



# C&K Switches Catalog

Pushbutton

Tactile

Navigation

Keyswitch

Detect

Toggle

Rocker

Dip

Slides

Snap

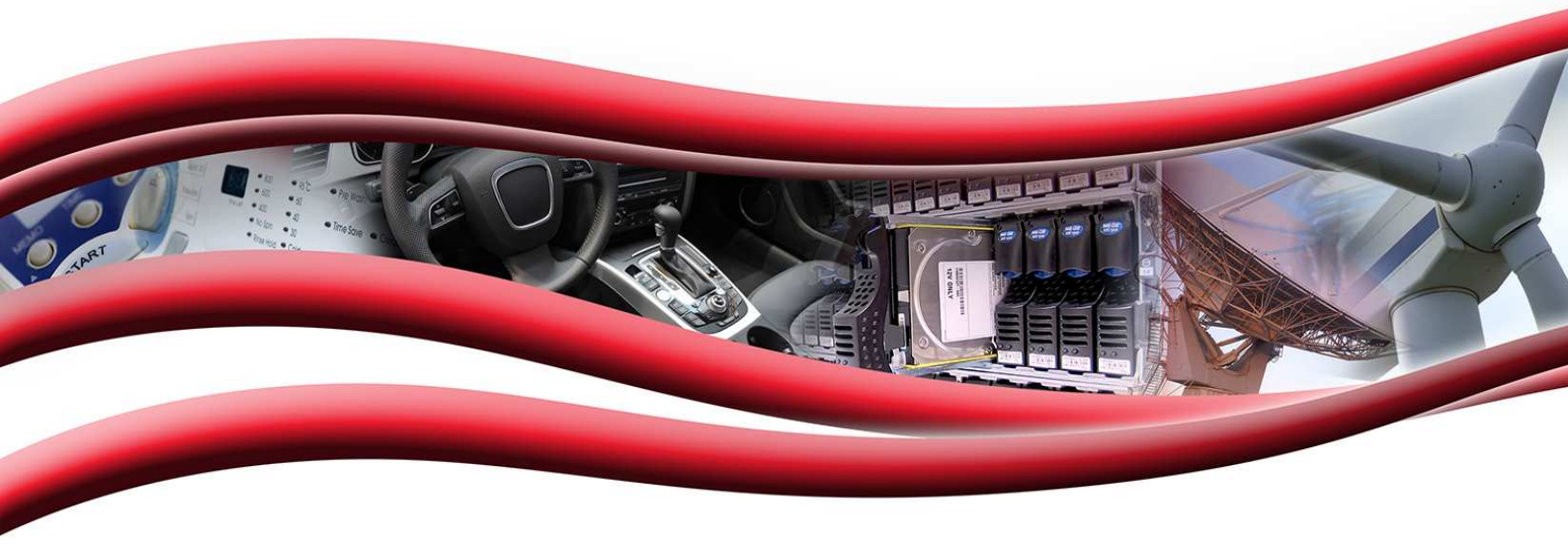
Rotary

Rotary (Encoder)

Switchlock

Thumbwheel

Smartcard Connector



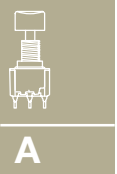


# Pushbutton Product Selection Guide

<b>Pushbutton</b>									
<b>Series</b>	<b>ELUM</b>	<b>EP</b>	<b>TP</b>	<b>E020</b>	<b>8020</b>	<b>E010</b>	<b>8060</b>	<b>8500</b>	<b>KM</b>
<b>Switch Type</b>	Mom./Latching	Tiny	Tiny	Snap-acting Mom.	Snap-acting Mom.	Miniature	Alternate Action	Sub-miniature	Sub-miniature
<b>Poles/Throws</b>	SPDT	SPST, SPDT, DPST	SPST, SPDT, DPST	SPDT, DPDT	SPDT, DPDT, 3PDT, 4PDT	SPDT	SPDT, DPDT	SPST	SPST, SPDT
<b>Max. Current</b>	3.5 VA	1 Amp	1 Amp	1 Amp	1 Amp	4 Amps	6 Amps	3 Amps	1 Amp
<b>Process Sealed</b>		•		•		•			
<b>Illuminated</b>	•				•		•	•	
<b>PCB Mount Options</b>									
Thru-hole	•	•	•	•	•	•	•	•	•
Vertical		•	•	•	•	•	•	•	•
Right Angle	•	•	•	•	•	•	•	•	•
Surface Mount	•	•							
<b>Panel Mount</b>			•		•	•	•	•	•
<b>Page No.</b>	A-4	A-9	A-15	A-21	A-29	A-46	A-52	A-62	A-67

<b>Pushbutton</b>							
<b>Series</b>	<b>8600</b>	<b>8700</b>	<b>GP</b>	<b>PN</b>	<b>PHB</b>	<b>F</b>	<b>NE-18</b>
<b>Switch Type</b>	Micro-miniature	Over Travel	Ultra-miniature	Alternate & Mom. Action	Short Stroke	Alternate & Mom. Action	Mains / Power
<b>Poles/Throws</b>	SPST	SPST	SPST, SPDT	SPDT, DPDT, 4PDT	DPDT, 4PDT	DPDT, 4PDT, 6PDT, 8PDT, 10PDT	DPST, DPDT Varied
<b>Max. Current</b>	500 mA	1 Amp	0.4 VA	200 mA	100 mA	500 mA	6 A
<b>Process Sealed</b>			•				
<b>PCB Mount Options</b>							
Thru-hole	•	•	•	•	•	•	•
Vertical	•	•	•				
Right Angle			•	•	•	•	•
Surface Mount			•				
<b>Panel Mount</b>	•	•				•	•
<b>Page No.</b>	A-71	A-74	A-77	A-81	A-84	A-87	A-96

# Pushbutton Product Selection Guide



**A**  
Pushbutton

Pushbutton								
Series	FP	AP	APB	HP	NP	PBA	PB	PS
Switch Type	Ultra Miniature	Industrial	Industrial	Hall Effect	Sealed Power	Snap-acting Mom.	Miniature	Sub-miniature Microminiature
Poles/Throws	SPST	SPST	SPST	Linear Output	SPDT	DPST	DPDT 4PDT	SPDT DPDT
Max. Current	0.4 VA	400mA	400mA	10 mA	5 Amp	250mA	0.3A / 1A	0.1 / 1A 0.3 / 2A
Process Sealed	•	IP67	IP67	IP68	IP68			
PCB Mount Options								
Thru-hole	•	•	•		•	•	•	•
Vertical	•	•	•	•	•			•
Right Angle	•					•	•	•
Panel Mount		•	•	•	•			•
Wire Leads		•	•	•	•			
Solder Lug		•	•					
Surface Mount								
Quick Connect								
Page No.	A-105	A-108	A-114	A-118	A-120	A-127	A-131	A-139



A

Pushbutton

# ELUM™ Series Right Angle Illuminated Latching Pushbutton

**LEAD FREE  
COMPATIBLE OPTION**

## Features/Benefits

- SPDT (N.O. & N.C.)
- Low height above PCB
- Reliable self-cleaning contact
- Surface-mount or thru-hole PCB
- Standard or custom actuator
- Central LED illumination
- Latching or Momentary
- Long travel. Smooth feel
- RoHS compliant and compatible

## Typical Applications

- Telecom network equipment
- Automotive electronics
- Consumer electronics
- Computer, server, modem, data storage
- Professional instrumentation, medical

Patent Numbers  
6,974,924 B2 US  
EP1583118B1 Europe



## Materials

FIXED CONTACTS: Stainless steel, silver plated with gold flash  
 TERMINALS: Stainless steel, silver plated  
 MOVABLE CONTACTS: Copper alloy, silver plated with gold flash  
 BASE: Glass filled LCP (UL94V-0)  
 ACTUATOR: Glass filled nylon 4/6 (UL94V-0)  
 COVER: Stainless steel

## Electrical

MAXIMUM POWER: 3.5 VA  
 MIN./MAX. VOLTAGE: 20 mV – 50 VDC  
 MIN./MAX. CURRENT: 0.01 mA – 250 mA  
 DIELECTRIC STRENGTH: ≥ 250 Vrms  
 CONTACT RESISTANCE: ≤ 50 mΩ  
 INSULATION RESISTANCE: ≥ 10<sup>9</sup> Ω  
 BOUNCE TIME: ≤ 1 ms  
 LED SPECIFICATIONS: See page A-5

## Mechanical

OPERATING FORCE: 2.5 N at Full Travel  
 SWITCHING TRAVEL: .067" (1.7 mm)  
 LATCH TRAVEL: .131" (3.6 mm)  
 FULL TRAVEL: .200" (5.1 mm)

## Operating Environment

OPERATING TEMPERATURE: -40°C TO 80°C.  
 STORAGE TEMPERATURE: -40°C TO 80°C.  
 RELATIVE HUMIDITY: 90% R.H. @ 80°C.  
 OPERATING LIFE: 30,000 Cycles.  
 VIBRATION: Per EIA 186-E Method  
 MECHANICAL SHOCK: Per EIA 186-E Method 12.  
 OVERLOAD: Withstands 40 N for 1 minute without damage

## Process Environment

SOLDERABILITY: According to Mil STD 202F Method 208D or EIA RS-186E Method 9.  
 LEAD FREE PROCESS COMPATIBLE: 260°C peak, 10 seconds Max. above 250° C.  
 WASHING PROCESS: No clean process compatible (SMT)  
 Bottom wash compatible (Thru-hole)  
 SHEAR TEST (SWITCH/PCB): > 40 N

## Packaging

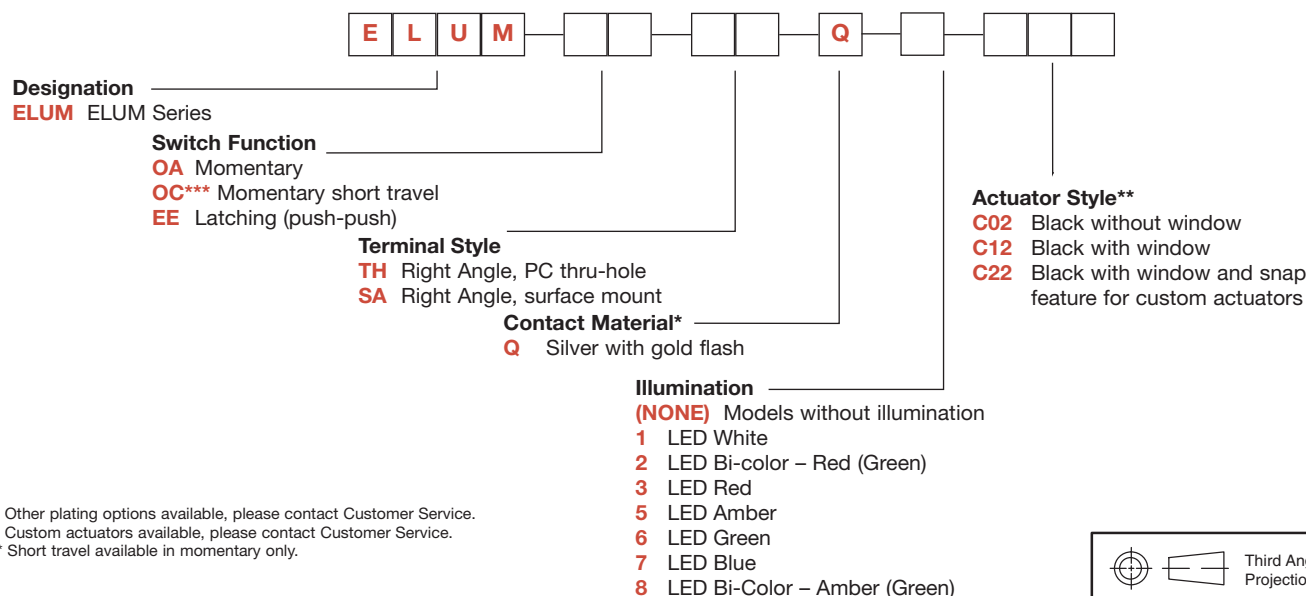
"SA" Terminal Style SMT: Tape and reel per EIA 481-2 (450/reel)  
 "TH" Terminal Style PC: Tray (60/tray)

**NOTE:** Any models supplied with Q, contact material are RoHS compliant.

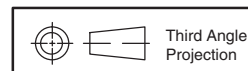
**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box.



\* Other plating options available, please contact Customer Service.  
 \*\* Custom actuators available, please contact Customer Service.  
 \*\*\* Short travel available in momentary only.



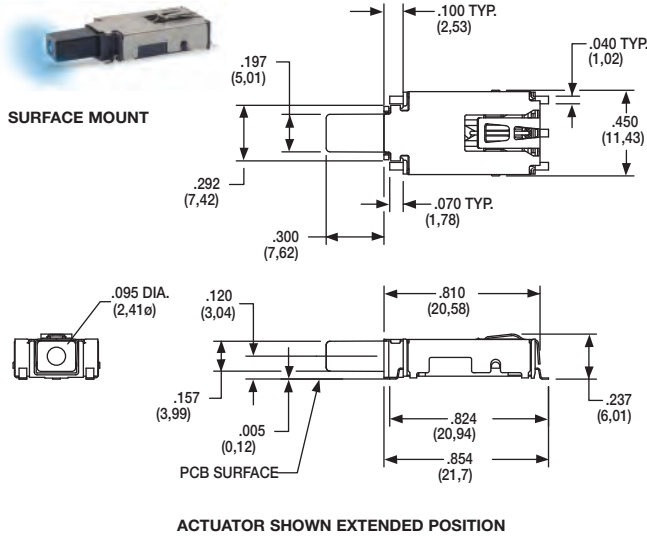
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

# ELUM™ Series Right Angle Illuminated Latching Pushbutton

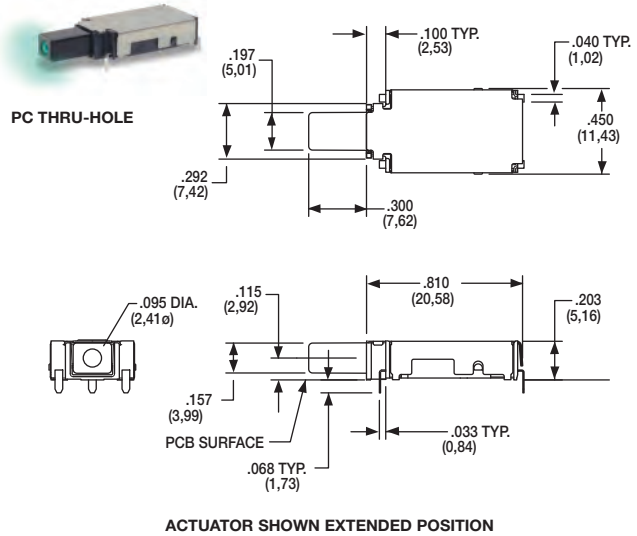


## STANDARD OPTIONS

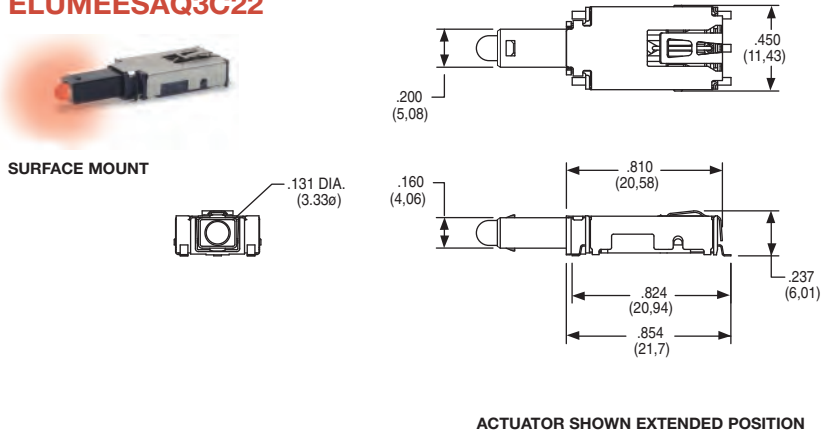
### ELUMEESAQ7C12



### ELUMOATHQ6C12



### ELUMEESAQ3C22



## DESIGNATION **ELUM** □ □ □ □ □ □ □ □ □ □

**ELUM** ELUM SERIES, Illuminated Latching Pushbutton

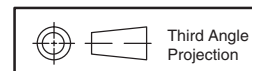
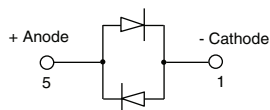
## SWITCH FUNCTION ■ □ □ □ □ □ □ □ □ □ □

OPTION CODE	NO. OF POLES	POSITION 1	CONNECTED TERMINALS	POSITION 2	CONNECTED TERMINALS	SCHEMATIC
		SWITCH FUNCTION		SWITCH FUNCTION		
<b>OA / OC</b>	SP Momentary	ON	3 - 4	ON (Mom.)	3 - 2	
<b>EE</b>	SP Latching (Push-Push)	ON	3 - 4	ON	3 - 2	

For SPST N.O. function, only terminals 3 & 2 are used.  
 For SPST N.C. function, only terminals 3 & 4 are used.  
 Circuit: Make before break

LED pins 1 & 5 are independent of switch function.

**NOTE:**  
 For bi-color LED's the polarity must be reversed to alternate the color



Dimensions are shown: Inches (mm)  
 Specifications and dimensions subject to change



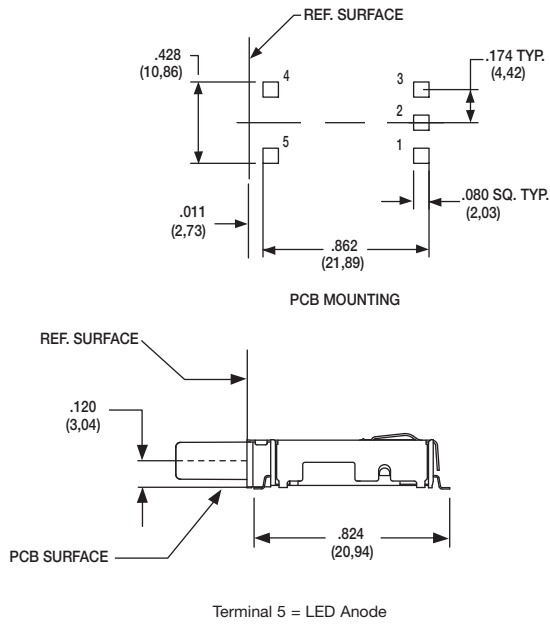
# ELUM™ Series Right Angle Illuminated Latching Pushbutton

Pushbutton  
A

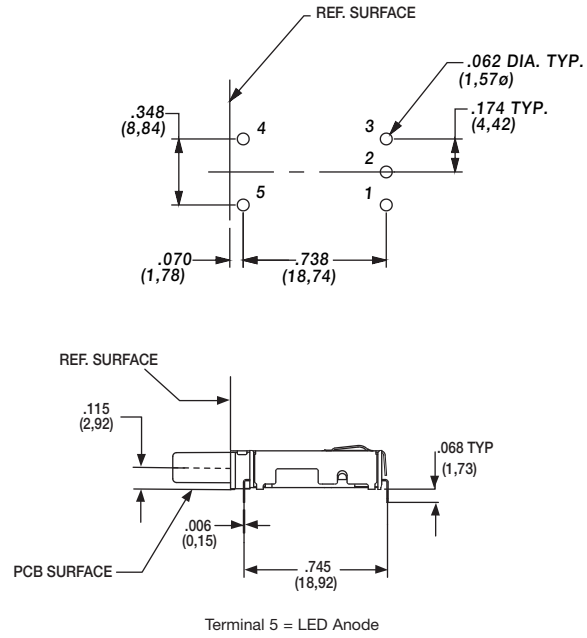
## TERMINAL STYLE



### SA RIGHT ANGLE, SURFACE MOUNT



### TH RIGHT ANGLE, PC THRU-HOLE



## CONTACT MATERIAL



OPTION CODE	CONTACT MATERIAL	TERMINAL PLATING	RATINGS
Q	SILVER WITH GOLD FLASH	SILVER	250 mA

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

FIXED CONTACTS AND TERMINALS: Stainless steel, silver plated with gold flash

MOVABLE CONTACTS: Copper alloy, silver plated with gold flash

**NOTE:** Any models supplied with Q, contact material are RoHS compliant.

## ILLUMINATION



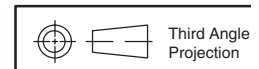
OPTION CODE	ILLUMINATION TYPE	TYPICAL INTENSITY* MIN	TYPICAL INTENSITY* MAX	PEAK WAVELENGTH	Vf Forward Voltage
		(mcd)		(nm)	
0	Model without illumination	N/A		N/A	
1	LED Super White	4,000	5,000	N/A	3.5
2	LED Bi-Color – Red (Green)	10	20	635/565	2.0
3	LED Red	4	8	700	2.0
5	LED Amber	35	50	610	2.0
6	LED Green	35	50	565	2.0
7	LED Super Blue	800	1,500	470	3.8
8	LED Bi-Color – Amber (Green)	10	10	585/565	2.0

\*LED FORWARD CURRENT: 20 mA

LED FORWARD VOLTAGE: see chart above

LED REVERSE VOLTAGE: 5.0 V MAX

\* For information on specific and custom LED, please contact Customer Service.



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

# ELUM™ Series Right Angle Illuminated Latching Pushbutton



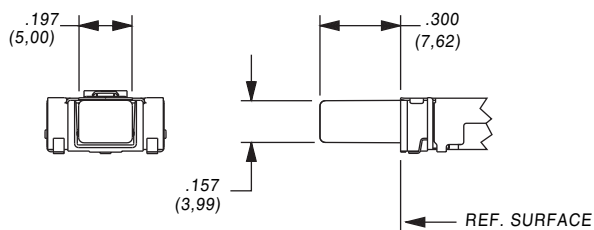
A

Pushbutton

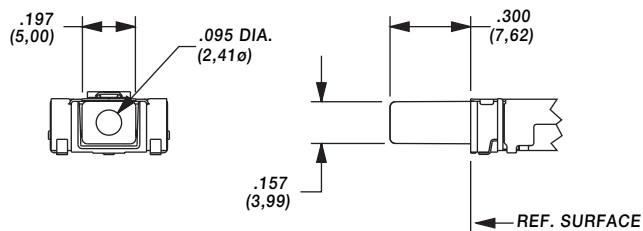
## ACTUATOR STYLE\*



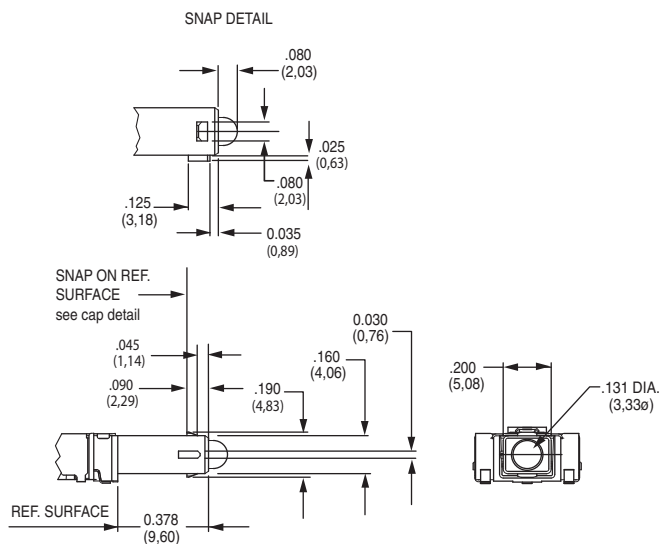
### C02 BLACK WITHOUT WINDOW



### C12 BLACK WITH WINDOW

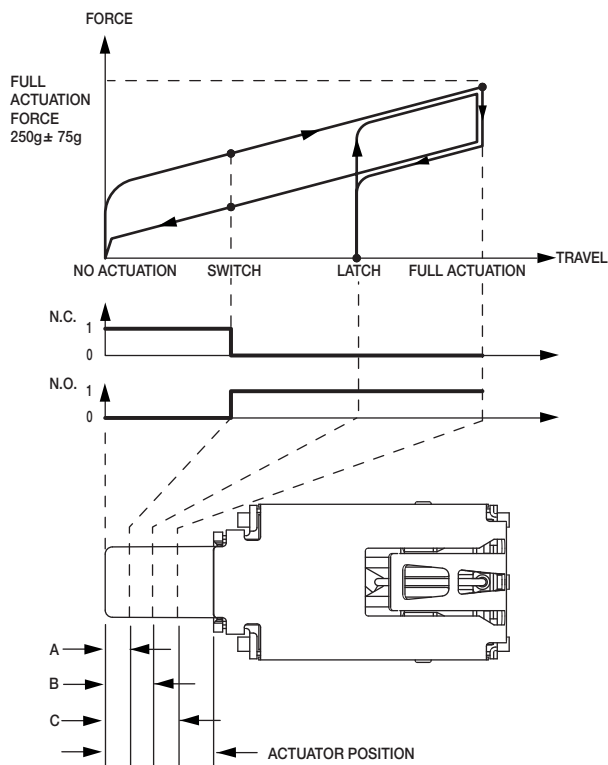


### C22 BLACK WITH WINDOW AND SNAP FEATURE TO ACCEPT CUSTOM CAP



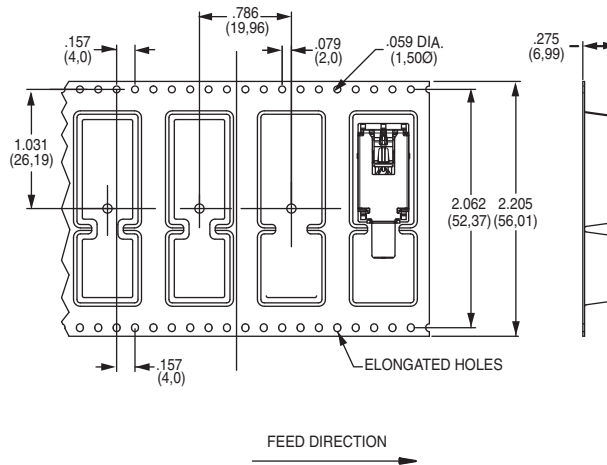
\* Custom actuators available, please contact Customer Service.

## FORCE TRAVEL DIAGRAM



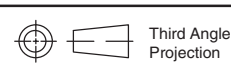
OA, EE ACTUATOR POSITION			
A	SWITCH POINT	.067 ± .020	1,7 ± 0.5mm
B	LATCH	.131 ± .020	3,3 ± 0.5mm
C	FULL ACTUATION	.200 ± .020	5,1 ± 0.5mm
OC ACTUATOR POSITION			
A	SWITCH POINT	.067 ± .020	1,7 ± 0.5mm
C	FULL ACTUATION	.098 ± .020	2,5 ± 0.5mm

## TAPE & REEL



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

www.ck-components.com





# ELUM™ Series Right Angle Illuminated Latching Pushbutton

## AVAILABLE HARDWARE

A  
Pushbutton

Cap



**PART NO.**

**957C00000** High temperature black cap with universal standby symbol

**956C02000** High temperature black cap with no symbol

Material: 4/6 Nylon SMT compatible

Cap



**PART NO.**

**181D01000** Paint and Laser Etched with black paint and universal standby symbol

Material: Clear polycarbonate

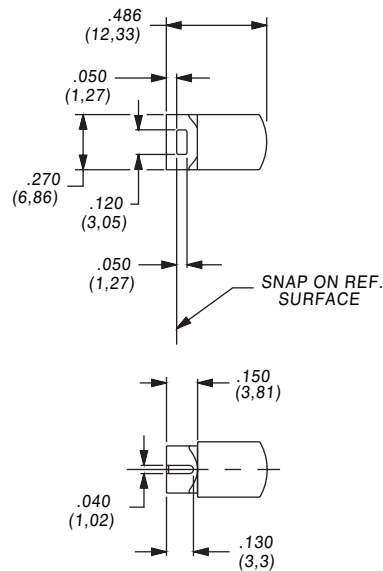
Cap



**PART NO.**

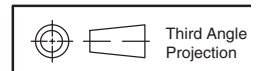
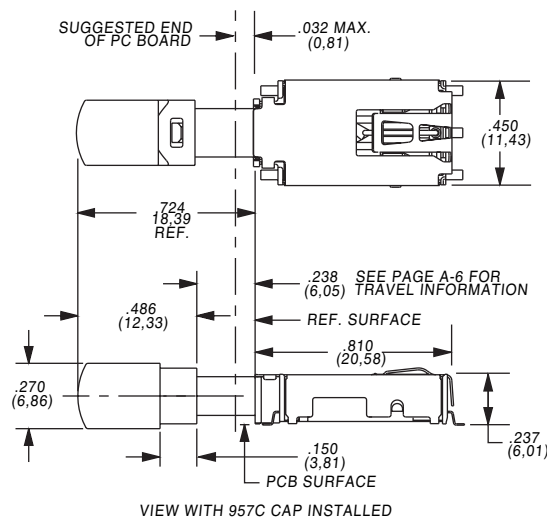
**181D00000** Paint and laser etched with white paint underlay and black paint with universal standby symbol.

Material: Clear polycarbonate



**NOTE:** Caps are for use with the C22 actuator style. Other colors and symbols available, consult Customer Service Center.

## CAP INSTALLATION



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

[www.ck-components.com](http://www.ck-components.com)



# EP Series Sealed Tiny Pushbutton Switches



A  
Pushbutton

## Features/Benefits

- Sealed against solder & cleaning processes
- Thru-hole and surface mount models
- Snap-fitting actuator accepts standard caps
- Tape & reel packaging available
- RoHS compliant models available

## Typical Applications

- Telecommunications and networking equipment
- Computers and peripherals
- Instrumentation and controls



Models Available

## Specifications

**CONTACT RATING:** B contact material: 0.4 VA max. @ 20 V AC or DC max. See page A-13 for additional ratings.

**ELECTRICAL LIFE:** EP11, EP21 models: 60,000 make-and-break cycles at full load. EP12 models: 30,000 cycles.

**CONTACT RESISTANCE:** Below 20 mΩ typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

**INSULATION RESISTANCE:** 10<sup>9</sup> Ω min.

**DIELECTRIC STRENGTH:** 1000 Vrms min. @ sea level.

**OPERATING TEMPERATURE:** -30°C to 85°C.

**SOLDERABILITY:** Per MIL-STD-202F method 208D, or EIA RS-186E method 9 (1 hour steam aging).

**DEGREE OF PROTECTION:** IP57; Protection against harmful dust deposit, full-scale voltage protection, temporary immersion.

**PACKAGING:** Surface mount switches standard in anti-static tape and reel packaging per EIA 481-3, see page A-14 for drawings and reel information. Tape and cover strip are conductive for use near statically sensitive components, consult Customer Service Center.

## Materials

**CASE & BUSHING:** High temperature material, glass filled nylon 4/6, flame retardant, heat stabilized (UL 94V-0) on EP11 / EP12 models; glass filled nylon 6/6 on EP21.

**PLUNGER:** Thermoplastic polyester or glass filled nylon (UL 94V-0), with internal o-ring seal. SA surface mount: High temperature material, glass filled LCP (UL 94V-0).

**SWITCH SUPPORT:** Brass, matte-tin plated.

**CONTACTS & TERMINALS:** B contact material: Copper alloy, with gold plate over nickel plate. See page A-13 for additional contact materials.

**TERMINAL SEAL:** Epoxy.

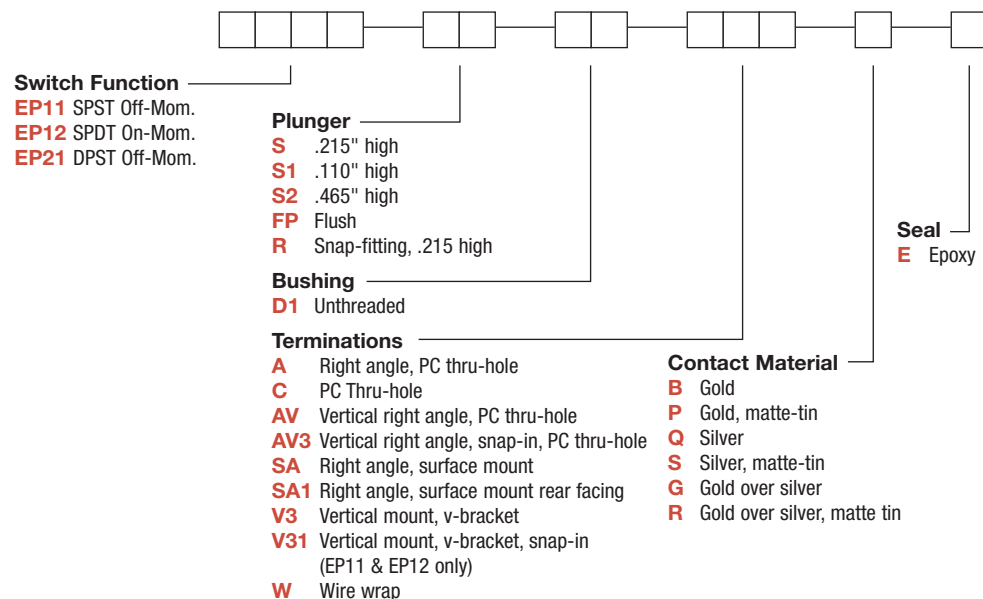
**NOTE:** Any models supplied with Q, B, P, S, R or G contact material are RoHS compliant.

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

**CAUTION:** PC mounting layouts and pads as shown are designed to be compatible with the latest equipment and reflow techniques. Care should be taken in the design and location of PC lands to suit individual needs. Orientation relative to reflow direction may significantly impact solder joint integrity.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages A-10 thru A-14. For additional options not shown in catalog, consult Customer Service Center. All models are process sealed to withstand machine soldering temperatures and pressure wash cleaning methods.



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



# EP Series Sealed Tiny Pushbutton Switches

Pushbutton A

## SWITCH FUNCTION

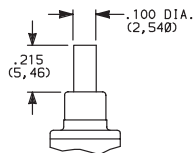
NO. POLES	MODEL NO.	SWITCH FUNCTION		CONNECTED TERMINALS		SCHEMATIC
		POS. 1	POS. 2	POS. 1	POS. 2	
SP	<b>EP11</b>	OFF	MOM.	OPEN	1-3	SPST
	<b>EP12</b>	ON	MOM.	2-1	2-3	SPDT
<b>SPDT</b> <p>Part number shown: EP12SD1CBE</p>						
DP	<b>EP21</b>	OFF	MOM.	OPEN	1-3,4-6	DPST
<b>DPST</b> <p>Part number shown: EP21SD1CBE</p>						

MOM. = Momentary

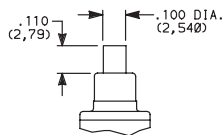
All models with all options when ordered with G, Q, R or S contact material.

## PLUNGER

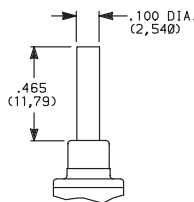
**S** .215" HIGH



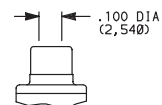
**S1** .110" HIGH



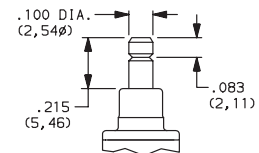
**S2** .465" HIGH



**FP** FLUSH PLUNGER



**R** SNAP-FITTING



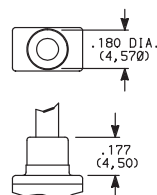
S1 & S2 actuators are not available with EP12 & EP21 models.

FP & R actuators are not available with EP21 model.

NOTE: Caps available for plunger options, see page A-14.

## BUSHING

**D1** UNTHREADED



NOTE: Internal actuator o-ring standard.



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



# EP Series Sealed Tiny Pushbutton Switches



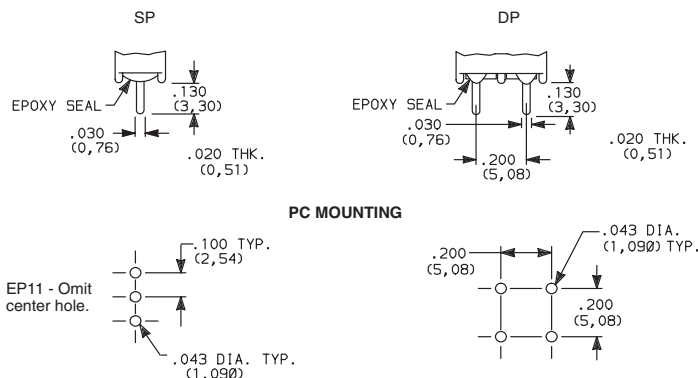
A

Pushbutton

## TERMINATIONS

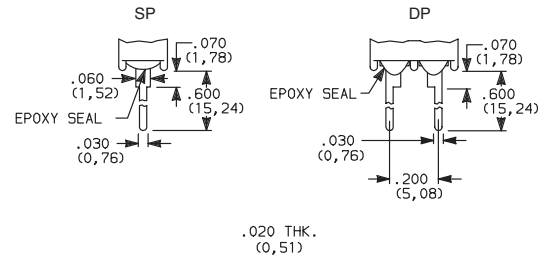


### C PC THRU-HOLE



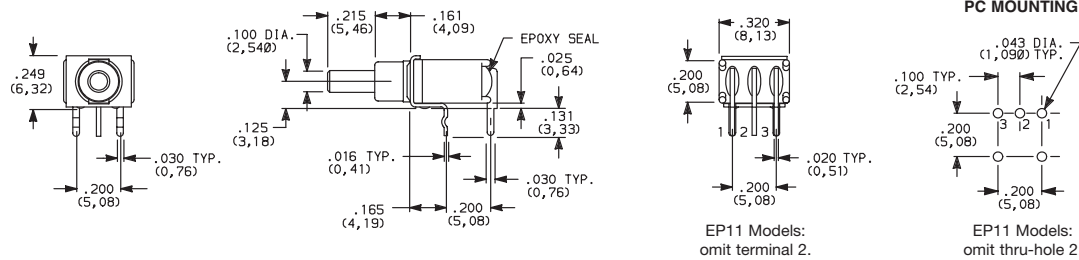
### SP and DP

### W WIRE WRAP



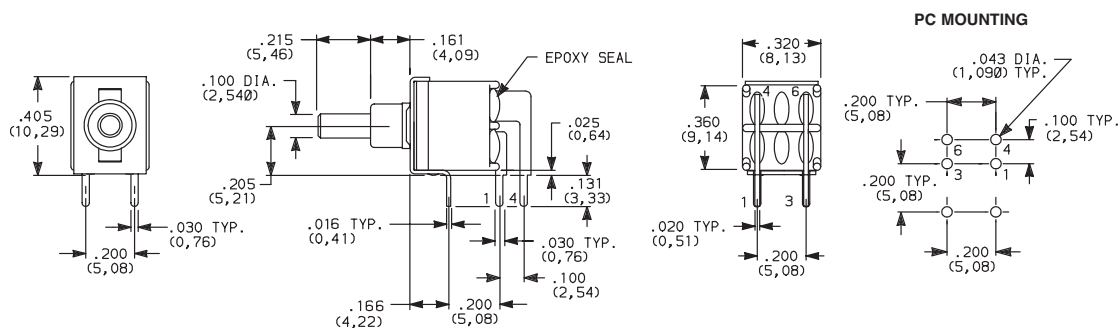
### SP and DP

### A RIGHT ANGLE, PC THRU-HOLE



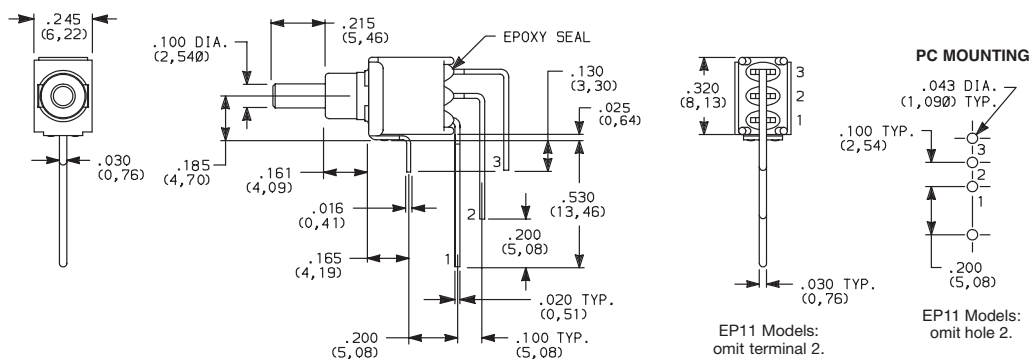
EP12SD1ABE  
SPDT

### A RIGHT ANGLE, PC THRU-HOLE



EP21SD1ABE  
DPST

### AV VERTICAL RIGHT ANGLE, PC THRU-HOLE



EP12SD1AVBE  
SPDT

NOTE: Terminal bend radii and lead-in manufacturing option.



Third Angle  
Projection



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



# EP Series Sealed Tiny Pushbutton Switches

## TERMINATIONS



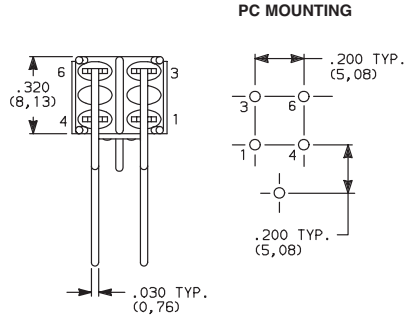
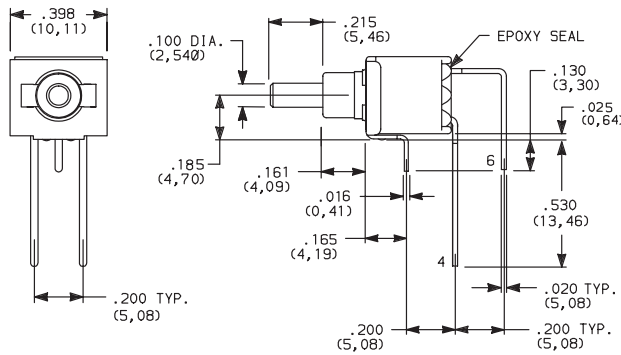
Pushbutton

A

### AV VERTICAL RIGHT ANGLE, THRU-HOLE



EP21SD1AVBE  
DPST

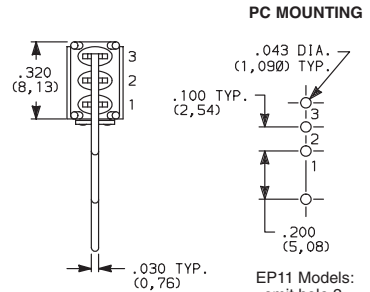
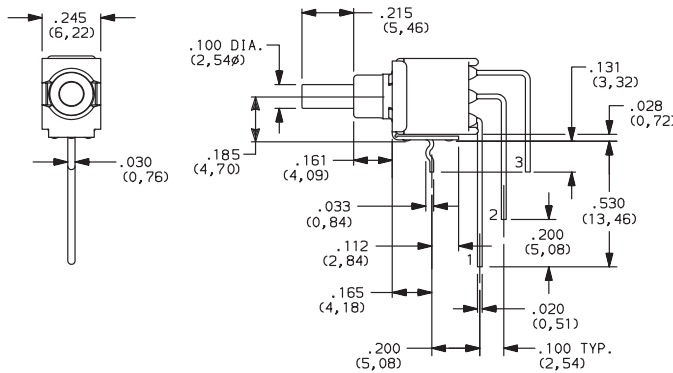


NOTE: Terminal bend radii and lead-in manufacturing option.

### AV3 VERTICAL RIGHT ANGLE, SNAP-IN, PC THRU-HOLE



EP12SD1AV3BE  
SPST

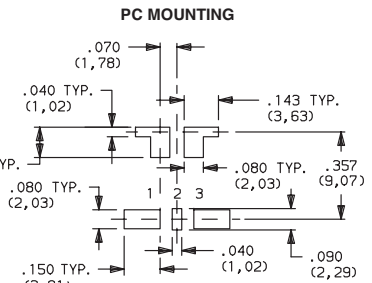
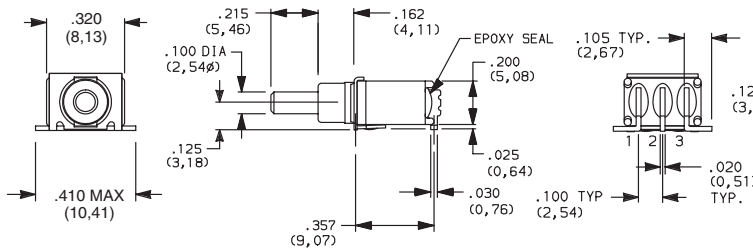


EP11 Models:  
omit hole 2.

### SA RIGHT ANGLE, SURFACE MOUNT



EP12SD1SAPE  
SPDT



EP11 Models:  
omit pad 2.

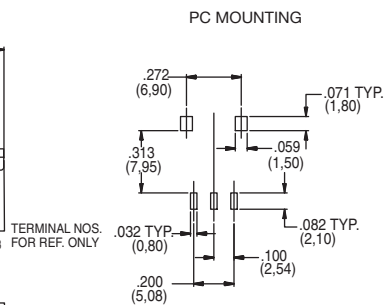
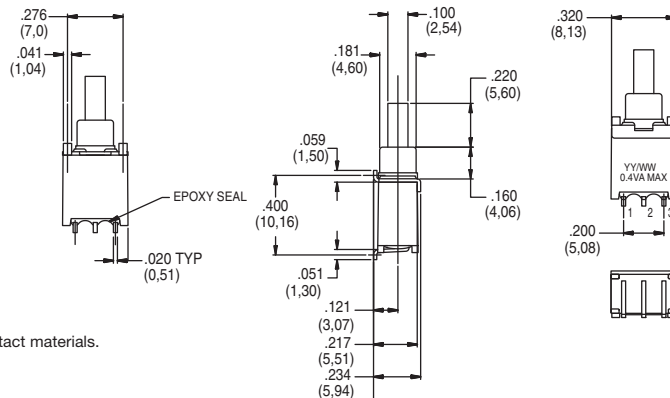
Available with P contact material only.  
Not Available on DPST models.

EP11 Models:  
omit terminal 2.

### SA1 RIGHT ANGLE, SURFACE MOUNT



EP12SD1SA1BE  
SPDT



Third Angle  
Projection

SA1 is only available with B and P contact materials.  
Not Available on DPST models.



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

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# EP Series Sealed Tiny Pushbutton Switches



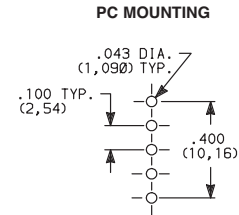
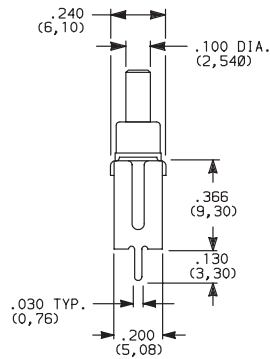
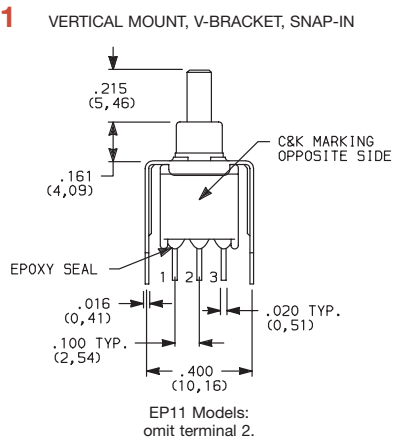
A

Pushbutton

## TERMINATIONS

**V3** VERTICAL MOUNT, V-BRACKET

**V31** VERTICAL MOUNT, V-BRACKET, SNAP-IN

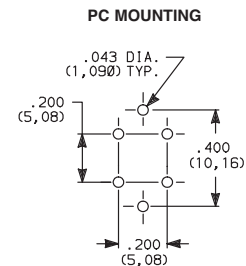
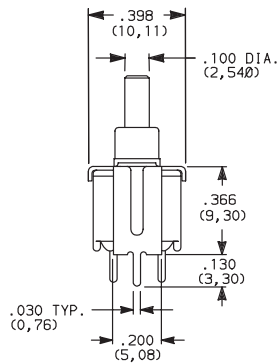
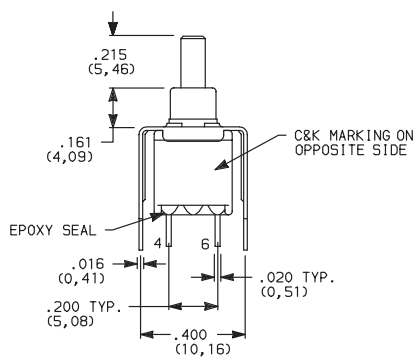


EP11 Models:  
omit centerhole.

EP12SD1V3BE  
SPDT



**V3** VERTICAL MOUNT, V-BRACKET



EP21SD1V3BE  
DPST



## CONTACT MATERIAL

OPTION CODE	CONTACT MATERIAL	TERMINAL PLATING	RATINGS	
<b>B</b>	GOLD <sup>1</sup>	GOLD <sup>1</sup>	LOW LEVEL/DRY CIRCUIT	0.4 VA MAX. @ 20 V AC OR DC MAX.
<b>P</b>		MATTE-TIN <sup>6</sup>		
<b>Q</b>	SILVER <sup>4,5</sup>	SILVER <sup>5</sup>	POWER	1 AMP @ 120 V AC OR 28 V DC.
<b>S</b>		MATTE-TIN <sup>6</sup>		
<b>G</b>	GOLD OVER SILVER <sup>2,3</sup>	GOLD <sup>3</sup>	LOW LEVEL/DRY CIRCUIT OR POWER	0.4 VA MAX @ 20 V AC OR DC MAX. OR 1 AMP @ 120 V AC OR 28 V DC.
<b>R</b>		MATTE-TIN <sup>6</sup>		

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

<sup>1</sup> CONTACTS & TERMINALS: Copper alloy, with gold plate over nickel plate.

<sup>2</sup> END CONTACTS: Coin silver, with gold plate over nickel plate.


<sup>3</sup> CENTER CONTACTS & ALL TERMINALS: Copper alloy, with gold plate over nickel plate.

<sup>4</sup> END CONTACTS: Coin silver, silver plated.

<sup>5</sup> CENTER CONTACT & ALL TERMINALS: Copper alloy, silver plated.

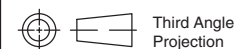
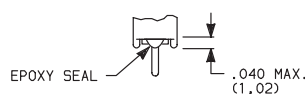
<sup>6</sup> TERMINALS: Copper alloy, with matte tin over nickel plate.

**NOTE:** Any models supplied with Q, B, P, S, R or G contact material are RoHS compliant.

All models  with all options when ordered with G, S, R or Q contact material.

## SEAL

**E** EPOXY SEAL



Third Angle  
Projection

**C&K**

Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

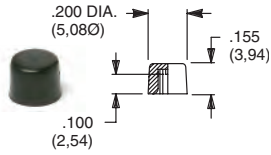


# EP Series Sealed Tiny Pushbutton Switches

Pushbutton  
A

## AVAILABLE HARDWARE

Cap



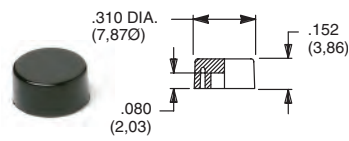
**PART NO.**

**508101000** WHITE  
**508102000** BLACK  
**508103000** RED

Material: Nylon  
Finish: Gloss

Not for use on S1 plunger

Cap



**PART NO.**

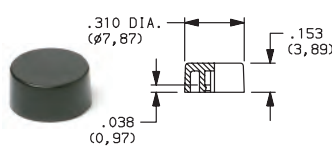
**465801000** WHITE  
**465802000** BLACK  
**465803000** RED

Material: Nylon  
Finish: Gloss

Not for use on S1 plunger

Cap

Compatible with snap-fitting plungers  
EP11 & EP12 Models. R option only.



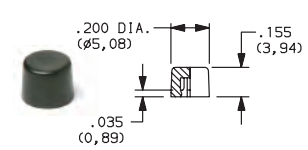
**PART NO.**

**585A01000** WHITE  
**585A02000** BLACK  
**585A03000** RED

Material: Nylon  
Finish: Gloss

Cap

Compatible with snap-fitting plungers  
EP11 & EP12 Models. R option only.



**PART NO.**

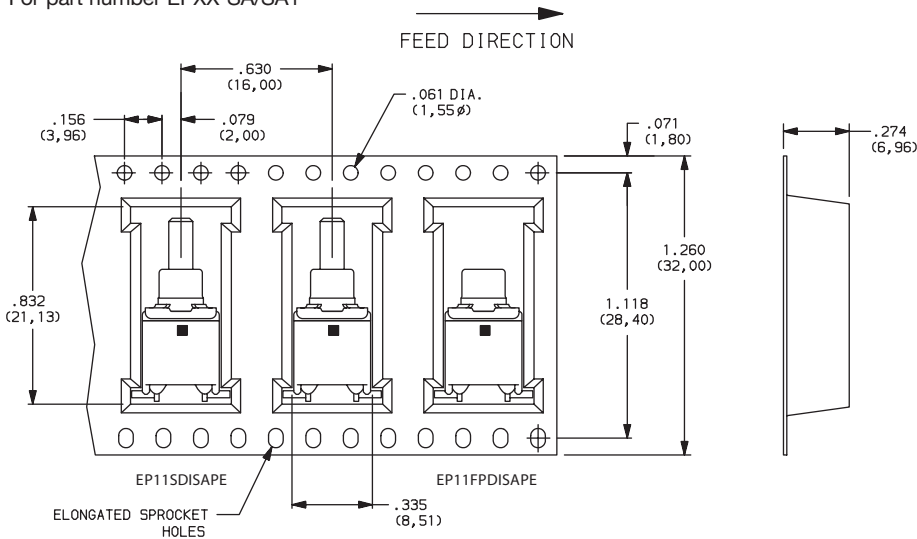
**785A01000** WHITE  
**785A02000** BLACK  
**785A03000** RED

Material: Nylon  
Finish: Gloss

**NOTE:** Other colors available, consult Customer Service Center.

## TAPE & REEL

For part number EPXX-SA/SA1



REEL INFORMATION	
OUTSIDE DIAMETER	13.00 (330,0)
PILOT HOLE	.512 (13,0)
QUANTITY PER REEL	600



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

# TP Series Tiny Pushbutton Switches



A  
Pushbutton

## Features/Benefits

- **Subminiature size**—capable of switching 1 AMP
- **Vertical & right angle terminations**
- **PC & panel mount models**
- **Snap-in front panel mounting available**
- **Epoxy terminal seal-compatible with bottom wash cleaning**
- **RoHS compliant models available**



Models Available

## Typical Applications

- **Telecommunications and networking equipment**
- **Computers and peripherals**
- **Instrumentation and controls**



## Specifications

**CONTACT RATING:** B contact material: 0.4 VA max. @ 20 V AC or DC max. Q contact material: 1 AMP @ 120 V AC or 28 V DC. See page A-19 for additional ratings.

**ELECTRICAL LIFE:** TP11, TP21 MODELS: 60,000 make-and-break cycles at full load. TP12 MODELS: 30,000 cycles.

**CONTACT RESISTANCE:** Below 20 mΩ typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

**INSULATION RESISTANCE:** 10<sup>9</sup>Ω min.

**DIELECTRIC STRENGTH:** 1000 Vrms min. @ sea level.

**OPERATING TEMPERATURE:** -30°C to 85°C.

**SOLDERABILITY:** Per MIL-STD-202F method 208D, or EIA RS-186E method 9 (1 hour steam aging).

**NOTE:** Any models supplied with Q, B, P, R or G contact material are RoHS compliant.

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## Materials

**CASE:** Glass filled nylon 4/6 or 6/6, flame retardant, heat stabilized or diallyl phthalate (DAP), (UL 94V-0).

**PLUNGER:** Thermoplastic polyester (UL 94V-0).

**CAP & FRAME:** Nylon, black standard.

**BUSHING:** Brass, nickel plated.

**HOUSING:** Stainless steel.

**SWITCH SUPPORT:** Brass, matte-tin plated.

**END CONTACTS:** B contact material: Copper alloy, with gold plate over nickel plate. Q contact material: Coin silver, silver plated. See page A-19 for additional contact materials.

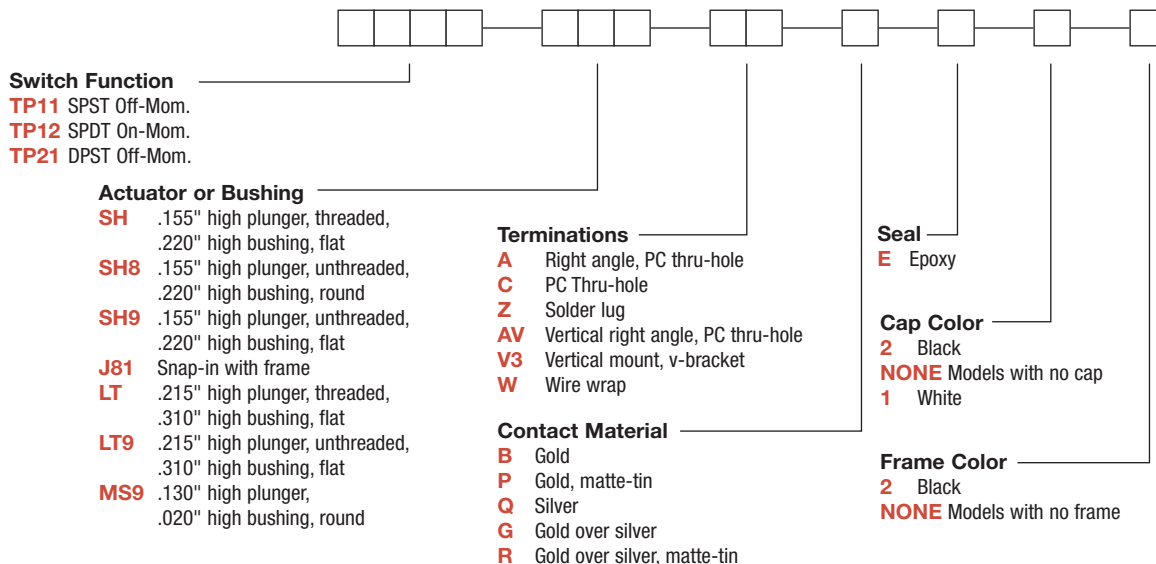
**CENTER CONTACT & ALL TERMINALS:** B contact material: Copper alloy, with gold plate over nickel plate. Q contact material: Copper alloy, silver plated. See page A-19 for additional contact materials.

**TERMINAL SEAL:** Epoxy. Refer to soldering and cleaning in Technical Data Chapter

**HARDWARE:** Nut & Locking Ring: Brass nickel plated.  
Lockwasher: Steel, nickel plated.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages A-16 thru A-20. For additional options not shown in catalog, consult Customer Service Center. All models have epoxy terminal seal and are compatible with all "bottom-wash" PCB cleaning methods.



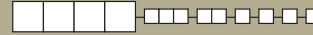
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



# TP Series Tiny Pushbutton Switches

Pushbutton  
A

## SWITCH FUNCTION

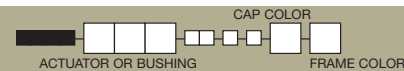


NO. POLES	MODEL NO.	SWITCH FUNCTION		CONNECTED TERMINALS		SCHEMATIC
		POS. 1	POS. 2	POS. 1	POS. 2	
SP	<b>TP11</b>	OFF	MOM.	OPEN	1-3	SPST 1 2 3
	<b>TP12</b>	ON	MOM.	2-1	2-3	SPDT NC 1 2 (COMMON) 3 NO
<b>SPDT</b> 						
DP	<b>TP21</b>	OFF	MOM.	OPEN	1-3,4-6	DPST 1 3 4 6
<b>DPST</b> 						

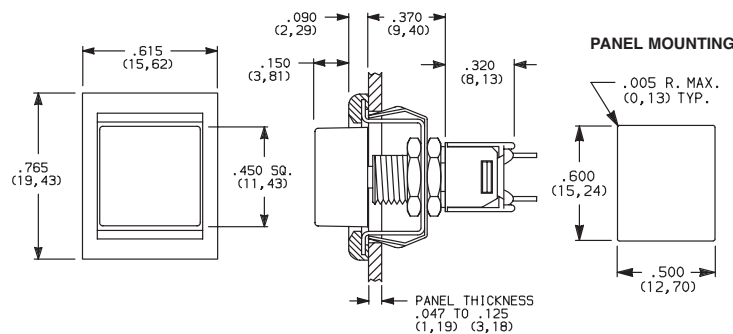
MOM. = Momentary

All models with all options when ordered with G, Q or R contact material.

## ACTUATOR—SNAP-IN FRONT MOUNT



### J81 SNAP-IN WITH FRAME



OPTION CODE	CAP COLOR
<b>2</b>	BLACK
<b>1</b>	WHITE

OPTION CODE	FRAME COLOR
<b>2</b>	BLACK
<b>NONE</b>	No Frame Color (J80 option)

Cap and Frame Finish: matte. Other colors available, consult Customer Service Center.  
**NOTE:** Available with Z, C, or W terminations.

**NOTE:** Caps & frames available separately, see page A-20.



Dimensions are shown: Inches (mm)  
 Specifications and dimensions subject to change





# TP Series Tiny Pushbutton Switches



A

Pushbutton

**SH** .155" HIGH PLUNGER,  
.220" HIGH BUSHING,  
THREADED, FLAT

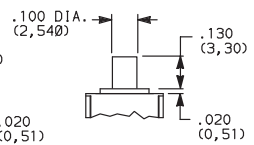
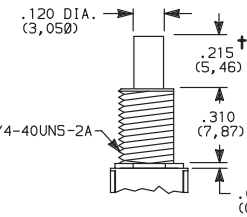
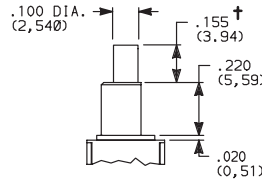
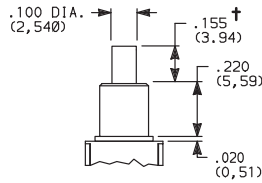
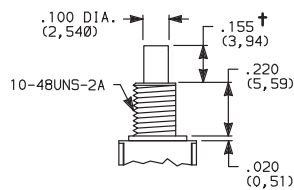
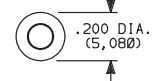
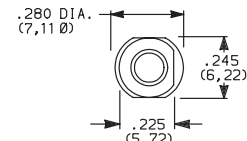
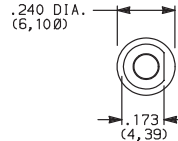
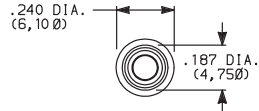
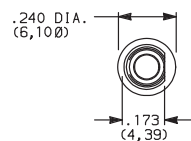
**SH8** .155" HIGH PLUNGER,  
.220" HIGH BUSHING,  
UNTHREADED

**SH9** .155" HIGH PLUNGER,  
.220" HIGH BUSHING,  
UNTHREADED, FLAT

**LT** .215" HIGH PLUNGER,  
.310" HIGH BUSHING,  
THREADED

**MS9** .130" HIGH  
PLUNGER

**LT9** .215" HIGH PLUNGER,  
.310" HIGH BUSHING,  
UNTHREADED



Standard with Z, C, W terminations.

Standard with A, AV, V3 terminations.

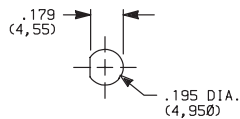
Not available with Z terminations.

† Subtract .016 (0,41) for models with A, AV or V3 terminations.

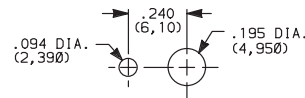
NOTE: Caps available for plunger options, see page A-20.

## PANEL MOUNTING

### 10-48 BUSHING

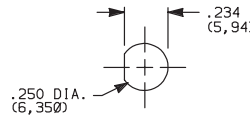


Without locking ring

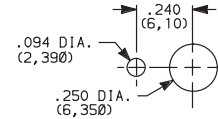


With standard locking ring

### 1/4 IN. BUSHING



Without locking ring

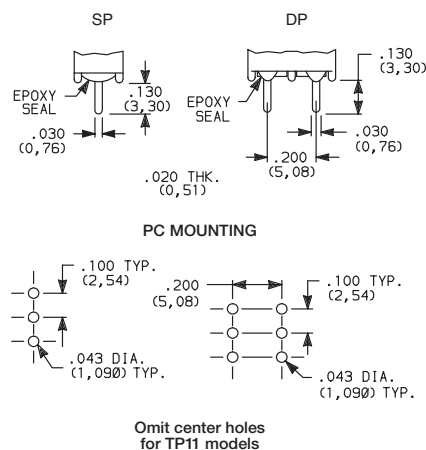


With standard locking ring

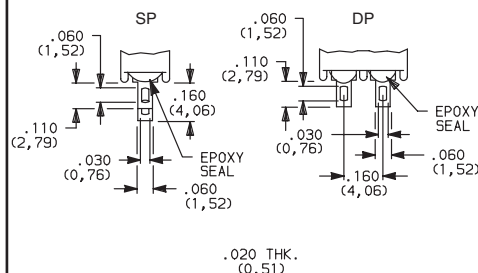
NOTE: One mounting nut, locking ring and lockwasher supplied standard with 10-48 threaded bushings (two nuts with 1/4-40 bushings). Optional mounting nut and locking ring styles and finishes available separately, see section "Technical Data and Additional Hardware".

## TERMINATIONS

### C PC THRU-HOLE

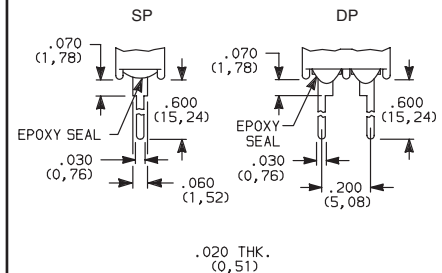


### Z SOLDER LUG



Not available with MS9 bushing or P or R contact material.

### W WIRE WRAP



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



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# TP Series Tiny Pushbutton Switches

## TERMINATIONS



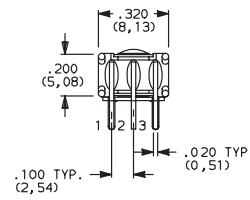
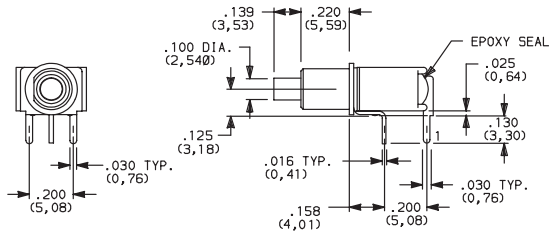
Pushbutton

A

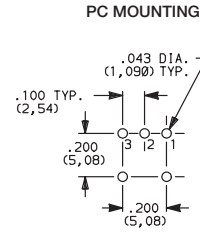
**A** RIGHT ANGLE, PC THRU-HOLE



**TP12SH9ABE  
SPDT**



**TP11 Models:  
omit terminal 2.**

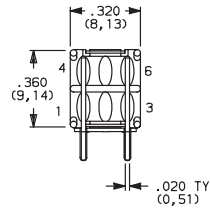
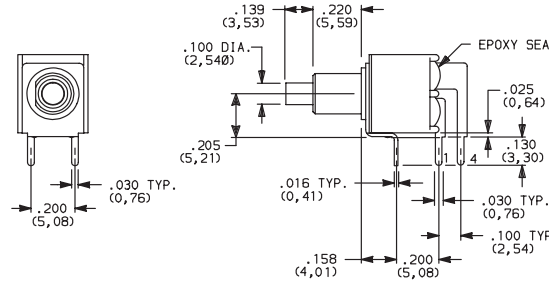


**TP11 Models:  
omit hole 2.**

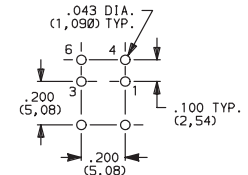
**A** RIGHT ANGLE, PC THRU-HOLE



**TP21SH9ABE  
DPST**



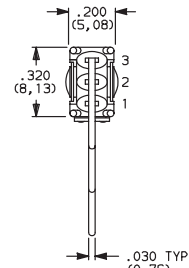
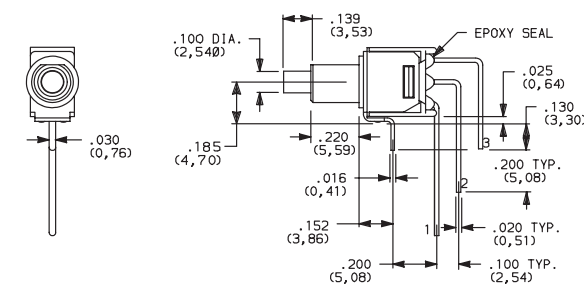
**PC MOUNTING**



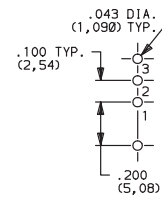
**AV** VERTICAL RIGHT ANGLE, PC THRU-HOLE



**TP12SH9AVBE  
SPDT**



**PC MOUNTING**



**TP11 Models:  
omit hole 2.**

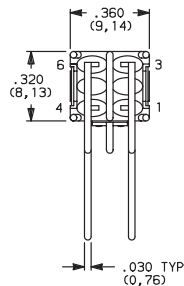
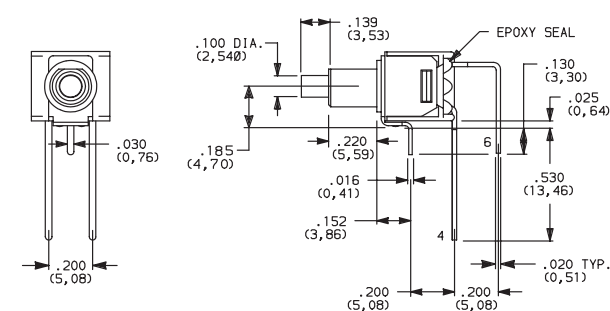
**TP11 Models:  
omit terminal 2.**

**NOTE:** Terminal bend radii and lead-in manufacturing option.

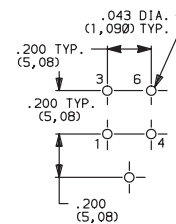
**AV** VERTICAL RIGHT ANGLE, PC THRU-HOLE



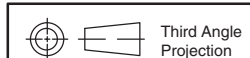
**TP21SH9AVBE  
DPST**



**PC MOUNTING**



**NOTE:** Terminal bend radii and lead-in manufacturing option.



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

# TP Series Tiny Pushbutton Switches

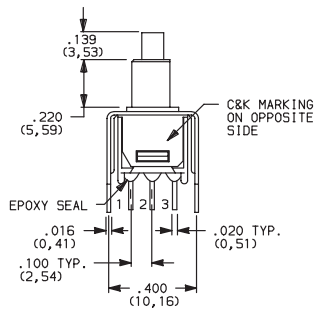


A

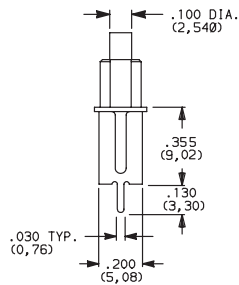
Pushbutton

## TERMINATIONS

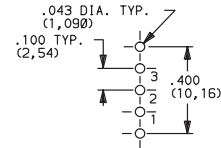
### V3 VERTICAL MOUNT, V-BRACKET



TP11 Models:  
omit terminal 2.



#### PC MOUNTING

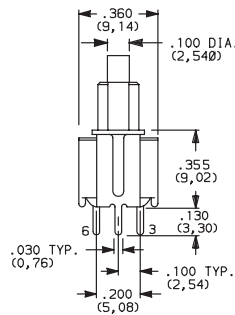
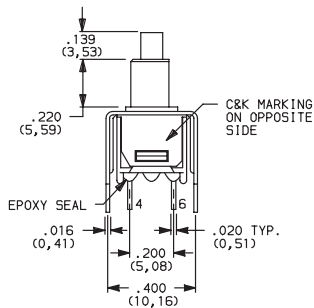


TP11 Models:  
omit hole 2.

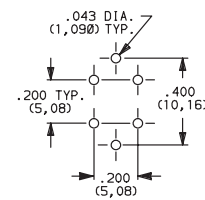


TP12SH9V3BE  
SPDT

### V3 VERTICAL MOUNT, V-BRACKET



#### PC MOUNTING



TP21SH9V3BE  
DPST

## CONTACT MATERIAL

OPTION CODE	CONTACT MATERIAL	TERMINAL PLATING	RATINGS	
<b>B</b>	GOLD <sup>1</sup>	GOLD <sup>1</sup>	LOW LEVEL/DRY CIRCUIT	0.4 VA MAX. @ 20 V AC OR DC MAX.
<b>P</b>		MATTE-TIN <sup>6</sup>		
<b>Q</b>	SILVER <sup>4,5</sup>	SILVER <sup>5</sup>	POWER	1 AMP @ 120 V AC OR 28 V DC.
<b>G</b>	GOLD OVER SILVER <sup>2,3</sup>	GOLD <sup>3</sup>	LOW LEVEL/DRY CIRCUIT OR POWER	0.4 VA MAX @ 20 V AC OR DC MAX. OR 1 AMP @ 120 V AC OR 28 V DC.
<b>R</b>		MATTE-TIN <sup>6</sup>		

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

<sup>1</sup> CONTACTS & TERMINALS: Copper alloy, with gold plate over nickel plate.

<sup>2</sup> END CONTACTS: Coin silver, with gold plate over nickel plate.

<sup>3</sup> CENTER CONTACTS & ALL TERMINALS: Copper alloy, with gold plate over nickel plate.

<sup>4</sup> END CONTACTS: Coin silver, silver plated.

<sup>5</sup> CENTER CONTACT & ALL TERMINALS: Copper alloy, silver plated.

<sup>6</sup> TERMINALS: Copper alloy, with matte-tin over nickel plate.

**NOTE:** Any models supplied with P, R, Q, B or G contact material are RoHS compliant.

All models with all options when ordered with R, G, or Q contact material.

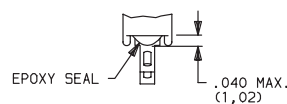
B contact material standard with A, AV, V3 & W terminations.

Q contact material standard with C & Z terminations

P, R contact materials not available with Z terminations.

## SEAL

### E EPOXY SEAL



Third Angle  
Projection



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

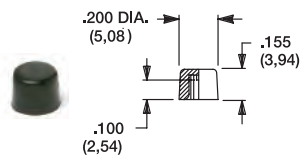


# TP Series Tiny Pushbutton Switches

Pushbutton  
A

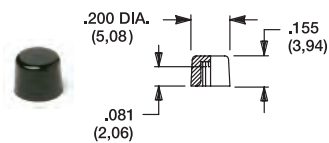
## AVAILABLE HARDWARE

Cap, .100" DIA. Plungers



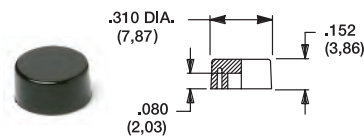
**PART NO.**  
**508101000** WHITE  
**508102000** BLACK  
 Material: Nylon  
 Finish: Gloss

Cap, .100" DIA. Plungers  
(Recommended for S9 plunger)



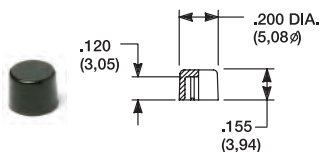
**PART NO.**  
**538701000** WHITE  
**538702000** BLACK  
 Material: Nylon  
 Finish: Gloss

Cap, .100" DIA. Plungers



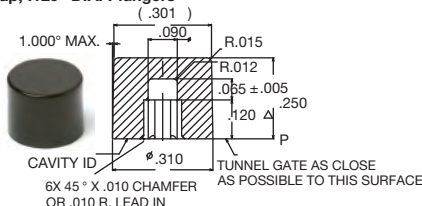
**PART NO.**  
**465801000** WHITE  
**465802000** BLACK  
 Material: Nylon  
 Finish: Gloss

Cap, .120" DIA. Plungers



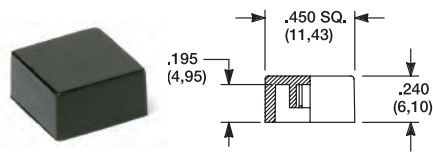
**PART NO.**  
**708901000** WHITE  
**708902000** BLACK  
 Material: Nylon  
 Finish: Gloss

Cap, .120" DIA. Plungers



**PART NO.**  
**891D01000** WHITE  
**891D02000** BLACK  
 Material: Nylon  
 Finish: Gloss

Cap, J81 option only



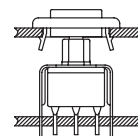
**PART NO.**  
**484601000** WHITE  
**484602000** BLACK  
 Material: Nylon  
 Finish: Gloss

**PART NO.**  
**798201000** WHITE  
**798202263** BLACK  
 Material: Nylon  
 Finish: Matte

**NOTE:** Additional nuts, locking rings and lockwashers available separately, see section "Technical Data and Additional Hardware".  
 Other cap colors available, consult Customer Service Center.

Frames snap into panel opening and are independent from switch mounting. Accurate positioning of the PC mounted switch relative to the panel opening is necessary to provide proper clearance between actuator and frame. Available in two basic styles and four panel thicknesses .047-.125 in. Material: Nylon. Finish: Matte.

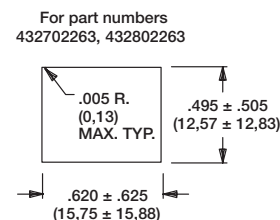
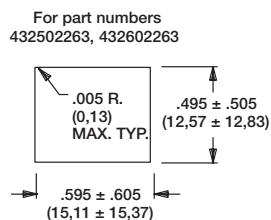
TYPICAL APPLICATION



.047" (1,19) PANEL THK.    .062" (1,57) PANEL THK.    .090" (2,29) PANEL THK.    .125" (3,18) PANEL THK.

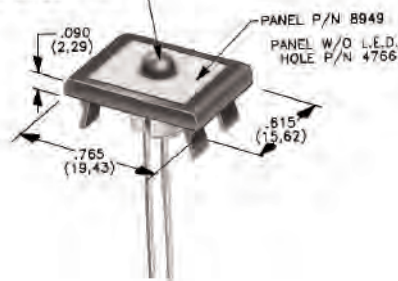
**PART NO.**    **PART NO.**    **PART NO.**    **PART NO.**  
**432502263**    **432602263**    **432702263**    **432802263** BLACK

### PANEL MOUNTING



Panel Inserts

L.E.D. (.200 DIA. (5,08)) SNAPS SECURELY INTO INSERT (P/N 8949). HEIGHT DEPENDS ON L.E.D. USED.



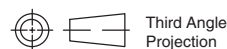
Above frames (part nos. 432XXXXXX) are also available with insert which accepts LED for indicator light assembly. Order insert separately from frame. Blank insert panel (without hole for LED) also available. **LED not included.**

PANEL INSERT WITH HOLE FOR LED

**PART NO.**  
**894902000**

BLANK PANEL INSERT WITHOUT HOLE FOR LED

**PART NO.**  
**476602000** BLACK



Dimensions are shown: Inches (mm)  
 Specifications and dimensions subject to change

# E020 Series Sealed Snap-acting Momentary Pushbutton Switches



A  
Pushbutton

## Features/Benefits

- Process sealed with disposable splashproof boot
- Long life contact design
- Snap-fitting plunger available
- RoHS compliant models available

## Typical Applications

- Instrumentation
- Telecommunications and networking equipment
- Computers and peripherals



Models Available

## Specifications

CONTACT RATING: B contact material (EX25 Models): 0.4 VA max. @ 20 V AC or DC max. G contact material (EX21 Models): 1 AMP @120 V AC or 28 V DC or 0.4 VA max. @ 20 V AC or DC max. Note: Break-before-make contacts. Multi-pole contacts do not make and break simultaneously. See page A-26 for additional ratings.

ELECTRICAL LIFE: 60,000 make-and-break cycles at full load.

CONTACT RESISTANCE: Below 50 mΩ typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

INSULATION RESISTANCE: 10<sup>9</sup>Ω min.

DIELECTRIC STRENGTH: 1000 Vrms min. @ sea level.

OPERATING TEMPERATURE: -30°C to 75°C.

CAP INSTALLATION FORCE: 10 lbs. max. permissible.

SOLDERABILITY: Per MIL-STD-202F method 208D, or

EIA RS-186E method 9 (1 hour steam aging).

**NOTE:** Any models supplied with P, R, B or G contact material are RoHS compliant.

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## Materials

CASE & BUSHING: Glass filled nylon 6/6, flame retardant (UL 94V-0).

PLUNGER: Glass filled nylon or glass filled polyester (PBT) (UL 94V-0).

SWITCH SUPPORT: Brass or steel, matte-tin.

SWITCH SUPPORT RETAINER: Stainless steel.

N.O. & N.C. CONTACTS: EX25 MODELS: B contact material: Copper alloy, with gold plate over nickel plate. EX21 MODELS: G contact material: Coin silver, with gold plate over nickel plate. See page A-26 for additional contact materials.

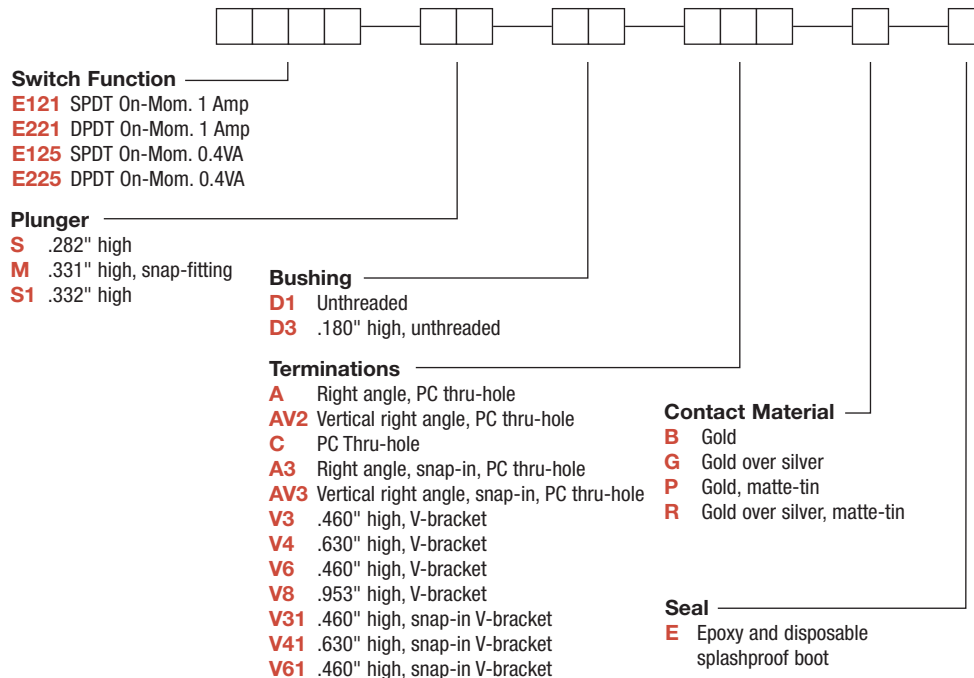
COMMON CONTACTS & ALL TERMINALS: Copper alloy, with gold plate over nickel plate. See page A-26 for additional contact materials.

TERMINAL SEAL: Epoxy.

DISPOSABLE BOOT: Vinyl splashproof boot supplied standard. Remove and discard only after soldering and cleaning processes are complete.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages A-22 thru A-28. For additional options not shown in catalog, consult our Customer Service Center. All models are process sealed to withstand machine soldering temperatures and pressure wash cleaning methods.



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



# E020 Series Sealed Snap-acting Momentary Pushbutton Switches

Pushbutton  
A

## SWITCH FUNCTION

NO. POLES	MODEL NO.	SWITCH FUNCTION		CONNECTED TERMINALS		SCHEMATIC
		POS. 1	POS. 2	POS. 1	POS. 2	
SP	<b>E121</b>	ON	MOM.	1-3	1-2	
	<b>E125</b>	ON	MOM.			
<p><b>SPDT</b></p> <p>Part number shown: E121SD1CGE</p>						
DP	<b>E221</b>	ON	MOM.	1-3,4-6	1-2,4-5	
	<b>E225</b>	ON	MOM.			
<p><b>DPDT</b></p> <p>Part number shown: E221SD1CBE</p>						

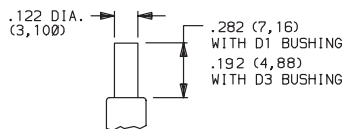
MOM. = Momentary

E121, E221 models with all options when ordered with G or R contact material.

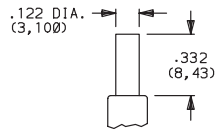
EX25 models must be ordered with B or P contact material.  
EX21 models must be ordered with G or R contact material.

## PLUNGER

**S** .282" HIGH

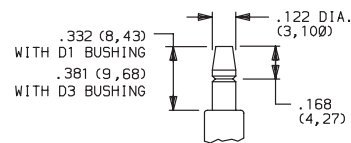


**S1** .332" HIGH



Not Available with D1 bushing.

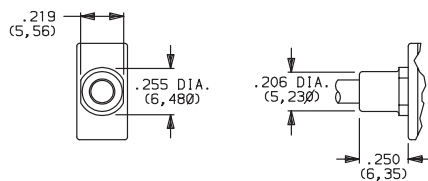
**M** .332" HIGH SNAP-FITTING



NOTE: Caps available for all plunger options, see page A-27.

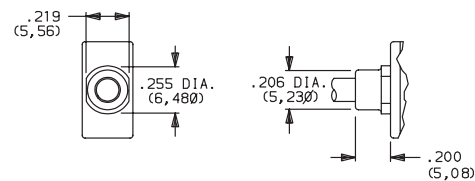
## BUSHING

**D1** UNTHREADED

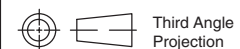


Not available with S1 actuator.

**D3** .180" HIGH UNTHREADED



NOTE: Disposable splashproof vinyl over actuator and bushing supplied std., see page A-26.



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

# E020 Series Sealed Snap-acting Momentary Pushbutton Switches

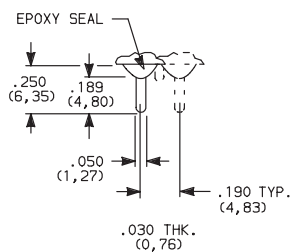


A

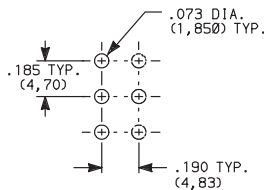
Pushbutton

## TERMINATIONS

### C PC THRU-HOLE

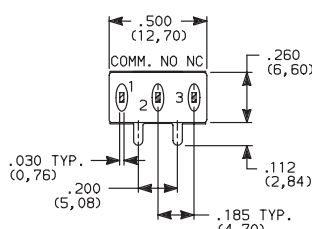
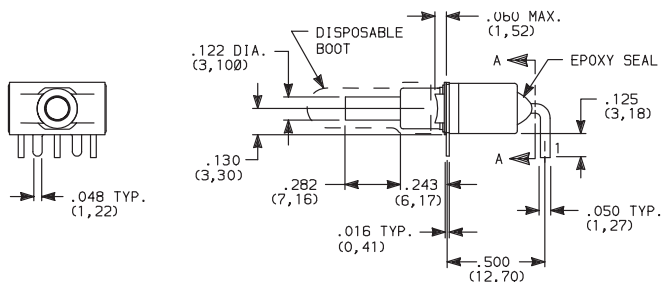


### PC MOUNTING



## SPDT and DPDT

### A RIGHT ANGLE, PC THRU-HOLE

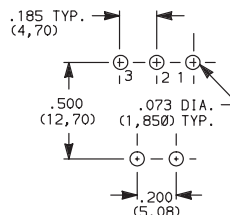


E121SD1AGE  
SPDT

### A3 RIGHT ANGLE, SNAP-IN, PC THRU-HOLE

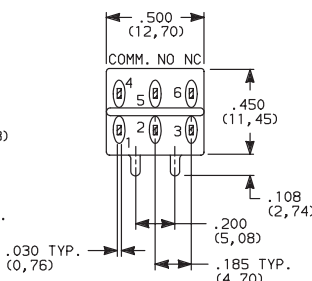
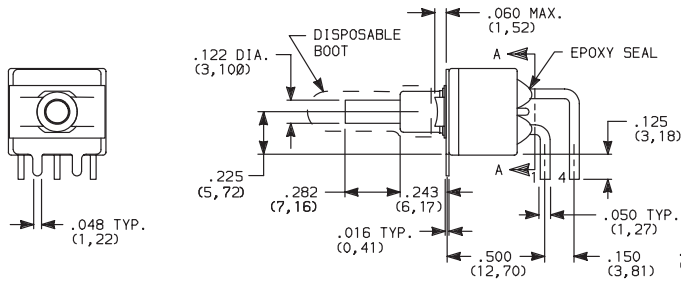


### PC MOUNTING



NOTE: Terminal bend radii and lead-in manufacturing option.

### A RIGHT ANGLE, PC THRU-HOLE

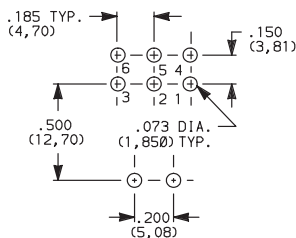


E221SD1AGE  
DPDT

### A3 RIGHT ANGLE, SNAP-IN, PC THRU-HOLE



### PC MOUNTING



NOTE: Terminal bend radii and lead-in manufacturing option.



Third Angle  
Projection



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

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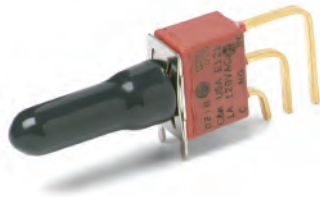
# E020 Series Sealed Snap-acting Momentary Pushbutton Switches

## TERMINATIONS

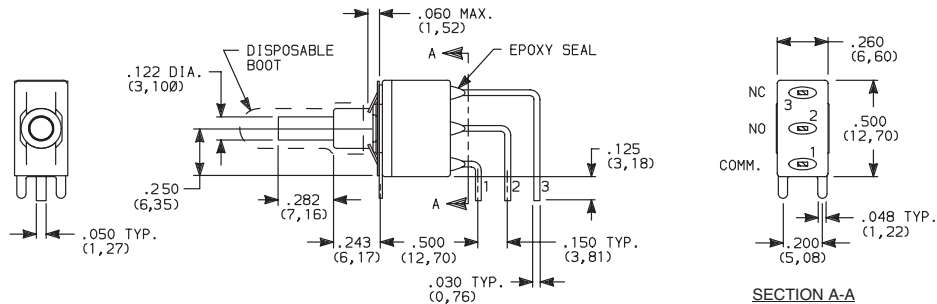


Pushbutton  
A

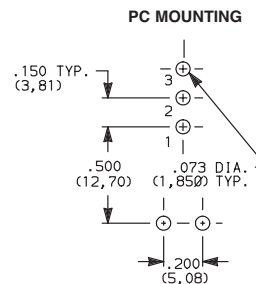
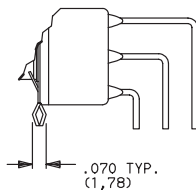
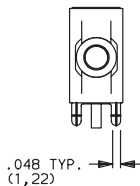
**AV2** VERTICAL RIGHT ANGLE, PC THRU-HOLE,  
.150" PITCH



**E121SD1AV2GE  
SPDT**



**AV3** VERTICAL RIGHT ANGLE, SNAP-IN, PC THRU-HOLE,  
.150" PITCH

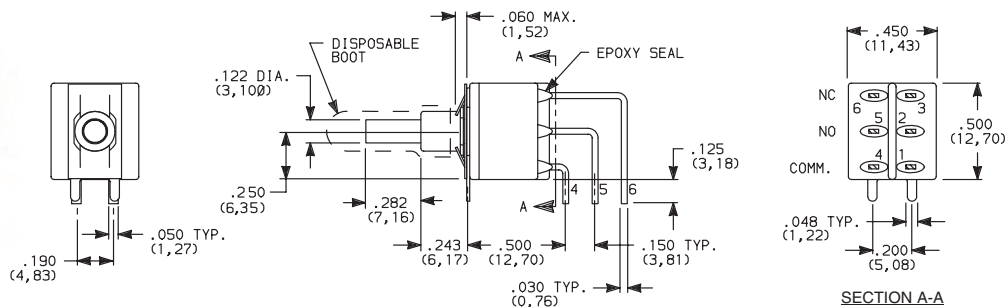


**NOTE:** Terminal bend radii and lead-in manufacturing option.

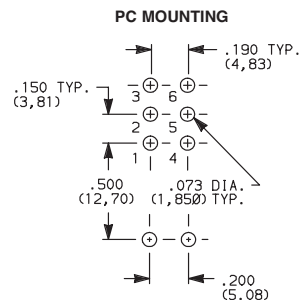
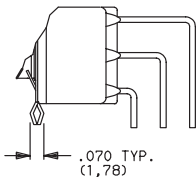
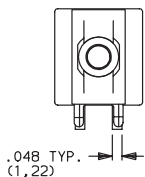
**AV2** VERTICAL RIGHT ANGLE, PC THRU-HOLE,  
.150" PITCH



**E221SD1AV2GE  
DPDT**



**AV3** VERTICAL RIGHT ANGLE, SNAP-IN, PC THRU-HOLE,  
.150" PITCH



**NOTE:** Terminal bend radii and lead-in manufacturing option.



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



# E020 Series Sealed Snap-acting Momentary Pushbutton Switches



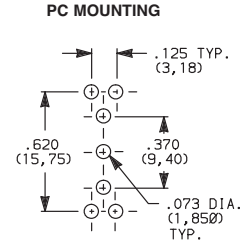
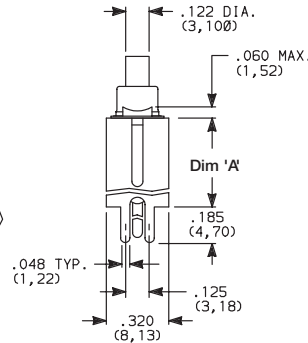
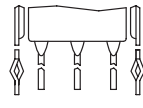
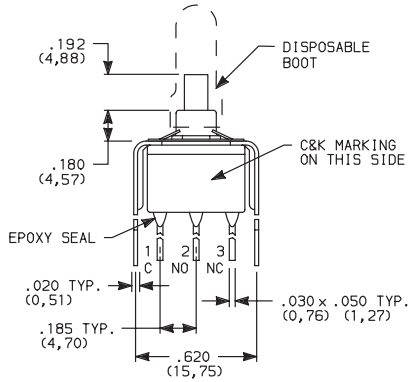
A

Pushbutton

## TERMINATIONS

**V3, V4** VERTICAL MOUNT, V-BRACKET

**V31, V41** VERTICAL MOUNT, V-BRACKET, SNAP-IN

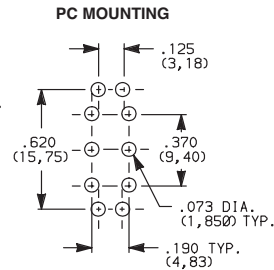
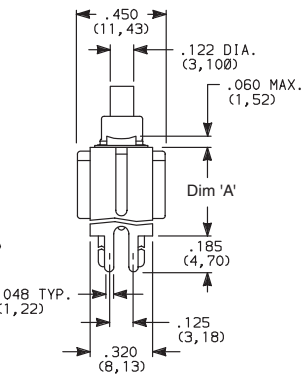
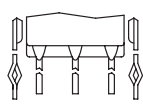
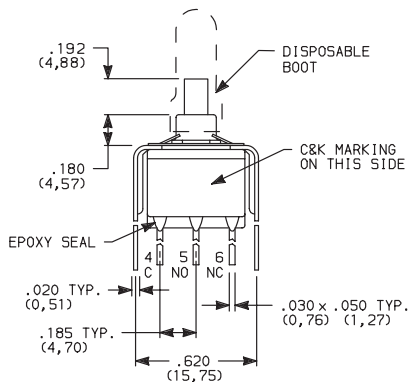


E121SD3\_GE SPDT

OPTION CODE	DIM 'A'
V3, V31	.460 (11,68)
V4, V41	.630 (16,00)

**V3, V4** VERTICAL MOUNT, V-BRACKET

**V31, V41** VERTICAL MOUNT, V-BRACKET, SNAP-IN

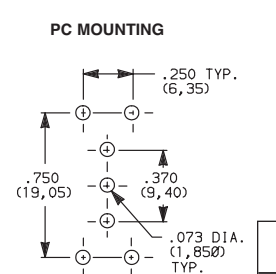
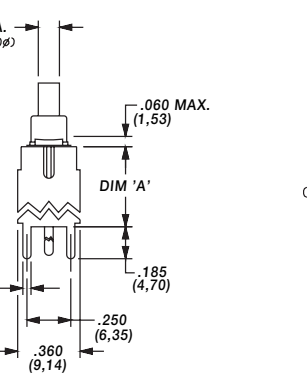
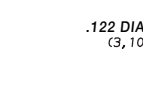
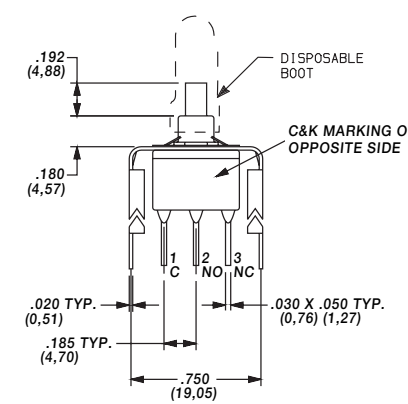


E221SD3\_GE DPDT

OPTION CODE	DIM 'A'
V3, V31	.460 (11,68)
V4, V41	.630 (16,00)

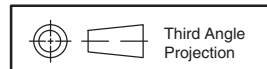
**V6, V8** VERTICAL MOUNT, V-BRACKET

**V61, V81** VERTICAL MOUNT, V-BRACKET, SNAP-IN



E121SD3\_GE SPDT

OPTION CODE	DIM 'A'
V6, V61	.460 (11,68)
V8, V81	.953 (24,21)



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

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# E020 Series Sealed Snap-acting Momentary Pushbutton Switches

Pushbutton

A

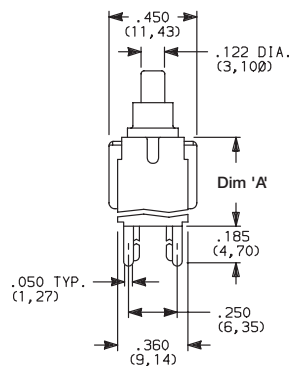
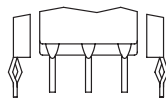
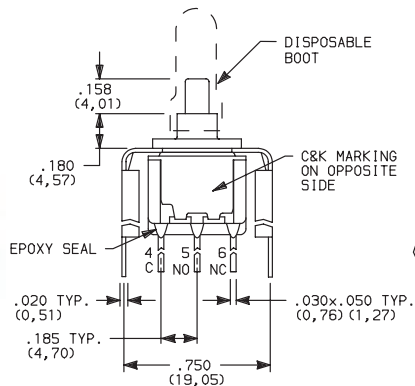
## TERMINATIONS

**V6, V8** VERTICAL MOUNT, V-BRACKET

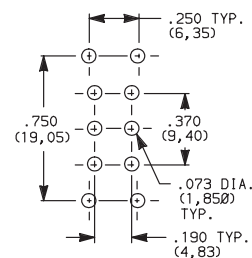
**V61, V81** VERTICAL MOUNT, V-BRACKET, SNAP-IN



E221SD3V6GE DPDT



### PC MOUNTING



OPTION CODE	DIM 'A'
<b>V6, V61</b>	.460 (11,68)
<b>V8, V81</b>	.953 (24,21)

## CONTACT MATERIAL

OPTION CODE	CONTACT MATERIAL	TERMINAL PLATING	RATINGS	
<b>B</b>	GOLD <sup>1</sup>	GOLD <sup>1</sup>	LOW LEVEL/DRY CIRCUIT	EX25 MODELS ONLY: 0.4 VA MAX. @ 20 V AC OR DC MAX.
<b>P</b>		MATTE-TIN <sup>4</sup>		
<b>G</b>	GOLD OVER SILVER <sup>2,3</sup>	GOLD <sup>3</sup>	LOW LEVEL/DRY CIRCUIT OR POWER	EX21 MODELS ONLY: 0.4 VA MAX @ 20 V AC OR DC MAX. OR 1 AMP @ 120 V AC OR 28 V DC.
<b>R</b>		MATTE-TIN <sup>4</sup>		

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

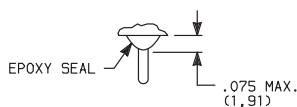
- 1 CONTACTS & TERMINALS: Copper alloy, with gold plate over nickel plate.
- 2 N.O. AND N.C. CONTACTS: Coin silver, with gold plate over nickel plate.
- 3 COMMON CONTACTS & ALL TERMINALS: Copper alloy, with gold plate over nickel plate.
- 4 TERMINALS: Copper alloy, with matte-tin alloy over nickel plate.

**NOTE:** Any models supplied with P, R, B or G contact material are RoHS compliant.

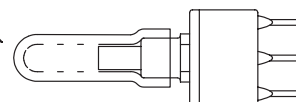
E121, E221 models with all options when ordered with mandatory G, or R contact material.  
P or B contact material must be ordered with EX25 models.  
R or G contact material must be ordered with EX21 models.

## SEAL

**E** EPOXY SEAL AND DISPOSABLE SPLASHPROOF BOOT



Disposable splashproof boot supplied standard. Remove and discard boot *only after* soldering and cleaning processes are complete.



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



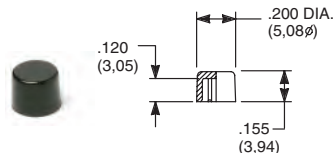
# E020 Series Sealed Snap-acting Momentary Pushbutton Switches



A  
Pushbutton

## AVAILABLE HARDWARE

Cap

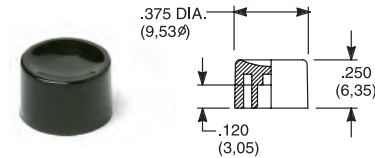


**PART NO.**

- 708901000 WHITE
- 708902000 BLACK
- 708903000 RED

Material: Nylon  
Finish: Gloss

Cap

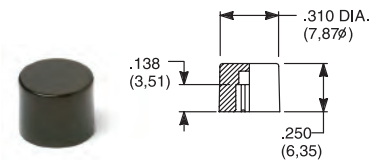


**PART NO.**

- 752701000 WHITE
- 752702000 BLACK
- 752703000 RED

Material: Nylon  
Finish: Gloss

Cap

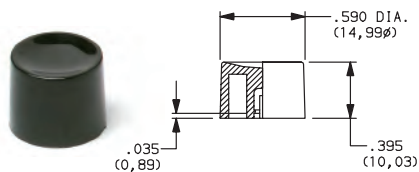


**PART NO.**

- 801801000 WHITE
- 801802000 BLACK
- 801803000 RED

Material: Nylon  
Finish: Gloss

Cap, Snap-fitting plunger

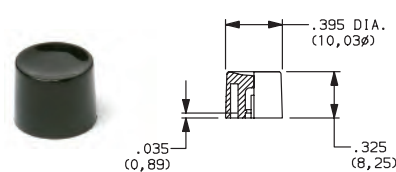


**PART NO.**

- 452D01000 WHITE
- 452D02000 BLACK
- 452D03000 RED

Material: Nylon  
Finish: Gloss

Cap, Snap-fitting plunger

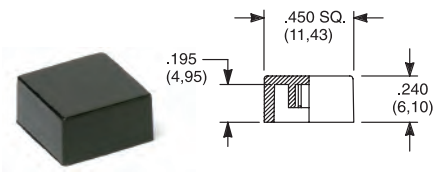


**PART NO.**

- 894101000 WHITE
- 894102000 BLACK
- 894103000 RED

Material: Nylon  
Finish: Gloss

Cap



**PART NO.**

- 484601000 WHITE
- 484602000 BLACK
- 484603000 RED

Material: Nylon  
Finish: Gloss

**PART NO.**

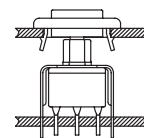
- 798201000 WHITE
- 798202263 BLACK
- 798203000 RED

Material: Nylon  
Finish: Matte

**NOTE:** Other cap colors available, consult Customer Service Center.

Frames snap into panel opening and are independent from switch mounting. Accurate positioning of the PC mounted switch relative to the panel opening is necessary to provide proper clearance between actuator and frame. Available in two basic styles and four panel thicknesses .047-.125 in. Material: Nylon. Finish: Matte.

TYPICAL APPLICATION



.047" (1,19) PANEL THK.

**PART NO.**  
432502263

.062" (1,57) PANEL THK.

**PART NO.**  
432602263

.090" (2,29) PANEL THK.

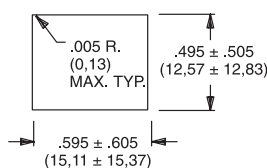
**PART NO.**  
432702263

.125" (3,18) PANEL THK.

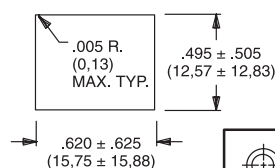
**PART NO.**  
432802263 BLACK

PANEL MOUNTING

For part numbers  
4325xxxxx, 4326xxxxx



For part numbers  
4327xxxxx, 4328xxxxx



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change





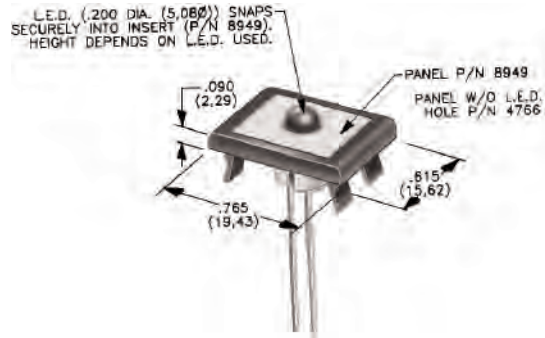
# E020 Series Sealed Snap-acting Momentary Pushbutton Switches

## AVAILABLE HARDWARE

Pushbutton  
A

### PANEL INSERTS

Above frames (part nos. 432XXXXXX) are also available with insert which accepts LED for indicator light assembly. Order insert separately from frame. Blank insert panel (without hole for LED) also available. **LED not included.**



PANEL INSERT  
WITH HOLE FOR LED

BLANK PANEL INSERT  
WITHOUT HOLE FOR LED

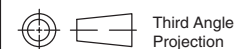
PART NO.

**894902000**

PART NO.

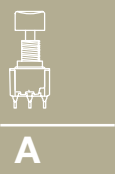
**476602000** BLACK

Special colors, custom markings available, consult Customer Service Center.



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

# 8020 Series Snap-acting Momentary Pushbutton Switches



Pushbutton

## Features/Benefits

- **Positive tactile feel**
- **Multi-positions available**
- **Wide variety of termination options**
- **Epoxy terminal seal compatible with bottom wash cleaning**
- **RoHS compliant models available**



Models Available

## Typical Applications

- **Instrumentation**
- **Computer peripherals**
- **Telecommunications equipment**



## Specifications

**CONTACT RATING:** B contact material (8X25 Models): 0.4 VA max. @ 20 V AC or DC maximum. G contact material (8X21, U8X1 Models): 1 AMP @ 120 V AC or 28 V DC or 0.4 VA max. @ 20 V AC or DC max. Note: Break-before-makecontacts. Multi-pole contacts do not make and break simultaneously. See page A-43 for additional ratings.

**ELECTRICAL LIFE:** 60,000 make-and-break cycles at full load.

**CONTACT RESISTANCE:** Below 50 mΩ typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

**INSULATION RESISTANCE:** 10<sup>9</sup>Ω min.

**DIELECTRIC STRENGTH:** 1,000 Vrms min. @ sea level.

**OPERATING TEMPERATURE:** 8X2X MODELS: -30°C to 75°C.  
U8X1 MODELS: -30°C to 65°C.

**CAP INSTALLATION FORCE:** 10 lbs. max. permissible.

**SOLDERABILITY:** Per MIL-STD-202F method 208D, or EIA RS-186E method 9 (1 hour steam aging).

**NOTE:** Any models supplied with B, P, R, or G contact material are RoHS compliant.

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## Materials

**CASE:** Glass filled nylon 6/6 or diallyl phthalate (DAP), flame retardant (UL 94V-0).

**PLUNGER:** Glass filled nylon or glass filled polyester (PBT) (UL 94V-0).

**CAP & FRAME:** Nylon, black, standard.

**BUSHING:** Brass or zinc, nickel plated.

**HOUSING:** Stainless steel.

**SWITCH SUPPORT:** Brass or steel, matte-tin plated.

**N.O. & N.C. CONTACTS:** 8X21, U8X1 MODELS: G contact material: Coin silver, with gold plate over nickel plate. See page A-43 for additional contact materials.

8X25 MODELS: B contact material: Copper alloy, with gold plate over nickel plate. See page A-43 for additional contact materials.

**COMMON CONTACT & ALL TERMINALS:** Copper alloy, with gold plate over nickel plate.

**TERMINAL SEAL:** Epoxy. Refer to soldering and cleaning Technical Data Chapter.

**HARDWARE:** Nut & Locking Ring: Brass, nickel plated;  
Lockwasher: Steel, nickel plated.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages A-30 thru A-45. For additional options not shown in catalog, consult Customer Service Center. All models have epoxy terminal seal and are compatible with all "bottom-wash" PCB cleaning methods.



### Switch Function

- 8121** SPDT On-Mom. 1 Amp
- 8125** SPDT On-Mom. 0.4VA
- 8221** DPDT On-Mom. 1 Amp
- 8225** DPDT On-Mom. 0.4VA
- 8321** 3PDT On-Mom. 1 Amp
- 8325** 3PDT On-Mom. 0.4VA
- 8421** 4PDT On-Mom. 1 Amp
- 8425** 4PDT On-Mom. 0.4VA

**Note:** UL models available, see page A-30 and A-31.

### Actuator or Plunger

- S** Plunger
- NONE** Snap-in
- J80** Snap-in
- J81** Snap-in w/frame
- J82** Snap-in w/frame for LED
- J83** Snap-in w/frame & flush cap
- J84** Snap-in w/frame for LED, flush cap
- J85** Snap-in w/frame & LED
- J95** PC w/V-bracket & LED
- L** Plunger
- M** Snap-fitting plunger

### Bushing

- D9** .280" high, keyway
- H** .250" high, flat
- NONE** No bushing choice required
- D** .280" high, keyway
- D2** .288" high, flat
- D3** .180" high
- D8** .288" high, flat
- H9** .250" high, flat, hi torque
- Y** .350" high, keyway
- Y3** 6.35mm high, keyway, hi torque
- Y4** .378" high, flat, hi torque
- Y9** .350" high, keyway

### Contact Material

- B** Gold
- P** Gold, matte-tin
- G** Gold over silver
- R** Gold over silver, matte-tin

### Seal

- E** Epoxy
- I** Epoxy potted base

### Cap Color

- 2** Black
- NONE** Models without caps
- 1** White
- 3** Red
- 4** Orange
- 5** Yellow
- 6** Green
- 7** Blue
- 9** Gray

### Frame Color

- 2** Black
- NONE** Models without frame
- 1** White
- 3** Red
- 5** Yellow
- 6** Green
- 9** Gray

### LED Color

- 3** Red
- NONE** Models without LED
- 5** Yellow
- 6** Green

### Terminations

- A** Right angle, PC thru-hole
- AV2** Vertical right angle, PC thru-hole
- C** PC Thru-hole
- Z** Solder lug
- A2** Right angle, PC thru-hole
- A3** Right angle, snap-in, PC thru-hole
- A4** Right angle, PC thru-hole, reversed terminals
- A6** Right angle, PC thru-hole
- AV1** Vertical right angle, PC thru-hole
- AV3** Vertical right angle, snap-in, PC thru-hole
- R** Right angle with PCB
- R2** Right angle with PCB, reversed terminals
- V2** .555" high, V-bracket
- V3** .460" high, V-bracket
- V4** .630" high, V-bracket
- V6** .460" high, V-bracket
- V7** .630" high, V-bracket
- V8** .953" high, V-bracket
- V9** 1.150" high, V-bracket
- V31** .460" high, snap-in V-bracket
- V61** .460" high, snap-in V-bracket
- W** .750" long, wire wrap
- W1** .964" long, wire wrap
- W3** .425" long, wire wrap
- W4** 1.062" long, wire wrap
- Z3** Quick connect

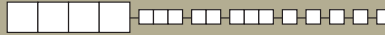


Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



# 8020 Series Snap-acting Momentary Pushbutton Switches

## SWITCH FUNCTION



Pushbutton  
A

NO. POLES	MODEL NO.	UL/CSA* MODEL NO.	SWITCH FUNCTION		CONNECTED TERMINALS		SCHEMATIC
			POS. 1	POS. 2	POS. 1	POS. 2	
SP	8121	U811	ON	MOM.	1-3	1-2	
	8125		ON	MOM.			
<p><b>SPDT</b></p> <p>Part number shown: 8121SHZGE</p>							
DP	8221	U821	ON	MOM.	1-3,4-6	1-2,4-5	
	8225		ON	MOM.			
<p><b>DPDT</b></p> <p>Part number shown: 8221SHZGE</p>							
3P	8321	U831	ON	MOM.	1-3,4-6,7-9	1-2,4-5,7-8	
	8325		ON	MOM.			
<p><b>3PDT</b></p> <p>Part number shown: 8321SHZGE</p>							

MOM. = Momentary

\*U811 thru U841 model numbers with all options (except R, R2 terminations) when ordered with G or R contact material.

8X25 models must be ordered with B or P contact material.

8X21 and U8X1 models must be ordered with G or R contact material.



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

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# 8020 Series Snap-acting Momentary Pushbutton Switches



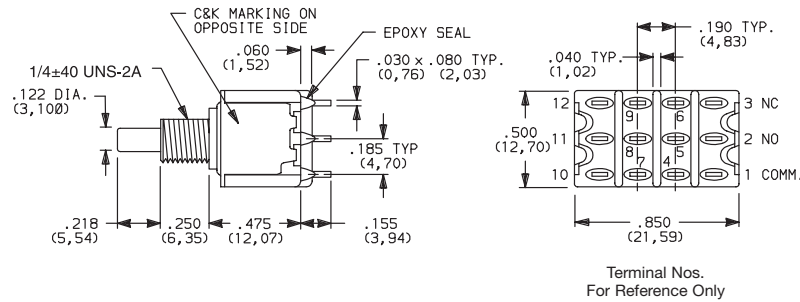
A

Pushbutton

## SWITCH FUNCTION

NO. POLES	MODEL NO.	UL/CSA* MODEL NO.	SWITCH FUNCTION		CONNECTED TERMINALS		SCHEMATIC
			POS. 1	POS. 2	POS. 1	POS. 2	
4P	8421	U841	ON	MOM.	1-3,4-6,7-9,10-12	1-2,4-5,7-8,10-11	
	8425		ON	MOM.			

### 4PDT



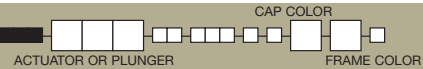
MOM. = Momentary

\* U811 thru U841 model numbers with all options (except R, R2 terminations) when ordered with G or R contact material.

8X25 models must be ordered with B or P contact material.

8X21 and U8X1 models must be ordered with G or R contact material.

## ACTUATOR—SNAP-IN FRONT MOUNT

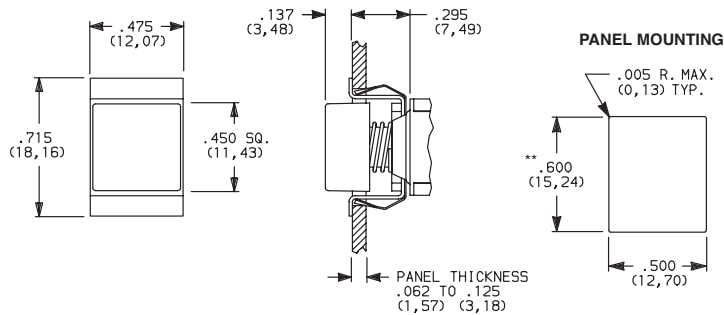


OPTION CODE	CAP AND FRAME COLOR
2	BLACK
NONE	No Frame Color (J80 option)
1	WHITE
3	RED
4	ORANGE
5	YELLOW
6	GREEN
7	BLUE
9	GRAY

Other colors available, consult Customer Service Center. Cap and Frame Finish: matte.

NOTE: Caps and frames available separately, see pages A-44 and A-45.

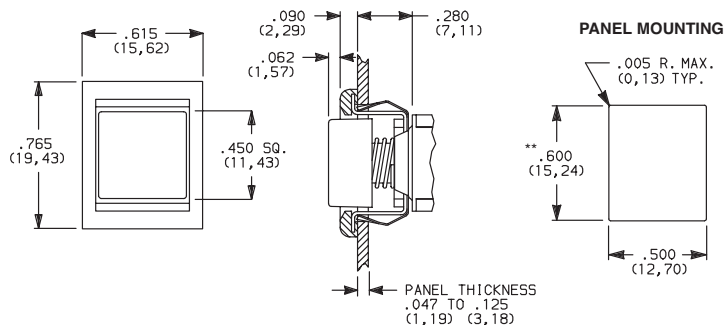
### J80 SNAP-IN



NOTE: No frame color choice required.

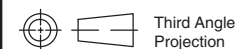
\*\* Increase this dim. to .620/.625 (15,75/15,88) for .091/.125 (2,31/3,18) thk. panels.

### J81 SNAP-IN WITH FRAME



NOTE: Available with C, W-W4, Z or Z3 terminations and SPDT and DPDT models only.

\*\* Increase this dim. to .620/.625 (15,75/15,88) for .091/.125 (2,31/3,18) thk. panels.



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



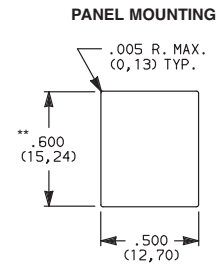
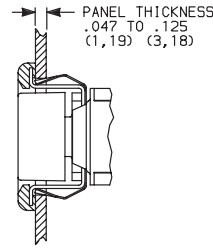
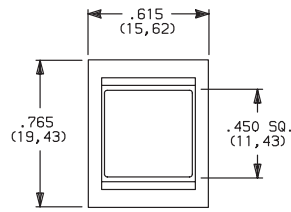
# 8020 Series Snap-acting Momentary Pushbutton Switches

Pushbutton  
A

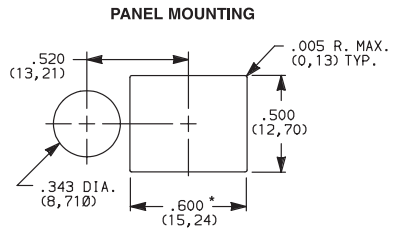
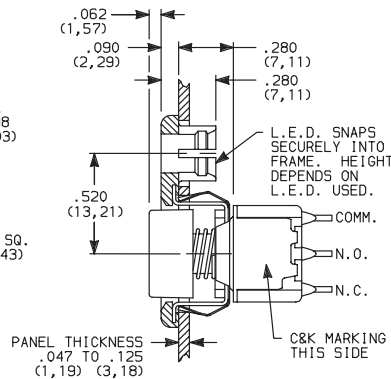
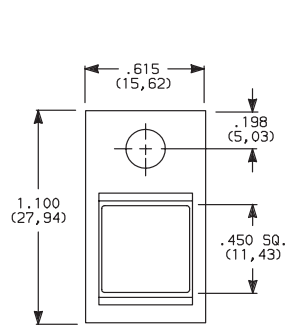
## ACTUATOR—SNAP-IN FRONT MOUNT



### J83 SNAP-IN WITH FRAME AND FLUSH CAP



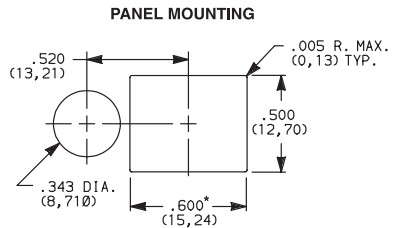
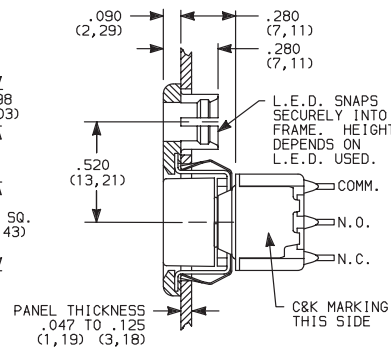
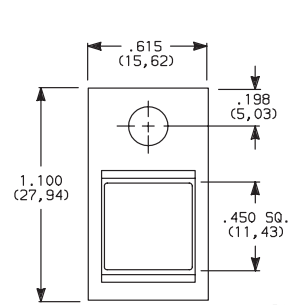
### J82 SNAP-IN WITH FRAME FOR LED



\* Increase this dim. to .620/.625 (15,75/15,88) for .091/.125 (2,31/3,18) thk. panels.

LED not included.  
For LED information, see page A-45.

### J84 SNAP-IN WITH FRAME FOR LED, FLUSH CAP



\* Increase this dim. to .620/.625 (15,75/15,88) for .091/.125 (2,31/3,18) thk. panels.

LED not included.  
For LED information, see page A-45.

OPTION CODE	CAP AND FRAME COLOR
2	BLACK
1	WHITE
3	RED
4	ORANGE
5	YELLOW
6	GREEN
7	BLUE
9	GRAY

Other colors available, consult Customer Service Center.  
Cap and Frame Finish: matte.

Available with C, W-W4, Z or Z3 terminations and SPDT and DPDT models only.

**NOTE:** Caps and frames available separately, see pages A-44 and A-45.



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change





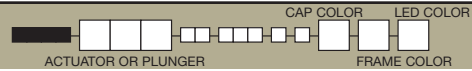
# 8020 Series Snap-acting Momentary Pushbutton Switches



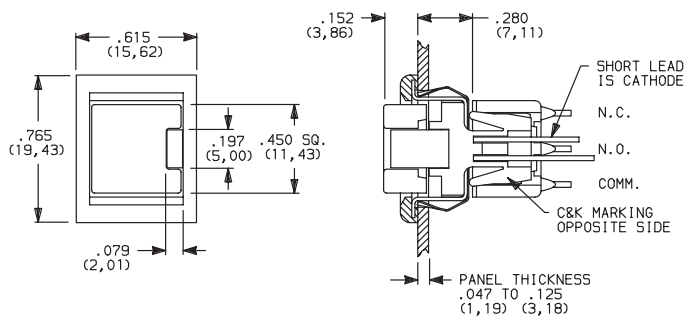
A

Pushbutton

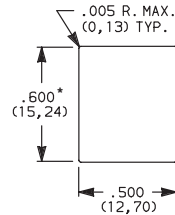
## ACTUATOR—SNAP-IN FRONT MOUNT



### J85 SNAP-IN WITH FRAME AND LED



### PANEL MOUNTING



\* Increase this dim. to .620/.625 (15,75/15,88) for .091/.125 (2,31/3,18) thk. panels.



8121J85ZGE223 SPST

Available with C, W-W4, Z or Z3 terminations and SPDT models only. For LED information see page A-45.

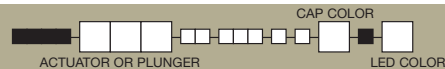
**NOTE:** Caps & frames available separately, see pages A-44 and A-45.

OPTION CODE	CAP AND FRAME COLOR
2	BLACK
1	WHITE
3	RED
4	ORANGE
5	YELLOW
6	GREEN
7	BLUE
9	GRAY

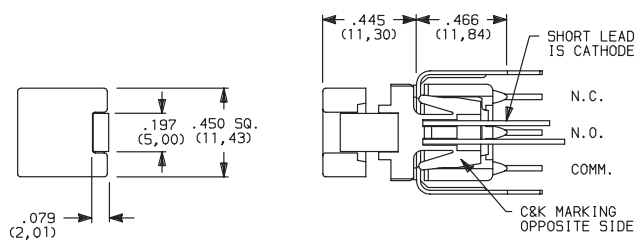
OPTION CODE	LED COLOR
3	RED
5	YELLOW
6	GREEN

For LED information see page A-45.

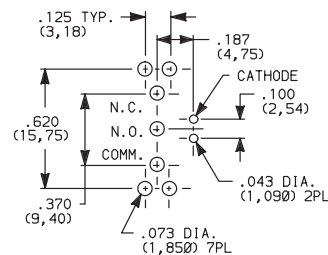
## ACTUATOR—PC MOUNT



### J95 PC WITH V-BRACKET AND LED



### PC MOUNTING



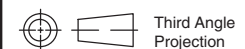
8121J95V3GE23 SPST

OPTION CODE	CAP AND FRAME COLOR
2	BLACK
1	WHITE
3	RED
4	ORANGE
5	YELLOW
6	GREEN
7	BLUE
9	GRAY

OPTION CODE	LED COLOR
3	RED
5	YELLOW
6	GREEN

For LED information see page A-45.

**NOTE:** Caps available separately, see page A-44. Available with V3 terminations and SPDT models only.



Third Angle Projection



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

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# 8020 Series Snap-acting Momentary Pushbutton Switches

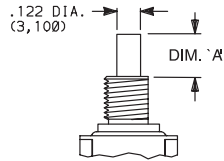
Pushbutton

A

## PLUNGER

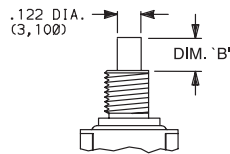


### S PLUNGER

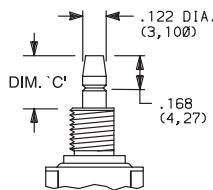


**NONE** NO PLUNGER CHOICE REQUIRED  
(JXX ACTUATORS)

### L PLUNGER



### M SNAP-FITTING PLUNGER



AVAILABLE BUSHINGS	DIM. 'A' FOR C, W-W4, Z & Z3 TERMINATIONS	DIM. 'A' FOR A, A2, A3, A4, A6, AV-A3, R & R2 TERMINATIONS	DIM. 'A' FOR V3-V61 TERMINATIONS
D, D9	.244 (6,20)	.228 (5,79)	.224 (5,69)
H, H9	.218 (5,54)	.202 (5,13)	.198 (5,03)
Y, Y9	.203 (5,16)	.187 (4,75)	.183 (4,65)
Y3	(5,54)	(5,13)	(5,03)
Y4	.185 (4,70)	.169 (4,29)	.165 (4,19)
D2, D8	N/A	.232 (5,89)	.228 (5,79)
D3	N/A	.162 (4,11)	.158 (4,01)

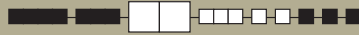
AVAILABLE BUSHINGS	DIM. 'B' FOR C, W-W4, Z & Z3 TERMINATIONS	DIM. 'B' FOR A, A2, A3, A4, A6, AV-A3, R & R2 TERMINATIONS	DIM. 'B' FOR V3-V61 TERMINATIONS
Y, Y9	.178 (4,52)	.162 (4,11)	.158 (4,01)
Y4	.090 (2,29)	.074 (1,88)	.070 (1,78)

AVAILABLE BUSHINGS	DIM. 'C' FOR C, W-W4, Z & Z3 TERMINATIONS	DIM. 'C' FOR A, A2, A3, A4, A6, AV-A3, R & R2 TERMINATIONS	DIM. 'C' FOR V3-V61 TERMINATIONS
D, D9	.297 (7,54)	.281 (7,14)	.277 (7,04)
H, H9	.267 (6,78)	.251 (6,38)	.247 (6,27)
Y, Y9	.259 (6,58)	.243 (6,17)	.239 (6,07)
Y3	(6,78)	(6,37)	(6,27)
Y4	.259 (6,58)	.243 (6,17)	.239 (6,07)
D2, D8	N/A	.273 (6,93)	.269 (6,83)
D3	N/A	.361 (9,17)	.357 (9,07)

N/A = NOT AVAILABLE

**NOTE:** When selecting plunger option, bushing selection must also be made, see next page. No plunger option is required when any JXX actuator option is selected. Additional plunger lengths are available on SPDT and DPDT models, consult Customer Service Center. Not all plunger lengths sufficient for use with caps, see page A-44.

## BUSHING

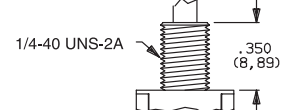
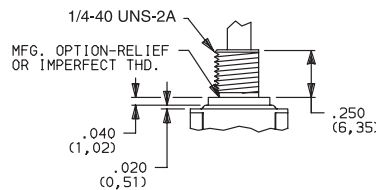
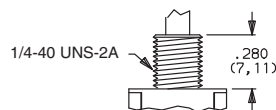
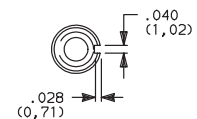
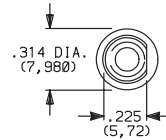
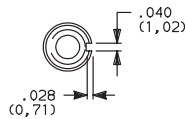


**NONE** NO BUSHING  
CHOICE REQUIRED  
(JXX ACTUATORS)

**D** .280" HIGH THREADED, KEYWAY  
**D9** .280" HIGH UNTHREADED,  
KEYWAY

**H** .250" HIGH THREADED, FLAT  
**H9** .250" HIGH UNTHREADED, FLAT

**Y** .350" HIGH THREADED, KEYWAY  
**Y9** .350" HIGH UNTHREADED, KEYWAY



D9 bushing standard with A-A6, R, R2 AV-AV3 terminations.

H bushing standard with C, W-W4, Z or Z3 terminations. H, H9 bushings not available on single pole models with A3-A6, R, R2 terminations.

**Will withstand 12 in./lbs. of torque with no distortion.**



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

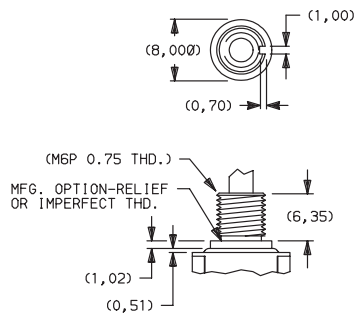
# 8020 Series Snap-acting Momentary Pushbutton Switches



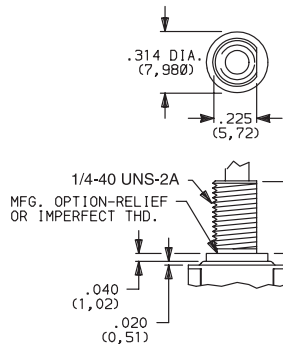
A Pushbutton

## BUSHING

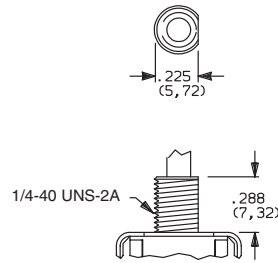
**Y3** 6.35mm THREADED, KEYWAY



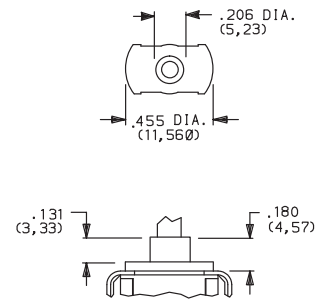
**Y4** .378" HIGH THREADED, FLAT



**D2** .288" HIGH THREADED, FLAT  
**D8** .288" HIGH UNTHREADED, FLAT



**D3** .180" HIGH UNTHREADED



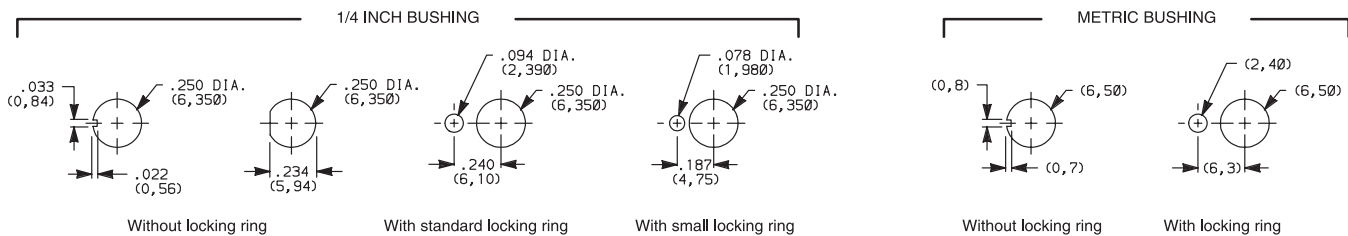
Y3 & Y4 bushings not available on single pole models with A3-A6, R, R2 terminations. Will withstand 12 in./lbs. of torque with no distortion.

D2, D8 bushings not available with C, W-W4, Z, Z3 terminations.

D3 bushing available with A, A2, A3, AV, AV2, AV3 and V2-V61 terminations only.

**NOTE:** No bushing option choice required when JXX actuator option is selected. When selecting bushing option, plunger selection must also be made, see previous page. Plunger lengths vary with bushing and termination options selected.

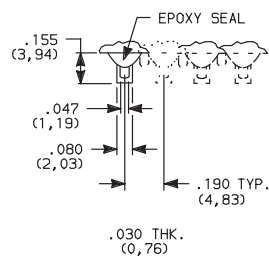
## PANEL MOUNTING



**NOTE:** Two mounting nuts, locking ring and lockwasher supplied standard with threaded bushings. Optional mounting nut and locking ring styles available, see section "Technical Data and Additional Hardware".

## TERMINATIONS

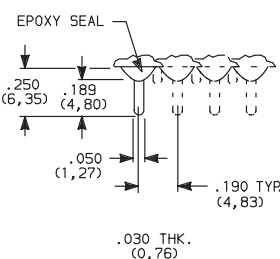
**Z** SOLDER LUG



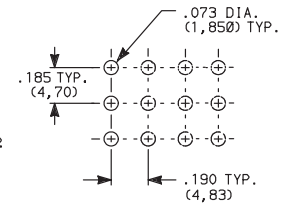
Not available with J95 actuator, P or R contact material.

SPDT thru 4PDT

**C** PC THRU-HOLE



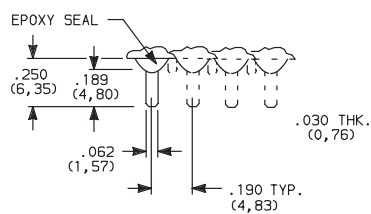
PC MOUNTING



Not available with J95 actuator option.

SPDT thru 4PDT

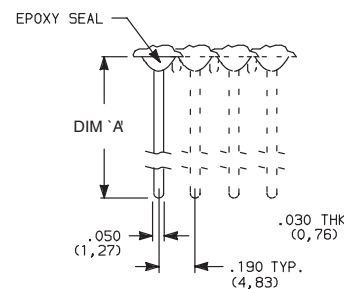
**Z3** QUICK CONNECT



Not available with J95 actuator, P or R contact material. Mating quick connector available, order part number 530100000, page A-44.

SPDT thru 4PDT

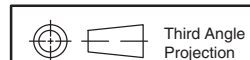
**W W1, W3, W4** WIRE WRAP



OPTION CODE	DIM 'A'
<b>W</b>	.750 (19,05)
<b>W1</b>	.964 (24,49)
<b>W3</b>	.425 (10,80)
<b>W4</b>	1.062 (26,97)

Not available with J95 actuator option.

SPDT thru 4PDT



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



# 8020 Series Snap-acting Momentary Pushbutton Switches

## TERMINATIONS



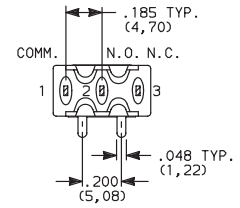
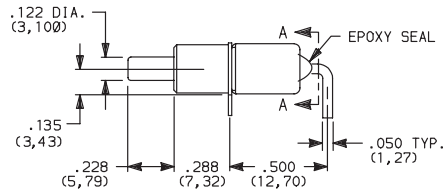
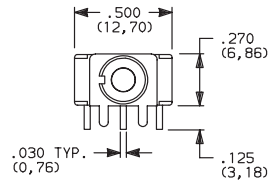
A

Pushbutton

**A** RIGHT ANGLE, PC THRU-HOLE

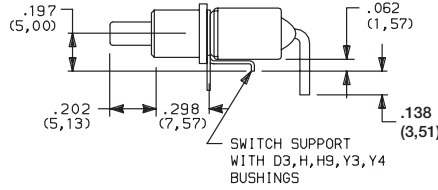


**8121SD9AGE  
SPDT**



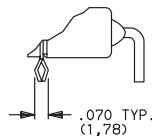
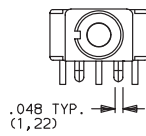
SECTION A-A

Terminal Nos.  
For Reference Only.

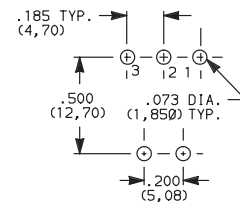


Part Number 8121SH9AGE

**A3** RIGHT ANGLE, SNAP-IN, PC THRU-HOLE



PC MOUNTING

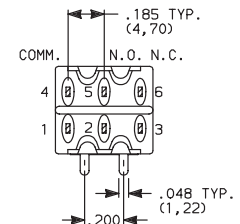
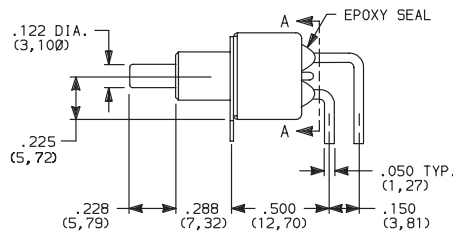
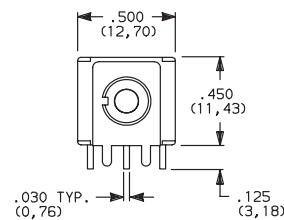


Not available with JXX actuators and I seal.  
Terminal bend radii and lead-in manufacturing option.

**A** RIGHT ANGLE, PC THRU-HOLE

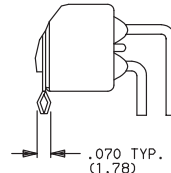
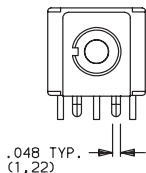


**8221SD9AGE  
DPDT**

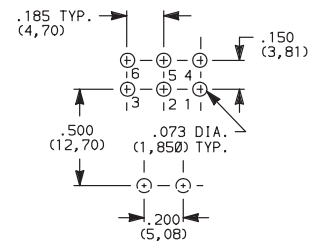


SECTION A-A

**A3** RIGHT ANGLE, SNAP-IN, PC THRU-HOLE



PC MOUNTING



Not available with JXX actuators and I seal option.  
Terminal bend radii and lead-in manufacturing option.



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

# 8020 Series Snap-acting Momentary Pushbutton Switches

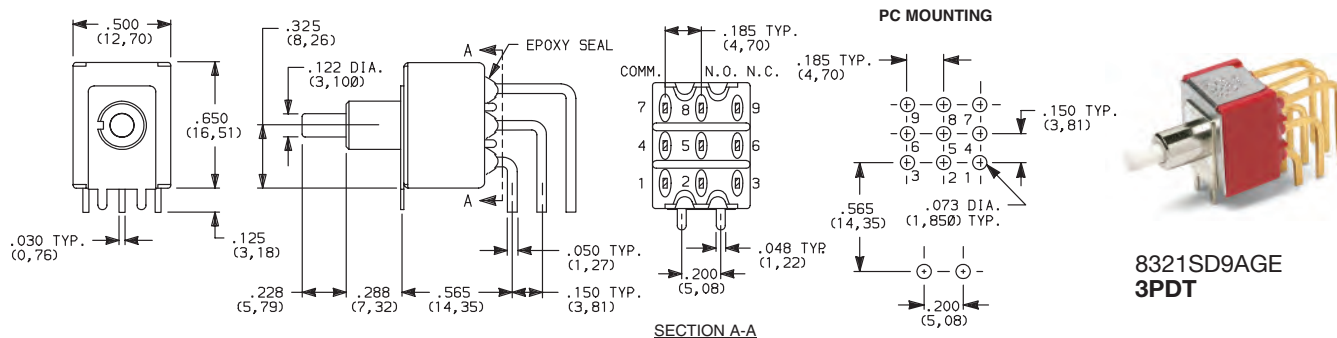


A

Pushbutton

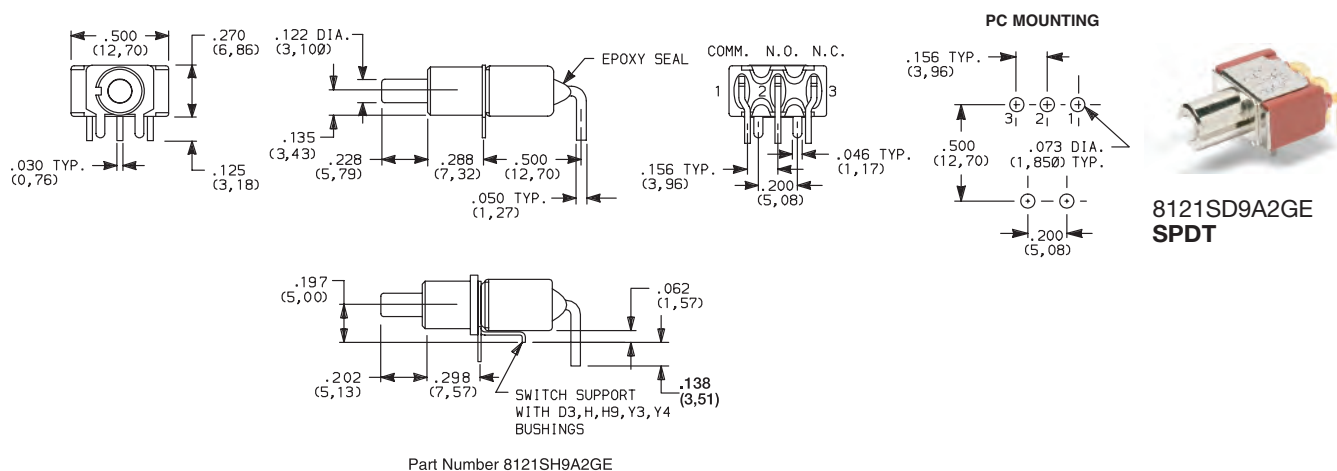
## TERMINATIONS

### A RIGHT ANGLE, PC THRU-HOLE



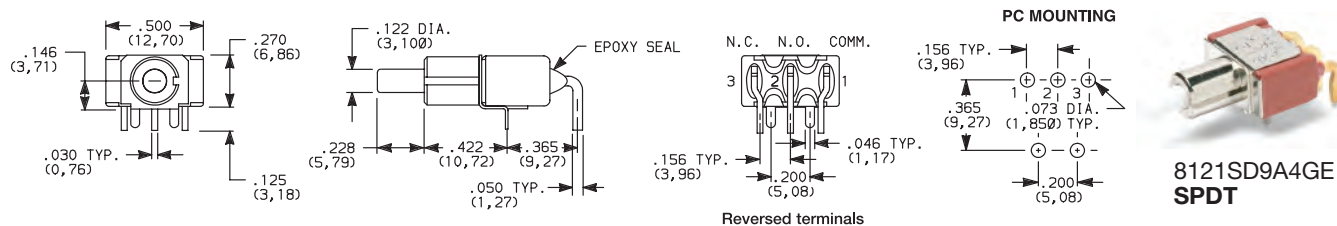
Not available with JXX actuators and I seal option.  
Terminal bend radii and lead-in manufacturing option.

### A2 RIGHT ANGLE, PC THRU-HOLE



Not available with JXX actuators, I seal option.  
Terminal bend radii and lead-in manufacturing option.

### A4 RIGHT ANGLE, PC THRU-HOLE, REVERSED TERMINALS



Not available with JXX actuators, D3, H, H9, Y3, Y4 bushings and I seal.  
Terminal bend radii and lead-in manufacturing option.

The A4 and R2 termination options are functionally identical and fit the same PC mounting pattern. The switches, however, are shifted relative to the mounting holes. The PC pattern must clear the switch support legs. Unlike the R2, the A4 option is available with UL/CSA.



Third Angle Projection



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



# 8020 Series Snap-acting Momentary Pushbutton Switches

## TERMINATIONS



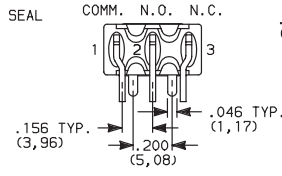
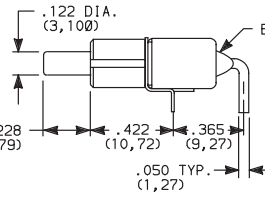
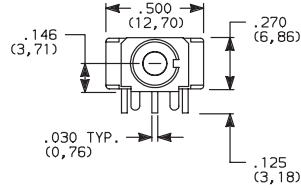
Pushbutton

A

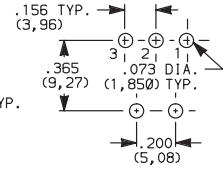
### A6 RIGHT ANGLE, PC THRU-HOLE



**8121SD9A6GE  
SPDT**



#### PC MOUNTING



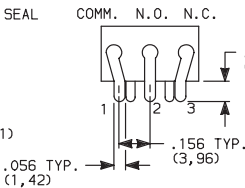
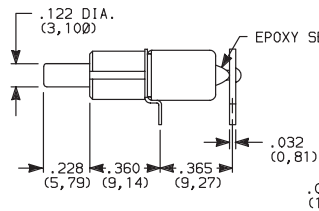
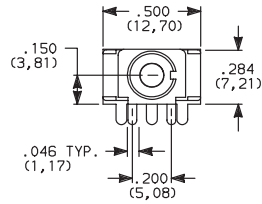
The A6 and R termination options are functionally identical and fit the same PC mounting pattern. The switches, however, are shifted relative to the mounting holes. The PC pattern must clear the switch support legs. Unlike the R, the A6 option is available with UL/CSA.

Not available with JXX actuators, D3, H, H9, Y3, Y4 bushings and I seal. Terminal bend radii and lead-in manufacturing option.

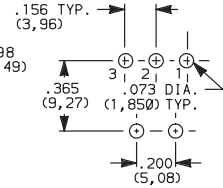
### R RIGHT ANGLE WITH PCB



**8121SD9RGE  
SPDT**



#### PC MOUNTING

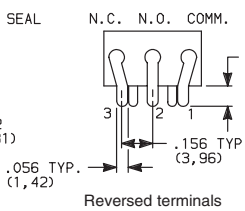
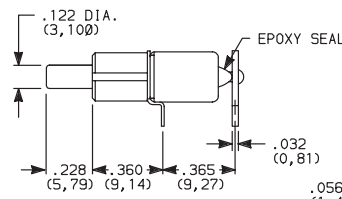
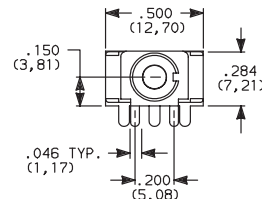


Not available with JXX actuators, D3, H, H9, Y3, Y4 bushings, I seal option. R termination not UL/CSA approved.

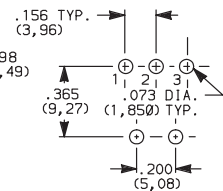
### R2 RIGHT ANGLE WITH PCB, REVERSED TERMINALS



**8121SD9R2GE  
SPDT**



#### PC MOUNTING



Reversed terminals

Not available with JXX actuators, D3, H, H9, Y3, Y4 bushings, I seal option. R2 termination not UL/CSA approved.



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

# 8020 Series Snap-acting Momentary Pushbutton Switches

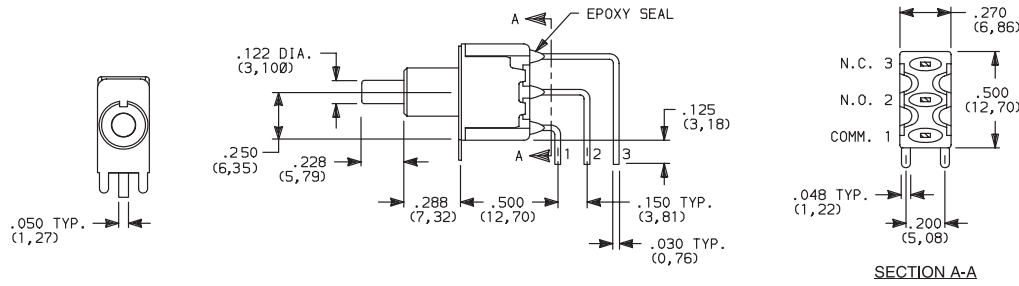


A

Pushbutton

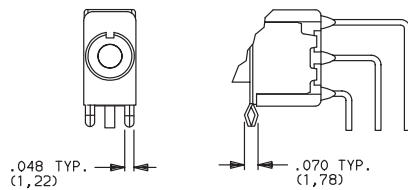
## TERMINATIONS

**AV2** VERTICAL RIGHT ANGLE, PC THRU-HOLE, .150" PITCH

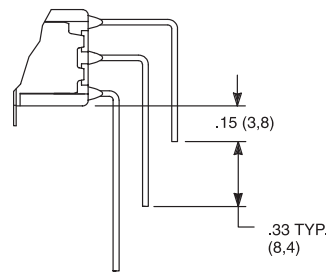


8121SD9AV2GE  
SPDT

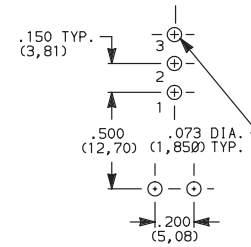
**AV3** VERTICAL RIGHT ANGLE, SNAP-IN, PC THRU-HOLE, .150" PITCH



**AV1** VERTICAL RIGHT ANGLE, EXTENDED, PC THRU-HOLE, .150" PITCH

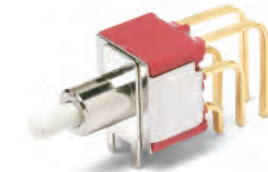
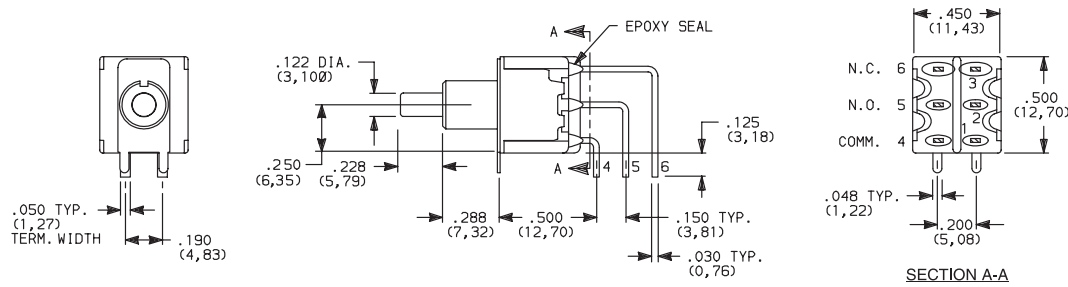


PC MOUNTING



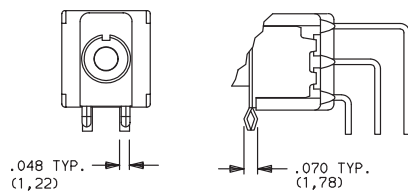
Not available with JXX actuators and I seal.  
Terminal bend radii and lead-in manufacturing option.

**AV2** VERTICAL RIGHT ANGLE, PC THRU-HOLE, .150" PITCH

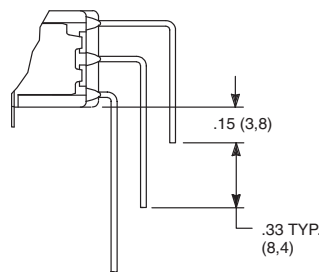


8221SD9AV2GE  
DPDT

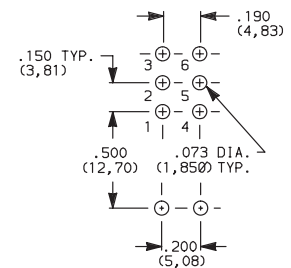
**AV3** VERTICAL RIGHT ANGLE, SNAP-IN, PC THRU-HOLE, .150" PITCH



**AV1** VERTICAL RIGHT ANGLE, EXTENDED, PC THRU-HOLE, .150" PITCH



PC MOUNTING



Not available with JXX actuators and I seal.  
Terminal bend radii and lead-in manufacturing option.



Third Angle Projection



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

www.ck-components.com



# 8020 Series Snap-acting Momentary Pushbutton Switches

## TERMINATIONS

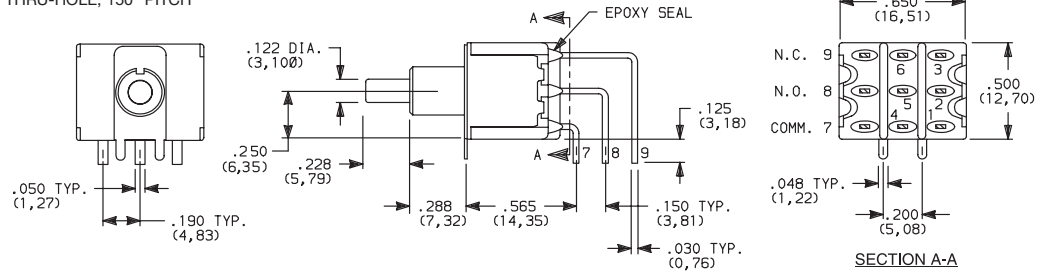


Pushbutton  
A

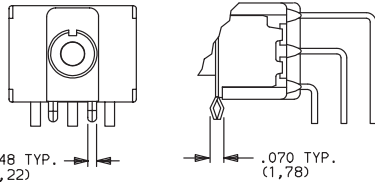
**AV2** VERTICAL RIGHT ANGLE, PC THRU-HOLE, 150° PITCH



**8321SD9AV2GE**  
3PDT

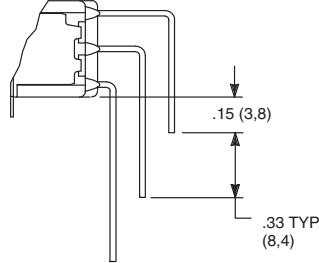


**AV3** VERTICAL RIGHT ANGLE, SNAP-IN, PC THRU-HOLE, .150° PITCH



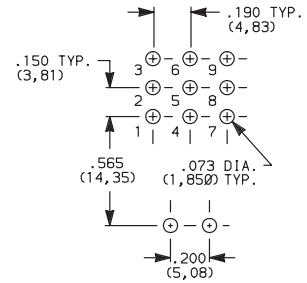
Not available with JXX actuators and I seal.  
Terminal bend radii and lead-in manufacturing option.

**AV1** VERTICAL RIGHT ANGLE, EXTENDED, PC THRU-HOLE, .150° PITCH



SECTION A-A

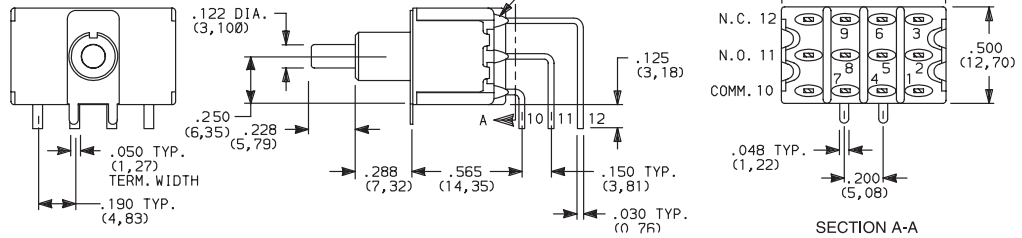
PC MOUNTING



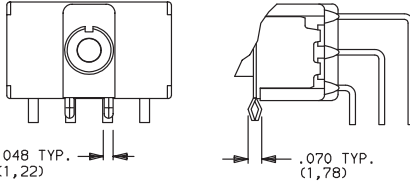
**AV2** VERTICAL RIGHT ANGLE, PC THRU-HOLE, 150° PITCH



**8421SD9AV2GE**  
4PDT

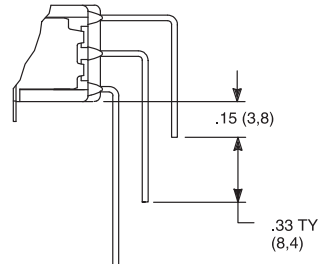


**AV3** VERTICAL RIGHT ANGLE, SNAP-IN, PC THRU-HOLE, .150° PITCH



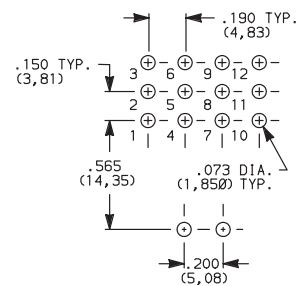
Not available with JXX actuators and I seal.  
Terminal bend radii and lead-in manufacturing option.

**AV1** VERTICAL RIGHT ANGLE, EXTENDED, PC THRU-HOLE, .150° PITCH



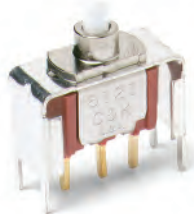
SECTION A-A

PC MOUNTING



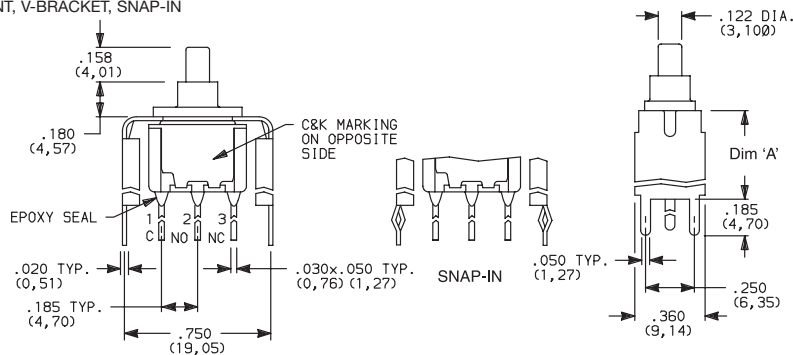
**V2, V6, V7, V8** VERTICAL MOUNT, V-BRACKET

**V61** VERTICAL MOUNT, V-BRACKET, SNAP-IN

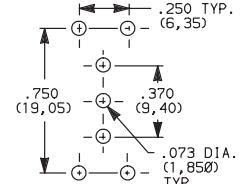


**8121SD3\_GE**  
SPDT

Not available with JXX actuators and I seal.



PC MOUNTING



OPTION CODE	DIM 'A'
V2	.555 (14,10)
V6, V61	.460 (11,68)
V7	.630 (16,00)
V8	.953 (24,21)



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



# 8020 Series Snap-acting Momentary Pushbutton Switches



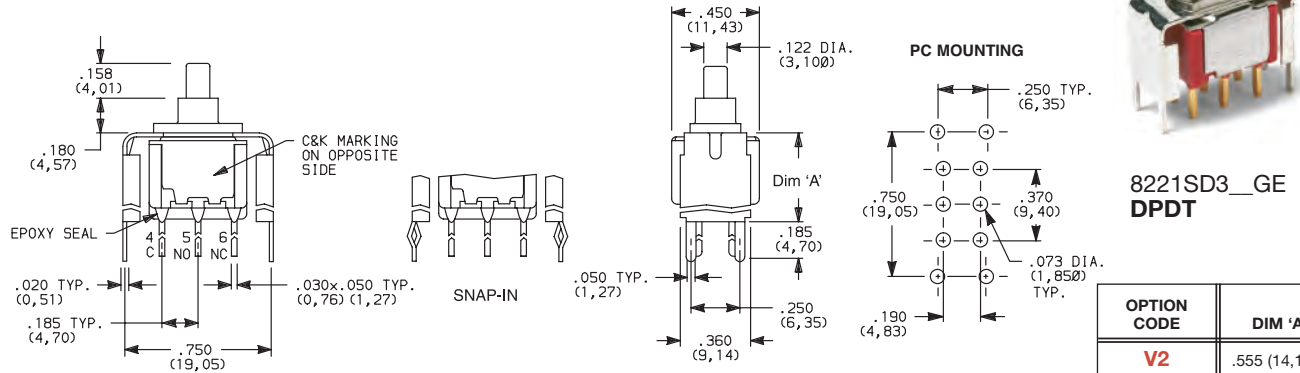
A

Pushbutton

## TERMINATIONS

**V2, V6, V7, V8** VERTICAL MOUNT, V-BRACKET

**V61** VERTICAL MOUNT, V-BRACKET, SNAP-IN

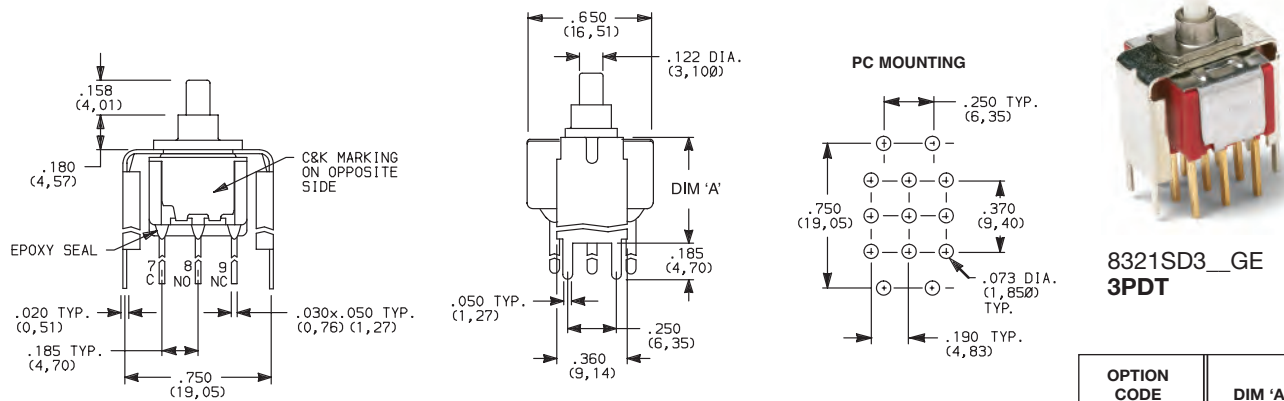


**8221SD3\_GE DPDT**

OPTION CODE	DIM 'A'
<b>V2</b>	.555 (14,10)
<b>V6, V61</b>	.460 (11,68)
<b>V7</b>	.630 (16,00)
<b>V8</b>	.953 (24,21)

Not available with JXX actuators and I seal.

**V2, V7, V8** VERTICAL MOUNT, V-BRACKET

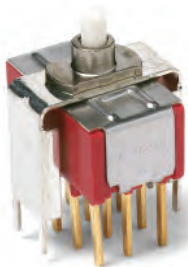
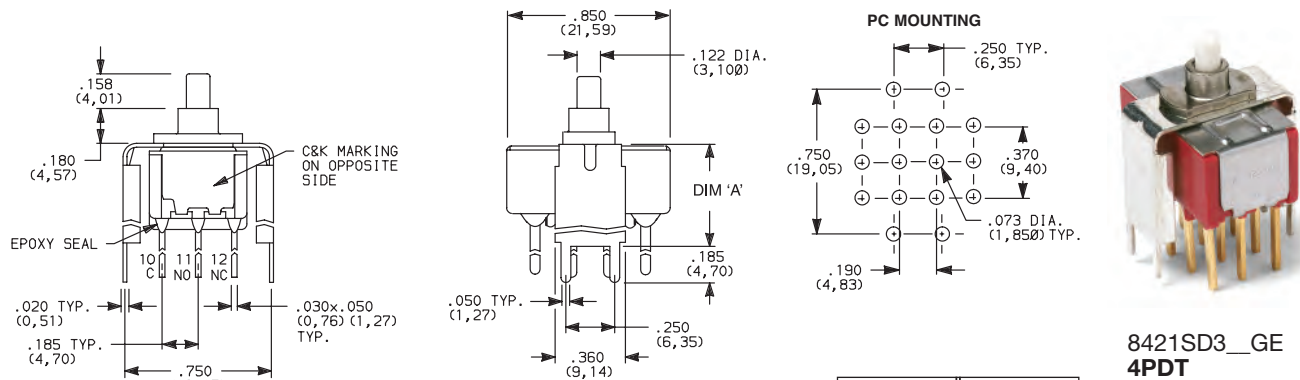


**8321SD3\_GE 3PDT**

OPTION CODE	DIM 'A'
<b>V2</b>	.555 (14,10)
<b>V7</b>	.630 (16,00)
<b>V8</b>	.953 (24,21)

Not available with JXX actuators and I seal.

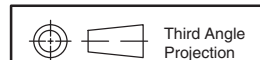
**V2, V7, V8** VERTICAL MOUNT, V-BRACKET



**8421SD3\_GE 4PDT**

OPTION CODE	DIM 'A'
<b>V2</b>	.555 (14,10)
<b>V7</b>	.630 (16,00)
<b>V8</b>	.953 (24,21)

Not available with JXX actuators and I seal.



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



# 8020 Series Snap-acting Momentary Pushbutton Switches

## TERMINATIONS



Pushbutton

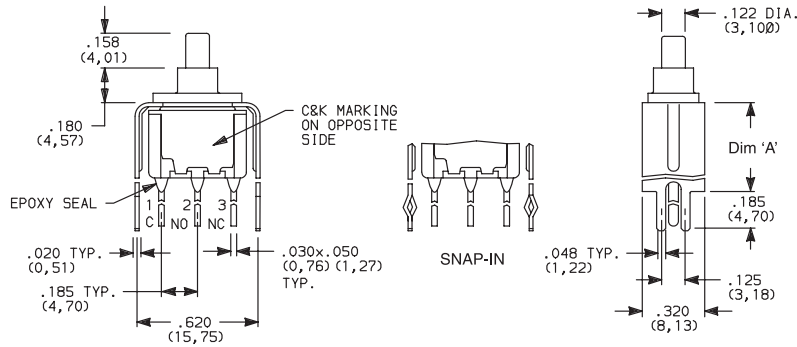
A

**V3, V4, V9** VERTICAL MOUNT, V-BRACKET

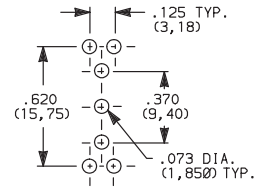
**V31** VERTICAL MOUNT, V-BRACKET, SNAP-IN



8121SD3\_GE  
SPDT



### PC MOUNTING



OPTION CODE	DIM 'A'
<b>V3, V31</b>	.460 (11,68)
<b>V4</b>	.630 (16,00)
<b>V9</b>	1.150 (29,21)

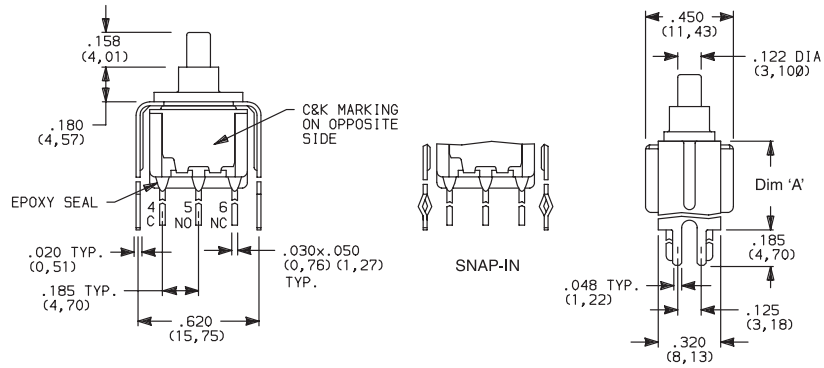
Not available with J8X actuators and I seal.

**V3, V4, V9** VERTICAL MOUNT, V-BRACKET

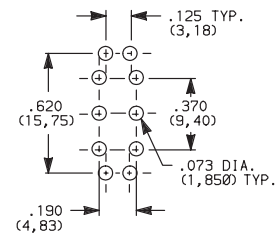
**V31** VERTICAL MOUNT, V-BRACKET, SNAP-IN



8221SD3\_GE  
DPDT



### PC MOUNTING



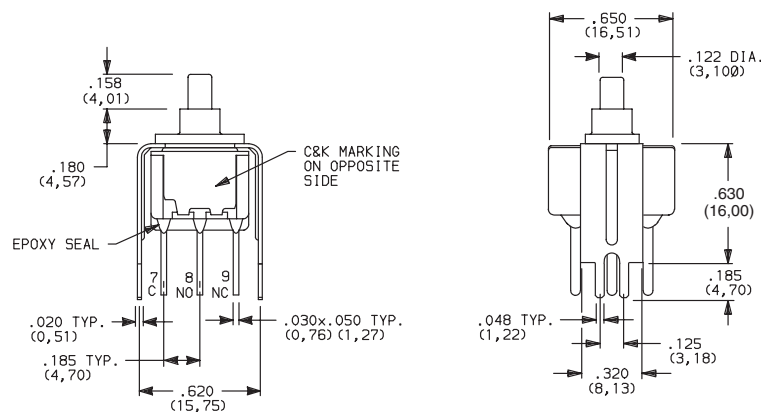
OPTION CODE	DIM 'A'
<b>V3, V31</b>	.460 (11,68)
<b>V4</b>	.630 (16,00)
<b>V9</b>	1.150 (29,21)

Not available with J8X actuators and I seal.

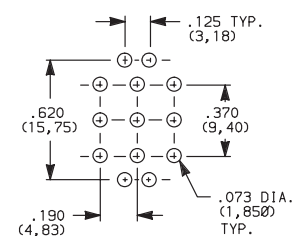
**V4, V9** VERTICAL MOUNT, V-BRACKET



8321SD3V4GE  
3PDT



### PC MOUNTING



OPTION CODE	DIM 'A'
<b>V4</b>	.630 (16,00)
<b>V9</b>	1.150 (29,21)

Not available with JXX actuators and I seal.



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

# 8020 Series Snap-acting Momentary Pushbutton Switches

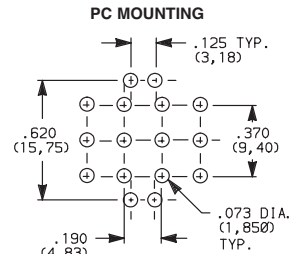
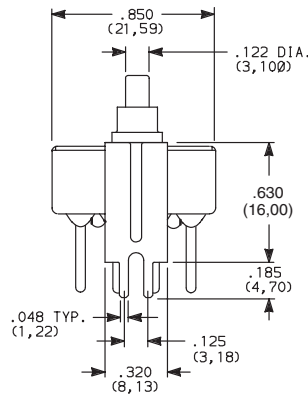
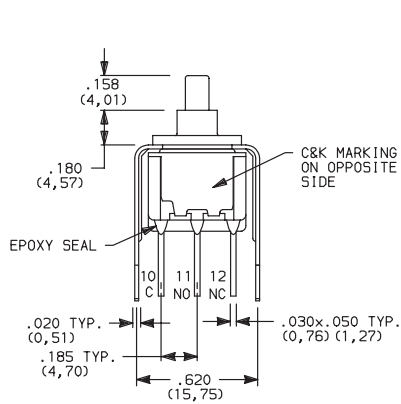


A

Pushbutton

## TERMINATIONS

**V4, V9** VERTICAL MOUNT, V-BRACKET



8421SD3V4GE  
4PDT

OPTION CODE	DIM 'A'
V4	.630 (16,00)
V9	1.150 (29,21)

Not available with JXX actuators and I seal.

## CONTACT MATERIAL

OPTION CODE	CONTACT MATERIAL	TERMINAL PLATING	RATINGS	
B	GOLD <sup>1</sup>	GOLD <sup>1</sup>	LOW LEVEL/DRY CIRCUIT	8x25 MODELS ONLY: 0.4 MAX. @ 20 V AC OR DC MAX.
P		MATTE-TIN <sup>4</sup>		
G	GOLD OVER SILVER <sup>2,3</sup>	GOLD <sup>3</sup>	LOW LEVEL/DRY CIRCUIT OR POWER	8X21, U8X1 MODELS ONLY: 0.4 VA MAX @ 20 V AC OR DC MAX. OR 1 AMP @ 120 V AC OR 28 V DC.
R		MATTE-TIN <sup>4</sup>		

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

- <sup>1</sup> ALL CONTACTS & TERMINALS: Copper alloy, with gold plate over nickel plate.
- <sup>2</sup> N.O. AND N.C. CONTACTS: Coin silver, with gold plate over nickel plate.
- <sup>3</sup> COMMON CONTACTS & ALL TERMINALS: Copper alloy, with gold plate over nickel plate.
- <sup>4</sup> TERMINALS: Copper alloy, with matte-tin over nickel plate.

**NOTE:** Any models supplied with B, P, R or G contact material are RoHS compliant.

U811-U841 models with all options (except R, R2 terminations) when ordered with mandatory G or R contact material.

B or P contact material must be ordered with 8X25 models.

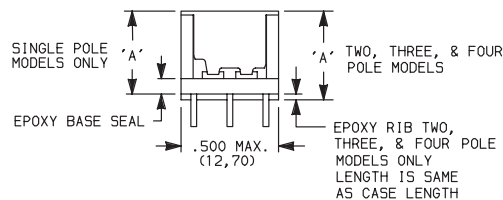
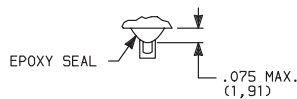
G or R contact material must be ordered with 8X21, U8X1 models.

P or R contact material not available with Z, Z3 terminations.

## SEAL

**E** EPOXY SEAL

**I** EPOXY POTTED BASE



NO. POLES	DIM 'A'
SP	.410 (10,41)
DP	.440 (11,18)
3P	.505 (12,83)
4P	.505 (12,83)

**NOTE:** Available with C, W-W4, Z, Z3 terminations only.



Third Angle Projection



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

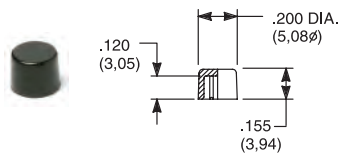


# 8020 Series Snap-acting Momentary Pushbutton Switches

Pushbutton  
A

## AVAILABLE HARDWARE

Cap

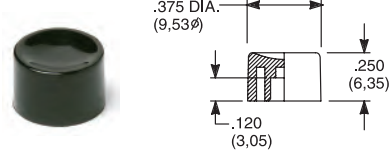


**PART NO.**

- 708901000 WHITE
- 708902000 BLACK
- 708903000 RED
- 708904000 ORANGE
- 708905000 YELLOW
- 708906000 GREEN
- 708907000 BLUE
- 708909000 GRAY

Material: Nylon  
Finish: Gloss

Cap

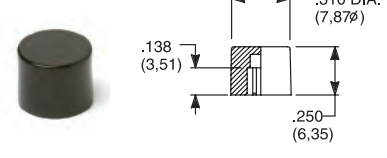


**PART NO.**

- 752701000 WHITE
- 752702000 BLACK
- 752703000 RED
- 752704000 ORANGE
- 752705000 YELLOW
- 752706000 GREEN
- 752707000 BLUE
- 752709000 GRAY

Material: Nylon  
Finish: Gloss

Cap

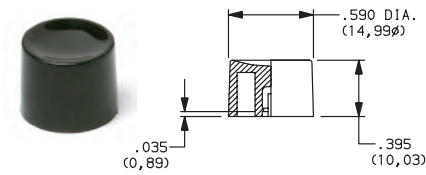


**PART NO.**

- 801801000 WHITE
- 801802000 BLACK
- 801803000 RED
- 801804000 ORANGE
- 801805000 YELLOW
- 801806000 GREEN
- 801807000 BLUE
- 801809000 GRAY

Material: Nylon  
Finish: Gloss

Cap, Snap-fitting plunger

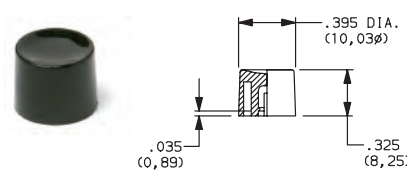


**PART NO.**

- 452D01000 WHITE
- 452D02000 BLACK
- 452D03000 RED
- 452D04000 ORANGE
- 452D05000 YELLOW
- 452D06000 GREEN
- 452D07000 BLUE
- 452D09000 GRAY

Material: Nylon  
Finish: Gloss

Cap, Snap-fitting plunger

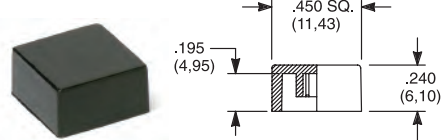


**PART NO.**

- 894101000 WHITE
- 894102000 BLACK
- 894103000 RED
- 894104000 ORANGE
- 894105000 YELLOW
- 894106000 GREEN
- 894107000 BLUE
- 894109000 GRAY

Material: Nylon  
Finish: Gloss

Cap, J80, J81, J82, J83 & J84 options only



**PART NO.**

- |                  |                  |
|------------------|------------------|
| 484601000 WHITE  | 798201000 WHITE  |
| 484602000 BLACK  | 798202263 BLACK  |
| 484603000 RED    | 798203000 RED    |
| 484604000 ORANGE | 798204000 ORANGE |
| 484605000 YELLOW | 798205000 YELLOW |
| 484606000 GREEN  | 798206000 GREEN  |
| 484607000 BLUE   | 798207000 BLUE   |
| 484609000 GRAY   | 798209000 GRAY   |

Material: Nylon  
Finish: Gloss

Frame



**PART NO.**

- 615602263 BLACK

Material: Nylon  
Finish: Matte

Frame

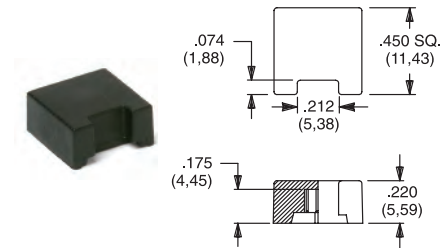


**PART NO.**

- 613302263 BLACK

Material: Nylon  
Finish: Matte

Cap, J85 & J95 options only



**PART NO.**

- |                  |                  |
|------------------|------------------|
| 459701000 WHITE  | 476801000 WHITE  |
| 459702000 BLACK  | 476802000 BLACK  |
| 459703000 RED    | 476803000 RED    |
| 459704000 ORANGE | 476804000 ORANGE |
| 459705000 YELLOW | 476805000 YELLOW |
| 459706000 GREEN  | 476806000 GREEN  |
| 459707000 BLUE   | 476807000 BLUE   |
| 459709000 GRAY   | 476809000 GRAY   |

Material: Nylon  
Finish: Gloss

Fits Z3 Termination female connector



**PART NO.**

- 530100000

Available in loose pieces.

NOTE: Additional nuts, locking rings and lockwashers available separately, see section "Technical Data and Additional Hardware".  
Other cap & frame colors available, consult Customer Service Center.



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



# 8020 Series Snap-acting Momentary Pushbutton Switches

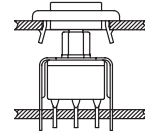


A Pushbutton

## AVAILABLE HARDWARE

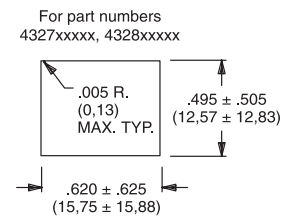
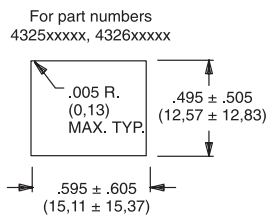
Frames snap into panel opening and are independent from switch mounting. Accurate positioning of the PC mounted switch relative to the panel opening is necessary to provide proper clearance between actuator and frame. Available in two basic styles and four panel thicknesses .047-.125 in. Material: Nylon. Finish: Matte.

### TYPICAL APPLICATION



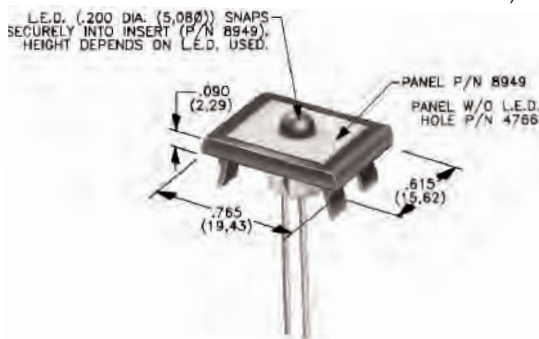
.047" (1,19) PANEL THK.	.062" (1,57) PANEL THK.	.090" (2,29) PANEL THK.	.125" (3,18) PANEL THK.
<b>PART NO.</b> 432502263	<b>PART NO.</b> 432602263	<b>PART NO.</b> 432702263	<b>PART NO.</b> 432802263 BLACK

### PANEL MOUNTING



### Panel Inserts

Above frames (part nos. 432XXXXXX) are also available with insert which accepts LED for indicator light assembly. Order insert separately from frame. Blank insert panel (without hole for LED) also available. **LED not included.**



PANEL INSERT WITH HOLE FOR LED

**PART NO.**  
894902000

BLANK PANEL INSERT WITHOUT HOLE FOR LED

**PART NO.**  
476602000 BLACK

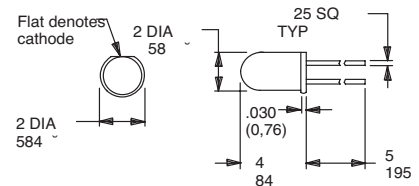
Special colors, custom markings available, consult Customer Service Center.

### LED INFORMATION

SWITCHES WITH LED SUPPLIED: J85, J95 OPTIONS:

Rectangular LEDs are supplied on 8020 Series pushbutton switches with J85 and J95 options. These LEDs are factory installed and are not replaceable. The following specifications apply:

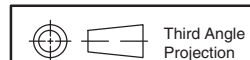
OPTION CODE	COLOR	TYP. INTENSITY	TYP. FORWARD VOLTAGE	TYP. FORWARD CURRENT	MAX RATINGS AT 25°C AMBIENT TEMPERATURE		
					FORWARD VOLTAGE	CONTINUOUS FORWARD CURRENT	POWER DISSIPATION
6	Green	1.0 mcd	2.1 V	20 mA	2.5 V	50 mA	125 mW
3	Red*	0.5 mcd		10 mA		30 mA	75 mW
5	Yellow	4.0 mcd		20 mA		50 mA	125 mW



Suggested LED for J82 & J84 options  
Dimensions for reference only

**Process Information:** Soldering to LED leads must be completed within 5 seconds at 500°F (260°C) maximum.

**Caution:** Circuit elements must limit forward current of LED to 50mA max. continuous.  
\* Extra-bright red LED available (typ. intensity 4.5 mcd), consult Customer Service Center.  
LEDs are not supplied with J82, J84 options. LED snaps into switch frame surrounding actuator and is wired externally.



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

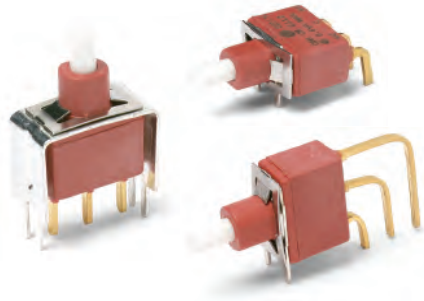




A

Pushbutton

# E010 Series Sealed Momentary Pushbutton Switches



## Features/Benefits

- Process sealed, withstands soldering and cleaning
- Long life contact design
- Snap-fitting plunger available, accepts a variety of caps
- RoHS compliant models available

## Typical Applications

- Instrumentation
- Telecommunications and networking equipment
- Computers and peripherals



Models Available

## Specifications

CONTACT RATING: Q contact material: 4 AMPS @ 125 V AC or 28 V DC. See page A-50 for additional ratings.

ELECTRICAL LIFE: 40,000 make-and-break cycles at full load.

CONTACT RESISTANCE: Below 20 mΩ typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

INSULATION RESISTANCE: 10<sup>9</sup>Ω min.

DIELECTRIC STRENGTH: 1000 Vrms min. @ sea level.

OPERATING TEMPERATURE: -30°C to 75°C.

CAP INSTALLATION FORCE: 10 lbs. max. permissible.

SOLDERABILITY: Per MIL-STD-202F method 208D, or EIA RS-186E method 9 (1 hour steam aging).

**NOTE:** Any models supplied with P, Q, B or G contact material are RoHS compliant.

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## Materials

CASE & BUSHING: Glass filled nylon 6/6, flame retardant (UL 94V-0).

PLUNGER: Glass filled nylon or glass filled polyester (PBT) (UL 94V-0), with internal o-ring seal standard.

SWITCH SUPPORT: Brass or steel, matte-tin plated.

SWITCH SUPPORT RETAINER: Stainless steel.

END CONTACTS: Q contact material: Coin silver, silver plated. See A-50 for additional ratings.

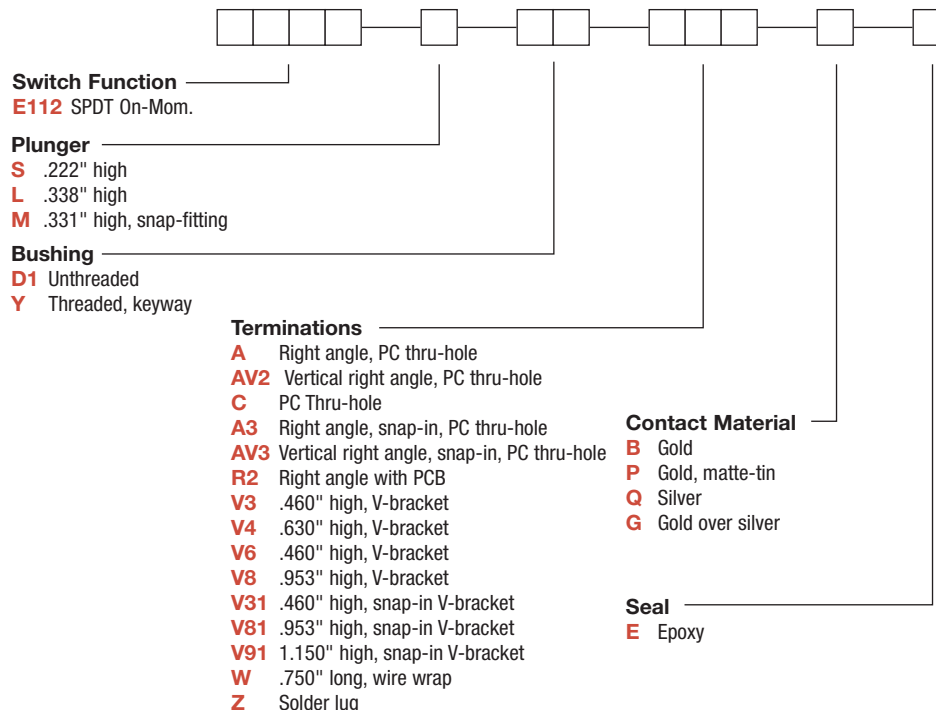
CENTER CONTACTS & ALL TERMINALS: Q contact material: Copper alloy, silver plated. See page A-50 for additional ratings.

TERMINAL SEAL: Epoxy.

HARDWARE: Nut & locking ring-Brass, nickel plated. Lockwasher-Steel, nickel plated.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages A-47 thru A-51. For additional options not shown in catalog, consult Customer Service Center. All models are process sealed to withstand machine soldering temperatures and pressure wash cleaning methods.



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

# E010 Series Sealed Momentary Pushbutton Switches



A

Pushbutton

## SWITCH FUNCTION

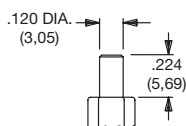
NO. POLES	MODEL NO.	SWITCH FUNCTION		CONNECTED TERMINALS		SCHEMATIC
		POS. 1	POS. 2	POS. 1	POS. 2	
SP	<b>E112</b>	ON C&K marking this side	MOM. C&K marking this side	2-1 C&K marking this side	2-3 C&K marking this side	SPDT NC 1 ● 2 (COMM) ● 3 NO
<p><b>SPDT</b></p> <p>Part number shown: E112SD1CQE</p>						

MOM. = Momentary

All models with all options when ordered with G or Q contact material.

## PLUNGER

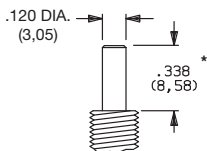
**S** .218" HIGH



Standard with D1 bushing (as shown).

† Subtract .100 (2,54) from plunger length when ordered with Y bushing.

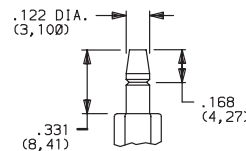
**L** .338" HIGH



Standard with Y bushing (as shown).

\*\* Add .100 (2,54) from plunger length when ordered with D1 bushing.

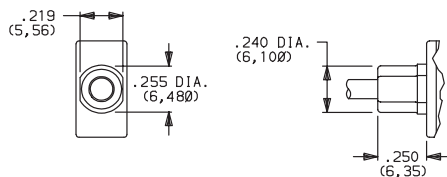
**M** .331" HIGH, SNAP-FITTING



**NOTE:** Caps available for all plunger options, see pages A-50 and A-51.

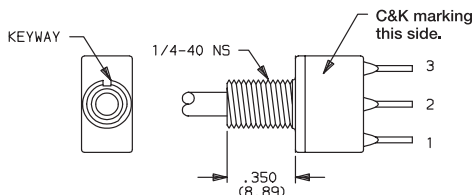
## BUSHING

**D1** UNTHREADED



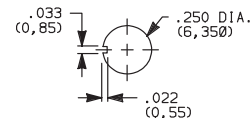
S plunger standard with D1 bushing.

**Y** THREADED, KEYWAY



L plunger standard with Y bushing. Available only with C, Z terminations.  
Hardware: One dress nut part number 299D01201, one hex nut and lockwasher supplied standard.  
**Withstands 4 in./lbs. without distortion.**

**PANEL MOUNTING**



**NOTE:** Internal o-ring actuator seal standard for all bushing options.



Third Angle Projection

Dimensions are shown: Inches (mm)

Specifications and dimensions subject to change

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# E010 Series Sealed Momentary Pushbutton Switches

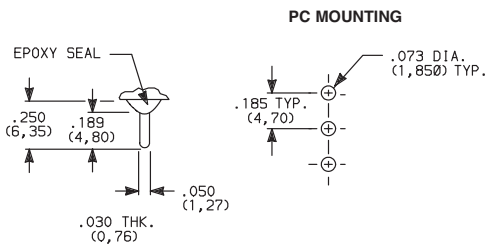
Pushbutton

A

## TERMINATIONS

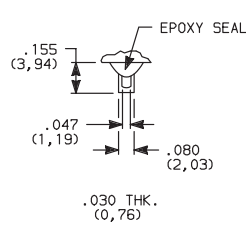


### C PC THRU-HOLE



**SPDT**

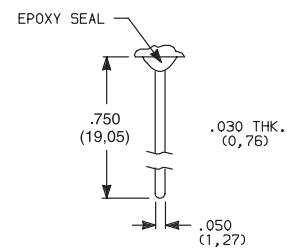
### Z SOLDER LUG



**SPDT**

Not available with P contact materials.

### W WIRE WRAP

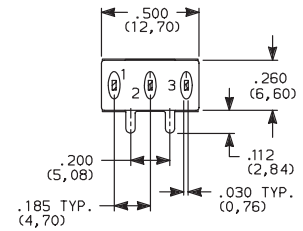
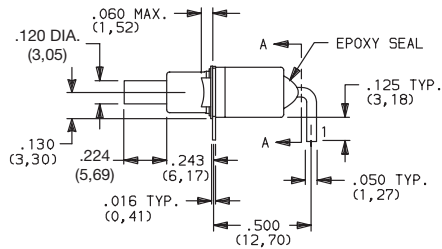
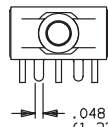


**SPDT**

### A RIGHT ANGLE, PC THRU-HOLE

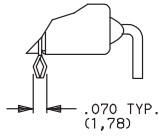
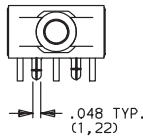


**E112SD1ABE  
SPDT**

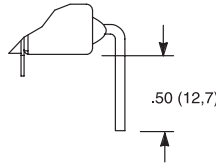


SECTION A-A

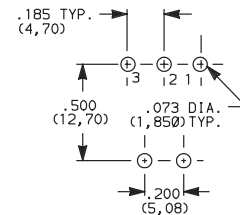
### A3 RIGHT ANGLE, SNAP-IN, PC THRU-HOLE



### AW RIGHT ANGLE, EXTENDED, PC THRU-HOLE

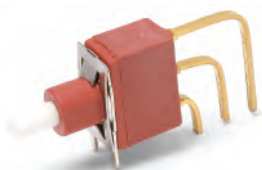


### PC MOUNTING

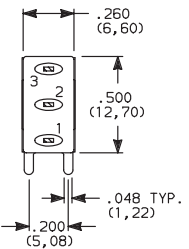
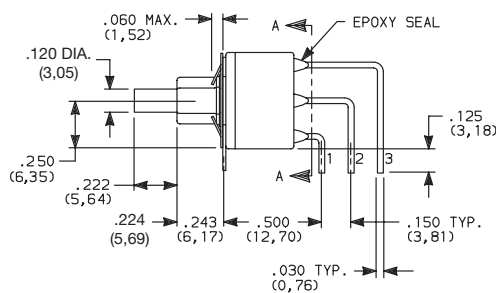


**NOTE:** Terminal bend radii and lead-in manufacturing option. Available with D1 bushing only.

### AV2 VERTICAL RIGHT ANGLE, PC THRU-HOLE, .150° PITCH

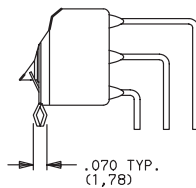
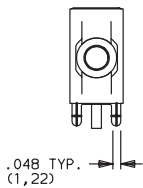


**E112SD1AV2BE  
SPDT**

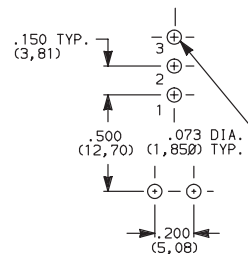


SECTION A-A

### AV3 VERTICAL RIGHT ANGLE, SNAP-IN, PC THRU-HOLE, .150° PITCH



### PC MOUNTING



**NOTE:** Terminal bend radii and lead-in manufacturing option. Available with D1 bushing only.



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change





# E010 Series Sealed Momentary Pushbutton Switches

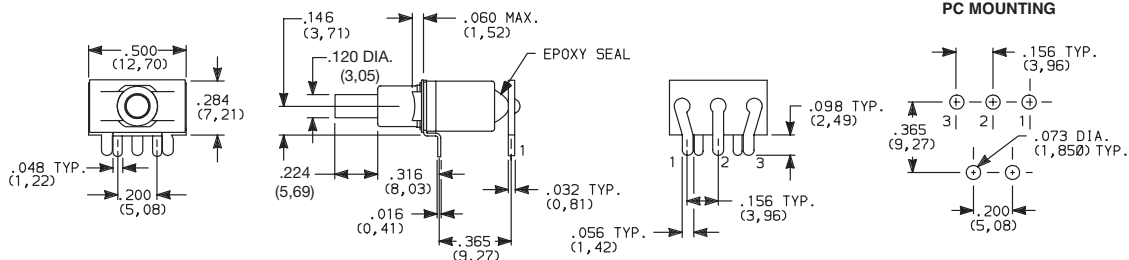


A

Pushbutton

## TERMINATIONS

### R2 RIGHT ANGLE WITH PCB

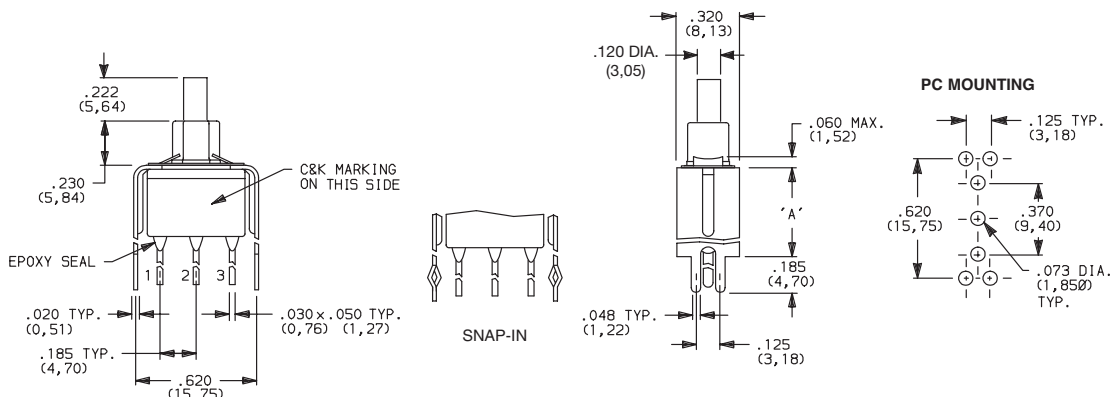


E112SD1R2BE  
SPDT

NOTE: Available with D1 bushing and B contact material only.

### V3, V4 VERTICAL MOUNT, V-BRACKET

### V31, V91 VERTICAL MOUNT, V-BRACKET, SNAP-IN



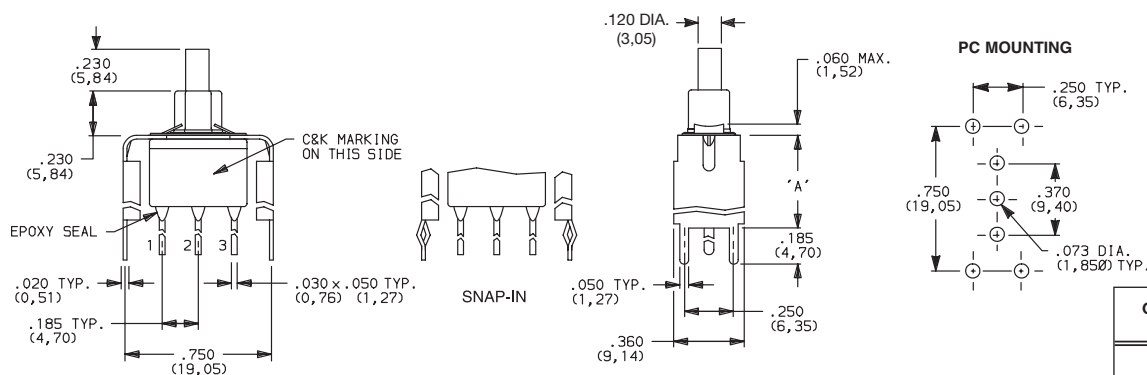
E112SD1\_BE  
SPDT

OPTION CODE	DIM 'A'
V3, V31	.460 (11,68)
V4	.630 (16,00)
V91	1.150 (29,21)

NOTE: Available with D1 bushing only.

### V6, V8 VERTICAL MOUNT, V-BRACKET

### V81 VERTICAL MOUNT, V-BRACKET, SNAP-IN



E112SD1\_BE  
SPDT

OPTION CODE	DIM 'A'
V6	.460 (11,68)
V8, V81	.953 (24,21)

NOTE: Available with D1 bushing only.



Third Angle  
Projection



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



# E010 Series Sealed Momentary Pushbutton Switches

Pushbutton  
A

## CONTACT MATERIAL

OPTION CODE	CONTACT MATERIAL	TERMINAL PLATING	RATINGS	
<b>B</b>	GOLD <sup>1</sup>	GOLD <sup>1</sup>	LOW LEVEL/DRY CIRCUIT	0.4 VA MAX. @ 20 V AC OR DC MAX.
<b>P</b>		MATTE-TIN <sup>6</sup>		
<b>Q</b>	SILVER <sup>4,5</sup>	SILVER <sup>5</sup>	POWER	4 AMPS @ 125 V AC OR 28 V DC.
<b>G</b>	GOLD OVER SILVER <sup>2,3</sup>	GOLD <sup>3</sup>	LOW LEVEL/DRY CIRCUIT OR POWER	0.4 VA MAX. @ 20 V AC OR DC MAX. OR 4 AMPS @ 125 V AC OR 28 V DC.

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

- <sup>1</sup> CONTACTS & TERMINALS: Copper alloy, with gold plate over nickel plate.
- <sup>2</sup> END CONTACTS: Coin silver, with gold plate over nickel plate.
- <sup>3</sup> CENTER CONTACTS & ALL TERMINALS: Coin silver, with gold plate over nickel plate.
- <sup>4</sup> END CONTACTS: Coin silver, silver plated.
- <sup>5</sup> CENTER CONTACTS & ALL TERMINALS: Copper alloy, silver plated.
- <sup>6</sup> TERMINALS: Copper alloy, with matte-tin over nickel plate.

**NOTE:** Any models supplied with P, Q, B or G contact material are RoHS compliant.

All models with all options when ordered with G or Q contact material.

B contact material standard with all terminations except C, Z.

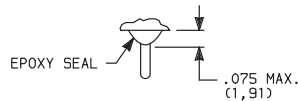
B contact material must be ordered with R2 terminations.

Q contact material standard with C, Z terminations.

P contact materials not available with Z terminations.

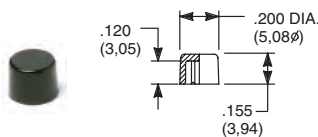
## SEAL

**E** EPOXY SEAL



## AVAILABLE HARDWARE

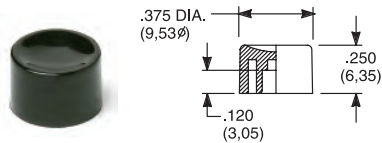
Cap



**PART NO.**  
**708901000** WHITE  
**708902000** BLACK  
**708903000** RED

Material: Nylon  
 Finish: Gloss

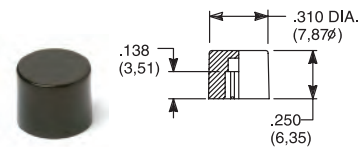
Cap



**PART NO.**  
**752701000** WHITE  
**752702000** BLACK  
**752703000** RED

Material: Nylon  
 Finish: Gloss

Cap



**PART NO.**  
**801801000** WHITE  
**801802000** BLACK  
**801803000** RED

Material: Nylon  
 Finish: Gloss

**NOTE:** Additional nuts, locking rings and lockwashers available separately, see section "Technical Data and Additional Hardware". Other cap colors available, consult Customer Service Center.



Dimensions are shown: Inches (mm)  
 Specifications and dimensions subject to change



# E010 Series Sealed Momentary Pushbutton Switches

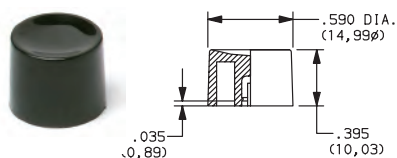


A

Pushbutton

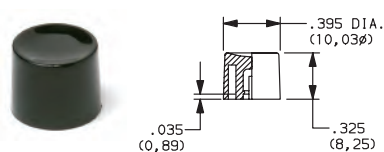
## AVAILABLE HARDWARE

Cap, Snap-fitting plunger



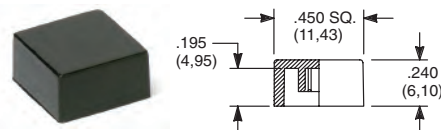
**PART NO.**  
**452D01000** WHITE  
**452D02000** BLACK  
**452D03000** RED  
 Material: Nylon  
 Finish: Gloss

Cap, Snap-fitting plunger



**PART NO.**  
**894101000** WHITE  
**894102000** BLACK  
**894103000** RED  
 Material: Nylon  
 Finish: Gloss

Cap



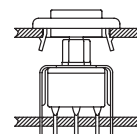
**PART NO.**  
**484601000** WHITE  
**484602000** BLACK  
**484603000** RED  
 Material: Nylon  
 Finish: Gloss

**PART NO.**  
**798201000** WHITE  
**798202263** BLACK  
**798203000** RED  
 Material: Nylon  
 Finish: Matte

**NOTE:** Additional nuts, locking rings and lockwashers available separately, see section "Technical Data and Additional Hardware".  
 Other cap colors available, consult Customer Service Center.

Frames snap into panel opening and are independent from switch mounting. Accurate positioning of the PC mounted switch relative to the panel opening is necessary to provide proper clearance between actuator and frame. Available in two basic styles and four panel thicknesses .047-.125 in. Material: Nylon. Finish: Matte.

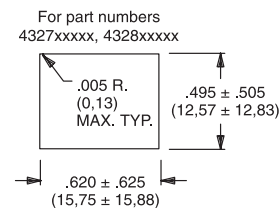
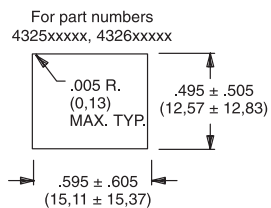
TYPICAL APPLICATION



.047" (1,19) PANEL THK.    .062" (1,57) PANEL THK.    .090" (2,29) PANEL THK.    .125" (3,18) PANEL THK.

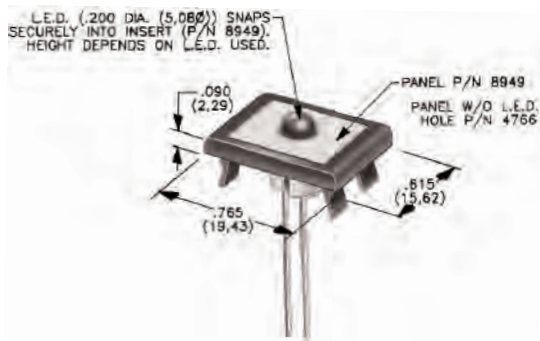
**PART NO.**    **PART NO.**    **PART NO.**    **PART NO.**  
**432502263**    **432602263**    **432702263**    **432802263** BLACK

PANEL MOUNTING



Panel Inserts

Above frames (part nos. 432XXXXXX) are also available with insert which accepts LED for indicator light assembly. Order insert separately from frame. Blank insert panel (without hole for LED) also available. **LED not included.**



PANEL INSERT WITH HOLE FOR LED

**PART NO.**  
**894902000**

BLANK PANEL INSERT WITHOUT HOLE FOR LED

**PART NO.**  
**476602000** BLACK

Special colors, custom markings available, consult Customer Service Center.



Dimensions are shown: Inches (mm)  
 Specifications and dimensions subject to change



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A

Pushbutton

# 8060 Series Alternate Action and Momentary Pushbutton Switches



## Features/Benefits

- Long travel
- Available with LED
- Long life contact design
- Epoxy terminal seal compatible with bottom wash cleaning
- RoHS compliant models available

## Typical Applications

- Instrumentation
- Computers and peripherals
- Telecommunications and networking equipment



Models Available

## Specifications

**CONTACT RATING:** Q contact material: 6 AMPS @ 120 V AC or 28 V DC; 3 AMPS @ 250 V AC. See page A-59 for additional ratings.

**ELECTRICAL LIFE:** 50,000 make-and-break cycles at full load.

**CONTACT RESISTANCE:** Below 20 mΩ typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

**INSULATION RESISTANCE:** 10<sup>9</sup>Ω min.

**DIELECTRIC STRENGTH:** 1,000 Vrms min. @ sea level.

**OPERATING TEMPERATURE:** -30°C to 65°C

**SOLDERABILITY:** Per MIL-STD-202F method 208D, or EIA RS-186E method 9 (1 hour steam aging).

**CAP INSTALLATION FORCE:** 10 lbs. maximum permissible.

**NOTE:** Any models supplied with P, R, S, Q, B or G contact material are RoHS compliant.

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## Materials

**CASE:** Glass filled nylon 6/6 or diallyl phthalate (DAP), flame retardant (UL 94V-0).

**PLUNGER:** S, S1, S2 Options: Glass filled nylon or glass filled polyester (PBT) (UL 94V-0). L, L1 Options: Brass, nickel plated.

**CAP & FRAME:** Nylon, black standard.

**BUSHING:** Brass or zinc, nickel plated.

**HOUSING:** Stainless steel.

**SWITCH SUPPORT:** Brass or steel, matte-tin plated.

**END CONTACTS:** Q contact material: Coin silver, silver plated. See page A-59 for additional contact materials.

**CENTER CONTACT & ALL TERMINALS:** Q contact material: Copper alloy, silver plated. See page A-59 for additional contact materials.

**TERMINAL SEAL:** Epoxy. Refer to soldering and cleaning in Technical Data Chapter.

**HARDWARE:** Nut & Locking Ring: Brass, nickel plated; Lockwasher: Steel, nickel plated.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages A-53 thru A-61. For additional options not shown in catalog, consult Customer Service Center. All models have epoxy terminal seal and are compatible with all "bottom-wash" PCB cleaning methods.



### Switch Function

- 8161** SPDT On-On
- 8168** SPDT On-Mom.
- 8261** DPDT On-On

### Actuator or Plunger

- S** .710" high plunger with .375" dia. cap
- J80** Snap-in
- J81** Snap-in with frame
- J82** Snap-in with frame for LED
- J86** Snap-in with frame & LED
- L** .740" high plunger with .395" dia. cap
- L1** .740" high plunger with .590" dia. cap
- S1** .615" high plunger with .200" dia. cap
- S2** .710" high plunger with .310" dia. cap

### Bushing

- H** .300" high, flat, hi torque
- H9** .300" high, flat, hi torque
- NONE** No bushing choice required
- Y3** 7.6mm, keyway

### Terminations

- A** Right angle, PC thru-hole
- AV2** Vertical right angle, PC thru-hole
- C** PC Thru-hole
- Z** Solder lug
- A3** Right angle, snap-in, PC thru-hole
- AV3** Vertical right angle, snap-in, PC thru-hole
- V3** .460" high, V-bracket
- V4** .630" high, V-bracket
- V6** .460" high, V-bracket
- V21** .555" high, snap-in V-bracket
- V31** .460" high, snap-in V-bracket
- W** .750" long, wire wrap
- Z3** Quick connect

### Contact Material

- B** Gold
- P** Gold, matte-tin
- Q** Silver
- S** Silver, matte-tin
- G** Gold over silver
- R** Gold over silver, matte-tin

### Seal

- E** Epoxy
- I** Epoxy potted base

### Cap Color

- 2** Black
- 1** White
- 3** Red
- 4** Orange
- 5** Yellow
- 9** Gray

### Frame Color

- 2** Black

### LED Color

- 3** Red
- NONE** Models without LED



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

# 8060 Series Alternate Action and Momentary Pushbutton Switches



A  
Pushbutton

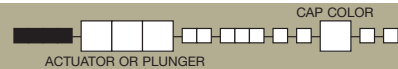
## SWITCH FUNCTION

NO. POLES	MODEL NO.	SWITCH FUNCTION		CONNECTED TERMINALS		SCHEMATIC
		POS. 1	POS. 2	POS. 1	POS. 2	
SP	<b>8161</b> <b>8168</b>	ON	ON	2-3	2-1	
		ON	MOM.	2-3	2-1	
<p><b>SPDT</b></p>						
DP	<b>8261</b>	ON	ON	2-3-5-6	2-1-5-4	
<p><b>DPDT</b></p>						

MOM. = Momentary

All models **C&K** US with all options when ordered with G or Q contact material.

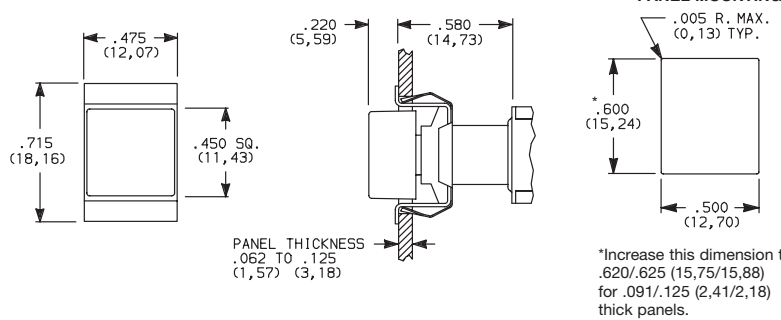
## ACTUATOR—SNAP-IN FRONT MOUNT



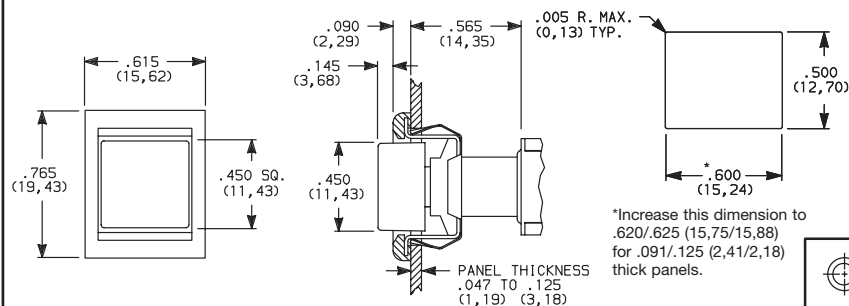
OPTION CODE	CAP COLOR
<b>2</b>	BLACK
<b>1</b>	WHITE
<b>3</b>	RED
<b>4</b>	ORANGE
<b>5</b>	YELLOW
<b>9</b>	GRAY

Cap Finish: matte.  
Other colors available, consult Customer Service Center.  
Available with C, W, Z or Z3 terminations.  
**NOTE:** Caps & frames available separately, see pages A-60 and A-61.

### J80 SNAP-IN



### J81 SNAP-IN WITH BLACK FRAME



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

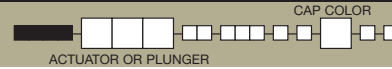


# 8060 Series Alternate Action and Momentary Pushbutton Switches

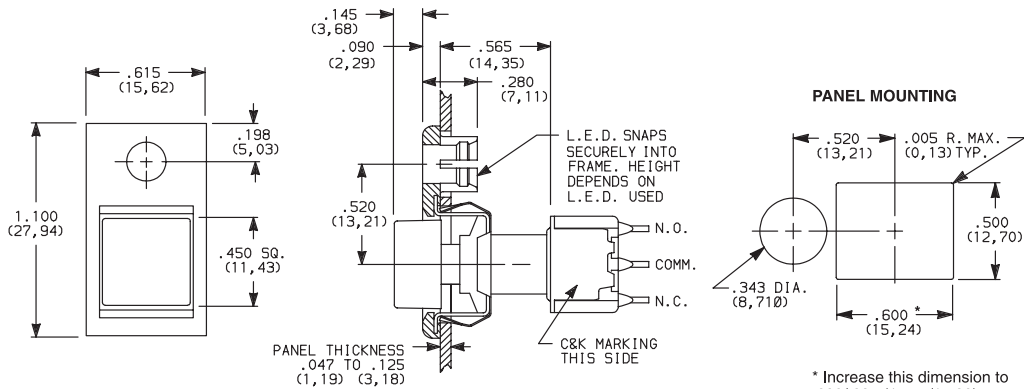
A

Pushbutton

## ACTUATOR—SNAP-IN FRONT MOUNT



**J82** SNAP-IN WITH BLACK FRAME FOR LED



Available with C, W, Z or Z3 terminations.

**LED not included.**  
For LED information, see page A-61.

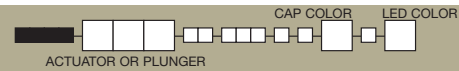
**NOTE:** Caps & frames available separately, see pages A-60 and A-61.

Other colors available, consult Customer Service Center.

OPTION CODE	CAP COLOR
2	BLACK
1	WHITE
3	RED
4	ORANGE
5	YELLOW
9	GRAY

\* Increase this dimension to .620/.625 (15,75/15,88) for .091/.125 (2,31/3,18) thick panels.

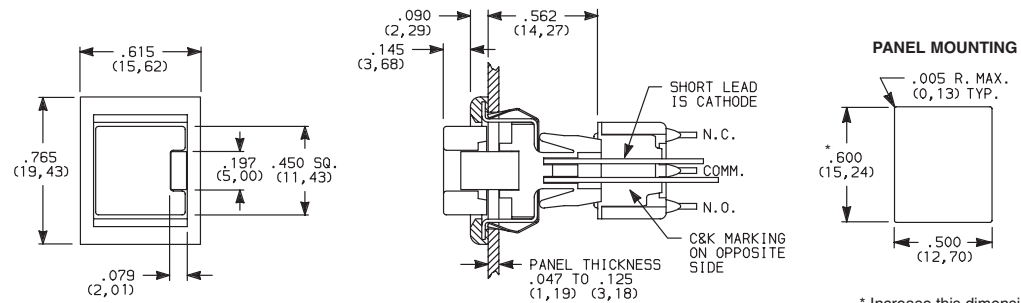
## ACTUATOR—SNAP-IN FRONT MOUNT



**J86** SNAP-IN WITH BLACK FRAME AND LED



8161J86ZQE223  
SPDT



Available with C, W, Z or Z3 terminations and SPDT models only.

**NOTE:** Caps & frames available separately, see pages A-60 and A-61.

Other colors available, consult Customer Service Center.

OPTION CODE	CAP COLOR
2	BLACK
1	WHITE
3	RED
4	ORANGE
5	YELLOW
9	GRAY

OPTION CODE	LED COLOR
3	RED

For LED information, see page A-61.



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



# 8060 Series Alternate Action and Momentary Pushbutton Switches

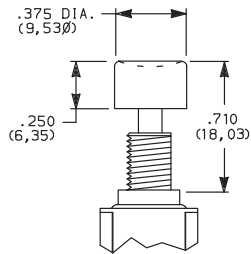


A

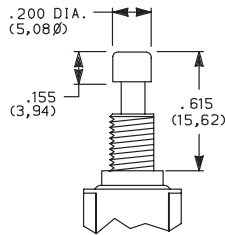
Pushbutton



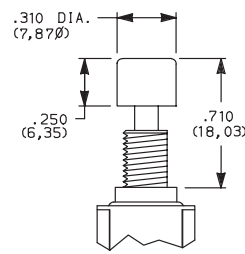
**S** PLUNGER WITH CAP P/N 7527



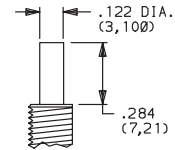
**S1** PLUNGER WITH CAP P/N 7089



**S2** PLUNGER WITH CAP P/N 8018

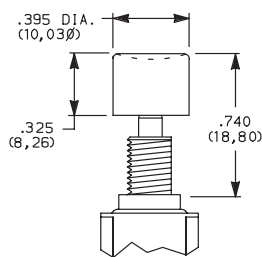


S, S1, S2 plunger dimensions.

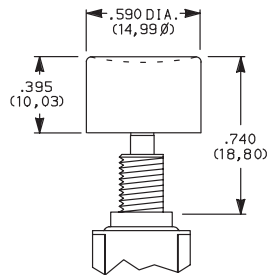


Plunger material: Glass filled nylon or glass filled polyester (UL 94V-0).

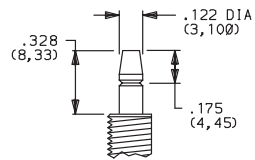
**L** PLUNGER WITH CAP P/N 8941



**L1** PLUNGER WITH CAP P/N 8940



L, L1 plunger dimensions.



Plunger Material: Brass, chrome plated.

OPTION CODE	CAP COLOR
2	BLACK
1	WHITE
3	RED
4	ORANGE
5	YELLOW
9	GRAY

Cap Finish: gloss. Cap supplied not installed. Other colors available, consult Customer Service Center.

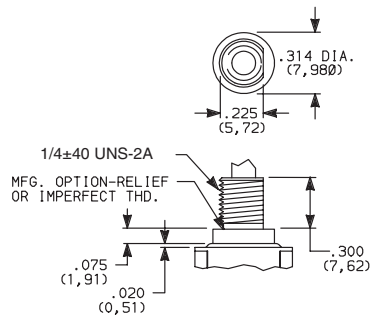
**NOTE:** When selecting plunger and cap option, bushing selection must also be made, see below.



**H** .300" HIGH THREADED, FLAT  
**H9** .300" HIGH UNTHREADED, FLAT

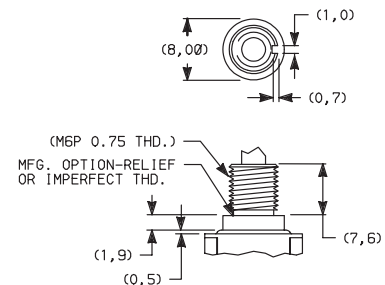
**NONE** NO BUSHING CHOICE REQUIRED (JXX ACTUATORS)

**Y3** 7.6mm THREADED, KEYWAY



H bushing standard with C, W, Z or Z3 terminations. H9 bushing standard with A, A3, AV2, AV3, or V3-V31 terminations.

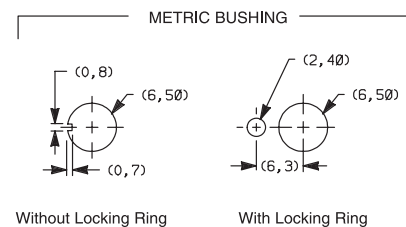
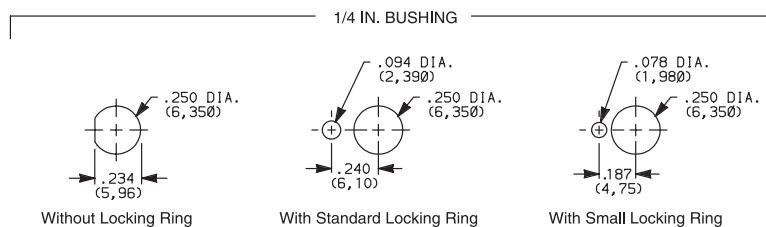
Withstands 12 in./lbs. of torque with no distortion.



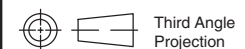
Withstands 12 in./lbs. of torque with no distortion.

**NOTE:** When selecting bushing option, plunger selection must also be made, see above. No bushing option choice required when any JXX actuator option is selected.

## PANEL MOUNTING



**NOTE:** Two mounting nuts, locking ring and lockwasher supplied standard with threaded bushings. Optional mounting nut and locking ring styles and finishes available, see section "Technical Data and Additional Hardware".



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



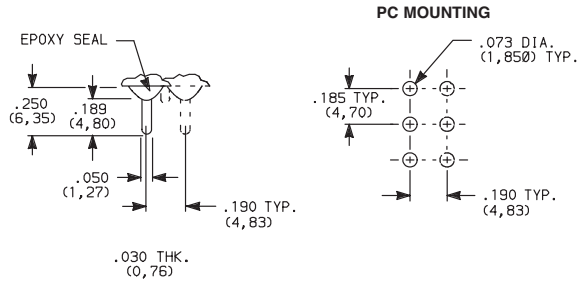


# 8060 Series Alternate Action and Momentary Pushbutton Switches

Pushbutton  
A

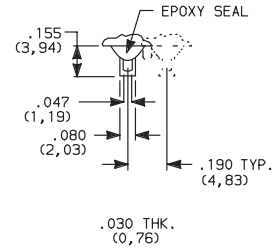
## TERMINATIONS

### C PC THRU-HOLE



SPDT and DPDT

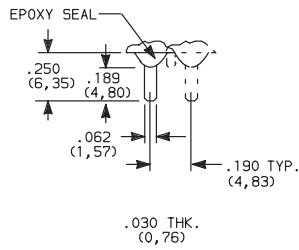
### Z SOLDER LUG



SPDT and DPDT

Not available with P, S or R contact material.

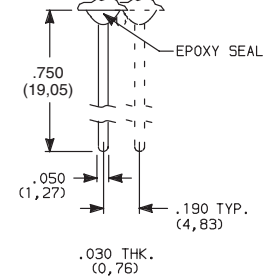
### Z3 QUICK CONNECT



SPDT and DPDT

Not available with P, S or R contact material.  
Mating quick connector available;  
order part number 530100000, page A-61.

### W WIRE WRAP

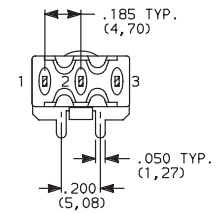
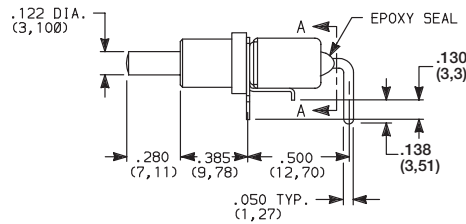
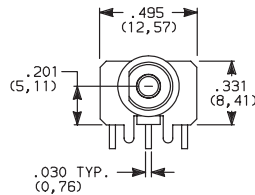


SPDT and DPDT

### A RIGHT ANGLE, PC THRU-HOLE

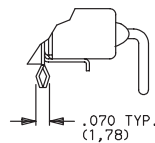
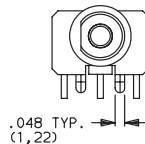


8161SH9ABE2  
SPDT



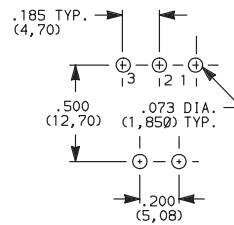
SECTION A-A

### A3 RIGHT ANGLE, SNAP-IN, PC THRU-HOLE



Not available with I seal.  
Terminal bend radii and lead-in manufacturing option.

### PC MOUNTING



NOTE: PC pattern must clear switch support leg.



Third Angle  
Projection

Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change





# 8060 Series Alternate Action and Momentary Pushbutton Switches

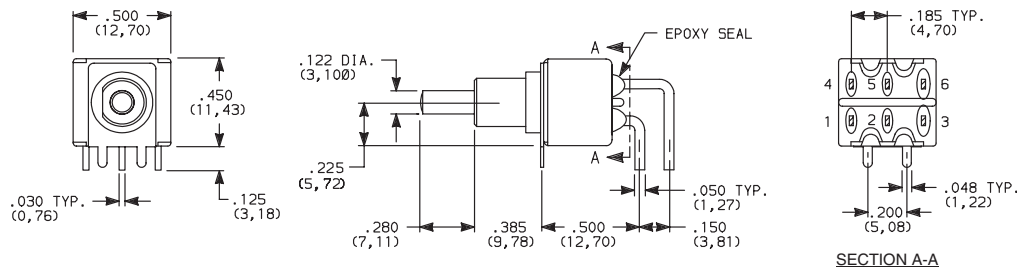


A

Pushbutton

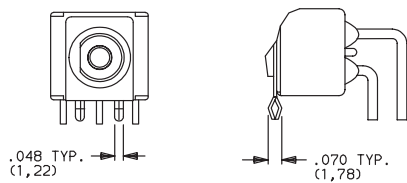
## TERMINATIONS

### A RIGHT ANGLE, PC THRU-HOLE

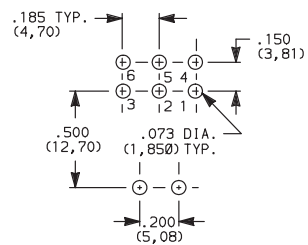


8261SH9ABE2  
DPDT

### A3 RIGHT ANGLE, SNAP-IN, PC THRU-HOLE

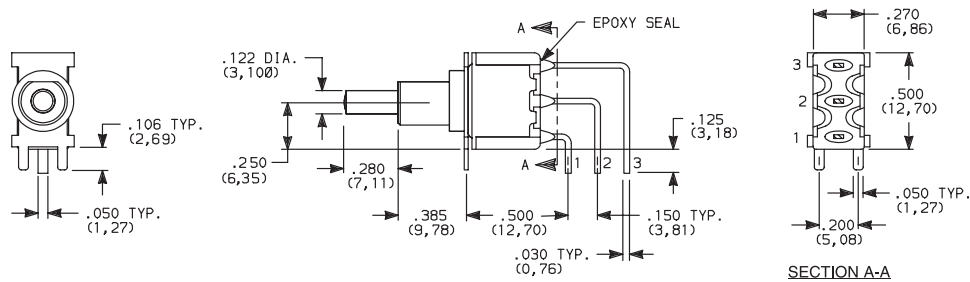


#### PC MOUNTING



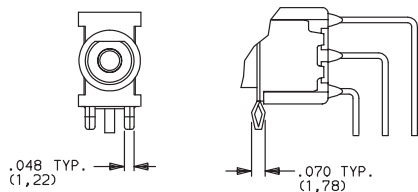
Not available with I seal.  
Terminal bend radii and lead-in manufacturing option.

### AV2 VERTICAL RIGHT ANGLE, PC THRU-HOLE, .150° PITCH

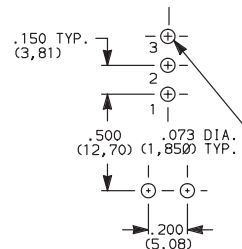


8161SH9AV2BE2  
SPDT

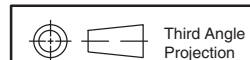
### AV3 VERTICAL RIGHT ANGLE, SNAP-IN, PC THRU-HOLE, .150° PITCH



#### PC MOUNTING



Not available with I seal.  
Terminal bend radii and lead-in manufacturing option.



Third Angle  
Projection



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

www.ck-components.com



# 8060 Series Alternate Action and Momentary Pushbutton Switches

## TERMINATIONS

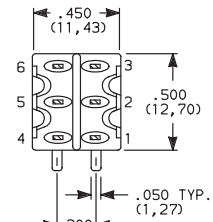
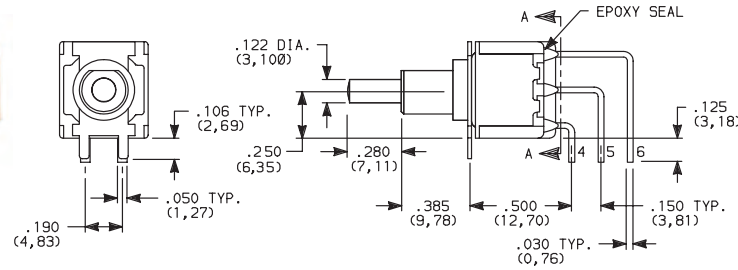


Pushbutton  
A

**AV2** VERTICAL RIGHT ANGLE, PC THRU-HOLE, .150" PITCH

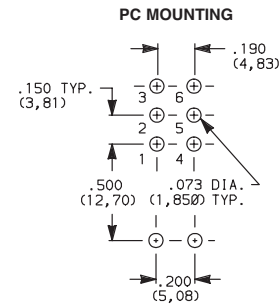
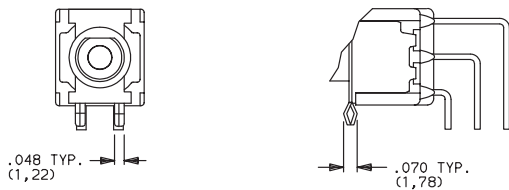


**8261SH9AV2BE2  
DPDT**



SECTION A-A

**AV3** VERTICAL RIGHT ANGLE, SNAP-IN, PC THRU-HOLE, .150" PITCH



PC MOUNTING

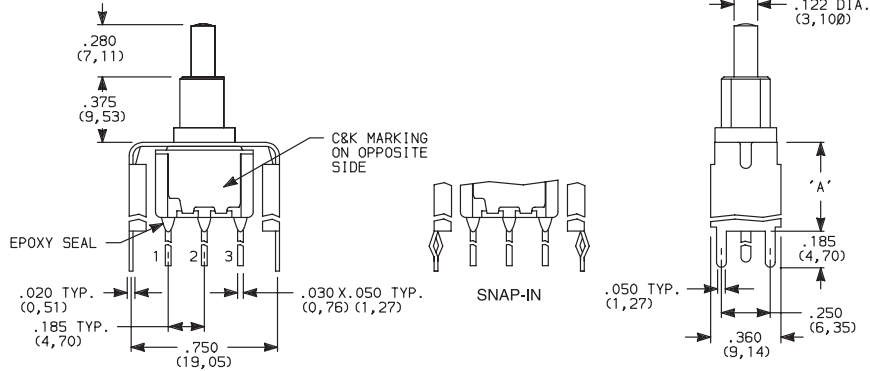
Not available with I seal.  
Terminal bend radii and lead-in manufacturing option.

**V6** VERTICAL MOUNT, V-BRACKET

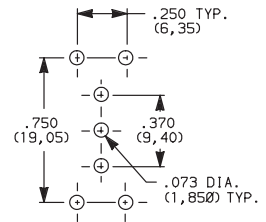
**V21** VERTICAL MOUNT, V-BRACKET, SNAP-IN



**8161SH9\_BE2  
SPDT**



PC MOUNTING



OPTION CODE	DIM 'A'
<b>V21</b>	.555 (14,10)
<b>V6</b>	.460 (11,68)

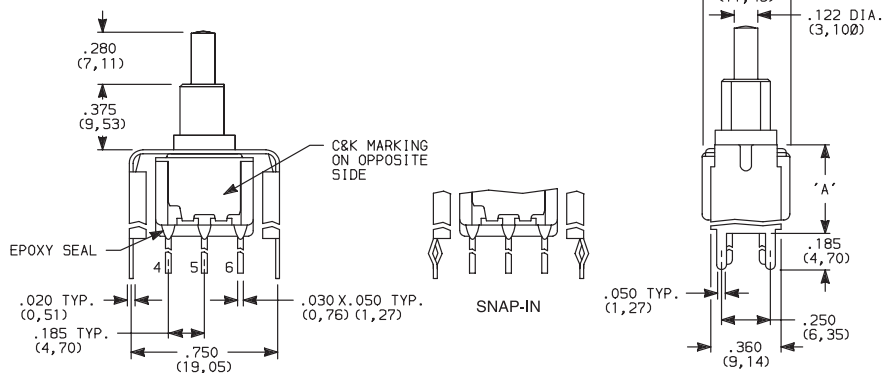
Not available with I seal.

**V6** VERTICAL MOUNT, V-BRACKET

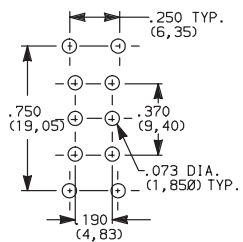
**V21** VERTICAL MOUNT, V-BRACKET, SNAP-IN



**8261SH9\_BE2  
DPDT**



PC MOUNTING



OPTION CODE	DIM 'A'
<b>V21</b>	.555 (14,10)
<b>V6</b>	.460 (11,68)

Not available with I seal.



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

# 8060 Series Alternate Action and Momentary Pushbutton Switches

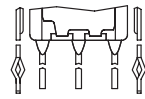
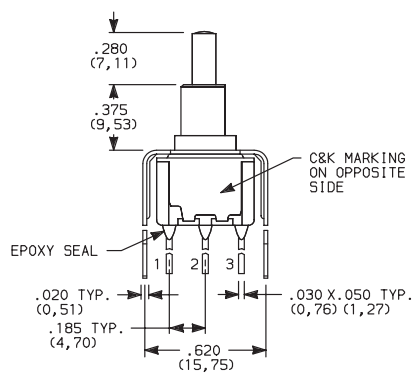


A  
Pushbutton

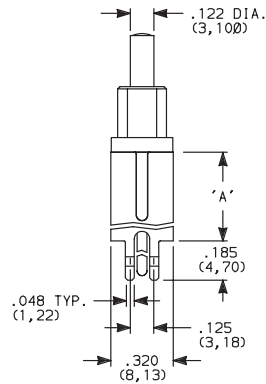
## TERMINATIONS

**V3, V4** VERTICAL MOUNT, V-BRACKET

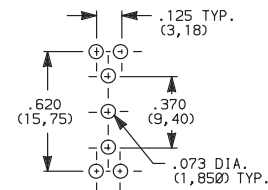
**V31** VERTICAL MOUNT, V-BRACKET, SNAP-IN



SNAP-IN



PC MOUNTING



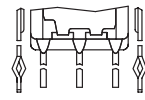
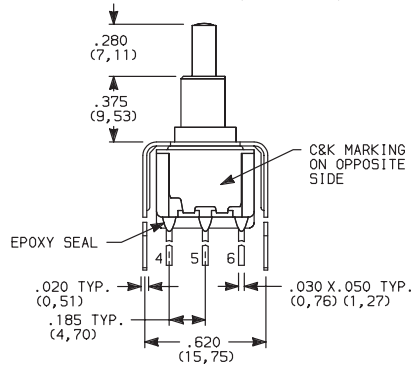
8161SH9\_BE2  
SPDT

OPTION CODE	DIM 'A'
V3, V31	.460 (11,68)
V4	.630 (16,00)

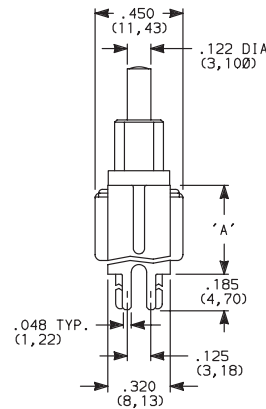
Not available with I seal.

**V3, V4** VERTICAL MOUNT, V-BRACKET

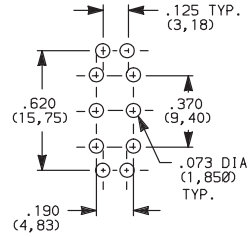
**V31** VERTICAL MOUNT, V-BRACKET, SNAP-IN



SNAP-IN



PC MOUNTING



8261SH9\_BE2  
DPDT

OPTION CODE	DIM 'A'
V3, V31	.460 (11,68)
V4	.630 (16,00)

Not available with I seal.

## CONTACT MATERIAL

OPTION CODE	CONTACT MATERIAL	TERMINAL PLATING	RATINGS	
B	GOLD 1	GOLD 1	LOW LEVEL/DRY CIRCUIT	0.4 VA MAX. @ 20 V AC OR DC MAX.
P		MATTE-TIN 6		
Q	SILVER 4,5	SILVER 5	POWER	6 AMPS @ 120 V AC OR 28 V DC; 3 AMPS @ 250 V AC.
S		MATTE-TIN 6		
G	GOLD OVER SILVER 2,3	GOLD 3	LOW LEVEL/DRY CIRCUIT OR POWER	0.4 VA MAX @ 20 V AC OR DC MAX. OR 6 AMPS @ 120 V AC OR 28 V DC; 3 AMPS @ 250 V AC.
R		MATTE-TIN 6		

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

- CONTACTS & TERMINALS: Copper alloy, with gold plate over nickel plate.
- END CONTACTS: Coin silver, with gold plate over nickel plate.
- CENTER CONTACTS & ALL TERMINALS: Copper alloy, with gold plate over nickel plate.
- END CONTACTS: Coin silver, silver plated.
- CENTER CONTACT & ALL TERMINALS: Copper alloy, silver plated.
- TERMINALS: Copper alloy, with matte-tin over nickel plate.

All models **CAUS** with all options when ordered with S, R, G, or Q contact material.

B contact material standard with all terminations except C, Z & Z3.

Q contact material standard with C, Z & Z3 terminations.

P, S & R contact materials not available with Z & Z3 terminations.

**NOTE:** Any models supplied with P, S, R, Q, B or G contact material are RoHS compliant.



Third Angle  
Projection



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

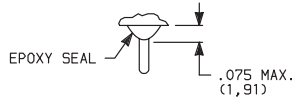


# 8060 Series Alternate Action and Momentary Pushbutton Switches

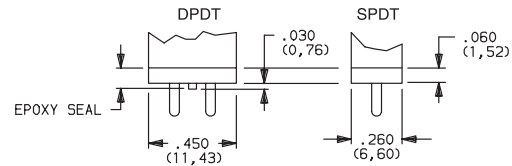


Pushbutton  
A

**E** EPOXY SEAL



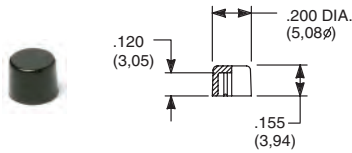
**I** EPOXY POTTED BASE



**NOTE:** Available with C, W, Z, Z3 terminations only.

## AVAILABLE HARDWARE

Cap

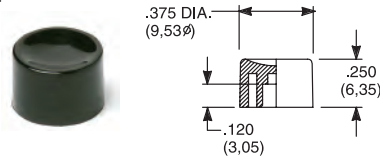


**PART NO.**

- 708901000 WHITE
- 708902000 BLACK
- 708903000 RED
- 708904000 ORANGE
- 708905000 YELLOW
- 708909000 GRAY

Material: Nylon  
Finish: Gloss

Cap

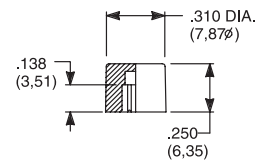


**PART NO.**

- 752701000 WHITE
- 752702000 BLACK
- 752703000 RED
- 752704000 ORANGE
- 752705000 YELLOW
- 752709000 GRAY

Material: Nylon  
Finish: Gloss

Cap

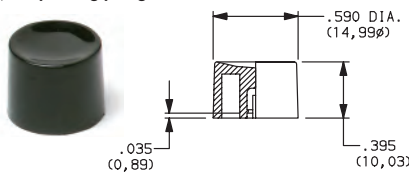


**PART NO.**

- 801801000 WHITE
- 801802000 BLACK
- 801803000 RED
- 801804000 ORANGE
- 801805000 YELLOW
- 801809000 GRAY

Material: Nylon  
Finish: Gloss

Cap, Snap-fitting plunger

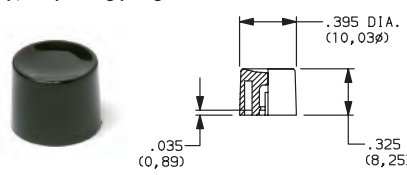


**PART NO.**

- 452D01000 WHITE
- 452D02000 BLACK
- 452D03000 RED
- 452D04000 ORANGE
- 452D05000 YELLOW
- 452D09000 GRAY

Material: Nylon  
Finish: Gloss

Cap, Snap-fitting plunger

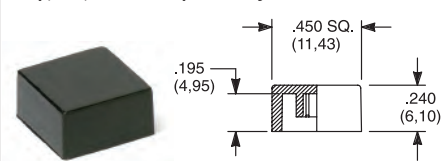


**PART NO.**

- 894101000 WHITE
- 894102000 BLACK
- 894103000 RED
- 894104000 ORANGE
- 894105000 YELLOW
- 894109000 GRAY

Material: Nylon  
Finish: Gloss

Cap, J80, J81 & J82 options only



**PART NO.**

- 484601000 WHITE
- 484602000 BLACK
- 484603000 RED
- 484604000 ORANGE
- 484605000 YELLOW
- 484609000 GRAY

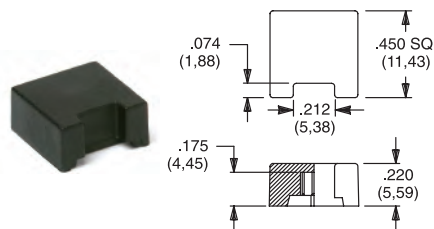
Material: Nylon  
Finish: Gloss

**PART NO.**

- 798201000 WHITE
- 798202263 BLACK
- 798203000 RED
- 798204000 ORANGE
- 798205000 YELLOW
- 798209000 GRAY

Material: Nylon  
Finish: Matte

Cap, J86 & J96 options only



**PART NO.**

- 459701000 WHITE
- 459702000 BLACK
- 459703000 RED
- 459704000 ORANGE
- 459705000 YELLOW
- 459709000 GRAY

Material: Nylon  
Finish: Gloss

**PART NO.**

- 476801000 WHITE
- 476802000 BLACK
- 476803000 RED
- 476804000 ORANGE
- 476805000 YELLOW
- 476809000 GRAY

Material: Nylon  
Finish: Matte

Frame



**PART NO.**

- 615602263 BLACK

Material: Nylon  
Finish: Matte

Frame



**PART NO.**

- 613302263 BLACK

Material: Nylon  
Finish: Matte

**NOTE:** Additional nuts, locking rings and lockwashers available separately, see section "Technical Data and Additional Hardware".  
Other cap & frame colors available, consult Customer Service Center.



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



# 8060 Series Alternate Action and Momentary Pushbutton Switches



A

Pushbutton

## AVAILABLE HARDWARE

Fits Z3 Termination female connector

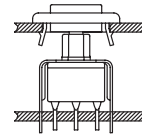
**PART NO.**  
**530100000**

Available in loose pieces.



Frames snap into panel opening and are independent from switch mounting. Accurate positioning of the PC mounted switch relative to the panel opening is necessary to provide proper clearance between actuator and frame. Available in two basic styles and four panel thicknesses .047-.125 in. Material: Nylon. Finish: Matte.

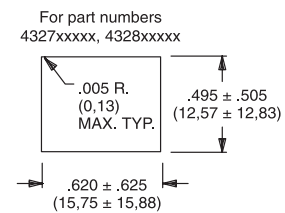
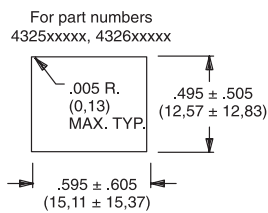
### TYPICAL APPLICATION



.047" (1,19) PANEL THK.    .062" (1,57) PANEL THK.    .090" (2,29) PANEL THK.    .125" (3,18) PANEL THK.

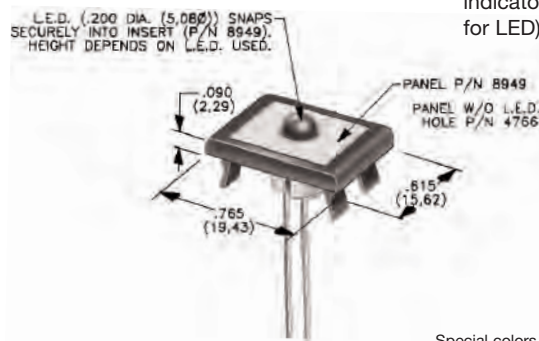
PART NO.	PART NO.	PART NO.	PART NO.
<b>432502263</b>	<b>432602263</b>	<b>432702263</b>	<b>432802263</b> BLACK

### PANEL MOUNTING



### Panel Inserts

Above frames (part nos. 432XXXXXX) are also available with insert which accepts LED for indicator light assembly. Order insert separately from frame. Blank insert panel (without hole for LED) also available. **LED not included.**



PANEL INSERT WITH HOLE FOR LED

**PART NO.**  
**894902000**

BLANK PANEL INSERT WITHOUT HOLE FOR LED

**PART NO.**  
**476602000** BLACK

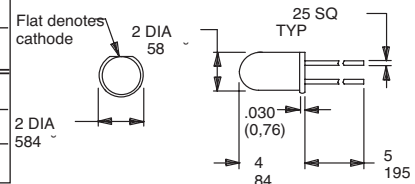
Special colors, custom markings available, consult Customer Service Center.

### LED INFORMATION

SWITCHES WITH LED SUPPLIED: J86 OPTION:

Rectangular LEDs are supplied on 8060 Series pushbutton switches with J86 option. These LEDs are factory installed and are not replaceable. The following specifications apply:

OPTION CODE	COLOR	TYP. INTENSITY	TYP. FORWARD VOLTAGE	TYP. FORWARD CURRENT	MAX RATINGS AT 25°C AMBIENT TEMPERATURE		
					FORWARD VOLTAGE	CONTINUOUS FORWARD CURRENT	POWER DISSIPATION
6	Green	1.0 mcd	2.1 V	20 mA	2.5 V	50 mA	125 mW
3	Red*	0.5 mcd		10 mA		30 mA	75 mW
5	Yellow	4.0 mcd		20 mA		50 mA	125 mW



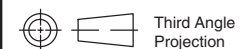
Suggested LED for J82 & J84 options  
Dimensions for reference only

**Process Information:** Soldering to LED leads must be completed within 5 seconds at 500°F (260°C) maximum.

**Caution:** Circuit elements must limit forward current of LED to 50mA max. continuous.

\* Extra-bright red LED available (typ. intensity 4.5 mcd), consult Customer Service Center.

LEDs are not supplied with J82 & J84 options. LED snaps into switch frame surrounding actuator and is wired externally.



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change





A

Pushbutton

# 8500 Series Subminiature Pushbutton Switches



## Features/Benefits

- Pre-travel or over-travel models available
- Ratings up to 3 AMPS
- Reliable contact design
- RoHS compliant

## Typical Applications

- Detection
- Telecommunications and networking equipment
- Computers and peripherals



Models Available

## Specifications

CONTACT RATING: Q contact material (853X Models): 1 AMP @ 120 V AC or 28 V DC; (855X Models): 3 AMPS @ 120 V AC or 28 V DC. See page A-65 for additional ratings.

ELECTRICAL LIFE:  
853X MODELS: 250,000 actuations at full load.  
855X MODELS: 10,000 actuations at full load.

CONTACT RESISTANCE: Below 30 mΩ typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

INSULATION RESISTANCE: 10<sup>9</sup>Ω min.

DIELECTRIC STRENGTH: 1,000 Vrms min. @ sea level.

OPERATING TEMPERATURE: -30°C to 65°C.

TORQUE SPECS: T, T1 15/32" bushings - 50 in. lbs max.  
All other 1/4 -40 bushing types 12 in. lbs max.

## Materials

CASE: Glass filled phenolic or diallyl phthalate (DAP) (UL 94V-0).

PLUNGER: Phenolic or glass filled polyester, black standard(UL94V-0).

CAP & FRAME: Nylon, black, standard.

BUSHING: Brass, nickel plated.

CONTACTS: Q contact material: Coin silver, silver plated. See page A-65 for additional contact materials.

TERMINALS: Q contact material: Copper alloy, silver plated. See page A-65 for additional contact materials.

TERMINAL SEAL: Epoxy.

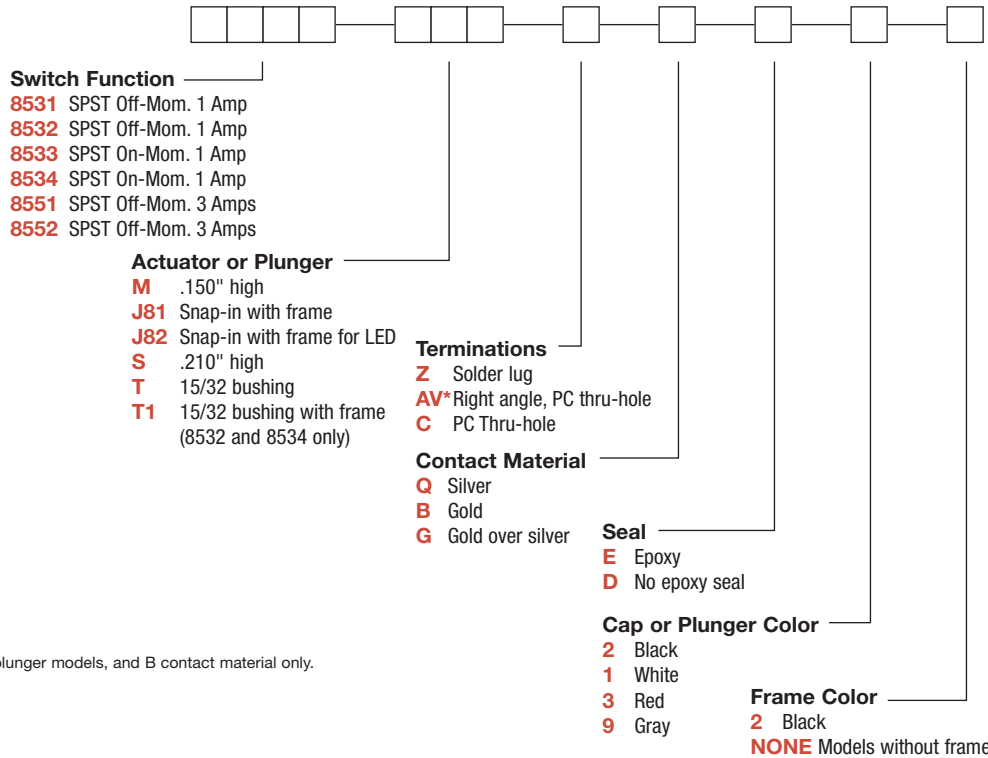
HARDWARE: Nut: Brass, nickel plated; Lockwasher: Steel, bright nickel plated.

**NOTE:** Any models supplied with Q, B or G contact material are RoHS compliant.

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages A-63 thru A-66. For additional options not shown in catalog, consult Customer Service Center. All models have epoxy terminal seal and are compatible with all "bottom-wash" PCB cleaning methods.



\* Available with M or S plunger models, and B contact material only.



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

# 8500 Series Subminiature Pushbutton Switches



A

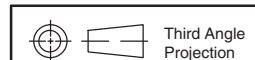
Pushbutton

## SWITCH FUNCTION

NO. POLES	MODEL NO.	RATING	SWITCH FUNCTION		TOTAL TRAVEL	ACTUATION FORCE	SCHEMATIC
			POS. 1	POS. 2			
SP	<b>8531</b>	1 AMP	OFF	MOM.	.095 (2,41) TYP. with overtravel .042 (1,07) TYP.	7.7 oz (220g) TYP.	N.O. with overtravel
	<b>8551</b>	3 AMPS					
<b>SPST</b> <p>Part number shown: 8531MZQE2</p>							
SP	<b>8532</b>	1 AMP	OFF	MOM.	.050 (1,27) TYP.	6 oz (170g) TYP.	N.O.
	<b>8552</b>	3 AMPS					
<b>SPST</b> <p>Part number shown: 8532MZQE2</p>							
SP	<b>8533</b>	1 AMP	ON	MOM.	.080 (2,03) TYP. with pretravel .057 (1,45) TYP.	11.5 oz (456 g) TYP.	N.C. with pretravel
	<b>8534</b>	1 AMP					
<b>SPST</b> <p>Part number shown: 8533MZQE2</p>							

MOM. = Momentary

All models with all options when ordered with G or Q contact material.



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

www.ck-components.com



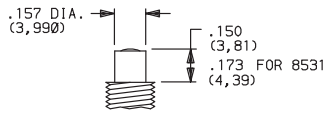
# 8500 Series Subminiature Pushbutton Switches

Pushbutton  
A

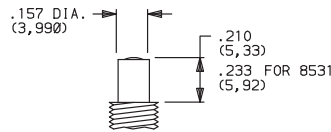
## PLUNGER



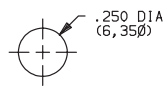
**M** .150" HIGH PLUNGER



**S** .210" HIGH PLUNGER



PANEL MOUNTING



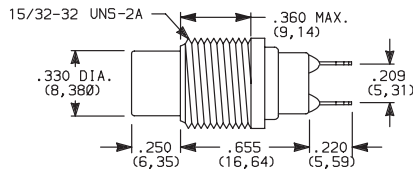
OPTION CODE	PLUNGER COLOR
<b>2</b>	BLACK
<b>3</b>	RED

**NOTE:** One mounting nut and lockwasher supplied with all actuators (except T actuator: two nuts supplied).

## ACTUATOR

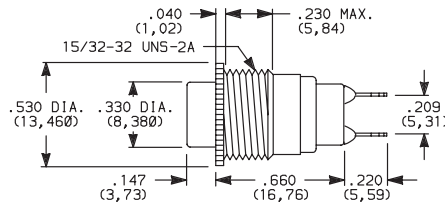


**T** 15/32 BUSHING



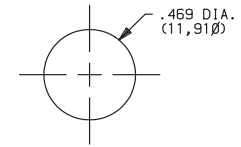
**NOTE:** No frame color choice required.

**T1** 15/32 BUSHING WITH FRAME



**NOTE:** No frame color choice required.  
Available with 8532 and 8534 models only.

PANEL MOUNTING



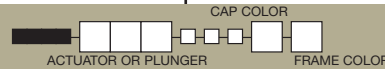
OPTION CODE	CAP COLOR
<b>2</b>	BLACK
<b>1</b>	WHITE
<b>3</b>	RED
<b>9</b>	GRAY

Cap Finish: gloss. Other colors available, consult Customer Service Center.

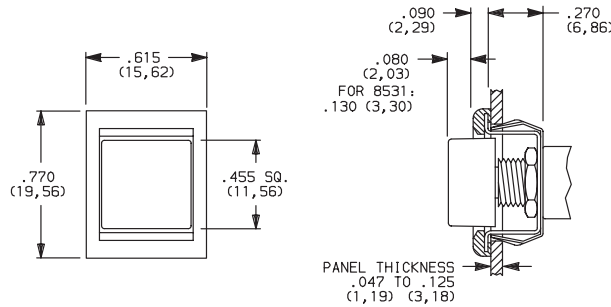
One mounting nut and lockwasher supplied with all actuators (except T actuator: two nuts supplied).

**NOTE:** Caps available for plunger options, see page A-65.

## ACTUATOR—SNAP-IN FRONT MOUNT



**J81** SNAP-IN WITH FRAME



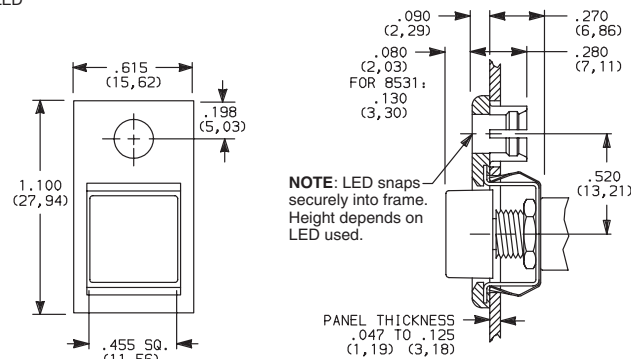
OPTION CODE	CAP AND FRAME COLOR
<b>2</b>	BLACK

Cap and Frame Finish: matte. Other colors available, consult Customer Service Center.

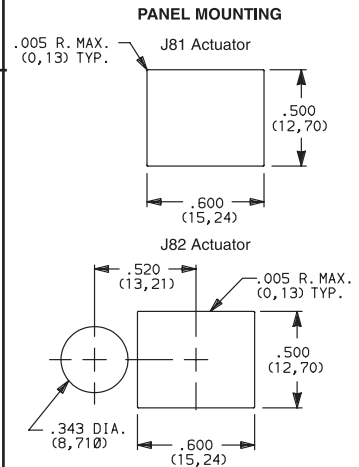
One mounting nut and lockwasher supplied with all actuators.

**NOTE:** Caps & frames available separately, see pages A-65 and A-66.

**J82** SNAP-IN WITH FRAME FOR LED



**NOTE:** LED snaps securely into frame. Height depends on LED used.



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change





# 8500 Series Subminiature Pushbutton Switches

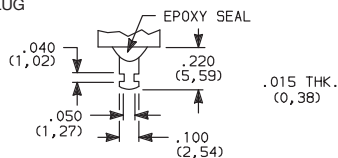


A

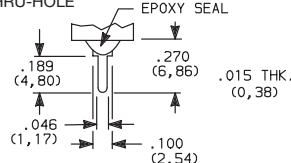
Pushbutton

## TERMINATIONS

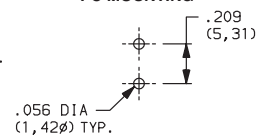
### Z SOLDER LUG



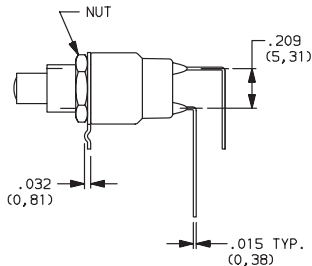
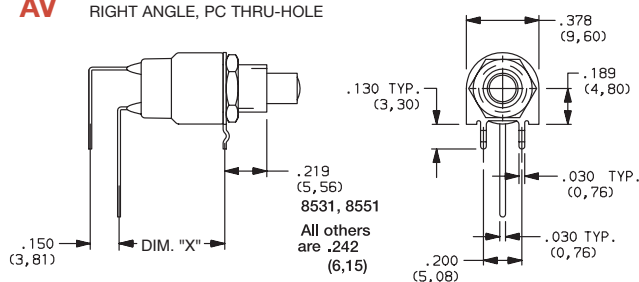
### C PC THRU-HOLE



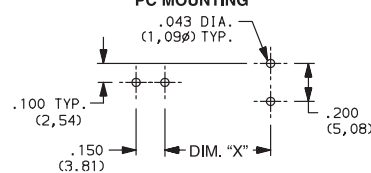
### PC MOUNTING



### AV RIGHT ANGLE, PC THRU-HOLE



### PC MOUNTING



Available with

MODEL NO.	DIM "X"
8531, 8533	0.550
8532, 8534	0.438

NOTE: Available with M or S plunger models, and B contact material only.

## CONTACT MATERIAL

OPTION CODE	RoHS COMPLIANT *	RoHS COMPATIBLE *	TERMINAL PLATING	CONTACT MATERIAL	RATINGS	
B	YES	YES	GOLD <sup>1</sup>	GOLD	LOW LEVEL/DRY CIRCUIT	0.4 VA MAX. @ 20 V AC OR DC MAX.
Q	YES	YES	SILVER <sup>4</sup>	SILVER <sup>5</sup>	POWER	853X MODELS: 1 AMP @ 120 V AC OR 28 V DC. 855X MODELS: 3 AMPS @ 120 V AC OR 28 V DC.
G	YES	YES	GOLD OVER SILVER <sup>2</sup>	GOLD <sup>3</sup>	LOW LEVEL/DRY CIRCUIT OR POWER	0.4 V MAX @ 20 V AC OR DC MAX. OR 853X MODELS: 1 AMP @ 120 V AC OR 28 V DC. 855X MODELS: 3 AMPS @ 120 V AC OR 28 V DC.

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

<sup>1</sup> CONTACTS & TERMINALS: Copper alloy, with gold plate over nickel plate.

<sup>2</sup> CONTACTS: Coin silver, with gold plate over nickel plate.

<sup>3</sup> TERMINALS: Copper alloy, with gold plate over nickel plate.

<sup>4</sup> CONTACTS: Coin silver, silver plated.

<sup>5</sup> TERMINALS: Copper alloy, silver plated.

NOTE: Any models supplied with Q, B or G contact material are RoHS compliant.

All models with all options when ordered with G or Q contact material.

Q contact material standard with C, Z terminations.

8551 & 8552 available with Q contact material only.

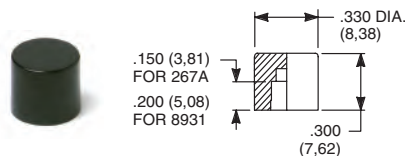
## SEAL

### E EPOXY SEAL



## REPLACEMENT HARDWARE

### Cap for 0.157" dia. plungers



#### PART NO.

267A01000 WHITE  
267A02000 BLACK  
267A03000 RED  
267A09000 GRAY

#### PART NO.

893101000 WHITE  
893102000 BLACK  
893103000 RED  
893109000 GRAY

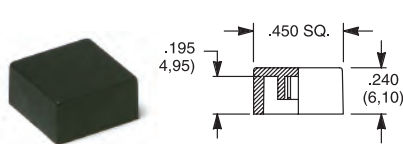
85X2T, 8534T models only

Material: Nylon  
Finish: Gloss

85X1T, 8532T1, 8533T, 8534T1 models only

Material: Nylon  
Finish: Gloss

### Cap, J80, J81 & J 82 options only



#### PART NO.

448901000 WHITE  
448902000 BLACK  
448903000 RED  
448909000 GRAY

Material: Nylon  
Finish: Gloss or matte

Other colors available, consult Customer Service Center.

### Frame



#### PART NO.

613302263 BLACK

Material: Nylon  
Finish: Matte



Third Angle Projection



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



# 8500 Series Subminiature Pushbutton Switches

## AVAILABLE HARDWARE

Pushbutton  
A

### Frame

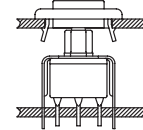


**PART NO.**  
**615602263** BLACK  
Material: Nylon  
Finish: Matte

**NOTE:** Additional nuts, locking rings and lockwashers available separately, see section "Technical Data and Additional Hardware".  
Other colors available, consult Customer Service Center.

Frames snap into panel opening and are independent from switch mounting. Accurate positioning of the PC mounted switch relative to the panel opening is necessary to provide proper clearance between actuator and frame. Available in two basic styles and four panel thicknesses .047-.125 in. Material: Nylon. Finish: Matte.

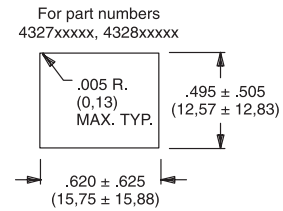
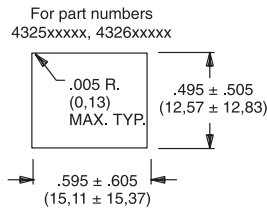
### TYPICAL APPLICATION



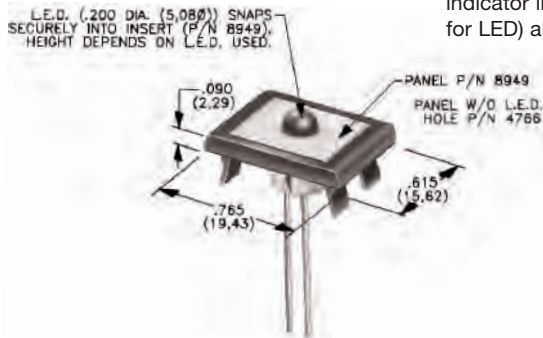
.047" (1,19) PANEL THK.    .062" (1,57) PANEL THK.    .090" (2,29) PANEL THK.    .125" (3,18) PANEL THK.

<b>PART NO.</b> <b>432502263</b>	<b>PART NO.</b> <b>432602263</b>	<b>PART NO.</b> <b>432702263</b>	<b>PART NO.</b> <b>432802263</b> BLACK
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### PANEL MOUNTING



### Panel Inserts



Above frames (part nos. 432XXXXXX) are also available with insert which accepts LED for indicator light assembly. Order insert separately from frame. Blank insert panel (without hole for LED) also available. **LED not included.**

PANEL INSERT WITH HOLE FOR LED

**PART NO.**  
**894902000**

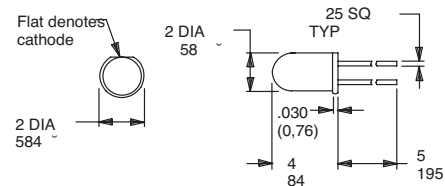
BLANK PANEL INSERT WITHOUT HOLE FOR LED

**PART NO.**  
**476602000** BLACK

Special colors, custom markings available, consult Customer Service Center.

### LED INFORMATION

**Process Information:** Soldering to LED leads must be completed within 5 seconds at 500°F (260°C) maximum. LEDs are not supplied with J82 option. LED snaps into switch frame surrounding actuator and is wired externally.



Suggested LED for J82 option  
Dimensions for reference only



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

# KM Series Subminiature Pushbutton Switches



A

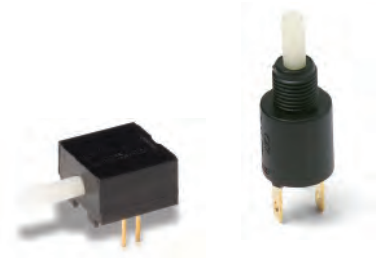
Pushbutton

## Features/Benefits

- **Reliable contact design**
- **Available with pretravel and overtravel**
- **RoHS compliant**

## Typical Applications

- **Alarm systems**
- **Computers**
- **Detector switch application**



Models Available

## Specifications

CONTACT RATING: Q contact material (KM11, KM12 Models): 0.25 AMPS @ 125 V AC or DC (UL); (KM33 Model): 1 AMP @ 125 V AC or 28 V DC. See page A-69 for additional ratings.

ELECTRICAL LIFE: 10,000 actuations min. at full load.

CONTACT RESISTANCE: Below 30 mΩ typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

INSULATION RESISTANCE: 10<sup>9</sup>Ω min.

DIELECTRIC STRENGTH: 1,000 Vrms min. @ sea level.

OPERATING TEMPERATURE: -30°C to 85°C.

CAP INSTALLATION FORCE: 10 lbs. max. permissible.

**NOTE:** Any models supplied with Q or B contact material are RoHS compliant.

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## Materials

HOUSING & BUSHING: 6/6 nylon (UL94V-2), black.

ACTUATOR: 6/6 nylon (UL 94V-2), natural. Internal o-ring seal, available on KM11 & KM33 models.

MOVABLE CONTACT: B contact material: Bronze or copper, with gold plate over nickel plate. See page A-69 for additional contact materials.

STATIONARY CONTACTS & TERMINALS: B contact material: Copper, with gold plate over nickel plate. See page A-69 for additional contact materials.

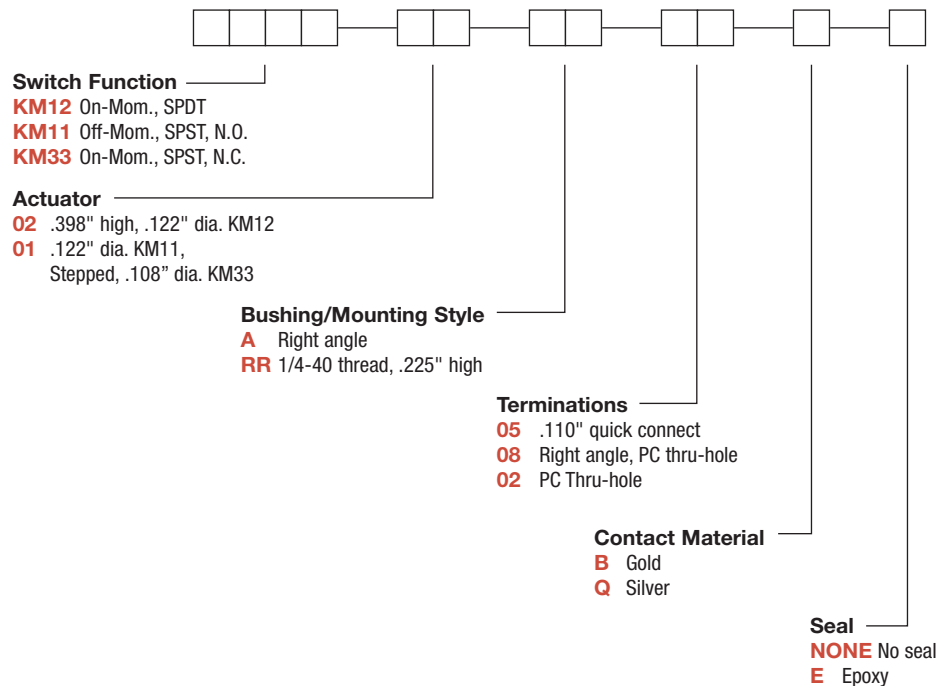
RETURN SPRING: Music wire, phosphor coated.

MOUNTING NUT: Brass, nickel plated.

TERMINAL SEAL: Epoxy.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages A-68 and A-70. For additional options not shown in catalog, consult Customer Service Center.



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



# KM Series Subminiature Pushbutton Switches

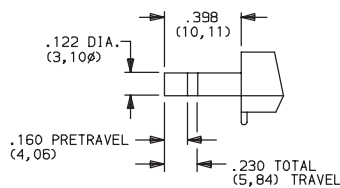
## SWITCH FUNCTION

Pushbutton  
A

NO. POLES	MODEL NO.	SWITCH FUNCTION		CONNECTED TERMINALS		SCHEMATIC
		POS. 1	POS. 2	POS. 1	POS. 2	
SP	<b>KM11</b>	OFF	MOM.	OPEN	2-1	SPST N.O.
	<b>KM33</b>	ON	MOM.	2-1	OPEN	SPST N.C.
<b>SPST</b>						
SP	<b>KM12</b>	ON	MOM.	2-1	4-3	SPDT
<b>SPDT</b>						

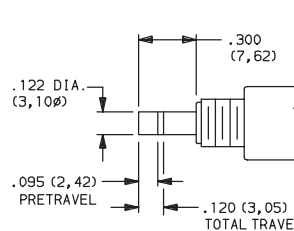
## ACTUATOR

**02** .398" HIGH, .122" DIA.

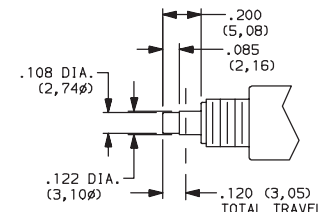


KM12 models only.

**01** .122" DIA.

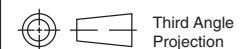


KM11 models only.



KM33 models only.

**NOTE:** Caps available for plunger options, see page A-70.



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



# KM Series Subminiature Pushbutton Switches

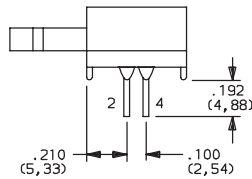


A

Pushbutton

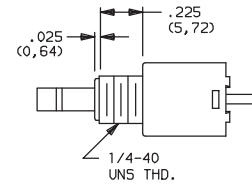
## BUSHING/ MOUNTING STYLE

**A** RIGHT ANGLE



KM12 models only.

**RR** 1/4-40 THREAD, .225" HIGH



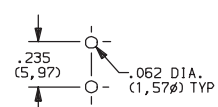
KM11 & KM33 models only.

### PANEL MOUNTING

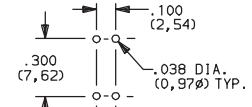


KM11 & KM33 models.

### PC MOUNTING



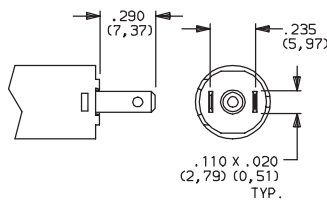
KM11 models only.



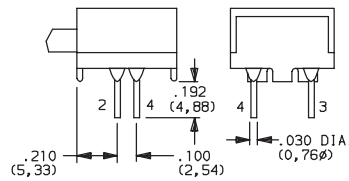
KM12 models only.

## TERMINATIONS

**05** .110" QUICK CONNECT

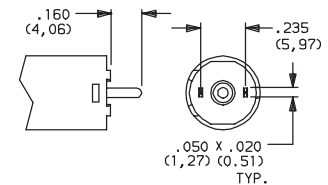


**08** RIGHT ANGLE, PC THRU-HOLE



KM12 models only.

**02** PC THRU-HOLE



KM11 models only.

## CONTACT MATERIAL

OPTION CODE	RoHS COMPLIANT *	RoHS COMPATIBLE *	CONTACT AND TERMINAL MATERIAL	RATINGS	
<b>B</b>	YES	YES	GOLD <sup>1</sup>	LOW LEVEL/DRY CIRCUIT	0.4 VA MAX. @ 20 V AC OR DC MAX.
<b>Q</b>	YES	YES	SILVER <sup>2</sup>	POWER	0.25 AMPS @ 125 V AC OR DC (KM11, KM12) (UL) 1 AMP @ 125 V AC OR 28 V DC (KM33).


\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

<sup>1</sup> STATIONARY CONTACTS & TERMINALS: Copper, with gold plate over nickel plate.  
MOVABLE CONTACT: Phosphor bronze or beryllium copper, with gold plate over nickel plate.

<sup>2</sup> STATIONARY CONTACTS & TERMINALS: Copper, silver plated (standard with all termination options).  
MOVABLE CONTACT: Phosphor bronze or beryllium copper, silver plated.

<sup>3</sup> STATIONARY CONTACTS & TERMINALS: Copper, with gold plate over nickel plate over silver plate.  
MOVABLE CONTACT: Phosphor bronze or beryllium copper, with gold plate over nickel plate over silver plate.

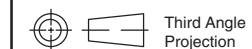
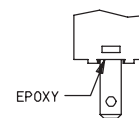
**NOTE:** Any models supplied with Q or B contact material are RoHS compliant.

KM11, KM12 models  when ordered with 'Q' contact material.

## SEAL

**NONE** NO SEAL

**E** EPOXY SEAL



Third Angle  
Projection

**C&K**

Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

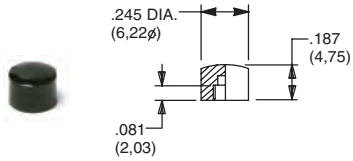


# KM Series Subminiature Pushbutton Switches

Pushbutton  
A

## AVAILABLE HARDWARE

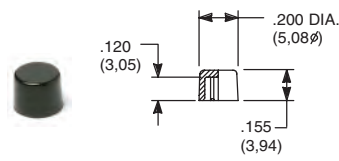
Cap, KM33 models



**PART NO.**  
**785101000** WHITE  
**785102000** BLACK  
**785103000** RED

Material: Nylon  
 Finish: Gloss

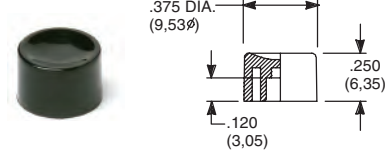
Cap, KM11 and KM12 models



**PART NO.**  
**708901000** WHITE  
**708902000** BLACK  
**708903000** RED

Material: Nylon  
 Finish: Gloss

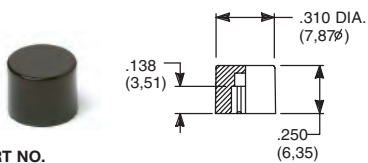
Cap, KM11 and KM12 models



**PART NO.**  
**752701000** WHITE  
**752702000** BLACK  
**752703000** RED

Material: Nylon  
 Finish: Gloss

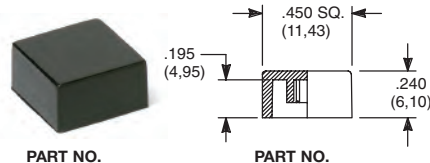
Cap, KM11 and KM12 models



**PART NO.**  
**801801000** WHITE  
**801802000** BLACK  
**801803000** RED

Material: Nylon  
 Finish: Gloss

Cap, KM11 models



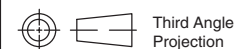
**PART NO.**  
**484601000** WHITE  
**484602000** BLACK  
**484603000** RED

**PART NO.**  
**798201000** WHITE  
**798202263** BLACK  
**798203000** RED

Material: Nylon  
 Finish: Gloss

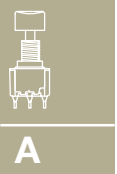
Material: Nylon  
 Finish: Matte

**NOTE:** Other cap colors available, consult Customer Service Center.



Dimensions are shown: Inches (mm)  
 Specifications and dimensions subject to change

# 8600 Series Microminiature Pushbutton Switches



Pushbutton

## Features/Benefits

- Available with overtravel
- Normally closed models available
- Microminiature size ideal for applications where space is limited
- RoHS compliant

## Typical Applications

- Detection
- Telecommunications and networking equipment
- Computers and peripherals



Models Available

## Specifications

**CONTACT RATING:** Q contact material (8631, 8632 Models): 500 mA @ 120 V AC or 28 V DC; 250 mA @ 250 V AC; (8633 Model): 250 mA @ 120 V AC or 28 V DC; 125 mA @ 250 V AC. See page A-73 for additional ratings.

**ELECTRICAL LIFE:**  
8631 and 8633 MODELS: 250,000 actuations at full load.  
8632 MODEL: 100,000 actuations at full load.

**CONTACT RESISTANCE:** Below 30 mΩ typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

**INSULATION RESISTANCE:** 109 Ω min.

**DIELECTRIC STRENGTH:** 500 Vrms min. @ sea level.

**OPERATING TEMPERATURE:** -30°C to 65°C.

**SOLDERABILITY:** Per MIL-STD-202F method 208D, or EIA RS-186E method 9.

## Materials

**CASE:** Glass filled phenolic or diallyl phthalate (DAP), (UL94V-0).

**PLUNGER:** Glass filled nylon (UL94V-0), black standard.

**BUSHING:** Brass, nickel plated.

**CONTACTS:** Q contact material: Coin silver, silver plated. See page A-73 for additional contact materials.

**TERMINALS:**  
8631, 8632 MODELS: Copper alloy, silver plated.  
8633 MODEL: Q contact material: Coin silver. See page A-73 for additional contact materials.

**TERMINAL SEAL:**  
8633 MODEL: Epoxy.  
8631, 8632 MODELS: Terminals insert molded.

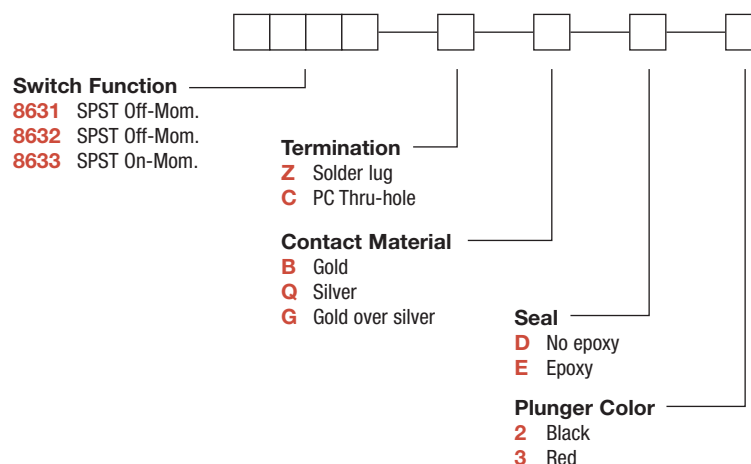
**HARDWARE:** Nut: Brass, nickel plated.

**NOTE:** Any models supplied with Q, B or G contact material are RoHS compliant.

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages A-72 and A-73. For additional options not shown in catalog, consult Customer Service Center.



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



# 8600 Series Microminiature Pushbutton Switches

Pushbutton  
A

## SWITCH FUNCTION

NO. POLES	MODEL NO.	SWITCH FUNCTION		TOTAL TRAVEL	ACTUATION FORCE	SCHEMATIC
		POS. 1	POS. 2			
SP	<b>8631</b>	OFF	MOM.	.040 (1,02) TYP.	5 oz (140g) TYP.	N.O.
<b>SPST</b> <p>Part number shown: 8631ZQD2</p> <p>Terminals Insert Molded</p>						
SP	<b>8632</b>	OFF	MOM.	.106 (2,69) TYP. with overtravel .024 (0,61) TYP.	6.25 oz (177g) TYP.	N.O. with overtravel
<b>SPST</b> <p>Part number shown: 8632ZQD2</p> <p>Terminals Insert Molded</p>						
SP	<b>8633</b>	ON	MOM.	.048 (1,22) TYP.	5 oz (140g) TYP.	N.C.
<b>SPST</b> <p>Part number shown: 8633ZQE2</p>						

MOM. = Momentary

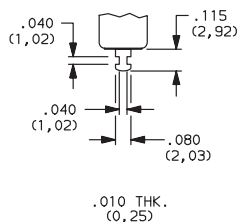
**NOTE:** Caps available for plunger options, see page A-73.

## TERMINATIONS

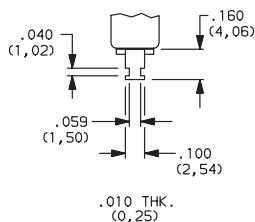
**Z** SOLDER LUG

**C** PC THRU-HOLE

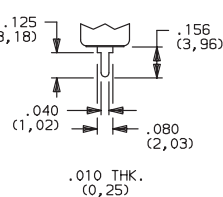
8631, 8632 models only.



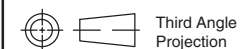
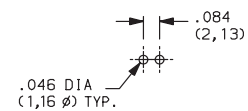
8633 models only.



8631, 8632 models only.



**PC MOUNTING**



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change





# 8600 Series Microminiature Pushbutton Switches



A  
Pushbutton

## CONTACT MATERIAL

OPTION CODE	RoHS COMPLIANT *	RoHS COMPATIBLE *	CONTACT MATERIAL	TERMINAL PLATING	RATINGS	
<b>B</b>	YES	YES	GOLD 1	GOLD 1	LOW LEVEL/ DRY CIRCUIT	0.4 VA MAX. @ 20 V AC OR DC MAX.
<b>Q</b>	YES	YES	SILVER 4	SILVER 5	POWER	8631, 8632 MODELS: 500 mA @ 120 V AC OR 28 V DC; 250 mA @ 250 V AC. 8633 MODELS: 250 mA @ 120 V AC OR 28 V DC; 125 mA @ 250 V AC.
<b>G</b>	YES	YES	GOLD OVER SILVER 4	GOLD 3	LOW LEVEL/DRY CIRCUIT OR POWER	0.4 VA MAX @ 20 V AC OR DC MAX. OR 8631, 8632 MODELS: 500 mA @ 120 V AC OR 28 V DC; 250 mA @ 250 V AC. 8633 MODELS: 250 mA @ 120 V AC OR 28 V DC; 125 mA @ 250 V AC.

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

- 1 CONTACTS & TERMINALS: Copper alloy, with gold plate over nickel plate.
- 2 CONTACTS: Coin silver, with gold plate over nickel plate.
- 3 TERMINALS: Copper alloy, with gold plate over nickel plate.  
8633 model only: Coin silver, with gold plate over nickel plate.
- 4 CONTACTS: Coin silver, silver plated.
- 5 TERMINALS: Copper alloy, silver plated. 8633 model only: coin silver.

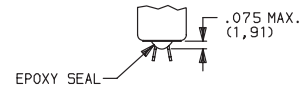
**NOTE:** Any models supplied with Q, B or G contact material are RoHS compliant.

8631, 8632 models with all options when ordered with G or Q contact material.  
Q contact material standard with C, Z terminations.

## SEAL

**D** NO EPOXY SEAL

**E** EPOXY SEAL



Not available on 8633 model.  
Standard on 8631, 8632 models.

Not available on 8631, 8632 models.  
Standard on 8633 model only.

## PLUNGER COLOR

OPTION CODE	COLOR
<b>2</b>	BLACK
<b>3</b>	RED

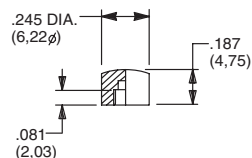
## AVAILABLE HARDWARE

Cap

**PART NO.**

**785101000** WHITE  
**785102000** BLACK  
**785103000** RED

Material: Nylon  
Finish: Gloss



**NOTE:** Other cap colors available, consult Customer Service Center.



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

**C&K**

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A

Pushbutton

# 8700 Series Overtravel Pushbutton Switches



### Features/Benefits

- **Extended pre-travel or over-travel**
- **Heavy-duty brass plunger**
- **Long electrical life – 100K cycles**
- **RoHS compliant**

### Typical Applications

- **Telecommunications**
- **High end Instrumentation**
- **Medical & test equipment**
- **Detection**

### Specifications

CONTACT RATING: Q contact material: 1 AMP @ 120 V AC or 28 V DC. See page A-76 for additional ratings.  
 ELECTRICAL LIFE: 100,000 actuations at full load.  
 CONTACT RESISTANCE: Below 30 mΩ typ. Initial @ 2-4 V DC, 100 mA.  
 INSULATION RESISTANCE: 10<sup>3</sup>Ω min.  
 DIELECTRIC STRENGTH: 1,000 Vrms min. @ sea level.  
 OPERATING TEMPERATURE: -30°C to 65°C.

**NOTE:** Any models supplied with Q, or B contact material are RoHS compliant.

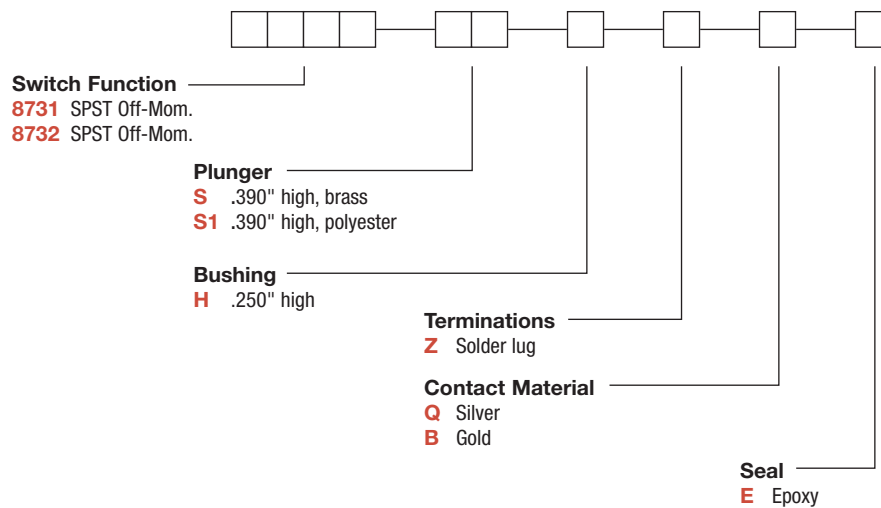
**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

### Materials

CASE: Diallyl phthalate (DAP) (UL 94V-0).  
 PLUNGER:  
 8731 – .390" brass, nickel plated.  
 8732 – .390" PBT polyester, black.  
 BUSHING: brass, nickel plated.  
 CONTACTS: Q contact material: Coin silver, silver plated. See page A-76 for additional contact materials.  
 TERMINALS: Q contact material: Copper alloy, silver plated. See page A-76 for additional contact materials.  
 TERMINAL SEAL: Epoxy.  
 HARDWARE: Nut: Brass, nickel plated; lockwasher: Steel, bright nickel plate. One mounting nut & lockwasher supplied with all switches.

### Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages A-75 and A-76. For additional options not shown in catalog, consult Customer Service Center. All models have epoxy terminal seal and are compatible with all "bottom-wash" PCB cleaning methods.



Dimensions are shown: Inches (mm)  
 Specifications and dimensions subject to change

# 8700 Series Overtravel Pushbutton Switches



A

Pushbutton

## SWITCH FUNCTION

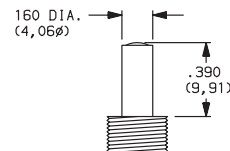
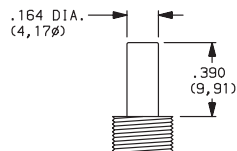
NO. POLES	MODEL NO.	SWITCH FUNCTION		TOTAL TRAVEL	ACTUATION FORCE	SCHEMATIC
		POS. 1	POS. 2			
SP	<b>8731</b>	OFF	MOM.	.390 (9,91) TYP. with overtravel .311 TYP.	4.7 oz TYP.	N.O. with overtravel SPST
<b>SPST</b> <p>Part number shown: 8731SHZQE</p>						
SP	<b>8732</b>	OFF	MOM.	.390 (9,91) TYP. with overtravel .350 TYP.	2.2 oz TYP.	N.O. with overtravel SPST
<b>SPST</b> <p>Part number shown: 8732S1HZQE</p>						

MOM. = Momentary

## PLUNGER

**S** .390" HIGH, BRASS

**S1** .390" HIGH, PBT POLYESTER

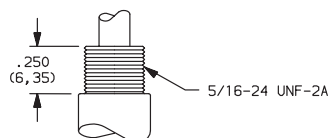


Available with 8731 model only.

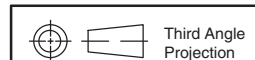
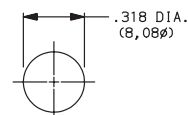
Available with 8732 model only.

## BUSHING

**H** .250" HIGH



### PANEL MOUNTING



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change





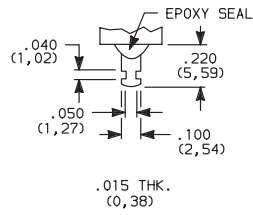
# 8700 Series Overtravel Pushbutton Switches

A

Pushbutton

## TERMINATIONS

**Z** SOLDER LUG



## CONTACT MATERIAL

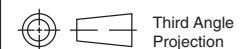
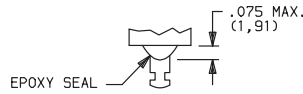
OPTION CODE	RoHS COMPLIANT *	RoHS COMPATIBLE *	CONTACT MATERIAL	TERMINAL PLATING	RATINGS	
					POWER	
<b>Q</b>	YES	YES	SILVER	SILVER		1 AMP @ 125 V AC OR 28 V DC.
<b>B</b>	YES	YES	GOLD	GOLD	LOW LEVEL/DRY CIRCUIT	0.4 VA MAX. @ 20 V AC OR DC MAX.

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definition and specifications.

**NOTE:** Any models supplied with Q, or B contact material are RoHS compliant.

## SEAL

**E** EPOXY SEAL



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

# GP Series Sealed Ultraminiature Pushbutton Switches

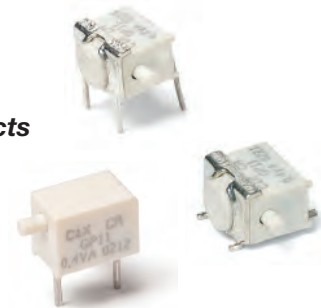


## Features/Benefits

- Ultraminiature design saves space
- Process compatible, withstands most soldering and washing processes
- Thru-hole and surface mount models available
- Sealed construction—internal o-ring and epoxy base
- RoHS compliant

## Typical Applications

- Telecommunications and network equipment
- Computers and peripheral products
- Instrumentation
- Medical Applications



## Specifications

CONTACT RATING: 0.4 VA max. @ 20 V AC or DC max.

MECHANICAL & ELECTRICAL LIFE: 40,000 make-and-break cycles at full load.

CONTACT RESISTANCE: Below 50 mΩ typ. initial @ 2-4 V DC, 100 mA.

INSULATION RESISTANCE:  $10^9 \Omega$  min.

DIELECTRIC STRENGTH: 500 Vrms min. @ sea level.

OPERATING TEMPERATURE: -40°C to 85°C.

SOLDERABILITY: Per MIL-STD-202F method 208D, or EIA RS-186E method 9 (1 hour steam aging).

DEGREE OF PROTECTION: IP57; Protection against harmful dust deposit, full-scale voltage protection, temporary immersion.

PACKAGING: Surface mount switches standard in anti-static tape and reel packaging per EIA 481-3, see page A-80 for drawings and reel information. Thru-Hole parts are shipped in trays.

All models are RoHS compliant and compliant.

## Materials

HOUSING & BASE: Glass filled nylon 4/6, flame retardant, heat stabilized (UL 94V-0).

ACTUATOR: Glass filled nylon 4/6, flame retardant (UL 94V-0) with standard internal o-ring seal.

SWITCH SUPPORT: Brass, tin plated.

MOVABLE CONTACT: Copper alloy, with gold plate over nickel plate.

STATIONARY CONTACTS Copper alloy, with gold plate over nickel plate.

TERMINALS: Copper alloy, with gold flash over nickel plate.

TERMINAL SEAL: Epoxy/Urethane. All terminals insert molded.

**NOTE:** Any models supplied with B contact material are RoHS compliant and compatible.

**NOTE:** Materials listed above are general specifications. Specifications available for specific and custom switches, consult Customer Service Center.

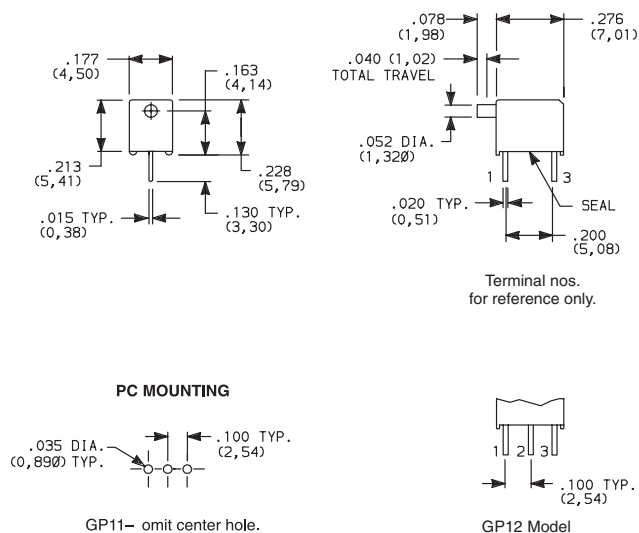
**CAUTION:** PC mounting layouts and pads as shown are designed to be compatible with the latest equipment and reflow techniques. Care should be taken in the design and location of PC lands to suit individual needs. Orientation relative to reflow direction may significantly impact solder joint integrity.

## How To Order

Complete part numbers for GP Series Sealed Ultraminiature Pushbutton Switches are shown on pages A-78 thru A-80.

PART NUMBER	SWITCH FUNCTION		SCHEMATIC
	POS.1	POS. 2	
<b>GP11MCBE</b>	OFF	MOM.	
Conn. Terms.	OPEN	1-3	SPST
<b>GP12MCBE</b>	ON	MOM.	
Conn. Terms.	2-1	2-3	SPDT

MOM. = Momentary



Dimensions are shown: Inches (mm)  
 Specifications and dimensions subject to change

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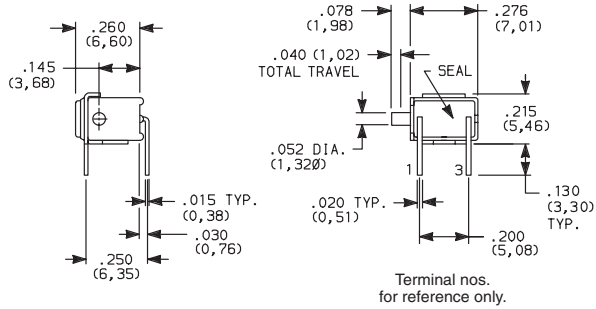
# GP Series Sealed Ultraminiature Pushbutton Switches

A

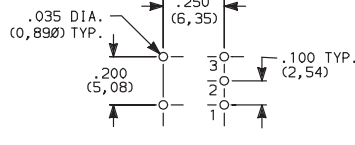
Pushbutton



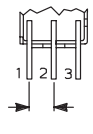
GP11MABE  
SPST



PC MOUNTING



GP11- omit hole 2.



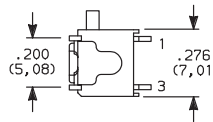
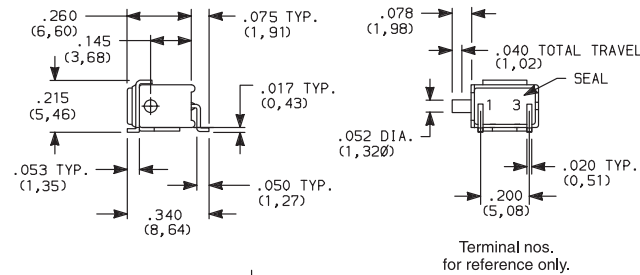
GP12 Model

PART NUMBER	SWITCH FUNCTION		SCHEMATIC
	POS.1	POS. 2	
<b>GP11MABE</b>	OFF	MOM.	 SPST
Conn. Terms.	OPEN	1-3	
<b>GP12MABE</b>	ON	MOM.	 SPDT
Conn. Terms.	2-1	2-3	

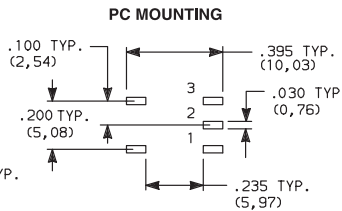
MOM. = Momentary



GP11MSABE  
SPST



GP12 Model



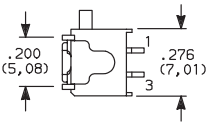
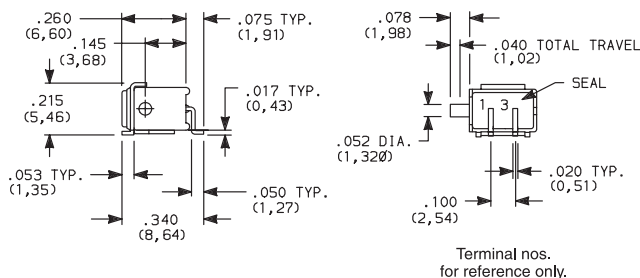
GP11- omit pad 2.

PART NUMBER	SWITCH FUNCTION		SCHEMATIC
	POS.1	POS. 2	
<b>GP11MSABE</b>	OFF	MOM.	 SPST
Conn. Terms.	OPEN	1-3	
<b>GP12MSABE</b>	ON	MOM.	 SPDT
Conn. Terms.	2-1	2-3	

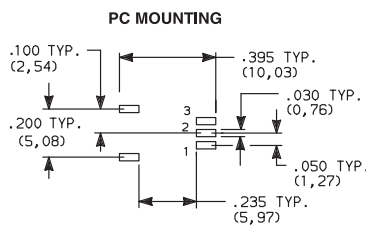
MOM. = Momentary



GP11MSA1BE  
SPST



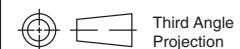
GP12 Model



GP11- omit pad 2.

PART NUMBER	SWITCH FUNCTION		SCHEMATIC
	POS.1	POS. 2	
<b>GP11MSA1BE</b>	OFF	MOM.	 SPST
Conn. Terms.	OPEN	1-3	
<b>GP12MSA1BE</b>	ON	MOM.	 SPDT
Conn. Terms.	2-1	2-3	

MOM. = Momentary



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



# GP Series Sealed Ultraminiature Pushbutton Switches

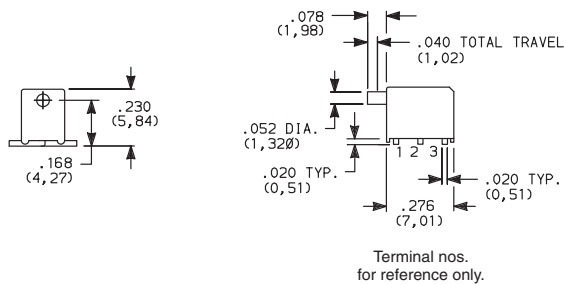


A

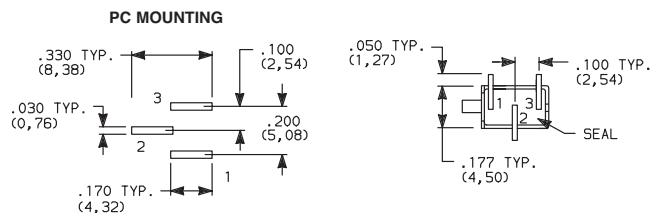
Pushbutton

PART NUMBER	SWITCH FUNCTION		SCHEMATIC
	POS. 1	POS. 2	
<b>GP12MSCBE</b>	ON	MOM.	 NC 1   2 (COMM)   3 NO
Conn. Terms.	2-1	2-3	
SPDT			

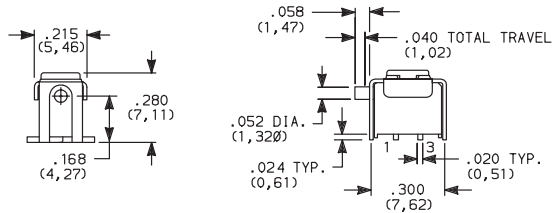
MOM. = Momentary



**GP12MSCBE  
SPDT**



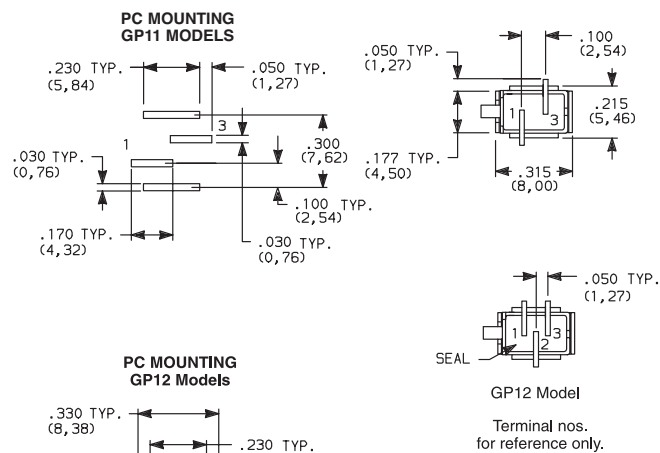
**NOTE:** Recommended for infrequent use applications only  
For increased switch mounting strength, order, SV1 termination style with support bracket (see below).



**GP11MSV1BE  
SPST**

PART NUMBER	SWITCH FUNCTION		SCHEMATIC
	POS. 1	POS. 2	
<b>GP11MSV1BE</b>	OFF	MOM.	 1   3
Conn. Terms.	OPEN	1-3	
<b>GP12MSV1BE</b>	ON	MOM.	 NC 1   2 (COMM)   3 NO
Conn. Terms.	2-1	2-3	
SPDT			

MOM. = Momentary



Third Angle  
Projection

Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



[www.ck-components.com](http://www.ck-components.com)



# GP Series Sealed Ultraminiature Pushbutton Switches

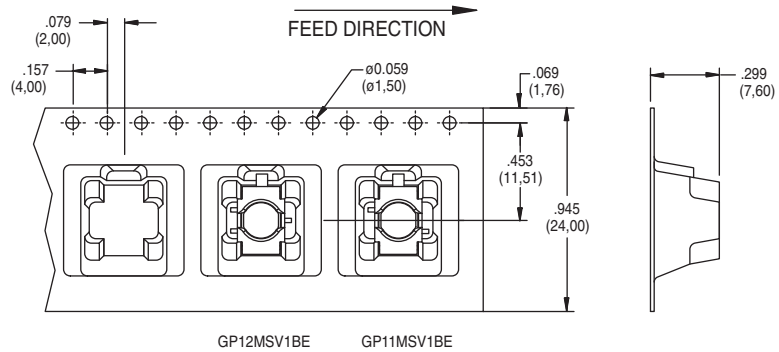
## TAPE & REEL

Pushbutton

A

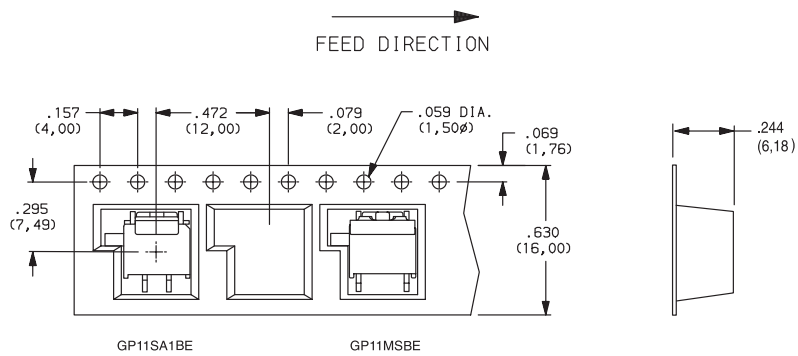
For part numbers GP11MSV1BE, GP12MSV1BE

REEL INFORMATION	
OUTSIDE DIAMETER	13.00 (330,0)
PILOT HOLE	.512 (13,0)
QUANTITY PER REEL	600



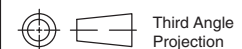
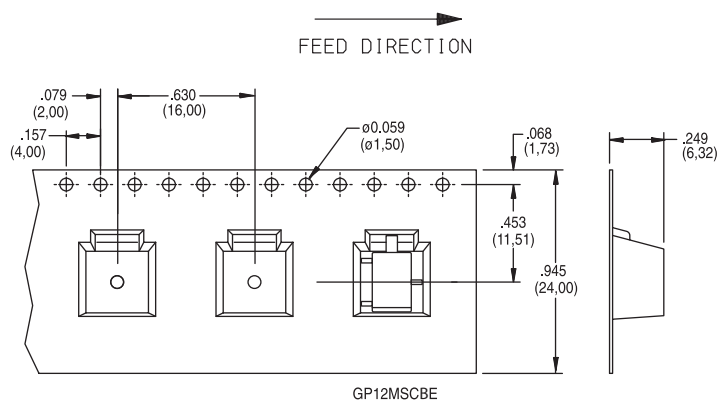
For part numbers GPXXSA1BE, GPXXMSABE

REEL INFORMATION	
OUTSIDE DIAMETER	13.00 (330,0)
PILOT HOLE	.512 (13,0)
QUANTITY PER REEL	600



For part numbers GP12MSCBE

REEL INFORMATION	
OUTSIDE DIAMETER	13.00 (330,0)
PILOT HOLE	.512 (13,0)
QUANTITY PER REEL	600



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change





# PN Series Alternate & Momentary Action Pushbutton Switches



A

Pushbutton

## Features/Benefits

- **Momentary or locking action**
- **Different actuation forces for customized feel**
- **Low cost, reliable contact design**
- **Single and double pole options**
- **RoHS compliant**

## Typical Applications

- **Computers and peripherals**
- **Instrumentation and measurement equipment**
- **Non-power, on-off switch applications**



## Specifications

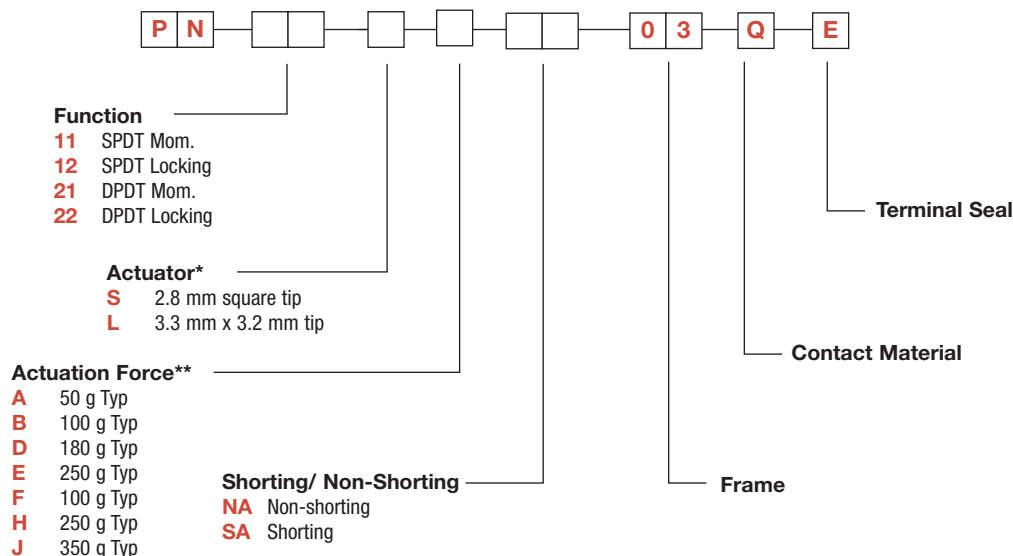
CONTACT RATING: 0.2 AMP @ 30 V DC max.  
 ELECTRICAL LIFE: 10,000 make-and-break cycles at full load.  
 MECHANICAL LIFE: 10,000 on/off cycles.  
 CONTACT RESISTANCE: 30 mΩ max. initial  
 INSULATION RESISTANCE: 100 MΩ min.  
 DIELECTRIC STRENGTH: 500 V AC min.  
 OPERATING/STORAGE TEMPERATURES: -10°C to 60°C.  
 PACKAGING: Switches are supplied in anti-static trays.

## Materials

FRAME: Tin plated steel.  
 ACTUATOR: PA 66 black.  
 BASE: Phenolic resin.  
 TERMINALS: Silver plated brass.  
 MOVABLE CONTACTS: Silver plated phosphor bronze.  
 RETURN SPRING: SWC  
 DETENT SPRING: Phosphor bronze.  
 DETENT SPRING PLATE: Phosphor bronze.  
 RETURN SPRING RETAINER RING: Nickel plated steel.  
 TERMINAL SEAL: Epoxy.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. For additional options not shown in catalog, consult Customer Service Center.



\* Note - The switch body style dimensions differ for each of these 3 groupings

"S" actuator available for PN 11 & PN 12 options

"S" actuator available for PN 21 & PN 22 options

"L" actuator available for PN 21 & PN 22 options

\*\* Actuation Force "A" only available with PN11 with "S" actuator

PN 11 & PN 21 available with Actuation Force "B", "D", "E", "F", "H", "J"

PN 12 & PN 22 available with Actuation Force "D", "E", "H", "J"

Full travel



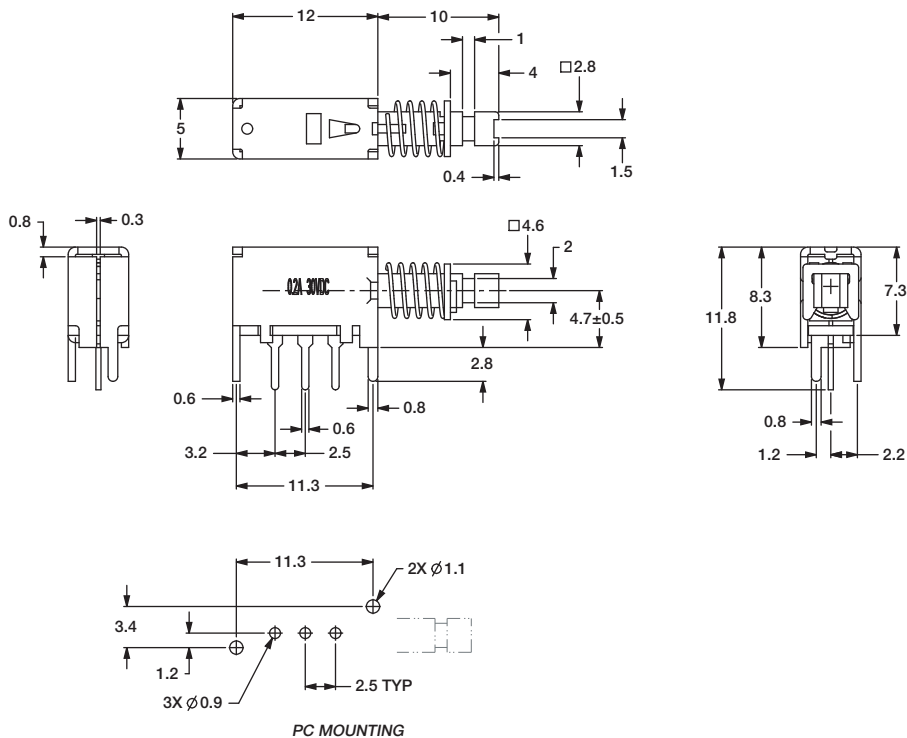
Specifications and dimensions subject to change



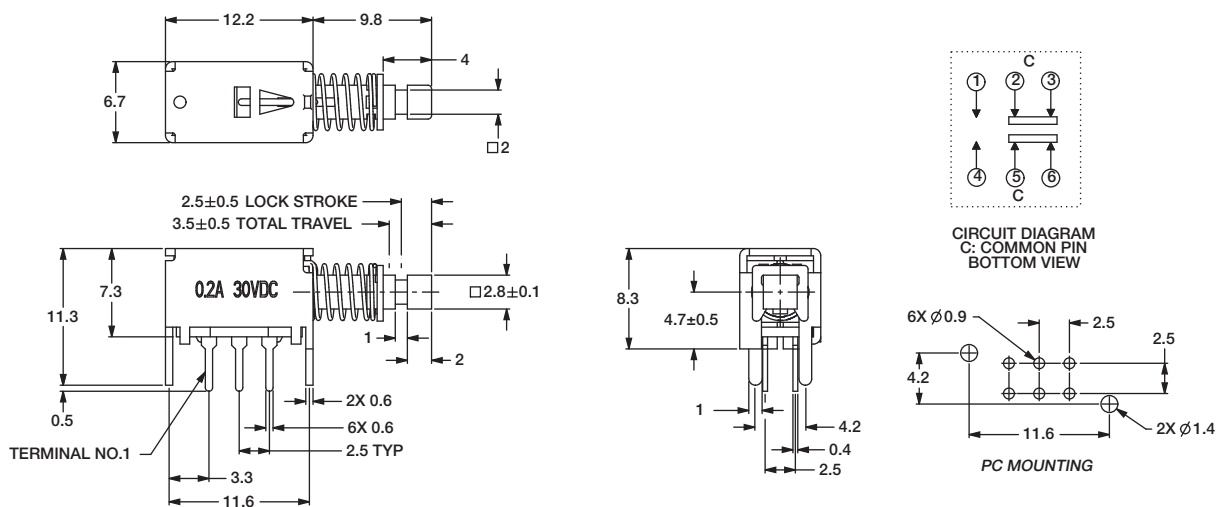
# PN Series Alternate & Momentary Action Pushbutton Switches

Pushbutton  
A

**PN 11** SPDT Mom.  
**PN 12** SPDT Locking



**PN 21** DPDT Mom. with "S" Actuator  
**PN 22** DPDT Locking with "S" Actuator



Dimensions are shown: mm  
Specifications and dimensions subject to change

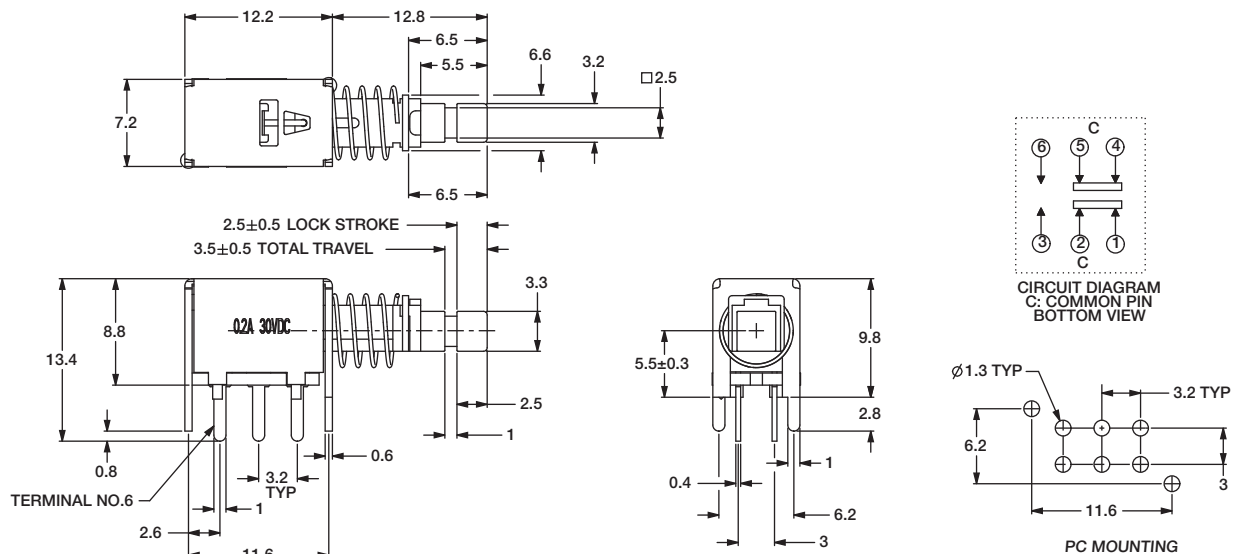
# PN Series Alternate & Momentary Action Pushbutton Switches



A

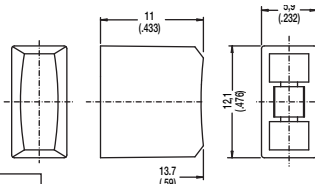
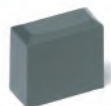
Pushbutton

**PN 21** DPDT Mom. with "L" Actuator  
**PN 22** DPDT Locking with "L" Actuator



BUTTONS MUST BE ORDERED SEPARATELY. SHIPPED IN BULK.

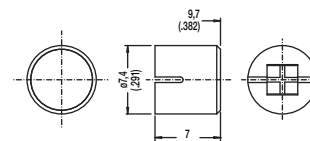
**PE**



OPTION CODE	COLOR
<b>RD</b>	Red
<b>GY</b>	Gray
<b>BK</b>	Black
<b>WH</b>	White

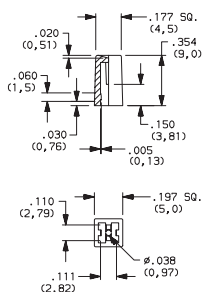
PE and PV buttons fit "L" actuators

**PV**



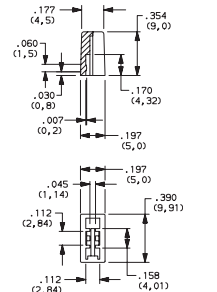
## Indexed

**G001A** Black  
**G001G** Gray  
**G001I** Ivory  
**G001R** Red



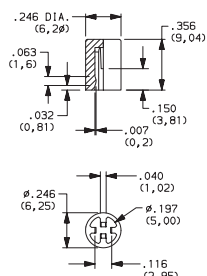
## Rectangular

**G002A** Black  
**G002G** Gray  
**G002I** Ivory  
**G002R** Red



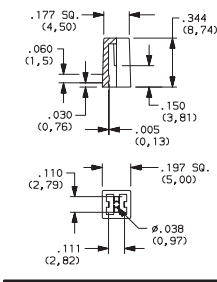
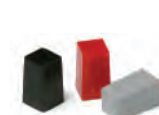
## Round

**G003A** Black  
**G003G** Gray  
**G003I** Ivory  
**G003R** Red



## Square

**G004A** Black  
**G004G** Gray  
**G004I** Ivory  
**G004R** Red



G001, G002, G003 and G004 buttons fit "S" actuators



Third Angle  
Projection



Dimensions are shown: Inches (mm)  
 Specifications and dimensions subject to change

www.ck-components.com



# PHB Series Short Stroke Pushbutton Switches

A

Pushbutton



## Features/Benefits

- Momentary or latching action
- Low cost, reliable contact design
- 2 & 4 pole configurations
- Sealed contacts
- Optional buttons
- RoHS compliant

## Typical Applications

- Computers and peripherals
- Instrumentation and measurement equipment
- Non-power, on-off switch applications

## Specifications

RATING: 1 A @ 15 V DC  
 DIELECTRIC STRENGTH (50 Hz/1 min.): 500 V DC between terminals or between terminals and frame for 1 minute  
 OPERATING LIFE: 10,000 cycles at rated load  
 CONTACT RESISTANCE: 20 m Ωohms initial  
 INSULATION RESISTANCE: 100 M Ωohms  
 TOTAL TRAVEL/LATCHING TRAVEL: 2.5mm (± 0.5 mm) / 1.5mm (± 0.5 mm) to latch EE option (push-push)  
 OPERATING FORCE:  
 2U option: 170 grams ± 100 grams (1.67 ± 0.98N)  
 4U option: 230 grams ± 100 grams (2.26 ± 0.98N)  
 OPERATING TEMPERATURE: -10°C to 60°C  
 BOUNCE TIME: ≤10 ms  
 SEALING: Sealed contacts.  
 PACKAGING: Switches; PHB2 models: 84 pcs per tray; PHB4 models 72 pcs per tray  
 Optional Caps; Bulk bag - 100 caps per bag

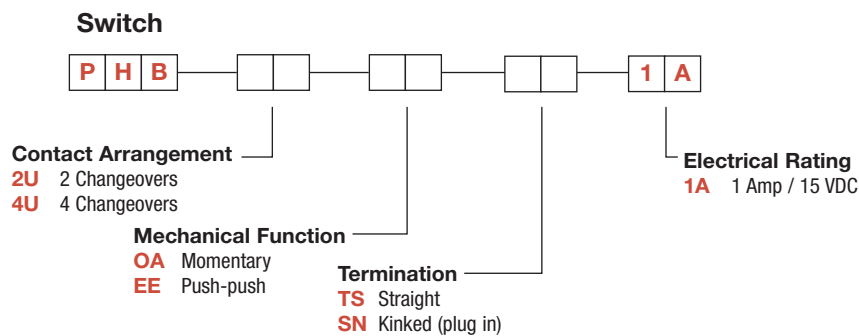
## Materials

FIXED TERMINAL: Brass, silver plated  
 MOVABLE CONTACT: Phosphor bronze, silver plated  
 COVER: PA 66 Black  
 COVER TO BASE RETAINING CLIP: POM  
 ACTUATOR: POM  
 RETURN SPRING: Stainless steel  
 SPRING RETAINING RING: Steel, nickel plate  
 BASE: Phenolic resin  
 TERMINAL SEAL: Epoxy.

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. For additional options not shown in catalog, consult Customer Service Center.



## Caps (order separately)



INDEXED	COLOR	RECTANGULAR	COLOR	ROUND	COLOR	SQUARE	COLOR
G001A	BLACK	G002A	BLACK	G003A	BLACK	G004A	BLACK
G001G	GRAY	G002G	GRAY	G003G	GRAY	G004G	GRAY
G001I	IVORY	G002I	IVORY	G003I	IVORY	G004I	IVORY
G001R	RED	G002R	RED	G003R	RED	G004R	RED



Dimensions are shown: Inches (mm)  
 Specifications and dimensions subject to change

# PHB Series Short Stroke Pushbutton Switches

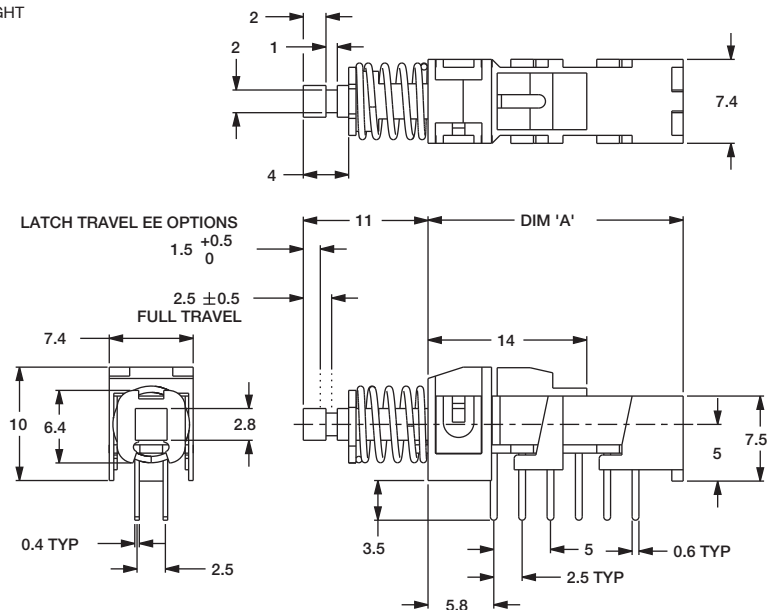


A

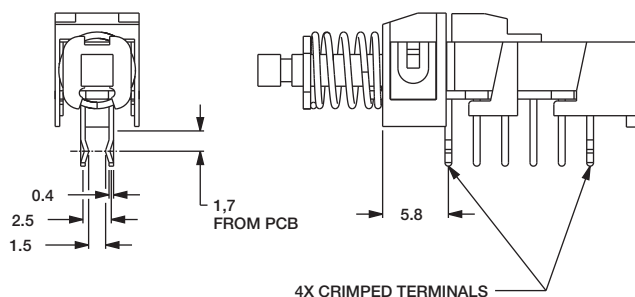
Pushbutton

## TERMINATION

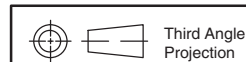
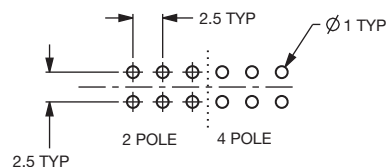
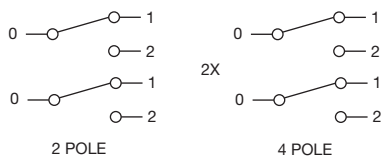
**TS** STRAIGHT



**SN** KINKED (PLUG IN)



POLES	MODEL NO.	DIM 'A'	ACTION
4	PHB4UEE1A	22,5	PUSH/PUSH
	PHB4U0A1A	22,5	MOMENTARY
2	PHB2UEE1A	15,0	PUSH/PUSH
	PHB2U0A1A	15,0	MOMENTARY



Dimensions are shown: mm  
Specifications and dimensions subject to change



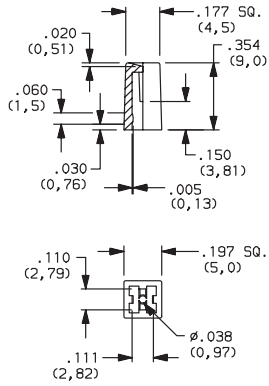
# PHB Series Short Stroke Pushbutton Switches

## CAPS

Pushbutton  
A

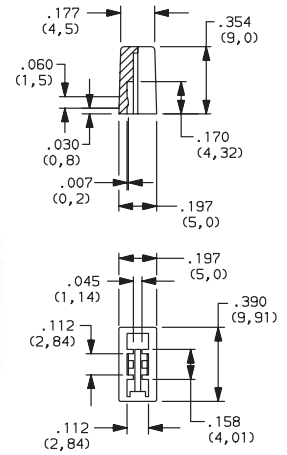
### Indexed

- G001A** Black
- G001G** Gray
- G001I** Ivory
- G001R** Red



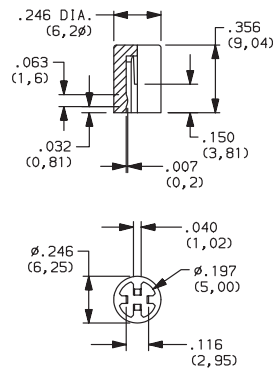
### Rectangular

- G002A** Black
- G002G** Gray
- G002I** Ivory
- G002R** Red



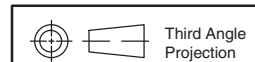
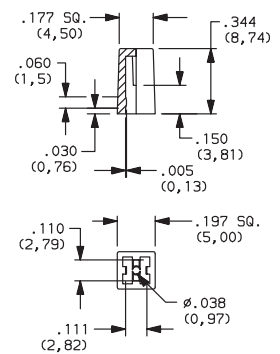
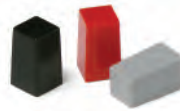
### Round

- G003A** Black
- G003G** Gray
- G003I** Ivory
- G003R** Red



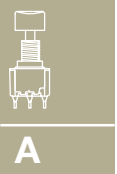
### Square

- G004A** Black
- G004G** Gray
- G004I** Ivory
- G004R** Red



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

# F Series Pushbutton Switches



Pushbutton

## Features/Benefits

- Up to 10 poles per module
- Various contact terminals
- Various mounting & switch ganging configurations
- Mechanical indicator buttons
- RoHS compliant

## Typical Applications

- Audio selection
- Digital equipment interface
- Medical equipment interface



## Specifications

SWITCHING POWER: F module max. AC/DC: Silver: 50 VA/15W, Gold: 1 VA/300 mW.

SWITCHING VOLTAGE: F module max. AC/DC: Silver: 125/30V, Gold: 50/30 V.

SWITCHING CURRENT: F module max. AC/DC: Silver: 0.5A/0.5A, Gold: 0.04A/0.01A.

CARRYING CURRENT: Max at du = 20C: Silver: < 2A, Gold: <0.5A.

DIELECTRIC STRENGTH (50 Hz, 1 min.): Chassis/contact:  $\wedge$ 1500V Between contacts:  $\wedge$ 1500V.

OPERATING LIFE "O/A/E" (24V/200mA):  $>10^5$  operations "GR":  $>3.5 \times 10^4$  operations.

CONTACT RESISTANCE: Initial: Typical %10 m $\Omega$ , max. 20 m $\Omega$  After operating life: %100 m $\Omega$

INSULATION RESISTANCE:  $\wedge 10^9 \Omega$  between open contacts,  $\wedge 10^9 \Omega$  between chassis and contacts.

CAPACITANCE (at f = 10 kHz): %0.7 pF between 2 contacts.

TOTAL TRAVEL/LATCHING TRAVEL: 4.7mm/3.3mm (.185 inch/.130 inch).

All models and options are RoHS compliant and compatible.

**NOTE:** All models and options are RoHS compliant and compatible.

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

TYPICAL F OPERATING FORCE: 2U: 6.5N (650 grams); 4U: 6.5N (650 grams); 6U: 7.5N (750 grams); 8U: 9.0N (900 grams); 10U: 9.0N (900 grams).

EUROPEAN TYPICAL SF OPERATING FORCE: 2U: 3.5N $\pm$ 0.5N (350 grams $\pm$ 100 grams); 4U: 5N $\pm$ 1N (500 grams $\pm$ 100 grams); 6U: 6.5N $\pm$ 1N (650 grams $\pm$ 100 grams); 8U: 9.0N $\pm$ 1N (900 grams $\pm$ 100 grams).

OPERATING TEMPERATURE RANGE: -40°C to 70°C.

## Materials

HOUSING: Polycarbonate UL 94V-0 or polyester UL 94V-0.

ACTUATOR: Polyester UL 94V-0.

MOVABLE CONTACTS: Bimetal brass, silver plated, gold plate over nickel.

STATIONARY CONTACTS & TERMINALS: Brass, silver plated, gold plated.

TERMINAL BOARD: Polyester UL 94V-0.

RETURN SPRING: Music wire.

TERMINAL SEAL: RTV adhesive sealant.

CHASSIS: Steel.

LOCKOUT PIN: Steel.

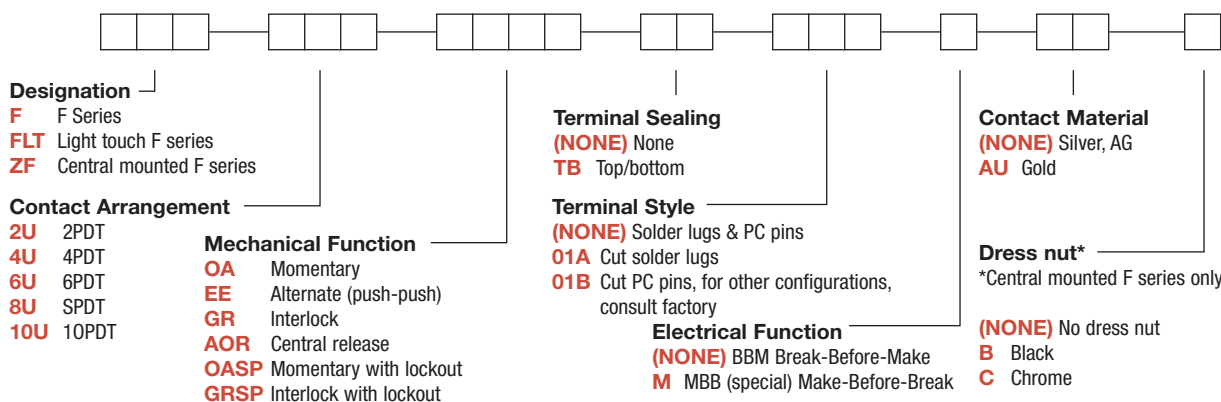
BLOCKERS: Steel.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages A-88 thru A-95. For additional options not shown in catalog, consult Customer Service Center.

If requesting only a switch, select either a North American or European switch as noted below. Chassis and buttons are sold separately. If multiple stations are selected, we will assume all switches are the same unless noted otherwise.

## North American Order Code - Switch Only



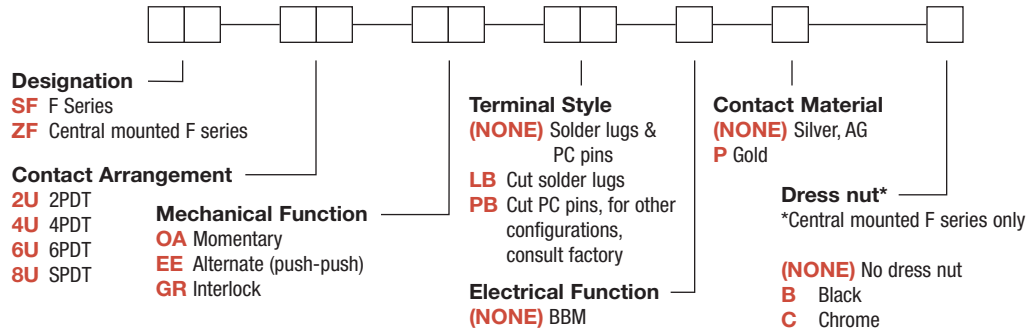
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



# F Series Pushbutton Switches

Pushbutton  
A

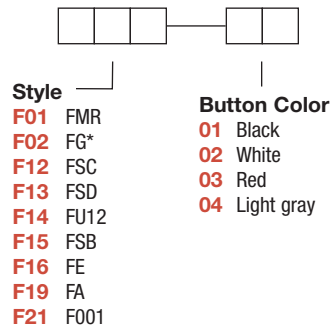
## European Order Code - Switch Only



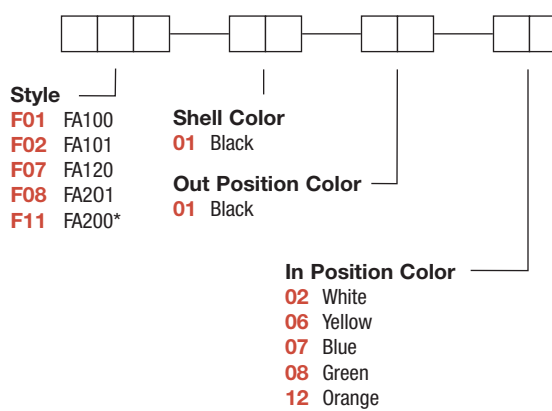
\*Minimum order quantities apply.

## Order Code - Buttons

### Solid Buttons



### Mechanical Indicator Buttons



\*Button options for central mounting configurations, use 'FG' for central mount with chrome dress nut, use 'FA200' for central mount with black dress nut.

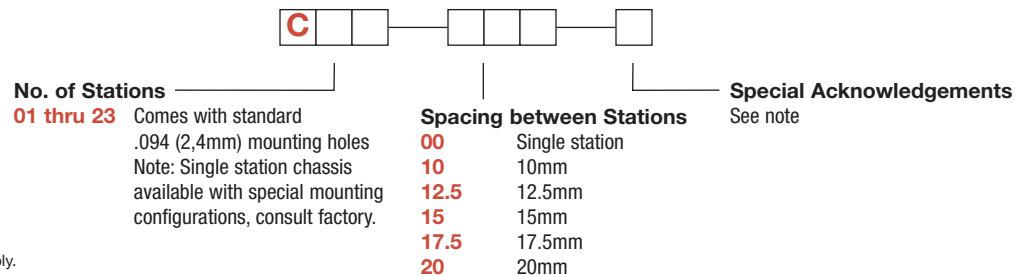
## BUTTON REMOVAL

A button of a push-push switch should only be removed in the "OFF" non-latching position.

## Order Code - Chassis

To order a switch with chassis, create the switch part number listed above and add the Chassis part number configurator information at the end of the part number.

Note: We do not guarantee or recommend interlocking beyond 10 stations.



\*Minimum order quantities apply.



Dimensions are shown: Inches (mm)  
 Specifications and dimensions subject to change



# F Series Pushbutton Switches



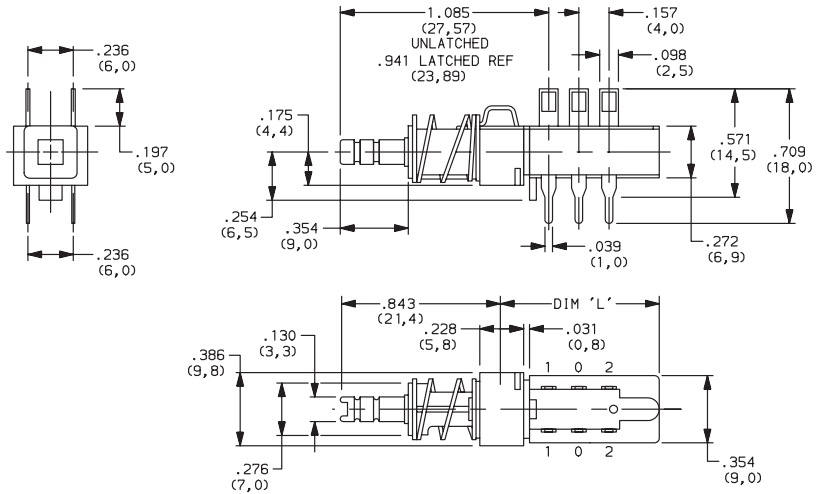
A

Pushbutton

## SWITCHES WITH STANDARD OPTIONS

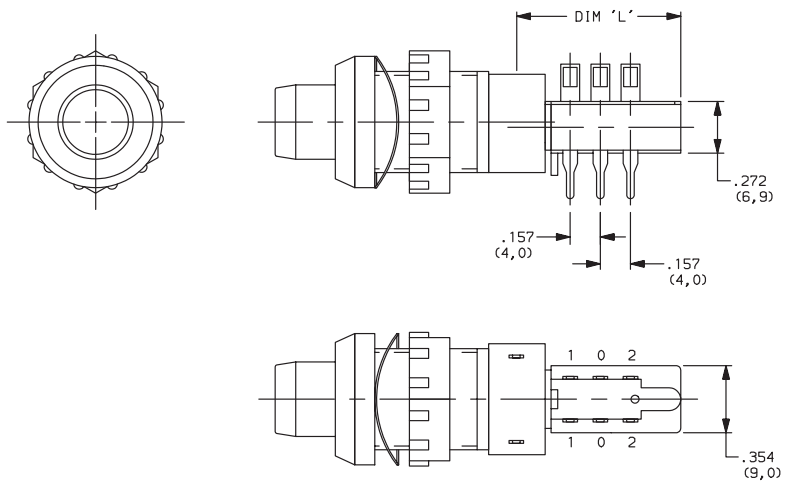
### F2UEE

CONTACT ARRANGEMENT	LENGTH DIM 'L'
2U	0.827 (21,00)
4U	1.300 (33,00)
6U	1.770 (45,00)
8U	2.240 (57,00)
10U	2.720 (69,00)



### ZF2UEEBF11010108

CONTACT ARRANGEMENT	LENGTH DIM 'L'
2U	0.827 (21,00)
4U	1.300 (33,00)
6U	1.770 (45,00)
8U	2.240 (57,00)
10U	2.720 (69,00)



## DESIGNATION

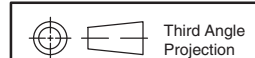


### Designation, North America

- F** F Series
- FLT** Light touch F series
- ZF** Central mounted F series

### Designation, Europe

- SF** F Series
- ZF** Central mounted F series



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



# F Series Pushbutton Switches

A

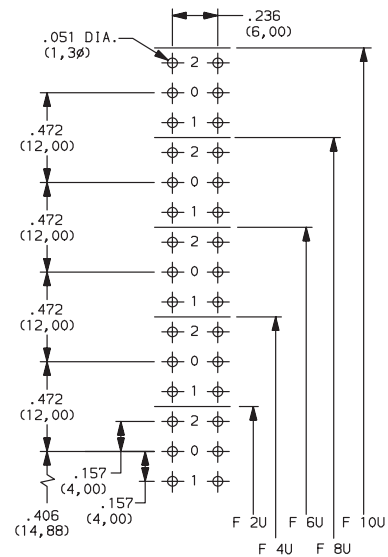
Pushbutton

## CONTACT ARRANGEMENT



OPTION CODE	NO. OF POLES	SCHEMATIC
<b>2U</b>	2PDT	
<b>4U</b>	4PDT	2X
<b>6U</b>	6PDT	3X
<b>8U</b>	8PDT	4X
<b>10U</b>	10PDT	5X

### PC MOUNTING



## MECHANICAL FUNCTION



### North America

OPTION CODE	FUNCTION
<b>OA</b>	Momentary
<b>EE</b>	Alternate (push-push)
<b>GR</b>	Interlock
<b>AOR</b>	Central release
<b>OASP</b>	Momentary with lockout
<b>GRSP</b>	Interlock with lockout

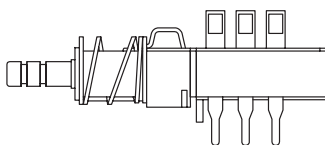
### Europe

OPTION CODE	FUNCTION
<b>OA</b>	Momentary
<b>EE</b>	Alternate (push-push)
<b>GR</b>	Interlock

## TERMINAL SEALING

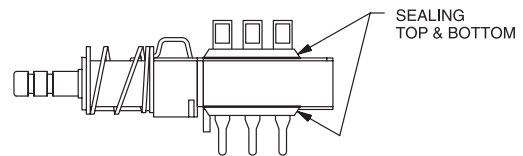


**(NONE)** NO SEAL



F2UEE shown in example above.

**TB** TOP & BOTTOM



NOTE: Available for North America only



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

# F Series Pushbutton Switches

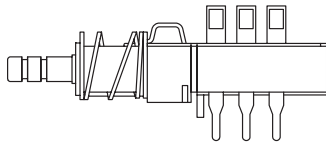


A  
Pushbutton

## TERMINAL STYLE

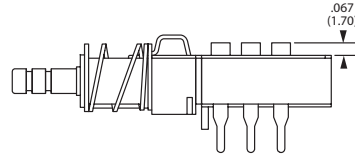


**(NONE)** SOLDER LUGS & PC PINS



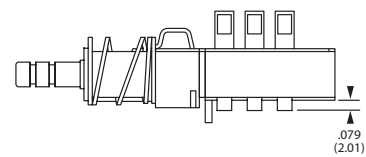
**01A** CUT SOLDER LUGS (North America)

**LB** CUT SOLDER LUGS (Europe)



**01B** CUT PC PINS (North America)

**PB** CUT PC PINS (Europe)



## ELECTRICAL FUNCTION



OPTION CODE	FUNCTION
<b>(NONE)</b>	BBM Non-shorting
<b>M</b>	MBB Shorting (North America only)

## CONTACT MATERIAL



NORTH AMERICA OPTION CODE	EUROPE OPTION CODE	RoHS COMPLIANT *	RoHS COMPATIBLE *	MATERIAL	RATING
<b>(NONE)</b>	<b>(NONE)</b>	YES	YES	SILVER, AG	50 VA/15 W; 125/30 V; 0.5/0.5 A
<b>AU</b>	<b>P</b>	YES	YES	GOLD	1 VA/300mW; 50/30 V; 0.04 A/0.01 A

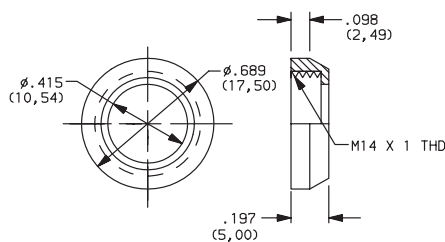
\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

## DRESS NUT

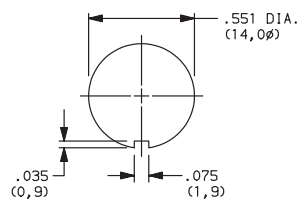


**(NONE)** NO DRESS NUT FOR F & F/LT DESIGNATIONS

**B** BLACK

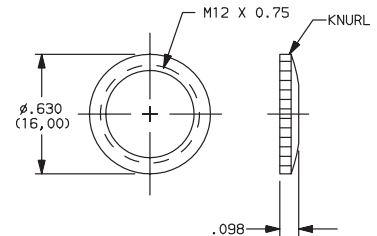


PANEL CUTOUT

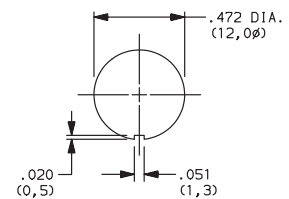


NOTE: Available with ZF designation and FA200 buttons.

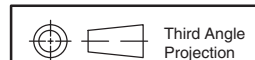
**C** CHROME



PANEL CUTOUT



NOTE: Available with ZF designation and FG button.



Third Angle Projection

Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change





# F Series Pushbutton Switches

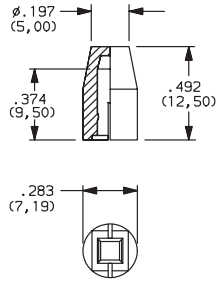
SOLID BUTTON



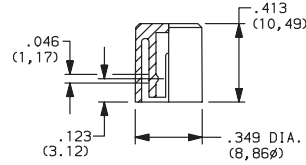
Pushbutton  
A

## STYLE

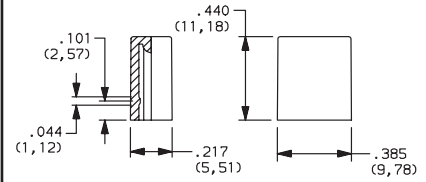
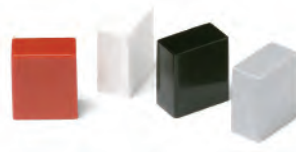
**F01** FMR



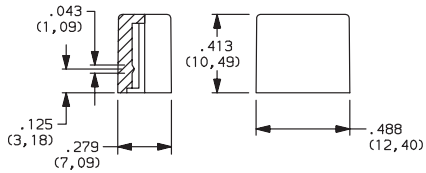
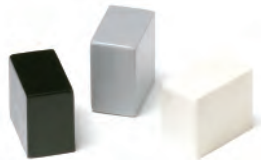
**F02** FG



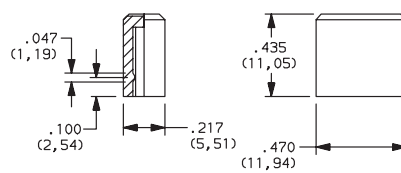
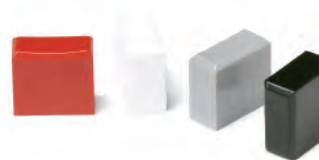
**F12** FSC



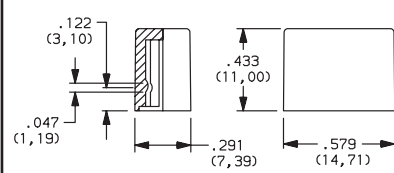
**F13** FSD



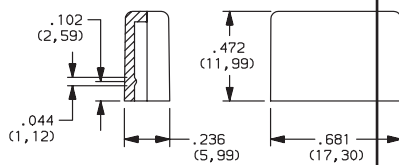
**F14** FU12



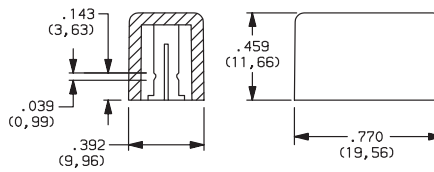
**F15** FSB



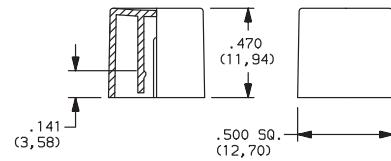
**F16** FE



**F19** FA



**F21** F001



OPTION CODE	COLOR
01	BLACK
02	WHITE
03	RED
04	LT. GRAY



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

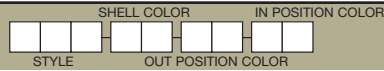
# F Series Pushbutton Switches



A

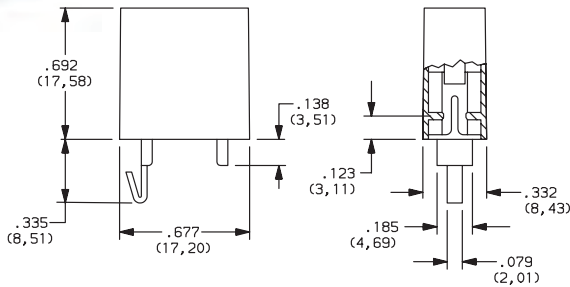
Pushbutton

## MECHANICAL BUTTON

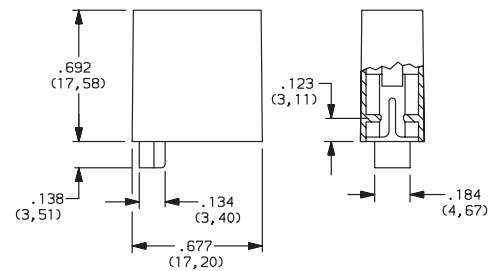


### STYLE

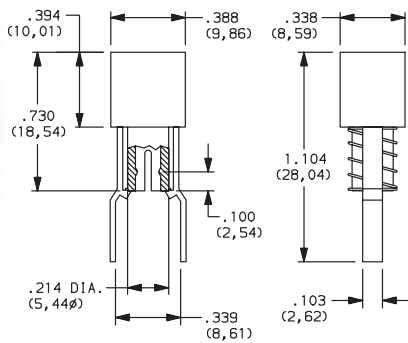
**F01** FA100



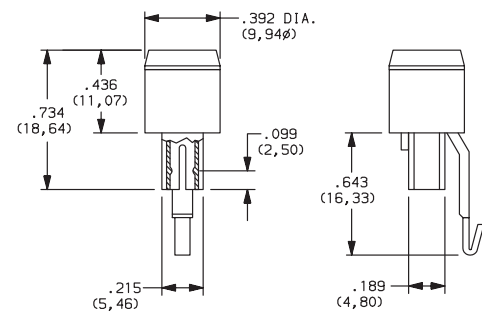
**F02** FA101



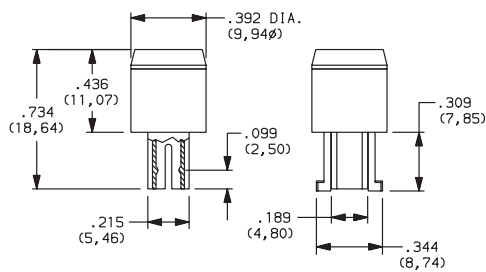
**F07** FA120



**F08** FA201



**F11** FA200



### SHELL COLOR

**01** BLACK

### OUT POSITION COLOR

**01** BLACK

### IN POSITION COLOR

OPTION CODE	COLOR
<b>02</b>	WHITE
<b>06</b>	YELLOW
<b>07</b>	BLUE
<b>08</b>	GREEN
<b>12</b>	ORANGE



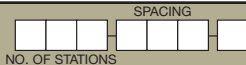
Dimensions are shown: Inches (mm)  
 Specifications and dimensions subject to change



# F Series Pushbutton Switches

Pushbutton A

**CHASSIS**



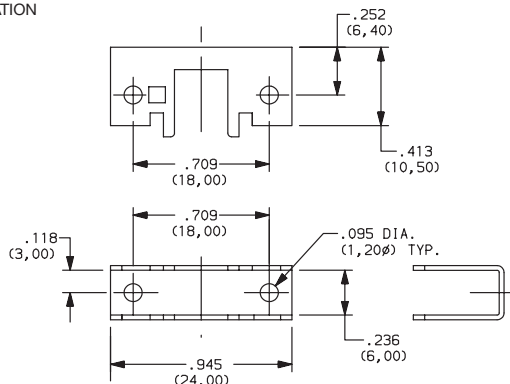
## NUMBER OF STATIONS

**C00 Thru C10** Comes with standard 0.094 (2,44mm) mounting holes

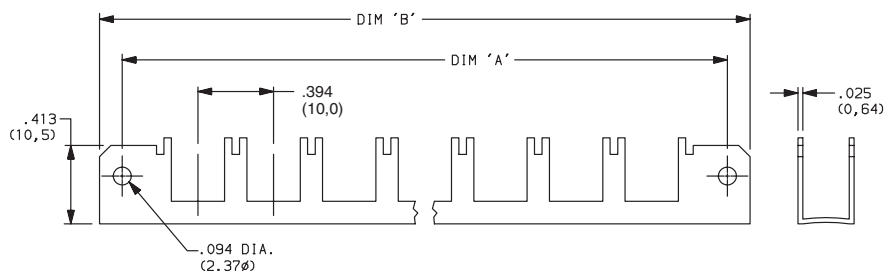
**NOTE:** Single station chassis available with mounting configurations, consult factory.

## SPACING

**00** SINGLE STATION

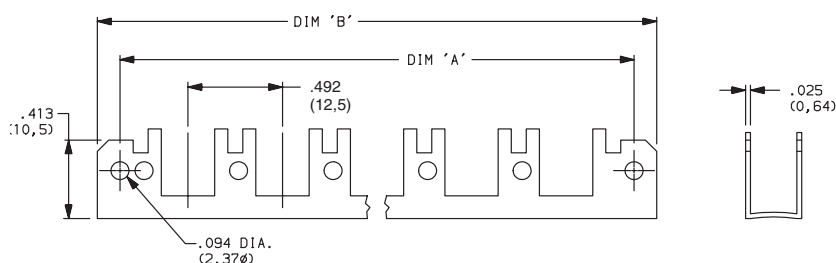


**10** 10mm



No. of Stations	Dim. 'A'	Dim. 'B'	Tolerance
2	1.182 (30,02)	1.418 (36,02)	0.005
3	1.575 (40,01)	1.811 (46,00)	0.010
4	1.969 (50,01)	2.205 (56,01)	0.010
5	2.363 (60,02)	2.599 (66,01)	0.010
6	2.757 (70,03)	2.993 (76,02)	0.015
7	3.150 (80,01)	3.386 (86,00)	0.015
8	3.544 (90,02)	3.780 (96,01)	0.015
9	3.938 (100,03)	4.174 (106,02)	0.015
10	4.331 (110,01)	4.567 (116,00)	0.015

**12.5** 12.5mm



No. of Stations	Dim. 'A'	Dim. 'B'	Tolerance
2	1.200 (30,48)	1.436 (36,47)	0.005
3	1.692 (42,98)	1.928 (48,97)	0.010
4	2.184 (55,47)	2.420 (61,47)	0.010
5	2.676 (67,97)	2.912 (73,96)	0.010
6	3.169 (80,49)	3.405 (86,49)	0.015
7	3.661 (92,99)	3.897 (98,98)	0.015
8	4.153 (105,49)	4.389 (111,48)	0.015
9	4.645 (117,98)	4.881 (123,98)	0.015
10	5.137 (130,48)	5.373 (136,47)	0.015



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



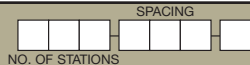
# F Series Pushbutton Switches



A

Pushbutton

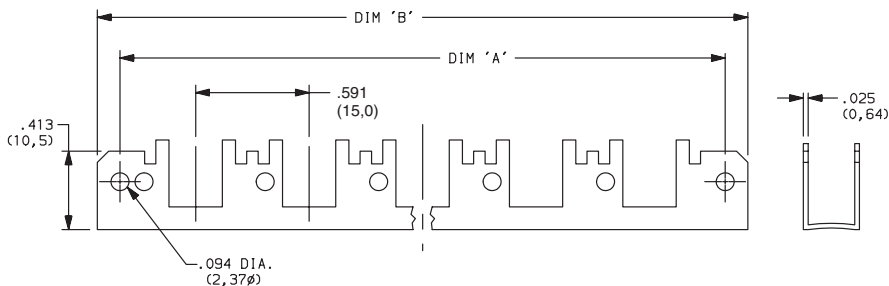
CHASSIS



## SPACING

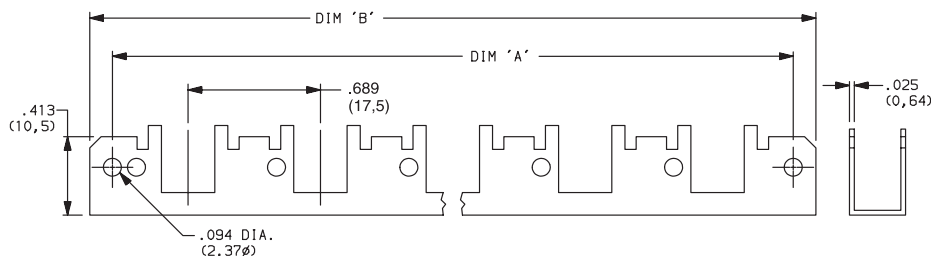
**15** 15mm

No. of Stations	Dim. 'A'	Dim. 'B'	Tolerance
2	1.374 (34,90)	1.615 (41,02)	0.005
3	1.969 (50,01)	2.205 (56,01)	0.010
4	2.560 (65,02)	2.796 (71,02)	0.010
5	3.150 (80,01)	3.386 (86,00)	0.010
6	3.741 (95,02)	3.977 (101,02)	0.015
7	4.332 (110,03)	4.568 (116,03)	0.015
8	4.922 (125,02)	5.158 (131,01)	0.015
9	5.513 (140,03)	5.749 (146,02)	0.015
10	6.103 (155,02)	6.339 (161,01)	0.015



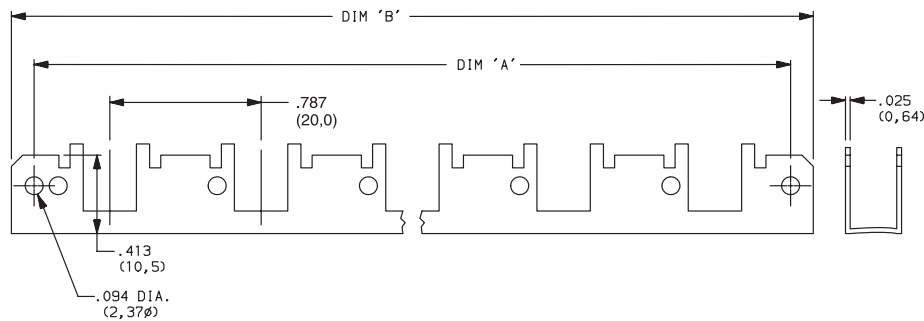
**17.5** 17.5mm

No. of Stations	Dim. 'A'	Dim. 'B'	Tolerance
2	1.477 (37,52)	1.713 (43,51)	0.005
3	2.166 (55,02)	2.402 (61,01)	0.010
4	2.855 (75,52)	3.091 (78,51)	0.010
5	3.544 (90,02)	3.780 (96,01)	0.010
6	4.233 (107,52)	4.469 (113,51)	0.015
7	4.922 (125,02)	5.158 (131,01)	0.015
8	5.611 (142,52)	5.847 (148,51)	0.015
9	6.300 (160,02)	6.536 (166,01)	0.015
10	6.989 (177,52)	7.225 (183,52)	0.015



**20** 20mm

No. of Stations	Dim. 'A'	Dim. 'B'	Tolerance
2	1.575 (40,01)	1.811 (46,00)	0.005
3	2.363 (60,02)	2.599 (66,01)	0.010
4	3.150 (80,01)	3.386 (86,00)	0.010
5	3.938 (100,03)	4.174 (106,02)	0.010
6	4.725 (120,02)	4.961 (126,01)	0.015
7	5.512 (140,00)	5.748 (146,00)	0.015
8	6.300 (160,02)	6.536 (166,01)	0.015
9	7.087 (180,01)	7.323 (186,00)	0.015
10	7.875 (200,03)	8.111 (206,02)	0.015



Third Angle Projection

Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change





Pushbutton  
A

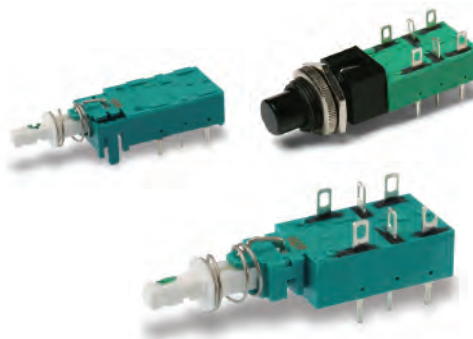
# NE-18 Series Mains / Power Switches

## Features/Benefits

- Chassis or panel mount
- Various buttons
- Various contact configurations
- RoHS compliant

## Typical Applications

- Mains/power switching
- Consumer electronics
- Audio equipment
- Digital products



UL61058-1



## Specifications

### ELECTRICAL RATING:

#### NE18 Series:

- 8A GP, 125 VAC, 50/60 Hz, 1E4, T70
- 6A GP, 250 VAC, 50/60 Hz, 1E4, T70
- 6(4)A RM, 250 VAC, 50/60 Hz, 1E4, T70
- 6/48A RC, 250 VAC, 50/60 Hz, 1E4, T70
- 1RA, 100 VDC, 1E4, T70
- 8RA, 30VDC, 1E4, T70

#### NE18CTII Series:

- 4A GP, 250 VAC, 50/60 Hz, 1E4, T70
- 4/48A RC, 250 VAC, 50/60 Hz, 1E4, T70
- 1RA, 100 VDC, 1E4, T70
- 4RA, 30VDC, 1E4, T70

DIELECTRIC STRENGTH (50 Hz, 1 min.): 2000 V

OPERATING LIFE AT MAX. LOAD AND AT MAX. INRUSH CURRENT:  $\wedge 10^4$  operations<sup>5)</sup>

CONTACT RESISTANCE: Initial: 50m $\Omega$ ; After  $10^4$  operations: 70m $\Omega$ .

INSULATION RESISTANCE:  $\wedge 10^{12}$   $\Omega$ chassis – nearest contact;  $\wedge 10^{12}$   $\Omega$ mains contact – mains contact;  $\wedge 10^{12}$   $\Omega$ mains contact – mains contact after  $10^4$  operations.

LOW VOLTAGE CONTACT:

SWITCHING POWER MAX.: 12W

SWITCHING VOLTAGE MAX.: 24V

SWITCHING CURRENT MAX.: 0.5A

TOTAL TRAVEL: 4.7mm (.185 inch)

LATCHING TRAVEL: 3.3mm (.130 inch)

OPERATING FORCE: Without auxiliary low voltage contacts: NE18: 7N (700 grams); NE18CTII: 9.5N (950 grams).

With auxiliary low voltage contacts: NE18: 8N (800 grams); NE18CTII: 11N (1100 grams).

SEALING: Dust proof.

## Materials

HOUSING, ACTUATOR & TERMINAL BOARD: Thermoplastic polyester (UL 94V-0).

MOVABLE CONTACT: Silver nickel alloy, silver plated.

FIXED CONTACTS: Silver nickel alloy, silver plated.

COMMON CONTACTS & TERMINALS: Copper alloy, silver plated.

RETURN SPRING: Music wire.

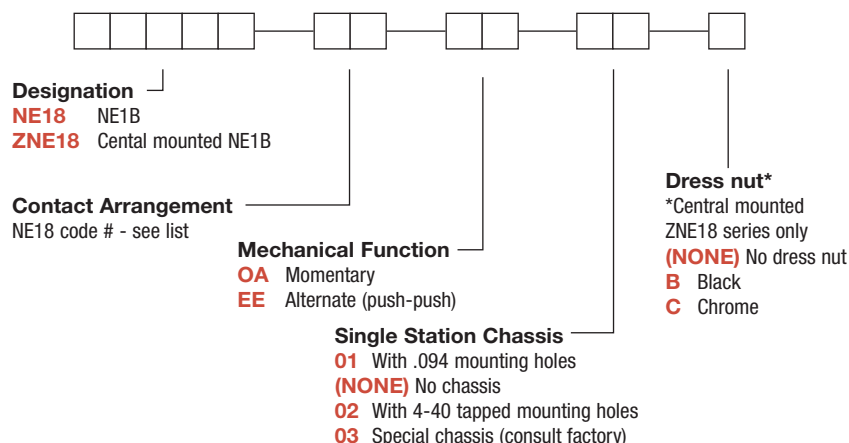
**NOTE:** All models are RoHS compliant and compatible.

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages A-97 thru A-104. For additional options not shown in catalog, consult Customer Service Center.

If requesting only a switch, select the switch as noted below. Buttons are sold separately.



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



# NE-18 Series Mains / Power Switches



**A**  
Pushbutton

## Order Code - Buttons

### Solid Buttons

<p><b>Style</b></p> <p><b>F01</b> FMR</p> <p><b>F02</b> FG*</p> <p><b>F12</b> FSC</p> <p><b>F13</b> FSD</p> <p><b>F14</b> FU12</p> <p><b>F15</b> FSB</p> <p><b>F16</b> FE</p> <p><b>F19</b> FA</p> <p><b>F21</b> F001</p>	<p><b>Button Color</b></p> <p><b>01</b> Black</p> <p><b>02</b> White</p> <p><b>03</b> Red</p> <p><b>04</b> Light gray</p>
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### Mechanical Indicator Buttons

<p><b>Style</b></p> <p><b>F01</b> FA100</p> <p><b>F02</b> FA101</p> <p><b>F07</b> FA120</p> <p><b>F08</b> FA201</p> <p><b>F11</b> FA200*</p>	<p><b>Shell Color</b></p> <p><b>01</b> Black</p>	<p><b>Out Position Color</b></p> <p><b>01</b> Black</p>	<p><b>In Position Color</b></p> <p><b>02</b> White</p> <p><b>06</b> Yellow</p> <p><b>07</b> Blue</p> <p><b>08</b> Green</p> <p><b>12</b> Orange</p>
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\*Button options for central mounting configurations, use 'FG' for central mount with chrome dress nut, use 'FA200' for central mount with black dress nut.

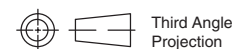
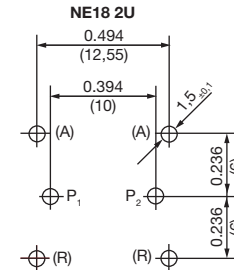
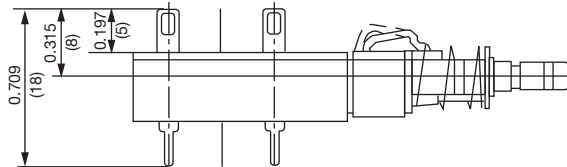
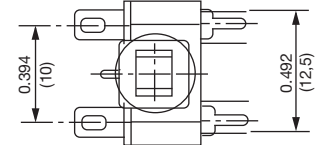
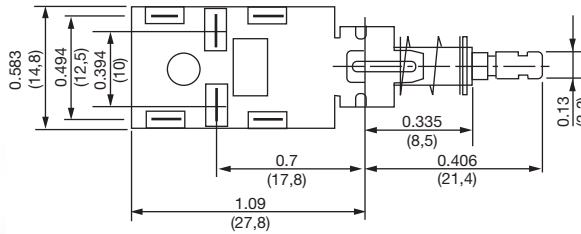
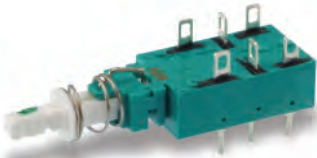
### BUTTON REMOVAL

A button of a push-push switch should only be removed in the "OFF" non-latching position.

## DESIGNATION & SWITCHES WITH STANDARD OPTIONS



### NE1838EE



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



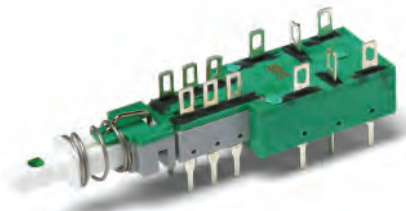
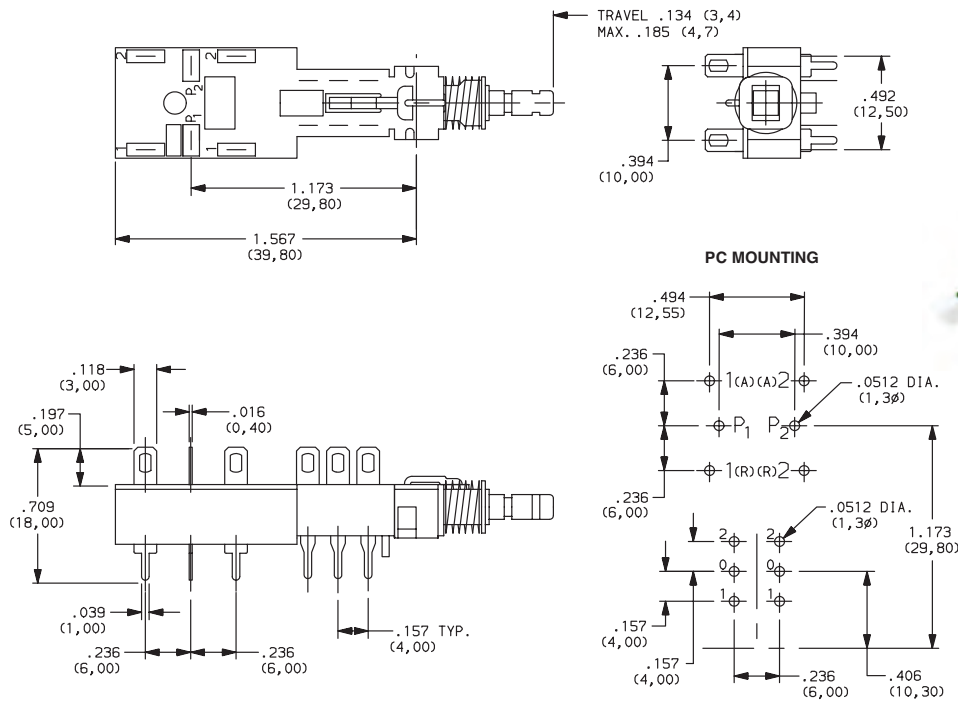
# NE-18 Series Mains / Power Switches

## DESIGNATION & SWITCHES WITH STANDARD OPTIONS

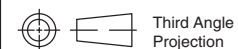
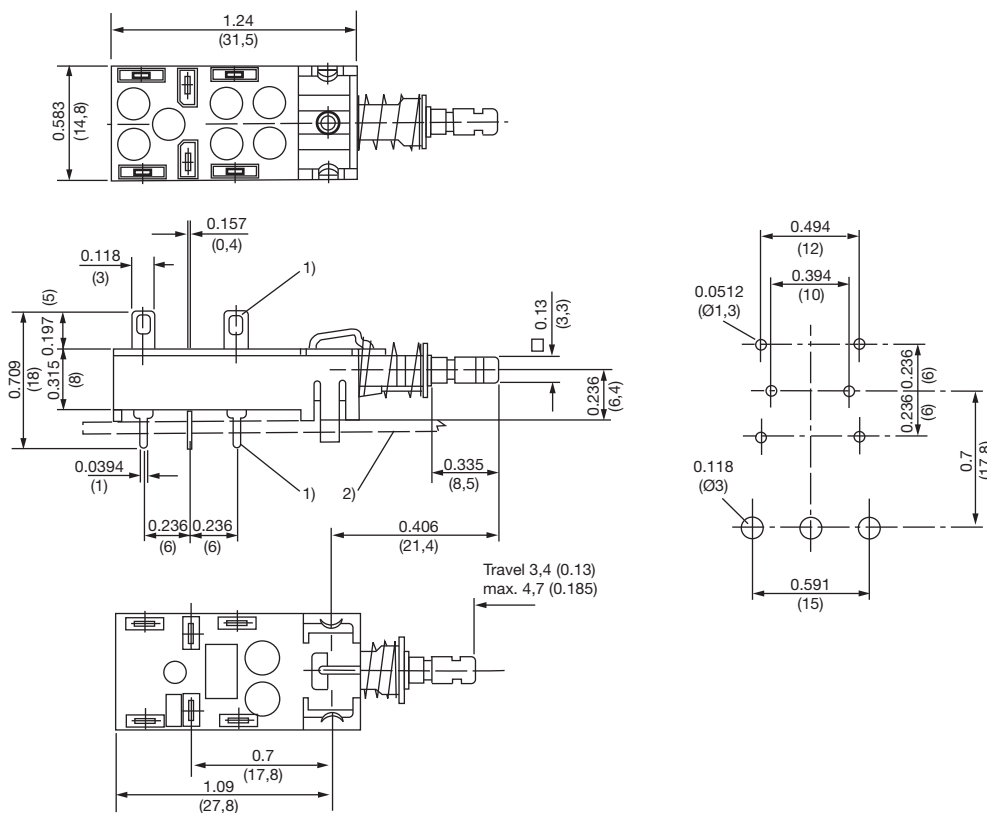


Pushbutton

### NE1839EE



### NE1846EE



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

# NE-18 Series Mains / Power Switches



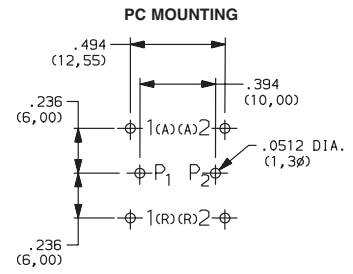
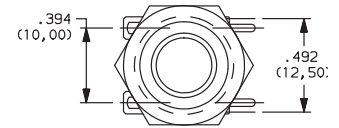
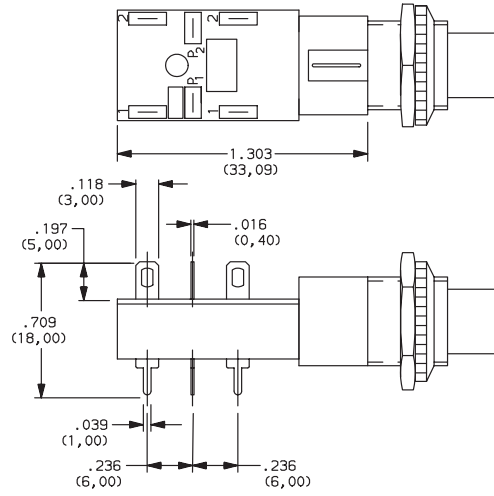
DESIGNATION & SWITCHES WITH STANDARD OPTIONS



**ZNE1838EECF0201**

A

Pushbutton



Third Angle  
Projection

Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



# NE-18 Series Mains / Power Switches

Pushbutton  
A

## CONTACT ARRANGEMENT

OPTION CODE Contact capacity and availability	STYLE	ELECTRICAL CIRCUIT
<b>37</b>	NE18 – 2AX	DPST
<b>38</b>	NE18 – 2UX	DPDT
<b>51</b>	2U + NE18 – 2AX	DPST*
<b>52 (4A/64)</b>	NE18CTII – 2AX	DPST
<b>39</b>	2U + NE18 – 2UX	DPDT*
<b>41</b>	NE18 – 2AP	DPST
<b>42</b>	NE18 – 2UP	DPDT
<b>43</b>	NE18 – 2AW	DPST
<b>44</b>	NE18 – 2UW	DPDT
<b>45</b>	NE18 – 2ASX	DPST

OPTION CODE Contact capacity and availability	STYLE	ELECTRICAL CIRCUIT
<b>46</b>	NE18 – 2USX	DPDT
<b>47</b>	NE18 – 2ASP	DPST
<b>48</b>	NE18 – 2USP	DPDT
<b>49</b>	NE18 – 2ASW	DPST
<b>50</b>	NE18 – 2USW	DPDT
<b>53 (4A/64)</b>	2U + NE18CTII – 2AX	DPST
<b>54</b>	2U + NE18 – 2AW	DPST
<b>55</b>	2U + NE18 – 2AP	DPST
<b>56</b>	2U + NE18 – 2UW	DPDT
<b>57</b>	2U + NE18 – 2UP	DPDT

\* 2U + Denotes auxiliary set of low current contacts DPDT  
 2A = DPST  
 2U = DPDT  
 S = Snap-in mounting  
 X = Solder lug/PC pins  
 W = Solder lugs only  
 P = PC pins only

NOTES  
 1. Contact plating is silver on all Power Switches.  
 2. The electrical function is Break Before Make (BBM) on all Power Switches.  
 3. The terminals will be epoxy sealed.

TYPE	POSSIBLE CONTACT ARRANGEMENT		CONTACT SPACING	PROTECTION CLASS (CEE 24)	APPROVALS
	POWER CONTACTS <sup>1</sup>	AUXILIARY CONTACTS			
NE18	2A <sup>2</sup>	2U	> 3mm (.118 inch)	II	 UL61058-1
NE18	2A <sup>2</sup> 2U	2U	> 3mm (.118 inch)	I	 UL61058-1
NE18CTII	2A <sup>2</sup>	2U	> 3mm (.118 inch)	II	 UL61058-1

1) A = make contact, U = changeover contact  
 2) With 2A mains contacts: Mounting only by PC pins is not sufficient.

## MECHANICAL FUNCTION

OPTION CODE	FUNCTION
<b>OA</b>	Momentary
<b>EE</b>	Alternate (push-push)



Dimensions are shown: Inches (mm)  
 Specifications and dimensions subject to change

# NE-18 Series Mains / Power Switches



A

Pushbutton

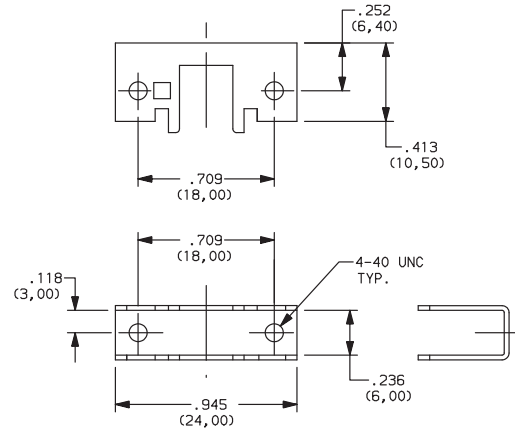
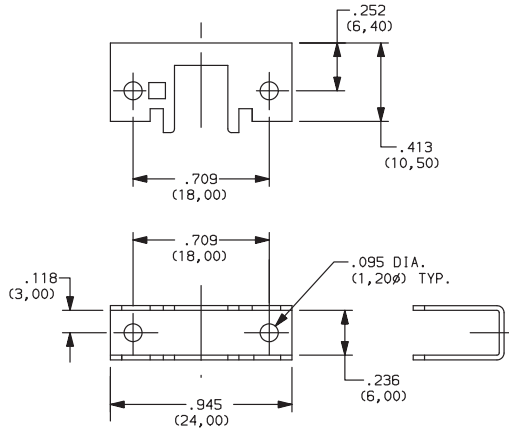
## SINGLE STATION CHASSIS



**01** WITH .094 MOUNTING HOLES

**(NONE)** NO CHASSIS

**02** WITH 4-40 TAPPED MOUNTING HOLES



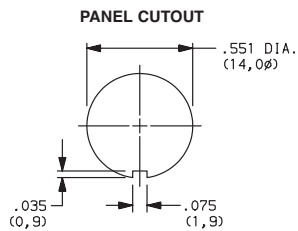
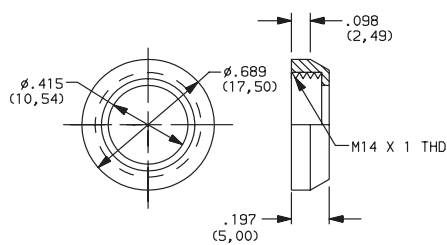
**03** SPECIAL CHASSIS (CONSULT FACTORY)

## DRESS NUT



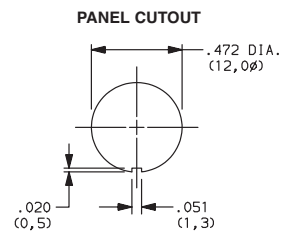
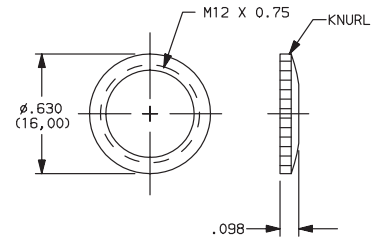
**(NONE)** NO DRESS NUT

**B** BLACK



**NOTE:** Available with ZNE18 designation and FA200 buttons.

**C** CHROME



**NOTE:** Available with ZNE18 designation and FG button.



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



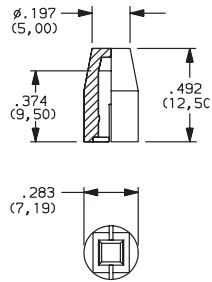
# NE-18 Series Mains / Power Switches

SOLID BUTTON

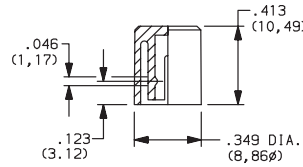
Pushbutton  
A

## STYLE

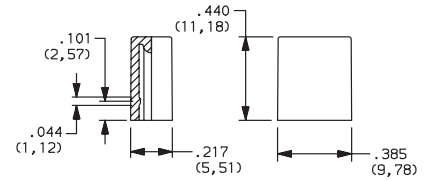
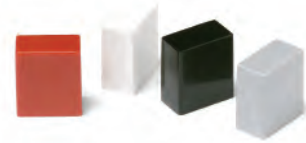
**F01** FMR



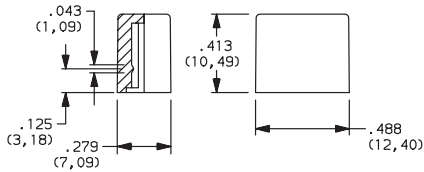
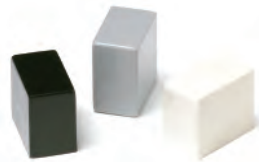
**F02** FG



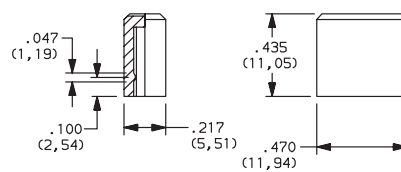
**F12** FSC



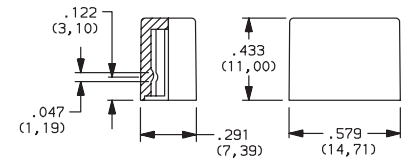
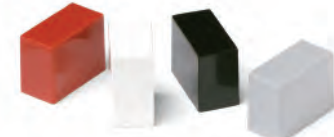
**F13** FSD



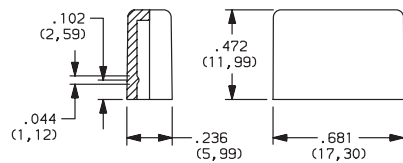
**F14** FU12



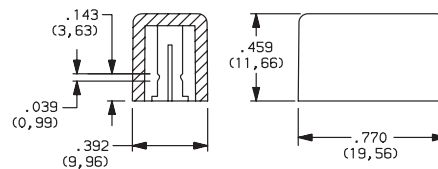
**F15** FSB



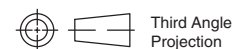
**F16** FE



**F19** FA



OPTION CODE	COLOR
<b>01</b>	BLACK
<b>02</b>	WHITE
<b>03</b>	RED
<b>04</b>	LT. GRAY



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



# NE-18 Series Mains / Power Switches



A

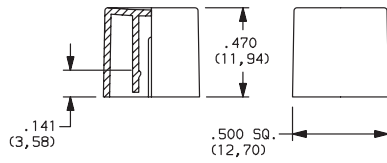
Pushbutton

## SOLID BUTTON



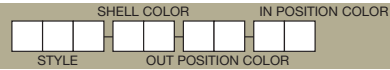
### STYLE

**F21** F001



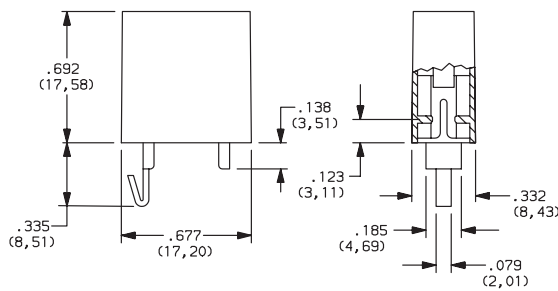
OPTION CODE	COLOR
<b>01</b>	BLACK
<b>02</b>	WHITE
<b>03</b>	RED
<b>04</b>	LT. GRAY
<b>09</b>	BLACK/CHROME (F03, F06 & F07 buttons only)

## MECHANICAL BUTTON

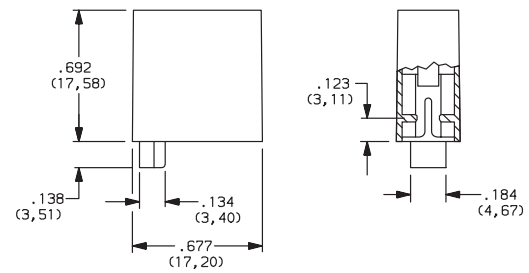


### STYLE

**F01** FA100



**F02** FA101



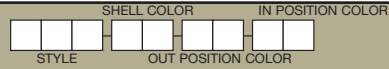
Third Angle  
Projection

Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



# NE-18 Series Mains / Power Switches

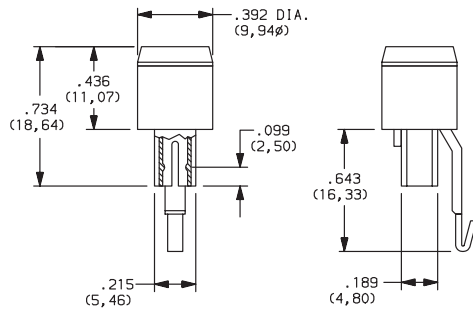
## MECHANICAL BUTTON



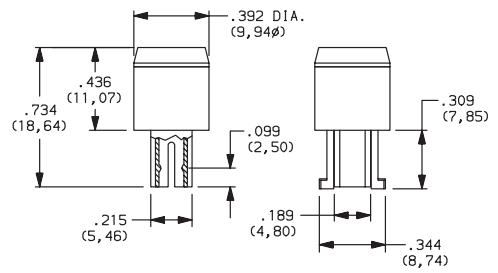
Pushbutton  
A

### STYLE

**F08** FA201



**F11** FA200



### SHELL COLOR

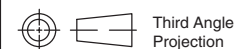
**01** BLACK

### OUT POSITION COLOR

**01** BLACK

### IN POSITION COLOR

OPTION CODE	COLOR
<b>02</b>	WHITE
<b>06</b>	YELLOW
<b>07</b>	BLUE
<b>08</b>	GREEN
<b>12</b>	ORANGE



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



# FP Series Sealed Ultra Miniature Pushbutton Switches



A

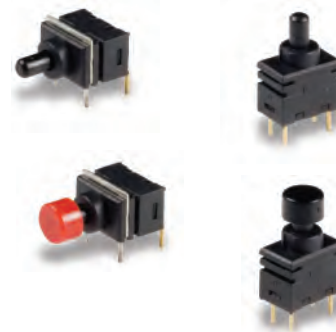
Pushbutton

## Features/Benefits

- Vertical and right angle mount
- Extended operating life 50,000 cycles
- Optional caps
- Sealed against soldering and cleaning processes
- RoHS compliant

## Typical Applications

- Networking equipment
- Modems
- Reset functions
- Instrumentation



## Specifications

CONTACT RATING: Max. 0.4 VA (28 V DC or V AC).  
 ELECTRICAL LIFE: 50,000 cycles.  
 CONTACT RESISTANCE: (10mA @ 2 V DC) 80 mΩ max. initial.  
 INSULATION RESISTANCE: 500MΩ min. @ 500 V DC - 1 minute.  
 OPERATING TEMPERATURE: -20°C to 80°C.  
 SOLDERABILITY: Per MIL-STD-202F method 208D, or EIA RS-186E method 9.  
 PACKAGING:  
 Tray pack - 100 switches per tray.  
 Caps (optional) - Bulk bag; 100 caps per bag.

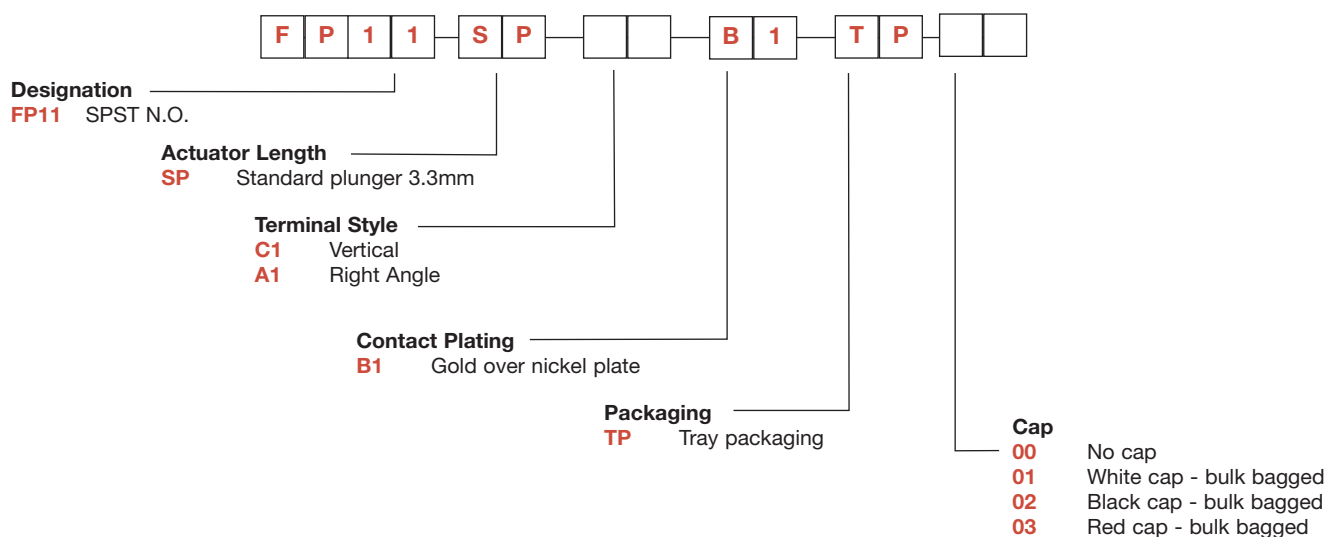
## Materials

MOVABLE CONTACTS:  
 Base metal: Phosphor bronze  
 Plating: Gold over nickel plate  
 FIXED CONTACTS:  
 Base metal: Brass  
 Plating: Gold over nickel plate  
 COVER: PA66 - Black  
 ACTUATOR: PPS - Black  
 BASE: PPS - Black  
 SUPPORT BRACKET (A1 Terminal Style only): Steel with tin plate

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages A-106 thru A-107. For additional options not shown in catalog, consult Customer Service Center.



Dimensions are shown: Inches (mm)  
 Specifications and dimensions subject to change

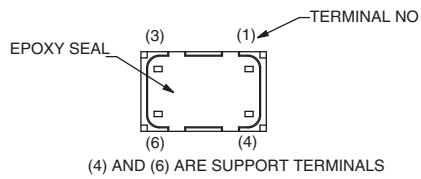
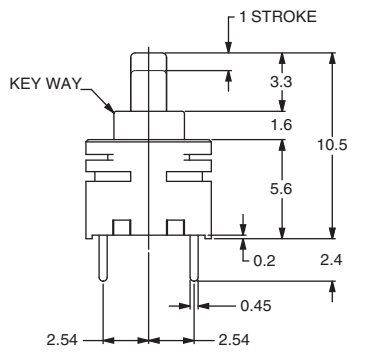
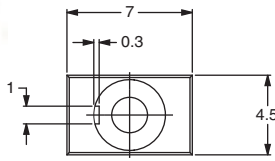


# FP Series Sealed Ultra Miniature Pushbutton Switches

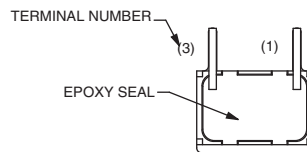
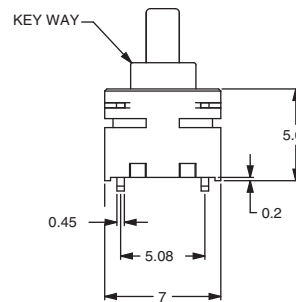
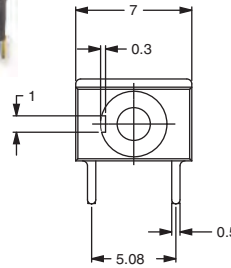
## SWITCH FUNCTION

Pushbutton  
A

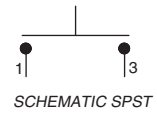
**C1** VERTICAL



**A1** RIGHT ANGLE

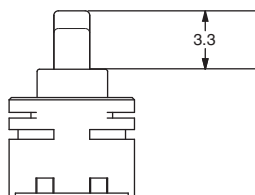


MODEL NO.	SWITCH FUNCTION	
	POS. 1	POS. 2
FP11		
	CONNECTED TERMINALS	
	OPEN	1-3



## ACTUATOR LENGTH

**SP** STANDARD PLUNGER 3.3MM



Dimensions are shown: mm  
Specifications and dimensions subject to change

# FP Series Sealed Ultra Miniature Pushbutton Switches

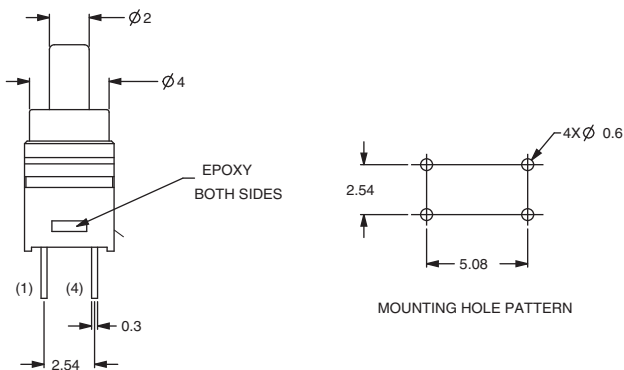


A

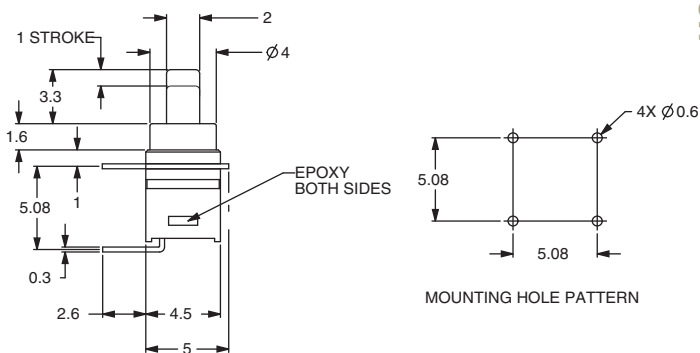
Pushbutton

## TERMINAL STYLE

**C1** VERTICAL



**A1** RIGHT ANGLE



## CONTACT PLATING

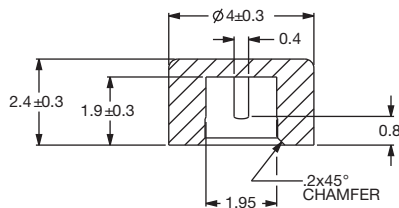
**B1** GOLD OVER NICKEL PLATE

## PACKAGING

**TP** TRAY PACKAGING

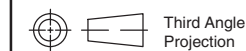
## CAPS

OPTION CODE	DESCRIPTION
<b>00</b>	NO CAP
<b>01</b>	WHITE CAP, BULK BAGGED
<b>02</b>	BLACK CAP, BULK BAGGED
<b>03</b>	RED CAP, BULK BAGGED



To purchase Caps separately without switch,  
please use these part numbers

PART #	COLOR
798D01000	WHITE
798D02000	BLACK
798D03000	RED



Dimensions are shown: mm  
Specifications and dimensions subject to change

www.ck-components.com



Pushbutton  
A

# AP Series Industrial Pushbutton Switch

## Features/Benefits

- IP67 sealed
- 1,000,000 life cycle
- Illumination / non-illumination
- Multiple colored caps
- Threaded or snap-in mounting
- Caps available separately
- RoHS compliant

## Typical Applications

- Harsh environments
- Off-Road
- Industrial
- Medical
- Transportation
- Joystick control modules
- Gaming
- Military



## Specifications

FUNCTION: SPST Momentary  
 CONTACT ARRANGEMENT: N.O.  
 MOUNTING TYPE:  
 Snap-in (no panel seal)  
 Threaded body (hex nut, lock washer, and panel seal gasket provided)  
 Torque spec for threaded body: Do not exceed 8-9 in-lbs (0.9-1.0 N.m)

## Mechanical

OPERATING LIFE: 1,000,000 cycles  
 TOTAL TRAVEL: 2.1 ± 0.2 mm  
 OPERATING POINT 1.55 ± 0.25 mm  
 OVER TRAVEL: 0.6 min.  
 OPERATING FORCE: 4N ± 1N standard configuration; other force option 2N ± 0.5N  
 VIBRATION: 10-500 Hz 10g Max  
 SHOCK: 60g 11ms sawtooth wave

## Electrical

CONTACT RATING:  
 200mA @ 24 V DC resistive (500,000 cycles)  
 100mA @ 50 V DC resistive (500,000 cycles)  
 400mA @ 32 V AC resistive (500,000 cycles)  
 125mA @ 125 V AC resistive (1,000,000 cycles)  
 DIELECTRIC STRENGTH: 1000 V AC min.  
 INSULATION RESISTANCE: 1 G Ω @ 500 VDC  
 INITIAL CONTACT RESISTANCE 50 mΩ max (without wire leads)  
 BOUNCE TIME: <5 ms

## Materials

HOUSING: PBT  
 BASE: PBT  
 CAP: PBT  
 ACTUATOR:  
 Illuminated: Clear polycarbonate  
 Non-illuminated: PBT  
 INTERNAL SEAL: Silicone rubber  
 TERMINALS: Copper alloy, gold over silver plating  
 MOVABLE CONTACT: Copper alloy, gold over silver plating  
 TERMINAL SEAL: Epoxy  
 WIRE LEADS: UL1569 Black 22 AWG

## Operating Environment

OPERATING TEMPERATURE: -40°C to 85°C (+105°C non-illuminated)  
 ESD PROTECTION: 20 KV min.

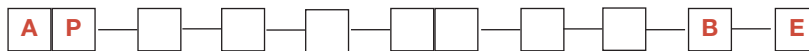
## Process Environment

SEALING: IP67 for threaded body  
 IP65 for snap-in version (no panel seal)

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box.



### Designation

**AP** AP Series

### Operating Force

**2** 2 Newtons  
**4** 4 Newtons

### Actuator Style

**D** Dome / Convex  
**C** Concave  
**E** Extended Dome  
**N** None

### Actuator Color

**0** No Cap  
**2** Black  
**3** Red  
**4** Orange  
**5** Yellow  
**6** Green  
**7** Blue  
**9** Gray

### Illumination

**00** No LED\*  
**01** Super White  
**02** Bi-color; Red (Green)  
**03** Red  
**05** Amber  
**06** Green  
**07** Super Blue  
**08** Bi-color; Amber (Green)

### Bushing Style\*\*

**S\*\*** Snap-in plastic  
**T** Threaded plastic

\*\* No panel seal option

\*\*\* PC terminals not available with illumination

Contact Customer Service for additional hardware options.

### Terminal Seal

**E** Epoxy  
 All models are epoxy sealed

### Contact Material

**B** Gold

### Termination

**Z** Solder Lug  
**W** 12" Wire Leads 22 AWG  
**C\*\*\*** PC Terminals

Please contact Customer Service for additional colors and paint / laser etched button options.



\* No LED available in short body only

Specifications and dimensions subject to change

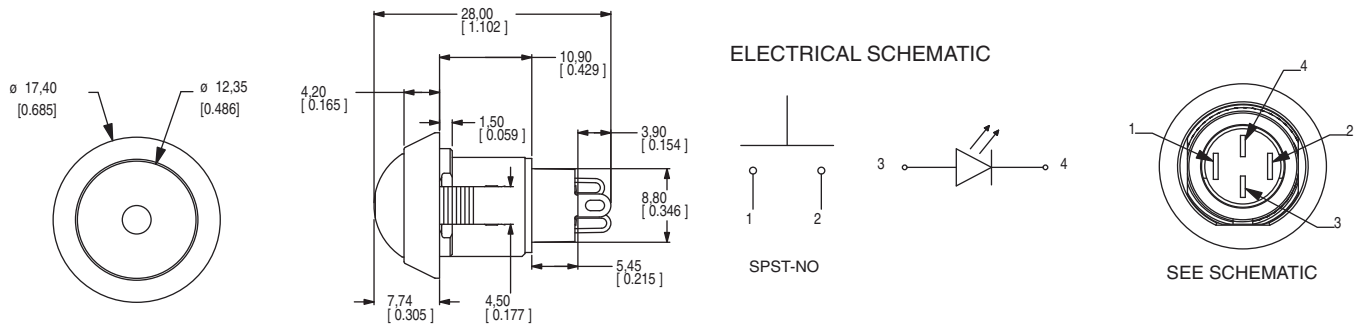
# AP Series Industrial Pushbutton Switch



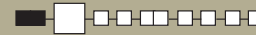
A

Pushbutton

## STANDARD VIEW

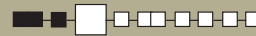


## OPERATING FORCE

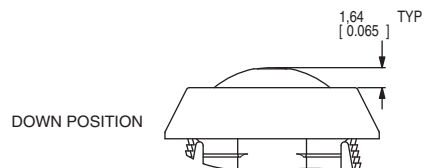
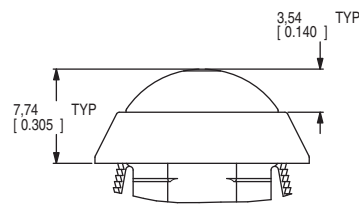


OPTION CODE	OPERATING FORCE
<b>2</b>	2 N, 200 g
<b>4</b>	4 N, 400 g

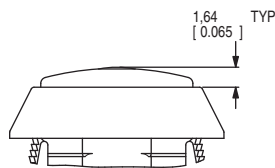
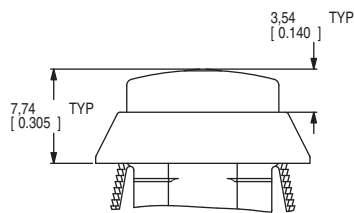
## ACTUATOR STYLE



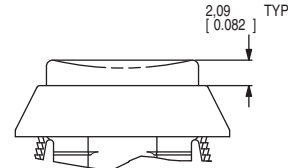
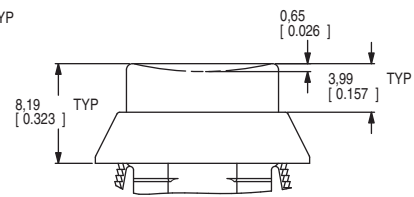
### D DOME / CONVEX



### E EXTENDED DOME



### C CONCAVE

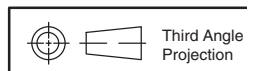


## ACTUATOR COLOR



OPTION CODE	ACTUATOR COLOR
<b>0</b>	No Cap
<b>2</b>	Black
<b>3</b>	Red
<b>4</b>	Orange
<b>5</b>	Yellow
<b>6</b>	Green
<b>7</b>	Blue
<b>9</b>	Gray

For additional colors please contact Customer Service.



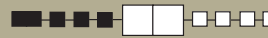
Dimensions are shown: mm (inches)  
Specifications and dimensions subject to change



# AP Series Industrial Pushbutton Switch

Pushbutton  
A

## ILLUMINATION

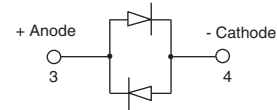


OPTION CODE	ILLUMINATION TYPE	TYPICAL INTENSITY*		PEAK WAVELENGTH	Vf Forward Voltage
		MIN	MAX		
		(mcd)		(nm)	
00	Model without illumination	N/A		N/A	
01	LED Super White	4,000	5,000	N/A	3.5
02	LED Bi-Color – Red (Green)	10	20	635/565	2.0
03	LED Red	4	8	700	2.0
05	LED Amber	35	50	610	2.0
06	LED Green	35	50	565	2.0
07	LED Super Blue	800	1,500	470	3.8
08	LED Bi-Color – Amber (Green)	10	10	585/565	2.0

\*LED FORWARD CURRENT: 20 mA  
LED FORWARD VOLTAGE: see chart above  
LED REVERSE VOLTAGE: 5.0 V MAX

\* For information on specific and custom LED, please contact Customer Service.

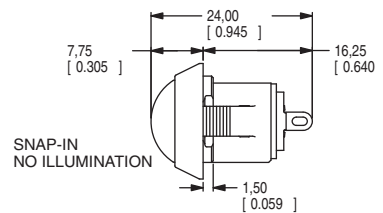
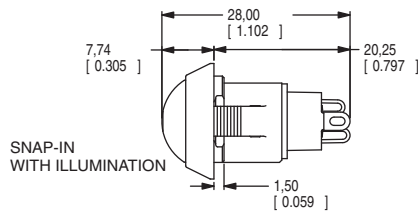
NOTE:  
For bi-color LED's the polarity must be reversed to alternate the color



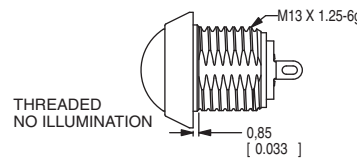
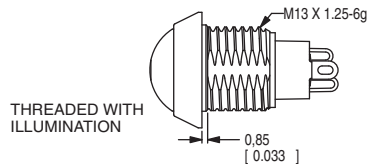
## BUSHING STYLE



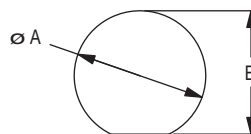
### S SNAP-IN



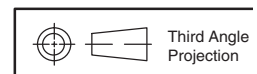
### T THREADED PLASTIC



### PANEL CUTOUT



PANEL THICKNESS	DIM A (± 0.05 mm)	DIM B (± 0.05 mm)
1 mm [0.039 in]	13.70 mm [0.539 in]	13.00 mm [0.512 in]
2 mm [0.079 in]	13.80 mm [0.539 in]	13.00 mm [0.512 in]
3 mm [0.118 in]	13.90 mm [0.547 in]	13.10 mm [0.516 in]
THREADED BODY MIN PANEL THICKNESS 1 mm	13.70 mm [0.539 in]	13.00 mm [0.512 in]



A 0.1mm min. chamfer on the leading edge of the mounting hole is recommended for snap-in version.

Dimensions are shown: mm (inches)  
Specifications and dimensions subject to change

# AP Series Industrial Pushbutton Switch



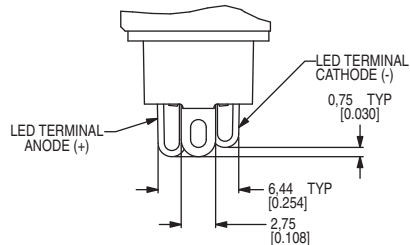
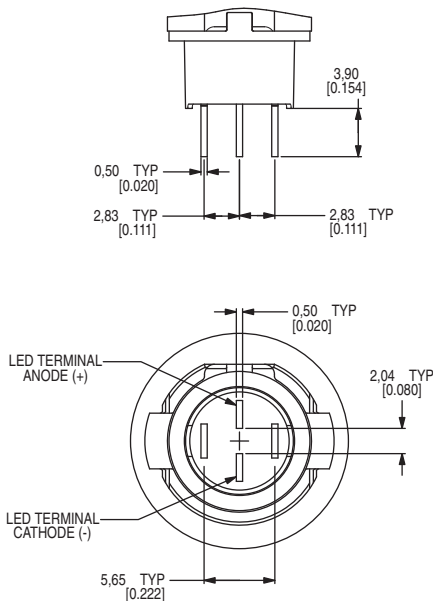
A

Pushbutton

## TERMINATION



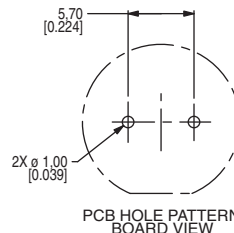
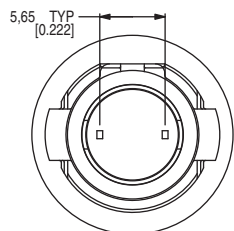
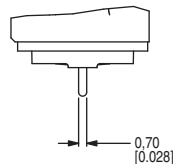
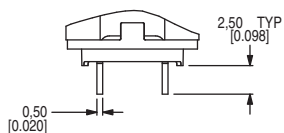
### Z SOLDER LUG



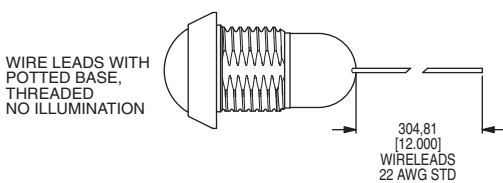
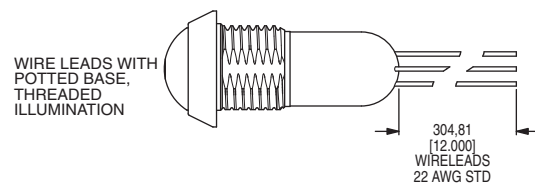
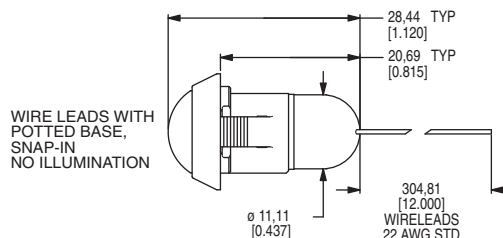
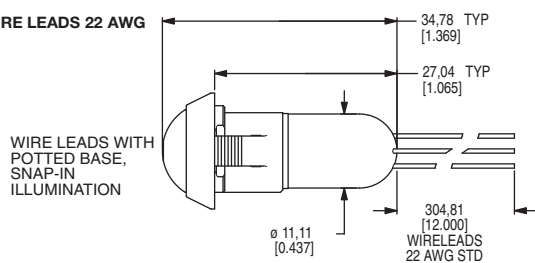
\* Switching terminals are gold and LED terminals are silver

### C PC TERMINALS

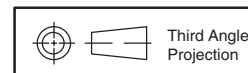
\*\*\* Illumination not available with PC Terminals



### W 12" WIRE LEADS 22 AWG



Wires: Black wires - Terminals  
Red wires - LED (+) Positive  
White wire - LED (-) Negative



Dimensions are shown: mm (inches)  
Specifications and dimensions subject to change



# AP Series Industrial Pushbutton Switch

A

Pushbutton

## CONTACT MATERIAL



**B** GOLD

OPTION CODE	CONTACT MATERIAL
<b>B</b>	Gold

## TERMINAL SEAL



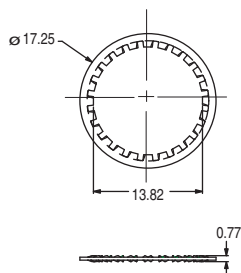
**E** EPOXY

All models are epoxy sealed

## HARDWARE

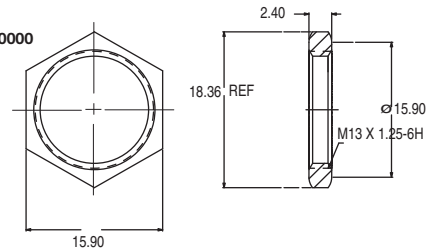
### LOCK WASHER

Part Number 647D00000



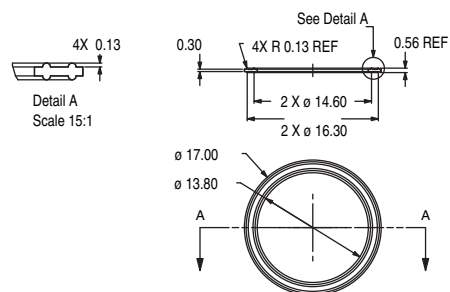
### HEX NUT

Part number 515D00000

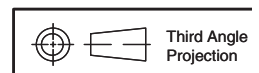


### PANEL SEAL

Part Number 655D00000



Caps available on next page



Dimensions are shown: mm (inches)  
Specifications and dimensions subject to change





## AVAILABLE CAPS



481D XX XXX

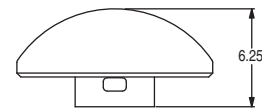
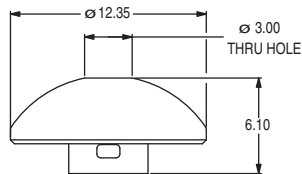
Cap Color  
Style

OPTION	CAP COLOR
01	WHITE
02	BLACK
03	RED
04	ORANGE
05	YELLOW
06	GREEN
07	BLUE
08	BROWN
09	GRAY

PART NUMBER	HOLE	STYLE
481DXX000	NO	DOME
481DXX001	YES	DOME
481DXX002	NO	EXTENDED DOME
481DXX003	YES	EXTENDED DOME
481DXX004	NO	CONCAVE
481DXX005	YES	CONCAVE

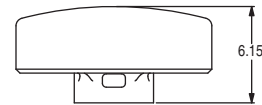
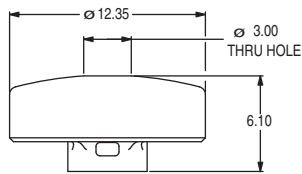
### DOME

481DXX000 = NO HOLE  
481DXX001 = HOLE



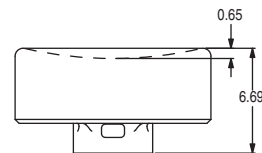
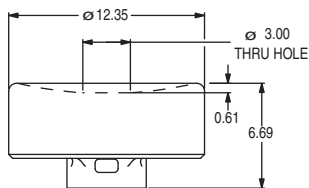
### EXTENDED DOME

481DXX002 = NO HOLE  
481DXX003 = HOLE



### CONCAVE

481DXX004 = NO HOLE  
481DXX005 = HOLE





# APB Series Backlit Pushbutton Switch

Pushbutton  
A

## Features/Benefits

- IP67 sealed
- 1,000,000 life cycle
- Illumination
- Threaded or snap-in mounting
- RoHS compliant

## Typical Applications

- Harsh environments
- Off-Road
- Industrial
- Medical
- Transportation
- Joystick control modules
- Gaming
- Military



## Specifications

FUNCTION: SPST Momentary  
 CONTACT ARRANGEMENT: N.O.  
 MOUNTING TYPE:  
 Snap-in (no panel seal)  
 Threaded body (hex nut, lock washer, and panel seal gasket provided)  
 Torque spec for threaded body: Do not exceed 8-9 in-lbs (0.9-1.0 N.m)

## Mechanical

OPERATING LIFE: 1,000,000 cycles  
 TOTAL TRAVEL: 2.1 ± 0.2 mm  
 OPERATING POINT 1.55 ± 0.25 mm  
 OVER TRAVEL: 0.6 min.  
 OPERATING FORCE: 4N ± 1N standard configuration; other force  
 option 2N ± 0.5N  
 VIBRATION: 10-500 Hz 10g Max  
 SHOCK: 60g 11ms sawtooth wave

## Electrical

CONTACT RATING:  
 200mA @ 24 V DC resistive (500,000 cycles)  
 100mA @ 50 V DC resistive (500,000 cycles)  
 400mA @ 32 V AC resistive (500,000 cycles)  
 125mA @ 125 V AC resistive (1,000,000 cycles)  
 DIELECTRIC STRENGTH: 1000 V AC min.  
 INSULATION RESISTANCE: 1 G Ω @ 500 VDC  
 INITIAL CONTACT RESISTANCE 50 mΩ max (without wire leads)  
 BOUNCE TIME: <5 ms

## Materials

HOUSING: PBT  
 BASE: PBT  
 CAP: Painted polycarbonate  
 ACTUATOR:  
 Illuminated: Clear polycarbonate  
 INTERNAL SEAL: Silicone rubber  
 TERMINALS: Copper alloy, gold over silver plating  
 MOVABLE CONTACT: Copper alloy, gold over silver plating  
 TERMINAL SEAL: Epoxy  
 WIRE LEADS: UL1569 Black 22 AWG

## Operating Environment

OPERATING TEMPERATURE: -40°C to 85°C  
 ESD PROTECTION: 20 KV min.

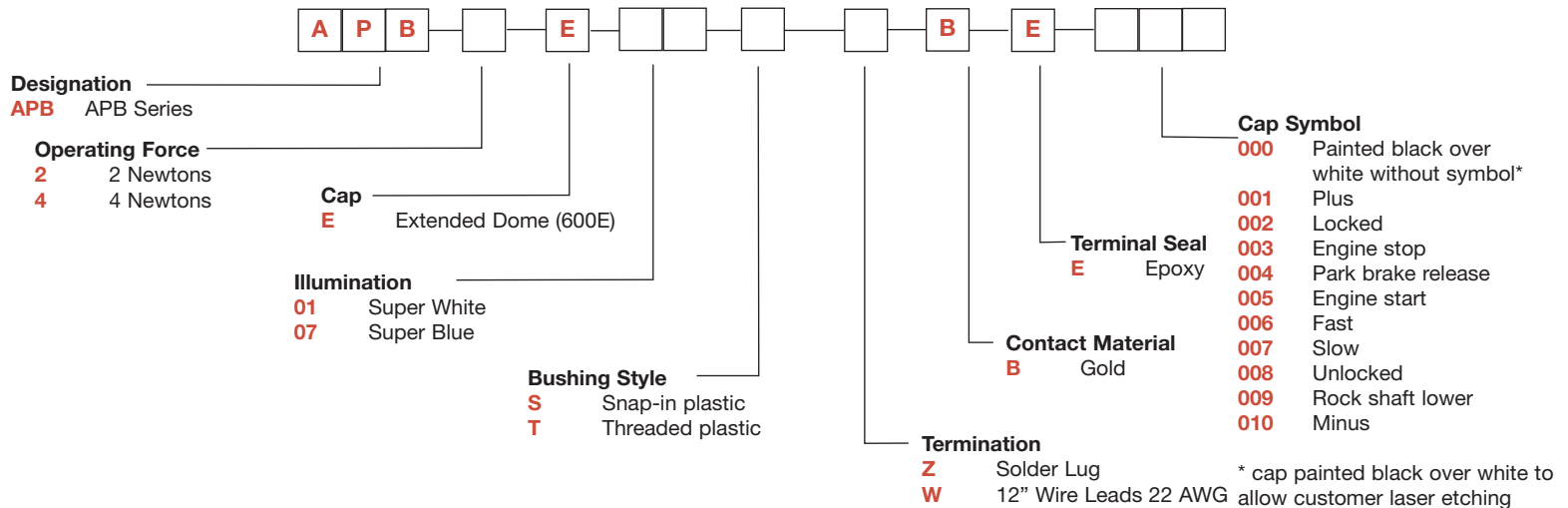
## Process Environment

SEALING: IP67 for threaded body  
 IP65 for snap-in version (no panel seal)

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box.

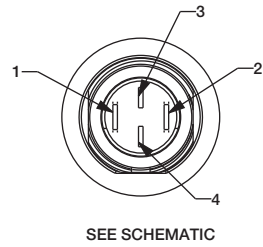
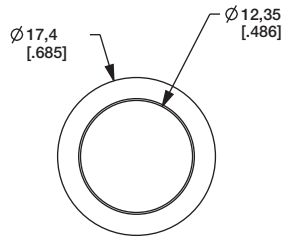
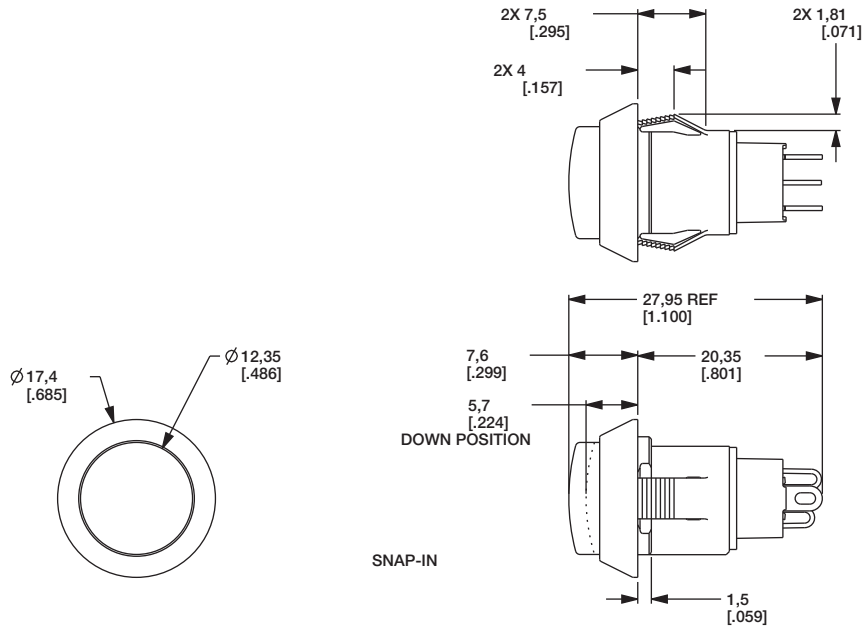


# APB Series Backlit Pushbutton Switch

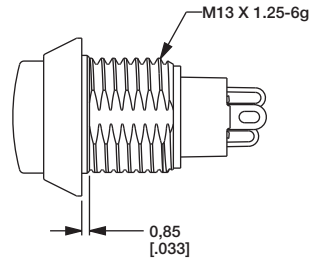


A

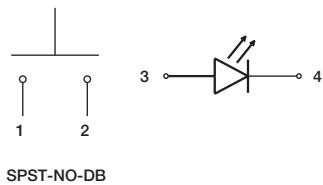
Pushbutton



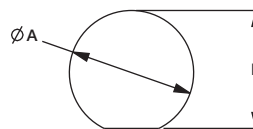
THREADED



ELECTRICAL SCHEMATIC

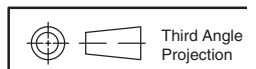


PANEL CUTOUT



PANEL THICKNESS	DIM A (±0.05 MM)	DIM B (±0.05 MM)
1 MM [0.039 IN]	13.70 MM [0.539 IN]	13.00 MM [0.512 IN]
2 MM [0.079 IN]	13.80 MM [0.539 IN]	13.00 MM [0.512 IN]
3 MM [0.118 IN]	13.90 MM [0.547 IN]	13.10 MM [0.516 IN]
THREADED BODY MIN PANEL THICKNESS 1 MM	13.70 MM [0.539 IN]	13.00 MM [0.512 IN]

A 0.1 MM MIN CHAMFER ON THE LEADING EDGE OF MOUNTING HOLE IS RECOMMENDED FOR SNAP-IN VERSION.



Third Angle  
Projection



12 Oct 16

A-115

Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

[www.ck-components.com](http://www.ck-components.com)



# APB Series Backlit Pushbutton Switch

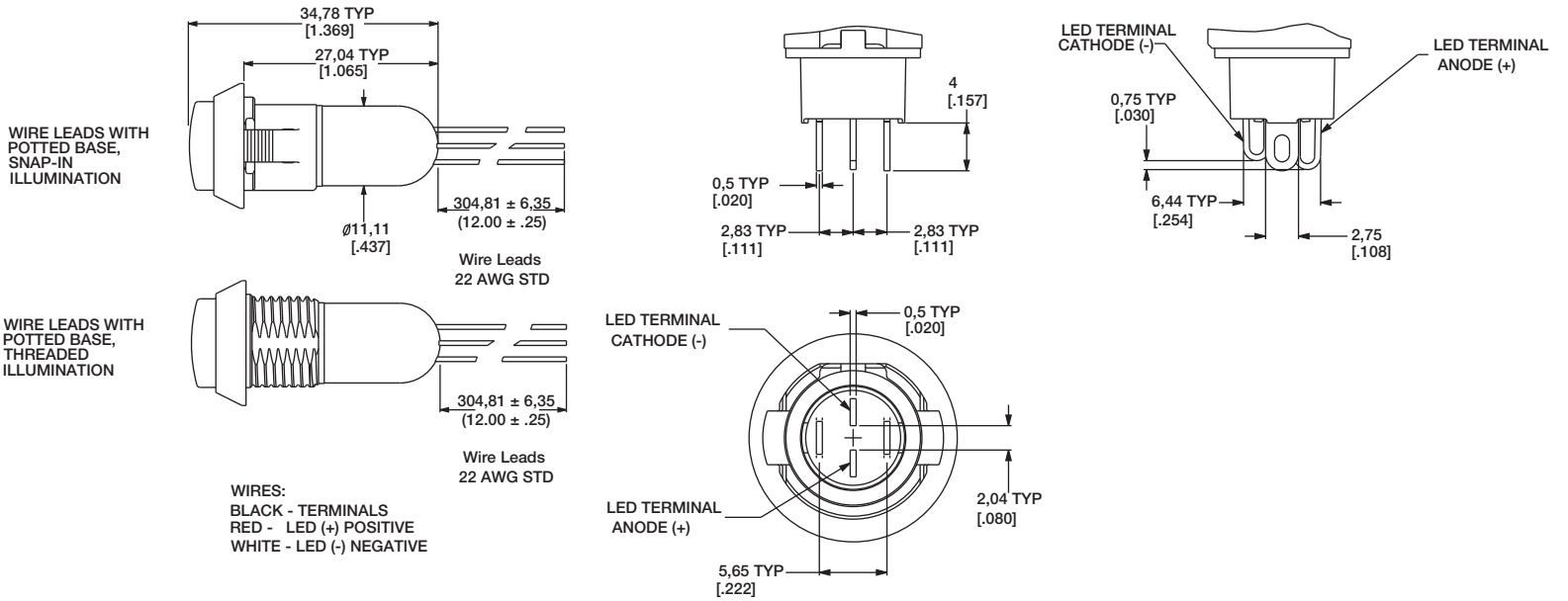
## TERMINATION

Pushbutton

A

**W** 12" WIRE LEADS

**Z** SOLDER LUG



## CONTACT MATERIAL

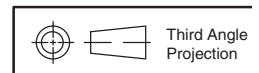
**B** GOLD

OPTION CODE	CONTACT MATERIAL
<b>B</b>	Gold

## TERMINAL SEAL

**E** EPOXY

All models are epoxy sealed



12 Oct 16

A-116

Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

[www.ck-components.com](http://www.ck-components.com)

# APB Series Backlit Pushbutton Switch



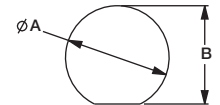
A

## CAP SYMBOLS

	-000		NO SYMBOL
	-001		PLUS
	-002		LOCKED
	-003		ENGINE STOP
	-004		PARK BRAKE RELEASE
	-005		ENGINE START

	-006		FAST
	-007		SLOW
	-008		UNLOCKED
	-009		ROCK SHAFT LOWER
	-010		MINUS

### PANEL CUTOUT



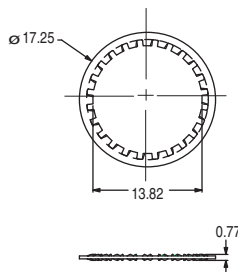
Panel Orientation  
Flat indicates bottom

See chart on previous page  
for dimensions

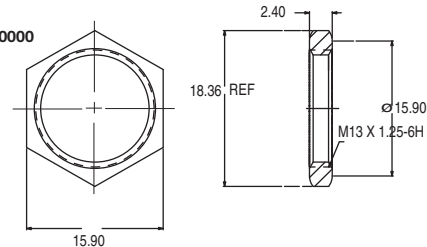
NOTES:  
1. ALL GRAPHICS MUST BE POSITIONED AS SHOWN, PERPENDICULAR TO ALIGNMENT FEATURE ON UNDERSIDE OF CAP.  
2. GRAPHIC MARKING MUST BE ALIGNED WITH THE FLAT FEATURE ON THE UNDERSIDE OF THE CAP AS SHOWN, TOLERANCE  $\pm 3^\circ$

## HARDWARE

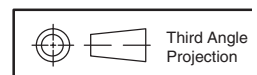
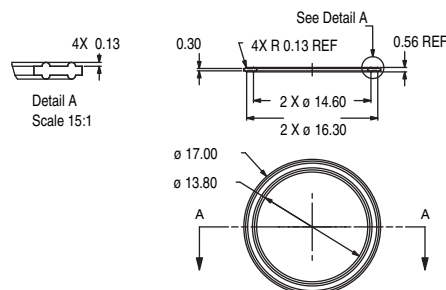
LOCK WASHER  
Part Number 647D00000



HEX NUT  
Part number 515D00000



PANEL SEAL  
Part Number 655D00000



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change





# HP Series Hall Effect Pushbutton Switch

Pushbutton  
A

## Features/Benefits

- IP68 sealed
- 10,000,000 life cycle
- Multiple colored caps
- Redundant output available

## Typical Applications

- Harsh environments
- Off-Road
- Industrial
- Medical
- Transportation
- Joystick control modules
- Gaming
- Military



## Specifications

FUNCTION: Linear output (See chart on next page)  
MOUNTING TYPE: Front mount, Rear mount

## Mechanical

MECHANICAL TRAVEL: 0.150 (3.81mm)  
SHOCK: 60g 11ms sawtooth wave  
VIBRATION: 10-500Hz 10g max.

## Electrical

SUPPLY VOLTAGE: 5 ± 0.5 VDC  
SUPPLY CURRENT: 10mA max.  
OUTPUT CURRENT: 1mA max.  
OUTPUT VOLTAGE: Programable from 0.5 -4.5V  
ESD PROTECTION: 16kV per EIA-545

## Materials

CASE / BUSHING: Anodized Aluminum  
INSIDE HOUSING: PBT  
CAP: PBT  
ACTUATOR: PBT

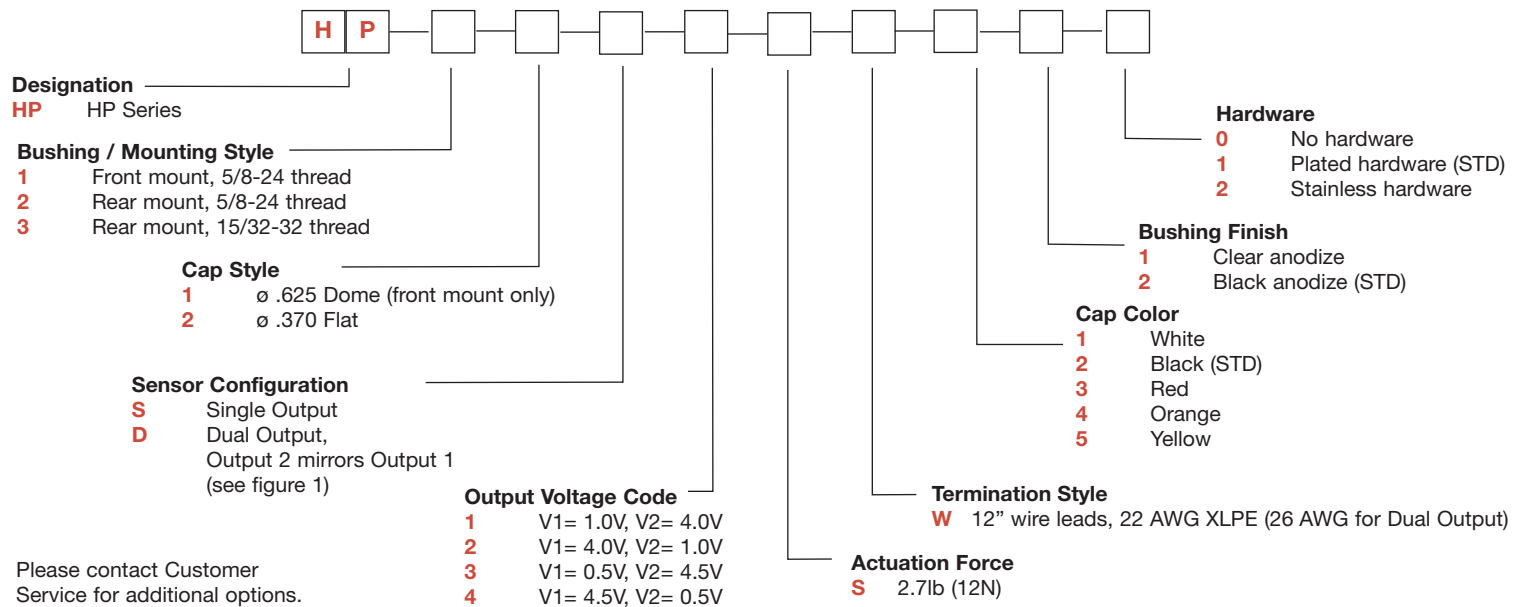
## Operating Environment

OPERATING TEMPERATURE: -40°C to 85°C  
OPERATING LIFE: 10,000,000 cycles  
SEALING: IP68S

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box.



Specifications and dimensions subject to change

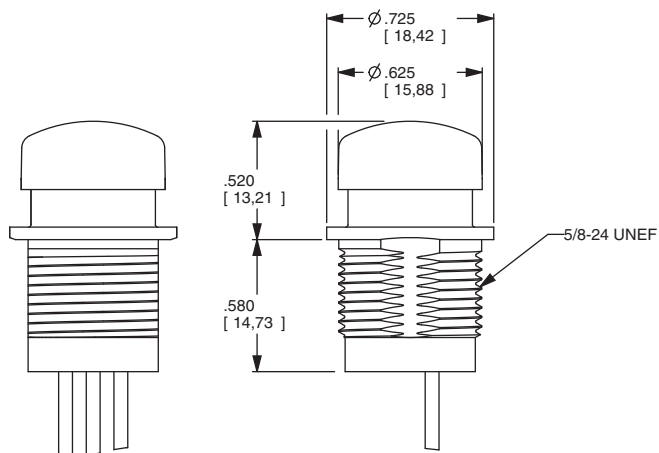
# HP Series Hall Effect Pushbutton Switch



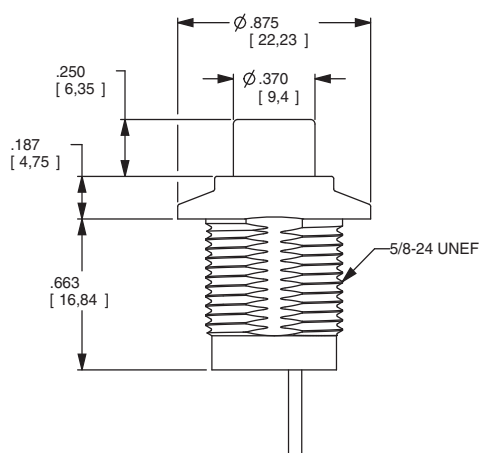
A

Pushbutton

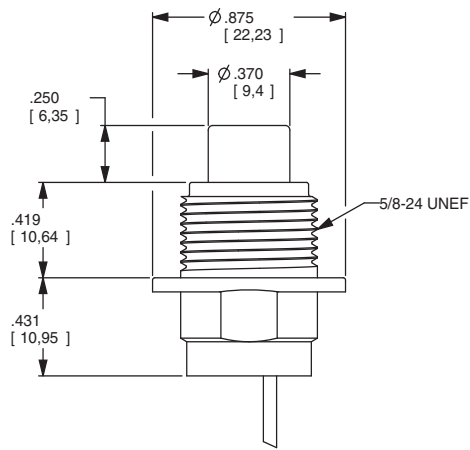
## STANDARD VIEW



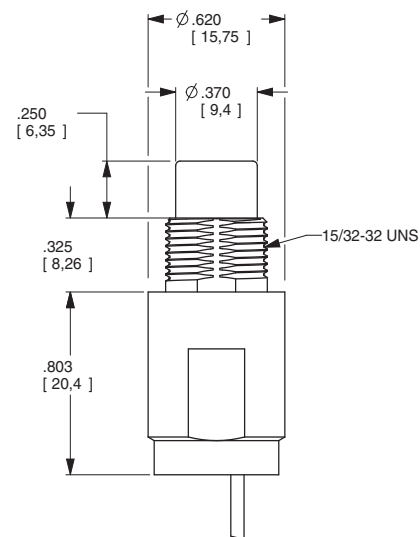
HP11



HP12



HP22



HP32

FIGURE 1: OUTPUT VOLTAGE

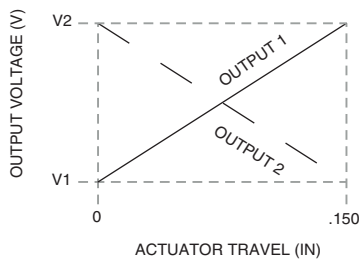
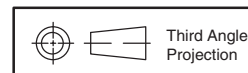
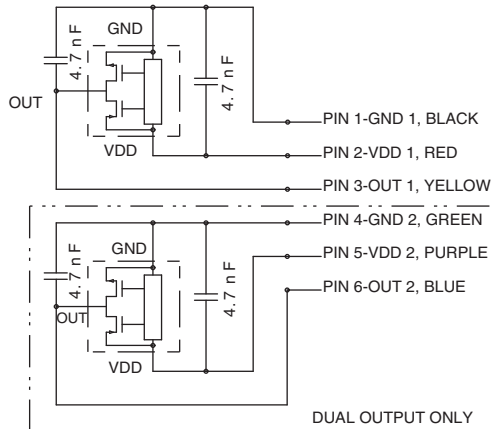


FIGURE 2- SCHEMATIC



Third Angle  
Projection



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



# NP Series Sealed Industrial Pushbutton Switch

Pushbutton  
A

## Features/Benefits

- IP68 sealed
- 1,000,000 life cycle
- Multiple housing styles
- Capable of up to 5A resistive load
- Wirelead options available
- RoHS compliant

## Typical Applications

- Harsh environments
- Off-Road
- Industrial
- Transportation
- Military



## Specifications

FUNCTION: SPDT Double Break (Form Z) Momentary  
CONTACT ARRANGEMENT: N.O. and N.C.  
MOUNTING TYPE: Threaded front or rear mount and slot mount  
TORQUE SPEC FOR THREADED BODY: Do not exceed 50 in-lbs (5.65 N-m)

## Mechanical

OPERATING LIFE: 1,000,000 cycles  
TOTAL TRAVEL: 1.6 ± 0.15 mm  
OPERATING POINT 0.9 ± 0.25 mm  
OVER TRAVEL: 0.45 min.  
OPERATING FORCE: 8N ± 1.5N  
VIBRATION: 10-500 Hz 10g Max  
SHOCK: 50g 11ms sawtooth wave

## Electrical

CONTACT RATING:  
Option G - Gold over Silver  
10mA/5 VDC (1,000,000 cycles)  
Option Q - Silver  
1A/32 VDC resistive (100,000 cycles)  
5A/32 VDC resistive (25,000 cycles)  
3A/32 VDC resistive (25,000 cycles)

## Electrical (cont.)

DIELECTRIC STRENGTH: 1000 V AC for 1 min.  
INSULATION RESISTANCE: 1 G Ω @ 500 VDC  
INITIAL CONTACT RESISTANCE 50 mΩ max (without wire leads)  
BOUNCE TIME: <5 ms

## Materials

HOUSING: 6061-T6 Aluminum, black or clear anodized  
BASE: PBT  
CAP: PBT  
ACTUATOR: PBT  
INTERNAL SEAL: Silicone rubber  
TERMINALS: Copper with silver nickel inlay, silver plating  
MOVABLE CONTACT: Copper alloy, gold over silver plating  
TERMINAL SEAL: Epoxy

## Operating Environment

OPERATING TEMPERATURE: -40°C to +85°C  
ESD PROTECTION: 15KV min.

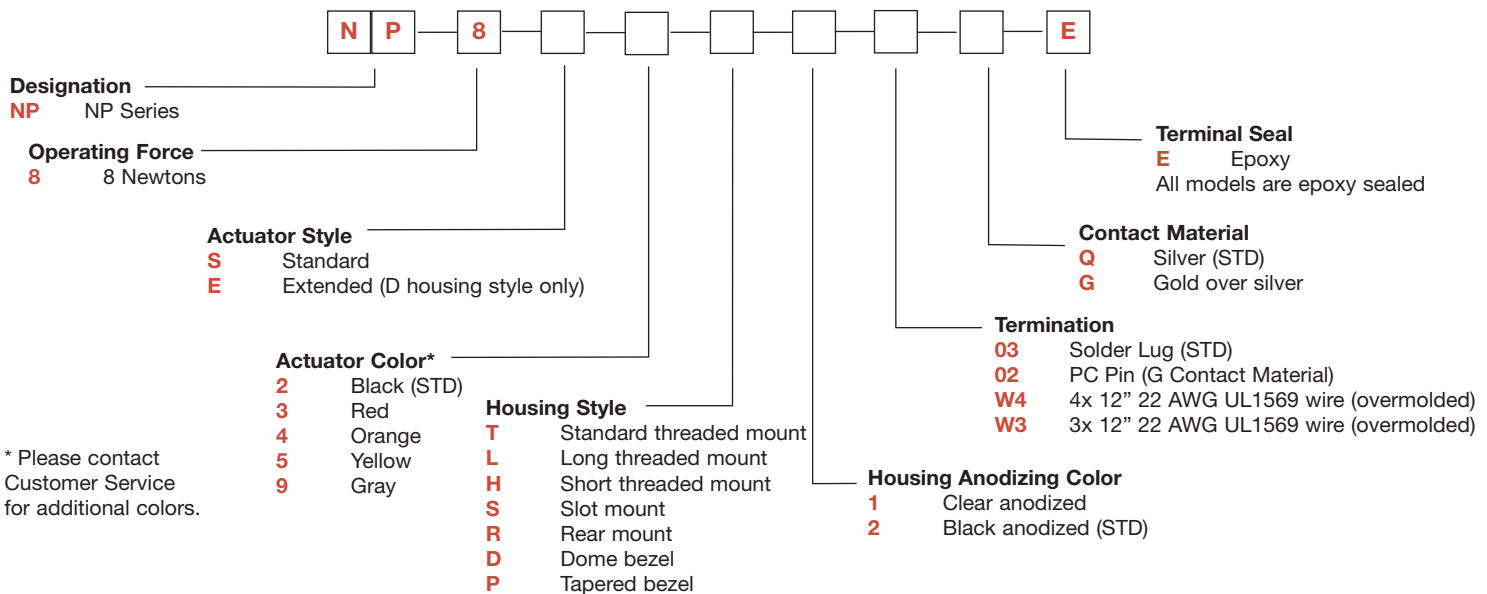
## Process Environment

SEALING: IP68

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box.



Specifications and dimensions subject to change



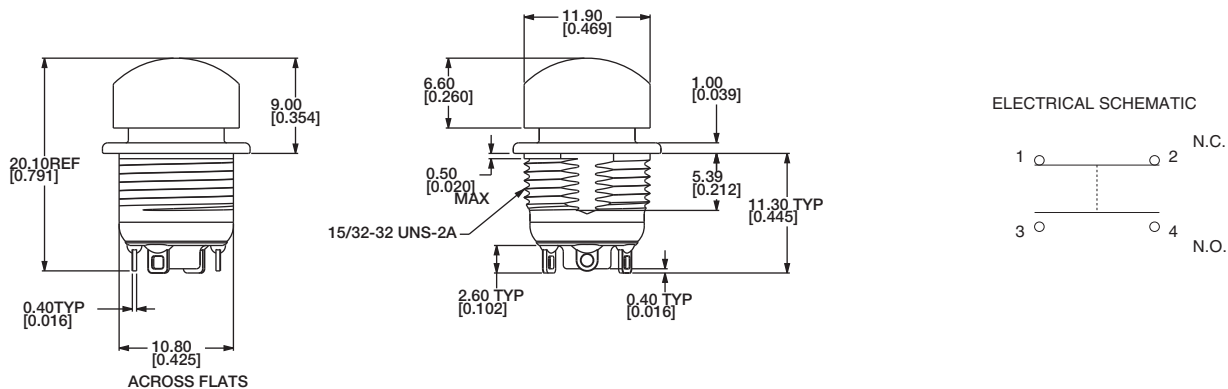
# NP Series Sealed Industrial Pushbutton Switch



A

Pushbutton

## STANDARD VIEW



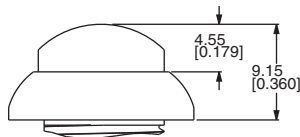
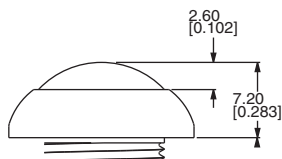
## OPERATING FORCE

OPTION CODE	OPERATING FORCE
<b>8</b>	8 N

## ACTUATOR STYLE

**S** STANDARD

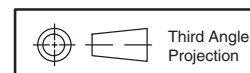
**E** EXTENDED (D HOUSING STYLE ONLY)



## ACTUATOR COLOR

OPTION CODE	ACTUATOR COLOR
<b>2</b>	Black
<b>3</b>	Red
<b>4</b>	Orange
<b>5</b>	Yellow
<b>9</b>	Gray

For additional colors please contact Customer Service.



Dimensions are shown: mm (inches)  
Specifications and dimensions subject to change



[www.ck-components.com](http://www.ck-components.com)



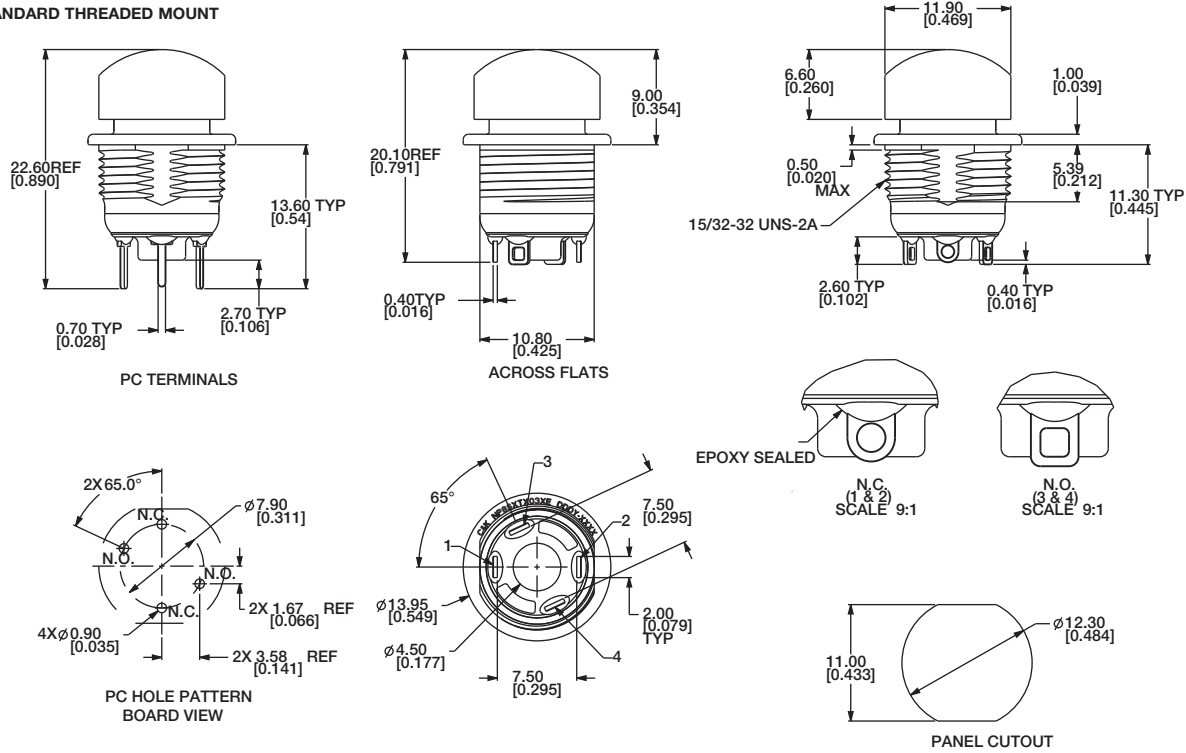
# NP Series Sealed Industrial Pushbutton Switch

## HOUSING STYLE

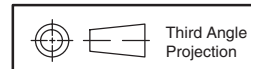
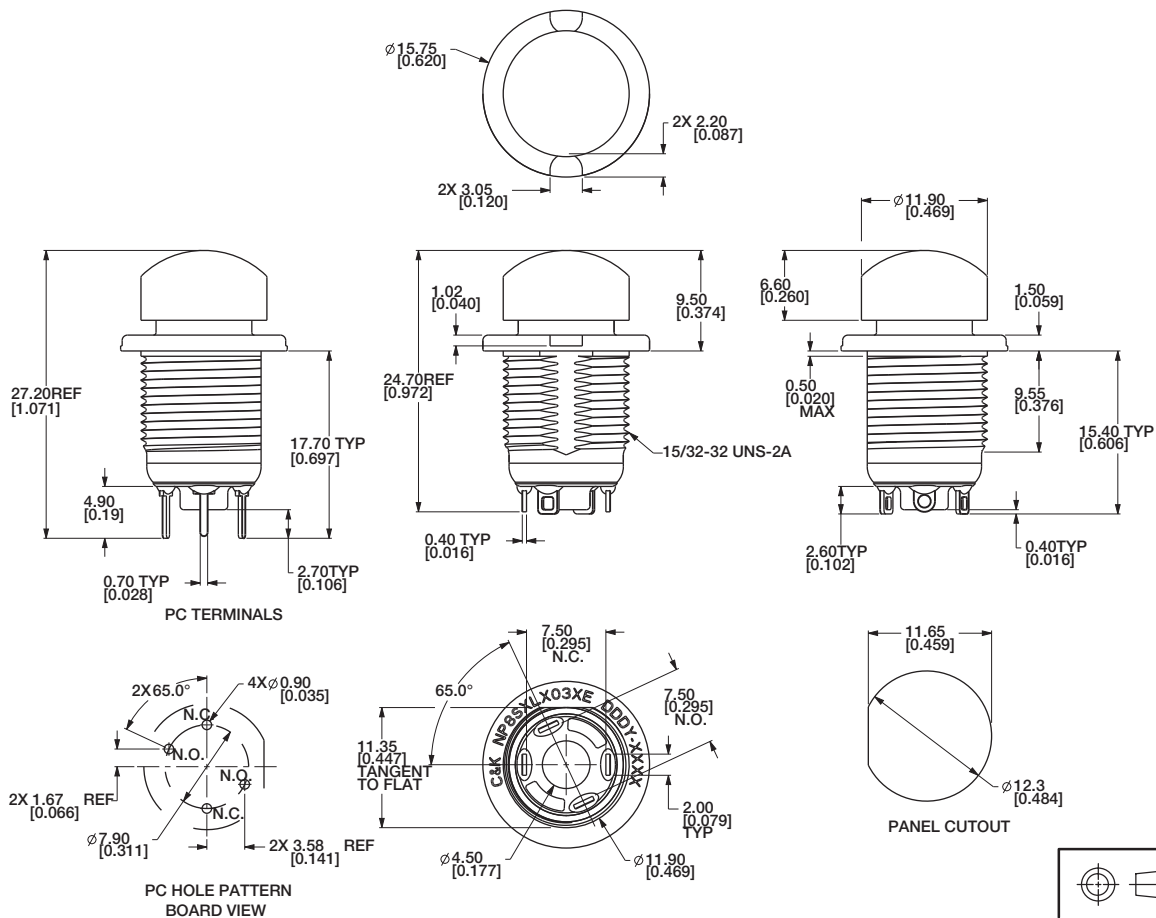
Pushbutton

A

### T STANDARD THREADED MOUNT



### L LONG THREADED MOUNT



Dimensions are shown: mm (inches)  
 Specifications and dimensions subject to change

# NP Series Sealed Industrial Pushbutton Switch

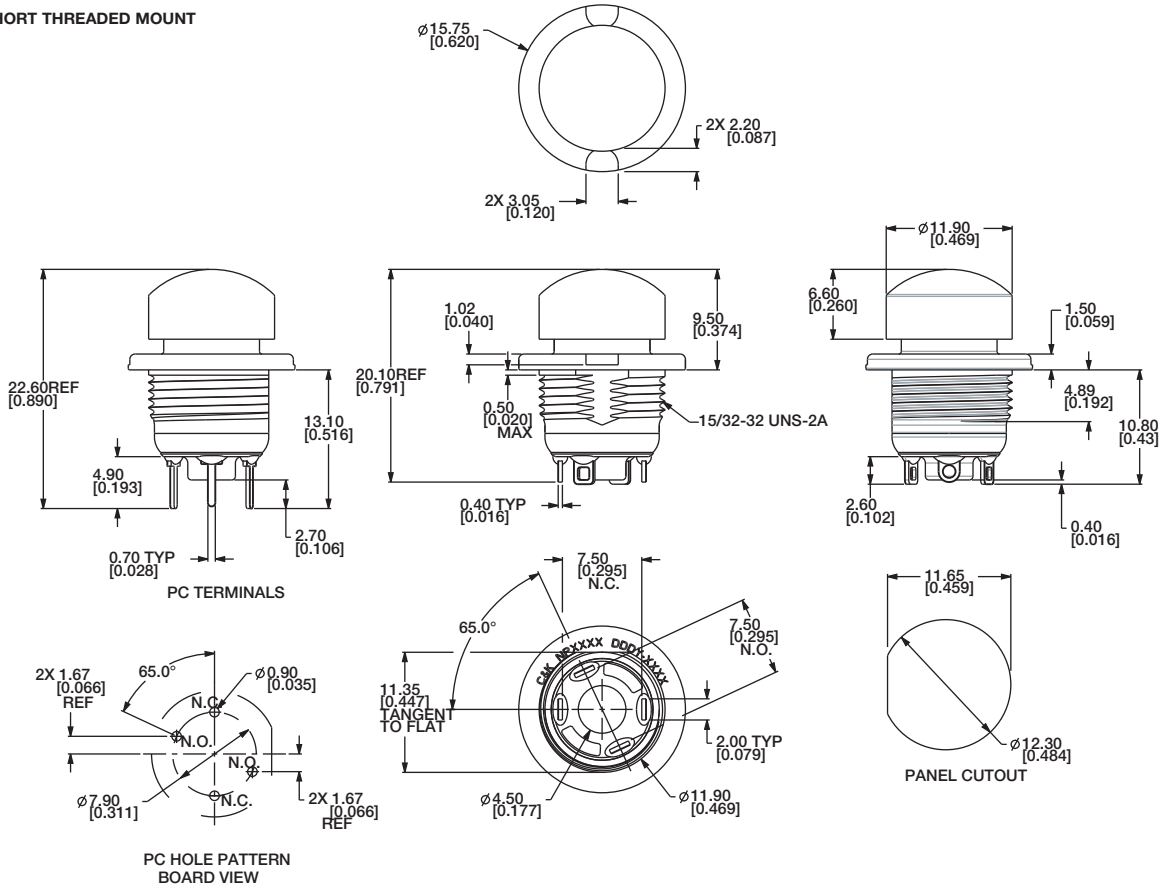


A

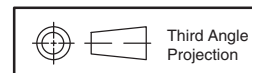
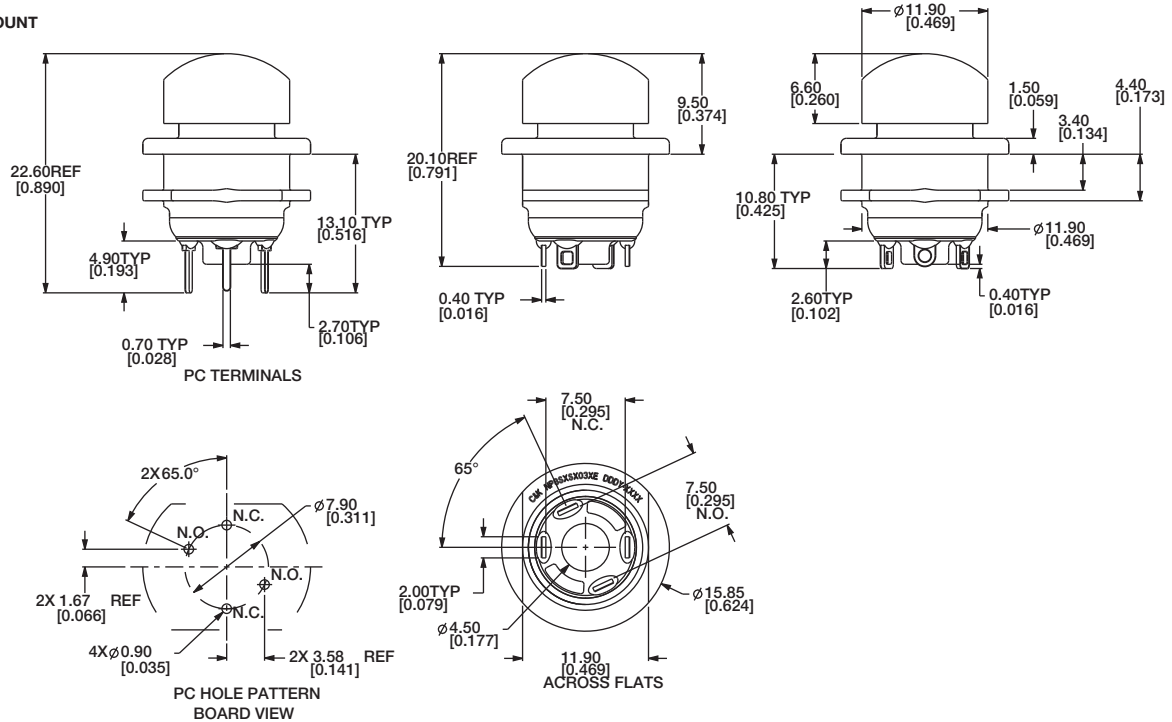
Pushbutton

## HOUSING STYLE

### H SHORT THREADED MOUNT



### S SLOT MOUNT



Dimensions are shown: mm (inches)  
Specifications and dimensions subject to change



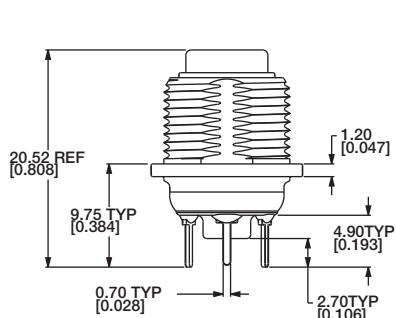
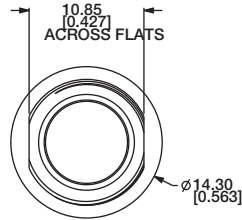
# NP Series Sealed Industrial Pushbutton Switch

## HOUSING STYLE

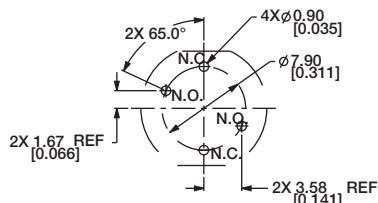
Pushbutton

A

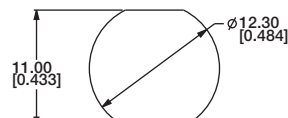
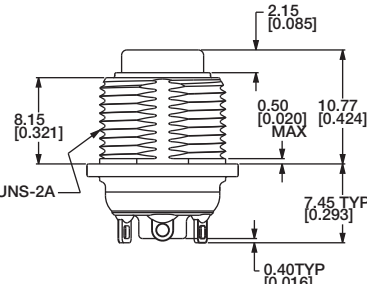
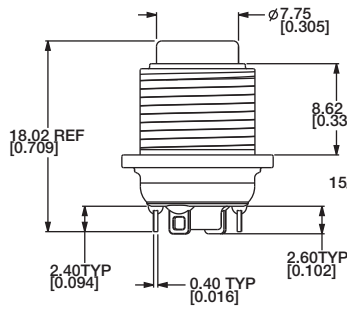
### R REAR MOUNT



PC TERMINALS

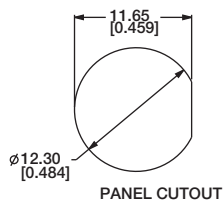


PC HOLE PATTERN  
BOARD VIEW

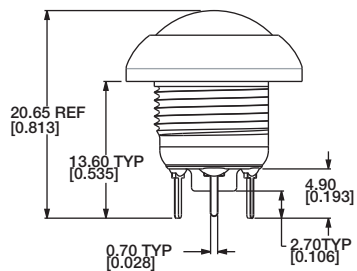
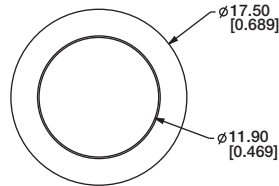


PANEL CUTOUT

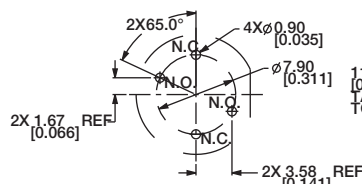
### D DOME BEZEL



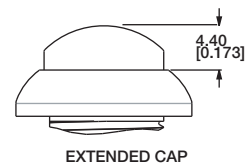
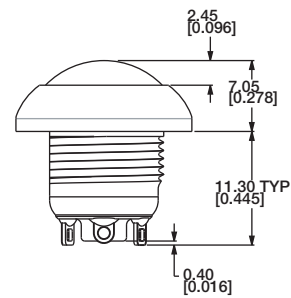
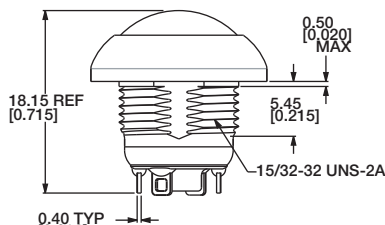
PANEL CUTOUT



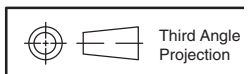
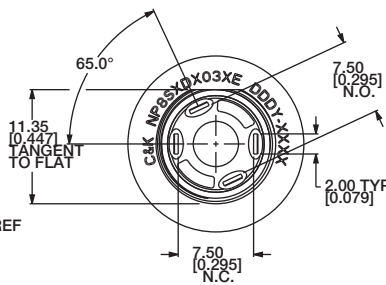
PC TERMINALS



PC HOLE PATTERN  
BOARD VIEW



EXTENDED CAP



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



# NP Series Sealed Industrial Pushbutton Switch

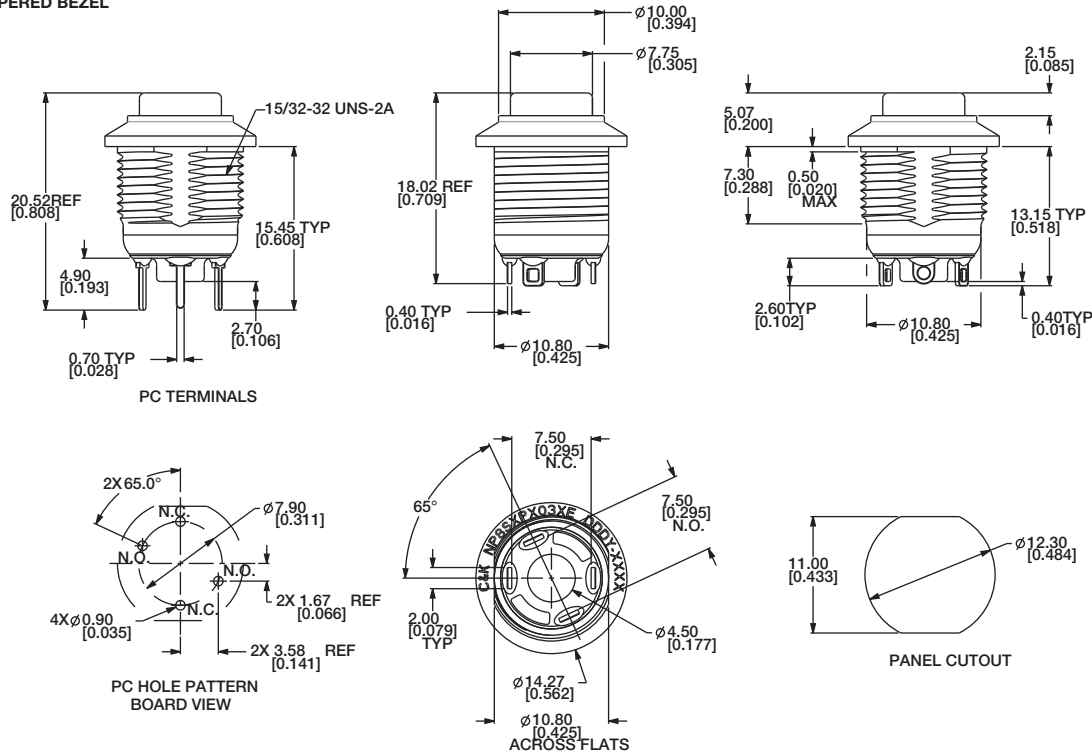


A

Pushbutton

## HOUSING STYLE

### P TAPERED BEZEL

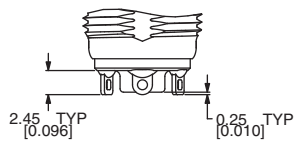


## HOUSING ANODIZING COLOR

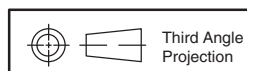
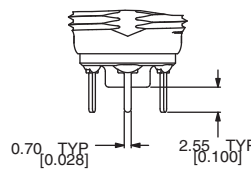
OPTION CODE	ANODIZING COLOR
1	Clear anodized
2	Black anodized (STD)

## TERMINATION

### 03 SOLDER LUG (STD)



### 02 PC PIN (G CONTACT MATERIAL)



Third Angle  
Projection



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

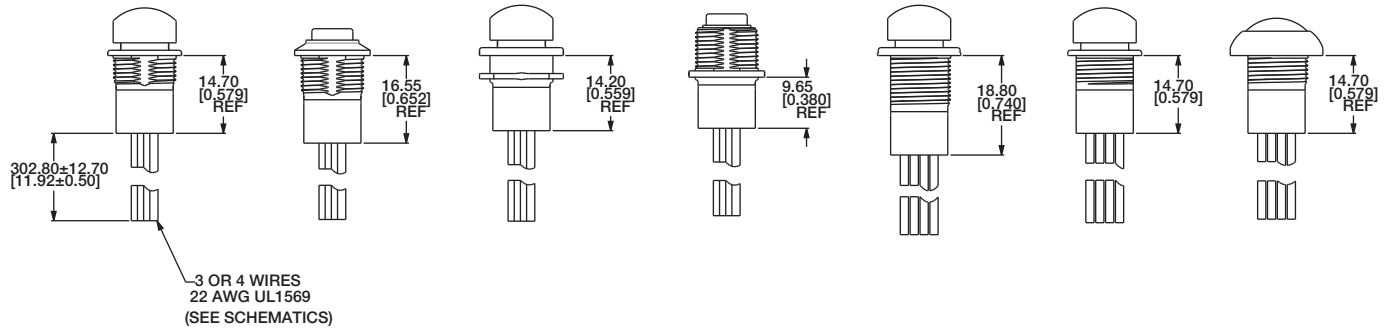


# NP Series Sealed Industrial Pushbutton Switch

A

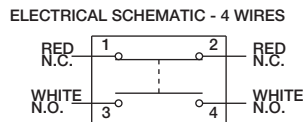
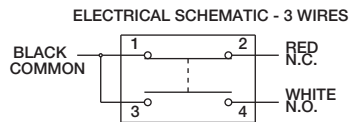
Pushbutton

## TERMINATION



**W3** 3X 12" 22 AWG UL1569 WIRE (OVERMOLDED)

**W4** 4X 12" 22 AWG UL1569 WIRE (OVERMOLDED)



## CONTACT MATERIAL

OPTION CODE	CONTACT MATERIAL
<b>Q</b>	Silver (STD)
<b>G</b>	Gold over Silver

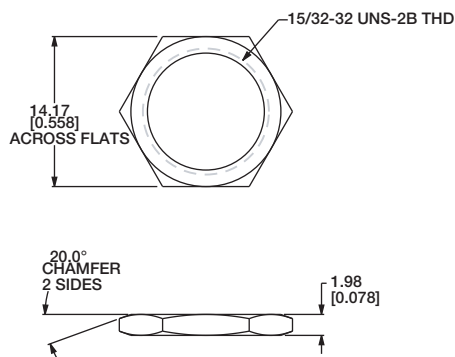
## TERMINAL SEAL

**E** EPOXY

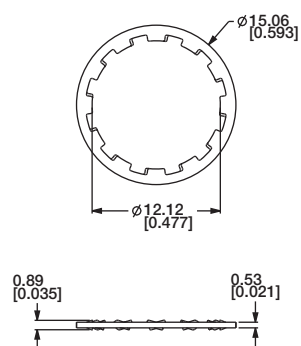
All models are epoxy sealed

## HARDWARE

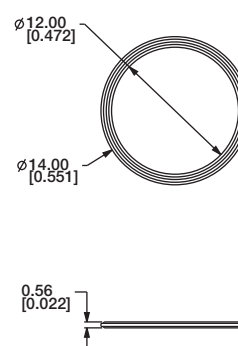
**HEX NUT**  
707100201 Nickel-plated



**LOCKWASHER**  
700302202



**PANEL GASKET**  
851D02000



Dimensions are shown: mm (inches)  
Specifications and dimensions subject to change

# PBA Series Illuminated Pushbutton



A

Pushbutton

## Features/Benefits

- **Illuminated display**
- **Small size**
- **Cold lighting**
- **Tactile feed back**

## Typical Applications

- **Avionics**



## Mechanical

ACTUATION FORCE: 5,5 N ± 0,5 N  
 MAXIMUM FORCE: 80 N  
 TRAVEL TO CONTACT: 1,2 ± 0,1 mm  
 OVERTRAVEL: >0,3 mm  
 TOTAL TRAVEL: 1,5 ± 0,1 mm  
 LIFE EXPECTANCY: 10<sup>8</sup> operations 28 V - 10 mA  
 WEIGHT: 2 grams  
 VIBRATION: ± 0,45mm from 33 Hz to 75 Hz  
 ACCELERATION: 10 g max

## Electrical

CONTACTS: Gold plated  
 VOLTAGE: Max 100 V - Min 20 mV DC  
 CARRYING CURRENT: Max 250 mA - Min 50 µA  
 SWITCHING CURRENT: Max 50 mA - Min 50 µA  
 MAX SWITCHING POWER: 1 W  
 CONTACT RESISTANCE: < 50 Ω  
 DIELECTRIC STRENGTH: 500 V rms  
 INSULATION RESISTANCE (100 V): > 5000 M Ω  
 BOUNCE: < 3 ms  
 SWITCHING OF 2 POLES MATCHING: < 10 ms

## Environmental Data

STORAGE TEMPERATURE: -55°C TO 85°C  
 OPERATING TEMPERATURE: -30°C TO 85°C  
 TEMPERATURE OF KEY TO CAP: < Ambient +25°C  
 HUMIDITY TEST: 21 days (-40°C - 93% HR)  
 ALTITUDE PRESSURE: From 20 hPa to 1070 hPa

## Soldering Data

WAVE SOLDERING: 260°C / 5s  
 MANUAL SOLDERING: 350°C / 2s  
 SEALING: According to IP64

## Plastic Material

Housing and Cap: UL-94 V0

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box.

Designation **PBA** PBA Series

Size

- 1 9,5 x 14
- 2 11,5 x 14
- 3 14 x 14

Marking Location

- H High
- M Middle
- L Low

Type of Marking

- T Text / Legend
- S Status Indicator

LED Color

- 0 White λ
- 1 Green λ 560 nm
- 2 Yellow Green λ 568 nm
- 3 Amber λ 590 nm
- 4 Red λ 660 nm
- 5 Other λ

LED Supply or Type

- AC Alternative
- DC Direct
- XX for each marking

1:6 LEDs in parallel for direct current

Display Type

		LED Non-Illuminated	LED Illuminated
N	Text Marking	White	LED Color
	Background	Black	Black
S	Text Marking	Not visible	LED Color
	Background	Black	Black
R	Text Marking	White	LED Color
	Background	Red	Red
G	Text Marking	Green	Green
	Background	Black	Black

Repeat sequence for 2nd Marking





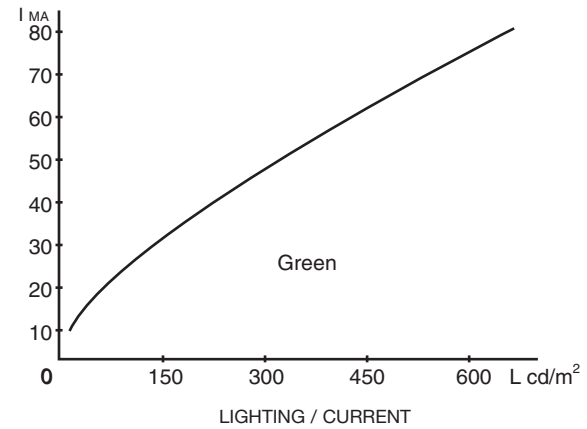
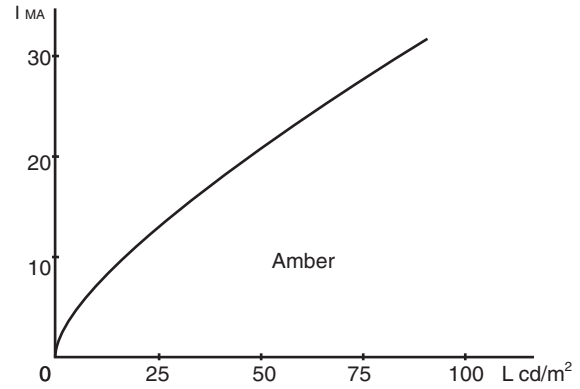
# PBA Series Illuminated Pushbutton

A

Pushbutton

## LIGHTING DATA

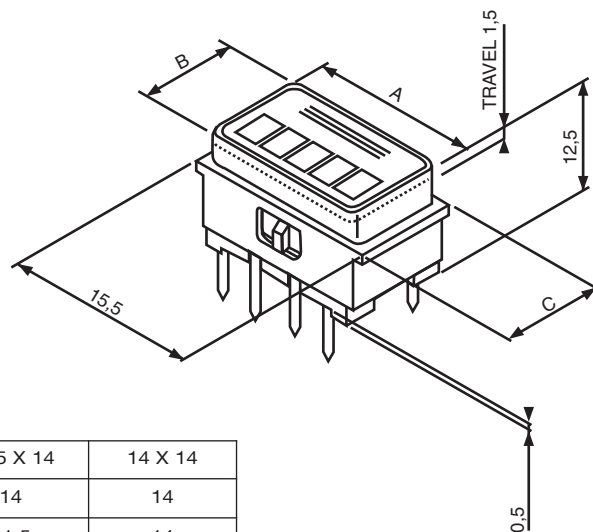
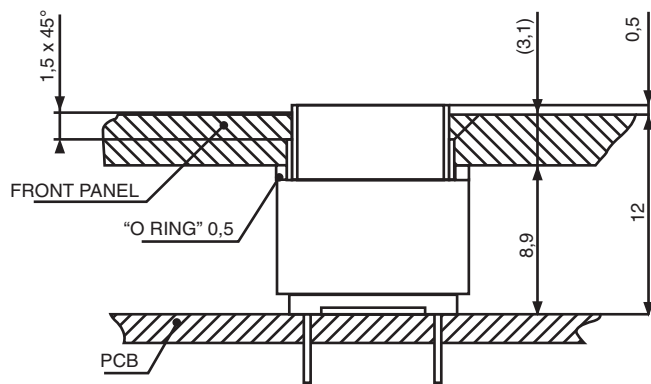
The legends of function and the status indicator can be illuminated separately.



Color	Amber	Green
Wave Length	586 < λ < 592	555 < λ < 560
Current Max	80 mA	80 mA
Chromaticity	X Y	0,54 < X < 0,58 0,40 < Y < 0,44
Contrast Min.	1,2	0,85

For other colors and displays, please contact Customer Service.

## DIMENSIONS (applicable for any size)



	9,5 X 14	11,5 X 14	14 X 14
A	14	14	14
B	9,5	11,5	14
C	11	11,5	15,5

Tolerance: ± 0,1 mm



Dimensions are shown: mm  
Specifications and dimensions subject to change

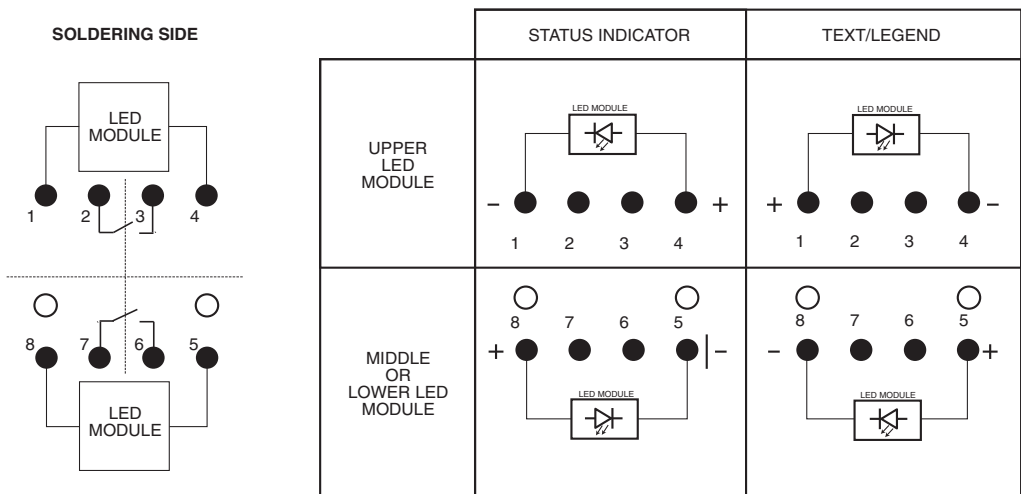


# PBA Series Illuminated Pushbutton

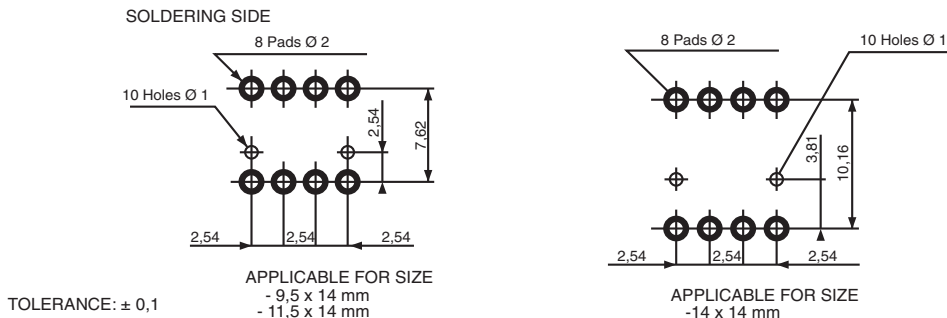


**A**  
Pushbutton

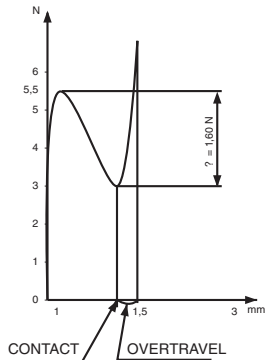
## LED MODULE LAYOUT



## PCB Layout

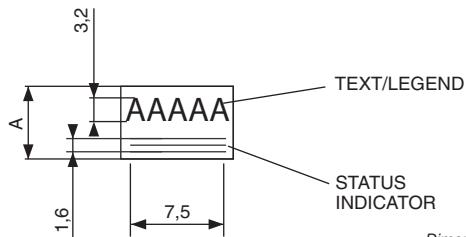
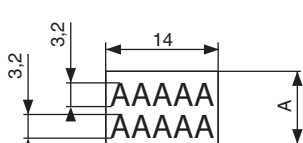
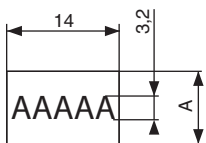


## TACTILE EFFECT



- TRAVEL**
- TRAVEL TO CONTACT: 1,2 ± 0,1 mm
  - OVERTRAVEL: > 0,3 mm
  - TOTAL TRAVEL: 1,5 ± 0,1 mm
- FORCE**
- ACTUATOR FORCE: 5,5 N ± 0,5 N
  - TACTILE FEELING: 1,6 N

1 or 2 markings are available in any combination of text / legend or status indicator.



A = 9,5 or 11,5 or 14mm

Dimensions are shown: mm  
Specifications and dimensions subject to change



A

Pushbutton



*Dimensions are shown: mm  
Specifications and dimensions subject to change*

# PB Series Single Pole and Multi-Key Pushbutton Switches



A

Pushbutton

## Features/Benefits

- Momentary or latching options
- Reliable contact design
- 2, 4, and 6 pole configurations
- Long travel and extended life cycles

## Typical Applications

- Appliances
- Audio and visual equipment
- Consumer electronics
- Industrial equipment



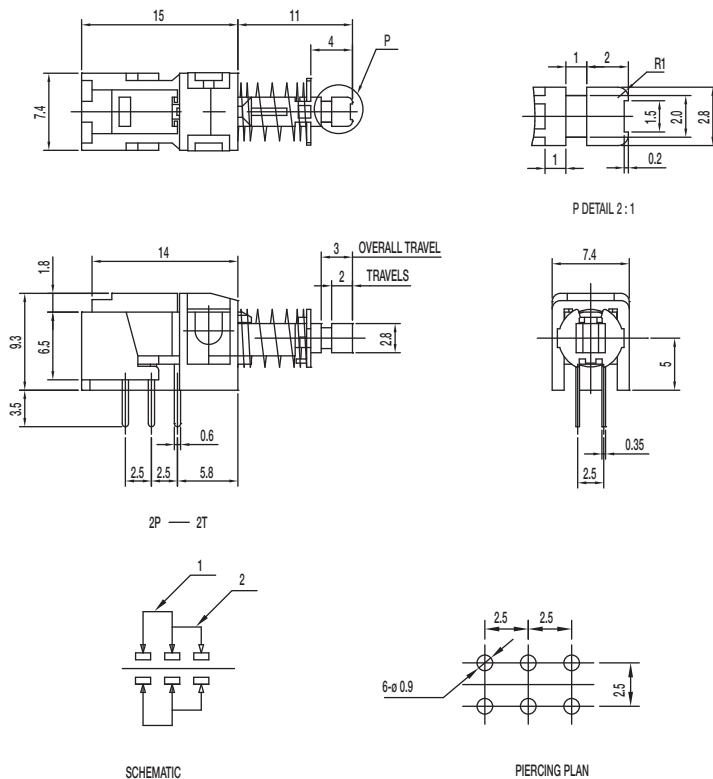
## Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles without load  
 OPERATING FORCE:  
 250 ± 100 gf (2.45 ± 0.98N)  
 LOCK TRAVEL: 2 ± 0.3 mm  
 TOTAL TRAVEL: 3 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

## Materials

CASE: PC (UL 94HB)  
 PLASTIC CLIP: POM (UL 94HB)  
 SPRING: SUS  
 KNOB: POM  
 TERMINAL: Silver plated

## PB-22D01-L 2PDT LOCK / LATCHING



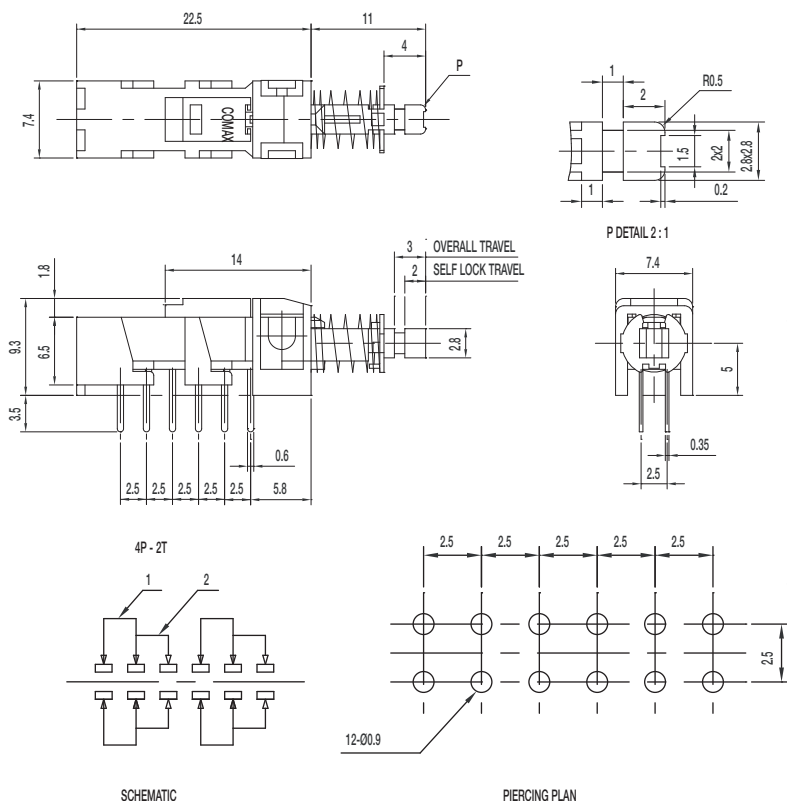
Dimensions are shown: mm  
 Specifications and dimensions subject to change



# PB Series Single Pole and Multi-Key Pushbutton Switches

**PB-42D01-L** 4PDT LOCK / LATCHING

Pushbutton  
A



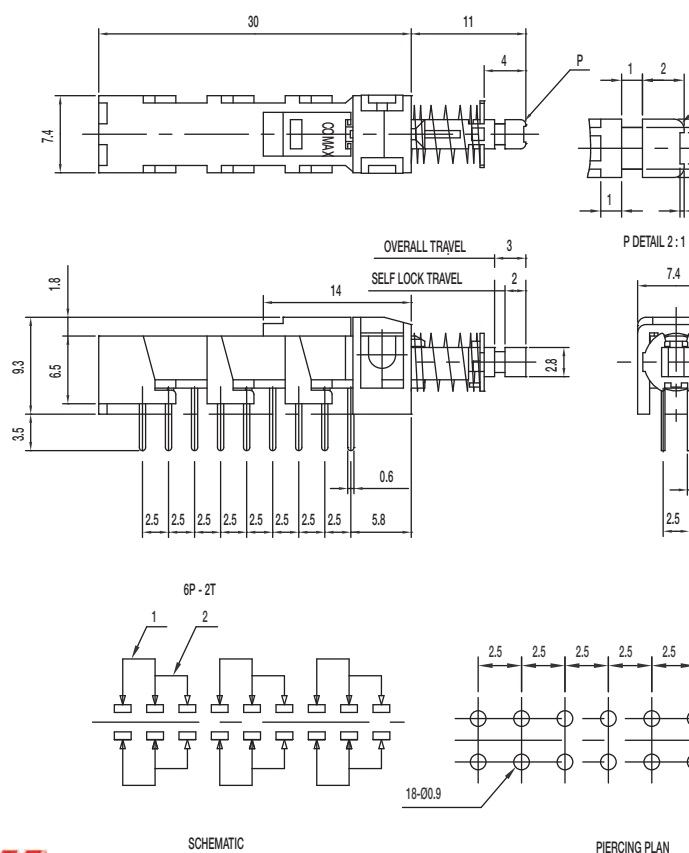
## Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles without load  
 OPERATING FORCE:  
 $280 \pm 100$  gf  
 LOCK TRAVEL:  $2 \pm 0.3$  mm  
 TOTAL TRAVEL:  $3 \pm 0.3$  mm  
 OPERATING TEMPERATURE:  $-20^{\circ}\text{C}$  to  $70^{\circ}\text{C}$

## Materials

CASE: PC (UL 94HB)  
 PLASTIC CLIP: POM (UL 94HB)  
 SPRING: SUS  
 KNOB: POM  
 TERMINAL: Silver plated

**PB-62D01-L** 6PDT LOCK / LATCHING



## Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles without load  
 OPERATING FORCE:  
 $300 \pm 100$  gf ( $2.94 \pm 0.98\text{N}$ )  
 LOCK TRAVEL:  $2 \pm 0.3$  mm  
 TOTAL TRAVEL:  $3 \pm 0.3$  mm  
 OPERATING TEMPERATURE:  $-20^{\circ}\text{C}$  to  $70^{\circ}\text{C}$

## Materials

CASE: PC (UL 94HB)  
 PLASTIC CLIP: POM (UL 94HB)  
 SPRING: SUS  
 KNOB: POM  
 TERMINAL: Silver plated



*Dimensions are shown: mm  
 Specifications and dimensions subject to change*

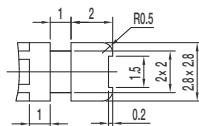
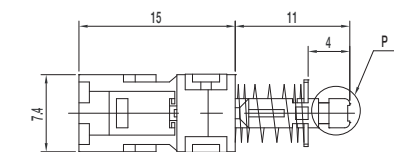
# PB Series Single Pole and Multi-Key Pushbutton Switches



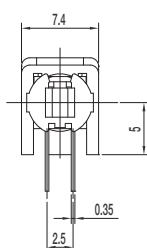
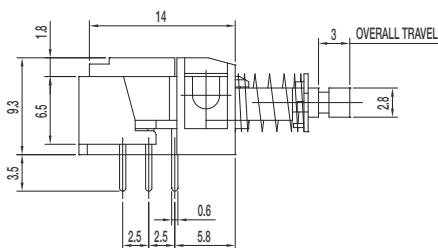
A

Pushbutton

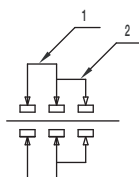
## PB-22D01-F 2PDT NON-LOCK / MOMENTARY



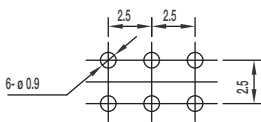
P DETAIL 2:1



2P — 2T



SCHEMATIC



PIERCING PLAN

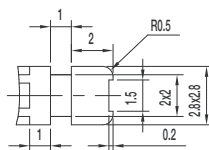
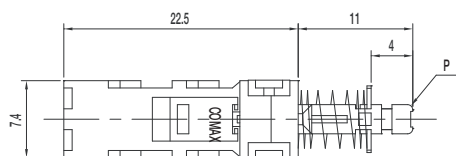
### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles without load  
 OPERATING FORCE:  
 $250 \pm 100$  gf ( $2.45 \pm 0.98$ N)  
 TOTAL TRAVEL:  $3 \pm 0.3$  mm  
 OPERATING TEMPERATURE:  $-20^{\circ}\text{C}$  to  $70^{\circ}\text{C}$

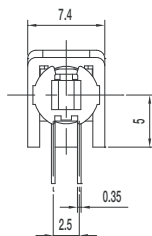
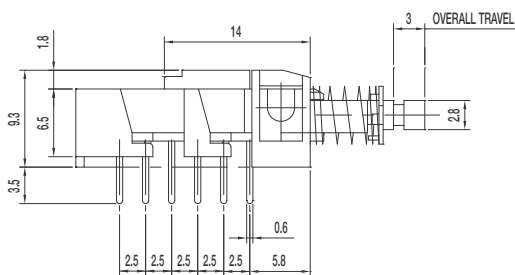
### Materials

CASE: PC (UL 94HB)  
 PLASTIC CLIP: POM (UL 94HB)  
 SPRING: SUS  
 KNOB: POM  
 TERMINAL: Silver plated

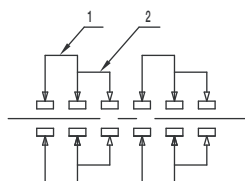
## PB-42D01-F 4PDT NON-LOCK / MOMENTARY



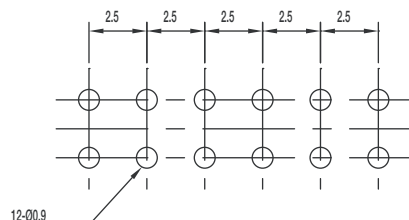
P DETAIL 2:1



4P - 2T



SCHEMATIC



PIERCING PLAN

### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles without load  
 OPERATING FORCE:  
 $280 \pm 100$  gf ( $2.477 \pm 0.98$ N)  
 TOTAL TRAVEL:  $3 \pm 0.3$  mm  
 OPERATING TEMPERATURE:  $-20^{\circ}\text{C}$  to  $70^{\circ}\text{C}$

### Materials

CASE: PC (UL 94HB)  
 PLASTIC CLIP: POM (UL 94HB)  
 SPRING: SUS  
 KNOB: POM  
 TERMINAL: Silver plated



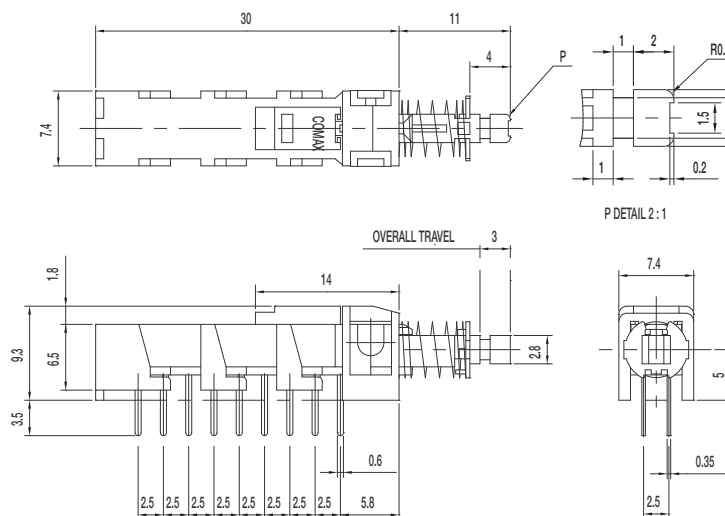
Dimensions are shown: mm  
 Specifications and dimensions subject to change



# PB Series Single Pole and Multi-Key Pushbutton Switches

**PB-62D01-F** 6PDT NON-LOCK / MOMENTARY

Pushbutton  
A

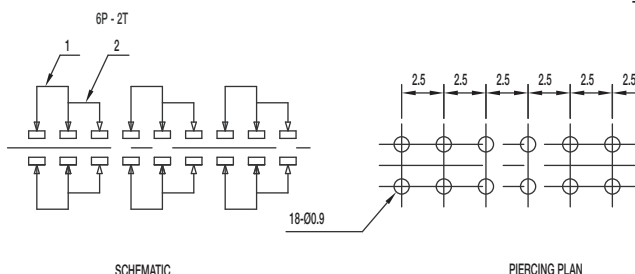


## Specifications

- CONTACT RATING: 0.3A @ 30 VDC
- INITIAL CONTACT RESISTANCE: 30 m ohms max.
- INSULATION RESISTANCE: 100 M ohms min.
- DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
- OPERATING LIFE: 10,000 cycles without load
- OPERATING FORCE:  
300 ± 100 gf (2.94 ± 0.98N)
- TOTAL TRAVEL: 3 ± 0.3 mm
- OPERATING TEMPERATURE: -20°C to 70°C

## Materials

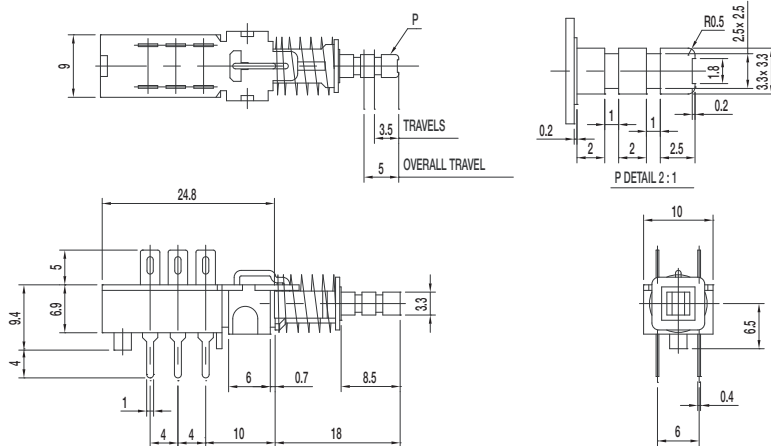
- CASE: PC (UL 94HB)
- PLASTIC CLIP: POM (UL 94HB)
- SPRING: SUS
- KNOB: POM
- TERMINAL: Silver plated



SCHMATIC

PIERCING PLAN

**PB-22G02-L** 2PDT LOCK / LATCHING

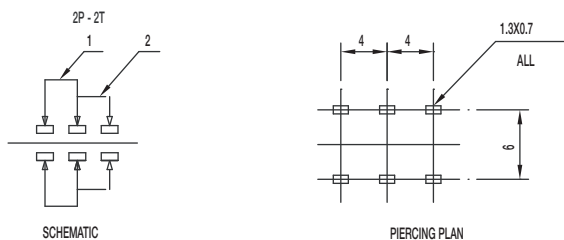


## Specifications

- CONTACT RATING: 1A @ 25 VDC
- INITIAL CONTACT RESISTANCE: 30 m ohms max.
- INSULATION RESISTANCE: 100 M ohms min.
- DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
- OPERATING LIFE: 10,000 cycles without load
- OPERATING FORCE:  
350 ± 150 gf (3.43 ± 1.47N)
- LOCK TRAVEL: 3.5 ± 0.3mm
- TOTAL TRAVEL: 5 ± 0.3 mm
- OPERATING TEMPERATURE: -20°C to 70°C

## Materials

- CASE: PC (UL 94HB)
- SPRING: SUS
- KNOB: POM
- TERMINAL: Silver plated



SCHMATIC

PIERCING PLAN



Dimensions are shown: mm  
Specifications and dimensions subject to change

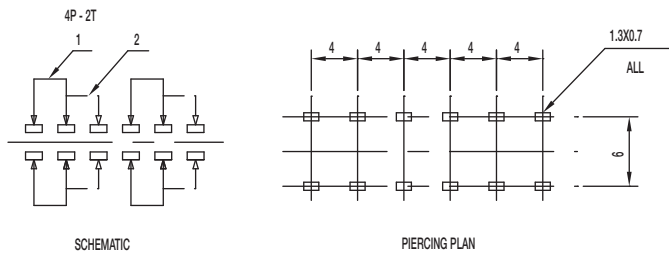
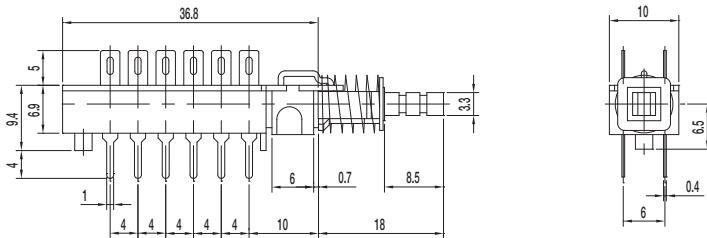
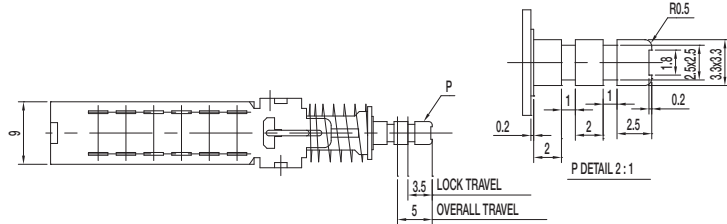
# PB Series Single Pole and Multi-Key Pushbutton Switches



A

Pushbutton

## PB-42G02-L 4PDT LOCK / LATCHING



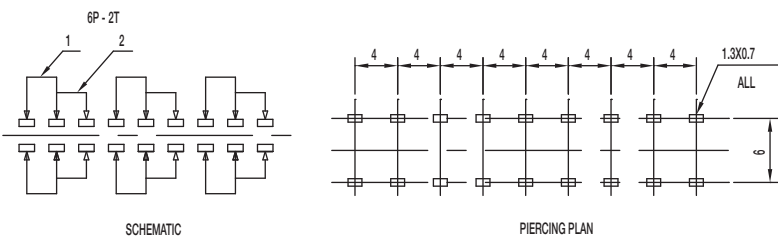
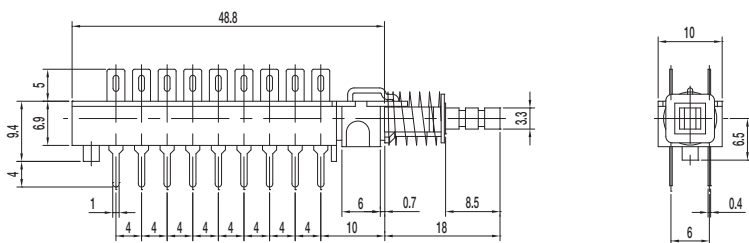
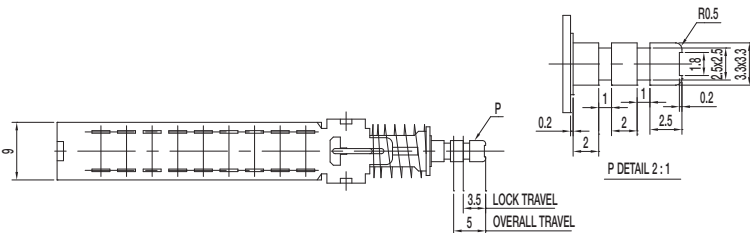
### Specifications

- CONTACT RATING: 1A @ 25 VDC
- INITIAL CONTACT RESISTANCE: 30 m ohms max.
- INSULATION RESISTANCE: 100 M ohms min.
- DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
- OPERATING LIFE: 10,000 cycles without load
- OPERATING FORCE:  
400 ± 150 gf (3.92 ± 1.47N)
- LOCK TRAVEL: 3.5 ± 0.3mm
- TOTAL TRAVEL: 5 ± 0.3 mm
- OPERATING TEMPERATURE: -20°C to 70°C

### Materials

- HOUSING: PC (UL 94HB)
- SPRING: SUS
- KNOB: POM
- TERMINAL: Silver plated

## PB-62G02-L DPDT LOCK / LATCHING



### Specifications

- CONTACT RATING: 1A @ 25 VDC
- INITIAL CONTACT RESISTANCE: 30 m ohms max.
- INSULATION RESISTANCE: 100 M ohms min.
- DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
- OPERATING LIFE: 10,000 cycles without load
- OPERATING FORCE:  
450 ± 150 gf
- LOCK TRAVEL: 3.5 ± 0.3mm
- TOTAL TRAVEL: 5 ± 0.3 mm
- OPERATING TEMPERATURE: -20°C to 70°C

### Materials

- HOUSING: PC (UL 94HB)
- SPRING: SUS
- KNOB: POM
- TERMINAL: Silver plated



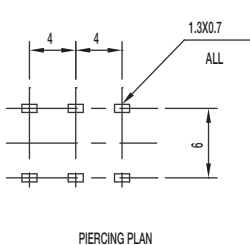
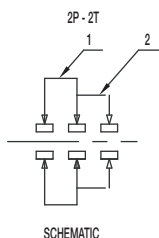
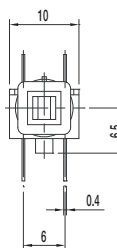
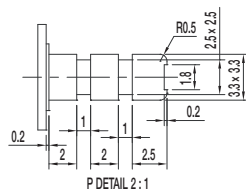
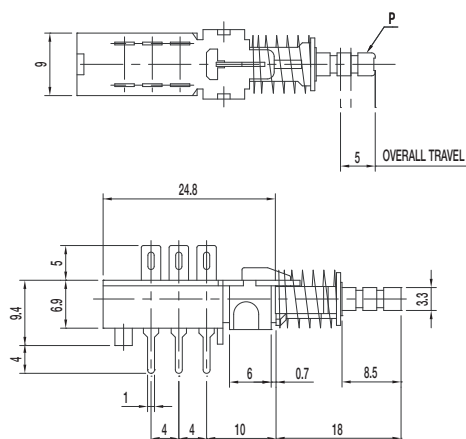
Dimensions are shown: mm  
Specifications and dimensions subject to change



# PB Series Single Pole and Multi-Key Pushbutton Switches

Pushbutton  
A

**PB-22G02-F** DPDT NON-LOCK / MOMENTARY



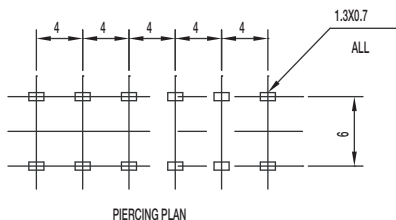
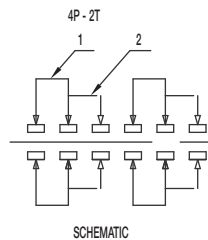
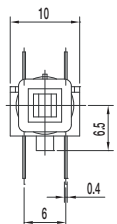
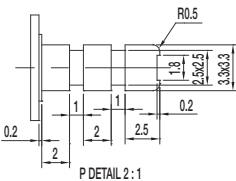
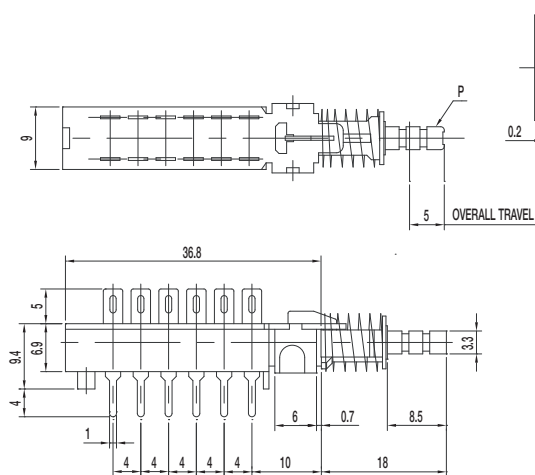
## Specifications

CONTACT RATING: 1A @ 25 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles without load  
 OPERATING FORCE:  
 350 ± 150 gf (3.43 ± 1.47N)  
 TOTAL TRAVEL: 5 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

## Materials

CASE: PC (UL 94HB)  
 SPRING: SUS  
 KNOB: POM  
 TERMINAL: Silver plated

**PB-42G02-F** 4PDT NON-LOCK / MOMENTARY



## Specifications

CONTACT RATING: 1A @ 25 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles without load  
 OPERATING FORCE:  
 400 ± 150 gf (3.92 ± 1.47N)  
 TOTAL TRAVEL: 5 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

## Materials

HOUSING: PC (UL 94HB)  
 SPRING: SUS  
 KNOB: POM  
 TERMINAL: Silver plated



Dimensions are shown: mm  
 Specifications and dimensions subject to change

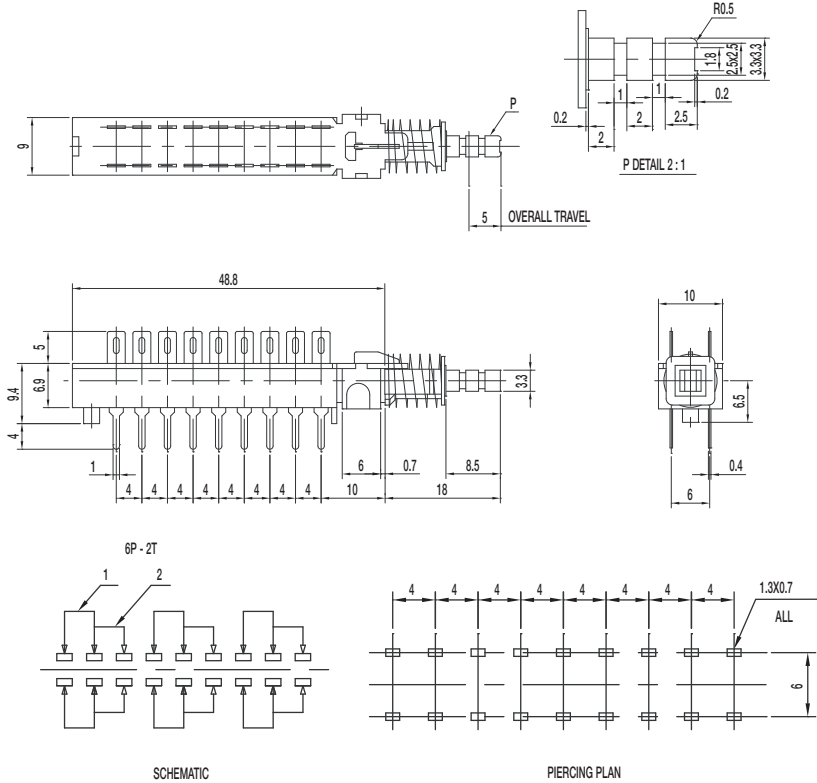


# PB Series Single Pole and Multi-Key Pushbutton Switches



Pushbutton

**PB-62G02-F** 6PDT NON-LOCK / MOMENTARY



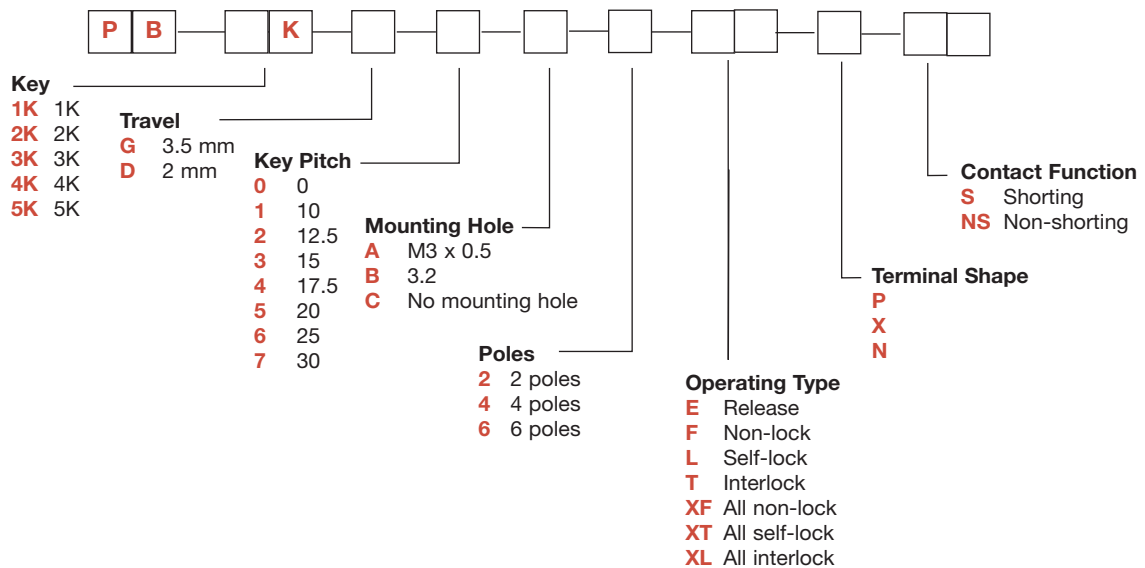
## Specifications

CONTACT RATING: 1A @ 25 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles without load  
 OPERATING FORCE:  
 450 ± 150 gf (4.41 ± 1.47N)  
 TOTAL TRAVEL: 5 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

## Materials

HOUSING: PC (UL 94HB)  
 SPRING: SUS  
 KNOB: POM  
 TERMINAL: Silver plated

## PB Multi-Key Series



Dimensions are shown: mm  
 Specifications and dimensions subject to change

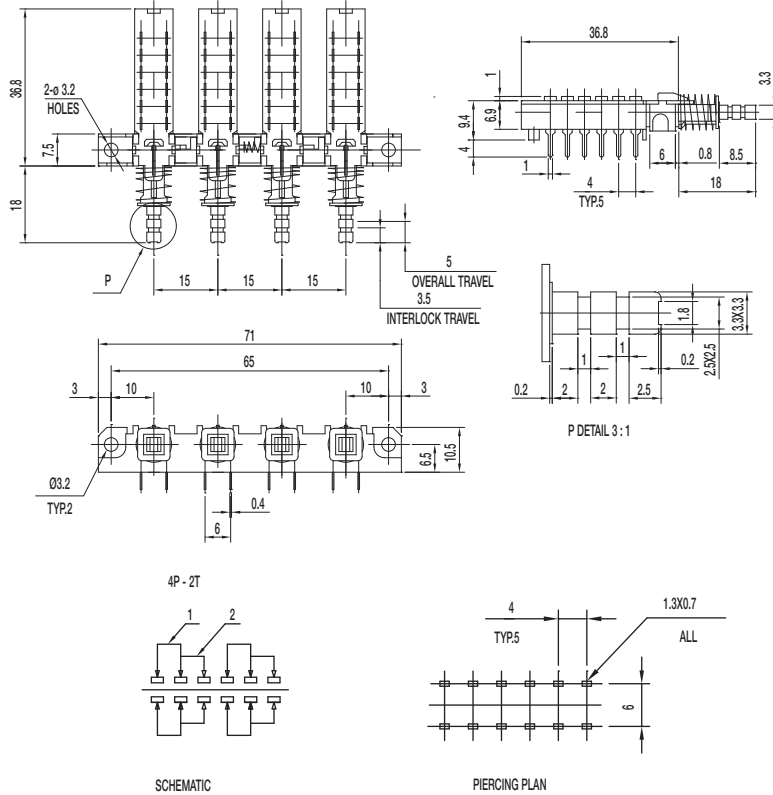


# PB Series Single Pole and Multi-Key Pushbutton Switches

A

## PB Multi-Key Series

Pushbutton



### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles without load  
 OPERATING FORCE:  
 250 ± 100 gf (2.45 ± 0.98N)  
 TOTAL TRAVEL: 3 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

CASE: PC (UL 94HB)  
 PLASTIC CLIP: POM (UL 94HB)  
 SPRING: SUS  
 KNOB: POM  
 TERMINAL: Silver plated



Dimensions are shown: mm  
 Specifications and dimensions subject to change

# PS-12G Series Pushbutton Switches



A

Pushbutton

## Features/Benefits

- Latching pushbutton
- Non-shorting with lock
- 5 mm travel
- SPDT

## Typical Applications

- Automotive interior lighting
- Computer peripherals
- Appliances



PART NUMBER	PACKAGING	SCHEMATIC
<b>PS-12G01</b>	200 pieces	

## Dimensions

FOOTPRINT: 14 X 16.8 mm

HEIGHT: 18 mm

## Specifications

CONTACT RATING: 1A @ 14 VDC

INITIAL CONTACT RESISTANCE: 100 m ohms max.

INSULATION RESISTANCE: 100 M ohms min.

DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.

OPERATING LIFE: 20,000 cycles with load

OPERATING FORCE: 400 ± 100 gf

OPERATING POSITION: 3.6 ± 0.2 mm

TOTAL TRAVEL: 5 ± 0.3 mm

OPERATING TEMPERATURE: -20°C to 70°C

## Materials

KNOB: POM (UL 94HB)

HOUSING: PBT (UL 94V-0)

COVER: PBT (UL 94V-0)

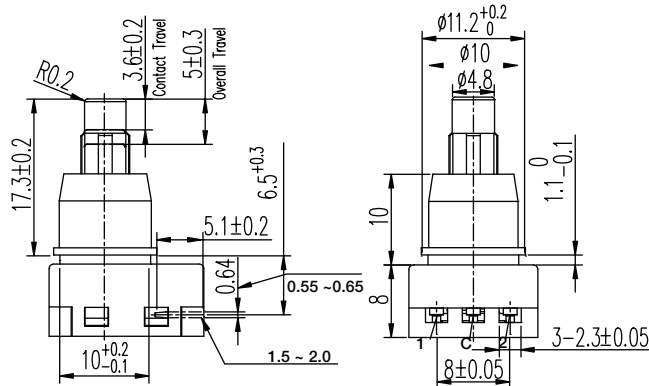
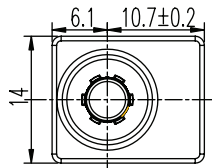
ROTOR: PBT (UL 94V-0)

SLIDER: POM (UL 94HB)

TERMINAL: Phospher bronze, silver plated

SPRING: Stainless steel

CONTACT: Phospher bronze, silver plated





# PS-12G Series Pushbutton Switches

Pushbutton  
A



PART NUMBER	PACKAGING	SCHEMATIC
<b>PS-12G03</b>	200 pieces	

## Dimensions

FOOTPRINT: 14 X 16.8 mm

HEIGHT: 18.3 mm

## Specifications

CONTACT RATING: 2.2A @ 14.5 VDC

INITIAL CONTACT RESISTANCE: 50 m ohms max.

INSULATION RESISTANCE: 100 M ohms min.

DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.

OPERATING LIFE: 20,000 cycles with load

OPERATING FORCE: 650 ± 300 gf

OPERATING POSITION: 4.00 ± 0.2 mm

TOTAL TRAVEL: 4.5 ± 0.3 mm

OPERATING TEMPERATURE: -40°C to 85°C

## Materials

KNOB: POM (UL 94HB)

HOUSING: PBT & PA (UL 94V-0)

COVER: PBT (UL 94V-0)

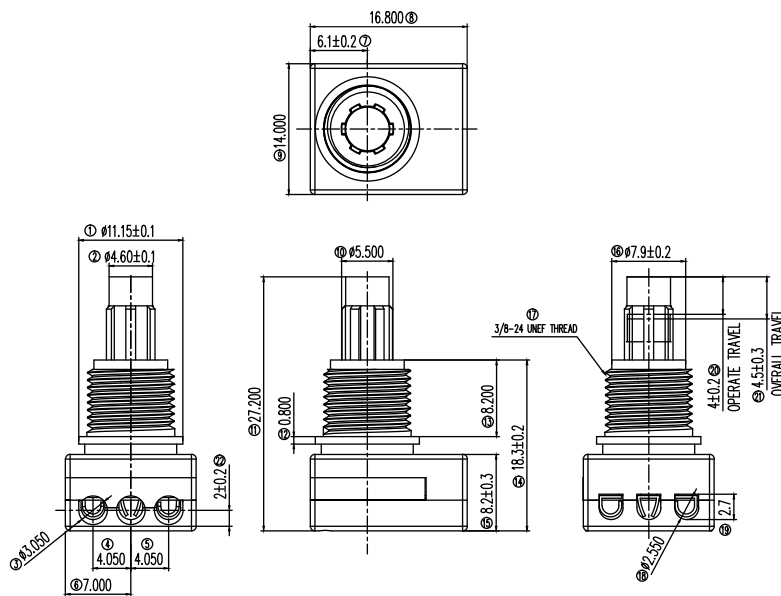
ROTOR: PBT (UL 94V-0)

SLIDER: POM (UL 94HB)

TERMINAL: Brass, silver plated

SPRING: Stainless steel

CONTACT: Phosphor bronze, silver plated



TYCO .062 Commercial Pin  
and Socket Connector  
PT# 770983-1



Dimensions are shown: mm  
Specifications and dimensions subject to change

# PS-22 Series Subminiature Pushbutton Switches



A

Pushbutton

## Features/Benefits

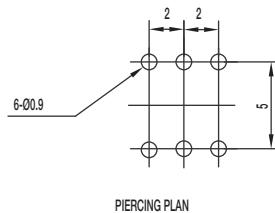
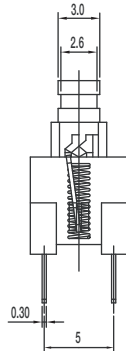
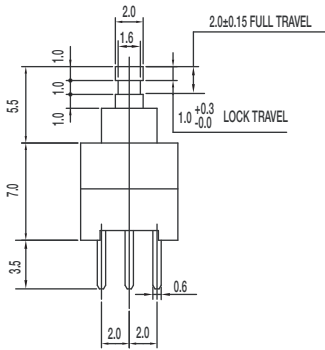
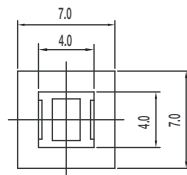
- Compact miniature push switch
- Momentary or latching options
- Shorting or non-shorting
- DPDT

## Typical Applications

- Industrial
- Automotive
- Audio and visual equipment



PART NUMBER	PACKAGING	SCHEMATIC
<b>PS-2203-L NS PA</b>	1,000 pieces	
<b>PS-2203-F NS PA</b>	1,000 pieces	



## Dimensions

FOOTPRINT: 7.0 x 7.0 mm

HEIGHT: 12.5 mm

## Specifications

CONTACT RATING: 0.1A @ 30 VDC

INITIAL CONTACT RESISTANCE: 30 m ohms max.

INSULATION RESISTANCE: 100 M ohms min.

DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.

OPERATING LIFE: 10,000 cycles with load

OPERATING FORCE:

200 ± 100 gf (1.96 ± 0.98N)

LOCK TRAVEL: 1 mm

TOTAL TRAVEL: 2 mm

OPERATING TEMPERATURE: -20°C to 70°C

## Materials

KNOB: POM Black

HOUSING: PA Black

COVER: POM Grey (latch) / White (Mom)

TERMINAL: Brass, silver plated

CONTACT CLIP: Phosphor bronze, silver plated

SPRING: Stainless steel

HOOK LOCK: Stainless steel (latch)



# PS-22 Series Subminiature Pushbutton Switches

Pushbutton  
A



PART NUMBER	PACKAGING	SCHEMATIC
<b>PS-2206-L NS PA</b>	1,000 pieces	
<b>PS-2206-F NS PA</b>	1,000 pieces	

## Dimensions

FOOTPRINT: 8.0 x 8.0 mm

HEIGHT: 13.5 mm

## Specifications

CONTACT RATING: 0.1A @ 30 VDC

INITIAL CONTACT RESISTANCE: 70 m ohms max.

INSULATION RESISTANCE: 100 M ohms min.

DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.

OPERATING LIFE: 10,000 cycles with load

OPERATING FORCE:  
200 ± 100 gf (1.96 ± 0.98N)

LOCK TRAVEL: 1.5 mm

TOTAL TRAVEL: 2.5 mm

OPERATING TEMPERATURE: -20°C to 70°C

## Materials

KNOB: POM Black

HOUSING: PA Black

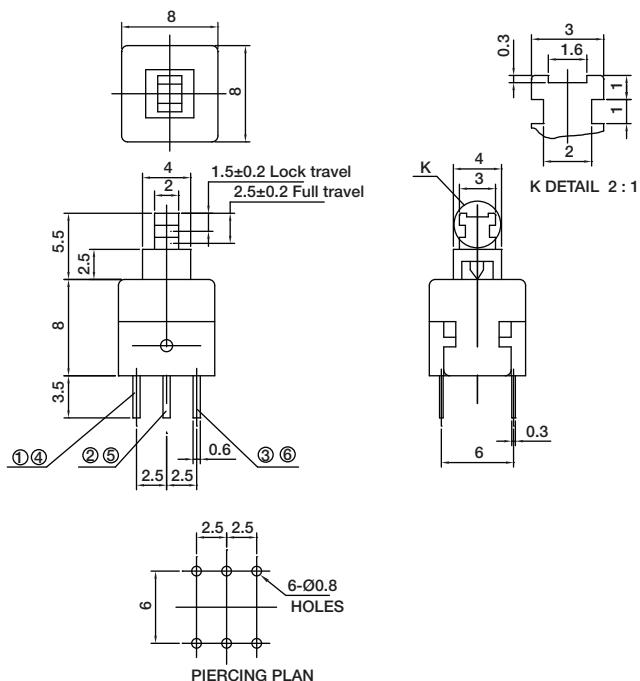
COVER: POM Grey (latch) / White (Mom)

TERMINAL: Brass, silver plated

CONTACT CLIP: Phosphor bronze., silver plated

SPRING: Stainless steel

HOOK LOCK: Stainless steel (latch)



PART NUMBER	PACKAGING	SCHEMATIC
<b>PS-2214-L NS PA</b>	1,000 pieces	
<b>PS-2214-F NS PA</b>	1,000 pieces	

## Dimensions

FOOTPRINT: 5.8 x 5.8 mm

HEIGHT: 7.5 mm

## Specifications

CONTACT RATING: 0.1A @ 30 VDC

INITIAL CONTACT RESISTANCE: 80 m ohms max.

INSULATION RESISTANCE: 100 M ohms min.

DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.

OPERATING LIFE: 10,000 cycles with load

OPERATING FORCE:  
150 ± 50 gf (1.47 ± 0.49N)

LOCK TRAVEL: 1.45 mm

TOTAL TRAVEL: 2.3 mm

OPERATING TEMPERATURE: -20°C to 70°C

## Materials

KNOB: POM Natural (latch) / PA black

HOUSING: PA Black

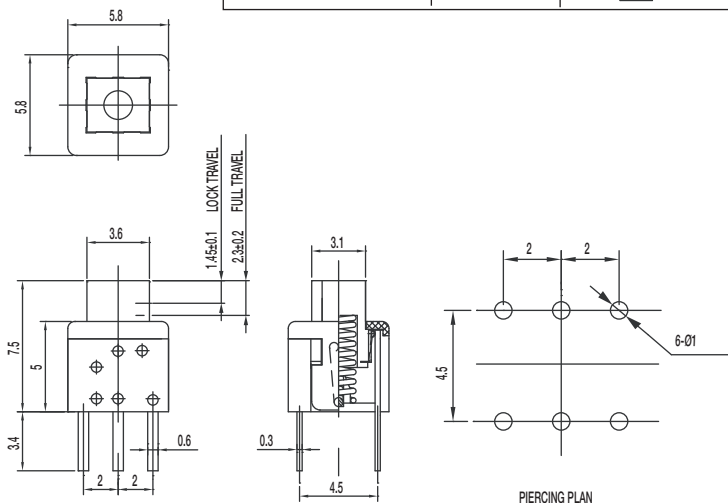
COVER: PA Black

TERMINAL: Brass, silver plated

CONTACT CLIP: Phosphor bronze, silver clad

SPRING: Stainless steel

HOOK LOCK: Stainless steel (latch)



*Dimensions are shown: mm  
Specifications and dimensions subject to change*

# PS-22 Series Subminiature Pushbutton Switches



A

Pushbutton



PART NUMBER	PACKAGING	SCHEMATIC
<b>PS-221605-L NS</b>	1,000 pieces	
<b>PS-221605-F NS</b>	1,000 pieces	

## Dimensions

FOOTPRINT: 5.8 x 5.8 mm

HEIGHT: 10 mm

## Specifications

CONTACT RATING: 0.1A @ 30 VDC / 2A @ 2 VDC

INITIAL CONTACT RESISTANCE: 80 m ohms max.

INSULATION RESISTANCE: 100 M ohms min.

DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.

OPERATING LIFE: 10,000 cycles with load

OPERATING FORCE:

150 ± 50 gf (1.47 ± 0.49N)

LOCK TRAVEL: 1.3 mm

TOTAL TRAVEL: 2.1 mm

OPERATING TEMPERATURE: -20°C to 70°C

## Materials

KNOB: POM Natural

HOUSING: PA Black

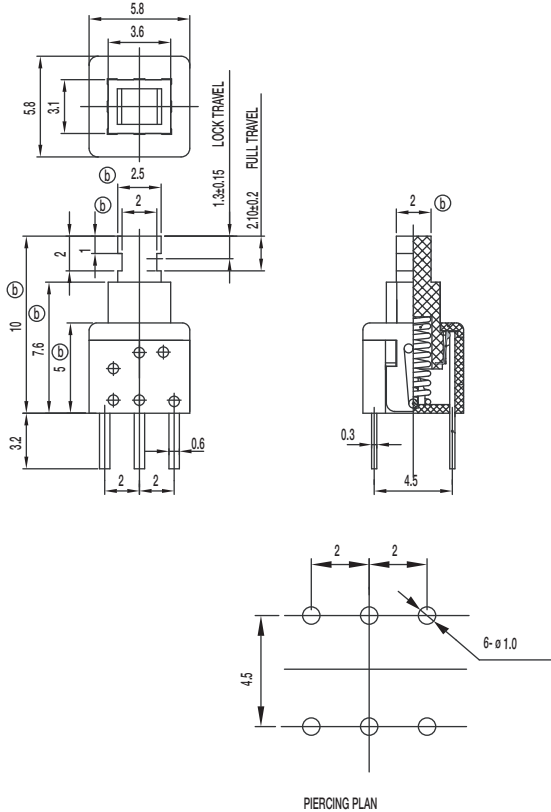
COVER: PC Grey

TERMINAL: Bras, silver plated

CONTACT CLIP: Phosphor bronze, silver clad

SPRING: Stainless steel

HOOK LOCK: Stainless steel (latch)





# PS Series Miniature Pushbutton Switches

Pushbutton  
A



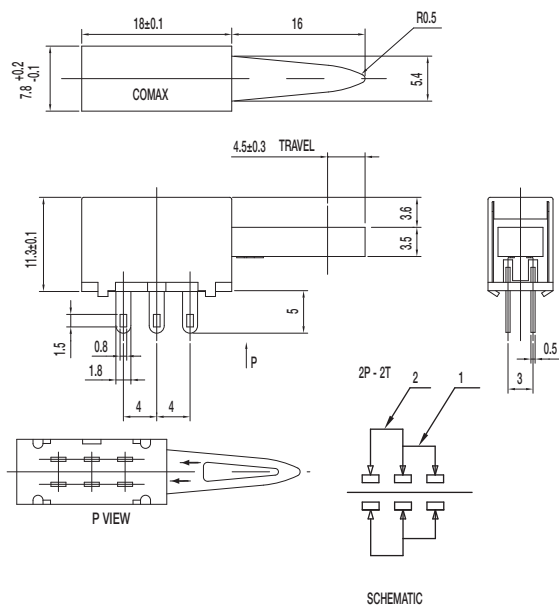
## Features/Benefits

- Miniature size
- Momentary or latching options
- Broad range of products

## Typical Applications

- Industrial
- Automotive
- Audio and visual equipment
- Telecommunications

### PS-22105 DPDT NON-SHORTING



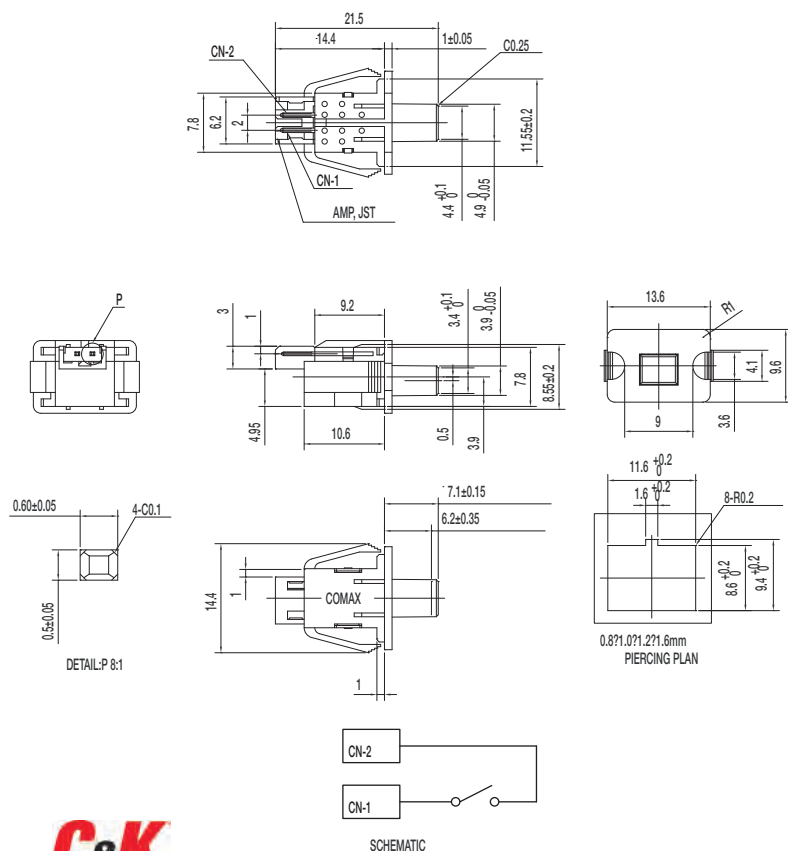
## Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 400 ± 150 gf (3.92 ± 1.47N)  
 TOTAL TRAVEL: 4.5 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

## Materials

FRAME: SECC  
 KNOB: POM (UL 94HB)  
 CONTACT PLATE: Silver clad  
 SPRING: SUS  
 TERMINAL: Silver plated

### PS-12C02-F NS SPST NON-SHORTING



## Specifications

CONTACT RATING: 100 μ A @ 3 VDC min. / 10mA @ 5 VDC max  
 INITIAL CONTACT RESISTANCE: 100 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 250 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 100,000 cycles with load  
 OPERATING FORCE: 50 ± 15 gf (0.49 ± 0.147N)  
 PRE-TRAVEL: 6.20 ± 0.35 mm  
 OPERATING TEMPERATURE: -40°C to 85°C

## Materials

KNOB: POM (UL 94HB)  
 COVER: PA (UL 94V-0)  
 HOUSING: PA (UL 94V-0)  
 SPRING: SUS  
 TERMINAL: Silver plated



Dimensions are shown: mm  
 Specifications and dimensions subject to change



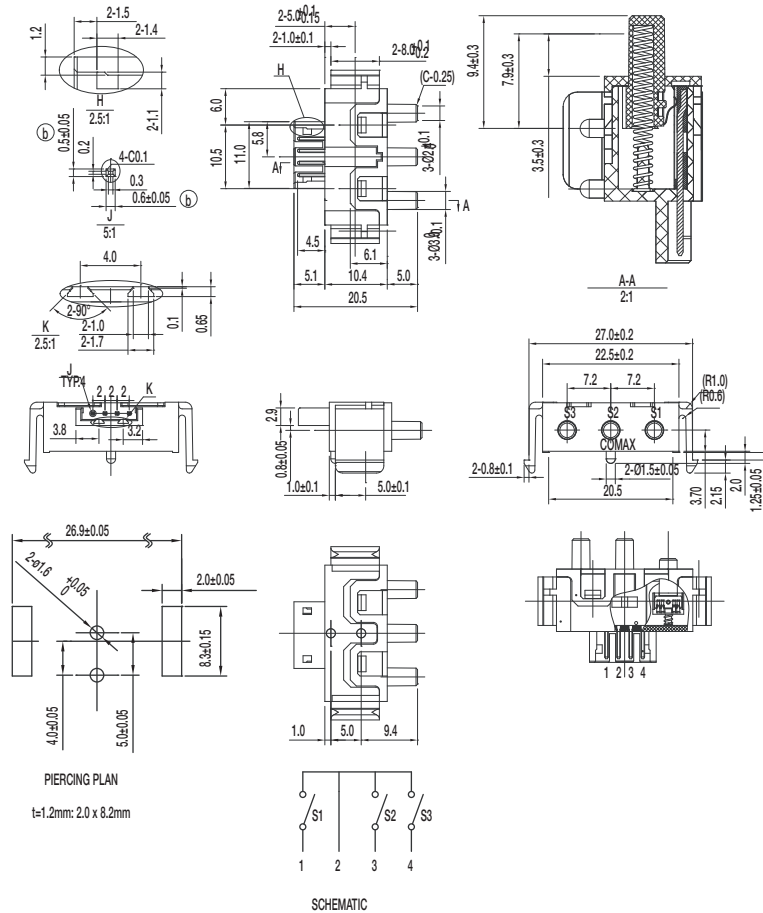
# PS Series Miniature Pushbutton Switches



A

Pushbutton

## PS-32C02-F NS 1P3T NON-SHORTING



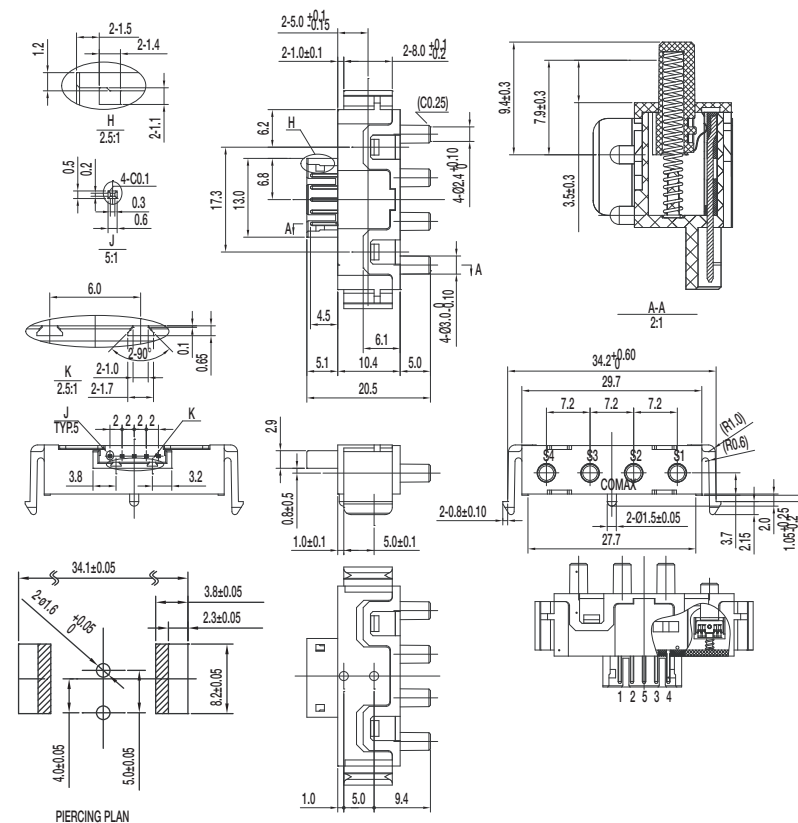
### Specifications

- CONTACT RATING: 100  $\mu$  A @ 3 VDC min. / 10mA @ 5 VDC max
- INITIAL CONTACT RESISTANCE: 100 m ohms max.
- INSULATION RESISTANCE: 100 M ohms min.
- DIELECTRIC STRENGTH: 250 V AC (50-60 Hz) between open terminals and between the frame and terminal.
- OPERATING LIFE: 100,000 cycles with load
- OPERATING FORCE: 80  $\pm$  20 gf (0.784  $\pm$  0.196N)
- PRE-TRAVEL: 1.5  $\pm$  0.3 mm
- OVER-TRAVEL: 3.5  $\pm$  0.3 mm
- TOTAL TRAVEL: 5  $\pm$  0.3 mm
- OPERATING TEMPERATURE: -20°C to 65°C

### Materials

- KNOB: POM (UL 94HB)
- COVER: PA (UL 94V-0)
- HOUSING: PA (UL 94V-0)
- SPRING: SUS
- TERMINAL: Silver plated

## PS-42C02-F NS 1P4T NON-SHORTING



### Specifications

- CONTACT RATING: 100  $\mu$  A @ 3 VDC min. / 10mA @ 5 VDC max
- INITIAL CONTACT RESISTANCE: 100 m ohms max.
- INSULATION RESISTANCE: 100 M ohms min.
- DIELECTRIC STRENGTH: 250 V AC (50-60 Hz) between open terminals and between the frame and terminal.
- OPERATING LIFE: 100,000 cycles with load
- OPERATING FORCE: 80  $\pm$  20 gf (0.784  $\pm$  0.196N)
- PRE-TRAVEL: 1.5  $\pm$  0.3 mm
- OVER-TRAVEL: 3.5  $\pm$  0.3 mm
- TOTAL TRAVEL: 5  $\pm$  0.3 mm
- OPERATING TEMPERATURE: -20°C to 65°C

### Materials

- KNOB: POM (UL 94HB)
- COVER: PA (UL 94V-0)
- HOUSING: PA (UL 94V-0)
- SPRING: SUS
- TERMINAL: Silver plated

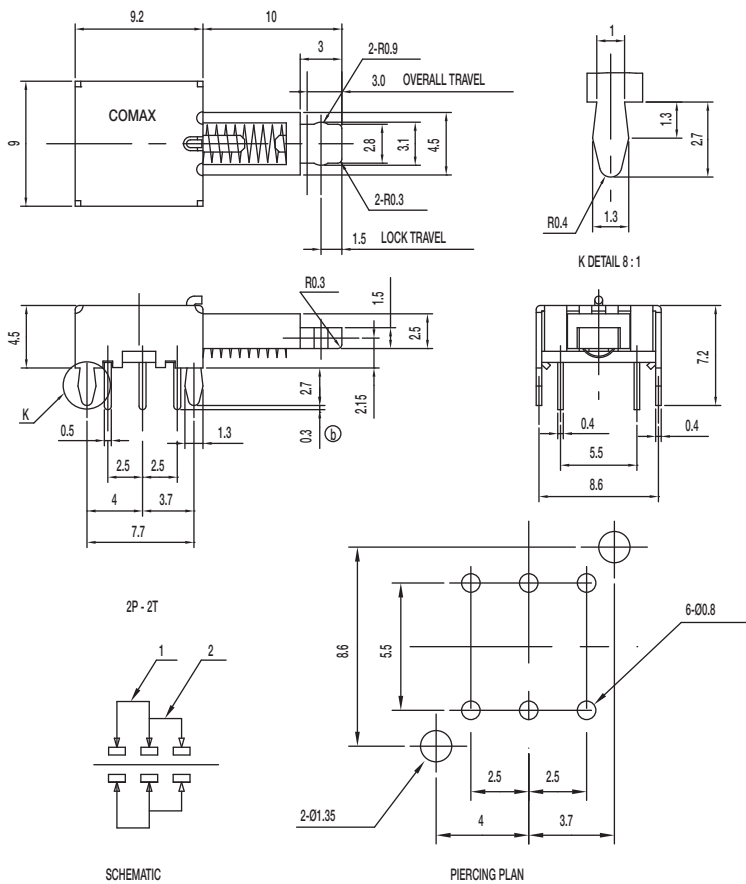
Dimensions are shown: mm  
Specifications and dimensions subject to change



# PS Series Miniature Pushbutton Switches

Pushbutton A

## PS-22C08-G10 NS DPDT NON-SHORTING



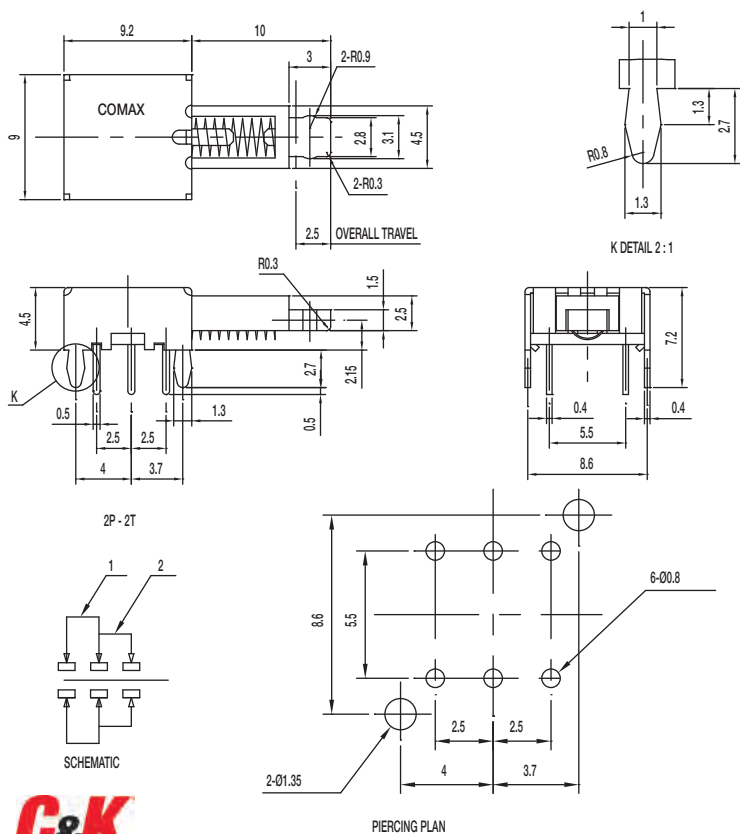
### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles without load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 LOCK TRAVEL: 1.5 ± 0.3 mm  
 OVER-TRAVEL: 3 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

FRAME: SPCC  
 KNOB: POM (UL 94HB)  
 CONTACT: Silver plated  
 SPRING: SUS  
 TERMINAL: Silver plated

## PS-22E08-G10 NS DPDT NON-SHORTING



### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles without load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 TOTAL TRAVEL: 2.5 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

FRAME: SPCC  
 KNOB: POM (UL 94HB)  
 CONTACT: Silver plated  
 SPRING: SUS  
 TERMINAL: Silver plated



Dimensions are shown: mm  
 Specifications and dimensions subject to change

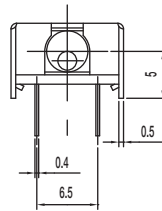
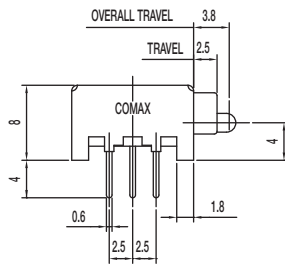
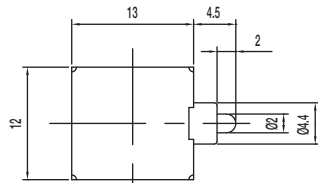
# PS Series Miniature Pushbutton Switches



A

Pushbutton

## PS-22E09-G 4.5 NS DPDT NON-SHORTING

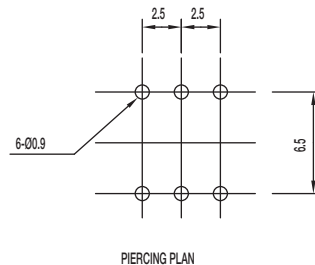
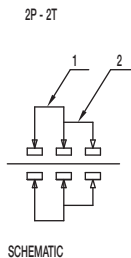


### Specifications

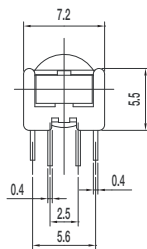
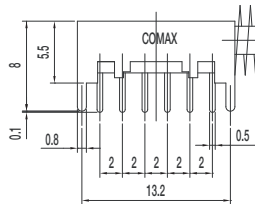
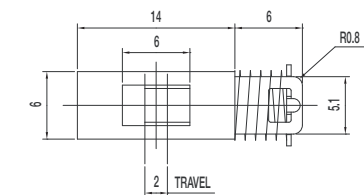
- CONTACT RATING: 0.3A @ 30 VDC
- INITIAL CONTACT RESISTANCE: 30 m ohms max.
- INSULATION RESISTANCE: 100 M ohms min.
- DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
- OPERATING LIFE: 10,000 cycles with load
- OPERATING FORCE:  $70 \pm 20$  gf (0.686  $\pm$  0.196N)
- TRAVEL:  $2.5 \pm 0.3$  mm
- TOTAL TRAVEL:  $3.8 \pm 0.3$  mm
- OPERATING TEMPERATURE: -20°C to 70°C

### Materials

- FRAME: SPCC
- KNOB: POM (UL 94HB)
- CONTACT: Silver plated
- SPRING: SUS
- TERMINAL: Silver plated



## PS-42D09-NS 4P2T NON-SHORTING

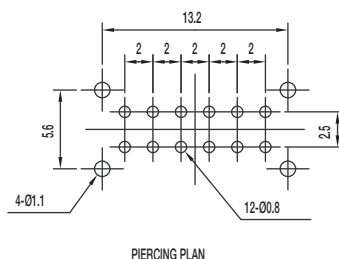
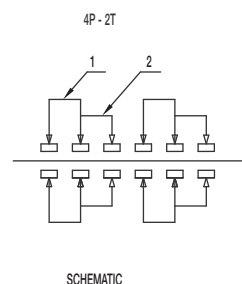


### Specifications

- CONTACT RATING: 0.3A @ 30 VDC
- INITIAL CONTACT RESISTANCE: 30 m ohms max.
- INSULATION RESISTANCE: 100 M ohms min.
- DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
- OPERATING LIFE: 10,000 cycles with load
- OPERATING FORCE:  $250 \pm 100$  gf (2.45  $\pm$  0.98N)
- TRAVEL:  $2 \pm 0.3$  mm
- OPERATING TEMPERATURE: -20°C to 70°C

### Materials

- FRAME: SPCC
- KNOB: POM (UL 94HB)
- CONTACT PLATE: Silver plated
- SPRING: Steel
- TERMINAL: Silver plated



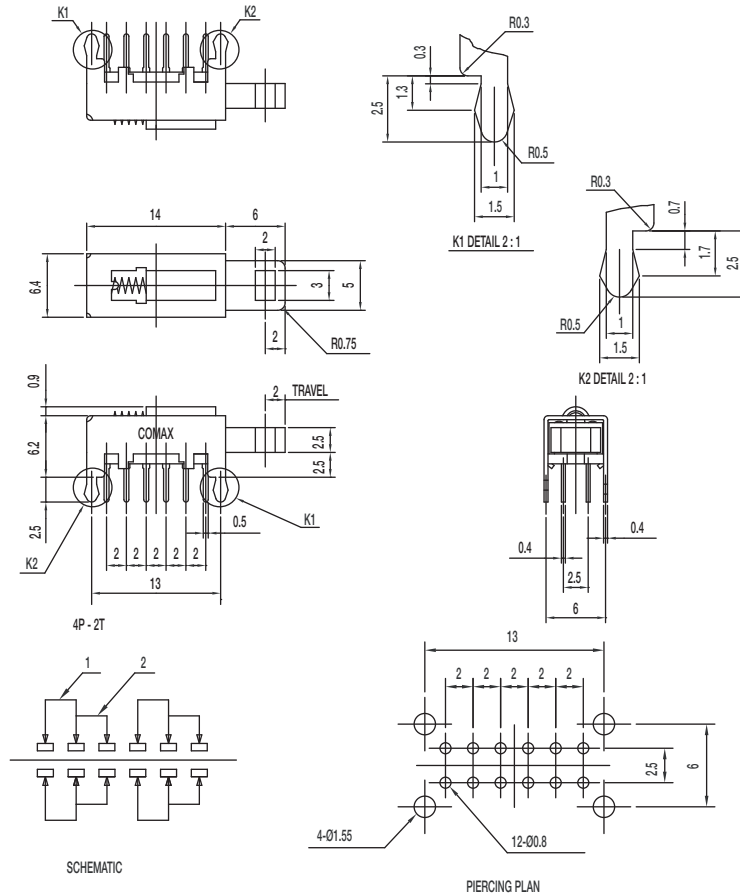
Dimensions are shown: mm  
Specifications and dimensions subject to change



# PS Series Miniature Pushbutton Switches

Pushbutton  
A

## PS-42D13-NS 4P2T NON-SHORTING



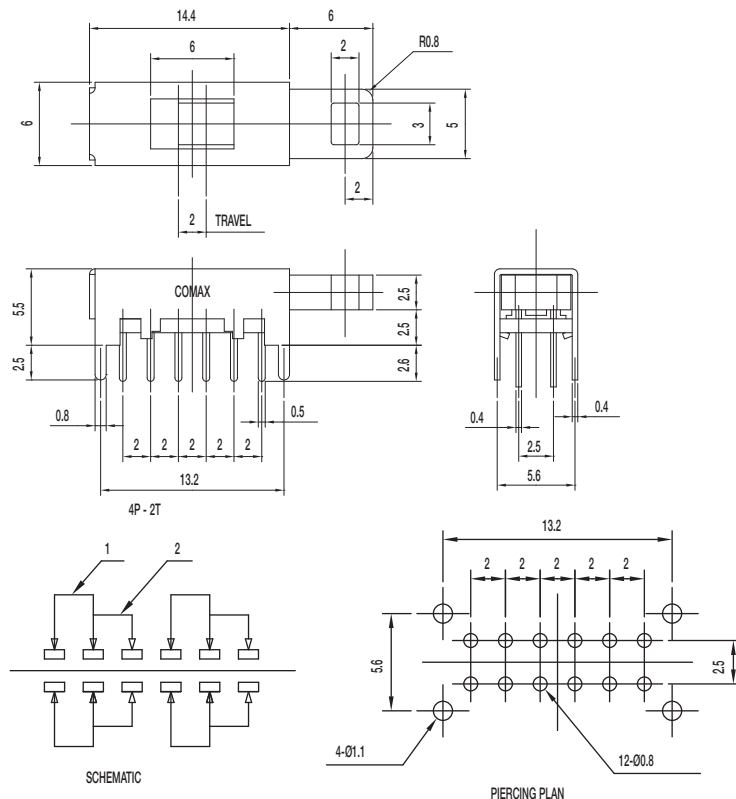
### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 250 ± 100 gf (2.45 ± 0.98N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

FRAME: SPCC  
 KNOB: POM (UL 94HB)  
 CONTACT: Silver plated  
 SPRING: Steel  
 TERMINAL: Silver plated

## PS-42D16-S 4P2T SHORTING



### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 60 ± 30 gf (0.59 ± 0.29N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

FRAME: SPCC  
 KNOB: POM (UL 94HB)  
 CONTACT: Silver plated  
 TERMINAL: Silver plated



Dimensions are shown: mm  
 Specifications and dimensions subject to change

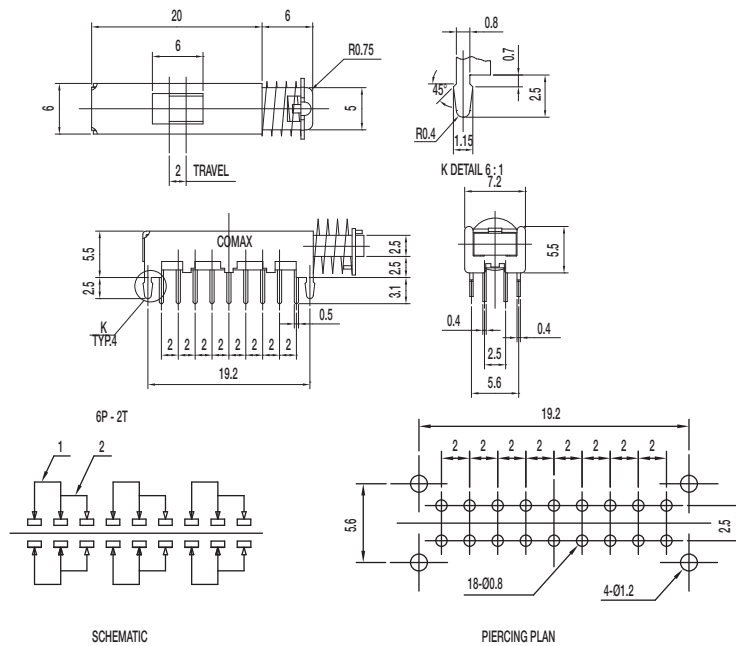
# PS Series Miniature Pushbutton Switches



A

Pushbutton

## PS-62D10-S 6P2T SHORTING



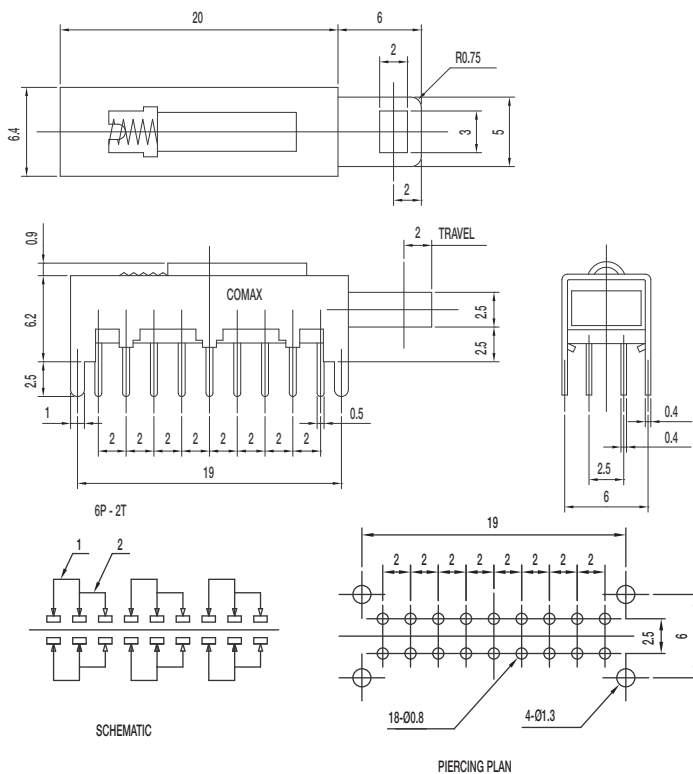
### Specifications

- CONTACT RATING: 0.3A @ 30 VDC
- INITIAL CONTACT RESISTANCE: 30 m ohms max.
- INSULATION RESISTANCE: 100 M ohms min.
- DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
- OPERATING LIFE: 10,000 cycles with load
- OPERATING FORCE: 250 ± 100 gf (2.45 ± 0.98N)
- TRAVEL: 2 ± 0.3 mm
- OPERATING TEMPERATURE: -20°C to 70°C

### Materials

- FRAME: SPCC
- KNOB: POM (UL 94HB)
- CONTACT: Silver plated
- SPRING: Steel
- TERMINAL: Silver plated

## PS-62D13-S 6P2T SHORTING



### Specifications

- CONTACT RATING: 0.3A @ 30 VDC
- INITIAL CONTACT RESISTANCE: 30 m ohms max.
- INSULATION RESISTANCE: 100 M ohms min.
- DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
- OPERATING LIFE: 10,000 cycles with load
- OPERATING FORCE: 300 ± 100 gf (2.94 ± 0.98N)
- TRAVEL: 2 ± 0.3 mm
- OPERATING TEMPERATURE: -20°C to 70°C

### Materials

- FRAME: SPCC
- KNOB: POM (UL 94HB)
- CONTACT PLATE: Silver plated
- SPRING: Steel
- TERMINAL: SUS



Dimensions are shown: mm  
Specifications and dimensions subject to change

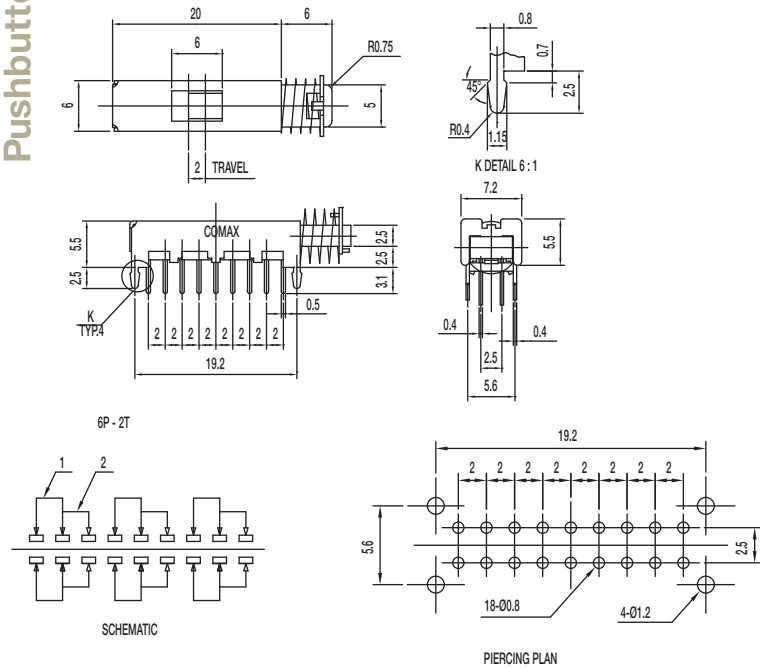


# PS Series Miniature Pushbutton Switches

Pushbutton

A

## PS-62D15-S 6P2T SHORTING



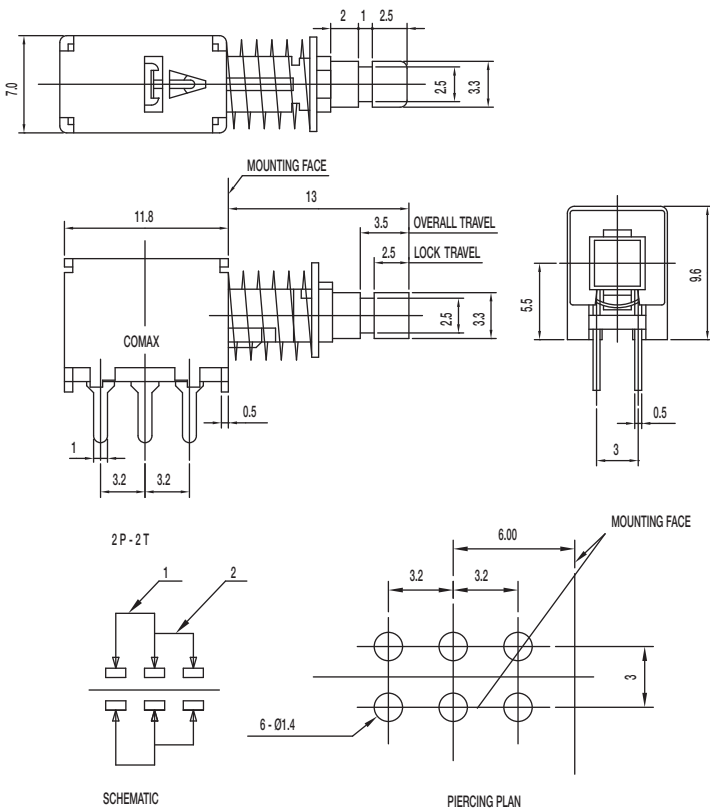
### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 250 ± 100 gf (2.45 ± 0.98N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

FRAME: SPCC  
 KNOB: POM (UL 94HB)  
 CONTACT: Silver plated  
 SPRING: Steel  
 TERMINAL: Silver plated

## PS-22E02-G13 S DPDT SHORTING WITH LOCK



### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 300 ± 100 gf (2.94 ± 0.98N)  
 LOCK TRAVEL: 2.5 ± 0.3 mm  
 TOTAL TRAVEL: 3.5 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

FRAME: SPCC  
 KNOB: POM (UL 94HB)  
 CONTACT: Silver plated  
 SPRING: Steel  
 TERMINAL: Silver plated



Dimensions are shown: mm  
 Specifications and dimensions subject to change

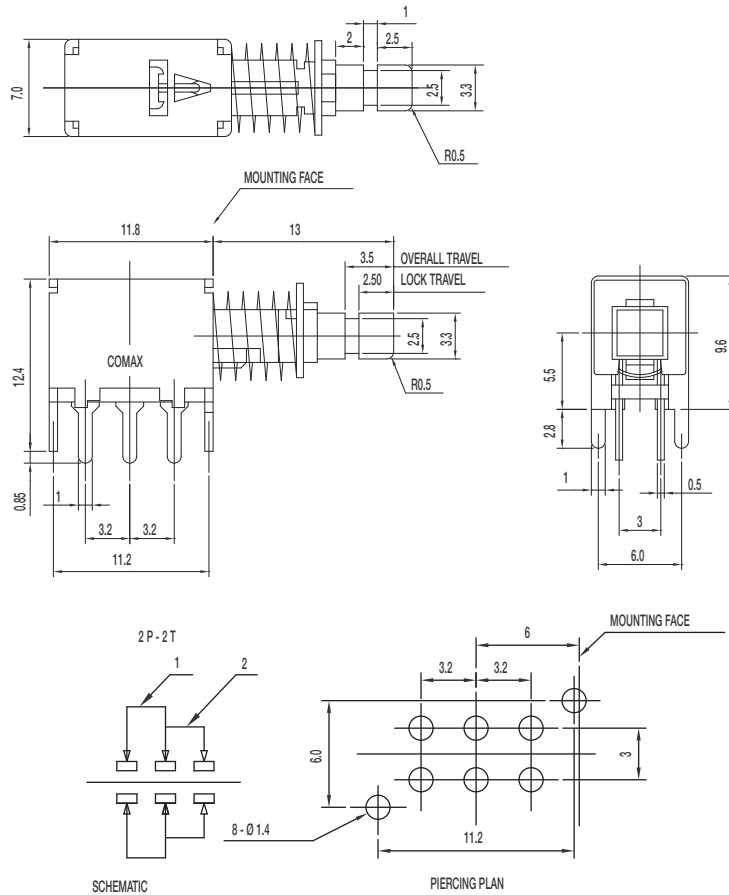
# PS Series Miniature Pushbutton Switches



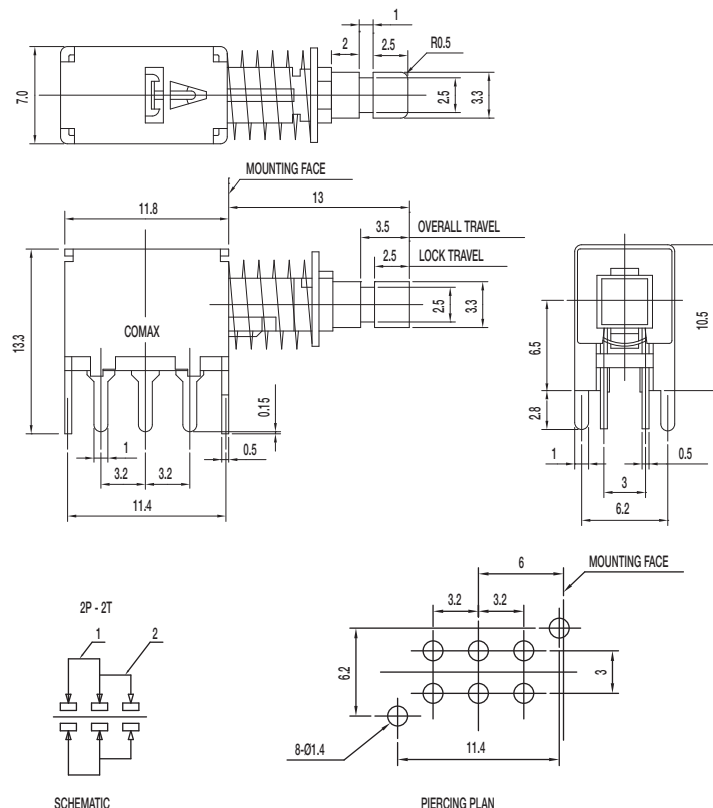
A

Pushbutton

## PS-22E04-G13 NS DPDT NON-SHORTING WITH LOCK



## PS-22E44-G13 NS DPDT NON-SHORTING WITH LOCK



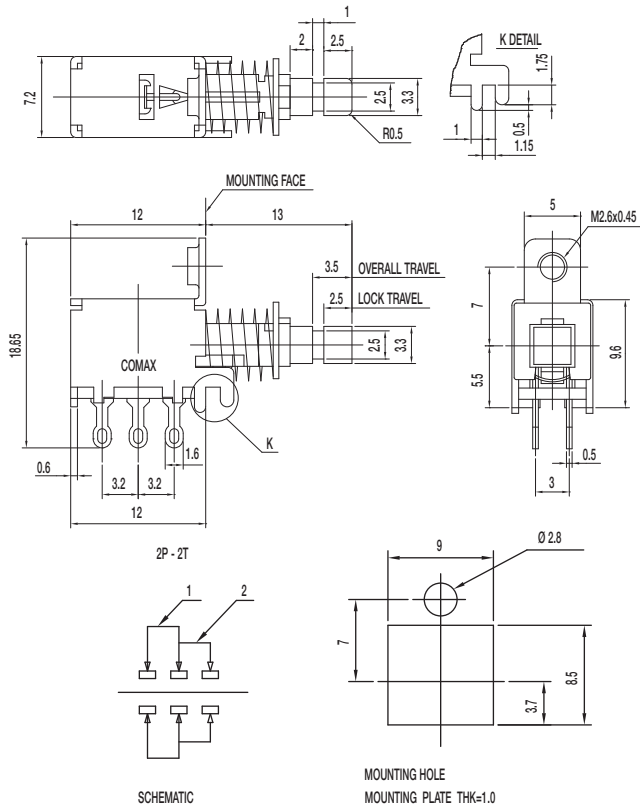
Dimensions are shown: mm  
 Specifications and dimensions subject to change



# PS Series Miniature Pushbutton Switches

Pushbutton  
A

**PS-22E75-G13 NS** DPDT NON-SHORTING WITH LOCK



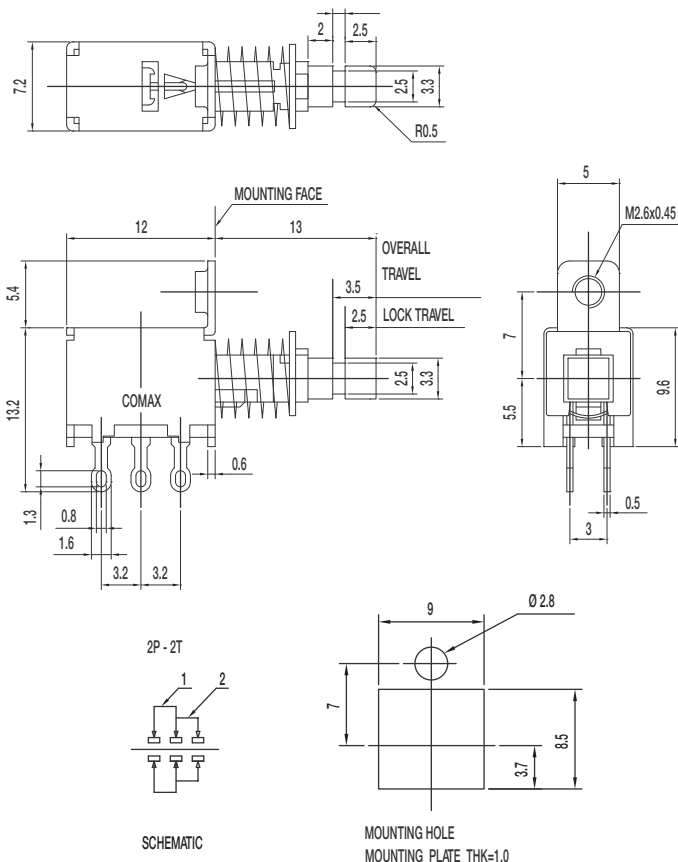
## Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 300 ± 100 gf (2.94 ± 0.98N)  
 LOCK TRAVEL: 2.5 ± 0.3 mm  
 TOTAL TRAVEL: 3.5 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

## Materials

FRAME: SPCC  
 KNOB: POM (UL 94HB)  
 CONTACT: Silver plated  
 SPRING: Steel  
 TERMINAL: Silver plated

**PS-22E95-G13 NS** DPDT NON-SHORTING WITH LOCK



## Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 300 ± 100 gf (2.94 ± 0.98N)  
 LOCK TRAVEL: 2.5 ± 0.3 mm  
 TOTAL TRAVEL: 3.5 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

## Materials

FRAME: SPCC  
 KNOB: POM (UL 94HB)  
 CONTACT: Silver plated  
 SPRING: Steel  
 TERMINAL: Silver plated



Dimensions are shown: mm  
 Specifications and dimensions subject to change



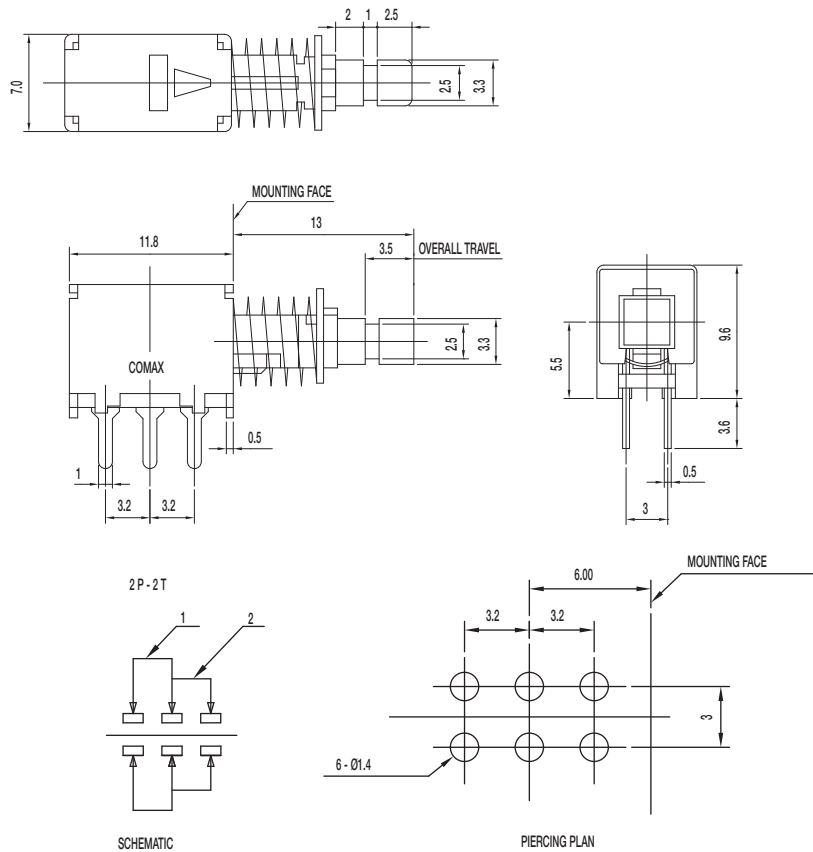
# PS Series Miniature Pushbutton Switches



A

Pushbutton

## PS-22F02-G13 S DPDT SHORTING



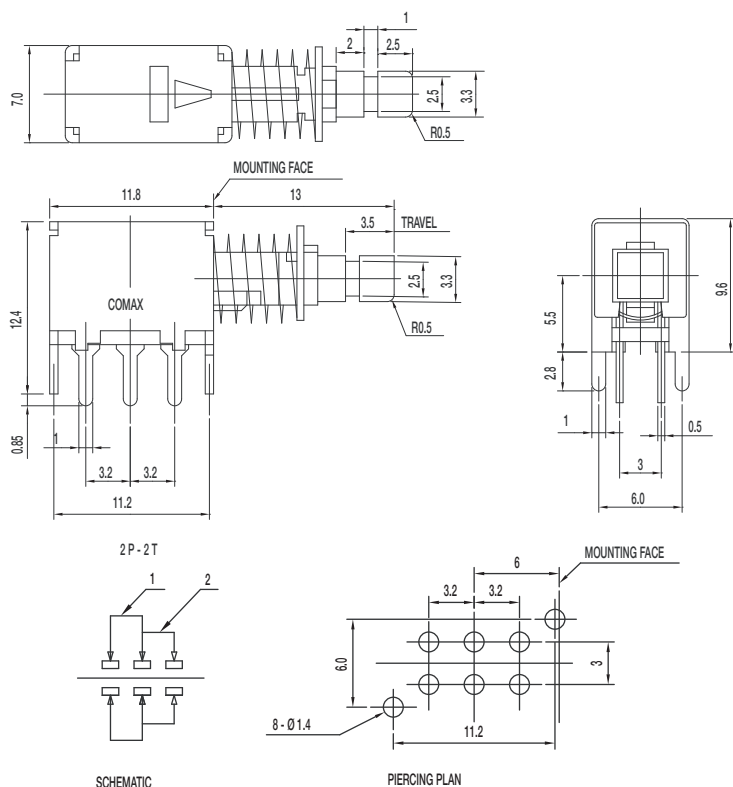
### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz)  
 between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 300 ± 100 gf (2.94 ± 0.98N)  
 TOTAL TRAVEL: 3.5 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

FRAME: SPCC  
 KNOB: POM (UL 94HB)  
 CONTACT: Silver plated  
 SPRING: Steel  
 TERMINAL: Silver plated

## PS-22F04-G13 NS DPDT NON\_SHORTING



### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 300 ± 100 gf (2.94 ± 0.98N)  
 TOTAL TRAVEL: 3.5 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

FRAME: SPCC  
 KNOB: POM (UL 94HB)  
 CONTACT: Silver plated  
 SPRING: Steel  
 TERMINAL: Silver plated



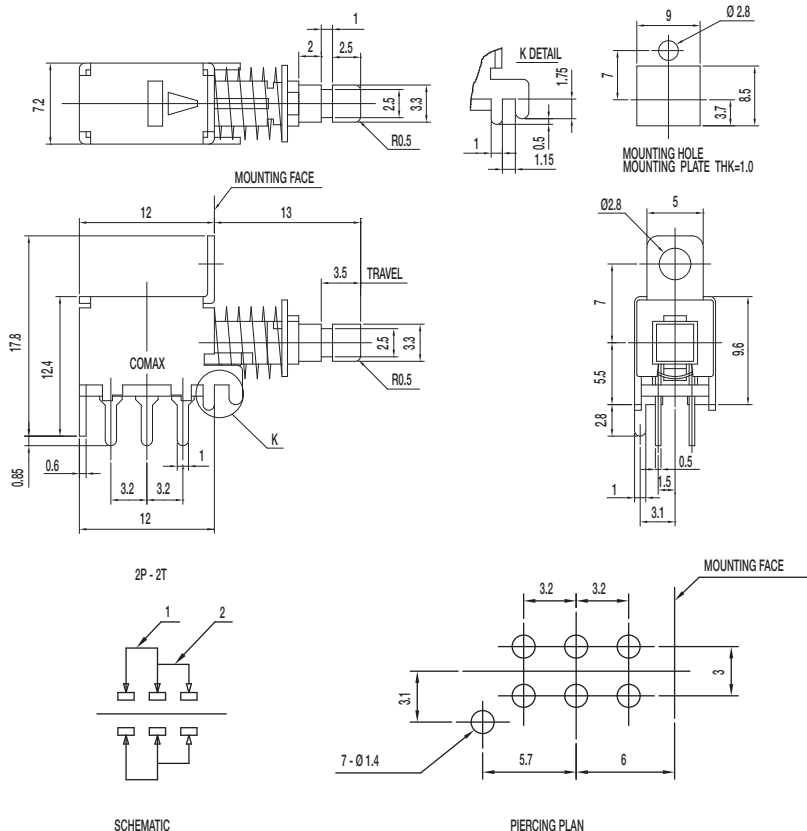
Dimensions are shown: mm  
 Specifications and dimensions subject to change



# PS Series Miniature Pushbutton Switches

Pushbutton  
A

**PS-22F24-G13 NS** DPDT NON\_SHORTING



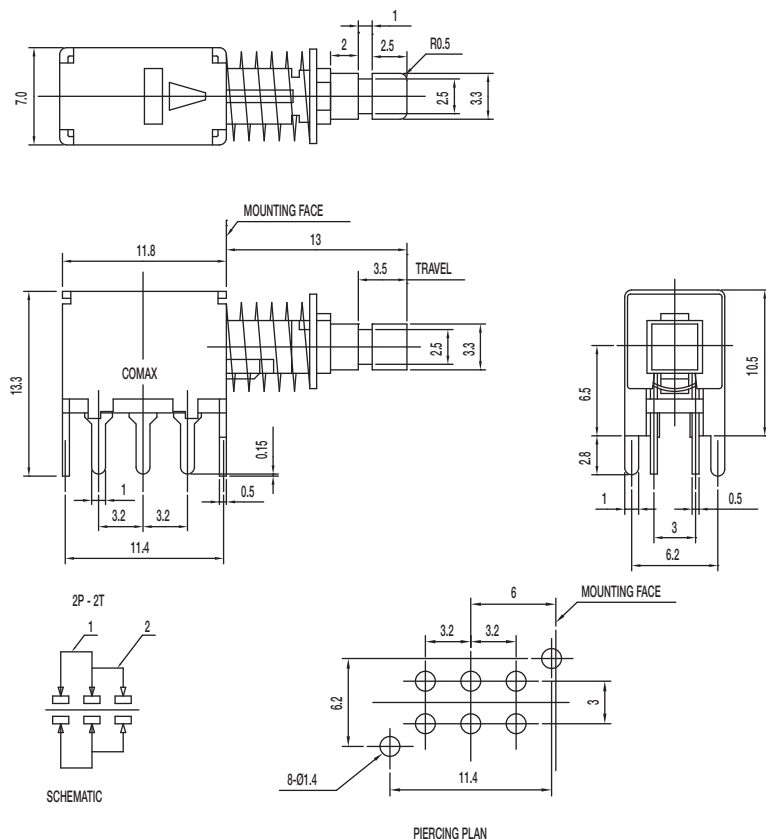
## Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 300 ± 100 gf (2.94 ± 0.98N)  
 TOTAL TRAVEL: 3.5 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

## Materials

FRAME: SPCC  
 KNOB: POM (UL 94HB)  
 CONTACT: Silver plated  
 SPRING: Steel  
 TERMINAL: Silver plated

**PS-22F44-G13 NS** DPDT NON\_SHORTING



## Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 300 ± 100 gf (2.94 ± 0.98N)  
 TOTAL TRAVEL: 3.5 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

## Materials

FRAME: SPCC  
 KNOB: POM (UL 94HB)  
 CONTACT: Silver plated  
 SPRING: Steel  
 TERMINAL: Silver plated



Dimensions are shown: mm  
 Specifications and dimensions subject to change

# Tactile Switches






## Product Selection Guide


<b>Surface Mount</b>							
<b>Series</b>	<b>KXT2</b>	<b>KXT3</b>	<b>KMT2</b>	<b>KMT0</b>	<b>KMR 2-8</b>	<b>KMS</b>	<b>PTS525</b>
<b>Size on PCB L x W (mm)</b>	3,9 x 3	3 x 2	3 x 2,6	3 x 2,6	4,2 x 2,8	4,2 x 3,55	5,2 x 5,2
<b>Total Height (mm)</b>	1,05	0,6	0,65	0,65	1,9 2,5	1,42	0,8 and 1,5
<b>Travel (mm)</b>	0,1	0,13	0,15	0,15	0,2 to 0,35	0,25 to 0,3	0,3
<b>Actuation Force (N)</b>	100 gf 200 gf	100 gf 160gf 240 gf 330 gf	1,0 1,6	1,0; 1,6 2,3; 3,4	1,2; 2,0 3,0; 4,0	2,0 3,0	1,6 2,6
<b>Contact Type</b>	Silver	Silver	Silver	Silver	Silver / Gold	Silver / Gold	Silver
<b>Max. Voltage (V)</b>	12	15	32	32	32	32	32
<b>Max. Switching Power (VA)</b>	0,5	0,5	0,5	0,5	1 / 0,2	1 / 0,2	1
<b>Life Cycles</b>	100,000	300,000 500,000	150,000	300,000/600,000 1,000,000	100,000 300,000	100,000	100,000
<b>IP Rating</b>	IP64	IP64	IP54	IP68	IP40	IP40	IP40
<b>Page Number</b>	B-5	B-7	B-9	B-11	B-13	B-23	B-25
<b>Surface Mount</b>							
<b>Series</b>	<b>PTS530</b>	<b>PTS540</b>	<b>PTS810</b>	<b>PTS820</b>	<b>PTS830</b>	<b>PTS840</b>	<b>KSR</b>
<b>Size on PCB L x W (mm)</b>	4,5 x 4,5	3,7 x 3,7	4,2 x 3,2	3,9 x 2,9	3,5 x 2,6	3,5 x 3,55	7,15 x 3,8 7,3 x 3,8
<b>Total Height (mm)</b>	0,55 and 0,65	0,55 / 0,65	2,5	1,5/2,0/2,5	1,4	1,35	2,5
<b>Travel (mm)</b>	0,2	0,15	0,15/0,2	0,2	0,15	0,2	0,3 to 0,5
<b>Actuation Force (N)</b>	1,0; 1,6; 2,0; 2,6; 4,0; 6,0	160 gf 230 gf	1,6; 2,6; 4,0; 6,0	1,6 2,5	160 gf 450 gf	1,6 2,2	1,2; 2,0; 3,0; 4,5
<b>Contact Type</b>	Silver	Silver	Silver	Silver	Silver	Silver	Silver / Gold
<b>Max. Voltage (V)</b>	12	12	16	12	12	12	32
<b>Max. Switching Power (VA)</b>	-	-	-	-	-	-	1 / 0,2
<b>Life Cycles</b>	150,000 to 1,000,000	300,000 500,000	50,000 to 150,000	100,000 200,000	200,000 500,000	100,000	100,000 200,000
<b>IP Rating</b>	-	IP40	IP40	IP40	IP40	IP40	IP50
<b>Page Number</b>	B-29	B-31	B-33	B-35	B-38	B-42	B-45

\* Other options available by request

*Dimensions are shown: mm  
Specifications and dimensions subject to change*

# Tactile Switches Product Selection Guide

Surface Mount Thru-Hole Options							
Series	KSS	KSC4V2	KSC 1 - 10			KSE	KT
Footprint	5,5 x 4,4	2 holes ø 1,1 2 pads 1,5 x 0,8	J 6,8 x 6,2	G 10 x 6,2		6,8 x 6,2	SA 7,5x5 SA2 7,5x7
Total Height (mm)	1,7	5,0*				3,1 / 4,3	6,6 7,11 with tab
Travel (mm)	0,3	0,7*	0,20 to 0,75 *			0,3	0,3 to 0,5
Actuation Force (N)	2 2,5 4	3.5*	1,1 to 5,5 *			1.5 2.25	3
Contact Type	Silver / Gold	Silver / Gold	Silver / Gold			Silver	Silver / Gold
Max. Voltage (V)	32	32	32			32	50
Max. Switching Power (VA)	1 / 0,2	1 / 0,2	1 / 0.2			1	1 / 0.2
Life Cycles	100,000	300,000	100,000 to 1,000,000			300,000	100,000
IP Rating	IP40	IP67	IP67			IP67	
Page Number	B-49	B-63	B-51			B-65	B-68

Surface Mount Thru-Hole Options							
Series	K5AT	K8	K5V	KSF/KSI	KSA	KSA-V	KSA MKII
Footprint	G 8,4 x 10,8	G 8,4 x 10,8	8 x 9 x 17 / 9 x 13	7,62 x 5,08	7,62 x 5,08	7,62 x 2,54	7,62 x 5,08
Total Height (mm)	6,1	6	9 / 13	2,6	4,7 button option	8	4,7
Travel (mm)	0,5	0,45	1,2	0,3 to 0,5	0,3 to 0,5	0,3 to 0,5	0,3 to 0,5
Actuation Force (N)	4.0	4.0	4.0	1.3 3.0 5.0	1.3 3.0 5.0	1.3 3.0 5.0	1.3 3.0 5.0
Contact Type	Gold	Silver	Gold	Silver / Gold	Silver / Gold	Silver / Gold	Silver / Gold
Max. Voltage (V)	32	32	32	32	32	32	32
Max. Switching Power (VA)	1	1	1	1 / 0.2	1 / 0.2	1 / 0.2	1 / 0.2
Life Cycles	100,000	300,000	25,000	100,000	100,000	100,000	100,000 1,000,000
IP Rating	IP40	IP40	IP40	IP60	IP60	IP60	IP67
Page Number	B-73	B-75	B-78	B-82	B-84	B-84	B-89






\* Other options available by request

# Tactile Switches

## Product Selection Guide

### Tactile Switches

B

Surface Mount Thru-Hole Options					
Series	KSJ	KSJ-V	KSJ	KSJ-V	PTS635
Footprint	7,62 x 5,08	7,62 x 2,54	7,62 x 5,08	7,62 x 2,54	6 x 3,5
Total Height (mm)	9,9	8	6,65	8	2,5 4,3 5,0
Travel (mm)	0,3 to 0,5	0,3 to 0,5	0,55 to 0,7	0,55 to 0,7	0,25
Actuation Force (N)	1,3 3,0	1,3 3,0	2,0 3,0	2,0 3,0	1,3 2,0 2,6
Contact Type	Silver / Gold	Silver / Gold	Silver / Gold	Silver / Gold	Silver
Max. Voltage (V)	32	32	32	32	12
Life Cycles	100,000	100,000	100,000 30,000	100,000 30,000	20,000
IP Rating	IP60	IP60	IP60	IP60	IP40
Page Number	B-84	B-84	B-91	B-91	B-93

Surface Mount Thru-Hole Options						
Series	PTS641	PTS645	PTS645-V	PTS125	ITS	
Footprint	6,3 x 6,4	6 x 6	7,0 x 2,5	12 x 12	variety of sizes available	
Total Height (mm)	2,5 3,1 3,4	4,3; 5,0; 7,0; 9,5;	7,1	4,3 7,3 Sq. 8,5 12,0		
Travel (mm)	0,20 / 0,30	0,25	0,25	0,30	0,25	
Actuation Force (N)	160 gf 250 gf 320 gf	1,3; 1,6 2,0; 2,6	1,3; 1,6 2,0; 2,6	1,6 2,6	160 gf	
Contact Type	Silver	Silver	Silver	Silver	Silver	
Max. Voltage (V)	12	12	12	12	12	
Life Cycles	100,000	100,000	100,000	200,000	50,000	
IP Rating	IP40	IP40	IP40	IP40	IP40	
Page Number	B-96	B-98	B-103	B-105	B-109	

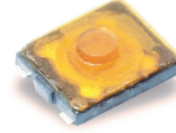
# KXT2 Series Double Action Ultra Low Profile Top Actuated

## Features

- 3.9 x 3.0 mm footprint
- 1.05 mm thickness
- Dual action

## Typical Applications

- Wearable electronics
- Mobile Phones
- Portable Electronics



B

Tactile Switches

## Specification

FUNCTION: momentary action  
 CONTACT ARRANGEMENT: Dual action = SPDT, N.O.  
 TERMINALS: G type for SMT  
 TRAVEL: 0.1 mm ± 0.05 mm  
 TRAVEL: 0.2 mm + 0.1 / - 0.05 mm

## Mechanical

	Operating force gf		Operating Life
KXT 211 LHS	Push force 1	100 ± 40	100,000
	Push force 2	200 ± 50	

## Electrical

MAXIMUM VOLTAGE: 12 VDC  
 MAXIMUM CURRENT DC: 50 mA  
 DIELECTRIC STRENGTH: 250 V (50 Hz, 1 min.)  
 CONTACT RESISTANCE: ≤ 500 mΩ  
 INSULATION RESISTANCE: 100 MΩ  
 BOUNCE TIME: ≤ 10 ms

## Environmental

OPERATING TEMPERATURE: -40°C to 85°C  
 STORAGE TEMPERATURE: -40°C to 85°C

## Process

SOLDERING: This component is suited to the following methods:  
 Infrared Reflow Soldering in accordance with IEC61760-1

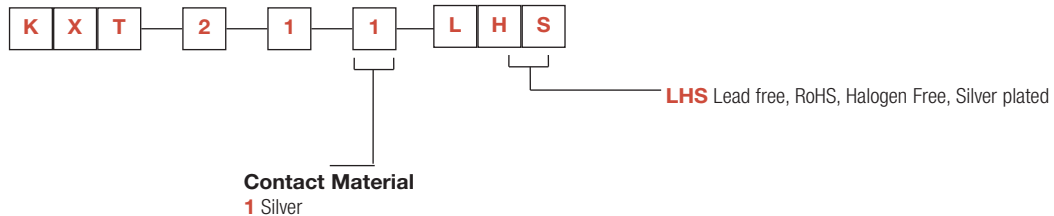
## Packaging

In reels of 6,000 pieces  
 Dimensions of reels according to EIA RS481 or IEC 2863  
 External diameter 178 mm ± 2mm

**NOTE:** Specifications listed above are for switches with standard options.  
 For information on specific and custom switches, consult Customer Service Center.

## Part Number Description

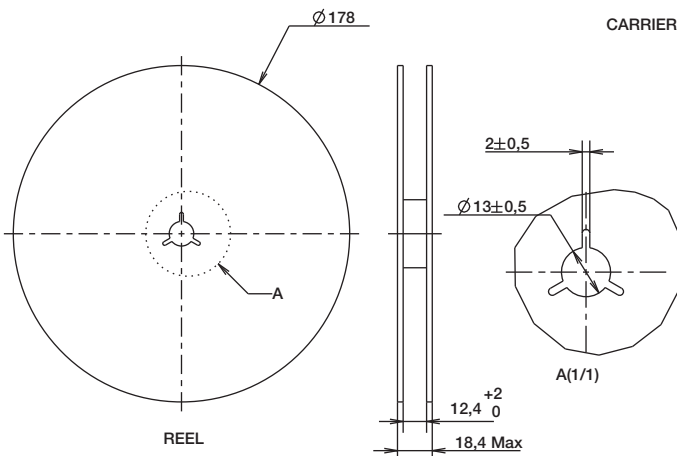
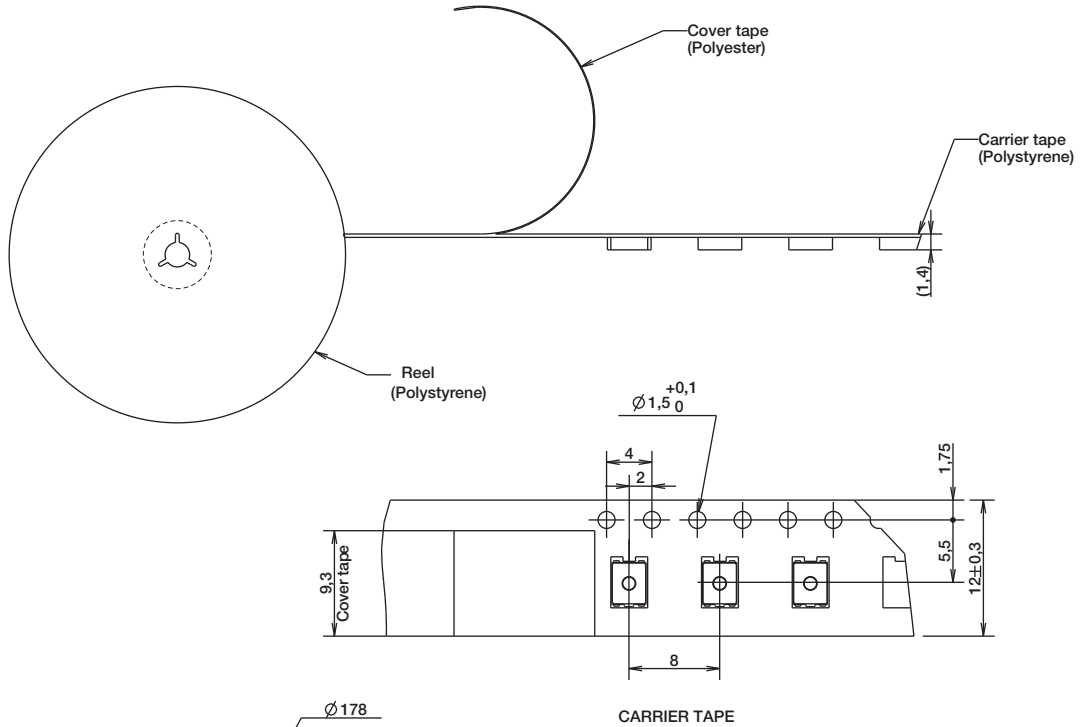
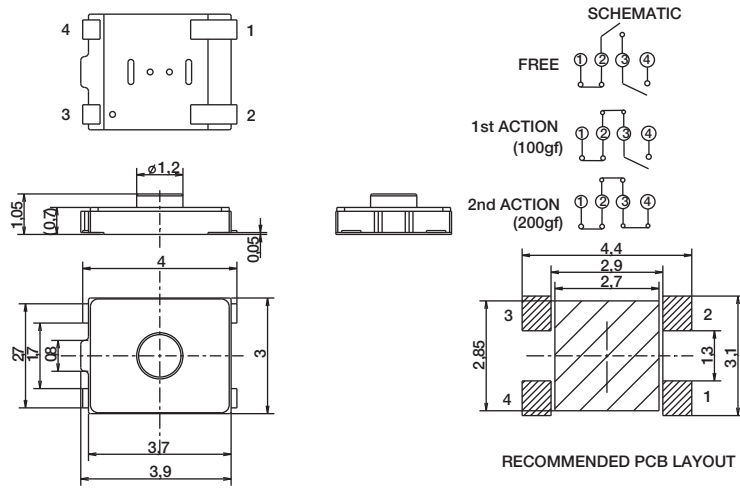
For any part number different from those listed above, please consult your local representative.



# KXT2 Series Double Action Ultra Low Profile Top Actuated

B

Tactile Switches



Dimensions are shown: mm  
Specifications and dimensions subject to change

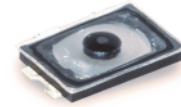
# KXT3 Series Ultra Low Profile Top Actuated

## Features

- 3.0 x 2.0 mm footprint
- 0.6 mm thickness
- High number of cycle

## Typical Applications

- Wearable electronics
- In-Ear headphones, Earbuds
- Mobile Phones
- Portable Electronics
- Hearing Aids



B

Tactile Switches

## Specification

FUNCTION: momentary action  
 CONTACT ARRANGEMENT: 1 make contact = SPST, N.O.  
 TERMINALS: G type for SMT  
 TRAVEL: 0.13 mm ± 0.05 mm

## Mechanical

	Operating force gf	Operating Life	Casing Color
KXT 311 LHS	100 ± 50	300,000	Black
KXT 321 LHS	160 ± 50	500,000	Black
KXT 331 LHS	240 ± 70	500,000	Black
KXT 341 LHS	330 ± 70	300,000	Black

## Electrical

MAXIMUM VOLTAGE: 15 VDC  
 MAXIMUM CURRENT DC: 20 mA  
 DIELECTRIC STRENGTH: (50/60 Hz, 1 min) 250 Vrms  
 CONTACT RESISTANCE: ≤ 500 mΩ  
 INSULATION RESISTANCE: ≥ 50 MΩ  
 BOUNCE TIME: ≤ 10 ms

## Environmental

OPERATING TEMPERATURE: -40°C to 85°C  
 STORAGE TEMPERATURE: -40°C to 85°C

## Process

SOLDERING: This component is suited to the following methods:  
 Infrared Reflow Soldering in accordance with IEC61760-1

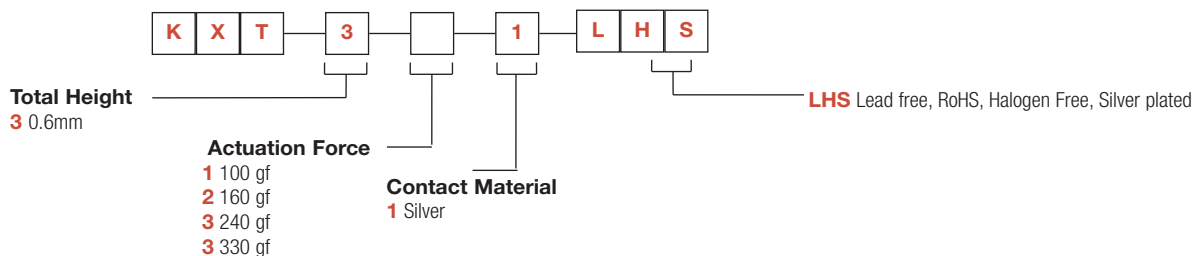
## Packaging

In reels of 8,500 pieces  
 Dimensions of reels according to EIA 481B  
 External diameter 330 mm

**NOTE:** Specifications listed above are for switches with standard options.  
 For information on specific and custom switches, consult Customer Service Center.

## Part Number Description

For any part number different from those listed above, please consult your local representative.

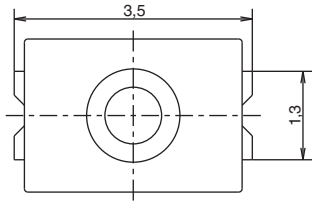
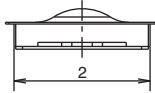
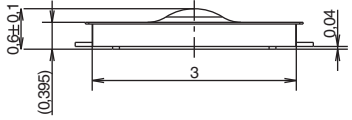
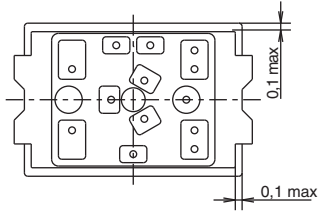




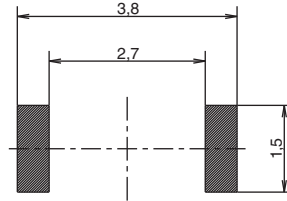
# KXT3 Series Ultra Low Profile Top Actuated

Tactile Switches

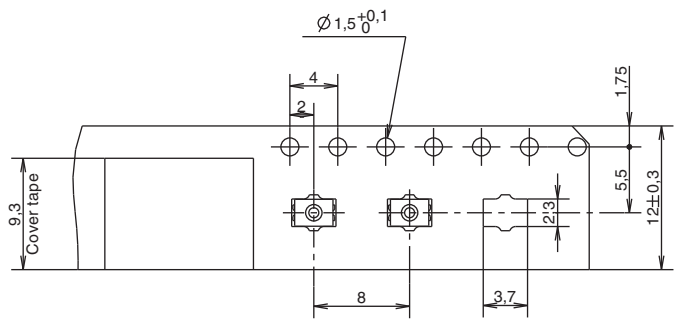
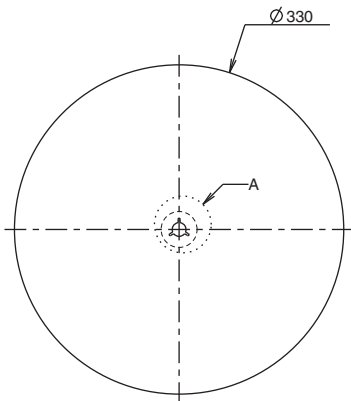
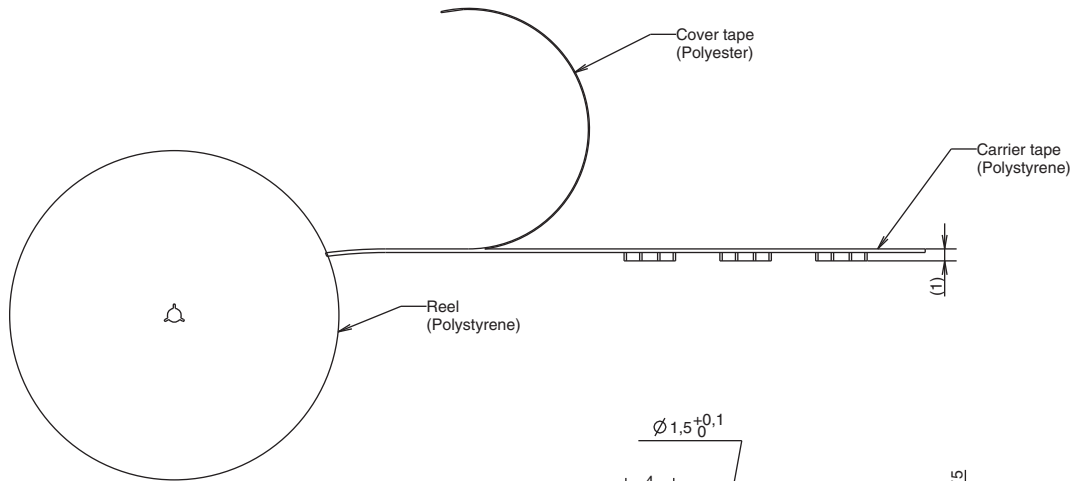
B



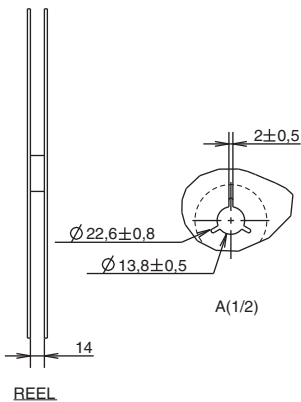
SCHEMATIC



RECOMMENDED PCB LAYOUT



CARRIER TAPE NOTE:



4 jan 17

# KMT2 Series Nano-Miniature SMT Top Actuated

## Features

- **Smallest footprint**
- **High number of cycles within the smallest packaging**
- **Smallest thickness with integrated actuator**
- **Ground pin option**
- **Halogen free**

## Typical Applications

- **Mobile Phones**
- **Hearing Aids**
- **MP3 accessories**
- **Bluetooth Headset**



B

Tactile Switches

## Specification

FUNCTION: momentary action  
CONTACT ARRANGEMENT: 1 make contact = SPST, N.O.  
TERMINALS: Gullwing type for SMT

## Mechanical

Type G and NG	Operating force Newtons (grams)	Operating Life	Tactile Feeling	Travel mm
KMT 211 HF LFS	1.0 (100) ± 0.25	150,000	≥ 10%	0.15 ± 0.1
KMT 221 HF LFS	1.6 (160) ± 0.40	150,000	≥ 30%	0.15 ± 0.1

## Electrical

	Silver
MAXIMUM POWER:	0.5 VA
MAXIMUM VOLTAGE:	32 VDC
MINIMUM VOLTAGE:	20 mV
MAXIMUM CURRENT DC:	50 mA
MINIMUM CURRENT DC:	1 mA
DIELECTRIC STRENGTH:	≥ 250 Vrms (1mn)
CONTACT RESISTANCE:	≤ 150 mΩ
INSULATION RESISTANCE:	≥ 50 MΩ
BOUNCE TIME:	≤ 6 ms

## Environmental

	Silver
OPERATING TEMPERATURE:	-40°C to 85°C
STORAGE TEMPERATURE:	-55°C (10 days) +85°C (4 days)

## Process

SOLDERING: This component is suited to the following methods:  
– Infrared Reflow Soldering in accordance with IEC61760-1

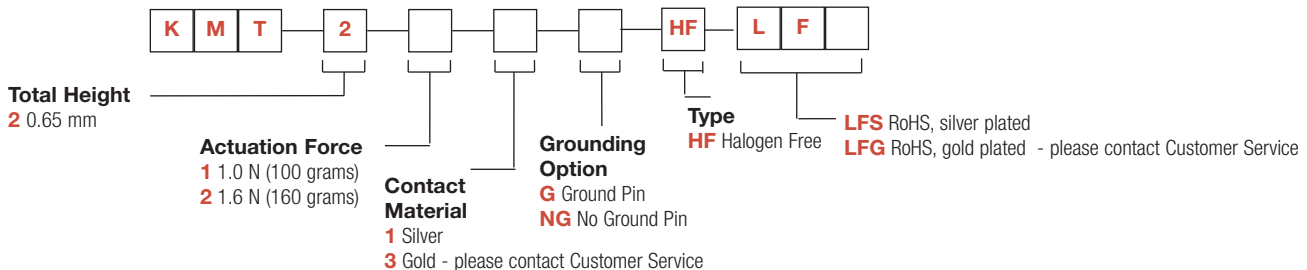
## Packaging

In reels of 4,000 pieces.  
Dimensions of reels according to EIA 481B  
External diameter 180 mm

**NOTE:** Specifications listed above are for switches with standard options.  
For information on specific and custom switches, consult Customer Service Center.

## Part Number Description

For any part number different from those listed above, please consult your local representative.

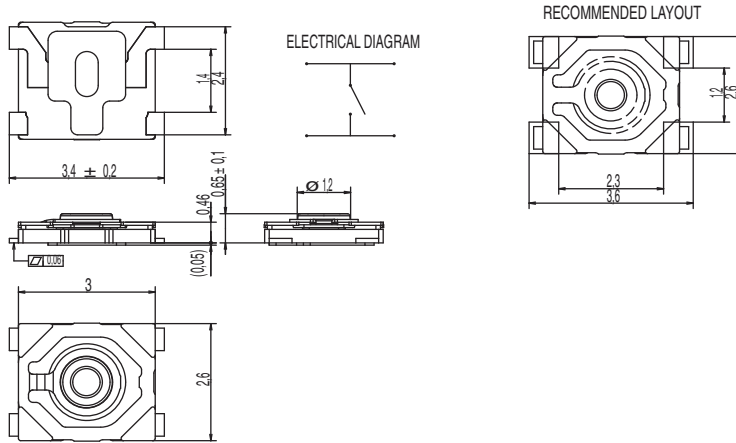


# KMT2 Series Nano-Miniature SMT Top Actuated

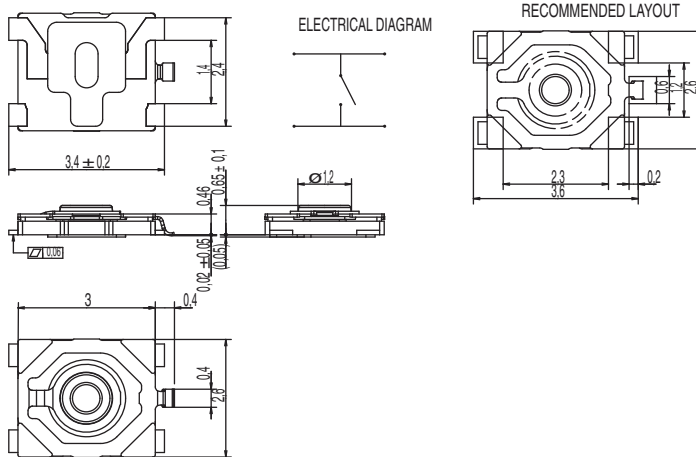
Tactile Switches

B

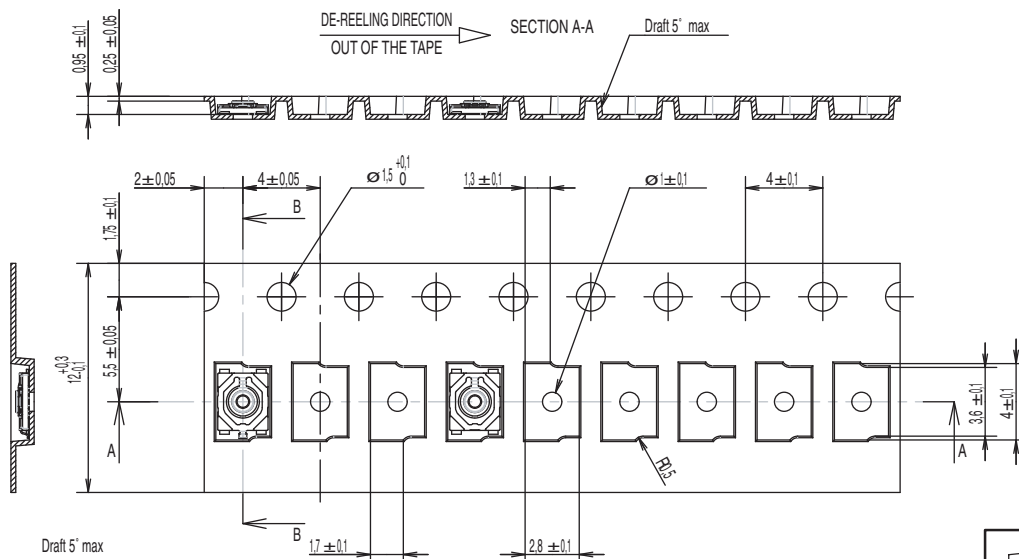
## KMT Series – No Ground Pin



## KMT Series – With Ground Pin



## TAPE & REEL



Dimensions are shown: mm  
Specifications and dimensions subject to change



# KMT0 Series Nano-Miniature SMT Top Actuated

## Features

- **Smallest footprint**
- **Smallest thickness with integrated actuator**
- **Extended life cycles**
- **IP68**
- **Ultra low current capabilities**

## Typical Applications

- **Mobile Phones**
- **Hearing Aids**
- **MP3 accessories**
- **Bluetooth Headset**
- **Automotive keyless entry system**
- **Smoke and CO detectors**
- **E-readers**
- **Home automation remote controls**



B

Tactile Switches

## Specification

FUNCTION: momentary action, normally open  
CONTACT ARRANGEMENT: 1 make contact = SPST, N.O.  
TERMINALS: J lead type for SMT

## Mechanical

TRAVEL (mm): 0.15 ± 0.1

	Operating force Newtons (grams)	Tactile Feeling	Operating Life
KMT011NGJLHS	1.0 (100) ± 25%	≥ 10%	300,000
KMT021NGJLHS	1.6 (160) ± 25%	≥ 30%	300,000
KMT071NGJLHS	2.3 (230) ± 25%	≥ 30%	300,000
KMT031NGJLHS	3.4 (340) ± 25%	≥ 30%	300,000

	Operating force Newtons (grams)	Tactile Feeling	Operating Life
KMT012NGJLHS	1.0 (100) ± 25%	≥ 10%	1,000,000
KMT022NGJLHS	1.6 (160) ± 25%	≥ 30%	600,000
KMT072NGJLHS	2.3 (230) ± 25%	≥ 30%	600,000

## Electrical

MAXIMUM POWER:	0.5 VA
MAXIMUM VOLTAGE:	32 VDC
MINIMUM VOLTAGE:	20 mV
MAXIMUM CURRENT DC:	50 mA
MINIMUM CURRENT DC:	1 mA
DIELECTRIC STRENGTH:	≥ 250 Vrms (1mn)
CONTACT RESISTANCE:	≤ 150 mΩ
INSULATION RESISTANCE:	≥ 50 MΩ
BOUNCE TIME:	≤ 6 ms

## Environmental

OPERATING TEMPERATURE: -40°C to 85°C  
STORAGE TEMPERATURE: -55°C (10 days) +85°C (4 days)

## Process

SOLDERING: This component is suited to the following methods:  
– Infrared Reflow Soldering in accordance with IEC61760-1

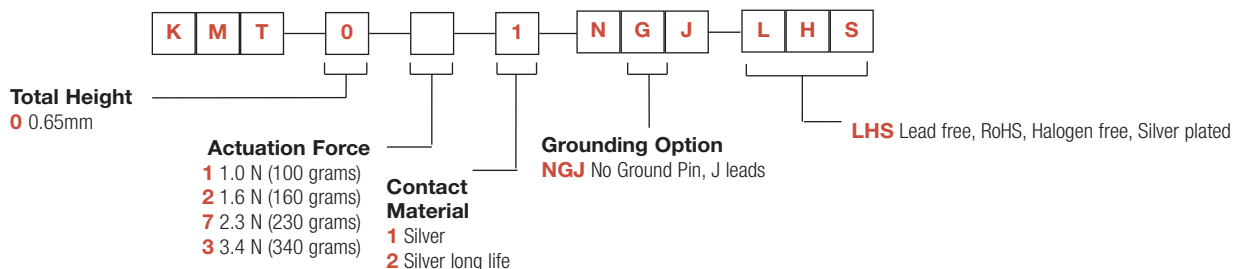
## Packaging

In reels of 5,000 pieces.  
Dimensions of reels according to EIA 481B  
External diameter 180 mm

**NOTE:** Specifications listed above are for switches with standard options.  
For information on specific and custom switches, consult Customer Service Center.

## Part Number Description

For any part number different from those listed above, please consult your local representative.

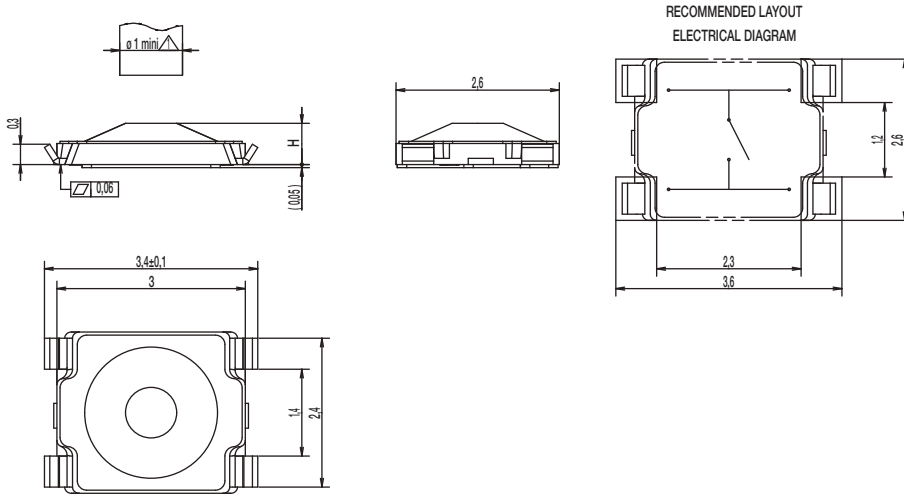


# KMT0 Series Nano-Miniature SMT Top Actuated

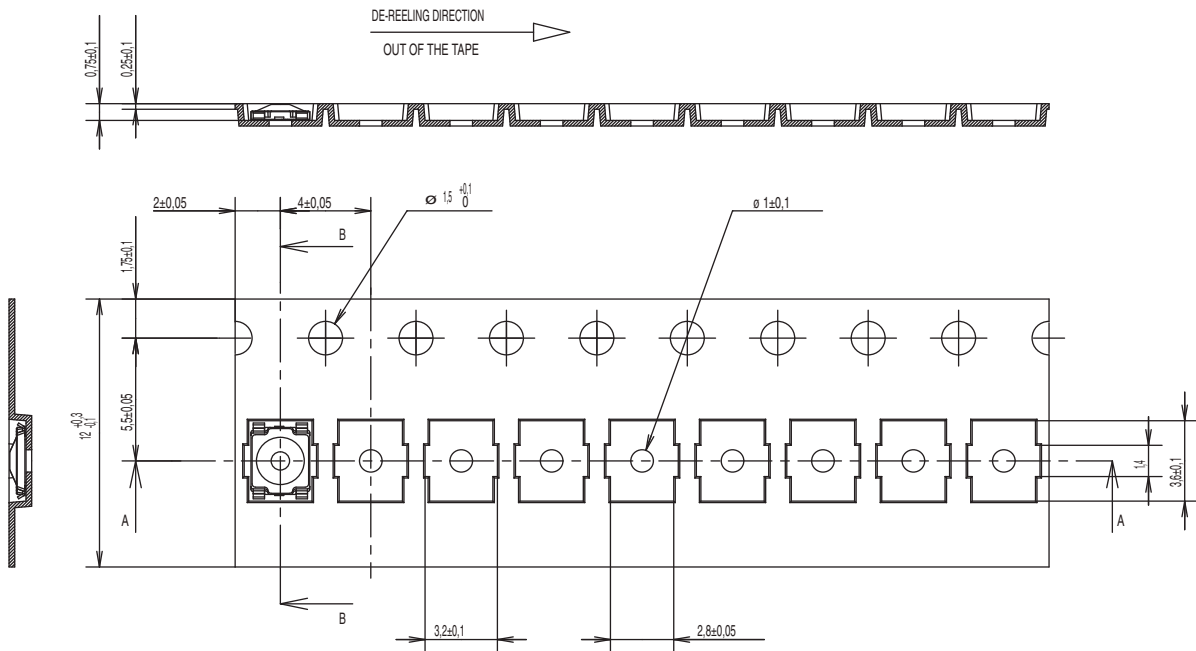
Minimum actuator diameter is 1.0 mm. It is recommended to enlarge this diameter to a full flat surface covering the switch.

Tactile Switches

B



## TAPE & REEL



Dimensions are shown: mm  
Specifications and dimensions subject to change



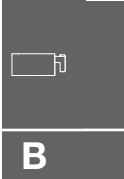
# KMR 2 Series Microminiature SMT Top Actuated

## Features/Benefits

- Small footprint
- 4 actuation forces
- Excellent tactile feel
- Ultra low current capabilities
- IP40

## Typical Applications

- Automotive
- Industrial electronics
- Medical equipment



Tactile Switches

## Specification

FUNCTION: momentary action  
CONTACT ARRANGEMENT: 1 make contact = SPST, N.O.  
TERMINALS: Gullwing type for SMT

## Mechanical

Type G and NG See description below	Operating force N (grs)	Operating life (cycles)	Travel (mm)
KMR211 LFS	1.2 (120) ± 0.30	200,000	0.20 mm ± 0.1
KMR211 ULC LFS	1.2 (120) ± 0.30	200,000	0.20 mm ± 0.1
KMR213 LFG	1.2 (120) ± 0.30	200,000	0.20 mm ± 0.1
KMR213 ULC LFG	1.2 (120) ± 0.30	200,000	0.20 mm ± 0.1
KMR221 LFS	2.0 (200) ± 0.50	200,000	0.25 mm ± 0.1
KMR221 ULC LFS	2.0 (200) ± 0.50	200,000	0.25 mm ± 0.1
KMR223 LFG	2.0 (200) ± 0.50	200,000	0.25 mm ± 0.1
KMR223 ULC LFG	2.0 (200) ± 0.50	200,000	0.25 mm ± 0.1
KMR231 LFS	3.0 (300) ± 0.75	150,000	0.25 mm ± 0.1
KMR231 ULC LFS	3.0 (300) ± 0.75	150,000	0.25 mm ± 0.1
KMR232 LFS	3.0 (300) ± 0.75	300,000	0.25 mm ± 0.1
KMR232 ULC LFS	3.0 (300) ± 0.75	300,000	0.25 mm ± 0.1
KMR233 LFG	3.0 (300) ± 0.75	150,000	0.25 mm ± 0.1
KMR233 ULC LFG	3.0 (300) ± 0.75	150,000	0.25 mm ± 0.1
KMR241 LFS	4.0 (400) ± 1.00	100,000	0.30 mm ± 0.1
KMR241 ULC LFS	4.0 (400) ± 1.00	100,000	0.30 mm ± 0.1
KMR242 LFS	4.0 (400) ± 1.00	200,000	0.30 mm ± 0.1
KMR242 ULC LFS	4.0 (400) ± 1.00	200,000	0.30 mm ± 0.1
KMR243 LFG	4.0 (400) ± 1.00	100,000	0.30 mm ± 0.1
KMR243 ULC LFG	4.0 (400) ± 1.00	100,000	0.30 mm ± 0.1

## Electrical

	Silver	Gold
MAXIMUM POWER:	1 VA	0.2 VA
MAXIMUM VOLTAGE:	32 VDC	32 VDC
MINIMUM VOLTAGE:	20 mVDC	20 mVDC
MAXIMUM CURRENT:	50 mA	10 mA
MINIMUM CURRENT:	1 mA*	1 mA*
DIELECTRIC STRENGTH:	≥ 250 Vrms	
CONTACT RESISTANCE:	≤ 100 mΩ	
INSULATION RESISTANCE:	≥ 1GΩ	
BOUNCE TIME:	≤ 3 ms	

\*For ULC version minimum current is 1µA at 1.8 VDC

## Environmental

	Silver	Gold
OPERATING TEMPERATURE:	-40°C to 85°C	-40°C to 125°C
STORAGE TEMPERATURE:	-55°C to 85°C	-55°C to 125°C

## Process

Infrared Reflow Soldering in accordance with IEC61760-1

## Packaging

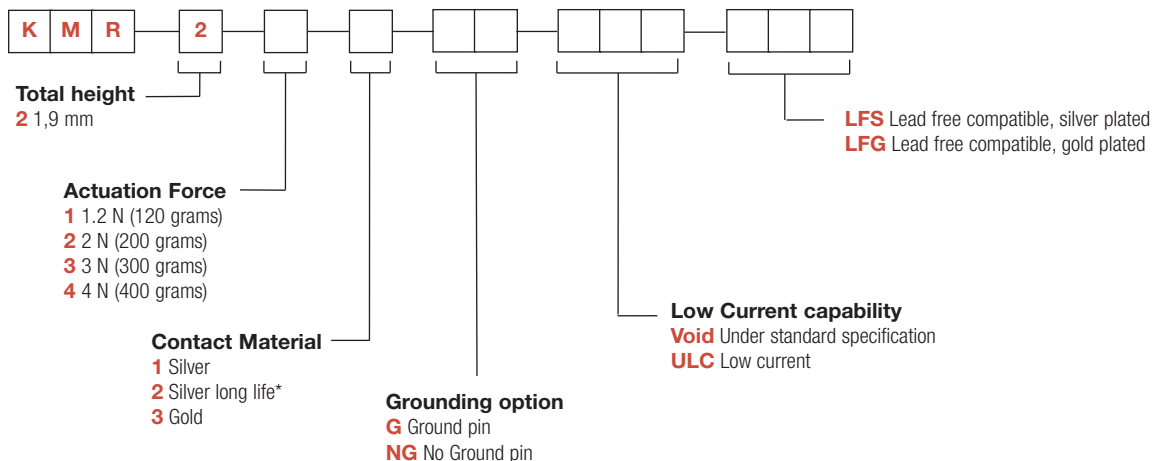
In reels of 7,000 pieces  
External diameter 330 mm ± 2 mm

**NOTE:** Specifications listed above are for switches with standard options.  
For information on specific and custom switches, consult Customer Service Center.

TACTILE FEELING: KMR 2 series with actuation force in 2N - 3N - 4N: ≥ 30%  
KMR 2 series with actuation force in 1.2N: ≥ 20%

## Part Number Description

For any part number different from those listed above, please consult your local representative.



\* Silver long life is available in 3N and 4N actuation force. For other versions, please contact Customer Service.



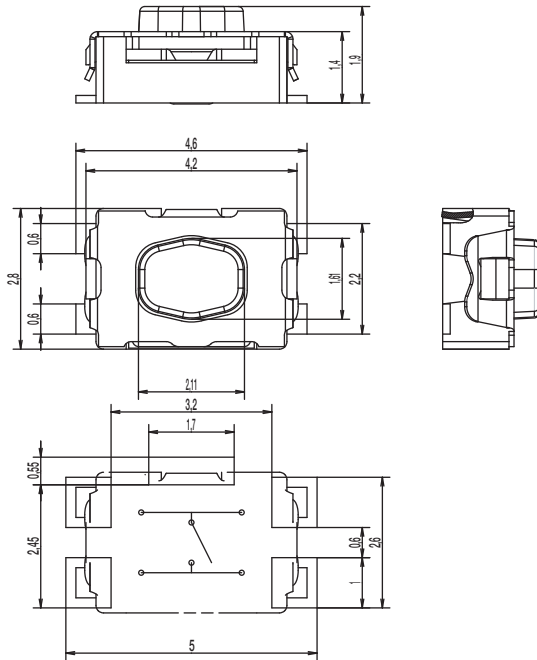
# KMR 2 Series Microminiature Tact Switch for SMT

KMR 2 Series - 1.9 mm height

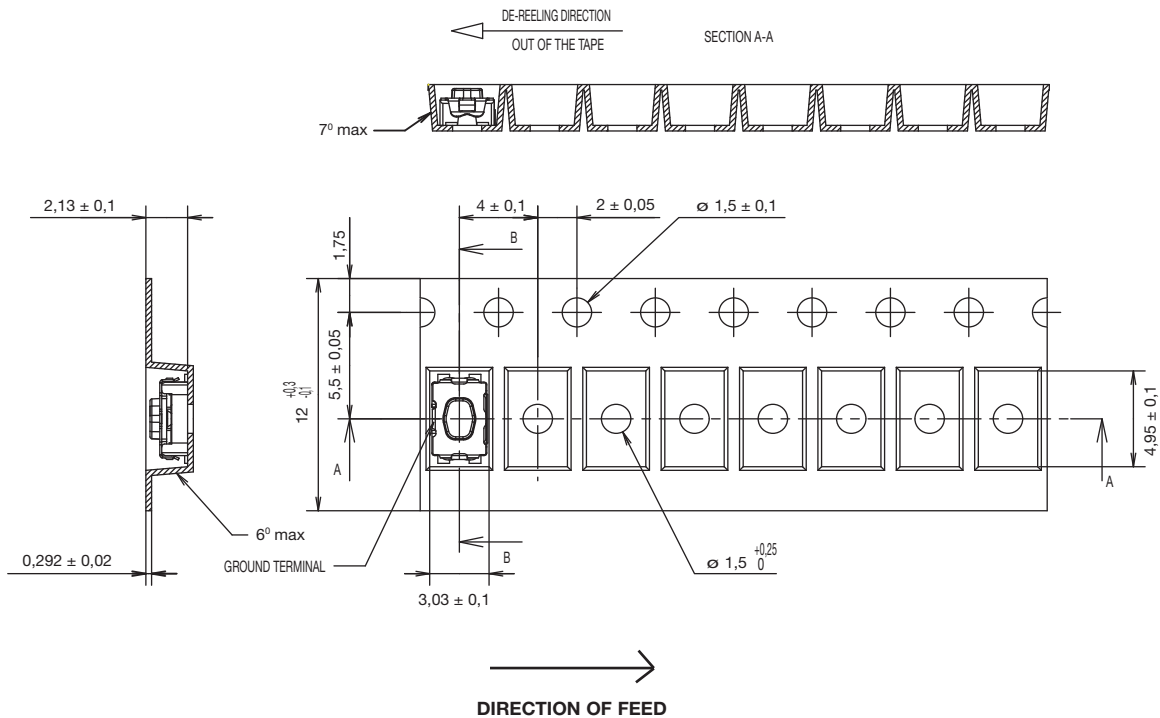
PCB layout shown with ground pin option

B

Tactile Switches



## TAPE & REEL



First Angle  
Projection

Dimensions are shown: mm  
Specifications and dimensions subject to change



8 jun 16

B-14

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# KMR 4 Series Microminiature SMT Top Actuated

## Features/Benefits

- Small footprint
- 4 actuation forces
- Excellent tactile feel
- Ultra low current capabilities
- IP40

## Typical Applications

- Automotive
- Industrial electronics
- Medical equipment



B

Tactile Switches

## Specification

FUNCTION: momentary action  
CONTACT ARRANGEMENT: 1 make contact = SPST, N.O.  
TERMINALS: Gullwing type for SMT

## Mechanical

Type G and NG See description below	Operating force N (grs)	Operating life (cycles)	Travel (mm)
KMR411 LFS	1.2 (120) ± 0.30	100,000	0.20 mm ± 0.1
KMR411 ULC LFS	1.2 (120) ± 0.30	100,000	0.20 mm ± 0.1
KMR413 LFG	1.2 (120) ± 0.30	100,000	0.20 mm ± 0.1
KMR413 ULC LFG	1.2 (120) ± 0.30	100,000	0.20 mm ± 0.1
KMR421 LFS	2.0 (200) ± 0.50	100,000	0.25 mm ± 0.1
KMR421 ULC LFS	2.0 (200) ± 0.50	100,000	0.25 mm ± 0.1
KMR423 LFG	2.0 (200) ± 0.50	100,000	0.25 mm ± 0.1
KMR423 ULC LFG	2.0 (200) ± 0.50	100,000	0.25 mm ± 0.1
KMR431 LFS	3.0 (300) ± 0.75	100,000	0.25 mm ± 0.1
KMR431 ULC LFS	3.0 (300) ± 0.75	100,000	0.25 mm ± 0.1
KMR432 LFS	3.0 (300) ± 0.75	300,000	0.25 mm ± 0.1
KMR432ULC LFS	3.0 (300) ± 0.75	300,000	0.25 mm ± 0.1
KMR433 LFG	3.0 (300) ± 0.75	100,000	0.25 mm ± 0.1
KMR433ULC LFG	3.0 (300) ± 0.75	100,000	0.25 mm ± 0.1
KMR441 LFS	4.0 (400) ± 1.00	100,000	0.30 mm ± 0.1
KMR441 ULC LFS	4.0 (400) ± 1.00	100,000	0.30 mm ± 0.1
KMR442 LFS	4.0 (400) ± 1.00	200,000	0.30 mm ± 0.1
KMR442 ULC LFS	4.0 (400) ± 1.00	200,000	0.30 mm ± 0.1
KMR443 LFG	4.0 (400) ± 1.00	100,000	0.30 mm ± 0.1
KMR443 ULC LFG	4.0 (400) ± 1.00	100,000	0.30 mm ± 0.1

## Electrical

	Silver	Gold
MAXIMUM POWER:	1 VA	0.2 VA
MAXIMUM VOLTAGE:	32 VDC	32 VDC
MINIMUM VOLTAGE:	20 mVDC	20 mVDC
MAXIMUM CURRENT:	50 mA	10 mA
MINIMUM CURRENT:	1 mA*	1 mA*
DIELECTRIC STRENGTH:	≥ 250 Vrms	
CONTACT RESISTANCE:	≤ 100 mΩ	
INSULATION RESISTANCE:	≥ 1GΩ	
BOUNCE TIME:	≤ 3 ms	

\*For ULC version minimum current is 1µA at 1.8 VDC

## Environmental

	Silver	Gold
OPERATING TEMPERATURE:	-40°C to 85°C	-40°C to 125°C
STORAGE TEMPERATURE:	-55°C to 85°C	-55°C to 125°C

## Process

Infrared Reflow Soldering in accordance with IEC61760-1

## Packaging

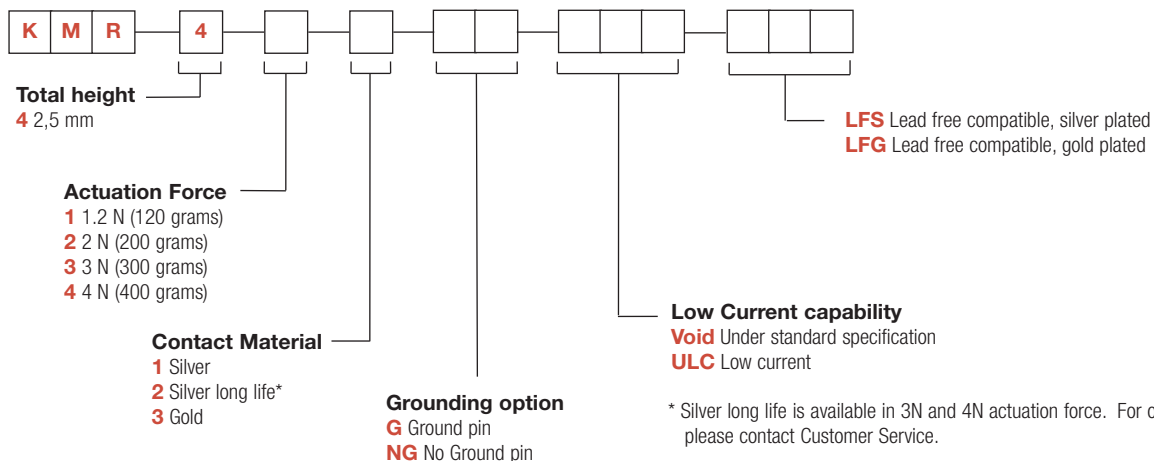
In reels of 6,000 pieces  
External diameter 330 mm ± 2 mm

**NOTE:** Specifications listed above are for switches with standard options.  
For information on specific and custom switches, consult Customer Service Center.

TACTILE FEELING: KMR 4 series with actuation force in 2N - 3N - 4N: ≥ 25%  
KMR 4 series with actuation force in 1.2N: ≥ 20%

## Part Number Description

For any part number different from those listed above, please consult your local representative.





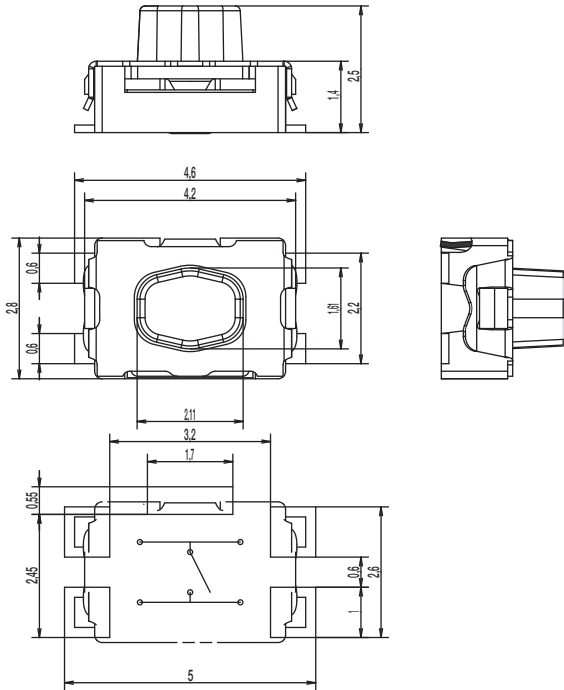
# KMR 4 Series Microminiature Tact Switch for SMT

KMR 4 Series - 2.5 mm height

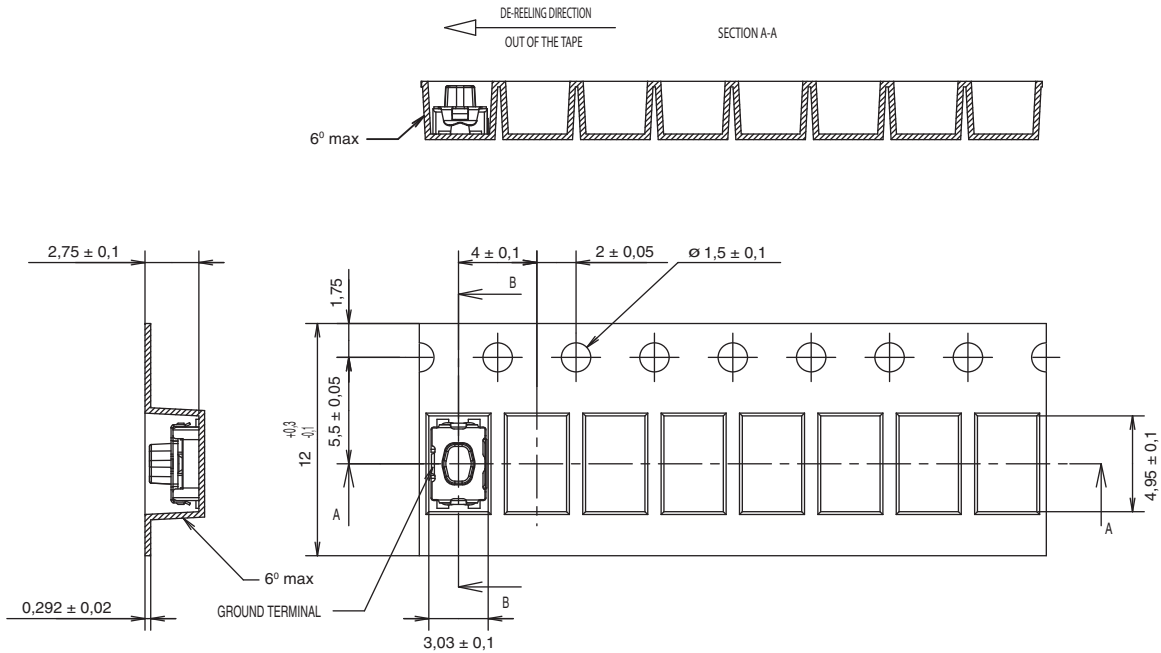
PCB layout shown with ground pin option

B

Tactile Switches



## TAPE & REEL



Dimensions are shown: mm  
Specifications and dimensions subject to change



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# KMR 6 Series Microminiature SMT Top Actuated IP67

## Features/Benefits

- Watertight IP67
- Standard and long life versions
- No ground pin
- Ultra low current capabilities
- Excellent tactile feel

## Typical Applications

- Automotive
- Medical
- Consumer
- Industrial



B

Tactile Switches

## Specification

FUNCTION: momentary action  
CONTACT ARRANGEMENT: 1 make contact = SPST, N.O.  
TERMINALS: Gullwing type for SMT

## Mechanical

Type NG See description below	Operating force N (grs)	Operating life (cycles)	Travel (mm)
KMR611NG LFS	1.2 (120) ± 0.30	200,000	0.20 mm ± 0.1
KMR611NG ULC LFS	1.2 (120) ± 0.30	200,000	0.20 mm ± 0.1
KMR613NG LFG	1.2 (120) ± 0.30	200,000	0.20 mm ± 0.1
KMR613NG ULC LFG	1.2 (120) ± 0.30	200,000	0.20 mm ± 0.1
KMR621NG LFS	2.0 (200) ± 0.50	200,000	0.25 mm ± 0.1
KMR621NG ULC LFS	2.0 (200) ± 0.50	200,000	0.25 mm ± 0.1
KMR623NG LFG	2.0 (200) ± 0.50	200,000	0.25 mm ± 0.1
KMR623NG ULC LFG	2.0 (200) ± 0.50	200,000	0.25 mm ± 0.1
KMR631NG LFS	3.0 (300) ± 0.75	150,000	0.25 mm ± 0.1
KMR631NG ULC LFS	3.0 (300) ± 0.75	150,000	0.25 mm ± 0.1
KMR632NG LFS	3.0 (300) ± 0.75	300,000	0.25 mm ± 0.1
KMR632NG ULC LFS	3.0 (300) ± 0.75	300,000	0.25 mm ± 0.1
KMR633NG LFG	3.0 (300) ± 0.75	150,000	0.25 mm ± 0.1
KMR633NG ULC LFG	3.0 (300) ± 0.75	150,000	0.25 mm ± 0.1
KMR641NG LFS	4.0 (400) ± 1.00	100,000	0.30 mm ± 0.1
KMR641NG ULC LFS	4.0 (400) ± 1.00	100,000	0.30 mm ± 0.1
KMR642NG LFS	4.0 (400) ± 1.00	200,000	0.30 mm ± 0.1
KMR642NG ULC LFS	4.0 (400) ± 1.00	200,000	0.30 mm ± 0.1
KMR643NG LFG	4.0 (400) ± 1.00	100,000	0.30 mm ± 0.1
KMR643NG ULC LFG	4.0 (400) ± 1.00	100,000	0.30 mm ± 0.1

## Electrical

	Silver	Gold
MAXIMUM POWER:	1 VA	0.2 VA
MAXIMUM VOLTAGE:	32 VDC	32 VDC
MINIMUM VOLTAGE:	20 mVDC	20 mVDC
MAXIMUM CURRENT:	50 mA	10 mA
MINIMUM CURRENT:	1 mA*	1 mA*
DIELECTRIC STRENGTH:	≥ 250 Vrms	
CONTACT RESISTANCE:	≤ 100 mΩ	
INSULATION RESISTANCE:	≥ 1GΩ	
BOUNCE TIME:	≤ 3 ms	

\*For ULC version minimum current is 1µA at 1.8 VDC

## Environmental

	Silver	Gold
OPERATING TEMPERATURE:	-40°C to 85°C	-40°C to 125°C
STORAGE TEMPERATURE:	-55°C to 85°C	-55°C to 125°C

## Process

Infrared Reflow Soldering in accordance with IEC61760-1

## Packaging

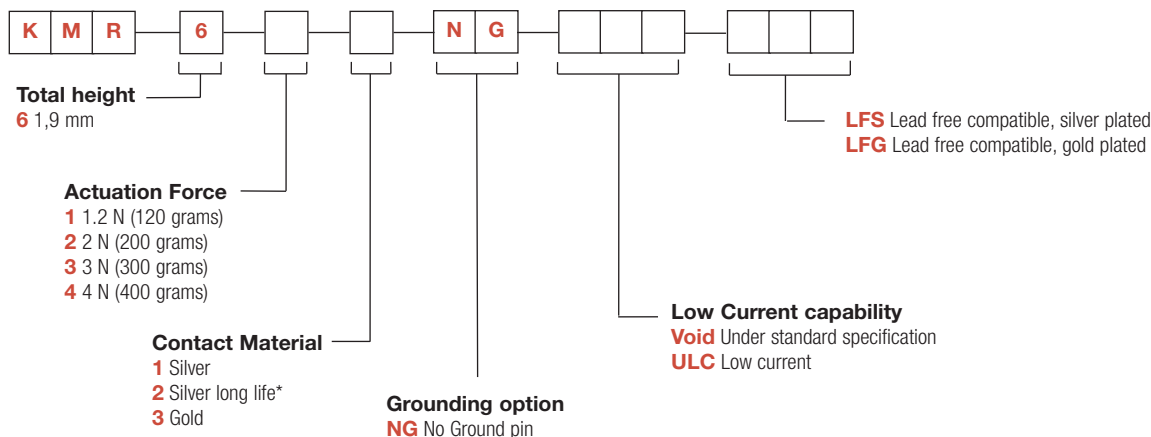
In reels of 7,000 pieces  
External diameter 330 mm ± 2 mm

**NOTE:** Specifications listed above are for switches with standard options.  
For information on specific and custom switches, consult Customer Service Center.

TACTILE FEELING: KMR 6 series with actuation force in 2N - 3N - 4N: ≥ 30%  
KMR 6 series with actuation force in 1.2N: ≥ 20%

## Part Number Description

For any part number different from those listed above, please consult your local representative.



\* Silver long life is available in 3N and 4N actuation force. For other versions, please contact Customer Service.



Dimensions are shown: mm  
Specifications and dimensions subject to change

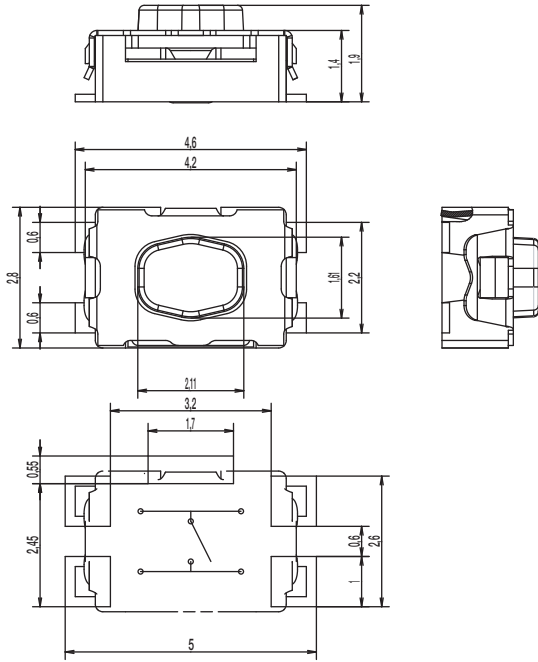
# KMR 6 Series Microminiature SMT Top Actuated IP67

KMR 6 Series - 1.9 mm height

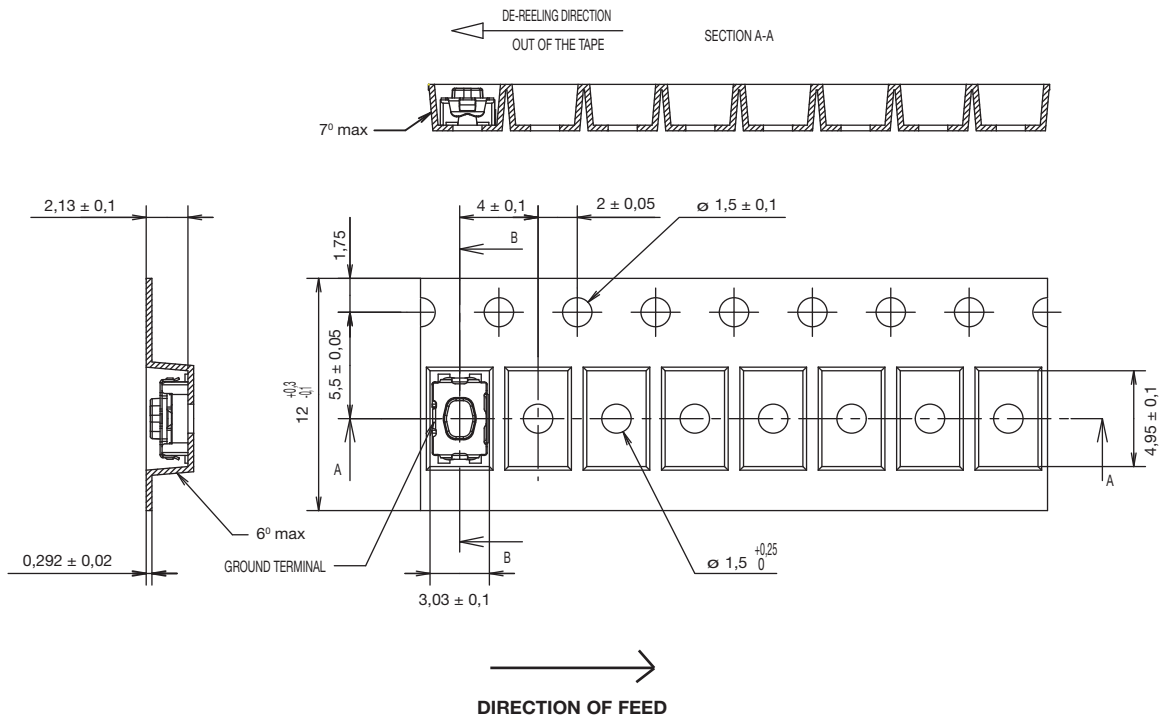
PCB layout shown with ground pin option

B

Tactile Switches



## TAPE & REEL



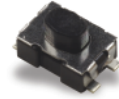
# KMR 7 Series Microminiature SMT Top Actuated IP67

## Features/Benefits

- Watertight IP67
- Standard and long life versions
- No ground pin
- Ultra low current capabilities
- Excellent tactile feel

## Typical Applications

- Automotive
- Medical
- Consumer
- Industrial



B

Tactile Switches

## Specification

FUNCTION: momentary action  
CONTACT ARRANGEMENT: 1 make contact = SPST, N.O.  
TERMINALS: Gullwing type for SMT

## Mechanical

Type NG See description below	Operating force N (grs)	Operating life (cycles)	Travel (mm)
KMR711NG LFS	1.2 (120) ± 0.30	100,000	0.20 mm ± 0.1
KMR711NG ULC LFS	1.2 (120) ± 0.30	100,000	0.20 mm ± 0.1
KMR713NG LFG	1.2 (120) ± 0.30	100,000	0.20 mm ± 0.1
KMR713NG ULC LFG	1.2 (120) ± 0.30	100,000	0.20 mm ± 0.1
KMR721NG LFS	2.0 (200) ± 0.50	100,000	0.25 mm ± 0.1
KMR721NG ULC LFS	2.0 (200) ± 0.50	100,000	0.25 mm ± 0.1
KMR723NG LFG	2.0 (200) ± 0.50	100,000	0.25 mm ± 0.1
KMR723NG ULC LFG	2.0 (200) ± 0.50	100,000	0.25 mm ± 0.1
KMR731NG LFS	3.0 (300) ± 0.75	100,000	0.25 mm ± 0.1
KMR731NG ULC LFS	3.0 (300) ± 0.75	100,000	0.25 mm ± 0.1
KMR732NG LFS	3.0 (300) ± 0.75	300,000	0.25 mm ± 0.1
KMR732NG ULC LFS	3.0 (300) ± 0.75	300,000	0.25 mm ± 0.1
KMR733NG LFG	3.0 (300) ± 0.75	100,000	0.25 mm ± 0.1
KMR733NG ULC LFG	3.0 (300) ± 0.75	100,000	0.25 mm ± 0.1
KMR741NG LFS	4.0 (400) ± 1.00	100,000	0.30 mm ± 0.1
KMR741NG ULC LFS	4.0 (400) ± 1.00	100,000	0.30 mm ± 0.1
KMR742NG LFS	4.0 (400) ± 1.00	200,000	0.30 mm ± 0.1
KMR742NG ULC LFS	4.0 (400) ± 1.00	200,000	0.30 mm ± 0.1
KMR743NG LFG	4.0 (400) ± 1.00	100,000	0.30 mm ± 0.1
KMR743NG ULC LFG	4.0 (400) ± 1.00	100,000	0.30 mm ± 0.1

## Electrical

	Silver	Gold
MAXIMUM POWER:	1 VA	0.2 VA
MAXIMUM VOLTAGE:	32 VDC	32 VDC
MINIMUM VOLTAGE:	20 mVDC	20 mVDC
MAXIMUM CURRENT:	50 mA	10 mA
MINIMUM CURRENT:	1 mA*	1 mA*
DIELECTRIC STRENGTH:	≥ 250 Vrms	
CONTACT RESISTANCE:	≤ 100 mΩ	
INSULATION RESISTANCE:	≥ 1GΩ	
BOUNCE TIME:	≤ 3 ms	

\*For ULC version minimum current is 1µA at 1.8 VDC

## Environmental

	Silver	Gold
OPERATING TEMPERATURE:	-40°C to 85°C	-40°C to 125°C
STORAGE TEMPERATURE:	-55°C to 85°C	-55°C to 125°C

## Process

Infrared Reflow Soldering in accordance with IEC61760-1

## Packaging

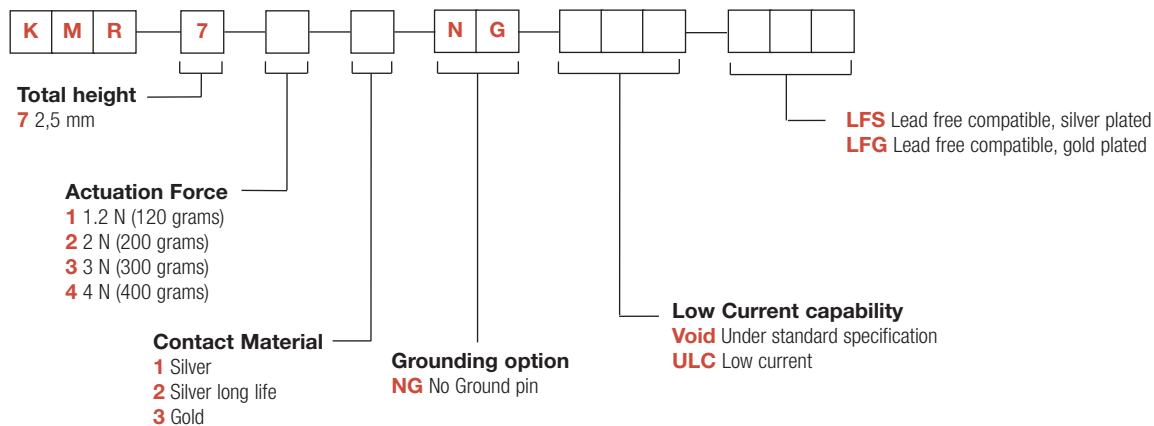
In reels of 6,000 pieces  
External diameter 330 mm ± 2 mm

**NOTE:** Specifications listed above are for switches with standard options.  
For information on specific and custom switches, consult Customer Service Center.

TACTILE FEELING: KMR 7 series with actuation force in 2N - 3N - 4N: ≥ 25%  
KMR 7 series with actuation force in 1.2N: ≥ 20%

## Part Number Description

For any part number different from those listed above, please consult your local representative.



\* Silver long life is available in 3N and 4N actuation force. For other versions, please contact Customer Service.



Dimensions are shown: mm  
Specifications and dimensions subject to change

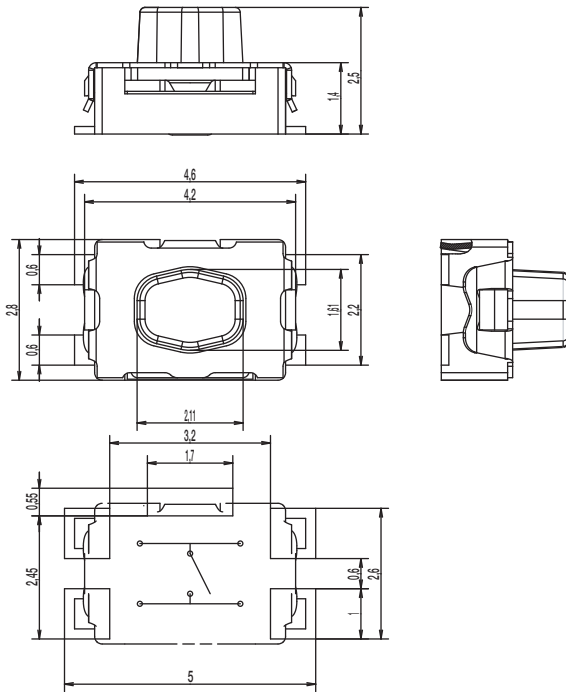
# KMR 7 Series Microminiature SMT Top Actuated IP67

KMR 7 Series - 2.5 mm height

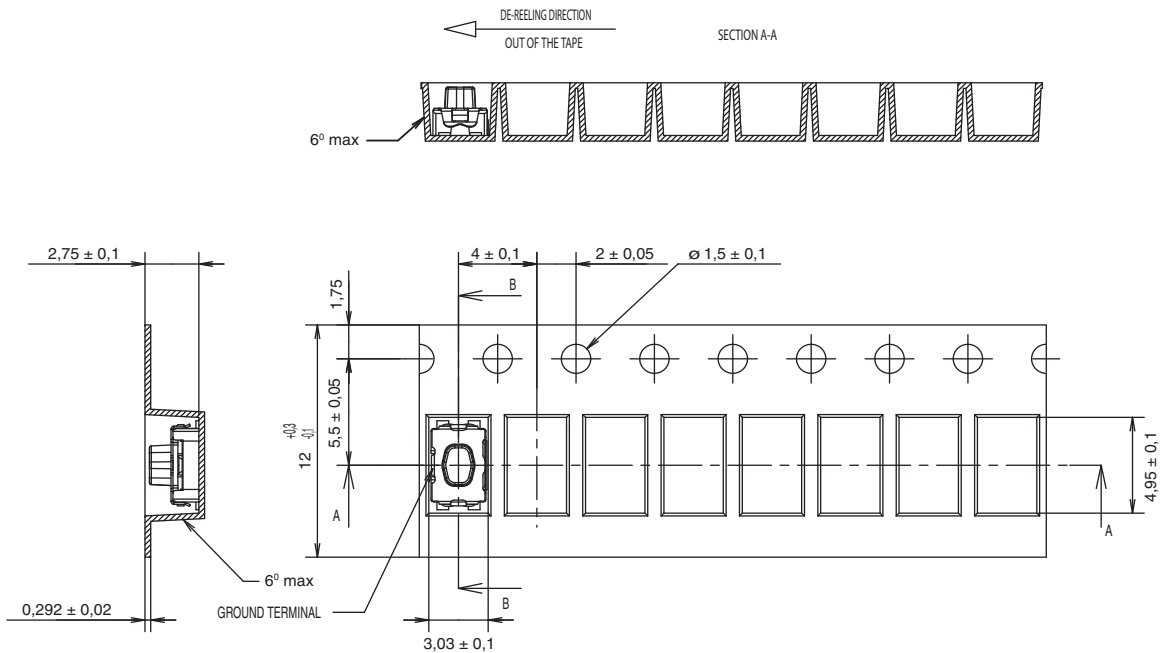
PCB layout shown with ground pin option

B

Tactile Switches



## TAPE & REEL



# KMR 8 Series Microminiature SMT Top Actuated

## Features/Benefits

- Small footprint
- 3 actuation forces
- Excellent tactile feel
- Hard actuator
- IP40

## Typical Applications

- Automotive
- Mobile phones
- Industrial electronics
- Medical equipment



B

Tactile Switches

## Specification

FUNCTION: momentary action  
CONTACT ARRANGEMENT: 1 make contact = SPST, N.O.  
TERMINALS: Gullwing type for SMT

## Mechanical

Type G and NG See description below	Operating force N (grs)	Operating life (cycles)	Travel (mm)
KMR811G LFS	1.2 (120) ± 0.30	200,000	0.20 mm ± 0.1
KMR821G LFS	2.0 (200) ± 0.50	200,000	0.25 mm ± 0.1
KMR831G LFS	3.0 (300) ± 0.75	150,000	0.25 mm ± 0.1
KMR831NG ULC LFS	3.0 (300) ± 0.75	150,000	0.25 mm ± 0.1

TACTILE FEELING:

KMR 8 series with actuation force in 2N - 3N - 4N: ≥ 30%  
KMR 8 series with actuation force in 1.2N: ≥ 20%

## Electrical

	Silver
MAXIMUM POWER:	1 VA
MAXIMUM VOLTAGE:	32 VDC
MINIMUM VOLTAGE:	20 mVDC
MAXIMUM CURRENT:	50 mA
MINIMUM CURRENT:	1 mA*
DIELECTRIC STRENGTH:	≥ 250 Vrms
CONTACT RESISTANCE:	≤ 100 mΩ
INSULATION RESISTANCE:	≥ 1GΩ
BOUNCE TIME:	≤ 3 ms

\*For ULC version minimum current is 1µA at 1.8 VDC

## Environmental

	Silver
OPERATING TEMPERATURE:	-40°C to 85°C
STORAGE TEMPERATURE:	-55°C to 85°C

## Process

Infrared Reflow Soldering in accordance with IEC61760-1

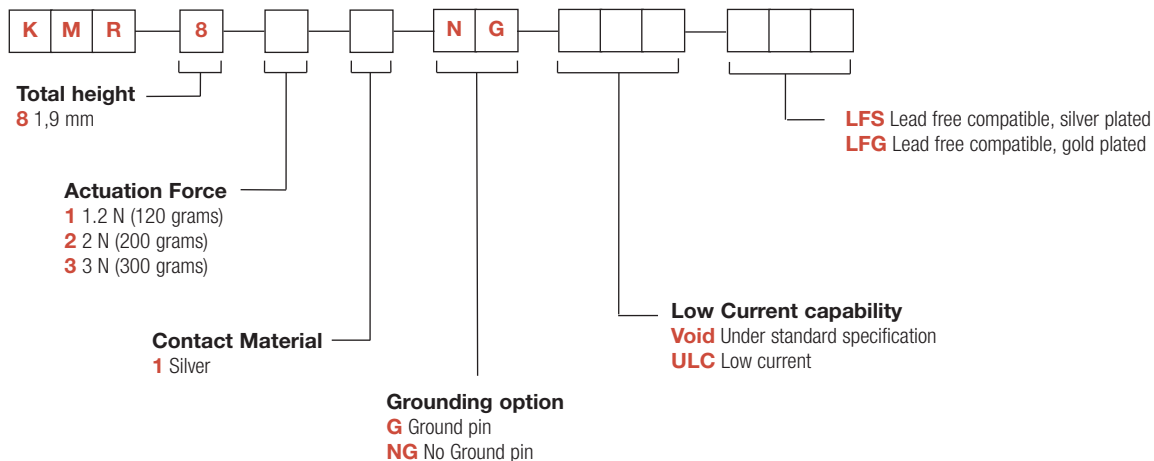
## Packaging

In reels of 7,000 pieces  
External diameter 330 mm ± 2 mm

**NOTE:** Specifications listed above are for switches with standard options.  
For information on specific and custom switches, consult Customer Service Center.

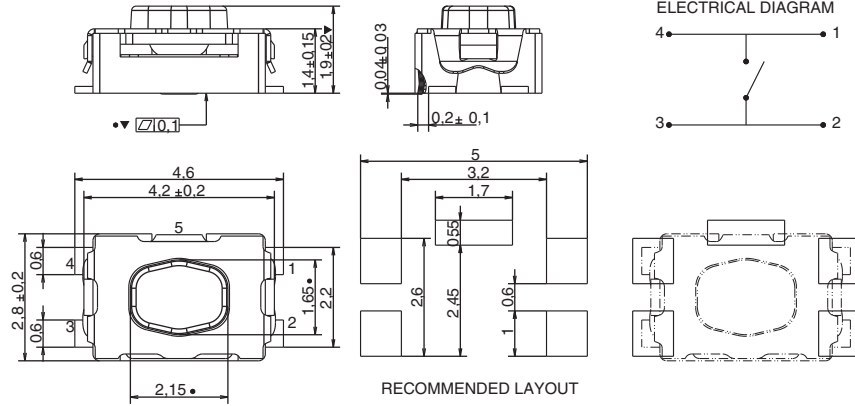
## Part Number Description

For any part number different from those listed above, please consult your local representative.

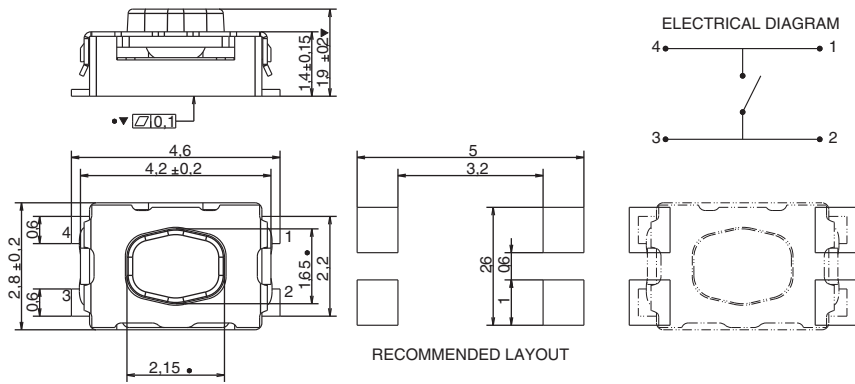


# KMR 8 Series Microminiature SMT Top Actuated

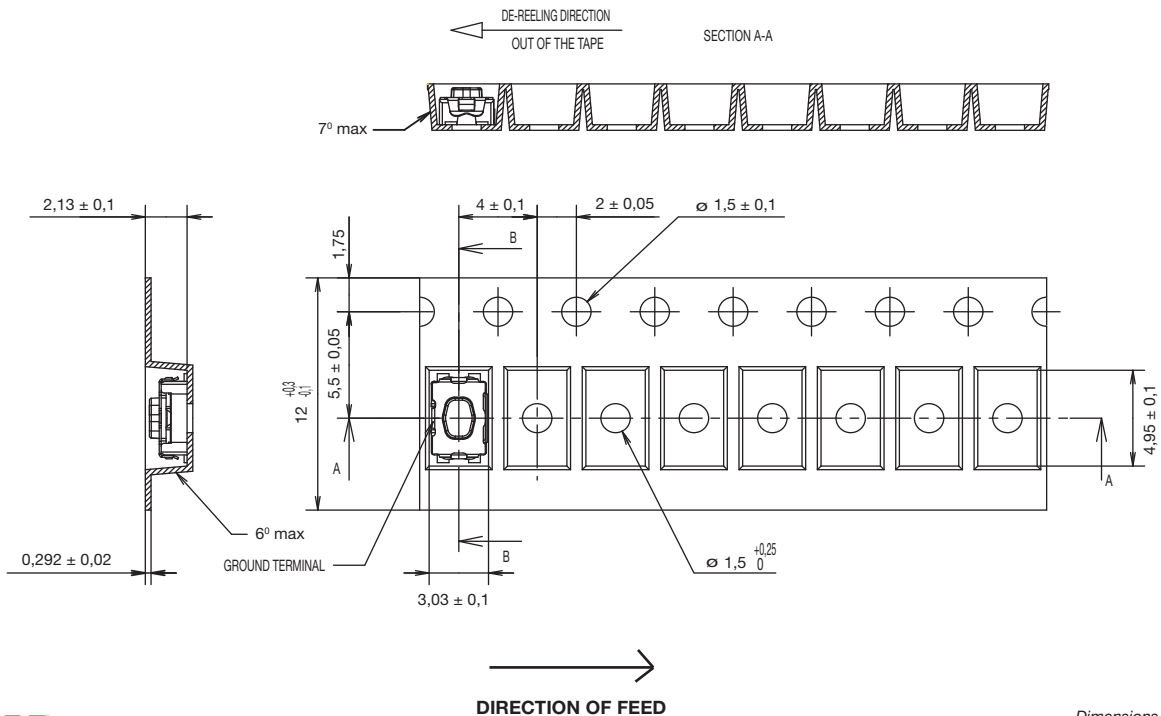
## G - Ground Pin



## NG - No Ground Pin



## TAPE & REEL



# KMS Series Microminiature SMT Side Actuated

## Features/Benefits

- Compact size
- Excellent tactile feel
- ESD protection
- Positioning pegs for stability
- RoHS compliant and compatible

## Typical Applications

- Mobile phones
- Medical handheld monitors
- Consumer electronics
- Telecommunication networks



B

Tactile Switches

## Specification

FUNCTION: Momentary  
CONTACT ARRANGEMENT: SPST, N.O.  
TERMINALS: Gullwing type for SMT  
IP40 Sealed

## Mechanical

OVERLOAD: 20N  
TACTILE FEELING: 15% min. for the 2N version  
25% min for the 2.5N version

Type	Operating force Newtons (grams)	Operating life (operations)	Travel
KMS221G/GP	2N (200) ± 0.5	100 K cycles	0,25 ± 0,15
KMS223G/GP	2N (200) ± 0.5	100 K cycles	0,25 ± 0,15
KMS231G/GP	3N (300) ± 0.6	100 K cycles	0,3 ± 0,15
KMS233G/GP	3N (300) ± 0.6	100 K cycles	0,3 ± 0,15

**Note:** Specifications listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## Packaging

Tape and reels in reels of 3,000 pieces.  
External diameter 330mm ± 2mm.

## Electrical

	Silver	Gold
MAXIMUM POWER:	1 VA	0.2 VA
MAXIMUM VOLTAGE:	32 VDC	32 VDC
MAXIMUM CURRENT DC:	50 mA	10 mA
MINIMUM CURRENT DC:	1 mA	1 mA
DIELECTRIC STRENGTH:	250 VDC	
CONTACT RESISTANCE:	≤100 mΩ	
INSULATION RESISTANCE:	10 <sup>9</sup> Ω	
BOUNCE TIME:	≤ 3 ms	

## Environmental

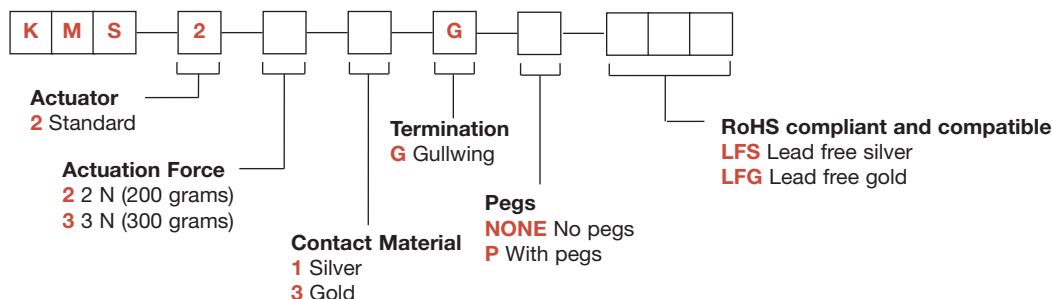
	Silver	Gold
OPERATING TEMPERATURE:	-40°C to 85°C	-40°C to 125°C
STORAGE TEMPERATURE:	-55°C to 85°C	-55°C to 125°C

## Process

Infrared reflow soldering in accordance with IEC 61760-1

## How To Order

Our easy build-a-switch concept allows you to mix and match options to create the switch you need. To order, select desired option from each category and place it in the appropriate box.



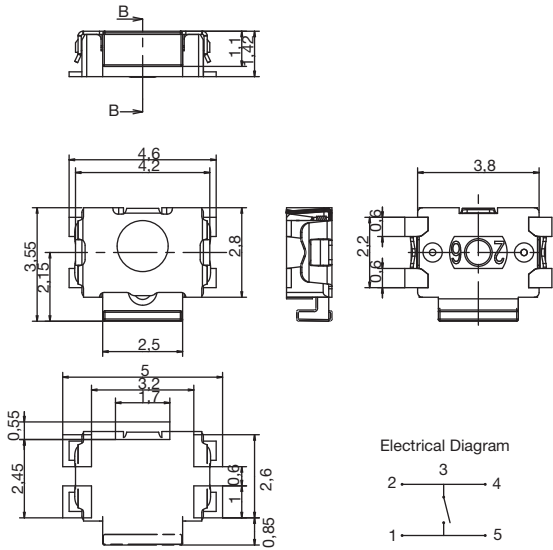


# KMS Series Microminiature SMT Side Actuated

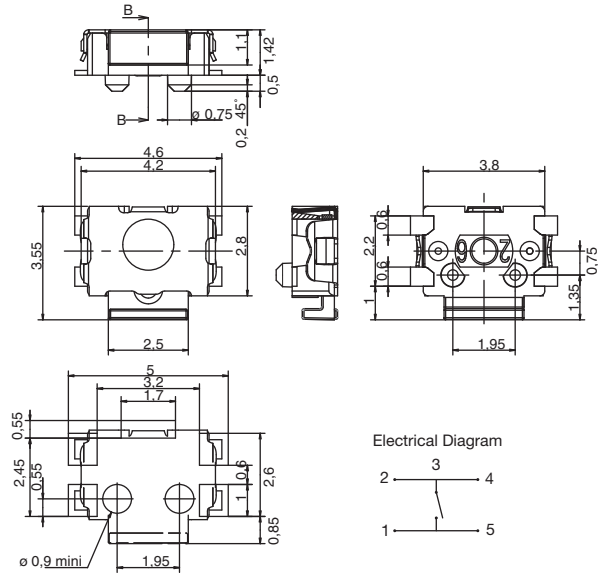
Tactile Switches

B

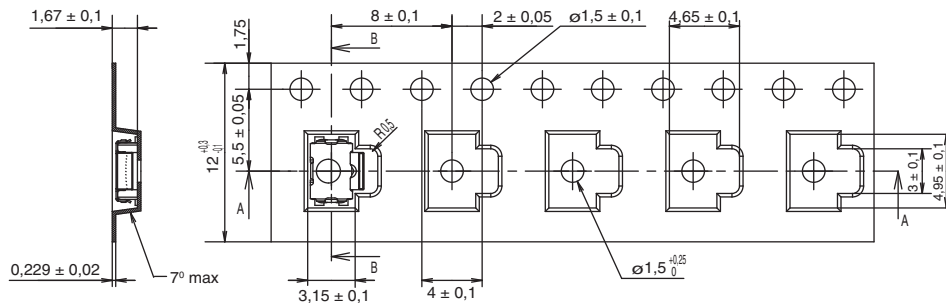
## KMS



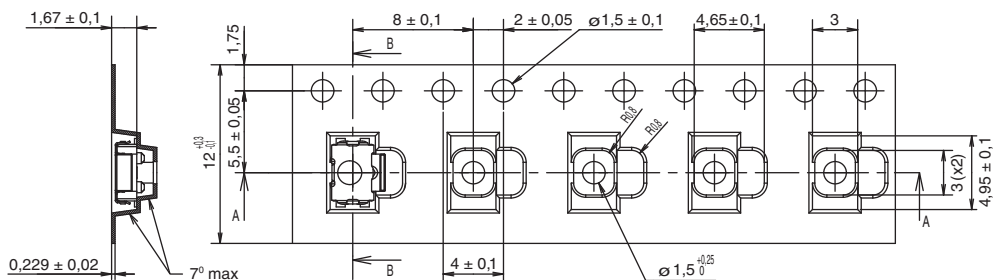
## KMS WITH PEGS



## TAPE & REEL



## WITH PEGS



→  
DIRECTION OF FEED



First Angle  
Projection

Dimensions are shown: mm  
Specifications and dimensions subject to change



# PTS 525 Series Microminiature Tact Switch for SMT

## Features/Benefits

- 0.8 & 1.5 mm actuator height
- Ruggedized package in a compact size
- High number of cycles

## Typical Applications

- Consumer products
- Instrumentation
- Remote controls



B

Tactile Switches

## Specification

FUNCTION: Momentary action  
CONTACT ARRANGEMENT: 1 make contact = SPST, N.O.

## Electrical

MAXIMUM VOLTAGE: 15 VDC  
MAXIMUM CURRENT DC: 20 mA  
DIELECTRIC STRENGTH: 250 VA C (1mn)  
CONTACT RESISTANCE:  $\leq 100 \text{ m}\Omega$   
INSULATION RESISTANCE:  $\geq 100 \text{ M}\Omega$   
BOUNCE TIME:  $\leq 10 \text{ ms}$

## Environmental

OPERATING TEMPERATURE:  $-20^\circ\text{C}$  to  $70^\circ\text{C}$

## Process

SOLDERING: This component is suited to the following methods:  
Infrared Reflow Soldering in accordance with IEC61760-1

## Packaging

Switches in reels of:  
5,000 pieces in 0.8 mm height  
4,000 pieces in 1.5 mm height  
Dimensions of reels according to EIA 481B  
External diameter 330 mm

**NOTE:** Specifications listed above are for switches with standard options.  
For information on specific and custom switches, consult Customer Service Center.

## How To Order

Please see chart below for full part numbers.

Part Number	Height (mm)	Leads Shape	Ground Pin	Force	Travel (mm)	Operating Life
PTS525 SM08 SMTR 2 LFS	0.8	G	No	160 gf $\pm$ 50 gf	0.25 $\pm$ 0.2	1,000,000
PTS525 SK08 SMTR 2 LFS	0.8	G	No	260 gf $\pm$ 50 gf	0.25 $\pm$ 0.2	200,000
PTS525 SM15 SMTR 2 LFS	1.5	G	No	160 gf $\pm$ 50 gf	0.25 $\pm$ 0.2	1,000,000
PTS525 SK15 SMTR 2 LFS	1.5	G	No	260 gf $\pm$ 50 gf	0.25 $\pm$ 0.2	500,000
PTS525 SMG15 SMTR 2 LFS	1.5	G	Yes	160 gf $\pm$ 50 gf	0.25 $\pm$ 0.2	1,000,000
PTS525 SKG15 SMTR 2 LFS	1.5	G	Yes	260 gf $\pm$ 50 gf	0.25 $\pm$ 0.2	500,000
PTS525 SMG15J SMTR 2 LFS	1.5	J	Yes	160 gf $\pm$ 50 gf	0.25 $\pm$ 0.2	1,000,000
PTS525 SKG15J SMTR 2 LFS	1.5	J	Yes	260 gf $\pm$ 50 gf	0.25 $\pm$ 0.2	500,000

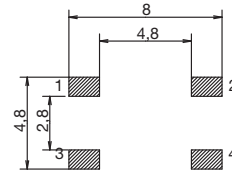
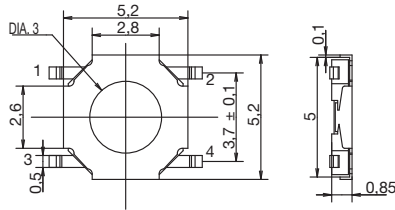
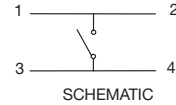
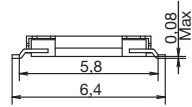


First Angle  
Projection

Dimensions are shown: mm  
Specifications and dimensions subject to change

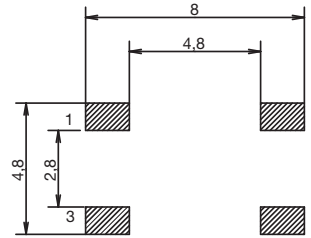
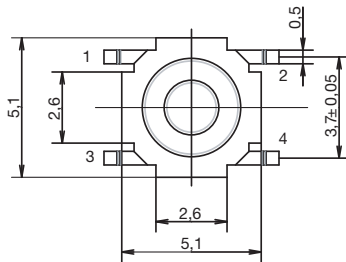
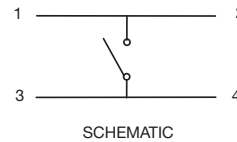
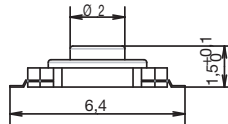
# PTS 525 Series Microminiature Tact Switch for SMT

**PTS525 SM08 SMTR2 LFS**  
**PTS525 SK08 SMTR2 LFS**



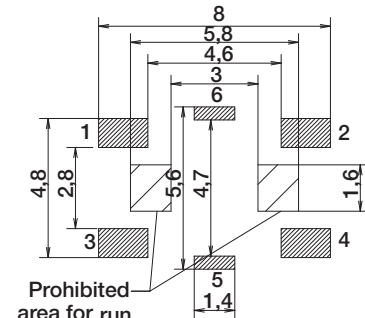
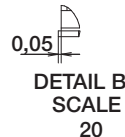
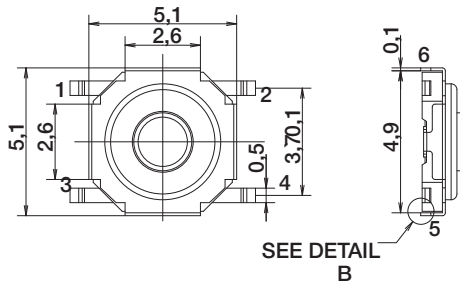
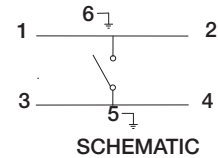
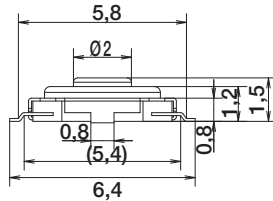
RECOMMENDED PCB LAYOUT

**PTS525 SM15 SMTR2 LFS**  
**PTS525 SK15 SMTR2 LFS**



RECOMMENDED PCB LAYOUT

**PTS525 SMG15 SMTR2 LFS**  
**PTS525 SKG15 SMTR2 LFS**

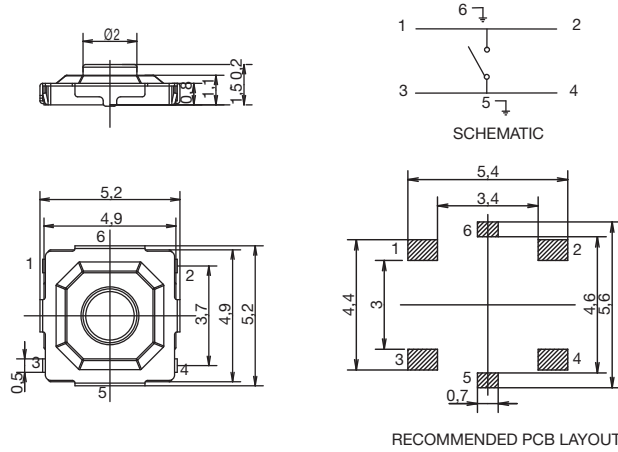


RECOMMENDED PCB LAYOUT

*Dimensions are shown: mm  
Specifications and dimensions subject to change*

# PTS 525 Series Microminiature Tact Switch for SMT

PTS525 SMG15J SMTR2 LFS  
PTS525 SKG15J SMTR2 LFS

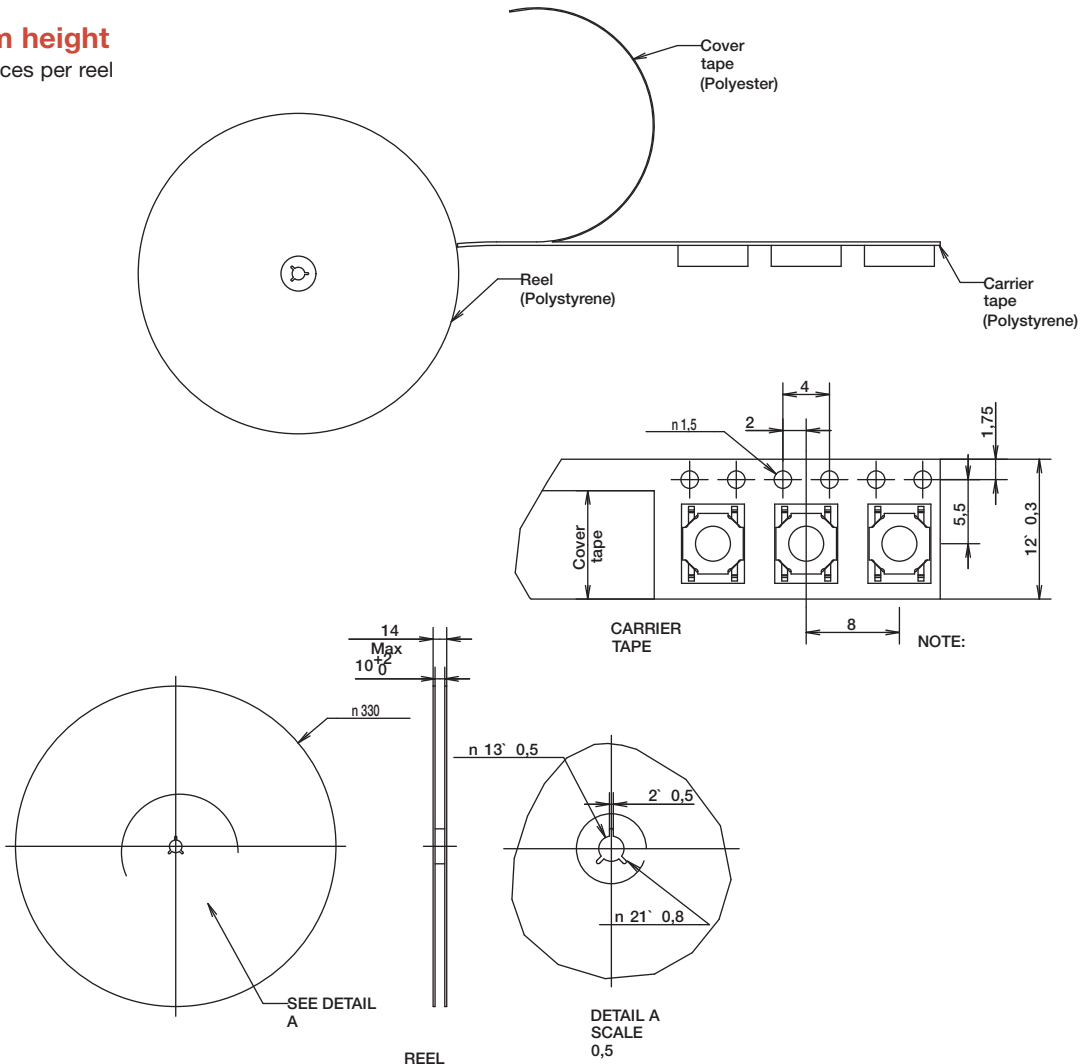


B

Tactile Switches

## TAPE & REEL

**0.8 mm height**  
5,000 pieces per reel



Dimensions are shown: mm  
Specifications and dimensions subject to change

# PTS 525 Series Microminiature Tact Switch for SMT

## TAPE & REEL

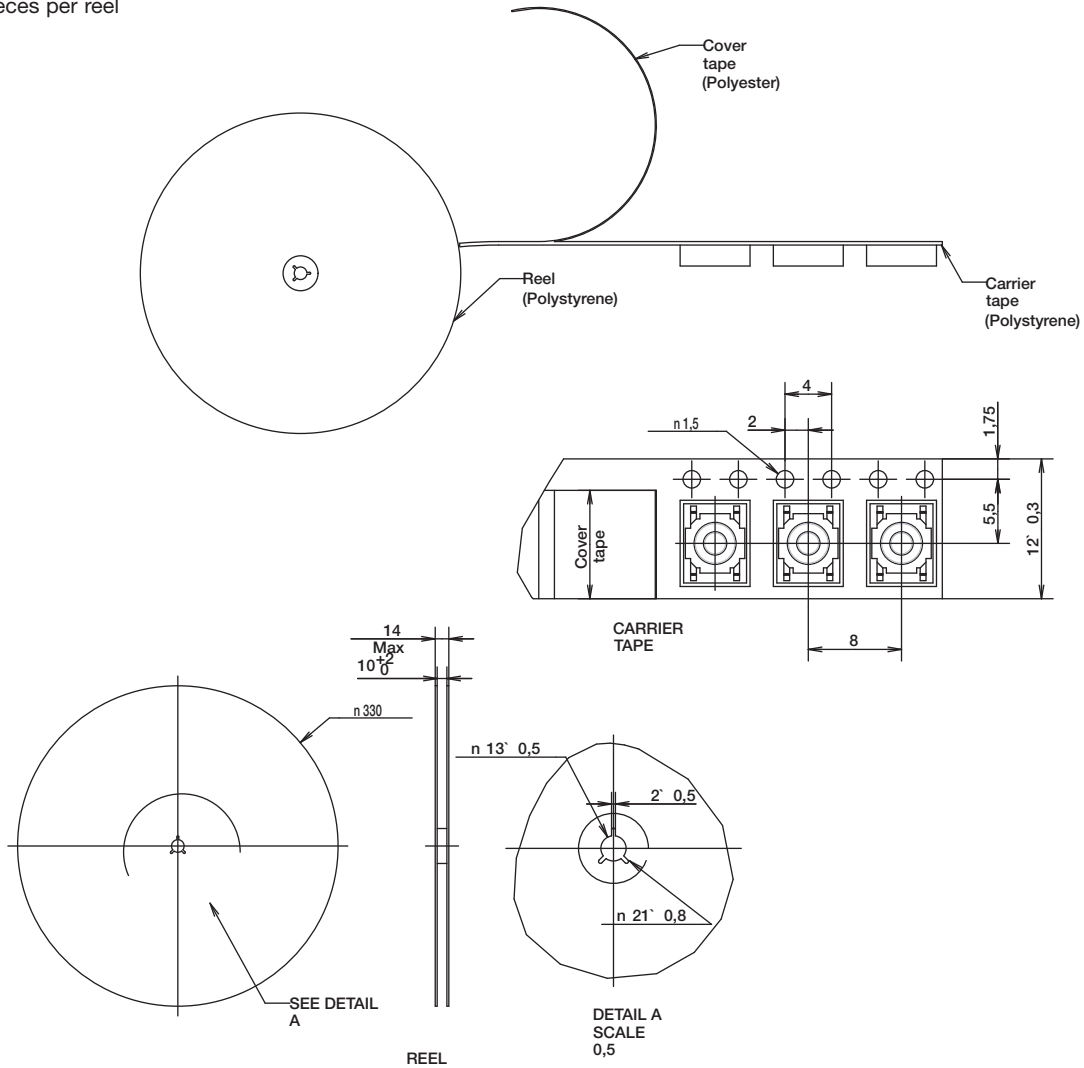
**1.5 mm height**

4,000 pieces per reel



**B**

Tactile Switches



First Angle  
Projection

Dimensions are shown: mm  
Specifications and dimensions subject to change



# PTS 530 Series Ultra Low Profile SMT Top Actuated

## Features/Benefits

- 4.5 x 4.5 mm footprint
- 0.55 mm thickness
- High number of cycles
- Symbol line identification

## Typical Applications

- MP3 accessories
- Bluetooth headset
- Remote controls
- Garage door opener



B

Tactile Switches

## Specifications

FUNCTION: momentary action  
CONTACT ARRANGEMENT: 1 make contact = SPST N.O.  
TERMINALS: Gullwing for SMT  
TRAVEL: 0.2mm - 0.1 /+ 0.15mm

Part Number	Operating Force (gf)	Operating Life (operations)
PTS530 GN055 SMTR LFS	100 ± 30	1,000,000
PTS530 GM055 SMTR LFS	160 ± 30	1,000,000
PTS530 GH055 SMTR LFS	200 ± 30	200,000
PTS530 GK055 SMTR LFS	260 ± 30	200,000
PTS530 GG065 SMTR LFS	400 ± 70	300,000
PTS530 GS065 SMTR LFS	600 - 50/+100	150,000

## Electrical

MAXIMUM VOLTAGE: 12 VDC  
MAXIMUM CURRENT DC: 50 mA  
DIELECTRIC STRENGTH: 250 VA C (1mn)  
CONTACT RESISTANCE: ≤ 100 mΩ  
INSULATION RESISTANCE: ≥ 100 MΩ  
BOUNCE TIME: ≤ 10 ms

## Environmental

OPERATING TEMPERATURE: -40°C to 85°C

## Process

SOLDERING: This component is suited to the following methods:  
Infrared Reflow Soldering in accordance with IEC61760-1

## Packaging

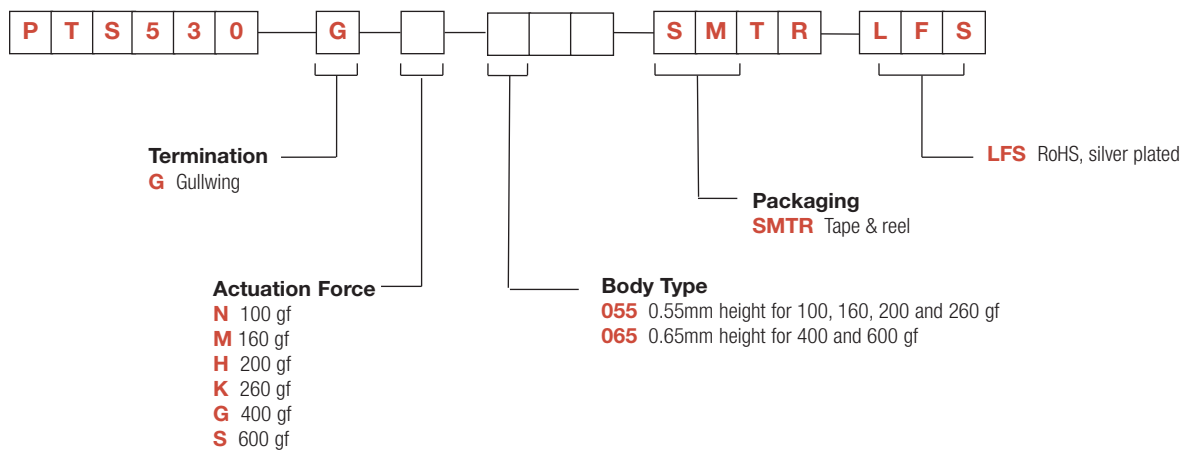
Switches in reels of 7,000 pieces.  
Dimensions of reels according to EIA 481B  
External diameter 330 mm

**NOTE:** Specifications listed above are for switches with standard options.  
For information on specific and custom switches, consult Customer Service Center.

## How To Order

Our easy build-a-switch concept allows you to mix and match options to create the switch you need. To order, select desired option from each category and place it in the appropriate box.

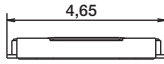
For any part number different from those listed above, please consult your local representative.



# PTS 530 Series Ultra Low Profile SMT Top Actuated

## TERMINATION

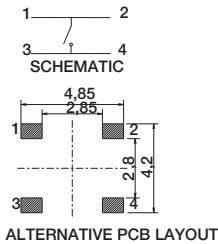
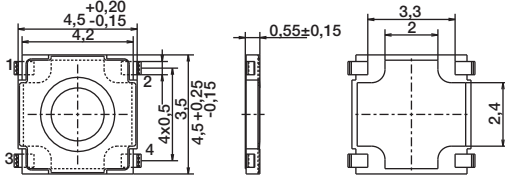
**G GULLWING**



## BODY TYPE / ACTUATION FORCE

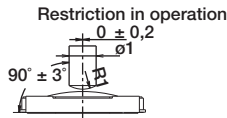
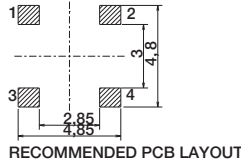
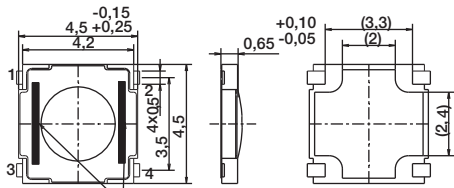
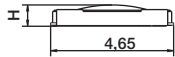
Tactile Switches

**055 0,55 MM HEIGHT**



**065 0,65 MM HEIGHT**

PART NUMBER	HEIGHT
PTS 530 GS 065 SMTR LFS	+0.1 -0.05 0.72
PTS 530 GG 065 SMTR LFS	0.68

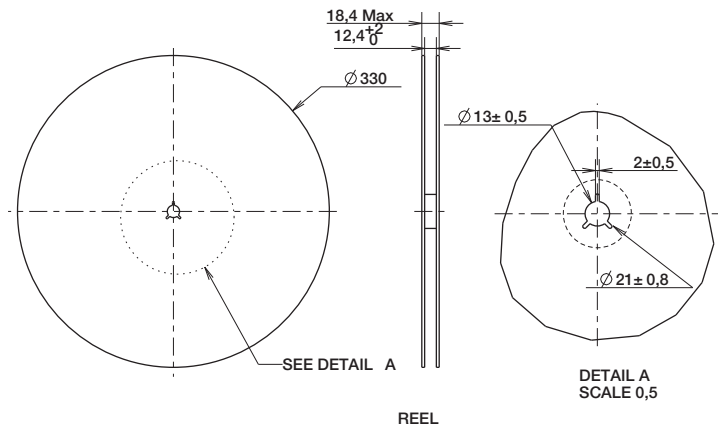
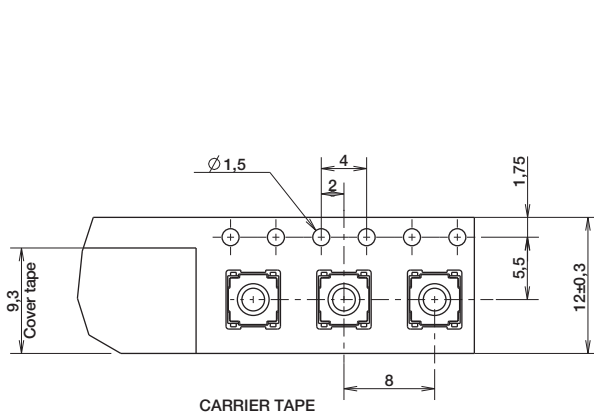


Force symbol lines for 600 gf  
No symbol line for 400 gf

Actuation force identification lines:

N: 100 gf	
M: 160 gf	No Lines
H: 200 gf	
K: 260 gf	
G: 400 gf	No Lines
S: 600 gf	

## TAPE & REEL



# PTS 540 Series Ultra Low Profile SMT Top Actuated

## Features/Benefits

- 3.7 x 3.7 mm footprint
- 0.35 mm thickness
- High number of cycles

## Typical Applications

- MP3 accessories
- Bluetooth headset
- Remote controls



B

Tactile Switches

## Specifications

FUNCTION: momentary action  
CONTACT ARRANGEMENT: 1 make contact = SPST N.O.  
TERMINALS: J type for SMT  
TRAVEL: 0.15 mm ± 0.1 mm

## Mechanical

Part Number	Operating Force (gf)	Operating Life (operations)
PTS540 JM035 SMTR LFS	160 ± 50	500,000
PTS540 JK035 SMTR LFS	230 ± 50	300,000

## Packaging

Switches in reels of 10,000 pieces.  
Dimensions of reels according to EIA 481B  
External diameter 330 mm

## Electrical

MAXIMUM VOLTAGE: 12 VDC  
MAXIMUM CURRENT DC: 50 mA  
DIELECTRIC STRENGTH: 250 VA C (1mn)  
CONTACT RESISTANCE: ≤ 100 mΩ  
INSULATION RESISTANCE: ≥ 100 MΩ  
BOUNCE TIME: ≤ 10 ms

## Environmental

OPERATING TEMPERATURE: -30°C to 85°C

## Process

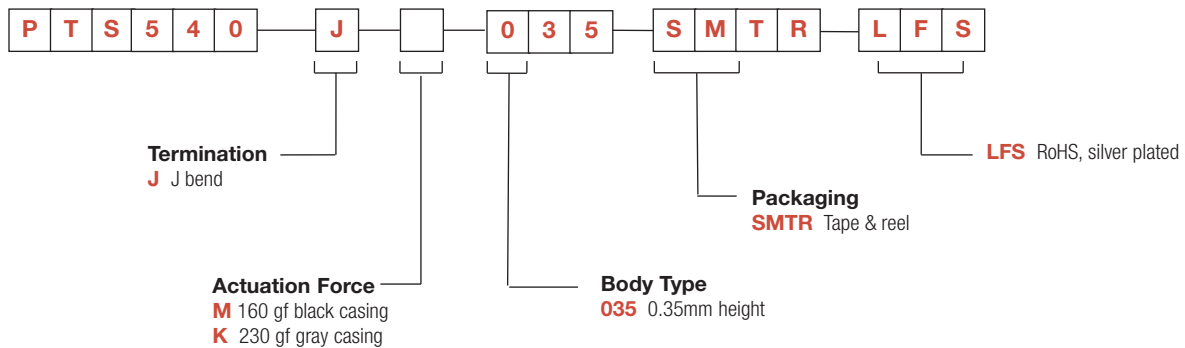
SOLDERING: This component is suited to the following methods:  
Infrared Reflow Soldering in accordance with IEC61760-1

**NOTE:** Specifications listed above are for switches with standard options.  
For information on specific and custom switches, consult Customer Service Center.

## How To Order

Our easy build-a-switch concept allows you to mix and match options to create the switch you need. To order, select desired option from each category and place it in the appropriate box.

For any part number different from those listed above, please consult your local representative.



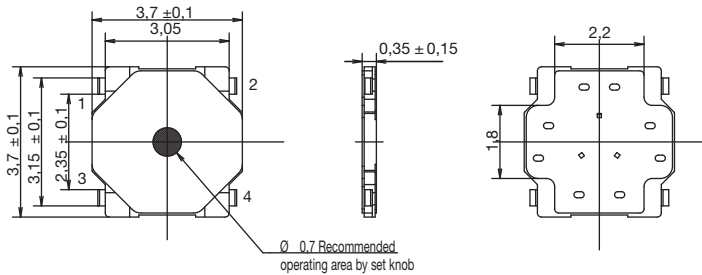


# PTS 540 Series Ultra Low Profile SMT Top Actuated

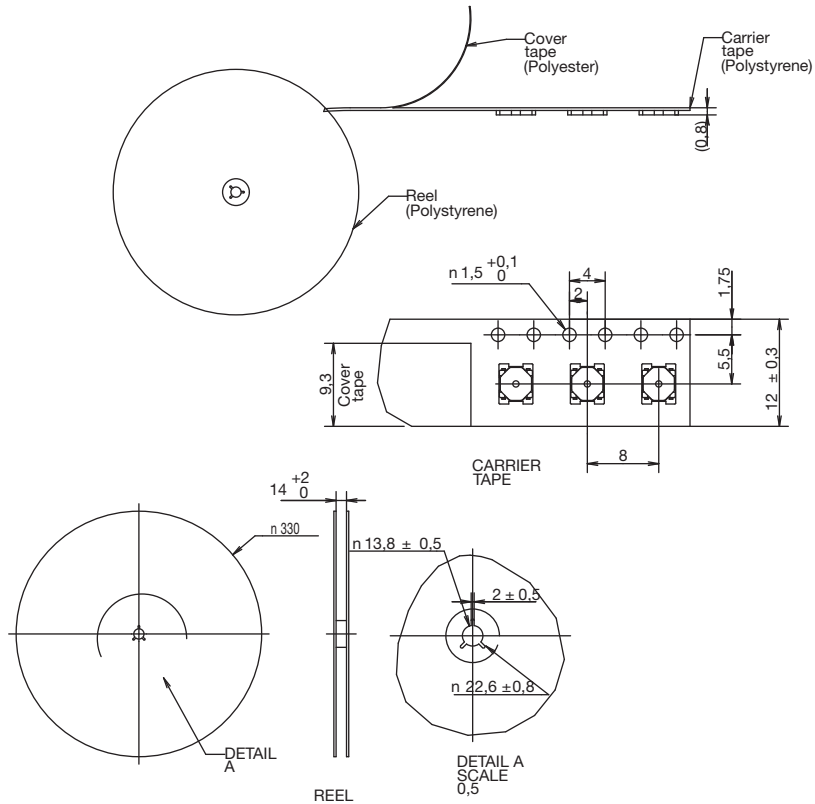
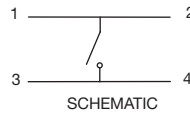
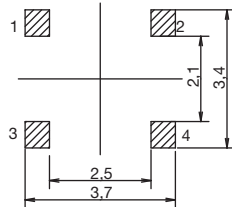
PTS 540

Tactile Switches

B



RECOMMENDED PCB



# PTS 810 Series Microminiature SMT Top Actuated

## Features/Benefits

- 4.2 x 3.2 mm footprint
- 2.5 mm thickness
- High number of cycles
- Color coded actuators

## Typical Applications

- Control panels
- Nomad devices
- Remote controls
- Keyless entry system



## Specifications

FUNCTION: momentary action  
 CONTACT ARRANGEMENT: 1 make contact = SPST N.O.  
 TERMINALS: J type for SMT  
 TRAVEL: 160 & 260 gf: 0.15mm ± 0.1mm  
 400 & 600 gf: 0.20mm ± 0.1mm

	Operating Force (gf)	Operating Life (operations)
PTS810 SJM 250 SMTR LFS	160 ± 50	150,000
PTS810 SJK 250 SMTR LFS	260 ± 70	50,000
PTS810 SJG 250 SMTR LFS	400 ± 100	100,000
PTS810 SJS 250 SMTR LFS	600 ± 150	150,000

## Packaging

Switches in reels of 2,900 pieces.  
 Dimensions of reels according to EIA 481B  
 External diameter 330 mm

## Electrical

MAXIMUM VOLTAGE: 16 VDC  
 MAXIMUM CURRENT DC: 50 mA  
 DIELECTRIC STRENGTH: 250 VA C (1mn)  
 CONTACT RESISTANCE: ≤ 500 mΩ  
 INSULATION RESISTANCE: ≥ 100 MΩ  
 BOUNCE TIME: ≤ 10 ms

## Environmental

OPERATING TEMPERATURE: -40°C to 85°C

## Process

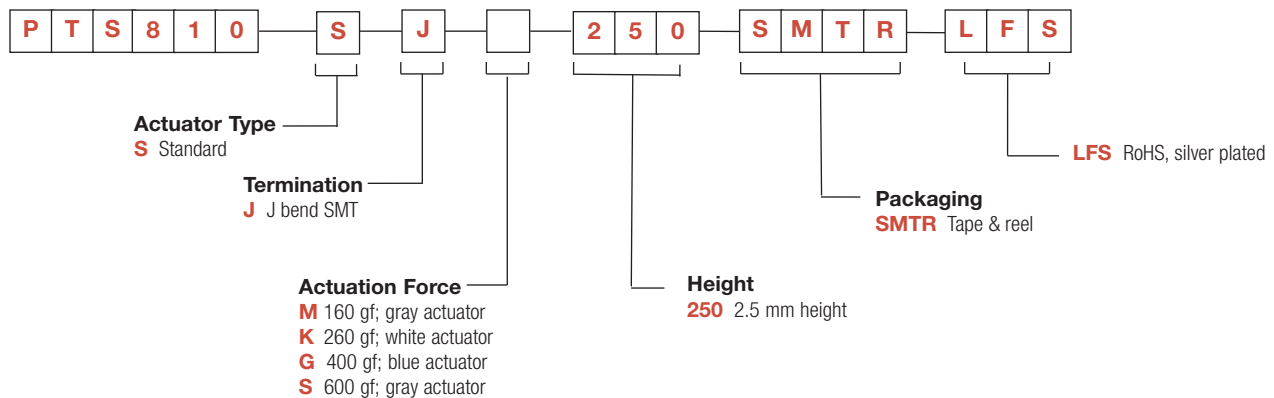
SOLDERING: This component is suited to the following methods:  
 Infrared Reflow Soldering in accordance with IEC61760-1

**NOTE:** Specifications listed above are for switches with standard options.  
 For information on specific and custom switches, consult Customer Service Center.

## How To Order

Our easy build-a-switch concept allows you to mix and match options to create the switch you need. To order, select desired option from each category and place it in the appropriate box.

For any part number different from those listed above, please consult your local representative.

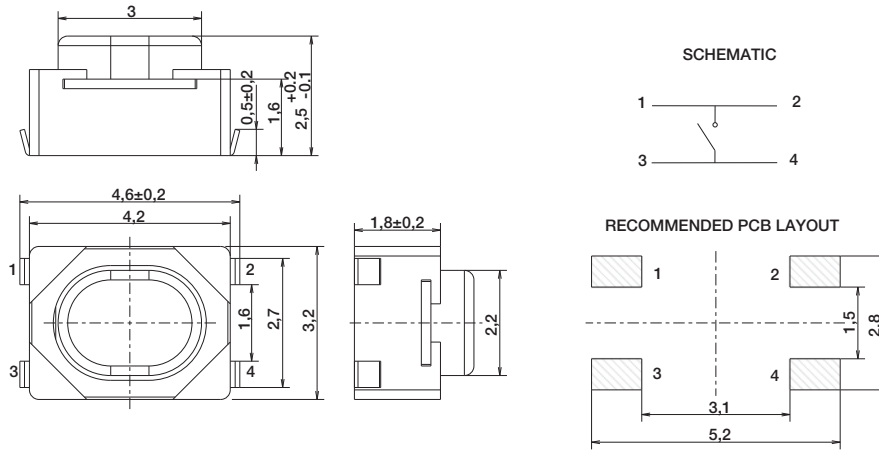


# PTS 810 Series Microminiature SMT Top Actuated

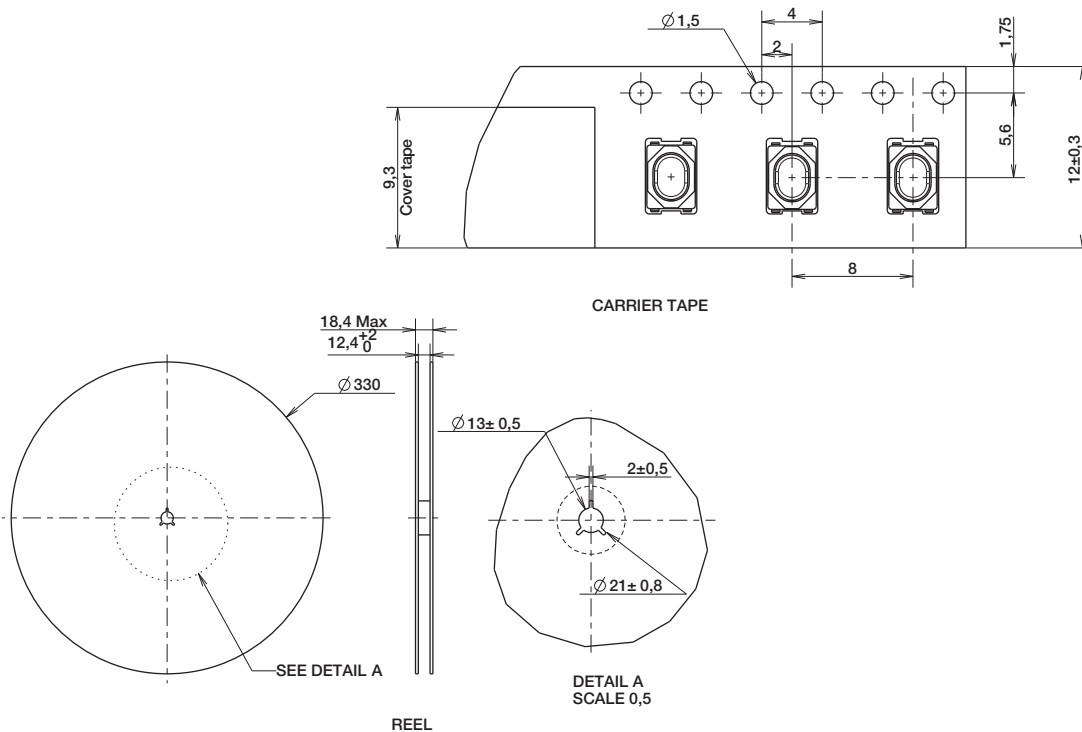
PTS810

Tactile Switches

B



## TAPE & REEL



Dimensions are shown: mm  
Specifications and dimensions subject to change

# PTS 820 Series Microminiature SMT Top Actuated

## Features/Benefits

- 3.9 x 2.9 mm footprint
- Three different heights
- High number of cycles
- Reduced footprint

## Typical Applications

- Control panels
- Nomad devices
- Remote controls
- Keyless entry system



## Specifications

FUNCTION: momentary action  
 CONTACT ARRANGEMENT: 1 make contact = SPST N.O.  
 TERMINALS: J type for SMT  
 TRAVEL: 0.2mm + 0.1mm / -0.05 mm

	Operating Force (gf)	Life Cycles	Height mm	Pegs
PTS820 J25M SMTR LFS	160 ± 50	200,000	2.5	No
PTS820 J25K SMTR LFS	250 ± 50	100,000	2.5	No
PTS820 J25MP SMTR LFS	160 ± 50	200,000	2.5	Yes
PTS820 J25KP SMTR LFS	250 ± 50	100,000	2.5	Yes
PTS820 J20M SMTR LFS	160 ± 50	200,000	2.0	No
PTS820 J20K SMTR LFS	250 ± 50	100,000	2.0	No
PTS820 J20MP SMTR LFS	160 ± 50	200,000	2.0	Yes
PTS820 J20KP SMTR LFS	250 ± 50	100,000	2.0	Yes
PTS820 J15M SMTR LFS	160 ± 50	200,000	1.5	No
PTS820 J15K SMTR LFS	250 ± 50	100,000	1.5	No
PTS820 J15MP SMTR LFS	160 ± 50	200,000	1.5	Yes
PTS820 J15KP SMTR LFS	250 ± 50	100,000	1.5	Yes

## Packaging

Switches in reels of 2,500 pieces for 1.5 and 2.0 mm height  
 Switches in reels of 2,300 pieces for 2.5 mm height  
 Dimensions of reels according to EIA 481B  
 External diameter 330 mm

## Electrical

MAXIMUM VOLTAGE: 12 VDC  
 MAXIMUM CURRENT DC: 50 mA  
 DIELECTRIC STRENGTH: 100 VA C (1mn)  
 CONTACT RESISTANCE: ≤ 100 mΩ  
 INSULATION RESISTANCE: ≥ 100 MΩ  
 BOUNCE TIME: ≤ 10 ms

## Environmental

OPERATING TEMPERATURE: -40°C to 85°C

## Process

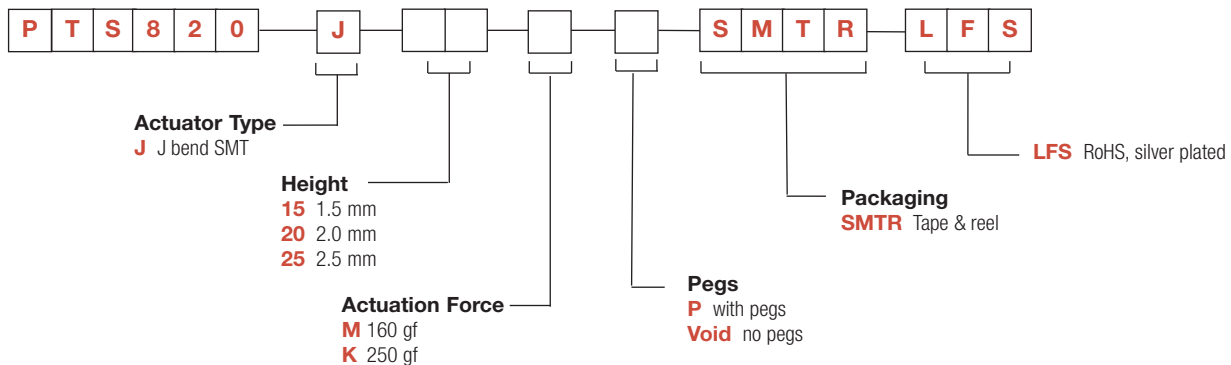
SOLDERING: This component is suited to the following methods:  
 Infrared Reflow Soldering in accordance with IEC61760-1

**NOTE:** Specifications listed above are for switches with standard options.  
 For information on specific and custom switches, consult Customer Service Center.

## How To Order

Our easy build-a-switch concept allows you to mix and match options to create the switch you need. To order, select desired option from each category and place it in the appropriate box.

**For any part number different from those listed above, please consult your local representative.**

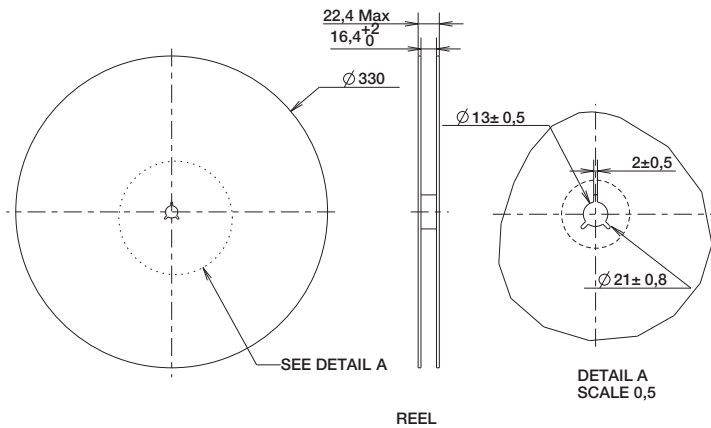
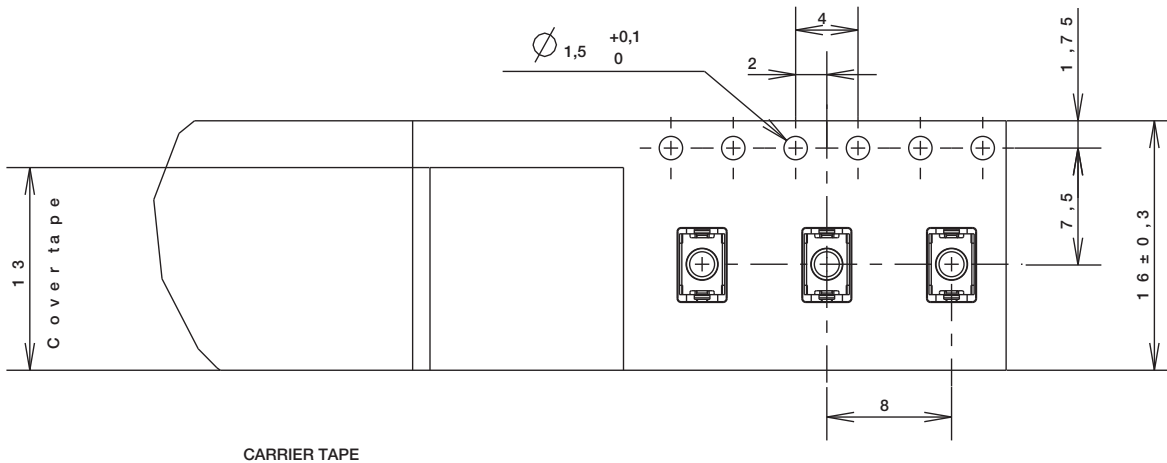
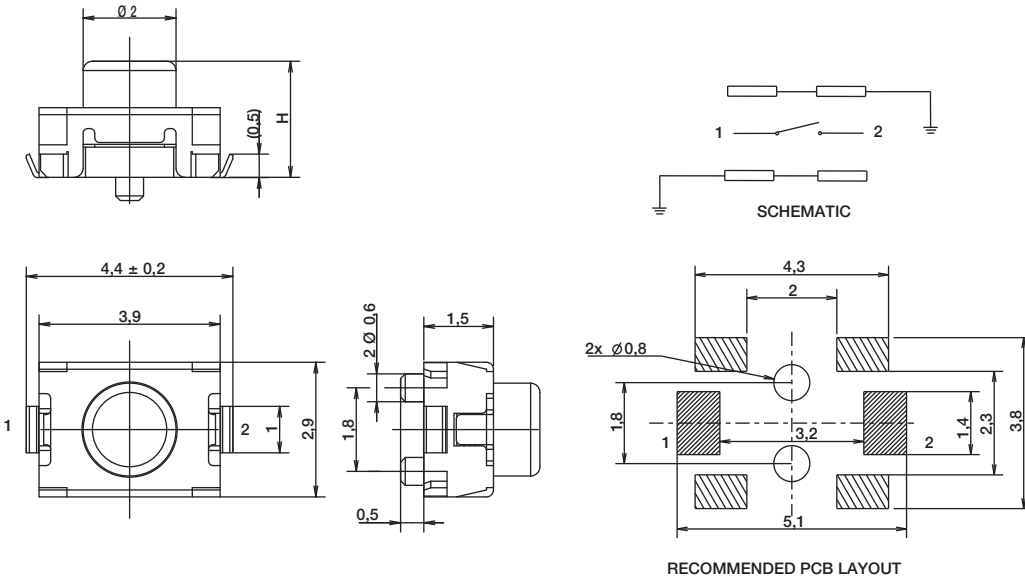


# PTS 820 Series Microminiature SMT Top Actuated

2.5 & 2.0 mm height (H) - version shown here with pegs

Tactile Switches

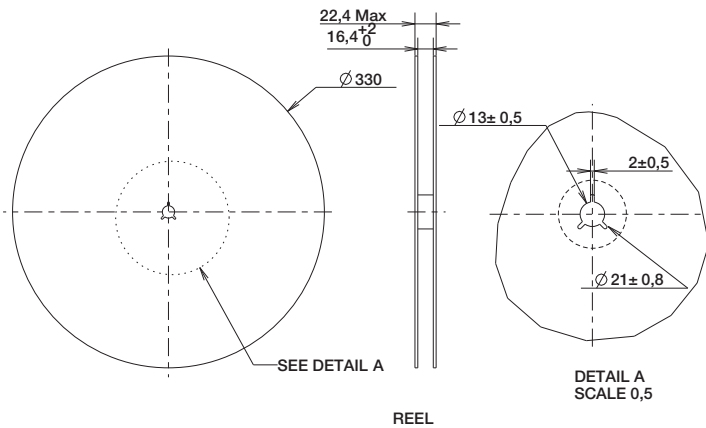
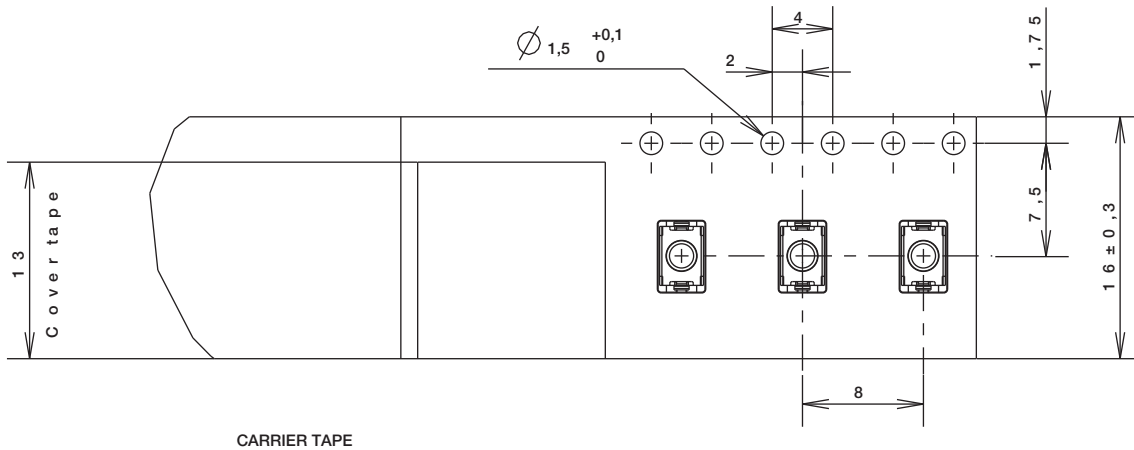
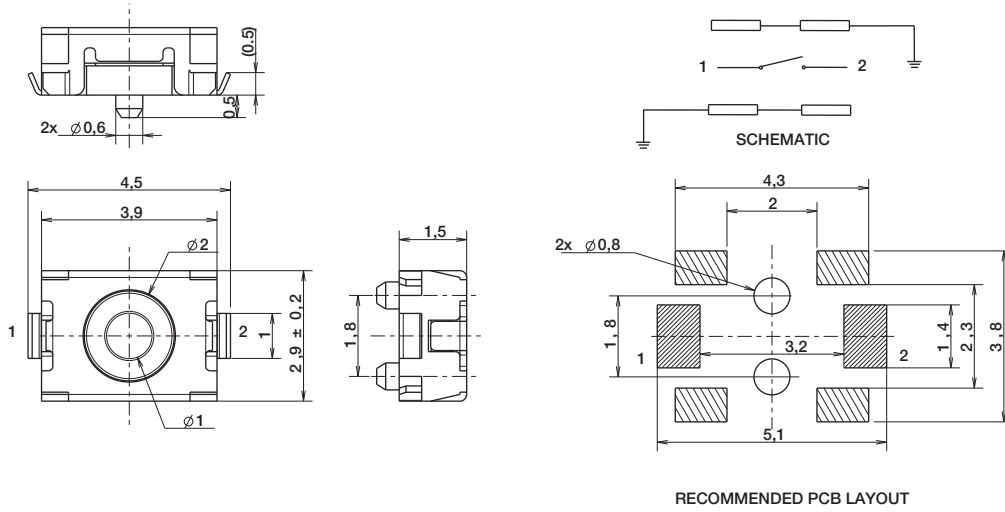
B



Dimensions are shown: mm  
Specifications and dimensions subject to change

# PTS 820 Series Microminiature SMT Top Actuated

1.5 mm height (H) - version shown here with pegs



B

Tactile Switches

# PTS 830 Series Microminiature SMT Top Actuated



## Features/Benefits

- 3.5 x 2.6 mm footprint
- High number of cycles
- Optional ground pin

## Typical Applications

- Wearable electronics
- Nomad devices
- Remote controls
- Keyless entry system

B

Tactile Switches

## Specifications

FUNCTION: momentary action  
 CONTACT ARRANGEMENT: 1 make contact = SPST N.O.  
 TERMINALS: G type for SMT  
 TRAVEL: 0.15 mm + 0.1 mm

	Operating Force (gf)	Life Cycles	Ground Pin
PTS830 GM140 SMTR LFS	160 ± 50	500,000	No
PTS830 GG140 SMTR LFS	450 ± 80	200,000	No
PTS830 GM140G SMTR LFS	160 ± 50	500,000	Yes
PTS830 GG140G SMTR LFS	450 ± 80	200,000	Yes

## Packaging

Switches in reels of 9,500 pieces  
 Dimensions of reels according to EIA 481B  
 External diameter 330 mm

## Electrical

MAXIMUM VOLTAGE: 12 VDC  
 MAXIMUM CURRENT DC: 50 mA  
 DIELECTRIC STRENGTH: 100 VA C (1mm)  
 CONTACT RESISTANCE: ≤ 100 mΩ  
 INSULATION RESISTANCE: ≥ 100 MΩ  
 BOUNCE TIME: ≤ 10 ms

## Environmental

OPERATING TEMPERATURE: -40°C to 85°C

## Process

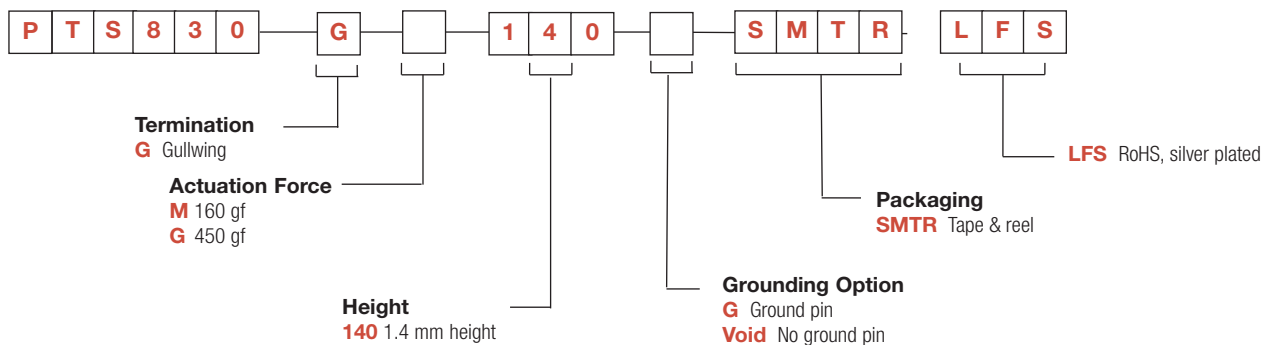
SOLDERING: This component is suited to the following methods:  
 Infrared Reflow Soldering in accordance with IEC61760-1

**NOTE:** Specifications listed above are for switches with standard options.  
 For information on specific and custom switches, consult Customer Service Center.

## How To Order

Our easy build-a-switch concept allows you to mix and match options to create the switch you need. To order, select desired option from each category and place it in the appropriate box.

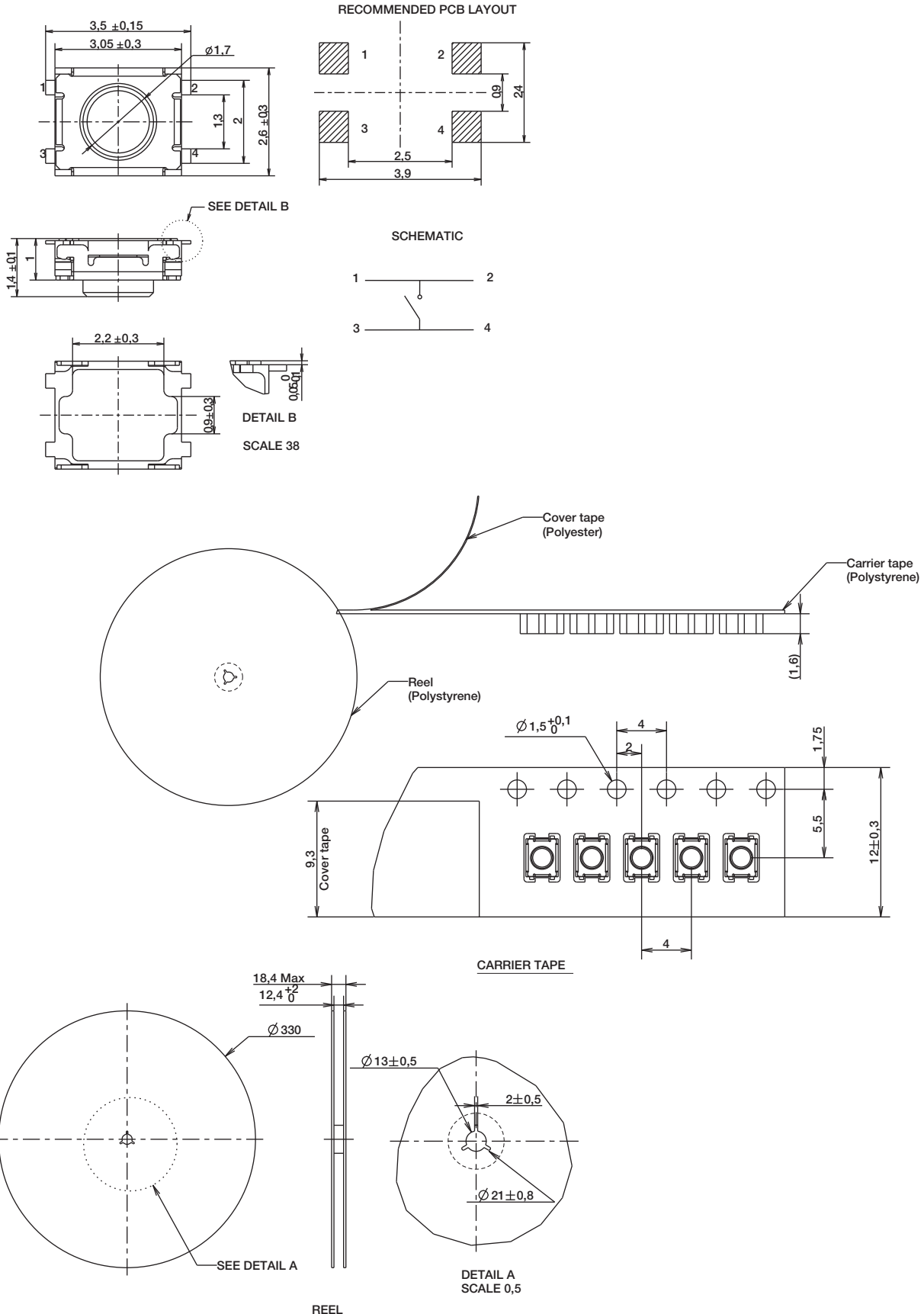
For any part number different from those listed above, please consult your local representative.



Dimensions are shown: mm  
 Specifications and dimensions subject to change

# PTS 830 Series Microminiature SMT Top Actuated

## PTS830 GX 140 SMTR LFS



B

Tactile Switches

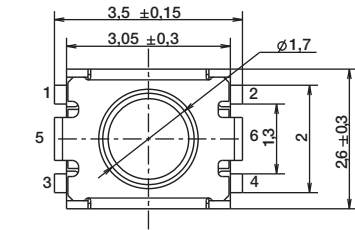


# PTS 830 Series Microminiature SMT Top Actuated

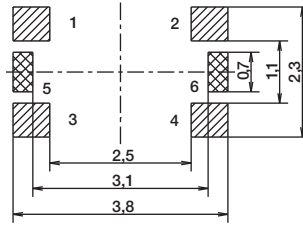
PTS830 GX 140 G SMTR LFS

Tactile Switches

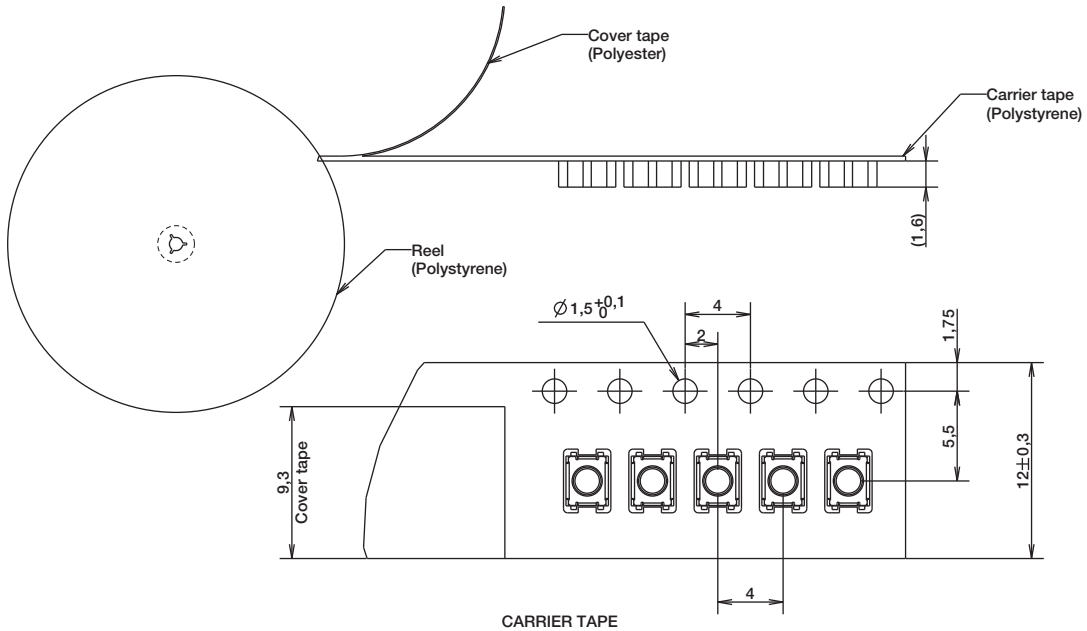
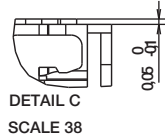
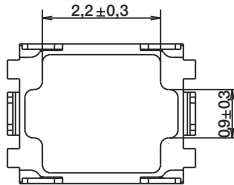
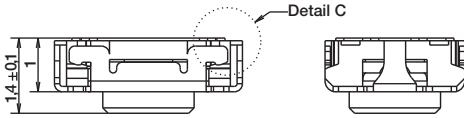
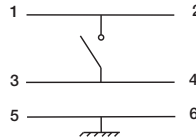
B



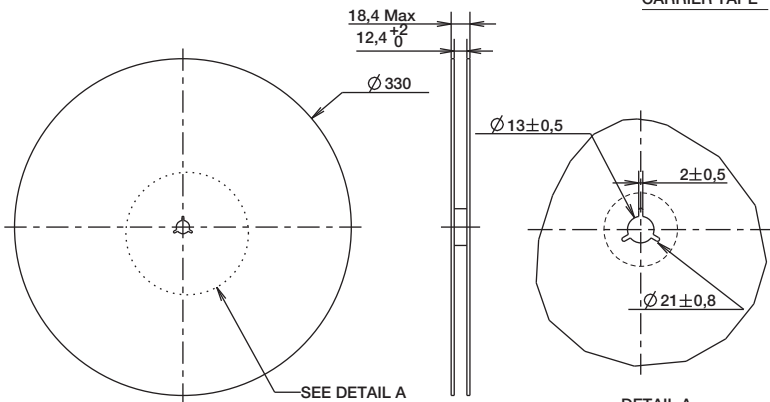
RECOMMENDED PCB LAYOUT



SCHEMATIC



CARRIER TAPE



DETAIL A  
SCALE 0,5

REEL



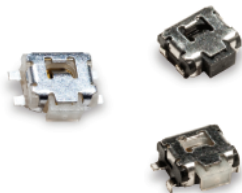
Dimensions are shown: mm  
Specifications and dimensions subject to change



**B**

**Tactile Switches**

# PTS 840 Series Microminiature SMT Side Actuated



## Features/Benefits

- 3.5 x 3.55 mm footprint
- Front PIP leads option for strong shear resistance
- ESD pin option
- Reduced footprint

## Typical Applications

- Nomad devices
- Remote controls
- Personal health diagnostics
- Consumer electronics

B

Tactile Switches

## Specifications

FUNCTION: momentary action  
CONTACT ARRANGEMENT: 1 make contact = SPST N.O.  
TERMINALS: G and front PIP types for SMT  
TRAVEL: 0.2mm + 0.2mm / -0.1 mm  
LIFE: 100,000 cycles

Type	Operating Force (gf)	SMT Leads	Pegs
<b>Without ground pin</b>			
PTS840 GM SMTR LFS	160 -40/+70	G leads	No
PTS840 GK SMTR LFS	220 -70/+80	G leads	No
PTS840 PM SMTR LFS	160 -40/+70	P leads	No
PTS840 PK SMTR LFS	220 -70/+80	P leads	No
PTS840 GMP SMTR LFS	160 -40/+70	G leads	Yes
PTS840 GKP SMTR LFS	220 -70/+80	G leads	Yes
<b>With ground pin</b>			
PTS840 ESDGM SMTR LFS	160 -40/+70	G leads	No
PTS840 ESDGK SMTR LFS	220 -70/+80	G leads	No
PTS840 ESDPM SMTR LFS	160 -40/+70	P leads	No
PTS840 ESDPK SMTR LFS	220 -70/+80	P leads	No
PTS840 ESDGMP SMTR LFS	160 -40/+70	G leads	Yes
PTS840 ESDGKP SMTR LFS	220 -70/+80	G leads	Yes

## Electrical

MAXIMUM VOLTAGE: 12 VDC  
MAXIMUM CURRENT DC: 50 mA  
DIELECTRIC STRENGTH: 250 VA C (1mm)  
CONTACT RESISTANCE: ≤ 500 mΩ  
INSULATION RESISTANCE: ≥ 100 MΩ  
BOUNCE TIME: ≤ 10 ms

## Environmental

OPERATING TEMPERATURE: -40°C to 85°C

## Process

SOLDERING: This component is suited to the following methods:  
Infrared Reflow Soldering in accordance with IEC61760-1

## Packaging

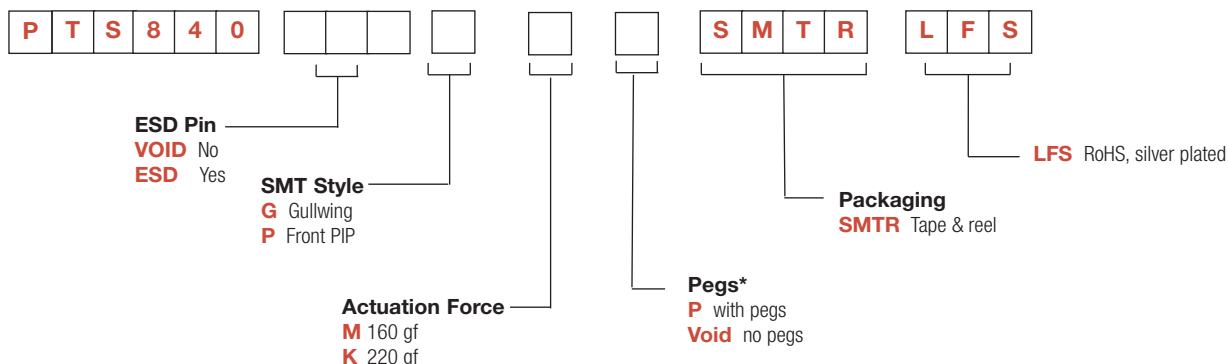
In reels of 3,500 pieces  
Dimensions of reels according to EIA 481B  
External diameter 330 mm

**NOTE:** Specifications listed above are for switches with standard options.  
For information on specific and custom switches, consult Customer Service Center.

## How To Order

Our easy build-a-switch concept allows you to mix and match options to create the switch you need. To order, select desired option from each category and place it in the appropriate box.

**For any part number different from those listed above, please consult your local representative.**



## Design Recommendations

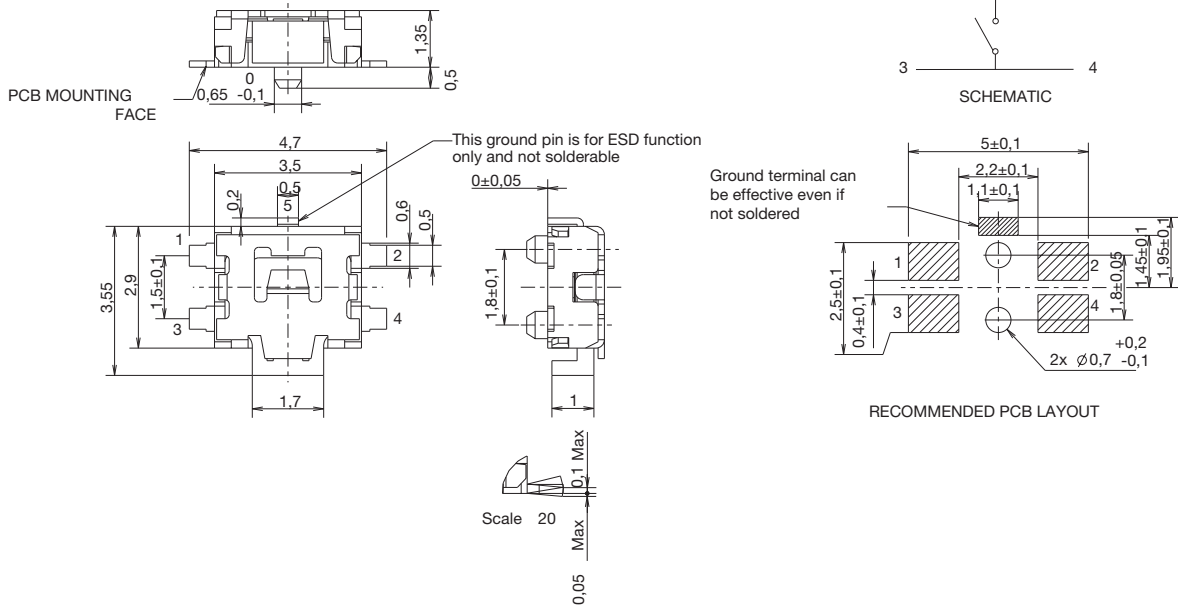
- "P" leads are recommended for applications where shear resistance is of importance
- When a precise alignment between application button and the switch is requested, version with pegs are the right choice to limit the possible floating of the switch during solderability.



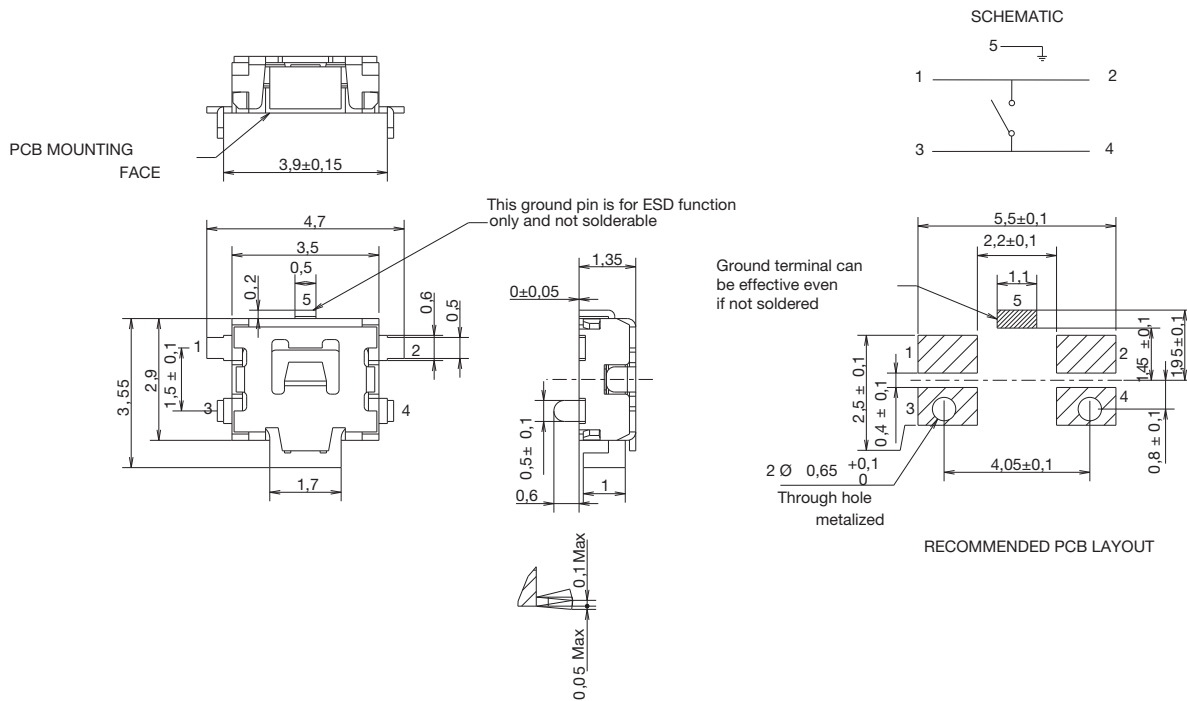
Dimensions are shown: mm  
Specifications and dimensions subject to change

# PTS 840 Series Microminiature SMT Side Actuated

## Standard G SMT Leads with ESD and Peg options

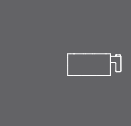


## P SMT Leads with ESD option



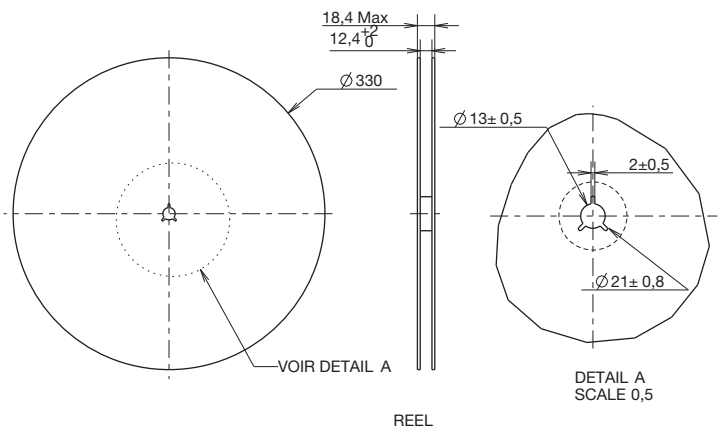
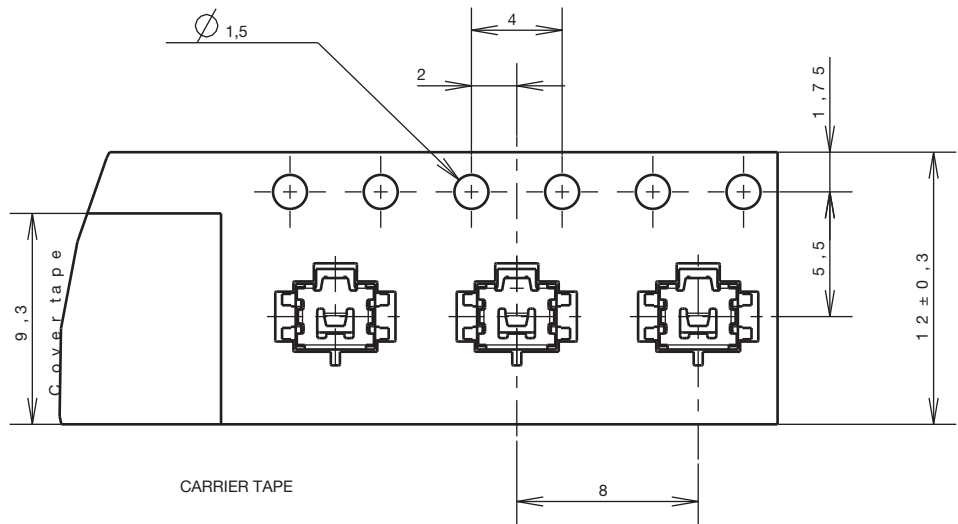
# PTS 840 Series Microminiature SMT Side Actuated

## TAPE & REEL



B

Tactile Switches



Dimensions are shown: mm  
Specifications and dimensions subject to change

# KSR Series Subminiature Tact Switch for SMT

## Features/Benefits

- 4 actuation forces
- G terminations
- N.O. and N.C.
- Detect type available
- Rubber actuator
- IP50 sealed
- RoHS compliant and compatible

## Typical Applications

- Automotive
- Medical equipment
- Industrial electronics
- Smart meters



B

Tactile Switches

## Specification

FUNCTION: momentary action  
CONTACT ARRANGEMENT: Normally Open  
TERMINALS: Gullwing type for SMT

## Mechanical

Type	Operating force Newtons (grams)	Operating life (operations)	Travel (mm)
KSR211G LFS / KSR213G LFG	1,5 < 1,85 (185) < 2,2	100,000	0,25 ± 0,15
KSR221G LFS / KSR223G LFG	1,9 < 2,25 (225) < 2,6	100,000	0,3 ± 0,15
KSR231G LFS /KSR233G LFG	2,25 < 3,00 (300) < 3,75	100,000	0,35 ± 0,15
KSR251G LFS / KSR253G LFG	3,4 < 4,50 (450) < 5,6	100,000	0,5 ± 0,15
KSR221G NC LFS	1,5 < 2,25 (225) < 3	30,000	0,3 ± 0,15
KSR223G NC LFG	1,5 < 2 (200) < 2,5	30,000	0,3 ± 0,15

Overload: 20 Newtons  
Detect switch versions are available. Please see Detect chapter  
KSR2D/M series.

## Packaging

Switches are delivered on continuous tape, in reels of 2,500 pieces.

## Electrical

	Silver	Gold
MAXIMUM POWER:	1 VA	0.2 VA
MAXIMUM VOLTAGE:	32 VDC	32 VDC
MINIMUM VOLTAGE:	20 mV	20 mV
MAXIMUM CURRENT DC:	50 mA	10 mA
MINIMUM CURRENT DC:	1 mA	1 mA

CONTACT RESISTANCE: ≤ 100 mΩ  
INSULATION RESISTANCE: (100 V): 1G Ω (between terminals)  
BOUNCE TIME: 1 ms max.

## Environmental

	Silver	Gold
OPERATING TEMPERATURE:	-40°C to 85°C	-40°C to 125°C
STORAGE TEMPERATURE:	-55°C to 85°C	-55°C to 125°C

## Process

SOLDERING: Compatible with lead free reflow soldering process.

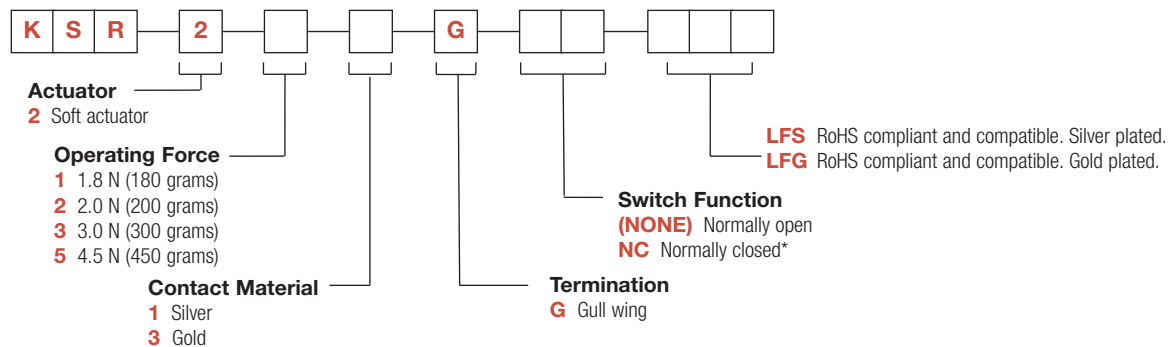
**NOTE:** Specifications listed above are for switches with standard options.  
For information on specific and custom switches, consult Customer Service Center.

## How To Order

Our easy build-a-switch concept allows you to mix and match options to create the switch you need. To order, select desired option from each category and place it in the appropriate box.

**However, please note that all the combinations of these options are not feasible.**

**For any part number different from those listed above, please consult your local representative.**



\*Available on KSR223G only.



Dimensions are shown: mm  
Specifications and dimensions subject to change

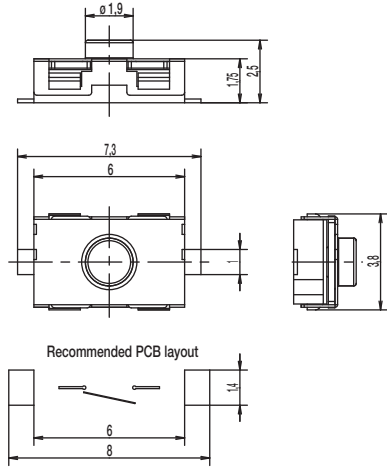
# KSR Series Subminiature Tact Switch for SMT

**KSR**

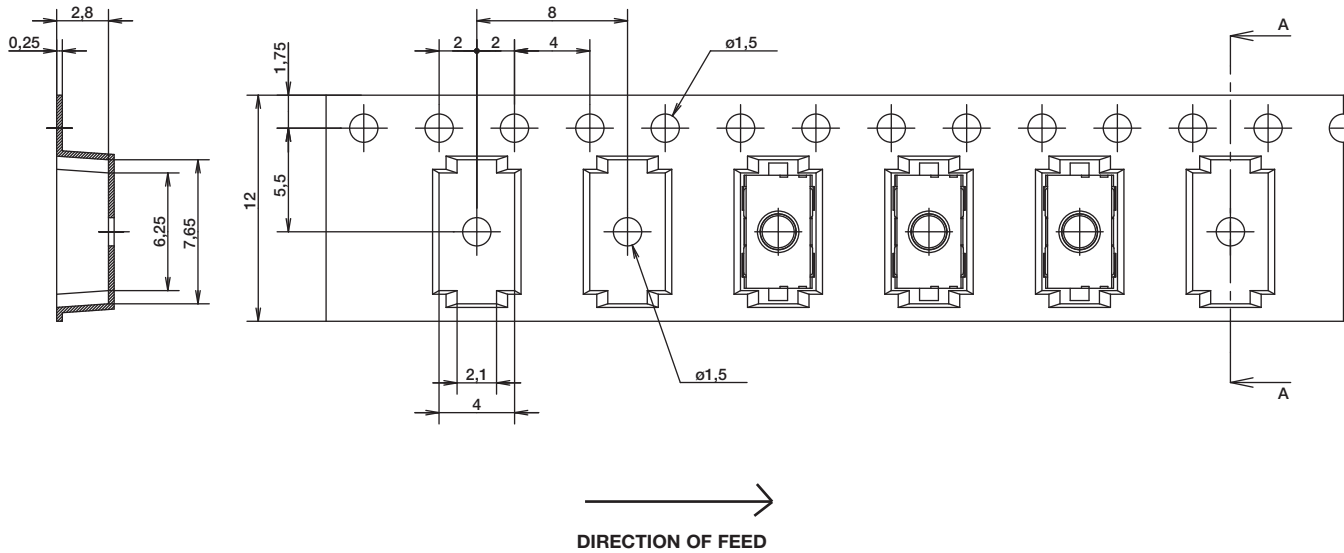


**B**

Tactile Switches



## TAPE & REEL



Dimensions are shown: mm  
Specifications and dimensions subject to change

# KSR Long Life-200,000 cycles-Gold and Silver Series Subminiature Tact Switch for SMT

## Features/Benefits

- 4 actuation forces
- G terminations
- N.O.
- Detect type available
- Rubber actuator
- IP50 sealed
- RoHS compliant and compatible

## Typical Applications

- Automotive
- Medical equipment
- Industrial electronics



B

Tactile Switches

## Specification

FUNCTION: momentary action  
CONTACT ARRANGEMENT: Normally Open  
TERMINALS: Gullwing type for SMT

## Mechanical

Type	Operating force(Fa) Newtons (grams)	Operating life (operations)	Travel (mm)
<b>Silver versions</b>			
KSR212G LFS	1,5 < 1,85 (185) < 2,2	200,000	0,25 ± 0,15
KSR222G LFS	1,9 < 2,25 (225) < 2,6	200,000	0,3 ± 0,15
KSR232G LFS	2,25 < 3,00 (300) < 3,75	200,000	0,35 ± 0,15
KSR252G LFS	3,4 < 4,50 (450) < 5,6	200,000	0,5 ± 0,15
<b>Gold versions</b>			
KSR214G LFS	1,5 < 1,85 (185) < 2,2	200,000	0,25 ± 0,15
KSR224G LFS	1,9 < 2,25 (225) < 2,6	200,000	0,3 ± 0,15
KSR234G LFS	2,25 < 3,00 (300) < 3,75	200,000	0,35 ± 0,15
KSR254G LFS	3,4 < 4,50 (450) < 5,6	200,000	0,5 ± 0,15

OVERLOAD: 20 Newtons

## Packaging

Switches are delivered on continuous tape, in reels of 2,500 pieces.

## Electrical

	Silver	Gold
MAXIMUM POWER:	1 VA	0.2 VA
MAXIMUM VOLTAGE:	32 V dc	32 V dc
MINIMUM VOLTAGE:	20 m Vdc	20 m Vdc
MAXIMUM CURRENT DC:	50 mA	10 mA
MINIMUM CURRENT DC:	1 mA	1 mA

CONTACT RESISTANCE: ≤ 100 m Ω  
INSULATION RESISTANCE (100 V): 1 G Ω (between terminals)  
BOUNCE TIME: 1 ms max

## Environmental

	Silver	Gold
OPERATING TEMPERATURE:	-40°C to 85°C	-40°C to 125°C
STORAGE TEMPERATURE:	-55°C to 85°C	-55°C to 125°C

## Process

SOLDERING: Compatible with lead free reflow soldering process.

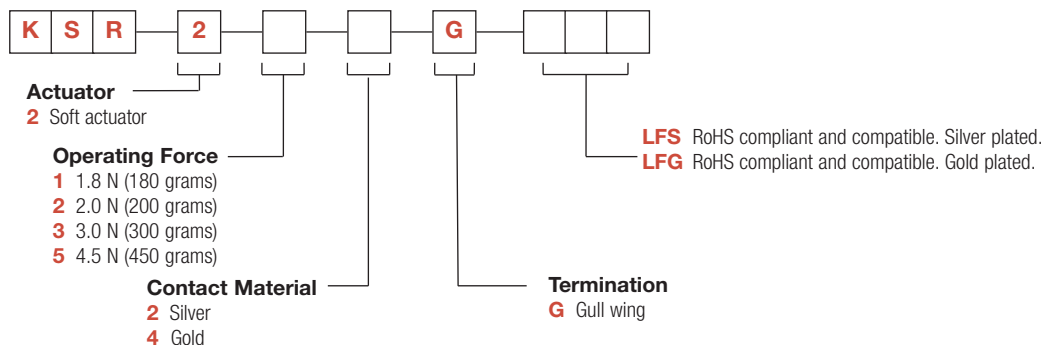
**NOTE:** Specifications listed above are for switches with standard options.  
For information on specific and custom switches, consult Customer Service Center.

## How To Order

Our easy build-a-switch concept allows you to mix and match options to create the switch you need. To order, select desired option from each category and place it in the appropriate box.

**However, please note that all the combinations of these options are not feasible.**

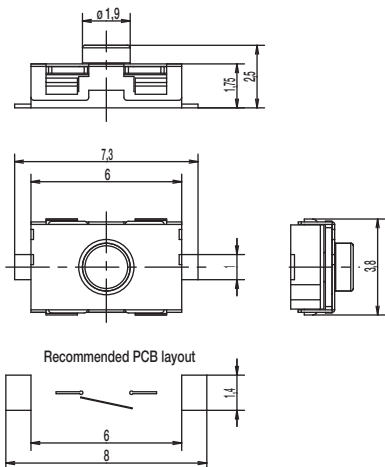
**For any part number different from those listed above, please consult your local representative.**



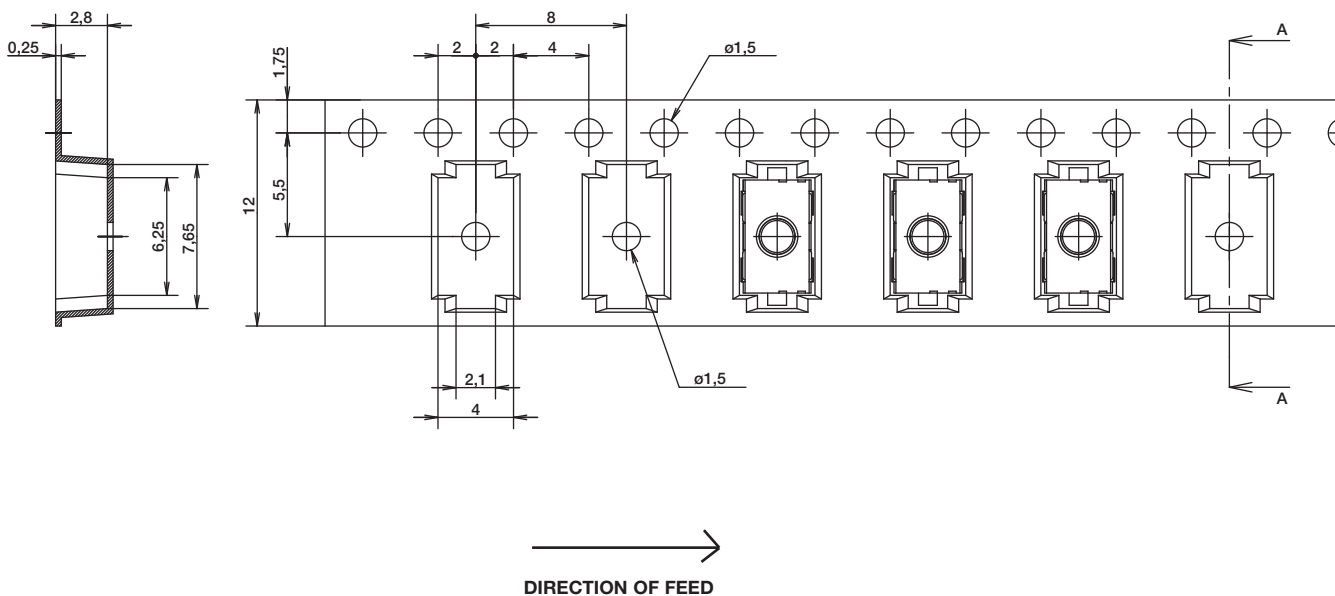


# KSR Long Life-200,000 cycles-Gold and Silver Series Subminiature Tact Switch for SMT

KSR



## TAPE & REEL



First Angle  
Projection

Dimensions are shown: mm  
Specifications and dimensions subject to change



# KSS Series Subminiature SMT Side Actuated

## Features/Benefits

- Low profile of 1.7 mm
- Excellent tactile feel
- High shear force
- Range of actuation forces
- Large flat top
- RoHS compliant and compatible

## Typical Applications

- Cellular phone
- Industrial electronics
- Health diagnostic electronics



B

Tactile Switches

## Specification

FUNCTION: momentary action  
CONTACT ARRANGEMENT: N.O.  
TERMINALS: Gullwing  
IP40 sealed

## Mechanical

OVERLOAD: 20N  
TACTILE FEELING: 2 and 4N: 25% min.  
2.5N: 30% min.

Type	Operating force Newtons (grams)	Operating life (operations)	Travel (mm)
KSS221G	2.0 (200) ± 0.5	100,000	0,3 ± 0,15
KSS231G	2.5 (250) ± 0.5	100,000	0,3 ± 0,10
KSS241G	4.0 (400) ± 1.0	100,000	0,3 ± 0,15

**NOTE:** Specifications listed above are for switches with standard options.  
For information on specific and custom switches, consult Customer Service Center.

## Electrical

	Silver	Gold
MAXIMUM POWER:	1 VA	0.2 VA
MAXIMUM VOLTAGE:	32 VDC	32 VDC
MAXIMUM CURRENT:	50 mA	10 mA
MINIMUM CURRENT:	1 mA	1 mA
DIELECTRIC STRENGTH: ≥ 250 VDC		
CONTACT RESISTANCE: < 100 mΩ		
INSULATION RESISTANCE (100 VDC): ≥ 10 <sup>9</sup> Ω		
BOUNCE TIME: < 3 ms		

## Environmental

	Silver	Gold
OPERATING TEMPERATURE:	-40°C to 85°C	-40°C to 125°C
STORAGE TEMPERATURE:	-55°C to 85°C	-55°C to 125°C

## Process

Infrared reflow soldering in accordance with IEC 61760-1

## Packaging

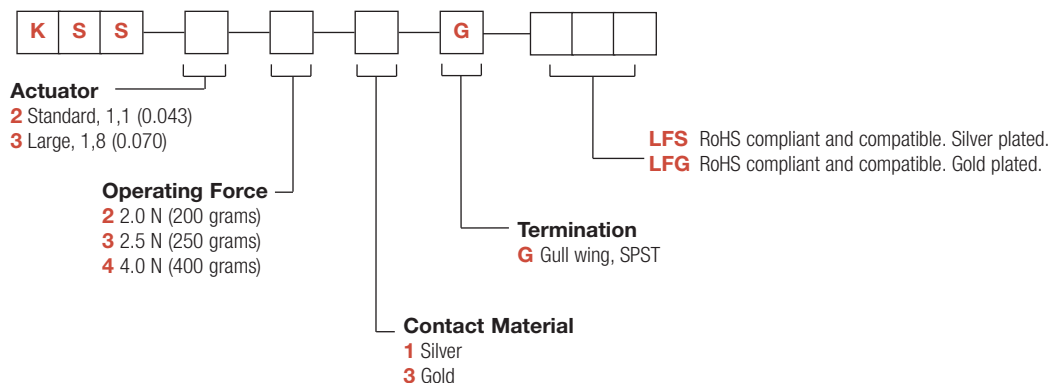
Tape and reels in reels of 3,000 pieces.  
External diameter 330mm ± 2mm.

## How To Order

Our easy build-a-switch concept allows you to mix and match options to create the switch you need. To order, select desired option from each category and place it in the appropriate box.

**However, please note that all the combinations of these options are not feasible.**

**For any part number different from those listed above, please consult your local representative.**

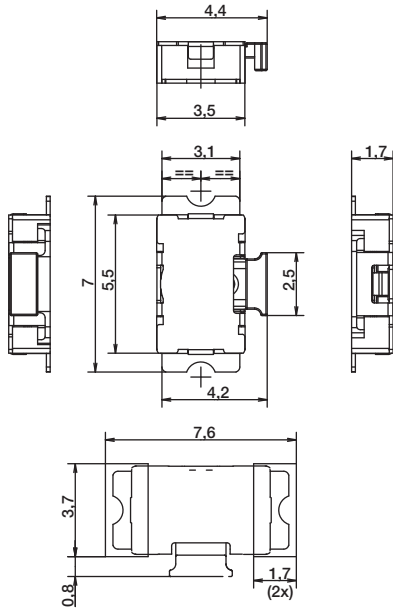


# KSS Series Subminiature SMT Side Actuated

KSS

B

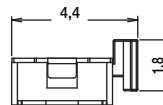
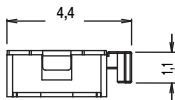
Tactile Switches



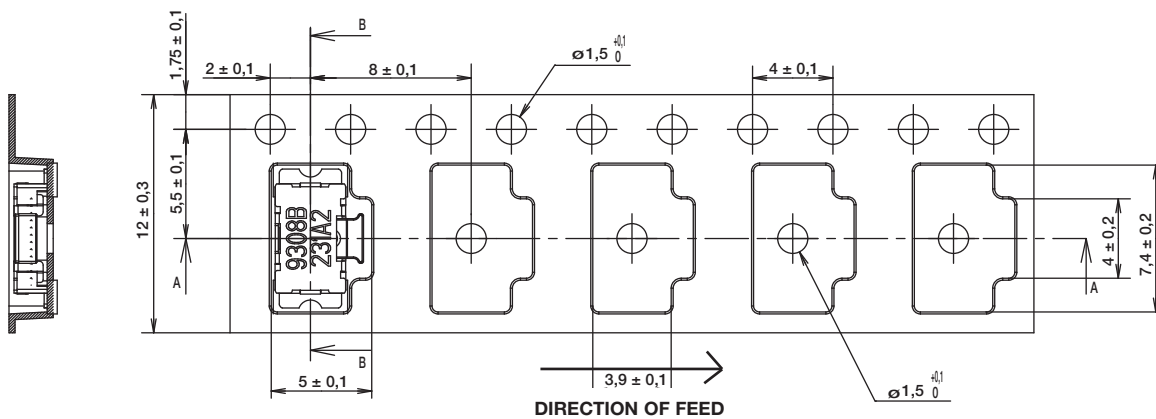
## ACTUATOR

2 STANDARD, 1,1 (0.043)

3 LARGE, 1,8 (0.070)



## TAPE & REEL



First Angle  
Projection

Dimensions are shown: mm  
Specifications and dimensions subject to change

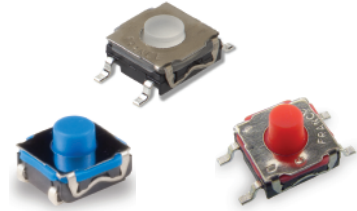
# KSC Series Sealed Tact Switch for SMT

## Features/Benefits

- Positive tactile feeling
- J or G terminations
- Various heights
- IP67

## Typical Applications

- Automotive
- Cellular phones
- Industrial electronics
- Network infrastructure and IT
- Elevator



## Specification

FUNCTION: Momentary action  
 CONTACT ARRANGEMENT: 1 make contact = SPST, N.O.  
 TERMINALS: J bend & Gullwing type for SMT  
 SEALING: IP67 except KSC5 (IP50)

## Liability Limitation

This datasheet does not provide enough information for applications that require a certain level of quality or safety such as automotive, medical systems, or safety equipment. Please contact customer service for the contractual specification package.

## Environmental

	Silver	Gold
OPERATING TEMPERATURE:	-40°C to 85°C	-40°C to 125°C
STORAGE TEMPERATURE:	-55°C to 85°C	-55°C to 125°C

## Process

- SOLDERING: Depending on the application, this component is suited to the following methods:
- Terminals being silver or gold plated over a nickel barrier, the use of slightly activated flux is suitable.
  - Soldering on double wave machine for vertical versions: soldering time  $\leq$  5 sec.
  - Cleaning according to typical washing processes.
  - Infrared Reflow Soldering in accordance with IEC 61760-1.

## Electrical

	Silver	Gold
MAXIMUM POWER:	1 VA	0.2 VA
MAXIMUM VOLTAGE:	32 VDC	32 VDC
MINIMUM VOLTAGE:	20 mV	20 mV
MAXIMUM CURRENT:	50 mA	10 mA
MINIMUM CURRENT:	1 mA*	0.1 mA

DIELECTRIC STRENGTH (50 Hz, 1 min.):  $\geq$  250 Vrms  
 CONTACT RESISTANCE:  $\leq$  100m $\Omega$   
 INSULATION RESISTANCE (100 V):  $\geq$  10M  $\Omega$   
 BOUNCE TIME:  $\leq$  1 ms

\* Ultra low current with 10  $\mu$ A - 1 VDC version are available upon request for KSC2 and KSC4

## Packaging

Tape and Reel (see series for quantity information)

**NOTE:** Specifications listed above are for switches with standard options.

## KSC Product Range

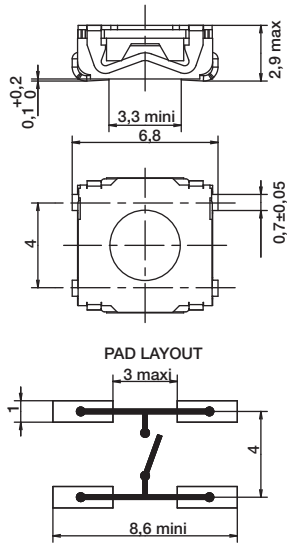
KSC1	KSC2	KSC3	KSC4	KSC5	KSC6	KSC7	KSC8	KSC9	KSC10
Without actuator	Soft actuator	Hard actuator	Soft actuator	Hard actuator	Hard actuator	Soft actuator	Hard actuator	Hard actuator	Soft actuator
H = 2.5 mm	H = 3.5 mm	H = 3.5 mm	H = 5.2 mm	H = 5.6 mm	H = 7.7 mm	H = 4.3 mm	H = 4.9 mm	H = 7.7 mm compatible with button	H = 4.9 mm
IP67	IP67	IP67	IP67	IP50	IP67	IP67	IP67	IP67	IP67



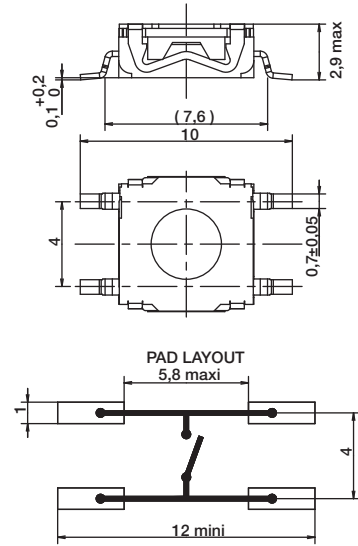
Note: KSC Series is subject to variants. Please contact customer service for other options.

# KSC Series Sealed Tact Switch for SMT

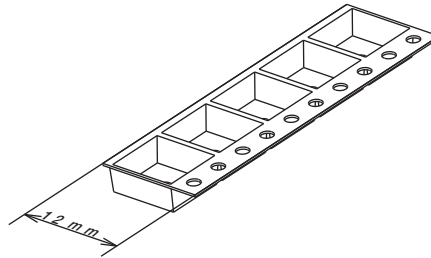
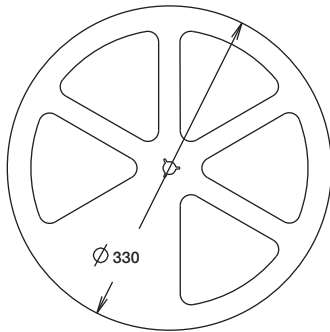
## J BEND



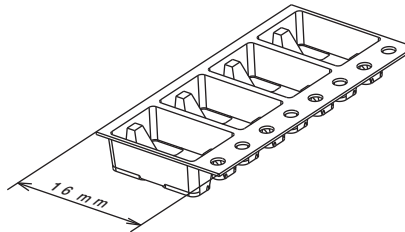
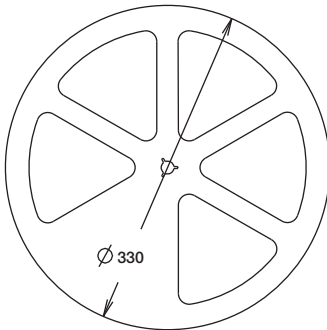
## G GULLWING



### 12 MM



### 16 MM



12 mm	Pieces	16 mm	Pieces
KSC1J	2,000	KSC1G	2,000
KSC2J	2,000	KSC2G	2,000
KSC3J	2,000	KSC3G	2,000
		KSC4J & G	1,000
		KSC5J & G	1,000
		KSC6J & G	750
		KSC7J & G	1,000
		KSC8J & G	1,000
		KSC9J & G	750
		KSC10J & G	1,000



First Angle  
Projection

Dimensions are shown: mm  
Specifications and dimensions subject to change

# KSC1 Series Sealed Tact Switch for SMT

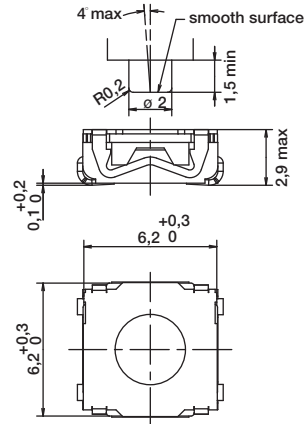
## KSC1 without actuator 2,5 mm high



Type	Operating force FA (Newtons)	Operating life (operations)	Travel (mm)
KSC121	1.8 ± 0.65	200,000	0.3 ± 0.15
KSC141	3 ± 0.75	200,000	0.3 ± 0.15
KSC151	5.5 ± 1.4	100,000	0.35 ± 0.15

### Packaging

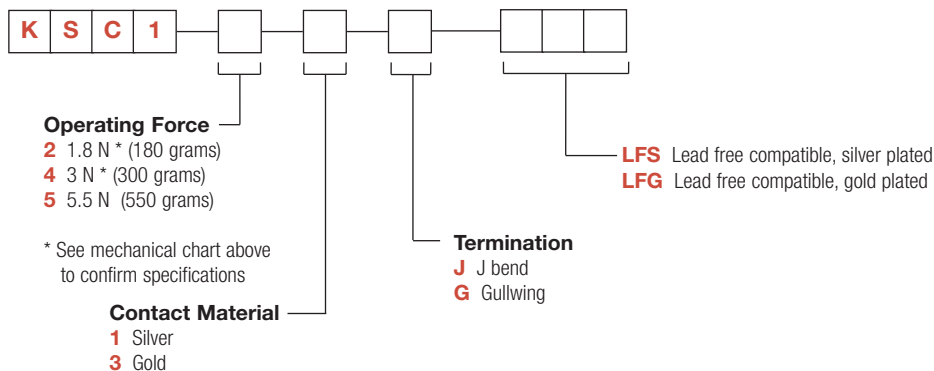
Switches delivered on continuous tape & reels of 2,000 pieces  
 Dimensions according to EIA RS-481/ IEC 60286-3 standard  
 External diameter 330 ± 2 mm



### How To Order

Our easy build-a-switch concept allows you to mix and match options to create the switch you need. To order, select desired option from each category and place it in the appropriate box.

**However, please note that all the combinations of these options are not feasible.  
 For any part number different from those listed above, please consult your local representative.**



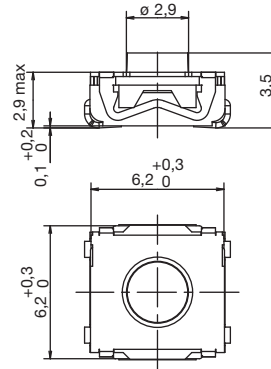
Dimensions are shown: mm  
 Specifications and dimensions subject to change

# KSC2 Series Sealed Tact Switch for SMT

## KSC2 soft actuator 3,5 mm high



Type	Operating force FA (Newtons)	Operating life (operations)	Travel (mm)
KSC201	1.6 ± 0.6	5,000,000	0.3 ± 0.2
KSC221	2 ± 0.5	500,000	0.35 + 0.3/- 0.1
KSC222	2 ± 0.5	1,000,000	0.35 ± 0.15
KSC241	3.5 ± 0.9	300,000	0.5 ± 0.2
KSC251	5.55 ± 1.45	300,000	0.5 ± 0.2
KSC231 SPD	3.5 ± 0.9	300,000	0.5 ± 0.2
KSC241 SPD	3.55 ± 0.9	300,000	0.5 ± 0.2
KSC251 SPD	6.2 ± 1.55	100,000	0.6 ± 0.2



### Packaging

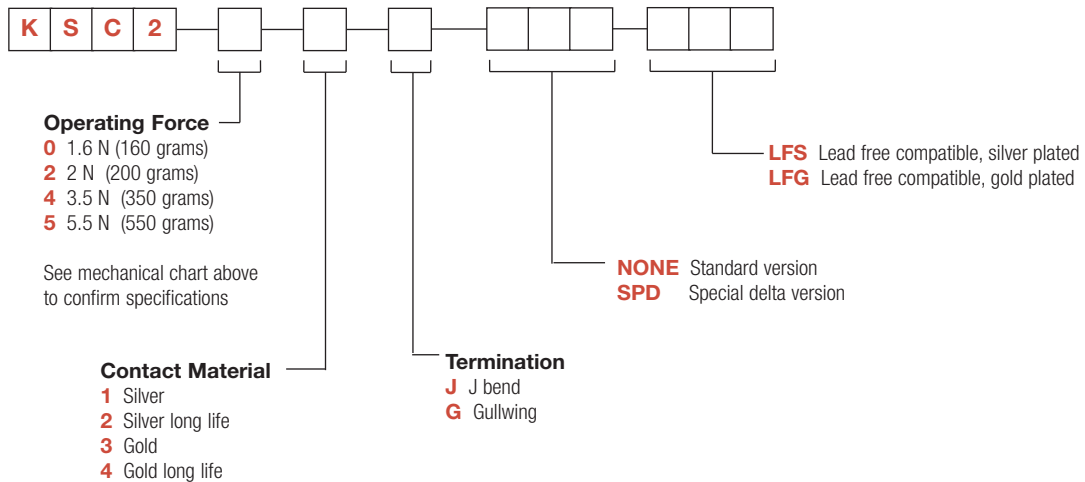
Switches delivered on continuous tape & reels of 2,000 pieces  
Dimensions according to EIA RS-481/ IEC 60286-3 standard  
External diameter 330 ± 2 mm

### How To Order

Our easy build-a-switch concept allows you to mix and match options to create the switch you need. To order, select desired option from each category and place it in the appropriate box.

**However, please note that all the combinations of these options are not feasible.**

**For any part number different from those listed above, please consult your local representative.**

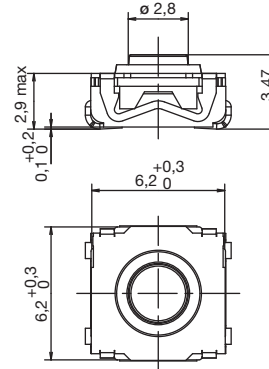


# KSC3 Series Sealed Tact Switch for SMT

## KSC3 hard actuator 3,5 mm high



Type	Operating force FA (Newtons)	Operating life (operations)	Travel (mm)
KSC321	2 ± 0.4	300,000	0.2 + 0.3/- 0
KSC341	3 ± 0.75	300,000	0.2 + 0.3/- 0
KSC351	5 ± 1	100,000	0.25 + 0.3/- 0



## Packaging

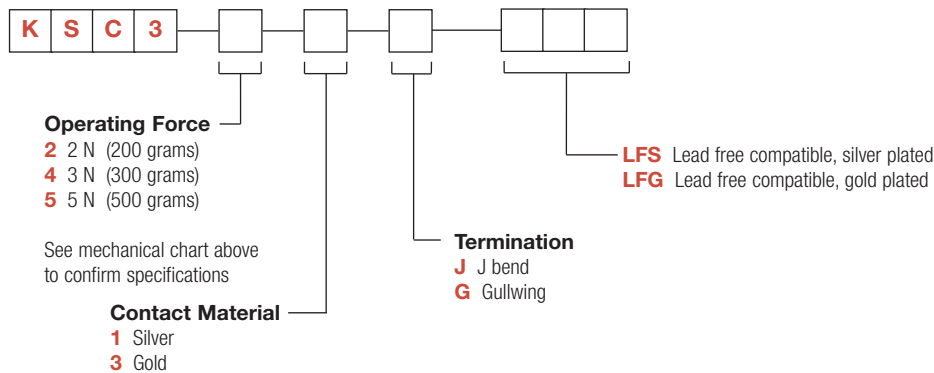
Switches delivered on continuous tape & reels of 2,000 pieces  
Dimensions according to EIA RS-481/ IEC 60286-3 standard  
External diameter 330 ± 2 mm

## How To Order

Our easy build-a-switch concept allows you to mix and match options to create the switch you need. To order, select desired option from each category and place it in the appropriate box.

**However, please note that all the combinations of these options are not feasible.**

**For any part number different from those listed above, please consult your local representative.**





# KSC4 Series

## Sealed Tact Switch for SMT

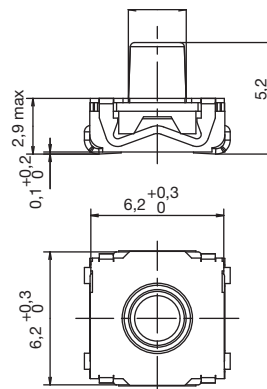
KSC4 soft actuator 5,2 mm high



B

Tactile Switches

Type	Operating force FA (Newtons)	Operating life (operations)	Travel (mm)
KSC401 50SH	1.45 ± 0.55	5,000,000	0.5 ± 0.25
KSC411 70SH	1.4 ± 0.35	1,000,000	0.35 ± 0.20
KSC421 70SH	1.7 ± 0.45	300,000	0.5 ± 0.25
KSC422 70SH	1.7 ± 0.45	1,000,000	0.5 ± 0.25
KSC441 70SH	4 ± 1	300,000	0.75 ± 0.25
KSC442 70SH	4 ± 1	1,000,000	0.75 ± 0.25
KSC451 70SH	4.25 ± 0.75	300,000	0.8 ± 0.2
KSC441 SPD	3.5 ± 0.9	300,000	0.7 ± 0.2
KSC441 ST1	3.4 ± 1	300,000	0.7 ± 0.25
KSC441 ST2	3.4 ± 1	300,000	0.35 ± 0.20
KSC461 ST1	6.25 ± 1.75	100,000	1 ± 0.3
KSC461 ST2	6.25 ± 1.75	300,000	0.5 ± 0.2



### Packaging

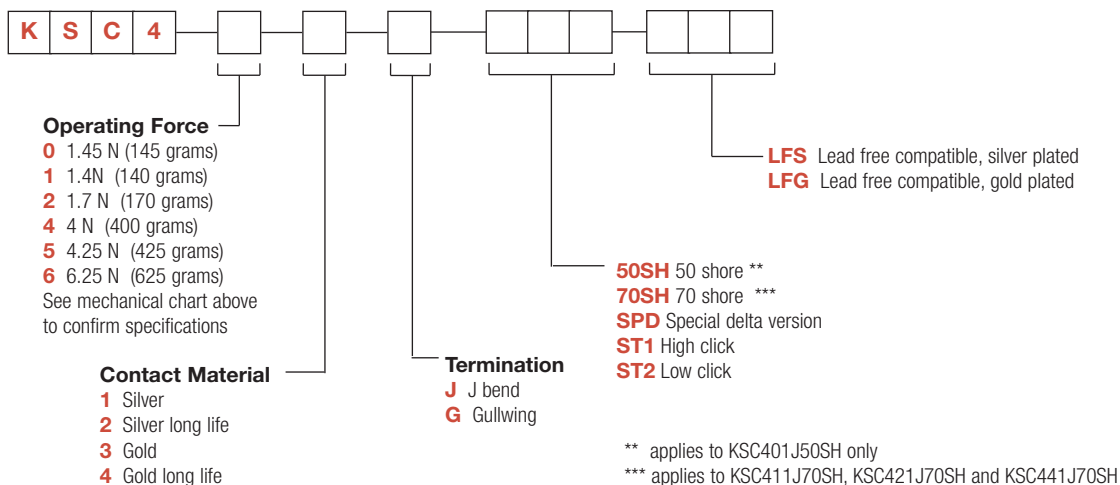
Switches delivered on continuous tape & reels of 1,000 pieces  
 Dimensions according to EIA RS-481/ IEC 60286-3 standard  
 External diameter 330 ± 2 mm

### How To Order

Our easy build-a-switch concept allows you to mix and match options to create the switch you need. To order, select desired option from each category and place it in the appropriate box.

However, please note that all the combinations of these options are not feasible.

For any part number different from those listed above, please consult your local representative.



Dimensions are shown: mm  
 Specifications and dimensions subject to change



# KSC5 Series Tact Switch with Rocker Option for SMT

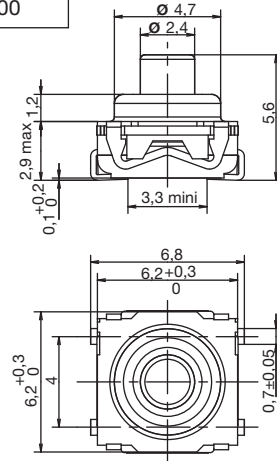
KSC5 hard actuator 5,6 mm high



Type	Operating force axial FA N (grams)	Operating force lateral FL N (grams) ±30%	Travel to make axial (mm)	Travel to make lateral (mm)	Life expectancy cycles, axial	Life expectancy cycles, lateral
KSC521	2 ± 0.5	1.2 - 2.6	0.25 ± 0.15	0.5 ± 0.25	100,000	10,000
KSC541	3 ± 0.75	1.8 - 3.8	0.25 ± 0.15	0.5 ± 0.25	100,000	10,000

## Packaging

Switches delivered on continuous tape & reels of 1,000 pieces, dimensions according to EIA RS-481/ IEC 60286-3 standard  
External diameter 330 ± 2 mm

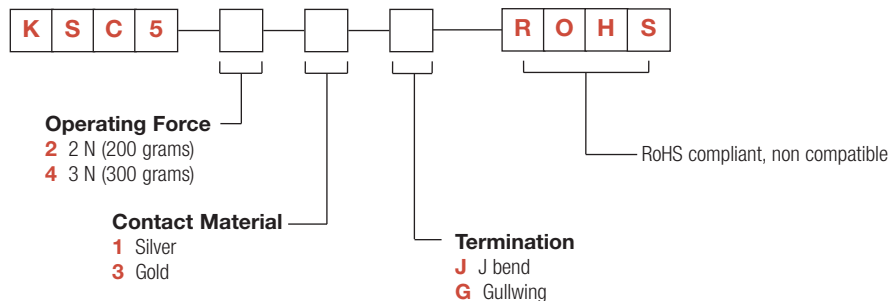


## How To Order

Our easy build-a-switch concept allows you to mix and match options to create the switch you need. To order, select desired option from each category and place it in the appropriate box.

However, please note that all the combinations of these options are not feasible.

For any part number different from those listed above, please consult your local representative.

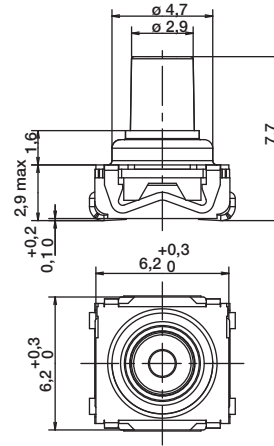


# KSC6 Series Sealed Tact Switch for SMT

KSC6 hard actuator 7,7 mm high



Type	Operating force FA (Newtons)	Operating life (operations)	Travel (mm)
KSC621	1.7 ± 0.5	300,000	0.4 ± 0.2
KSC631	2.55 ± 0.65	300,000	0.4 ± 0.2
KSC641	3.4 ± 0.85	300,000	0.4 ± 0.2



Tactile Switches

## Packaging

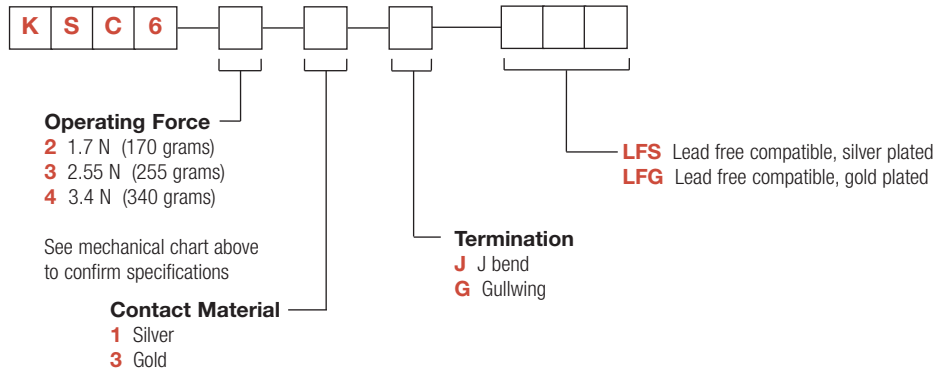
Switches delivered on continuous tape & reels of 750 pieces  
Dimensions according to EIA RS-481/ IEC 60286-3 standard  
External diameter 330 ± 2 mm

## How To Order

Our easy build-a-switch concept allows you to mix and match options to create the switch you need. To order, select desired option from each category and place it in the appropriate box.

**However, please note that all the combinations of these options are not feasible.**

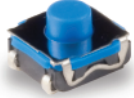
**For any part number different from those listed above, please consult your local representative.**



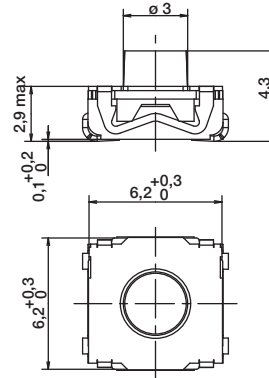
Dimensions are shown: mm  
Specifications and dimensions subject to change

# KSC7 Series Tact Switch with Rocker Option for SMT

## KSC7 soft actuator 4,3 mm high



Type	Operating force FA (Newtons)	Operating life (operations)	Travel (mm)
KSC701	1.6 ± 0.6	5,000,000	0.3 ± 0.2
KSC721	2.25 ± 0.55	300,000	0.3 ± 0.15
KSC741	3.9 ± 1	300,000	0.4 ± 0.2



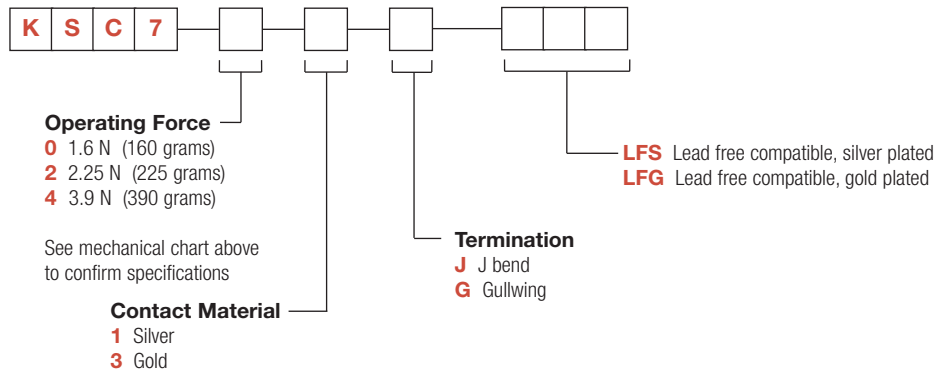
## Packaging

Switches delivered on continuous tape & reels of 1,000 pieces  
 Dimensions according to EIA RS-481/ IEC 60286-3 standard  
 External diameter 330 ± 2 mm

## How To Order

Our easy build-a-switch concept allows you to mix and match options to create the switch you need. To order, select desired option from each category and place it in the appropriate box.

**However, please note that all the combinations of these options are not feasible.  
 For any part number different from those listed above, please consult your local representative.**



# KSC8 Series Sealed Tact Switch for SMT

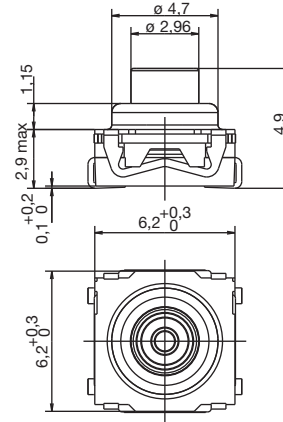
KSC8 hard actuator 4,9 mm high



Type	Operating force FA (Newtons)	Operating life (operations)	Travel (mm)
KSC821	3.15 ± 0.75	300,000	0.65 ± 0.2
KSC821 OL	1.7 ± 0.5	300,000	0.4 ± 0.2
KSC831 OL	2.55 ± 0.65	300,000	0.4 ± 0.2
KSC841 OL	3.4 ± 0.85	300,000	0.4 ± 0.2

## Packaging

Switches delivered on continuous tape & reels of 1,000 pieces  
Dimensions according to EIA RS-481/ IEC 60286-3 standard  
External diameter 330 ± 2 mm

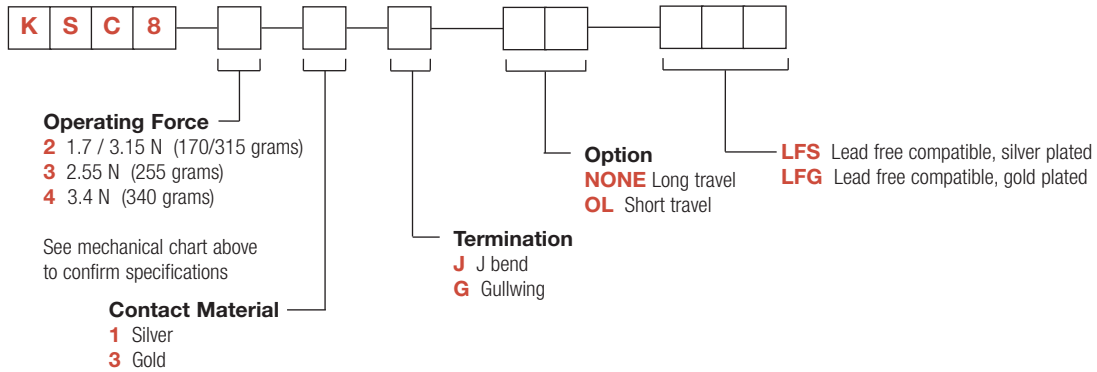


Tactile Switches

## How To Order

Our easy build-a-switch concept allows you to mix and match options to create the switch you need. To order, select desired option from each category and place it in the appropriate box.

However, please note that all the combinations of these options are not feasible.  
For any part number different from those listed above, please consult your local representative.



Dimensions are shown: mm  
Specifications and dimensions subject to change

# KSC9 Series Sealed Tact Switches for SMT

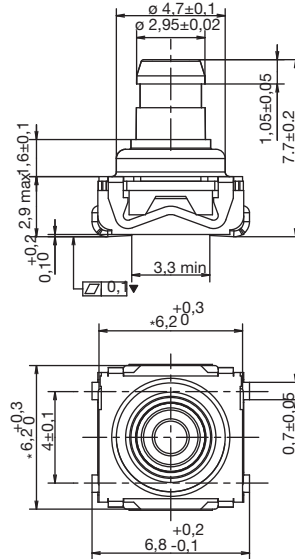
## KSC9 hard actuator 7,7 mm high



Type	Operating force FA (Newtons)	Operating life (operations)	Travel (mm)
KSC921	1.7 ± 0.5	300,000	0.4 ± 0.2
KSC931	2.25 ± 0.65	300,000	0.4 ± 0.2
KSC941	3.4 ± 0.85	300,000	0.4 ± 0.2

### Packaging

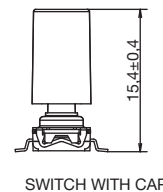
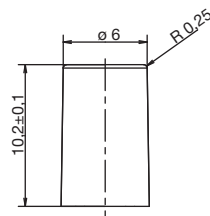
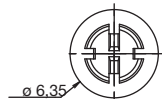
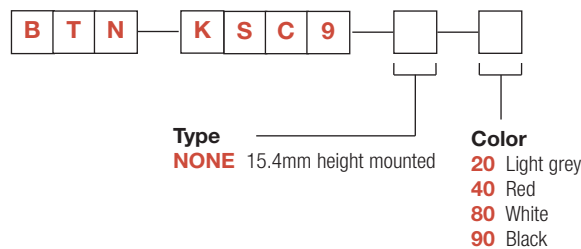
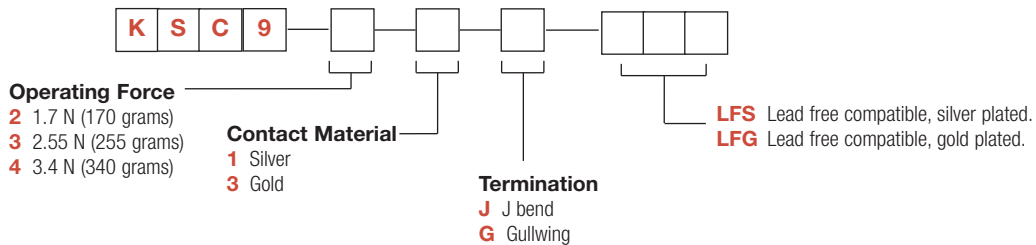
Switches delivered on continuous tape & reels of 750 pieces  
Dimensions according to EIA RS-481/ IEC 60286-3 standard  
External diameter 330 ± 2 mm



### How To Order

Our easy build-a-switch concept allows you to mix and match options to create the switch you need. To order, select desired option from each category and place it in the appropriate box.

**For any part number different from those listed above, please consult your local representative.**



Dimensions are shown: mm  
Specifications and dimensions subject to change

# KSC10 Series

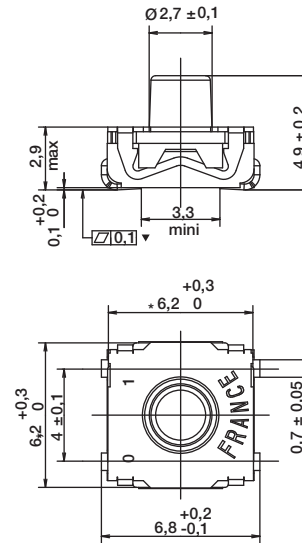
## Sealed Tact Switches for SMT

KSC10 soft actuator 4,9 mm high



Tactile Switches

Type	Operating force FA (Newtons)	Operating life (operations)	Travel (mm)
KSC1001	1.45 ± 0.55	5,000,000	0.45 ± 0.25



### Packaging

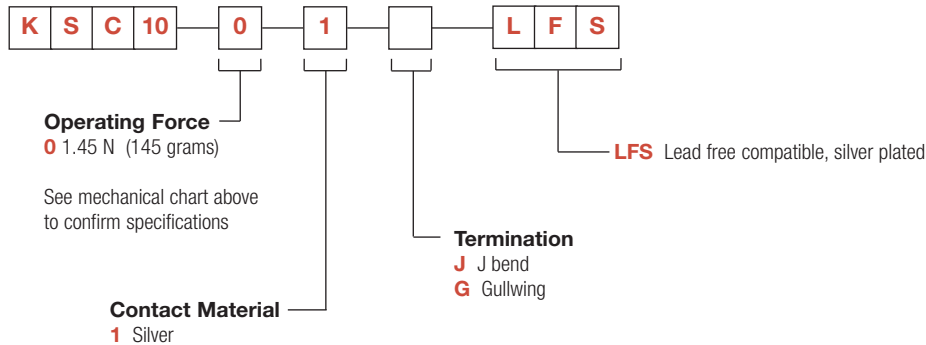
Switches delivered on continuous tape & reels of 1,000 pieces  
 Dimensions according to EIA RS-481/ IEC 60286-3 standard  
 External diameter 330 ± 2 mm

### How To Order

Our easy build-a-switch concept allows you to mix and match options to create the switch you need. To order, select desired option from each category and place it in the appropriate box.

**However, please note that all the combinations of these options are not feasible.**

**For any part number different from those listed above, please consult your local representative.**



Note: KSC10 offered with yellow actuator as standard, hardness 55 Shore



Dimensions are shown: mm  
 Specifications and dimensions subject to change

# KSC4V2 Series Side Actuated Sealed Tact Switch

## Features/Benefits

- Full SMD side actuated
- Haptic adaptability
- Pin in paste terminations
- Tape & reel
- IP67

## Typical Applications

- Automotive
- Industrial electronics
- Network equipment
- Telecommunications



## Specification

FUNCTION: momentary action  
 CONTACT ARRANGEMENT: 1 make contact = SPST, N.O.  
 TERMINALS:  
 2 pin in paste signal terminals  
 3 SMD ground terminals

## Mechanical

Type	Force (N)	Operating Life (operations)	Travel (mm)
KSC441V2SPDLFS	3.5 ± 1.0	300,000	0.7 ± 0.2
KSC421V270SHLFS	1.55 ± 0.45	300,000	0.5 ± 0.2

NOTE: Basic version is based on KSC441V2 SPDELTA LFS.  
 Other configurations of haptics are available upon demand.

MISUSE OVERLOAD: 40N with back support  
 SHEAR FORCE: 10N without back support

## Electrical

	Silver	Gold
MAXIMUM POWER:	1 VA	0.2 VA
MAXIMUM VOLTAGE:	32 VDC	32 VDC
MINIMUM VOLTAGE:	20 mV	20 mV
MAXIMUM CURRENT:	50 mA	10 mA
MINIMUM CURRENT:	1 mA	0.1 mA

DIELECTRIC STRENGTH (50 Hz, 1 min.): ≥ 250 Vrms  
 CONTACT RESISTANCE: ≤ 100 mΩ  
 INSULATION RESISTANCE (100 V, initial stage): > 10<sup>9</sup> Ω  
 BOUNCE TIME: < 1 ms

## Environmental

	Silver	Gold
OPERATING TEMPERATURE:	-40°C to 85°C	-40°C to 125°C
STORAGE TEMPERATURE:	-55°C to 85°C	-55°C to 125°C

## Process

SOLDERING: Depending on the application, this component is suited to the following methods:

- Cleaning according to typical washing processes.
- Infrared Reflow Soldering in accordance with IEC 61760-1.

TERMINALS: pin in paste, silver or gold plated

TOP PLATE: tin plated

MSL level: 1

Vacuum pick head mandatory

## Packaging

In reels of 500 pieces.

Dimensions of reels according to EIA RS481 or IEC 2863.

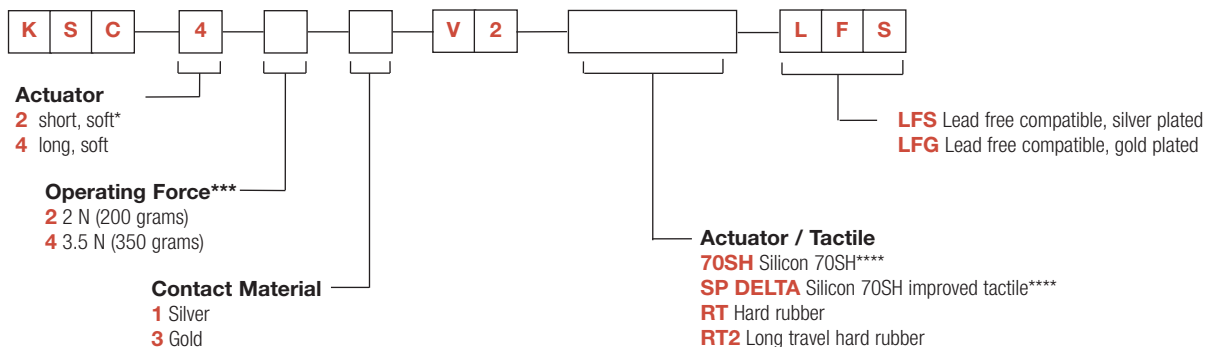
External diameter 330 mm ± 2 mm.

NOTE: This product is designed and manufactured for general electronic devices.  
 For systems where reliability and safety are required, please contact your sales representative to secure product integration and function to secure usage.

## How To Order

Our easy build-a-switch concept allows you to mix and match options to create the switch you need. To order, select desired option from each category and place it in the appropriate box.

**For any part number different from those listed above, please consult your local representative.**



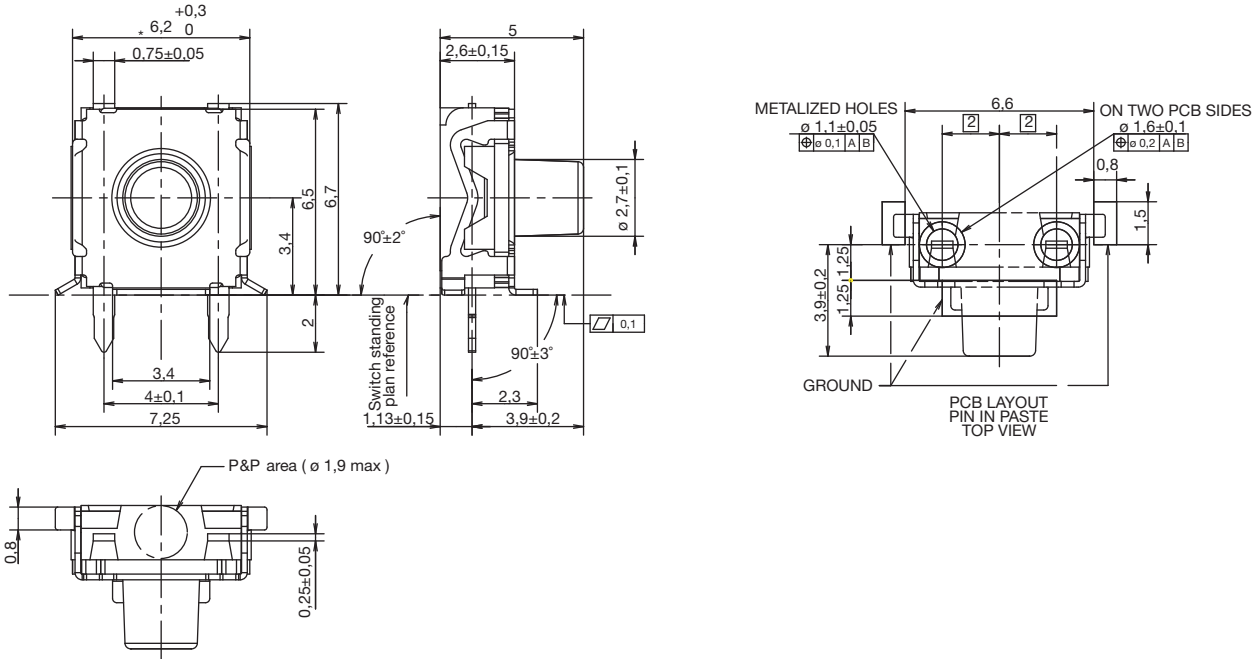
\* KSC2 version available upon demand  
 \*\*\* Force available upon demand (variant version)  
 \*\*\*\* Available for KSC4 only



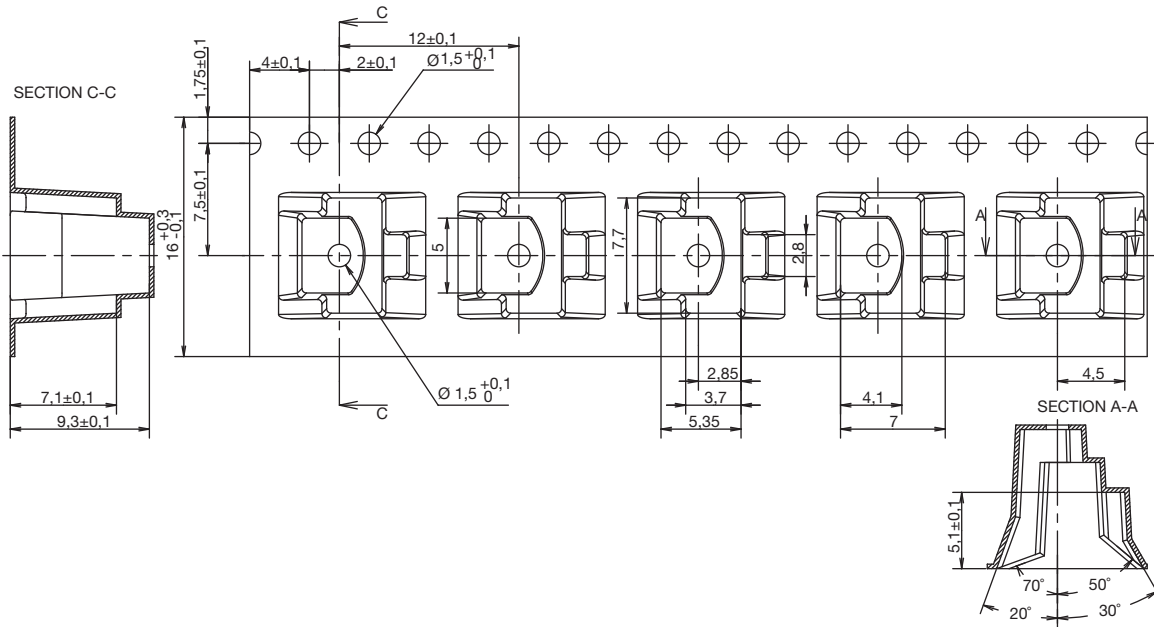
# KSC4V2 Series Side Actuated Sealed Tact Switch

Tactile Switches

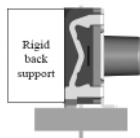
B



## TAPE AND REEL



## INTEGRATION



First Angle  
Projection

Dimensions are shown: mm  
Specifications and dimensions subject to change

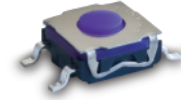
# KSE Series Low Profile Tact Switch

## Features/Benefits

- Low profile
- Cost efficient
- J or G terminations
- Tape and reel
- IP67

## Typical Applications

- Smart meters
- Home appliances
- Consumer electronics
- Industrial electronics
- Telecommunications



## Specification

FUNCTION: momentary action  
CONTACT ARRANGEMENT: 1 make contact = SPST, N.O.  
TERMINALS: J bend & Gullwing type for SMT

## Mechanical

Type	Operating Force FA (Newtons)		Operating Life Operations	Travel (mm)
	Min.	Max.		
KSEM31JLFS	1,6 ± 0,6		300,000	0,3 + 0,1/-0,2
KSEM31GLFS	1,6 ± 0,6		300,000	0,3 + 0,1/-0,2
KSEK43JLFS	2,25 ± 0,75		300,000	0,3 ± 0,2
KSEK43GLFS	2,25 ± 0,75		300,000	0,3 ± 0,2

NOTE: For cost effectiveness the tactile feeling is not specified and can change along production. If your application requires a defined tactile effect, please consider KSC series for your application.

## Packaging

In reels of 2,000 pieces  
Dimensions of reels according to EIA RS481 or IEC 2863.  
External diameter 330 mm ± 2 mm.

## Electrical

MAXIMUM POWER: 1 VA  
MINIMUM/MAXIMUM VOLTAGE: 20 mV / 32 VDC  
MINIMUM/MAXIMUM CURRENT: 1 mA / 50 mA  
DIELECTRIC STRENGTH: (50 Hz, 1 min.): ≥ 250 V  
CONTACT RESISTANCE: ≤ 100 mΩ  
INSULATION RESISTANCE: (100 V): ≥ 10<sup>9</sup> Ω  
BOUNCE TIME: ≤ 1 ms

## Environmental

OPERATING TEMPERATURE: -40°C to 85°C  
STORAGE TEMPERATURE: -55°C to 85°C

## Process

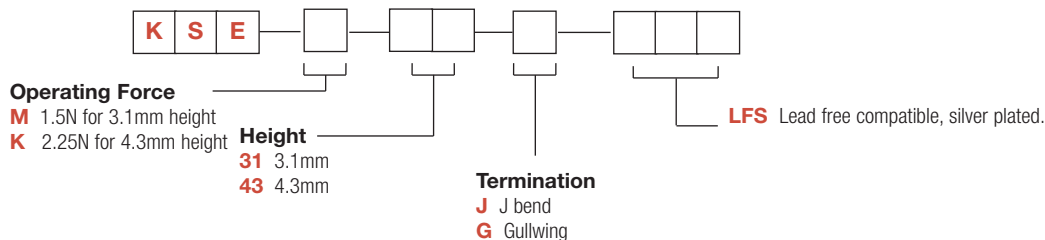
SOLDERING: Depending on the application, this component is suited to the following methods:  
– Cleaning according to typical washing processes.  
– Infrared Reflow Soldering in accordance with IEC 61760-1.

## NOTE:

Specifications listed above are for switches with standard options. KSE series is not subject to adaptation and/or modification for specific use. If you require additional features, please refer to the KSC series. KSE is not recommended for applications requiring high level of performance such as aerospace, automotive and some industrial applications.

## How To Order

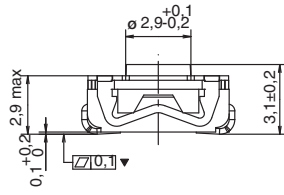
Our easy build-a-switch concept allows you to mix and match options to create the switch you need. To order, select desired option from each category and place it in the appropriate box.



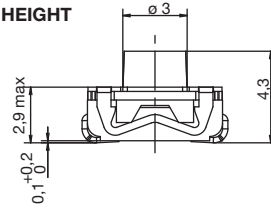
# KSE Series Low Profile Tact Switch

## HEIGHT

**31** 3.1 MM HEIGHT

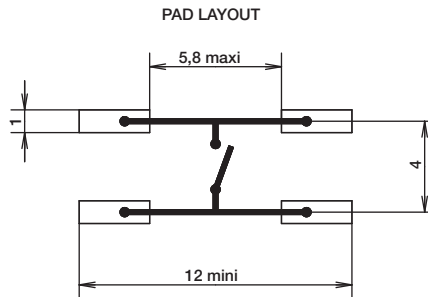
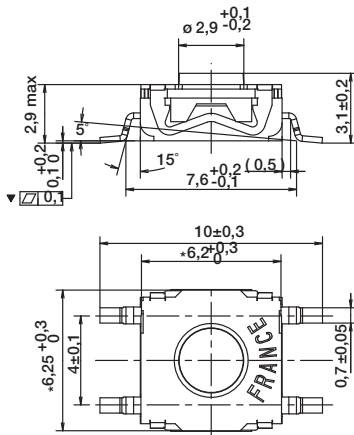


**43** 4.3 MM HEIGHT

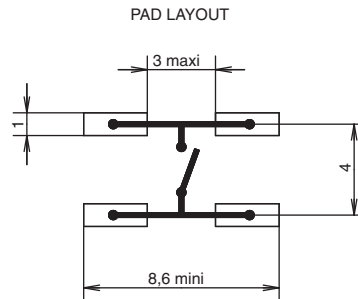
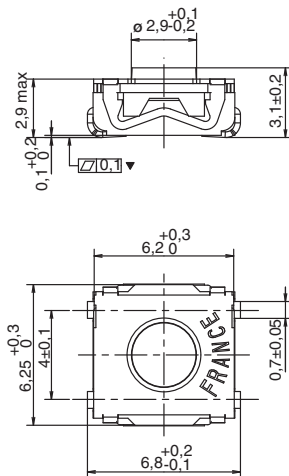


## TERMINATION

**G** GULLWING



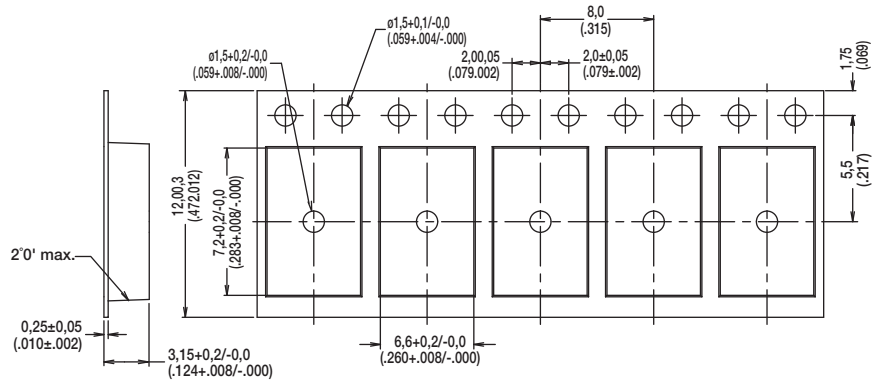
**J** J BEND



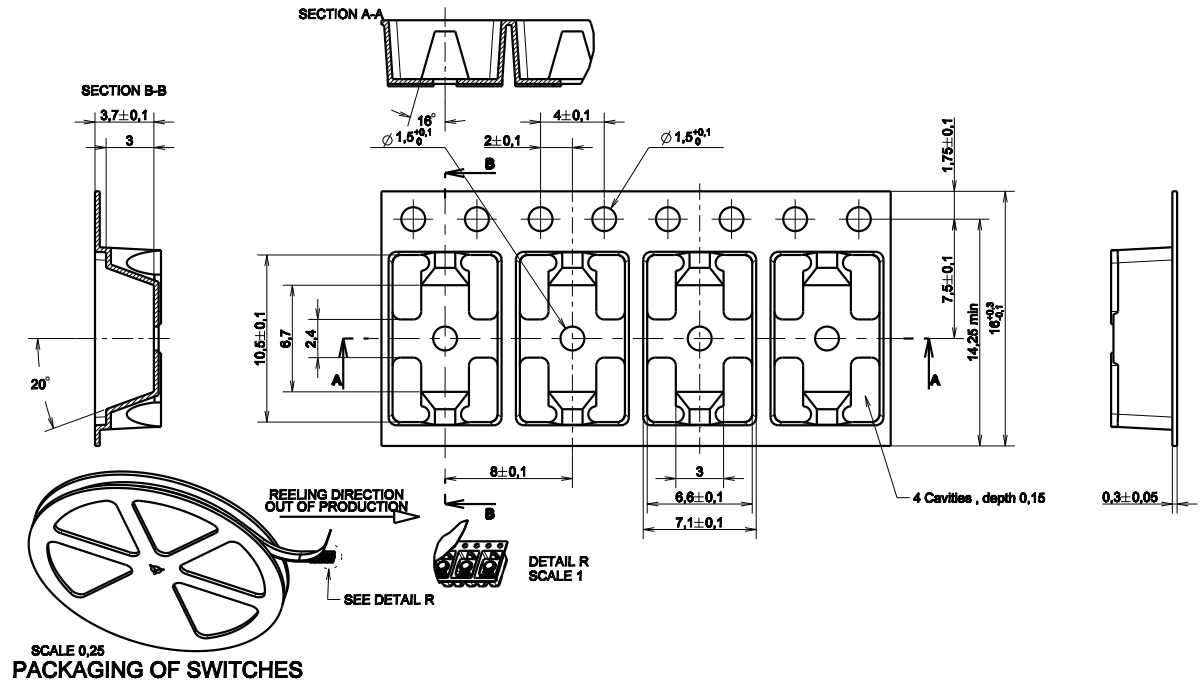
# KSE Series Low Profile Tact Switch

## TAPE & REEL

### 12 mm height



### 16 mm height



**B**  
Tactile Switches

# KT Series

## Full SMT Top & Side Actuated Sealed Tact Switch



### Features/Benefits

- Full SMT side-actuated tact switch
- SMT top-actuated tact switch with G or J terminations
- High shear force with extended bracket
- Easy to pick & place with top plate tab
- Rubber or hard plastic actuator
- Press fit or snap fit caps
- RoHS compliant and compatible

### Typical Applications

- Telecommunications
- Computer products
- Instrumentation
- Power supply

Tactile Switches

### Specification

CONTACT ARRANGEMENT: SPST, N.O.  
TERMINALS: SMT termination

### Electrical

CONTACT RATING: 1.0 VA max. @ 32 V AC or DC max.  
ELECTRICAL & MECHANICAL LIFE: 100,000 make-and-break cycles at full load.  
DIELECTRIC STRENGTH: 250 Vrms min. @ sea level.  
CONTACT RESISTANCE: Below 50 mΩ typ. initial @ 2-4 V DC, 100 mA.  
INSULATION RESISTANCE: 10<sup>9</sup> Ω min.

### Environmental

OPERATING TEMPERATURES: Ag version: -40°C to 90°C  
Au version: -40°C to 125°C

### Process

SOLDERABILITY: Per MIL-STD-202F method 208D, or EIA RS-186E method 9 (1 hour steam aging).  
DEGREE OF PROTECTION: IP57; protection against harmful dust deposits, full-scale voltage protection.

### Packaging

Switches supplied in anti-static tape and reels per EIA 481-2. Tape and cover strip are conductive for use near statically sensitive components.

**NOTE:** Specifications listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

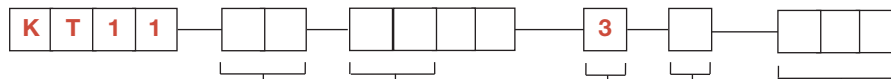
### How To Order

Our easy build-a-switch concept allows you to mix and match options to create the switch you need. To order, select desired option from each category and place it in the appropriate box.

However, please note that all the combinations of these options are not feasible.

For any part number different from those listed above, please consult your local representative.

### SWITCH



#### Actuator

- B0\*** Soft, flush
- B1\*** Soft, 0,64 mm
- B2\*** Soft, 2,24 mm
- P2\*\*** Hard, 2,36 mm
- P3\*\*** Hard, 1,12 mm
- P4\*\*** Hard, 3,96 mm
- S1\*\*\*** ø0,1" for Press Fit Caps
- S2\*\*\*** ø0,14" for Snap Fit Caps (with anti-rotation)

#### Orientation and Mounting Style

- SM** Top Gullwing
- JM** Top J Bend \*\*\*\*
- SAM** Right angle
- SA1M** Right angle with front solder pad
- SA2M** Right angle with front solder pad and pick & place tab
- SA3M** Right angle with pick & place tab

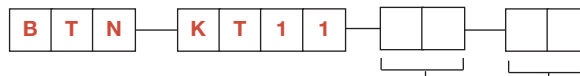
#### Contact Plating

- 4** Silver
- 5** Gold
- LFS** RoHS compliant and compatible. Silver plated
- LFG** RoHS compliant and compatible. Gold plated

\* B0, B1 & B2 available with A, A1 & A3 mounting bracket only.  
\*\* P2, P3, P4 actuators suitable with A1 & A2 mounting bracket only.  
\*\*\* S1 & S2 available with A1 & A2 mounting bracket only.  
\*\*\*\* JM available with B0, B1, B2, P2, P3, P4 without mounting bracket.

### BUTTON

To order buttons in bulk



#### Button Style

- 02** Press fit
- 03** Snap fit, high temperature

#### Button Color

- 90** Black
- 80** Ivory (natural)
- 40** Red

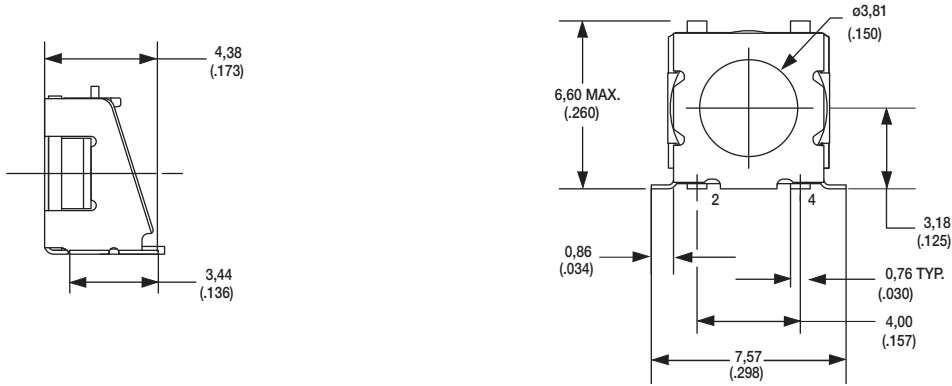


Dimensions are shown: mm  
Specifications and dimensions subject to change

# KT Series Full SMT Top & Side Actuated Sealed Tact Switch

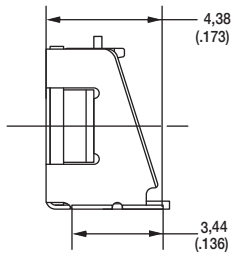
## SERIES

**KT11**

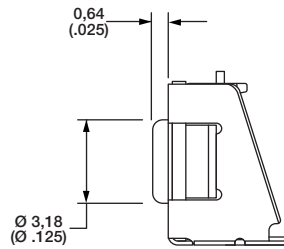


## ACTUATOR

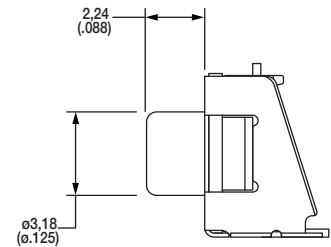
**B0 SOFT, FLUSH\***



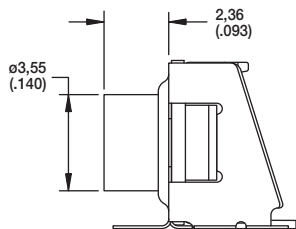
**B1 SOFT, 0,64 mm\***



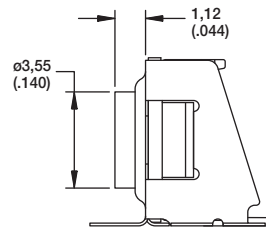
**B2 SOFT, 2,24 mm\***



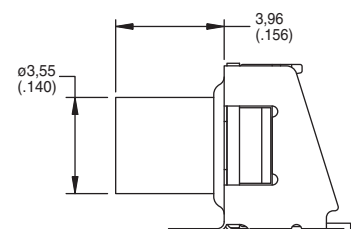
**P2 HARD, 2,36 mm**



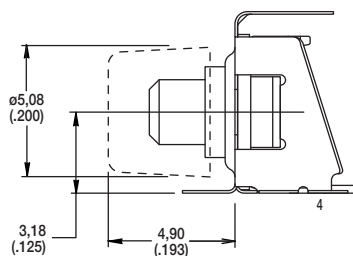
**P3 HARD, 1,12 mm**



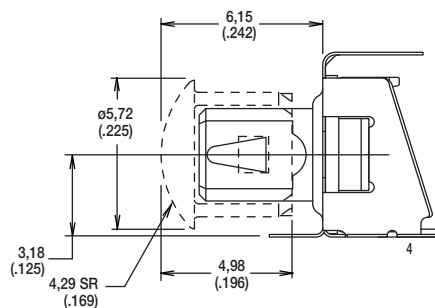
**P4 HARD, 3,96 mm\*\***



**S1  $\varnothing$ 0,1" FOR PRESS FIT CAPS\*\*\***



**S2  $\varnothing$ 0,14" FOR SNAP FIT CAPS\*\*\***



\* B0, B1 & B2 available with A, A1 & A3 mounting bracket only.

\*\* P2, P3, P4 actuators suitable with A1 & A2 mounting bracket only.

\*\*\* S1 & S2 available with A1 & A2 mounting bracket only.

\*\*\*\* JM available with B0, B1, B2, P2, P3, P4 without mounting bracket.



*Dimensions are shown: mm  
Specifications and dimensions subject to change*

B

Tactile Switches

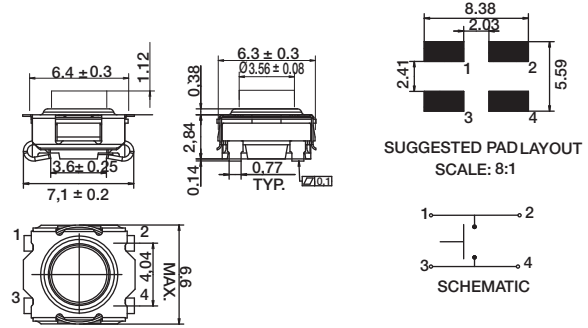
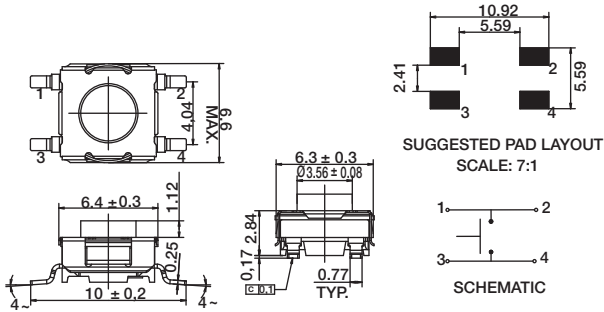
# KT Series Full SMT Top & Side Actuated Sealed Tact Switch

## ORIENTATION & MOUNTING STYLE

### SM TOP GULLWING

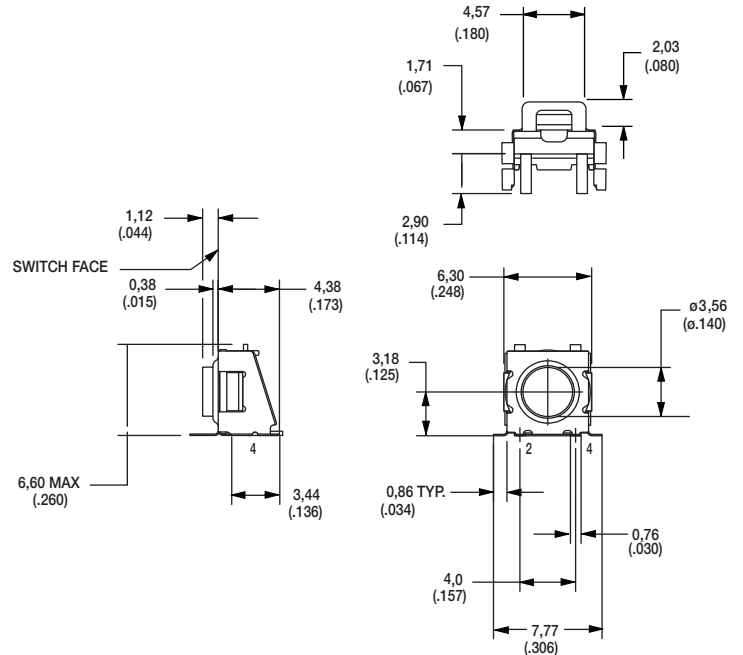
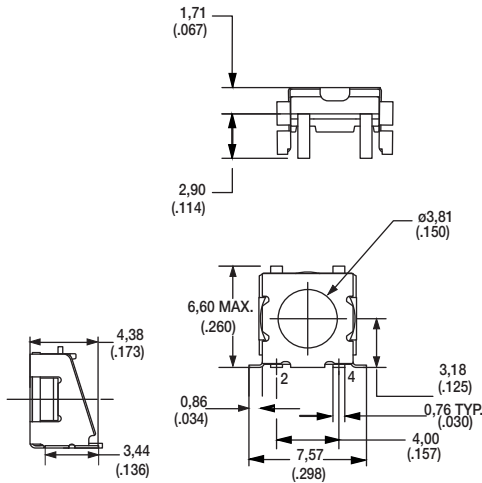
### JM TOP J BEND

Tactile Switches



### SAM RIGHT ANGLE

### SA1M RIGHT ANGLE WITH FRONT SOLDER PAD

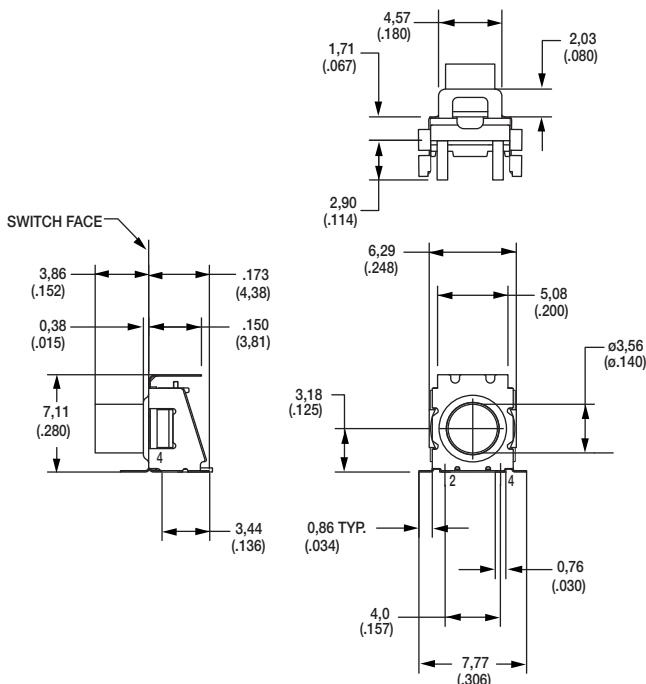


Dimensions are shown: mm  
Specifications and dimensions subject to change

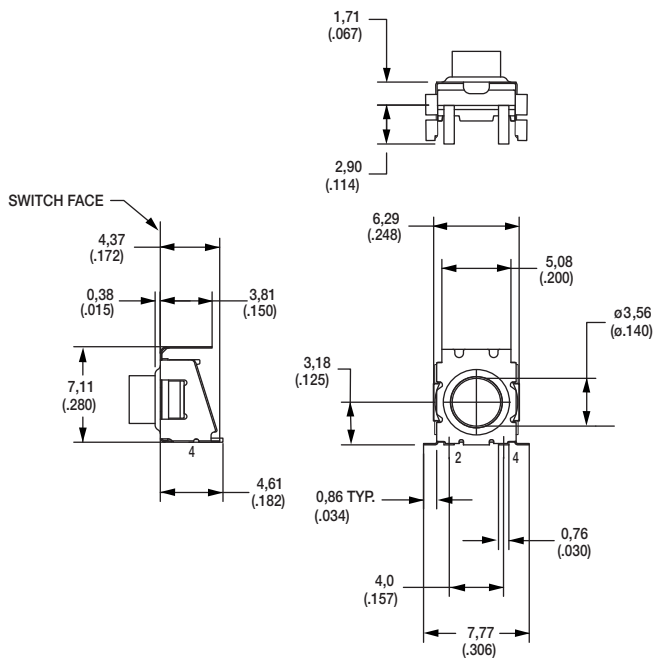
# KT Series

## Full SMT Top & Side Actuated Sealed Tact Switch

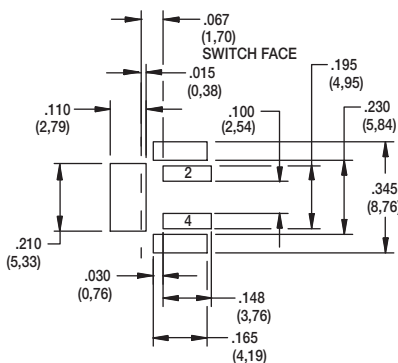
**SA2M** RIGHT ANGLE WITH FRONT SOLDER PAD AND PICK & PLACE TAB



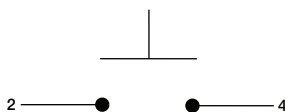
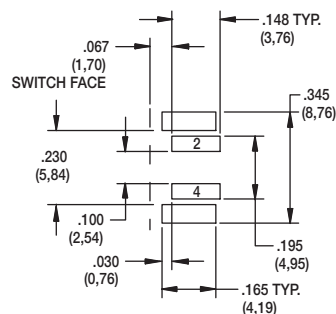
**SA3M** RIGHT ANGLE WITH PICK & PLACE TAB



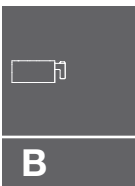
**PAD LAYOUT**  
SA1M & SA2M MOUNTING BRACKET



**PAD LAYOUT**  
SAM & SA3M MOUNTING BRACKET



**SCHEMATIC**



Dimensions are shown: mm  
Specifications and dimensions subject to change



# KT Series Full SMT Top & Side Actuated Sealed Tact Switch

## BUTTON

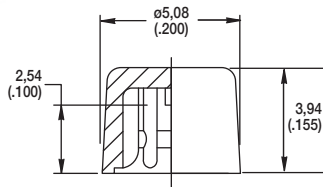
### BUTTON

To order buttons in bulk

#### 02 PRESS FIT

PART NUMBER	Internal Part Number	Button Color
<b>BTN KT11 02 80</b>	5081 01000	Ivory (Natural)
<b>BTN KT11 02 90</b>	5081 02000	Black
<b>BTN KT11 02 40</b>	5081 03000	Red

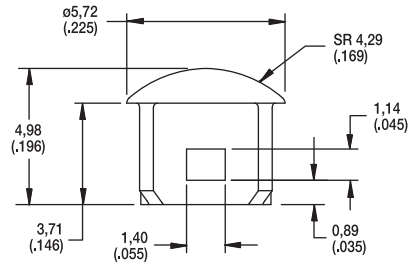
Materials: Nylon  
Finish: Gloss



#### 03 SNAP FIT, HIGH TEMPERATURE

PART NUMBER	Internal Part Number	Button Color
<b>BTN KT11 03 80</b>	685B 01000	Ivory (Natural)
<b>BTN KT11 03 90</b>	685B 02000	Black

Materials: Nylon  
Finish: Gloss



# K5AT Illuminated SMT Tact Switch

## Features

- High bright LED's
- Gold plated dome contact offering superior contact reliability in time
- Excellent ergonomics: sharp tactile feel and audible click
- Reduced space usage on board "2 in 1"
- 40 N overload
- Tape and reel
- RoHS compliant and compatible

## Typical Applications

- Application requiring illumination
- Server, storage
- Network infrastructure
- Telecom
- Medical



B

Tactile Switches

## Specification

FUNCTION: momentary action  
 CONTACT ARRANGEMENT: Normally Open  
 TERMINALS: SMT with positioning pegs;  
 SMT without positioning pegs is available, contact Customer Service

## Mechanical

Type	Operating force FA <sup>1</sup> Newtons (grams)	Operating life (operations)	Travel (total travel) mm(mm)
K5AT WH 43GP	4.0 (400)	100,000	0,5 (0.8)

<sup>1</sup> Tolerances of operating force FA is ± 25%.

## Packaging

Standard: 900 pcs per reel; Reel diameter 380 mm  
 Reduced: 180 pcs per reel; Reel diameter 180 mm

## Electrical

POWER MIN/MAX: 0.02VA / 1.0VA  
 VOLTAGE MIN/MAX: 20mVdc – 32 Vdc  
 CURRENT MIN/MAX: 0.1mA – 100mA  
 CONTACT RESISTANCE: <100m Ω  
 INSULATION RESISTANCE: >1G Ω initial, >10M Ω after damp heat  
 BOUNCE TIME: <10ms

## Environmental

OPERATING TEMPERATURE: -40°C to 125°C  
 STORAGE TEMPERATURE: -55°C to 125°C  
 RELATIVE HUMIDITY: 90 to 96% according to NF EN 60068-2-30  
 PROTECTION: dust protection and flux tight (IP 40)  
 OVERLOAD: 40N min

## Process

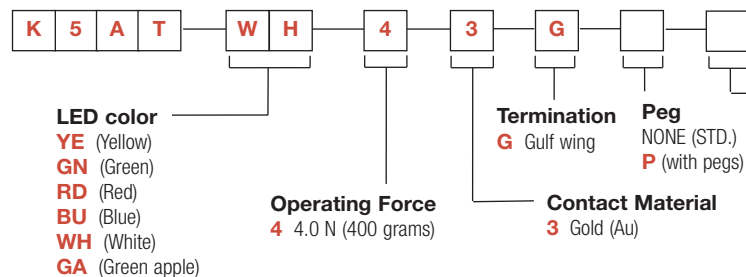
SOLDERING: Compatible with the lead free soldering profile.  
 No washing

## Materials

CONTACTS: Au over Ni  
 SOLDERING: Au over Ni  
 HOUSING: Thermoplastic UL94 V0

## How To Order

Our easy build-a-switch concept allows you to mix and match options to create the switch you need. To order, select desired option from each category and place it in the appropriate box.



## Packaging

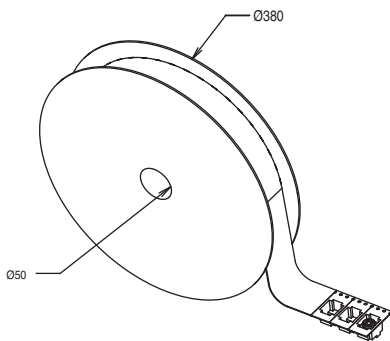
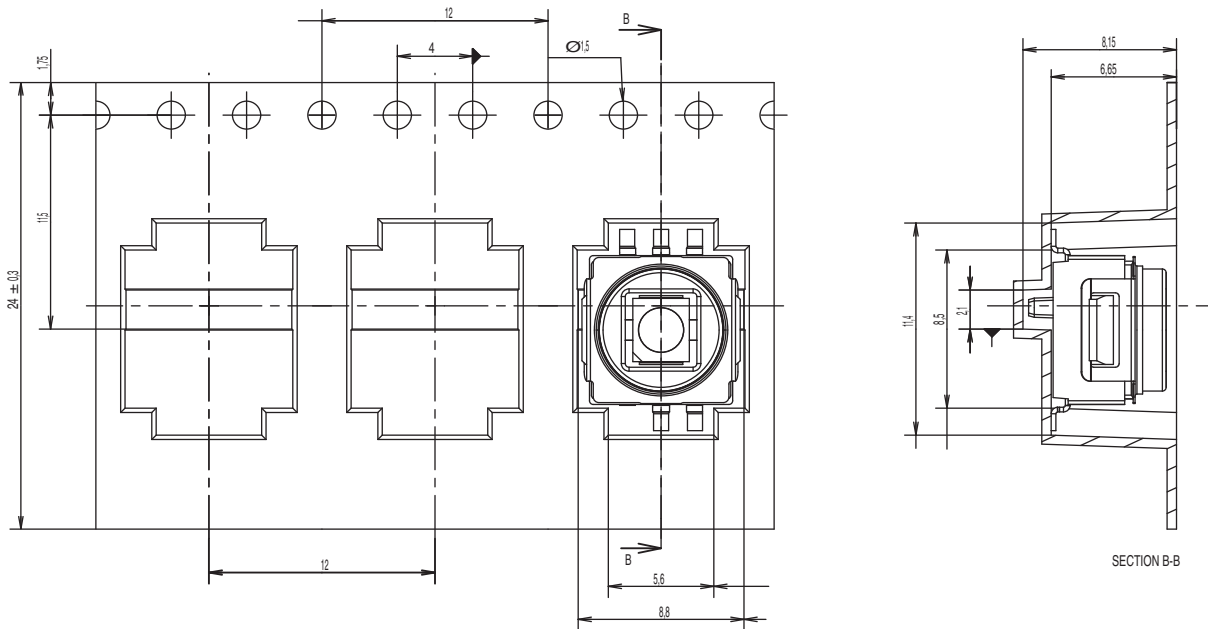
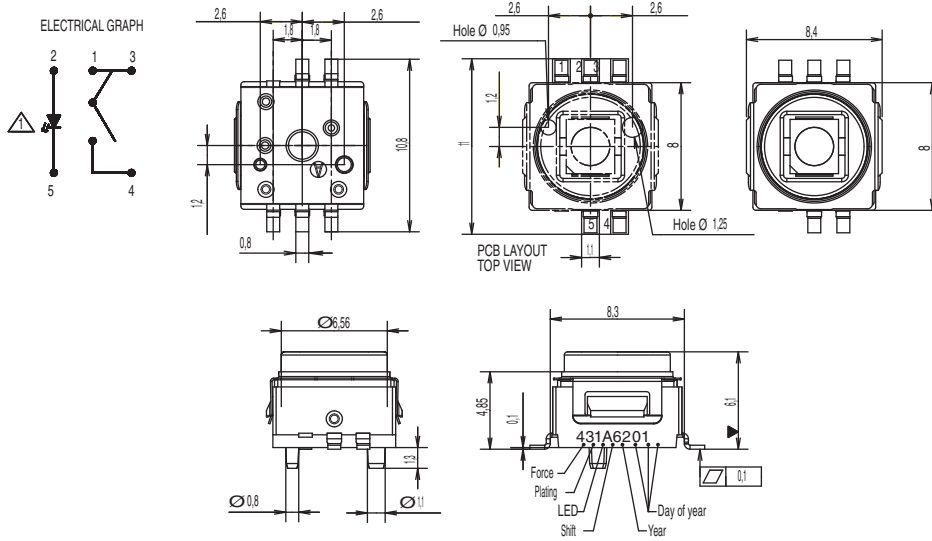
NONE (900 pieces per reel)  
 R (reduced packaging 180 pieces per reel)

# K5AT Illuminated SMT Tact Switch

K5AT

Tactile Switches

B



Dimensions are shown: mm  
Specifications and dimensions subject to change



# Lighted SMT Tact Switch with Rugged LED Mounting Process

## Features

- LED assembly without soldering
- Various LED options
- No light perturbation
- Sound haptic
- Various climatic classes

## Typical Applications

- Automotive
- Network equipment
- Telecommunications
- Medical equipment
- Industrial controls



B

Tactile Switches

## Specification

FUNCTION: momentary action  
 CONTACT ARRANGEMENT: 1 make control = SPST, N.O.  
 TERMINALS: Gullwing type for SMT, peg as option, 2 terminals for LED

## Mechanical

Type	Actuation Force (N)	Operating Life (operations)	Total Travel (mm)
K8xx41G LFS	4.0	300,000	0.45±0.15

Tolerances on actuation force is ± 0.25%.  
 SEALING LEVEL: IP40

## Illumination Colors

White, blue, pure green, orange, super red  
 LED technical information available on product specification.  
 For any extra color, please contact your sales representative.

## Packaging

In reels of 900 pieces under sealed foil.  
 Dimensions of reels according to EIA RS481 or IEC 2863.  
 External diameter 380 mm.

## Electrical

	Silver	Gold
MAXIMUM POWER:	1.0 VA	0.2 VA
MAXIMUM VOLTAGE:	32 VDC	32 VDC
MINIMUM VOLTAGE:	20 mV	20 mV
MAXIMUM CURRENT:	50 mA	10 mA
MINIMUM CURRENT:	1 mA	0.1 mA
DIELECTRIC STRENGTH: (50 Hz, 1 min.)	≥ 250 Vrms	
CONTACT RESISTANCE:	< 100mΩ	
INSULATION RESISTANCE: (100 V, initial stage)	> 10 <sup>9</sup> Ω	
BOUNCE TIME:	< 10 ms	

## Environmental

OPERATING TEMPERATURE: -40°C to +85°C (Silver)  
 -40°C to +125°C (Gold)

STORAGE TEMPERATURE: -55°C to +85°C (Silver)  
 -40°C to +125°C (Gold)

## Process

SOLDERING: Compatible with the lead free soldering profile.  
 No washing  
 MSL level: 5

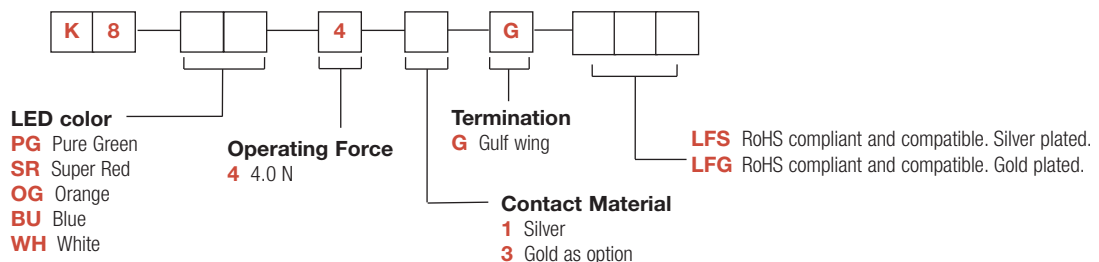
## NOTE:

The specifications show in the datasheet are for reference only and are not valid for design-in work. Please contact your sales representative to request drawings and product specifications.

For systems where reliability and safety are required, please contact your sales representative to secure product integration and function to secure usage.

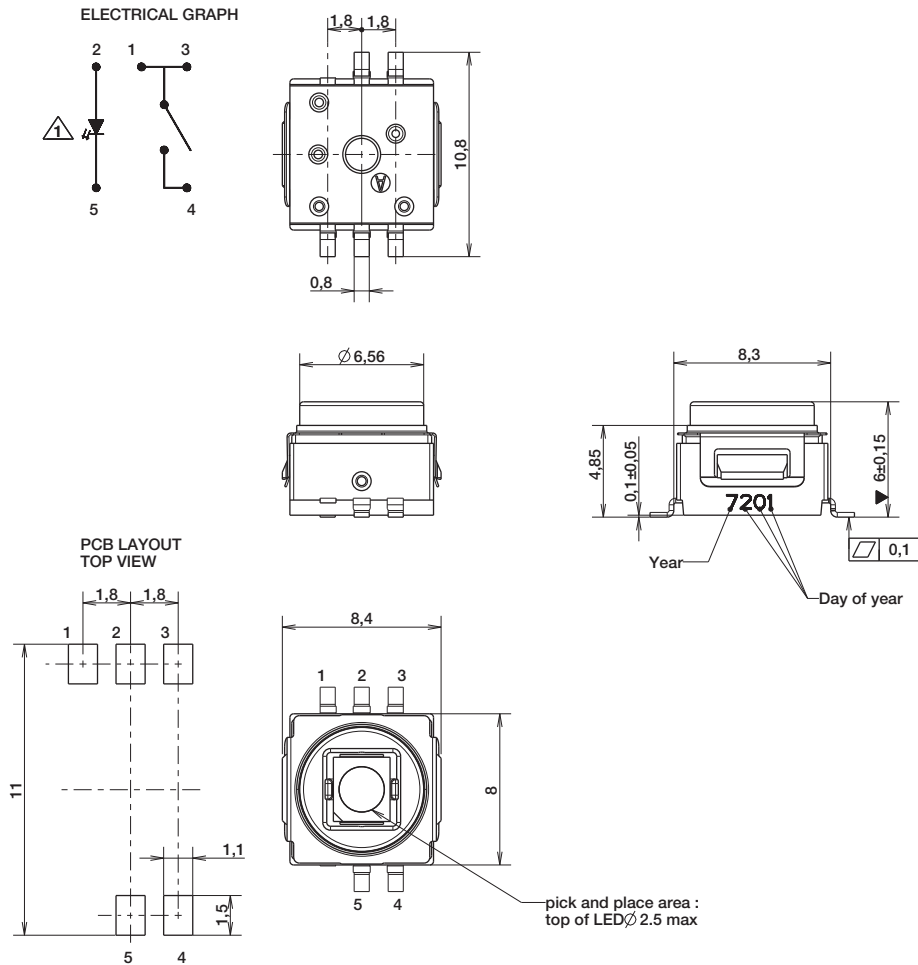
## How To Order

Our easy build-a-switch concept allows you to mix and match options to create the switch you need. To order, select desired option from each category and and place it in the appropriate box.



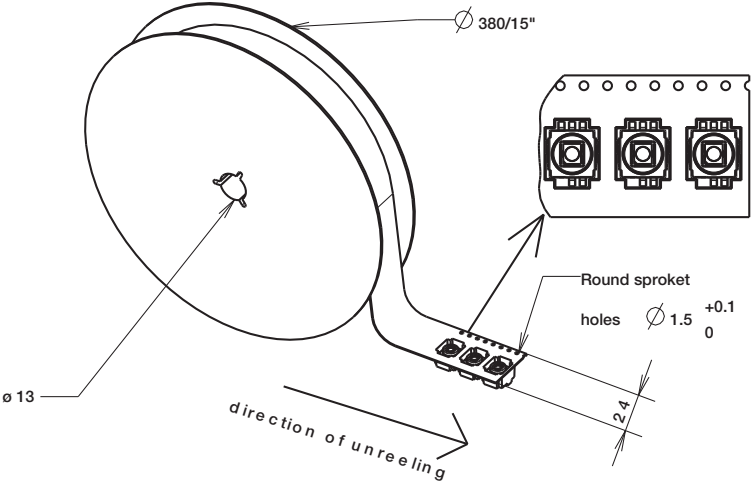
# K8 Lighted SMT Tact Switch with Rugged LED Mounting Process

PART NUMBER	REF LED	EMITTED COLOR	LUMINOUS INTENSITY (mcd) $I_f = 20 \text{ mA}$		CHROMATICITY COORDINATES OR PEAK WAVE LENGTH (typ) $I_f = 20 \text{ mA}$		FORWARD VOLTAGE V $I_f = 20 \text{ MA}$	
			min	typ	X	Y	min	max
K8WH41G	LW T67C-S2U1-5K8L	WHITE	224	560	0,33	0,33	3	4.1
K8BU41G	LB T67C-P2R1-35	BLUE	56	140	465 nm		3	4.1
K8PG41G	LP T676-L1M2-25	PURE GREEN	11.2	28	562 nm		1.8	2.4
K8SR41G	LP T676-Q1R2-1	SUPER RED	71	180	645 nm		1.8	2.3
K8OG41G	LO T676-R1S2-24	ORANGE	112	280	610 nm		1.85	2.35



# Lighted SMT Tact Switch with Rugged LED Mounting Process

TAPE & REEL



B

Tactile Switches

# K5V Illuminated Tact Switch



## Features

- Gold plated dome contact SPST/SPDT
- Excellent ergonomics
- High bright leds
- Reduced space usage on board
- 40 N overload
- Tape and reel
- RoHS compliant and compatible

## Typical Applications

- When backlighting and switch are required to be a "2 in 1" component
- The dome contact secures a superior contact reliability in time
- The ergonomics of K5V provides a long travel, a sharp tactile feel and an audible click
- Server, storage, automotive, network infrastructure, medical

## Specification

FUNCTION: momentary action  
 CONTACT ARRANGEMENT: Normally Open + Normally Closed  
 TERMINALS:  
 THT: Through hole terminals with positioning pegs  
 SMT: Surface mount terminals with positioning pegs  
 PM: Panel mount solder terminals with wire hole

## Electrical

POWER MIN/MAX: 0.02VA / 1.0VA  
 VOLTAGE MIN/MAX: 20mVdc – 32 Vdc  
 CURRENT MIN/MAX: 0.1mA – 100mA  
 CONTACT RESISTANCE: <150m Ω  
 INSULATION RESISTANCE: >1G Ω initial, >10M Ω after damp heat  
 BOUNCE TIME: <5ms

## Mechanical

Version	Operating force FA <sup>1</sup> Newtons (grams)	Operating life (operations)	Travel (total travel) mm(mm)
THT, SMT, PM	4.0 (400)	25,000	1.2 (2.4)

<sup>1</sup> Tolerances of operating force FA is ± 25%.

## Environmental

OPERATING TEMPERATURE: -40°C to 85°C  
 STORAGE TEMPERATURE: -50°C to 85°C  
 RELATIVE HUMIDITY: 90 to 96% according to NF EN 60068-2-30  
 PROTECTION: dust protection and flux tight  
 OVERLOAD: 40N min

## Packaging

THT:  
 60 pieces per tray; 1800 pieces per box  
 SMT:  
 330 pieces per reel (reel ø 360mm); 1320 pieces per box  
 PM:  
 60 pieces per tray; 2100 pieces per box

## Process

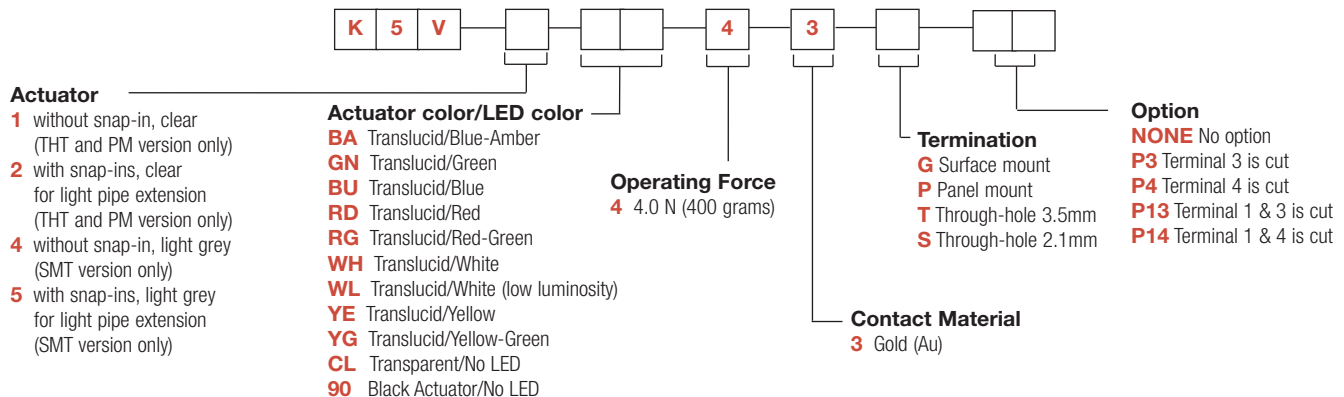
SMT  
 Soldering: Compatible with the lead free soldering profile  
 No washing  
 THT  
 Soldering: Compatible with the lead free soldering profile  
 No washing  
 PM  
 Soldering: Low wattage soldering iron (25-50 watts max).  
 Solder time 3 seconds max. No washing

## Materials

LEAD FREE  
 CONTACTS: Au over Ni  
 SOLDERING: Au over Ni  
 HOUSING: Thermoplastic UL94 V0

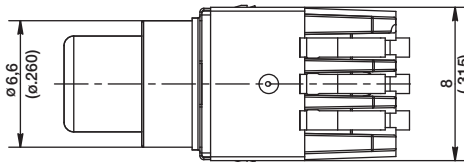
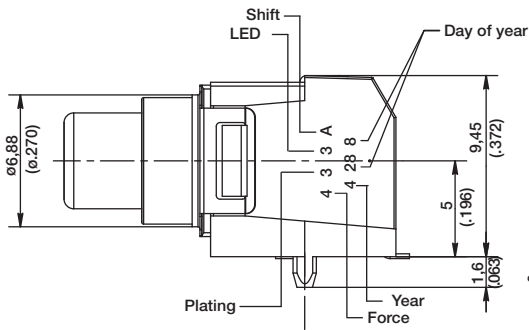
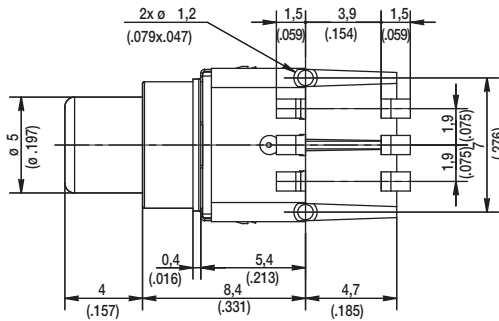
## How To Order

Our easy build-a-switch concept allows you to mix and match options to create the switch you need. To order, select desired option from each category and place it in the appropriate box.

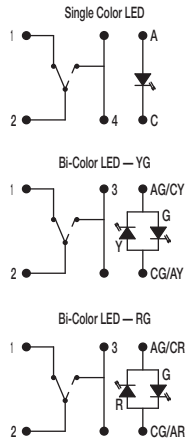


# K5V Illuminated Tact Switch

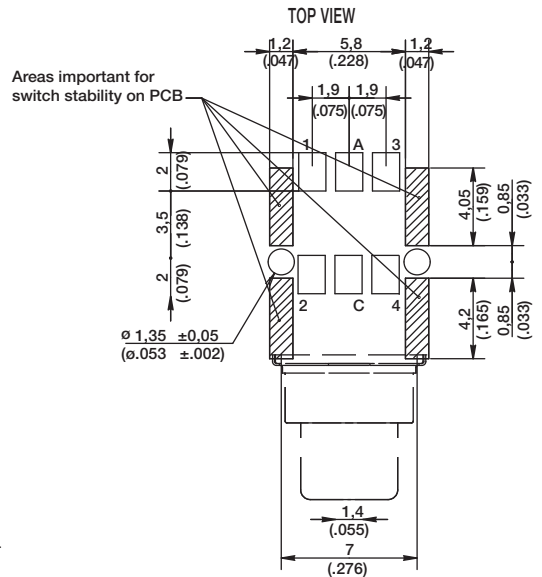
## K5V SMT



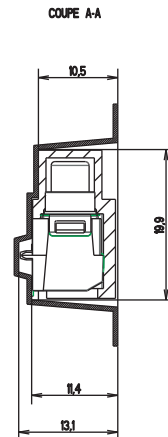
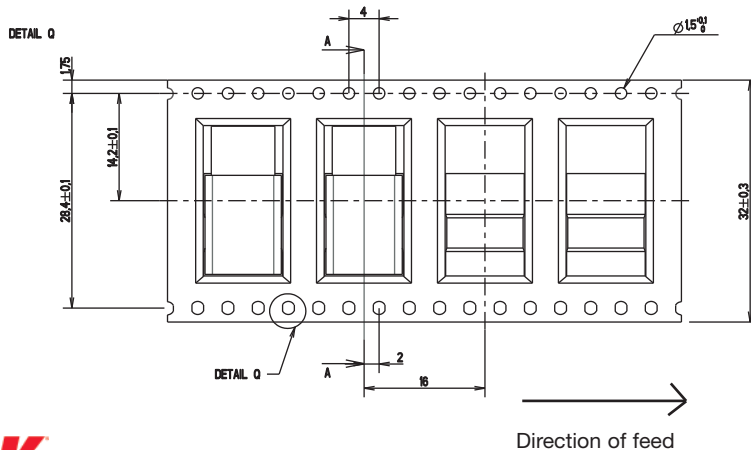
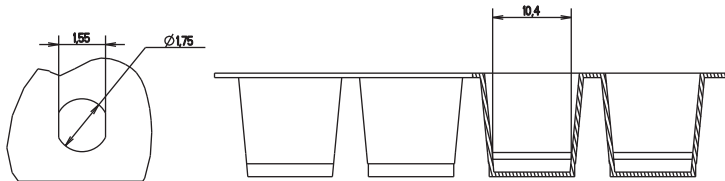
## ELECTRICAL DIAGRAM



## RECOMMENDED PCB LAYOUT ( WITH HOLES )



## TAPE & REEL



Dimensions are shown: mm  
Specifications and dimensions subject to change



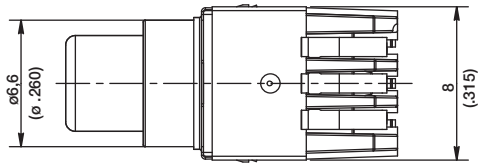
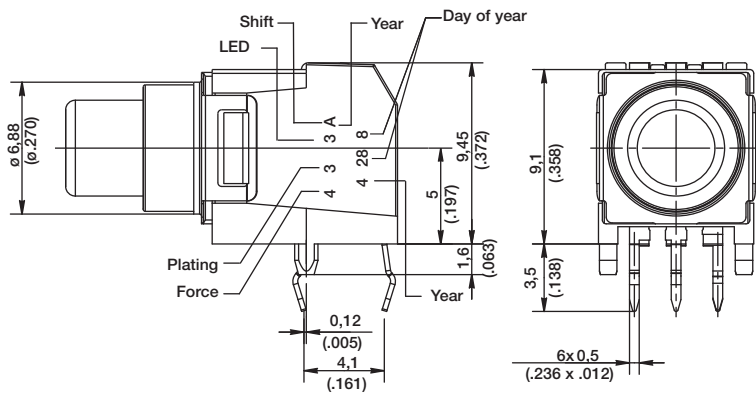
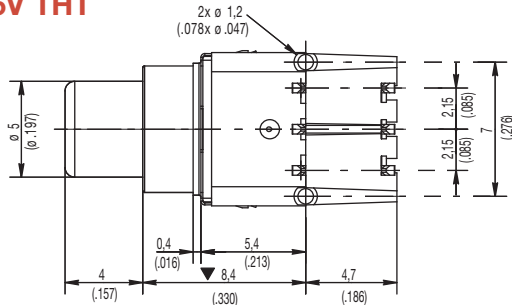


# K5V Illuminated Tact Switch

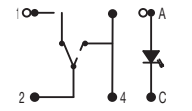
B

Tactile Switches

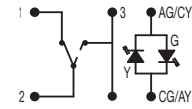
## K5V THT



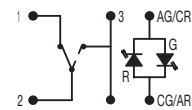
## ELECTRICAL DIAGRAM



Bi-Color LED — YG

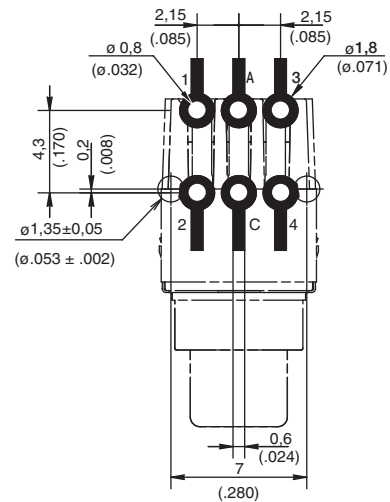


Bi-Color LED — RG

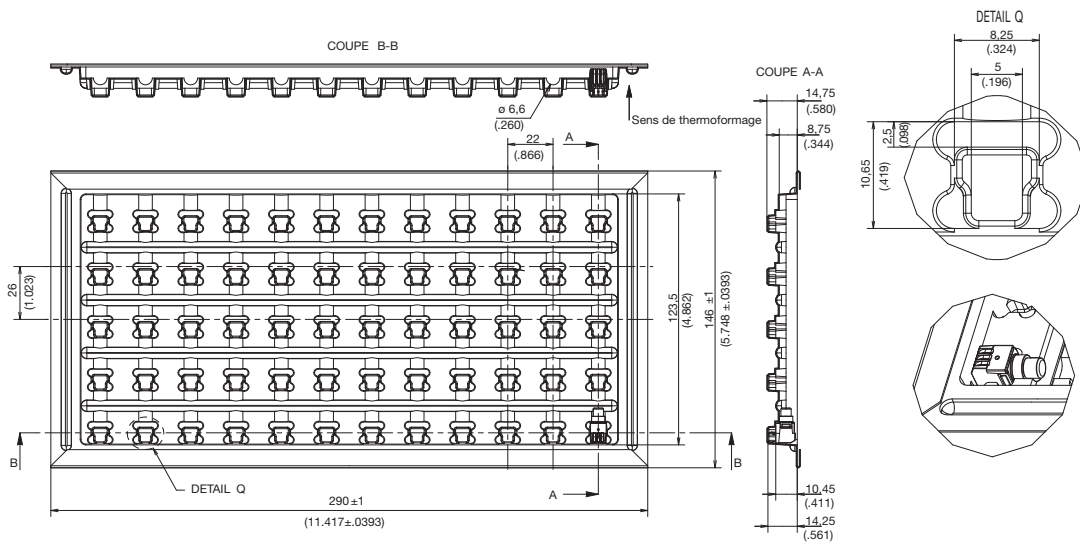


## RECOMMENDED PCB LAYOUT (WITH HOLES)

### TOP VIEW



## TRAY

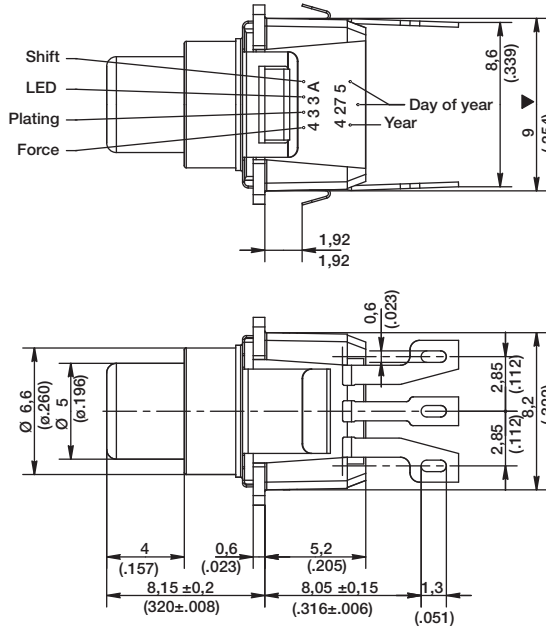


Dimensions are shown: mm  
Specifications and dimensions subject to change

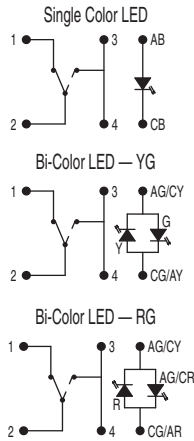
# K5V Illuminated Tact Switch

## K5V PM

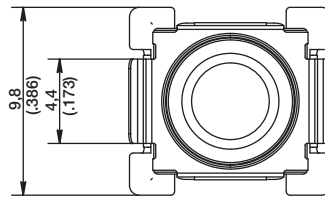
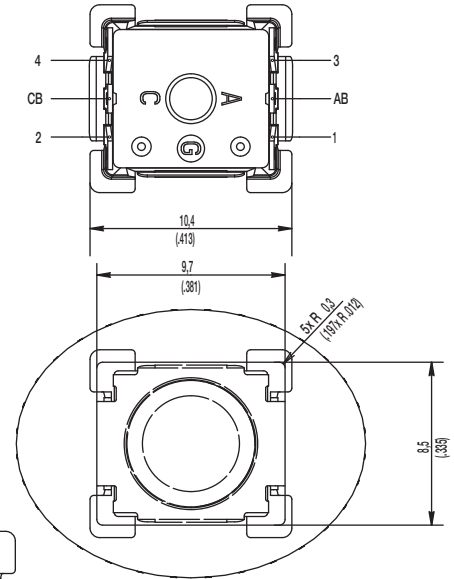
### PRODUCT IDENTIFICATION AND DATE CODES



### ELECTRICAL DIAGRAM



### TERMINAL REFERENCES

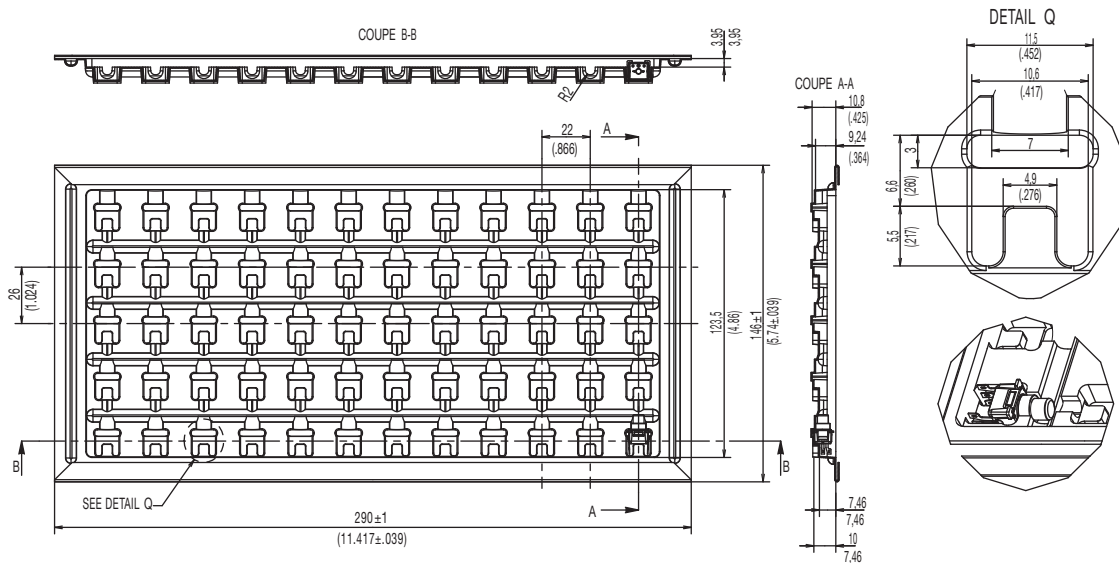


B

Tactile Switches

## TRAY

SUITABLE FOR PANEL THICKNESS OF 1.8MM MAX



Dimensions are shown: mm  
Specifications and dimensions subject to change

# KSF & KSFI Series Soft Actuated Tact Switch



## Features/Benefits

- Soft actuated switch
- Sealed front end
- Top and side actuated

## Typical Applications

- Low profile keyboards
- Automotive interfaces
- Industrial control

B

Tactile Switches

## Specification

FUNCTION: momentary action  
CONTACT ARRANGEMENT: 1 make contact = SPST, N.O.  
TERMINALS: THT pins

## Mechanical

Type	Force (N)	Operating life (operations)	Travel (mm)
KSF0M211LFTR	1.5 ± 0.5	100,000	0.25 ± 0.1
KSF0M311LFTR	1.9 ± 0.5	100,000	0.25 ± 0.1
KSF0M411LFTR	3.0 ± 0.75	100,000	0.25 ± 0.1
KSF0M511LFTR	5.2 ± 1.0	100,000	0.25 ± 0.1
KSFI0V91170SH LFTR	3.4 ± 1.5	100,000	0.65 ± 0.25
KSF0M212 LFT	1.6 ± 0.4	300,000	0.25 ± 0.1
KSFI0M412 70SHLFT	3.2 ± 0.8	100,000	0.75 ± 0.25

Overload resistance: 40N, 1 time  
Sealing: IP60 or IP67

**NOTE:** Other configurations of haptics and terminals are available upon demand. Please also refer to KSF and KSFI Mk2 catalogues pages for other options.

This product is designed and manufactured for general electronic devices. For systems where reliability and safety are required, please contact your sales representative to secure product integration and function to secure usage.

## Electrical

	Silver	Gold
MAXIMUM POWER:	1 VA	0.2 VA
MAXIMUM VOLTAGE:	32 VDC	32 VDC
MINIMUM VOLTAGE:	20 mV	20 mV
MAXIMUM CURRENT:	50 mA	10 mA
MINIMUM CURRENT:	1 mA	1 mA
DIELECTRIC STRENGTH (50 Hz, 1 min.): > 250 Vrms		
CONTACT RESISTANCE: < 100 m Ω		
INSULATION RESISTANCE (100 V, initial stage): > 10 <sup>9</sup> Ω		
BOUNCE TIME: < 1 ms		

## Environmental

	Silver	Gold
OPERATING TEMPERATURE:	-40°C to 85°C	-40°C to 125°C
STORAGE TEMPERATURE:	-55°C to 85°C	-40°C to 125°C

## Process

SOLDERING

## Packaging

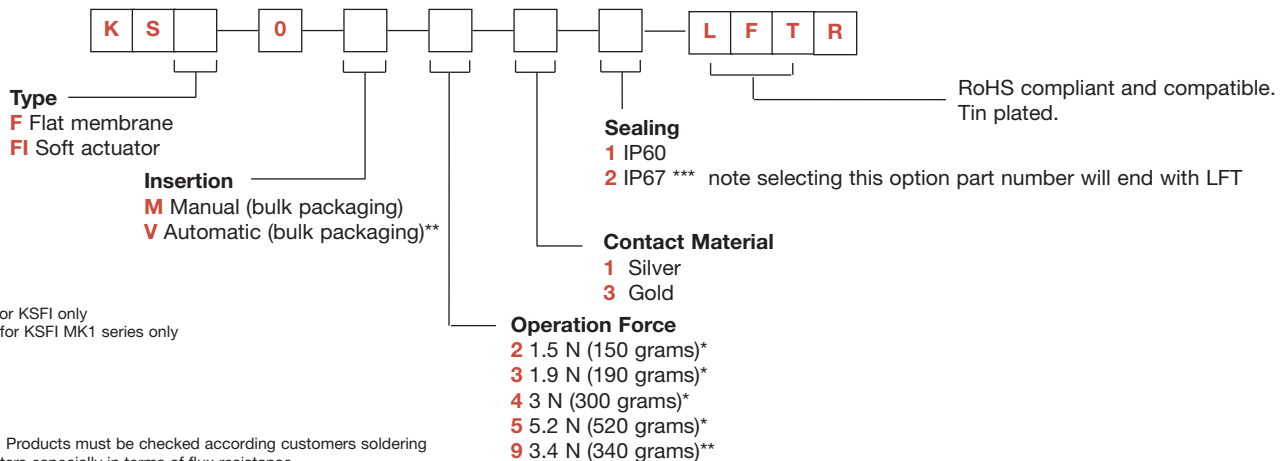
In boxes of 250 pieces (V type) or 500 pieces (M type).

## How To Order

Our easy build-a-switch concept allows you to mix and match options to create the switch you need. To order, select desired option from each category and place it in the appropriate box.

**However, please note that all the combinations of these options are not feasible.**

**For any part number different from those listed above, please consult your local representative.**

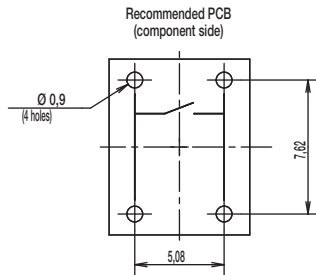
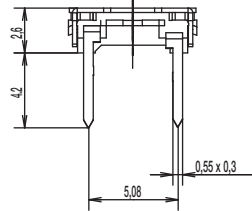
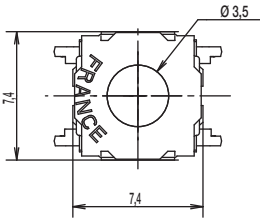
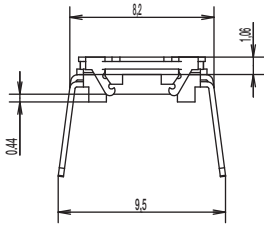


\* valid for KSFI only  
\*\* valid for KSFI MK1 series only

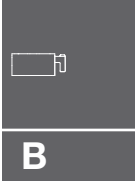
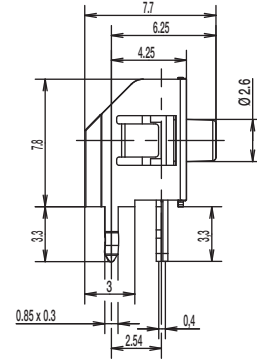
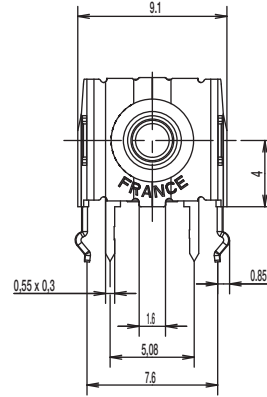
**\*NOTE:** Products must be checked according customers soldering parameters especially in terms of flux resistance.

# KSF & KSFI Series Soft Actuated Tact Switch

## KSF



## KSFI 0V



B

Tactile Switches



First Angle  
Projection

Dimensions are shown: mm  
Specifications and dimensions subject to change

# KSA & KSL Series Sealed Tact Switch



## Features/Benefits

- Designed for automatic or manual insertion
- Cambered terminals to ensure self retention
- Top or side actuated
- Large choice of caps
- RoHS compliant and compatible

## Typical Applications

- Automotive
- Industrial
- Telecommunication networks

B

Tactile Switches

## Specification

CONTACT ARRANGEMENT: SPST, N.O.  
DOUBLE OVERMOLDING ON TERMINAL  
SEALING: IP60  
TERMINALS: PC pins, ground pin optional

## Mechanical

Type	Actuation force N	Operating life (operations)	Travel to make
KSA0M211	1,4 ± 0,4	100,000	0,5 ± 0,2
KSA0M311	1,4 ± 0,4	1,000,000	0,5 ± 0,2
KSA0M411	3 ± 0,75	100,000	0,6 ± 0,2
KSA0M511	5 ± 1,5	100,000	0,7 ± 0,2
KSA0M911	3 ± 0,75	500,000	0,6 ± 0,2
KSL0M211	1,4 ± 0,4	100,000	0,5 ± 0,2
KSL0M311	1,4 ± 0,4	1,000,000	0,5 ± 0,2
KSL0M411	3 ± 0,75	100,000	0,6 ± 0,2
KSL0M511	5 ± 1,5	100,000	0,7 ± 0,2
KSL0M911	3 ± 0,75	500,000	0,6 ± 0,2

**NOTE:** Other versions in terms of force, termination length and corrosion protection available. Please contact your sales representative.  
This data sheet does not provide enough information for applications which require a certain level of quality or safety such as automotive, medical systems, safety equipment. Please contact your sales representative to get contractual specification package.

## Electrical

	Silver	Gold
MAXIMUM POWER:	1 VA	0.2 VA
MAXIMUM VOLTAGE:	32 VDC	32 VDC
MINIMUM VOLTAGE:	20 mV	20 mV
MAXIMUM CURRENT:	50 mA	10 mA
MINIMUM CURRENT:	1 mA	1 mA
DIELECTRIC STRENGTH:	250 Vrms	
CONTACT RESISTANCE:	≤ 100m Ω	
INSULATION RESISTANCE (100 V):	≥ 10 <sup>9</sup> Ω	
BOUNCE TIME:	≤ 1 ms	

## Environmental

	Silver	Gold
OPERATING TEMPERATURE:	-40°C to 85°C	-40°C to 125°C
STORAGE TEMPERATURE:	-40°C to 85°C	-55°C to 125°C

## Process

Wave soldering compatible with lead free soldering profile.

## Packaging

Can be delivered in tubes of 65 pieces for automatic insertion or in boxes of 500 pieces for manual insertion (250 pieces for KSL, KSLV, KSAV).

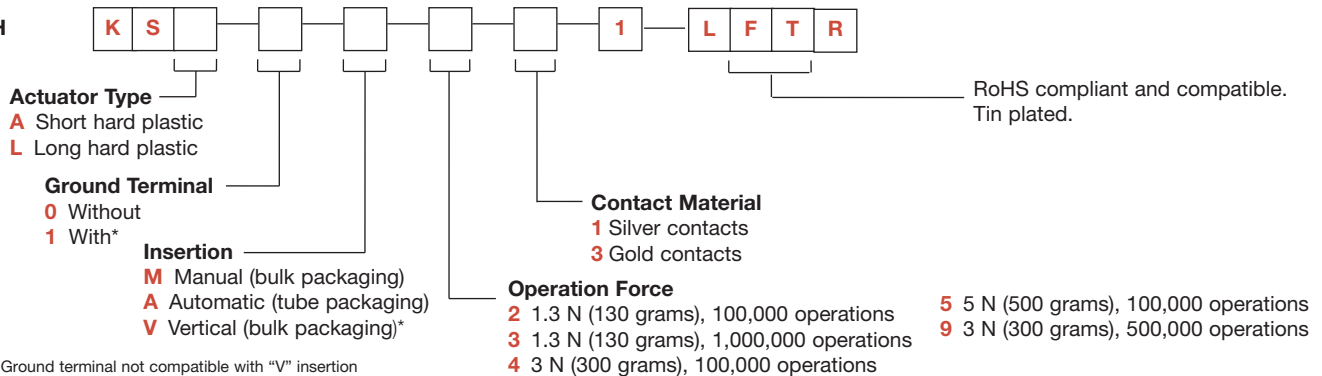
## How To Order

Our easy build-a-switch concept allows you to mix and match options to create the switch you need. To order, select desired option from each category and place it in the appropriate box.

However, please note that all the combinations of these options are not feasible.

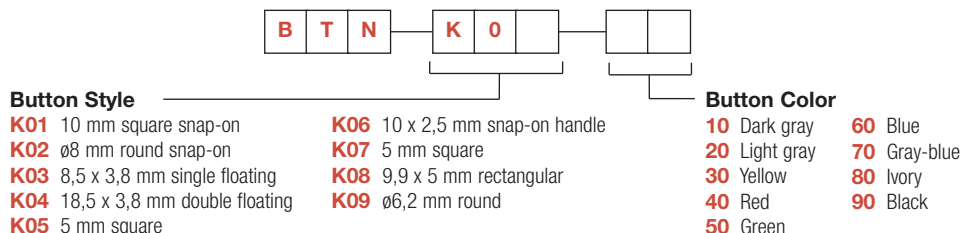
For any part number different from those listed above, please consult your local representative.

## SWITCH



## BUTTONS

Buttons must be ordered separately and will be supplied in bulk.



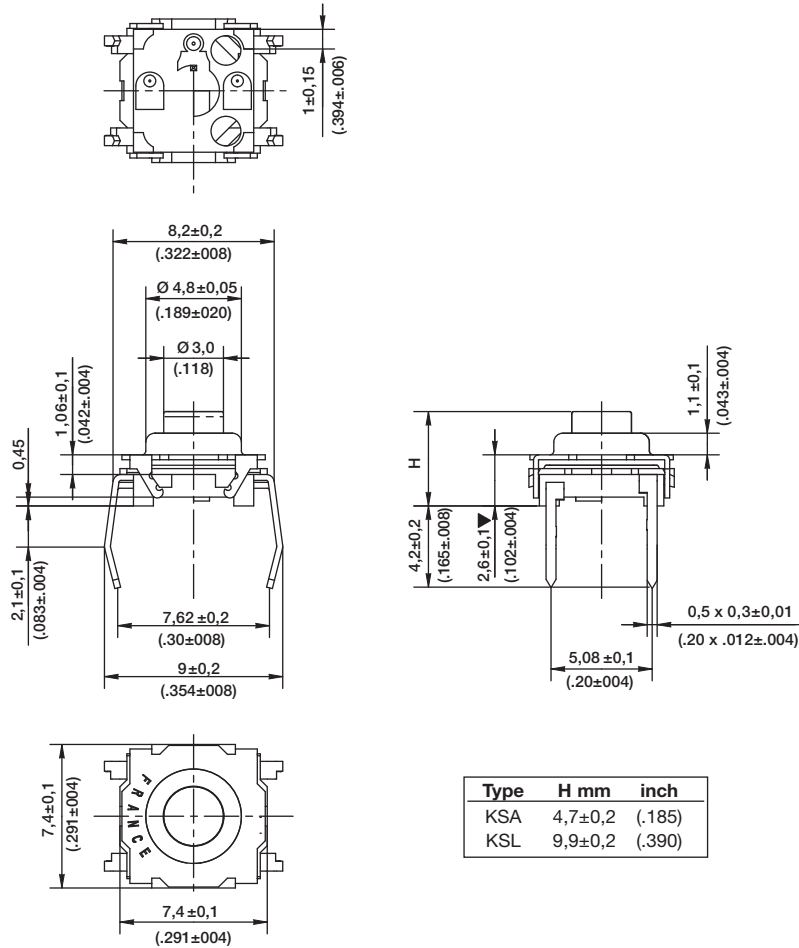
\*NOTE: Please note that all buttons are not RoHS compliant. Please check the compliance with your C&K sales representative.



# KSA & KSL Series Sealed Tact Switch

## ACTUATOR TYPE

### KSA & KSL

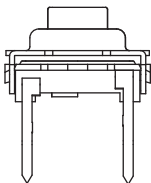


B

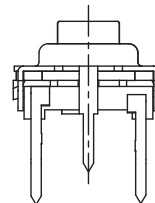
Tactile Switches

## GROUND TERMINAL

0 WITHOUT



1\* WITH



\*Not compatible with "V" insertion



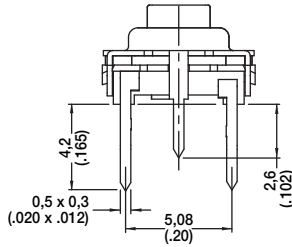
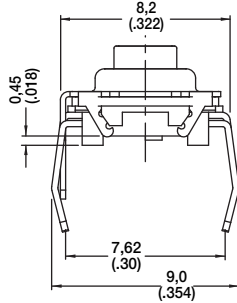
Dimensions are shown: mm  
Specifications and dimensions subject to change

# KSA & KSL Series Sealed Tact Switch

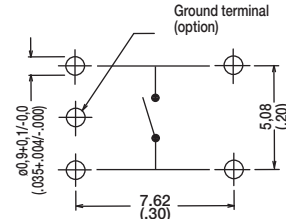
## INSERTION

Tactile Switches

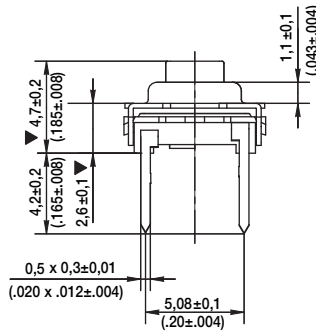
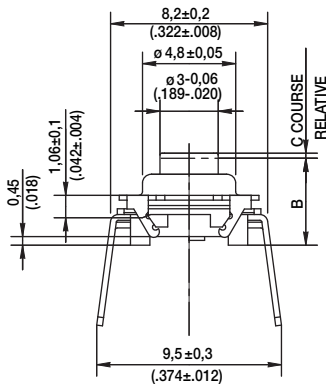
### M MANUAL (BULK PACKAGING)



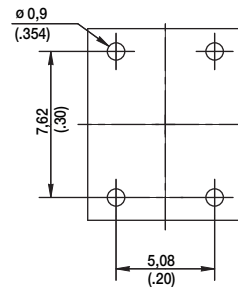
### PCB LAYOUT



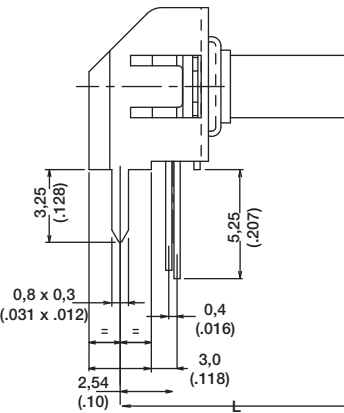
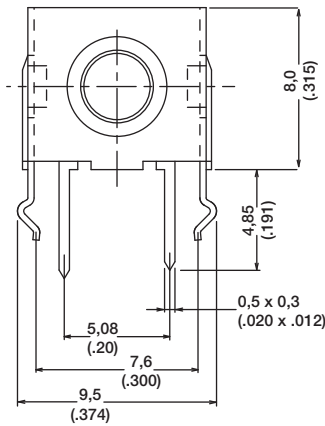
### A AUTOMATIC (TUBE PACKAGING, 65 PIECES PER TUBE)



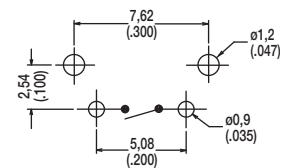
### PCB LAYOUT



### V VERTICAL



### PCB LAYOUT



### DIMENSION L

Type	L mm	inch
KSA0V	5,8	.228
KSL0V	11,1	.437

## OPERATING FORCE

OPTION CODE	OPERATING FORCE
<b>2</b>	1.3 N (130 grams) 100,000 operations
<b>3</b>	1.3 N (130 grams) 1,000,000 operations
<b>4</b>	3.0 N (300 grams) 100,000 operations
<b>5</b>	5.0 N (500 grams) 100,000 operations
<b>9</b>	3.0 N (300 grams) 500,000 operations



First Angle  
Projection

Dimensions are shown: mm  
Specifications and dimensions subject to change



# KSA & KSL Series Sealed Tact Switch

## CONTACT MATERIAL

OPTION CODE	CONTACT MATERIAL
<b>1</b>	Silver contacts
<b>3</b>	Gold contacts

## SEALING

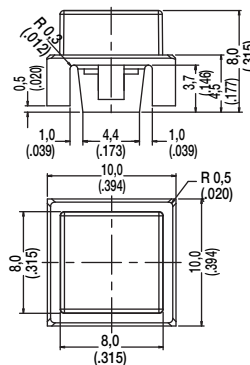
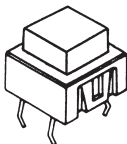
OPTION CODE	SEALING
<b>1</b>	Sealing level IP60

## BUTTONS

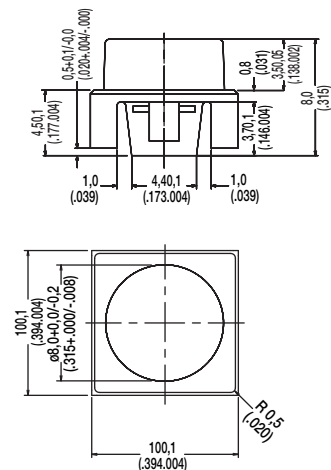
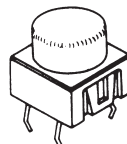
Buttons must be ordered separately and will be supplied in bulk.

BUTTON TYPE	KSA	KSL	KSAV	KSLV
<b>K01</b>	X			
<b>K02</b>	X			
<b>K03</b>	X	X	X	X
<b>K04</b>	X	X	X	X
<b>K05</b>		X		X
<b>K06</b>	X			
<b>K07</b>		X		X
<b>K08</b>		X		X
<b>K09</b>		X		X

**K01**



**K02**



Dimensions are shown: mm  
Specifications and dimensions subject to change

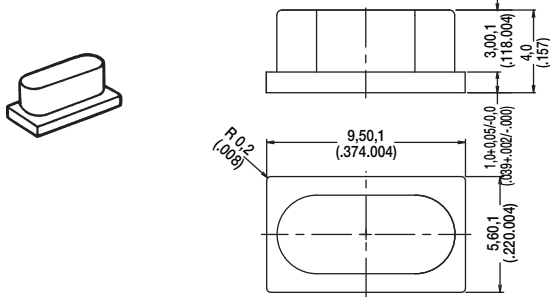


# KSA & KSL Series Sealed Tact Switch

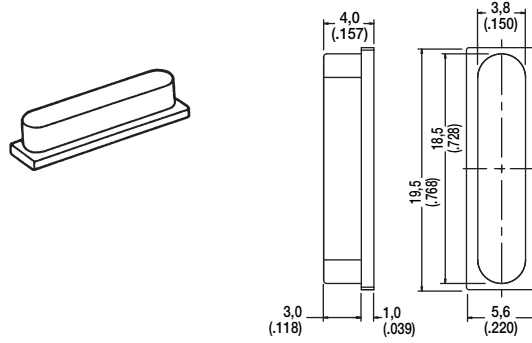
Tactile Switches

B

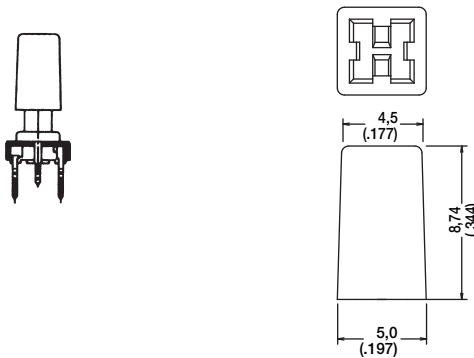
**K03**



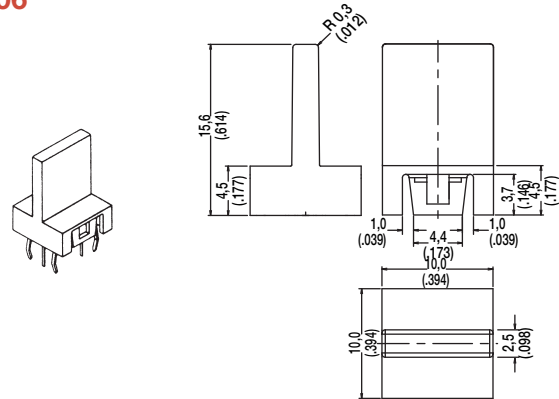
**K04**



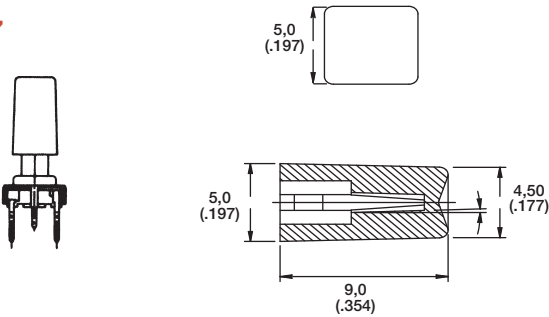
**K05**



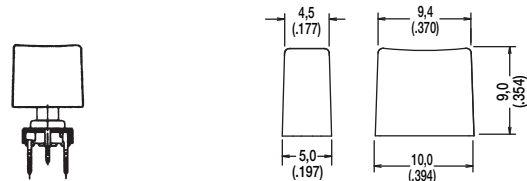
**K06**



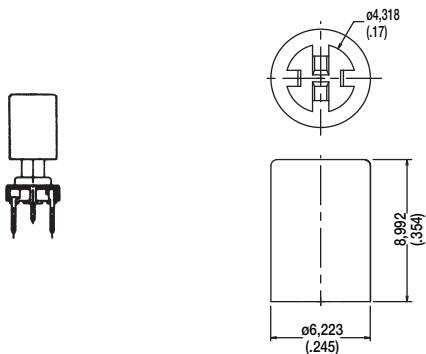
**K07**



**K08**



**K09**



First Angle  
Projection

Dimensions are shown: mm  
Specifications and dimensions subject to change

# KSA & KSL MKII Series High Performance Sealed Tact Switch

## Features/Benefits

- Highest tact switch sealing performance
- Improved sealing through a modification of the crimping technique and to a double overmolding of the terminal
- Totally sealed
- Up to 1M operations
- RoHS compliant and compatible

## Typical Applications

- Automotive
- Industrial
- Telecommunication networks
- Household appliances
- Heating control systems



B

Tactile Switches

## Specification

CONTACT ARRANGEMENT: SPST, N.O.  
 TERMINALS: PC pins  
 SEALING: IP65  
 Double overmold on terminals

## Mechanical

Type	Actuation force N (grams)	Operating life (operations)	Travel to make
KSA0M212	1,3 ± 0,3	100,000	0,5 ± 0,15
KSA0M312	1,3 ± 0,3	1,000,000	0,5 ± 0,15
KSA0M412	3,25 ± 0,5	100,000	0,6 ± 0,25
KSA0M512	5 ± 1,25	100,000	0,7 ± 0,25

## Packaging

Delivered in boxes of 500 pieces (250 pieces for KSL)

**NOTE:** Specifications listed above are for switches with standard options.  
 For information on specific and custom switches, consult Customer Service Center.

Other versions in terms of force, termination length and corrosion protection available.  
 Please contact your sales representative.

This data sheet does not provide enough information for applications which require a certain level of quality or safety such as automotive, medical systems, safety equipment.  
 Please contact your sales representative to get contractual specification package.

## Electrical

	Silver	Gold
MAXIMUM POWER:	1 VA	0.2 VA
MAXIMUM VOLTAGE:	32 VDC	32 VDC
MINIMUM VOLTAGE:	20 mV	20 mV
MAXIMUM CURRENT:	50 mA	10 mA
MINIMUM CURRENT:	1 mA	1 mA
DIELECTRIC STRENGTH:	≥ 250 Vrms	
CONTACT RESISTANCE:	≤ 100m Ω	
INSULATION RESISTANCE (100 V):	≥ 10 <sup>9</sup> Ω	
BOUNCE TIME:	≤ 1 ms	

## Environmental

	Silver	Gold
OPERATING TEMPERATURE:	-40°C to 85°C	-40°C to 125°C
STORAGE TEMPERATURE:	-40°C to 85°C	-55°C to 125°C

## Process

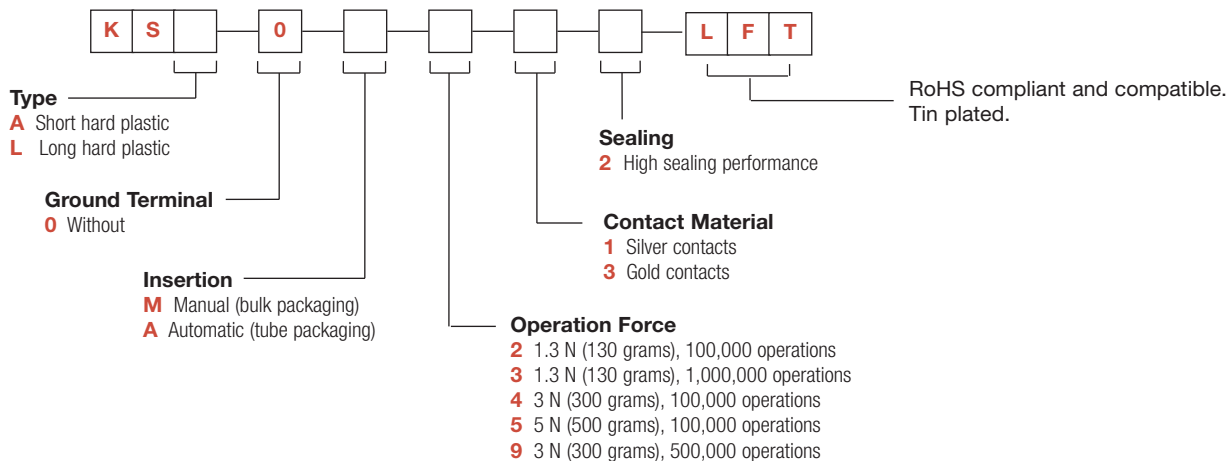
Wave soldering compatible with lead free soldering profile.

## How To Order

Our easy build-a-switch concept allows you to mix and match options to create the switch you need. To order, select desired option from each category and place it in the appropriate box.

**However, please note that all the combinations of these options are not feasible.**

**For any part number different from those listed above, please consult your local representative.**

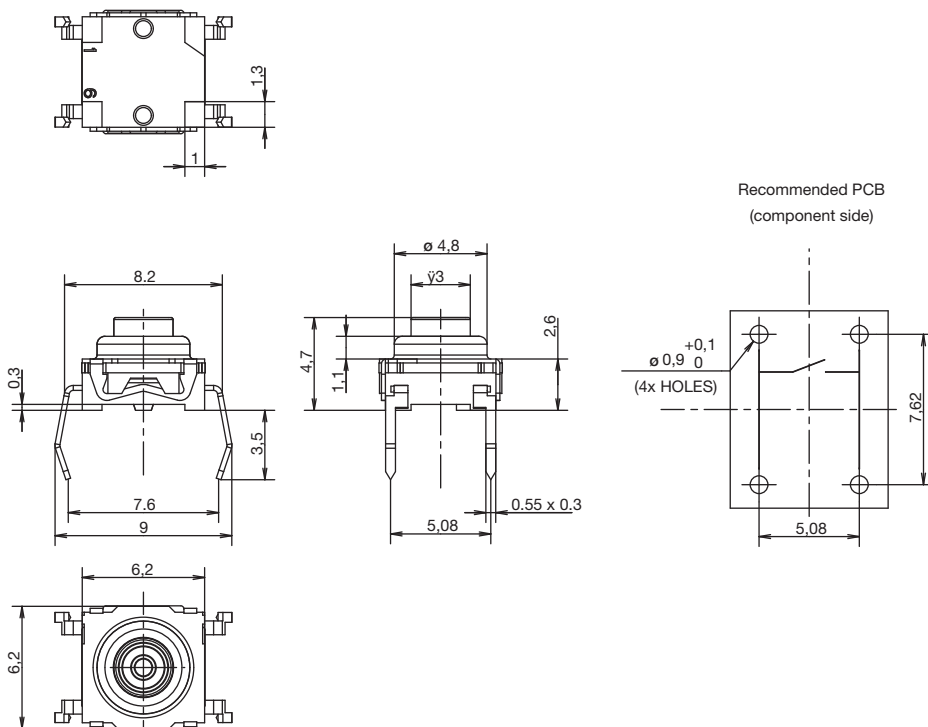


# KSA & KSL MKII Series High Performance Sealed Tact Switch

TYPE 

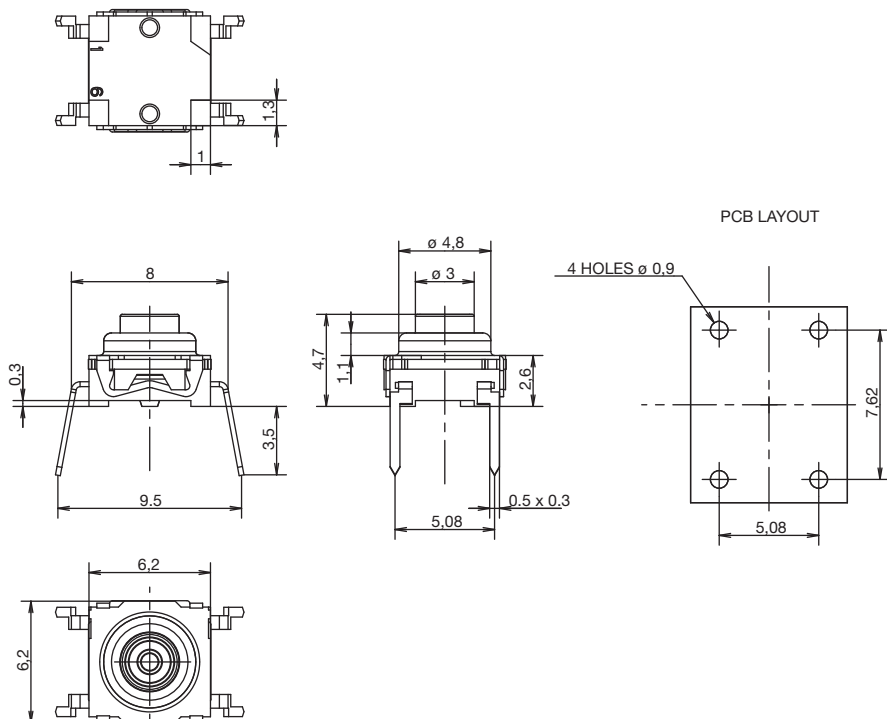
**KSA & KSL**

**MANUAL INSERTION**



**KSA & KSL**

**AUTOMATIC INSERTION**



Dimensions are shown: mm  
Specifications and dimensions subject to change



# KSJ Series Spherical Actuator Tact Switches

## Features/Benefits

- Spherical actuator allows actuation force off center  $\pm 30^\circ$  with regard to vertical
- RoHS compliant and compatible
- Designed for mechanisms
- Compliant side actuation

## Typical Applications

- Automotive
- Cranes, off road, railway
- Factory automation
- Security systems



B

Tactile Switches

## Specification

FUNCTION: Momentary action  
 CONTACT ARRANGEMENT: 1 make contact = SPST, N.O.  
 DISTANCE BETWEEN BUTTON CENTERS (min.): 7.62 (0.300)  
 TERMINALS: PC pins  
 SEALING: IP60

## Environmental

	Silver	Gold
OPERATING TEMPERATURE:	-40°C to 85°C	-40°C to 125°C
STORAGE TEMPERATURE:	-40°C to 85°C	-55°C to 125°C

## Packaging

Delivered in boxes of 250 pieces.

## Mechanical

Type	Actuation force N (grams)	Operating life (operations) axial	Operating life (operations) radial	Travel to make (mm)
KSJ0M21160SH	2 ± 0,5	100,000	30,000	0,6 ± 0,3
KSJ0M41180SH	3,0 ± 0,8	100,000	30,000	0,55 ± 0,25
KSJ0M21180SH	2 ± 0,5	100,000	30,000	0,35 ± 0,2
KSJ0M91180SH	3,9 ± 0,8	100,000	30,000	0,7 ± 0,25

## Electrical

	Silver	Gold
MAXIMUM POWER:	1 VA	0.2 VA
MAXIMUM VOLTAGE:	32 VDC	32 VDC
MINIMUM VOLTAGE:	20 mV	20 mV
MAXIMUM CURRENT:	50 mA	10 mA
MINIMUM CURRENT:	1 mA	1 mA
DIELECTRIC STRENGTH (50 Hz, 1 min.): $\geq 250$ Vrms		
CONTACT RESISTANCE: $\leq 100$ m $\Omega$		
INSULATION RESISTANCE (100V): $\geq 10^9$ ohms		
BOUNCE TIME: $\leq 1$ ms		

## Process

Wave soldering, compatible with lead free soldering profile.

**NOTE:** Specifications listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

This data sheet does not provide enough information for applications which require a certain level of quality or safety such as automotive, medical systems, safety equipment. Please contact your sales representative to get contractual specification package.

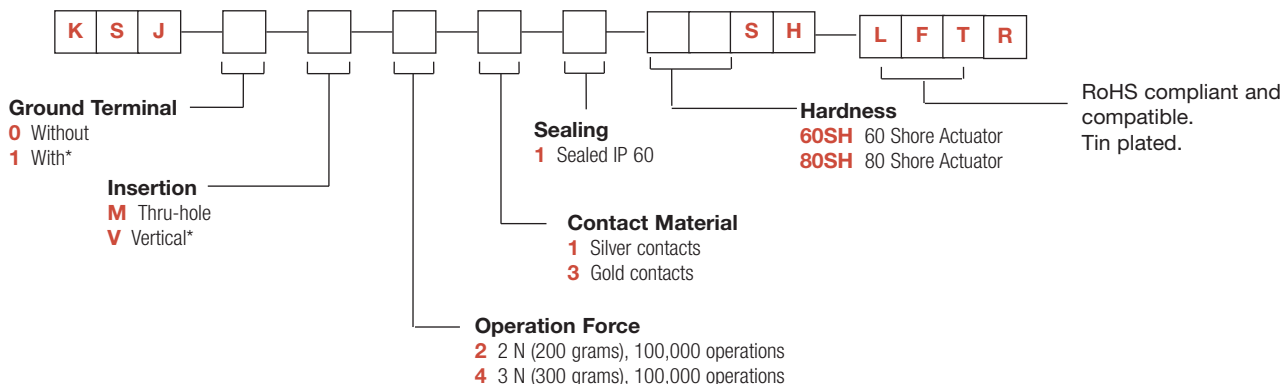
\* Please contact your C&K representative for any question regarding the product integration.

## How To Order

Our easy build-a-switch concept allows you to mix and match options to create the switch you need. To order, select desired option from each category and place it in the appropriate box.

**However, please note that all the combinations of these options are not feasible.**

**For any part number different from those listed in the table above, please consult your local representative.**



\*Note: "1" ground terminal option not available with "V" version. The bracket for the "V" version plays this role.



26 jul 16

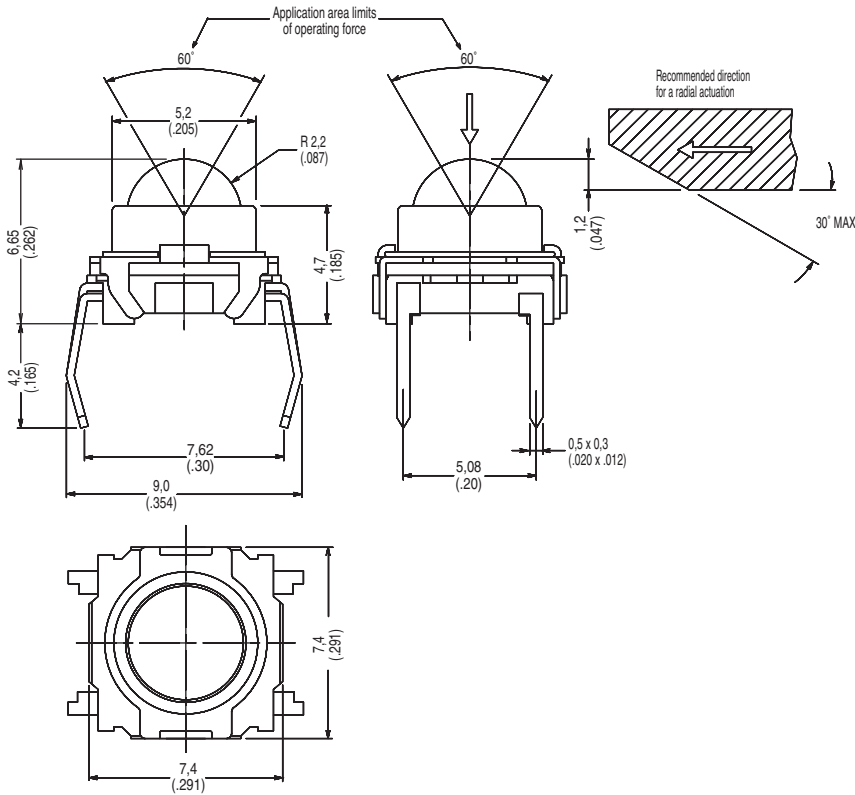
B-91

Dimensions are shown: mm  
 Specifications and dimensions subject to change

www.ckswitches.com

# KSJ Series Spherical Actuator Tact Switches

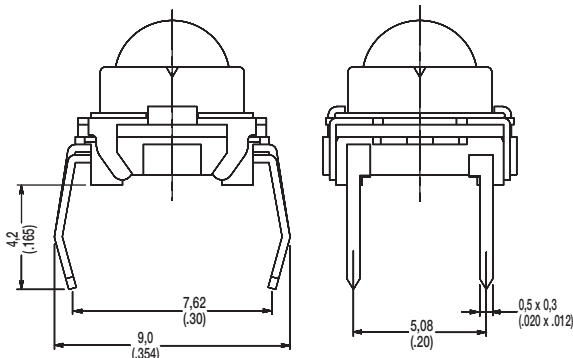
**KSJ**



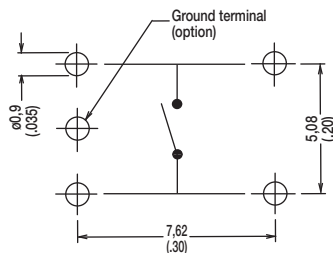
**KSJ0M211**

## INSERTION

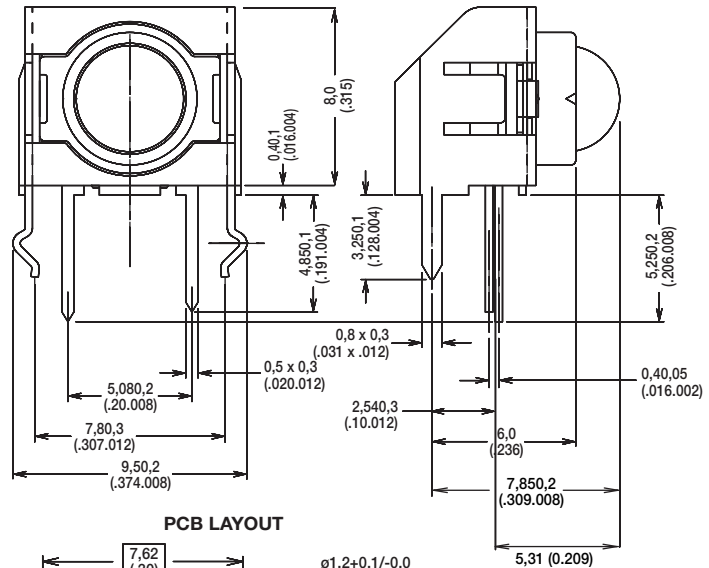
**M THRU-HOLE**



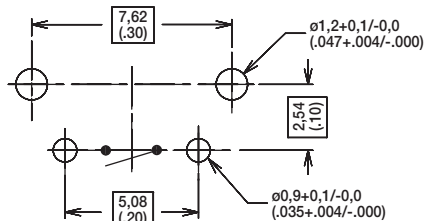
**PCB LAYOUT**



**V VERTICAL**



**PCB LAYOUT**



First Angle  
Projection



26 jul 16

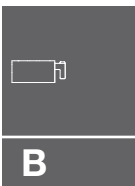
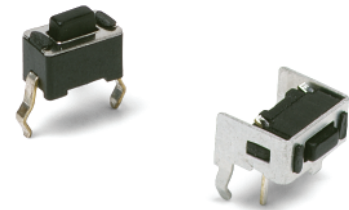
# PTS635 Series 3,5 mm Tact Switches

## Features/Benefits

- Compact size 6 x 3.5 mm
- Variety of switch heights
- Choice of actuation force
- RoHS compliant and compatible

## Typical Applications

- Consumer products
- Instrumentation
- Computer products
- Industrial



Tactile Switches

## Specification

FUNCTION: Momentary action  
CONTACT ARRANGEMENT: SPST, N.O.  
TERMINALS: PC pins

## Mechanical

ACTUATION FORCE: PTS635L models: 130 grams.  
PTS635H models: 200 grams.  
LIFE EXPECTANCY: 20,000 operations.

## Electrical

CONTACT RATING: 50 mA @ 12 V DC.  
DIELECTRIC STRENGTH: 250 V AC min.  
CONTACT RESISTANCE: 100 mΩ max. initial.  
INSULATION RESISTANCE: 10<sup>11</sup>Ω min.

## Environmental

OPERATING TEMPERATURE: -40°C to 60°C

**NOTE:** Specifications listed above are for switches with standard options.  
For information on specific and custom switches, consult Customer Service Center.

## Process

SOLDERING: Preheating to 100°C for 45 sec. max. Keep flux flush with top surface of PCB; do not apply to component side of PCB and area where terminals are located. Soldering to 255°C for 5 sec. max. Clean by brushing on solder surface. Do not clean switch with solvents.

## Materials

BASE: 6/6 nylon or glass filled polyester (PBT) (UL 94V-0).  
ACTUATOR: 6/6 nylon or polyacetal (UL 94HB).  
COVER PLATE: PTS635S and PTS635V models: Tin plated stainless steel  
DOME CONTACTS: Phosphor bronze, silver clad.  
STATIONARY CONTACTS: Brass, silver plated.  
TERMINALS: Brass, silver plated. Insert molded.

## Packaging

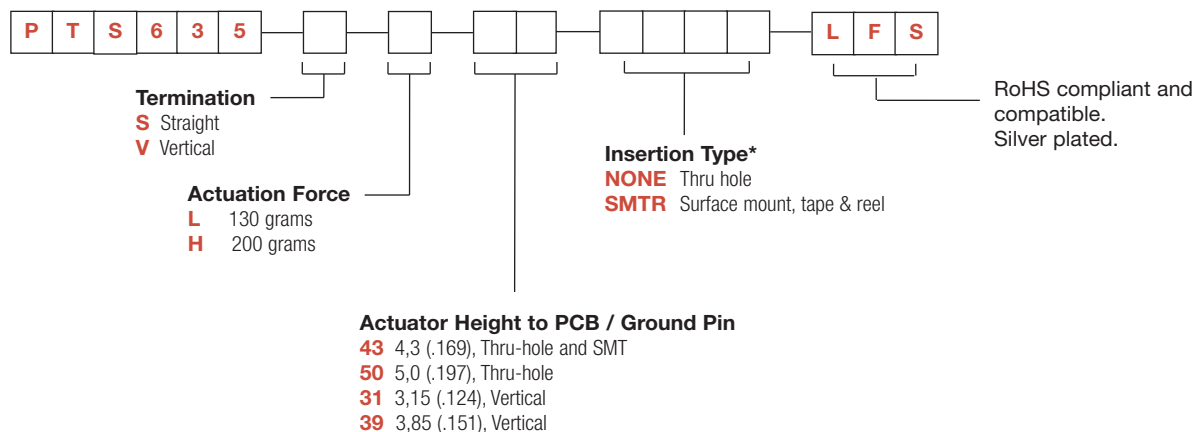
Bulk packaging.

## Tape & reel for:

PTS635Sx43SMTR, 1700 pcs per reel

## How To Order

Our easy build-a-switch concept allows you to mix and match options to create the switch you need. To order, select desired option from each category and place it in the appropriate box.

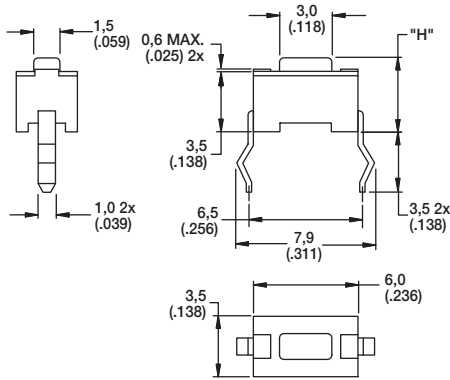


\* SMTR only available with PTS635 43 Actuator Height options.

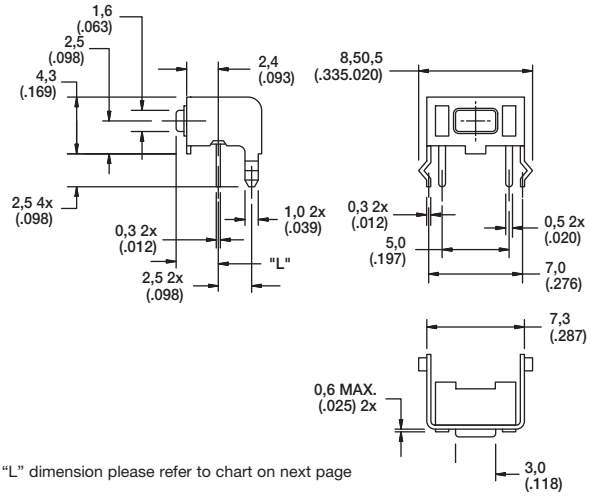
# PTS635 Series 3,5 mm Tact Switches

SERIES

## PTS635



For "H" dimension please refer to chart on next page



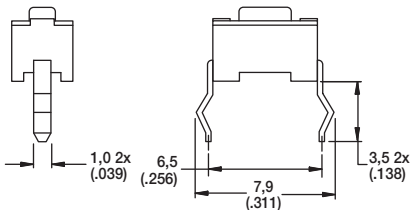
For "L" dimension please refer to chart on next page

Tactile Switches

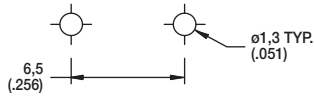
B

TERMINATION

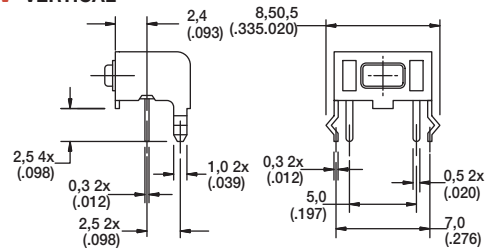
## S STRAIGHT



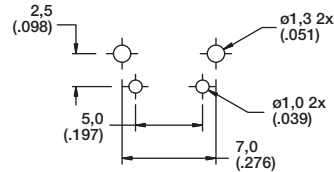
PCB LAYOUT



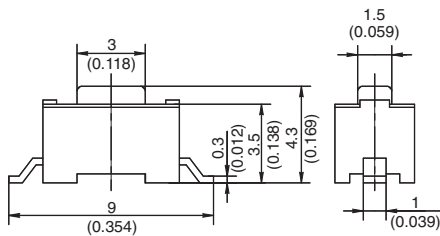
## V VERTICAL



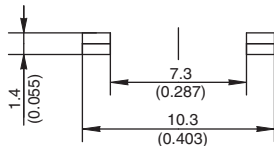
PCB LAYOUT



## SMT 43



PCB LAYOUT



Dimensions are shown: mm  
Specifications and dimensions subject to change

# PTS635 Series 3,5 mm Tact Switches

## ACTUATION FORCE



OPTION CODE	FORCE
L	130 grams
H	200 grams

## ACTUATOR HEIGHT

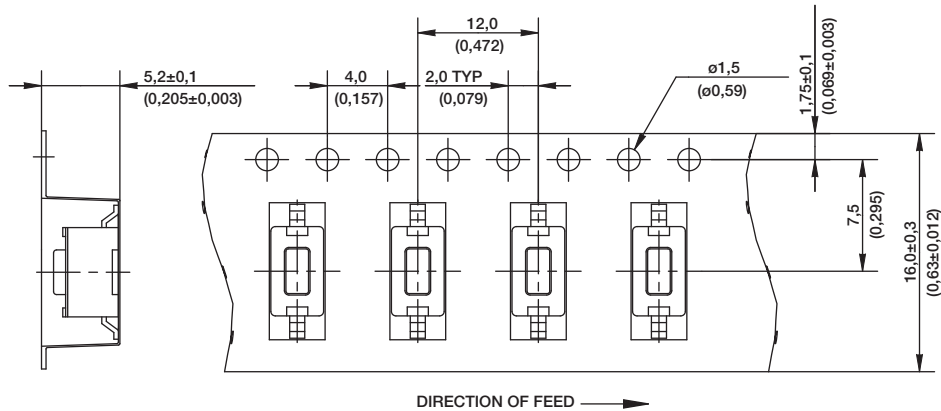


OPTION CODE	HEIGHT "H" or LENGTH "L"	TERMINATION	SCHEMATIC
43	4,3 (.169)	Thru-hole & SMT	1  2
50	5,0 (.197)	Thru-hole	1  2
31	3,15 (.124)	Vertical	1  2
39	3,85 (.151)	Vertical	3  4

## INSERTION TYPE



SMTR 43



First Angle  
Projection

Dimensions are shown: mm  
Specifications and dimensions subject to change



# PTS641 Series SMT Top Actuated Switches



## Features/Benefits

- 6.3 x 6.3 mm footprint
- Multiple heights
- Ground pin option

## Typical Applications

- Metering
- White goods
- Home and garden equipment

B

Tactile Switches

### Specification

FUNCTION: Momentary action  
CONTACT ARRANGEMENT: 1 make contact = SPST N.O.  
TERMINALS: G type for SMT

### Mechanical

TRAVEL:  
0.20 mm ±0.15 mm for 160 & 250 gf  
0.30 mm ±0.15 mm for 320 gf  
OPERATING LIFE: 100,000 cycles  
OPERATION FORCE:  
160 gf ±50 gf blue actuator  
250 gf ±50 gf red actuator  
320 gf ±80 gf black actuator

### Packaging

Switches in reels of 1,500 pieces.  
Dimensions of reels according to EIA 481B  
External diameter 330 mm

### Electrical

MAXIMUM VOLTAGE: 12 VDC  
MAXIMUM CURRENT DC: 50 mA  
DIELECTRIC STRENGTH: 250 VA C (1mm)  
CONTACT RESISTANCE: 100 m Ω  
INSULATION RESISTANCE: ≥ 100 M Ω  
BOUNCE TIME: < 5 ms

### Environmental

OPERATING TEMPERATURE: -20°C to 85°C

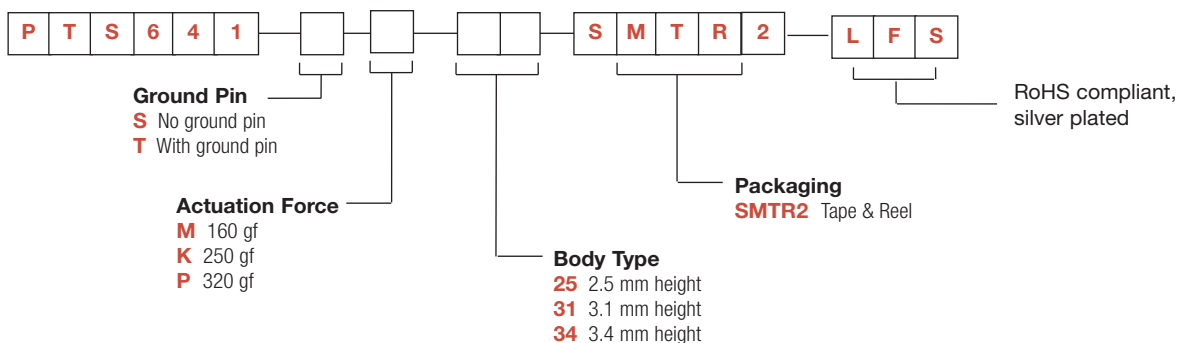
### Process

SOLDERING: This component is suited to the following methods:  
Infrared Reflow Soldering in accordance with IEC61760-1

**NOTE:** Specifications listed above are for switches with standard options.  
For information on specific and custom switches, consult Customer Service Center.

## How To Order

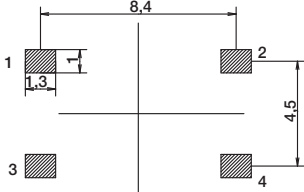
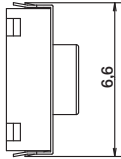
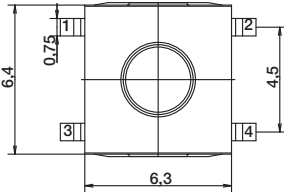
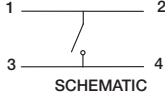
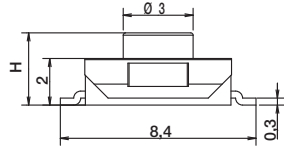
Our easy build-a-switch concept allows you to mix and match options to create the switch you need. To order, select desired option from each category and place it in the appropriate box.



Dimensions are shown: mm  
Specifications and dimensions subject to change

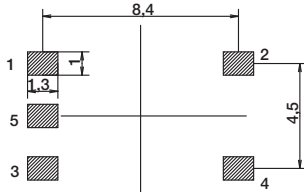
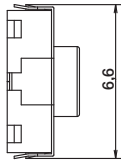
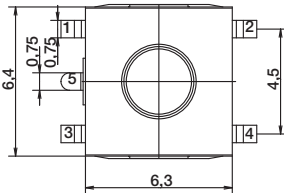
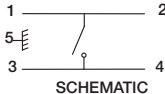
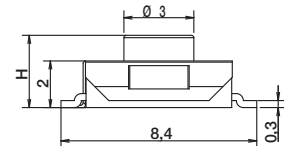
# PTS641 Series SMT Top Actuated Switches

**NO GROUND PIN** H = 2.5, 3.1, or 3.4 mm



RECOMMENDED PCB LAYOUT

**GROUND PIN** H = 2.5, 3.1, or 3.4 mm



RECOMMENDED PCB LAYOUT

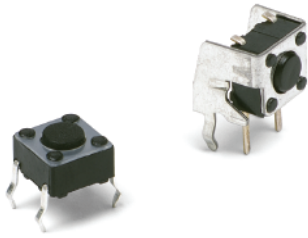


Tactile Switches



Dimensions are shown: mm  
Specifications and dimensions subject to change

# PTS645 Series 6 mm Tact Switches



## Features/Benefits

- Compact size 6 x 6 mm
- Variety of actuator lengths
- Choice of actuation force
- RoHS compliant and compatible

## Typical Applications

- Consumer products
- Instrumentation
- Computer products
- Industrial

B

Tactile Switches

### Specification

FUNCTION: Momentary action  
CONTACT ARRANGEMENT: SPST, N.O.  
TERMINALS: PC pins

### Mechanical

ACTUATION FORCE: 130 grams, 160 grams, 200 grams, 260 grams  
LIFE EXPECTANCY: 100,000 operations.

### Electrical

CONTACT RATING: 50 mA @ 12 V DC.  
DIELECTRIC STRENGTH: 250 V AC min.  
CONTACT RESISTANCE: 100 mΩ max. initial.  
INSULATION RESISTANCE: 10<sup>11</sup> Ω min.

### Environmental

OPERATING TEMPERATURE: -20°C to 60°C

### Process

SOLDERING: Preheating to 100°C for 45 sec. max. Keep flux flush with top surface of PCB; do not apply to component side of PCB and area where terminals are located. Soldering to 255°C for 5 sec. max. Clean by brushing on solder surface. Do not clean switch with solvents.

### Packaging

Bulk packaging.

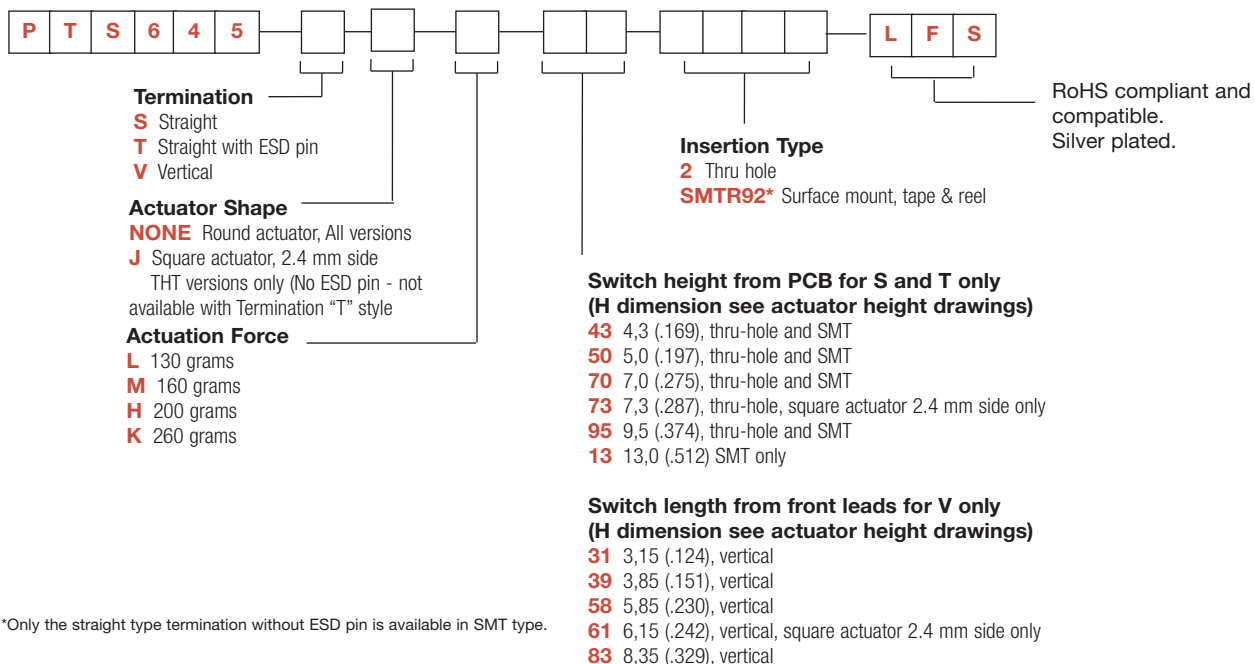
#### Tape & reel for the SMT type:

Reels of 1,000 pieces for 4,3 and 5,0 mm height  
Reels of 700 pieces for 7,0 mm height  
Reels of 500 pieces for 9,5 mm height  
Reels of 400 pieces for 13,0 mm height

**NOTE:** Specifications listed above are for switches with standard options.  
For information on specific and custom switches, consult Customer Service Center.

## How To Order

Our easy build-a-switch concept allows you to mix and match options to create the switch you need. To order, select desired option from each category and place it in the appropriate box.



\*Only the straight type termination without ESD pin is available in SMT type.

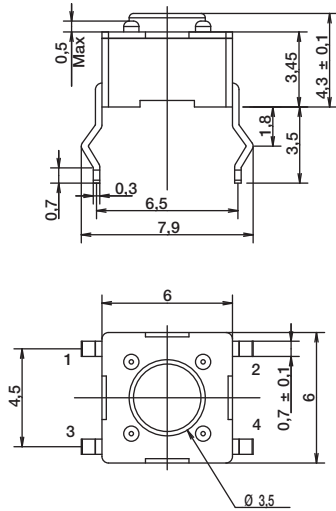


Dimensions are shown: mm  
Specifications and dimensions subject to change

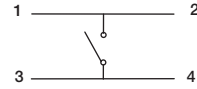
# PTS645 Series 6 mm Tact Switches

## TERMINATION

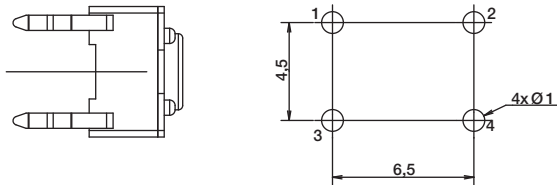
### S STRAIGHT



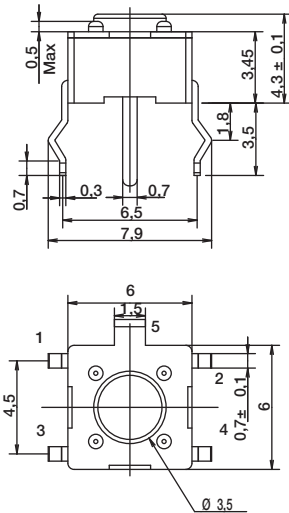
SCHEMATIC



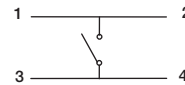
PCB LAYOUT



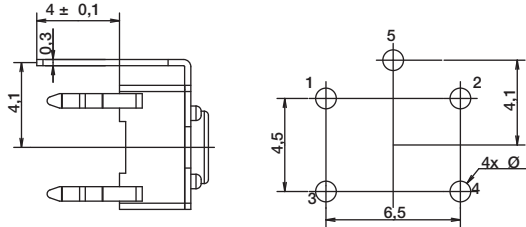
### T STRAIGHT WITH ESD PIN



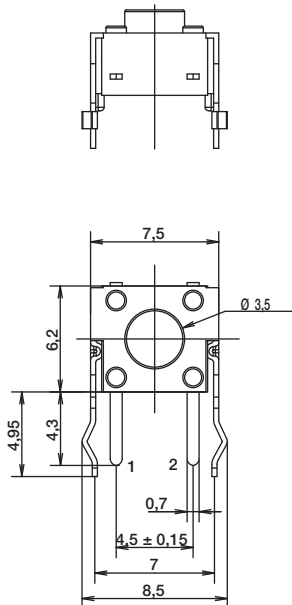
SCHEMATIC



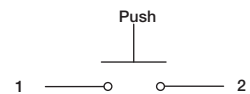
PCB LAYOUT



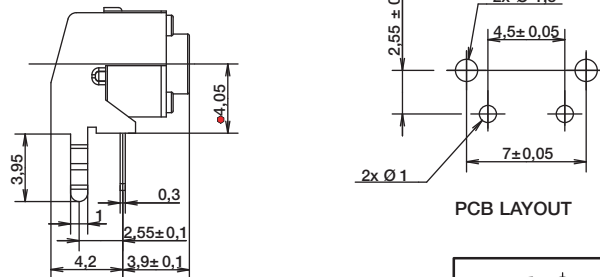
### V VERTICAL



SCHEMATIC



PCB LAYOUT



Dimensions are shown in mm  
Specifications and dimensions subject to change

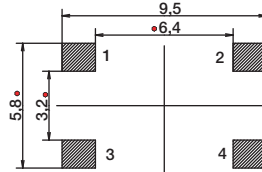
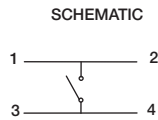
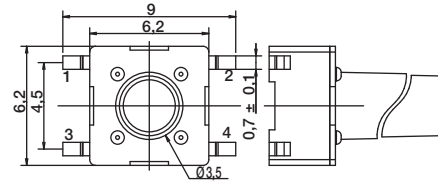
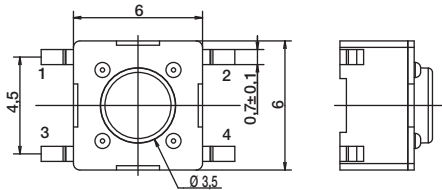
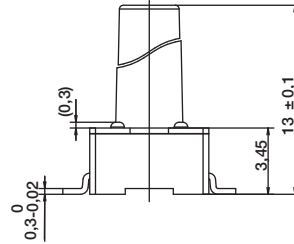
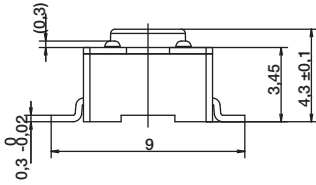
# PTS645 Series 6 mm Tact Switches

## TERMINATION

### SMT

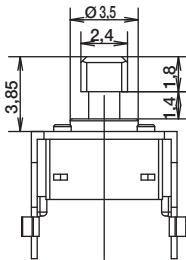
FOR 4.3, 5.0, 7.0, 9.5 MM HEIGHT

13.0 MM HEIGHT ONLY

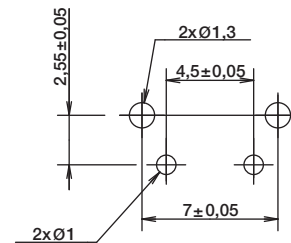
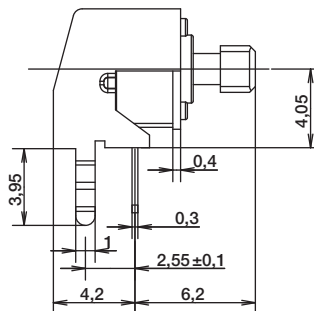
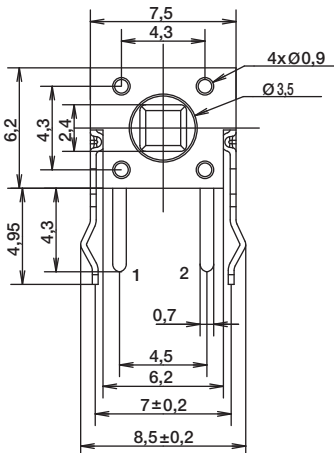
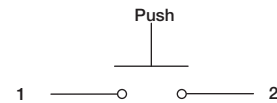


PCB LAYOUT

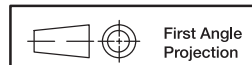
## ACTUATOR SHAPE



SCHEMATIC



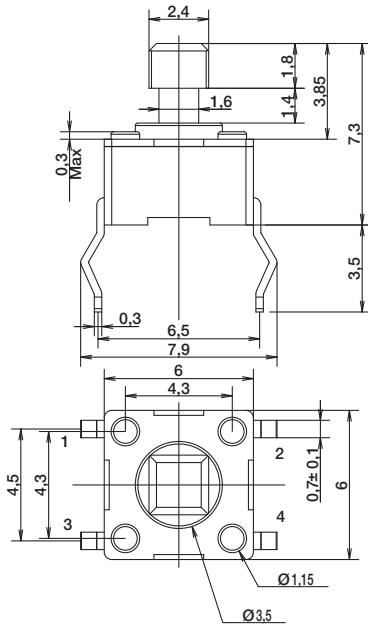
RECOMMENDED PCB LAYOUT



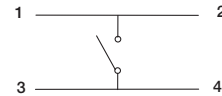
Dimensions are shown: mm  
Specifications and dimensions subject to change

# PTS645 Series 6 mm Tact Switches

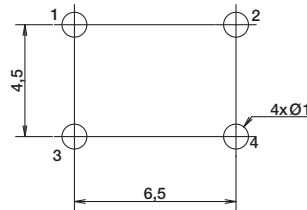
## ACTUATOR SHAPE



SCHMATIC



RECOMMENDED PCB LAYOUT



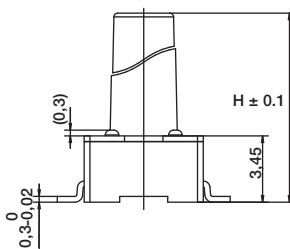
B

Tactile Switches

## ACTUATION FORCE

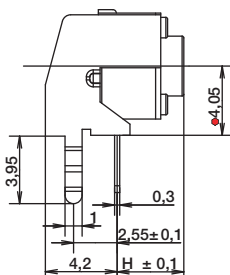
OPTION CODE	FORCE
<b>L</b>	130 grams Black
<b>M</b>	160 grams Blue
<b>H</b>	200 grams Gray
<b>K</b>	260 grams Red

## ACTUATOR HEIGHT



Switch height from PCB for S and T only

OPTION CODE	DIMENSION H	TERMINATION	SCHEMATIC	
			Without EMC pin	With EMC pin
<b>43</b>	4,3 (.169)	Thru-hole and SMT		
<b>50</b>	5,0 (.197)	Thru-hole and SMT		
<b>70</b>	7,0 (.275)	Thru-hole and SMT		
<b>95</b>	9,5 (.374)	Thru-hole and SMT		
<b>13</b>	13,0 (.512)	SMT		



Switch length from front leads for V only

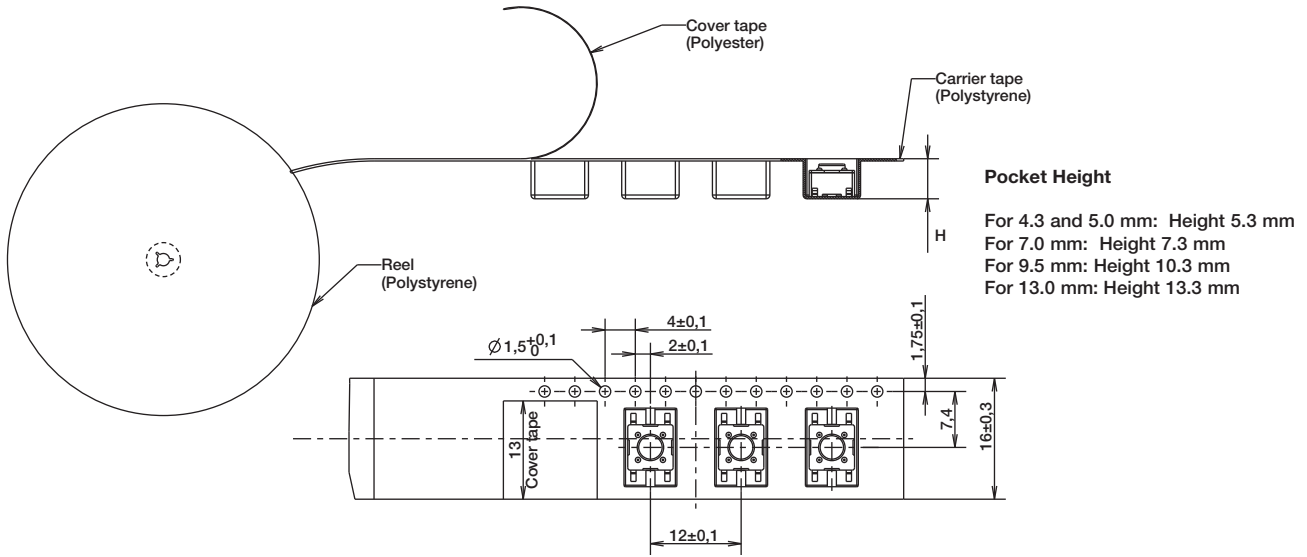
OPTION CODE	DIMENSION H	TERMINATION	SCHEMATIC	
			Without EMC pin	With EMC pin
<b>31</b>	3,15 (.124)	Vertical		
<b>39</b>	3,85 (.151)	Vertical		
<b>58</b>	5,85 (.230)	Vertical		
<b>83</b>	8,35 (.329)	Vertical		

# PTS645 Series 6 mm Tact Switches

## TAPE & REEL

B

Tactile Switches



# PTS645 V SMT Series 6 mm SMT Side Actuated Tact Switch

## Features/Benefits

- Full SMT processing
- Strong PCB soldering pads
- Compact 6 x 6 mm design

## Typical Applications

- Consumer Products
- Set Top and Access Boxes
- Instrumentation
- Home and Garden Equipment



B

Tactile Switches

## Specification

FUNCTION: Momentary action  
 CONTACT ARRANGEMENT: 1 make contact = SPST, N.O.  
 TERMINALS: G type for SMT  
 TRAVEL: 0.25 mm +0.2/-0.1 mm  
 OPERATING LIFE: 100,000 cycles

## Mechanical

Part Number	Operating Force (gf)	Actuator Color
PTS645 VN13 SMTR92 LFS	100 ± 30	Dark grey
PTS645 VM13 SMTR92 LFS	160 ± 50	Yellow green

## Electrical

MAXIMUM VOLTAGE: 12 V DC  
 MAXIMUM CURRENT: 50 mA  
 DIELECTRIC STRENGTH: 100 V AC (1mn)  
 CONTACT RESISTANCE: ≤ 100 mΩ  
 INSULATION RESISTANCE: ≥ 100 MΩ  
 BOUNCE TIME: ≤ 10 ms

## Environmental

OPERATING TEMPERATURE: -20°C to 70°C  
 STORAGE TEMPERATURE: -30°C to 80°C

## Process

SOLDERING: This component is suited to the following methods:  
 Infrared Reflow Soldering in accordance with IEC61760-1

Recommended solder paste thickness is ≥ 15µm

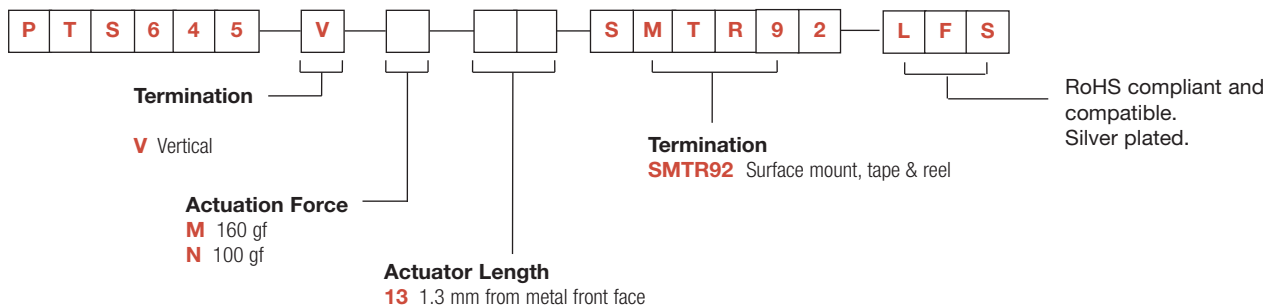
## Packaging

In reels of 650 pieces  
 Dimensions of reels according to EIA 481B  
 External diameter 330 mm

**NOTE:** Specifications listed above are for switches with standard options.  
 For information on specific and custom switches, consult Customer Service Center.

## How To Order

Our easy build-a-switch concept allows you to mix and match options to create the switch you need. To order, select desired option from each category and place it in the appropriate box.

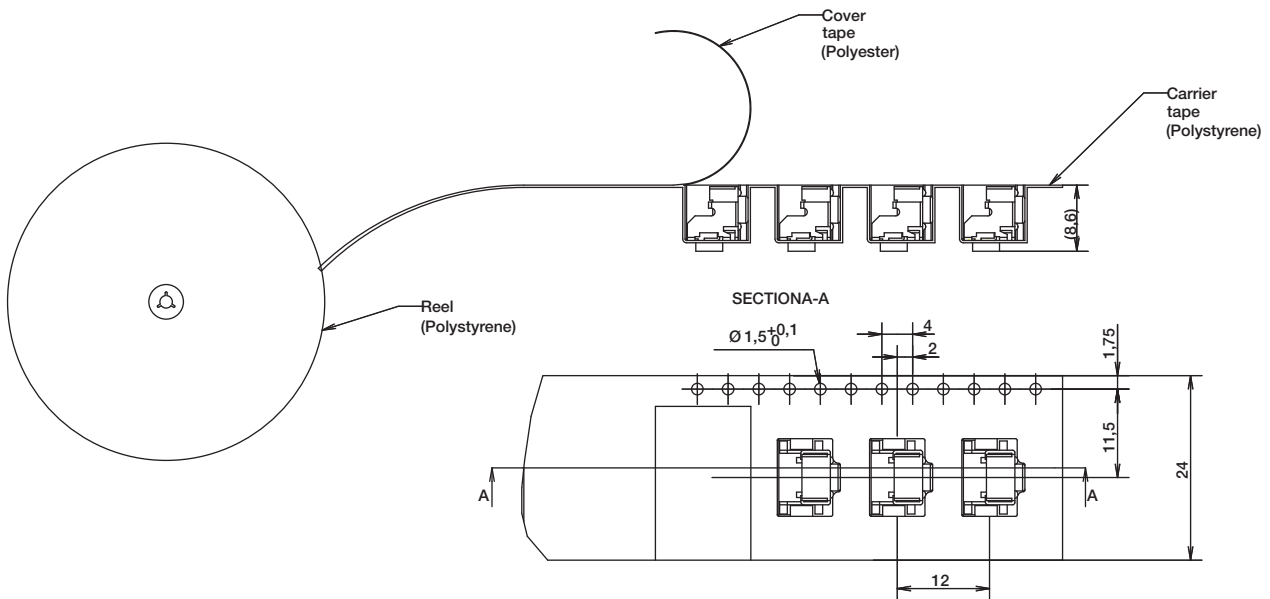
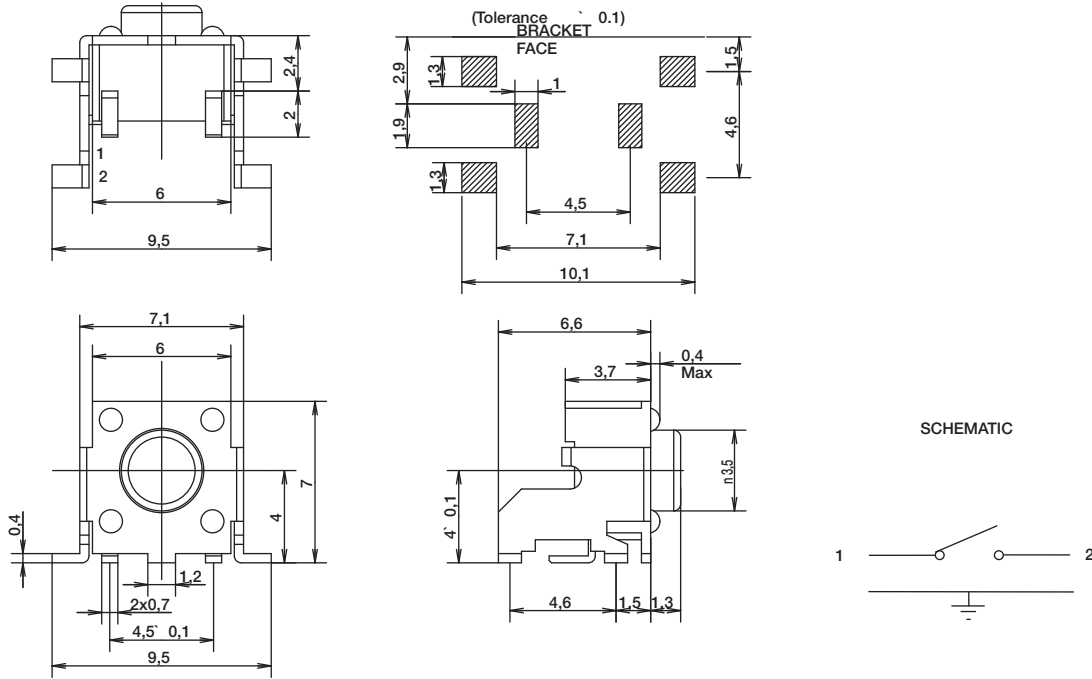




# PTS645 V SMT Series

## 6 mm SMT Side Actuated Tact Switch

RECOMMENDED PCB LAYOUT



# PTS125 Series 12 mm Tact Switches



## Features/Benefits

- THT and SMT terminations
- Various heights
- Snap fit actuator option

## Typical Applications

- Consumer products
- Instrumentation
- Computer products
- Industrial



B

Tactile Switches

## Specification

FUNCTION: Momentary action  
CONTACT ARRANGEMENT: 1 make contact SPST, N.O.  
TERMINALS: PC pins for THT and G type for SMT  
TRAVEL: 0.30 mm ± 0.15 mm

## Mechanical

OPERATING LIFE: 200,000 cycles  
OPERATING FORCE: 180 gf ± 50  
250 gf ± 50

## Electrical

MAX VOLTAGE: 12 VDC  
MAX CURRENT: 50 mA  
DIELECTRIC STRENGTH: 250 V AC (1mn)  
CONTACT RESISTANCE: <100 mΩ  
INSULATION RESISTANCE: >100MΩ  
BOUNCE TIME: < 5 ms

**NOTE:** Specifications listed above are for switches with standard options.  
For information on specific and custom switches, consult Customer Service Center.

## Environmental

OPERATING TEMPERATURE: -20°C to 70°C

## Process

SOLDERING: This component is suited to the following methods:  
Infrared reflow soldering in accordance with IEC 61760-1 for SMT version  
Wave soldering compatible with lead free soldering profile

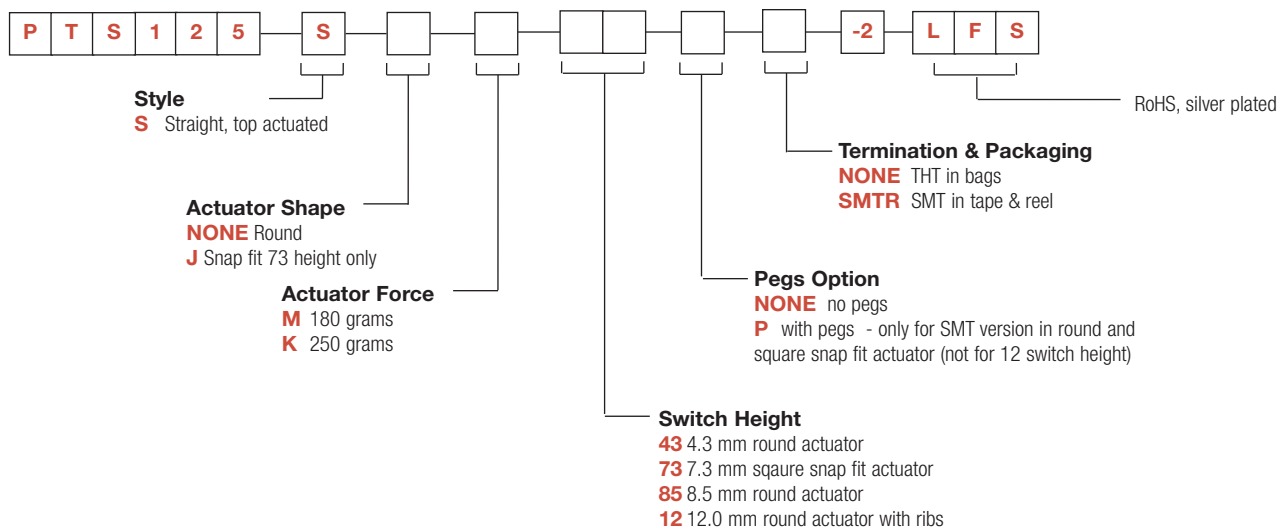
## Packaging

Soldering Style	Height	Packaging	Parts per Packaging
THT	All heights	Plastic bag	500
SMT	4.3 mm	tape & reel	900
SMT	4.3 mm with pegs	tape & reel	600
SMT	7.3 mm	tape & reel	500
SMT	7.3 mm with pegs	tape & reel	500
SMT	8.5 mm	tape & reel	500
SMT	8.5 mm with pegs	tape & reel	400
SMT	12 mm	tape & reel	250

Dimensions of reels according to EIA 481B. External diameter 330 mm.

## How To Order

Our easy build-a-switch concept allows you to mix and match options to create the switch you need. To order, select desired option from each category and place it in the appropriate box.



Other heights with the round actuator are available upon request. Different minimum order quantities than the stand may apply.



Dimensions are shown: mm  
Specifications and dimensions subject to change

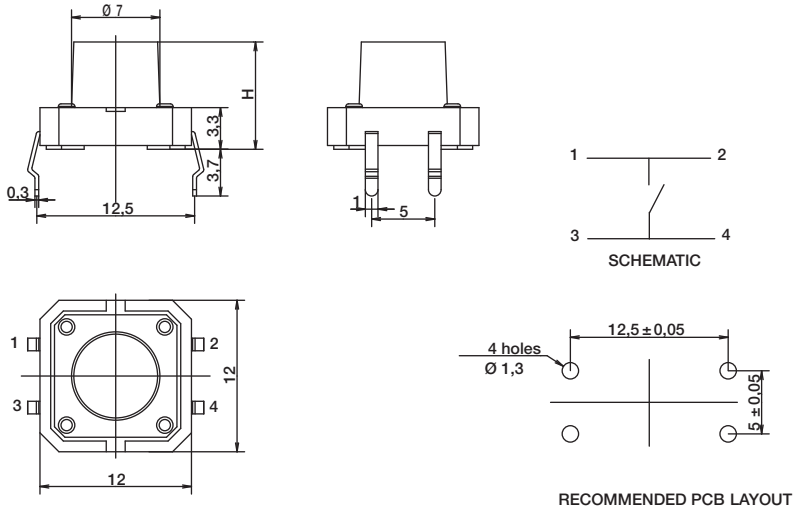
# PTS125 Series

## 12 mm Tact Switches

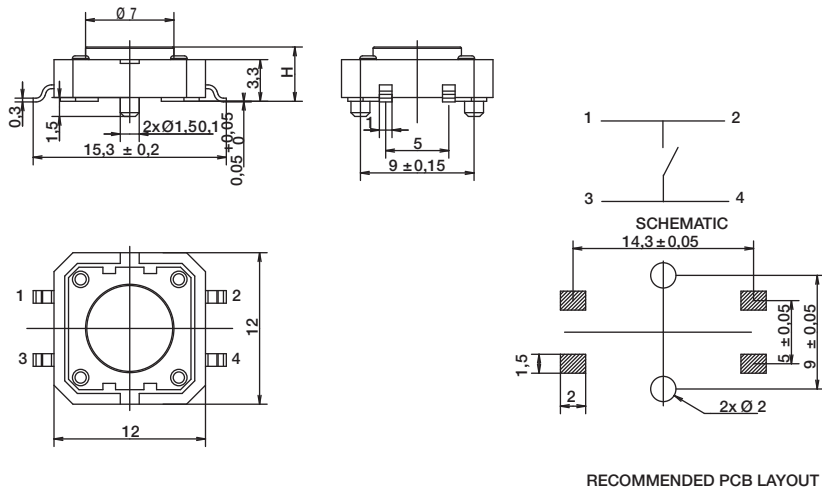
**THT** VERSION WITH ROUND ACTUATOR H= 4.3 & 8.5 MM (other height upon request)

B

Tactile Switches

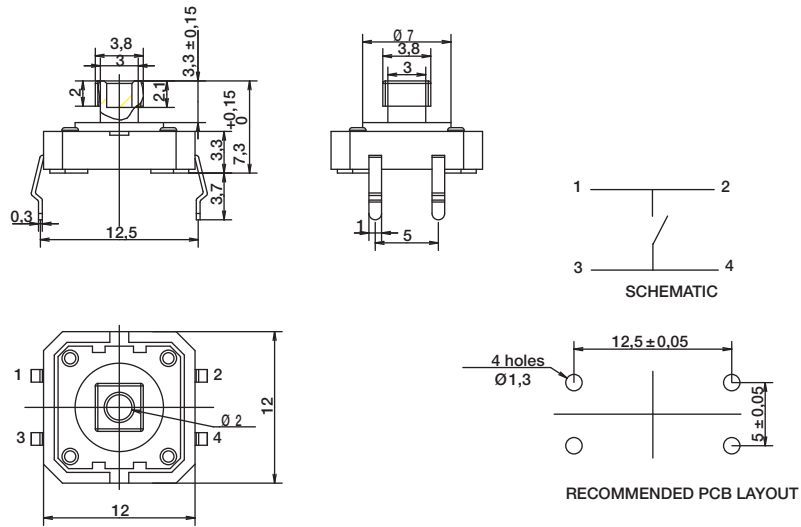


**SMT** VERSION WITH ROUND ACTUATOR AND PEGS H= 4.3 & 8.5 MM (other height upon request)

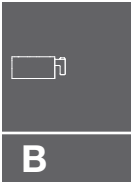
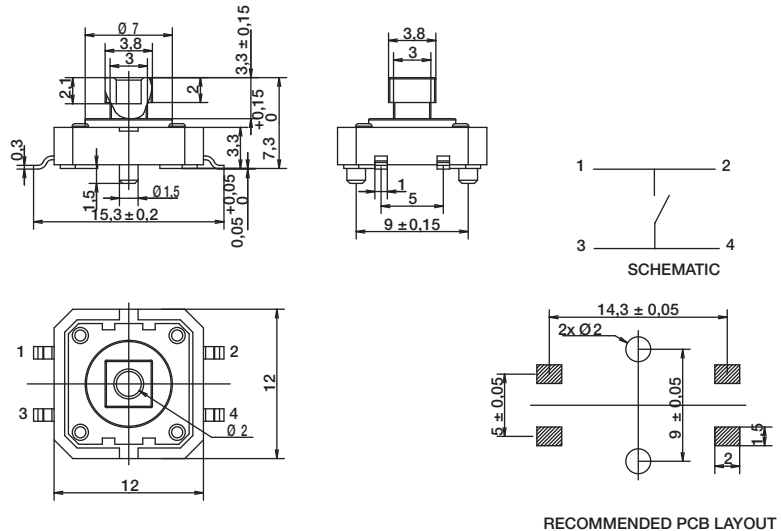


# PTS125 Series 12 mm Tact Switches

**THT** VERSION WITH SQUARE SNAP FIT ACTUATOR H= 7.3 MM



**SMT** VERSION WITH SQUARE SNAP FIT ACTUATOR AND PEGS H= 7.3 MM



**B**  
Tactile Switches



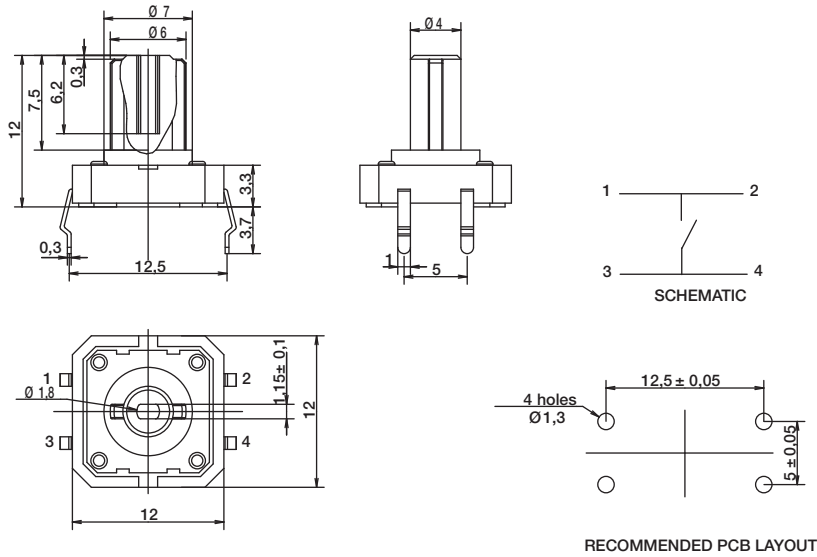
Dimensions are shown: mm  
Specifications and dimensions subject to change

# PTS125 Series 12 mm Tact Switches

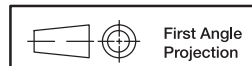
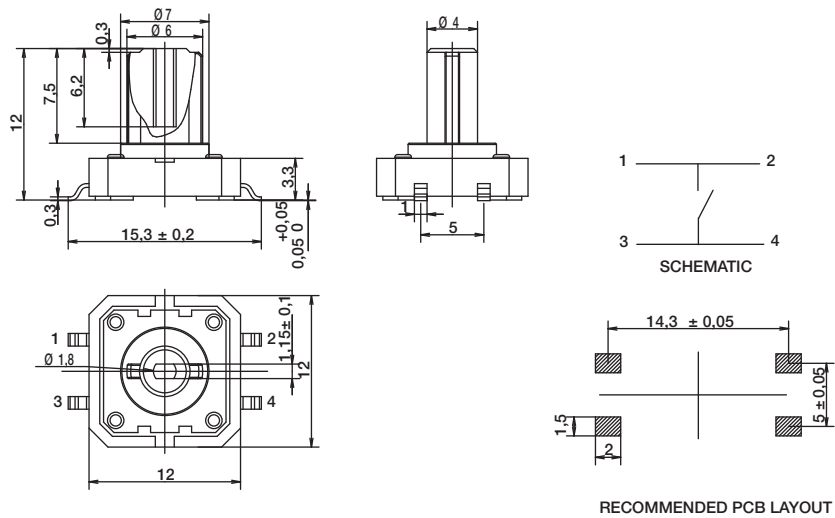
**THT** VERSION WITH ROUND RIBBED ACTUATOR H= 12.0 MM

Tactile Switches

B



**SMT** VERSION WITH ROUND RIBBED ACTUATOR H= 12.0 MM



Dimensions are shown: mm  
Specifications and dimensions subject to change



# ITS Series Illuminated Tact Switch

## Features/Benefits

- Vertical and right angle SMT models
- Vertical and right angle thru-hole models
- Multiple caps and legends
- Several LED colors and bi-color options
- RoHS compliant /compatible

## Typical Applications

- Consumer electronics
- Server/storage
- Medical devices
- Test/Measurement/Instrumentation
- Audio/Video
- Computers/Peripherals
- Security

NEW  
Right  
Angle  
SMT



B

Tactile Switches

## Specification

FUNCTION: N.O. momentary action  
TERMINALS: SMT & Thru-hole

## Mechanical

OPERATING FORCE: 160 ± 50gf for V1; V2; V3; R1; R2 models  
220 ± 50 gf for R3 model  
OPERATING LIFE: 50,000 cycles (250m Ω max)  
RECOMMENDED OPERATING STROKE: 0.25mm ± 0.1mm

## Electrical

RATING: 50mA @ 12VDC  
CONTACT RESISTANCE: <100m Ω (initial)  
DIELECTRIC WITHSTANDING VOLTAGE:  
>250VAC (50-60 Hz) between terminals - 1 min.Ω  
INSULATION RESISTANCE: >100M Ω  
BOUNCE TIME: <10ms

## Packaging

Thru-hole: 200 pieces per tray  
SMT: tape & reel (see V2 or V3 mounting style drawings)

## Environmental

OPERATING TEMPERATURE: -25°C to +70°C  
STORAGE TEMPERATURE: -25°C to +80°C

## Process

SOLDERABILITY: Thru-hole - wave compatible  
SMT - convection or IR reflow compatible

## Materials

CONTACTS/TERMINALS: Base metal; brass  
Plating; Ag  
DOME: Base metal: Phosphor bronze  
Plating; Ag

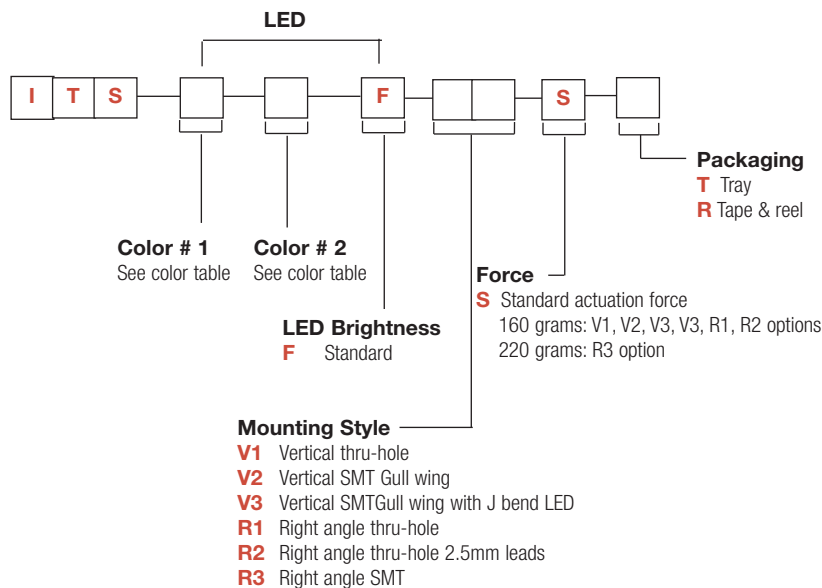
BASE: PA  
ACTUATOR: PA  
COVER: PA

## Caps

Caps are ordered separately and shipped bulk. Thru-hole versions available with caps assembled under custom part number. Contact customer service for details.

## How To Order

Our easy build-a-switch concept allows you to mix and match options to create the switch you need. To order, select desired option from each category and place it in the appropriate box.



LED Color	
00	No light
10	Red
12	Red/Yellow
13	Red/Green
14	Red/Blue
20	Yellow
21	Yellow/Red
23	Yellow/Green
30	Green
31	Green/Red
32	Green/Yellow
40	Blue
41	Blue/Red
50	White
60	True green

\* Other colors available by request



Dimensions are shown: mm  
Specifications and dimensions subject to change

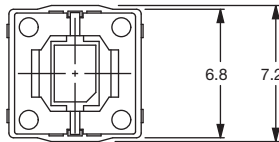
# ITS Series Illuminated Tact Switch

## LED COLOR / BRIGHTNESS

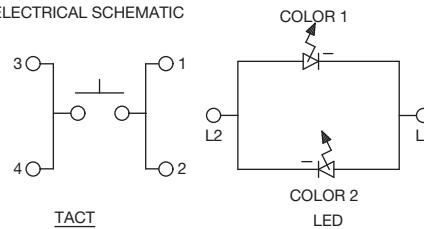
LED Characteristic	units	Standard LED Color Options					
		Red (1)	Yellow (2)	Green (3)	Blue (4)	White (5)	True Green (6)
Recommended Operating	mA @ 5VDC	20mA	20mA	20mA	20mA	20mA	20mA
Forward Current	mA	30 mA	30 mA	30 mA	30 mA	30 mA	30 mA
Peak Pulsing Current (1/8 duty @ 1kHz)	mA	125 mA	125 mA	125 mA	125 mA	125 mA	125 mA
Power Dissipation	mW	75 mW	75 mW	75 mW	108 mW	108 mW	108 mW
Forward Voltage @ 20mA	Volts	2.5 Volts Max.	2.5 Volts Max.	2.5 Volts Max.	3.6 Volts Max.	3.6 Volts Max.	3.6 Volts Max.
Dominant Wavelength @ 20mA	nm	637nm (Typical)	590nm (Typical)	570nm (Typical)	465nm (Typical)	CIE Coordinates X= 0.25 ~ 0.33 Y= 0.24 ~ 0.34	522nm (Typical)
Wavelength at Peak Emission @ 20mA	nm	645nm (Typical)	590nm (Typical)	573nm (Typical)	460nm (Typical)		515nm (Typical)
Spectral Half Bandwidth @ 20mA	nm	20nm (Typical)	20nm (Typical)	17nm (Typical)	25nm (Typical)		33nm (Typical)
Luminous Intensity @ 20mA	mcd	50mcd Minimum	125mcd Minimum	40mcd Minimum	100mcd Minimum	250mcd Minimum	500mcd Minimum
Viewing Angle at 50% LV (@10mA)	degrees	150° Typical	120° Typical	120° Typical	120° Typical	150° Typical	120° Typical

## MOUNTING STYLES

### V1 - Vertical Thru-hole



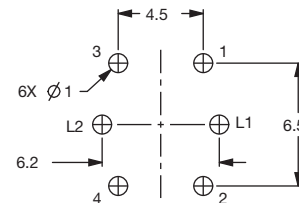
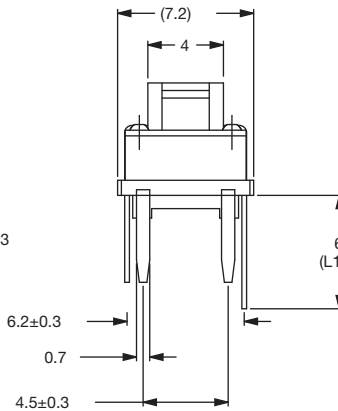
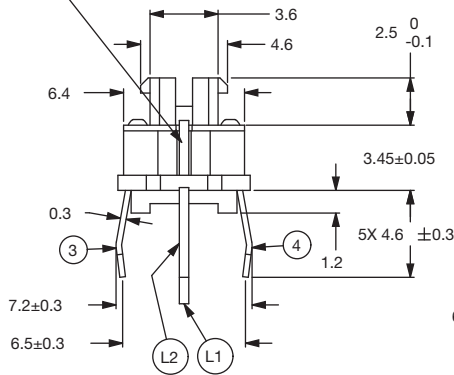
ELECTRICAL SCHEMATIC



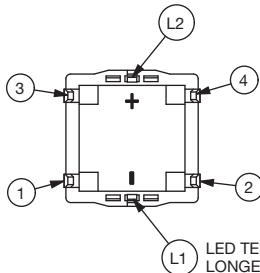
TACT

COLOR 2  
LED

DOT SHOWING LED COLOR IS MARKED FOR MINUS POLE SEE SCHEMATIC



P.C.B. LAYOUT



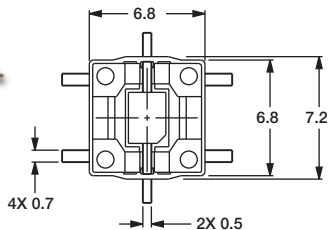
LED TERMINAL L1 IS TRIMMED LONGER THAN TERMINAL L2

TRAY PACKAGING: 200 PIECES

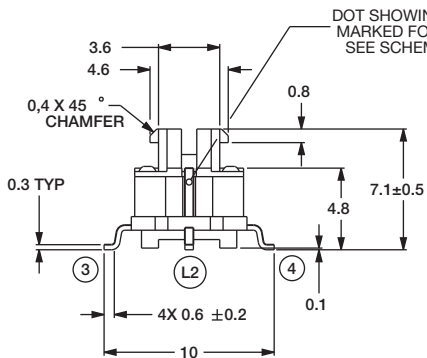
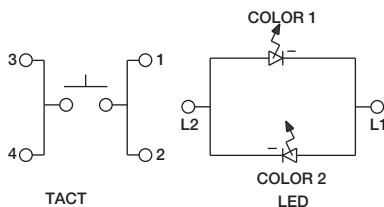
# ITS Series Illuminated Tact Switch

## MOUNTING STYLES

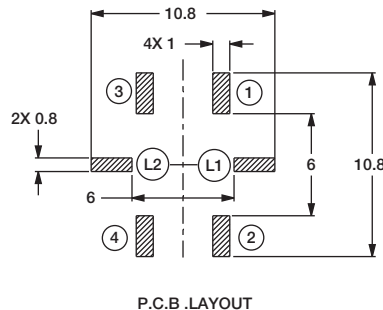
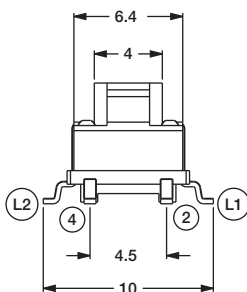
### V2 - Vertical SMT; Gullwing



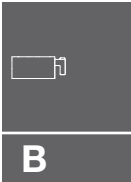
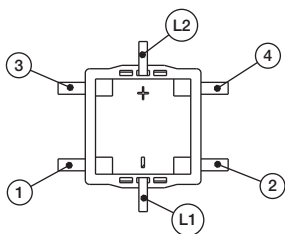
ELECTRICAL SCHEMATIC



DOT SHOWING LED COLOR IS MARKED FOR MINUS POLE (CATHODE) SEE SCHEMATIC

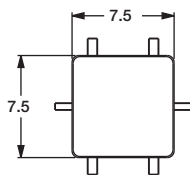


P.C.B. LAYOUT

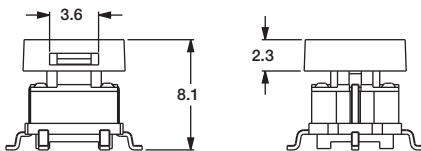


B

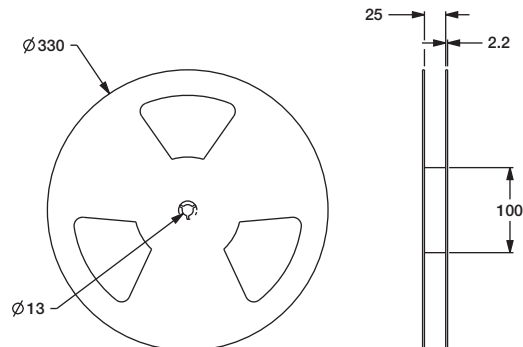
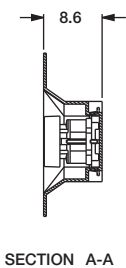
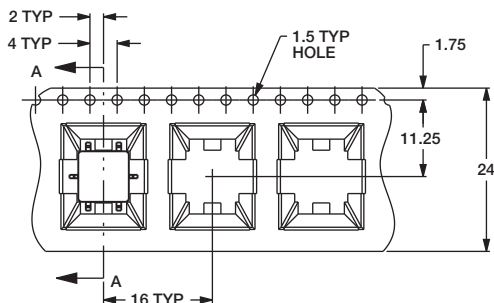
Tactile Switches



TAPE & REEL: 500 PIECES



NOTES:  
1. SWITCH WITH TEMPORARY PICK AND PLACE CAP.



Dimensions are shown: mm  
Specifications and dimensions subject to change

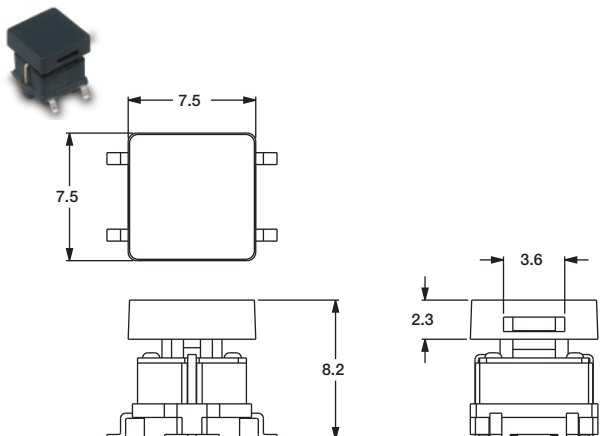
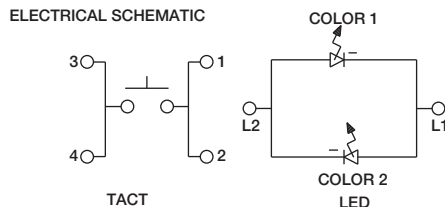
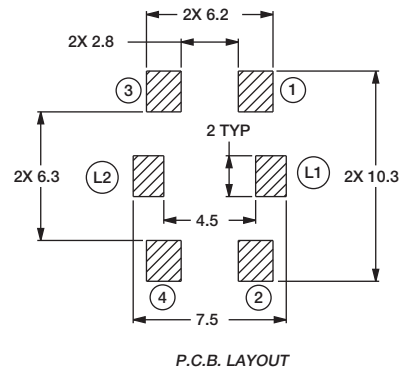
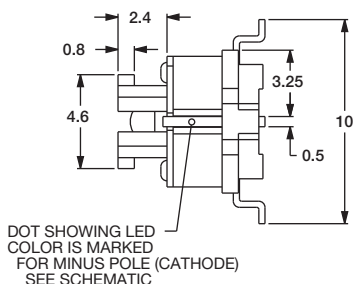
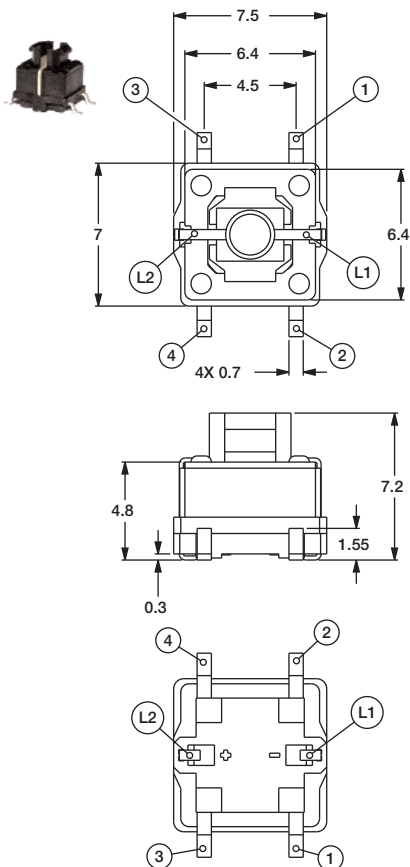


# ITS Series Illuminated Tact Switch

## MOUNTING STYLES

### V3 - Vertical SMT; Gull wing with J bend LED

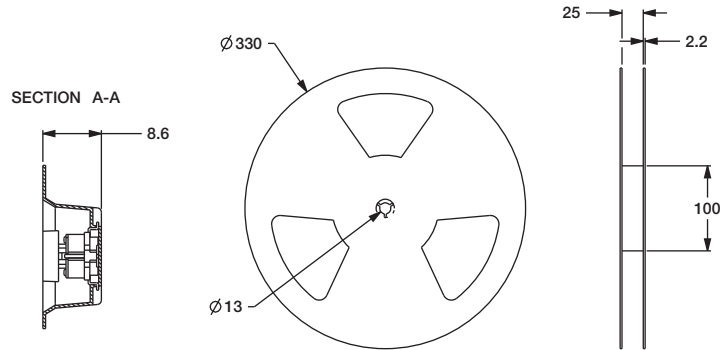
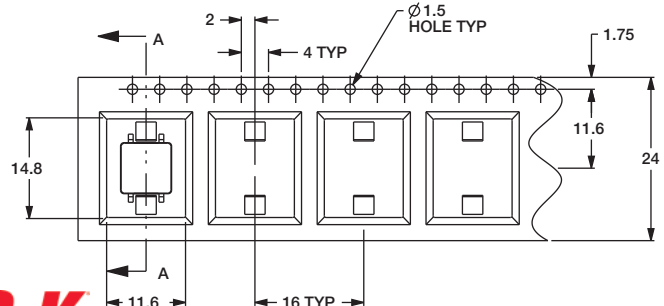
Tactile Switches



SCALE 3:1

TAPE & REEL: 500 PIECES

NOTES:  
1. SWITCH WITH TEMPORARY PICK AND PLACE CAP.



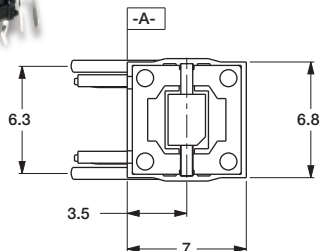
Dimensions are shown: mm  
Specifications and dimensions subject to change



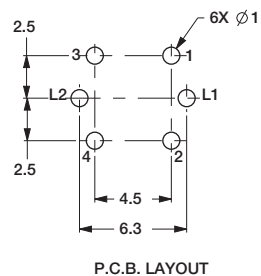
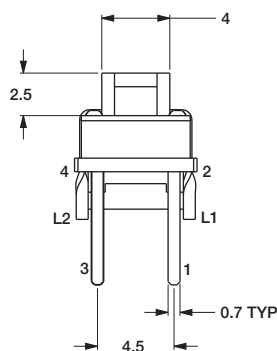
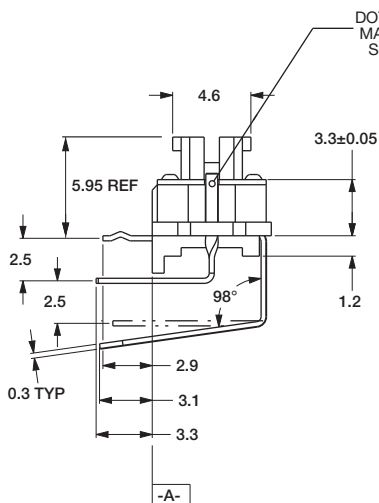
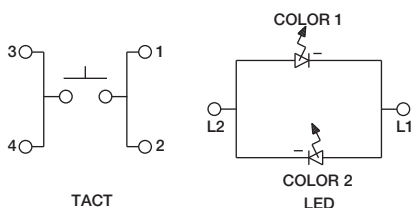
# ITS Series Illuminated Tact Switch

## MOUNTING STYLES

### R1 - Right Angle; Thru-hole

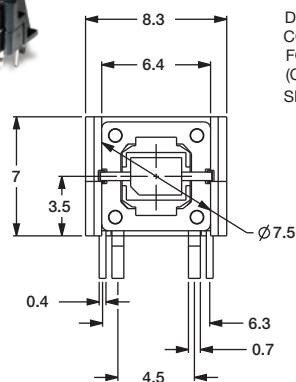


ELECTRICAL SCHEMATIC

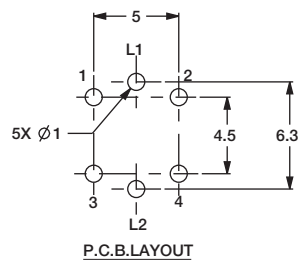
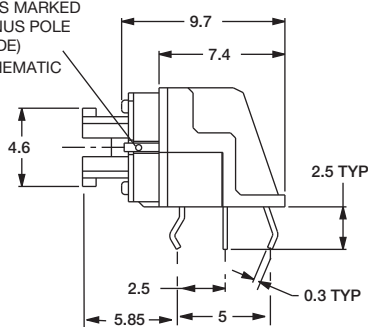


TRAY PACKAGING: 200 PIECES

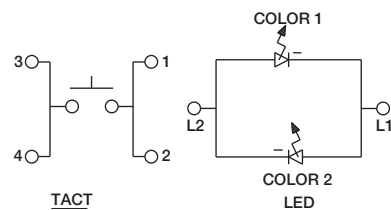
### R2 - Right Angle; Thru-hole 2.5mm leads



DOT SHOWING LED COLOR IS MARKED FOR MINUS POLE (CATHODE) SEE SCHEMATIC



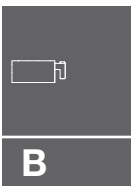
ELECTRICAL SCHEMATIC



TRAY PACKAGING: 200 PIECES



Dimensions are shown: mm  
Specifications and dimensions subject to change



Tactile Switches

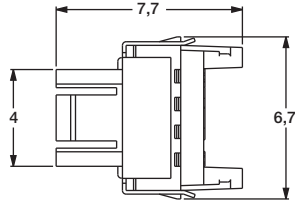
# ITS Series Illuminated Tact Switch

## MOUNTING STYLES

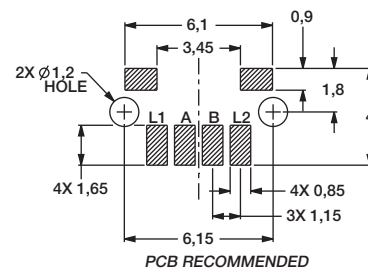
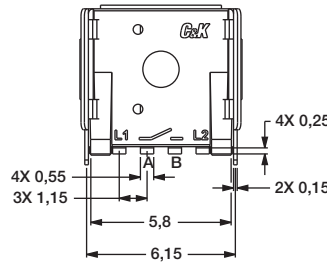
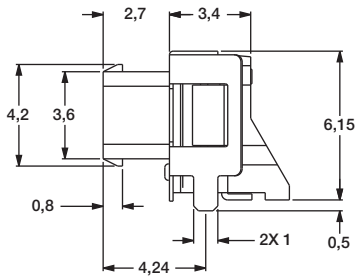
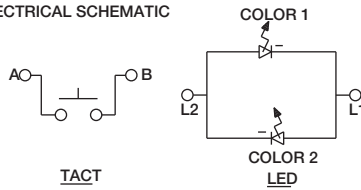
### R3 - Right Angle, SMT

B

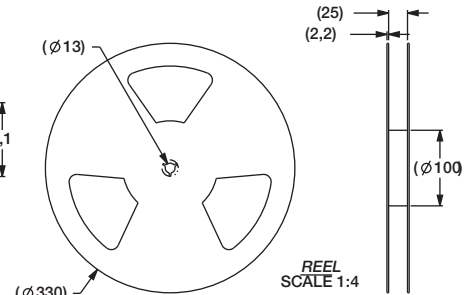
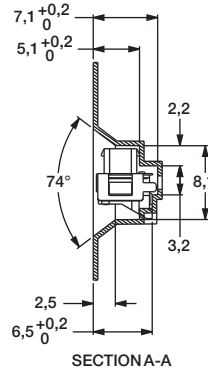
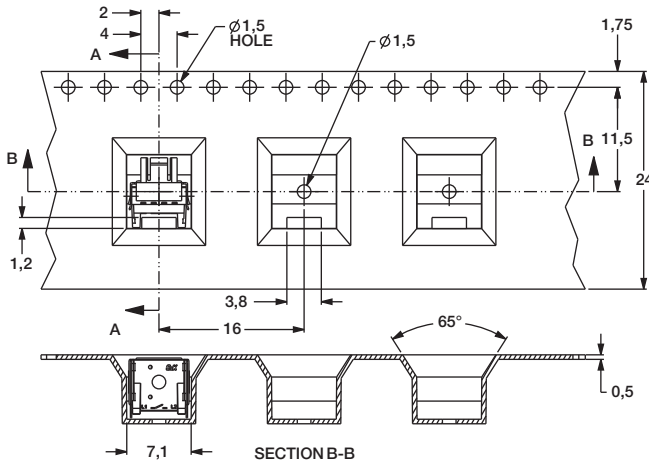
Tactile Switches



ELECTRICAL SCHEMATIC



TAPE & REEL: 500 PIECES



# ITS Series Illuminated Tact Switch

## FORCE

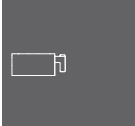
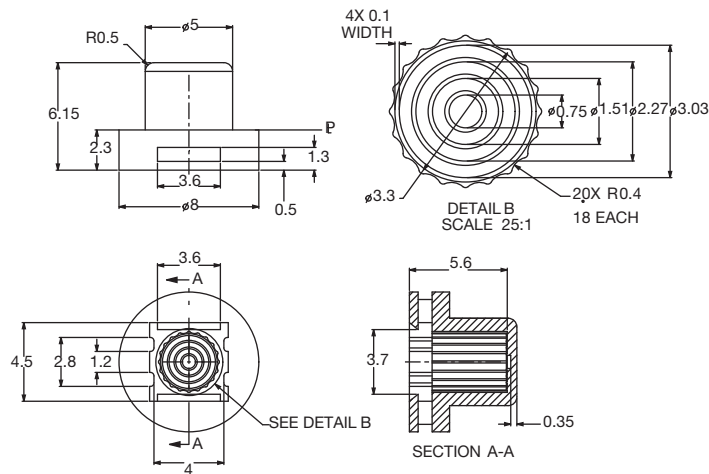
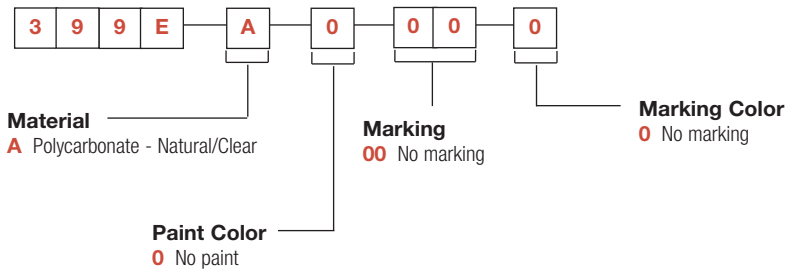
OPTION CODE	FORCE
<b>S</b>	Standard 160 gf - V1, V2, V3, R1, R2 options 220 gf - R3 option

## CAPS

Use the individual ordering code for each cap



**399EA0000**  
Round cap, clear



**B**

Tactile Switches

# ITS Series Illuminated Tact Switch

## CAPS



**400EA0000**

Natural/clear



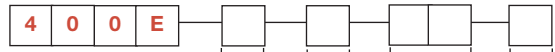
**400EB0000**

Translucent white, flat edge



**400ECA01E**

Matte silver paint laser etch, flat edge



**Material**

- A** Natural/Clear - polycarbonate
- B** Translucent white - polycarbonate
- C** Silver paint laser etch - polycarbonate

**Paint Color**

- 0** No paint
- A** Matte silver

**Laser Etch Marking**

- 00** No marking
- 01** Power On/Off
- 04** Arrow right
- 05** Arrow left
- 06** Arrow up
- 07** Arrow down
- 09** Power
- 33** Arrow up (fill)
- 34** Arrow down (fill)
- 97** I/O



**Marking Color**

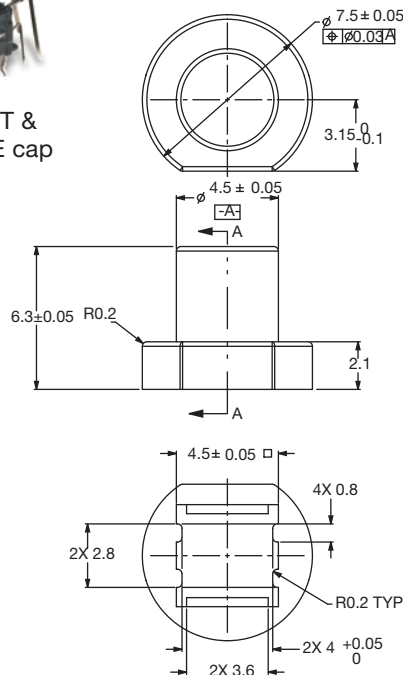
- 0** No marking
- E** Laser etch (painted caps only)

Tactile Switches

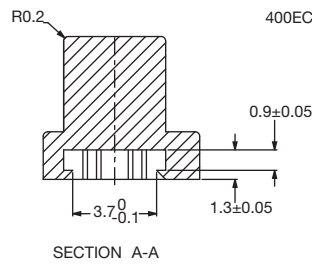
**B**



ITSXXFR1ST &  
400ECA01E cap



400ECA01E SHOWN



**400E cap dimensions shown are "as molded" (no paint).**

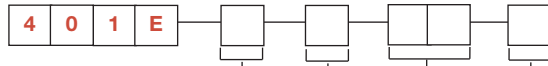
# ITS Series Illuminated Tact Switch

## CAPS



**401ECA06E**

Matte silver paint, laser etch,  
tall oval



**Material**

- A** Natural/clear - polycarbonate
- B** Translucent white - polycarbonate
- C** Paint laser etch - polycarbonate

**Paint Color**

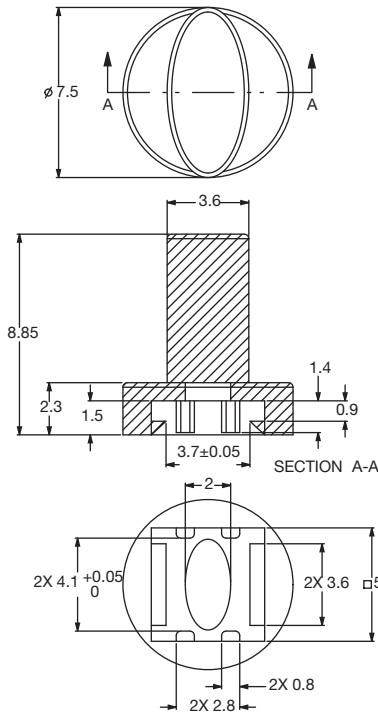
- 0** No paint
- A** Matte silver

**Laser Etch  
Marking**

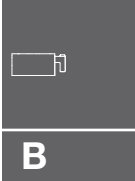
- 00** No marking
- 06** Arrow up
- 07** Arrow down
- 33** Arrow up (fill)
- 34** Arrow down (fill)

**Marking Color**

- 0** No marking
- E** Laser etch (painted caps only)





401E cap dimensions shown are "as molded" (no paint).



Tactile Switches

# Navigation Switches

## Product Selection Guide

<b>Navigation</b>		
<b>Series</b>	<b>TSW</b>	<b>CS</b>
<b>Number of directions</b>	3 7	4
<b>Size on PCB L x W (mm)</b>	ø 21 ø 34,4	40 x 40
<b>Total Height (mm)</b>	3,5 6,0	58
<b>Actuation Force (N)</b>	2,2 to 3,0 scanning and select, 0.5N cm rotation	4,9N
<b>Contact Type</b>	Silver	NA
<b>Max. Voltage (VDC)</b>	10	12
<b>Max. Switching Power (A)</b>	0.001	0.2
<b>Life Cycles/ per way</b>	1,000,000	10,000
<b>Sealing</b>	Not sealed	Not sealed
<b>Page Number</b>	C-3	C-6



Navigation

# TSW Series 3 or 7 Function Tact and Scroll Wheel

## Features/Benefits

- Compact and slim
- Multiple function in one component (rotary, select)
- Easy installation
- Through hole termination
- Integrated decoration (B type)

## Typical Applications

- Remote controls
- Desk phones
- Keyboards
- Printers
- Entertainment systems
- White goods



## Operation Characteristics

OPERATING FORCE: See chart below  
24 detent - 12 pulses/360°

## Specifications

INITIAL CONTACT RESISTANCE: Max. 300mΩ  
INSULATION RESISTANCE: Min. 100 MΩ (100 VDC)  
RATING: 1mA 10 VDC  
LIFE CYCLE: See chart below  
OPERATING FREQUENCY:  
Rotation - Max. 30 operations per minute  
Push - Max. 120 operations per minute  
Depression - Max. 300 gf

## Environmental

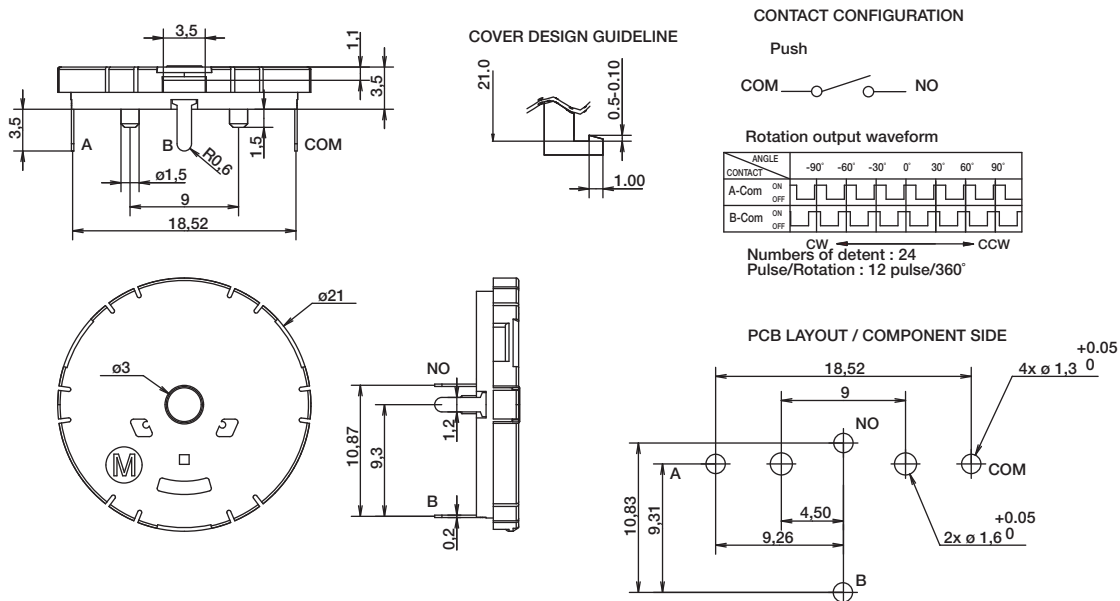
OPERATING TEMPERATURE: 0°C / 40°C  
STORAGE TEMPERATURE: -40°C / 70°C  
VIBRATION RESISTANCE: 10 ~ 55 Hz, displacement 0.75mm (p-p)  
SHOCK RESISTANCE: Destruction 1,000 m/s<sup>2</sup> (approx. 100G) max.  
WAVE SOLDERING: Max. 260°C for 5 seconds  
HAND SOLDERING: Max. 260°C for 5 seconds

Designation	Number of Circuits	Rotation Actuation Force	Push Actuation Force	Cycle Life Rotation (per direction)	Cycle Life Push
TSWA	3	Max. 60g - cm	220g ± 50g	1,000K cycles	1,000K cycles
TSWB	5	Max. 50g - cm	Max 300g	1,000K cycles	1,000K cycles

Part Number	Description	Tray	Box
TSWA-3N-C LFS	Base switch with jog and select, no decoration	80	160
TSWA-3N-CB11 LFS	Base switch with jog and select, white central button, white dial	65	130
TSWA-3N-CD23 LFS	Base switch with jog and select, black central button, grey dial	30	60
TSWB-3N-CB111 LFS	Central select with jog and 4 directions, white central button, dial & direction ring	30	60
TSWB-3N-CB222 LFS	Central select with jog and 4 directions, black central button, dial & direction ring	30	60

## TSWA-3N-C LFS

Base switch with jog and select, no decoration



Dimensions are shown: mm  
Specifications and dimensions subject to change

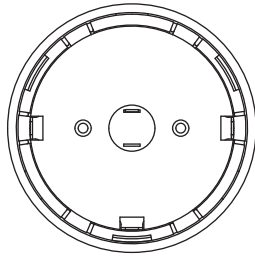




# TSW Series

## 3 or 7 Function Tact and Scroll Wheel

**TSWA-3N-CB11 LFS** Base switch with jog and select, white central button, white dial

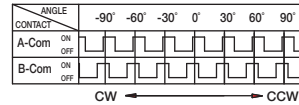


CONTACT CONFIGURATION

Push



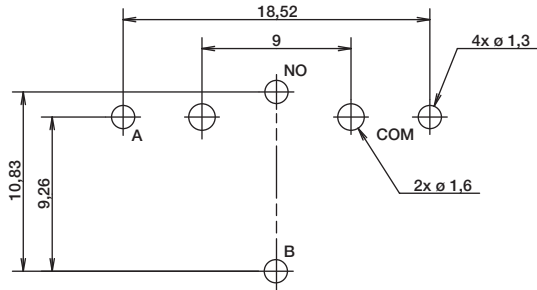
Rotation output waveform



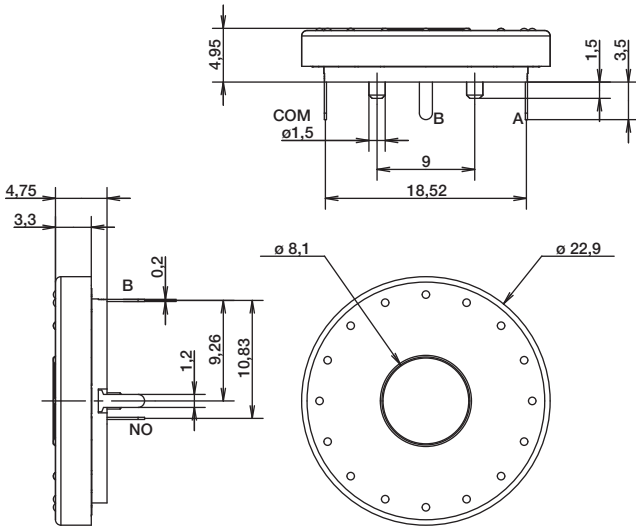
Numbers of detent : 24

Pulse/Rotation : 12 pulse/360°

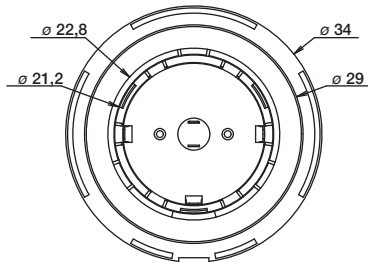
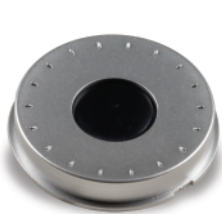
PCB LAYOUT / COMPONENT SIDE



Navigation



**TSWA-3N-CD23 LFS** Base switch with jog and select, black central button, grey dial

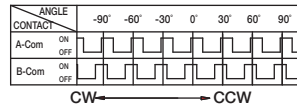


CONTACT CONFIGURATION

Push



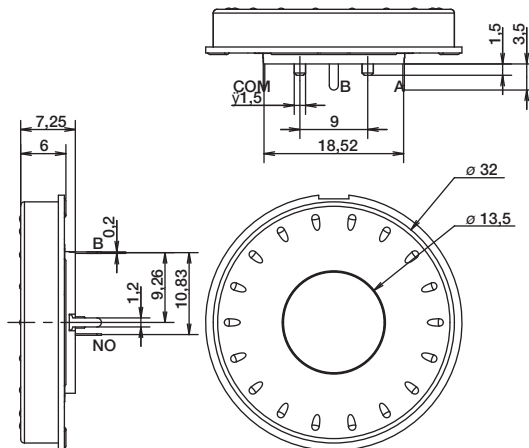
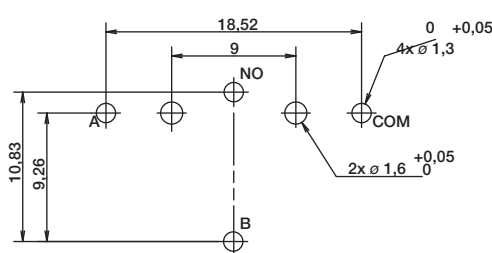
Rotation output waveform



Numbers of detent : 24

Pulse/Rotation : 12 pulse/360°

PCB LAYOUT / COMPONENT SIDE



First Angle Projection

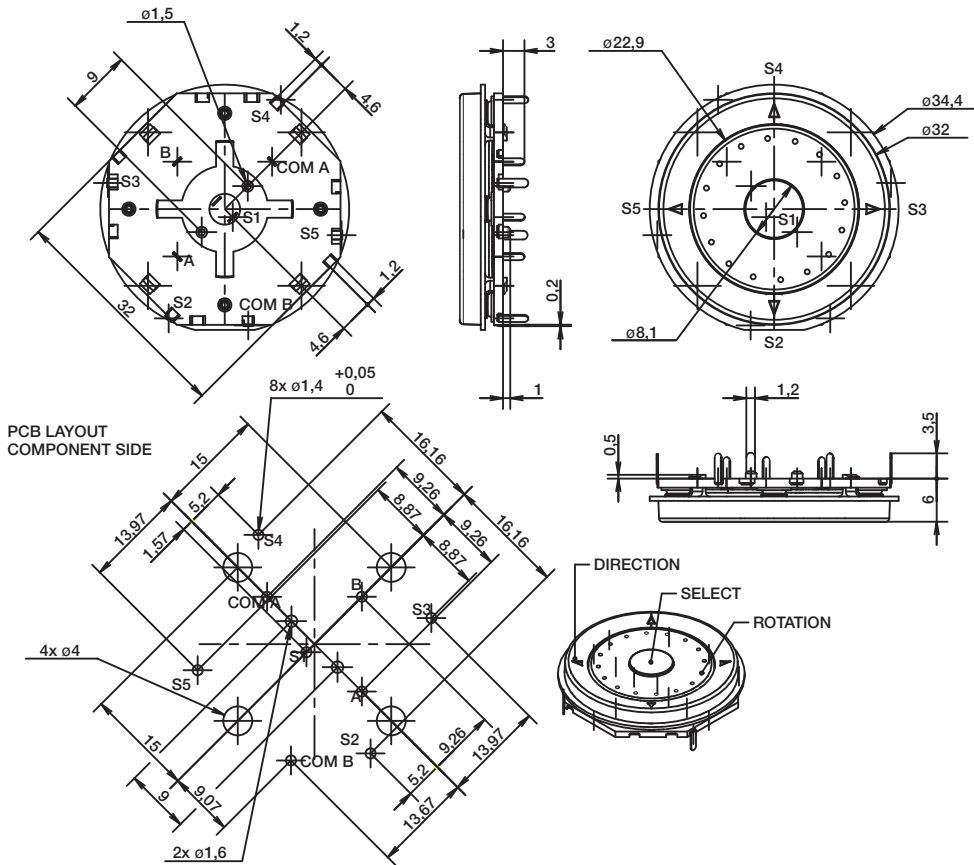
Dimensions are shown: mm  
Specifications and dimensions subject to change



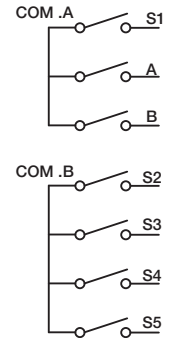
# TSW Series 3 or 7 Function Tact and Scroll Wheel

**TSWB-3N-CB111 LFS**  
**TSWB-3N-CB222 LFS**

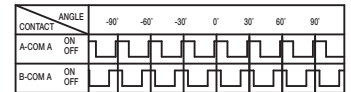
Central select with jog and 4 directions, white central button, dial & direction ring  
Central select with jog and 4 directions, black central button, dial & direction ring



ELECTRICAL FUNCTION



Rotational Output Waveform



CW ← → CCW

Numbers of detent : 24

Pulse/Rotation : 12 pulse/360°



C

Navigation

# CS-41001E Series 4-way Adjustable Direction Switch



## Features/Benefits

- Designed for mirror control
- Wire harness and connector easy to customize
- 4-way adjustable directions

## Typical Applications

- Automotive
- Industrial

## Specifications

CONTACT RATING: 0.2 A @ 12 VDC  
 OPERATING LIFE: 10,000 cycles  
 INSULATION RESISTANCE: 10 M  $\Omega$  min. @ 500 VDC  
 DIELECTRIC STRENGTH: 500 V AC  
 OPERATING TEMPERATURE: -40°C to +90°C  
 OPERATING FORCE: L- OFF, R-OFF; 200  $\pm$ 100 gf  
 OFF-L, OFF-R; 400  $\pm$  200 gf  
 4 Direction; 500  $\pm$  200 gf

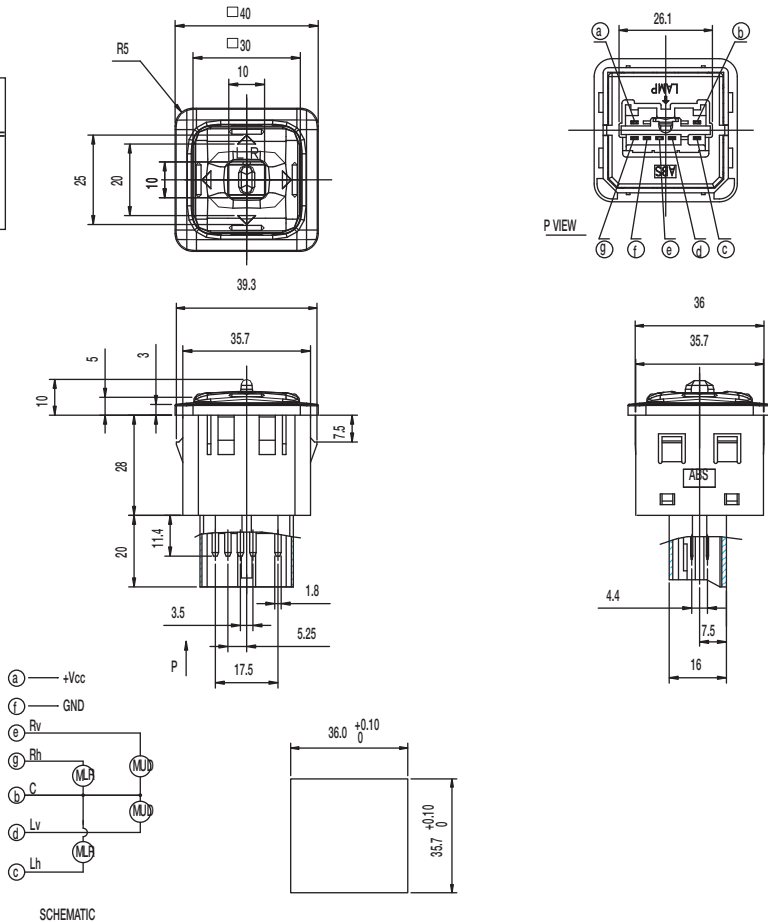
## Materials

KNOB: ABS  
 COVER: ABS  
 TERMINAL: Brass, tin plated

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

Navigation






PART NUMBER	PACKAGING
<b>CS-41001-E</b>	256 pieces


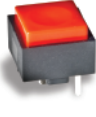





Dimensions are shown: mm  
 Specifications and dimensions subject to change

# Key Switches

## Product Selection Guide

Key Switches					
<b>Series</b>	<b>K6</b>	<b>K12S</b>	<b>K12</b>	<b>PVA</b>	<b>PVB</b>
<b>Size (mm)</b> L x W x H	7,4 x 10,9 x 8,4	12 x 11,6 x 9,1	12 x 12 x 11	9,2 x 10 x 13,5	PVB4: 9,4 x 9 x 12,5 PVB6: 9,85 x 8,6 x 12,5
<b>Poles/Throws</b>	SPST momentary	SPST / DPST momentary	SPST 2 x SPST momentary	DPST / DPDT momentary or push-on/push off	SPDT PVB4 DPDT PVB6
<b>Maximum Load</b>	30 V / 100 mA	30 V / 100 mA	30 V / 100 mA	32 V / 100 mA	14 V / 100 mA or 200 mA
<b>Operating Force</b>	2 N; 3 N; 5 N	3 N; 5 N; 6 N 9 N; 4/8 N; 6/12 N	1,5 N; 2,5 N; 3,5 N; 5 N 3,5/7 N; 6/12 N	1,2 N; 1,7 N; 3,5 N	3 N
<b>Travel (standard)</b>	1,5 mm	1,5 mm	1 mm, 1,5 mm, 2 mm	Mom. 2,4 mm Push-push 2,4/1,5mm	Mom. 2,3 mm Push-push 2,3/1,5mm
<b>Life Cycle</b>	200,000	1,000,000	1,000,000	100,000	PVB4: 100,000 PVB6: 30,000
<b>Sealed</b>		IP40/IP67	K12C only		
<b>Illumination</b>	•	•	•		
<b>Termination</b>	SMT/ Thru-hole	SMT	Thru-hole	Thru-hole	SMT / Thru-hole
<b>Page Number</b>	D-3	D-6	D-9	D-15	D-18

Key Switches					
<b>Series</b>	<b>D6</b>	<b>KS</b>	<b>Digitast</b>	<b>ED / EDM</b>	<b>KBD</b>
<b>Size (mm)</b> L x W x H	12 x 11,4 x 14,5	12,4 x 12,4 x 9,9	17,1x12,3 x 14,3	12,7 x 11,3 x 1,2	15,6 x 15,6 x 15
<b>Poles/Throws</b>	SPST momentary	SPST SPDT	SPDT momentary or push-on/push off	SPST momentary	SPST momentary
<b>Maximum Load</b>	32 V/100 mA*	50 V/25 mA	24 V / 10 mA	100 V/100 mA	12 VDC /10 mA
<b>Operating Force</b>	1,3 N 2,75 N		1,5 N	2,4 N to 6,5N	45gf / 55gf / 60gf 0,4N / 0,5N / 0,6N
<b>Travel (standard)</b>	1 mm 1.10 mm	0,71 mm	3 mm	0,3 mm	1,5 ~ 2 mm
<b>Life Cycle</b>	250,000	100,000	5,000,000	1,000,000	50,000,000
<b>Sealed</b>				•	•
<b>Illumination</b>			•		
<b>Termination</b>	Thru-hole	Thru-hole	Thru-hole	Thru-hole/SMT	Thru-hole
<b>Page Number</b>	D-23	D-26	D-29	D-32	D-34

\* Maximum value are for voltage and current separately

Dimensions are shown: mm  
Specifications and dimensions subject to change



D

# K6 Miniature Key Switches

## Features/Benefits

- Excellent tactile feel
- Wide variety of LED's, travel and actuation forces
- Designed for low-level switching
- Detector version available
- RoHS compliant

## Typical Applications

- Automotive
- Industrial electronics
- Computers and network equipment



## Construction

FUNCTION: momentary action  
 CONTACT ARRANGEMENT: 1 make contact = SPST, N.O.  
 DISTANCE BETWEEN BUTTON CENTERS:  
 min. 7,5 and 11,8 (0.295 and 0.465)  
 TERMINALS: Snap-in pins, tinned  
 MOUNTING: Soldered by PC pins, locating pins  
 PC board thickness: 1,5 (0.0591)

## Mechanical

TOTAL TRAVEL/SWITCHING TRAVEL: 1,5/0,9 (0.059/0.035)  
 PROTECTION CLASS: IP 40 according to DIN/IEC 529

- 1) Voltage rise: 300 V/s  
 2) According to DIN 41640; IEC 512-2  
 3) Higher values upon request

## Packaging

THT: bulk in boxes of 500 pieces  
 SMT: bulk in boxes of 500 pieces  
 reels of 500 pieces (with LED) or 750 pieces (without LED)

## Electrical

SWITCHING POWER MIN./MAX.: 0.02 mW / 3 W DC  
 SWITCHING VOLTAGE MIN./MAX.: 2 V DC / 30 V DC  
 SWITCHING CURRENT MIN./MAX.: 10 mA / 100 mA DC  
 DIELECTRIC STRENGTH (50 Hz)<sup>1)2)</sup>: ≥ 300 V  
 OPERATING LIFE: ≥ 2 x 10<sup>5</sup> operations <sup>3)</sup>  
 ≥ 1 X 10<sup>5</sup> operations for SMT version  
 CONTACT RESISTANCE: Initial ≤ 50 mΩ  
 INSULATION RESISTANCE: ≥ 10<sup>10</sup> Ω  
 BOUNCE TIME: ≤ 1 ms  
 Operating speed 100 mm/s (3.94/s)

## Environmental

OPERATING TEMPERATURE: -40°C to 85°C.  
 STORAGE TEMPERATURE: -40°C to 95°C.

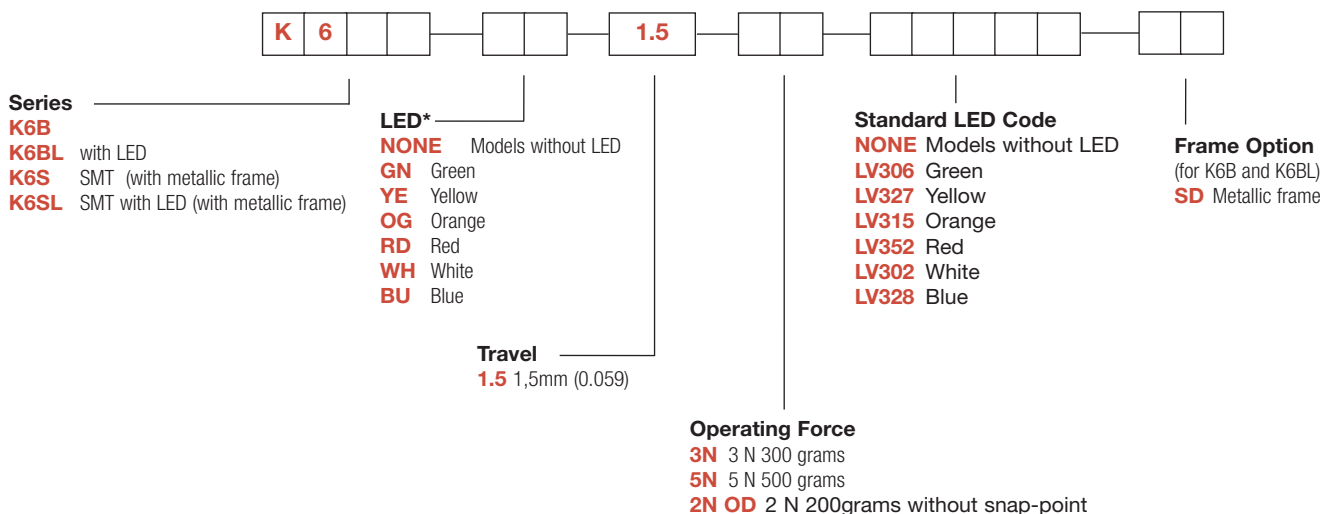
## Process

SOLDERABILITY:  
 THT: wave soldering, compatible with lead free soldering profile  
 Hand soldering, 350°C for 3s  
 SMT: not compatible with lead free reflow profile  
 245°C for 5s

## How To Order

Our easy build-a-switch concept allows you to mix and match options to create the switch you need. To order, select desired option from each category and place it in the appropriate box.

Note: Some of the configurations may not be available or could require some development.



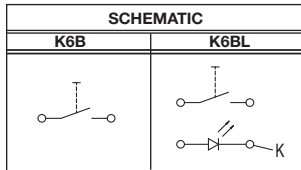
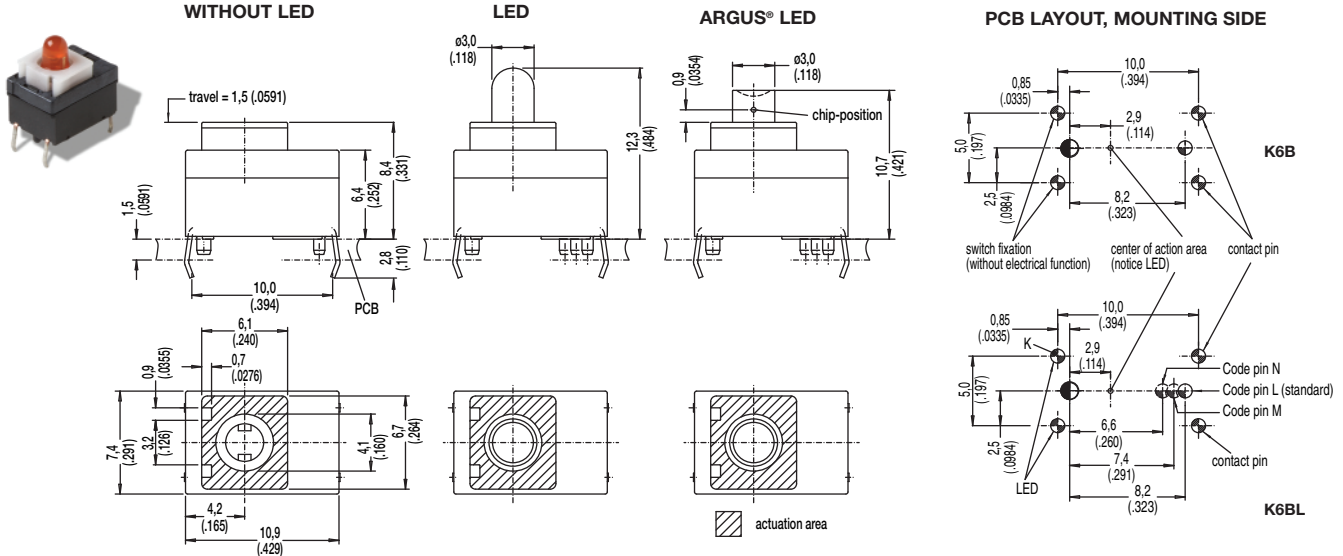
\* Additional LED colors available by request.

# K6 Miniature Key Switches

SERIES

**K6B** WITHOUT LED

**K6BL** WITH LED



Hole	Ø	Without LED	With LED	Description	Terminal Section	Surface
	1,2+0,1 (.0471+.00349)	1x	1x	center hole		
	0,9+0,1 (.0354+.00349)	1x	1x	code (L,M,N)		
	1,0+0,1 (.0354+.00349)		2x		0,6 x 0,3 (.0236 x .0118)	SnPb
		4x	2x	LED switch		

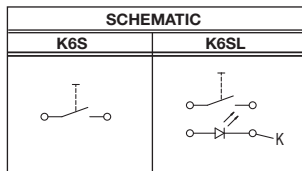
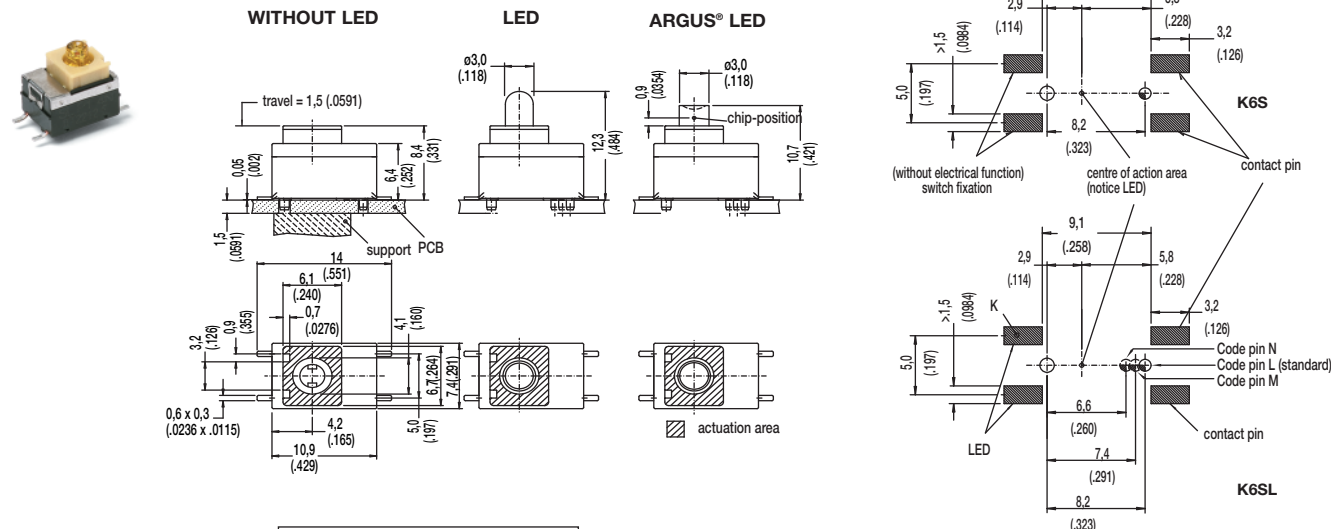
**K6S** WITHOUT LED

**K6SL** WITH LED



D

Key Switches



Hole	Ø	Without LED	With LED	Description
	1,2+0,1 (.0471+.00349)	1x	1x	center hole
	0,9+0,1 (.0354+.00349)	1x	1x	code (L,M,N)



Dimensions are shown: mm

Specifications and dimensions subject to change



# K6 Miniature Key Switches

## LED

OPTION CODE	COLOR
<b>NONE</b>	Models without LED
<b>GN</b>	Green
<b>YE</b>	Yellow
<b>OG</b>	Orange
<b>RD</b>	Red
<b>WH</b>	White
<b>BU</b>	Blue

STANDARD LED CODE	COLOR
<b>NONE</b>	Models without LED
<b>LV306</b>	Green
<b>LV327</b>	Yellow
<b>LV315</b>	Orange
<b>LV352</b>	Red
<b>LV302</b>	White
<b>LV328</b>	Blue

Additional LED colors available by request

## TRAVEL

**1.5** 1.5 MM

## OPERATING FORCE

OPTION CODE	OPERATING FORCE
<b>3N</b>	3 N, 300 g
<b>5N</b>	5 N, 500 g
<b>2N OD</b>	2 N, 200g without snap-point

## FRAME OPTION

**SD** METALLIC FRAME (OPTION FOR K6B AND K6BL)

NOTE: K6S and K6SL are equipped with metallic frame (SD not specified)



D

Key Switches

# K12S

## High Performance SMT Key Switches



### Features/Benefits

- Harsh environment applications - IP67
- Compatible with SMT lead free soldering process
- Illuminated
- Excellent tactile feel
- High reliability / long life
- DPST and detect versions available
- RoHS compliant

### Typical Applications

- Automotive
- Off-road transportation
- Motorcycles
- Industrial
- Medical
- Network
- Joysticks

### Construction:

FUNCTION: Momentary  
 CONTACT ARRANGEMENT: SPST or DPST  
 CONTACT TYPE: NO or NC  
 TERMINALS: SMT

### Mechanical

TOTAL TRAVEL: 1,5 mm  
 OPERATING FORCE: 3N; 5N; 6N; 9N 4/8 N; 6/12 N  
 SEALING: IP40 or IP67

### Packaging

Reels of 900 pieces

### Electrical

SWITCHING POWER MIN./MAX.: 0.02mW/3 W DC  
 SWITCHING VOLTAGE MIN./MAX.: 2 V / 30 V DC  
 SWITCHING CURRENT MIN./MAX.: 10 mA /100 mA DC  
 DIELECTRIC STRENGTH: > 300 V RMS  
 OPERATING LIFE: > 10<sup>6</sup> operations (F<5N) / 10<sup>5</sup> operations (F≥5N)  
 CONTACT RESISTANCE: Initial < 100mΩ - After test < 250mΩ  
 INSULATION RESISTANCE: >10<sup>9</sup>Ω  
 BOUNCE TIME: < 10 ms

### Environmental

OPERATING TEMPERATURE: -40°C to 85°C.  
 STORAGE TEMPERATURE: -40°C to 95°C.  
 RoHS compliant and Halogen free.

### Process

SOLDERABILITY: Lead free soldering compatible.

### How To Order

Our easy build-a-switch concept allows you to mix and match options to create the switch you need. To order, select desired option from each category and place it in the appropriate box.



D

Key Switches



#### Sub-Series

- A IP40 with peg
- B IP67 with peg
- C IP40 without peg
- D IP67 without peg

#### Option

- S SPST version
- L LED version (SPST)
- D DPST version

#### LED Color

- NONE No LED
- YE0 Yellow
- RD0 Red
- GN0 Green
- OR0 Orange
- WH0 White
- AM0 Amber

#### Operating Force

- 3N 3 N
- 5N 5 N
- 6N 6 N
- 9N 9 N
- 4/8N 4/8 N (double step actuation)
- 6/12N 6/12 N (double step actuation)

#### Travel

- 1.5 1.5 mm

#### Contact Arrangement

- O Normally open (SPST)
- C Normally closed (SPST)
- OO 2 Normally open (DPST)
- CC 2 Normally closed (DPST)
- OC 1 Normally open
- 1 Normally closed (DPST)

#### LFTX

Lead free, RoHS terminals tin plated Translucent button

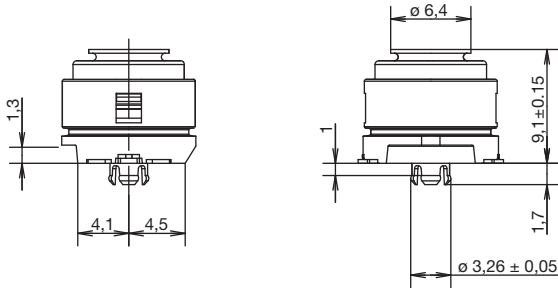
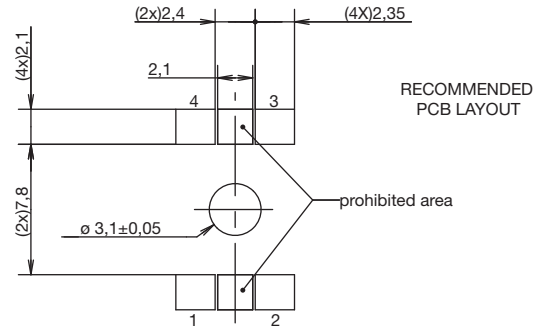
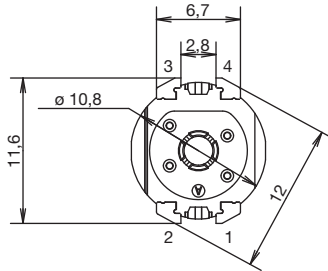


Dimensions are shown: mm  
 Specifications and dimensions subject to change

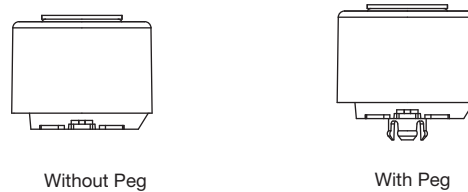
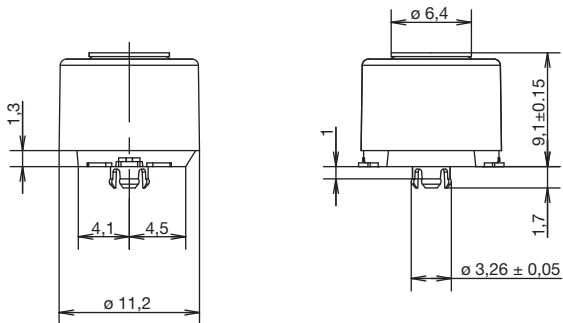
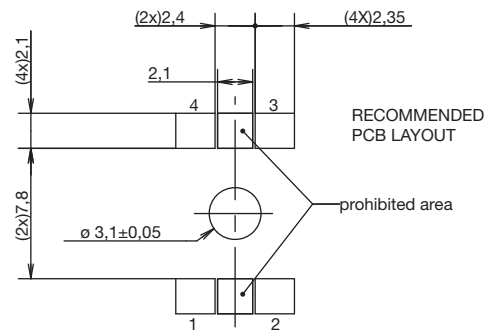
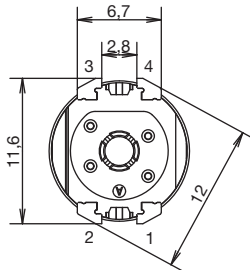


# K12S High Performance SMT Key Switches

**K12SA/K12SC** IP40 with peg / IP40 without peg



**K12SB / K12SD** IP67 with peg / IP67 without peg



First Angle  
Projection

Dimensions are shown: mm  
Specifications and dimensions subject to change

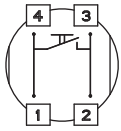
# K12S

## High Performance SMT Key Switches

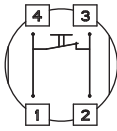
### OPTION

**S** SPST version

Single NO

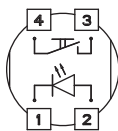


Single NC

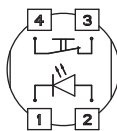


**L** LED version

Single NO + LED

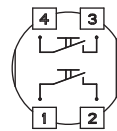


Single NC + LED

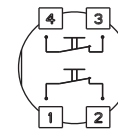


**D** DPST version

Double NO



Double NC



### LED COLOR

OPTION CODE	LED COLOR
	No LED
<b>YE0</b>	Yellow
<b>RD0</b>	Red
<b>GN0</b>	Green
<b>OR0</b>	Orange
<b>WH0</b>	White
<b>AM0</b>	Amber

### TRAVEL

**1.5** 1.5 mm

### OPERATING FORCE

OPTION CODE	OPERATING FORCE
<b>3N</b>	3N
<b>5N</b>	5N
<b>6N</b>	6N
<b>9N</b>	9N
<b>4/8N</b>	4/8N (double step actuation)
<b>6/12N</b>	6/12N (double step actuation)

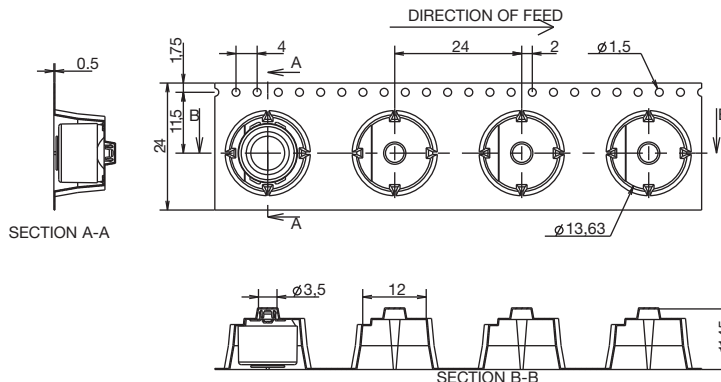
### CONTACT ARRANGEMENT

- O** Normally open (SPST and LED versions)
- C** Normally closed (SPST and LED versions)
- OO** 2 Normally open (DPST version)

- CC** 2 Normally closed (DPST version)
- OC<sup>(1)</sup>** 1 Normally open/ 1 Normally closed (DPST)

<sup>(1)</sup> Please contact Technical support for this configuration using the "Ask a Specialist" option on the K12S product web page.

### TAPE AND REEL



First Angle Projection

Dimensions are shown: mm  
Specifications and dimensions subject to change



D

Key Switches

# K12 High Performance Key Switches

## Features/Benefits

- **Excellent tactile feel**
- **Wide choice of LED colors, travel and actuator forces**
- **High reliability / long life**
- **Sealed version available**
- **Designed for low-level switching**
- **Double stroke version available**
- **Detector version available**

## Typical Applications

- **Automotive**
- **Off-road transportation**
- **Industrial electronics**
- **Computers & network equipment**
- **Joysticks**



## Construction:

FUNCTION: momentary  
 DISTANCE BETWEEN BUTTON CENTERS:  
 min. 11 (0.433) K12C = 13 (0.512)  
 TERMINALS: PC pins, tinned  
 MOUNTING: Locating pins; K12G and K12P additionally  
 with snap-in housing

## Mechanical

TOTAL TRAVEL: 1 mm, 1.5 mm, 2 mm  
 SWITCHING TRAVEL: 0,6 mm\*  
 OPERATING FORCE: 1.5 N OD without snap-point as detector  
 switch, 2.5 N, 3.5 N, 5 N, 3.5/7 N, 6/12 N. Additional  
 operating force 7N, 9N and 20N, available on request.  
 PROTECTION CLASS: K12C IP 67 (dust tight, protected against  
 the effects of immersion in water; other versions IP 40)

\* Additional switching travel (with pre-travel) available by request.

## Packaging

Bulk in boxes of 250 pieces (version C or GO) or  
 300 pieces (version A, AL, P or PL)

## Electrical

SWITCHING POWER MIN./MAX.: 0.02mW/3 W  
 SWITCHING VOLTAGE MIN./MAX.: 2 V DC / 30 V DC  
 SWITCHING CURRENT MIN./MAX.: 10 mA /100 mA  
 DIELECTRIC STRENGTH (50 Hz, 1 min): ≥ 500 V  
 OPERATING LIFE with max. switching power: ≥ 10<sup>6</sup> operations  
 K12G & K12GO; operating life of second switch 5 x 10<sup>4</sup> operations,  
 operating life K12C and version with more than 6N (7N, 9N 20N)  
 please consult factory.  
 CONTACT RESISTANCE: Initial ≤ 50 mΩ  
 INSULATION RESISTANCE: ≥ 10<sup>10</sup> Ω  
 BOUNCE TIME: ≤ 1 ms  
 Operating speed 100 mm/s (3.94/s)

## Environmental

OPERATING TEMPERATURE: -40°C to 85°C.  
 STORAGE TEMPERATURE: -40°C to 95°C.

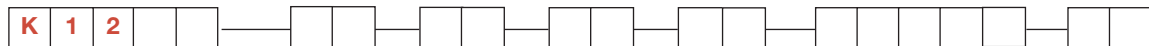
## Process

SOLDERABILITY:  
 Wave soldering, compatible with lead free soldering profile  
 Hand soldering, 350°C

## How To Order

Our easy build-a-switch concept allows you to mix and match options to create the switch you need. To order, select desired option from each category and place it in the appropriate box.

Note: Some of the configurations may not be available or could require some development.



### Series

- K12A** No snap-in pegs
- K12AL** No snap-in pegs with central LED
- K12P** With snap-in pegs
- K12PL** With central LED
- K12C** Sealed contact with rubber cap (IP 67)
- K12GO** Two-step switch

### Cap Color

- NONE** version with LED, version C
- BK** Black cap - No LED
- YE** Yellow cap - No LED
- RD** Red cap - No LED
- GY** Gray cap - No LED

### LED Color

- NONE** No LED
- GN** Green
- YE** Yellow
- OG** Orange
- RD** Red
- WH** White
- BU** Blue

### Travel\*

- 1** 1 mm (0.039)
- 1.5** 1.5 mm (0.059)
- 2** 2 mm (0.079)

### Operating Force\*\*\*

- 1.5N OD** 1.5 N without snap-point
- 2.5N** 2.5 N
- 3.5N** 3.5 N
- 5N** 5 N
- 3.5/7N** 3.5/7 N\*\*
- 6/12N** 6/12 N\*\*

### Standard LED Code

- NONE** No LED
- LV306** Green
- LV327** Yellow
- LV315** Orange
- LV352** Red
- LV302** White
- LV328** Blue

### Contact

- Arrangement**
- NONE** SPST NO (STD)
- 1R** SPST NC (Special request)

\* K12C – 1mm MAX  
 K12 with LED – 1.5 mm MAX

\*\* K12G & K12GO version only

\*\*\* Additional operating force: 7N, 9N available on request

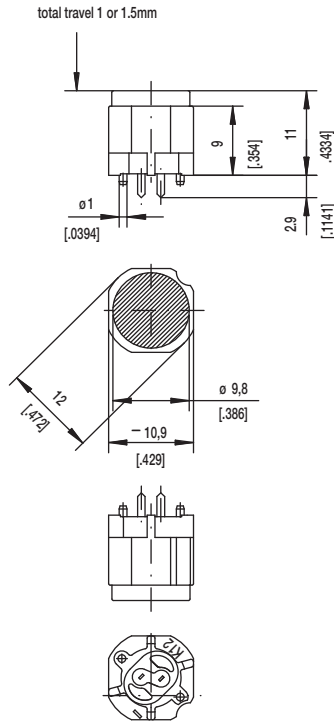


Dimensions are shown: mm  
 Specifications and dimensions subject to change

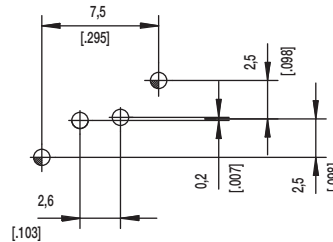
# K12 High Performance Key Switches

SERIES 

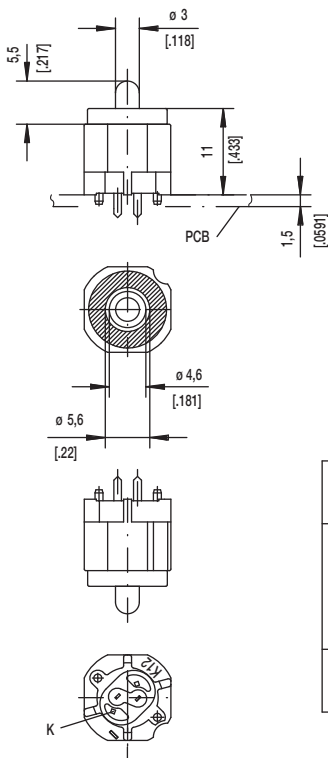
**K12A** without snap in



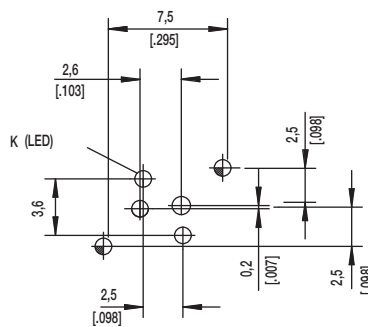
PCB LAYOUT, MOUNTING SIDE



**K12AL**



PCB LAYOUT, MOUNTING SIDE



	$1,1^{+0,05}$	2x	2x	center hole		
	$0,9 \pm 0,05$		2x	LED	$\varnothing 0,5 (.020)$	Sn
			2x	switch	$0,7 \times 0,2 (.028 \times .081)$	Sn
Hole	$\varnothing$	Without	with LED	Description	Terminal Section	Surface



Key Switches



First Angle  
Projection

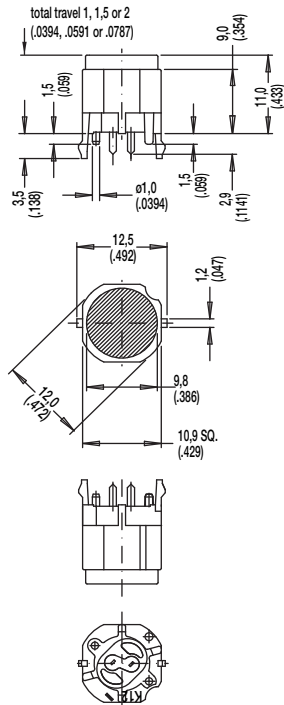
Dimensions are shown: mm  
Specifications and dimensions subject to change

**C&K**

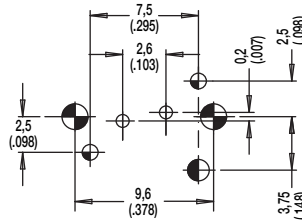
# K12 High Performance Key Switches

SERIES 

## K12P with snap in







### PCB LAYOUT, MOUNTING SIDE

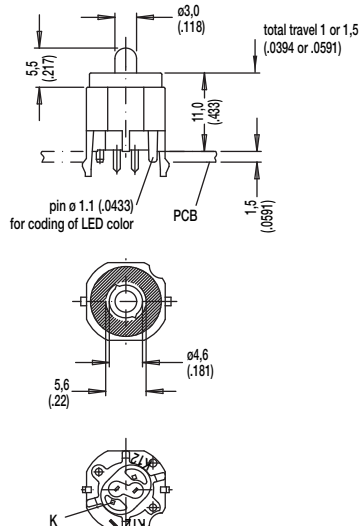


center of actuation area (notice LED)

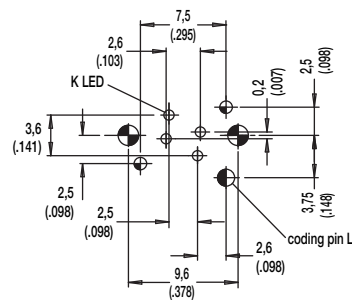


Hole	Ø	Without LED	Description	Terminal Section	Surface
	1,7 (.069)	2x	snap-in		
	1,6 (.062)	1x	coding hole (L,M,N)		
	1,1 (.043)	2x	center hole		Sn
	0,9 (.035)	2x	switch	0.7 x 0.2 (.028 x .081)	Sn

## K12PL








### PCB LAYOUT, MOUNTING SIDE



center of actuation area (notice LED)



Hole	Ø	Without LED	Description	Terminal Section	Surface
	1,7 (.069)	2x	snap-in		
	1,6 (.062)	1x	coding hole (L,M,N)		
	1,1 (.043)	2x	center hole		Sn
	0,9 (.035)	2x	LED	m0.5 (.020)	Sn
		2x	switch	0.7 x 0.2 (.028 x .081)	

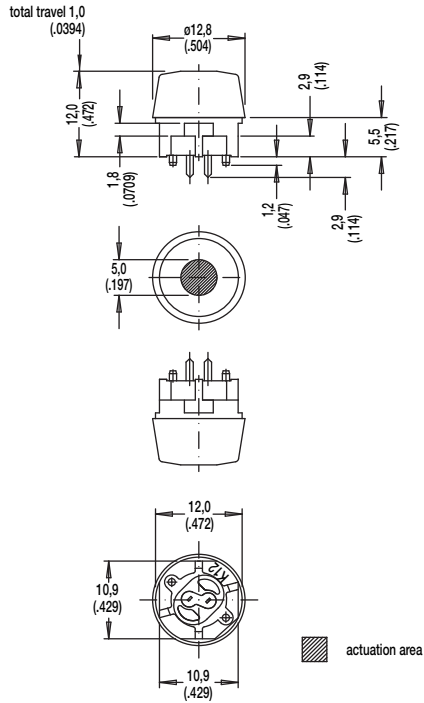


Dimensions are shown: mm  
Specifications and dimensions subject to change

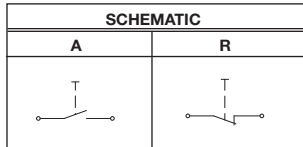
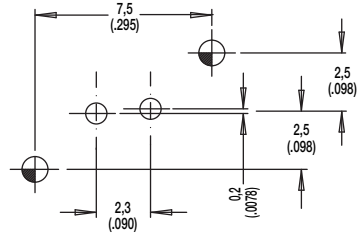
# K12 High Performance Key Switches



SERIES 

**K12C** SEALED CONTACT WITH RUBBER CAP (IP 67)



PCB LAYOUT, MOUNTING SIDE



Hole	Ø	Without LED	Description	Terminal Section	Surface
	1,1 (.043)	2x	center hole		
	0,9 (.035)	2x	switch	0.7 x 0.2(.0275 x .0787)	Sn



Key Switches



First Angle  
Projection

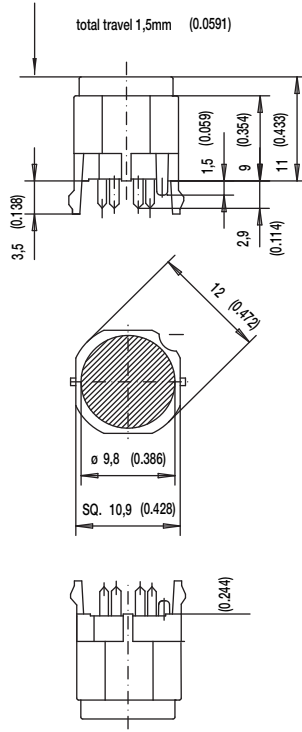
Dimensions are shown: mm  
Specifications and dimensions subject to change



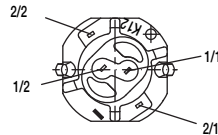
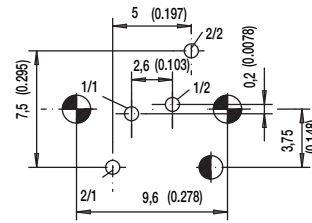
# K12 High Performance Key Switches

SERIES

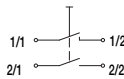
## K12GO



### PCB LAYOUT, MOUNTING SIDE



### SCHEMATIC K12G



Hole	Ø	Without LED	Description	Terminal Section	Surface
	1,7 (.069)	2x	snap-in		
	1,6 (.062)	1x	code		
	0,9 (.035)		LED	m0.5 (.020)	Sn
		2x	switch 2	0.7 x 0.3 (.028 x .012)	Sn
		2x	switch 1	0.7 x 0.2 (.028 x .081)	Sn



First Angle  
Projection

Dimensions are shown: mm  
Specifications and dimensions subject to change



# K12

## High Performance Key Switches

### CAP COLOR

OPTION CODE	COLOR
<b>NONE</b>	Version with LED
<b>BK</b>	Black - no LED
<b>YE</b>	Yellow - no LED
<b>RD</b>	Red - no LED
<b>GY</b>	Gray - no LED

### LED COLOR

OPTION CODE	COLOR
<b>NONE</b>	Models without LED
<b>GN</b>	Green
<b>YE</b>	Yellow
<b>OG</b>	Orange
<b>RD</b>	Red
<b>WH</b>	White
<b>BU</b>	Blue

STANDARD LED CODE	COLOR
<b>NONE</b>	Models without LED
<b>LV306</b>	Green
<b>LV327</b>	Yellow
<b>LV315</b>	Orange
<b>LV352</b>	Red
<b>LV302</b>	White
<b>LV328</b>	Blue

### TRAVEL

- 1** 1 mm
- 1.5** 1.5 mm
- 2** 2 mm

### OPERATING FORCE

OPTION CODE	OPERATING FORCE
<b>1.5N OD</b>	1.5 N, 150g without snap-point
<b>2.5N</b>	2.5 N, 250g
<b>3.5N</b>	3.5 N, 350g
<b>5N</b>	5 N, 500g
<b>3.5/7N</b>	3.5/7 N, 350/700g
<b>6/12N</b>	6/12 N, 600-1200g

### CONTACT ARRANGEMENT OPTION

**1R** SPST NC (SPECIAL REQUEST FOR NORMALLY CLOSED OPTION)



D

Key Switches



First Angle Projection

Dimensions are shown: mm  
Specifications and dimensions subject to change





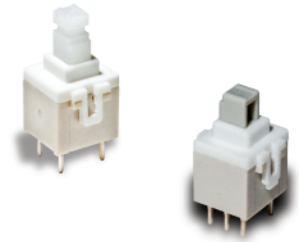
# PVA Short Stroke Key Switches

## Features/Benefits

- **Compact design**
- **Short stroke to latch**
- **Wide variety of actuator heights**
- **Adapted for medium power applications**
- **RoHS compliant and compatible**

## Typical Applications

- **Automotive (air conditioning, lighting)**
- **Industrial**
- **Control panel**



## Construction

FUNCTION: Momentary, Push-Push  
 CONTACT ARRANGEMENT:  
 PVA1: 2 make contacts (DPST)  
 PVA2: 2 change over contacts (DPDT)  
 SWITCHING MODE: Non-shorting  
 TERMINALS: PC pins<sup>1</sup>

## Mechanical

TOTAL TRAVEL / LATCHING TRAVEL:  
 OA: 2,4 mm  
 EE: 2,4 / 1,5 mm  
 ELECTRICAL TRAVEL: 0.8 mm (1.1 for PVA2 OA H5)  
 OPERATING FORCE: 1,2N; 1,7N; 3,5N

## Process

SOLDERABILITY:  
 Wave soldering, compatible with lead free soldering profile  
 Hand soldering, 350°C for 3 seconds

**Note:** Specifications listed above are for switches with standard options.  
 For information on specific and custom switches, please contact technical support using the "Ask a Specialist" option on the PVA product web page.v

## Electrical

SWITCHING POWER MAX.: 3 W DC  
 SWITCHING VOLTAGE MAX.: 32 V DC  
 SWITCHING CURRENT MAX.: 100 mA DC\*  
 DIELECTRIC STRENGTH (50 Hz / 1 min):  
 1000 V between open contacts, PVA2: 750 V  
 OPERATING LIFE:  
 OA (momentary):  $\geq 1 \times 10^5$  operations  
 EE (push-push):  $\geq 1 \times 10^5$  operations  
 CONTACT RESISTANCE: Initial  $\leq 100 \text{ m}\Omega$   
 INSULATION RESISTANCE:  $\geq 10^{10} \Omega$   
 BOUNCE TIME:  $\leq 3 \text{ ms}$

## Environmental

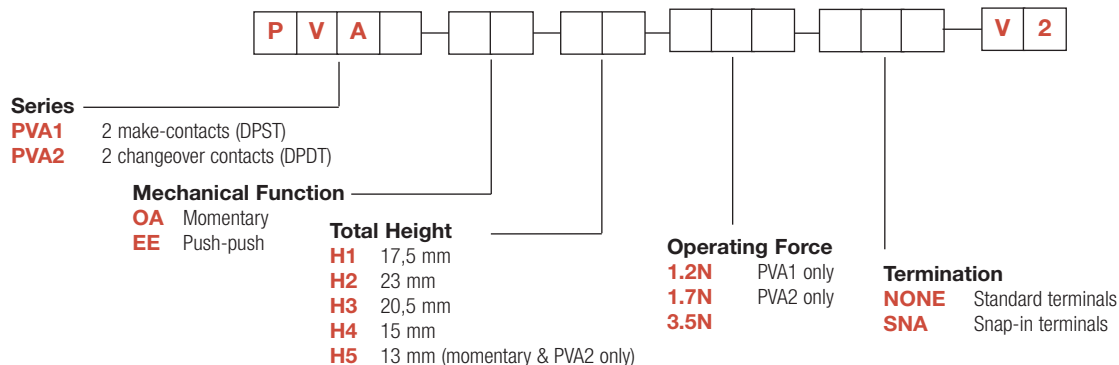
OPERATING TEMPERATURE: -40°C to 85°C.<sup>2</sup>

- 1) "Snap-in" contacts on request, Version SNA with pins bent inside (standard)  
 2) With button +70°C

## How To Order

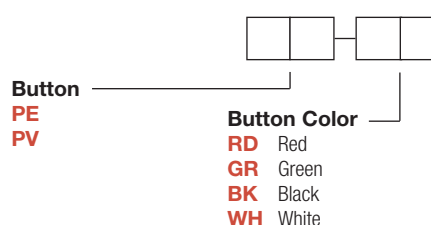
Our easy build-a-switch concept allows you to mix and match options to create the switch you need. To order, select desired option from each category and place it in the appropriate box. **Some of the configurations may not be available or could require some development.**

### Switch



### Button

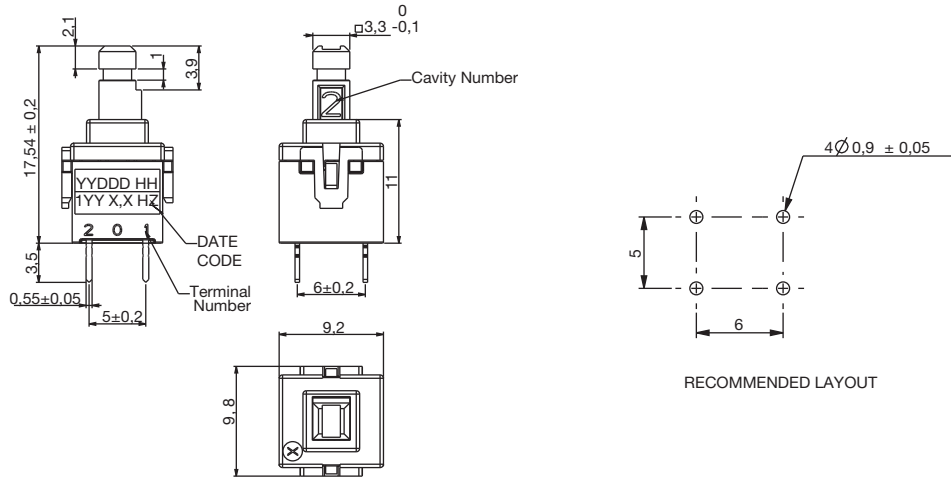
Buttons must be ordered separately.  
 Shipped in bulk.



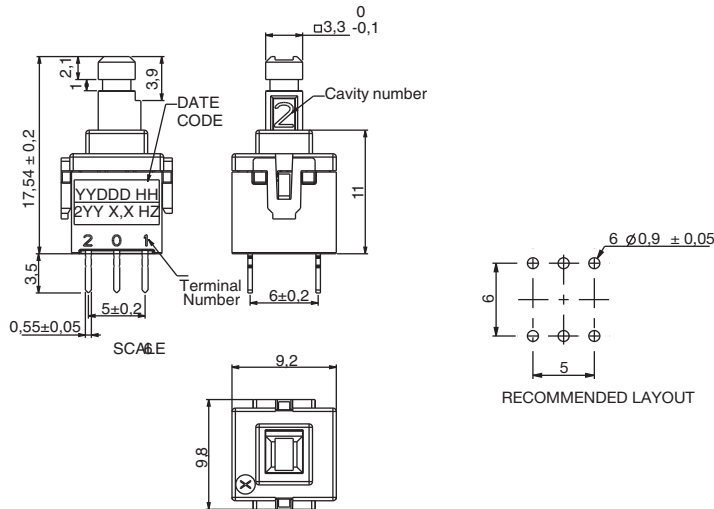
# PVA Short Stroke Key Switches

SERIES

## PVA1 (DPST)



## PVA2 (DPDT)



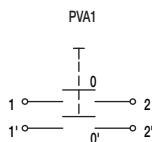
D

Key Switches

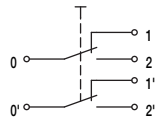
MECHANICAL FUNCTION

OPTION CODE	FUNCTION
<b>OA</b>	Momentary
<b>EE</b>	Push-Push

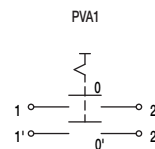
**OA**



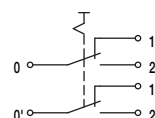
PVA2



**EE**



PVA2



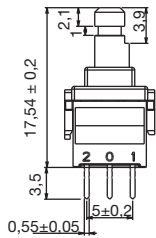
Dimensions are shown: mm  
Specifications and dimensions subject to change



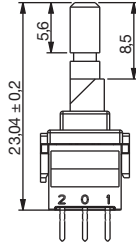
# PVA Short Stroke Key Switches

## TOTAL HEIGHT

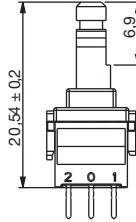
**H1** 17,5 MM



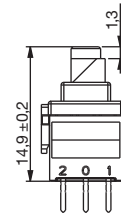
**H2** 23 MM



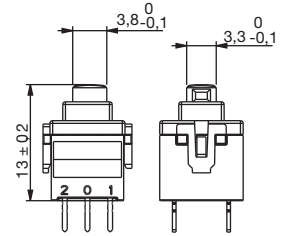
**H3** 20,5 MM



**H4** 15 MM



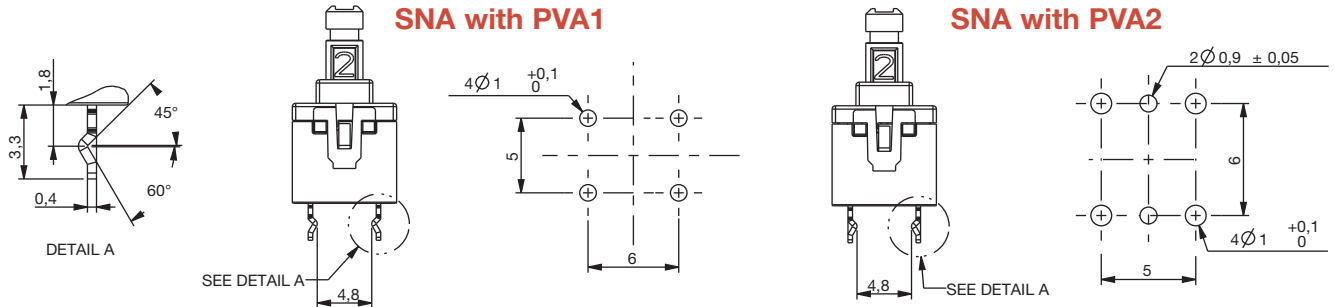
**H5** 13 MM  
(MOMENTARY ONLY)



## OPERATING FORCE

**1.2N** PVA1 ONLY  
**1.7N** PVA2 ONLY  
**3.5N**

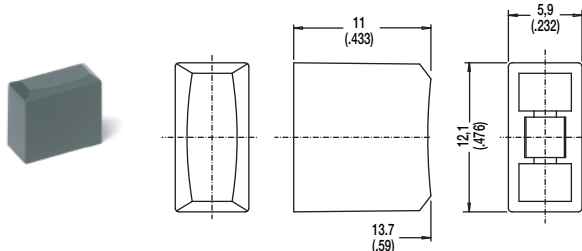
## TERMINATION



## BUTTONS

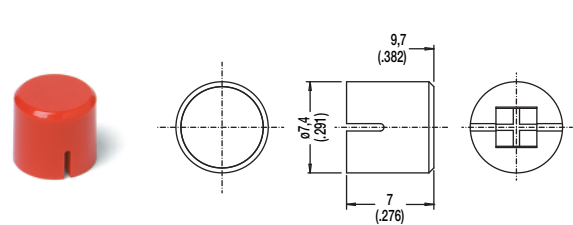
BUTTONS MUST BE ORDERED SEPARATELY. SHIPPED IN BULK.

**PE**



OPTION CODE	COLOR
<b>RD</b>	Red
<b>GY</b>	Gray
<b>BK</b>	Black
<b>WH</b>	White

**PV**



Dimensions are shown: mm  
Specifications and dimensions subject to change

# D6 SPST Momentary Key Switches

## Features/Benefits

- Easy X, Y coding on single side PCB
- Positive tactile feedback
- High temperature
- Wide variety of colors & styles
- RoHS compliant and compatible

## Typical Applications

- Video
- Electronic games
- Appliances



## Construction

FUNCTION: momentary  
CONTACT ARRANGEMENT: 1 make contact (SPST), NO  
DISTANCE BETWEEN BUTTON CENTERS, MIN.: 12,7 (0.500)  
TERMINALS: PC pins

## Electrical

SWITCHING POWER MAX.: 3 VA  
SWITCHING VOLTAGE MAX.: 32 V DC  
SWITCHING CURRENT MAX.: 100 mA DC  
DIELECTRIC STRENGTH (50 Hz / 1 min): 250 V  
OPERATING LIFE with max. switching power: (2,5x10<sup>5</sup> operations)  
CONTACT RESISTANCE: ≤100 mΩ  
INSULATION RESISTANCE: ≥10<sup>8</sup> Ω  
BOUNCE TIME: ≤10 ms

## Packaging

The D6 switches are delivered in boxes containing 10 trays with 250 pieces each: Total 2,500 pieces per box.  
The D6 buttons are delivered in bulk with 2500 pieces per box.

## Mechanical

SWITCHING TRAVEL:  
Version F1: 0.2mm ≤ Te ≤ 1.0 mm  
Version F2: 0.3mm ≤ Te ≤ 1.1 mm  
OPERATING FORCE:  
Version F1: 0.8N ≤ Fa ≤ 1.8N  
Version F2: 2.0N ≤ Fa ≤ 3.5N

## Environmental

OPERATING TEMPERATURE: -20°C to 85°C.

## Process

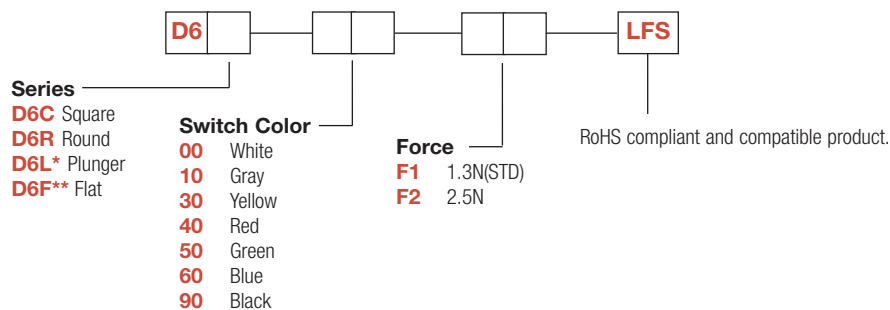
SOLDERABILITY:

Wave soldering, compatible with lead free soldering profile  
Hand soldering, 350°C for 3 seconds

## How To Order

Our easy build-a-switch concept allows you to mix and match options to create the switch you need. To order, select desired option from each category and place it in the appropriate box.

### Switch



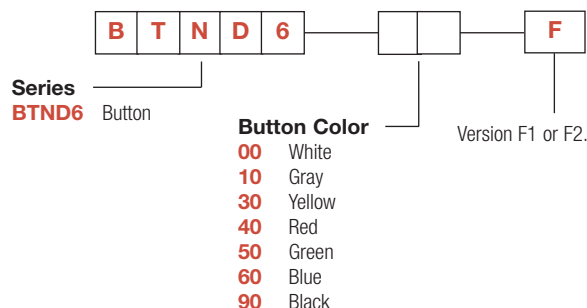
\*Available only in color 90 (black).

\*\* Available only in color 90 (black) and 00 (white).

### Button

Buttons can be ordered separately.  
Shipped in bulk.

D6 button for use with D6C only.

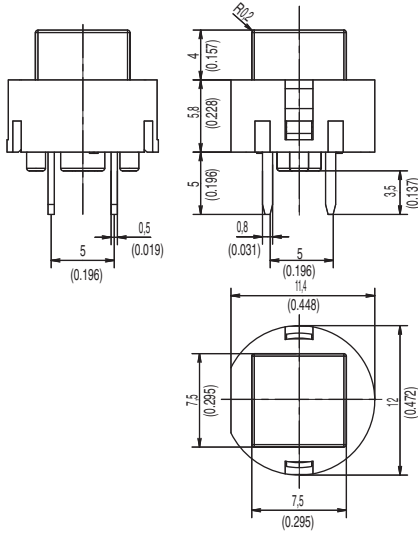
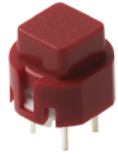


Dimensions are shown: mm  
Specifications and dimensions subject to change

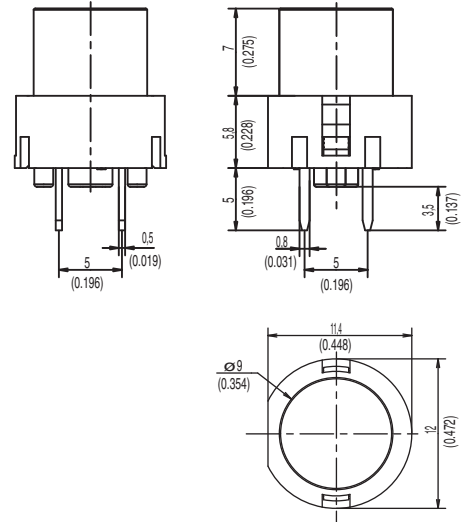
# D6 SPST Momentary Key Switches

SERIES 

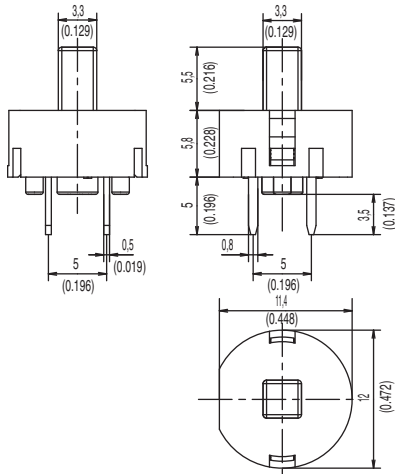
**D6C**



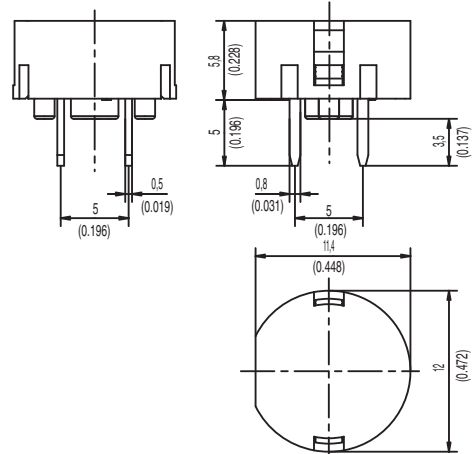
**D6R**



**D6L ONLY AVAILABLE IN BLACK**



**D6F**



D

Key Switches



First Angle  
Projection

Dimensions are shown: mm  
Specifications and dimensions subject to change

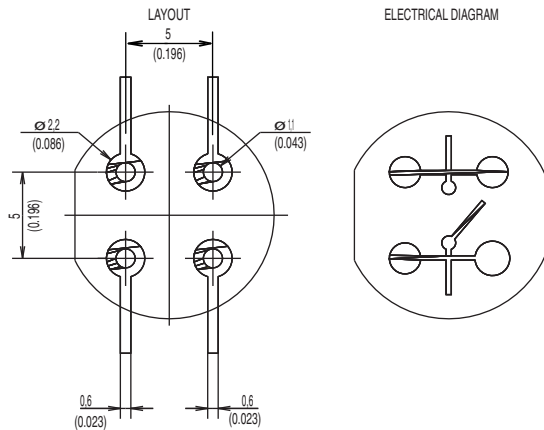


# D6 SPST Momentary Key Switches

## SWITCH COLORS

OPTION CODE	SWITCH COLOR
00	WHITE
10	GRAY
30	YELLOW
40	RED
50	GREEN
60	BLUE
90	BLACK

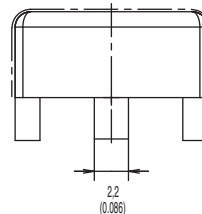
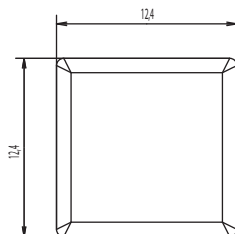
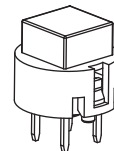
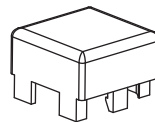
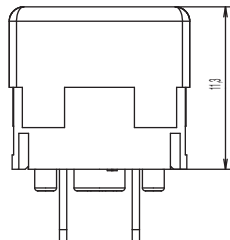
## PCB LAYOUT



## BUTTON AVAILABLE

**BTND6** Buttons must be ordered separately. Shipped in bulk.

**NOTE:** Only compatible with D6C.



OPTION CODE	BUTTON COLOR
00	WHITE
10	GRAY
30	YELLOW
40	RED
50	GREEN
60	BLUE
90	BLACK



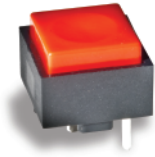
Dimensions are shown: mm  
Specifications and dimensions subject to change



D

Key Switches

# KS Single Pole Key Switches



## Features/Benefits

- Positive tactile feel
- Variety of cap colors
- SPST and SPDT configurations
- RoHS compliant

## Typical Applications

- Telecommunications
- Industrial
- Instrumentation

## Specifications

CONTACT RATING: Q contact material: 25mA @ 50V AC .or DC max.  
 ELECTRICAL LIFE: 100,000 actuations.  
 CONTACT RESISTANCE: Below 100 mΩ initial @ 2-4 V DC, 100 mA  
 INSULATION RESISTANCE: 10<sup>9</sup>Ω min.  
 DIELECTRIC STRENGTH: 1,000 Vrms min. @ sea level.  
 OPERATING TEMPERATURE: -30°C to 65°C.  
 SOLDERABILITY: Per MIL-STD-202F method 208D, or EIA RS-186E method 9 (1 hour steam aging).

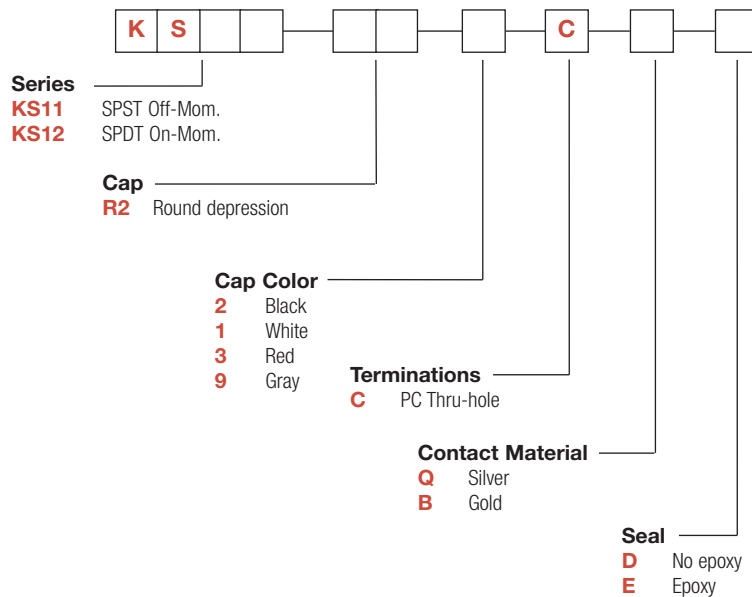
**Note:** Specifications and materials listed above are for switches with standard options.  
 For information on specific and custom switches, consult Customer Service Center.

## Materials

CASE: Glass filled nylon (UL 94V-0).  
 ACTUATOR: ABS, matte finish, black standard.  
 MOVABLE CONTACT: Q contact material: Stainless steel, silver plated.  
 STATIONARY CONTACTS AND TERMINALS: Q contact material: copper alloy, silver plated.  
 TERMINAL SEAL: Epoxy

## How To Order

Our easy build-a-switch concept allows you to mix and match options to create the switch you need. To order, select desired option from each category and place it in the appropriate box.



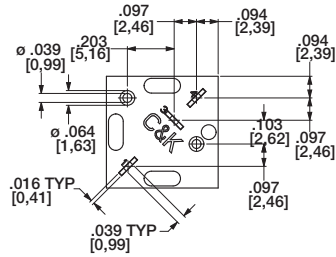
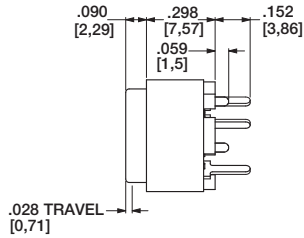
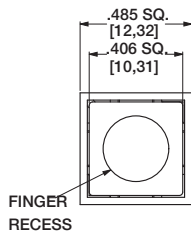
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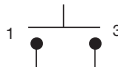

Key Switches

# KS Single Pole Key Switches

SERIES 

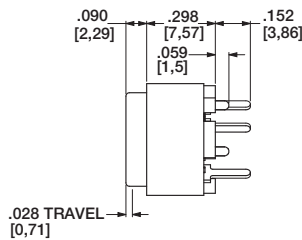
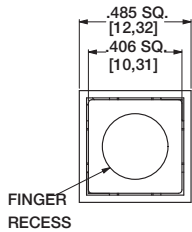
## KS11 / KS12



NO. POLES	MODEL NO.	SWITCH FUNCTION		CONNECTED TERMINALS		SCHEMATIC
		POS. 1	POS. 2	POS. 1	POS. 2	
SP	KS11	OFF	MOM.	OPEN	1-3	SPST 
	KS12	ON	MOM.	1-4	1-3	SPDT 

CAP 

## R2 CAP WITH ROUND DEPRESSION



OPTION CODE	CAP COLOR
2	BLACK
1	WHITE
3	RED
9	GRAY



Key Switches



Third Angle Projection  
Dimensions are shown: mm  
Specifications and dimensions subject to change

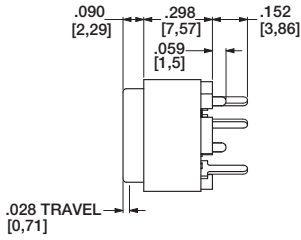




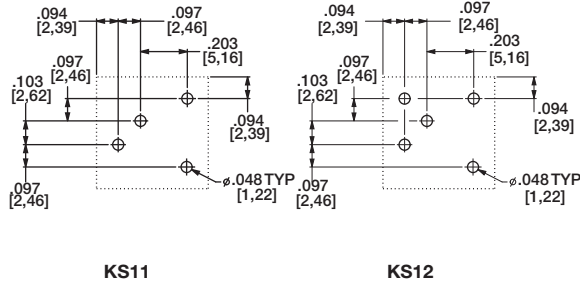
# KS Single Pole Key Switches

## TERMINATION

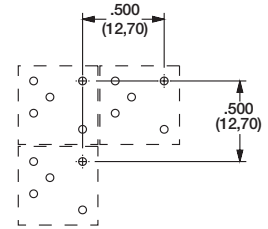
### C PC THRU-HOLE



### PC MOUNTING



### MULTIPLE SWITCH SPACING



## CONTACT MATERIAL

OPTION CODE	CONTACT MATERIAL	TERMINAL PLATING	RATINGS	
Q	SILVER <sup>2</sup>	SILVER <sup>2</sup>	POWER	25 mA MAX. @ 50 V AC OR DC MAX.
B	GOLD <sup>1</sup>	GOLD <sup>1</sup>	LOW LEVEL/DRY CIRCUIT	0.4 VA MAX. @ 20 V AC OR DC MAX.

- MOVABLE CONTACT: Stainless steel, with gold plate over nickel plate.  
STATIONARY CONTACTS & ALL TERMINALS: Copper alloy, with gold plate over nickel plate.
- MOVABLE CONTACT: Stainless steel, silver plated.  
STATIONARY CONTACTS & ALL TERMINALS: Copper alloy, silver plated.

**NOTE:** Any models supplied with Q or B contact material are RoHS compliant.

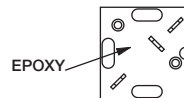


D

### D NO EPOXY SEAL

### E EPOXY SEAL

## SEAL



Key Switches



Third Angle  
Projection

Dimensions are shown: mm  
Specifications and dimensions subject to change

**C&K**

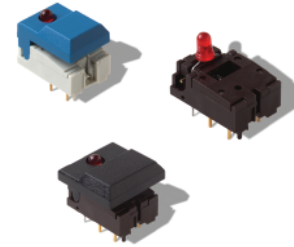
# DIGITAST Microminiature SPDT, Key Switches

## Features/Benefits

- High reliability/long life
- Designed for low level switching
- Ready to implement on PCB
- Latching function available
- Several button options
- RoHS compliant and compatible

## Typical Applications

- Medical
- Instrumentation
- Industrial electronics
- Audio electronics



## Construction

FUNCTION: momentary or push-push  
 CONTACT ARRANGEMENT: 1 change over contact SPDT, NO  
 MODE OF SWITCHING: Non-shorting  
 DISTANCE BETWEEN BUTTON CENTERS:  
 HORIZONTAL MINIMUM: 12,7 (0.500) or 17,78 (0.700)  
 VERTICAL MINIMUM: 17,78 (0.700)  
 TERMINALS: PC pins  
 MOUNTING: Soldering, centering pins

## Mechanical

TOTAL TRAVEL: ≤ 3 (.0018)  
 SWITCHING TRAVEL: 1,5 (0.0591)  
 LATCHING TRAVEL: 1,8 (0.0709)  
 OPERATING FORCE: 1.5 +/- 0.5 N (150 +/- 50 grams)

## Process

SOLDERABILITY:  
 Wave soldering, compatible with lead free soldering profile  
 Hand soldering, 350°C for 3 seconds

## Electrical

SWITCHING POWER MAX.: 240 mW DC  
 SWITCHING VOLTAGE MAX.: 24 V DC  
 SWITCHING CURRENT MAX.: 10 mA DC  
 CARRYING CURRENT AT 20°C (push-push version): 100 mA  
 DIELECTRIC STRENGTH (50 Hz, 1 min): 500 V  
 OPERATING LIFE with or without max. switching power  
 Momentary: ≥ 5 x 10<sup>6</sup> operations  
 Push-push: ≥ 5 x 10<sup>5</sup> operations  
 CONTACT RESISTANCE: Initial ≤ 50 mΩ  
 After 5 x 10<sup>6</sup> operations: ≤ 100 mΩ  
 INSULATION RESISTANCE: ≥ 10<sup>10</sup> Ω  
 CAPACITANCE at f= 10 kHz: ≤ 0.8pF  
 BOUNCE TIME: ≤ 2.5 ms  
 Operating speed 400 mm/s (15.75/s)

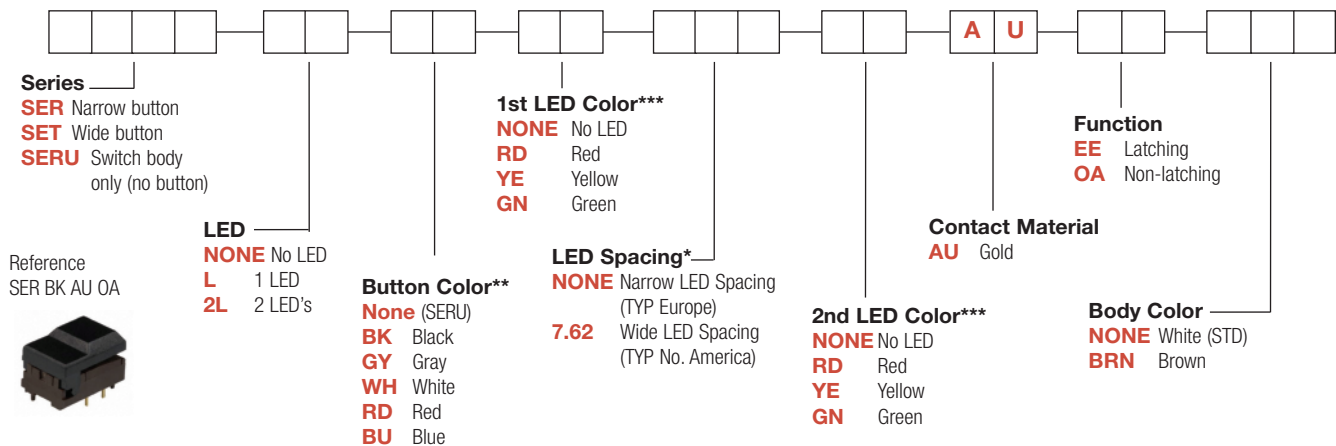
## Environmental

OPERATING TEMPERATURE: -25°C to 85°C.

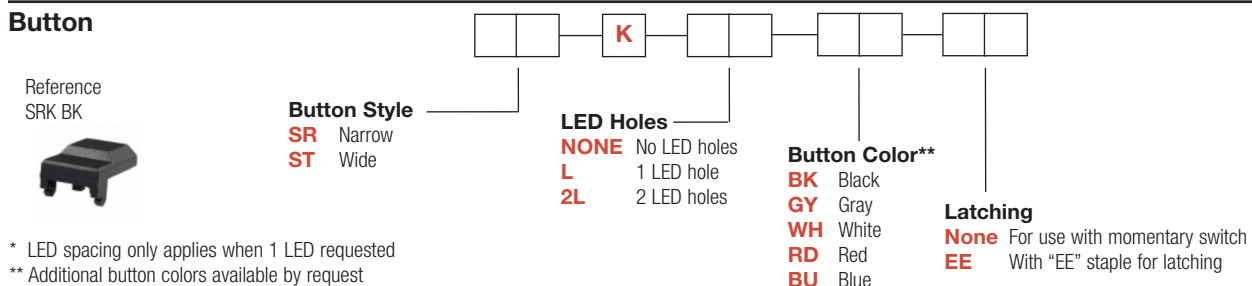
## How To Order

Our easy build-a-switch concept allows you to mix and match options to create the switch you need. To order, select desired option from each category and place it in the appropriate box. **Some of the configurations may not be available or could require some development.**

### Switch



### Button



\* LED spacing only applies when 1 LED requested  
 \*\* Additional button colors available by request  
 \*\*\* Additional LED colors available by request including Bi color configurations



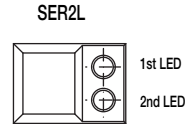
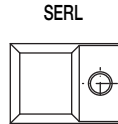
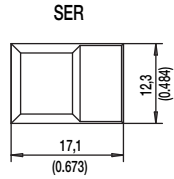
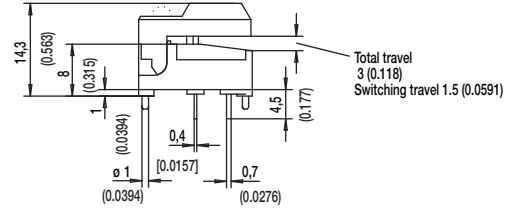
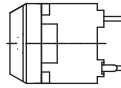
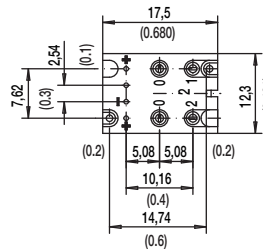
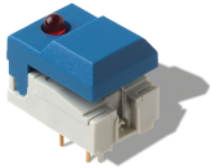
Dimensions are shown: mm  
 Specifications and dimensions subject to change



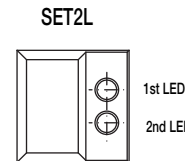
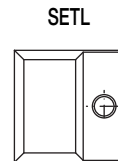
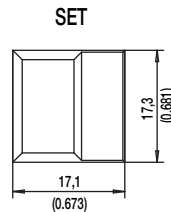
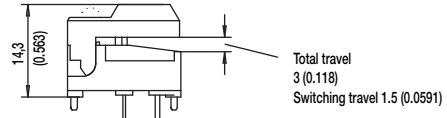
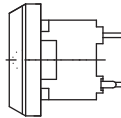
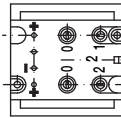
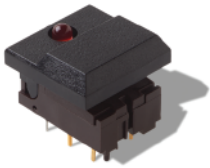
# DIGITAST Microminiature SPDT, Key Switches

## DESIGNATION

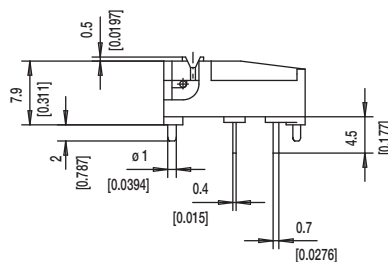
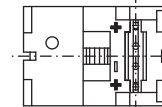
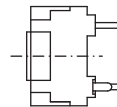
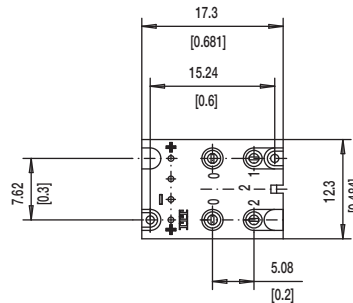
### SER NARROW BUTTON



### SET WIDE BUTTON



### SERU NO BUTTON



Key Switches

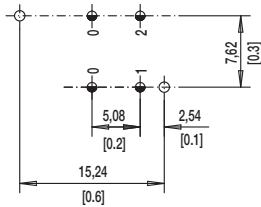


Dimensions are shown: mm  
Specifications and dimensions subject to change

# DIGITAST Microminiature SPDT, Key Switches

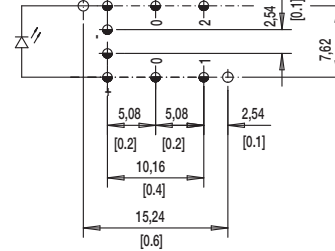
## LED

### NONE NO LED

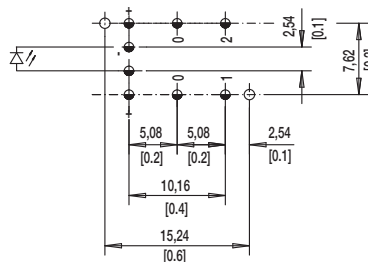


### L 1 LEDs

#### 7.62 mm Spacing (TYP No. America)

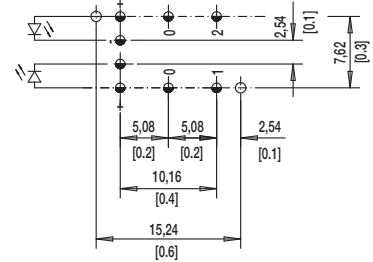


#### NARROW SPACING (TYP EUROPE)



TOP VIEW OF PCB

### 2L 2 LEDs



⌀ 1.0±0.1 (0.0394±0.00349)

⌀ 1.1±0.05 (0.0433±0.00197)

## BUTTON COLOR

**BK** BLACK

**GY** GRAY

Other button colors available by request [red (RD), green (GN), white (WH), yellow (YE), blue (BU), orange (OG)].

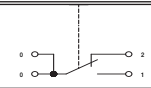
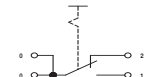
## LED COLOR

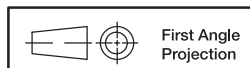
OPTION CODE	COLOR
<b>NONE</b>	Models without LED
<b>RD</b>	Red
<b>GN</b>	Green
<b>YE</b>	Yellow

## CONTACT MATERIAL

OPTION CODE	MATERIAL
<b>AU</b>	Gold

## FUNCTION

OPTION CODE	COLOR	SCHEMATIC
<b>OA</b>	Momentary	
<b>EE</b>	Push-Push	



First Angle  
Projection

Dimensions are shown: mm  
Specifications and dimensions subject to change

# ED & EDM Domes



## Features

- Short travel
- Good tactile feedback
- Self cleaning
- 3 actuation forces
- RoHS

## Typical Applications

- Aircraft
- Instrument
- Panels
- Radio equipment

## Specification

ED: Disc element  
 EDM: Disc element and double dome  
 FUNCTION: Momentary action  
 CONTACT TYPE: Normally open - SPST  
 TERMINALS: Through hole PCB terminations or Tabs  
 OPERATING LIFE: 1,000,000

## Electrical

	Silver	Gold
MAXIMUM POWER:	1.0 VA	0.2 VA
MAXIMUM VOLTAGE:	100 VDC	100 VDC
MINIMUM VOLTAGE:	20m VDC	20m VDC
MIN/MAX CURRENT:	1.0 mA - 100 mA	50µA - 50 mA
DIELECTRIC STRENGTH:	≥ 250 Vrms	
CONTACT RESISTANCE:	≤ 100 mΩ	
INSULATION RESISTANCE:	Initial measurement: ≥ 1 GΩ	
(between terminals)	After damp heat: ≥ 10 MΩ	
BOUNCE TIME:	≤ 3 ms	

## Packaging

Trays 50 pieces.

## Mechanical

## Environmental

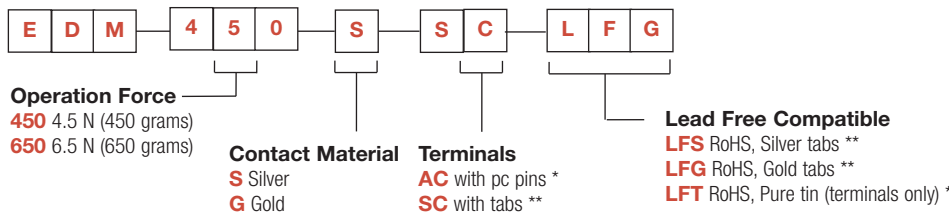
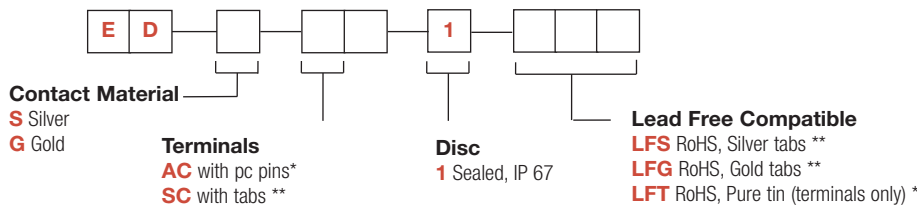
	Silver	Gold
OPERATING TEMPERATURE:	-25°C to 70°C	-55°C to 85°C

Type	Operating force Newtons (grams)	Tactile Feeling (Δ%)	Return Force N	Travel (mm)
EDSAC LFS	2.4 (240) ± 25%	≥ 30%	≥ 0.4 N	0.3mm ± 0.15
EDSSC LFS	2.4 (240) ± 25%	≥ 30%	≥ 0.4 N	0.3mm ± 0.15
EDM450SAC LFS	4.5 (450) ± 25%	≥ 25%	≥ 1.0 N	0.5mm ± 0.25
EDM650SSC LFS	6.5 (650) ± 25%	≥ 25%	≥ 1.6 N	0.6mm ± 0.25

SIMULTANEITY: ≤ 0.05 mm

## How To Order

Our easy build-a-switch concept allows you to mix and match options to create the switch you need. To order, select desired option from each category and place it in the appropriate box.



Note  
 \* AC terminals only available with LFT  
 \*\* SC terminals only available with LFS or LFG



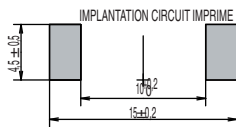
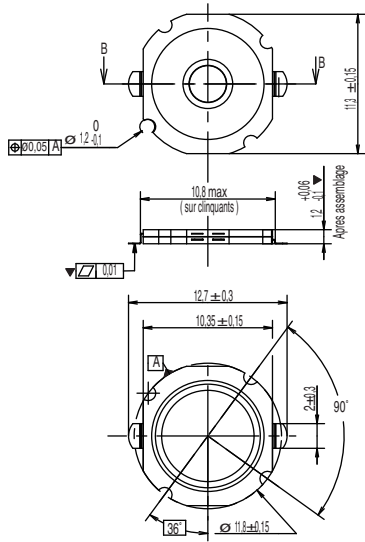
Dimensions are shown: mm  
 Specifications and dimensions subject to change



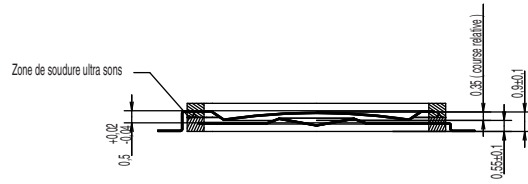
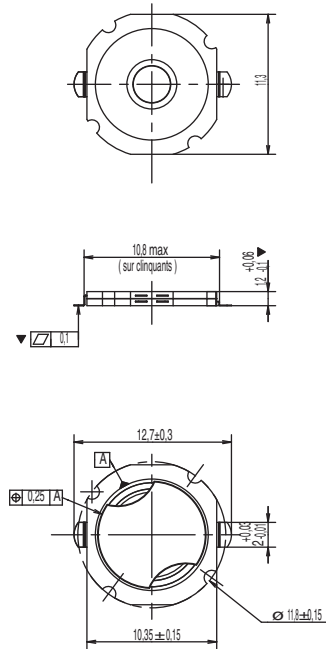
D

Key Switches

## ED



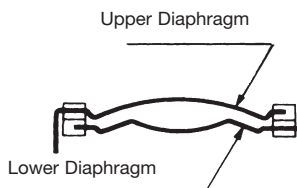
## EDM



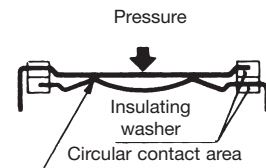
### Switch Action Principal

The disc contact is essentially made of two separate conductive dome diaphragms separated by an insulated material.

The upper diaphragm is shaped so that under pressure it collapses suddenly and establishes contact with the lower diaphragm.



Switch in resting position

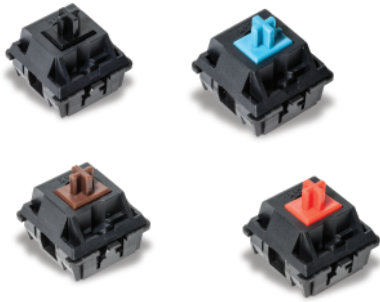


Switch in active position



Dimensions are shown: mm  
Specifications and dimensions subject to change

# KBD Keyboard Switches



## Features

- Long operating life
- High reliability
- Excellent ergonomics
- RoHS compliant

## Typical Applications

- Gaming keyboard
- Professional keyboard
- Industrial keyboard
- Workstation keyboard

## Specifications

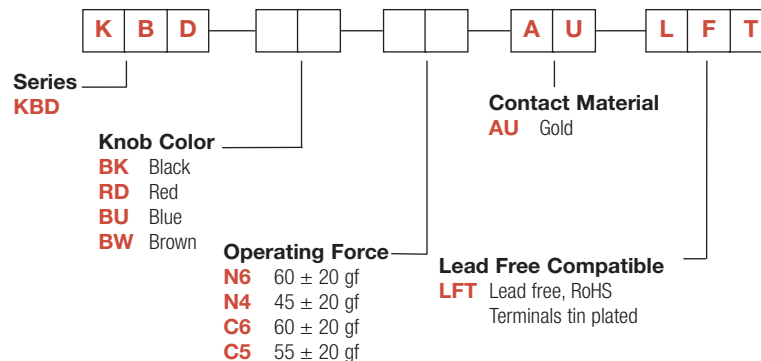
CONTACT ARRANGEMENT: SPST  
 CONTACT RATING: 10mA @ 12 VDC  
 INITIAL CONTACT RESISTANCE: 200 m Ω max. (25m Ω typically)  
 INSULATION RESISTANCE: 100M Ω min. @ 100 VDC  
 DIELECTRIC STRENGTH: 250 VAC (50-60 Hz) 60 sec.  
 ELECTRICAL LIFE: 50,000,000 cycles  
 PRE-TRAVEL: 1.5 ~ 2 mm  
 OVERTRAVEL: 4 mm  
 OPERATING TEMPERATURE: -10°C to +70°C

## Materials

COVER: Nylon (UL94V-0)  
 HOUSING: Nylon (UL94V-0)  
 KNOB: POM (UL94HB)  
 TERMINALS: Copper alloy, gold plated in contact area,  
 Tin plated in soldering area  
 SPRING: Stainless steel

## How To Order

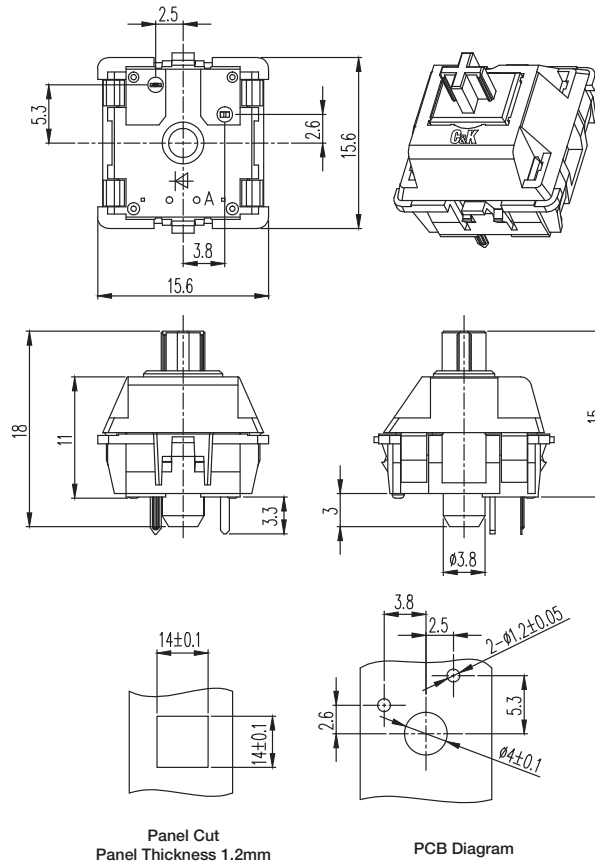
Our easy build-a-switch concept allows you to mix and match options to create the switch you need. To order, select desired option from each category and place it in the appropriate box.



D

Key Switches

# KBD Keyboard Switches



PART NUMBER	FEELING	KNOB COLOR	OPERATING FORCE	OPERATING LIFE
KBDBKN6AULFT	Linear actuation	BLACK	60±20gf	50,000,000
KBDRDN4AULFT	Linear actuation	RED	45±20gf	50,000,000
KBDBUC6AULFT	Click pressure point	BLUE	60±20gf	50,000,000
KBDBWC5AULFT	Click pressure point	BROWN	55±20gf	50,000,000



Key Switches



# Detect Switches

## Product Selection Guide







Detect						
Series	HDT	DS	HDS	HDP	SDP	SDS
Travel to Make (mm)	0,3	See datasheet	0,17	0,24	29,2°	0,35
Overtravel (mm)	0,75	See datasheet	0,5	1,66	39,1°	1,65
Total Travel (mm)	1,05	See datasheet	1,07	1,9	68,3°	2,0
Actuator Length (mm)	1,4	See datasheet	1,17	2,15	1,85	2,5
Life Expectancy	100,000 cycles	20,000; 50,000; 100,000 cycles	100,000 cycles	100,000 cycles	50,000 cycles	50,000 cycles
Contact Type	SPST N.O.	SPST SPDT	SPST N.O.	SPST N.O.	SPDT	SPST N.O. SPST N.C.
Max. Voltage (V)	5	5 V; 16 V 30 V	5	5	5	12
Max. Switching Current (mA)	1 mA	1 mA; 5 mA 100 mA	1 mA	1 mA	1 mA	100 mA
Sealing	No	No	No	No	No	No
Mounting	Surface mount	Thru-hole Solder lug	Surface mount	Surface mount	Surface Mount	Surface mount
Page number	E-4	E-7	E-12	E-14	E-16	E-17

Detect						
Series	DDS	MDS	KDS	KM	MPS	ZMA
Travel to Make (mm)	0,45	2,5 max.	1,25 max.	4,06	See datasheet	1,3 max.
Overtravel (mm)	1,95	0,15 min.	8,9	1,78	See datasheet	0,2 min.
Total Travel (mm)	2,4	2,9	10,16	5,84	See datasheet	1,5
Actuator Length (mm)	2,6	R 8,4	10,16	10,11	N/A	
Life Expectancy	50,000 cycles	100,000 cycles	10,000 cycles	10,000 cycles	10,000,000 cycles	300,000 cycles
Contact Type	SPST N.O.	SPDT	SPST N.O. SPST N.C.	SPDT	SPST N.O.	SPDT
Max. Voltage (V)	30	30	20	125 V AC	30	125 V
Max. Switching Current (mA)	100 mA	300 mA	.4 VA	250 mA	300 mA	3 Amps
Sealing	No	No	No	Flux tight	Yes	No
Mounting	Thru-hole	Thru-hole & Surface Mount	Snap-in panel	Thru-hole	Wire lead	Thru-hole
Page Number	E-18	E-20	E-26	E-27	E-30	E-32



Detect

# Detect Switches Product Selection Guide

<b>Detect</b>						
<b>Series</b>	<b>KSU</b>	<b>KSR2D</b>	<b>KSM</b>	<b>KSC4D</b>	<b>KSJ</b>	<b>RB</b>
<b>Travel to Make (mm)</b>	0,5	0,3	0,3	0,6	0,3	See datasheet
<b>Overtravel (mm)</b>	1,0	N/A	1,15	N/A	0,75	N/A
<b>Total Travel (mm)</b>	1,5	0,3	1,72	0,6	1,05	N/A
<b>Actuator Length (mm)</b>	1,5	0,8	1,8	2,6	1,4	N/A
<b>Life Expectancy</b>	100,000 cycles	100,000 cycles	50,000 cycles	500,000 and 2,000,000 cycles	100,000 cycles	20,000; 100,000 cycles
<b>Contact Type</b>	SPST N.O.	SPST N.O.	SPST N.C.	SPST N.O.	SPST N.O.	SPST SPDT
<b>Max. Voltage (V)</b>	32	32	32	32	5	5 V; 24 V
<b>Max. Switching Current (mA)</b>	50 mA	10 mA	50 mA	50 mA	1 mA	1 mA; 25 mA
<b>Sealing</b>	Dust and water drop proof	Dust and flux tight	Flux tight	IP67	IP60	No
<b>Mounting</b>	Surface mount	Surface mount	Surface mount	Surface mount	Surface mount	Thru-hole
<b>Page number</b>	E-36	E-38	E-40	E-42	E-44	E-46



**Detect**



Dimensions are shown: mm  
Specifications and dimensions subject to change

# HDT Series Micro Mini Surface Mount Detect Switches



## Features/Benefits

- Low profile package
- Design allows top or side actuation
- Low actuation force, 35 grams max.
- Pick and place compatible, available in tape & reel packaging
- RoHS compliant and compatible
- Halogen free

## Typical Applications

- Consumer electronics
- Computers
- Medical devices
- ATCA and MicroTCA devices

## Specifications

CONTACT RATING: 1 mA 5 VDC  
 MECHANICAL AND ELECTRICAL LIFE: 100,000 cycles min.  
 CONTACT RESISTANCE: 500 m Ω max. initial.  
 INSULATION RESISTANCE: 100 M Ω min. between adjacent contacts.  
 OPERATING TEMPERATURE: -40°C to + 85°C  
 STORAGE TEMPERATURE: -40°C to + 85°C  
 PACKAGING: Tape & reel

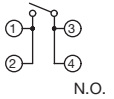
## Materials

BASE: PA 46 (UL94V-0)  
 COVER: PA 46 (UL94V-0)  
 ACTUATOR: PA 46 (UL94V-0)  
 MOVABLE BLADE: Stainless Steel, Ag over Ni plating.  
 TERMINALS: Phosphor Bronze, Ag over Ni plating.  
 SOLDERABILITY: Lead free compatible - No clean.

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## Build-A-Switch

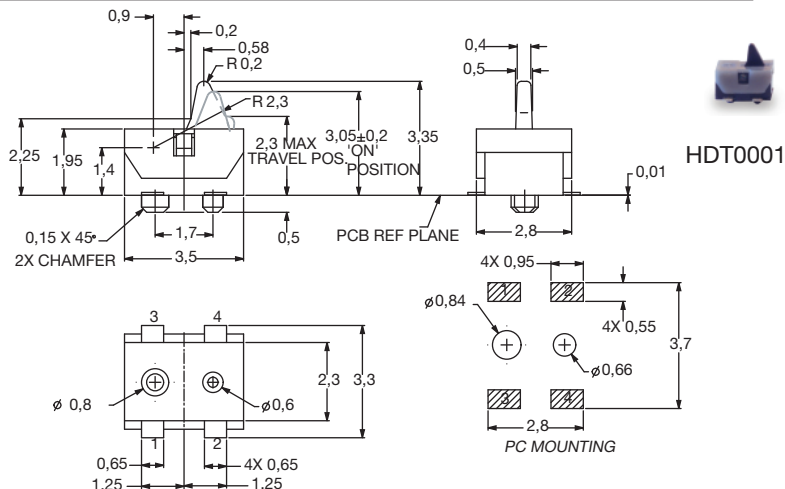
Complete part numbers for HDT Series are shown below.

PART NUMBER	PACKAGING	SCHEMATIC
<b>HDT0001</b>	TAPE & REEL 2,450 per reel	

**NOTE:** Available with no locating posts by adding "NP" (HDT0001NP) to Part Number.

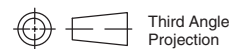
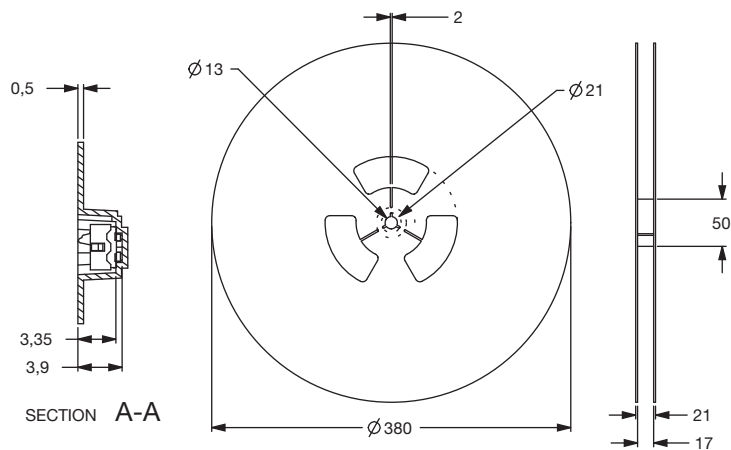
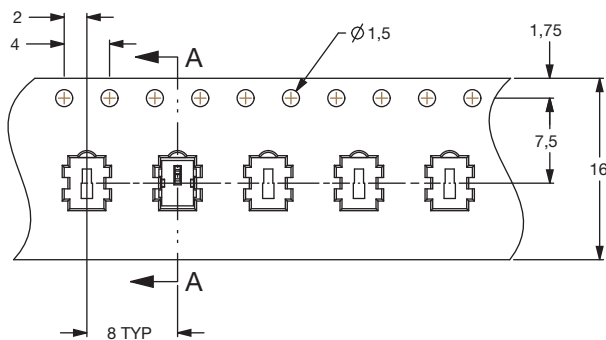
### TRAVEL:

Pre-travel: .30 mm  
 Overtravel: .75 mm  
 Total: 1.05 mm



## TAPE & REEL

### HDT0001



Dimensions are shown: mm  
 Specifications and dimensions subject to change



Detect

# HDT Series Micro Mini Surface Mount Detect Switches

## HDT0004

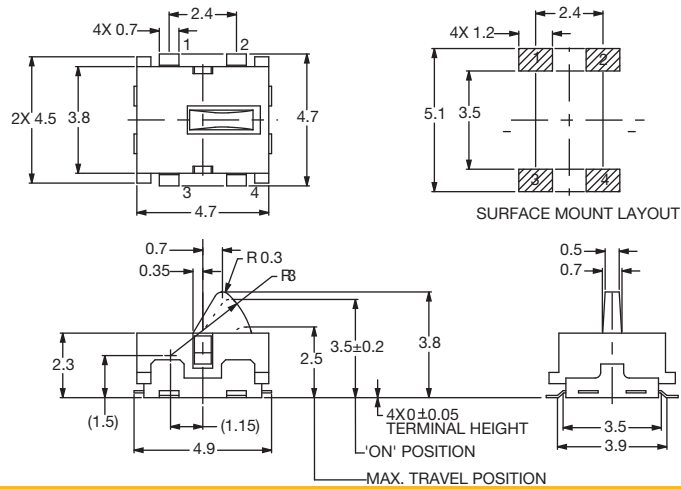


HDT0004

PART NUMBER	PACKAGING	SCHEMATIC
<b>HDT0004</b>	TAPE & REEL 2,800 per reel	

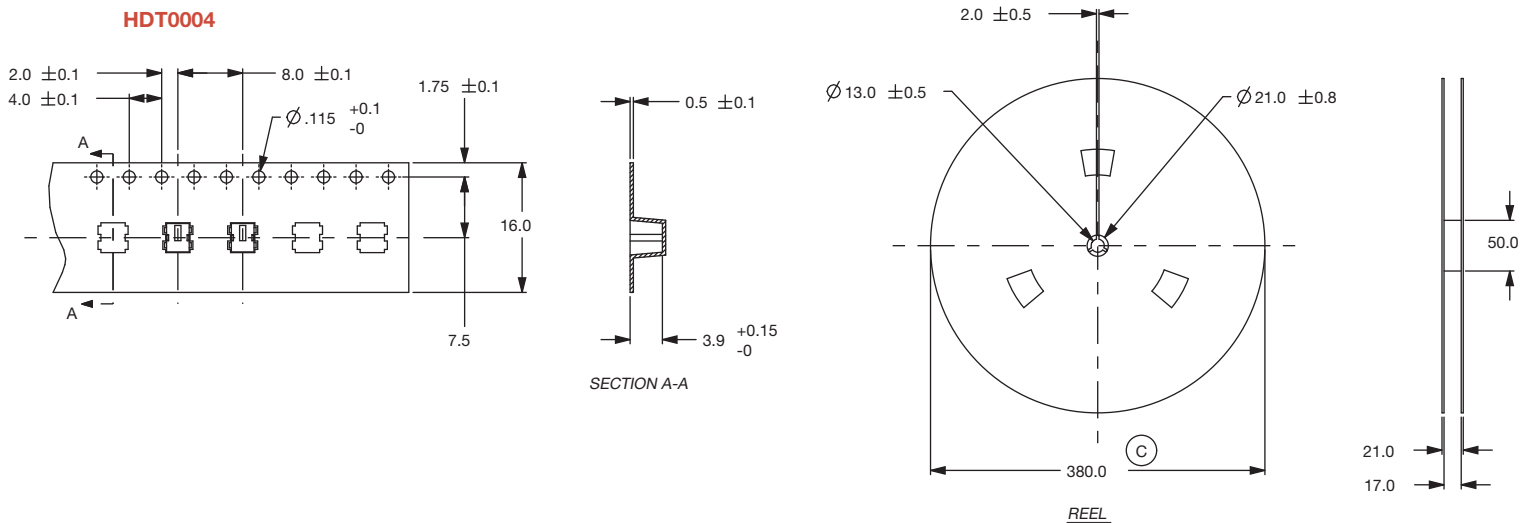
**TRAVEL:**

Pre-travel: .3 mm  
Overtravel: 1.0 mm  
Total: 1.3 mm



## TAPE & REEL

HDT0004



## HDT0104

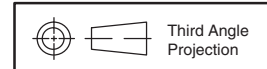
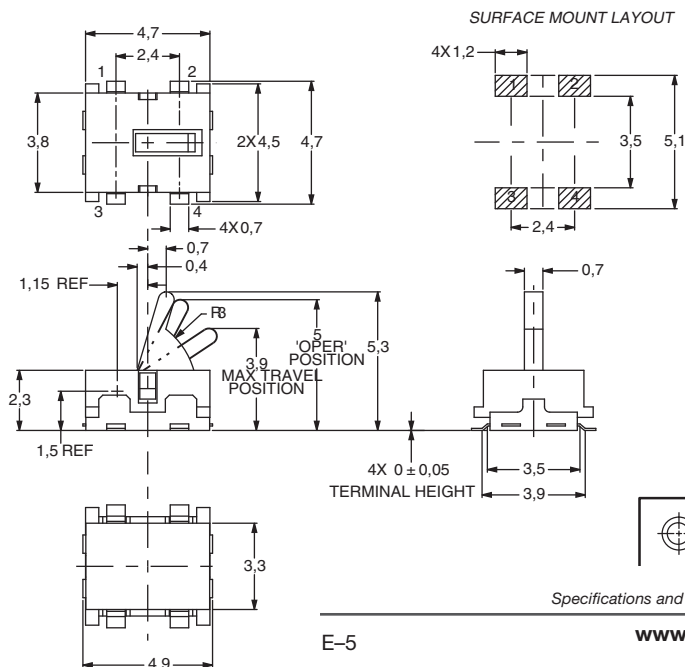


HDT0104

PART NUMBER	PACKAGING	SCHEMATIC
<b>HDT0104</b>	TAPE & REEL 2,500 per reel	

**TRAVEL:**

Pre-travel: .3 mm  
Overtravel: 1.1 mm  
Total: 1.4 mm



Dimensions are shown: mm  
Specifications and dimensions subject to change

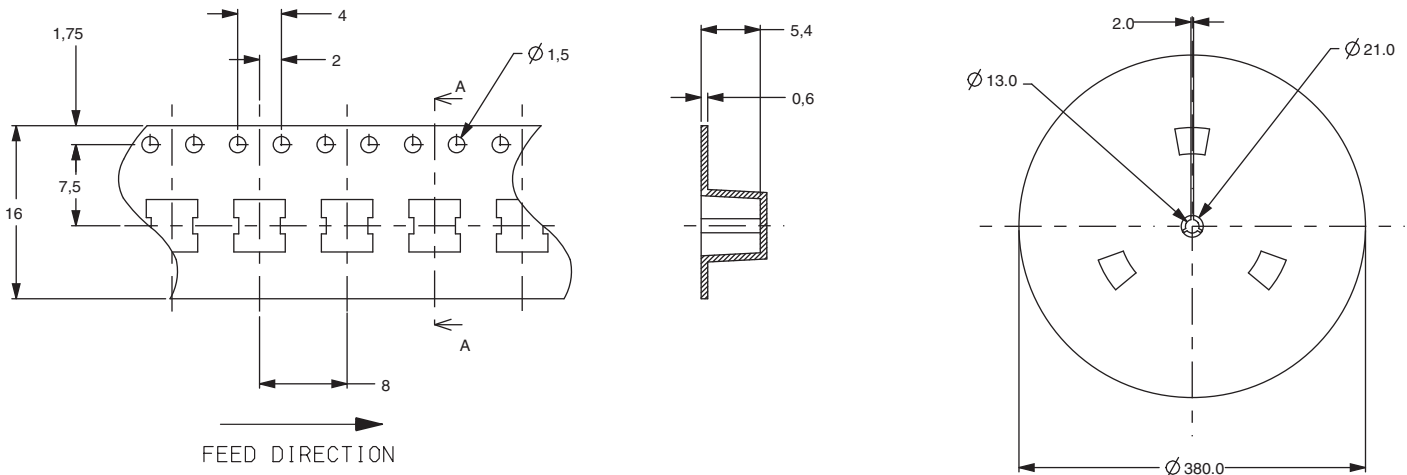


Detect

# HDT Series Micro Mini Surface Mount Detect Switches

## TAPE & REEL

**HDT0104**



## HDT0204

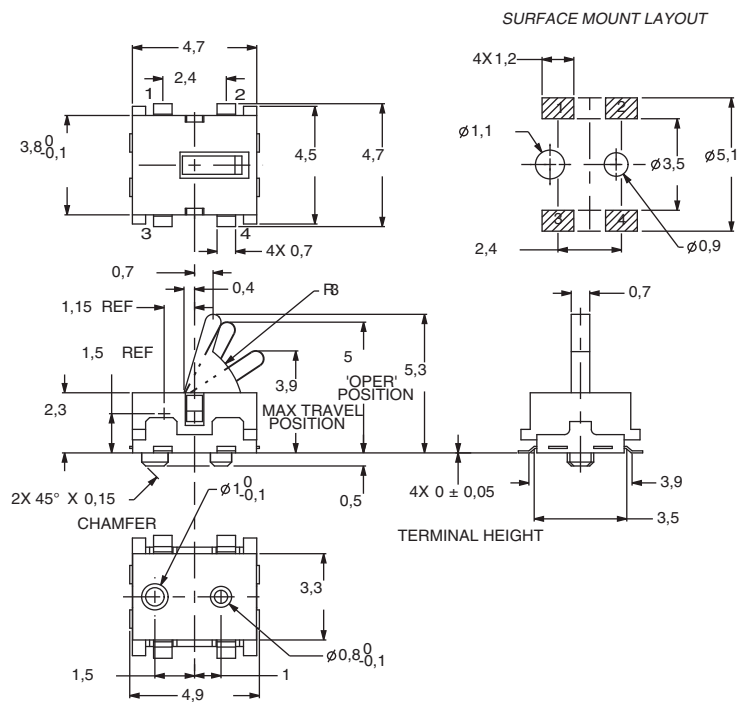


**HDT0204**

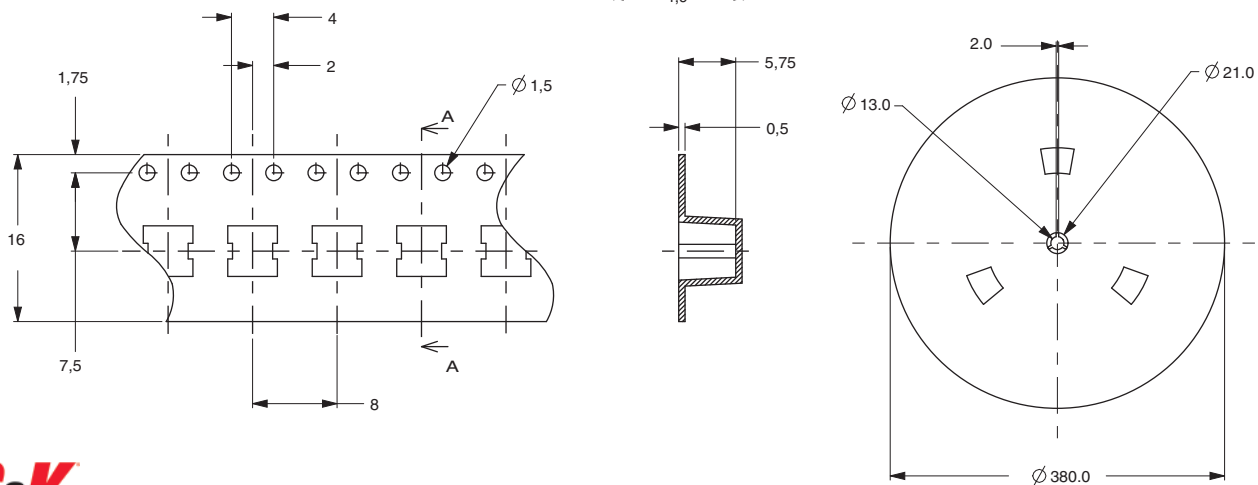
PART NUMBER	PACKAGING	SCHEMATIC
<b>HDT0204</b>	TAPE & REEL 1,400 per reel	

**TRAVEL:**

- Pre-travel: .3 mm
- Overtravel: 1.1 mm
- Total: 1.4 mm



**Detect**



# DS Series Detect Switch

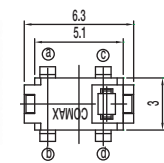


## Features/Benefits

- Compact design
- Low actuation force
- Detect mechanical movement
- Left and right options
- Right angle options

## Typical Applications

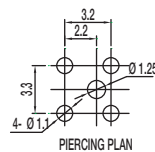
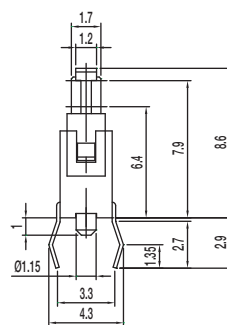
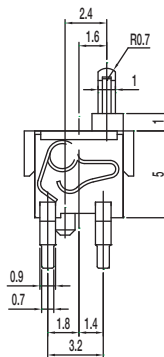
- Computer peripherals
- Office equipment
- Consumer electronics
- Appliances
- Audio and visual equipment



PART NUMBER	PACKAGING	SCHEMATIC
<b>DS-02005</b>	1,000 pieces	1P-1T

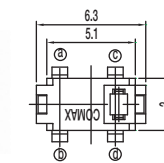
## Specifications

CONTACT ARRANGEMENT: SPST, NO  
 CONTACT RATING: 100mA @ 30 VDC  
 OPERATING LIFE: 50,000 cycles  
 OPERATING FORCE: 50 gf max.  
 PRE-TRAVEL: 0.7 mm  
 TOTAL TRAVEL: 2.6 mm  
 INITIAL CONTACT RESISTANCE: 1 Ω max.  
 INSULATION RESISTANCE: 100 M Ω min. @ 100 VDC 60 sec.  
 DIELECTRIC STRENGTH: 100 V AC (50-60Hz) 60 sec.  
 OPERATING TEMPERATURE: -20°C to +70°C.



## Materials

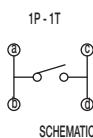
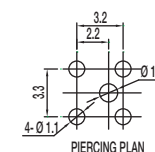
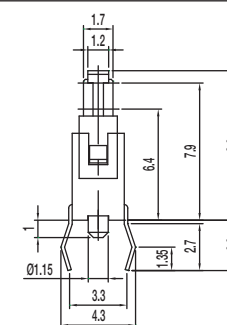
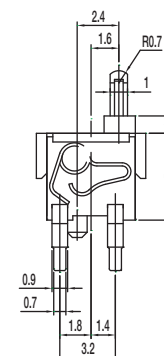
KNOB: PA  
 COVER: PA  
 SPRING: Gold plated, copper alloy  
 HOUSING: PA  
 TERMINAL: Silver plated, copper alloy



PART NUMBER	PACKAGING	SCHEMATIC
<b>DS-02005 (30)</b>	1,000 pieces	1P-1T

## Specifications

CONTACT ARRANGEMENT: SPST, NO  
 CONTACT RATING: 100mA @ 30 VDC  
 OPERATING LIFE: 50,000 cycles  
 OPERATING FORCE: 30 gf max.  
 PRE-TRAVEL: 0.7 mm  
 TOTAL TRAVEL: 2.2 mm  
 INITIAL CONTACT RESISTANCE: 1 Ω max.  
 INSULATION RESISTANCE: 100 M Ω min. @ 100 VDC 60 sec.  
 DIELECTRIC STRENGTH: 100 V AC (50-60Hz) 60 sec.  
 OPERATING TEMPERATURE: -20°C to +70°C.



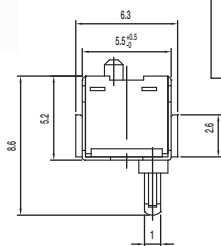
## Materials

KNOB: PA  
 COVER: PA  
 SPRING: Gold plated, copper alloy  
 HOUSING: PA  
 TERMINAL: Silver plated, copper alloy



Detect

# DS Series Detect Switch



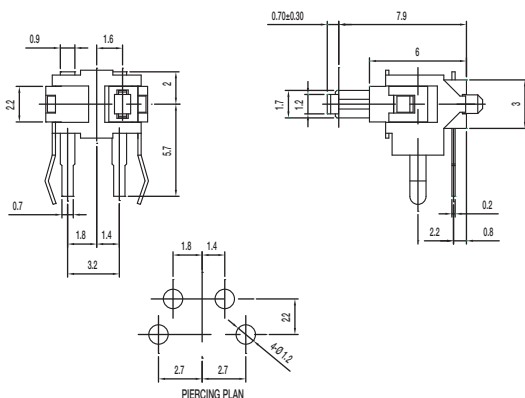
PART NUMBER	PACKAGING	SCHEMATIC
<b>DS-02005-A</b>	1,000 pieces	

## Specifications

CONTACT ARRANGEMENT: SPST, NO  
 CONTACT RATING: 100mA @ 30 VDC  
 OPERATING LIFE: 50,000 cycles  
 OPERATING FORCE: 50 gf max.  
 PRE-TRAVEL: 0.7 mm  
 TOTAL TRAVEL: 2.6 mm  
 INITIAL CONTACT RESISTANCE: 1 Ω max.  
 INSULATION RESISTANCE: 100 M Ω min. @ 100 VDC 60 sec.  
 DIELECTRIC STRENGTH: 100 V AC (50-60Hz) 60 sec.  
 OPERATING TEMPERATURE: -20°C to +70°C.

## Materials

KNOB: PA  
 COVER: PA  
 SPRING: Gold plated, copper alloy  
 HOUSING: PA  
 TERMINAL: Silver plated, copper alloy



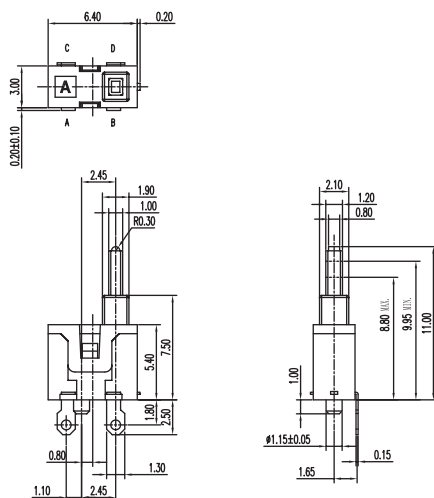
PART NUMBER	PACKAGING	SCHEMATIC
<b>DS-21805</b>	2,500 pieces	

## Specifications

CONTACT ARRANGEMENT: SPDT  
 CONTACT RATING: 5mA @ 5 VDC  
 OPERATING LIFE: 100,000 cycles  
 OPERATING FORCE: 36 gf  
 TOTAL TRAVEL: 2.20 mm  
 INITIAL CONTACT RESISTANCE: 1 Ω max.  
 INSULATION RESISTANCE: 100 M Ω min. @ 100 VDC 60 sec.  
 DIELECTRIC STRENGTH: 100 V AC (50-60Hz) 60 sec.  
 OPERATING TEMPERATURE: -20°C to +70°C.

## Materials

KNOB: POM  
 COVER: PA46  
 SPRING: Silver plated  
 HOUSING: PPS  
 TERMINAL: Silver plated



Detect

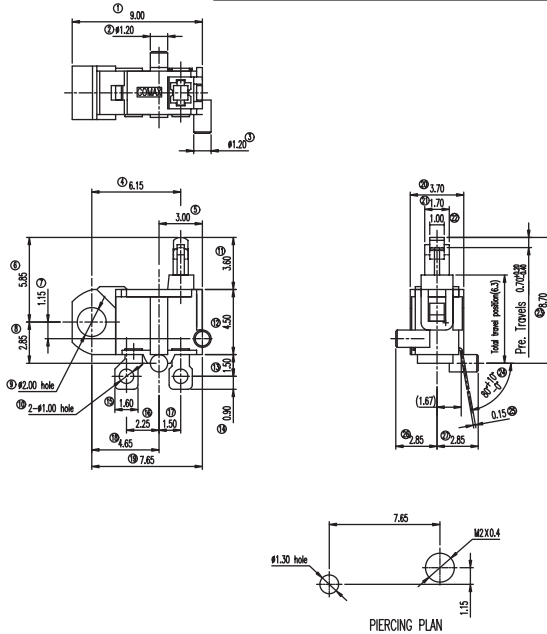


Dimensions are shown: mm  
 Specifications and dimensions subject to change

# DS Series Detect Switch



PART NUMBER	PACKAGING	SCHEMATIC
<b>DS-203-A</b>	2,500 pieces	 1P - 1T N.O.



## Specifications

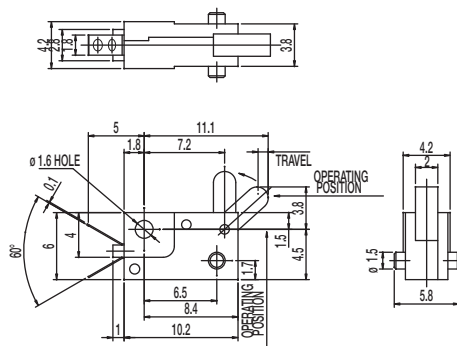
CONTACT ARRANGEMENT: SPST  
 CONTACT RATING: 100mA @ 30 VDC  
 OPERATING LIFE: 50,000 cycles  
 OPERATING FORCE: 36 gf  
 PRE TRAVEL: 0.70 +0.20/-0.40 mm  
 INITIAL CONTACT RESISTANCE: 1 Ω max.  
 INSULATION RESISTANCE: 50 M Ω min. @ 250 VDC 60 sec.  
 DIELECTRIC STRENGTH: 250 V AC (50-60Hz) 60 sec.  
 OPERATING TEMPERATURE: -20°C to +70°C.

## Materials

KNOB: POM  
 COVER: PA  
 SPRING: Gold plated  
 HOUSING: PA  
 TERMINAL: Silver plated



PART NUMBER	PACKAGING	SCHEMATIC
<b>DS-040-02</b>	1,000 pieces	 1P - 1T N.O.



## Specifications

CONTACT ARRANGEMENT: SPST, NO  
 CONTACT RATING: 0.1A @ 16 VDC  
 OPERATING LIFE: 20,000 cycles  
 OPERATING FORCE: 30 ± 15 gf  
 TRAVEL: 0.90 ± 0.20 mm  
 INITIAL CONTACT RESISTANCE: 40 m Ω max.  
 INSULATION RESISTANCE: 100 M Ω min. @ 250 VDC 60 sec.  
 DIELECTRIC STRENGTH: 250 V AC (50-60Hz) 60 sec.  
 OPERATING TEMPERATURE: -20°C to +70°C.

## Materials

LEVER: POM  
 CASE: PBT  
 COVER: PC



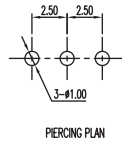
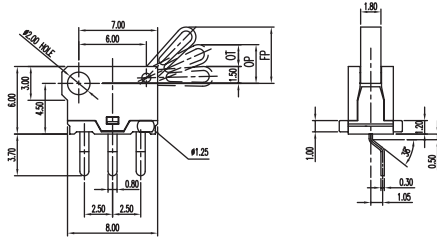
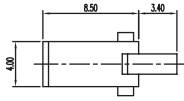
Detect



# DS Series Detect Switch



PART NUMBER	PACKAGING	SCHEMATIC
<b>DS-080</b>	1,000 pieces	



## Specifications

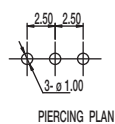
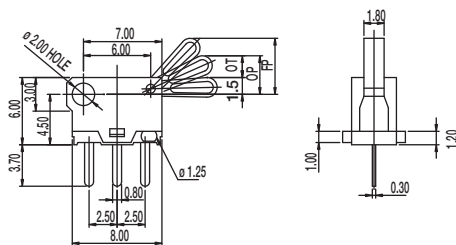
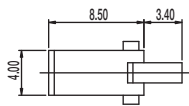
CONTACT ARRANGEMENT: SPDT  
 CONTACT RATING: 100mA @ 30 VDC  
 OPERATING LIFE: 20,000 cycles  
 OPERATING FORCE: 30 ± 20 gf  
 OVER TRAVEL: 2.0 ± 0.40 mm  
 INITIAL CONTACT RESISTANCE: 200 m Ω max.  
 INSULATION RESISTANCE: 10 M Ω min. @ 250 VDC 60 sec.  
 DIELECTRIC STRENGTH: 250 V AC (50-60Hz) 60 sec.  
 OPERATING TEMPERATURE: -20°C to +70°C.

## Materials

KNOB: POM  
 COVER: PA46  
 SLIDER: PBT  
 HOUSING: PA46  
 TERMINAL: Silver plated



PART NUMBER	PACKAGING	SCHEMATIC
<b>DS-080-C PA</b>	1,000 pieces	



## Specifications

CONTACT ARRANGEMENT: SPDT  
 CONTACT RATING: 100mA @ 30 VDC  
 OPERATING LIFE: 20,000 cycles  
 OPERATING FORCE: 30 ± 20 gf  
 OVER TRAVEL: 2.0 ± 0.40 mm  
 INITIAL CONTACT RESISTANCE: 200 m Ω max.  
 INSULATION RESISTANCE: 10 M Ω min. @ 250 VDC 60 sec.  
 DIELECTRIC STRENGTH: 250 V AC (50-60Hz) 60 sec.  
 OPERATING TEMPERATURE: -20°C to +70°C.

## Materials

KNOB: POM  
 COVER: PA46  
 SLIDER: PBT  
 HOUSING: PA46  
 TERMINAL: Silver plated

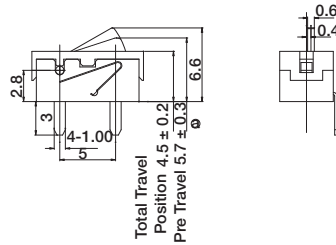
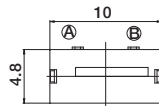


Detect

# DS Series Detect Switch



PART NUMBER	PACKAGING	SCHEMATIC
<b>DS-09005-02 BK</b>	500 pieces	



## Specifications

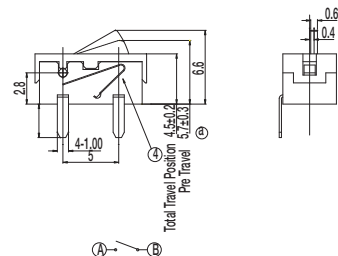
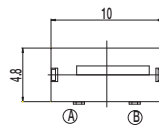
CONTACT ARRANGEMENT: SPST  
 CONTACT RATING: 1mA @ 5 VDC  
 OPERATING LIFE: 100,000 cycles  
 OPERATING FORCE: 50 gf max.  
 TOTAL TRAVEL: 4.5±0.2 mm  
 INITIAL CONTACT RESISTANCE: 500 m Ω max.  
 INSULATION RESISTANCE: 100 M Ω min. @ 500 VDC 60 sec.  
 DIELECTRIC STRENGTH: 500 V AC (50-60Hz) 60 sec.  
 OPERATING TEMPERATURE: -20°C to +70°C.

## Materials

LEVER: POM  
 COVER: PA  
 HOUSING: PA  
 TERMINAL: Silver plated



PART NUMBER	PACKAGING	SCHEMATIC
<b>DS-09005-02 RP</b>	500 pieces	



## Specifications

CONTACT ARRANGEMENT: SPST  
 CONTACT RATING: 1mA @ 5 VDC  
 OPERATING LIFE: 100,000 cycles  
 OPERATING FORCE: 50 gf max.  
 TOTAL TRAVEL: 4.5±0.2 mm  
 INITIAL CONTACT RESISTANCE: 500 m Ω max.  
 INSULATION RESISTANCE: 100 M Ω min. @ 500 VDC 60 sec.  
 DIELECTRIC STRENGTH: 500 V AC (50-60Hz) 60 sec.  
 OPERATING TEMPERATURE: -20°C to +70°C.

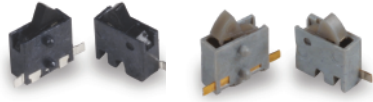
## Materials

LEVER: POM  
 COVER: PA  
 HOUSING: PA  
 TERMINAL: Silver plated



**Detect**

# HDS Series Micro Mini Side Actuated Surface Mount Detect Switches



## Features/Benefits

- Low profile package sits just 1.4 mm off PCB
- Design allows top or side actuation
- Right and left options available
- Low actuation force, 30 grams max.
- Pick and place compatible, available in tape & reel packaging
- RoHS compliant and compatible

## Typical Applications

- Consumer electronics
- Computers
- Medical devices
- Mobile Communications
- ATCA and MicroTCA devices

## Specifications

CONTACT RATING: 1 mA 5 VDC  
 MECHANICAL AND ELECTRICAL LIFE: 100,000 cycles min.  
 CONTACT RESISTANCE: 1 Ω max. initial.  
 INSULATION RESISTANCE: 100 M Ω min. between adjacent contacts.  
 OPERATING TEMPERATURE: -40°C to + 80°C  
 STORAGE TEMPERATURE: -40°C to + 80°C  
 PACKAGING: tape & reel; 5,000 per reel.  
 TRAVEL:  
 Pre-travel: .17 mm min.  
 Overtravel: .5 mm min.  
 Total: 1.07 mm

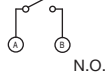
## Materials

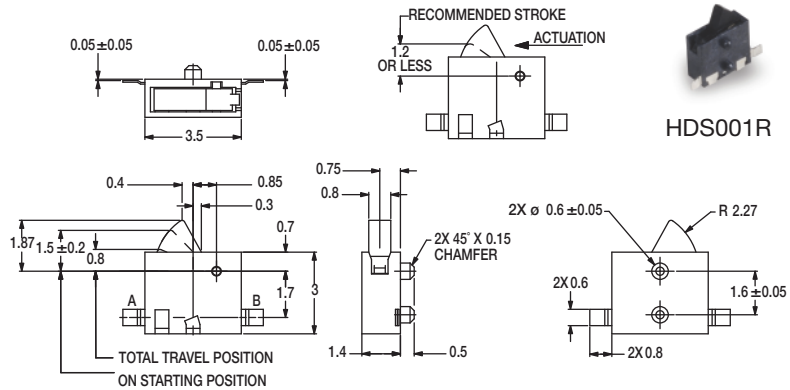
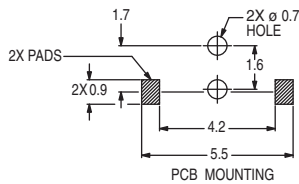
BASE: LCP HDS001L: Gray HDS001R: Black  
 COVER: PA 46 (UL94V-0)  
 ACTUATOR: PA 46 (UL94V-0) HDS001L: Gray HDS001R: Black  
 MOVABLE BLADE: Stainless Steel, Ag over Ni plating.  
 TERMINALS: Phosphor Bronze, Ag plating.

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## Build-A-Switch


Complete part numbers for HDS Series are shown below.

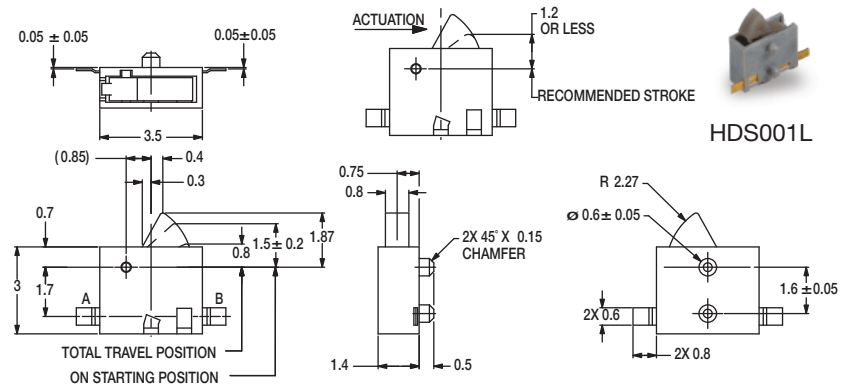
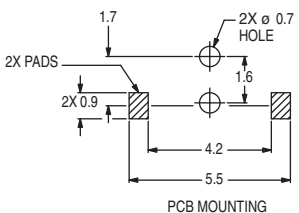
PART NUMBER	PACKAGING	SCHEMATIC
<b>HDS001R</b>	TAPE & REEL	



HDS001R

HDS001L

PART NUMBER	PACKAGING	SCHEMATIC
<b>HDS001L</b>	TAPE & REEL	



Third Angle Projection

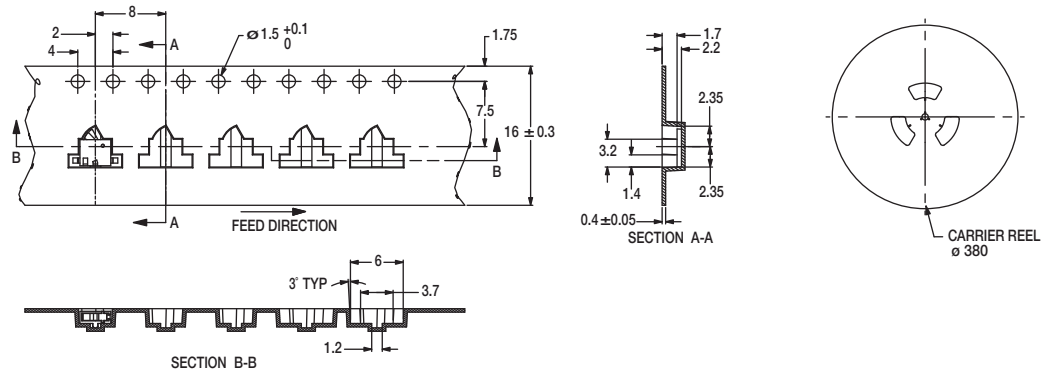
Dimensions are shown: mm  
 Specifications and dimensions subject to change



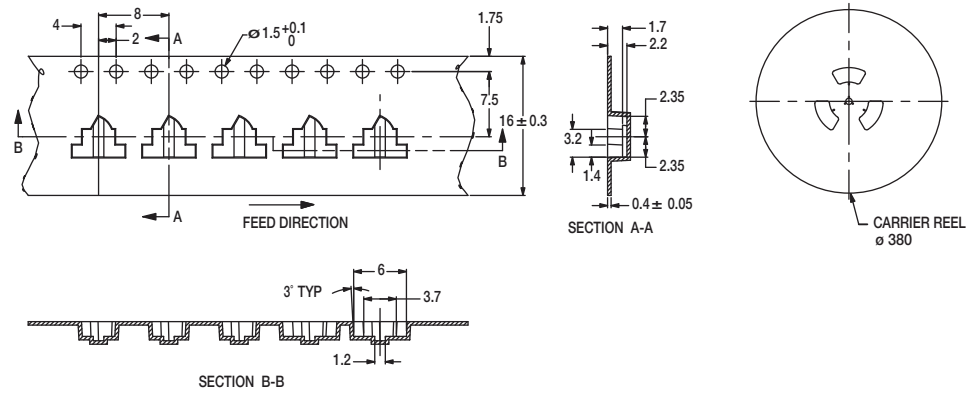
# HDS Series Micro Mini Side Actuated Surface Mount Detect Switches

## TAPE & REEL

HDS001R



HDS001L



NOTE: Quantity per reel: 5,000 pieces



Detect

# HDP Series Micro Mini Side Actuated Surface Mount Detect Switches



## Features/Benefits

- Low profile
- Side actuation
- Right and left options available
- Low actuation force
- Lead free and halogen free

## Typical Applications

- Consumer electronics
- Computers
- Medical devices
- Mobile Communications
- ATCA and MicroTCA devices

## Specifications

CONTACT RATING: 1 mA 5 VDC  
 MECHANICAL AND ELECTRICAL LIFE: 100,000 cycles min.  
 CONTACT RESISTANCE: < 500 m Ω initial.  
 INSULATION RESISTANCE: > 100 M Ω  
 OPERATING TEMPERATURE: -20°C to + 70°C  
 STORAGE TEMPERATURE: -30°C to + 80°C  
 PACKAGING: tape & reel; 2,500 per reel.  
 TRAVEL:  
 Pre-travel 0.15 mm min.  
 "ON" starting position 2.96 +/- 0.25 mm  
 Total: 1.3 mm  
 Mechanical: 1.9 mm

## Materials

BASE: PA 46 (UL94HB) - halogen free  
 ACTUATOR: PA 46 (UL94HB) - halogen free  
 HDP001R - black body/actuator  
 HDP001L - grey body/actuator  
 MOVABLE CONTACTS: Stainless Steel, Silver over nickel plate.  
 FIXED CONTACTS/TERMINALS: Phosphor Bronze, Silver plate.

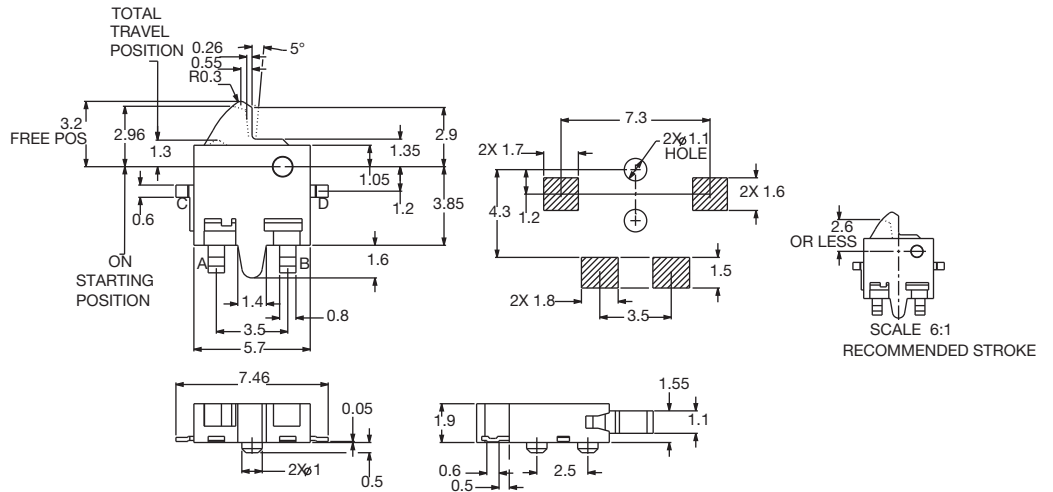
**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## Build-A-Switch

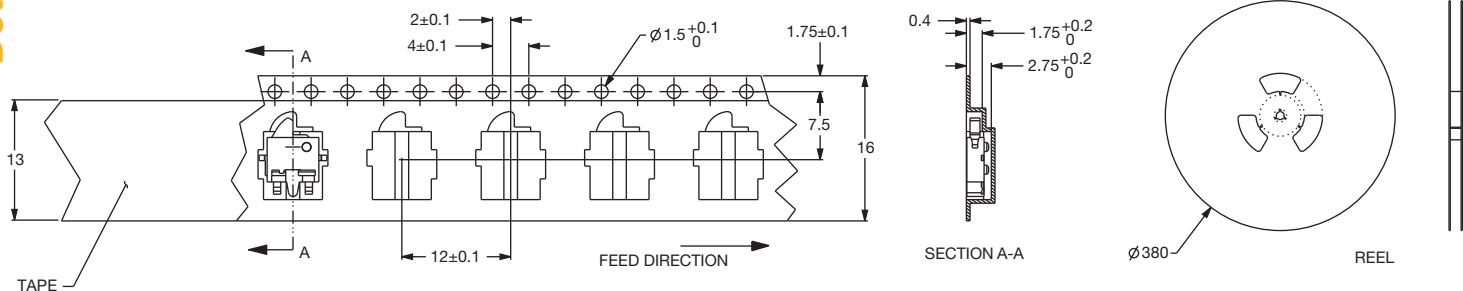
Complete part numbers for HDP Series are shown below.



PART NUMBER	PACKAGING	SCHEMATIC
<b>HDP001R</b>	TAPE & REEL	
Black body/ actuator		



Detect

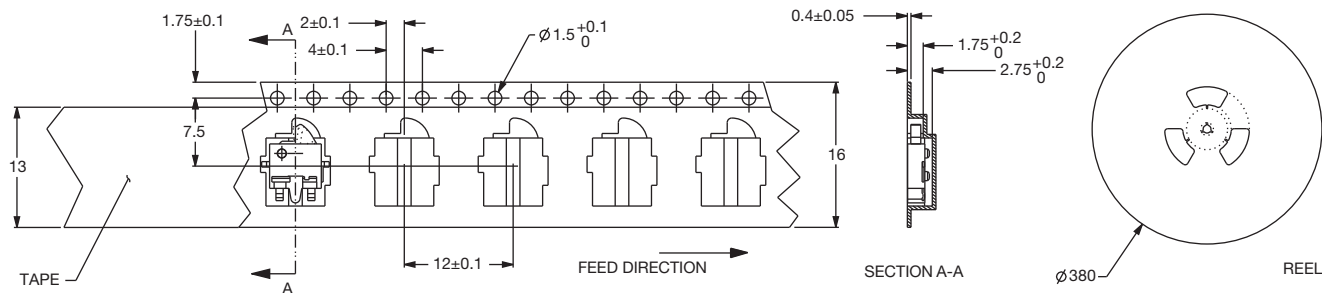
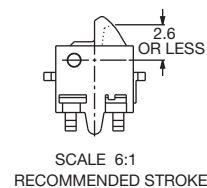
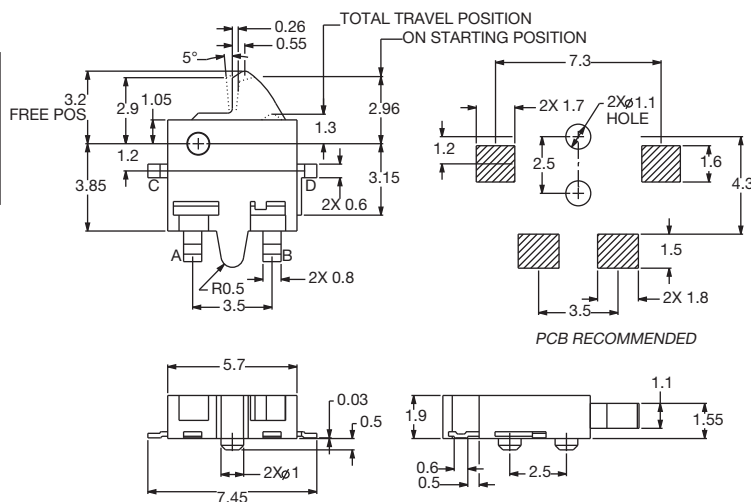


Dimensions are shown: mm  
 Specifications and dimensions subject to change

# HDP Series Micro Mini Side Actuated Surface Mount Detect Switches



PART NUMBER	PACKAGING	SCHEMATIC
<b>HDP001L</b>	TAPE & REEL	
Grey body/ actuator		



Detect

# SDP Series Micro Mini Pendulum SMT Detect Switch



## Features/Benefits

- SMT process compatible
- Low profile
- Right or left side actuated
- Low actuation force
- Low halogen / halogen free

## Typical Applications

- Consumer electronics
- Computers
- Medical devices
- ATCA and MicroTCA devices

## Specifications

CONTACT RATING: 5 VDC 1mA (0.1mA to 100mA max)  
 MECHANICAL AND ELECTRICAL LIFE: 50,000 cycles  
 CONTACT RESISTANCE: 500 m  $\Omega$  max. initial.  
 INSULATION RESISTANCE: 100 M  $\Omega$  (500VDC for 1 min.)  
 OPERATING TEMPERATURE: -20°C to + 70°C  
 STORAGE TEMPERATURE: -30°C to + 80°C  
 PACKAGING: Tape & reel 4,550 pieces

## Materials

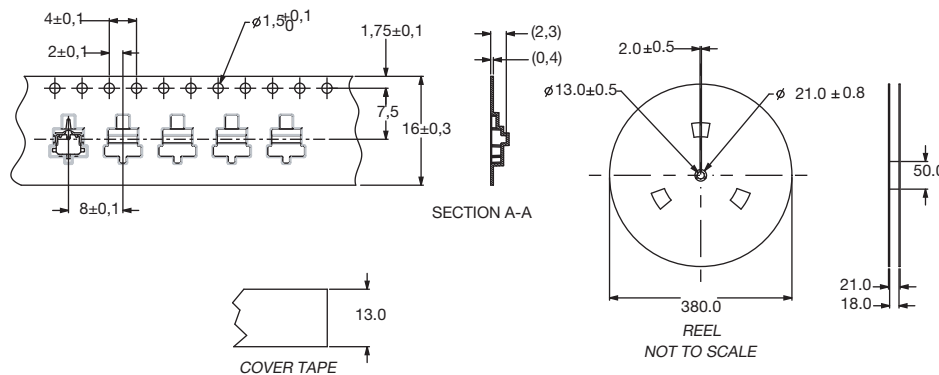
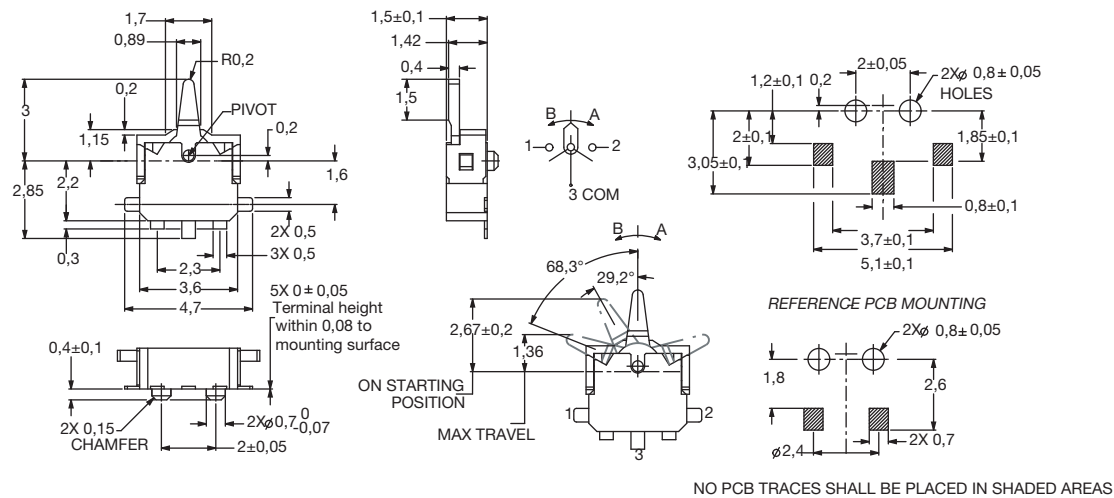
BASE: LCP (black)  
 COVER: PA 46 (black)  
 ACTUATOR: LCP (black)  
 MOVABLE BLADE: Stainless Steel, Ag over Ni plating.  
 TERMINALS: Phosphor Bronze, Ag over Ni plating.  
 SOLDERABILITY: Lead free compatible - No clean.

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## Build-A-Switch

Complete part numbers for SDP Series are shown below.

### SDP002



Detect



Dimensions are shown: mm  
 Specifications and dimensions subject to change

# SDS Series Side Actuated Detect Switches

## Features/Benefits

- Low profile package sits just 2mm off PCB
- 2mm overtravel ideal for detector applications
- Low actuation force (75 grams max.)
- Pick & place compatible, available in tape & reel packaging
- RoHS compliant and compatible

## Typical Applications

- Medical devices
- Consumer electronic devices
- PCB lock cam detect
- Smart card detect
- ATCA and MicroTCA



## Specifications

CONTACT RATING: 100 mA @ 12 VDC.  
 MECHANICAL & ELECTRICAL LIFE: 50,000 cycles.  
 CONTACT RESISTANCE: 100 m Ω max. initial.  
 INSULATION RESISTANCE: 10 M Ω min. @ 100 VDC.  
 OPERATING TEMPERATURE: -40°C to +85°C.  
 SOLDERABILITY: IR compatible, no wash. 260°C max.  
 PACKAGING: Bulk or tape & reel (3000 per reel).

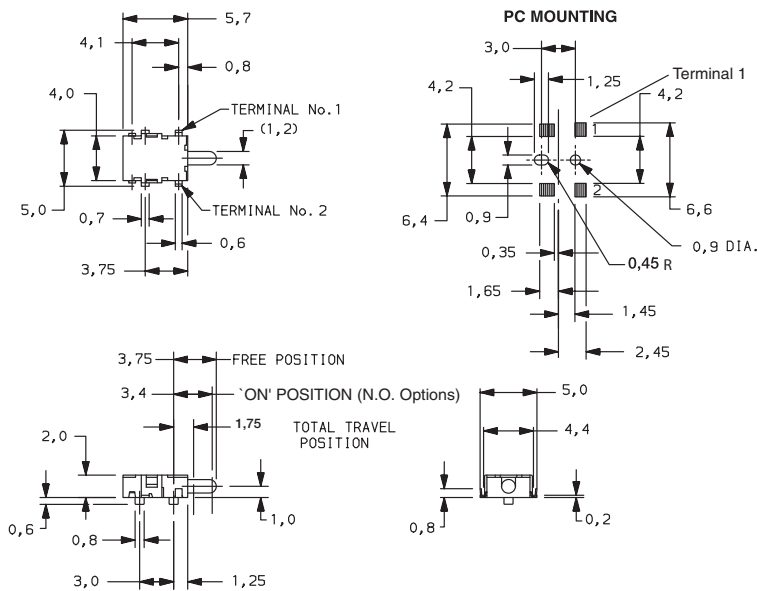
## Materials

BASE: Glass filled LCP (UL 94V-0).  
 ACTUATOR: Glass Filled LCP (UL94V-0).  
 SURFACE PLATE: Nickel silver w/silver plate.  
 MOVABLE CONTACT: Phosphor bronze, see table for plating.  
 TERMINALS: Phosphor bronze, see table for plating.

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## How to Order

Complete part numbers for SDS Series Switches are shown below.

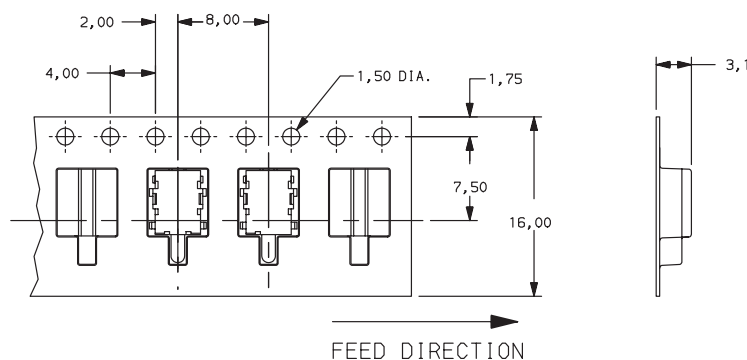


PART NUMBER	HOUSING COLOR	PACKAGING	SCHEMATIC	Contact Plating	Terminal Plating
SDS001	Black	Bulk		Silver Clad	Silver Plate
SDS001R		Tape & Reel			
SDS002	White	Bulk		Gold Flash	Gold Flash
SDS002R		Tape & Reel			
SDS004	Black	Bulk		Gold Flash	Gold Flash
SDS004R		Tape & Reel			
SDS005	White	Bulk		Gold Flash	Gold Flash
SDS005R		Tape & Reel			



SDS001  
SPST

## TAPE & REEL



Dimensions are shown: mm  
 Specifications and dimensions subject to change



Detect



# DDS Series Micro Mini Thru-hole Detect Switches



## Features/Benefits

- Vertical or horizontal actuation
- 2mm overtravel—Ideal for detector applications
- Low actuations force (less than 40 grams)
- RoHS compliant and compatible

## Typical Applications

- Detect the presence of a mechanical device
- Medical devices
- Consumer electronic devices

## Specifications

CONTACT RATING: 0.1A @ 30 VDC.  
 MECHANICAL & ELECTRICAL LIFE: 50,000 cycles.  
 CONTACT RESISTANCE: 150 m Ω max. initial.  
 INSULATION RESISTANCE: 100 M Ω min. @ 100 VDC.  
 OPERATING TEMPERATURE: -20°C to +70°C.  
 DIELECTRIC STRENGTH: 100 volts AC @ 60 Hz.  
 PACKAGING: Bulk.

## Materials

HOUSING: P.P.S.  
 ACTUATOR: PA66  
 MOVABLE CONTACT: Tin bronze, silver plated.

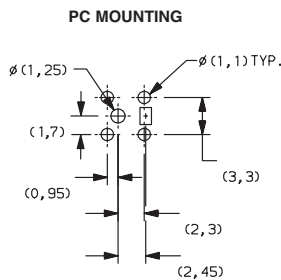
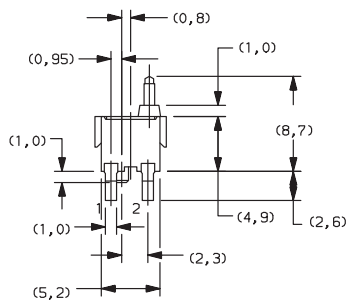
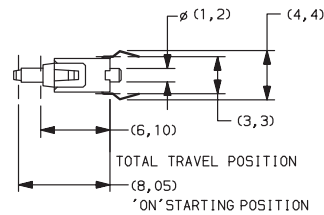
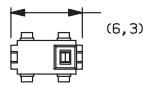
**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## How To Order

Complete part numbers for DDS Series Switches are shown below.



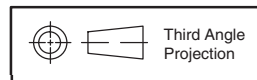
DDS001  
SPST



PART NUMBER	DESCRIPTION	SCHEMATIC
DDS001	Vertical Actuator	 SPST N.O.




Detect

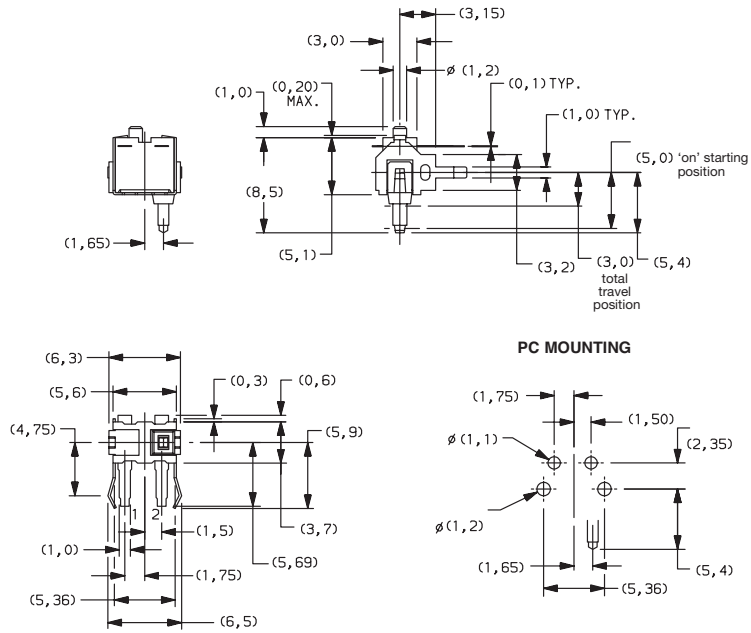


Dimensions are shown: mm  
 Specifications and dimensions subject to change


# DDS Series Micro Mini Thru-hole Detect Switches

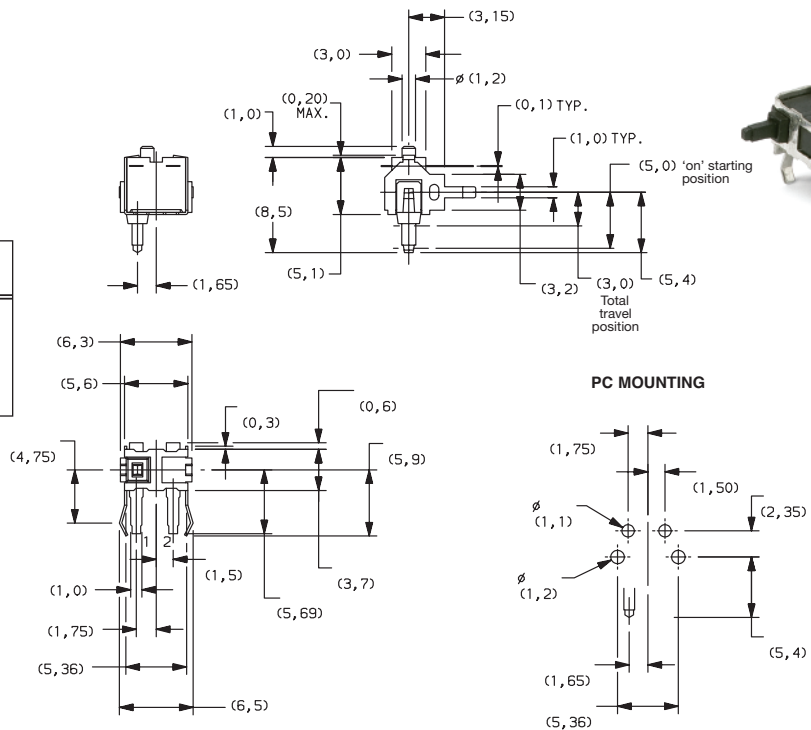


PART NUMBER	DESCRIPTION	SCHEMATIC
<b>DDS002</b>	Right angle, actuator right	 SPST N.O.

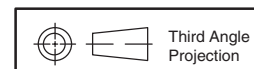


**DDS002  
SPST**

PART NUMBER	DESCRIPTION	SCHEMATIC
<b>DDS003</b>	Right angle, actuator left	 SPST N.O.

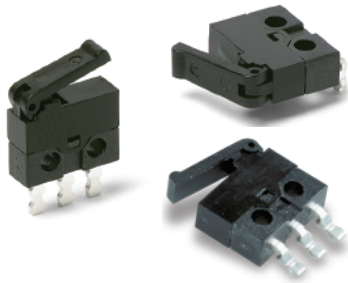


**Detect**



Dimensions are shown: mm  
Specifications and dimensions subject to change

# MDS Series Micro Snap-acting Detect Switches



## Features/Benefits

- Snap-acting tactile feel
- Small package size
- Available in vertical or right angle PCB mount
- RoHS compliant and compatible

## Typical Applications

- Detect the presence of a mechanical device
- Medical devices
- Consumer electronic devices
- ATCA or MicroTCA devices

## Specifications

CONTACT RATING: 300mA @ 30 VDC.  
 MECHANICAL & ELECTRICAL LIFE: 30,000 operations.  
 CONTACT RESISTANCE: 100 m Ω max.  
 OPERATING TEMPERATURE: -25°C to +70°C.  
 SOLDERABILITY: According to lead free solder profiles.  
 PACKAGING: Available in bulk or tape and reel.  
 OPERATING FORCE: 50 g Max.  
 RELEASE FORCE: 3g Min.

## Materials

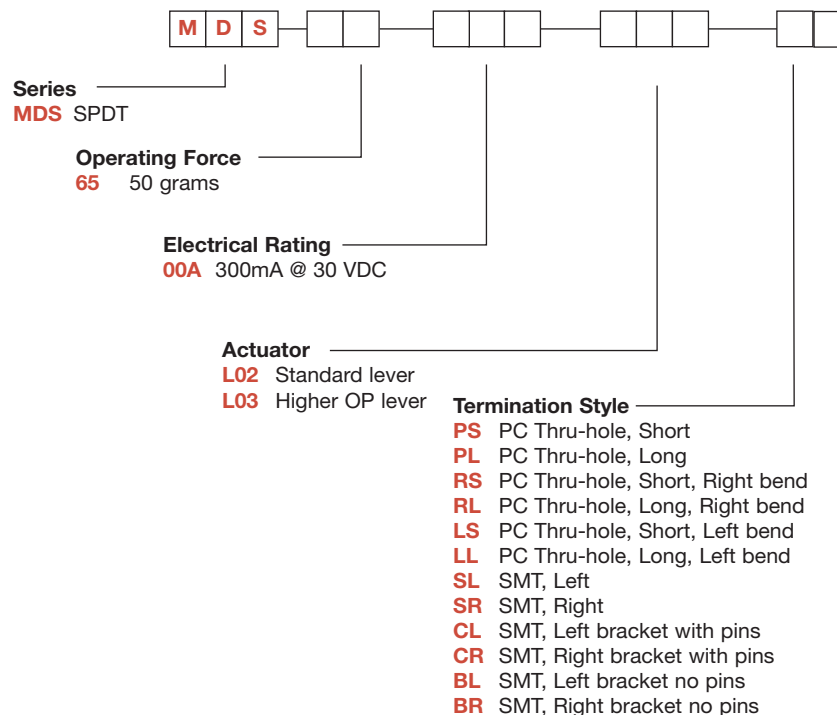
BASE: PA9T  
 COVER & ACTUATOR: PA9T  
 MOVABLE CONTACT: Copper alloy, silver plated.  
 STATIONARY CONTACTS: Copper alloy, silver plated.  
 TERMINALS: Copper alloy, silver plated.

**NOTE:** MDS series is RoHS compliant, and compatible. See technical data section of this catalog for RoHS compliant and compatible definitions and specifications.

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## Build-A-Switch

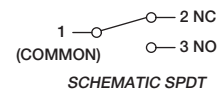
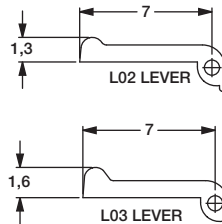
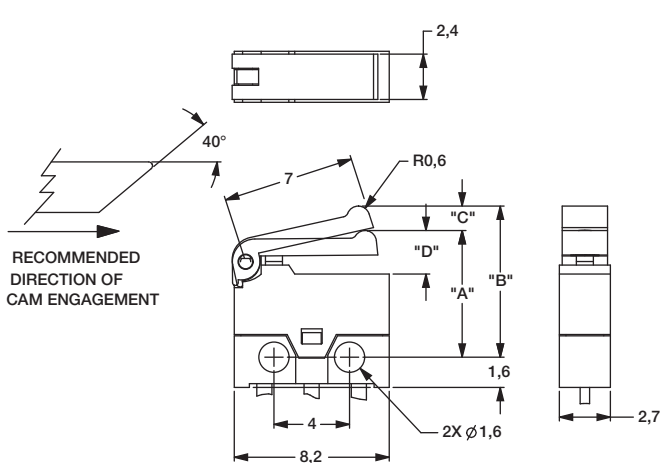
To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages E-21 and E-25. For additional options not shown in catalog, consult Customer Service Center.



Detect

# MDS Series Micro Snap-acting Detect Switches

SERIES **MDS**



OPERATING CHARACTERISTICS			
		LEVER L02	LEVER L03
OPERATING POSITION	DIM 'A'	6.7±0.5	7.0 +/-0.5
FREE POSITION	DIM 'B'	8 MAX	8.5 MAX
PRETRAVEL	DIM 'C'	1,8 MAX	1,8 MAX
OVER TRAVEL	DIM 'D'	0,3 MIN	0,3 MIN
CONTACT RATING		0,3A @ 30 VDC	0,3A @ 30VDC
OPERATING FORCE		50 GRAMS F. MAX	50 GRAMS F. MAX

## OPERATING FORCE

OPTION CODE	OPERATING FORCE
<b>65</b>	50 grams max.

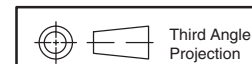
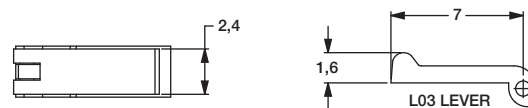
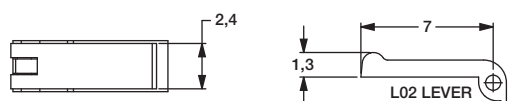
## ELECTRICAL RATING

OPTION CODE	ELECTRICAL RATING
<b>00A</b>	300mA @ 30 V DC

## ACTUATOR

**L02** STANDARD LEVER

**L03** HIGHER OP LEVER



Dimensions are shown: mm  
Specifications and dimensions subject to change

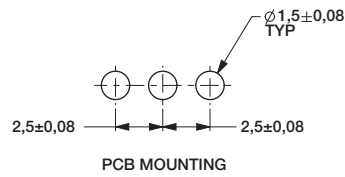
**C&K**



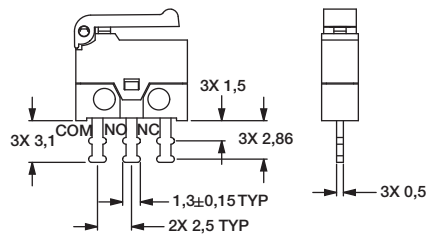
# MDS Series Micro Snap-acting Detect Switches

## TERMINATIONS

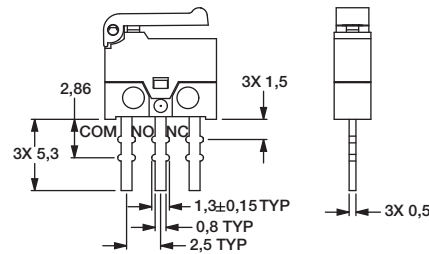
### PCB Mounting Pattern



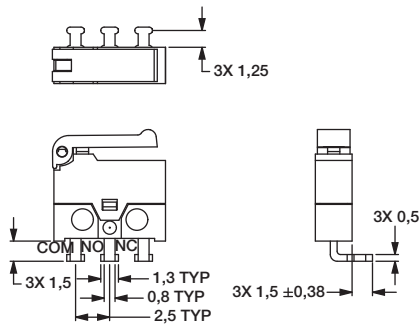
### PS PC THRU-HOLE, SHORT STRAIGHT



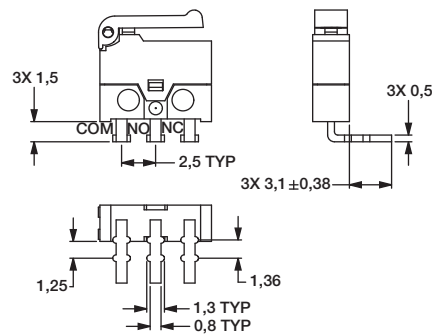
### PL PC THRU-HOLE, LONG STRAIGHT



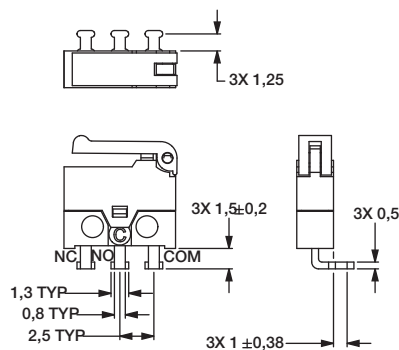
### RS PC THRU-HOLE, SHORT RIGHT BEND



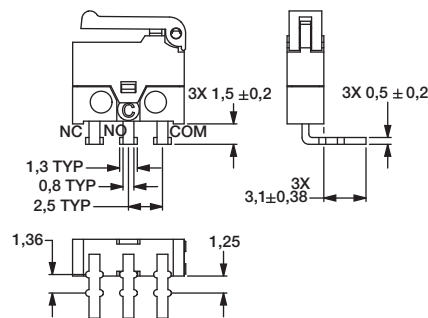
### RL PC THRU-HOLE, LONG SHORT BEND



### LS PC THRU-HOLE, SHORT LEFT BEND



### LL PC THRU-HOLE, LONG LEFT BEND

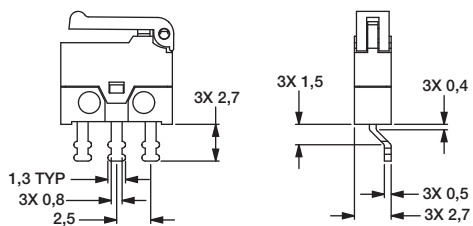


Detect

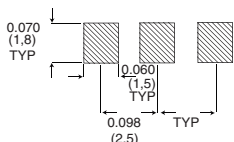
# MDS Series Micro Snap-acting Detect Switches

## TERMINATIONS

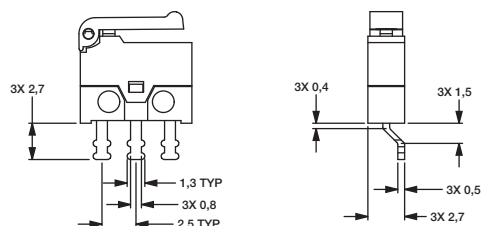
**SL** SMT, LEFT MOUNT



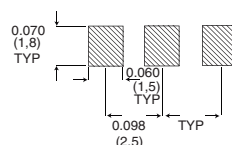
**SMT Mounting Pattern**



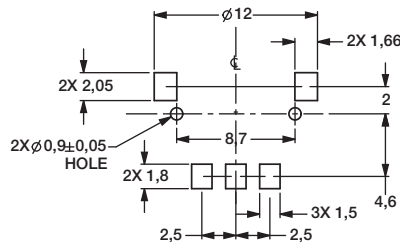
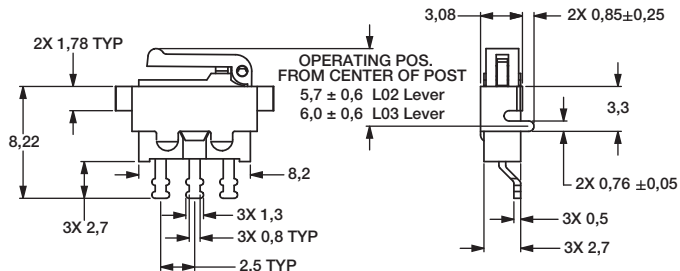
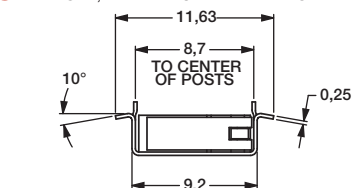
**SR** SMT, RIGHT MOUNT



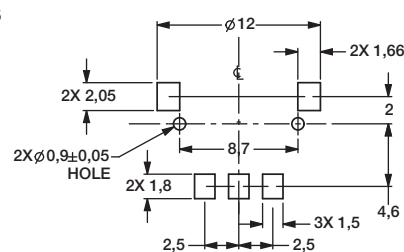
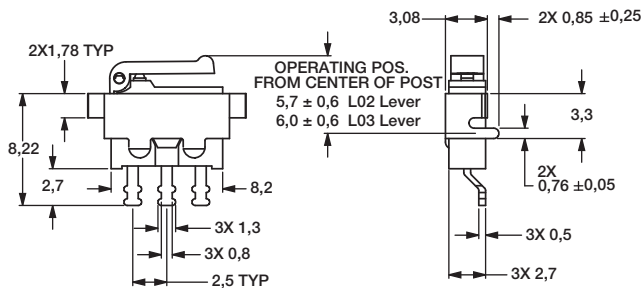
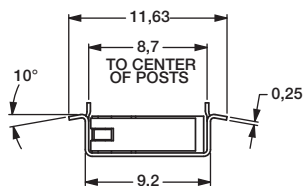
**SMT Mounting Pattern**



**CL** SMT, LEFT BRACKET WITH PINS



**CR** SMT, RIGHT BRACKET WITH PINS



Third Angle  
Projection

Dimensions are shown: mm  
Specifications and dimensions subject to change



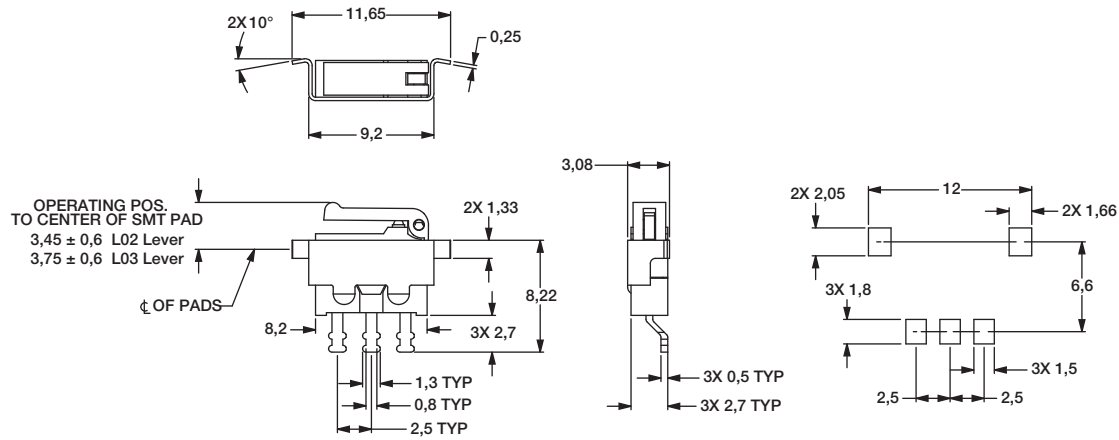
Detect

# MDS Series Micro Snap-acting Detect Switches

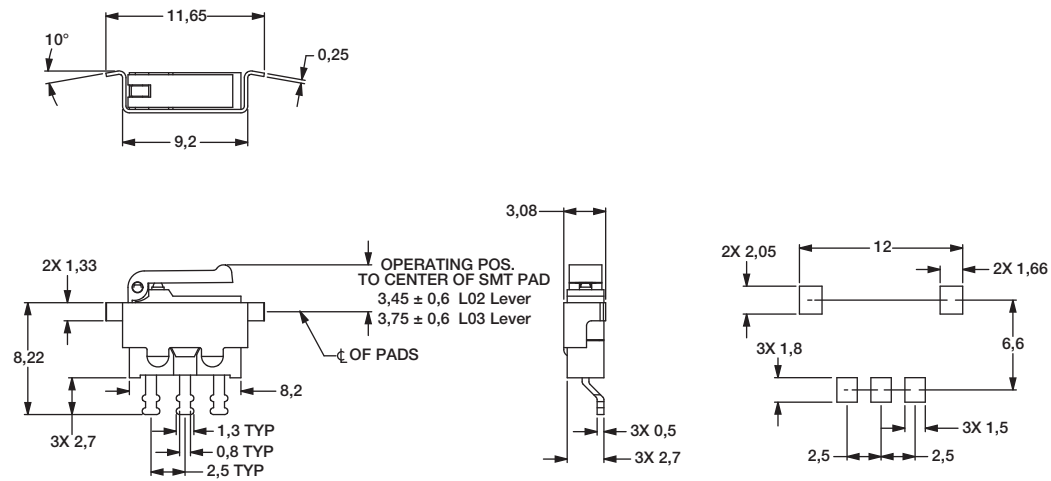
## TERMINATIONS



### BL SMT, LEFT BRACKET NO PINS



### BR SMT, RIGHT BRACKET NO PINS



E

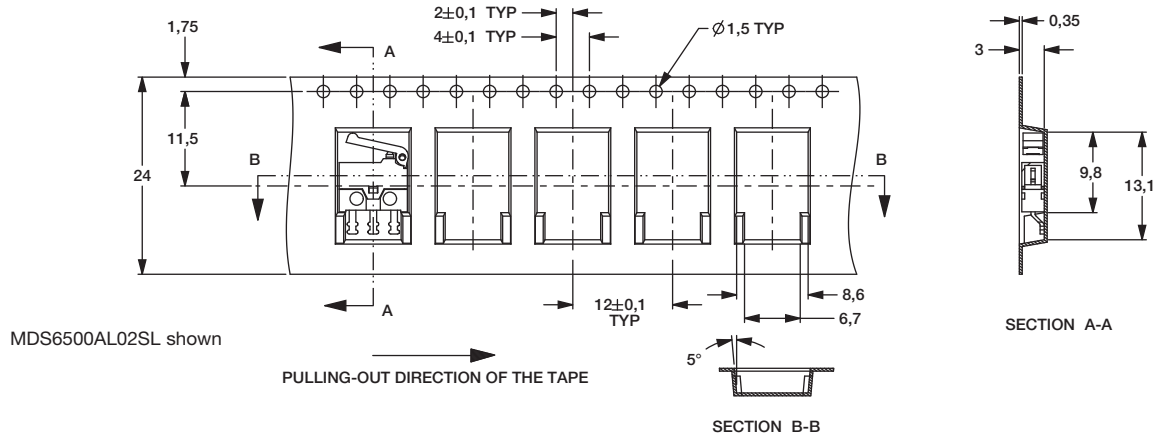
Detect

# MDS Series Micro Snap-acting Detect Switches

## TAPE & REEL

**SL** SMT, LEFT MOUNT

**SR** SMT, RIGHT MOUNT

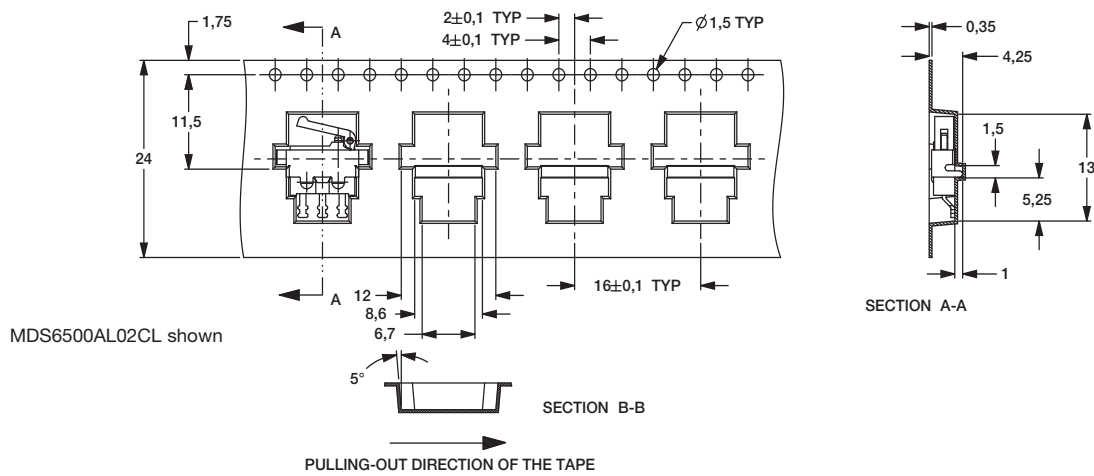


**CL** SMT, LEFT MOUNT

**CR** SMT, RIGHT MOUNT

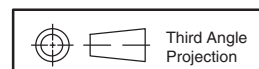
**BL** SMT, LEFT MOUNT

**BR** SMT, RIGHT MOUNT



Supplied in carrier tape meeting the EIA-481-2 standard for 24mm tape.

Packaging quantity: SL and SR; 1,600 pieces per reel  
CL, CR, BL and BR; 1,000 pieces per reel



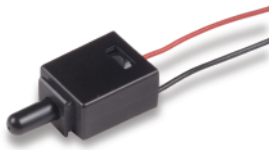
Dimensions are shown: mm  
Specifications and dimensions subject to change

[www.ck-components.com](http://www.ck-components.com)





# KDS Series Intrusion Switches



## Features/Benefits

- Slot mount into chassis to reduce installation cost
- Wire harness length & connector easily customized
- Available in N.O. or N.C. configuration
- RoHS compliant

## Typical Applications

- Intrusion/Alarm switch in network desktop PC
- Intrusion/Alarm switch in telecommunication equipment
- Intrusion/Alarm switch in cellular base station

## Specifications

CONTACT RATING: 0.4 VA max. @ 20 V AC or DC.  
 MECHANICAL & ELECTRICAL LIFE: 10,000 actuations min. at full load.  
 CONTACT RESISTANCE: 200 m Ω max. initial @ 2-4 V DC, 100mA.  
 INSULATION RESISTANCE: 10<sup>9</sup> Ω min.  
 OPERATING TEMPERATURE: -40°C to +85°C  
 TRAVEL: KDS11: Pre-travel 0.180" TYP; Overtravel 0.223"  
           KDS33: No pre-travel, full travel 0.403"  
 DIELECTRIC STRENGTH: 500 Vrms min. @ sea level.  
 PACKAGING: Bulk packaging.

## Materials

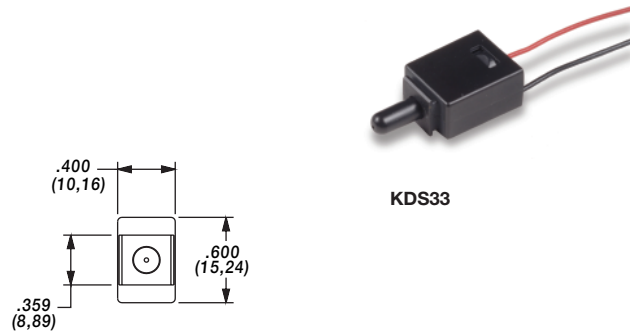
HOUSING: Nylon 6/6 (UL 94V-0)  
 ACTUATOR: Nylon 6/6 (UL 94V-0)  
 MOVABLE CONTACT: Copper alloy, gold plate over nickel plate.  
 FIXED CONTACT: Brass, gold plate over nickel plate.  
 WIRE: UL 1061-24 AWG.

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

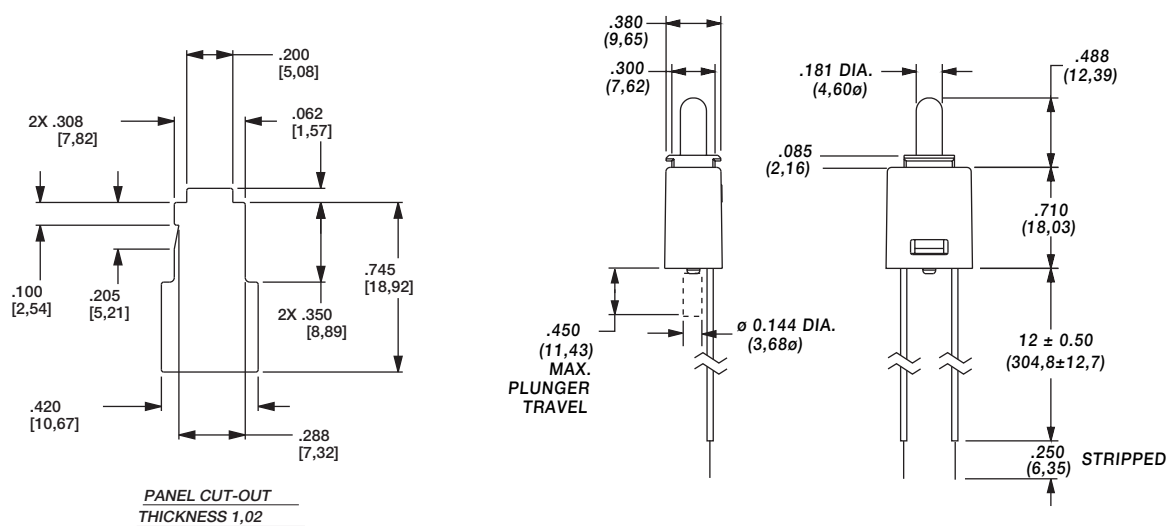
## How To Order

Complete part numbers for KDS Series Switches are shown below.

PART NUMBER	SWITCH FUNCTION		SCHEMATIC
	POS. 1	POS. 2	
<b>KDS11</b>	OFF	MOM.	SPST N.O.
<b>KDS33</b>	ON	OFF	SPST N.C.



Detect



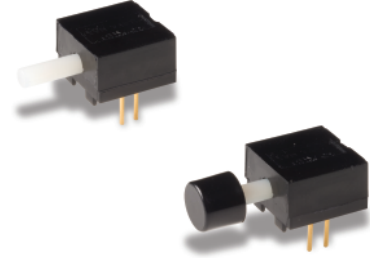
# KM Series Subminiature Detect Switches

## Features/Benefits

- **Reliable contact design**
- **Available with pretravel and overtravel**
- **RoHS compliant**

## Typical Applications

- **Alarm systems**
- **Computers**
- **Detector switch application**



Models Available

## Specifications

**CONTACT RATING:** Q contact material:  
0.25 AMPS @ 125 V AC or DC (UL). See page F-29 for additional ratings.

**ELECTRICAL LIFE:** 10,000 actuations min. at full load.

**CONTACT RESISTANCE:** Below 30 mΩ typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

**INSULATION RESISTANCE:** 10<sup>9</sup>Ω min.

**DIELECTRIC STRENGTH:** 1,000 Vrms min. @ sea level.

**OPERATING TEMPERATURE:** -30°C to 85°C.

**CAP INSTALLATION FORCE:** 10 lbs. max. permissible.

**NOTE:** Any models supplied with Q or B contact material are RoHS compliant.

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## Materials

**HOUSING & BUSHING:** 6/6 nylon (UL94V-2), black.

**ACTUATOR:** 6/6 nylon (UL 94V-2), natural.

**MOVABLE CONTACT:** B contact material: Bronze or copper, with gold plate over nickel plate. See page F-39 for additional contact materials.

**STATIONARY CONTACTS & TERMINALS:** B contact material: Copper, with gold plate over nickel plate. See page F-29 for additional contact materials.

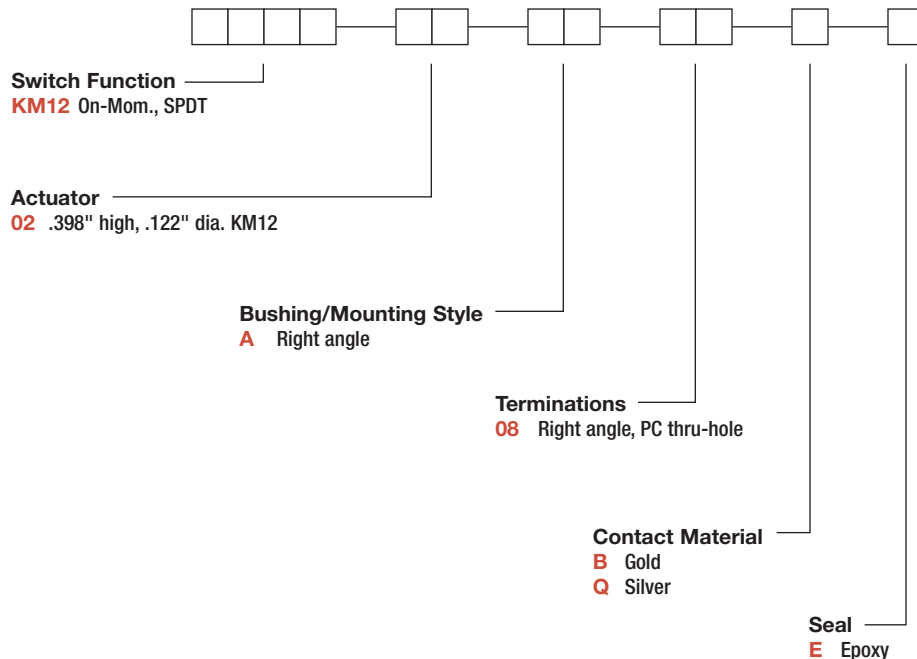
**RETURN SPRING:** Music wire, phosphor coated.

**MOUNTING NUT:** Brass, nickel plated.

**TERMINAL SEAL:** Epoxy.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages E-28 and E-29. For additional options not shown in catalog, consult Customer Service Center.



Detect



Dimensions are shown: mm  
Specifications and dimensions subject to change

# KM Series Subminiature Detect Switches

## SWITCH FUNCTION

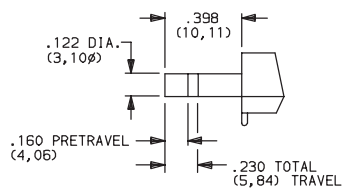


NO. POLES	MODEL NO.	SWITCH FUNCTION		CONNECTED TERMINALS		SCHEMATIC
		POS. 1	POS. 2	POS. 1	POS. 2	
SP	<b>KM12</b>	ON	MOM.	2-1	4-3	 SPDT
<p><b>SPDT</b></p> <p>Part number shown: KM1202A08BE</p>						

## ACTUATOR



**02** .398" HIGH, .122" DIA.

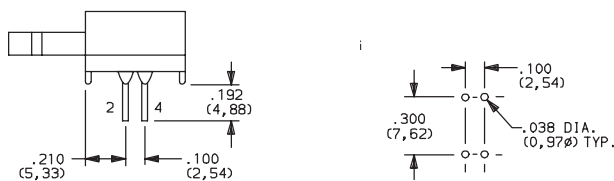


**NOTE:** Caps available for plunger options, see page E-29.

## BUSHING/ MOUNTING STYLE



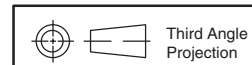
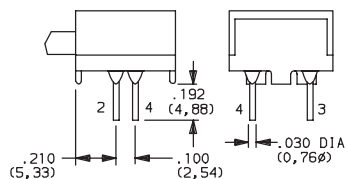
**A** RIGHT ANGLE



## TERMINATIONS



**08** RIGHT ANGLE, PC THRU-HOLE



Third Angle Projection

Dimensions are shown: mm  
Specifications and dimensions subject to change

# KM Series Subminiature Detect Switches

## CONTACT MATERIAL

OPTION CODE	RoHS COMPLIANT *	RoHS COMPATIBLE *	CONTACT AND TERMINAL MATERIAL	RATINGS	
<b>B</b>	YES	YES	GOLD <sup>1</sup>	LOW LEVEL/DRY CIRCUIT	0.4 VA MAX. @ 20 V AC OR DC MAX.
<b>Q</b>	YES	YES	SILVER <sup>2</sup>	POWER	0.25 AMPS @ 125 V AC OR DC (KM11, KM12) (UL) 1 AMP @ 125 V AC OR 28 V DC (KM33).


\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

<sup>1</sup> STATIONARY CONTACTS & TERMINALS: Copper, with gold plate over nickel plate.  
MOVABLE CONTACT: Phosphor bronze or beryllium copper, with gold plate over nickel plate.

<sup>2</sup> STATIONARY CONTACTS & TERMINALS: Copper, silver plated (standard with all termination options).  
MOVABLE CONTACT: Phosphor bronze or beryllium copper, silver plated.

<sup>3</sup> STATIONARY CONTACTS & TERMINALS: Copper, with gold plate over nickel plate over silver plate.  
MOVABLE CONTACT: Phosphor bronze or beryllium copper, with gold plate over nickel plate over silver plate.

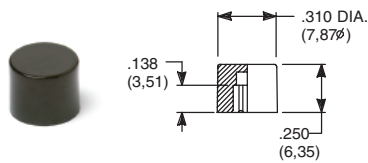
**NOTE:** Any models supplied with Q or B contact material are RoHS compliant.

KM12 models  when ordered with 'Q' contact material.

## SEAL

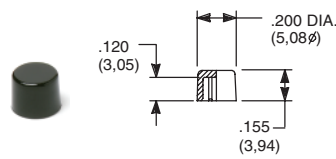
**E** EPOXY SEAL

## AVAILABLE HARDWARE



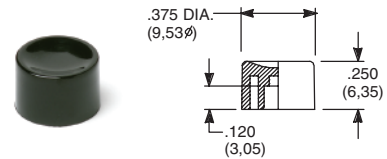
**PART NO.**  
**801801000** WHITE  
**801802000** BLACK  
**801803000** RED

Material: Nylon  
Finish: Gloss



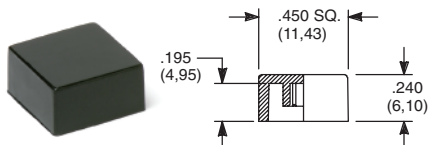
**PART NO.**  
**708901000** WHITE  
**708902000** BLACK  
**708903000** RED

Material: Nylon  
Finish: Gloss



**PART NO.**  
**752701000** WHITE  
**752702000** BLACK  
**752703000** RED

Material: Nylon  
Finish: Gloss



**PART NO.**  
**484601000** WHITE  
**484602000** BLACK  
**484603000** RED

Material: Nylon  
Finish: Gloss

**PART NO.**  
**798201000** WHITE  
**798202263** BLACK  
**798203000** RED

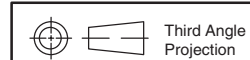
Material: Nylon  
Finish: Matte

**NOTE:** Other cap colors available, consult Customer Service Center.



**E**

**Detect**



Dimensions are shown: mm  
Specifications and dimensions subject to change

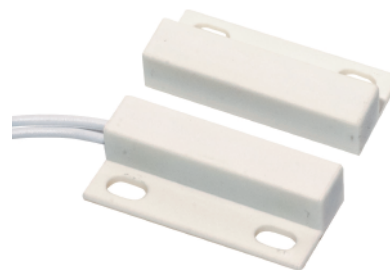
# MPS Series Magnetic Proximity Sensors

## Features/Benefits

- Long life—4M operations
- Sealed contacts
- Quality construction
- Quick and easy installation
- UL 61058 approved

## Typical Applications

- Automotive sensors and indicators
- Industrial sensors
- Factory automation equipment
- Server / storage
- Security, alarms for windows



## Specifications

CONTACT RATINGS: 3.0 W max. @ 30 V DC or 30 V AC max. @ 0.3 AMP max.; 1.0 msec. max. operate time (including bounce); 1.0 AMP max. carry current.

CONTACT RESISTANCE: 100 m Ω max. initial.

DIELECTRIC STRENGTH: 200 V DC min.

ELECTRICAL CIRCUIT: SPST NO (Contact Form A). Reed switch opens when magnet is removed from proximity. Contacts are held closed when magnet is within actuation range.

OPERATING TEMPERATURE: -40°F to 212°F (-40°C to 100°C).

OPERATING DISTANCE/ALIGNMENT: Operate (pull-in or make) points are nominal values with ± 10% tolerance. Release points are 110% to 150% of the operating points.

MECHANICAL & ELECTRICAL LIFE: 4 million operations.

PACKAGING: Bulk packaging, 10 switch and magnet pairs per package.

## Materials

HOUSING/SPACER/COVER: ABS plastic (UL94V-0), white.

REED SWITCH: Rhodium coated reed contacts in hermetically sealed, nitrogen filled glass capsule. Closed when magnet is in close proximity. Used in closed loop circuits.

WIRE LEADS: UL 1061/ UL1007 / UL2468

All are 22 AWG wire: stranded, made of copper or aluminum; Length: 12 in. with ends stripped; Color: white.

POTTING (around wires): Epoxy.

MAGNETS: NdFeB

ADHESIVE MOUNTING: Foam-backed, pressure-sensitive adhesive with release liner.

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

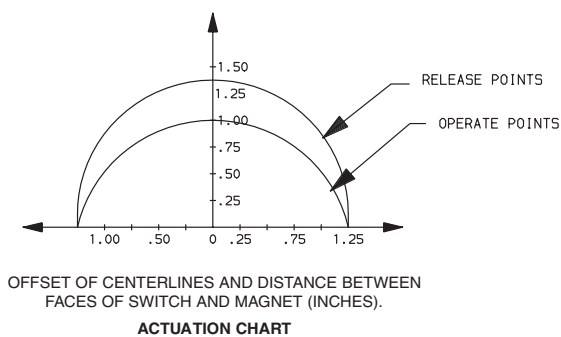
## How To Order

PART NUMBER	SWITCH TYPE
MPS45WGW	Subminiature surface mount (adhesive or flange), side exit leads, 1" make gap.

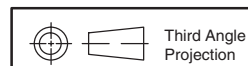
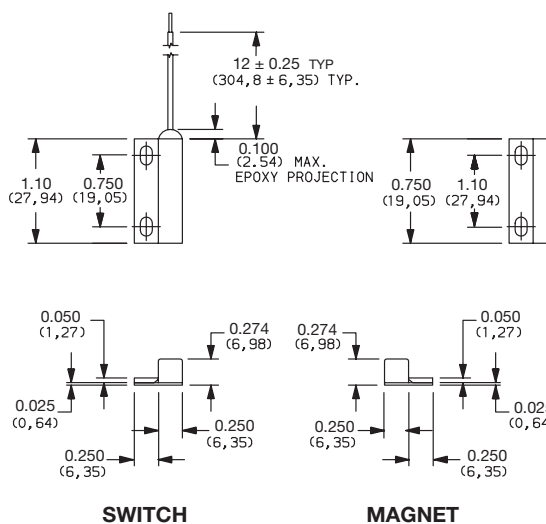
UL 61058



Detect



NOTE: UL 61058 Rating



Dimensions are shown: inches (mm)  
Specifications and dimensions subject to change



# MPS Series Magnetic Proximity Sensors

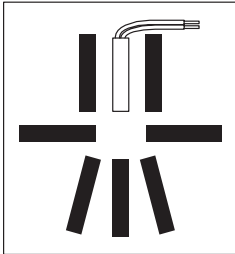
## Actuating Positions

When installing recessed and surface mount contacts, magnet position is very important. The switch and magnet must always be parallel or end to end, and never in a 'T' configuration.

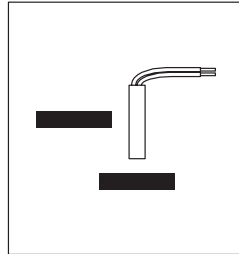
## Gap Distance

Gap distance is a combination of the horizontal and vertical plane separation of the switch and magnet. Example: if a recessed magnet is 1/4" off the centerline of the switch, the make gap is reduced by 1/4"

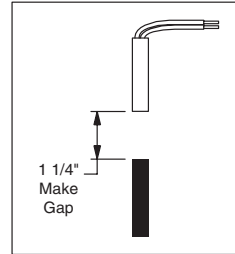
Correct Configuration



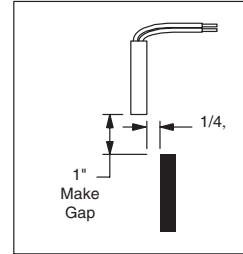
Incorrect Configuration



Center Alignment



Off Center Alignment



# ZMA Series Subminiature Snap-acting Switches



## Features/Benefits

- Reliable snap-acting mechanism
- Long electrical and mechanical life
- Compact size—Ideal when space is limited
- Various PCB terminals and actuators
- RoHS compatible & compliant

## Typical Applications

- PCB detection switch
- Communication devices
- Testing equipment
- Security/Alarm systems
- Consumer electronics

UL61058-1



## Specifications

CONTACT RATING: 3A @ 125 V AC 24 V DC  
 1 A @125 / 250 V AC 24 V DC  
 0.1A @ 125 V AC 60 V DC

ELECTRICAL LIFE: 300,000 cycles @ 0.1A / 10,000 cycles @ 3A.  
 MECHANICAL LIFE: 1,000,000 cycles.  
 INSULATION RESISTANCE: 100 M ohm min.  
 DIELECTRIC STRENGTH: 500 Vrms.  
 OPERATING TEMPERATURE: -40°C to 85°C  
 OPERATING FORCE: 80 or 150 grams.

\* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max.  
 @ 20 V AC or DC max.

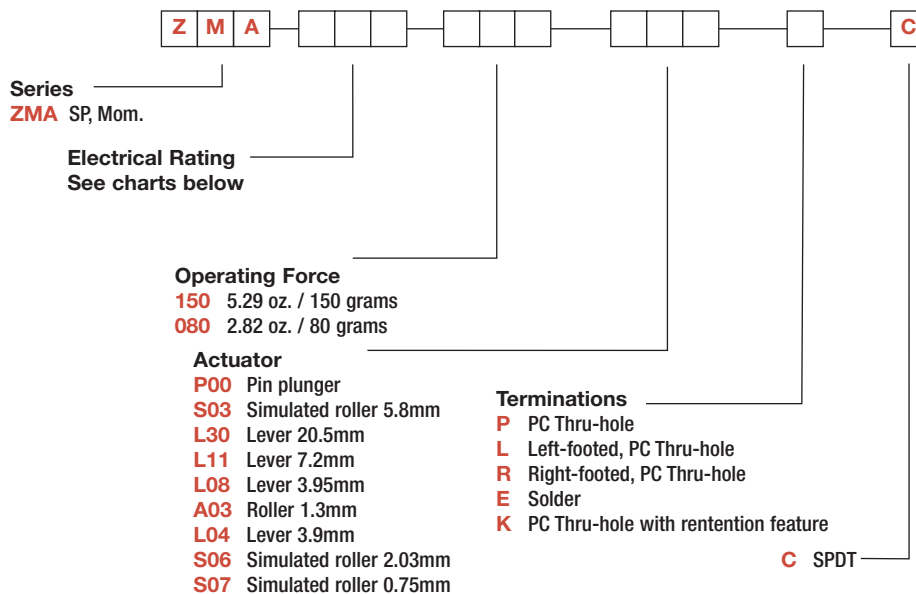
## Materials

CASE/COVER: PBT  
 ACTUATOR: Button nylon 6/6  
 MOVABLE CONTACTS: Silver alloy or gold plated  
 STATIONARY CONTACTS: Silver alloy or gold plated  
 TERMINALS: Brass, silver plated.

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages J-33 through J-35. For additional options not shown in catalog, consult Customer Service Center.



Detect

### Silver Contacts

Option Code	UL 1054	UL 61058-1	4	15
<b>00A</b>	0.1A 60 V DC 0.1A 125 V AC	0.1A 60 V DC 0.1A 125 V AC	0.1A 125 V AC	
<b>03A</b>	3 A 125 V AC	3 A 125 V AC 3 A 24 V DC	3A 125 V AC	
<b>01A</b>		1 A 24 V DC 1 A 125 / 250 V AC		1 A 24 V DC 1 A 125 / 250 V AC

### Gold Plated Contacts

Option Code	UL 1054	UL 61058-1	4	15
<b>G00</b>	0.1A 60 V DC 0.1A 125 V AC	0.1A 60 V DC 0.1A 125 V AC	0.1A 125 V AC	
<b>G03</b>	3 A 125 V AC	3 A 125 V AC 3 A 24 V DC	3A 125 V AC	
<b>G01</b>		1 A 24 V DC 1 A 125 / 250 V AC		1 A 24 V DC 1 A 125 / 250 V AC

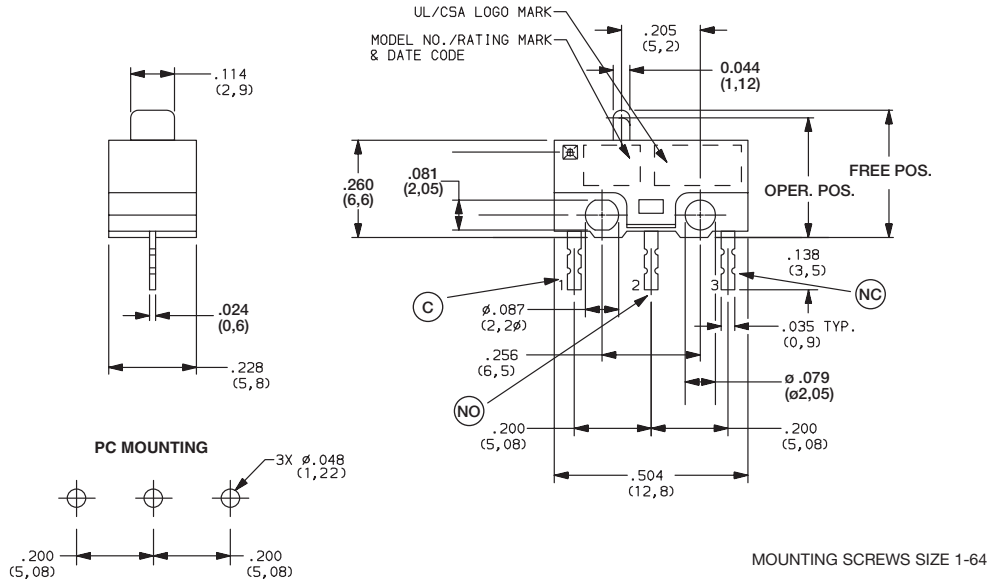


Dimensions are shown: mm  
 Specifications and dimensions subject to change

# ZMA Series Subminiature Snap-acting Switches

## SERIES

**ZMA** SUBMINIATURE SNAP-ACTING SWITCHES – SP MOMENTARY



ZMA03A150L04PC  
SPDT

## ELECTRICAL RATING

### Silver Contacts

Option Code	UL c  US 1054	UL c  US 61058-1		
00A	0.1A 60 V DC 0.1A 125 V AC	0.1A 60 V DC 0.1A 125 V AC	0.1A 125 V AC	
03A	3 A 125 V AC	3 A 125 V AC 3 A 24 V DC	3A 125 V AC	
01A		1 A 24 V DC 1 A 125 / 250 V AC		1 A 24 V DC 1 A 125 / 250 V AC

### Gold Plated Contacts

Option Code	UL c  US 1054	UL c  US 61058-1		
G00	0.1A 60 V DC 0.1A 125 V AC	0.1A 60 V DC 0.1A 125 V AC	0.1A 125 V AC	
G03	3 A 125 V AC	3 A 125 V AC 3 A 24 V DC	3A 125 V AC	
G01		1 A 24 V DC 1 A 125 / 250 V AC		1 A 24 V DC 1 A 125 / 250 V AC

\* Note: See Technical Data in section N of this catalog for RoHS compliant and compatible definition and specifications.

All models US with all options.

Consult Customer Service center for availability and delivery of nonstandard ratings.

## OPERATING FORCE

OPTION CODE	BASIC SWITCH OPERATING FORCE (OZ./GRAMS)
150	5.29 150
080	2.82 80



Third Angle  
Projection

Dimensions are shown: mm  
Specifications and dimensions subject to change



E

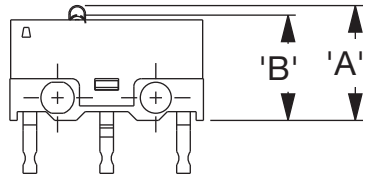
Detect



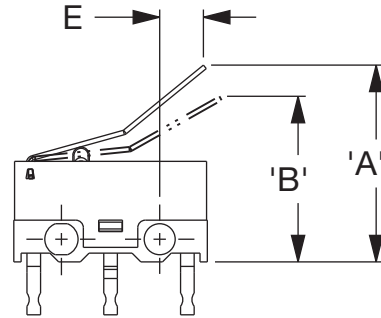
# ZMA Series Subminiature Snap-acting Switches

## ACTUATOR

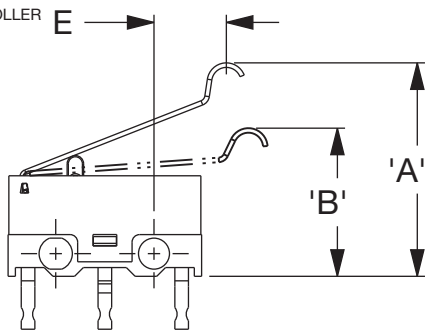
**P00** PIN PLUNGER



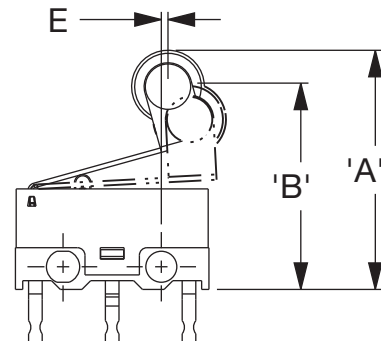
**L08** LEVER  
3.95MM



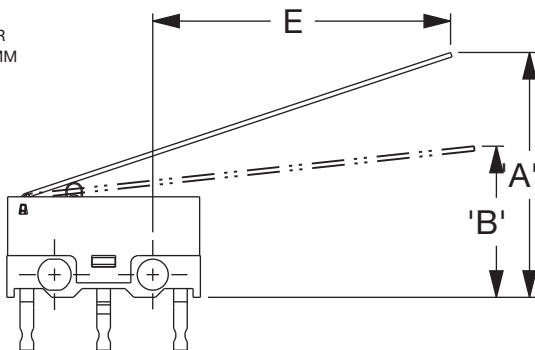
**S03** SIMULATED ROLLER  
5.8MM



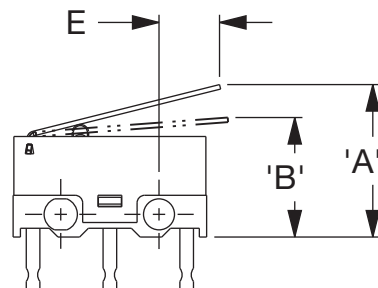
**A03** ROLLER  
1.3MM



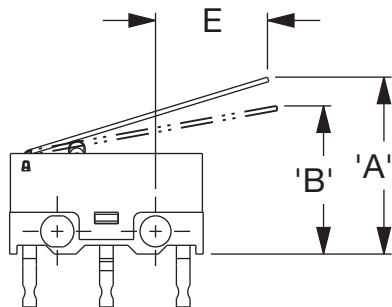
**L30** LEVER  
20.5MM



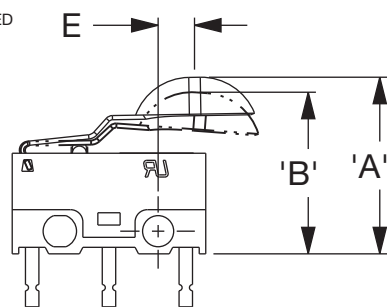
**L04** LEVER  
3.49MM



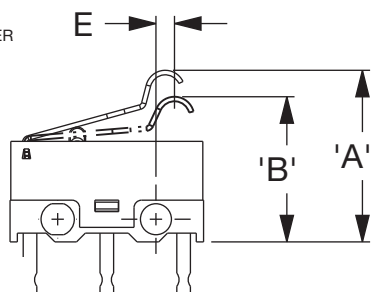
**L11** LEVER  
7.2MM



**S06** SIMULATED ROLLER  
2.03MM



**S07** SIMULATED ROLLER  
0.75MM



Third Angle  
Projection

Dimensions are shown: mm  
Specifications and dimensions subject to change

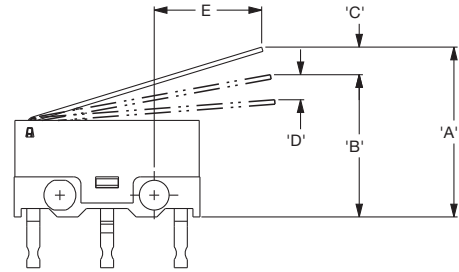


Detect

# ZMA Series Subminiature Snap-acting Switches

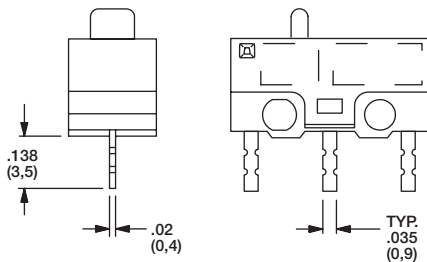
## SWITCH CHARACTERISTICS

CODE	OPER. FORCE MAX. (GRAMS)		REL. FORCE MIN. (GRAMS)		'A' FP MAX. (MM)	'B' OP MAX. (MM)	'C' PT MAX. (MM)	'D' OT MIN. (MM)	'E' MIN. (MM)
P00	80	150	21	35	7.35	6.9 ±0.3	0.62	0.2	
S03	25	43	5	7	14.2	9.8 ±0.9	3.5	0.7	5.41
L30 (80gf)	13	21	2	3	16.8	9.5 ±1.9	6.9	0.55	20.15
L30 (150 gf)	13	21	2	3	16.8	9.75 ±1.9	6.9	0.55	20.15
L11	25	39	4	6	11.7	8.68 ±1	4.4	0.6	7.33
L08	27	48	3	8	13.5	10.75 ±0.8	3.5	0.3	3.82
A03	34	65	6	10	16.55	13.65 ±1	3.9	0.5	0.56
L04	30	50	5	8	10.1	7.9 ±0.7	3.0	0.5	3.49
S06	33	49	5	11	12.43	10.7 ±0.8	1.43	1.25	1.97
S07	40	65	2	5	13.0	9.7 ±1	4.3	0.5	0.49

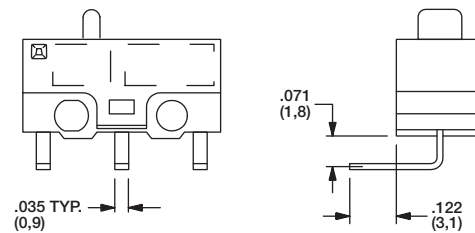


## TERMINATIONS

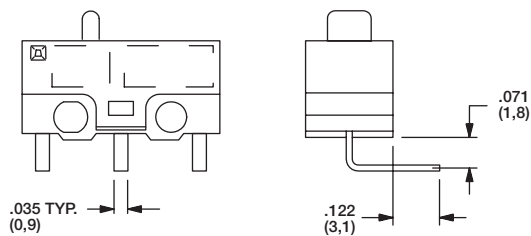
### P PC THRU-HOLE



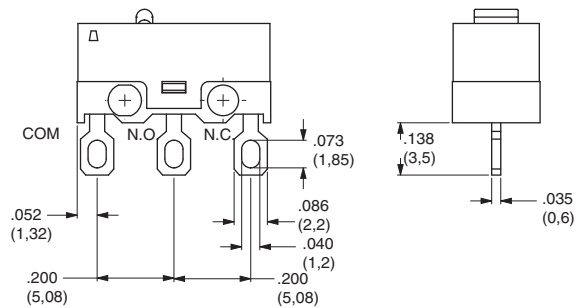
### L LEFT FOOTED, PC THRU-HOLE



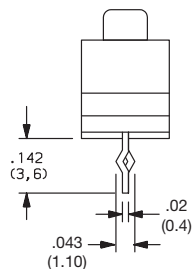
### R RIGHT FOOTED, PC THRU-HOLE



### E SOLDER



### K PC THRU-HOLE WITH RETENTION FEATURE



Detect

Detect

# KSU Series Micro Mini Surface Mount Detect Switches



## Features/Benefits

- New multi contact construction
- Metal actuator
- Low actuating force
- RoHS compliant and compatible

## Typical Applications

- Mobile phones and other handheld devices
- Portable medical devices
- Audio devices
- Alarm devices
- Payment terminals
- Smart meters

## Specifications

FUNCTION: Momentary action.  
CONTACT TYPE: SPST Normally open.  
TERMINALS: Gullwing type for SMT.

## Mechanical

SWITCHING FORCE:  $0,7 \pm 0,5$  N  
TRAVEL TO MAKE: 0,65 mm - 0,45/+0,25 mm  
MECHANICAL TRAVEL:  $1,5 \pm 0,2$  mm  
OPERATING LIFE: 100,000 cycles

## Packaging

Switches are delivered on continuous tape, in reels of 1,000 pieces

## Electrical

	GOLD	SILVER
MAXIMUM POWER:	0.2 VA	0.1 VA
MAXIMUM VOLTAGE:	32 VDC	32 VDC
MINIMUM VOLTAGE:	20 mV	20 mV
MAXIMUM CURRENT:	10 mA	50 mA
MINIMUM CURRENT:	0.01 mA	1 mA
CONTACT RESISTANCE:	≤100 mΩ	
INSULATION RESISTANCE:	(100 VDC) $10^9 \Omega$	
DIELECTRIC STRENGTH:	≥ 250 Vrms	
BOUNCE TIME:	≤ 3 ms	

## Environmental

OPERATING TEMPERATURE: -40°C to +125°C -40°C to +85°C  
STORAGE TEMPERATURE: -55°C to + 125°C -40°C to +85°C

## Process

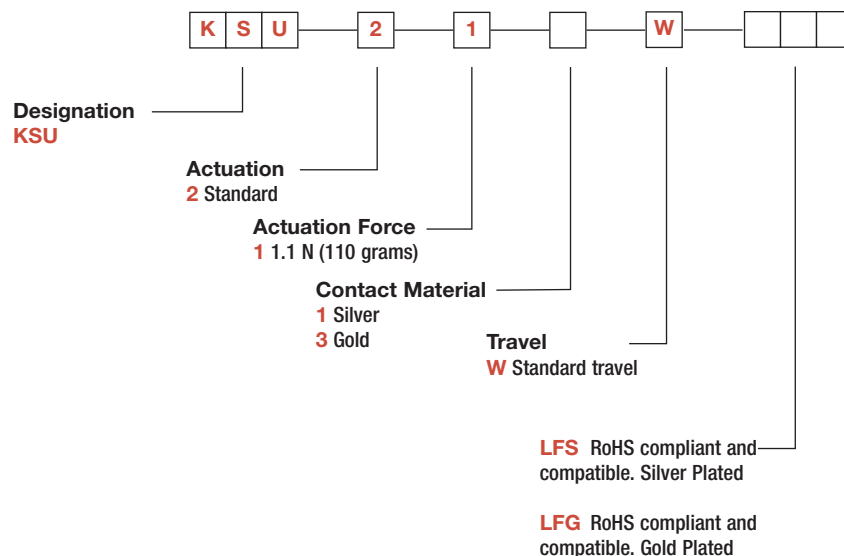
SOLDERING: Compatible with lead free reflow process

**NOTE:** Specifications listed above are for switches with standard options.  
For information on specific and custom switches, consult Customer Service Center.

## How To Order

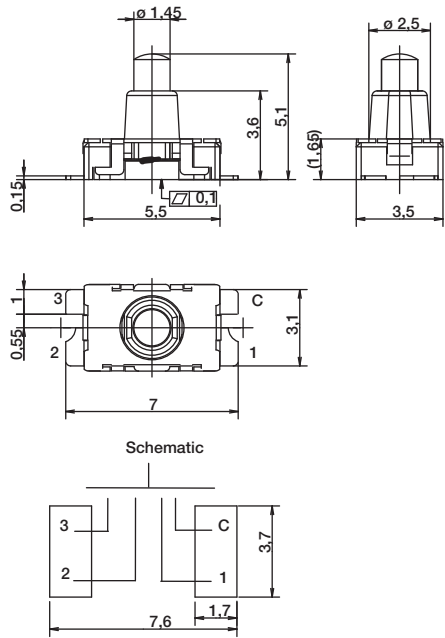
Our easy build-a-switch concept allows you to mix and match options to create the switch you need. To order, select desired option from each category and place it in the appropriate box.

For any part number different from those listed above, please consult your local representative.

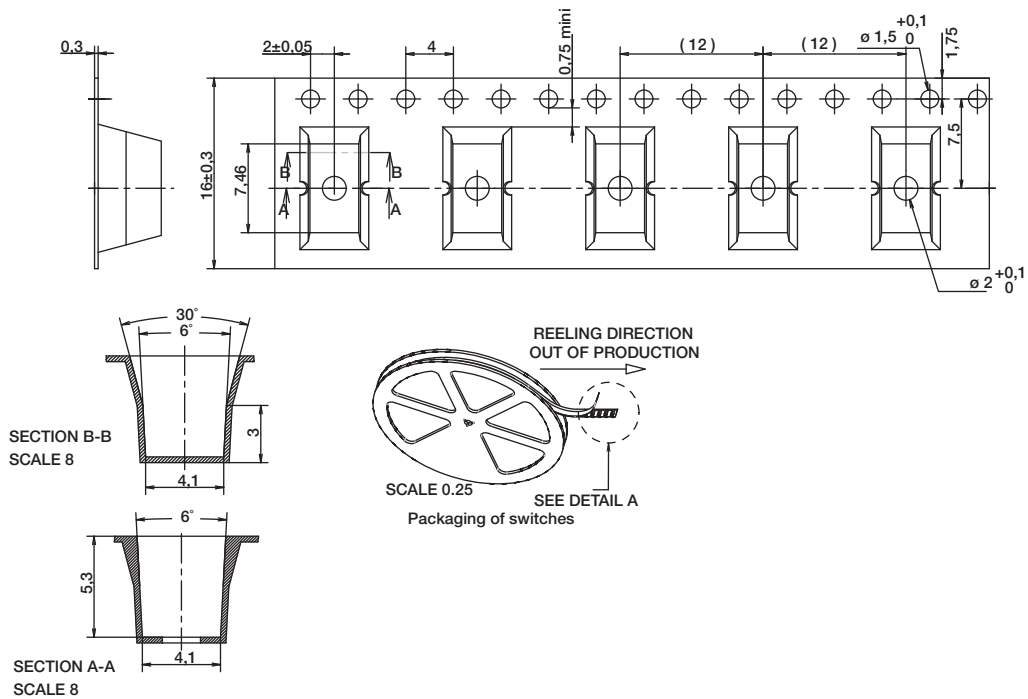


Detect

# KSU Series Micro Mini Surface Mount Detect Switches



## TAPE & REEL



Detect



Dimensions are shown: mm  
Specifications and dimensions subject to change

[www.ck-components.com](http://www.ck-components.com)

# KSR2D/M Series Subminiature Detect Switch for SMT



## Features/Benefits

- Gold contacts
- G terminations
- Soft actuator
- RoHS compliant and compatible

## Typical Applications

- Automotive
- Industrial electronics
- Medical equipment
- Detector switch applications

## Specification

FUNCTION: momentary action  
CONTACT ARRANGEMENT: N.O.  
TERMINALS: Gullwing type for SMT

Type	Operating force Newtons	Operating life (operations)	Travel (mm)
KSR2D3MG LFG	1,5 ± 0,5N	100,000	0,3 ± 0,15
KSR2M3G LFG	0,8 ± 0,4N	100,000	0,19 ± 0,11

## Packaging

Switches are delivered on continuous tape, in reels of 2,500 pieces.  
For information on specific and custom switches, consult Customer Service Center.

## Electrical

MAXIMUM POWER:	Gold 0.2 VA
MAXIMUM VOLTAGE:	32 VDC
MINIMUM VOLTAGE:	20 mV
MAXIMUM CURRENT DC:	10 mA
MINIMUM CURRENT DC:	1 mA
CONTACT RESISTANCE:	100 mΩ
INSULATION RESISTANCE (100 V):	10 <sup>9</sup> Ω
BOUNCE TIME:	1 ms

## Environmental

OPERATING TEMPERATURE:	Gold -40°C to 125°C
STORAGE TEMPERATURE:	-55°C to 125°C

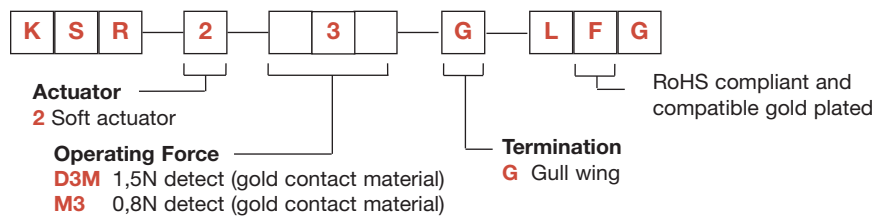
## Process

SOLDERING: Compatible with lead free reflow soldering process

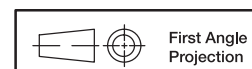
## How To Order

Our easy build-a-switch concept allows you to mix and match options to create the switch you need. To order, select desired option from each category and place it in the appropriate box.

For any part number different from those listed above, please consult your local representative.



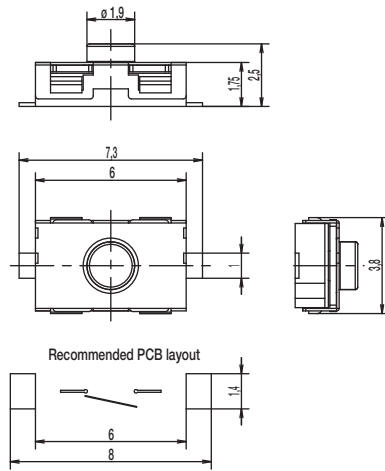
Detect



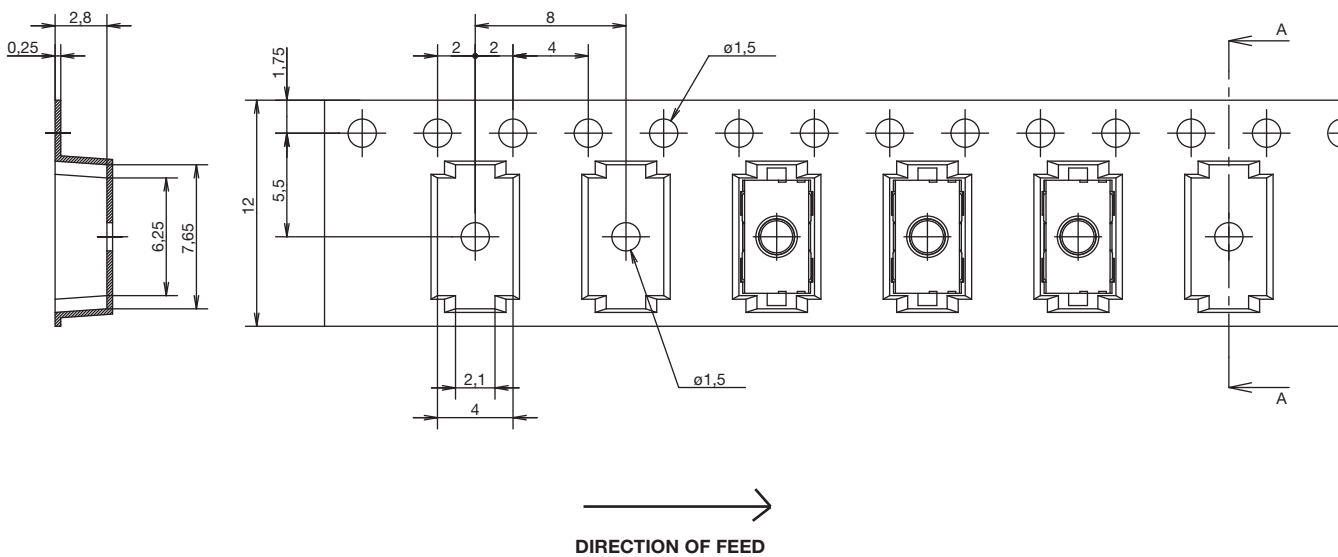
Dimensions are shown: mm  
Specifications and dimensions subject to change

# KSR2D/M Series Subminiature Detect Switch for SMT

## KSR2D/M



## TAPE & REEL

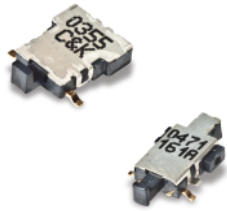


Detect



Dimensions are shown: mm  
Specifications and dimensions subject to change

# KSM Series Side Actuated Detect Switches



## Features/Benefits

- Low profile – 1,5 mm
- Momentary, normally closed contact
- Gold contacts
- RoHS compliant and compatible

## Typical Applications

- Automotive
- Position sensing switch
- Edge card reset switch
- Smart card presence switch detector
- DSL and fiber optic networks

## Specifications

FUNCTION: Momentary action  
CONTACT TYPE: SPST Normally closed

### Mechanical

TRAVEL TO BREAK:	KSM1131D LFG	0,35 ± 0,15 mm
	KSM6161 LFG	0,5 ± 0,20 mm
TOTAL TRAVEL:	KSM1131D LFG	1,25 ± 0,2 mm
	KSM6161 LFG	1,92 ± 0,2 mm

SWITCHING FORCE:

KSM1131D LFG	0,15N ≤ F <sub>ce</sub> ≤ 0,90 N
KSM6161 LFG	0,50N ≤ F <sub>ce</sub> ≤ 0,90 N

OPERATING LIFE:	KSM1131D LFG	50,000 cycles
	KSM6161 LFG	200,000 cycles

### Packaging

Switches are delivered on continuous tape, in reels of 2,000 pieces (KSM1131D LFG) and 1250 pieces (KSM6161 LFG)

## Electrical

	KSM1131D LFG	KSM6161 LFG
MAXIMUM POWER:	0.2 VA	1.0 VA
MAXIMUM VOLTAGE:	24 VDC	32 VDC
MINIMUM VOLTAGE:	20 mV	20 mV
MAXIMUM CURRENT DC:	50 mA	50 mA
MINIMUM CURRENT DC:	1 mA	
CONTACT RESISTANCE:	≤ 300 mΩ	≤ 900 mΩ
INSULATION RESISTANCE:	≥ 10 <sup>9</sup> Ω	≥ 10 <sup>9</sup>
DIELECTRIC STRENGTH:	≥ 250 Vrms	≥ 250 Vrms
BOUNCE TIME:	≤ 10 ms	≤ 1,25 ms

## Environmental

OPERATING TEMPERATURE:	-40°C to +85°C
STORAGE TEMPERATURE:	-55°C to +85°C

## Process

SOLDERING: Compatible with lead free reflow process

**NOTE:** Specifications listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

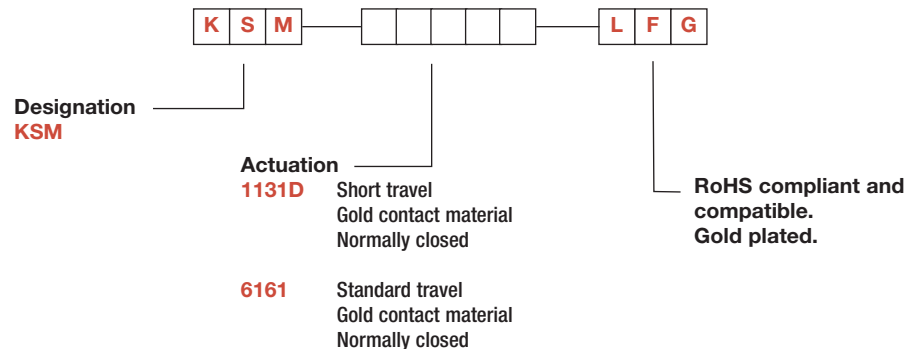
## How To Order

Our easy build-a-switch concept allows you to mix and match options to create the switch you need. To order, select desired option from each category and place it in the appropriate box.

For any part number different from those listed above, please consult your local representative.



Detect  
E

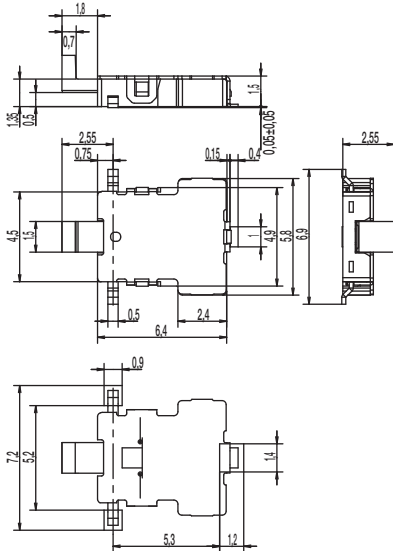


Dimensions are shown: mm  
Specifications and dimensions subject to change

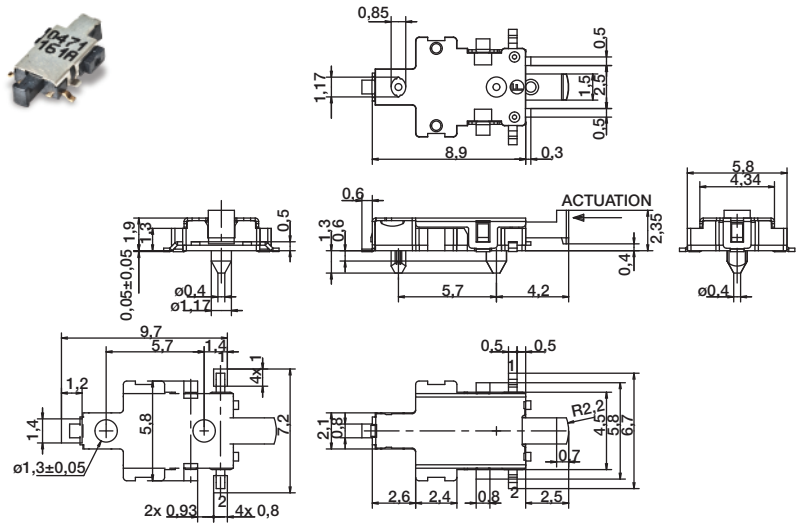


# KSM Series Side Actuated Detect Switches

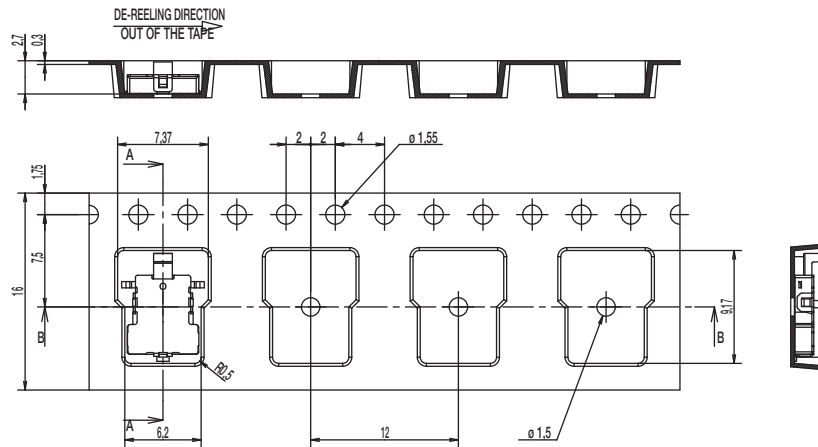
**KSM1131D LFG**



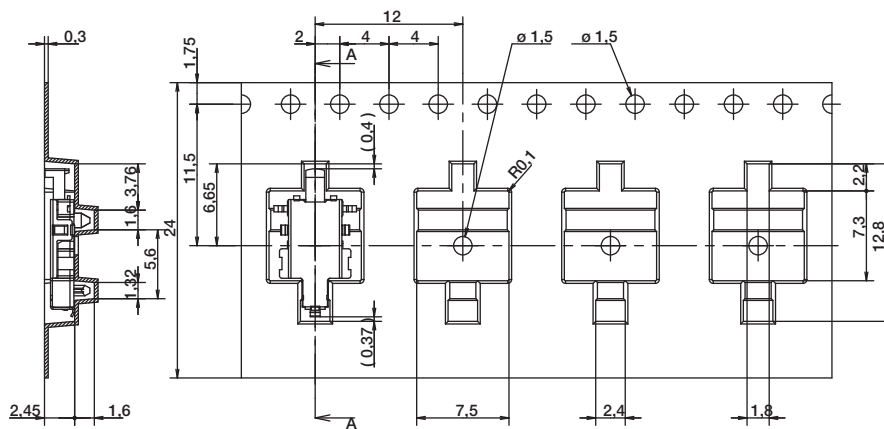
**KSM6161 LFG**



**KSM1131D LFG**



**KSM6161 LFG**



**Detect**

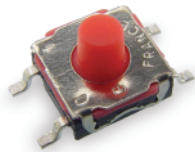


Dimensions are shown: mm  
Specifications and dimensions subject to change





# KSC4D Series Sealed Detect Switch for SMT



## Features/Benefits

- Soft actuator
- J or G terminations
- Tape & reel
- IP 67
- RoHS compliant and compatible

## Typical Applications

- Automotive
- Cellular phones
- Industrial electronics
- Computer infrastructure and IT

## Specification

FUNCTION: momentary action compatible with permanent actuation  
CONTACT ARRANGEMENT: 1 make contact = SPST, N.O.  
TERMINALS: J bend & Gullwing type for SMT  
Compatible with permanent actuation

## Mechanical

Type	Operating force FA Newtons	Operating life (operations)	Travel (mm)
KSC4D1J50SH	1,0 - 3,0	500,000	0,6 ± 0,25
KSC4D2J50SH	1,0 - 3,0	2,000,000	
KSC4D350SH	1,0 - 3,0	500,000	

## Electrical

	Silver	Gold
MAXIMUM POWER:	1 VA	0.2 VA
MAXIMUM VOLTAGE:	32 VDC	32 VDC
MINIMUM VOLTAGE:	20 mV	20 mV
MAXIMUM CURRENT:	50 mA	10 mA
MINIMUM CURRENT:	1 mA	0.1 mA
DIELECTRIC STRENGTH (50 Hz, 1 min.): ≥ 250 V		
CONTACT RESISTANCE: ≤ 100 mΩ		
INSULATION RESISTANCE (100 V): ≥ 10 <sup>9</sup> Ω		
BOUNCE TIME: ≤ 1 ms		

## Electrical

	Silver	Gold
OPERATING TEMPERATURE:	-40°C to 85°C	-40°C to 125°C
STORAGE TEMPERATURE:	-55°C to 85°C	-55°C to 125°C

## Process

SOLDERING:

- Infrared Reflow according to free soldering process with IEC 61760-1.

## Packaging

Reels of 1,000 pieces. Dimensions of reels according to EIA RS481 or IEC 60286-3. External diameter 330 mm ± 2 mm.

**NOTE:** Part numbers listed above do not represent all possible configurations. For information on specific and custom switches, consult Customer Service Center.

This data sheet does not provide enough information for applications which require a certain level of quality or safety such as automotive, medical systems, safety equipment. Please contact your sales representative to get contractual specification package.

## How To Order

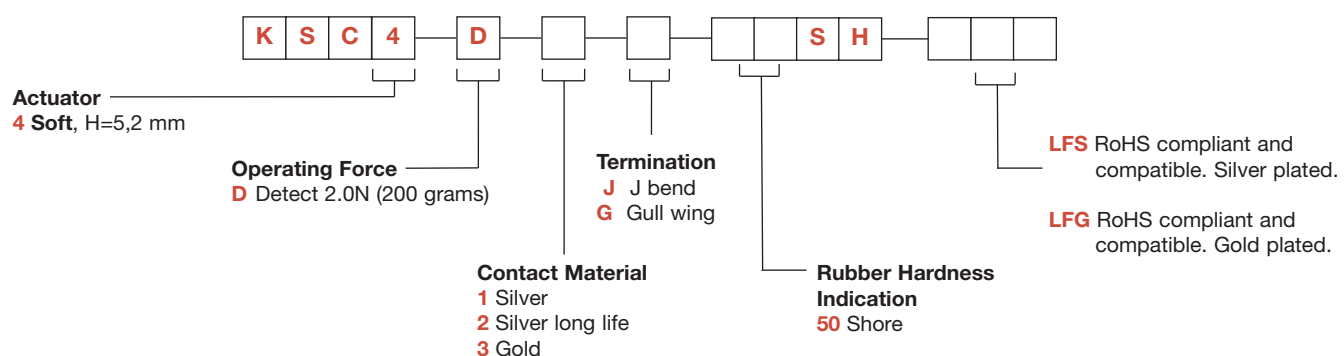
Our easy build-a-switch concept allows you to mix and match options to create the switch you need. To order, select desired option from each category and place it in the appropriate box.

However, please note that all the combinations of these options are not feasible.

For any part number different from those listed above, please consult your local representative.

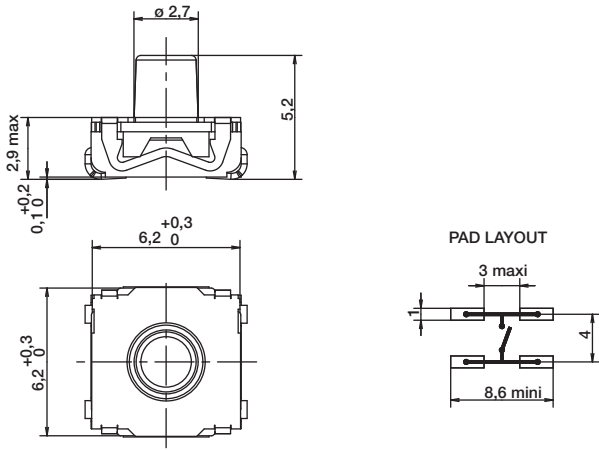


Detect

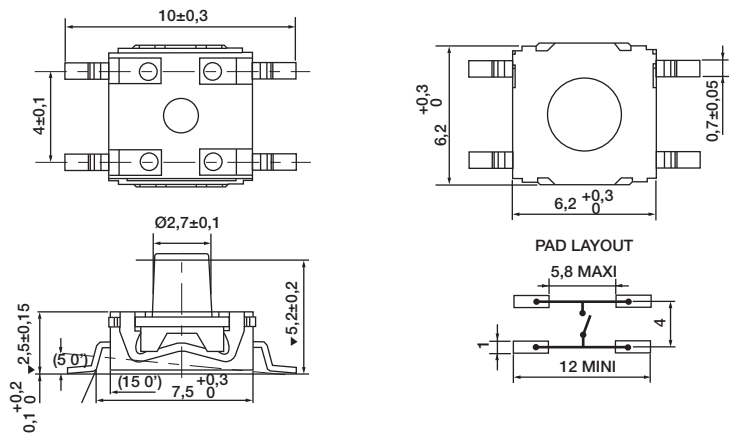


# KSC4D Series Sealed Detect Switch for SMT

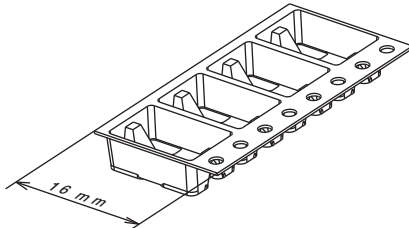
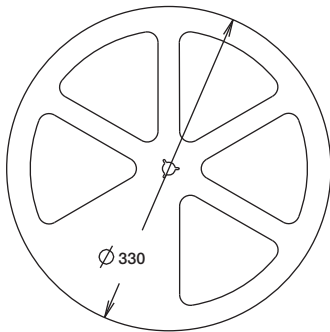
**KSC4D1J** SOFT, 5,2 mm high



**KSC4D1G** SOFT, 5,2 mm high



**TAPE AND REEL**



First Angle  
Projection

Dimensions are shown: mm  
Specifications and dimensions subject to change

[www.ck-components.com](http://www.ck-components.com)



Detect

# KSJ Detect Series Spherical Actuator Detect Switches



## Features/Benefits

- Straight or vertical detect
- Top or side actuation
- Spherical actuator allows actuation +/- 30°
- High travel
- Adapted for cam actuation
- Sealing IP60

## Typical Applications

- Automotive
- Industrial electronics
- Computer infrastructure and IT

## Specification

FUNCTION: momentary action  
 CONTACT ARRANGEMENT: 1 make contact = SPST, N.O.  
 TERMINALS: PC pins  
 Compatible with permanent actuation

## Electrical

	Silver	Gold
OPERATING TEMPERATURE:	-40°C to 85°C	-40°C to 125°C
STORAGE TEMPERATURE:	-40°C to 85°C	-55°C to 125°C

## Mechanical

Type	Operating force FA Newtons (grams)	Operating life (operations)	Travel
KSJ0VD1860SHLFT	6,0 (600)	100,000	0,50 ± 0,25
KSJ0MD1860SHLFT	6,0 (600)	100,000	0,50 ± 0,25

## Process

Wave soldering, compatible with lead free soldering.

## Packaging

In boxes of 250 pieces

## Electrical

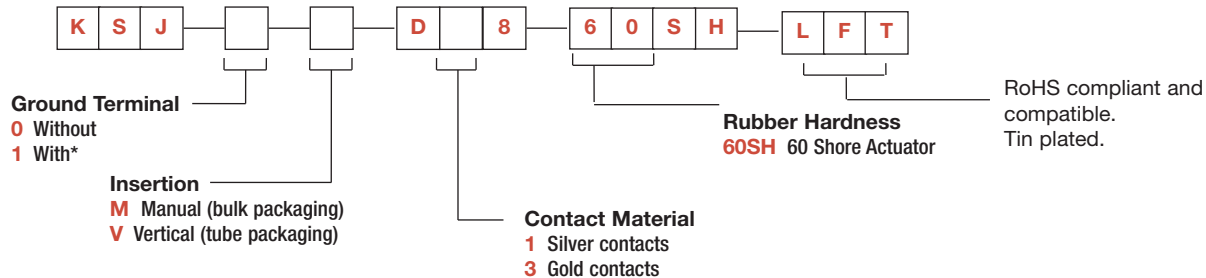
	Silver	Gold
MAXIMUM POWER:	1 VA	0.2 VA
MINIMUM VOLTAGE:	20 mV	20 mV
MAXIMUM VOLTAGE:	32 VDC	32 VDC
MINIMUM CURRENT:	1 mA	1 mA
MAXIMUM CURRENT:	50 mA	10 mA
DIELECTRIC STRENGTH (50 Hz, 1 min.): ≥ 250 V		
CONTACT RESISTANCE: ≤ 100 m ohms		
INSULATION RESISTANCE (100 V): ≥ 10 <sup>9</sup> ohms		
BOUNCE TIME: ≤ 1 ms		

## How To Order

Our easy build-a-switch concept allows you to mix and match options to create the switch you need. To order, select desired option from each category and place it in the appropriate box.

However, please note that all the combinations of these options are not feasible.

For any part number different from those listed above, please consult your local representative.

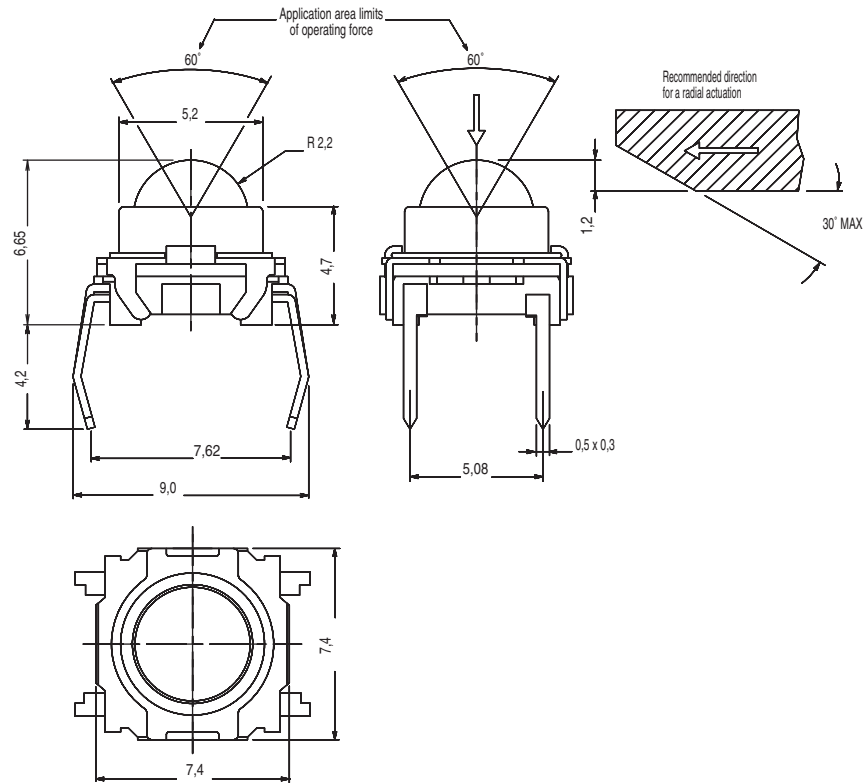


\*Note: "1" ground terminal option not available with "V" version.  
 The bracket for the "V" version plays this role.



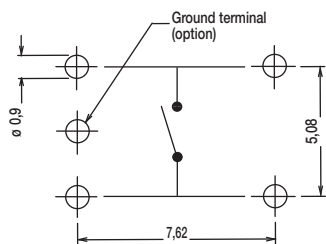
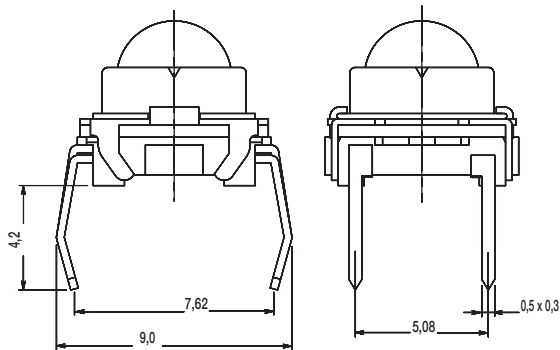
# KSJ Detect Series Spherical Actuator Detect Switches

**KSJ**

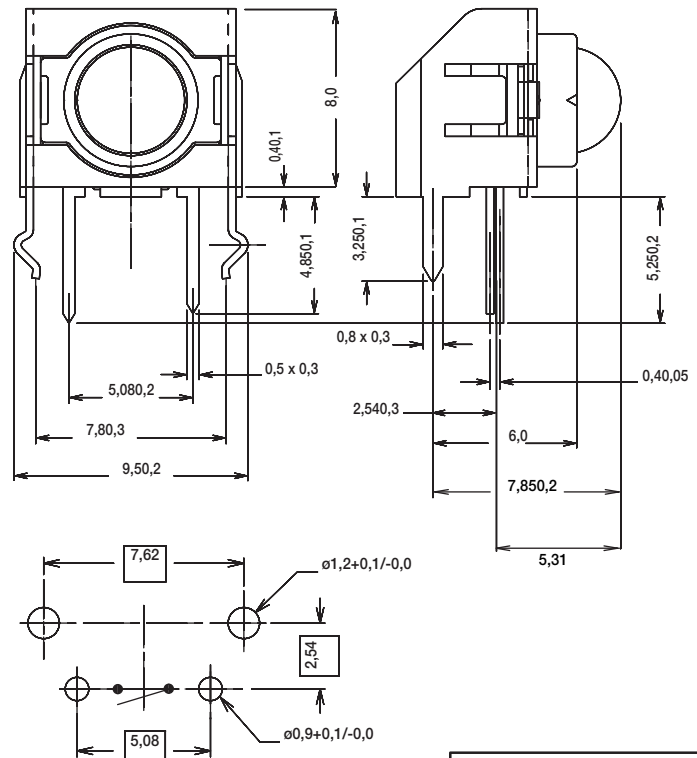


## INSERTION

**M** MANUAL



**V** VERTICAL



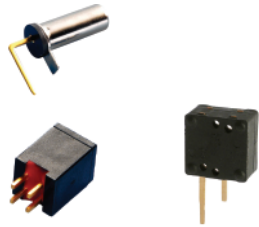
**Detect**



Dimensions are shown: mm  
Specifications and dimensions subject to change

[www.ck-components.com](http://www.ck-components.com)

# RB Series Rolling Ball Sensor Switch

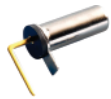


## Features/Benefits

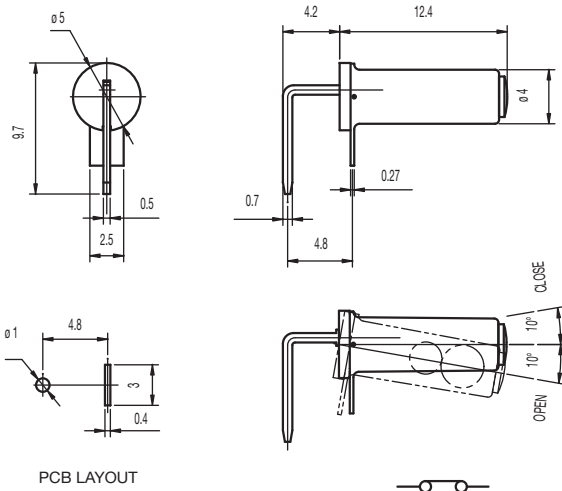
- Different angle options to trigger
- Ultra miniature design
- Patent awarded

## Typical Applications

- Household goods
- Electronic toys
- Consumer electronics including irons, portable heaters, games, toys
- Safety and security controls



PART NUMBER	PACKAGING
<b>RB-231X2</b>	1,000 pieces



## Specifications

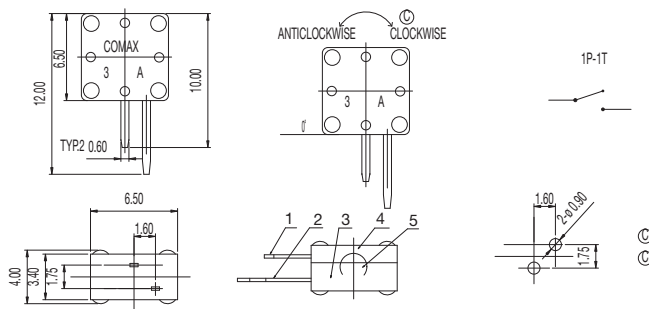
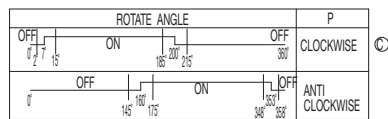
CONTACT ARRANGEMENT: SPST  
 SENSOR ANGLE: 0° to -10° scope inside, terminal to disconnection electric current  
 MINIMUM VOLTAGE: 1 VDC 10mA (resistive load)  
 MAXIMUM VOLTAGE: 5 VDC 1mA (resistive load)  
 OPERATING LIFE: 100,000 cycles  
 INSULATION RESISTANCE: 1000 M Ω min. @ 100 VDC  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz)  
 OPERATING TEMPERATURE: -20°C to +70°C

## Materials

FRAME: Copper alloy, nickel plated  
 COVER: PA 46 (UL94V-0).  
 MOVABLE CONTACT: Copper alloy, nickel plated  
 TERMINALS: Copper alloy, gold plated  
 BRASS BALL: Brass, gold plated



PART NUMBER	PACKAGING
<b>RB-220-07 R</b>	500 pieces



## Specifications

CONTACT ARRANGEMENT: SPST  
 SENSOR ANGLE: 15° to 90° scope inside, terminal to disconnection electric current  
 MINIMUM VOLTAGE: 1 VDC 10mA (resistive load)  
 MAXIMUM VOLTAGE: 5 VDC 1mA (resistive load)  
 OPERATING LIFE: 20,000 cycles (without load);  
 100,000 cycles with load  
 INSULATION RESISTANCE: 10 M Ω min. @ 100 VDC  
 DIELECTRIC STRENGTH: 100 V AC (50-60Hz)  
 OPERATING TEMPERATURE: -10°C to +50°C

## Materials

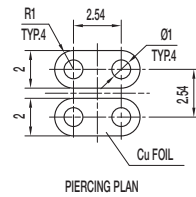
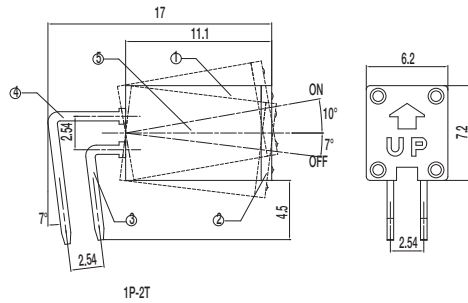
HOUSING: PA  
 COVER: PA  
 BALL: Gold plated



Detect

# RB Series Rolling Ball Sensor Switch

PART NUMBER	PACKAGING
<b>RB-435B</b>	500 pieces



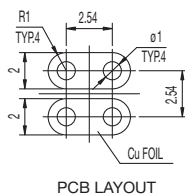
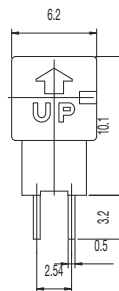
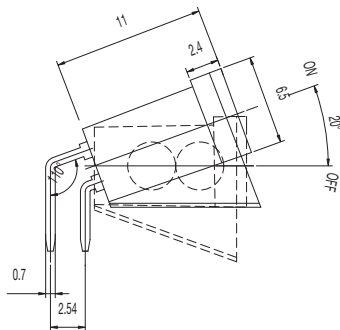
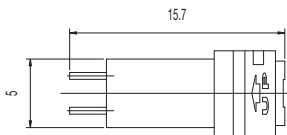
## Specifications

CONTACT ARRANGEMENT: SPDT  
 MINIMUM VOLTAGE: 1 VDC 10mA (resistive load)  
 MAXIMUM VOLTAGE: 5 VDC 1mA (resistive load)  
 OPERATING LIFE: 100,000 cycles  
 INITIAL CONTACT RESISTANCE: 5 Ω max.  
 INSULATION RESISTANCE: 1000 M Ω min. @ 500 VDC  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz)  
 OPERATING TEMPERATURE: -20°C to +70°C

## Materials

HOUSING: PA (UL94V-0)  
 COVER: PA (UL94V-0)  
 MOVABLE CONTACT: Copper alloy, nickel plated  
 TERMINALS: Gold plated  
 BALL: Steel, gold plated

PART NUMBER	PACKAGING
<b>RB-435X2-20</b>	500 pieces



## Specifications

CONTACT ARRANGEMENT: SPDT  
 SENSOR ANGLE: -20° to -30° scope inside, terminal to disconnection electric current  
 MINIMUM VOLTAGE: 1 VDC 10mA (resistive load)  
 MAXIMUM VOLTAGE: 5 VDC 1mA (resistive load)  
 OPERATING LIFE: 100,000 cycles  
 INSULATION RESISTANCE: 1000 M Ω min. @ 100 VDC  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz)  
 OPERATING TEMPERATURE: -20°C to +70°C

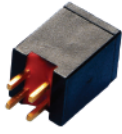
## Materials

HOUSING: PBT (UL94V-0)  
 COVER: PBT (UL94V-0)  
 TERMINALS: Gold plated  
 BALL: Steel, gold plated



Detect

# RB Series Rolling Ball Sensor Switch



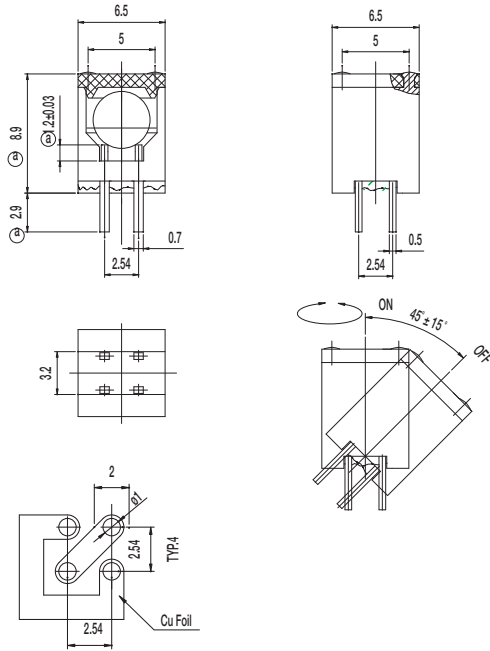
PART NUMBER	PACKAGING
<b>RB-441-45</b>	500 pieces

## Specifications

CONTACT ARRANGEMENT: SPDT  
 MAXIMUM VOLTAGE: 24 VDC 25mA (resistive load)  
 OPERATING LIFE: 100,000 cycles  
 INSULATION RESISTANCE: 1000 M  $\Omega$  min. @ 100 VDC  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz)  
 OPERATING TEMPERATURE: -20°C to +70°C

## Materials

HOUSING: PBT (UL94V-0)  
 COVER: PBT (UL94V-0)  
 TERMINALS: Gold plated  
 BALL: Gold plated



PCB LAYOUT



Detect

### Features/Benefits

- Normally closed function
- Vertical detect
- Reliable long time compression
- IP54
- Tape & reel
- RoHS compliant and compatible

### Typical Applications

- Smart meters
- Alarm systems
- Anti-tamper devices



### Specifications

FUNCTION: Momentary action.  
CONTACT TYPE: SPST Normally Closed.  
TERMINALS: Gullwing type for SMT.

### Mechanical

SWITCHING FORCE: ≤ 2 N  
TRAVEL TO BREAK: 0,7 mm  
TOTAL TRAVEL: 1,1 mm

### Electrical

	GOLD	SILVER
MAXIMUM POWER:	0.2 VA	1 VA
MAXIMUM VOLTAGE:	32 VDC	32 VDC
MINIMUM VOLTAGE:	20 mVDC	20 mVDC
MAXIMUM CURRENT:	10 mA	50 mA
MINIMUM CURRENT:	1 µA	1 mA
CONTACT RESISTANCE:	≤ 350 mΩ	
INSULATION RESISTANCE:	> 1 G Ω	
DIELECTRIC STRENGTH:	≥ 250 Vrms	

### Packaging

Switches are delivered on continuous tape, in reels of 2,000 pieces

### Environmental

	GOLD	SILVER
OPERATING TEMPERATURE:	-40°C to +125°C	-40°C to +85°C
STORAGE TEMPERATURE:	-55°C to + 125°C	-40°C to +85°C

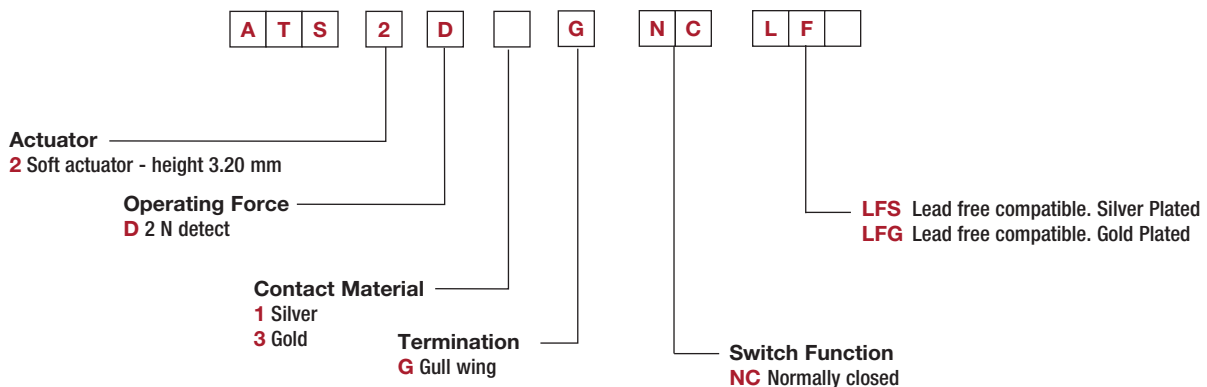
### Process

SOLDERING: Compatible with lead free reflow process

**NOTE:** Specifications listed above are for switches with standard options.  
For information on specific and custom switches, consult Customer Service Center.

### Build-A-Switch

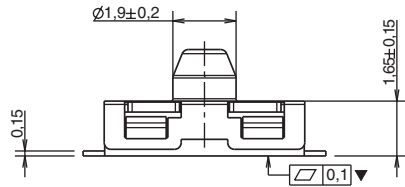
To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on the next page. For additional options not shown in catalog, consult Customer Service Center.



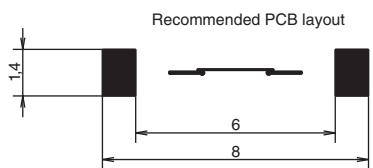
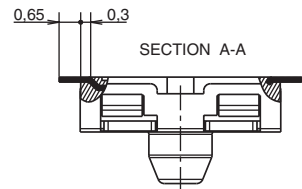
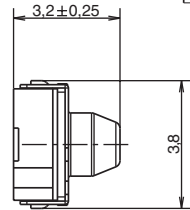
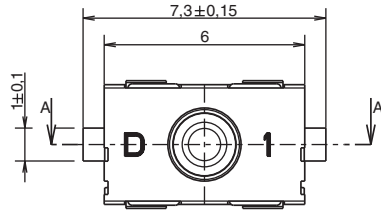


# ATS Series Anti-Tampering Switches

**NEW**



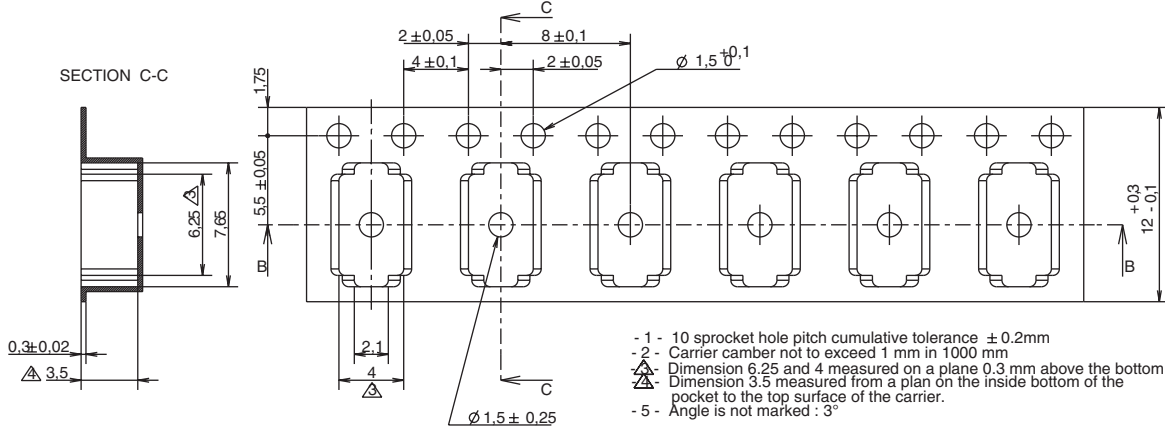
MARKING	PART NUMBER
D - 1	ATS 2D1G NC LFS
D - 3	ATS 2D3G NC LFG



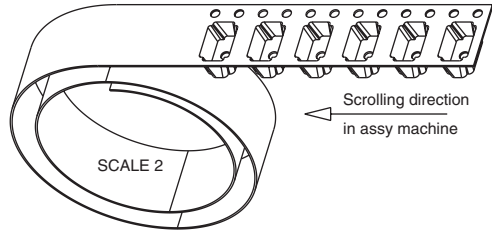
SECTION B-B



SECTION C-C



- 1 - 10 sprocket hole pitch cumulative tolerance ± 0.2mm
- 2 - Carrier camber not to exceed 1 mm in 1000 mm
- 3 - Dimension 6.25 and 4 measured on a plane 0.3 mm above the bottom of the pocket
- 4 - Dimension 3.5 measured from a plan on the inside bottom of the pocket to the top surface of the carrier.
- 5 - Angle is not marked : 3°



**Detect**

# ASD Series Miniature Sealed Detect Switch

## Features/Benefits

- Automotive grade
- Long 2.5 mm travel
- Quiet operation
- 300,000 electrical cycles
- IP67

## Typical Applications

- Automotive - electronic door latch
- Automotive - electronic door handles



**Preliminary**  
8 June 16

## Specifications

FUNCTION: SPST NO, or SPST NC

### Mechanical

OPERATING FORCE:	1.5 N max.
FREE POSITION:	8.75 mm *
OPERATING POSITION:	7.25 mm *
FULL TRAVEL POSITION:	6.25 mm *
MECHANICAL LIFE:	300,000 cycles min.
MAX. OVERLOAD FORCE:	20 N down

\* from post center

### Electrical

MINIMUM RATING:	1mA 5 VDC (silver plated contacts)
MAXIMUM RATING:	250mA 14 VDC (silver contacts)
ELECTRICAL LIFE:	300,000 cycles min.
CONTACT RESISTANCE:	500 m $\Omega$ initial / 1 m $\Omega$ max.
INSULATION RESISTANCE:	100 M $\Omega$ min.
DIELECTRIC STRENGTH:	250 V min.

## Materials

FIXED CONTACTS / TERMINALS: Phosphor bronze / Silver plated  
MOVABLE CONTACTS: Phosphor bronze; silver plate  
BASE: PBT  
COVER: PBT  
ACTUATOR: Acetal

## Environmental

OPERATING TEMPERATURE: - 40°C to +85°C  
STORAGE TEMPERATURE: - 50°C to +95°C

## Process

SOLDERING: Hand solder 300°C, 3s max.

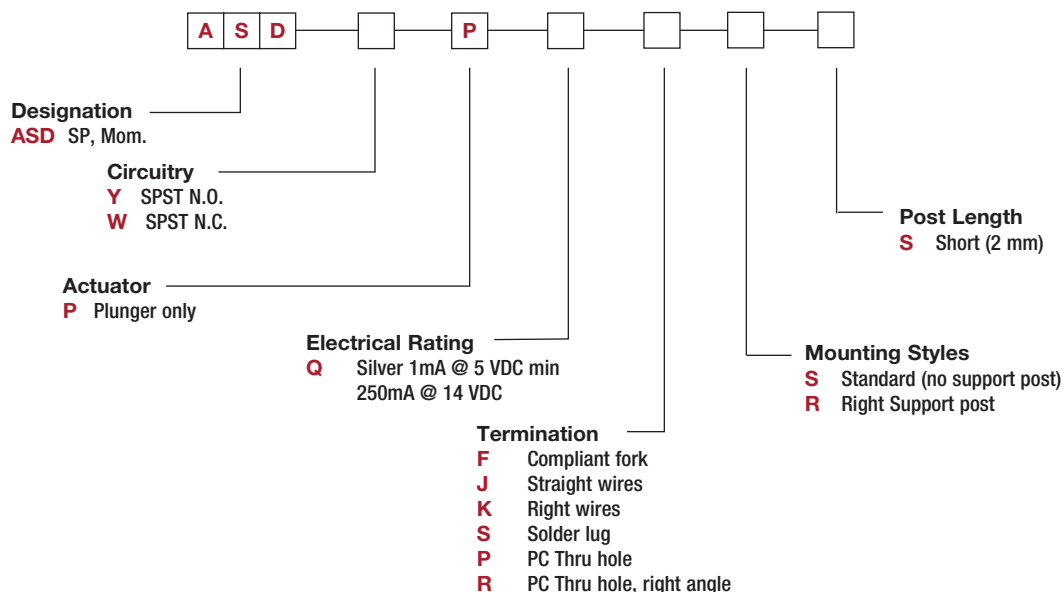
## Packaging

Switches are delivered in tray.

**NOTE:** Specifications listed above are for switches with standard options.  
For information on specific and custom switches, consult Customer Service Center.

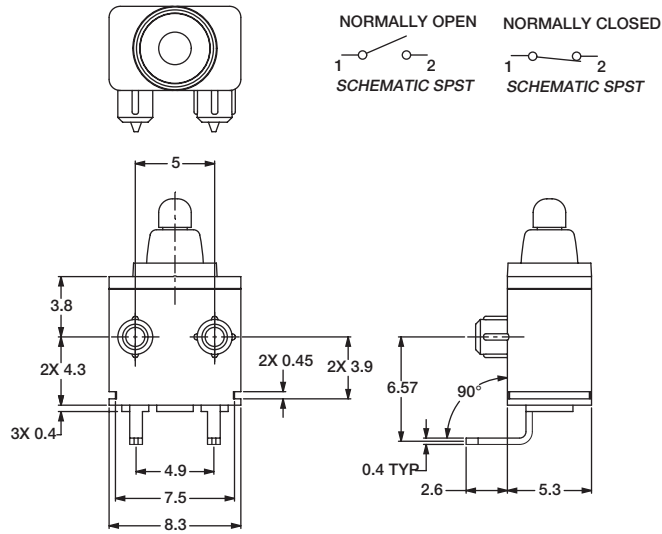
## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on the next page. For additional options not shown in catalog, consult Customer Service Center.



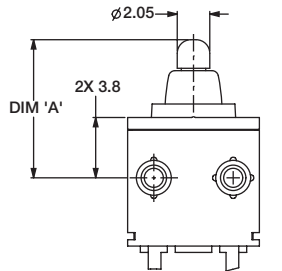
# ASD Series Miniature Sealed Detect Switch

Preliminary  
8 June 16



## ACTUATOR

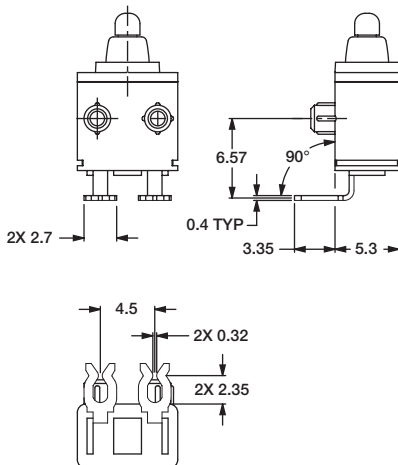
**P** PLUNGER ONLY



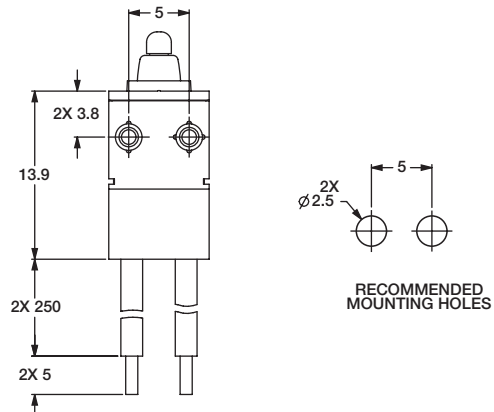
	DIM 'A'
FREE POSITION	8.75
BREAK	7.25
FULL TRAVEL	6.25

## TERMINATIONS

**F** COMPLIANT FORK



**J** STRAIGHT WIRES



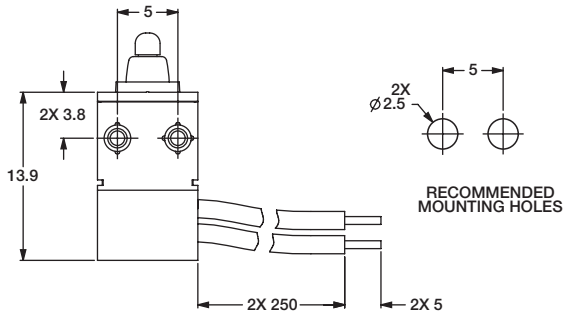
Detect



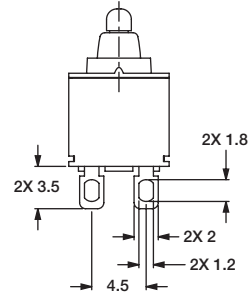
Dimensions are shown: mm  
Specifications and dimensions subject to change

## TERMINATIONS

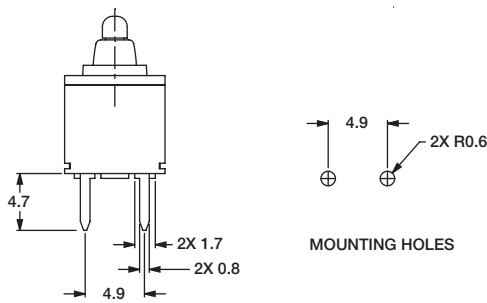
### K RIGHT WIRES



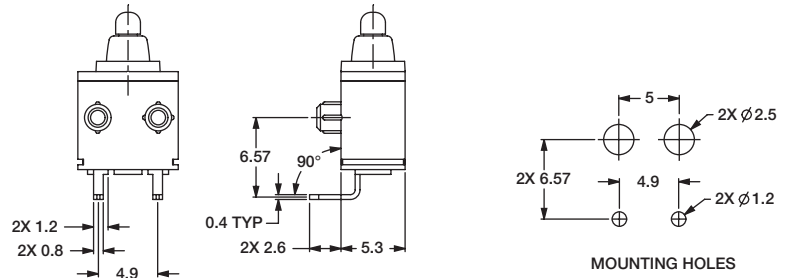
### S SOLDER LUG



### P PC THRU-HOLE

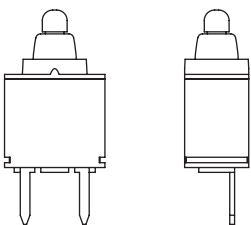


### R PC THRU-HOLE - RIGHT ANGLE

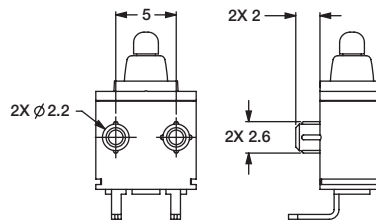


## MOUNTING STYLE

### S STANDARD (NO SUPPORT POST)



### R RIGHT SUPPORT POST



# Toggles

## Product Selection Guide

<b>Toggles</b>							
Series	7000	Military	E	ET	T	GT	9000
<b>Switch Type</b>	Miniature	Miniature	Miniature	Subminiature	Subminiature	Ultriminiature	Power
<b>Poles/Throws</b>	SPDT, DPDT, 3PDT, 4PDT	SPDT, DPDT,	SPDT, DPDT, 3PDT	SPST, SPDT, DPDT	SPST, SPDT, DPDT	SPST, SPDT, DPST, DPDT	DPDT
<b>Maximum Current Silver/Gold</b>	5 Amps	5 Amps	7.5 Amps/ 5 Amps	3 Amps/ 2 Amps	3 Amps/ 2 Amps	0.4 VA	10 Amps
<b>Process Sealed</b>			•	•		•	
<b>PCB Mount Options</b>							
Vertical	•	•	•	•	•	•	•
Right Angle	•	•	•	•	•	•	
Vertical Right Angle	•	•	•	•	•	•	•
<b>Surface Mount Options</b>							
Vertical						•	
Right Angle				•		•	
<b>Panel Mount Options</b>							
Rear Mount	•	•	•		•		•
<b>Termination Options</b>							
PCB Thru-hole	•	•	•	•	•	•	•
Wire Wrap	•		•	•	•		
Solder Lug	•	•	•		•		•
Quick Connect	•		•				•
<b>Other Available Options</b>							
Support Brackets	•	•	•	•	•	•	•
Snap-in Retention	•		•	•			
ESD Protection	•		•	•	•		
Tape & Reel				•		•	
<b>Bushing Options</b>							
10-48					•		
1/4-40	•	•	•		•		•
15/32	•						•
M6P 0.75 (Metric)	•						
<b>Page No.</b>	F-3	F-17	F-22	F-30	F-37	F-43	F-48



Toggle



*Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change*

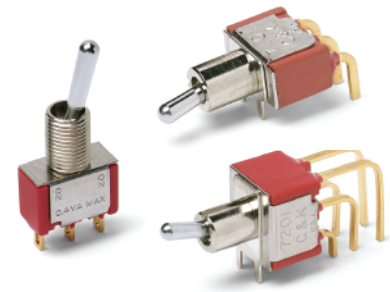
# 7000 Series Miniature Toggle Switches

## Features/Benefits

- Multi-pole and multi-position
- Wide variety of actuator and termination options
- Epoxy terminal-seal compatible with bottom wash cleaning
- RoHS complaint models available

## Typical Applications

- Telecommunications
- Instrumentation
- Medical equipment



## Specifications

CONTACT RATING: B contact material: 0.4 VA max. @ 20 V AC or DC max. Q contact material: 5 AMPS @ 120 V AC or 28 V DC; 2 AMPS @ 250 V AC. See page F-15 for additional ratings.

ELECTRICAL LIFE: 7X01 and UX1 models: 100,000 make-and-break cycles at full load. All other models: 40,000 cycles.

CONTACT RESISTANCE: Below 10 m Ω typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

INSULATION RESISTANCE: 10<sup>9</sup> Ω min.

DIELECTRIC STRENGTH: 1000 Vrms min. @ sea level.

OPERATING TEMPERATURE: -30°C to 85°C.

SOLDERABILITY: Per MIL-STD-202F method 208D, or EIA RS-186E method 9 (1 hour steam aging).

For materials see page F-4.

**NOTE:** Any models supplied with P, S, R, Q, B or G contact material are RoHS compliant and compatible.

**NOTE:** Specifications listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages F-4 thru F-16. For additional options not shown in catalog, consult our Customer Service Center.

<p><b>Switch Function</b></p> <p><b>7101</b> SP On-None-On  <b>7103</b> SP On-Off-On  <b>7105</b> SP Mom.-Off-Mom.  <b>7107</b> SP On-Off-Mom.  <b>7108</b> SP On-None-Mom.  <b>7109</b> SP None-On-Mom.  <b>7201</b> DP On-None-On  <b>7203</b> DP On-Off-On  <b>7205</b> DP Mom.-Off-Mom.  <b>7207</b> DP On-Off-Mom.  <b>7208</b> DP On-None-Mom.  <b>7211</b> DP On-On-On  <b>7213</b> DP On-On-Mom.  <b>7215</b> DP Mom.-On-Mom.  <b>7301</b> 3P On-None-On  <b>7303</b> 3P On-Off-On  <b>7305</b> 3P Mom.-Off-Mom.  <b>7308</b> 3P On-None-Mom.  <b>7401</b> 4P On-None-On  <b>7403</b> 4P On-Off-On  <b>7405</b> 4P Mom.-Off-Mom.  <b>7408</b> 4P On-None-Mom.  <b>7411</b> 4P On-On-On  <b>7413</b> 4P On-On-Mom.  <b>7415</b> 4P Mom.-On-Mom.</p> <p><small>Note: UL models available, see pages F-4 &amp; F-5.</small></p>	<p><b>Actuator</b></p> <p><b>M</b> .200" high  <b>P3</b> Flatted, anti-rotation, .450" high  <b>S</b> .420" high  <b>T</b> .687" high, 15/32 bushing  <b>K2</b> Locking lever, .704" high  <b>K9</b> Locking lever, .704" high  <b>K12</b> Locking lever, .732" high  <b>K19</b> Locking lever, .732" high  <b>L</b> .840" high  <b>L1</b> .640" high  <b>L1P</b> Anti-rotation, .640" high  <b>L2</b> .550" high  <b>L2P</b> Anti-rotation, .550" high  <b>L3</b> Plastic .940" inch  <b>L40</b> Lever handle without cap  <b>L41</b> .531" high lever handle with cap  <b>L42</b> .838" high lever handle with cap  <b>MP</b> Anti-rotation, .200" high  <b>P1</b> Flatted, anti-rotation, .840" high  <b>P4</b> Flatted, anti-rotation, .250" high  <b>SP</b> Anti-rotation, .420" high  <b>T1</b> .487" high, 15/32 bushing  <b>T1P</b> Anti-rotation, .487" high, 15/32 bushing  <b>T2P</b> Flatted, anti-rotation, .610" high, 15/32 bushing  <b>TP</b> Anti-rotation, .687" high, 15/32 bushing</p>	<p><b>Bushing</b></p> <p><b>D</b> .280 high, keyway  <b>H</b> .296 high, flat  <b>Y</b> .350 high, keyway  <b>NONE</b> No bushing choice required  <b>CW</b> Splashproof  <b>D8</b> .280" high, flat  <b>D9</b> .280" high, keyway  <b>H3</b> .315" high, keyway  <b>H4</b> 8mm high, keyway  <b>Y1</b> .378" high, keyway  <b>Y3</b> 8.9mm high, keyway  <b>Y4</b> .378" high, flat  <b>Y9</b> .350" high, keyway</p> <p><b>Terminations</b></p> <p><b>A</b> Right angle, PC thru-hole  <b>AV2</b> Vert. right angle, PC thru-hole  <b>C</b> PC Thru-hole  <b>V3</b> .460 high, V-bracket  <b>Z</b> Solder lug  <b>A2</b> Right angle, PC thru-hole  <b>A3</b> Right angle, PC thru-hole  <b>A4</b> Right angle, PC thru-hole  <b>AW1</b> Right angle, extended, PC thru-hole  <b>AW4</b> Right angle, extended, PC thru-hole  <b>V2</b> .555" high, V-bracket  <b>V4</b> .630" high, V-bracket  <b>V6</b> .460" high, V-bracket  <b>V7</b> .630" high, V-bracket  <b>V8</b> .953" high, V-bracket  <b>V9</b> 1.150" high, V-bracket  <b>V21</b> .555" high, snap-in V-bracket  <b>V31</b> .460" high, snap-in V-bracket  <b>V41</b> .630" high, snap-in V-bracket  <b>V71</b> .630" high, snap-in V-bracket  <b>V81</b> .953" high, snap-in V-bracket</p>	<p><b>Contact Material</b></p> <p><b>B</b> Gold  <b>P</b> Gold, matte-tin  <b>Q</b> Silver  <b>S</b> Silver, matte-tin  <b>G</b> Gold over silver  <b>R</b> Gold over silver, matte-tin</p> <p><b>Seal</b></p> <p><b>E</b> Epoxy  <b>I</b> Epoxy potted base</p> <p><b>Actuator Color/Finish</b></p> <p><b>NONE</b> Bright chrome  <b>2</b> Black  <b>3</b> Red  <b>S</b> Satin chrome</p> <p><b>KXX Actuator Color/Finish</b></p> <p><b>NONE</b> Natural aluminum  <b>2</b> Black anodized aluminum  <b>3</b> Red anodized aluminum  <b>7</b> Blue anodized aluminum</p> <p><b>Bushing Finish</b></p> <p><b>NONE</b> Nickel on all bushings (except D8, satin chrome)  <b>2</b> Black</p> <p><b>W</b> .750" long, wire wrap  <b>W1</b> .964" long, wire wrap  <b>W3</b> .425" long, wire wrap  <b>W4</b> 1.062" long, wire wrap  <b>W5</b> 1.305" long, wire wrap  <b>Z3</b> Quick connect</p>



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

# 7000 Series Miniature Toggle Switches

## Materials

CASE: Glass filled nylon 6/6, flame retardant, heat stabilized, or diallyl phthalate (DAP) (UL 94V-0).

ACTUATOR: Brass, chrome plated.

BUSHING: Brass or zinc, nickel plated.

HOUSING: Stainless steel.

SWITCH SUPPORT: Brass or steel, tin plated.

END CONTACTS: B contact material: Copper alloy, with gold plate over nickel plate. Q contact material: Coin silver, silver plated. See page F-15 for additional contact materials.

CENTER CONTACTS & ALL TERMINALS: B contact material: Copper alloy, with gold plate over nickel plate. Q contact material: Copper alloy, silver plated. See above for additional contact materials.

TERMINAL SEAL: Epoxy.

HARDWARE: Nut & Locking Ring: Brass, nickel plated.  
Lockwasher: Steel, nickel plated.

NOTE: Materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## SWITCH FUNCTION

NO. POLES	MODEL NO.	UL** MODEL NO.	SWITCH FUNCTION			CONNECTED TERMINALS			SCHEMATIC
			POS. 1 KEYWAY	POS. 2 KEYWAY	POS. 3 KEYWAY	POS. 1 KEYWAY	POS. 2 KEYWAY	POS. 3 KEYWAY	
SP	7101	U11	ON	NONE	ON	2-3	N/A	2-1	
	7103	U13	ON	OFF	ON	2-3	OPEN	2-1	
	7105	U15	MOM.	OFF	MOM.				
	7107	U17	ON	OFF	MOM.				
	7108	U18	ON	NONE	MOM.	2-3	N/A	2-1	
	7109	U19	NONE	ON	MOM.	N/A	2-3	2-1	SPDT
<p><b>SPDT</b></p> <p>Part number shown: 7101SYZBE</p> <p>Terminal Numbers For Reference Only</p>									
DP	7201	U21	ON	NONE	ON	2-3,5-6	N/A	2-1,5-4	
	7203	U23	ON	OFF	ON	2-3,5-6	OPEN	2-1,5-4	
	7205	U25	MOM.	OFF	MOM.				
	7207	U27	ON	OFF	MOM.				
	7208	U28	ON	NONE	MOM.	2-3,5-6	N/A	2-1,5-4	
	7211*	U211*	ON	ON	ON	2-3,5-6	2-3,5-4	2-1,5-4	
	7213*	U213*	ON	ON	MOM.				
7215*	U215*	MOM.	ON	MOM.					
<p><b>DPDT</b></p> <p>Part number shown: 7201SYZQE</p> <p>Terminal Numbers For Reference Only</p>									

MOM. = Momentary

\*\* U11-U415 model nos. with all options when ordered with G, R, Q or S contact material.

\* Wiring for 3-way switch, see Section N.



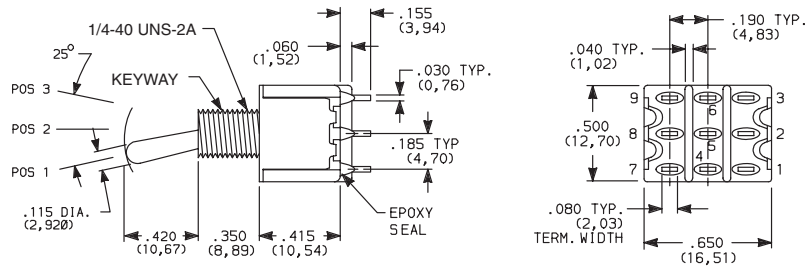
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

# 7000 Series Miniature Toggle Switches

## SWITCH FUNCTION

NO. POLES	MODEL NO.	UL** MODEL NO.	SWITCH FUNCTION			CONNECTED TERMINALS			SCHEMATIC
			POS. 1	POS. 2	POS. 3	POS. 1	POS. 2	POS. 3	
			KEYWAY	KEYWAY	KEYWAY	KEYWAY	KEYWAY	KEYWAY	
3P	<b>7301</b>	<b>U31</b>	ON	NONE	ON	2-3,5-6,8-9	N/A	2-1,5-4,8-7	
	<b>7303</b>	<b>U33</b>	ON	OFF	ON	2-3,5-6,8-9	OPEN	2-1,5-4,8-7	
	<b>7305</b>	<b>U35</b>	MOM.	OFF	MOM.	2-3,5-6,8-9	OPEN	2-1,5-4,8-7	
	<b>7307</b>	<b>U37</b>	ON	OFF	MOM.	2-3,5-6,8-9	OPEN	2-1,5-4,8-7	
	<b>7308</b>	<b>U38</b>	ON	NONE	MOM.	2-3,5-6,8-9	N/A	2-1,5-4,8-7	

### 3PDT

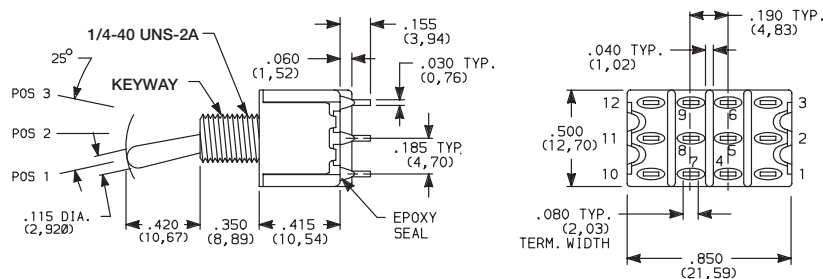


Part number shown: 7301SYZQE

Terminal Numbers  
For Reference Only

4P	<b>7401</b>	<b>U41</b>	ON	NONE	ON	2-3,5-6,8-9,11-12	N/A	2-1,5-4,8-7,11-10	
	<b>7403</b>	<b>U43</b>	ON	OFF	ON	2-3,5-6,8-9,11-12	OPEN	2-1,5-4,8-7,11-10	
	<b>7405</b>	<b>U45</b>	MOM.	OFF	MOM.	2-3,5-6,8-9,11-12	OPEN	2-1,5-4,8-7,11-10	
	<b>7408</b>	<b>U48</b>	ON	NONE	MOM.	2-3,5-6,8-9,11-12	N/A	2-1,5-4,8-7,11-10	
	<b>7411*</b>	<b>U411*</b>	ON	ON	ON	2-3,5-6,8-9,11-12	2-3,5-4,8-9,11-10	2-1,5-4,8-7,11-10	
	<b>7413*</b>	<b>U413*</b>	ON	ON	MOM.	2-3,5-6,8-9,11-12	2-3,5-4,8-9,11-10	2-1,5-4,8-7,11-10	
<b>7415*</b>	<b>U415*</b>	MOM.	ON	MOM.	2-3,5-6,8-9,11-12	2-3,5-4,8-9,11-10	2-1,5-4,8-7,11-10		

### 4PDT

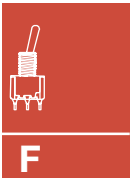


Part number shown: 7401SYZQE

Terminal Numbers  
For Reference Only

MOM. = Momentary  
Wiring for 3-way switch, see Section N.

\*\* U11-U415 model nos. with all options when ordered with G, Q, R or S contact material.



Toggle



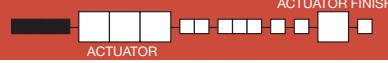
Third Angle  
Projection

Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

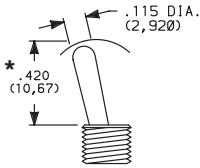


# 7000 Series Miniature Toggle Switches

**ACTUATOR**

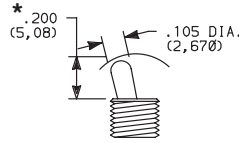


**S** .420" HIGH <sup>1</sup>  
**SP** ANTIROTATION, .420" HIGH <sup>2,3</sup>



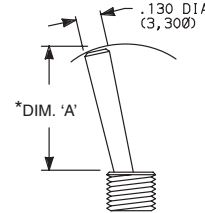
S actuator standard when ordered with C, W-W5, Z & Z3 terminations. Caps are available separately, see page F-16.

**M** .200" HIGH <sup>1</sup>  
**MP** ANTIROTATION, .200" HIGH <sup>2,3</sup>



M actuator standard when ordered with all terminations except C, W-W5, Z & Z3. Caps are available separately, see page F-16.

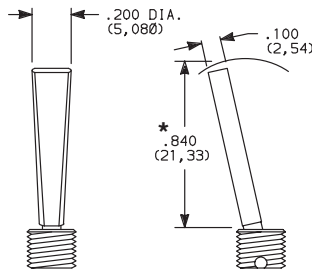
**L, L1, L2** .840", .640", .550" HIGH <sup>1</sup>  
**L1P, L2P** ANTIROTATION, .840", .640", .550" HIGH <sup>2,3</sup>



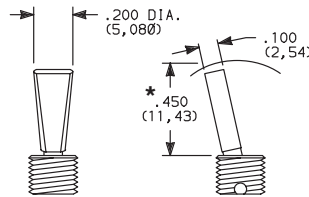
OPTION CODE	DIM 'A'
L	.840 (21,34)
L1, L1P	.640 (16,26)
L2, L2P	.550 (13,97)

Caps are available separately, see page F-16.

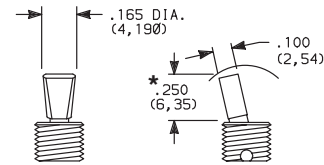
**\*P1** FLATTED WITH ANTIROTATION, .840" HIGH <sup>2,3</sup>



**\*P3** FLATTED WITH ANTIROTATION, .450" HIGH <sup>2,3</sup>

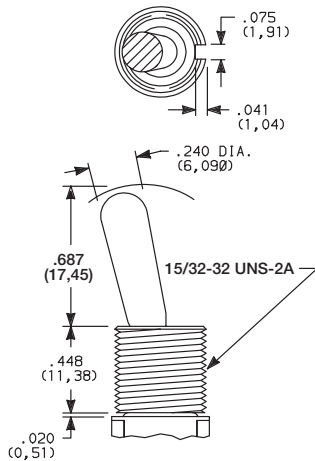


**\*P4** FLATTED WITH ANTIROTATION, .250" HIGH <sup>2,3</sup>

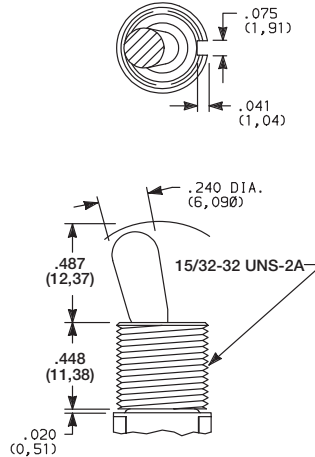


\*Dress nut part number 709901201 supplied standard with threaded bushing. (Part number 709903201 with metric threaded bushings.)

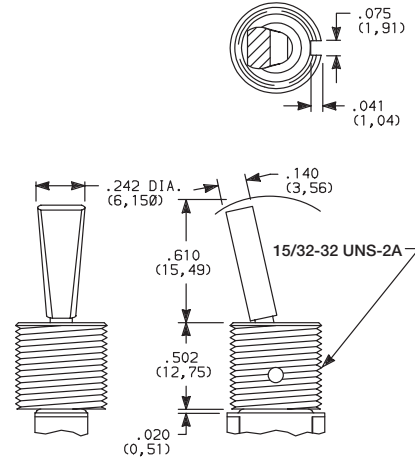
**T** .687 (17,45) HIGH <sup>1,2</sup>  
**TP** ANTIROTATION, .687 (17,45) HIGH, 15/32 BUSHING <sup>1,2,3</sup>



**T1** .487 (12,37) HIGH <sup>1,2</sup>  
**T1P** ANTIROTATION, .487 (12,37) HIGH, 15/32 BUSHING <sup>1,2,3</sup>



**T2P** FLATTED, ANTIROTATION, .610" HIGH, 15/32 BUSHING <sup>1,2,3</sup>



Bushing option code not required unless CW splashproof bushing ordered. TP & T1P actuators not available with CW splashproof bushing. All TXX actuators not available on single pole models with A-A4, AW1-AW4 terminations.

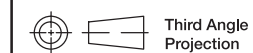
Bushing option code not required. T2P actuator not available with CW splashproof bushing or single pole models with A-A4, AW1-AW4 terminations.

- <sup>1</sup> L, L1, L2, M, S & TXX actuators not available with Y1 bushing.
  - <sup>2</sup> L1P, L2P, MP, P1, P3, P4, SP & TXX actuators not available with D8 & H4 bushing.
  - <sup>3</sup> Antirotation: Provides anti-'push-in' feature on actuator.
- \* Add .070 (1,78) for D, D8 & D9 bushings, subtract .020 (0,51) for H3 bushing.

OPTION CODE	ACTUATOR FINISH
<b>NONE</b>	BRIGHT CHROME-With Nickel Plated Bushing
<b>2</b>	BLACK
<b>S</b>	SATIN CHROME

**NOTE:** Black hardware is supplied when either black actuators or bushings are specified. For additional hardware, see Section N.

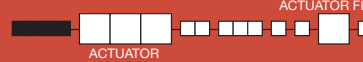
**Toggle**



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

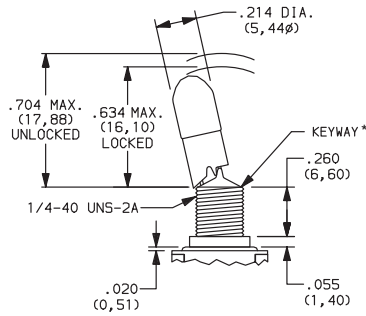
# 7000 Series Miniature Toggle Switches

## ACTUATOR

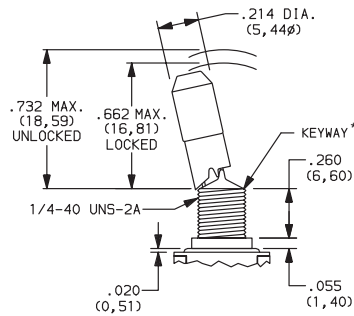


- K2** LOCKING LEVER, .704" HIGH (threaded)
- K9** LOCKING LEVER, .704" HIGH (unthreaded)

- K12** LOCKING LEVER, .732" HIGH (threaded)
- K19** LOCKING LEVER, .732" HIGH (unthreaded)



Replaces K, K8



Replaces K1, K18

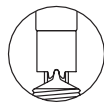
OPTION CODE	ACTUATOR CAP FINISH
<b>NONE</b>	NATURAL ALUMINUM—With Nickel Plated Bushing
<b>2</b>	BLACK ANODIZED ALUMINUM
<b>3</b>	RED ANODIZED ALUMINUM
<b>7</b>	BLUE ANODIZED ALUMINUM

\* All KXX models including KXXCW have a keyway

### Locking Positions



-01 Models  
2 Position lock



-03 & -11 Models  
3 Position lock



-05, -09 & -15 Models  
1 Position lock



-07 & -13 Models  
2 Position lock



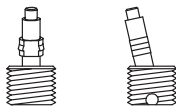
-08 Models  
1 Position lock

**NOTE:** To prevent accidental actuation, toggle must be lifted before being actuated. When released, toggle will lock in place. Overtightening mounting nut may cause actuator to bind.

Locking levers supplied with bushing shown.

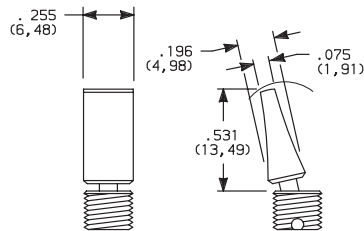
Bushing option code not required unless CW splashproof bushing ordered.

- L40** LEVER HANDLE WITHOUT CAP



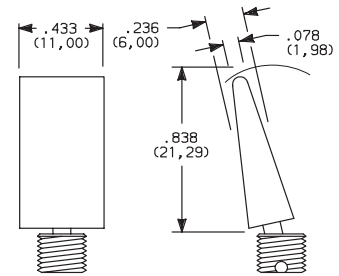
No color choice required

- L41** PLASTIC LEVER HANDLE WITH ANTIROTATION AND CAP, P/N 4810

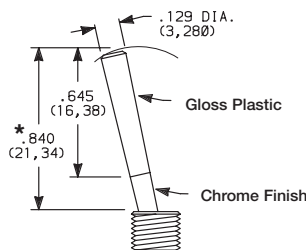


Finish: Matte (L41 & L42).

- L42** PLASTIC LEVER HANDLE WITH ANTIROTATION AND CAP, P/N 4811



- L3** PLASTIC .940" HIGH



OPTION CODE	PLASTIC ACTUATOR COLORS
<b>NONE</b>	No Actuator Color (L40 option)
<b>2</b>	BLACK
<b>3</b>	RED

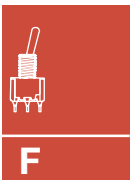
\* Add .070 (1,78) for D, D8 & D9 bushings, subtract .020 (0,51) for H3 bushing.

**NOTE:** Lever handle for L41 & L42 actuators supplied, but not installed. For interchangeability, order L40 actuator option and lever handles separately, see page F-16. L4X actuators not available with H4, Y1, Y4 bushings. Antirotation: Provides anti-'push-in' feature on actuator.



Third Angle Projection

Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



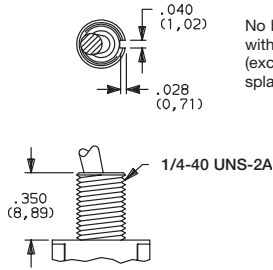
# 7000 Series Miniature Toggle Switches

## BUSHING

BUSHING FINISH

BUSHING

**Y** .350" HIGH, THREADED, KEYWAY  
**Y9** .350" HIGH, UNTHREADED, KEYWAY

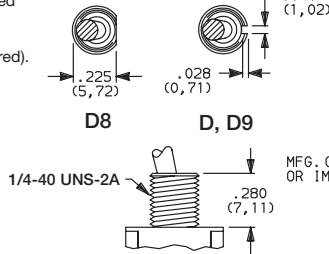


Y bushing standard with C, W-W5, Z or Z3 terminations.

**NONE** NO BUSHING

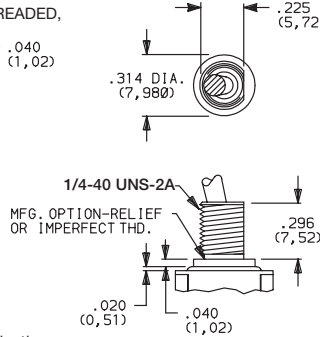
No bushing choice required with KXX, TXX actuators. (exception: Specify CW if splashproof bushing desired).

**D** .280" HIGH, THREADED, KEYWAY  
**D8** .280" HIGH, UNTHREADED, FLAT<sup>3</sup>  
**D9** .280" HIGH, UNTHREADED, KEYWAY

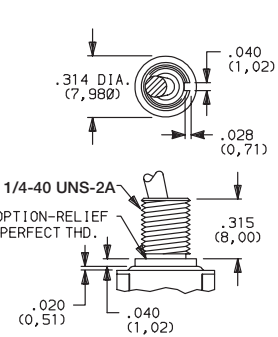


D9 bushing standard with all terminations except C, W-W5, Z or Z3. Add .070 (1,78) to all actuators lengths with D, D8 & D9 bushings.

**H** .296" HIGH, FLAT THREADED, HIGH TORQUE<sup>1,2</sup>

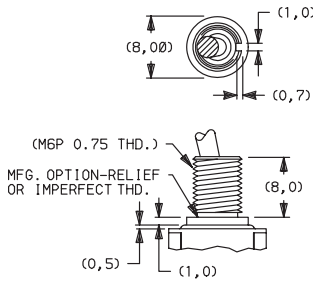


**H3** .315" HIGH, KEYWAY THREADED, HIGH TORQUE<sup>1,2</sup>

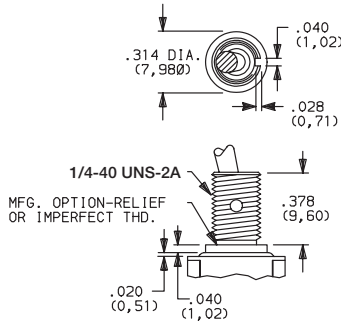


Subtract .020 (0,51) from all actuator lengths for H3 bushing.

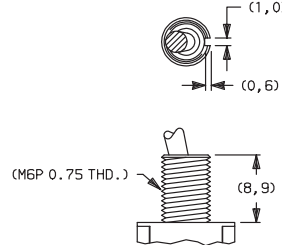
**H4** 8mm HIGH, KEYWAY, THREADED, METRIC HIGH TORQUE<sup>1,2,3</sup>



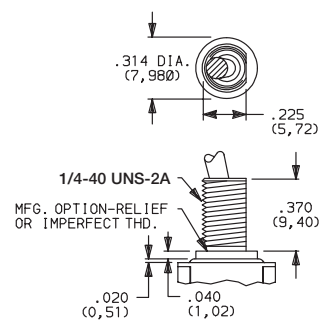
**Y1** .378" HIGH, KEYWAY, THREADED, HIGH TORQUE<sup>1,2,4</sup>



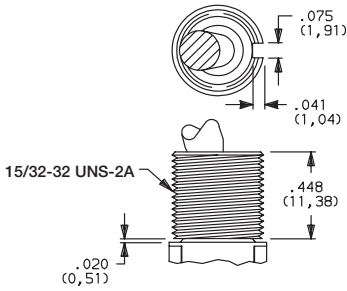
**Y3** 8.9mm HIGH, KEYWAY, THREADED, METRIC



**Y4** .378" HIGH, FLAT, THREADED, HIGH TORQUE<sup>1,2,5</sup>

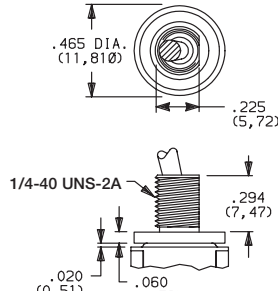


**CW** THREADED, SPLASHPROOF<sup>1,2</sup>  
For T & T1 actuators.



IP67 Degree of protection, totally protected against dust, full-scale voltage protection, temporary immersion. Internal actuator seal standard. External bushing seal available separately from APM Hexseal, part # MFS-60064.

For actuators other than T, T1 and KXX.



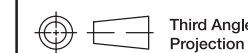
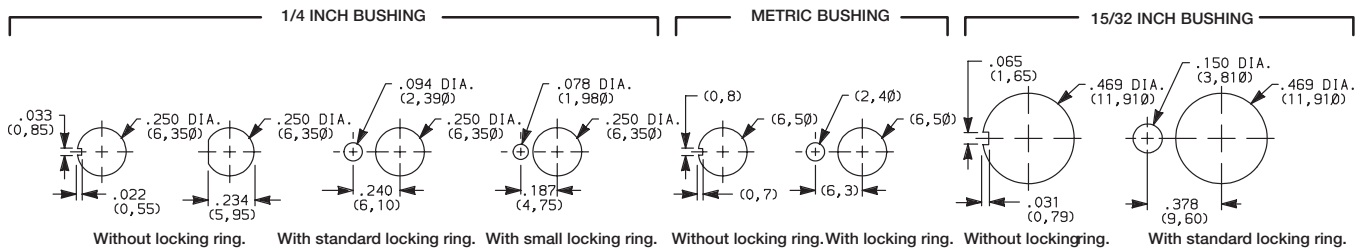
IP67 Degree of protection, totally protected against dust, full-scale voltage protection, temporary immersion. Internal actuator seal and external bushing seal washer standard. IP65 degree of protection for LXP, MP, PX or SP with CW option.

OPTION CODE	BUSHING FINISH
<b>NONE</b>	NICKEL on all bushings except 'D8' satin chrome.
<b>2</b>	BLACK

- Will withstand 12 in.-lbs. of torque with no distortion.
- CW, H, H3, H4, Y1 & Y4 bushings not available on single pole models with A4 terminations.
- D8 & H4 bushings available only with L, L1, L2, M & S actuators.
- Y1 bushing available only with LXP, MP, PX & SP actuators.
- Y4 bushing not available with L4X actuators.

**NOTE:** Two mounting nuts, locking ring and lockwasher supplied standard with threaded bushings. Black hardware is supplied when either black bushings or actuators are specified. Optional mounting nut and locking ring styles and finishes available, see Section N.

## PANEL MOUNTING



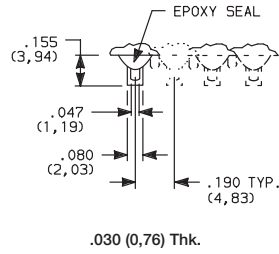
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

www.ck-components.com

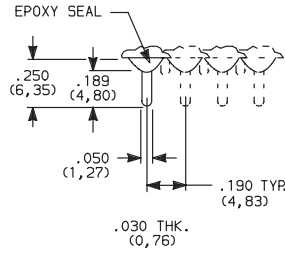
# 7000 Series Miniature Toggle Switches

## TERMINATIONS

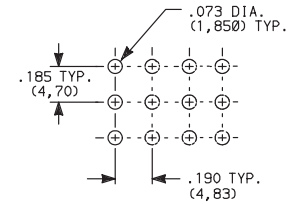
### Z SOLDER LUG



### C PC THRU-HOLE



### PC MOUNTING

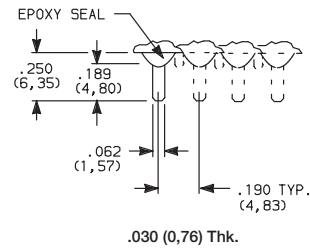


### SPDT thru 4PDT

Not available with P, R or S contact materials.

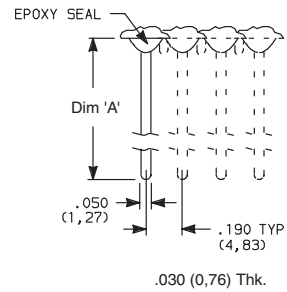
### SPDT thru 4PDT

### Z3 QUICK CONNECT



### W, W1, W3, W4, W5 WIRE WRAP

WIRE WRAP



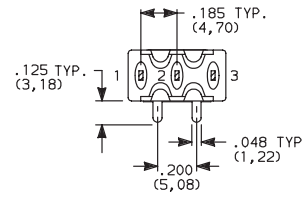
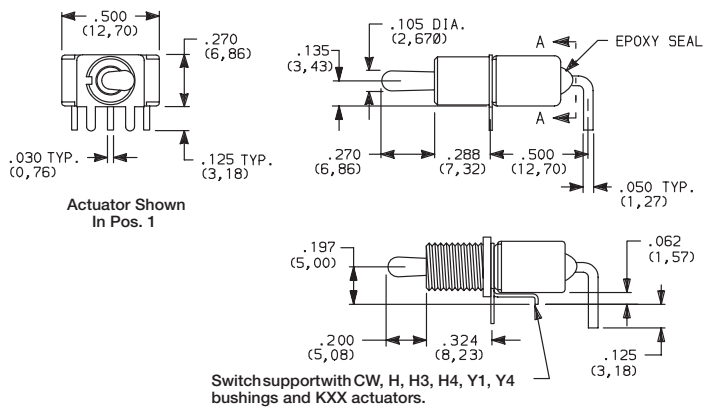
OPTION CODE	DIM 'A'
<b>W</b>	.750 (19,05)
<b>W1</b>	.964 (24,48)
<b>W3</b>	.425 (10,80)
<b>W4</b>	1.062 (26,97)
<b>W5</b>	1.305 (33,15)

### SPDT thru 4PDT

Not available with P, R or S contact materials.  
Mating quick connector available, order part number 530100000, page F-16.

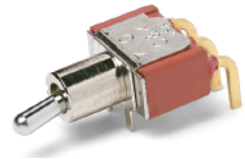
### SPDT thru 4PDT

### A RIGHT ANGLE, PC THRU-HOLE



### SECTION A-A

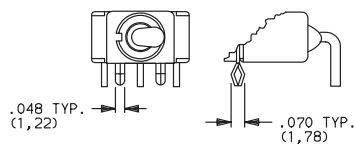
Terminal Nos.  
For Reference Only



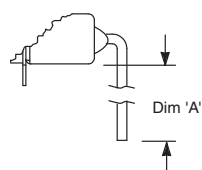
7101MD9ABE  
Horizontal Actuation  
SPDT

Part No. Shown: 7101MHABE

### A3 RIGHT ANGLE, SNAP-IN, PC THRU-HOLE

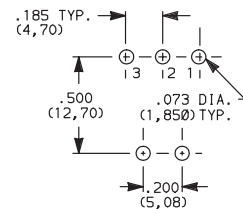


### AW1, AW4 RIGHT ANGLE, EXTENDED, PC THRU-HOLE

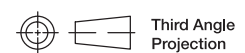


OPTION CODE	DIM 'A'
<b>AW1</b>	.72 (18,3)
<b>AW4</b>	.83 (21,1)

### PC MOUNTING



Not available with I seal option.  
Terminal bend radii and lead-in manufacturing option.



Third Angle  
Projection

Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

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**C&K**

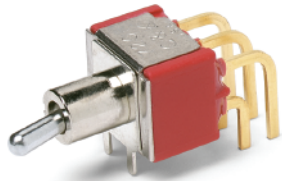


Toggle

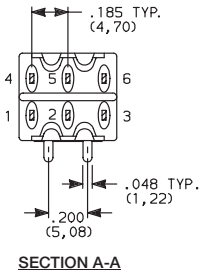
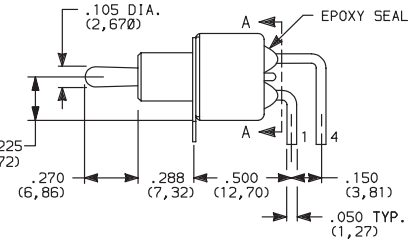
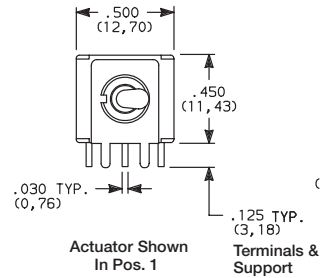
# 7000 Series Miniature Toggle Switches

## TERMINATIONS

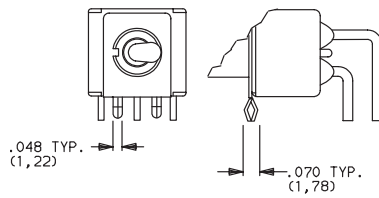
**A** RIGHT ANGLE, PC THRU-HOLE



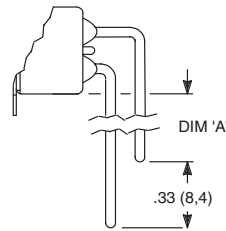
**7201MD9ABE**  
Horizontal Actuation  
**DPDT**



**A3** RIGHT ANGLE, SNAP-IN, PC THRU-HOLE

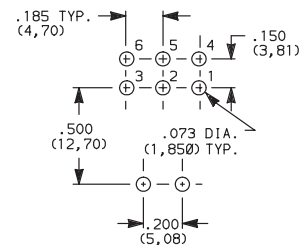


**AW1, AW4** RIGHT ANGLE, EXTENDED, PC THRU-HOLE



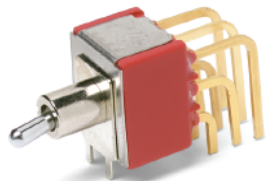
OPTION CODE	DIM 'A'
<b>AW1</b>	.40 (10,2)
<b>AW4</b>	.50 (12,7)

**PC MOUNTING**

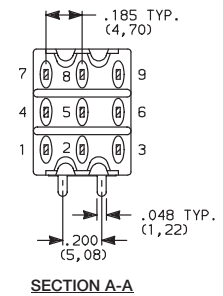
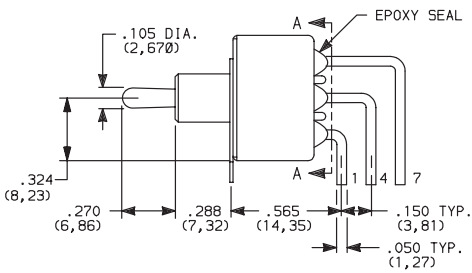
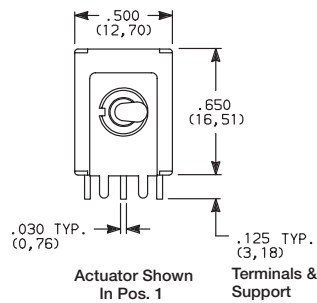


Not available with I seal option.  
Terminal bend radii and lead-in manufacturing option.

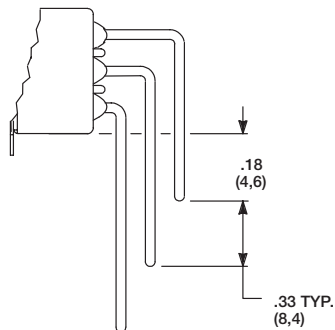
**A** RIGHT ANGLE, PC THRU-HOLE



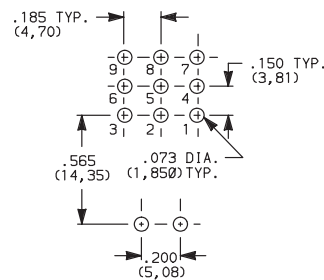
**7301MD9ABE**  
Horizontal Actuation  
**3PDT**



**AW4** RIGHT ANGLE, EXTENDED, PC THRU-HOLE



**PC MOUNTING**



Not available with I seal option.  
Terminal bend radii and lead-in manufacturing option.



**Toggle**

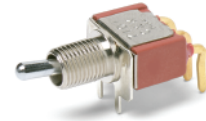
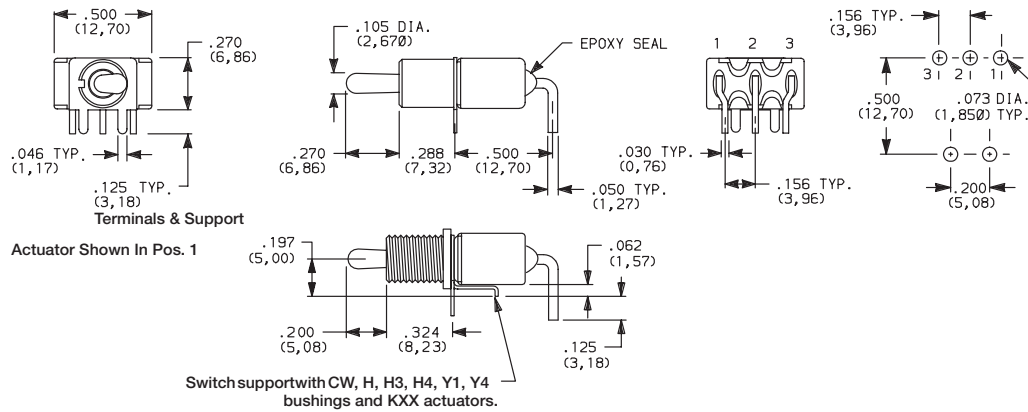


Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

# 7000 Series Miniature Toggle Switches

## TERMINATIONS

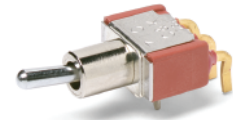
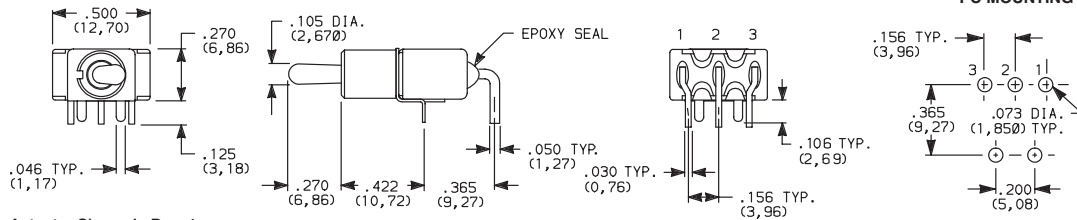
**A2** RIGHT ANGLE, PC THRU-HOLE,  
.156" PITCH



**7101MHA2BE**  
Horizontal Actuation  
**SPDT**

Not available with TXX actuators and I seal.  
Terminal bend radii and lead-in manufacturing option. Part No. Shown: 7101MHA2BE

**A4** RIGHT ANGLE, PC THRU-HOLE  
.156" PITCH

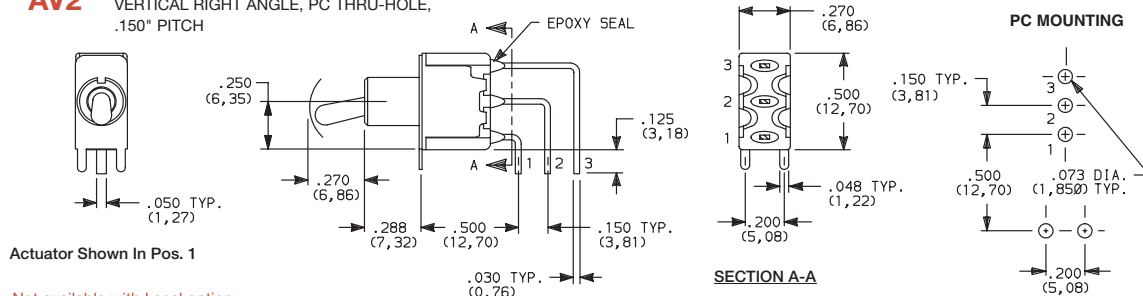


**7101MD9A4BE**  
Horizontal Actuation  
**SPDT**

Not available with KXX & TXX actuators, CW, H, H3, H4, Y1 & Y4 bushings, and I seal. Terminal bend radii and lead-in manufacturing option.

**NOTE:** The A4 option is available with any contact material and can be UL recognized and CSA certified. The PC pattern must clear switch support legs.

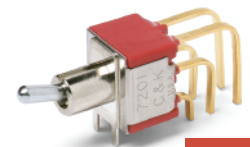
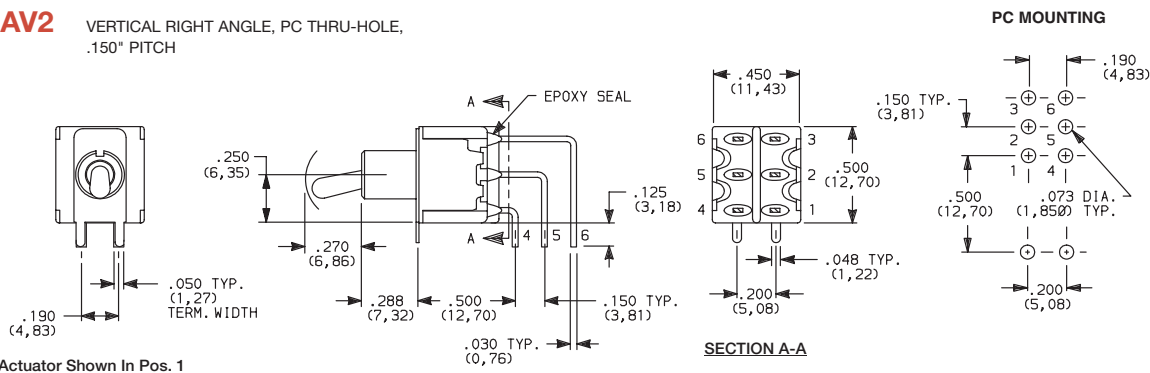
**AV2** VERTICAL RIGHT ANGLE, PC THRU-HOLE,  
.150" PITCH



**7101MD9AV2BE**  
Horizontal Actuation  
**SPDT**

Not available with I seal option.  
Terminal bend radii and lead-in manufacturing option.

**AV2** VERTICAL RIGHT ANGLE, PC THRU-HOLE,  
.150" PITCH



**7201MD9AV2BE**  
Vertical Actuation  
**DPDT**

Not available with I seal option.  
Terminal bend radii and lead-in manufacturing option.



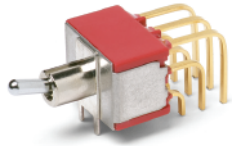
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

www.ck-components.com

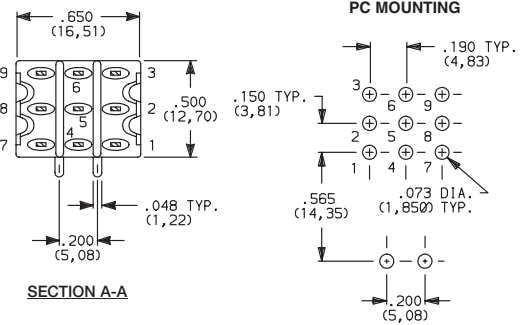
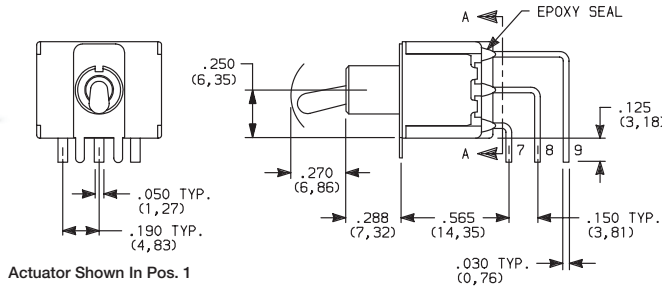
# 7000 Series Miniature Toggle Switches

## TERMINATIONS

**AV2** VERTICAL RIGHT ANGLE, PC THRU-HOLE,  
.150" PITCH

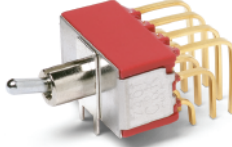


7301MD9AV2BE  
Vertical Actuation  
3PDT

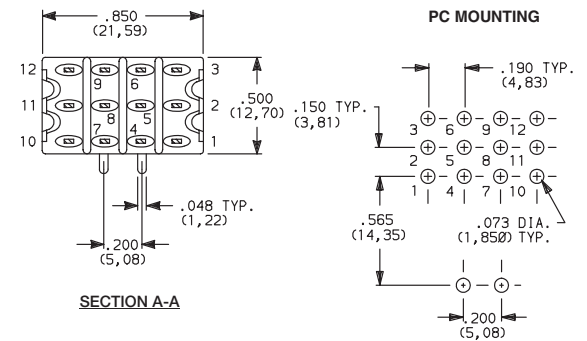
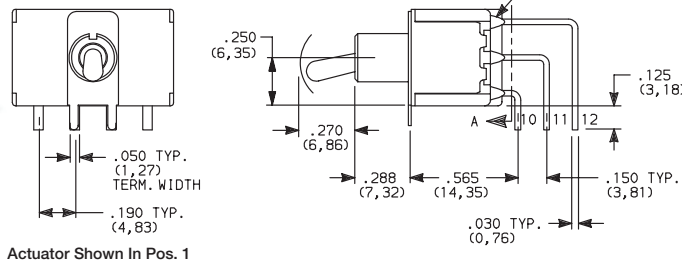


Not available with I seal option.  
Terminal bend radii and lead-in manufacturing option.

**AV2** VERTICAL RIGHT ANGLE, PC THRU-HOLE,  
.150" PITCH



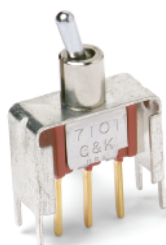
7401MD9AV2BE  
Vertical Actuation  
4PDT



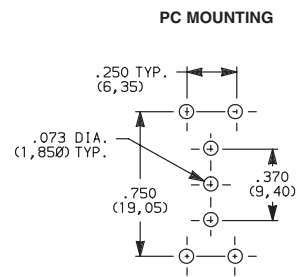
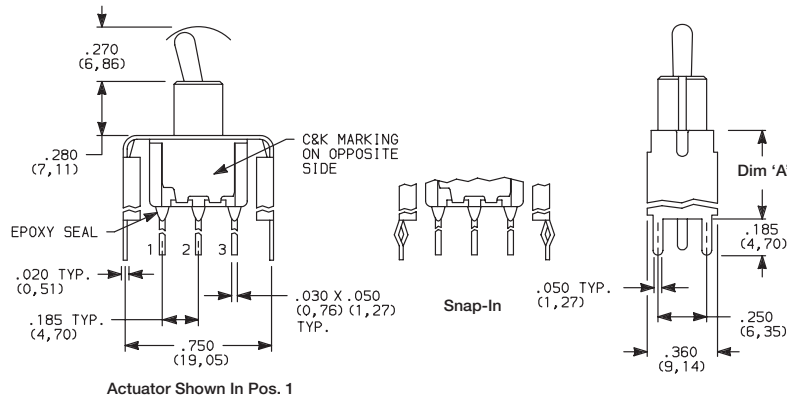
Not available with I seal option.  
Terminal bend radii and lead-in manufacturing option.

**V2, V6, V7, V8** VERTICAL MOUNT, V-BRACKET

**V21, V71, V81** VERTICAL MOUNT, V-BRACKET, SNAP-IN



7101MD9\_BE  
SPDT



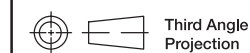
OPTION CODE	DIM 'A'
V2, V21	.555 (14,10)
V6	.460 (11,68)
V7, V71	.630 (16,00)
V8, V81	.953 (24,21)

Not available with I seal option.



F

Toggle



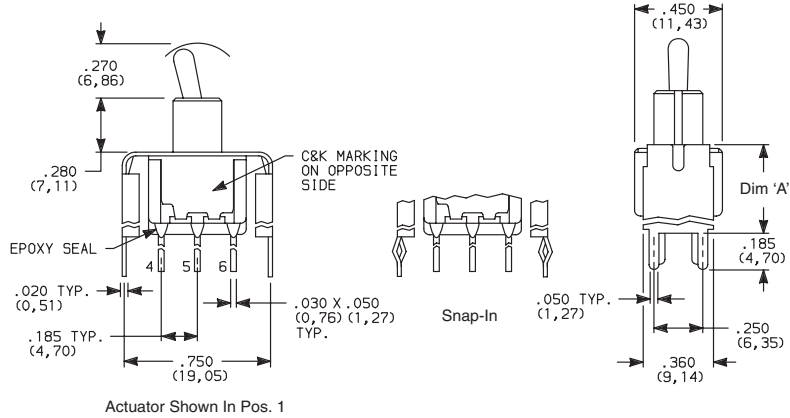
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

# 7000 Series Miniature Toggle Switches

## TERMINATIONS

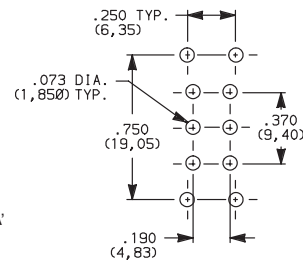
**V2, V6, V7, V8** VERTICAL MOUNT, V-BRACKET

**V21, V61, V71, V81** VERTICAL MOUNT, V-BRACKET, SNAP-IN

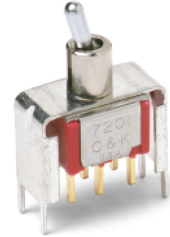


Not available with I seal option.

PC MOUNTING



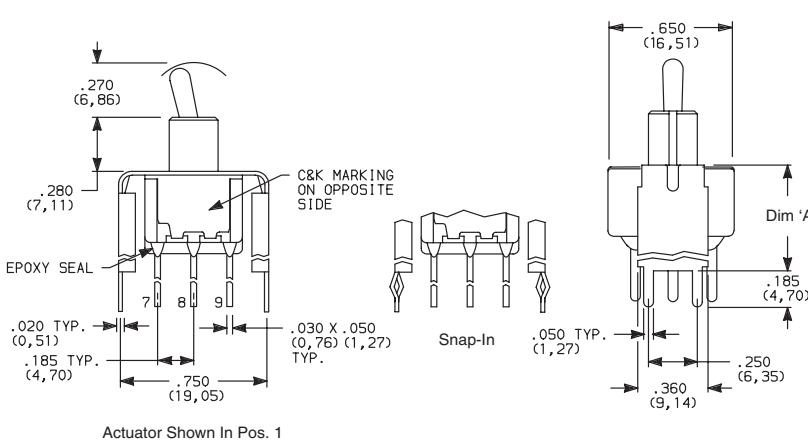
OPTION CODE	DIM 'A'
<b>V2, V21</b>	.555 (14,10)
<b>V6, V61</b>	.460 (11,68)
<b>V7, V71</b>	.630 (16,00)
<b>V8, V81</b>	.953 (24,21)



7201MD9\_BE  
DPDT

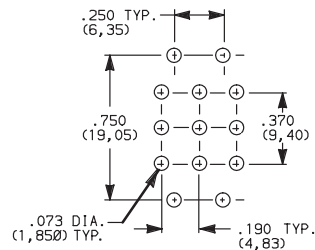
**V2, V7, V8** VERTICAL MOUNT, V-BRACKET

**V21, V71, V81** VERTICAL MOUNT, V-BRACKET, SNAP-IN

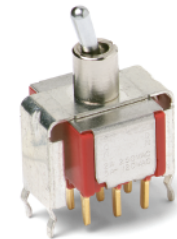


Not available with I seal option.

PC MOUNTING



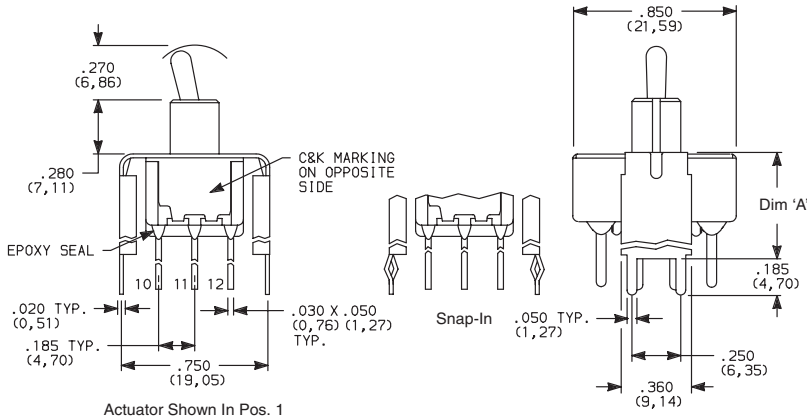
OPTION CODE	DIM 'A'
<b>V2, V21</b>	.555 (14,10)
<b>V7, V71</b>	.630 (16,00)
<b>V8, V81</b>	.953 (24,21)



7301MD9\_BE  
3PDT

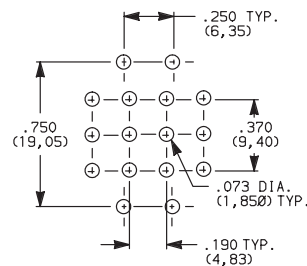
**V2, V7, V8** VERTICAL MOUNT, V-BRACKET

**V21, V71, V81** VERTICAL MOUNT, V-BRACKET, SNAP-IN

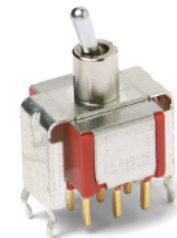


Not available with I seal option.

PC MOUNTING



OPTION CODE	DIM 'A'
<b>V2, V21</b>	.555 (14,10)
<b>V7, V71</b>	.630 (16,00)
<b>V8, V81</b>	.953 (24,21)



7401MD9\_BE  
4PDT



Third Angle  
Projection  
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



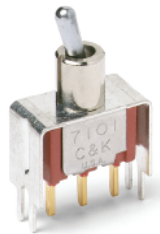


# 7000 Series Miniature Toggle Switches

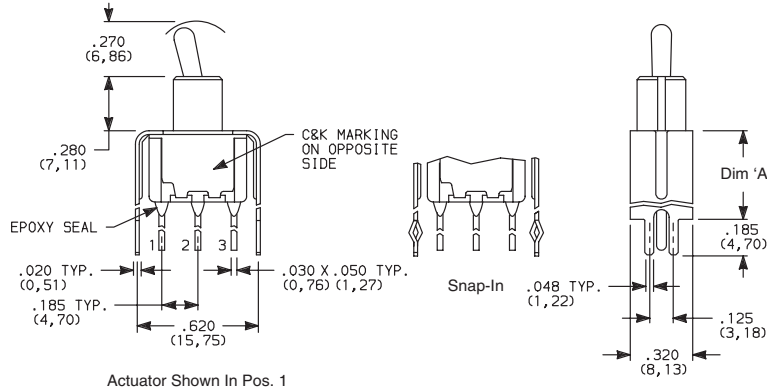
## TERMINATIONS

**V3, V4, V9** VERTICAL MOUNT, V-BRACKET

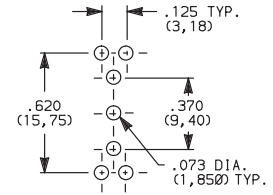
**V31, V41** VERTICAL MOUNT, V-BRACKET, SNAP-IN



7101MD9\_BE  
SPDT



PC MOUNTING

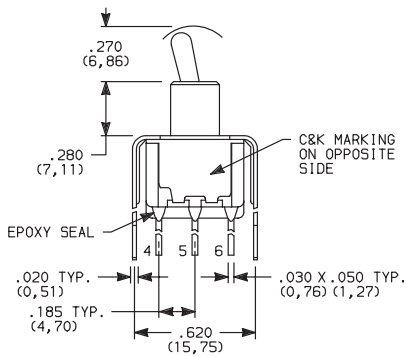


OPTION CODE	DIM 'A'
<b>V3, V31</b>	.460 (11,68)
<b>V4, V41</b>	.630 (16,00)
<b>V9</b>	1.150 (29,21)

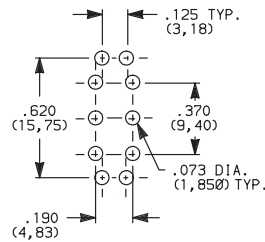
Not available with I seal option.

**V3, V4, V9** VERTICAL MOUNT, V-BRACKET

**V31, V41** VERTICAL MOUNT, V-BRACKET, SNAP-IN



PC MOUNTING



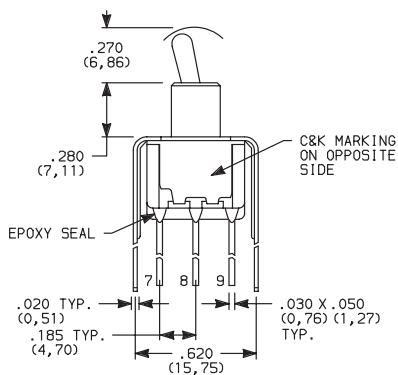
7201MD9\_BE  
DPDT

OPTION CODE	DIM 'A'
<b>V3, V31</b>	.460 (11,68)
<b>V4, V41</b>	.630 (16,00)
<b>V9</b>	1.150 (29,21)

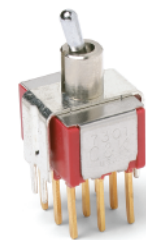
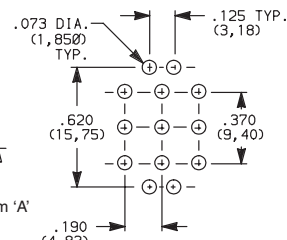
Not available with I seal option.

**V4, V9** VERTICAL MOUNT, V-BRACKET

**V41** VERTICAL MOUNT, V-BRACKET, SNAP-IN



PC MOUNTING



7301MD9\_BE  
3PDT

OPTION CODE	DIM 'A'
<b>V4, V41</b>	.630 (16,00)
<b>V9</b>	1.150 (29,21)

Not available with I seal option.

Toggle



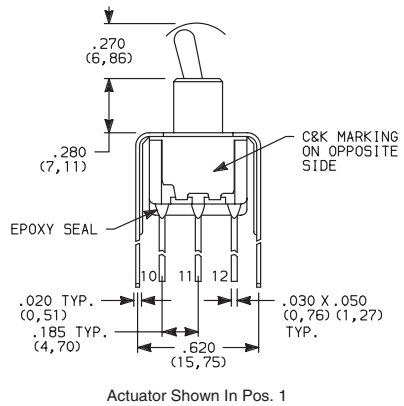
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

# 7000 Series Miniature Toggle Switches

## TERMINATIONS

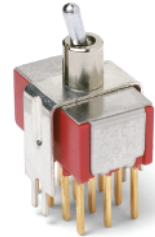
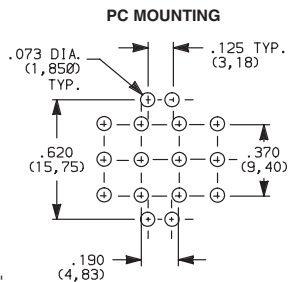
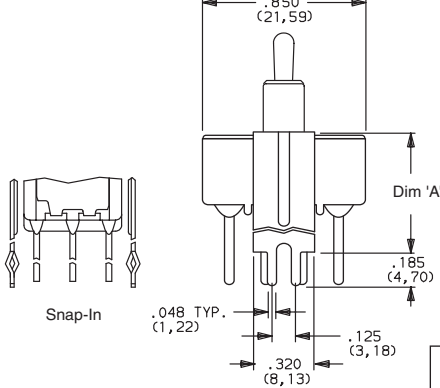
**V4, V9** VERTICAL MOUNT, V-BRACKET

**V41** VERTICAL MOUNT, V-BRACKET, SNAP-IN



Actuator Shown In Pos. 1

Not available with I seal option.



7401MD9\_BE  
4PDT

OPTION CODE	DIM 'A'
<b>V4, V41</b>	.630 (16,00)
<b>V9</b>	1.150 (29,21)

## CONTACT MATERIAL

OPTION CODE	CONTACT MATERIAL	TERMINAL PLATING	RATINGS	
<b>B</b>	GOLD <sup>1</sup>	GOLD <sup>1</sup>	LOW LEVEL/ DRY CIRCUIT	0.4 VA MAX. @ 20 V AC OR DC MAX.
<b>P</b>		MATTE-TIN <sup>6</sup>		
<b>Q</b>	SILVER <sup>4,5</sup>	SILVER <sup>5</sup>	POWER	5 AMPS @ 120 V AC OR 28 V DC; 2 AMPS @ 250 V AC.
<b>S</b>		MATTE-TIN <sup>6</sup>		
<b>G</b>	GOLD OVER SILVER <sup>2,3</sup>	GOLD <sup>3</sup>	LOW LEVEL/DRY CIRCUIT OR POWER	0.4 VA MAX @ 20 V AC OR DC MAX. OR 5 AMPS @ 120 V AC OR 28 V DC; 2 AMPS @ 250 V AC.
<b>R</b>		MATTE-TIN <sup>6</sup>		

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

<sup>1</sup> CONTACTS & TERMINALS: Copper alloy, with gold plate over nickel plate.

<sup>2</sup> END CONTACTS: Coin silver, with gold plate over nickel plate.

<sup>3</sup> CENTER CONTACTS & ALL TERMINALS: Copper alloy, with gold plate over nickel plate.

<sup>4</sup> END CONTACTS: Coin silver, silver plated.

<sup>5</sup> CENTER CONTACT & ALL TERMINALS: Copper alloy, silver plated.

<sup>6</sup> TERMINALS: Copper alloy, with matte tin alloy nickel plate.

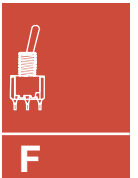
**NOTE:** Any models supplied with P, S, R, Q, B or G contact material are RoHS compliant.

U11-U415 model numbers  with all options when ordered with G, S, R, or Q contact material.

B contact material standard with all terminations except C, Z & Z3.

Q contact material standard with C, Z & Z3 terminations.

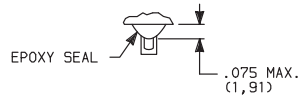
P, S & R contact materials not available with Z & Z3 terminations.



# 7000 Series Miniature Toggle Switches

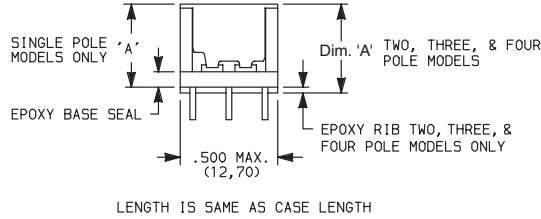
## SEAL

### E EPOXY SEAL



Compatible with "bottom-wash" PC board cleaning methods.

### I EPOXY POTTED BASE

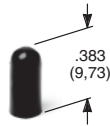


NO. POLES	DIM 'A'
SP	.410 (10,41)
DP	.440 (11,18)
3P	.505 (12,83)
4P	.505 (12,83)

Available with C, W-W5, Z & Z3 terminations only.

## AVAILABLE HARDWARE

### Cap

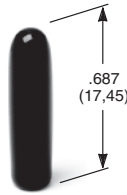


#### PART NO.

**896801000** WHITE  
**896802000** BLACK  
**896803000** RED

Material: Polyethylene  
Finish: Matte

### Cap

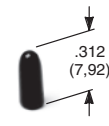


#### PART NO.

**763701000** WHITE  
**763702000** BLACK  
**763703000** RED

Material: Vinyl  
Finish: Matte

### Cap

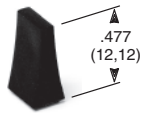


#### PART NO.

**706201000** WHITE  
**706202000** BLACK  
**706203000** RED

Material: Vinyl  
Finish: Matte

### L41 Lever handle

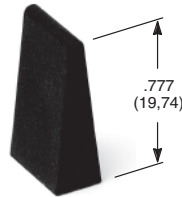


#### PART NO.

**481001000** WHITE  
**481002263** BLACK  
**481003000** RED

Material: Nylon  
Finish: Matte

### L42 Lever handle



#### PART NO.

**481101000** WHITE  
**481102263** BLACK  
**481103000** RED

Material: Nylon  
Finish: Matte

### Fits Z3 Termination female connector



#### PART NO.

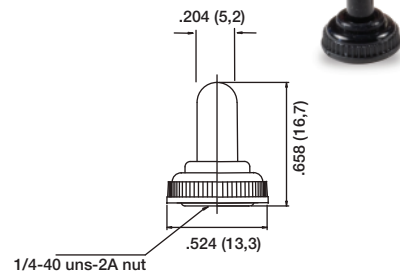
**530100000**

Available in loose pieces.

**NOTE:** Additional nuts, locking rings and lockwashers available separately, see Section N.

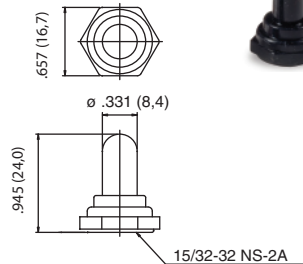
Other colors available, consult Customer Service Center.

### 759D02000 Sealing Boot



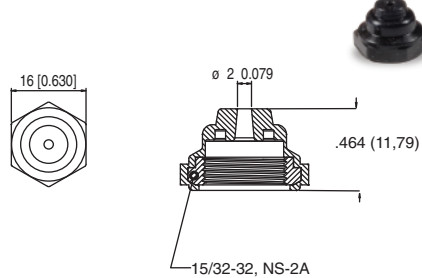
**NOTE:** For use with S actuator style when combined with D, H, H3, Y, and Y4 bushings

### 703D02000 Sealing Boot



**NOTE:** For use with T and TP style actuators. **Cannot be used for Switch Functions: 7103, 7203, 7303, 7403, 7107, 7207, 7307, 7407.**

### 704D02000 Sealing Boot



**NOTE:** For use with T, TP and T2P style actuators. **Cannot be used for Switch Functions: 7103, 7203, 7303, 7403, 7107, 7207, 7307, and 7407.**



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



Toggle



# Military/Aerospace/Hi-REL MIL-S-83731 Toggle Switches

## Features/Benefits

- Qualified to MIL-S-83731
- 50  $\mu$  inch selective gold contact plating
- Epoxy sealed terminals for process compatibility
- Rated for logic level to 5 amp resistive loads and 2 amp inductive loads
- Flame retardant housing material
- RoHS compliant and compatible

Test Requirement	MIL-S-83731/9, 10, 13, 14, 15, 16
1. Strength of Terminal	1 lb. – solder lug
2. Strength of Actuating Lever Pivot and Stop	10 lbs. & 8 lbs. throughout range
3. Strength of Mounting Means	15 lbs. in. torque on bushing
4. Dielectric (Sea Level) Indication	1000 VAC Group B, 750 VAC after electrical endurance. 500 $\mu$ A max. leakage
5. Contact Voltage Drop	2.5 millivolt initial, 5.0 millivolt after mechanical endurance @ 2-6 VDC 0.1 amp
6. Temperature Rise	50° C rise max. @ rated resistive load after endurance test
7. Short Circuit	10 operations carry 100 amps resistive load @ lowest DC volts
8. Mechanical Life	20K operations at specified high and low temperatures
9. Electrical Endurance	10K operations at specified high and low temperatures
10. Overload	50 operations @ 150% of rated resistive load
11. Electrical Endurance at Sea Level	10K operations resistive load @ room temperature 10K operations inductive load @ room temperature 10K operations lamp load @ room temperature Performed on different test samples
12. Vibration	Method 204 of MIL-STD-202, test condition A .06 D. A. or 10 G's 10-500 Hz, 10 usec. max. chatter
13. Shock	Fuse-method 213 or MIL-STD-202, 10 usec. max. chatter
14. Salt Spray Test Upon Completion	48 hours – method 101 of MIL-STD-202, test condition B 10 operations resistive load (toggle sealed switches only)
15. Moisture Resistance Test Upon Completion	Method 106 of MIL-STD-202 100 VDC potential between current carrying parts and panel
16. Sand & Dust	Method 110 of MIL-STD-202, test condition B 6 hours @ 23°C 2.5K operations mechanical life (toggle sealed switches only)
17. Explosion	MIL-STD-202 method 109, maximum rated DC inductive load (toggle sealed switches only)
18. Sealing	Toggle seal – 5 operations under 0.5 inches of H <sub>2</sub> O above top of bushing
19. A.) Toggle Seal B.) Bushing Seal	(Toggle sealed switches only) (Panel sealed switches only)
20. Temperature Operation	Mechanical life, –25°C to +71°C
21. Life Low Cur. Level	No requirement
22. Fungus	No requirement
23. Intermediate Current	20K operations, 35/40 milliamps @ 5 VDC resistive load @ +71°C
24. Thermal Shock	Method 107 of MIL-STD-202 test condition A; 5 cycles @ –55°C/+85°C

## RATINGS

### CURRENT RATINGS – HIGH LEVEL

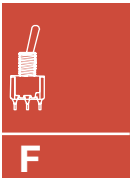
Current Capacity in Amperes – Per Pole		
28V dc	115V ac, 400 Hz	125V ac, 60 Hz
Lamp Load		
1	1	1
Resistive Load		
5	5	5
Inductive Load		
2	2	2

### CURRENT RATINGS – LOGIC LEVEL

0.5 Volt – Amp (VA) Max. @ 28 V Max. (AC or DC)
---

## MATERIALS

CASE: Diallyl phthalate (DAP) (UL 94 V-0).  
 BUSHING: Brass, nickel plated.  
 HOUSING: Stainless steel.  
 ACTUATOR: Brass, chrome plated.  
 SWITCH SUPPORT: Brass, tin plated.  
 TERMINALS: Gold over nickel over copper alloy.  
 TERMINAL SEAL: Epoxy.  
 CONTACTS: Gold over nickel over silver over brass.  
 PANEL SEAL: Silicone rubber.  
 MOUNTING HARDWARE: Two hexagon nut, brass with nickel plating; one lockwasher, steel with nickel plating; one locking ring, brass with nickel plating.



F

Toggle

**HOW TO ORDER:** Complete part numbers for MIL-S-83731 TOGGLE SWITCHES are shown on pages F–18 through F–21.



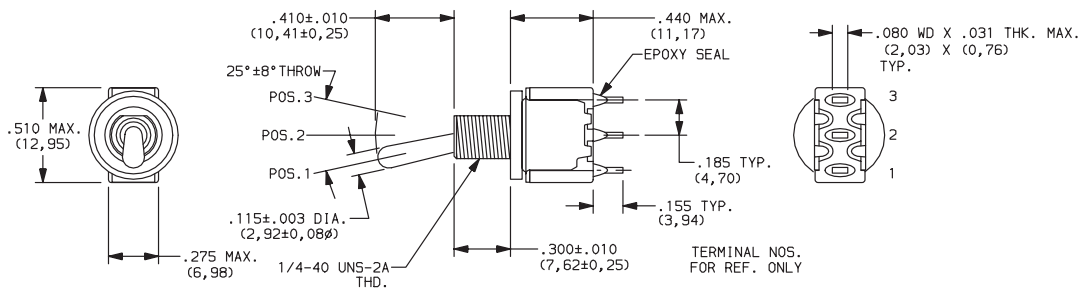
Dimensions are shown: Inches (mm)  
 Specifications and dimensions subject to change

# Military/Aerospace/Hi-REL MIL-S-83731 Toggle Switches



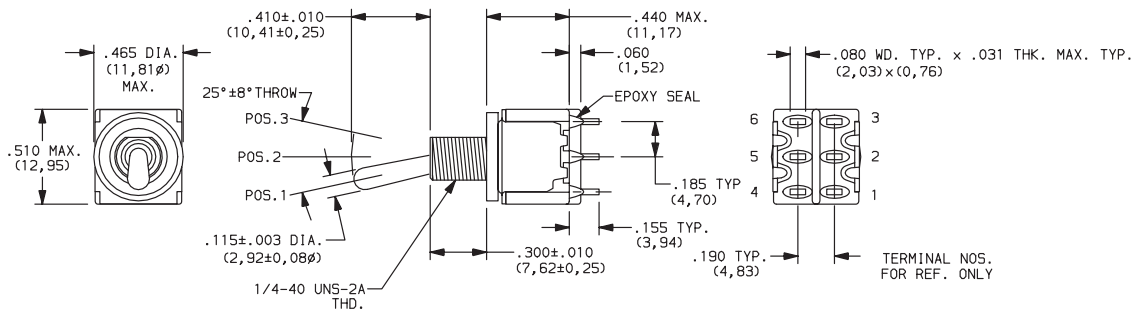
NO. POLES	MODEL NO.	SWITCH FUNCTION			CONNECTED TERMINALS			SCHEMATIC
		POS. 1	POS. 2	POS. 3	POS. 1	POS. 2	POS. 3	
SP	M83731/9-211	ON	OFF	ON	2-3	OPEN	2-1	 SPDT
	M83731/9-231	ON	NONE	ON				
	M83731/9-261	ON	NONE	MOM.				
	M83731/9-271	MOM.	OFF	MOM.				
	M83731/9-311	ON	OFF	MOM.				
M83731/9-341	NONE	ON	MOM.	N/A	2-3	2-1		

SPDT

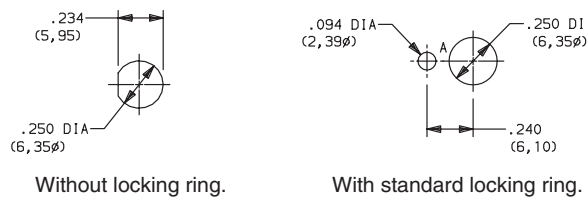


NO. POLES	MODEL NO.	SWITCH FUNCTION			CONNECTED TERMINALS			SCHEMATIC
		POS. 1	POS. 2	POS. 3	POS. 1	POS. 2	POS. 3	
DP	M83731/10-211	ON	OFF	ON	2-3,5-6	OPEN	2-1,5-4	 DPDT
	M83731/10-231	ON	NONE	ON				
	M83731/10-261	ON	NONE	MOM.				
	M83731/10-271	MOM.	OFF	MOM.				
	M83731/10-311	ON	OFF	MOM.				
	M83731/10-321	ON	ON	ON				
	M83731/10-331	ON	ON	MOM.				
	M83731/10-341	NONE	ON	MOM.				
M83731/10-351	MOM.	ON	MOM.	2-3,5-6	2-3,5-4	2-1,5-4		

DPDT



### PANEL MOUNTING



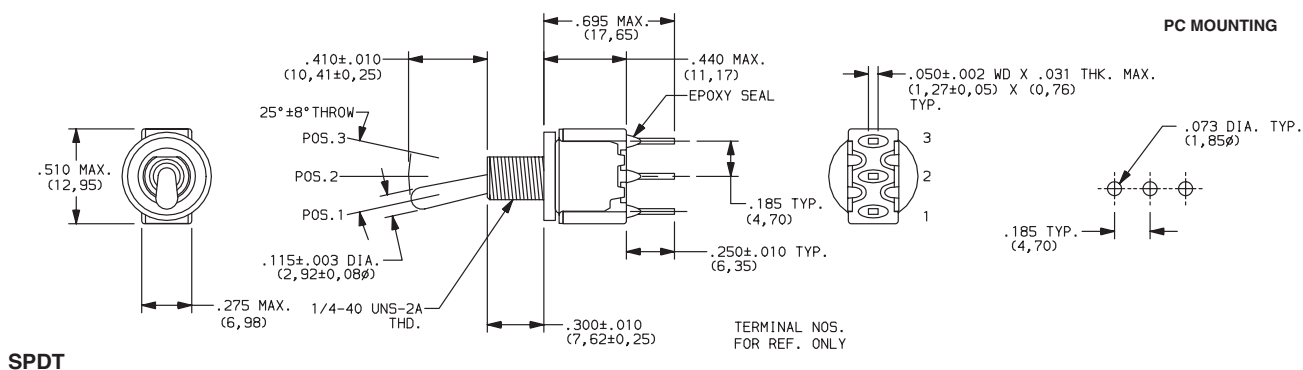
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

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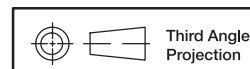
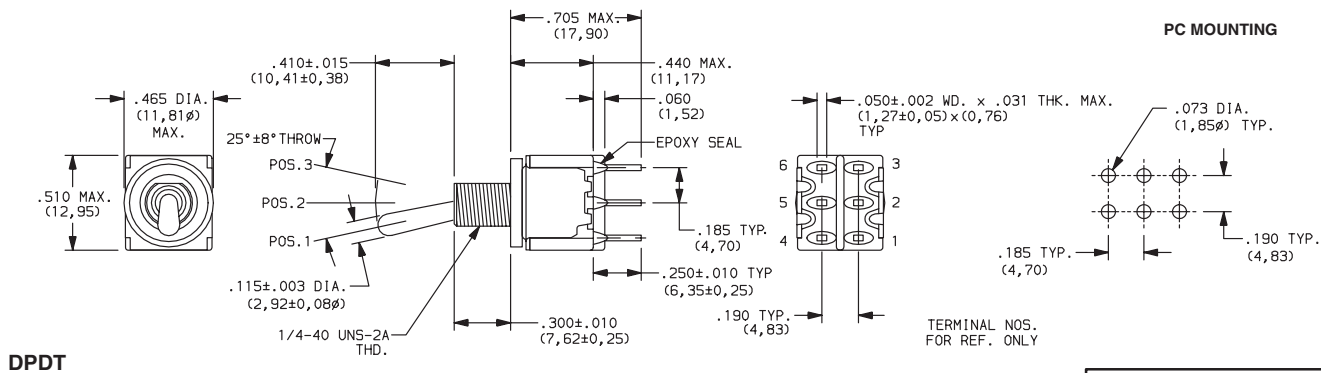
# Military/Aerospace/Hi-REL MIL-S-83731 Toggle Switches



NO. POLES	MODEL NO.	SWITCH FUNCTION			CONNECTED TERMINALS			SCHEMATIC
		POS. 1	POS. 2	POS. 3	POS. 1	POS. 2	POS. 3	
SP	M83731/9-212	ON	OFF	ON	2-3	OPEN	2-1	 SPDT
	M83731/9-232	ON	NONE	ON				
	M83731/9-262	ON	NONE	MOM.				
	M83731/9-272	MOM.	OFF	MOM.				
	M83731/9-312	ON	OFF	MOM.				
	M83731/9-342	NONE	ON	MOM.				



NO. POLES	MODEL NO.	SWITCH FUNCTION			CONNECTED TERMINALS			SCHEMATIC
		POS. 1	POS. 2	POS. 3	POS. 1	POS. 2	POS. 3	
DP	M83731/10-212	ON	OFF	ON	2-3,5-6	OPEN	2-1,5-4	 DPDT
	M83731/10-232	ON	NONE	ON				
	M83731/10-262	ON	NONE	MOM.				
	M83731/10-272	MOM.	OFF	MOM.				
	M83731/10-312	ON	OFF	MOM.				
	M83731/10-322	ON	ON	ON				
	M83731/10-332	ON	ON	MOM.				
	M83731/10-342	NONE	ON	MOM.				
M83731/10-352	MOM.	ON	MOM.	2-3,5-6	2-3,5-4	2-1,5-4		

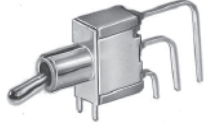


Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

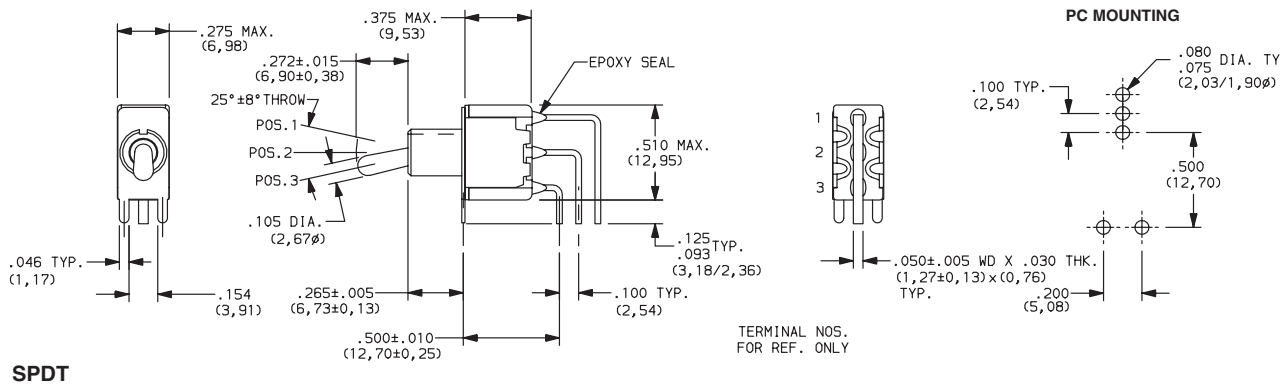


**F**  
Toggle

# Military/Aerospace/Hi-REL MIL-S-83731 Toggle Switches



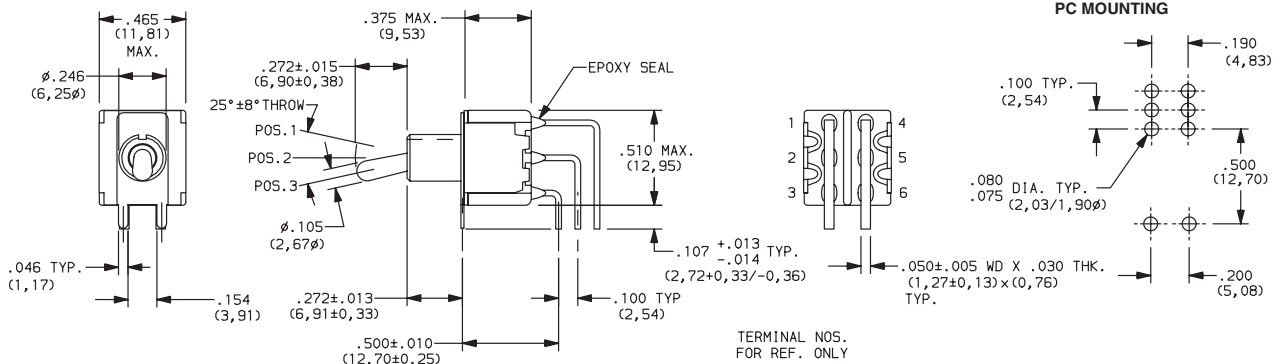
NO. POLES	MODEL NO.	SWITCH FUNCTION			CONNECTED TERMINALS			SCHEMATIC
		POS. 1	POS. 2	POS. 3	POS. 1	POS. 2	POS. 3	
SP	M83731/13-211	ON	OFF	ON	2-3	OPEN	2-1	 SPDT
	M83731/13-231	ON	NONE	ON				
	M83731/13-261	ON	NONE	MOM.				
	M83731/13-271	MOM.	OFF	MOM.				
	M83731/13-311	ON	OFF	MOM.				
	M83731/13-341	NONE	ON	MOM.	N/A	2-3	2-1	



SPDT



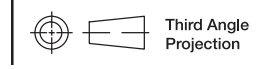
NO. POLES	MODEL NO.	SWITCH FUNCTION			CONNECTED TERMINALS			SCHEMATIC
		POS. 1	POS. 2	POS. 3	POS. 1	POS. 2	POS. 3	
DP	M83731/14-211	ON	OFF	ON	2-3,5-6	OPEN	2-1,5-4	 DPDT
	M83731/14-231	ON	NONE	ON				
	M83731/14-261	ON	NONE	MOM.				
	M83731/14-271	MOM.	OFF	MOM.				
	M83731/14-311	ON	OFF	MOM.				
	M83731/14-321	ON	ON	ON				
	M83731/14-331	ON	ON	MOM.				
	M83731/14-341	NONE	ON	MOM.				
	M83731/14-351	MOM.	ON	MOM.	2-3,5-6	2-3,5-4	2-1,5-4	



DPDT



Toggle  
F



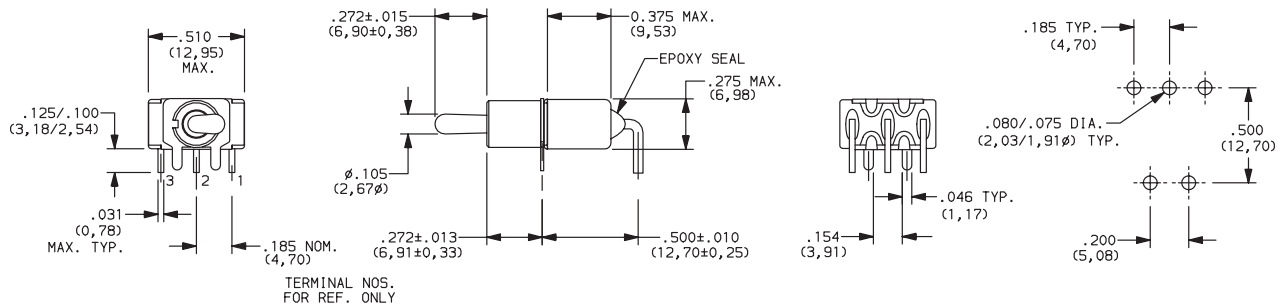
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

# Military/Aerospace/Hi-REL MIL-S-83731 Toggle Switches



NO. POLES	MODEL NO.	SWITCH FUNCTION			CONNECTED TERMINALS			SCHEMATIC
		POS. 1	POS. 2	POS. 3	POS. 1	POS. 2	POS. 3	
SP	M83731/15-211	ON	OFF	ON	2-3	OPEN	2-1	 1 ● 2 (COMM) ● 3 SPDT
	M83731/15-231	ON	NONE	ON				
	M83731/15-261	ON	NONE	MOM.				
	M83731/15-271	MOM.	OFF	MOM.				
	M83731/15-311	ON	OFF	MOM.				
	M83731/15-341	NONE	ON	MOM.				

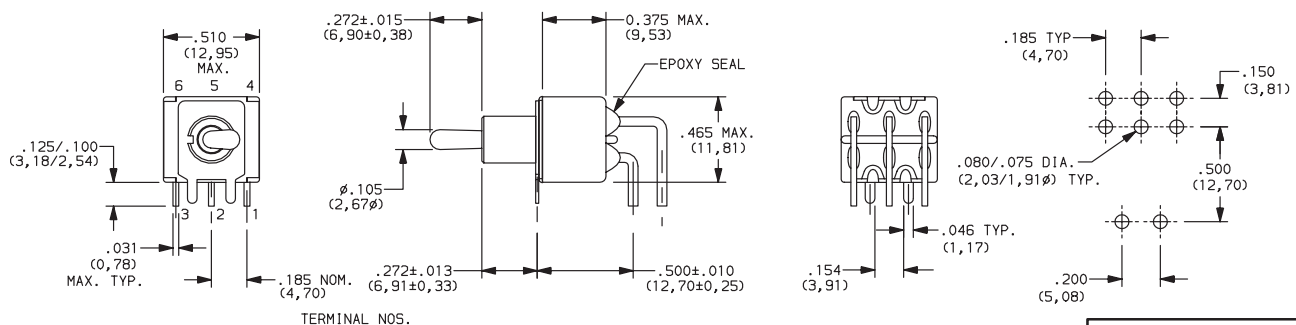
### PC MOUNTING



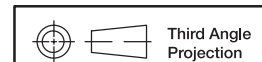
### SPDT

NO. POLES	MODEL NO.	SWITCH FUNCTION			CONNECTED TERMINALS			SCHEMATIC
		POS. 1	POS. 2	POS. 3	POS. 1	POS. 2	POS. 3	
DP	M83731/16-211	ON	OFF	ON	2-3,5-6	OPEN	2-1,5-4	 2 (COMM) ● 1 ● 6 DPDT
	M83731/16-231	ON	NONE	ON				
	M83731/16-261	ON	NONE	MOM.				
	M83731/16-271	MOM.	OFF	MOM.	2-3,5-6	2-3,5-4	2-1,5-4	
	M83731/16-311	ON	OFF	MOM.				
	M83731/16-321	ON	ON	ON				
	M83731/16-331	ON	ON	MOM.	N/A	2-3,5-6	2-1,5-4	
	M83731/16-341	NONE	ON	MOM.				
	M83731/16-351	MOM.	ON	MOM.	2-3,5-6	2-3,5-4	2-1,5-4	

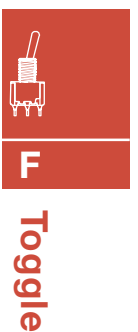
### PC MOUNTING



### DPDT

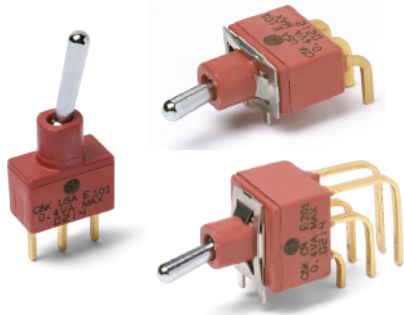


Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change





# E Series Sealed Miniature Toggle Switches



## Features/Benefits

- Sealed against solder and cleaning process contaminants
- UL 94V-0 Nylon case and bushing
- Multi-positions
- ESD protection available
- RoHS compliant models available

## Typical Applications

- Telecommunications
- Instrumentation
- Medical equipment



## Specifications

CONTACT RATING: B contact material: 0.4 VA max. @ 20 V AC or DC max. Q contact material: E1XX & E2XX MODELS: 7.5 AMPS @ 125 V AC or 28 V DC; 3 AMPS @ 250 V AC. E3XX MODELS: 5 AMPS @ 125 V AC or 28 V DC; 2 AMPS @ 250 V AC. See page F-29 for additional ratings.

ELECTRICAL LIFE: E1XX and E2XX models: 40,000 make-and-break cycles at full load. E3XX models: 30,000 cycles.

CONTACT RESISTANCE: Below 10 mΩ typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

INSULATION RESISTANCE: 10<sup>9</sup> Ω min.

ELECTROSTATIC DISCHARGE (ESD) OPTION: F1 conductive bushing only. Dissipates up to 20,000 V DC from actuator to ground.

DIELECTRIC STRENGTH: 1000 Vrms min. @ sea level.

OPERATING TEMPERATURE: -30°C to 85°C.

SOLDERABILITY: Per MIL-STD-202F method 208D, or EIA RS-186E method 9 (1 hour steam aging).

DEGREE OF PROTECTION: IP57; Protection against harmful dust deposit, full-scale voltage protection, temporary immersion.

## Materials

CASE & BUSHING: Glass filled nylon 6/6, flame retardant, heat stabilized (UL 94V-0). F1 conductive bushing option is impregnated with carbon fibers.

ACTUATOR: Brass, chrome plated with internal o-ring seal standard.

SWITCH SUPPORT: Brass or steel, matte-tin plated.

SWITCH SUPPORT RETAINER: Stainless steel.

CONTACTS & TERMINALS: B contact material: Copper alloy, with gold plate over nickel plate. Q contact material: Copper alloy, silver plated. See page F-29 for additional contact materials.

TERMINAL SEAL: Epoxy.

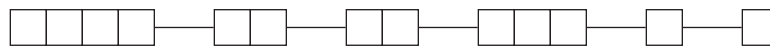
HARDWARE: Nut & Locking ring: Brass, nickel plated. Lockwasher: Steel, nickel plated.

**NOTE:** Any models supplied with P, S, R, Q, B or G contact material are RoHS compliant and compatible.

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages F-23 thru F-29. For additional options not shown in catalog, consult our Customer Service Center. All models are process sealed to withstand machine soldering temperatures and pressure wash cleaning methods.



### Switch Function

- E101** SP, On-None-On
- E103** SP, On-Off-On
- E105** SP, Mom.-Off-Mom.
- E107** SP, On-Off-Mom.
- E108** SP, On-None-Mom.
- E201** DP, On-None-On
- E203** DP, On-Off-On
- E205** DP, Mom.-Off-Mom.
- E207** DP, On-Off-Mom.
- E208** DP, On-None-Mom.
- E211** DP, On-On-On
- E213** DP, On-On-Mom.
- E215** DP, Mom.-On-Mom.
- \*\*E301** 3P, On-None-On

### Actuator

- M** .300" high
- S** .500" high
- L3** Plastic, .940" high

### Bushing

- D1** .250" high
- \*F1** Conductive, .250" high
- D9** .280" high
- \*\*Y** Threaded, .350" high

### Terminations

- A** Right angle, PC thru-hole
- AV2** Vertical right angle, PC thru-hole
- C** PC Thru-hole
- V3** .460" high, V-bracket
- Z** Solder lug
- A3** Right angle, PC thru-hole
- AV3** Vertical right angle, PC thru-hole
- V6** .460" high, V-bracket
- V9** 1.150" high, V-bracket
- V31** .460" high, snap-in V-bracket
- V61** .460" high, snap-in V-bracket
- W** .750" long, wire wrap
- Z3** Quick connect

### Contact Material

- B** Gold
- P** Gold, matte-tin
- Q** Silver
- S** Silver, matte-tin
- G** Gold over silver
- R** Gold over silver, matte-tin

### Seal

- E** Epoxy



Toggle  
F

\* F1 available with SP and DP versions only, please see page F-19

\*\* Y threaded bushing available for 1 & 2 pole only



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

# E Series Sealed Miniature Toggle Switches

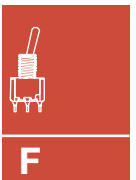
## SWITCH FUNCTION

NO. POLES	MODEL NO.	SWITCH FUNCTION			CONNECTED TERMINALS			SCHEMATIC
		POS. 1	POS. 2	POS. 3	POS. 1	POS. 2	POS. 3	
SP	<b>E101</b>	ON	NONE	ON	2-3	N/A	2-1	
	<b>E103</b>	ON	OFF	ON	2-3	OPEN	2-1	
	<b>E105</b>	MOM.	OFF	MOM.				
	<b>E107</b>	ON	OFF	MOM.				
	<b>E108</b>	ON	NONE	MOM.				
<p><b>SPDT</b></p> <p>Part number shown: E101SD1CBE</p> <p>Terminal Numbers For Reference Only</p>								
DP	<b>E201</b>	ON	NONE	ON	2-3,5-6	N/A	2-1,5-4	
	<b>E203</b>	ON	OFF	ON	2-3,5-6	OPEN	2-1,5-4	
	<b>E205</b>	MOM.	OFF	MOM.				
	<b>E207</b>	ON	OFF	MOM.				
	<b>E208</b>	ON	NONE	MOM.				
	<b>E211**</b>	ON	ON	ON				
	<b>E213**</b>	ON	ON	MOM.				
<b>E215**</b>	MOM.	ON	MOM.					
<p><b>DPDT</b></p> <p>Part number shown: E201SD1CBE</p> <p>Terminal Numbers For Reference Only</p>								

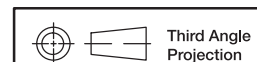
MOM. = Momentary

\*\* Wiring for 3-way switch, see Section N.

All models with all options when ordered with G,R, Q or S contact material except with F1 conductive bushing.



**Toggle**



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

# E Series Sealed Miniature Toggle Switches

## SWITCH FUNCTION

NO. POLES	MODEL NO.	SWITCH FUNCTION			CONNECTED TERMINALS			SCHEMATIC
		POS. 1	POS. 2	POS. 3	POS. 1	POS. 2	POS. 3	
3P	<b>E301</b>	ON	NONE	ON	2-3,5-6,8-9	N/A	2-1,5-4,8-7	
<p><b>3PDT</b></p> <p>Part number shown: E301SD1CBE</p>								

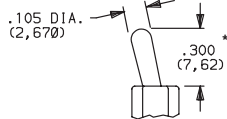
MOM. = Momentary

\*\* Wiring for 3-way switch, see Section N.

All models with all options when ordered with G, R, Q or S contact material except with F1 conductive bushing.

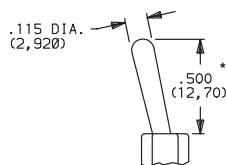
## ACTUATOR

**M** .300" HIGH



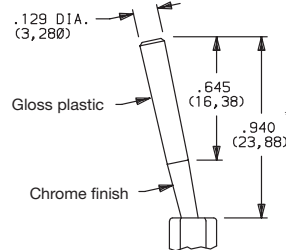
Standard when ordered with A, A3, AV2, AV3, V2-V61 terminations. Finish: Chrome.

**S** .500" HIGH



Standard when ordered with C, Z, Z3, W & W4 terminations. Finish: Chrome

**L3** PLASTIC, .940" HIGH



OPTION CODE	L3 ACTUATOR COLOR
<b>2</b>	BLACK

Other colors available, consult Customer Service Center. No color choice required for S & M actuators.

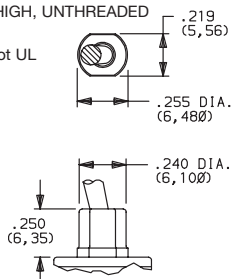
\* Actuators shown with standard D1 bushing. Subtract .030 (0,76) for D9 bushing. Subtract .100 (2,54) for Y bushing.

## BUSHING

**D1** .250" HIGH, UNTHREADED

**F1** ESD CONDUCTIVE BUSHING, .250" HIGH, UNTHREADED

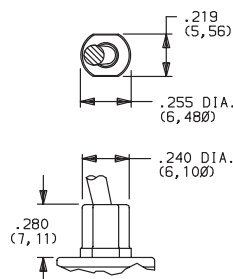
F1 bushing is not UL approved



**ESD protection** depends on proper grounding of switch support bracket. F1 conductive bushing option is impregnated with carbon fibers; dissipates electrostatic discharge (ESD) up to 20,000 V from actuator to ground.

Available with M & S actuator options and A, A3, AV2, AV3, V3-V61 termination options.

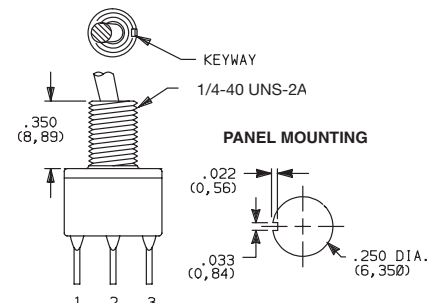
**D9** .280" HIGH, UNTHREADED



E3XX models not available with D9 bushing.

**NOTE:** Internal o-ring actuator seal standard for all bushing options.

**Y** THREADED, INSULATED, .350" HIGH WITH KEYWAY



Available only with C, Z, Z3, & W terminations. Available for 1&2 pole only.

Hardware: One dress nut part number 299D01201, one hex nut part number 540400201 and lockwasher part number 700303202 supplied standard.

**Will withstand 4 in.-lbs. of torque with no distortion.**



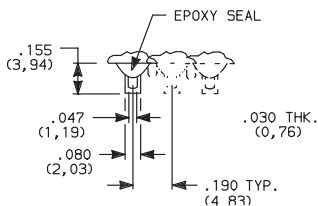
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

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# E Series Sealed Miniature Toggle Switches

## TERMINATIONS

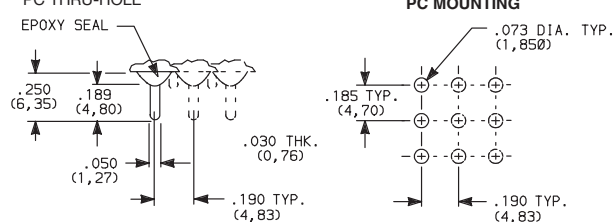
### Z SOLDER LUG



Not available with F1 conductive bushing or P, R or S contact material.

SPDT thru 3PDT

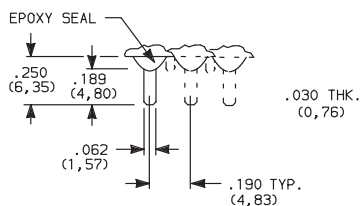
### C PC THRU-HOLE



Not available with F1 conductive bushing.

SPDT thru 3PDT

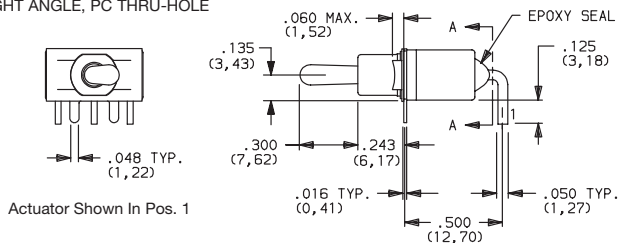
### Z3 QUICK CONNECT



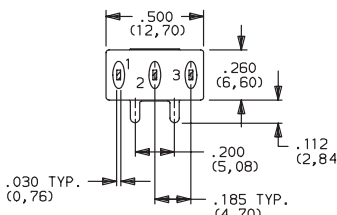
Not available with F1 conductive bushing or P, R or S contact material. Mating quick connector available; order part number 530100000, page F-16.

SPDT thru 3PDT

### A RIGHT ANGLE, PC THRU-HOLE

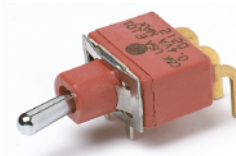
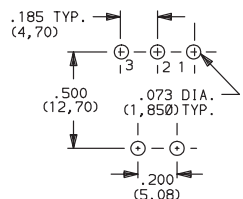


Actuator Shown In Pos. 1



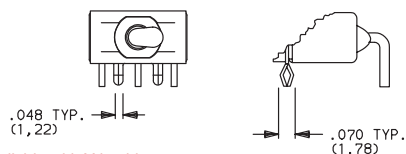
Terminal Nos. For Reference Only

PC MOUNTING



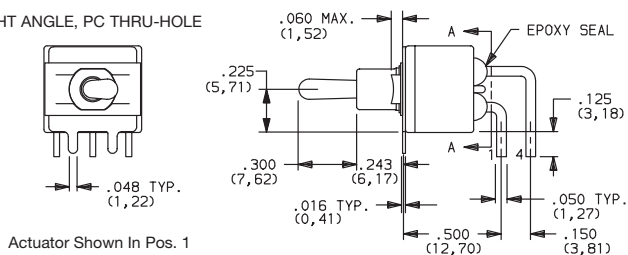
E101MD1ABE  
Horizontal Actuation  
SPDT

### A3 RIGHT ANGLE, SNAP-IN, PC THRU-HOLE

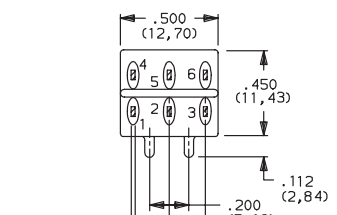


Not available with Y bushing.  
Terminal bend radii and lead-in manufacturing option.

### A RIGHT ANGLE, PC THRU-HOLE

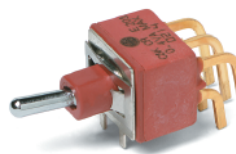
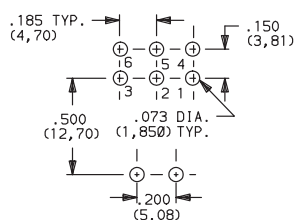


Actuator Shown In Pos. 1



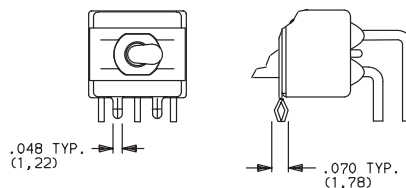
Terminal Nos. For Reference Only

PC MOUNTING



E201MD1ABE  
Horizontal Actuation  
DPDT

### A3 RIGHT ANGLE, SNAP-IN, PC THRU-HOLE

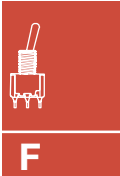


Not available with Y bushing.  
Terminal bend radii and lead-in manufacturing option.



Third Angle Projection

Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

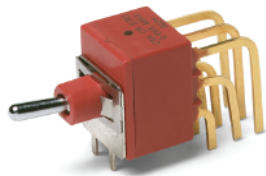


Toggle

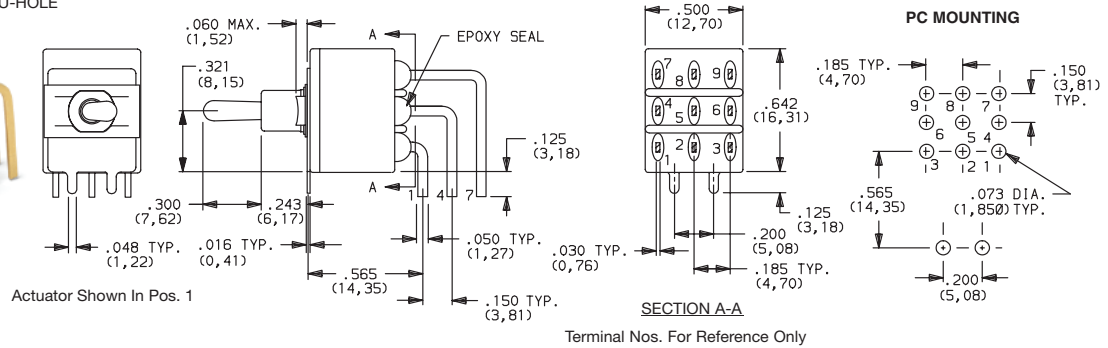
# E Series Sealed Miniature Toggle Switches

## TERMINATIONS

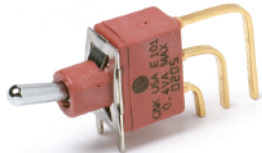
### A RIGHT ANGLE, PC THRU-HOLE



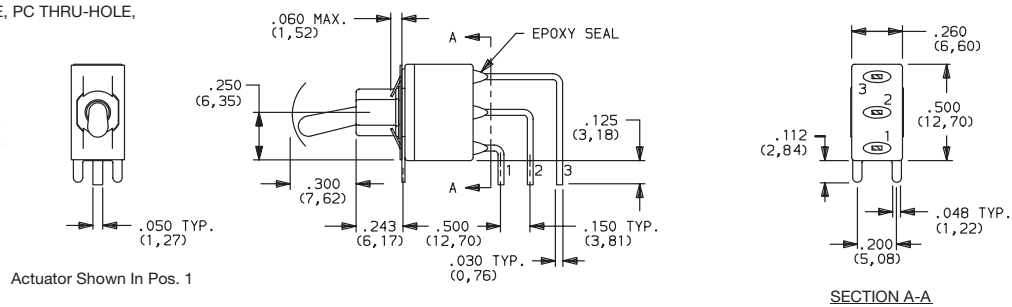
**E301MD1ABE**  
Horizontal Actuation  
**3PDT**



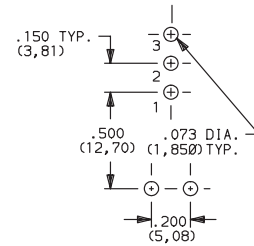
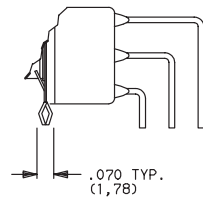
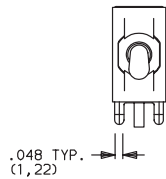
### AV2 VERTICAL RIGHT ANGLE, PC THRU-HOLE, .150" PITCH



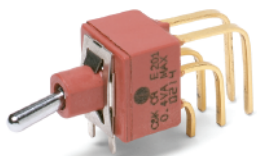
**E101MD1AV2BE**  
Vertical Actuation  
**SPDT**



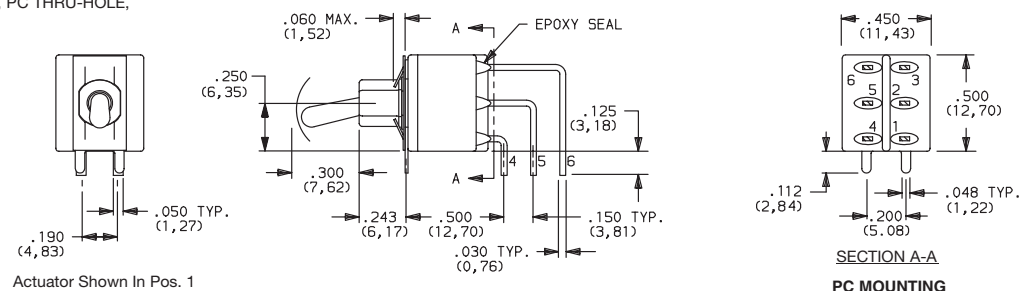
### AV3 VERTICAL RIGHT ANGLE, SNAP-IN, PC THRU-HOLE, .150" PITCH



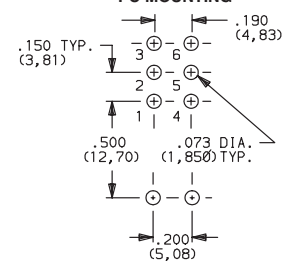
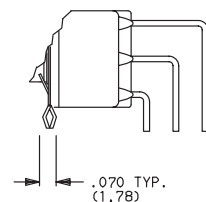
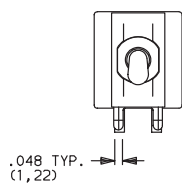
### AV2 VERTICAL RIGHT ANGLE, PC THRU-HOLE, .150" PITCH



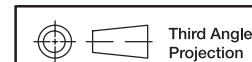
**E201MD1AV2BE**  
Vertical Actuation  
**DPDT**



### A3 VERTICAL RIGHT ANGLE, SNAP-IN, PC THRU-HOLE, .150" PITCH



Toggle

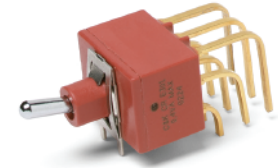
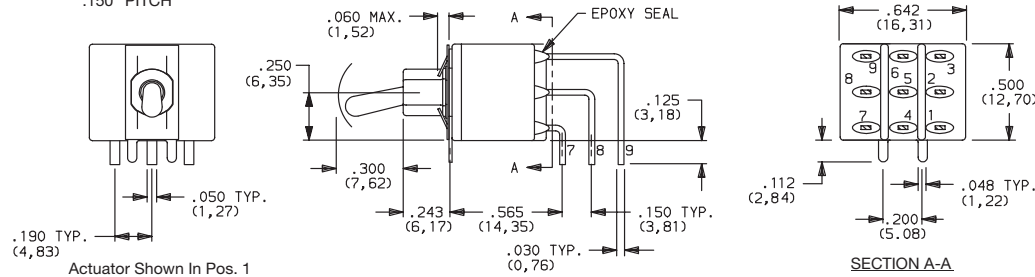


Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

# E Series Sealed Miniature Toggle Switches

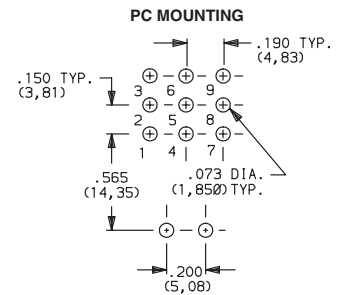
## TERMINATIONS

**AV2** VERTICAL RIGHT ANGLE, PC THRU-HOLE,  
.150" PITCH



**E301MD1AV2BE**  
Vertical Actuation  
**3PDT**

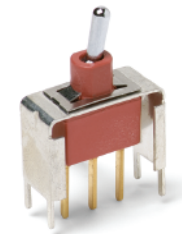
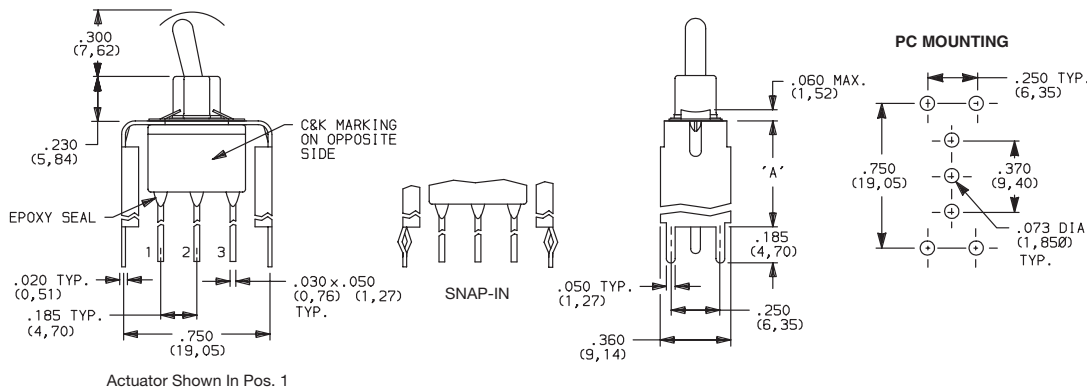
**AV3** VERTICAL RIGHT ANGLE, SNAP-IN, PC THRU-HOLE  
.150" PITCH



Not available with D9 & Y bushings.  
Terminal bend radii and lead-in manufacturing option.

**V6** VERTICAL MOUNT, V-BRACKET

**V61** VERTICAL MOUNT, V-BRACKET, SNAP-IN



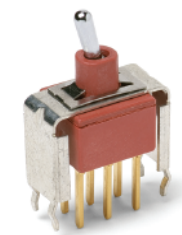
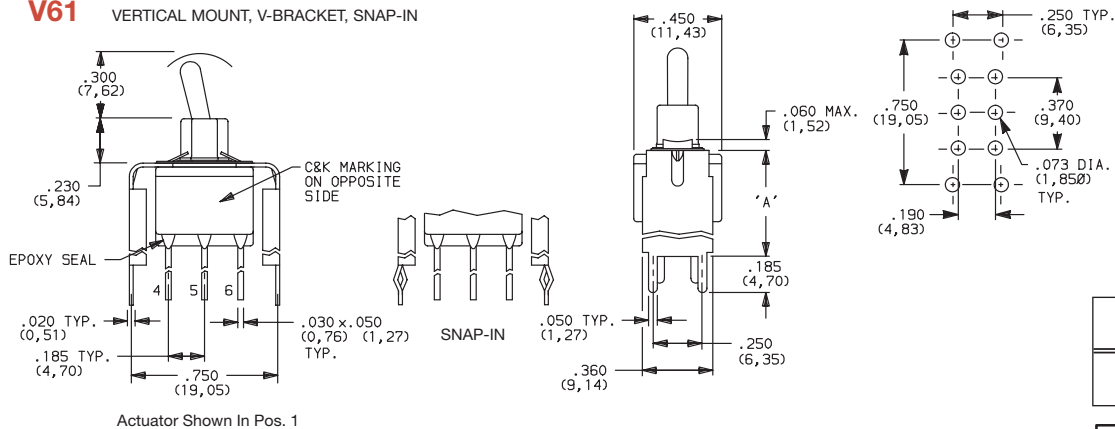
**E101MD1\_BE**  
**SPDT**

OPTION CODE	DIM 'A'
<b>V6, V61</b>	.460 (11,68)

Not available with Y bushing.

**V6** VERTICAL MOUNT, V-BRACKET

**V61** VERTICAL MOUNT, V-BRACKET, SNAP-IN



**E201MD1\_BE**  
**DPDT**

OPTION CODE	DIM 'A'
<b>V6, V61</b>	.460 (11,68)

Not available with Y bushing.



Third Angle Projection



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

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# E Series Sealed Miniature Toggle Switches

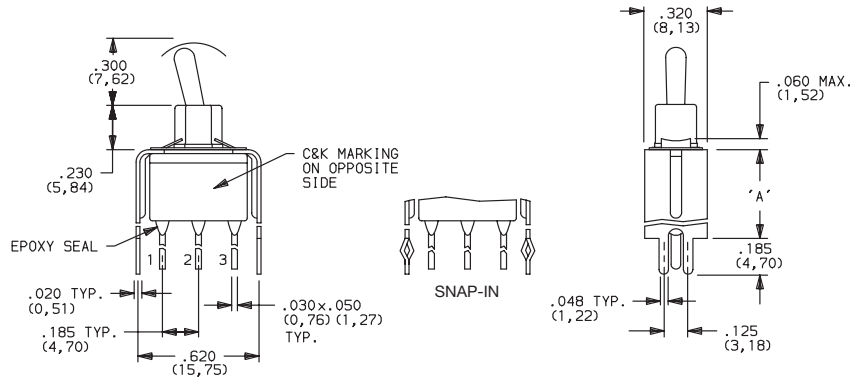
## TERMINATIONS

**V3, V9** VERTICAL MOUNT, V-BRACKET

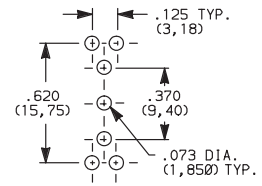
**V31** VERTICAL MOUNT, V-BRACKET, SNAP-IN



**E101MD1\_BE**  
**SPDT**



### PC MOUNTING



OPTION CODE	DIM 'A'
<b>V3, V31</b>	.460 (11,68)
<b>V9</b>	1.150 (29,21)

Actuator Shown In Pos. 1

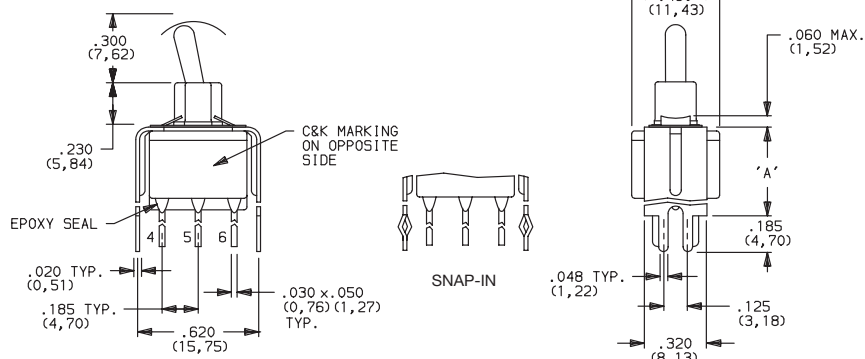
Not available with Y bushing.

**V3, V9** VERTICAL MOUNT, V-BRACKET

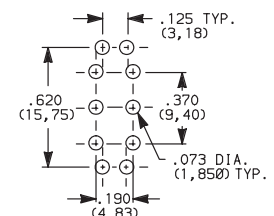
**V31** VERTICAL MOUNT, V-BRACKET, SNAP-IN



**E201MD1\_BE**  
**DPDT**



### PC MOUNTING

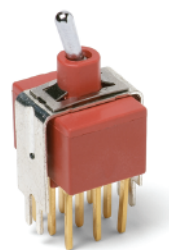


OPTION CODE	DIM 'A'
<b>V3, V31</b>	.460 (11,68)
<b>V9</b>	1.150 (29,21)

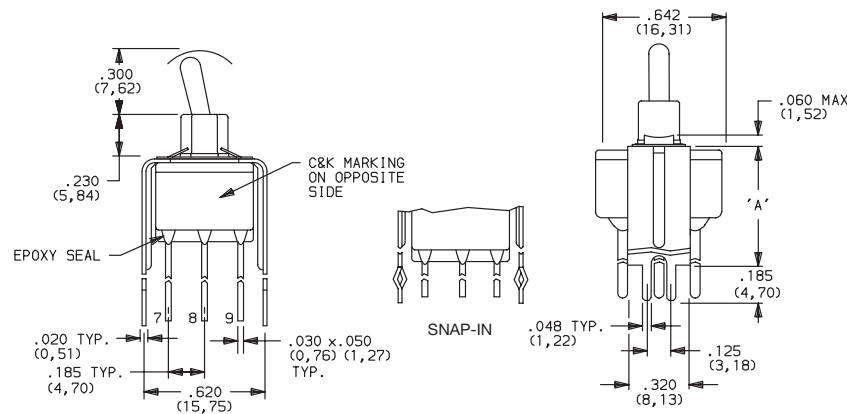
Actuator Shown In Pos. 1

Not available with Y bushing.

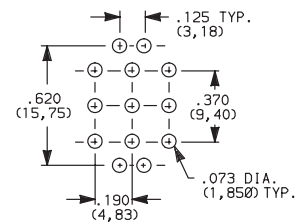
**V9** VERTICAL MOUNT, V-BRACKET



**E301MD1\_BE**  
**3PDT**



### PC MOUNTING



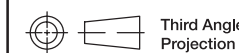
OPTION CODE	DIM 'A'
<b>V9</b>	1.150 (29,21)

Actuator Shown In Pos. 1

Not available with D9 & Y bushings.

Toggle

F



Third Angle Projection  
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

# E Series Sealed Miniature Toggle Switches

## CONTACT MATERIAL



OPTION CODE	CONTACT MATERIAL	TERMINAL PLATING	RATINGS	
<b>B</b>	GOLD <sup>1</sup>	GOLD <sup>1</sup>	LOW LEVEL/ DRY CIRCUIT	0.4 VA MAX. @ 20 V AC OR DC MAX.
<b>P</b>		MATTE-TIN <sup>6</sup>		
<b>Q</b>	SILVER <sup>4,5</sup>	SILVER <sup>5</sup>	POWER	E1XX & E2XX MODELS: 7.5 AMPS @ 125 V AC OR 28 V DC; 3 AMPS @ 250 V AC. E3XX MODELS: 5 AMPS @ 125 V AC OR 28 V DC; 2 AMPS @ 250 V AC.
<b>S</b>		MATTE-TIN <sup>6</sup>		
<b>G</b>	GOLD OVER SILVER <sup>2,3</sup>	GOLD <sup>3</sup>	LOW LEVEL/DRY CIRCUIT OR POWER	E1XX AND E2XX MODELS: 0.4 VA MAX @20 V AC OR DC MAX. OR 7.5 AMPS @125 V AC OR 28 V DC; 3 AMPS @ 250 V AC. DC E3XX MODELS: 0.4 VA MAX. @ 20 V AC OR DC MAX. OR 5 AMPS @ 125 V AC OR 28 V DC; 2 AMPS @ 250 V AC.
<b>R</b>		MATTE-TIN <sup>6</sup>		

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

<sup>1</sup> CONTACTS & TERMINALS: Copper alloy, with gold plate over nickel plate.

<sup>2</sup> END CONTACTS: Coin silver, with gold plate over nickel plate.

<sup>3</sup> CENTER CONTACTS & ALL TERMINALS: Copper alloy, with gold plate over nickel plate.

<sup>4</sup> END CONTACTS: Coin silver, silver plated.

<sup>5</sup> CENTER CONTACT & ALL TERMINALS: Copper alloy, with gold flash over silver plate. Or copper alloy, silver plated.

<sup>6</sup> TERMINALS: Copper alloy, with matte-tin over nickel plate.

**NOTE:** Any models supplied with P, S, R, Q, B or G contact material are RoHS compliant.

All models **CEC** **RU** **US** with all options when ordered with S, R, G, or Q contact material except with F1 conductive bushing.

B contact material standard with all terminations.

P, S & R contact materials not available with Z & Z3 terminations.



Third Angle  
Projection

Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

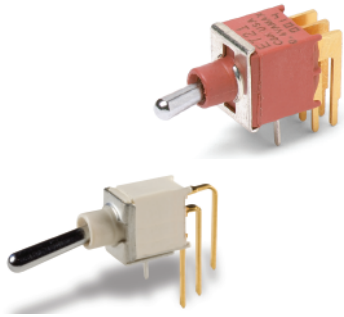
www.ck-components.com



Toggle



# ET Series Sealed Subminiature Toggle Switches



## Features/Benefits

- Sealed against solder and cleaning process contaminants
- ESD protection available
- Thru-hole and surface mount models
- Compact size and small footprint save PCB space
- RoHS compliant models available

## Typical Applications

- Hand-held telecommunications
- Instrumentation
- Medical equipment

## Specifications

CONTACT RATING: B contact material: 0.4 VA max. @ 20 V AC or DC max. See page F-35 for additional ratings.

ELECTRICAL LIFE: ETX1 models: 60,000 make-and-break cycles at full load. All other models: 30,000 cycles.

CONTACT RESISTANCE: Below 20 m Ω typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

INSULATION RESISTANCE: 10<sup>9</sup> Ω min.

ELECTROSTATIC DISCHARGE (ESD) RESISTANT OPTION: M3 & S3 insulating actuator only: 9,000 V DC min. @ sea level, actuator to terminals. F1 conductive bushing only: Dissipates up to 20,000 V DC from actuator to ground. M3 & S3 actuator and F1 bushing options are not recommended for use together.

DIELECTRIC STRENGTH: 1000 Vrms min. @ sea level.

OPERATING TEMPERATURE: -30°C to 85°C.

SOLDERABILITY: Per MIL-STD-202F method 208D, or EIA RS-186E method 9 (1 hour steam aging).

DEGREE OF PROTECTION: IP57; Protection against harmful dust deposit, full-scale voltage protection, temporary immersion.

PACKAGING: Surface mount switches are shipped in tape and reel packaging, see page F-36 for drawings and reel information.

## Materials

CASE & BUSHING: Glass filled nylon 6/6, flame retardant, heat stabilized (UL 94V-0) or glass filled 4/6 nylon, flame retardant, heat stabilized (UL 94V-0). F1 conductive bushing option is impregnated with carbon fibers.

ACTUATOR: M3 & S3 anti-static actuator: Nylon 4/6, black standard (UL 94V-0). All other actuators: Brass, chrome plated. Internal o-ring seal standard with all actuators.

SWITCH SUPPORT: Brass, tin plated.

CONTACTS & TERMINALS: B contact material: Copper alloy, with gold plate over nickel plate. Q contact material: Copper alloy, silver plated. See F-35 for additional contact materials.

TERMINAL SEAL: Epoxy.

**NOTE:** Any models supplied with Q, B, G, P or R contact material are RoHS compliant and compatible.

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages F-31 thru F-36. For additional options not shown in catalog, consult our Customer Service Center. All models are process sealed to withstand machine soldering temperatures and pressure wash cleaning methods.

### Switch Function

- ET01 SP, On-None-On
- ET02 SPST, Off-None-On
- ET03 SP, On-Off-On
- ET05 SP, Mom.-Off-Mom.
- ET07 SP, On-Off-Mom.
- ET08 SP, On-None-Mom.
- ET21 DP, On-None-On
- ET23 DP, On-Off-On
- ET24 DP, On-On-On
- ET25 DP, Mom.-Off-Mom.
- ET27 DP, On-Off-Mom.
- ET28 DP, On-None-Mom.

### Actuator

- M .240" high
- M3 Plastic, anti-static, .240" high
- S .400" high
- L .320" high
- S1 .540" high

### Bushing

- D1 .177" High, Unthreaded
- F1 .177" high, unthreaded, ESD conductive

### Terminations

- A Right angle, PC thru-hole
- AV Vertical right angle, PC thru-hole
- C PC Thru-hole
- SA Right angle, surface mount
- SA1 Right angle, surface mount rear-facing
- V3 Vertical mount, V-bracket
- AV3 Vertical right angle, snap-in, PC thru-hole
- V31 Vertical mount, V-bracket, snap-in
- W Wire wrap

### Contact Material

- B Gold
- P Gold, matte tin
- Q Silver
- S Silver/matte-tin
- G Gold over silver
- R Gold over silver, matte-tin

### Seal

- E Epoxy

### Plastic Actuator Color

- NONE No actuator color
- 2 Black
- 1 White



Toggle



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

# ET Series Sealed Subminiature Toggle Switches

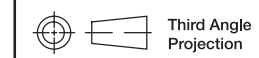
## SWITCH FUNCTION

NO. POLES	MODEL NO.	SWITCH FUNCTION			CONNECTED TERMINALS			SCHEMATIC
		POS. 1	POS. 2	POS. 3	POS. 1	POS. 2	POS. 3	
SP	<b>ET01</b>	ON	NONE	ON	2-3	N/A	2-1	
	<b>ET03</b>	ON	OFF	ON	2-3	OPEN	2-1	
	<b>ET05</b>	MOM.	OFF	MOM.				
	<b>ET07</b>	ON	OFF	MOM.				
	<b>ET08</b>	ON	NONE	MOM.	2-3	N/A	2-1	
	<b>ET02</b>	OFF	NONE	ON	OPEN	N/A	3-1	
<b>SPDT</b> <p>Part number shown: ET01MD1CBE      ET02 Models: Omit terminal 2</p>								
DP	<b>ET21</b>	ON	NONE	ON	2-3,5-6	N/A	2-1,5-4	
	<b>ET23</b>	ON	OFF	ON	2-3,5-6	OPEN	2-1,5-4	
	<b>ET25</b>	MOM.	OFF	MOM.				
	<b>ET27</b>	ON	OFF	MOM.				
	<b>ET28</b>	ON	NONE	MOM.	2-3,5-6	N/A	2-1,5-4	
	<b>ET24**</b>	ON	ON	ON	2-3,5-6	2-3,5-4	2-1,5-4	
<b>DPDT</b> <p>Part number shown: ET21MD1CBE</p>								

MOM. = Momentary

\*\* Wiring for 3-way switch, see Section N.

All models with all options (except M3 actuator) when ordered with G, L, R or Q contact material except with F1 conductive bushing.



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

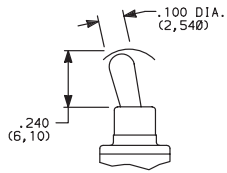


Toggle

# ET Series Sealed Subminiature Toggle Switches

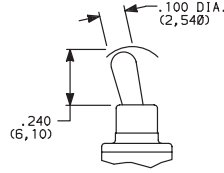
## ACTUATOR

**M** .240" HIGH



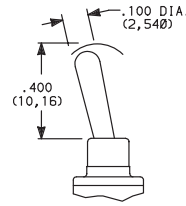
Standard with A, AV, V3 & V31 terminations.

**M3** PLASTIC, ANTISTATIC,  
.240" HIGH



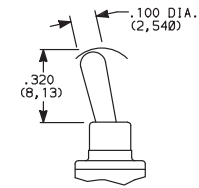
Material: Nylon 4/6 (UL 94V-0), black standard.  
Static resistance: 9,000 V DC min. @ sea level,  
actuator to terminals. Not available with F1  
conductive bushing option. Not UL approved.

**S** .400" HIGH

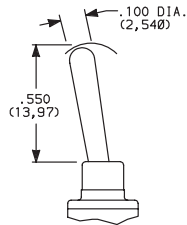


Standard with C or W terminations.

**L** .320" HIGH



**S1** .540" HIGH



OPTION CODE	PLASTIC ACTUATOR COLOR
(NONE)	BLACK (M3 & S3 only)
1	WHITE (M3 & S3 only)

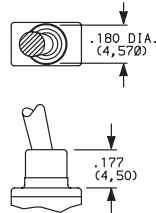
**NOTE:** All actuators have chrome finish (except M3 & S3).

## BUSHING

**D1** .177" HIGH, UNTHREADED

**F1** ESD, CONDUCTIVE BUSHING  
UNTHREADED, .177" HIGH

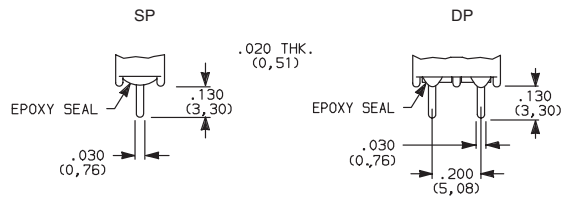
F1 bushing is not UL approved



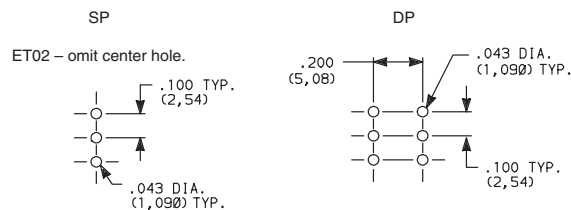
**NOTE:** ESD protection depends on proper grounding of switch support bracket. F1 conductive bushing option is impregnated with carbon fibers; dissipates electrostatic discharge (ESD) up to 20,000 V from actuator to ground. Available with all metal actuator options and A, AV, AV3, V3 and V31 termination options only. Internal actuator o-ring seal standard.

## TERMINATIONS

**C** PC THRU-HOLE



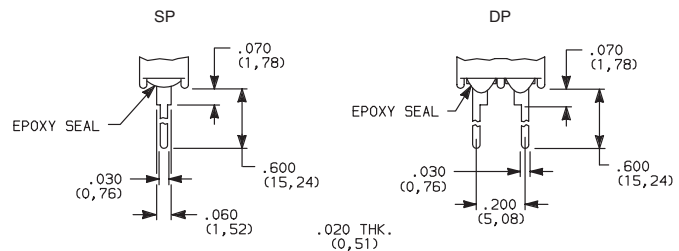
PC MOUNTING



SP and DP

Not available with F1 conductive bushing.

**W** WIRE WRAP



SP and DP

Not available with F1 conductive bushing.



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



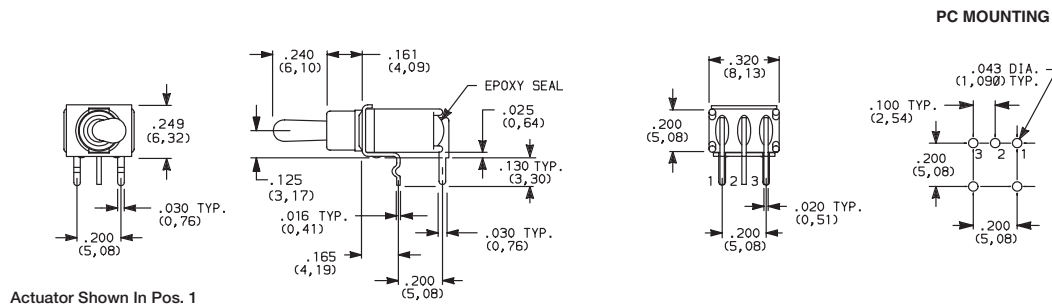
Toggle  
F

# ET Series Sealed Subminiature Toggle Switches

## TERMINATIONS

**A** RIGHT ANGLE, PC THRU-HOLE

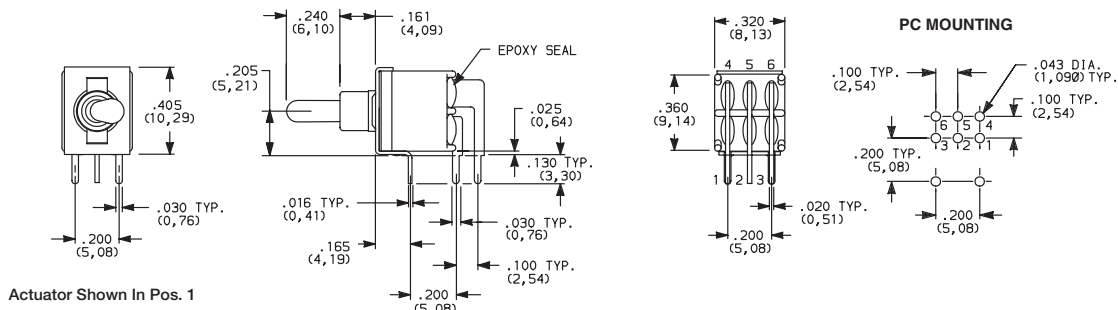
**ET01MD1ABE**  
Horizontal Actuation  
**SPDT**



Not available with ET02 model.

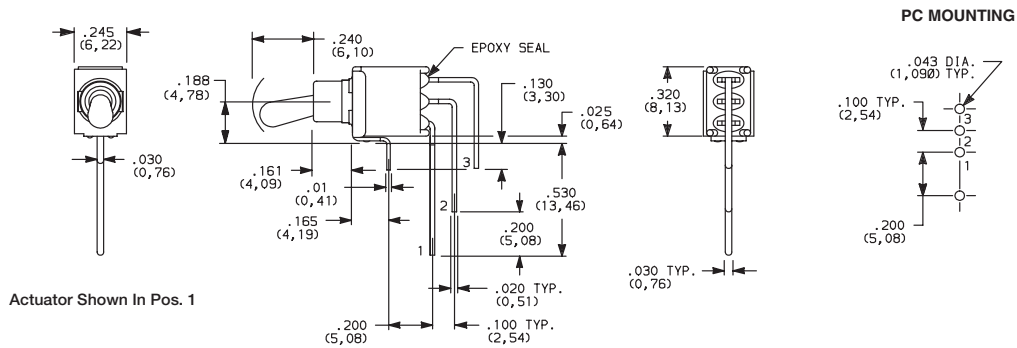
**A** RIGHT ANGLE, PC THRU-HOLE

**ET21MD1ABE**  
Horizontal Actuation  
**DPDT**



**AV** VERTICAL RIGHT ANGLE, PC THRU-HOLE

**ET01MD1AVBE**  
Vertical Actuation  
**SPDT**

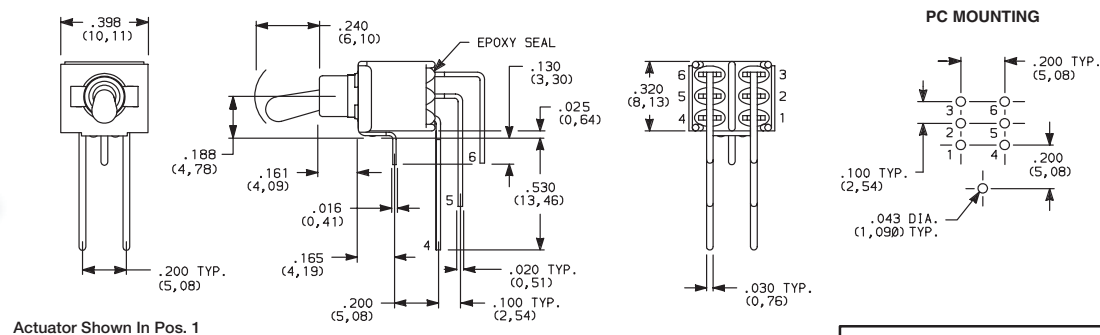


ET02 - omit terminal 2.

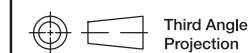
NOTE: Terminal bend radii and lead-in manufacturing option.

**AV** VERTICAL RIGHT ANGLE, PC THRU-HOLE

**ET21MD1AVBE**  
Vertical Actuation  
**DPDT**

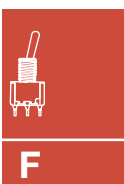


NOTE: Terminal bend radii and lead-in manufacturing option.



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

**C&K**

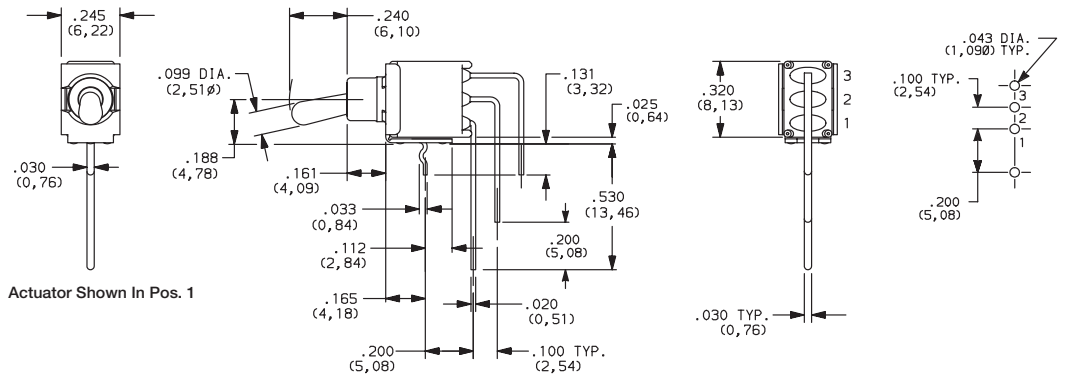


**F**  
Toggle

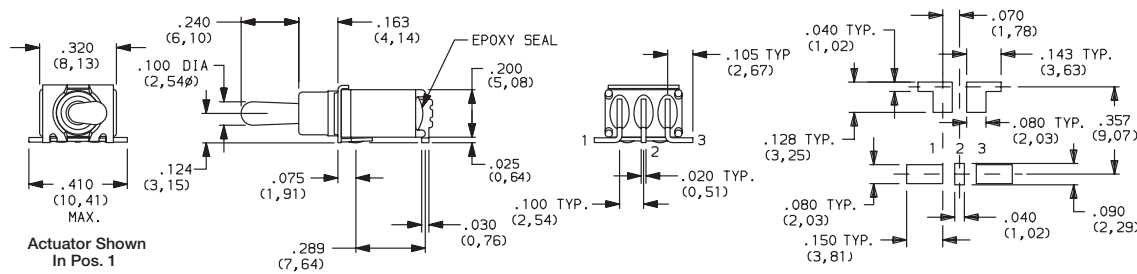
# ET Series Sealed Subminiature Toggle Switches

## TERMINATIONS

### AV3 VERTICAL RIGHT ANGLE, SNAP-IN, PC THRU-HOLE

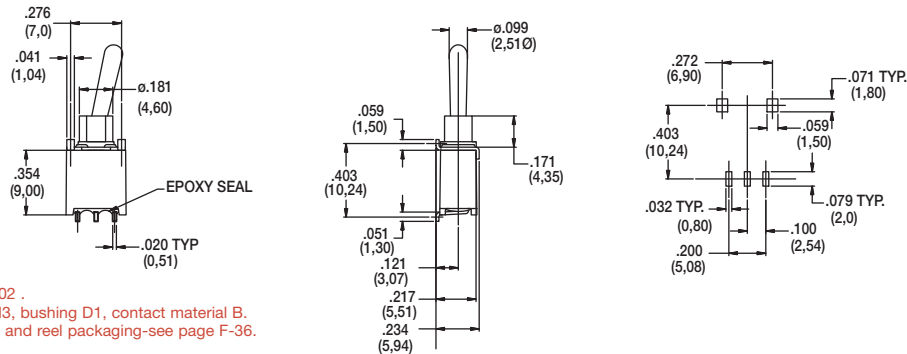


### SA RIGHT ANGLE, SURFACE MOUNT



Not available with S and S1 actuators. Standard with tape & reel packaging. See page F-36.

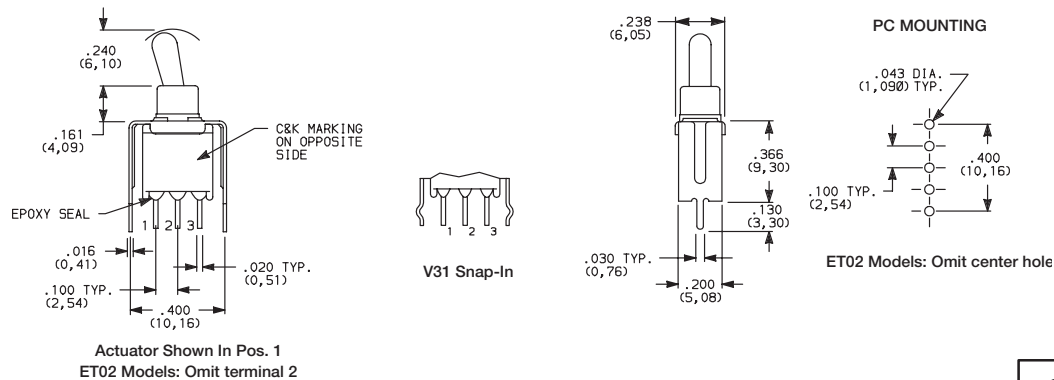
### SA1 RIGHT ANGLE, SURFACE MOUNT



Not available in ET02.  
Actuators M and M3, bushing D1, contact material B.  
Standard with tape and reel packaging-see page F-36.

### V3 VERTICAL MOUNT, V-BRACKET

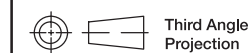
### V31 VERTICAL MOUNT, V-BRACKET, SNAP-IN



Toggle

F

**C&K**



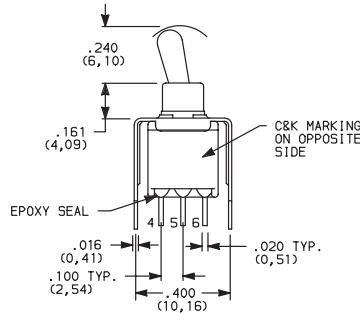
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

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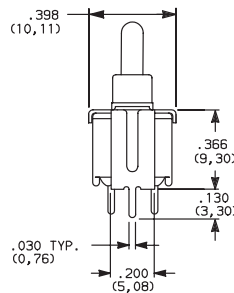
# ET Series Sealed Subminiature Toggle Switches

## TERMINATIONS

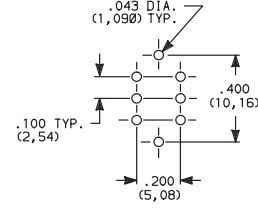
### V3 VERTICAL MOUNT, V-BRACKET



Actuator Shown In Pos. 1



### PC MOUNTING



ET21MD1V3BE  
DPDT

## CONTACT MATERIAL

OPTION CODE	CONTACT MATERIAL	TERMINAL PLATING	RATINGS	
<b>B</b>	GOLD <sup>1</sup>	GOLD <sup>1</sup>	LOW LEVEL/DRY CIRCUIT	0.4 VA MAX. @ 20 V AC OR DC MAX.
<b>P</b>		MATTE-TIN <sup>6</sup>		
<b>Q</b>	SILVER <sup>4,5</sup>	SILVER <sup>5</sup>	POWER	ETX1 MODELS: 3 AMPS @ 120 V AC OR 28 V DC ALL OTHER MODELS: 2 AMPS @ 120 V AC OR 28 V DC
<b>S</b>		MATTE-TIN <sup>6</sup>		
<b>G</b>	GOLD OVER SILVER <sup>2,3</sup>	GOLD <sup>3</sup>	LOW LEVEL/DRY CIRCUIT OR POWER	ETX1 MODELS: 0.4 VA MAX. @ 20 V AC OR DC MAX. OR 3 AMPS @ 120 V AC OR 28 V DC ALL OTHER MODELS: 0.4 VA MAX. @ 20 V AC OR DC MAX. OR 2 AMPS @ 120 V AC OR 28 V DC
<b>R</b>		MATTE-TIN <sup>6</sup>		

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

<sup>1</sup> CONTACTS & TERMINALS: Copper alloy, with gold plate over nickel plate.

<sup>2</sup> END CONTACTS: Coin silver, with gold plate over nickel plate.


<sup>3</sup> CENTER CONTACTS & ALL TERMINALS: Copper alloy, with gold plate over nickel plate.

<sup>4</sup> END CONTACTS: Coin silver, silver plated.

<sup>5</sup> CENTER CONTACT & ALL TERMINALS: Copper alloy, silver plated.

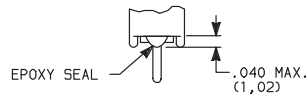
<sup>6</sup> TERMINALS: Copper alloy, with matte tin over nickel plate.

**NOTE:** Any models supplied with Q, B, G, P or R contact material are RoHS compliant.

All models  with all options (except M3 actuator) when ordered with G, L, R or Q contact material except with F1 conductive bushing.

## SEAL

### E EPOXY SEAL



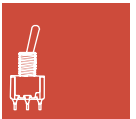
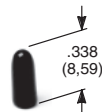
## AVAILABLE HARDWARE

### Cap

#### PART NO.

**706201000** WHITE  
**706202000** BLACK  
**706203000** RED

Material: Vinyl  
Finish: Matte



F

Toggle

**NOTE:** Other colors available, consult Customer Service Center.



Third Angle  
Projection

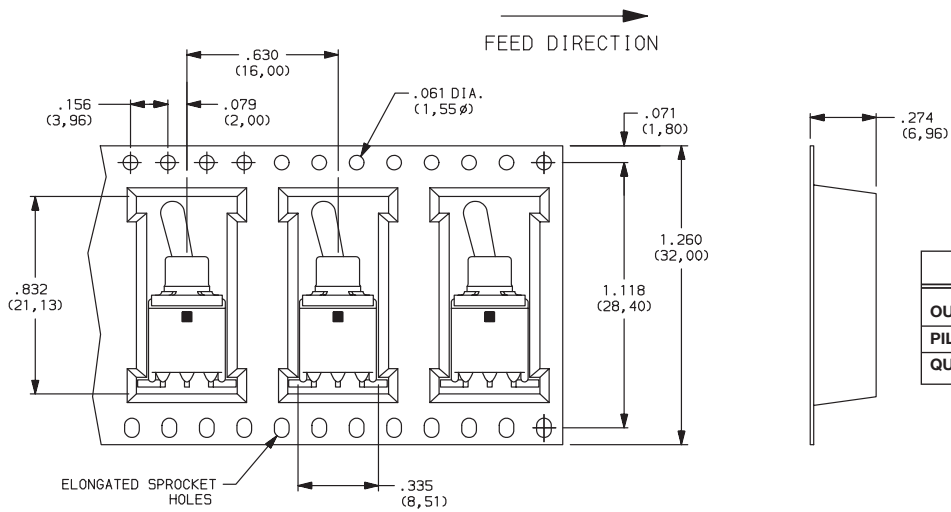
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

**C&K**

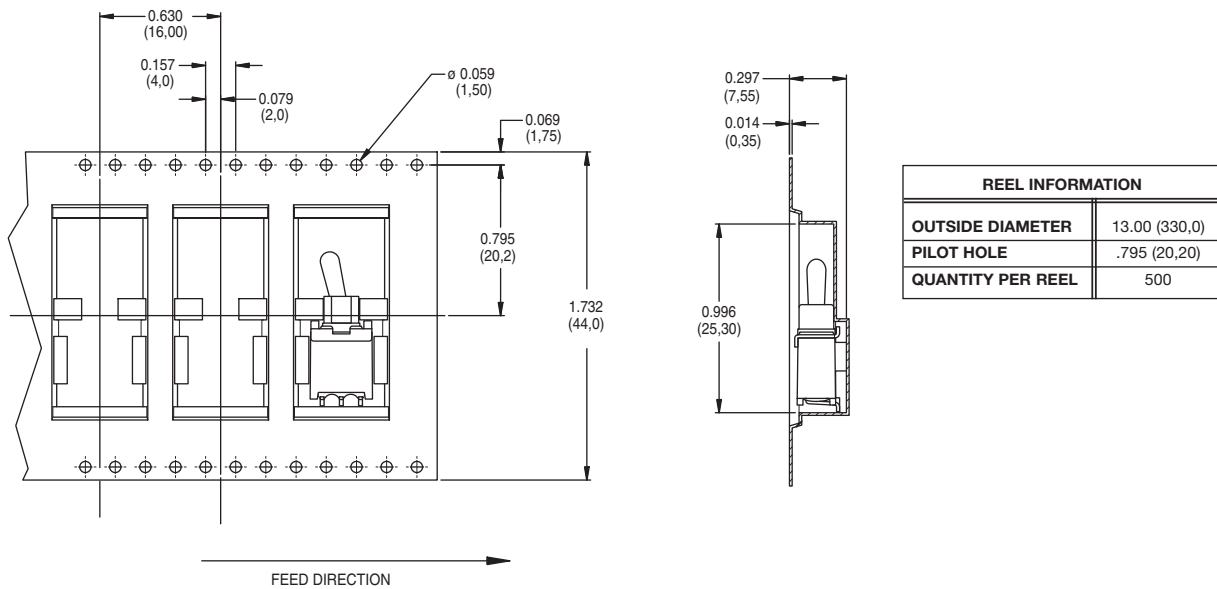
# ET Series Sealed Subminiature Toggle Switches

## TAPE & REEL

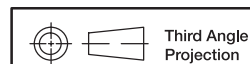
For part number ET01M3D1SAPE



For part number ET01M3D1SA1BE



Toggle



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

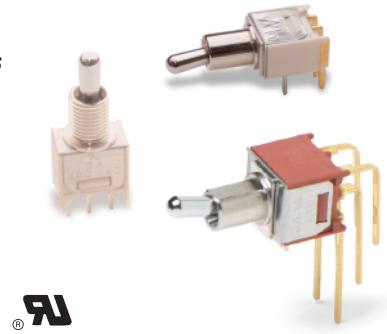
# T Series Subminiature Toggle Switches

## Features/Benefits

- Compact size—small footprint
- Single and double pole models
- PC and panel mount options available
- RoHS compliant models available

## Typical Applications

- Hand-held telecommunications
- Instrumentation
- Medical equipment



## Specifications

**CONTACT RATING:** B contact material: 0.4 VA max. @ 20 V AC or DC max. Q contact material (TX01 models): 3 AMPS @ 120 V AC or 28 V DC. All other models: 2 AMPS @ 120 V AC or 28 V DC. See page F-42 for additional ratings.

**ELECTRICAL LIFE:** TX01 models: 60,000 make-and-break cycles at full load. All other models: 30,000 cycles.

**CONTACT RESISTANCE:** Below 20 m Ω typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

**INSULATION RESISTANCE:** 10<sup>9</sup> Ω min.

**DIELECTRIC STRENGTH:** 1000 Vrms min. @ sea level.

**OPERATING TEMPERATURE:** -30°C to 85°C.

**SOLDERABILITY:** Per MIL-STD-202F method 208D, or EIA RS-186E method 9 (1 hour steam aging).

**NOTE:** Any models supplied with P, R, Q, B or G contact material are RoHS compliant and compatible.

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## Materials

**CASE:** Glass filled nylon 6/6, flame retardant, heat stabilized or diallyl phthalate (DAP), (UL 94V-0) or glass filled nylon 4/6, flame retardant, heat stabilized.

**ACTUATOR:** Brass, chrome plated.

**BUSHING:** Brass, nickel plated.

**HOUSING:** Stainless steel.

**SWITCH SUPPORT:** Brass, matte-tin plated.

**END CONTACTS:** B contact material: Copper alloy, with gold plate over nickel plate. Q contact material: Coin silver, silver plated. See above for additional contact materials.

**CENTER CONTACTS & TERMINALS:** B contact material: Copper alloy, with gold plate over nickel plate. Q contact material: Copper alloy, silver plated. See page F-42 for additional contact materials.

**TERMINAL SEAL:** Epoxy.

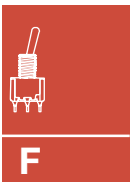
**HARDWARE:** Nut & Locking Ring: Brass, nickel plated.

Lockwasher: Steel, nickel plated. Additional hardware available separately, see Section N.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages F-38 thru F-42. For additional options not shown in catalog, consult Customer Service Center. All models have epoxy terminal seal and are compatible with all "bottom-wash" PCB cleaning methods.

<p><b>Switch Function</b></p> <p><b>T101</b> SPDT On-None-On  <b>T102</b> SPDT Off-None-On  <b>T103</b> SPDT On-Off-On  <b>T105</b> SPDT Mom.-Off-Mom.  <b>T107</b> SPDT On-Off-Mom.  <b>T108</b> SPDT On-None-Mom.  <b>T201</b> DPDT On-None-On  <b>T203</b> DPDT On-Off-On  <b>T205</b> DPDT Mom.-Off-Mom.  <b>T207</b> DPDT On-Off-Mom.  <b>T208</b> DPDT On-None-Mom.  <b>T211</b> DPDT On-On-On</p>	<p><b>Actuator</b></p> <p><b>P3</b> Flatted, anti-rotation, .490" high  <b>S</b> .370" high  <b>K</b> Locking lever, round tip  <b>L1</b> .640" high  <b>M1</b> .220" high  <b>S1</b> .410" high  <b>M</b> .210" high  <b>L</b> .290" high</p>	<p><b>Bushing</b></p> <p><b>H</b> .220" high, threaded, flat  <b>H9</b> .220" high, unthreaded, flat  <b>CF</b> Splashproof, .310" high, threaded, flat  <b>D9</b> .260" high, unthreaded, keyway  <b>T</b> .310" high, threaded, flat  <b>T9</b> .310" high, unthreaded, flat  <b>TD</b> .260" high, threaded, keyway  <b>TK</b> .310" high, threaded, keyway  <b>Y</b> .220" high, threaded, keyway  <b>Y9</b> .220" high, unthreaded, keyway</p>	<p><b>Terminations</b></p> <p><b>A</b> Right angle, PC thru-hole  <b>AV</b> Vertical right angle, PC thru-hole  <b>C</b> PC Thru-hole  <b>V3</b> Vertical mount V-bracket  <b>Z</b> Solder lug  <b>W</b> Wire wrap</p>	<p><b>Seal</b></p> <p><b>E</b> Epoxy</p>
<p><b>Contact Material</b></p> <p><b>B</b> Gold  <b>P</b> Gold, matte tin  <b>Q</b> Silver  <b>G</b> Gold over silver  <b>R</b> Gold over silver, matte-tin</p>				



Toggle



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

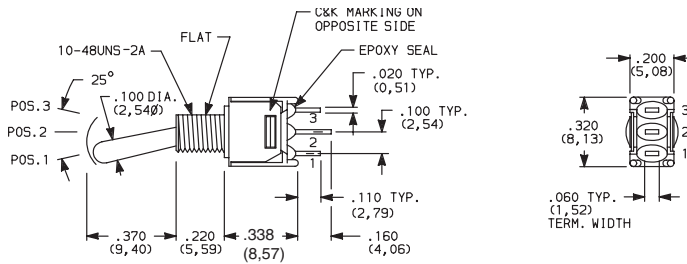


# T Series Subminiature Toggle Switches

## SWITCH FUNCTION

NO. POLES	MODEL NO.	SWITCH FUNCTION			CONNECTED TERMINALS			SCHEMATIC
		POS. 1	POS. 2	POS. 3	POS. 1	POS. 2	POS. 3	
SP	<b>T101</b>	ON	NONE	ON	2-3	N/A	2-1	
	<b>T103</b>	ON	OFF	ON	2-3	OPEN	2-1	
	<b>T105</b>	MOM.	OFF	MOM.				
	<b>T107</b>	ON	OFF	MOM.				
	<b>T108</b>	ON	NONE	MOM.	2-3	NA	2-1	
	<b>T102</b>	OFF	NONE	ON	OPEN	N/A	3-1	

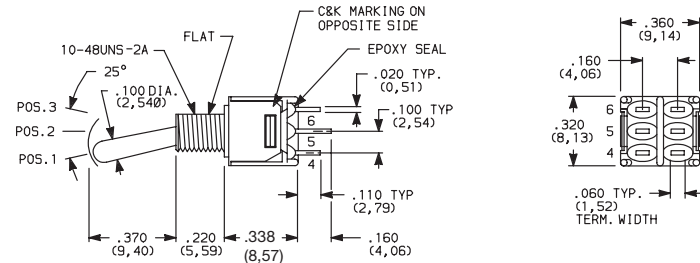
### SPDT



Part number shown: T101SHZQE

NO. POLES	MODEL NO.	SWITCH FUNCTION			CONNECTED TERMINALS			SCHEMATIC
		POS. 1	POS. 2	POS. 3	POS. 1	POS. 2	POS. 3	
DP	<b>T201</b>	ON	NONE	ON	2-3,5-6	N/A	2-1,5-4	
	<b>T203</b>	ON	OFF	ON	2-3,5-6	OPEN	2-1,5-4	
	<b>T205</b>	MOM.	OFF	MOM.				
	<b>T208</b>	ON	NONE	MOM.	2-3,5-6	N/A	2-1,5-4	
	<b>T211*</b>	ON	ON	ON	2-3,5-6	2-3,5-4	2-1,5-4	

### DPDT



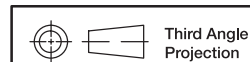
Terminal Nos.  
For Reference Only

Part number shown: T201SHZQE

MOM. = Momentary  
\* Wiring for 3-way switch refer to page N-10

All models with all options when ordered with G, L, R or Q contact material.

Toggle

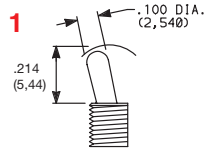


Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

# T Series Subminiature Toggle Switches

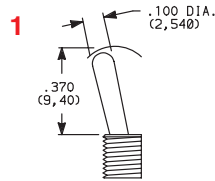
## ACTUATOR

**M** .210" HIGH



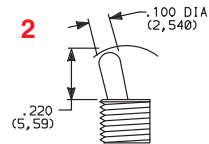
Standard with A, AV or V3 terminations.

**S** .370" HIGH

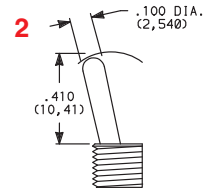


Standard with Z, C or W terminations.

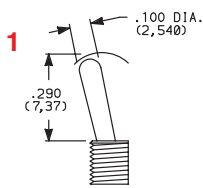
**M1** .220" HIGH  
(with "T" bushing)



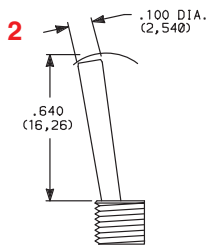
**S1** .410" HIGH  
(with "T" bushing)



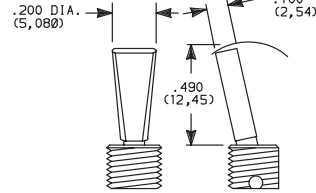
**L** .290" HIGH



**L1** .640" HIGH



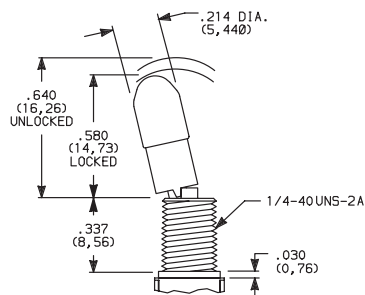
**P3** ANTI-ROTATION, FLATTED,  
.450" HIGH



Available with T & T9 bushings only.  
Dress nut part number 709901201  
supplied standard with threaded bushing.

1 Actuator shown with standard H bushing.  
Subtract .040 (1,02) for TD and D9 bushings,  
subtract .090 (2,29) for T, T9, TK, K9 &  
CF bushings.  
2 Actuators shown with T, T9, TK & CF bushings,  
add .050 (1,27) for TD and D9 bushings,  
add .090 (2,29) for H, H9, Y & Y9 bushings.  
All actuators have chrome finish (except K).

**K** LOCKING LEVER



### Locking Positions



-01 & -02 Models  
2 Position lock



-03 & -11 Models  
3 Position lock



-08 Models  
1 Position lock

K actuators have natural aluminum finish.

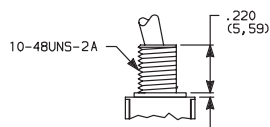
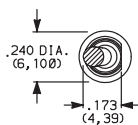
Not available with CF bushing option.

Bushing option code not required. Not available with TX05 & TX07 models.

Keyway on right side. To prevent accidental actuation, toggles  
must be lifted before being actuated. When released, toggles  
again lock in place. Overtightening mounting nut may cause  
actuator to bind.

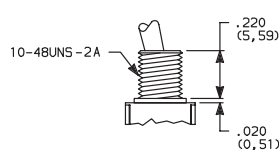
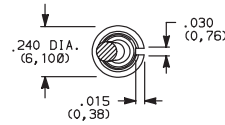
## BUSHING

**H** .220" HIGH THREADED, FLAT

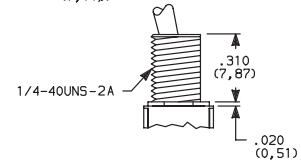
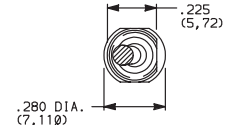


H standard with C, W & Z terminations.  
H9 standard with A, AV & V3 terminations.

**Y** .220" HIGH THREADED, KEYWAY



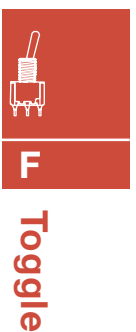
**T** .310" HIGH THREADED, FLAT



Third Angle  
Projection

Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

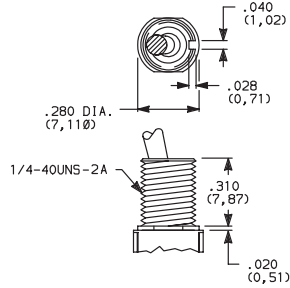
**C&K**



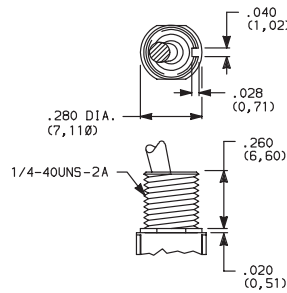
# T Series Subminiature Toggle Switches

## BUSHING

**TK** .310" HIGH THREADED, KEYWAY

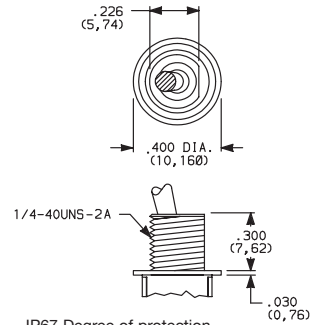


**TD** .260" HIGH THREADED, KEYWAY



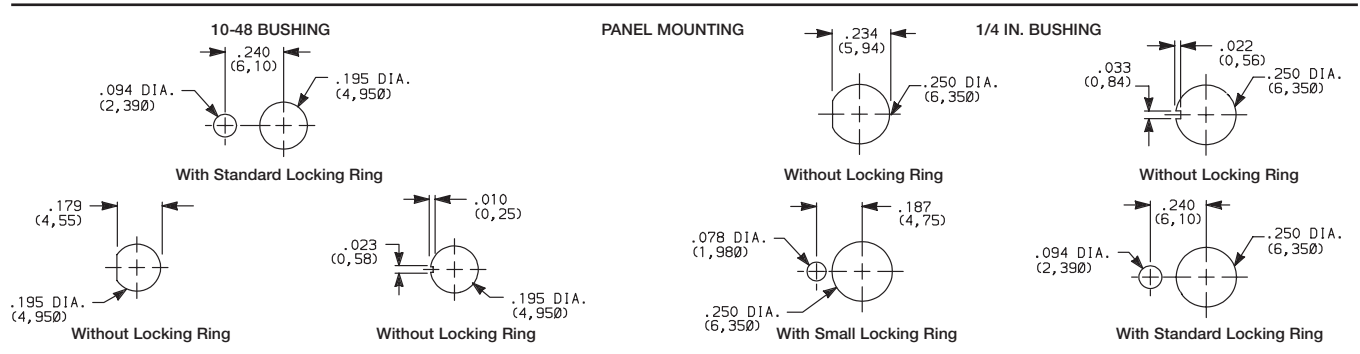
**D9** .260" HIGH UNTHREADED, KEYWAY

**CF** SPLASHPROOF, .310" HIGH THREADED, FLAT



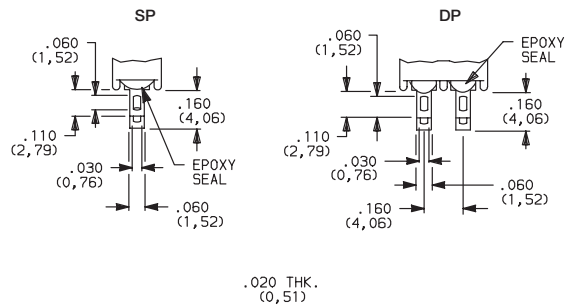
IP67 Degree of protection.  
Internal o-ring actuator seal and external bushing seal washer standard.

Not available with K locking lever option.



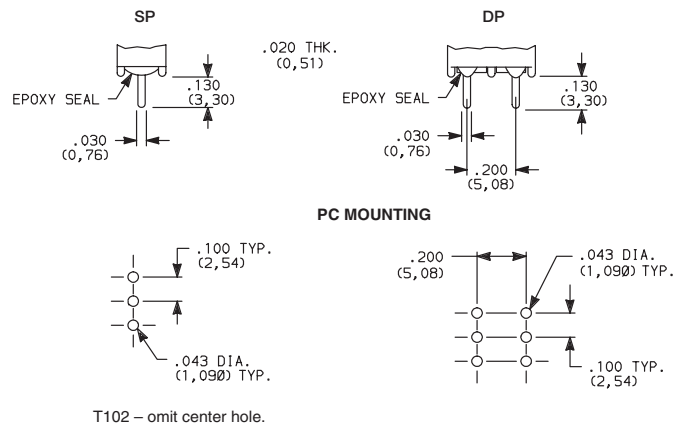
## TERMINATIONS

**Z** SOLDER LUG

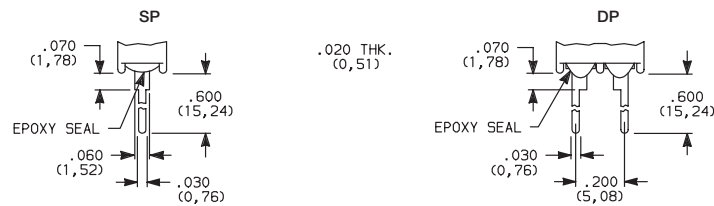


Not available with P or R contact materials.

**C** PC THRU-HOLE



**W** WIRE WRAP



Third Angle Projection  
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

www.ck-components.com



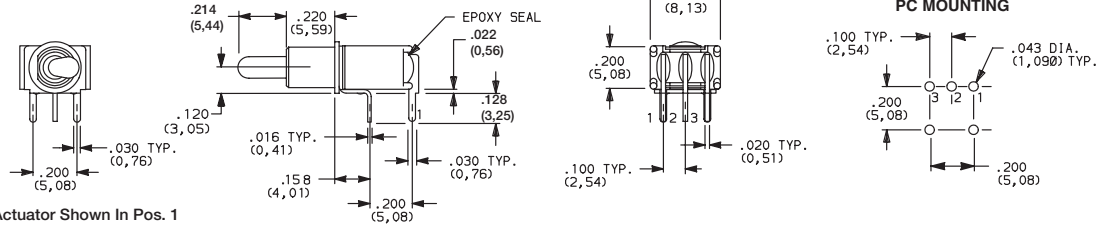
Toggle



# T Series Subminiature Toggle Switches

## TERMINATIONS

### A RIGHT ANGLE, PC THRU-HOLE



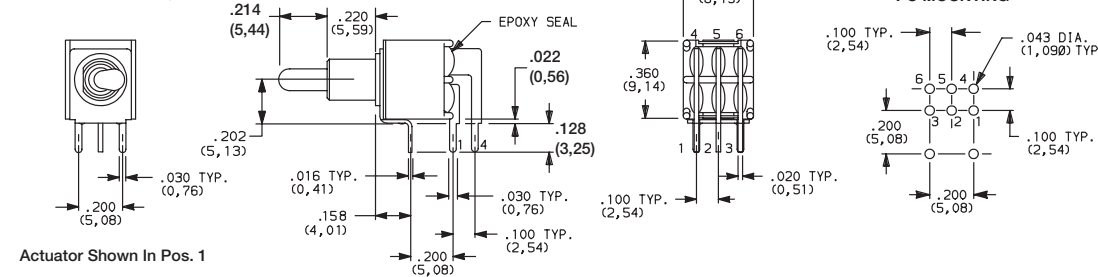
Actuator Shown In Pos. 1

Not available with T102 model.

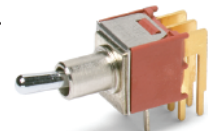


T101MH9ABE  
Horizontal Actuation  
SPDT

### A RIGHT ANGLE, PC THRU-HOLE

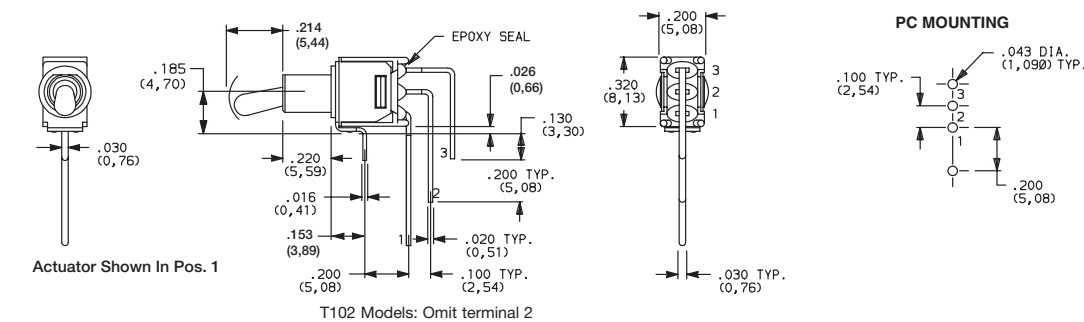


Actuator Shown In Pos. 1



T201MH9ABE  
Horizontal Actuation  
DPDT

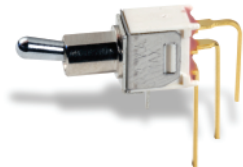
### AV VERTICAL RIGHT ANGLE, PC THRU-HOLE



Actuator Shown In Pos. 1

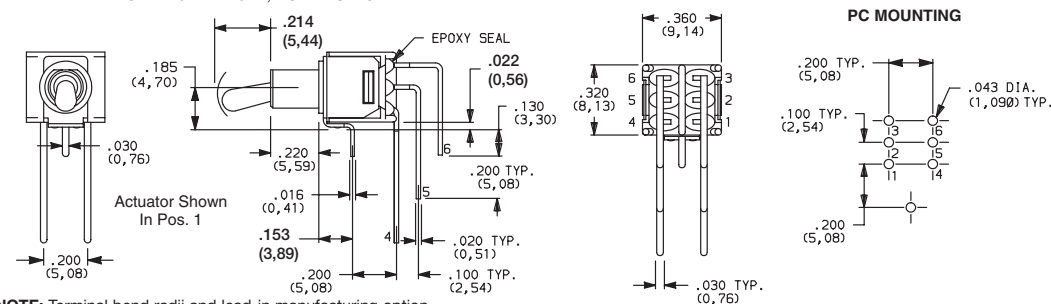
T102 Models: Omit terminal 2

NOTE: Terminal bend radii and lead-in manufacturing option.



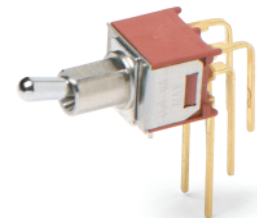
T101MH9AVBE  
Vertical Actuation  
SPDT

### AV VERTICAL RIGHT ANGLE, PC THRU-HOLE



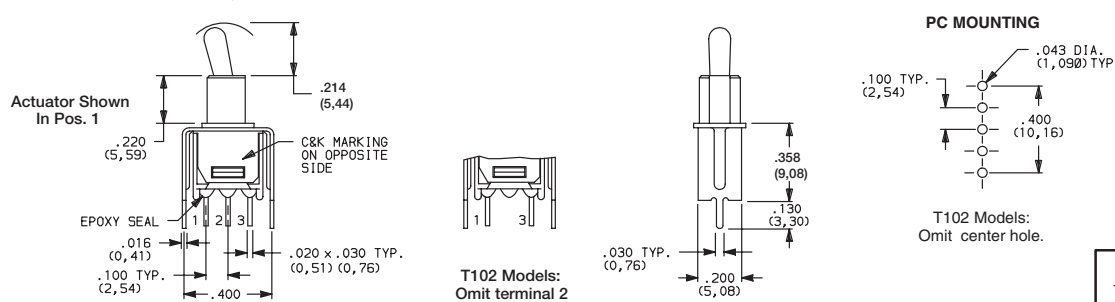
Actuator Shown In Pos. 1

NOTE: Terminal bend radii and lead-in manufacturing option.



T201MH9AVBE  
Vertical Actuation  
DPDT

### V3 VERTICAL MOUNT, V-BRACKET



Actuator Shown In Pos. 1

T102 Models:  
Omit terminal 2



T101MH9V3BE  
SPDT



Third Angle  
Projection

Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

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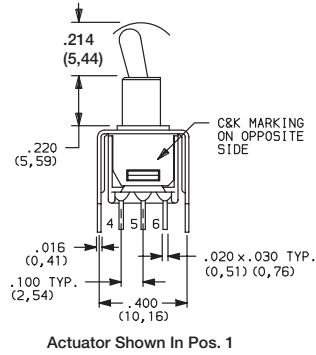
# T Series Subminiature Toggle Switches

## TERMINATIONS

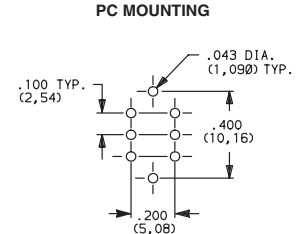
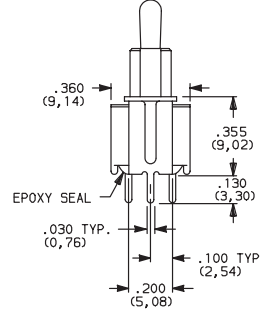
**V3** VERTICAL MOUNT, V-BRACKET



T201MH9V3BE  
DPDT



Actuator Shown in Pos. 1



## CONTACT MATERIAL

OPTION CODE	CONTACT MATERIAL	TERMINAL PLATING	RATINGS	
<b>B</b>	GOLD <sup>1</sup>	GOLD <sup>1</sup>	LOW LEVEL/ DRY CIRCUIT	0.4 VA MAX. @ 20 V AC OR DC MAX.
<b>P</b>		MATTE-TIN <sup>6</sup>		
<b>Q</b>	SILVER <sup>4,5</sup>	SILVER <sup>5</sup>	POWER	TX01 MODELS: 3 AMPS @ 120 V AC OR 28 V DC. ALL OTHER MODELS: 2 AMPS @ 120 V AC OR 28 V DC.
<b>G</b>	GOLD OVER SILVER <sup>2,3</sup>	GOLD <sup>3</sup>	LOW LEVEL/DRY CIRCUIT OR POWER	TX01 MODELS: 0.4 VA MAX @ 20 V AC OR DC MAX. OR 3 AMPS @ 120 V AC OR 28 V DC. ALL OTHER MODELS: 0.4 VA MAX @ 20 V AC OR DC MAX. OR 2 AMPS @ 120 V AC OR 28 V DC.
<b>R</b>		MATTE-TIN <sup>6</sup>		

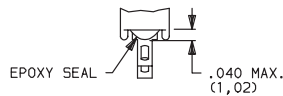
\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

- <sup>1</sup> CONTACTS & TERMINALS: Copper alloy, with gold plate over nickel plate.
- <sup>2</sup> END CONTACTS: Coin silver, with gold plate over nickel plate.
- <sup>3</sup> CENTER CONTACTS & ALL TERMINALS: Copper alloy, with gold plate over nickel plate.
- <sup>4</sup> END CONTACTS: Coin silver, silver plated.
- <sup>5</sup> CENTER CONTACT & ALL TERMINALS: Copper alloy, silver plated.
- <sup>6</sup> TERMINALS: Copper alloy, with matte-tin over nickel plate.

All models with all options when ordered with R, G, or Q contact material.  
B contact material standard with A, AV, V3 & W terminations.  
Q contact material standard with C & Z terminations.

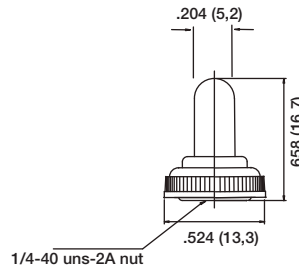
## SEAL

**E** EPOXY SEAL



## AVAILABLE HARDWARE

**759D02000** SEALING BOOT



\* Note: For use with S1 actuator style when combined with T, TK, and CF bushings.

Toggle



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

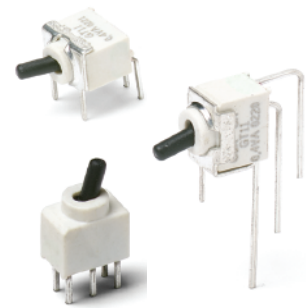
# GT Series Sealed Ultraminiature Toggle Switches

## Features/Benefits

- Sealed against solder and cleaning process contaminants
- Ultraminiature size, smallest footprint available
- Thru-hole and surface mount models
- High temperature materials (UL 94V-0)
- RoHS compliant and compatible

## Typical Applications

- Hand-held telecommunications
- Small instrumentation



## Specifications

CONTACT RATING: 0.4 VA max. @ 20 V AC or DC max.  
 MECHANICAL & ELECTRICAL LIFE: 40,000 make-and-break cycles at full load.  
 CONTACT RESISTANCE: Below 50 m Ω typ. initial @ 2-4 V DC, 100 mA.  
 INSULATION RESISTANCE: 10<sup>9</sup> Ω min.  
 DIELECTRIC STRENGTH: 500 Vrms min. @ sea level.  
 OPERATING TEMPERATURE: -30°C to 85°C.  
 SOLDERABILITY: Per MIL-STD-202F method 208D, or EIA RS-186E method 9 (1 hour steam aging).  
 PACKAGING: Surface mount switches shipped in anti-static tape and reel packaging per EIA 481-3, see page F-47 for drawings and reel information. Tape and cover strip are conductive for use near statically sensitive components, consult Customer Service Center.

## Materials

HOUSING AND BASE: Glass filled nylon 4/6, flame retardant, heat stabilized (UL 94V-0).  
 ACTUATOR: Glass filled nylon 4/6, flame retardant, heat stabilized (UL 94V-0), with standard internal o-ring seal.  
 SWITCH SUPPORT: Brass, tin plated.  
 MOVABLE CONTACTS: Copper alloy, with gold plate over nickel plate.  
 STATIONARY CONTACTS: Copper alloy, with gold plate over nickel plate.  
 TERMINALS: Gold.  
 TERMINAL SEAL: Epoxy. All terminals insert molded.

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

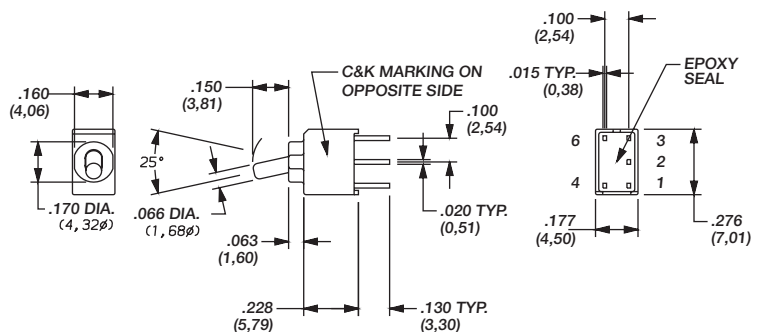
## How To Order

Complete part numbers for GT Series Sealed Ultraminiature Toggle Switches are shown on pages F-43 thru F-47.

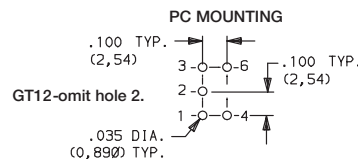


GT11MCBE  
SPDT

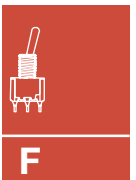
PART NUMBER	SWITCH FUNCTION		
	POS. 1	POS. 2	POS. 3
<b>GT11MCBE</b>	ON	NONE	ON
<b>GT13MCBE</b>	ON	OFF	ON
Conn. Terms.	2-3	OPEN	2-1
Schematic			
SPDT	Note: Pins 4 and 6 not connected		
<b>GT12MCBE</b>	OFF	NONE	ON
Conn. Terms.	OPEN	N/A	3-1
Schematic			
SPST	Note: Pins 4 and 6 not connected		



ACTUATOR SHOWN IN POS. 1



TERMINAL NOS. FOR REFERENCE ONLY

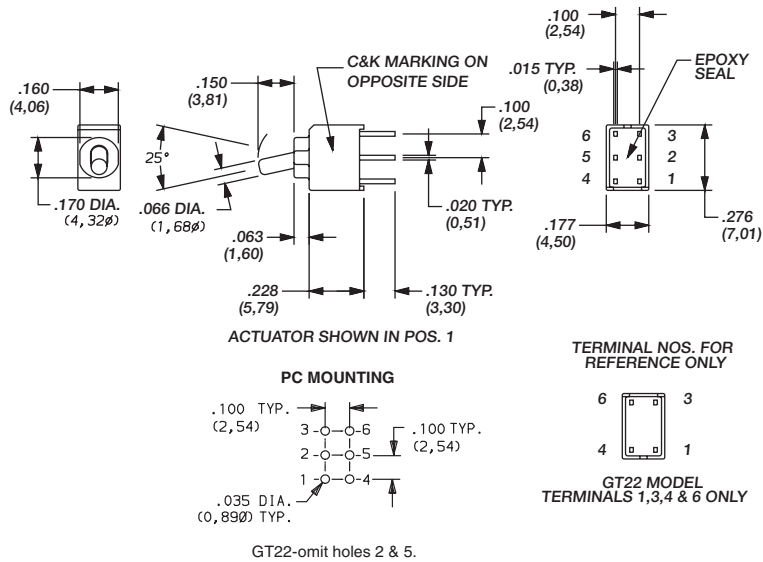


Toggle

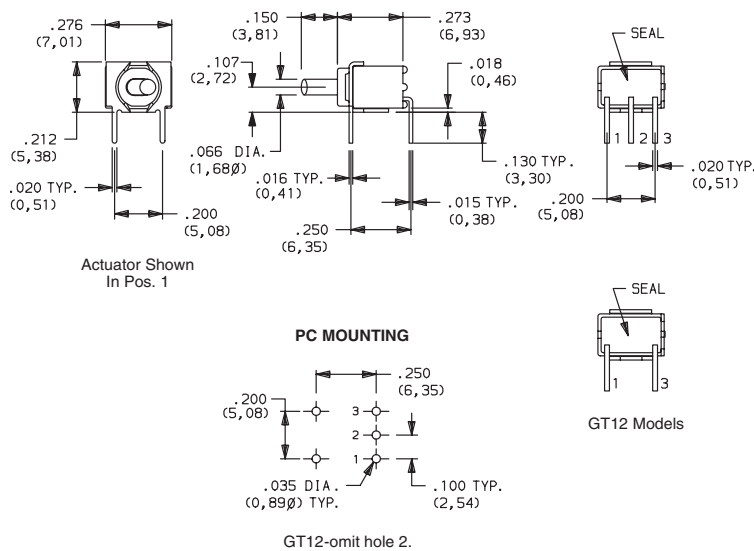


Dimensions are shown: Inches (mm)  
 Specifications and dimensions subject to change

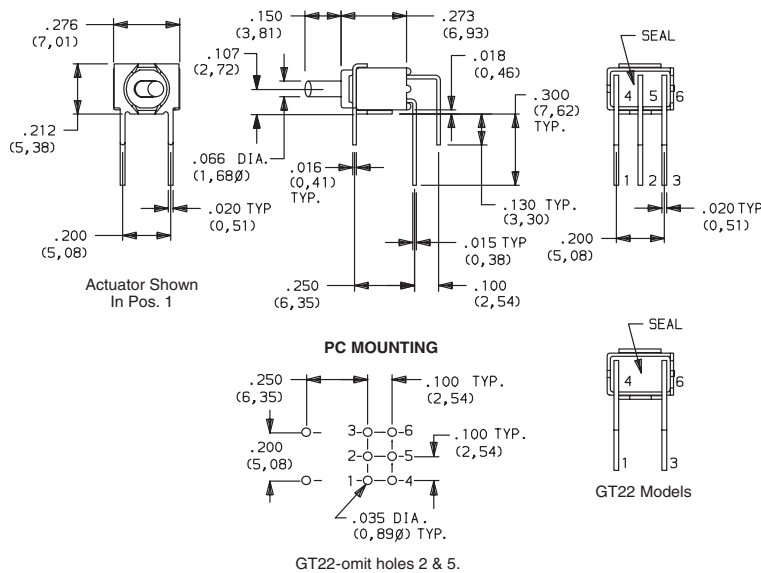
# GT Series Sealed Ultraminiature Toggle Switches



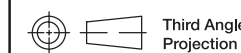
PART NUMBER	SWITCH FUNCTION		
	POS. 1	POS. 2	POS. 3
<b>GT21MCBE</b> <b>GT23MCBE</b>	ON	NONE	ON
Conn. Terms.	2-3, 5-6	OPEN	2-1, 5-4
Schematic			
DPDT			
<b>GT22MCBE</b>	OFF	NONE	ON
Conn. Terms.	OPEN	N/A	3-1
Schematic			
DPST			



PART NUMBER	SWITCH FUNCTION		
	POS. 1	POS. 2	POS. 3
<b>GT11MABE</b> <b>GT13MABE</b>	ON	NONE	ON
Conn. Terms.	2-3	OPEN	2-1
Schematic			
SPDT			
<b>GT12MABE</b>	OFF	NONE	ON
Conn. Terms.	OPEN	N/A	3-1
Schematic			
SPST			



PART NUMBER	SWITCH FUNCTION		
	POS. 1	POS. 2	POS. 3
<b>GT21MABE</b> <b>GT23MABE</b>	ON	NONE	ON
Conn. Terms.	2-3, 5-6	OPEN	2-1, 5-4
Schematic			
DPDT			
<b>GT22MABE</b>	OFF	NONE	ON
Conn. Terms.	OPEN	N/A	3-1, 6-4
Schematic			
DPST			



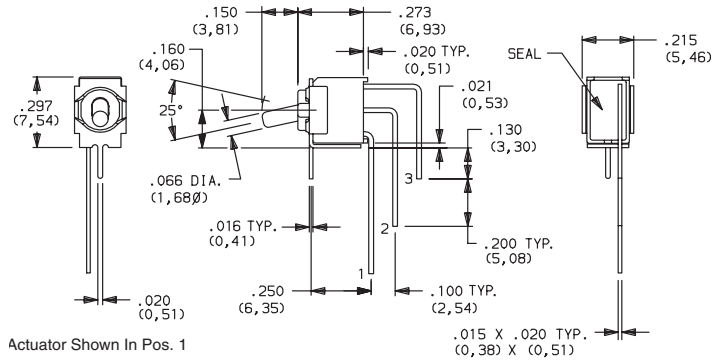
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

# GT Series Sealed Ultraminiature Toggle Switches

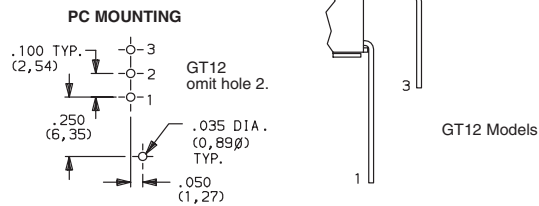


GT11MAVBE  
Vertical  
Actuation  
SPDT

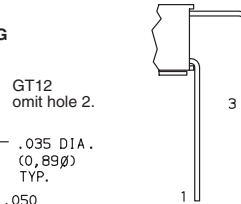
PART NUMBER	SWITCH FUNCTION		
	POS.1	POS. 2	POS. 3
<b>GT11MAVBE</b> <b>GT13MAVBE</b>	ON	NONE	ON
Conn. Terms.	2-3	OPEN	2-1
Schematic 			
SPDT			
<b>GT12MAVBE</b>	OFF	NONE	ON
Conn. Terms.	OPEN	N/A	3-1
Schematic 			
SPST			



Actuator Shown In Pos. 1



PC MOUNTING

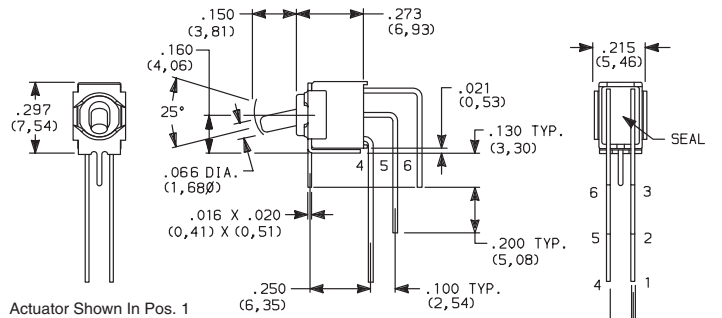


GT12 Models

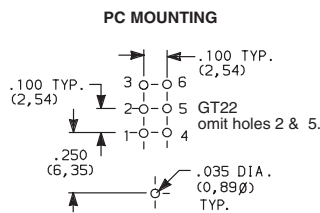


GT21MAVBE  
Vertical  
Actuation  
DPDT

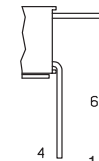
PART NUMBER	SWITCH FUNCTION		
	POS.1	POS. 2	POS. 3
<b>GT21MAVBE</b> <b>GT23MAVBE</b>	ON	NONE	ON
Conn. Terms.	2-3, 5-6	OPEN	2-1, 5-4
Schematic 			
DPDT			
<b>GT22MAVBE</b>	OFF	NONE	ON
Conn. Terms.	OPEN	N/A	3-1, 6-4
Schematic 			
DPST			



Actuator Shown In Pos. 1



PC MOUNTING

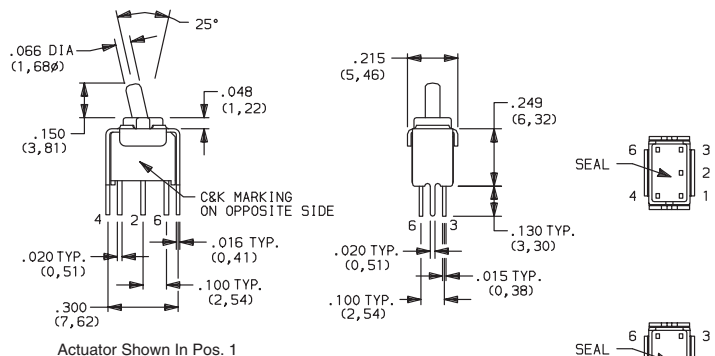


GT22 Models:  
1, 3, 4 & 6 terminals only.

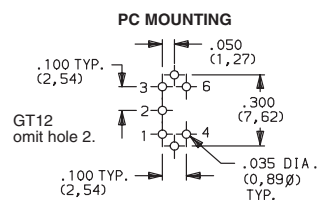


GT11MV3BE  
SPDT

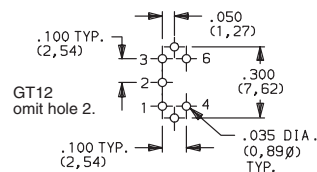
PART NUMBER	SWITCH FUNCTION		
	POS.1	POS. 2	POS. 3
<b>GT11MV3BE</b> <b>GT13MV3BE</b>	ON	NONE	ON
Conn. Terms.	2-3	OPEN	2-1
Schematic 			
SPDT			
<b>GT12MV3BE</b>	OFF	NONE	ON
Conn. Terms.	OPEN	N/A	3-1
Schematic 			
SPST			



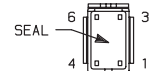
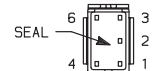
Actuator Shown In Pos. 1



PC MOUNTING



GT12  
omit hole 2.

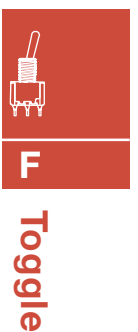


GT12 Models



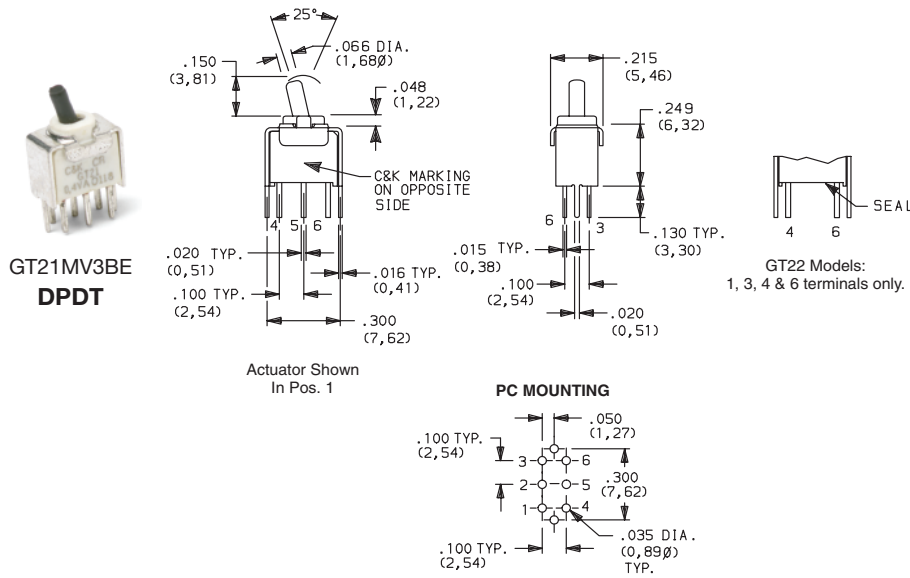
Third Angle  
Projection

Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

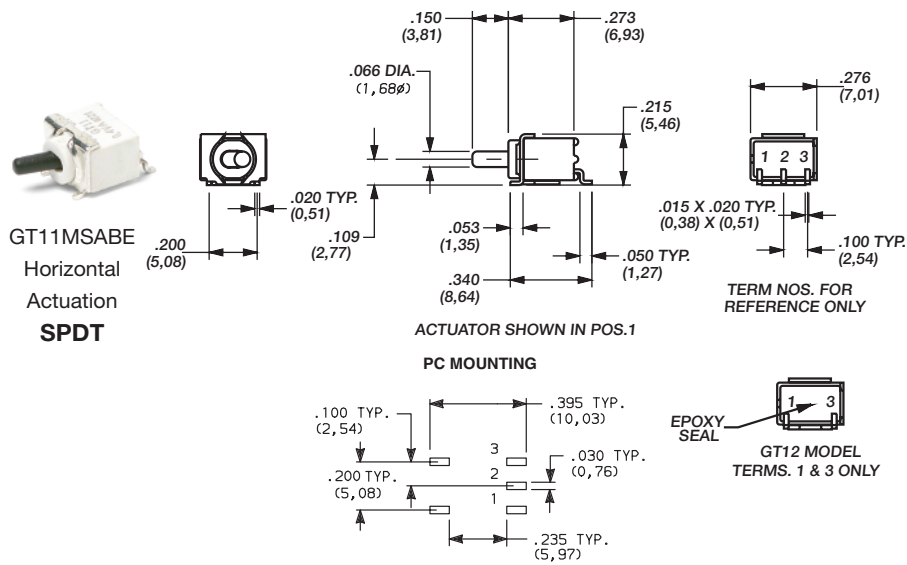




# GT Series Sealed Ultraminiature Toggle Switches



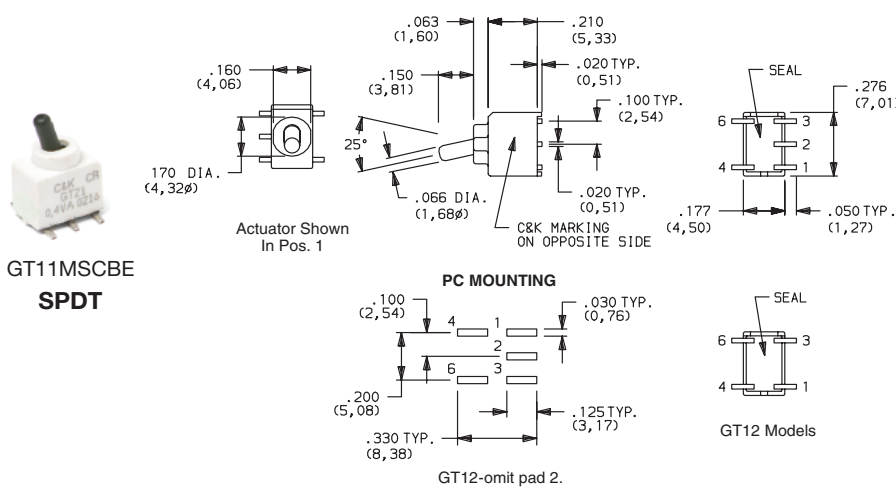
PART NUMBER	SWITCH FUNCTION		
	POS.1	POS. 2	POS. 3
<b>GT21MV3BE</b>	ON	NONE	ON
<b>GT23MV3BE</b>	ON	OFF	ON
Conn. Terms.	2-3, 5-6	OPEN	2-1, 5-4
Schematic			
<b>GT22MV3BE</b>	OFF	NONE	ON
Conn. Terms.	OPEN	N/A	3-1, 6-4
Schematic			
<b>DPST</b>			



PART NUMBER	SWITCH FUNCTION		
	POS.1	POS. 2	POS. 3
<b>GT11MSABETR</b>	ON	NONE	ON
<b>GT13MSABETR</b>	ON	OFF	ON
Conn. Terms.	2-3	OPEN	2-1
Schematic			
<b>GT12MSABETR</b>	OFF	NONE	ON
Conn. Terms.	OPEN	N/A	3-1
Schematic			
<b>SPST</b>			

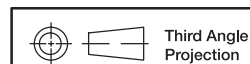
Standard with tape & reel packaging, see page F-47.

GT12-omit pad 2.



PART NUMBER	SWITCH FUNCTION		
	POS.1	POS. 2	POS. 3
<b>GT11MSCBETR</b>	ON	NONE	ON
<b>GT13MSCBETR</b>	ON	OFF	ON
Conn. Terms.	2-3	OPEN	2-1
Schematic			
<b>GT12MSCBETR</b>	OFF	NONE	ON
Conn. Terms.	OPEN	N/A	3-1
Schematic			
<b>SPST</b>	Note: Pins 4 and 6 not connected		

Standard with tape & reel packaging, see page F-47.



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

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Toggle

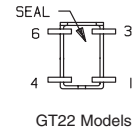
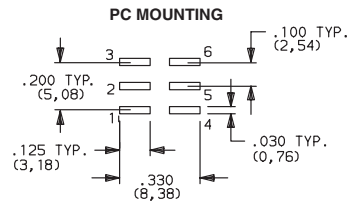
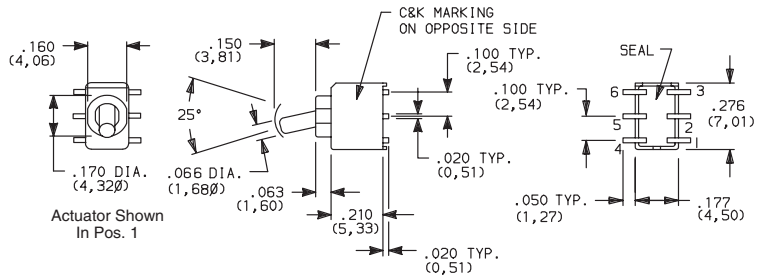


# GT Series Sealed Ultraminiature Toggle Switches



GT21MSCBE  
DPDT

PART NUMBER	SWITCH FUNCTION		
	POS. 1	POS. 2	POS. 3
<b>GT21MSCBETR</b>	ON	NONE	ON
<b>GT23MSCBETR</b>	ON	OFF	ON
Conn. Terms.	2-3, 5-6	OPEN	2-1, 5-4
Schematic			
DPDT			
<b>GT22MSCBETR</b>	OFF	NONE	ON
Conn. Terms.	OPEN	N/A	3-1, 6-4
Schematic			
DPST			

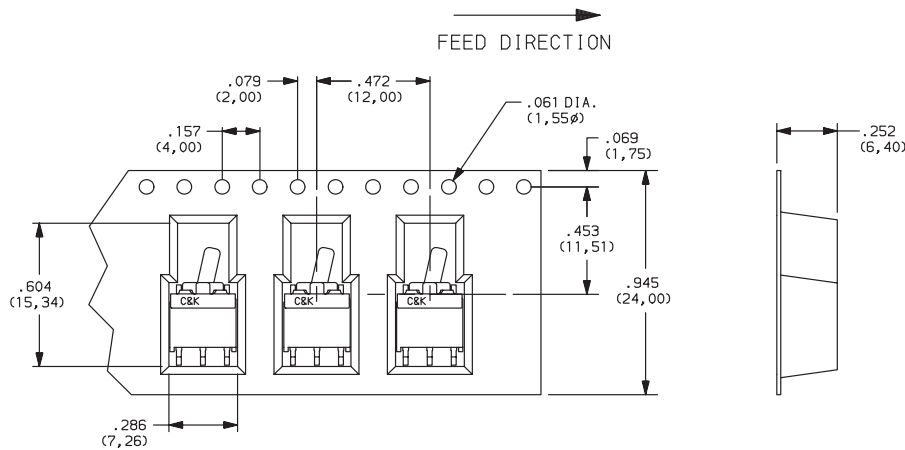


GT22-omit pads 2 & 5.

Standard with tape & reel packaging

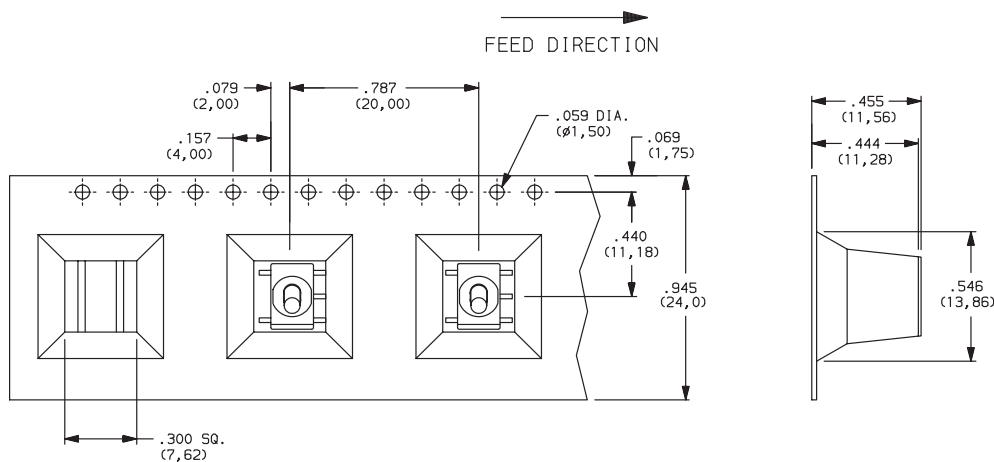
## TAPE & REEL

For part numbers GT11MSABE, GT12MSABE, GT13MSABE



REEL INFORMATION	
OUTSIDE DIAMETER	13.00 (330,0)
PILOT HOLE	.512 (13,0)
QUANTITY PER REEL	600

For part numbers GT11MSCBE, GT12MSCBE, GT13MSCBE, GT21MSCBE, GT22MSCBE, GT23MSCBE,



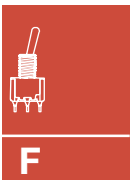
REEL INFORMATION	
OUTSIDE DIAMETER	13.00 (330,0)
PILOT HOLE	.512 (13,0)
QUANTITY PER REEL	200



Third Angle  
Projection

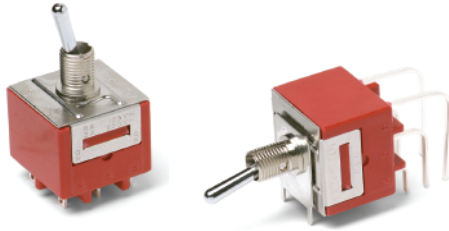
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

www.ck-components.com



Toggle

# 9000 Series Power Toggle Switches



## Features/Benefits

- Power ratings up to 10 AMPS
- Double pole models
- Locking lever options available
- Wide variety of actuator styles
- RoHS compliant and compatible

## Typical Applications

- Shut-off switch
- Small equipment



UL 61058-1

## Specifications

CONTACT RATING:

9201 Model

- GP (general purpose)
- 6 AMPS 125 VAC 50/60 Hz T85 10,000 cycles (10E3)
- 3 AMPS 250 VAC 50/60 Hz T85 10,000 cycles
- R (resistive)
- 6 AMPS 30 VDC T85 10,000 cycles

9221 Model:

- GP (general purpose)
- 10 AMPS 125 VAC 50/60 Hz T85 10,000 cycles
- 5 AMPS 250 VAC 50/60 Hz T85 10,000 cycles
- R (resistive)
- 10 AMPS 30 VDC T85 10,000 cycles

ELECTRICAL LIFE: 25,000 make-and-break cycles at full load.

CONTACT RESISTANCE: Below 10 m Ω typ. initial @ 2-4 V DC, 100 mA.

INSULATION RESISTANCE: 10<sup>9</sup> Ω min.

DIELECTRIC STRENGTH: 2,500 Vrms min. @ sea level.

OPERATING TEMPERATURE: -30°C to 85°C.

SOLDERABILITY: Per MIL-STD-202F method 208D, or EIA RS-186E method 9 (1 hour steam aging).

## Materials

CASE: Diallyl phthalate (DAP) (UL 94V-0).

ACTUATOR: Brass, chrome plated.

BUSHING: Brass or zinc, nickel plated.

HOUSING: Stainless steel.

SWITCH SUPPORT: Brass or steel, matte-tin plated.

END CONTACTS: 9201 Model: Coin silver, silver plated.  
9221 Model: Silver cadmium oxide.

CENTER CONTACTS: Copper alloy, silver plated

ALL TERMINALS: 9201 Model: Copper alloy, silver plated.  
9221 Model: Copper alloy, matte-tin plated.

TERMINAL SEAL: Epoxy.

HARDWARE: Nut & Locking ring: Brass, nickel plated.  
Lockwasher: Steel, nickel plated.

**NOTE:** Any models supplied with Q contact material are RoHS compliant and compatible.

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages F-49 thru F-52. For additional options not shown in catalog, consult Customer Service Center.

<p><b>Switch Function</b></p> <p><b>9201</b> DPDT, On-On, 6 Amps <b>9221</b> DPDT, On-On, 10 Amps</p> <p><b>Actuator</b></p> <p><b>S</b> Antirotation, .410" high <b>K</b> Locking lever, .650" high <b>K1</b> Locking lever, .680" high <b>L43</b> Lever handle with cap <b>P3</b> Flatted, anti-rotation, .450" high <b>T</b> .687" high, 15/32 bushing <b>T1</b> .460" high, 15/32 bushing</p>	<p><b>Bushing</b></p> <p><b>H3</b> .296" high, keyway <b>CW</b> Splashproof <b>H</b> .296" high, flat</p> <p><b>Terminations</b></p> <p><b>Z</b> Solder lug <b>Z4</b> Quick connect (9221 only) <b>AV2</b> Vert. right angle, PC thru-hole (9201 only) <b>C</b> PC Thru-hole</p>	<p><b>Contact Material</b></p> <p><b>Q</b> Silver</p> <p><b>Seal</b></p> <p><b>E</b> Epoxy <b>D</b> No epoxy</p> <p><b>Actuator Color/Finish</b></p> <p><b>NONE</b> Bright chrome <b>2</b> Black</p> <p><b>Bushing Finish</b></p> <p><b>NONE</b> Nickel <b>2</b> Black</p> <p><b>KXX Actuator Color/Finish</b></p> <p><b>NONE</b> Natural aluminum <b>2</b> Black anodized aluminum</p>
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Toggle



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

# 9000 Series Power Toggle Switches

## SWITCH FUNCTION

NO. POLES	MODEL NO.	RATING*	SWITCH FUNCTION		CONNECTED TERMINALS		SCHEMATIC
			POS. 1 	POS. 2 	POS. 1 	POS. 2 	
DP	9201	6 AMPS	ON	ON	2-3,5-6	2-1,5-4	
	9221	10 AMPS	ON	ON			

**DPDT**

\* See CONTACT MATERIAL, page F-52, for complete ratings.

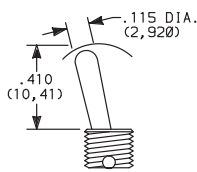
All 9000 Series models meet international dimensional and electrical requirements.



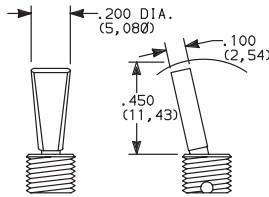
9221 model must be ordered with Z4 terminations and D seal option.

## ACTUATOR

**S** ANTIROTATION, .410" HIGH



**P3** FLATTED, ANTIROTATION, .450" HIGH



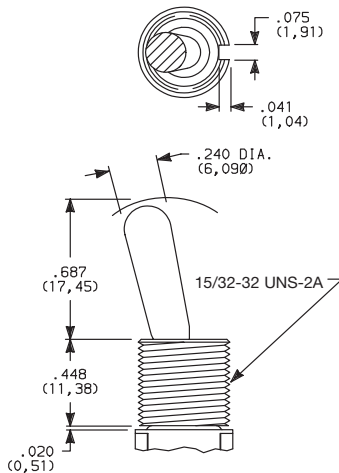
OPTION CODE	ACTUATOR FINISH
NONE	NATURAL ALUMINUM—With Nickel Plated Bushing
2	BLACK

**NOTE:** Black hardware is supplied when either black actuators or bushings are specified. All hardware is available separately, see Section N.

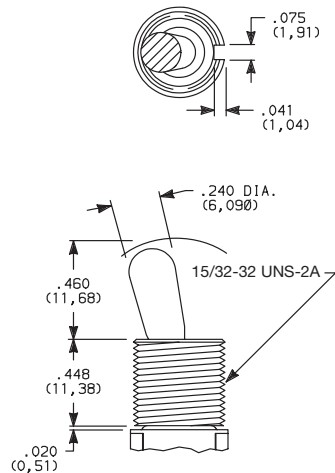
Antirotation is standard on all actuators, provides 'anti-push-in' feature on actuator.

Dress nut part number: 709901201 supplied standard with P3 actuator.

**T** .687" HIGH, 15/32 BUSHING



**T1** .460" HIGH, 15/32 BUSHING

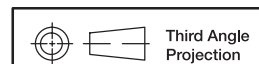


OPTION CODE	ACTUATOR FINISH
NONE	BRIGHT CHROME—With Nickel Plated Bushing
2	BLACK

**NOTE:** Bushing option code not required for T & T1 actuators unless CW splashproof bushing ordered.

Black hardware is supplied when either black actuators or bushings are specified. All hardware is available separately, see Section N.

Antirotation is standard on all actuators except T & T1, provides 'anti-push-in' feature on actuator.



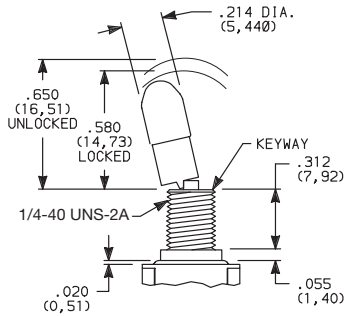
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



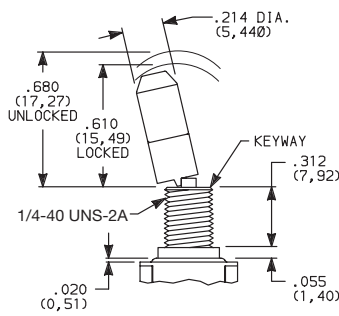
# 9000 Series Power Toggle Switches

## ACTUATOR ACTUATOR FINISH

**K** LOCKING LEVER, .650" HIGH, THREADED



**K1** LOCKING LEVER, .680" HIGH, THREADED



### Locking Positions

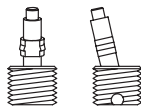


2 Position Lock

**NOTE:** To prevent accidental actuation, toggles must be lifted before being actuated. When released, toggles again lock in place. Bushing option code not required. Overtightening mounting nut may cause actuator to bind.

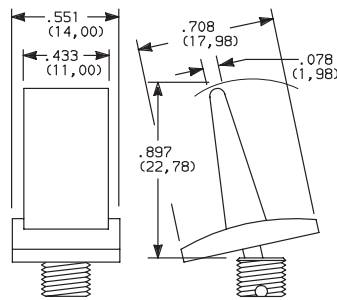
OPTION CODE	ACTUATOR CAP FINISH
<b>NONE</b>	NATURAL ALUMINUM—With Nickel Plated Bushing
<b>2</b>	BLACK ANODIZED ALUMINUM

**L40** LEVER HANDLE WITHOUT CAP



No color choice required.

**L43** PLASTIC LEVER HANDLE WITH ANTIROTATION AND CAP, P/N 4812



Finish: Matte

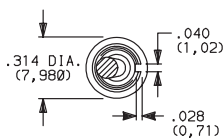
OPTION CODE	ACTUATOR CAP COLOR
<b>2</b>	BLACK
<b>NONE</b>	No Actuator Color (L40 option)

Other colors available, consult Customer Service Center.

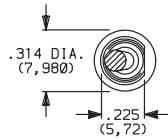
**NOTE:** Lever handle actuator L43 supplied, but not installed. For interchangeability, order L40 actuator option and order lever handles separately, see page F-52. Antirotation is standard on all actuators, provides 'anti-push-in' feature.

## BUSHING BUSHING FINISH

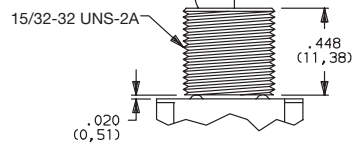
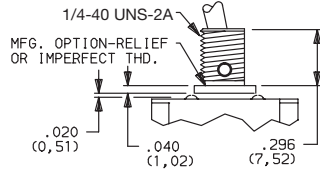
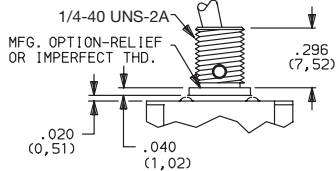
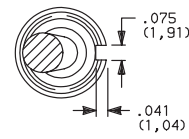
**H3** .296" HIGH, THREADED, KEYWAY



**H** .296" HIGH, THREADED, FLAT



**CW** SPLASHPROOF, 15/32 BUSHING



OPTION CODE	BUSHING FINISH
<b>NONE</b>	NICKEL
<b>2</b>	BLACK

Will withstand 12 in./lbs. of torque with no distortion.

For T & T1 actuators only.

**NOTE:** Two mounting nuts, locking ring and lockwasher supplied standard with threaded bushings. Black hardware is supplied when either black bushings or actuators are specified. Optional mounting nut and locking ring styles and finishes available, see Section N.

Internal actuator seal standard. External bushing seal available separately from APM Hexseal, part # MFS-60064.



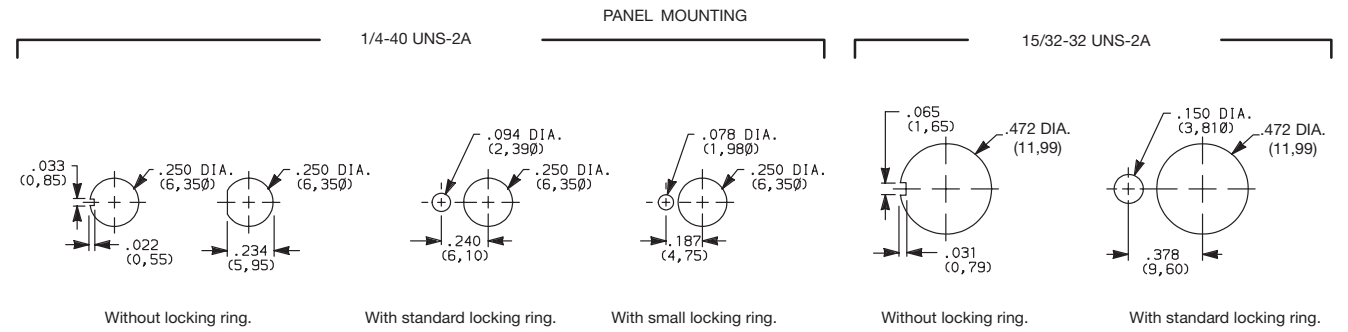
Third Angle Projection

Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

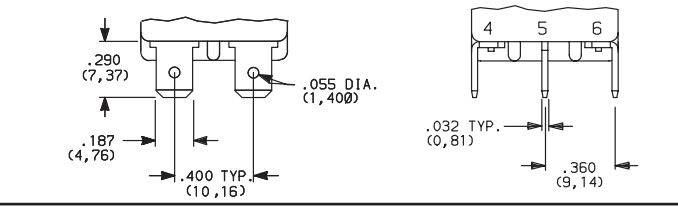
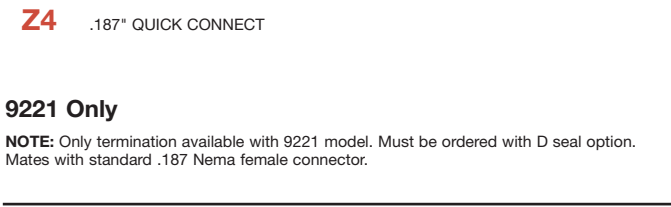
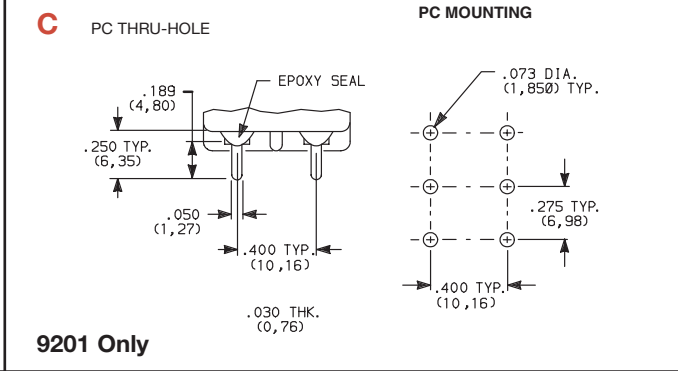
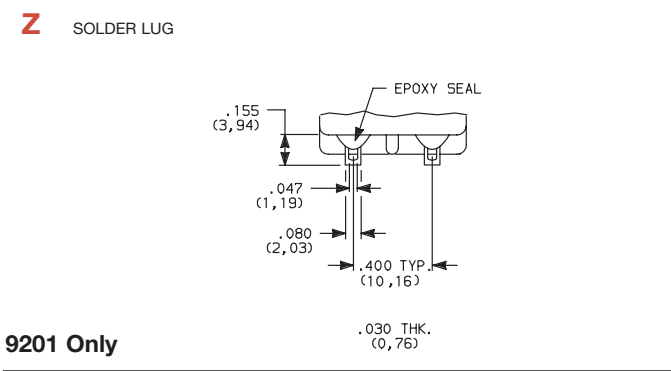


# 9000 Series Power Toggle Switches

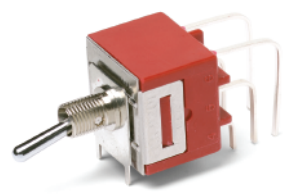
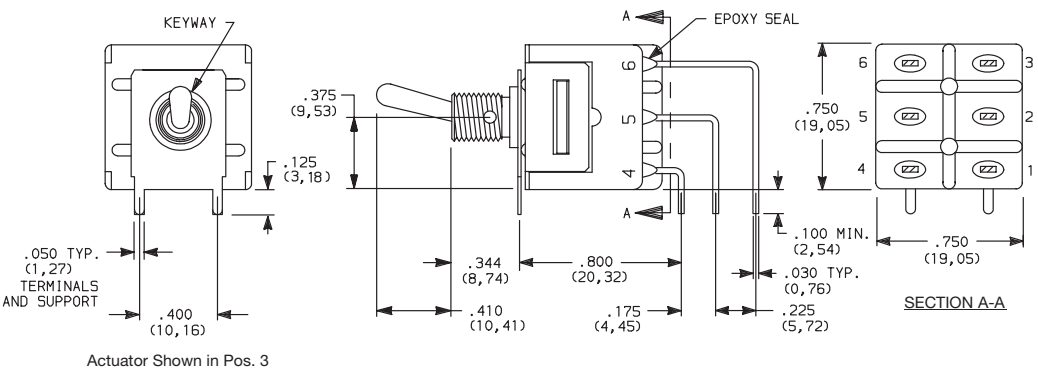
## BUSHING



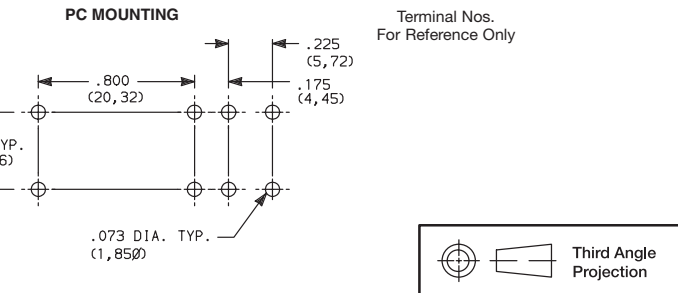
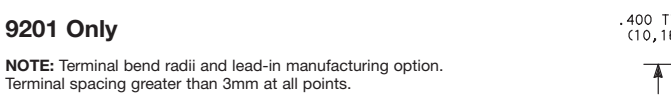
## TERMINATIONS



**AV2** VERTICAL RIGHT ANGLE, PC THRU-HOLE



9201SH3AV2QE  
Vertical Actuation  
DPDT



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



Toggle

# 9000 Series Power Toggle Switches

## CONTACT MATERIAL

OPTION CODE	MODEL	CONTACT MATERIAL	TERMINAL PLATING	RATINGS
Q	9201	SILVER 1,2	SILVER OR TIN 2,5	GP (general purpose) 6 AMPS 125 VAC 50/60 Hz T85 10,000 cycles (10E3) 3 AMPS 250 VAC 50/60 Hz T85 10,000 cycles R (resistive) 6 AMPS 30 VDC T85 10,000 cycles
	9221	SILVER CADMIUM OXIDE 3,4,6	TIN 5	GP (general purpose) 10 AMPS 125 VAC 50/60 Hz T85 10,000 cycles 5 AMPS 250 VAC 50/60 Hz T85 10,000 cycles R (resistive) 10 AMPS 30 VDC T85 10,000 cycles

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

<sup>1</sup> END CONTACTS: Coin silver, silver plated.

<sup>2</sup> CENTER CONTACTS & ALL TERMINALS: Copper alloy, silver plated.

<sup>3</sup> END CONTACTS: Silver cadmium oxide.

<sup>4</sup> CENTER CONTACTS: Copper alloy, silver plated.

<sup>5</sup> Z4 TERMINALS ONLY: Copper alloy, matte-tin plated.

<sup>6</sup> Cadmium in electrical switch contacts is exempt from RoHS.

**NOTE:** Any models supplied with Q contact material are RoHS compliant.

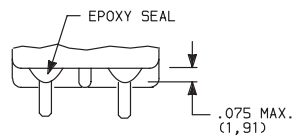
All 9000 Series models meet international dimensional and electrical requirements.

9221 model must be ordered with Z4 terminations and D seal option.



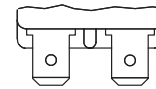
## SEAL

**E** EPOXY SEAL



Not available with 9221 model or Z4 terminations.

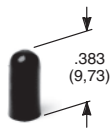
**D** NO EPOXY SEAL



Must be ordered with 9221 model and Z4 termination.

## AVAILABLE HARDWARE

Cap  
Compatible with S actuator



**PART NO.**  
896801000 WHITE  
896802000 BLACK  
896803000 RED

Material: Polyethylene  
Finish: Matte

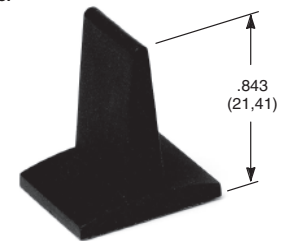
Cap  
Compatible with S actuator



**PART NO.**  
706201000 WHITE  
706202000 BLACK  
706203000 RED

Material: Vinyl  
Finish: Matte

L43 Actuator



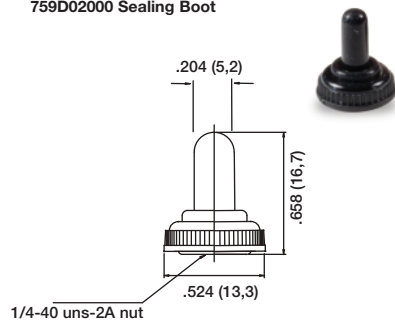
**PART NO.**  
481202000 BLACK  
481203000 RED

Material: Nylon  
Finish: Matte

**NOTE:** Additional nuts, locking rings and lockwashers available separately, see Section N.

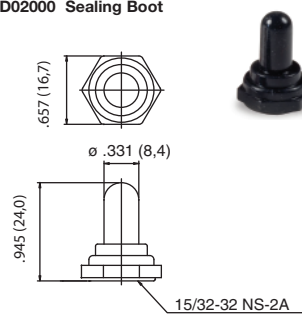
Other colors available, consult Customer Service Center.

759D02000 Sealing Boot



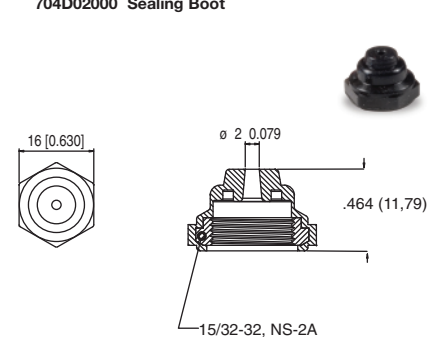
**NOTE:** For use with S actuator style when combined with H3 and H bushings

703D02000 Sealing Boot

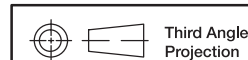


**NOTE:** For use with T style actuator

704D02000 Sealing Boot



**NOTE:** For use with T style actuator










Third Angle Projection






Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

www.ck-components.com

# Rockers

## Product Selection Guide

Rocker							
<b>Series</b>	7000	E	ET	T	9000	DA	D
<b>Switch Type</b>	Miniature	Miniature	Subminiature	Subminiature	Power Rocker & Lever Handle	Miniature Power	Miniature Power
<b>Poles/Throws</b>	SPDT, DPDT, 3PDT, 4PDT	SPDT, DPDT, 3PDT	SPST, SPDT, DPDT	SPST, SPDT, DPDT	DPDT	SPST, SPDT	SPST, SPDT, DPST, DPDT
<b>Max. Current</b>	5 Amps	7.5 Amps	3 Amps	3 Amps	10 Amps	16 Amps 10 Amps	4 Amps 10 Amps
<b>Washable</b>		•	•				
<b>Illuminated</b>						•	
<b>Panel Mount Options</b>							
Front Mount	•	•		•	•	Snap-in	Snap-in
Rear Mount	•	•		•	•		
<b>PCB Mount Options</b>							
Vertical	•	•	•	•	•	•	•
Right Angle	•	•	•	•	•	•	•
Surface Mount			•				
<b>Page No.</b>	G-3	G-25	G-39	G-45	G-51	G-56	G-60

Rocker					
<b>Series</b>	DM	DM	DF	CR	SW
<b>Switch Type</b>	Miniature 2 Pole Power	Miniature Illuminated Power	Power	Round	Miniature Power
<b>Poles/Throws</b>	DPST, DPDT	SPST, DPST	SPST, SPDT, DPST	SPST, SPDT	SPST, SPDT, DPST
<b>Max. Current</b>	3 Amps, 10 Amps	3 Amps, 10 Amps	16 Amps	10 Amps, 6 Amps	3 A, 6 A, 6.5 A, 10 A, 16 A
<b>Washable</b>					
<b>Illuminated</b>		•		•	•
<b>Panel Mount Options</b>					
Front Mount	Snap-in	Snap-in	Snap-in	Snap-in	Snap-in
Rear Mount			•		
<b>PCB Mount Options</b>					
Vertical					
Right Angle			•		
Surface Mount					
<b>Page No.</b>	G-65	G-69	G-73	G-77	G-81

Rocker



G

**C&K**

*Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change*



# 7000 Series Miniature Rocker & Lever Handle Switches

## Features/Benefits

- Multi-pole and multi-position
- Wide variety of actuator and termination options
- Epoxy terminal-seal compatible with bottom wash cleaning
- RoHS compliant

## Typical Applications

- Telecommunications
- Instrumentation
- Medical equipment



## Specifications

CONTACT RATING: B contact material: 0.4 VA max. @ 20 V AC or DC max. Q contact material: 5 AMPS @ 120 V AC or 28 V DC; 2 AMPS @ 250 V AC. See page G-20 for additional ratings.

ELECTRICAL LIFE: 7X01 and UX1 models: 100,000 make-and-break cycles at full load. All other models: 40,000 cycles.

CONTACT RESISTANCE: Below 10 m Ω typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

INSULATION RESISTANCE: 10<sup>9</sup> Ω min.

DIELECTRIC STRENGTH: 1000 Vrms min. @ sea level.

OPERATING TEMPERATURE: -30°C to 85°C.

SOLDERABILITY: Per MIL-STD-202F method 208D, or EIA RS-186E method 9 (1 hour steam aging).

**NOTE:** Any models supplied with S, P, R, Q, B or G contact material are RoHS compliant.

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## Materials

CASE: Glass filled nylon 6/6, flame retardant, heat stabilized, or diallyl phthalate (DAP) (UL 94V-0).

ACTUATOR: Nylon, black.

FRAME (FRONT MOUNT): Nylon, black.

FRAME (REAR MOUNT): Spring steel, black.

BUSHING: Brass or zinc, nickel plated.

HOUSING: Stainless steel.

SWITCH SUPPORT: Brass or steel, matte-tin plated.

END CONTACTS: B contact material: Copper alloy, with gold plate over nickel plate. Q contact material: Coin silver, silver plated. See page G-20 for additional contact materials.

CENTER CONTACTS & ALL TERMINALS: B contact material: Copper alloy, with gold plate over nickel plate. Q contact material: Copper alloy, silver plated. See page G-20 for additional contact materials.

TERMINAL SEAL: Epoxy. Refer to Soldering and Cleaning in Technical Data Section

HARDWARE: Mounting nuts & screws: Brass. Lockwasher: Stainless steel. Standoff: Nylon standard.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages G-4 through G-24. For additional options not shown in catalog, consult Customer Service Center. All models have epoxy terminal seal and are compatible with all "bottom-wash" PCB cleaning methods.

<p><b>Switch Function</b></p> <p><b>7101</b> SP On-None-On  <b>7103</b> SP On-Off-On  <b>7105</b> SP Mom.-Off-Mom.  <b>7107</b> SP On-Off-Mom.  <b>7108</b> SP On-None-Mom.  <b>7109</b> SP None-On-Mom.  <b>7201</b> DP On-None-On  <b>7203</b> DP On-Off-On  <b>7205</b> DP Mom.-Off-Mom.  <b>7207</b> DP On-Off-Mom.  <b>7208</b> DP On-None-Mom.  <b>7211</b> DP On-On-On  <b>7213</b> DP On-On-Mom.  <b>7215</b> DP Mom.-On-Mom.  <b>7301</b> 3P On-None-On  <b>7303</b> 3P On-Off-On  <b>7401</b> 4P On-None-On  <b>7405</b> 4P Mom.-Off-Mom.  <b>7411</b> 4P On-On-On</p> <p><b>Note:</b> UL models available, see pages G-5 and G-6.</p>	<p><b>Actuator</b></p> <p><b>J1</b> .531" long rocker  <b>J2</b> Lever  <b>J3</b> .906" long rocker  <b>J8</b> .699" long rocker  <b>J10</b> 1.318" long rocker  <b>J11</b> Rocker with frame  <b>J15</b> Rocker, snap-in  <b>J16</b> Rocker with frame, snap-in  <b>J19</b> Rocker with frame  <b>J21</b> Lever with frame  <b>J25</b> Lever, snap-in  <b>J26</b> Lever with frame, snap-in  <b>J37</b> Rocker with frame  <b>J50</b> Rocker  <b>J51</b> Rocker with frame  <b>J52</b> Rocker with frame for LED, snap-in  <b>J60</b> Lever  <b>J61</b> Lever with frame, snap-in  <b>J62</b> Lever with frame for LED, snap-in  <b>J90</b> Lever  <b>J91</b> Lever with frame, snap-in</p>	<p><b>Terminations</b></p> <p><b>A</b> Right angle, PC thru-hole  <b>AV2</b> Vertical right angle, PC thru-hole  <b>C</b> PC Thru-hole  <b>Z</b> Solder lug  <b>A3</b> Right angle, snap-in, PC thru-hole  <b>AV3</b> Vertical right angle, snap-in, PC thru-hole  <b>AW3</b> Right angle, extended, PC thru-hole  <b>V2</b> .555" high, V-bracket  <b>V3</b> .460" high, V-bracket  <b>V4</b> .630" high, V-bracket  <b>V5</b> Vertical right angle, PC thru-hole  <b>V6</b> .460" high, V-bracket  <b>V7</b> .630" high, V-bracket  <b>V8</b> .953" high, V-bracket  <b>V9</b> 1.150" high, V-bracket  <b>V31</b> .460" high, V-bracket, snap-in  <b>V51</b> Vertical right angle, snap-in  <b>V61</b> .460" high, V-bracket, snap-in  <b>W</b> .750" long, wire wrap  <b>W3</b> .425" long, wire wrap  <b>W5</b> 1.305" long, wire wrap  <b>Z3</b> Quick connect</p>	<p><b>Contact Material</b></p> <p><b>B</b> Gold  <b>P</b> Gold, matte tin  <b>Q</b> Silver  <b>S</b> Silver, matte-tin  <b>G</b> Gold over silver  <b>R</b> Gold over silver, matte-tin</p> <p><b>Seal</b></p> <p><b>E</b> Epoxy  <b>I</b> Epoxy potted base</p> <p><b>Actuator Color</b></p> <p><b>2</b> Black  <b>1</b> White  <b>3</b> Red</p> <p><b>Frame Color</b></p> <p><b>2</b> Black  <b>NONE</b> No frame color required  <b>1</b> White</p> <p><b>Metal Frame Color</b>  (J11, J19, J21 &amp; J37 Actuators)  <b>2</b> Black  <b>1</b> White</p>
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Dimensions are shown: Inches (mm)  
 Specifications and dimensions subject to change

Rocker

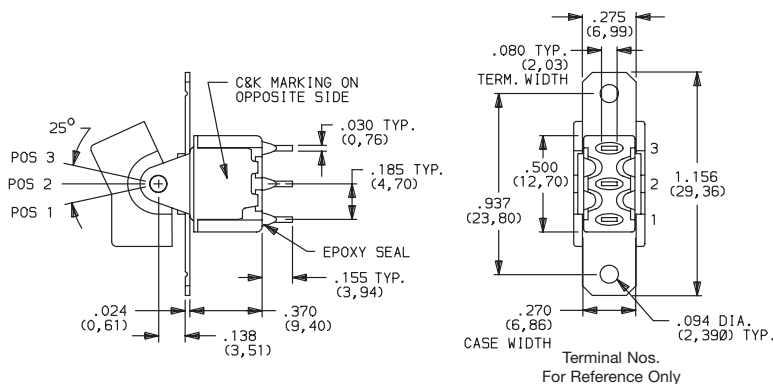


# 7000 Series Miniature Rocker & Lever Handle Switches

## SWITCH FUNCTION

NO. POLES	MODEL NO.	UL** MODEL NO.	SWITCH FUNCTION			CONNECTED TERMINALS			SCHEMATIC
			POS. 1	POS. 2	POS. 3	POS. 1	POS. 2	POS. 3	
SP	7101	U11	ON	NONE	ON	2-3	N/A	2-1	
	7103	U13	ON	OFF	ON		OPEN		
	7105	U15	MOM.	OFF	MOM.		N/A		
	7107	U17	ON	OFF	MOM.				
	7108	U18	ON	NONE	MOM.				
	7109	U19	NONE	ON	MOM.		N/A		

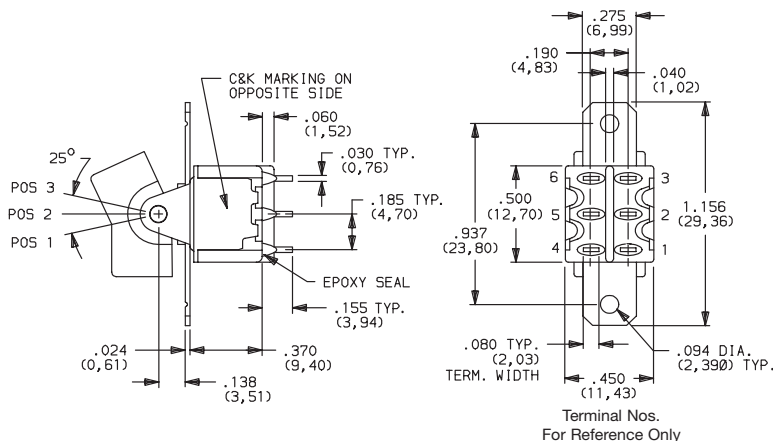
### SPDT



Part number shown: 7101J1ZQE2

DP	7201	U21	ON	NONE	ON	2-3,5-6	N/A	2-1,5-4	
	7203	U23	ON	OFF	ON		OPEN		
	7205	U25	MOM.	OFF	MOM.		N/A		
	7207	U27	ON	OFF	MOM.				
	7208	U28	ON	NONE	MOM.				
	7211*	U211*	ON	ON	ON				
	7213*	U213*	ON	ON	MOM.		2-3,5-4		
	7215*	U215*	MOM.	ON	MOM.				

### DPDT



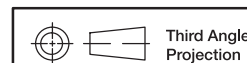
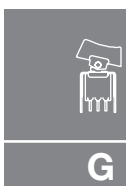
Part number shown: 7201J1ZQE2

MOM. = Momentary

\* Wiring for 3-way switch, see Section N.

\*\* U11 through U413 model nos. c US with all options when ordered with G, Q, R or S contact material.

Rocker



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

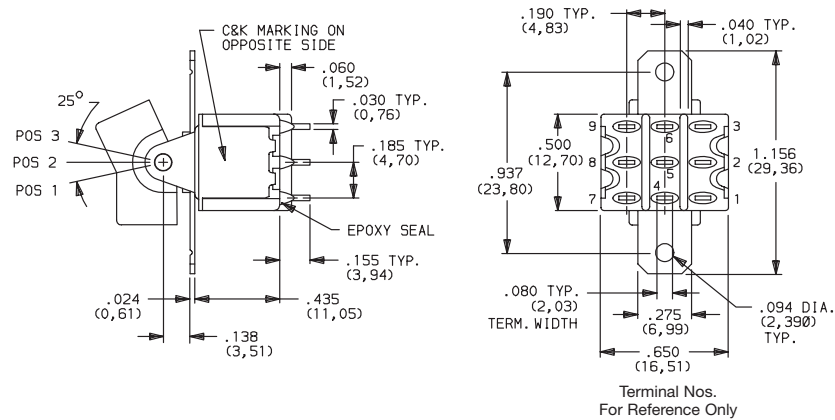
www.ck-components.com

# 7000 Series Miniature Rocker & Lever Handle Switches

## SWITCH FUNCTION

NO. POLES	MODEL NO.	UL** MODEL NO.	SWITCH FUNCTION			CONNECTED TERMINALS			SCHEMATIC
			POS. 1	POS. 2	POS. 3	POS. 1	POS. 2	POS. 3	
3P	<b>7301</b>	<b>U31</b>	ON	NONE	ON	2-3-5-6,8-9	N/A	2-1,5-4,8-7	 3PDT
	<b>7303</b>	<b>U33</b>	ON	OFF	ON		OPEN		

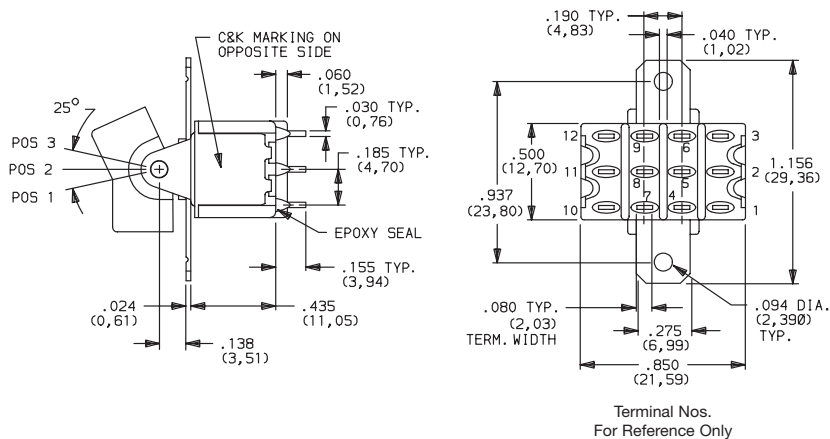
### 3PDT



Part number shown: 7301J1ZQE2

4P	<b>7401</b>	<b>U41</b>	ON	NONE	ON	2-3-5-6,8-9,11-12	N/A	2-1,5-4,8-7,11-10	 4PDT
	<b>7405</b>	<b>U45</b>	MOM.	OFF	MOM.		OPEN		
	<b>7411*</b>	<b>U411*</b>	ON	ON	ON		2-3-5-4,8-9,11-10		

### 4PDT



Part number shown: 7401J1ZQE2

MOM. = Momentary

\*\* U11 through U411 model nos. with all options when ordered with G, Q, R or S contact material.

\* Wiring for 3-way switch: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



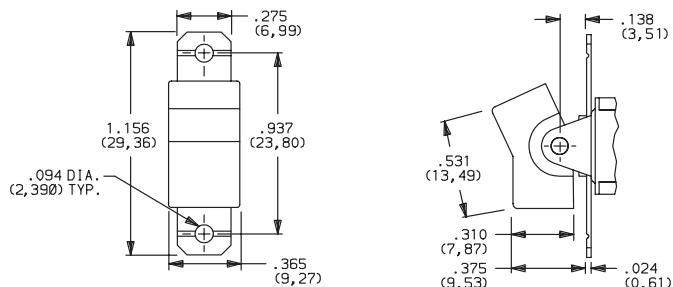
# 7000 Series Miniature Rocker & Lever Handle Switches

## ACTUATOR-PANEL REAR MOUNT

ACTUATOR COLOR

ACTUATOR

### J1 ROCKER



OPTION CODE	ACTUATOR COLOR
2	BLACK
1	WHITE
3	RED

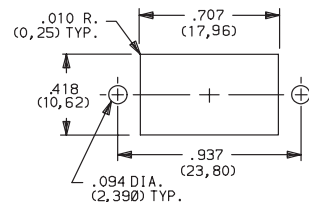
Finish: Matte. Other colors, custom actuator markings and legends available, consult Customer Service Center.

**NOTE:** Hardware: two each—mounting screws, nuts, lockwashers and standoffs for 1/8 inch thick panel are supplied standard on all switches with panel mounting brackets. Actuators available separately, see page G-21 through G-22. Hardware is available see Technical Data section of this catalog.

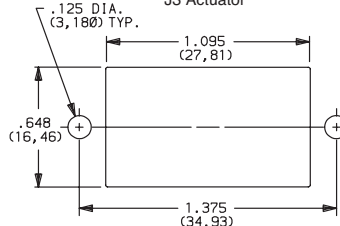
J1, J2, J3, J8 & J10 Actuators available with C, W-W5, Z or Z3 terminations.

### PANEL MOUNTING

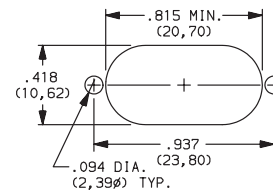
#### J1 & J2 Actuators



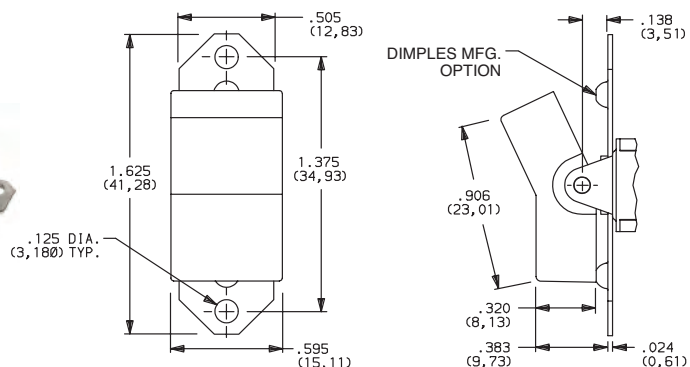
#### J3 Actuator



#### J8 Actuator

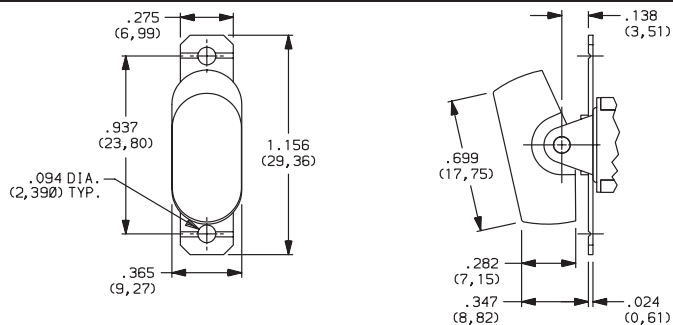


### J3 ROCKER

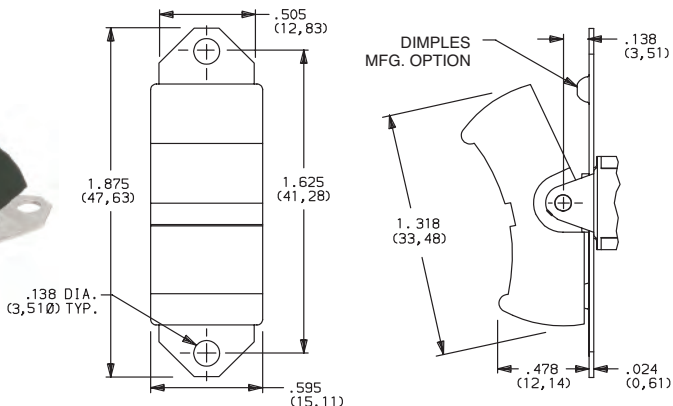


DIMPLES MFG. OPTION

### J8 ROCKER

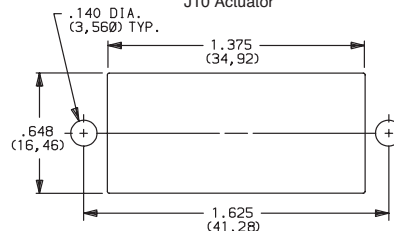


### J10 ROCKER



DIMPLES MFG. OPTION

#### J10 Actuator



Third Angle Projection

Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

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Rocker

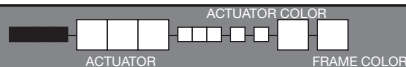


G

C&K

# 7000 Series Miniature Rocker & Lever Handle Switches

## ACTUATOR-SNAP-IN FRONT MOUNT



OPTION CODE	ACTUATOR COLOR
2	BLACK
1	WHITE
3	RED

OPTION CODE	FRAME COLOR
2	BLACK
NONE	No Frame Color (J15 or J25 options)
1	WHITE

Finish: Matte. Other colors, custom actuator markings and legends available, consult Customer Service Center.

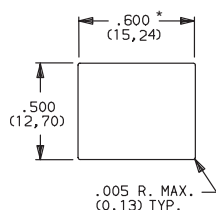
**NOTE:** Actuators & frames available separately, see pages G-21 through G-22. J15, J16, J25, J26, J50 & J51 Actuators available with 71XX, 72XX, U1XX & U2XX models and C, W-W5, Z and Z3 terminations.

### PANEL MOUNTING

J15, J16, J25 & J26 Actuators



J50 Actuator

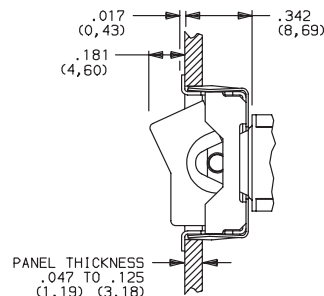


\* For J50: Increase this dimension to .620/.625 (15,75/15,88) for .091/.125 (2,31/3,18) thk. panels.

### J15 ROCKER, SNAP-IN



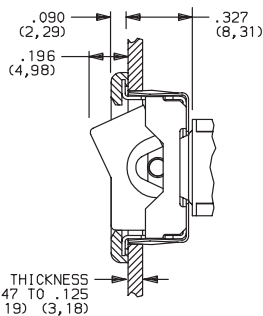
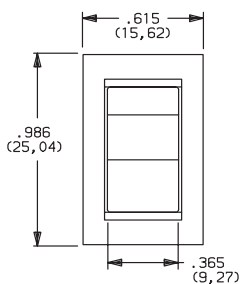
No frame color choice required



PANEL THICKNESS  
.047 TO .125  
(1,19) (3,18)



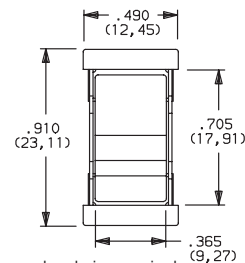
### J16 ROCKER WITH FRAME, SNAP-IN



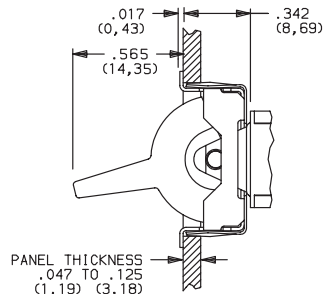
PANEL THICKNESS  
.047 TO .125  
(1,19) (3,18)



### J25 LEVER, SNAP-IN



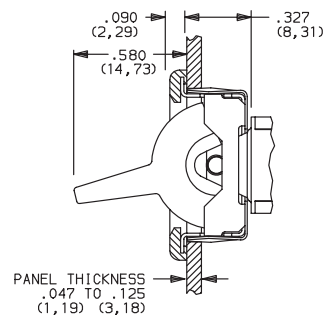
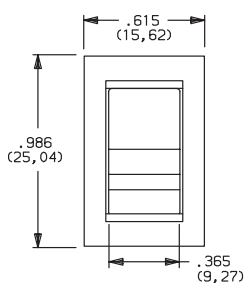
No frame color choice required



PANEL THICKNESS  
.047 TO .125  
(1,19) (3,18)



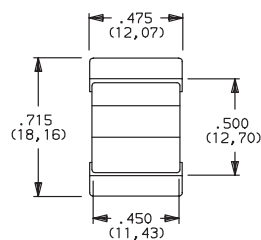
### J26 LEVER WITH FRAME, SNAP-IN



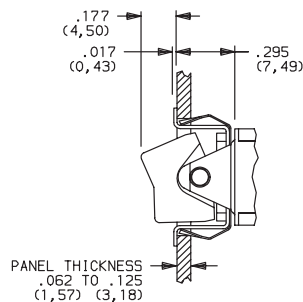
PANEL THICKNESS  
.047 TO .125  
(1,19) (3,18)



### J50 ROCKER, SNAP-IN



No frame color choice required



PANEL THICKNESS  
.062 TO .125  
(1,57) (3,18)



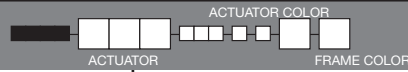
Third Angle  
Projection

Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

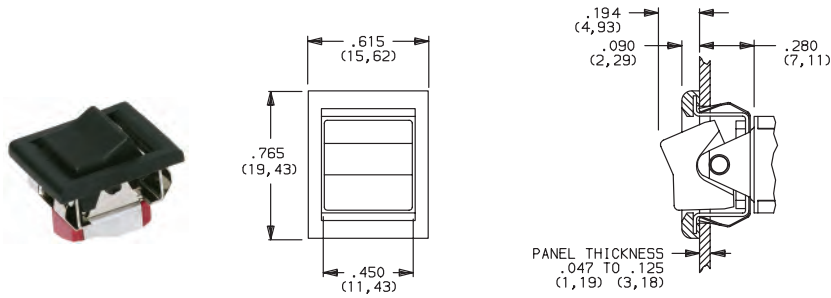


# 7000 Series Miniature Rocker & Lever Handle Switches

## ACTUATOR-SNAP-IN FRONT MOUNT

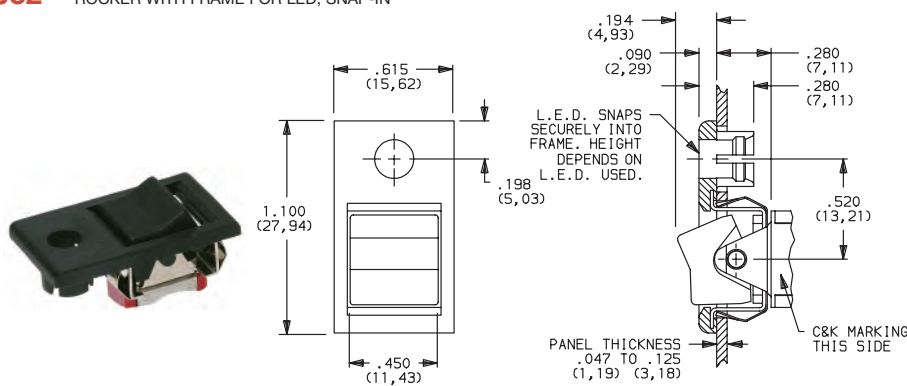


### J51 ROCKER WITH FRAME, SNAP-IN



OPTION CODE	ACTUATOR COLOR
2	BLACK
1	WHITE
3	RED

### J52 ROCKER WITH FRAME FOR LED, SNAP-IN



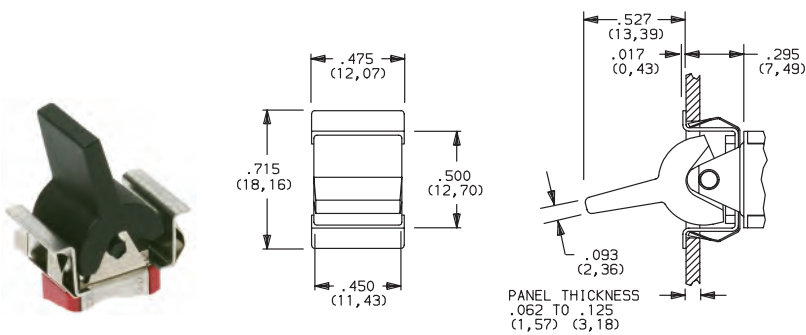
OPTION CODE	FRAME COLOR
2	BLACK
NONE	No Frame Color (J15 or J25 options)
1	WHITE

Finish: Matte. Other colors, custom actuator markings and legends available, consult Customer Service Center.

**NOTE:** Actuators & frames available separately, see pages G-21 through G-22. J51, J52, J60 & J61 Actuators available with 71XX, 72XX, U1XX & U2XX models and C, W-W5, Z and Z3 terminations.

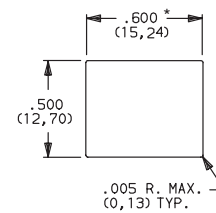
LED not included.  
For LED information, see page G-24.

### J60 LEVER, SNAP-IN

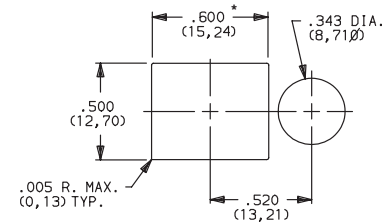


#### PANEL MOUNTING

J51, J60 & J61 Actuators



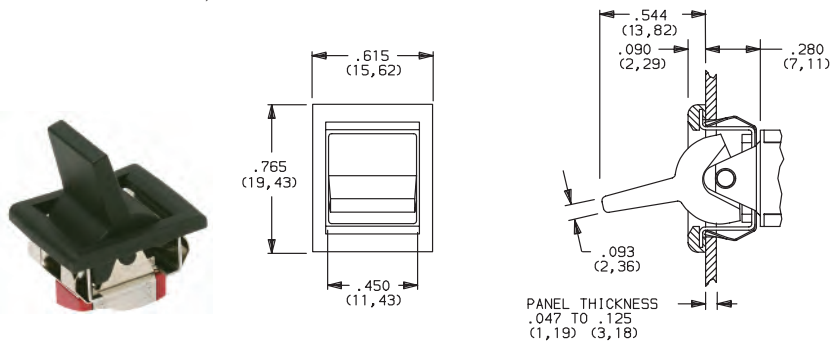
J52 Actuator



For J51, J52: Increase this dimension to .620/.625 (15,75/15,88) for .060/.125(1,52/3,18) thk. panels.

No frame color choice required

### J61 LEVER WITH FRAME, SNAP-IN



Rocker



G



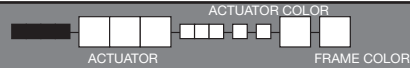
Third Angle Projection

Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

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# 7000 Series Miniature Rocker & Lever Handle Switches

## ACTUATOR-SNAP-IN FRONT MOUNT



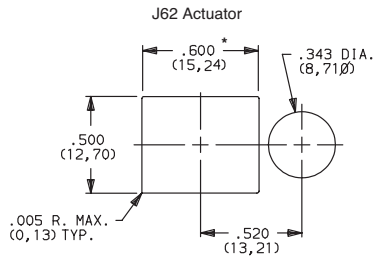
OPTION CODE	ACTUATOR COLOR
2	BLACK
1	WHITE
3	RED

OPTION CODE	FRAME COLOR
2	BLACK
NONE	No Frame Color (J90 options)
1	WHITE

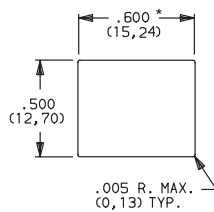
Finish: Matte. Other colors, custom actuator markings and legends available, consult Customer Service Center.

**NOTE:** Actuators & frames available separately, see pages G-21 through G-22. J62, J90 & J91 Actuators available with 71XX, 72XX, U1XX & U2XX models and C, W-W5, Z & Z3 terminations.

### PANEL MOUNTING

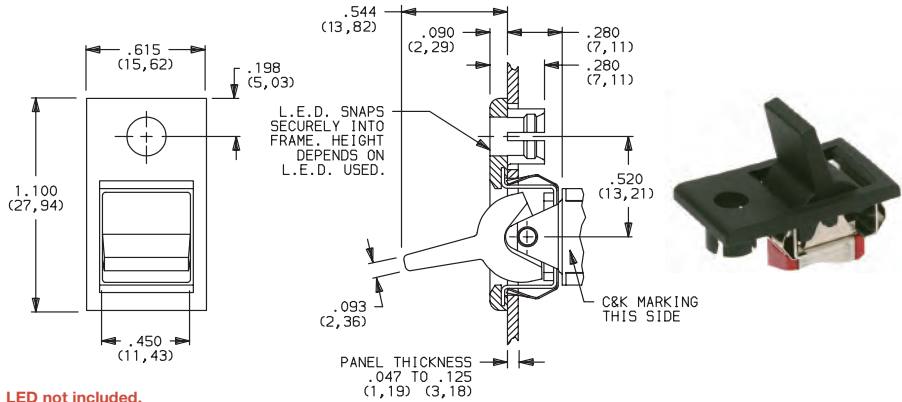


### J90, J91 & J93 Actuators



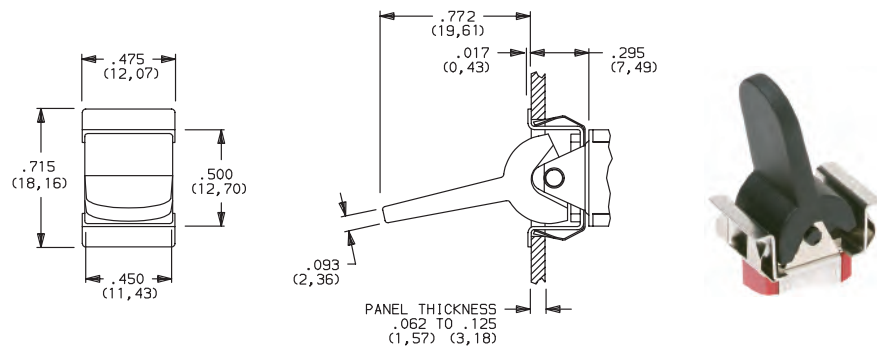
\* For J90: Increase this dimension to .620/.625 (15,75/15,88) for .091/.125 (2,31/3,18) thk. panels.  
For J91: Increase this dimension to .620/.625 (15,75/15,88) for .060/.125 (1,52/3,18) thk. panels.

### J62 LEVER WITH FRAME FOR LED, SNAP-IN



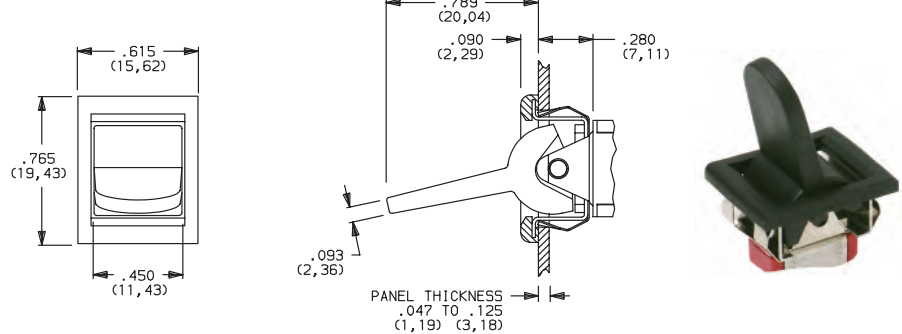
**LED not included.**  
For LED information, see page H-25.

### J90 LEVER, SNAP-IN



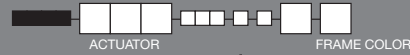
No frame color choice required.

### J91 LEVER WITH FRAME, SNAP-IN

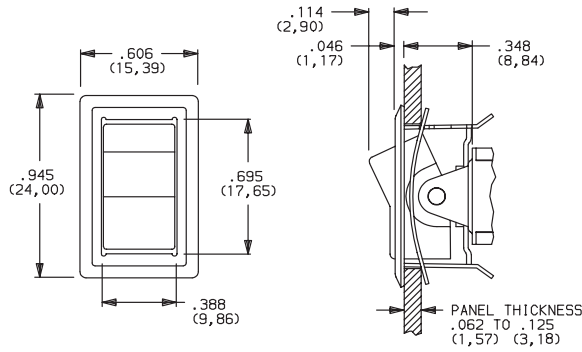


# 7000 Series Miniature Rocker & Lever Handle Switches

## ACTUATOR-REAR MOUNT



**J11** ROCKER WITH FRAME



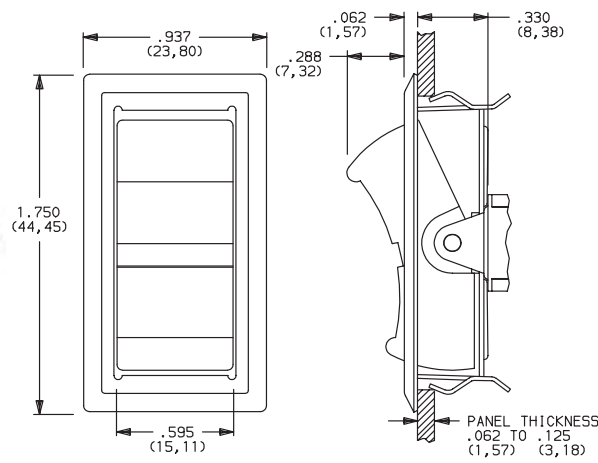
OPTION CODE	ACTUATOR COLOR
2	BLACK
1	WHITE
3	RED

OPTION CODE	FRAME COLOR
2	BLACK
1	WHITE

Actuator finish: Matte. Frame finish: Gloss. Other colors, custom actuator markings and legends available, consult Customer Service Center.

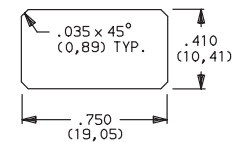
**NOTE:** Actuators & frames available separately, see pages G-21 through G-22. J11, J19, J21 & J37 Actuators available with C, W-W5, Z & Z3 terminations.

**J19** ROCKER WITH FRAME

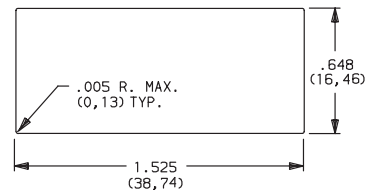


### PANEL MOUNTING

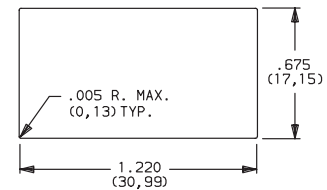
#### J11 & J21 Actuators



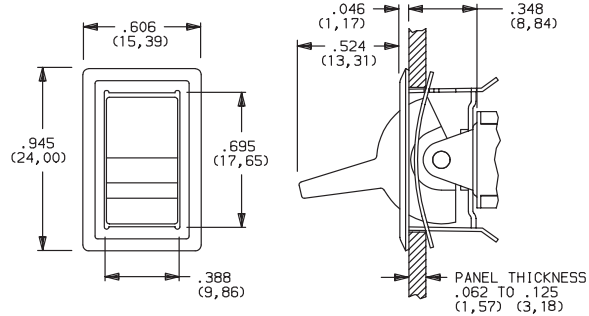
#### J19 Actuator



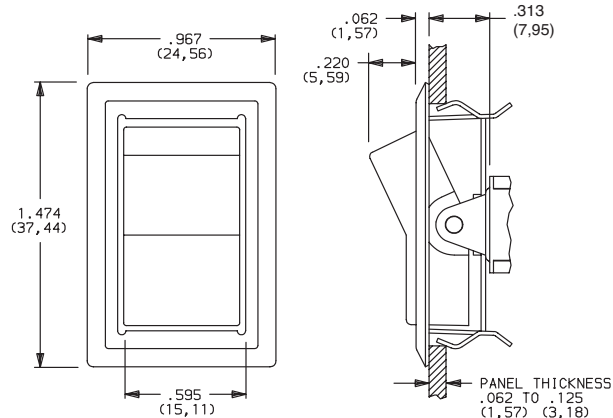
#### J37 Actuator



**J21** LEVER WITH FRAME



**J37** ROCKER WITH FRAME



Rocker



G

**C&K**



Third Angle Projection

Dimensions are shown: Inches (mm)  
 Specifications and dimensions subject to change

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# 7000 Series Miniature Rocker & Lever Handle Switches

ACTUATOR-PC MOUNT



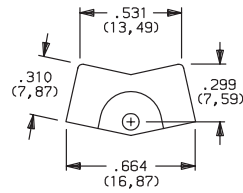
OPTION CODE	ACTUATOR COLOR
2	BLACK
1	WHITE
3	RED

Finish: Matte. Other colors, custom actuator markings and legends available, consult Customer Service Center.

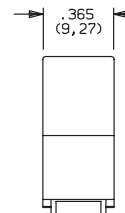
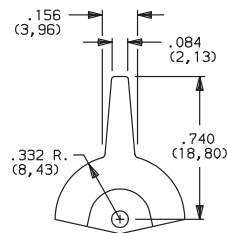
**NOTE:** Some permissible actuator/termination combinations may lack clearance between actuator and PC board, and care must be exercised to accommodate this condition.

Actuators available separately, see page G-21 through G-22. J1, J2 & J8 actuators available with A, A3, AV2, AV3, AW3 & V2 terminations. J3 actuators available with AV2, AV3 & V2-V61 terminations. J50 actuators available with A (DP, 3P models only), A3 (DP, 3P models only), AV2, AV3, AW3 (DP, 3P models only) & V2-V61 terminations.

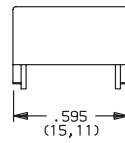
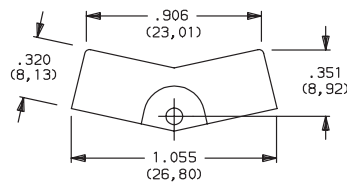
## J1 ROCKER



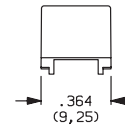
## J2 LEVER



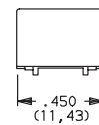
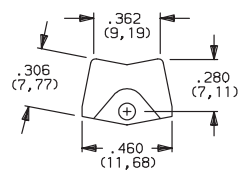
## J3 ROCKER



## J8 ROCKER



## J50 ROCKER



Rocker

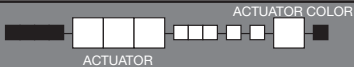


Third Angle Projection  
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

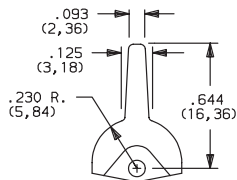


# 7000 Series Miniature Rocker & Lever Handle Switches

## ACTUATOR-PC MOUNT



### J60 LEVER

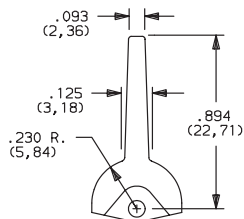


OPTION CODE	ACTUATOR COLOR
2	BLACK
1	WHITE
3	RED

Finish: Matte. Other colors, custom actuator markings and legends available, consult Customer Service Center.

**NOTE:** Some permissible actuator/termination combinations may lack clearance between actuator and PC board, and care must be exercised to accommodate this condition.

### J90 LEVER

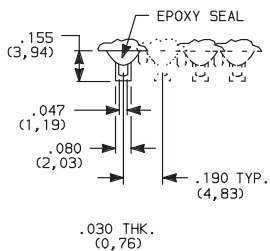


Actuators available separately, see page G-21 through G-22. J60 & J90 actuators available with A (DP, 3P models only), A3 (DP, 3P models only), AV2, AV3, AW3 (DP, 3P models only) & V2-V61 terminations.

## TERMINATIONS



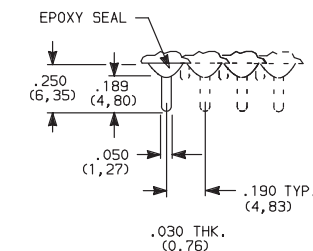
### Z SOLDER LUG



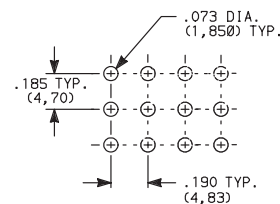
### SPDT thru 4PDT

Not available with P, R or S contact materials. Available actuators, see pages G-7 through G-13.

### C PC THRU-HOLE



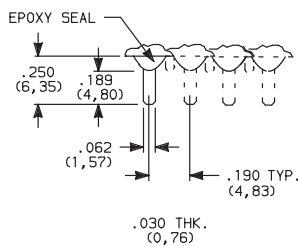
### PC MOUNTING



### SPDT thru 4PDT

NOTE: Available actuators, see pages G-7 through G-13.

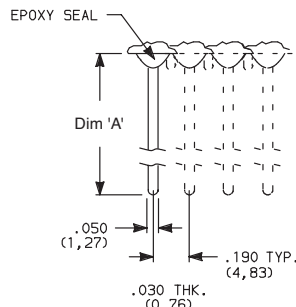
### Z3 QUICK CONNECT



### SPDT thru 4PDT

Not available with P, R or S contact materials. Available actuators, see pages G-7 through G-13. Mating quick connector available; order part number 530100000, page G-22.

### W, W3, W5 WIRE WRAP



OPTION CODE	DIM 'A'
W	.750 (19,05)
W3	.425 (10,80)
W5	1.305 (33,15)

### SPDT thru 4PDT

NOTE: Available actuators, see pages G-7 through G-13.



Third Angle Projection

Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

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Rocker



G

**C&K**

# 7000 Series Miniature Rocker & Lever Handle Switches

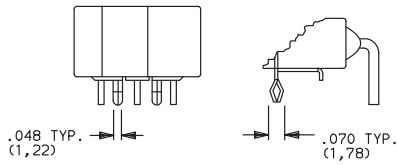
## TERMINATIONS

### A RIGHT ANGLE, PC THRU-HOLE

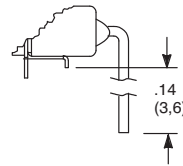


**7101J1ABE2**  
Horizontal Actuation  
**SPDT**

### A3 RIGHT ANGLE, SNAP-IN, PC THRU-HOLE



### AW3 RIGHT ANGLE, EXTENDED, PC THRU-HOLE



### PC MOUNTING



Not available with I seal option. Available actuators, see pages G-6 and G-12.  
Terminal bend radii and lead-in manufacturing option.

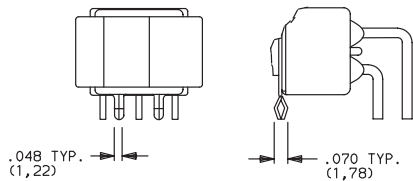
**NOTE:** PC pattern must clear switch support leg.

### A RIGHT ANGLE, PC THRU-HOLE

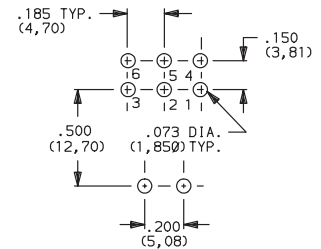


**7201J1ABE2**  
Horizontal Actuation  
**DPDT**

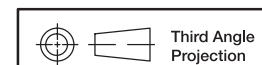
### A3 RIGHT ANGLE, SNAP-IN, PC THRU-HOLE



### PC MOUNTING



Not available with I seal option. Available actuators, see pages G-6 and G-12.  
Terminal bend radii and lead-in manufacturing option.



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



# 7000 Series Miniature Rocker & Lever Handle Switches

## TERMINATIONS

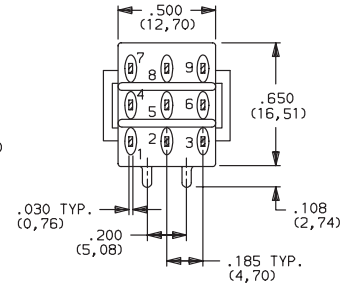
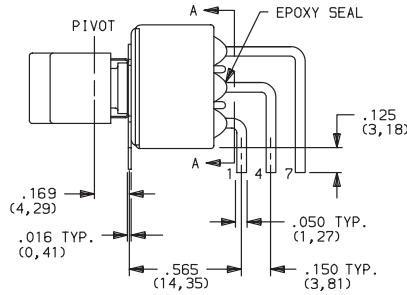
**A** RIGHT ANGLE, PC THRU-HOLE



**7301J1ABE2**  
Horizontal Actuation  
**3PDT**



Actuator Shown In Pos. 1



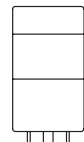
SECTION A-A

Not available with I seal option. Available actuators, see pages G-6 and G-12.  
Terminal bend radii and lead-in manufacturing option.

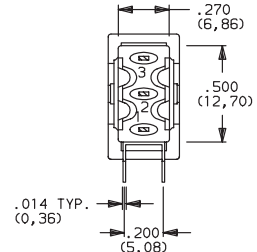
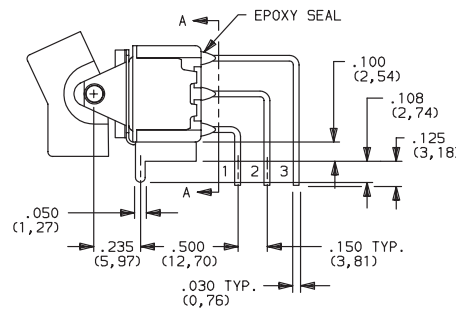
**AV2** VERTICAL RIGHT ANGLE, PC THRU-HOLE,  
.150" PITCH



**7101J1AV2BE2**  
Vertical Actuation  
**SPDT**

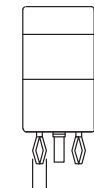


Actuator Shown In Pos. 1

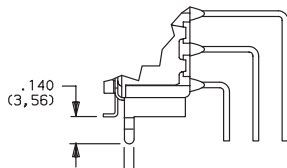


SECTION A-A

**AV3** VERTICAL RIGHT ANGLE, SNAP-IN, PC THRU-HOLE,  
.150" PITCH



.070 TYP. (1,78)

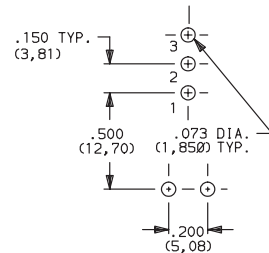


.048 TYP. (1,22)

Not available with I seal option. Available actuators, see pages G-6 and G-12.  
Terminal bend radii and lead-in manufacturing option.

Rocker

PC MOUNTING



Third Angle  
Projection

Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

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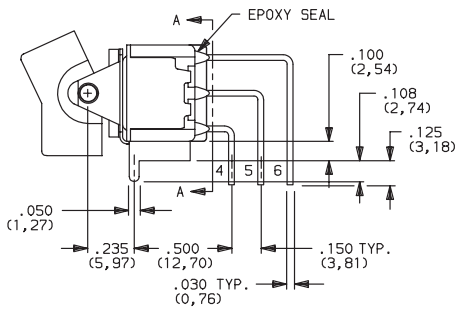
# 7000 Series Miniature Rocker & Lever Handle Switches

## TERMINATIONS

**AV2** VERTICAL RIGHT ANGLE, PC THRU-HOLE,  
.150" PITCH

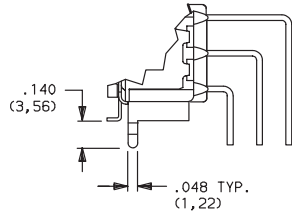


Actuator Shown In Pos. 1

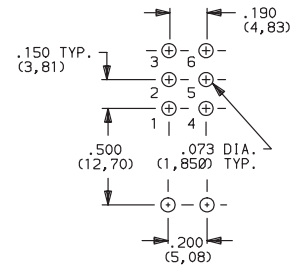


**7201J1AV2BE2**  
Vertical Actuation  
**DPDT**

**AV3** VERTICAL RIGHT ANGLE, SNAP-IN, PC THRU-HOLE,  
.150" PITCH

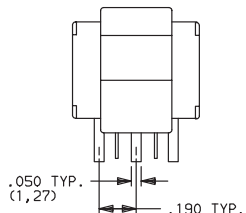


### PC MOUNTING

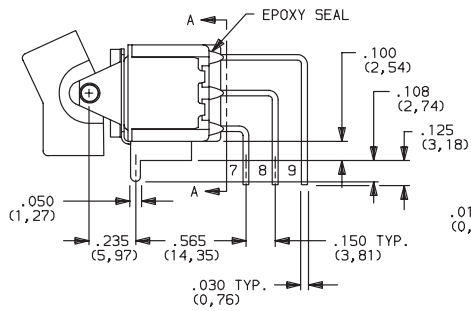


Not available with I seal option. Available actuators, see pages G-6 and G-12.  
Terminal bend radii and lead-in manufacturing option.

**AV2** VERTICAL RIGHT ANGLE, PC THRU-HOLE,  
.150" PITCH

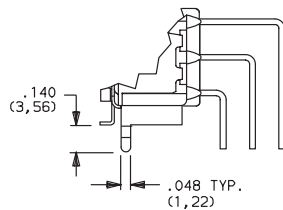


Actuator Shown In Pos. 1

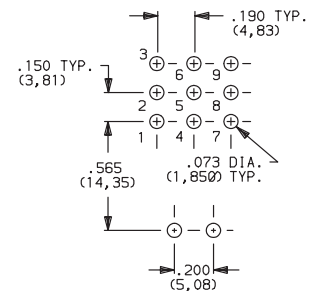


**7301J1AV2BE2**  
Vertical Actuation  
**3PDT**

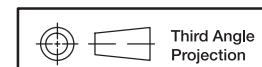
**AV3** VERTICAL RIGHT ANGLE, SNAP-IN, PC THRU-HOLE,  
.150" PITCH



### PC MOUNTING



Not available with I seal option. Available actuators, see pages G-6 and G-12.  
Terminal bend radii and lead-in manufacturing option.



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

www.ck-components.com



# 7000 Series Miniature Rocker & Lever Handle Switches

## TERMINATIONS

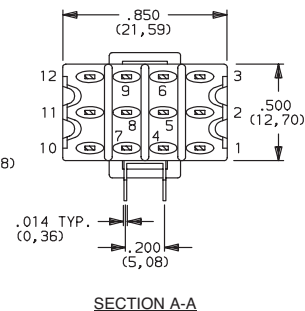
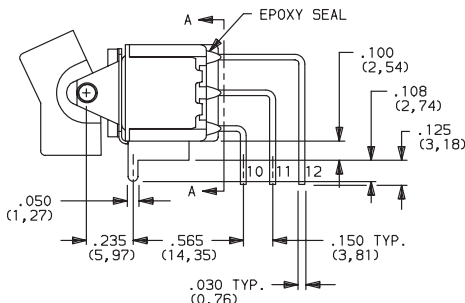
**AV2** VERTICAL RIGHT ANGLE, PC THRU-HOLE,  
.150" PITCH



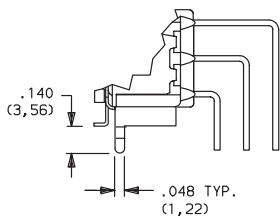
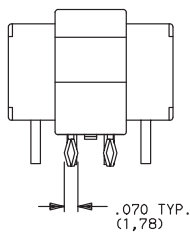
**7401J1AV2BE2**  
Vertical Actuation  
**4PDT**



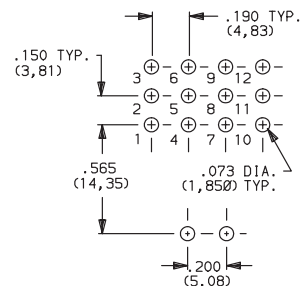
Actuator Shown In Pos. 1



**AV3** VERTICAL RIGHT ANGLE, SNAP-IN, PC THRU-HOLE,  
.150" PITCH



### PC MOUNTING

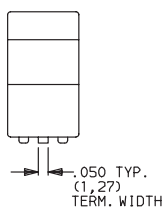


Not available with I seal option. Available actuators, see pages G-6 and G-12.  
Terminal bend radii and lead-in manufacturing option.

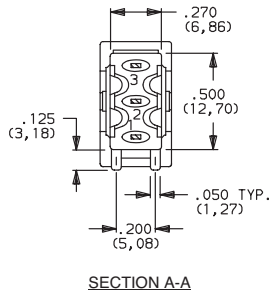
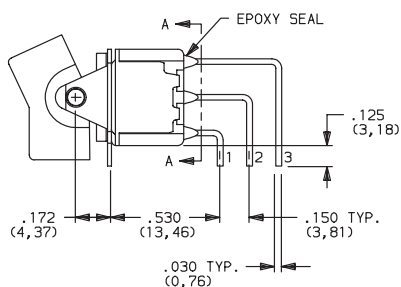
**V5** VERTICAL RIGHT ANGLE, PC THRU-HOLE,  
.150" PITCH



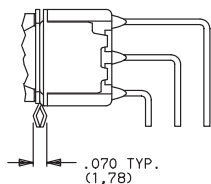
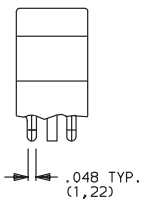
**7101J1V5BE2**  
Vertical Actuation  
**SPDT**



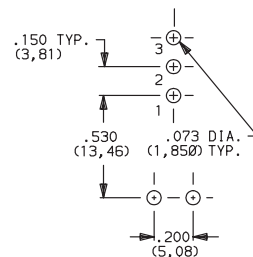
Actuator Shown In Pos. 1



**V51** VERTICAL RIGHT ANGLE, SNAP-IN,  
PC THRU-HOLE, .150" PITCH



### PC MOUNTING



Rocker

Not available with I seal option. Available actuators, see pages G-6 and G-12.  
Terminal bend radii and lead-in manufacturing option.



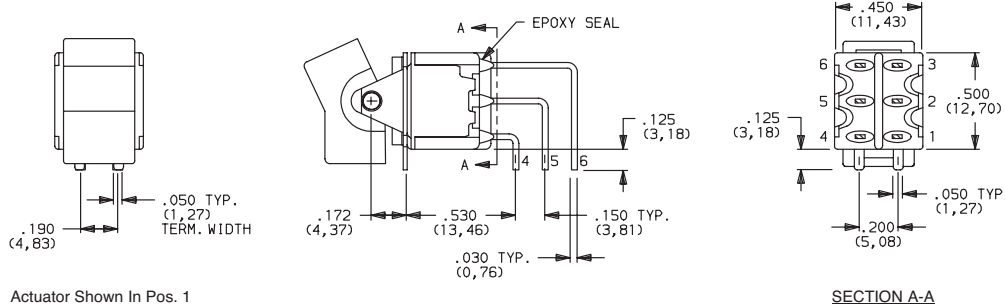
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



# 7000 Series Miniature Rocker & Lever Handle Switches

## TERMINATIONS

**V5** VERTICAL RIGHT ANGLE, PC THRU-HOLE,  
.150" PITCH

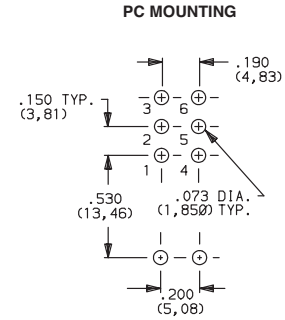
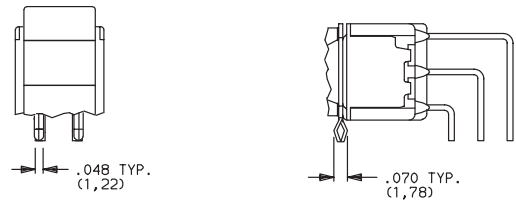


Actuator Shown In Pos. 1



**7201J1V5BE2**  
Vertical Actuation  
DPDT

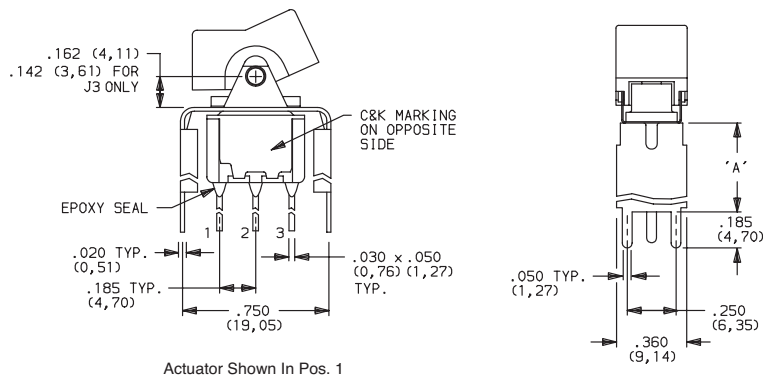
**V51** VERTICAL RIGHT ANGLE, SNAP-IN,  
PC THRU-HOLE, .150" PITCH



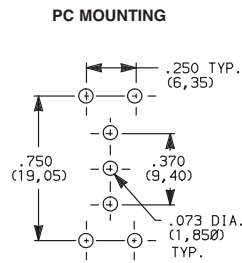
Not available with I seal option. Available actuators, see pages G-6 and G-12.  
Terminal bend radii and lead-in manufacturing option.

**V2, V6, V7, V8** VERTICAL MOUNT, V-BRACKET

**V61** VERTICAL MOUNT, V-BRACKET, SNAP-IN



Actuator Shown In Pos. 1



**7101J1\_BE2**  
SPDT

OPTION CODE	DIM 'A'
<b>V2, V21</b>	.555 (14,10)
<b>V6, V61</b>	.460 (11,68)
<b>V7</b>	.630 (16,00)
<b>V8</b>	.953 (24,21)

Not available with I seal option.  
Available actuators, see pages G-6 and G-12.



Third Angle Projection  
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

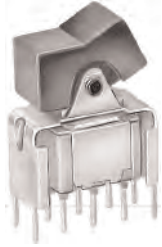


# 7000 Series Miniature Rocker & Lever Handle Switches

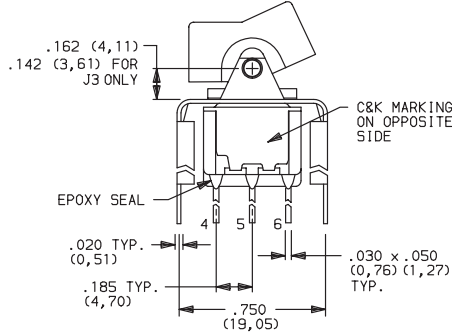
## TERMINATIONS

**V2, V6, V7, V8** VERTICAL MOUNT, V-BRACKET

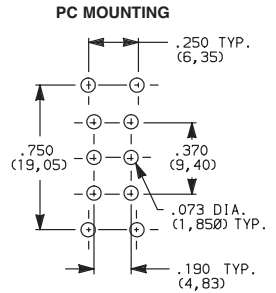
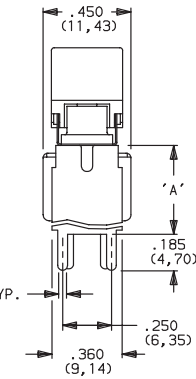
**V21, V61** VERTICAL MOUNT, V-BRACKET, SNAP-IN



7201J1\_BE2  
DPDT



Actuator Shown In Pos. 1



OPTION CODE	DIM 'A'
<b>V2, V21</b>	<b>.555 (14,10)</b>
<b>V6, V61</b>	<b>.460 (11,68)</b>
<b>V7</b>	<b>.630 (16,00)</b>
<b>V8</b>	<b>.953 (24,21)</b>

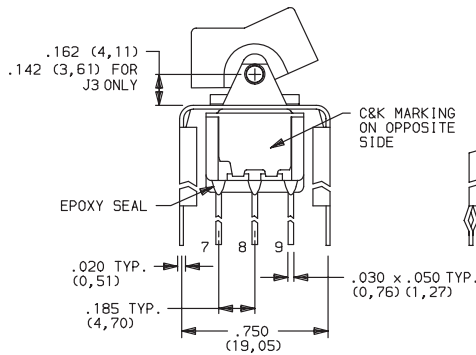
Not available with I seal option.  
Available actuators, see pages G-6 and G-12.

**V2, V7, V8** VERTICAL MOUNT, V-BRACKET

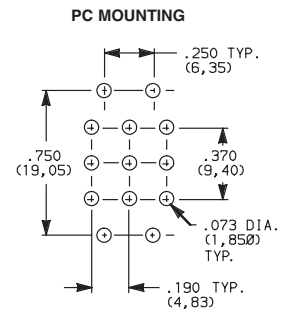
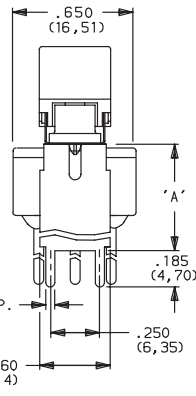
**V21** VERTICAL MOUNT, V-BRACKET, SNAP-IN



7301J1\_BE2  
3PDT



Actuator Shown In Pos. 1



OPTION CODE	DIM 'A'
<b>V2, V21</b>	<b>.555 (14,10)</b>
<b>V7</b>	<b>.630 (16,00)</b>
<b>V8</b>	<b>.953 (24,21)</b>

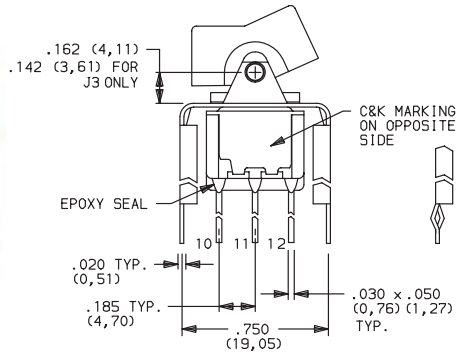
Not available with I seal option.  
Available actuators, see pages G-6 and G-12.

**V2, V7, V8** VERTICAL MOUNT, V-BRACKET

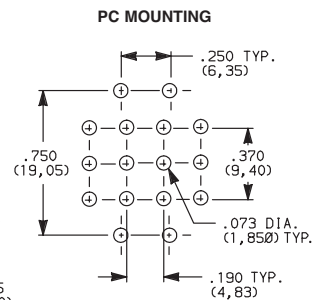
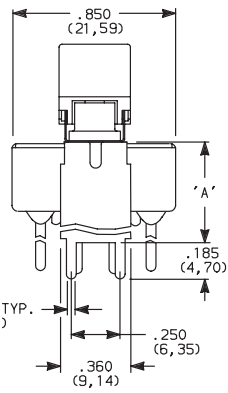
**V21** VERTICAL MOUNT, V-BRACKET, SNAP-IN



7401J1\_BE2  
4PDT



Actuator Shown In Pos. 1



OPTION CODE	DIM 'A'
<b>V2, V21</b>	<b>.555 (14,10)</b>
<b>V7</b>	<b>.630 (16,00)</b>
<b>V8</b>	<b>.953 (24,21)</b>

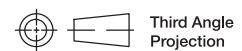
Not available with I seal option.  
Available actuators, see pages G-6 and G-12.

Rocker



G

C&K



Third Angle Projection  
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

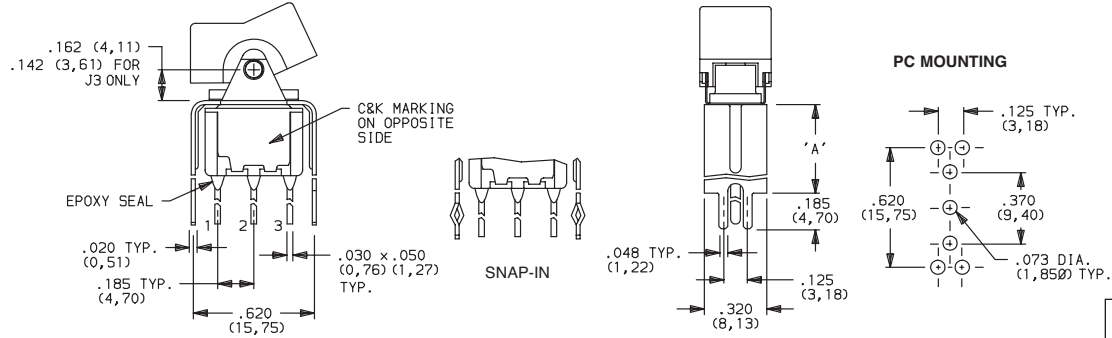


# 7000 Series Miniature Rocker & Lever Handle Switches

## TERMINATIONS

**V3, V4, V9** VERTICAL MOUNT, V-BRACKET

**V31** VERTICAL MOUNT, V-BRACKET, SNAP-IN



Actuator Shown In Pos. 1

Not available with I seal option.  
Available actuators, see pages G-6 and G-12.

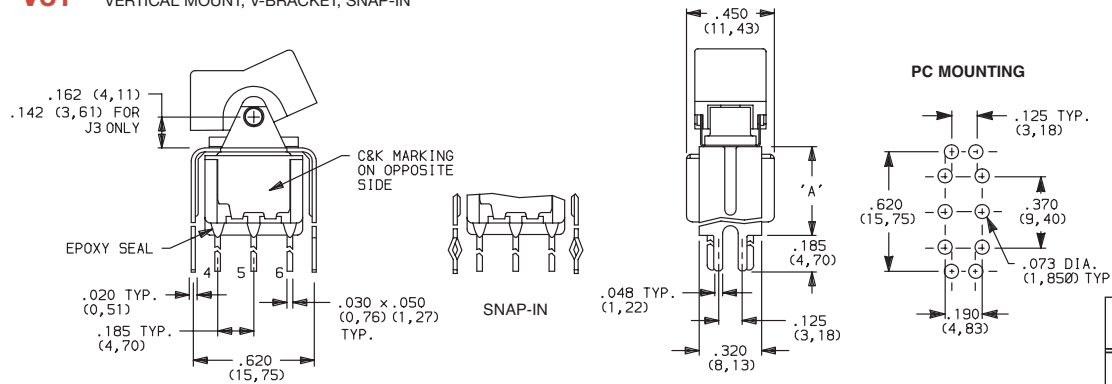


7101J1\_BE2  
SPDT

OPTION CODE	DIM 'A'
<b>V3, V31</b>	.460 (11,68)
<b>V4</b>	.630 (16,00)
<b>V9</b>	1.150 (29,21)

**V3, V4, V9** VERTICAL MOUNT, V-BRACKET

**V31** VERTICAL MOUNT, V-BRACKET, SNAP-IN



Actuator Shown In Pos. 1

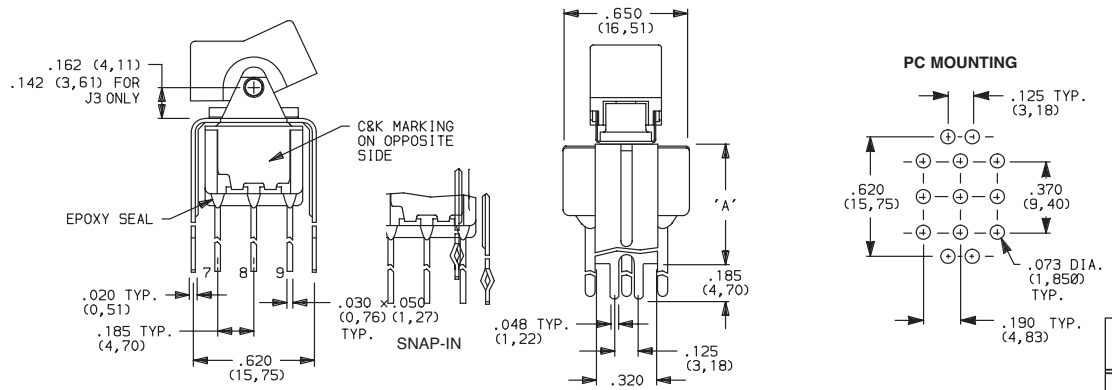
Not available with I seal option.  
Available actuators, see pages G-6 and G-12.



7201J1\_BE2  
DPDT

OPTION CODE	DIM 'A'
<b>V3, V31</b>	.460 (11,68)
<b>V4</b>	.630 (16,00)
<b>V9</b>	1.150 (29,21)

**V4, V9** VERTICAL MOUNT, V-BRACKET



Actuator Shown In Pos. 1

Not available with I seal option.  
Available actuators, see pages G-6 and G-12.



7301J1\_BE2  
3PDT

OPTION CODE	DIM 'A'
<b>V4</b>	.630 (16,00)
<b>V9</b>	1.150 (29,21)



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



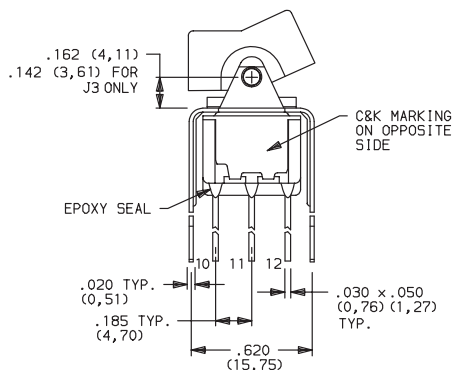
# 7000 Series Miniature Rocker & Lever Handle Switches

## TERMINATIONS

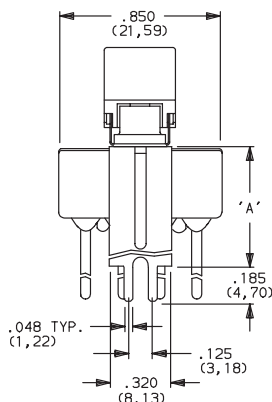
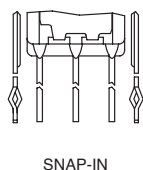
**V4, V9** VERTICAL MOUNT, V-BRACKET



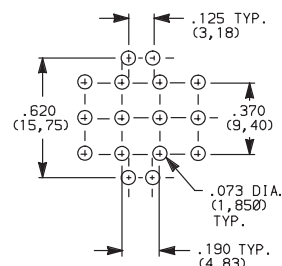
7401J1\_BE2  
4PDT



Actuator Shown In Pos. 1



### PC MOUNTING



OPTION CODE	DIM 'A'
<b>V4</b>	.630 (16,00)
<b>V9</b>	1.150 (29,21)

Not available with I seal option.  
Available actuators, see pages G-6 and G-12.

## CONTACT MATERIAL

OPTION CODE	CONTACT MATERIAL	TERMINAL PLATING	RATINGS	
<b>B</b>	GOLD <sup>1</sup>	GOLD <sup>1</sup>	LOW LEVEL/ DRY CIRCUIT	0.4 VA MAX. @ 20 V AC OR DC MAX.
<b>P</b>		MATTE-TIN <sup>6</sup>		
<b>Q</b>	SILVER <sup>4,5</sup>	SILVER <sup>5</sup>	POWER	5 AMPS @ 120 V AC OR 28 V DC; 2 AMPS @ 250 V AC.
<b>S</b>		MATTE-TIN <sup>6</sup>		
<b>G</b>	GOLD OVER SILVER <sup>2,3</sup>	GOLD <sup>3</sup>	LOW LEVEL/DRY CIRCUIT OR POWER	0.4 VA MAX @ 20 V AC OR DC MAX OR 5 AMPS @ 120 V AC OR 28 V DC; 2 AMPS @ 250 V AC.
<b>R</b>		MATTE-TIN <sup>6</sup>		

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

- 1 CONTACTS & TERMINALS: Copper alloy, with gold plate over nickel plate.
- 2 END CONTACTS: Coin silver, with gold plate over nickel plate.
- 3 CENTER CONTACTS & ALL TERMINALS: Copper alloy, with gold plate over nickel plate.
- 4 END CONTACTS: Coin silver, silver plated.
- 5 CENTER CONTACT & ALL TERMINALS: Copper alloy, silver plated.
- 6 TERMINALS: Copper alloy, with matte-tin over nickel plate.

U11-U415 model numbers with all options when ordered with G, Q, S & R contact material.

B contact material standard with all terminations except C, Z & Z3.

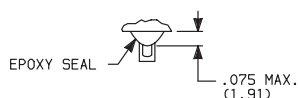
Q contact material standard with C, Z & Z3 terminations.

P, S & R, contact materials not available with Z & Z3 terminations.

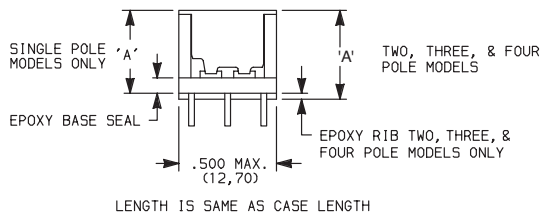
**NOTE:** Any models supplied with Q, B, G S, P & R contact material are RoHS compliant.

## SEAL

**E** EPOXY SEAL



**I** EPOXY POTTED BASE



Available with C, W through W5, Z & Z3 terminations.

NO. POLES	DIM 'A'
SP	.410 (10,41)
DP	.440 (11,18)
3P	.505 (12,83)
4P	.505 (12,83)



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

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Rocker



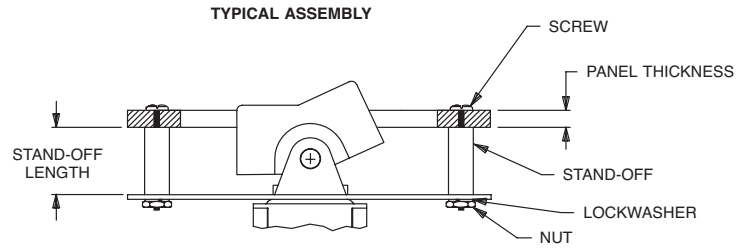
G



# 7000 Series Miniature Rocker & Lever Handle Switches

## AVAILABLE HARDWARE

Panel mounting hardware for rocker and lever handle switches is available separately. Mounting hardware consists of two screws, two nuts, two standoffs and two lockwashers per switch, and is available for panel thicknesses of 1/16, 3/32 and 1/8 inch. See part numbers below.



Qty	Part Number	Description
2	761103000	Standoffs
2	764100000	Mounting screws
2	764200000	Lock washers
2	764300000	Hex nuts

### J1 & J2 actuators

PART NO.	PANEL THK.	STANDOFF LENGTH
761103000	1/8 IN. (3,18)	.233 (5,92)

### J3 actuators

PART NO.	PANEL THK.	STANDOFF LENGTH
770603000	1/8 IN. (3,18)	.233 (5,92)

### J10 actuators

PART NO.	PANEL THK.	STANDOFF LENGTH
770703000	1/8 IN. (3,18)	.233 (5,92)

### MATERIAL

Screws, nuts, lockwashers: Stainless steel. Standoffs: Nylon, standard.

### J1, J11, J15 & J16 Actuators



PART NO.  
**776A01000** WHITE  
**776A02263** BLACK  
**776A03000** RED

Material: Nylon  
Finish: Matte

### J2, J21, J25 & J26 Actuators



PART NO.  
**426D01000** WHITE  
**426D02263** BLACK  
**426D03000** RED

Material: Nylon  
Finish: Matte

### J3 & J37 Actuators



PART NO.  
**431D01000** WHITE  
**431D02263** BLACK  
**431D03000** RED

Material: Nylon  
Finish: Matte

### J50, J51 & J52 Actuators



PART NO.  
**775A01000** WHITE  
**775A02263** BLACK  
**775A03000** RED

Material: Nylon  
Finish: Matte

### J60, J61 & J62 Actuators



PART NO.  
**598101000** WHITE  
**613802263** BLACK  
**598103000** RED

Material: Nylon  
Finish: Matte

### J8 Actuator



PART NO.  
**488701000** WHITE  
**488702263** BLACK  
**488703000** RED

Material: Nylon  
Finish: Matte



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



# 7000 Series Miniature Rocker & Lever Handle Switches

## AVAILABLE HARDWARE

J90 & J91 Actuators



PART NO.  
**598001000** WHITE  
**598002263** BLACK  
**598003000** RED  
 Material: Nylon  
 Finish: Matte

J10 & J19 Actuators



PART NO.  
**769501000** WHITE  
**769502263** BLACK  
**769503000** RED  
 Material: Nylon  
 Finish: Matte

Fits Z3 Termination female connector



PART NO.  
**530100000**  
 Available in loose pieces.

Frame for J11 & J21 Actuators



PART NO.  
**764500746** BLACK ENAMEL  
**764500747** WHITE ENAMEL  
**764601106** RETAINING SPRING  
 Material: Spring Steel

Frame for J16 & J26 Actuators



PART NO.  
**459101000** WHITE  
**459102000** BLACK  
**459103000** RED  
 Material: Nylon  
 Finish: Matte

Frame for J51, J61 & J91 Actuators



PART NO.  
**615601000** WHITE  
**615602263** BLACK  
**615603000** RED  
 Material: Nylon  
 Finish: Matte

Frame for J19 Actuator



PART NO.  
**781000746** BLACK ENAMEL  
**781000747** WHITE ENAMEL  
 Material: Spring Steel

Frame for J37 Actuator



PART NO.  
**445400746** BLACK ENAMEL  
**445400747** WHITE ENAMEL  
 Material: Spring Steel

Frame for J52 & J62 Actuators



PART NO.  
**613301000** WHITE  
**613302263** BLACK  
**613303000** RED  
 Material: Nylon  
 Finish: Matte

Rocker



G



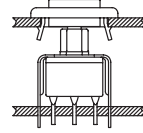
Dimensions are shown: Inches (mm)  
 Specifications and dimensions subject to change

# 7000 Series Miniature Rocker & Lever Handle Switches

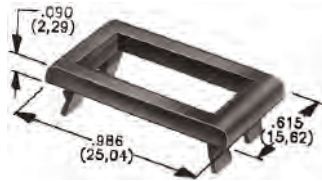
## AVAILABLE HARDWARE

Frames snap into panel opening and are independent from switch mounting. Accurate positioning of the PC mounted switch relative to the panel opening is necessary to provide proper clearance between actuator and frame. Available in two basic styles and four panel thicknesses .047-.125 in. Material: Nylon. Finish: Matte.

TYPICAL APPLICATION



J1 & J2 Actuators



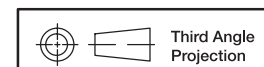
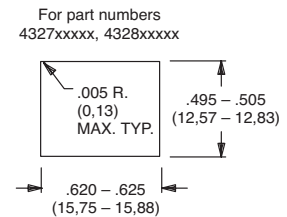
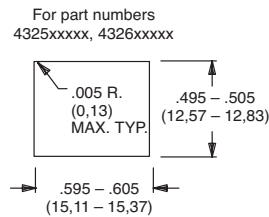
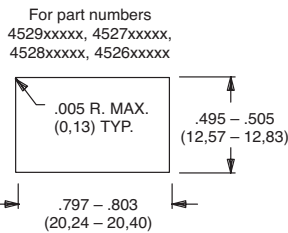
.047" (1,19) PANEL THK.	.062" (1,57) PANEL THK.	.090" (2,29) PANEL THK.	.125" (3,18) PANEL THK.
PART NO. <b>452902263</b>	PART NO. <b>452702263</b>	PART NO. <b>452802263</b>	PART NO. <b>452602263</b> BLACK

J50, J60 & J90 Actuators



.047" (1,19) PANEL THK.	.062" (1,57) PANEL THK.	.090" (2,29) PANEL THK.	.125" (3,18) PANEL THK.
PART NO. <b>432502263</b>	PART NO. <b>432602263</b>	PART NO. <b>432702263</b>	PART NO. <b>432802263</b> BLACK

### PANEL MOUNTING



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

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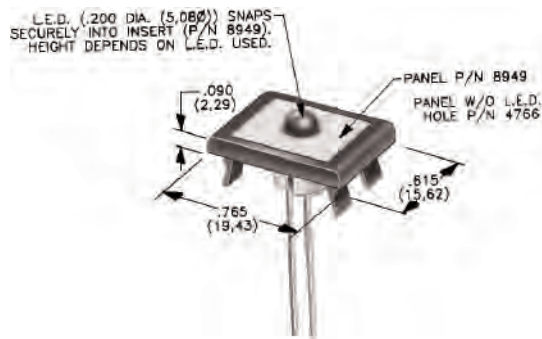
# 7000 Series Miniature Rocker & Lever Handle Switches

## AVAILABLE HARDWARE

### Panel Inserts

Will fit Separate Snap-in frames for J50, J60 & J90 actuators

Above frames (part nos. 432XXXXXX) are also available with insert which accepts LED for indicator light assembly. Order insert separately from frame. Blank insert panel (without hole for LED) also available. **LED not included.**



**PANEL INSERT WITH HOLE FOR LED**

**PART NO.**  
**894902000**

**BLANK PANEL INSERT WITHOUT HOLE FOR LED**

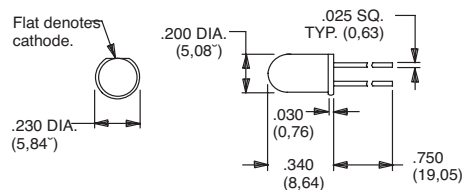
**PART NO.**  
**476602000 BLACK**

**NOTE:** Special colors, custom markings available, consult Customer Service Center.

### LED INFORMATION

**Process Information:** Soldering to LED leads must be completed within 5 seconds at 500° F (260°C) maximum.

LEDs are not supplied with J52, J62 options. LED snaps into switch frame surrounding actuator and is wired externally.



Suggested LED for J52 & J62 options.  
Dimensions for reference only.

Rocker



Third Angle  
Projection

Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

# E Series

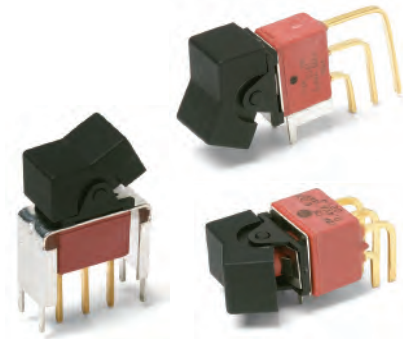
## Sealed Miniature Rocker and Lever Handle Switches

### Features/Benefits

- Sealed against solder and cleaning process contaminants
- ESD Resistance—all actuator options
- Rocker, case & bushing UL 94V-0
- RoHS compliant

### Typical Applications

- Telecommunications
- Instrumentation
- Computers & peripherals



### Specifications

**CONTACT RATING:** B contact material: 0.4 VA max. @ 20 V AC or DC max. Q contact material (E1XX & E2XX Models): 7.5 AMPS @125 V AC or 28 V DC; 3 AMPS @ 250 V AC. (E3XX Models): 5 AMPS @ 125 V AC or 28 V DC; 2 AMPS @ 250 V AC. See page G-36 for additional ratings.

**ELECTRICAL LIFE:** E1XX and E2XX models: 40,000 make-and-break cycles at full load. E3XX models: 30,000 cycles.

**CONTACT RESISTANCE:** Below 10 m Ω typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

**INSULATION RESISTANCE:** 10<sup>9</sup> Ω min.

**ELECTROSTATIC DISCHARGE (ESD) OPTION:** All actuator options: 15,000 V DC max. @ sea level, actuator to terminals.

**DIELECTRIC STRENGTH:** 1000 Vrms min. @ sea level.

**OPERATING TEMPERATURE:** -30°C to 85°C.

**SOLDERABILITY:** Per MIL-STD-202F method 208D, or EIA RS-186E method 9 (1 hour steam aging).

### Materials

**CASE & BUSHING:** Glass filled nylon 6/6, flame retardant, heat stabilized (UL 94V-0).

**ACTUATOR:** Nylon, black standard, internal o-ring seal standard with all actuators.

**FRAME:** Spring steel, black standard.

**SWITCH SUPPORT:** Brass or steel, matte-tin plated.

**ACTUATOR PIVOT & MOUNTING BRACKET:** Nylon.

**ACTUATOR PIVOT RETAINER:** Stainless steel.

**CONTACTS & TERMINALS:** B contact material: Copper alloy, with gold plate over nickel plate. Q contact material: Copper alloy, silver plated. See page G-36 for additional contact materials.

**TERMINAL SEAL:** Epoxy.

**HARDWARE:** Nut, Screw & Lockwasher: Stainless steel.  
Standoff: Nylon standard, aluminum available, consult Customer Service Center.

**NOTE:** Any models supplied with Q, B, G, S, P & R contact material are RoHS compliant.

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

### Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages G-26 through G-38. For additional options not shown in catalog, consult Customer Service Center. All models are process sealed to withstand machine soldering temperatures and pressure wash cleaning methods.

<p><b>Switch Function</b></p> <p><b>E101</b> SP On-None-On  <b>E103</b> SP On-Off-On  <b>E105</b> SP Mom.-Off-Mom.  <b>E107</b> SP On-Off-Mom.  <b>E108</b> SP On-None-Mom.  <b>E201</b> DP On-None-On  <b>E203</b> DP On-Off-On  <b>E205</b> DP Mom.-Off-Mom.  <b>E207</b> DP On-Off-Mom.  <b>E208</b> DP On-None-Mom.  <b>E211</b> DP On-On-On  <b>E213</b> DP On-On-Mom.  <b>E215</b> DP Mom.-On-Mom.  <b>E301</b> 3P On-None-On</p>	<p><b>Actuator</b></p> <p><b>J1</b> .531 long rocker  <b>J2</b> Lever  <b>J3</b> .906" long rocker  <b>J11</b> Rocker with frame  <b>J21</b> Lever with frame  <b>J50</b> .362" long rocker  <b>J60</b> Lever  <b>J90</b> Lever</p>	<p><b>Terminations</b></p> <p><b>A</b> Right angle, PC thru-hole  <b>AV2</b> Vertical right angle, PC thru-hole  <b>C</b> PC Thru-hole  <b>Z</b> Solder lug  <b>A3</b> Right angle, snap-in, PC thru-hole  <b>AV3</b> Vertical right angle, snap-in, PC thru-hole  <b>V3</b> .460" high, V-bracket  <b>V4</b> .630" high, V-bracket  <b>V5</b> Vertical right angle, PC thru-hole  <b>V6</b> .460" high, V-bracket  <b>V7</b> .630" high, V-bracket  <b>V8</b> .953" high, V-bracket  <b>V21</b> .555" high, V-bracket, snap-in  <b>V31</b> .460" high, V-bracket, snap-in</p>	<p><b>Contact Material</b></p> <p><b>B</b> Gold  <b>P</b> Gold, matte tin  <b>Q</b> Silver  <b>S</b> Silver, matte-tin  <b>G</b> Gold over silver  <b>R</b> Gold over silver, matte-tin</p> <p><b>Seal</b></p> <p><b>E</b> Epoxy</p> <p><b>Actuator Color</b></p> <p><b>2</b> Black  <b>3</b> Red</p> <p><b>Frame Color</b></p> <p><b>2</b> Black  <b>NONE</b> No frame color required</p> <p><b>Metal Frame Color</b>          (J11, J21 Actuators)  <b>2</b> Black</p>



# E Series Sealed Miniature Rocker and Lever Handle Switches

## SWITCH FUNCTION

NO. POLES	MODEL NO.	SWITCH FUNCTION			CONNECTED TERMINALS			SCHEMATIC	
		POS. 1	POS. 2	POS. 3	POS. 1	POS. 2	POS. 3		
		C&K marking on opposite side			C&K marking on opposite side				
SP	<b>E101</b>	ON	NONE	ON	2-3	N/A	2-1		
	<b>E103</b>	ON	OFF	ON		OPEN			
	<b>E105</b>	MOM.	OFF	MOM.					
	<b>E107</b>	ON	OFF	MOM.					
	<b>E108</b>	ON	NONE	MOM.					N/A
<b>SPDT</b>									
								Terminal Nos. For Reference Only	
DP	<b>E201</b>	ON	NONE	ON	2-3,5-6	N/A	2-1,5-4		
	<b>E203</b>	ON	OFF	ON		OPEN			
	<b>E205</b>	MOM.	OFF	MOM.					
	<b>E207</b>	ON	OFF	MOM.					
	<b>E208</b>	ON	NONE	MOM.					
	<b>E211**</b>	ON	ON	ON					
	<b>E213**</b>	ON	ON	MOM.					
	<b>E215**</b>	MOM.	ON	MOM.					2-3,5-4
<b>DPDT</b>									
								Terminal Nos. For Reference Only	

Part number shown: E101J1ZBE2

Part number shown: E201J1ZBE2

MOM. = Momentary

\*\* Wiring for 3-way switch, Hardware available separately, see Technical Data section of this catalog.

All models with all options when ordered with G, Q, R or S contact material.

Rocker



G

**C&K**



Third Angle Projection

Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

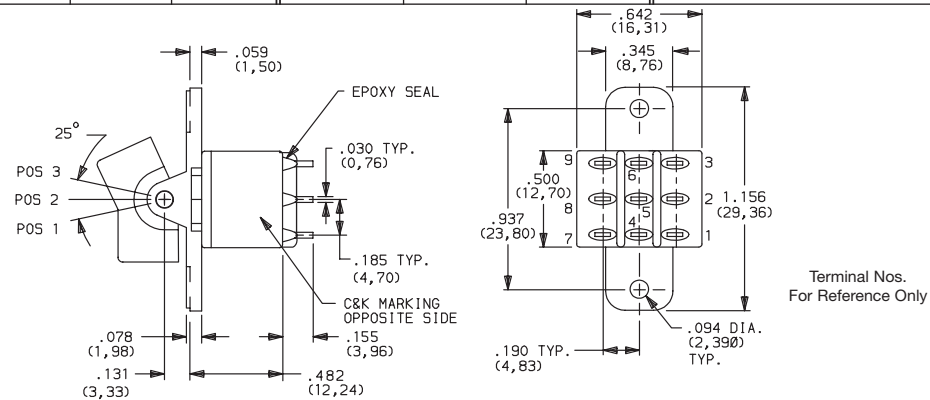


# E Series Sealed Miniature Rocker and Lever Handle Switches

## SWITCH FUNCTION

NO. POLES	MODEL NO.	SWITCH FUNCTION			CONNECTED TERMINALS			SCHEMATIC
		POS. 1	POS. 2	POS. 3	POS. 1	POS. 2	POS. 3	
3P	<b>E301</b>	ON	NONE	ON	2-3-5-6,8-9	N/A	2-1,5-4,8-7	<p>3PDT</p>

3PDT



Part number shown: E301J1ZBE2

MOM. = Momentary

\*\* Wiring for 3-way switch, see Technical Data section of this catalog.

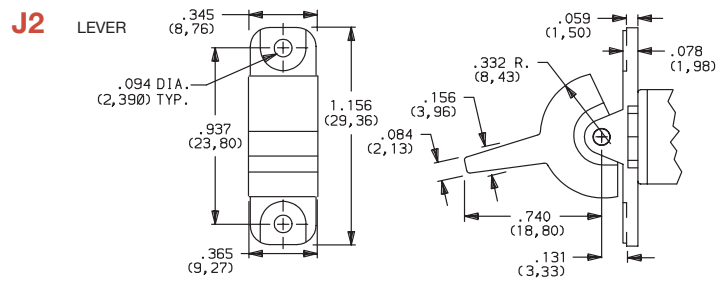
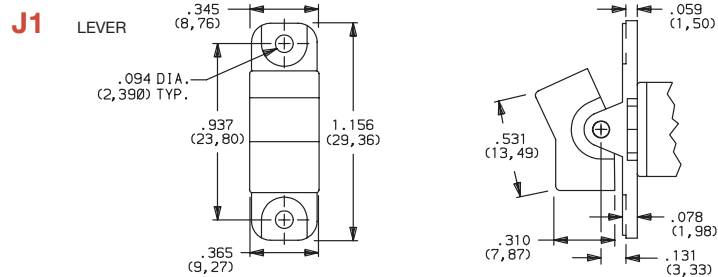
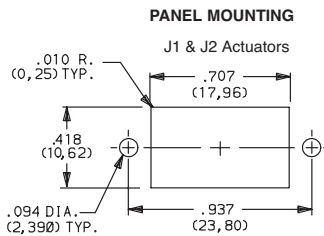
All models with all options when ordered with G, Q, R and S contact material.

## ACTUATOR-PANEL REAR MOUNT

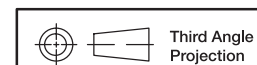
OPTION CODE	ACTUATOR COLOR
<b>2</b>	BLACK
<b>3</b>	RED

Finish: Matte. Other colors, custom actuator markings and legends available, consult Customer Service Center.

**NOTE:** Hardware: two each—mounting screws, nuts, lockwashers and standoffs for 1/8 inch thick panel are supplied standard on switches with panel mounting bracket. Internal o-ring actuator seal standard. Actuators available separately, see page G-36. Hardware available separately, see Technical Data section of this catalog. J1, J2 actuators available with C, Z or Z3 terminations.



Rocker

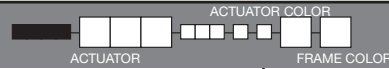


Third Angle Projection

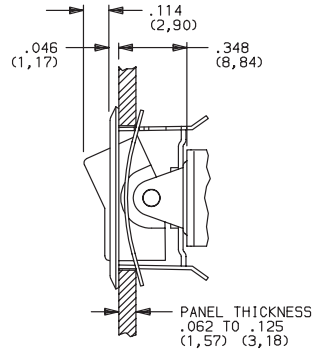
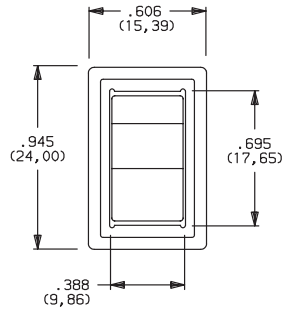
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

# E Series Sealed Miniature Rocker and Lever Handle Switches

## ACTUATOR-REAR MOUNT



### J11 ROCKER WITH FRAME

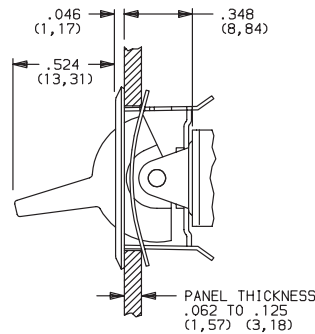
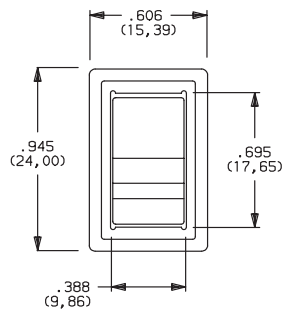


NOTE: This option has reduced anti-static capability.

OPTION CODE	ACTUATOR COLOR
2	BLACK
3	RED

OPTION CODE	FRAME COLOR
2	BLACK

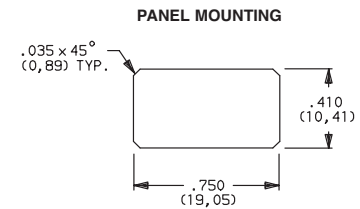
### J21 LEVER WITH FRAME



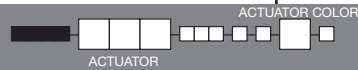
NOTE: This option has reduced anti-static capability.

Actuator finish: Matte, frame finish: gloss. Other colors, custom actuator markings and legends available, consult Customer Service Center.

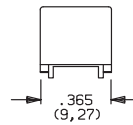
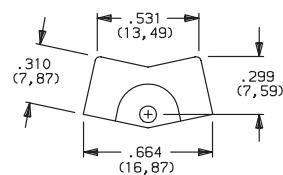
NOTE: Internal o-ring actuator seal standard. Actuators & frames available separately, see page G-36. Hardware available separately, see Technical Data section of this catalog. N, J11 & J21 actuators available with C, Z & Z3 terminations.



## ACTUATOR-PC MOUNT

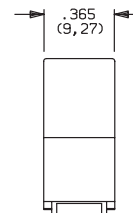
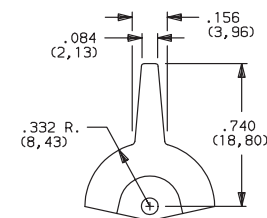


### J1 ROCKER



OPTION CODE	ACTUATOR COLOR
2	BLACK
3	RED

### J2 LEVER



Finish: Matte. Other colors, custom actuator markings and legends available, consult Customer Service Center.

NOTE: Hardware: two each—mounting screws, nuts, lockwashers and standoffs for 1/8 inch thick panel are supplied standard on switches with panel mounting bracket. Internal o-ring actuator seal standard. Actuators available separately, see page G-36. Hardware available separately, see Technical Data section of this catalog. J1, J2 actuators available with A, A3, AV2, AV3, V2-V61 terminations.

Rocker



G

**C&K**

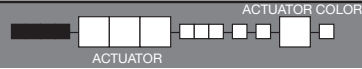


Third Angle Projection

Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

# E Series Sealed Miniature Rocker and Lever Handle Switches

## ACTUATOR-PC MOUNT



OPTION CODE	ACTUATOR COLOR
2	BLACK
3	RED

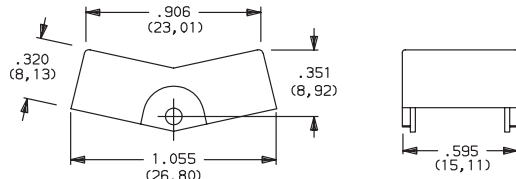
Finish: Matte. Other colors, custom actuator markings and legends available, consult Customer Service Center.

**NOTE:** Hardware: two each—mounting screws, nuts, lockwashers and standoffs for 1/8 inch thick panel are supplied standard on switches with panel mounting bracket. Internal o-ring actuator seal standard. Actuators available separately, see page G-36. Hardware available separately, see Technical Data section of this catalog.

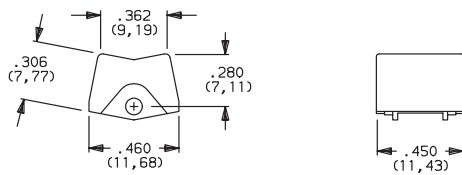
J3 actuators available with AV2, AV3 & V2-V61 terminations. Some permissible actuator/termination combinations may lack clearance between actuator and PC board, and care must be exercised to accommodate this condition.

J50, J60 & J90 actuators available with A, AV2, AV3, V2 - V61 terminations.

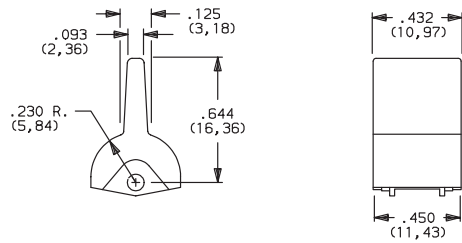
### J3 ROCKER



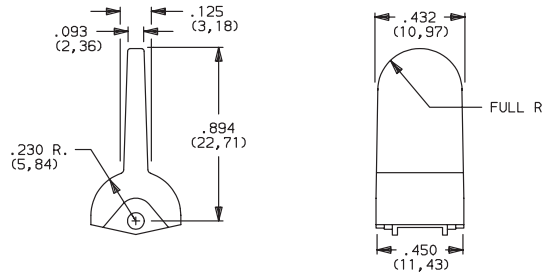
### J50 ROCKER



### J60 LEVER



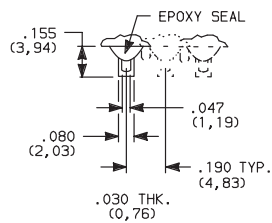
### J90 LEVER



## TERMINATIONS



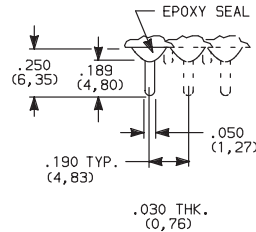
### Z SOLDER LUG



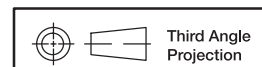
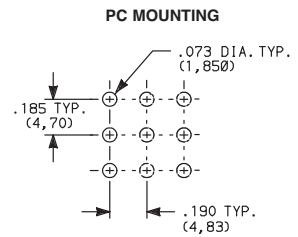
### SPDT thru 3PDT

Not available with P, S, & R contact materials. Available actuators, see page G-27-28.

### C PC THRU-HOLE



### SPDT thru 3PDT



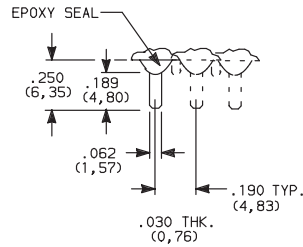
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



# E Series Sealed Miniature Rocker and Lever Handle Switches

## TERMINATIONS

### Z3 QUICK CONNECT



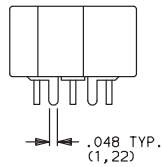
Not available with P, S, & R contact materials. Available actuators, see pages G-27 thru G-28. Mating quick connector available; order part number 530100000, page G-37.

### SPDT thru 3PDT

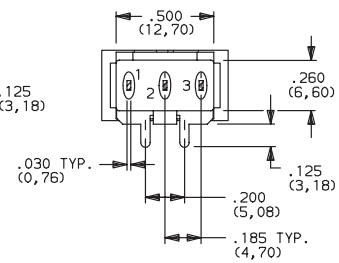
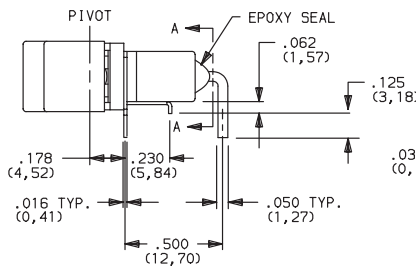
#### A RIGHT ANGLE, PC THRU-HOLE



**E101J1ABE2**  
Horizontal Actuation  
SPDT

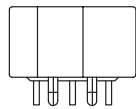


Actuator Shown In Pos. 1

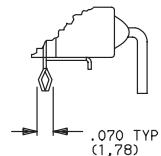


SECTION A-A

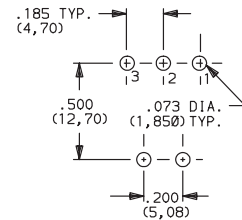
#### A3 RIGHT ANGLE, SNAP-IN, PC THRU-HOLE



.050 TYP.  
(1,27)



#### PC MOUNTING

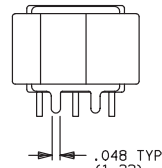


NOTE: PC mounting pattern must clear switch support leg.

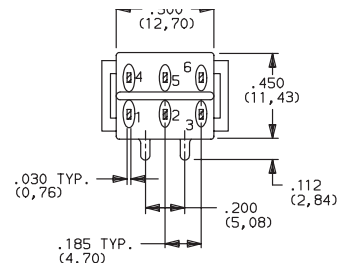
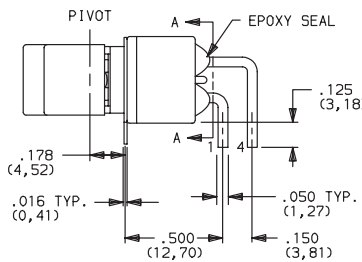
#### A RIGHT ANGLE, PC THRU-HOLE



**E201J1ABE2**  
Horizontal Actuation  
DPDT

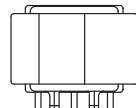


Actuator Shown In Pos. 1

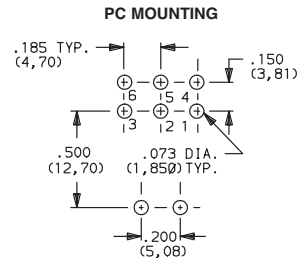
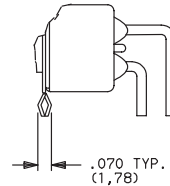


SECTION A-A

#### A3 RIGHT ANGLE, SNAP-IN, PC THRU-HOLE



.048 TYP.  
(1,22)



Rocker

NOTE: Not available with J3 actuator. Available actuators, see pages G-27 thru G-29. Terminal bend radii and lead-in manufacturing option.



Third Angle  
Projection

Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

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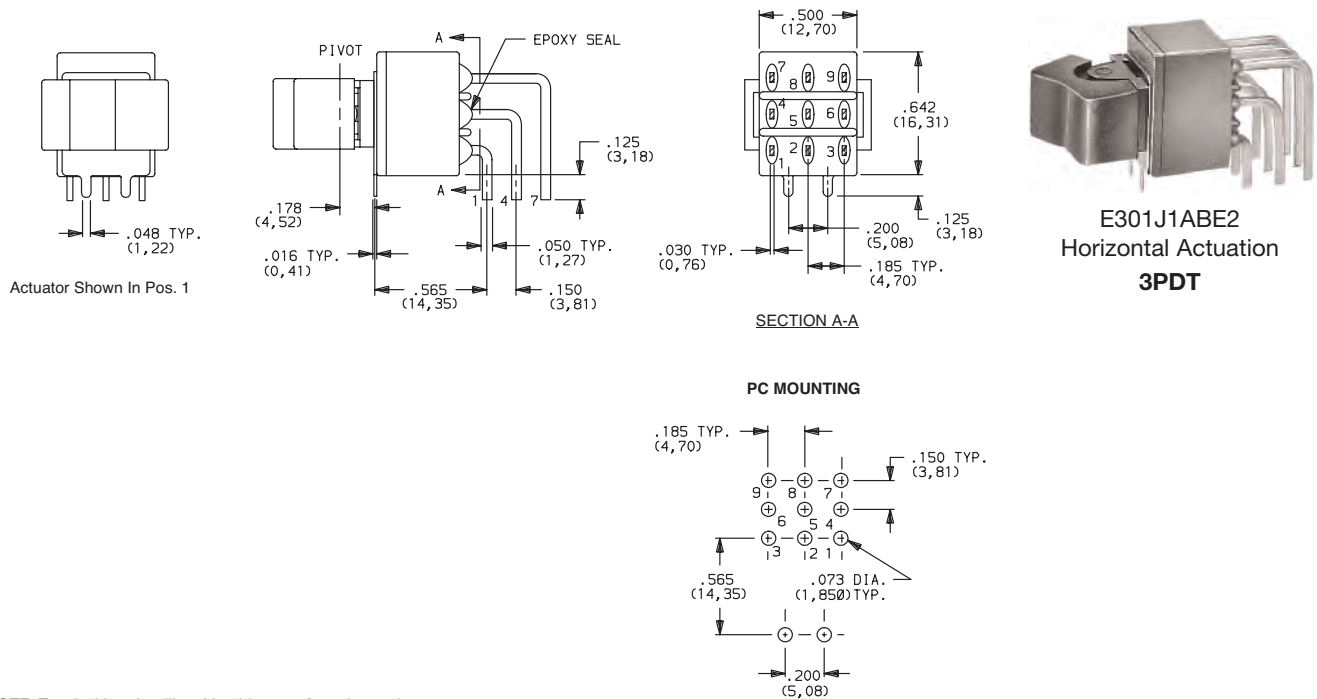
G

**C&K**

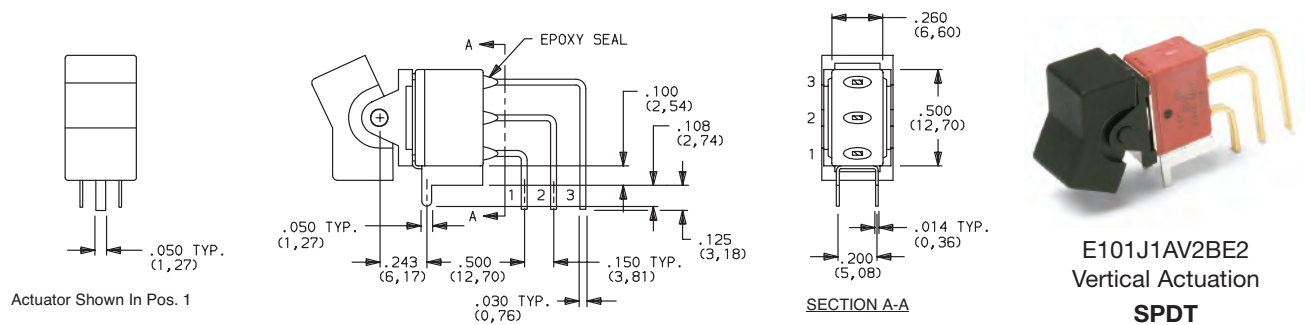
# E Series Sealed Miniature Rocker and Lever Handle Switches

## TERMINATIONS

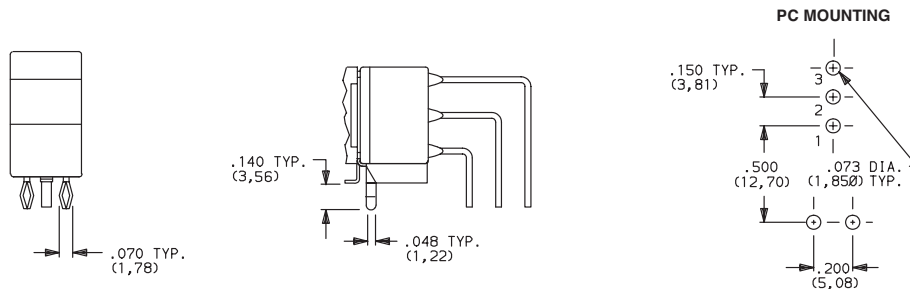
### A RIGHT ANGLE, PC THRU-HOLE



### AV2 VERTICAL RIGHT ANGLE, PC THRU-HOLE, .150" PITCH



### AV3 VERTICAL RIGHT ANGLE, SNAP-IN, PC THRU-HOLE, .150" PITCH



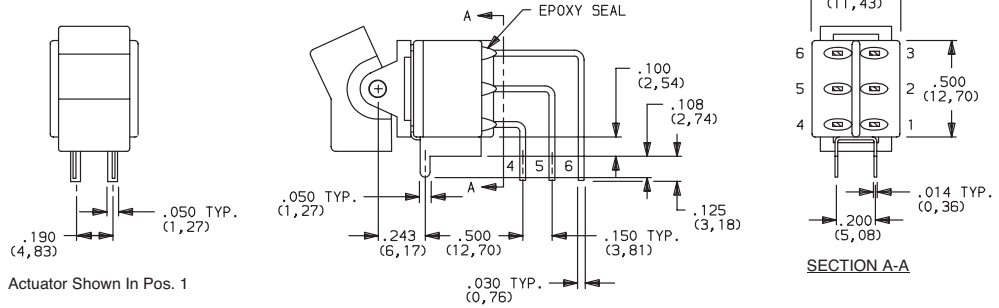
# E Series Sealed Miniature Rocker and Lever Handle Switches

## TERMINATIONS

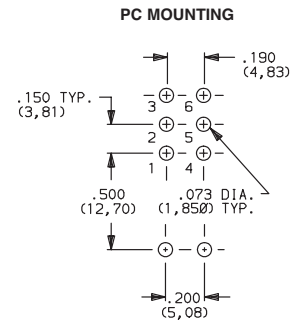
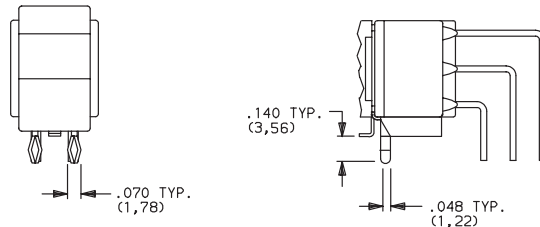
**AV2** VERTICAL RIGHT ANGLE, PC THRU-HOLE,  
.150" PITCH



**E201J1AV2BE2**  
Vertical Actuation  
**DPDT**



**AV3** VERTICAL RIGHT ANGLE, SNAP-IN, PC THRU-HOLE,  
.150" PITCH

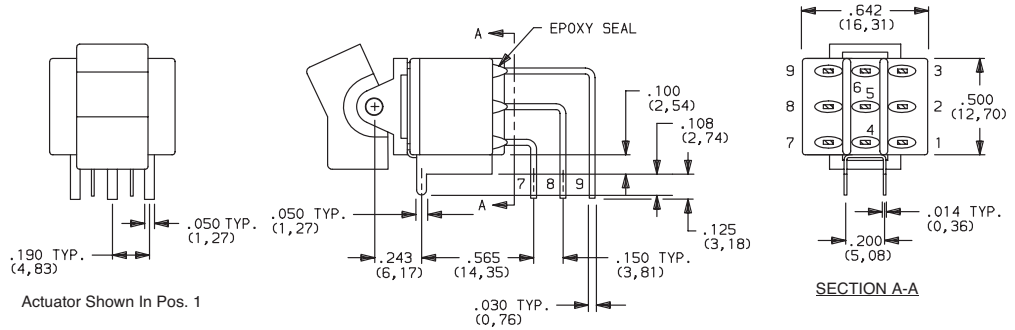


**NOTE:** Terminal bend radii and lead-in manufacturing option.  
Available actuators, see pages G-27 thru G-29.

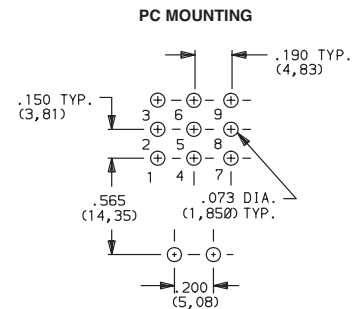
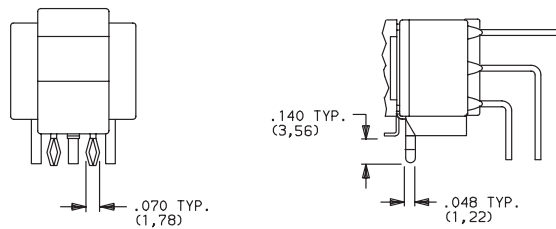
**AV2** VERTICAL RIGHT ANGLE, PC THRU-HOLE,  
.150" PITCH



**E301J1AV2BE2**  
Vertical Actuation  
**3PDT**



**AV3** VERTICAL RIGHT ANGLE, SNAP-IN, PC THRU-HOLE,  
.150" PITCH



**NOTE:** Terminal bend radii and lead-in manufacturing option.  
Available actuators, see pages G-27 thru G-29.

Rocker



G

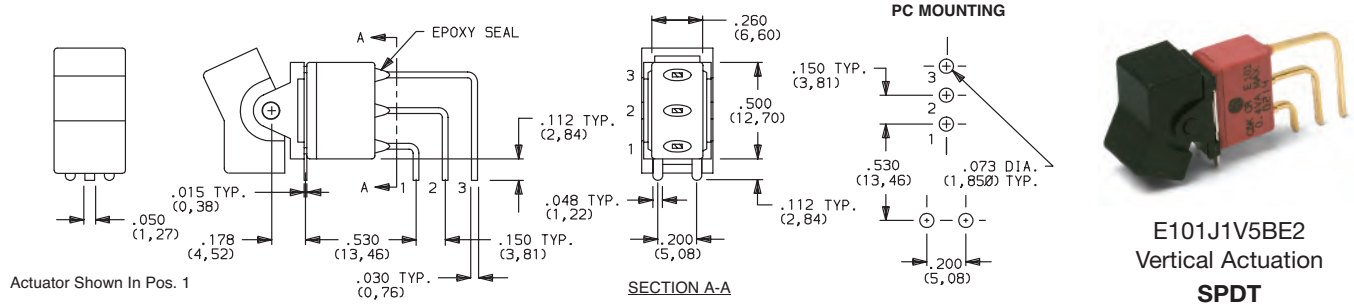


Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

# E Series Sealed Miniature Rocker and Lever Handle Switches

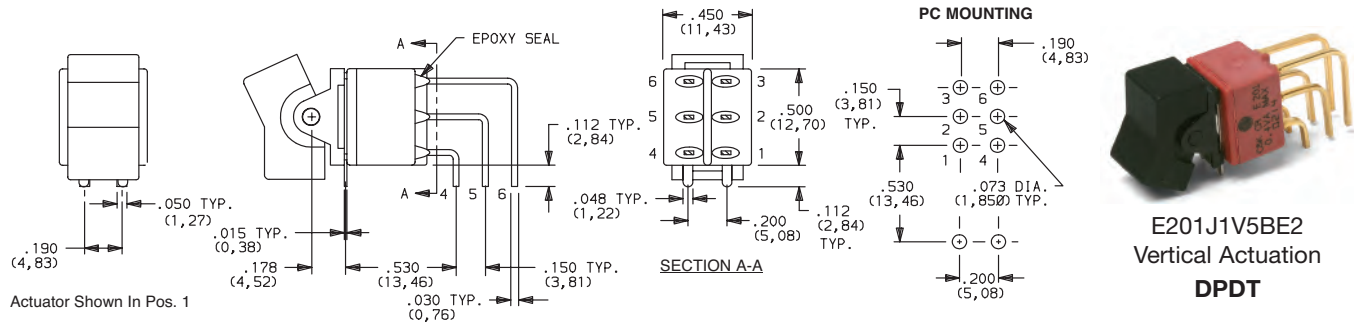
## TERMINATIONS

**V5** VERTICAL RIGHT ANGLE, PC THRU-HOLE,  
.150" PITCH



**NOTE:** Terminal bend radii and lead-in manufacturing option.  
Available actuators, see pages G-27 thru G-29.

**V5** VERTICAL RIGHT ANGLE, PC THRU-HOLE,  
.150" PITCH



**NOTE:** Terminal bend radii and lead-in manufacturing option.  
Available actuators, see pages G-27 thru G-29.



# E Series Sealed Miniature Rocker and Lever Handle Switches

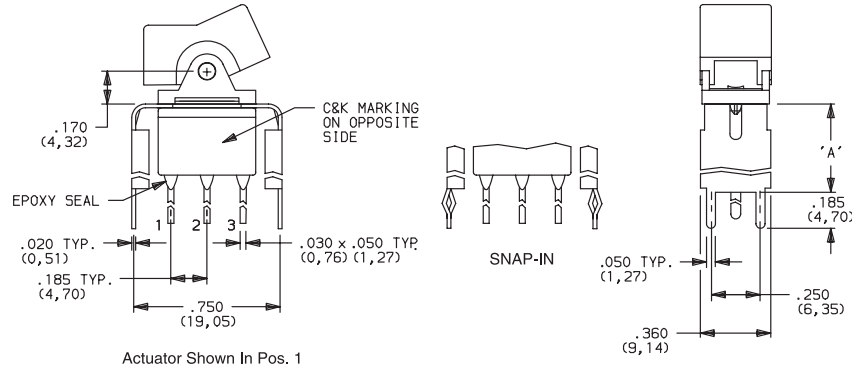
## TERMINATIONS

**V6, V7, V8** VERTICAL MOUNT, V-BRACKET

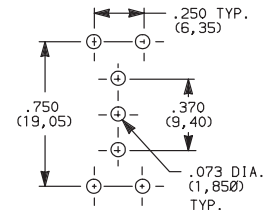
**V21** VERTICAL MOUNT, V-BRACKET, SNAP-IN



**E101J1\_\_BE2**  
**SPDT**



### PC MOUNTING



OPTION CODE	DIM 'A'
<b>V21</b>	.555 (14, 10)
<b>V6</b>	.460 (11, 68)
<b>V7</b>	.630 (16, 00)
<b>V8</b>	.953 (24, 21)

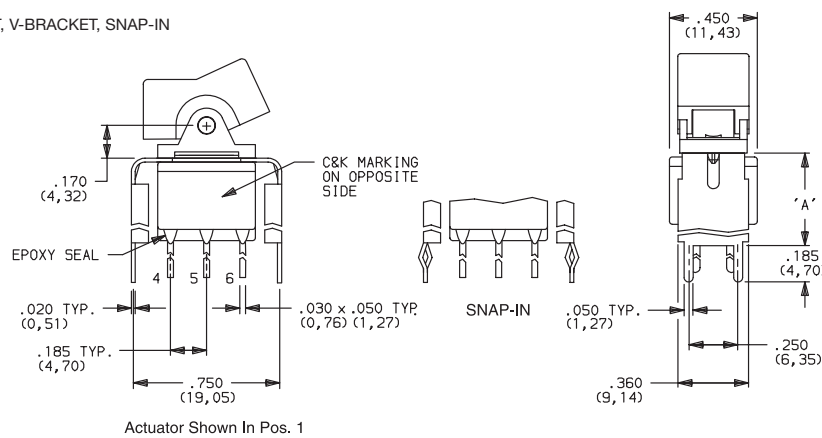
**NOTE:** Available actuators, see pages G-27 thru G-29.

**V6, V7, V8** VERTICAL MOUNT, V-BRACKET

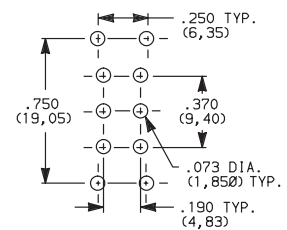
**V21** VERTICAL MOUNT, V-BRACKET, SNAP-IN



**E201J1\_\_BE2**  
**DPDT**



### PC MOUNTING



OPTION CODE	DIM 'A'
<b>V21</b>	.555 (14, 10)
<b>V6</b>	.460 (11, 68)
<b>V7</b>	.630 (16, 00)
<b>V8</b>	.953 (24, 21)

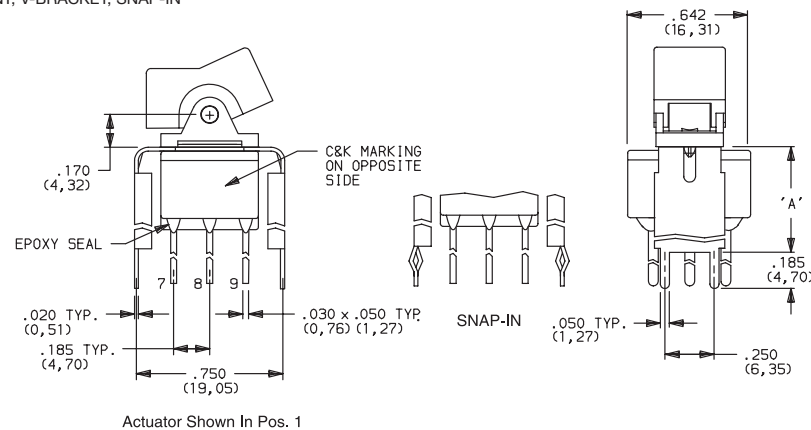
**NOTE:** Available actuators, see pages G-27 thru G-29.

**V7, V8** VERTICAL MOUNT, V-BRACKET

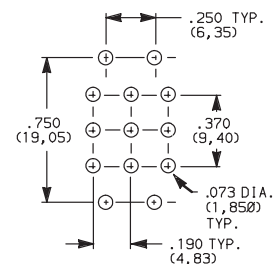
**V21** VERTICAL MOUNT, V-BRACKET, SNAP-IN



**E301J1\_\_BE2**  
**3PDT**



### PC MOUNTING



OPTION CODE	DIM 'A'
<b>V21</b>	.555 (14, 10)
<b>V7</b>	.630 (16, 00)
<b>V8</b>	.953 (24, 21)

**Rocker**

**NOTE:** Available actuators, see pages G-27 thru G-29.



Third Angle Projection  
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

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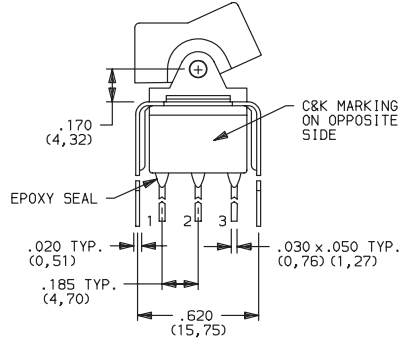


# E Series Sealed Miniature Rocker and Lever Handle Switches

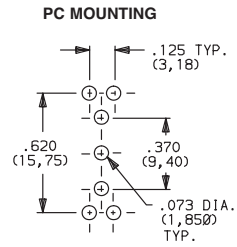
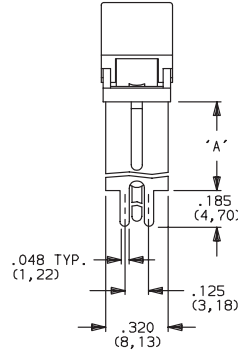
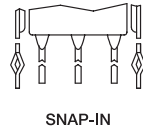
## TERMINATIONS

**V3, V4** VERTICAL MOUNT, V-BRACKET

**V31** VERTICAL MOUNT, V-BRACKET, SNAP-IN



Actuator Shown In Pos. 1



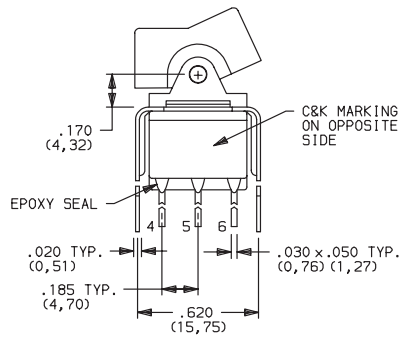
E101J1\_BE2  
SPDT

OPTION CODE	DIM 'A'
<b>V3, V31</b>	.460 (11,68)
<b>V4</b>	.630 (16,00)

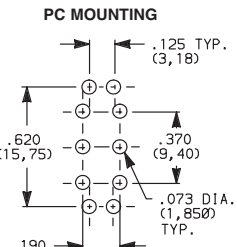
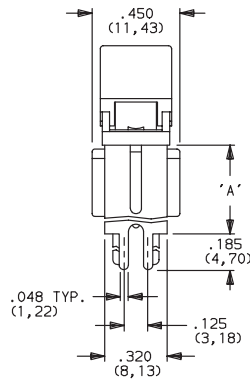
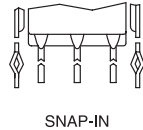
**NOTE:** Available actuators, see pages G-27 thru G-29.

**V3, V4** VERTICAL MOUNT, V-BRACKET

**V31** VERTICAL MOUNT, V-BRACKET, SNAP-IN



Actuator Shown In Pos. 1



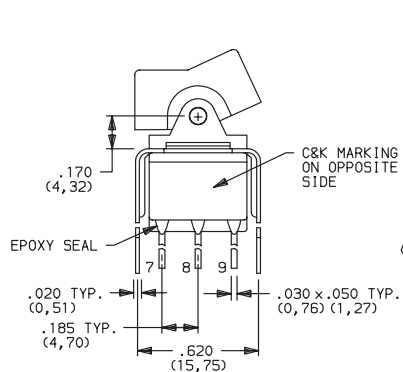
E201J1\_BE2  
DPDT

OPTION CODE	DIM 'A'
<b>V3, V31</b>	.460 (11,68)
<b>V4</b>	.630 (16,00)

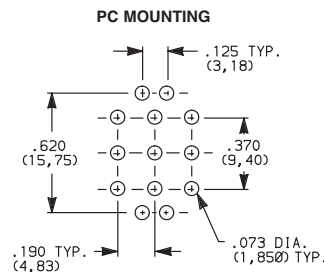
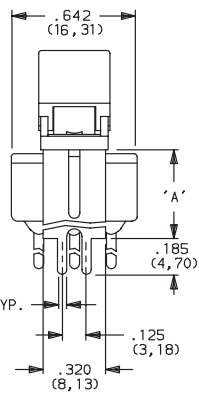
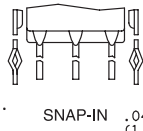
**NOTE:** Available actuators, see pages G-27 thru G-29.

**V4** VERTICAL MOUNT, V-BRACKET

VERTICAL MOUNT, V-BRACKET, SNAP-IN



Actuator Shown In Pos. 1



E301J1\_BE2  
3PDT

OPTION CODE	DIM 'A'
<b>V41</b>	.630 (16,00)

**NOTE:** Available actuators, see pages G-27 thru G-29.



# E Series Sealed Miniature Rocker and Lever Handle Switches

## CONTACT MATERIAL

OPTION CODE	CONTACT MATERIAL	TERMINAL PLATING	RATINGS	
<b>B</b>	GOLD <sup>1</sup>	GOLD <sup>1</sup>	LOW LEVEL/ DRY CIRCUIT	0.4 VA MAX. @ 20 V AC OR DC MAX.
<b>P</b>		MATTE-TIN <sup>7</sup>		
<b>Q</b>	SILVER <sup>4,5</sup>	SILVER <sup>5</sup>	POWER	E1XX & E2XX MODELS: 7.5 AMPS @125 V AC OR 28 V DC; 3 AMPS @250 V AC. E3XX MODELS: 5 AMPS @ 125 V AC OR 28 V DC; 2 AMPS @ 250 V AC.
<b>S</b>		MATTE-TIN <sup>6</sup>		
<b>G</b>	GOLD OVER SILVER <sup>2,3</sup>	GOLD <sup>3</sup>	LOW LEVEL/DRY CIRCUIT OR POWER	E1XX AND E2XX MODELS: 0.4 VA MAX @20 V AC OR DC MAX. OR 7.5 AMPS @125 V AC OR 28 V DC; 3 AMPS @ 250 V AC. DC E3XX MODELS: 0.4 VA MAX. @ 20 V AC OR DC MAX. OR 5 AMPS @ 125 V AC OR 28 V DC; 2 AMPS @ 250 V AC.
<b>R</b>		MATTE-TIN <sup>6</sup>		

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

<sup>1</sup> CONTACTS & TERMINALS: Copper alloy, with gold plate over nickel plate.

<sup>2</sup> END CONTACTS: Coin silver, with gold plate over nickel plate.

<sup>3</sup> CENTER CONTACTS & ALL TERMINALS: Copper alloy, with gold plate over nickel plate.

<sup>4</sup> END CONTACTS: Coin silver, silver plated.

<sup>5</sup> CENTER CONTACT & ALL TERMINALS: Copper alloy, with gold flash over silver plate. Or copper alloy, silver plated.

<sup>6</sup> TERMINALS: Copper alloy, with matte-tin over nickel plate.

**NOTE:** Any models supplied with Q, B, G, S P & R contact material are RoHS compliant.

All models with all options when ordered with G, Q, S & R contact material.

B contact material standard with all terminations.

P R & S contact materials not available with Z terminations.

## SEAL

**E** EPOXY SEAL



## AVAILABLE HARDWARE

<p><b>J2, J21 Actuators</b></p>  <p><b>PART NO.</b> <b>760502263</b> BLACK <b>760503000</b> RED</p> <p>Material: Nylon Finish: Matte</p>	<p><b>J3 Actuator</b></p>  <p><b>PART NO.</b> <b>766602263</b> BLACK <b>766603000</b> RED</p> <p>Material: Nylon Finish: Matte</p>	<p><b>J1, J11 Actuators</b></p>  <p><b>PART NO.</b> <b>776A02263</b> BLACK <b>776A03000</b> RED</p> <p>Material: Nylon Finish: Matte</p>
<p><b>J50 Actuator</b></p>  <p><b>PART NO.</b> <b>775A02263</b> BLACK <b>775A03000</b> RED</p> <p>Material: Nylon Finish: Matte</p>	<p><b>J60 Actuator</b></p>  <p><b>PART NO.</b> <b>613802263</b> BLACK <b>598103000</b> RED</p> <p>Material: Nylon Finish: Matte</p>	<p><b>J90 Actuator</b></p>  <p><b>PART NO.</b> <b>598002263</b> BLACK <b>598003000</b> RED</p> <p>Material: Nylon Finish: Matte</p>

NOTE: Additional nuts, screws and lockwashers available separately, see Technical Data section of this catalog. Other colors available, consult Customer Service Center.



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

Rocker



G

**C&K**

# E Series Sealed Miniature Rocker and Lever Handle Switches

## AVAILABLE HARDWARE

Fits Z3 Termination female connector



PART NO.  
**530100000**

Available in loose pieces.

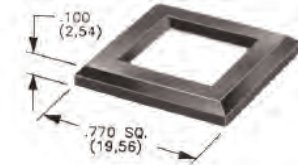
Frame for J11, J21 Actuators



PART NO.  
**764500746** BLACK ENAMEL  
**764601106** RETAINING SPRING  
Material: Spring Steel



J50, J60 & J90 Actuators

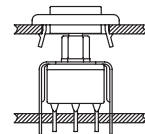


MATTE	GLOSS
PART NO.	PART NO.
<b>486702000</b>	<b>486802000</b> BLACK
Material: Nylon	
Finish: Matte or Gloss	

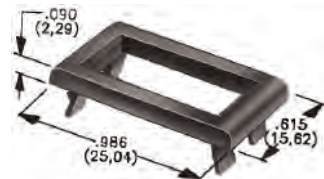
**NOTE:** Additional nuts, screws and lockwashers available separately, see Technical Data section of this catalog. Other colors available, consult Customer Service Center.

Frames snap into panel opening and are independent from switch mounting. Accurate positioning of the PC mounted switch relative to the panel opening is necessary to provide proper clearance between actuator and frame. Available in two basic styles and four panel thicknesses .047-.125 in. Material: Nylon. Finish: Matte.

TYPICAL APPLICATION

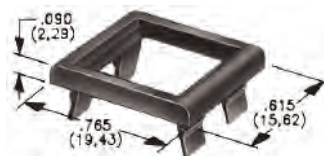


J1 & J2 Actuators



.047" (1,19) PANEL THK.	.062" (1,57) PANEL THK.	.090" (2,29) PANEL THK.	.125" (3,18) PANEL THK.
PART NO.	PART NO.	PART NO.	PART NO.
<b>452902263</b>	<b>452702263</b>	<b>452802263</b>	<b>452602263</b> BLACK
<b>452903000</b>	<b>452703000</b>	<b>452803000</b>	<b>452603000</b> RED

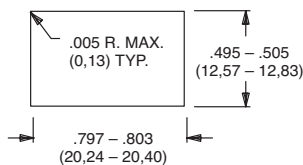
J50, J60 & J90 Actuators



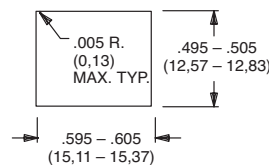
.047" (1,19) PANEL THK.	.062" (1,57) PANEL THK.	.090" (2,29) PANEL THK.	.125" (3,18) PANEL THK.
PART NO.	PART NO.	PART NO.	PART NO.
<b>432502263</b>	<b>432602263</b>	<b>432702263</b>	<b>432802263</b> BLACK
<b>432503000</b>	<b>432603000</b>	<b>432703000</b>	<b>432803000</b> RED

### PANEL MOUNTING

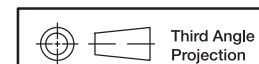
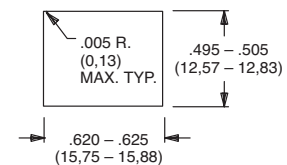
For part numbers  
4529xxxxx, 4527xxxxx,  
4528xxxxx, 4526xxxxx



For part numbers  
4325xxxxx, 4326xxxxx



For part numbers  
4327xxxxx, 4328xxxxx



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



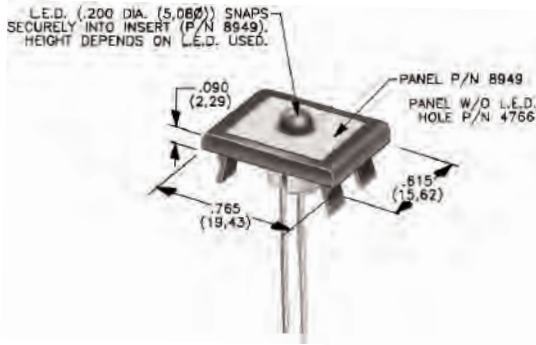
# E Series Sealed Miniature Rocker and Lever Handle Switches

## AVAILABLE HARDWARE

### Panel Inserts

Will fit separate snap-in frames for J50, J60, J90 actuators.

Above frames (part nos. 432XXXXXX) are also available with insert which accepts LED for indicator light assembly. Order insert separately from frame. Blank insert panel (without hole for LED) also available. **LED not included.**



PANEL INSERT WITH HOLE FOR LED

BLANK PANEL INSERT WITHOUT HOLE FOR LED

PART NO.  
894902000  
894903000

PART NO.  
476602000 BLACK  
476603000 RED

NOTE: Special colors, custom markings available, consult Customer Service Center.

Rocker



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

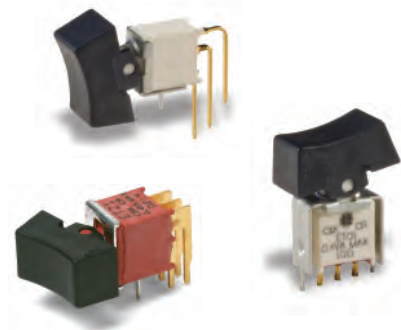
# ET Series Sealed Subminiature Rocker Switches

## Features/Benefits

- Sealed against solder and cleaning process contaminants
- Rocker, bushing & case—UL 94V-0
- Small footprint—saves space
- RoHS compliant

## Typical Applications

- Telecommunications
- Instrumentation
- Computers & peripherals



## Specifications

**CONTACT RATING:** B contact material: 0.4 VA max. @ 20 V AC or DC max. Q contact material: Copper alloy, silver plated. See page G-43 for additional ratings.

**ELECTRICAL LIFE:** ETX1 models: 60,000 make-and-break cycles at full load. All other models: 30,000 cycles.

**CONTACT RESISTANCE:** Below 20 m  $\Omega$  typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

**INSULATION RESISTANCE:** 10<sup>9</sup>  $\Omega$  min.

**DIELECTRIC STRENGTH:** 1000 Vrms min. @ sea level.

**OPERATING TEMPERATURE:** -30°C to 85°C.

**SOLDERABILITY:** Per MIL-STD-202F method 208D, or EIA RS-186E method 9 (1 hour steam aging).

**PACKAGING:** Surface mount switches standard in tape and reel packaging, see page G-45 for drawings and reel information.

## Materials

**CASE & BUSHING:** Glass filled nylon 6/6, flame retardant, heat stabilized (UL 94V-0) or glass filled 4/6 nylon, flame retardant, heat stabilized (UL 94V-0).

**ACTUATOR:** Nylon, black standard. Internal o-ring seal standard with all actuators. SA surface mount: High temperature material, glass filled 46 nylon, flame retardant, heat stabilized (UL 94V-0).

**SWITCH SUPPORT:** Brass, matte-tin plated.

**CONTACTS & TERMINALS:** B contact material: Copper alloy, with gold plate over nickel plate. Q contact material: Copper alloy, silver plated. See page G-43 for additional contact materials.

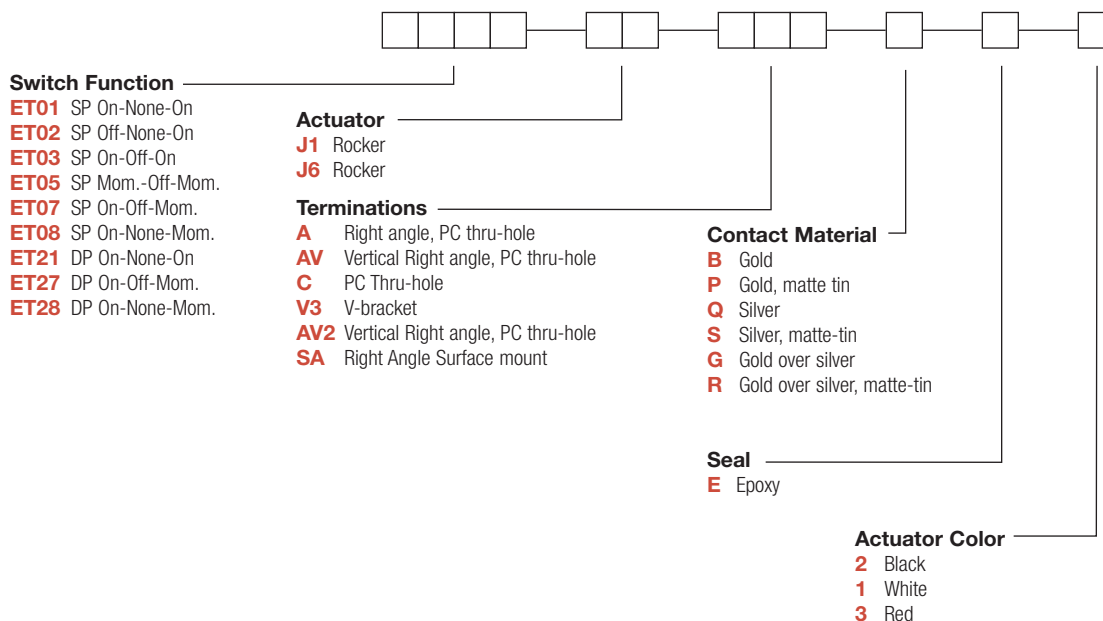
**TERMINAL SEAL:** Epoxy.

**NOTE:** Any models supplied with Q, B, G, S, P & R contact material are RoHS compliant.

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages G-40 thru G-44. For additional options not shown in catalog, consult Customer Service Center. All models are process sealed to withstand machine soldering temperatures and pressure wash cleaning methods.



# ET Series Sealed Subminiature Rocker Switches

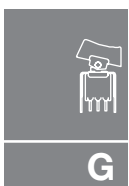
## SWITCH FUNCTION

NO. POLES	MODEL NO.	SWITCH FUNCTION			CONNECTED TERMINALS			SCHEMATIC
		POS. 1	POS. 2	POS. 3	POS. 1	POS. 2	POS. 3	
SP	<b>ET01</b>	ON	NONE	ON	2-3	N/A	2-1	
	<b>ET03</b>	ON	OFF	ON		OPEN		
	<b>ET05</b>	MOM.	OFF	MOM.				
	<b>ET07</b>	ON	OFF	MOM.	N/A			
	<b>ET08</b>	ON	NONE	MOM.				
	<b>ET02</b>	OFF	NONE	ON	OPEN	N/A	3-1	
<p><b>SPDT</b></p> <p>Part number shown: ET01J6CBE2</p> <p>ET02 Models: Omit terminal 2</p> <p>Terminal Nos. For Reference Only</p>								
DP	<b>ET21</b>	ON	NONE	ON	2-3,5-6	N/A	2-1,5-4	
	<b>ET27</b>	ON	OFF	MOM.		OPEN		
	<b>ET28</b>	ON	NONE	MOM.				
<p><b>DPDT</b></p> <p>Part number shown: ET21J6CBE2</p> <p>Terminal Nos. For Reference Only</p>								

MOM. = Momentary

All models with all options when ordered with G, S, R or Q contact material.

Rocker



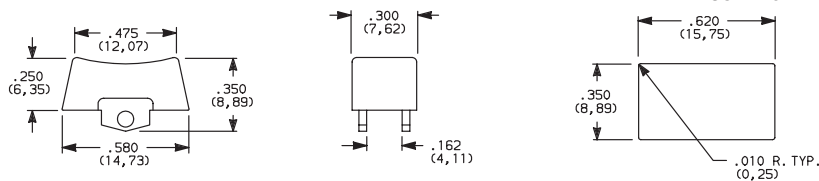
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

[www.ck-components.com](http://www.ck-components.com)

# ET Series Sealed Subminiature Rocker Switches

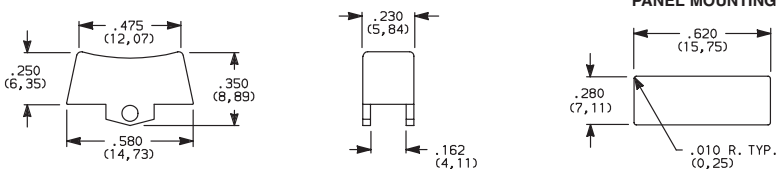
## ACTUATOR

### J1 ROCKER



Available with all models except ETOX with A & SA & SA1 terminations.

### J6 ROCKER



Standard with ETOX model with A & SA & SA1 terminations.

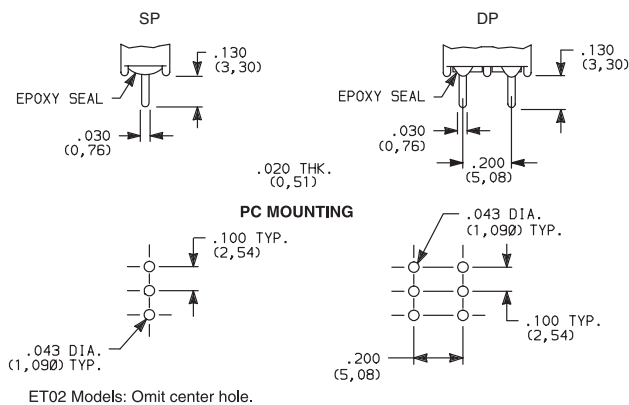
OPTION CODE	ACTUATOR COLOR
2	BLACK
1	WHITE
3	RED

Actuators available separately, see page G-45. Finish: Matte. Other colors, custom actuator markings and legends available, consult Customer Service Center.

**NOTE:** Internal o-ring actuator seal standard.

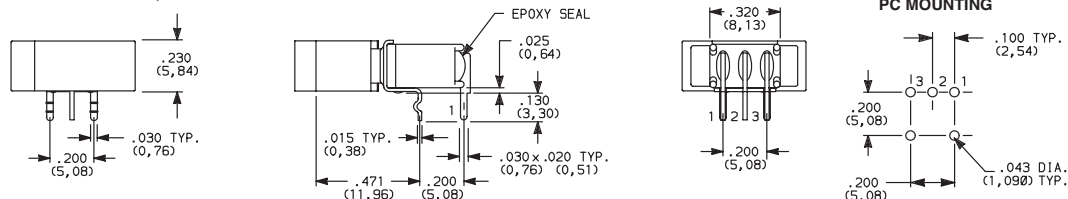
## TERMINATIONS

### C PC THRU-HOLE



### SP & DP

#### A RIGHT ANGLE, PC THRU-HOLE



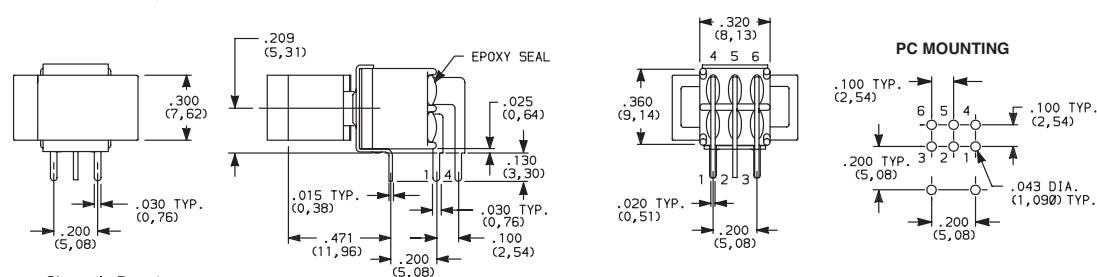
Actuator Shown In Pos. 1

Not available with ET02 model.  
J6 actuator std. only on ETOX models with A terminations.



ET01J6ABE2  
Horizontal Actuation  
SPDT

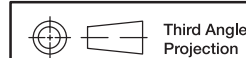
#### A RIGHT ANGLE, PC THRU-HOLE



Actuator Shown In Pos. 1



ET21J1ABE2  
Horizontal Actuation  
DPDT



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

www.ck-components.com



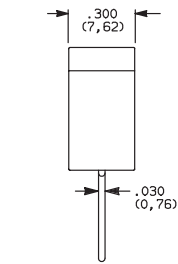
# ET Series Sealed Subminiature Rocker Switches

## TERMINATIONS

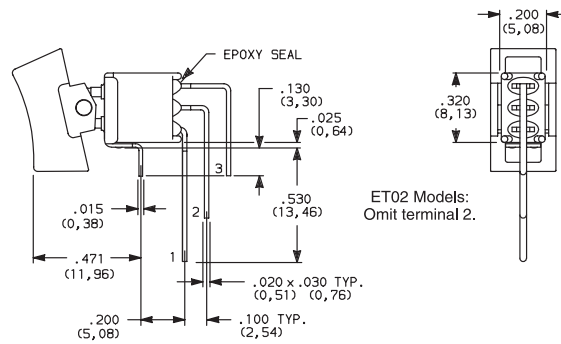
**AV** VERTICAL RIGHT ANGLE, PC THRU-HOLE



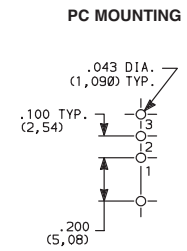
**ET01J1AVBE2**  
Vertical Actuation  
**SPDT**



Actuator Shown In Pos. 1



ET02 Models:  
Omit terminal 2.

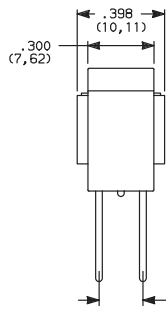


**NOTE:** Terminal bend radii and lead-in manufacturing option.

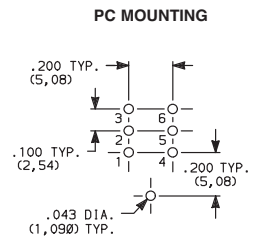
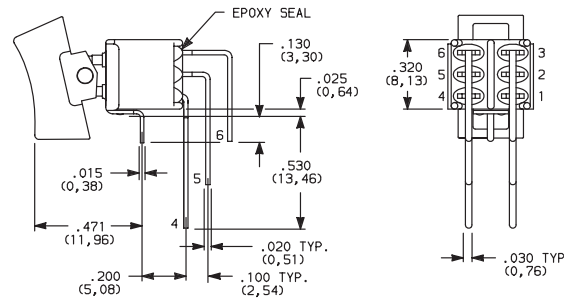
**AV** VERTICAL RIGHT ANGLE, PC THRU-HOLE



**ET21J1AVBE2**  
Vertical Actuation  
**DPDT**



Actuator Shown In Pos. 1

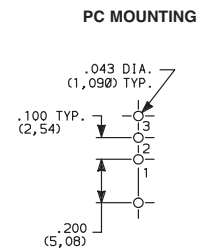
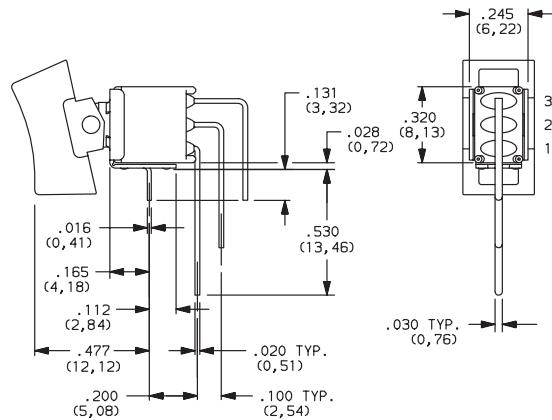
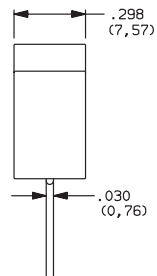


**NOTE:** Terminal bend radii and lead-in manufacturing option.

**AV2** VERTICAL RIGHT ANGLE, PC THRU-HOLE



**ET01J1AV2BE2**  
Vertical Actuation  
**SPDT**



Rocker



G

**C&K**



Third Angle Projection

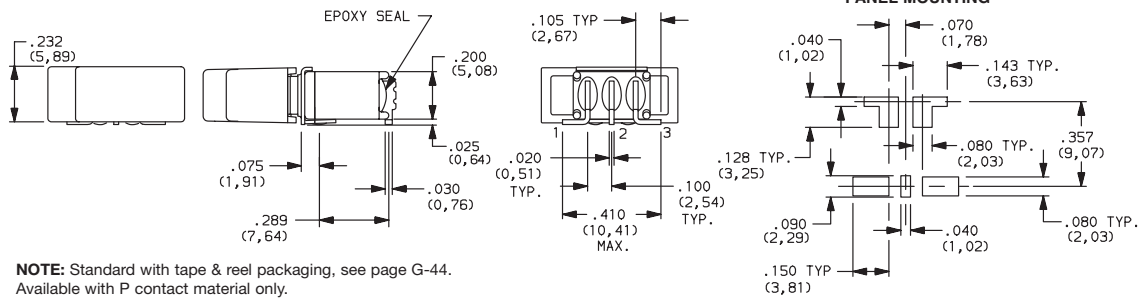
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



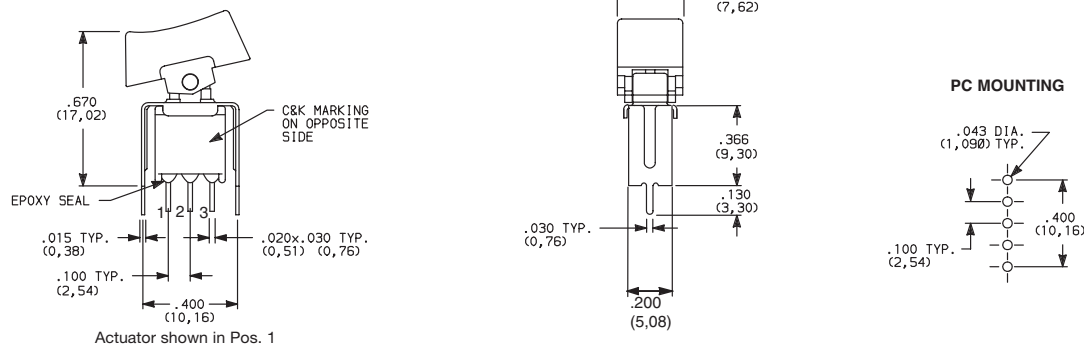
# ET Series Sealed Subminiature Rocker Switches

## TERMINATIONS

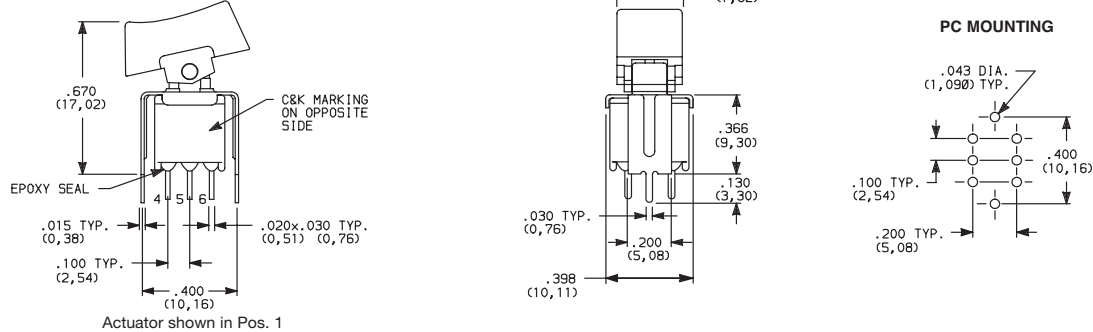
### SA RIGHT ANGLE, SURFACE MOUNT



### V3 VERTICAL MOUNT, V-BRACKET



### V3 VERTICAL MOUNT, V-BRACKET



## CONTACT MATERIAL

OPTION CODE	CONTACT MATERIAL	TERMINAL PLATING	RATINGS	
<b>B</b>	GOLD 1	GOLD 1	LOW LEVEL/ DRY CIRCUIT	0.4 VA MAX. @ 20 V AC OR DC MAX.
<b>P</b>		MATTE-TIN 6		
<b>Q</b>	SILVER 4,5	SILVER 5	POWER	ETX1 MODELS: 3 AMPS @ 120 V AC OR 28 V DC. ALL OTHER MODELS: 2 AMPS @ 120 V AC OR 28 V DC.
<b>S</b>		MATTE-TIN 6		
<b>G</b>	GOLD OVER SILVER 2,3	GOLD 3	LOW LEVEL/DRY CIRCUIT OR POWER	ETX1 MODELS: 0.4 VA MAX @ 20 V AC OR DC MAX. OR 3 AMPS @ 120 V AC OR 28 V DC. ALL OTHER MODELS: 0.4 VA MAX @ 20 V AC OR DC MAX. OR 2 AMPS @ 120 V AC OR 28 V DC.
<b>R</b>		MATTE-TIN 6		

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

<sup>1</sup> CONTACTS & TERMINALS: Copper alloy, with gold plate over nickel plate.

<sup>2</sup> END CONTACTS: Coin silver, with gold plate over nickel plate.


<sup>3</sup> CENTER CONTACTS & ALL TERMINALS: Copper alloy, with gold plate over nickel plate.

<sup>4</sup> END CONTACTS: Coin silver, silver plated.

<sup>5</sup> CENTER CONTACT & ALL TERMINALS: Copper alloy, silver plated.

<sup>6</sup> TERMINALS: Copper alloy, with matte-tin over nickel plate.

**NOTE:** Any models supplied with Q, B, G, S, P & R contact material are RoHS compliant.

All models  with all options when ordered with G, Q, S & R contact material.



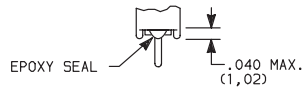
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



# ET Series Sealed Subminiature Rocker Switches



**E** EPOXY SEAL



## AVAILABLE HARDWARE

J1 Actuator



**PART NO.**  
**261A01000** WHITE  
**261A02263** BLACK  
**261A03000** RED

Material: Nylon  
 Finish: Matte  
 NOT AVAILABLE WITH A, SA, SA1

J6 Actuator



**PART NO.**  
**621C01000** WHITE  
**621C02263** BLACK  
**621C03000** RED

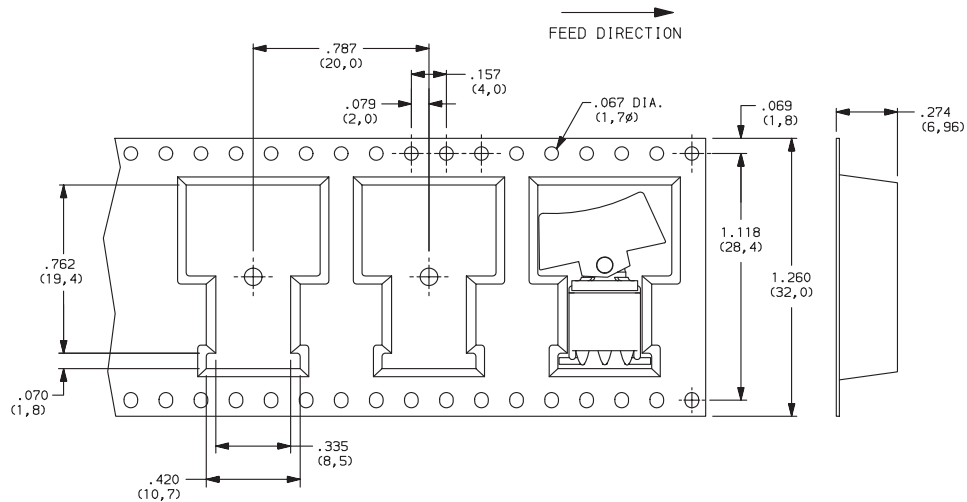
Material: Nylon  
 Finish: Matte  
 For Hi Temp, Consult Factory

**NOTE:** Other colors available, consult Customer Service Center.

## TAPE & REEL SA TERMINATION

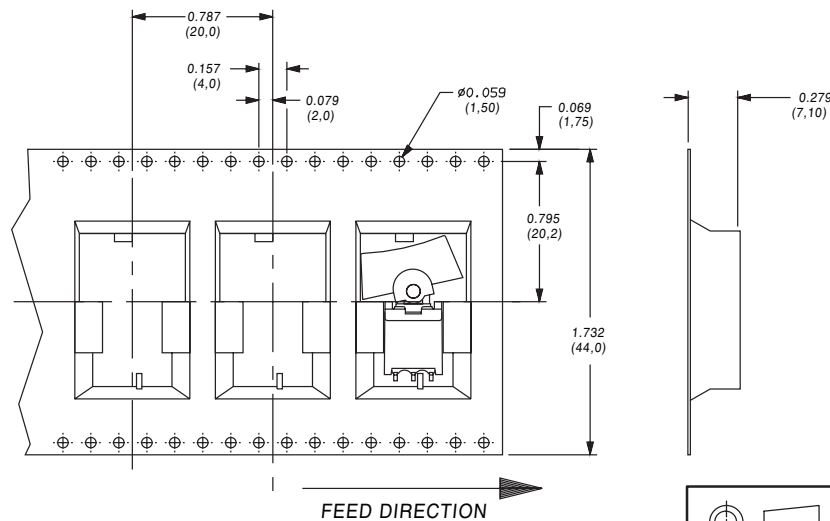
ET01J6SABE (SHOWN)

REEL INFORMATION	
OUTSIDE DIAMETER	13.00 (330,0)
PILOT HOLE	.512 (13,0)
QUANTITY PER REEL	500



ET01J6SA1BE (SHOWN)

REEL INFORMATION	
OUTSIDE DIAMETER	13.00 (330,0)
PILOT HOLE	.795 (20,2)
QUANTITY PER REEL	450



Rocker



G



Dimensions are shown: Inches (mm)  
 Specifications and dimensions subject to change

# T Series Subminiature Rocker Switches

## Features/Benefits

- Compact size—small footprint
- Single and double pole models
- PC and panel mounting options available
- RoHS compliant

## Typical Applications

- Telecommunications
- Instrumentation
- Medical Equipment



Models Available

## Specifications

CONTACT RATING: Q contact material (TX01 models): 3 AMPS @ 120 V AC or 28 V DC. All other models: 2 AMPS @ 120 V AC or 28 V DC. See page G-49 for additional ratings.

ELECTRICAL LIFE: TX01 models: 60,000 make-and-break cycles at full load. All other models: 30,000 cycles.

CONTACT RESISTANCE: Below 20 m Ω typ. initial @ 2–4 V DC, 100 mA, for both silver and gold plated contacts.

INSULATION RESISTANCE: 10<sup>9</sup> Ω min.

DIELECTRIC STRENGTH: 1000 Vrms min. @ sea level.

OPERATING TEMPERATURE: –30°C to 85°C.

SOLDERABILITY: Per MIL-STD-202F method 208D, or EIA RS-186E method 9 (1 hour steam aging).

**NOTE:** Any models supplied with B, G, P, Q or R contact material are RoHS compliant.

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## Materials

CASE: Glass filled nylon 6/6, flame retardant, heat stabilized or diallyl phthalate (DAP), (UL 94V-0) or glass filled nylon 4/6, flame retardant, heat stabilized.

ACTUATOR: Nylon, black standard.

BUSHING: Brass, nickel plated.

HOUSING: Stainless steel.

SWITCH SUPPORT: Brass, matte-tin plated.

MOUNTING BRACKET: Stainless steel.

END CONTACTS: B contact material: Copper alloy, with gold plate over nickel plate. Q contact material: Coin silver, silver plated. See page G-49 for additional contact materials.

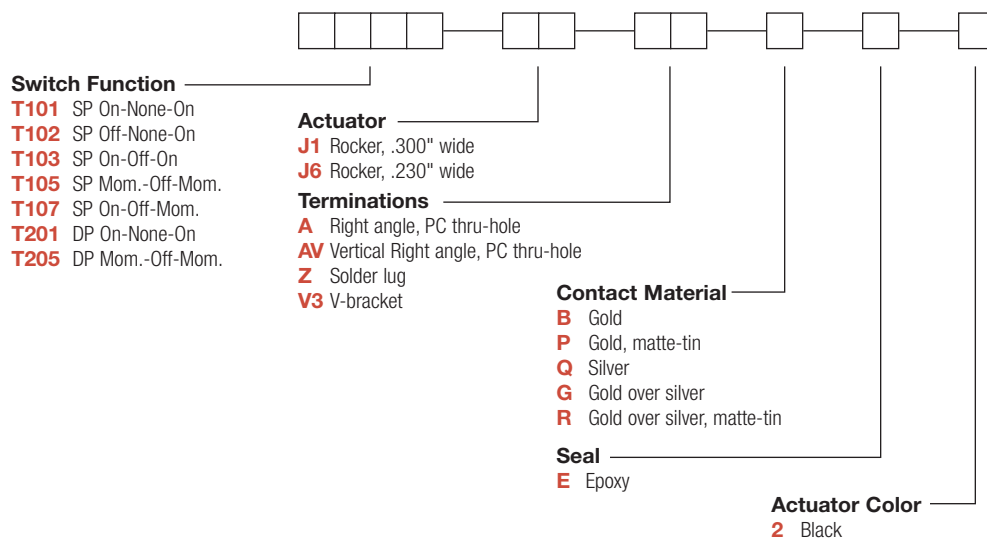
CENTER CONTACTS & TERMINALS: B contact material: Copper alloy, with gold plate over nickel plate. Q contact material: Copper alloy, silver plated. See page G-49 for additional contact materials.

TERMINAL SEAL: Epoxy.

HARDWARE: Nut, Screws & Lockwasher: Stainless steel.  
Standoff: Nylon standard.

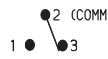

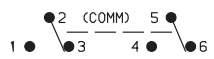
## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages G-46 through G-50. For additional options not shown in catalog, consult Customer Service Center. All models have epoxy terminal seal and are compatible with all “bottom-wash” PCB cleaning methods.




# T Series Subminiature Rocker Switches

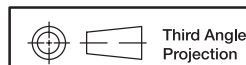
SWITCH FUNCTION  ACTUATOR COLOR

NO. POLES	MODEL NO.	SWITCH FUNCTION			CONNECTED TERMINALS			SCHEMATIC
		POS. 1	POS. 2	POS. 3	POS. 1	POS. 2	POS. 3	
		C&K marking on opposite side			C&K marking on opposite side			
SP	<b>T101</b>	ON	NONE	ON	2-3	N/A	2-1	 SPDT
	<b>T103</b>	ON	OFF	ON		OPEN		
	<b>T105</b>	MOM.	OFF	MOM.				
	<b>T107</b>	ON	OFF	MOM.				
	<b>T102</b>	OFF	NONE	ON	OPEN	N/A	3-1	 SPST
<b>SPDT</b> <div style="display: flex; justify-content: space-around;"> <div data-bbox="291 725 705 1043"> <p>T102 Models: Omit terminal 2</p> </div> <div data-bbox="758 691 1031 1031"> <p>Terminal Nos. For Reference Only</p> </div> <div data-bbox="1076 748 1472 963"> <p>PANEL MOUNTING</p> </div> </div> <p>Part number shown: T101J6ZBE2</p>								
DP	<b>T201</b>	ON	NONE	ON	2-3,5-6	N/A	2-1,5-4	 DPDT
	<b>T205</b>	MOM.	OFF	MOM.				
<b>DPDT</b> <div style="display: flex; justify-content: space-around;"> <div data-bbox="291 1372 705 1632"> </div> <div data-bbox="758 1292 1031 1632"> <p>Terminal Nos. For Reference Only</p> </div> <div data-bbox="1076 1372 1472 1587"> <p>PANEL MOUNTING</p> </div> </div> <p>Part number shown: T201J1ZBE2</p>								

MOM. = Momentary

All models  with all options when ordered with G, Q or R contact material.

Rocker

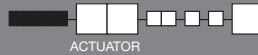


Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

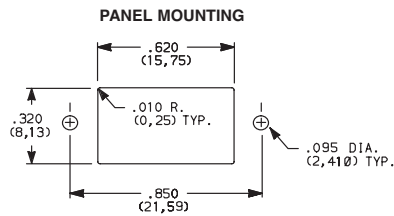
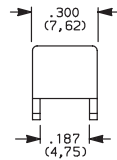
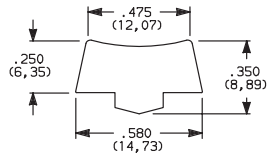
www.ck-components.com

# T Series Subminiature Rocker Switches

## ACTUATOR



### J1 ROCKER, .300 WIDE

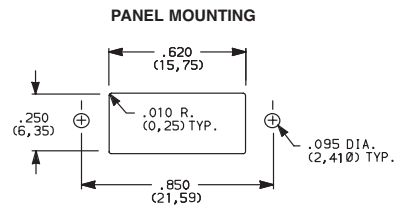
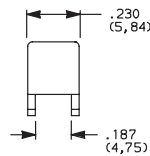
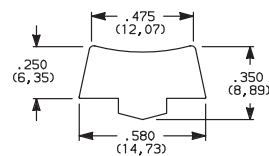


OPTION CODE	ACTUATOR COLOR
2	BLACK

Standard with all models except T10X with A terminations.

Actuators available separately, see page G 50. Finish: Matte. Other colors, custom actuator markings and legends available, consult Customer Service Center.

### J6 ROCKER, .230 WIDE

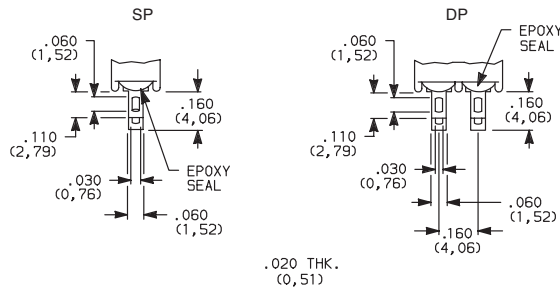


Standard with T10X model with A terminations.

## TERMINATIONS



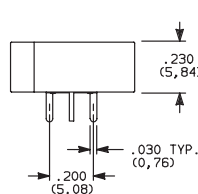
### Z SOLDER LUG



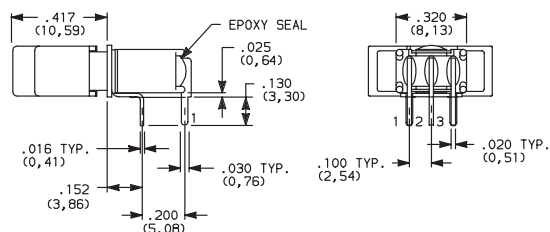
### SP and DP

Not available with P or R contact material.

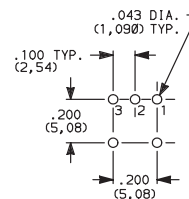
### A RIGHT ANGLE, PC THRU-HOLE



Actuator Shown In Pos. 1



### PC MOUNTING



T101J6ABE2  
Horizontal Actuation  
SPDT

Rocker



# T Series Subminiature Rocker Switches

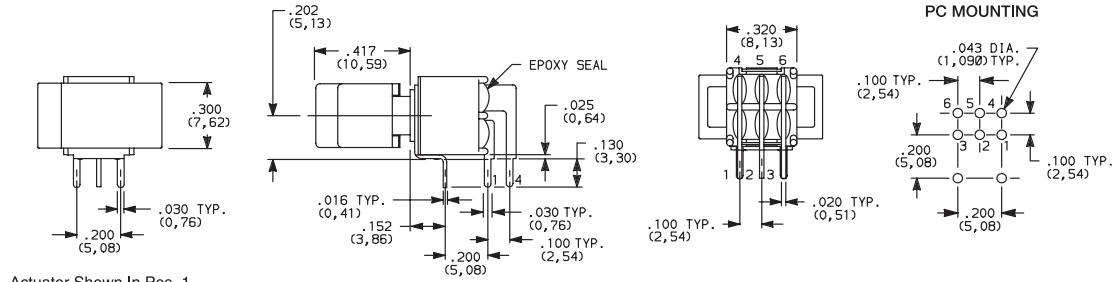
## TERMINATIONS



### A RIGHT ANGLE, PC THRU-HOLE



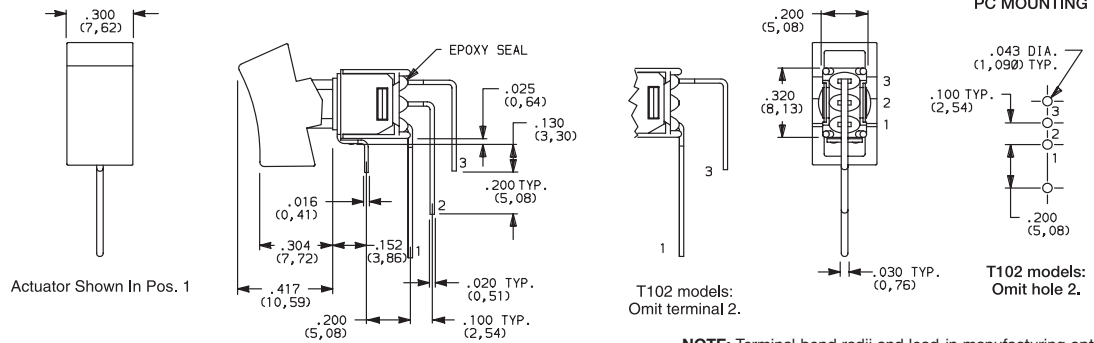
**T201J1ABE2**  
Horizontal Actuation  
**DPDT**



### AV VERTICAL RIGHT ANGLE, PC THRU-HOLE



**T101J1AVBE2**  
Vertical Actuation  
**SPDT**

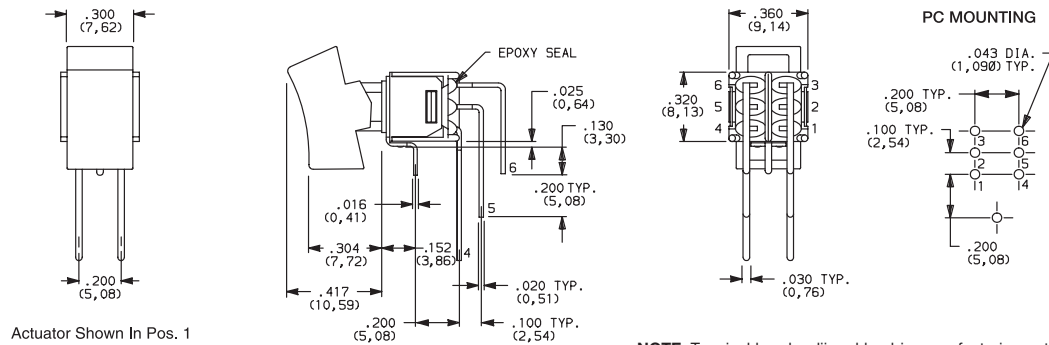


NOTE: Terminal bend radii and lead-in manufacturing option.

### AV VERTICAL RIGHT ANGLE, PC THRU-HOLE



**T201J1AVBE2**  
Vertical Actuation  
**DPDT**

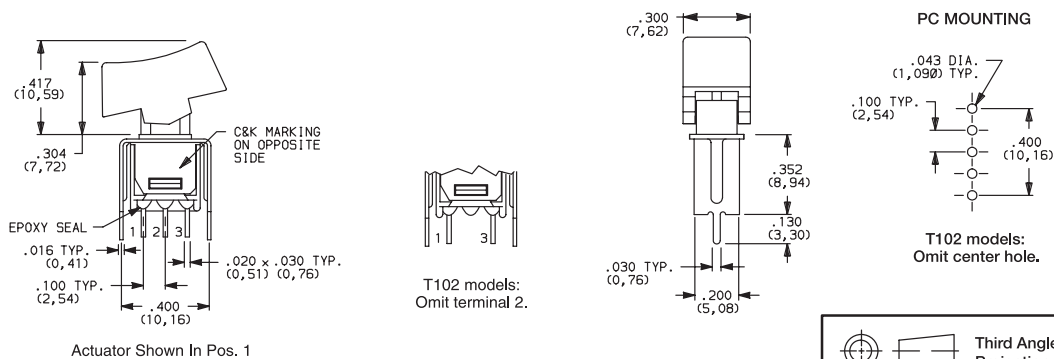


NOTE: Terminal bend radii and lead-in manufacturing option.

### V3 VERTICAL MOUNT, V-BRACKET



**T101J1V3BE2**  
**SPDT**



Rocker



G



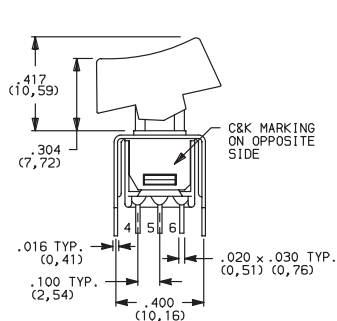
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

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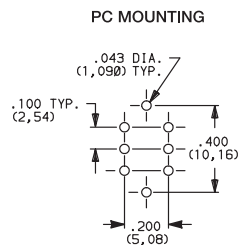
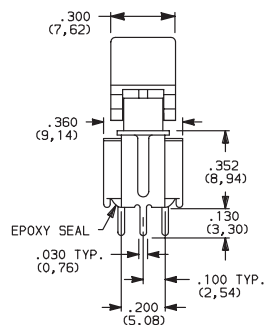
# T Series Subminiature Rocker Switches

## TERMINATIONS

### V3 VERTICAL MOUNT, V-BRACKET



Actuator Shown In Pos. 1



T201J1V3BE2  
DPDT


## CONTACT MATERIAL

OPTION CODE	CONTACT MATERIAL	TERMINAL PLATING	RATINGS	
<b>B</b>	GOLD <sup>3</sup>	GOLD <sup>1</sup>	LOW LEVEL/ DRY CIRCUIT	0.4 VA MAX. @ 20 V AC OR DC MAX.
<b>P</b>		MATTE-TIN <sup>6</sup>		
<b>Q</b>	SILVER <sup>4,5</sup>	SILVER <sup>5</sup>	POWER	TX01 MODELS: 3 AMPS @ 120 V AC OR 28 V DC. ALL OTHER MODELS: 2 AMPS @ 120 V AC OR 28 V DC.
<b>G</b>	GOLD OVER SILVER <sup>2,3</sup>	GOLD <sup>3</sup>	LOW LEVEL/DRY CIRCUIT OR POWER	TX01 MODELS: 0.4 VA MAX @ 20 V AC OR DC MAX. OR 3 AMPS @ 120 V AC OR 28 V DC. ALL OTHER MODELS: 0.4 VA MAX @ 20 V AC OR DC MAX. OR 2 AMPS @ 120 V AC OR 28 V DC.
<b>R</b>		MATTE-TIN <sup>6</sup>		

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

- 1 CONTACTS & TERMINALS: Copper alloy, with gold plate over nickel plate.
- 2 END CONTACTS: Coin silver, with gold plate over nickel plate.
- 3 CENTER CONTACTS & ALL TERMINALS: Copper alloy, with gold plate over nickel plate.
- 4 END CONTACTS: Coin silver, silver plated.
- 5 CENTER CONTACT & ALL TERMINALS: Copper alloy, silver plated.
- 6 TERMINALS: Copper alloy, with matte-tin over nickel plate.

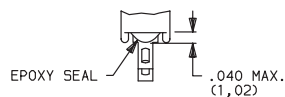
**NOTE:** Any models supplied with B, G, P, Q & R contact material are RoHS compliant.

All models  with all options when ordered with G, Q, or R contact material.  
B contact material standard with A, AV, V3 terminations.  
Q contact material standard with C & Z terminations.

P & R contact materials not available with Z terminations.

## SEAL

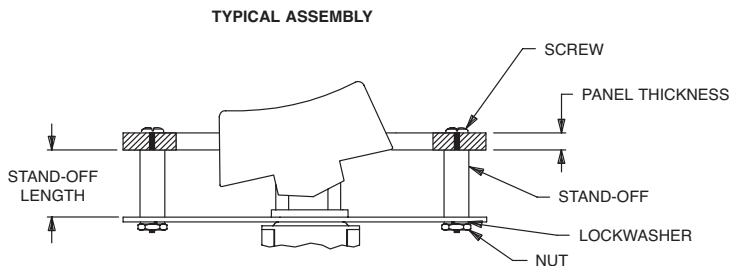
### E EPOXY SEAL



# T Series Subminiature Rocker Switches

## AVAILABLE HARDWARE

Panel mounting hardware for rocker and lever handle switches is available separately. Mounting hardware consists of two screws, two nuts, two standoffs and two lockwashers per switch, and is available for panel thicknesses of 1/16, 3/32 and 1/8 inch. See part numbers below.



PART NO.	PANEL THK.	STANDOFF LENGTH
761101000	1/16 IN. (1,59)	.295 (7,49)
761102000	3/32 IN. (2,38)	.264 (6,71)
761103000	1/8 IN. (3,18)	.233 (5,92)

**NOTE:** Additional nuts, screws and lockwashers available separately, see Technical Data section of this catalog.

J1 Actuator



PART NO.  
468002263 BLACK

Material: Nylon  
Finish: Matte

J6 Actuator



PART NO.  
468102263 BLACK

Material: Nylon  
Finish: Matte

**NOTE:** Other colors, custom actuator markings and legends available, consult Customer Service Center.

Rocker



Third Angle  
Projection

Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



# 9000 Series Power Rocker and Lever Handle Switches



### Features/Benefits

- **Thermoset UL 94V-0 housing**
- **Rugged construction**
- **Variety of actuator and termination options**
- **RoHS compliant**

### Typical Applications

- **Small equipment**
- **Shut-off switch**

UL 61058-1



### Specifications

CONTACT RATING:

9201 Model:

- GP (general purpose)
- 6 AMPS 125 VAC 50/60 Hz T85 10,000 cycles (10E3)
- 3 AMPS 250 VAC 50/60 Hz T85 10,000 cycles
- R (resistive)
- 6 AMPS 30 VDC T85 10,000 cycles

9221 Model:

- GP (general purpose)
- 10 AMPS 125 VAC 50/60 Hz T85 10,000 cycles
- 5 AMPS 250 VAC 50/60 Hz T85 10,000 cycles
- R (resistive)
- 10 AMPS 30 VDC T85 10,000 cycles

ELECTRICAL LIFE: 25,000 make-and-break cycles at full load.

CONTACT RESISTANCE: Below 10 m Ω typ. initial @ 2-4 V DC, 100 mA.

INSULATION RESISTANCE: 10<sup>9</sup> Ω min.

DIELECTRIC STRENGTH: 2,500 Vrms min. @ sea level.

OPERATING TEMPERATURE: -30°C to 85°C.

SOLDERABILITY: Per MIL-STD-202F method 208D, or EIA RS-186E method 9 (1 hour steam aging).

### Materials

CASE: Diallyl phthalate (DAP) (UL 94V-0).

ACTUATOR: Nylon, black standard.

FRAME-REAR MOUNT OPTIONS: Spring steel, black.

BUSHING: Brass, nickel plated.

HOUSING: Stainless steel.

SWITCH SUPPORT: Brass or steel, matte-tin plated.

MOUNTING BRACKET: Stainless steel.

END CONTACTS: 9201 Model: Coin silver, silver plated.

9221 Model: Silver cadmium oxide.

CENTER CONTACTS: Copper alloy, silver plated

ALL TERMINALS: 9201 Model: Copper alloy, silver plated.

9221 Model: Copper alloy, matte-tin plated.

TERMINAL SEAL: Epoxy.

HARDWARE: Nut, Screw & Lockwasher: Stainless steel. Standoff: Nylon standard, aluminum available, consult Customer Service Center.

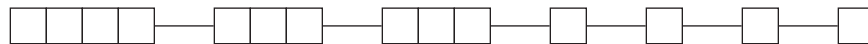
\*Cadmium used in electrical contacts is acceptable for RoHS.

**NOTE:** Any models supplied with Q contact material are RoHS compliant.

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

### Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages G-52 through G-55. For additional options not shown in catalog, consult Customer Service Center.



#### Switch Function

- 9201** DP On-On, 6 Amps
- 9221** DP On-On, 10 Amps

#### Actuator

- J1** Rocker
- J2** Lever
- J3** Rocker
- J37** Rocker with metal frame

#### Terminations

- Z** Solder lug (9201 only)
- AV2** Vertical right angle, PC thru-hole (9201 only)
- C** PC Thru-hole (9201 only)
- Z4** Quick connect

#### Contact Material

- Q** Silver

#### Seal

- E** Epoxy
- D** No Seal

#### Actuator Color

- 2** Black
- 1** White
- 3** Red

#### Frame Color

- 2** Black
- NONE** No frame color required



# 9000 Series Power Rocker and Lever Handle Switches

## SWITCH FUNCTION

NO. POLES	MODEL NO.	RATING*	SWITCH FUNCTION		CONNECTED TERMINALS		SCHEMATIC
			POS. 1	POS. 2	POS. 1	POS. 2	
DP	9201	6 AMPS	ON	ON	2-3,5-6	2-1,5-4	
	9221	10 AMPS	ON	ON			

**DPDT**

Part number shown: 9201J1ZQE2

All 9000 Series models meet international dimensional and electrical requirements.

\* See CONTACT MATERIAL, page G-54, for complete ratings.

9221 model must be ordered with Z4 terminations and D seal option.

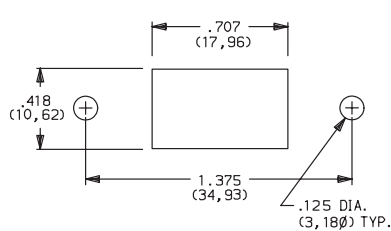
## ACTUATOR-PANEL MOUNT

OPTION CODE	ACTUATOR COLOR
2	BLACK
1	WHITE
3	RED

Finish: Matte. Other colors, custom actuator markings and legends available, consult Customer Service Center.

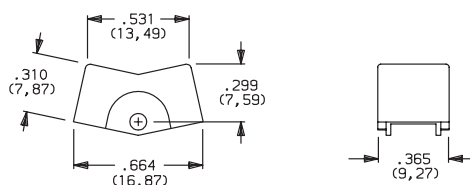
**NOTE:** Hardware: two each—mounting screws, nuts, lockwashers and standoffs for 1/8 inch thick panel are supplied standard on all switches with panel mounting brackets. Actuators available separately, see page G-55. Hardware available separately, see Technical Data section of this catalog.

### PANEL MOUNTING

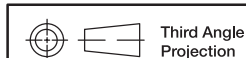
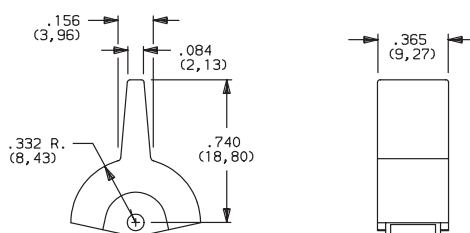


Rocker

### J1 ROCKER



### J2 LEVER



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

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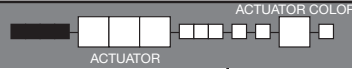


G

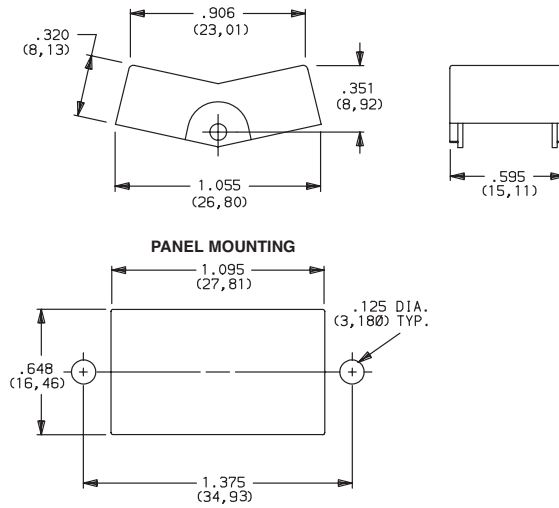
**C&K**

# 9000 Series Power Rocker and Lever Handle Switches

## ACTUATOR-PANEL MOUNT



### J3 ROCKER

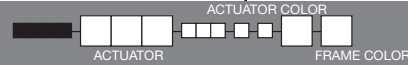


OPTION CODE	ACTUATOR COLOR
2	BLACK
1	WHITE
3	RED

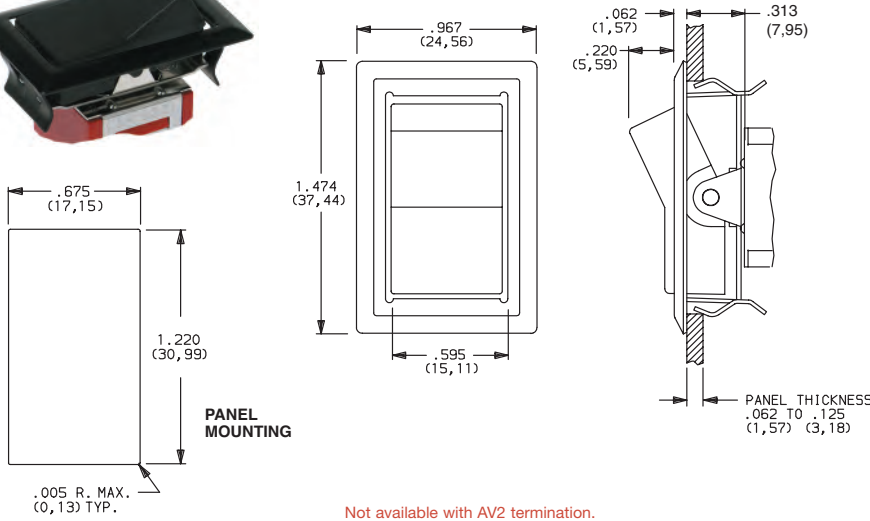
Actuator finish: Matte. Other colors, custom actuator markings and legends available, consult Customer Service Center.

**NOTE:** Actuators available separately, see page G-55. Hardware: two each—mounting screws, nuts, lockwashers and standoffs for 1/8 inch thick panel are supplied standard on all switches with panel mounting brackets. Hardware available separately, see Technical Data section of this catalog.

## ACTUATOR-REAR MOUNT



### J37 ROCKER WITH METAL FRAME



OPTION CODE	ACTUATOR COLOR
2	BLACK
1	WHITE
3	RED

OPTION CODE	FRAME COLOR
2	BLACK

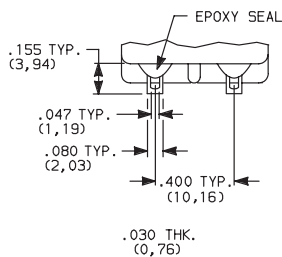
Actuator finish: Matte. Frame finish: Gloss. Other colors, custom actuator markings and legends available, consult Customer Service Center.

**NOTE:** Actuators & frames available separately, see page G-55. Hardware: two each—mounting screws, nuts, lockwashers and standoffs for 1/8 inch thick panel are supplied standard on all switches with panel mounting brackets. Hardware available separately, see Technical Data section of this catalog.

## TERMINATIONS

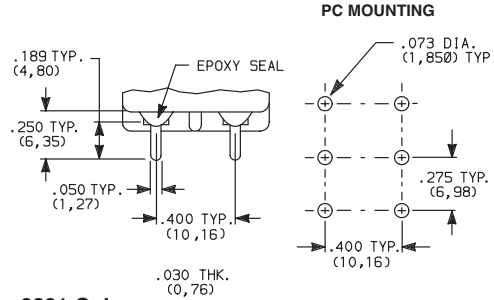


### Z SOLDER LUG



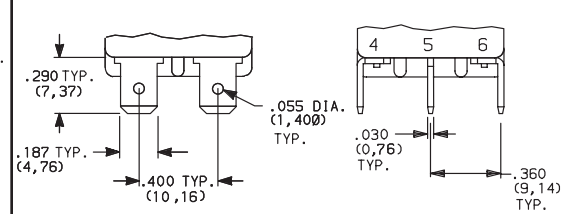
9201 Only

### C PC THRU-HOLE



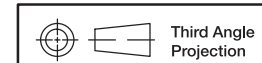
9201 Only

### Z4 QUICK CONNECT



9201 and 9221

**NOTE:** Only termination available with 9221 model. Must be ordered with D seal option. Mating terminal standard Nema .187" quick connect.



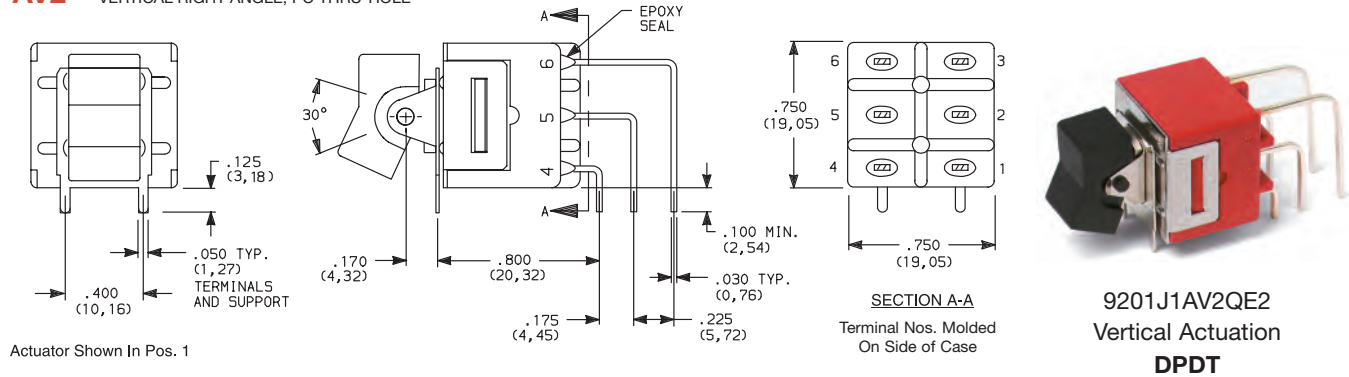
Third Angle Projection



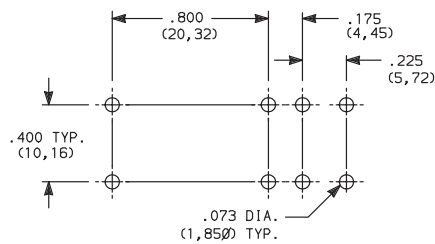
# 9000 Series Power Rocker and Lever Handle Switches

## TERMINATIONS

### AV2 VERTICAL RIGHT ANGLE, PC THRU-HOLE



### PC MOUNTING



### 9201 Only

**NOTE:** Terminal bend radii and lead-in manufacturing option.  
Terminal spacing greater than 3mm at all points.

## CONTACT MATERIAL

OPTION CODE	MODEL	CONTACT MATERIAL	TERMINAL PLATING	RATINGS
Q	9201	SILVER <sup>1,2</sup>	SILVER OR TIN <sup>2,5</sup>	GP (general purpose) 6 AMPS 125 VAC 50/60 Hz T85 10,000 cycles (10E3) 3 AMPS 250 VAC 50/60 Hz T85 10,000 cycles R (resistive) 6 AMPS 30 VDC T85 10,000 cycles
	9221	SILVER CADMIUM OXIDE <sup>3,4,6</sup>	TIN <sup>5</sup>	GP (general purpose) 10 AMPS 125 VAC 50/60 Hz T85 10,000 cycles 5 AMPS 250 VAC 50/60 Hz T85 10,000 cycles R (resistive) 10 AMPS 30 VDC T85 10,000 cycles

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

- <sup>1</sup> END CONTACTS: Coin silver, silver plated.
- <sup>2</sup> CENTER CONTACTS & ALL TERMINALS: Copper alloy, silver plated.
- <sup>3</sup> END CONTACTS: Silver cadmium oxide.
- <sup>4</sup> CENTER CONTACTS: Copper alloy, silver plated.
- <sup>5</sup> Z4 TERMINALS ONLY: Copper alloy, tin plated.
- <sup>6</sup> Cadmium used for electrical contacts is acceptable for RoHS.

**NOTE:** Any models supplied with Q contact material is RoHS compliant.

9221 model must be ordered with Z4 terminations and D seal option.

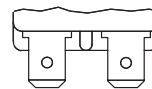
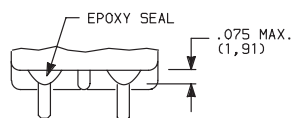
All 9000 Series models meet international dimensional and electrical requirements.



## SEAL

**E** EPOXY SEAL

**D** NO EPOXY SEAL



Not available with 9221 model or Z4 terminations.

Must be ordered with 9221 model and Z4 termination.

Rocker



G

**C&K**

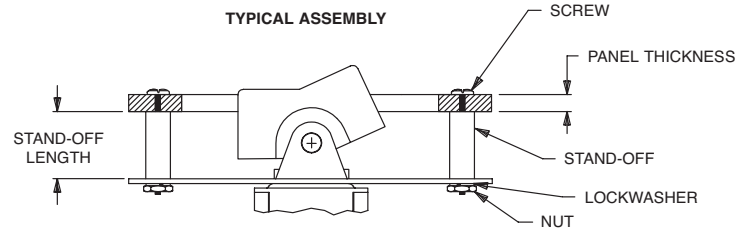


Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

# 9000 Series Power Rocker and Lever Handle Switches

## AVAILABLE HARDWARE

Panel mounting hardware for rocker and lever handle switches is available separately. Mounting hardware consists of two screws, two nuts, two standoffs and two lockwashers per switch, and is available for panel thicknesses of 1/16, 3/32 and 1/8 inch. See part numbers below.



J1 & J2 actuators

PART NO.	PANEL THK.	STANDOFF LENGTH
761101000	1/16 IN. (1,59)	.295 (7,49)
761102000	3/32 IN. (2,38)	.264 (6,71)
761103000	1/8 IN. (3,18)	.233 (5,92)

**J1 Actuator**



**PART NO.**

776A01000 WHITE  
776A02263 BLACK  
776A03000 RED

Material: Nylon  
Finish: Matte

**J2 Actuator**



**PART NO.**

760501000 WHITE  
760502263 BLACK  
760503000 RED

Material: Nylon  
Finish: Matte

**J3, J37 Actuators**



**PART NO.**

766601000 WHITE  
766602263 BLACK  
766603000 RED

Material: Nylon  
Finish: Matte

**Frame for J37 Actuators**



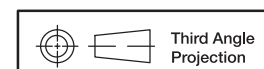
**PART NO.**

445400746 BLACK ENAMEL  
445400747 WHITE ENAMEL

Material: Spring Steel

**NOTE:** Additional nuts, screws and lockwashers available separately, see Technical Data section of this catalog.

Other colors available, consult Customer Service Center.



Third Angle Projection

Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

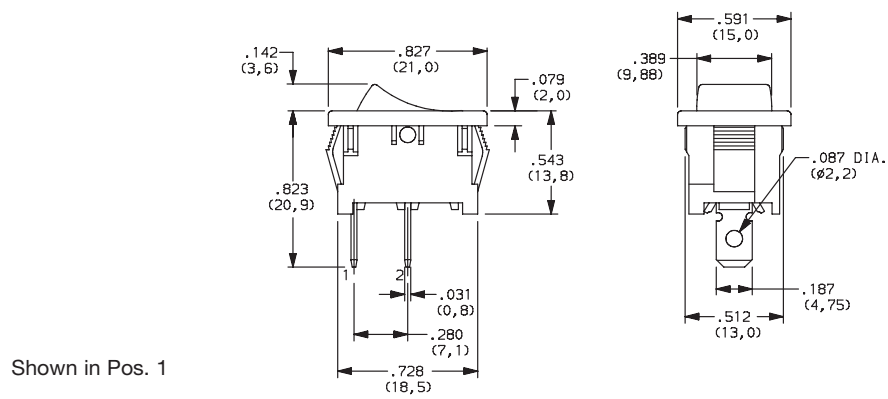




# DA Series Miniature Single Pole Rocker Switches

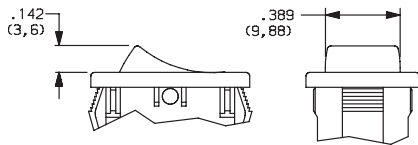
## SWITCH FUNCTION

NO. POLES	MODEL NO.	SWITCH FUNCTION			CONNECTED TERMINALS			SCHEMATIC	
		C&K marking on opposite side			C&K marking on opposite side				
SP	<b>DA101</b>	ON	NONE	ON	2-3	N/A	2-1		
	<b>DA102</b>	ON	NONE	OFF				OR	
	<b>DA103</b>	ON	OFF	ON				OR	
								For 7 & 8 Illuminated Versions Only	
								For 6 Illuminated Versions Only	



## ACTUATOR

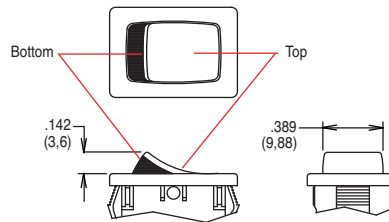
- J1** ROCKER
- \*J3** ILLUMINATED ROCKER



**NOTE:** J3 actuator available with DA102 switch functions, 7&8 lamp ratings and not available with O2 and A termination options.

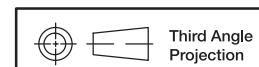
\* J3 actuator not available with markings

- J2** TWO-TONE ROCKER



**NOTE:**

1. Available with DA102 switch function only.
2. Available with None or P actuator marking options only.



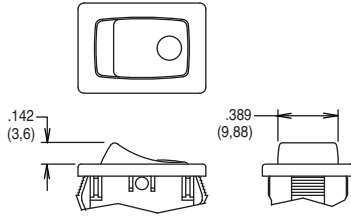
Third Angle  
Projection  
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



# DA Series Miniature Single Pole Rocker Switches

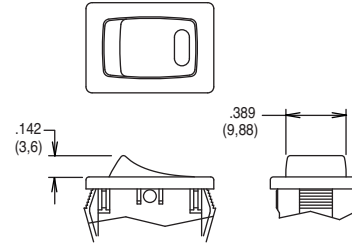
## ACTUATOR

### J4 CIRCLE, ILLUMINATED ROCKER



**NOTE:** Available with DA102 switch function and 7 & 8 lamp ratings combinations only. Not available with O2 and A termination options.

### J5 OVAL, ILLUMINATED ROCKER

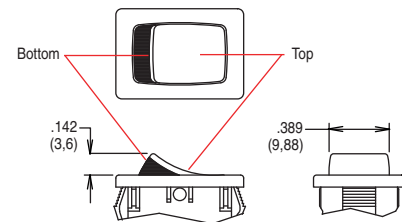


**NOTE:** Available with DA102 switch function and 6 lamp rating combinations only. Not available with O2 and A termination options.

## ACTUATOR COLOR

	OPTION CODE	ACTUATOR COLOR
	<b>J1 only</b>	<b>2</b>
<b>1</b>		WHITE
<b>3</b>		RED
<b>J3, J4, J5 only</b>	<b>R</b>	RED, ILLUMINATED
	<b>A</b>	AMBER, ILLUMINATED
	<b>G</b>	GREEN, ILLUMINATED

	OPTION CODE	ACTUATOR COLOR	
		TOP	BOTTOM
<b>J2 only</b>	<b>1</b>	WHITE	RED
	<b>2</b>	WHITE	BLACK
	<b>3</b>	RED	WHITE
	<b>4</b>	BLACK	WHITE
	<b>5</b>	BLACK	RED

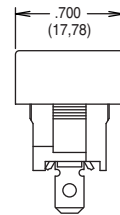
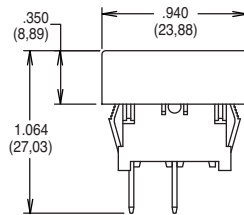
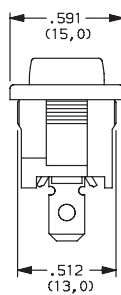
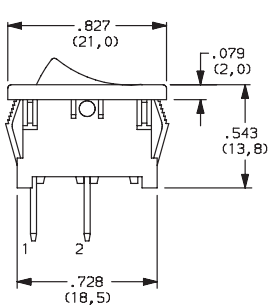


## MOUNTING STYLE/COLOR

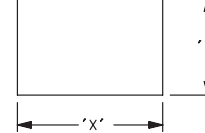
### S2 SNAP-IN, BLACK

### S1 SNAP-IN, WHITE

### G2 GUARD, BLACK



### S2, S1 & G2 PANEL MOUNTING



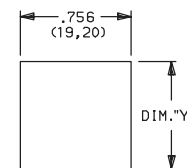
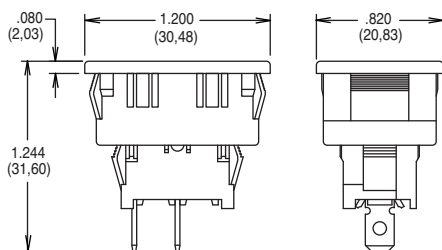
PANEL THICKNESS	"X"	"Y"
0.030-0.049 (0,75-1,25)	0.756-.004 (19,2-0,1)	0.512+.004 (13,0+0,1)
0.049-0.079 (1,25-2,0)	0.764-.004 (19,4-0,1)	0.512+.004 (13,0+0,1)
0.079-0.118 (2,0-3,0)	0.779-.004 (19,8-0,1)	0.512+.004 (13,0+0,1)

**NOTE:** Available with DA10X switch functions only.

Actuator shown in Pos. 1

### B2 RECESSED SNAP-IN BRACKET, BLACK

### B2 PANEL MOUNTING



PANEL THICKNESS	"Y"
0.030-0.049 (0,75-0,25)	1.068 (27,13)
0.049-0.079 (1,25-2,0)	1.076 (27,33)
0.079-0.118 (2,0-3,0)	1.092 (27,74)

**NOTE:** Available with DA10X switch functions only.

Rocker



G

**C&K**



Third Angle Projection

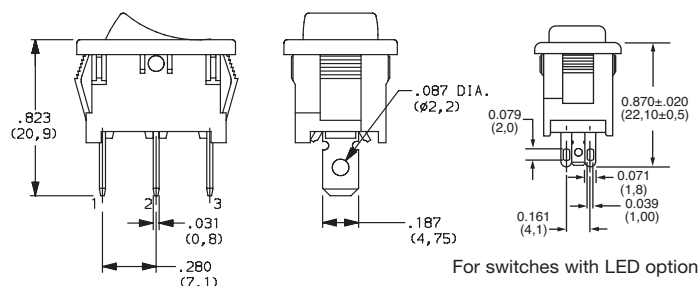
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



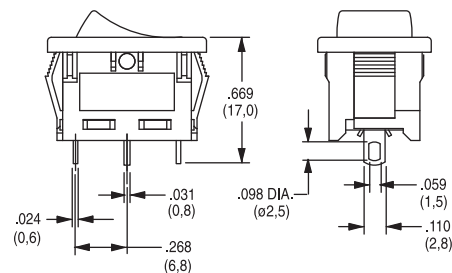
# DA Series Miniature Single Pole Rocker Switches

## TERMINATION

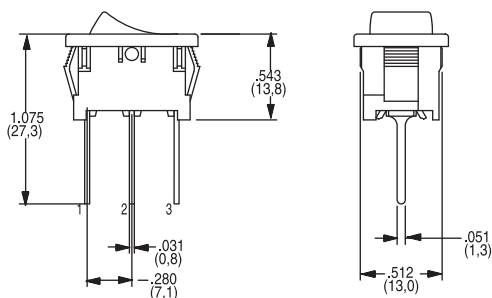
### 15 .187" QUICK CONNECT



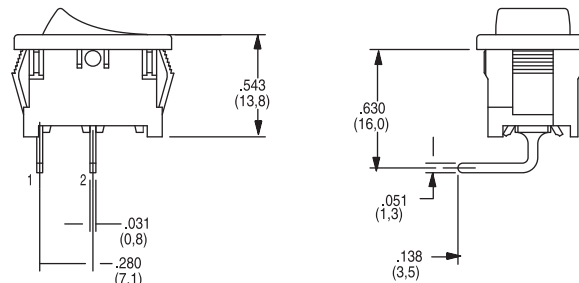
### 17 SOLDER LUG



### 02\* THRU-HOLE



### A\* RIGHT ANGLE



\* NOTE - O2 and A termination options not offered with J3, J4 or J5 actuator options.

## ACTUATOR MARKING

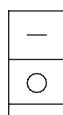
### NONE NO MARKING



### D ON-OFF



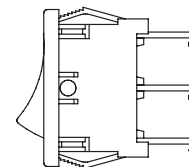
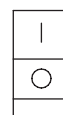
### H O I



### N LARGE DOT



### P O -



All models shown in Pos. 1  
Markings not available with J3 actuator

NOTE: Orientation of actuator marking and terminals.

## CONTACT MATERIAL

OPTION CODE	CONTACT AND TERMINAL MATERIAL	RATINGS	
QF	SILVER	POWER	16 AMPS @ 125 VAC; 1/3 HP; 10 AMPS @ 250 VAC; 1/2 10 AMPS @ 125 VAC, 6 AMPS @ 250 VAC

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

## LAMP RATING

(NONE) NO LAMP

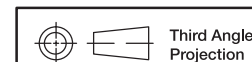
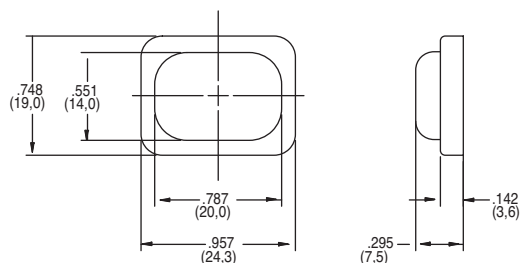
6 LED RATING @ 10 mA  $V_f=1.85V$

7 125 VAC 33kΩ NEON

8 250 VAC 150kΩ NEON

## ACCESSORIES

216C0000 IP65 SPLASH PROOF RUBBER BOOT



Third Angle Projection  
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



# D Series Miniature Snap-in Power Rocker Switches

## Features/Benefits

- Momentary and maintained models
- PC and quick connect terminals
- Recessed bracket available — prevents accidental actuation
- RoHS compliant
- Gold plated options available

## Typical Applications

- Small appliances
- Computers and peripherals
- Medical instrumentation



UL 61058-1



## Specifications

CONTACT RATING:

D101, D102, D103, D105, D108, D201, D202, D203

GP (general purpose)

4 AMPS 125 VAC 50/60 Hz T85 10,000 cycles

2 AMPS 250 VAC 50/60 Hz T85 10,000 cycles

R (resistive)

4 AMPS 30 VDC T85 10,000 cycles

D501, D502, D503, D508, D601, D602, D608

GP (general purpose)

10 AMPS 125 VAC 50/60 Hz T85 10,000 cycles

5 AMPS 250 VAC 50/60 Hz T85 10,000 cycles

R (resistive)

10 AMPS 30 VDC T85 10,000 cycles

0.4VA @ 20V AC/DC (gold plating) available upon request

ELECTRICAL LIFE: 10,000 make-and-break cycles at full load.

INSULATION RESISTANCE:  $10^9 \Omega$  min.

DIELECTRIC STRENGTH: 1,000 Vrms min. @ sea level.

## Materials

ACTUATOR & HOUSING: 6/6 nylon (UL 94V-2), color black, finish: matte.

MOVABLE CONTACTS: D10X and D20X Models: Copper, silver plated. D50X and D60X Models: Coin silver, silver plated.

STATIONARY CONTACTS AND TERMINALS: Copper or brass, silver plated. Gold plating available.

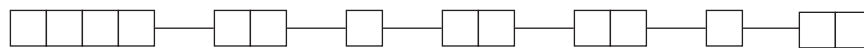
CONTACT SPRING: Music wire or stainless steel.

OPERATING TEMPERATURE: -30°C to +65°C

**NOTE:** Specifications and materials listed above are for standard switches. For information on specific and custom switches, consult Customer Service Center.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages G-61 through G-64. For additional options not shown in catalog, consult Customer Service Center.



### Switch Function

- D101** SPDT, On-None-On
- D102** SPST, On-None-Off
- D103** SPDT, On-Off-On
- D105** SPDT, Mom.-Off-Mom.
- D108** SPDT, Mom.-None-On
- D201** DPDT, On-None-On
- D202** DPST, On-None-Off
- D203** DPDT, On-Off-On
- D501** SPDT, On-None-On
- D502** SPST, On-None-Off
- D503** SPDT, On-Off-On
- D508** SPDT, Mom.-None-On
- D601** DPDT, On-None-On
- D602** DPST, On-None-Off
- D608** DPDT, Mom.-None-On

### Actuator

- J1** Rocker
- J5** Lever

### Actuator Color

- 2** Black
- 1** White
- 3** Red

### Mounting Style/Color

- S2** Snap-in, black
- B2** Recessed snap-in actuator guard, black
- G2** Actuator guard, black
- S1** Snap-in, white

### Terminations

- 15** Quick connect
- A** Right angle, PC thru-hole
- 02** PC Thru-hole
- 05** Twisted quick connect
- 06** Extended PC thru-hole
- 17** Wirable quick connect

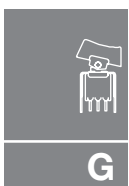
### Actuator Markings

- NONE** No marking
- D** ON-OFF
- H** 0 I
- N** Large dot
- P** 0 -
- R** Red rectangle on end
- U** Large dot on end

### Contact Material

- QA** Silver
- Gold plating options available contact Customer Service

Rocker



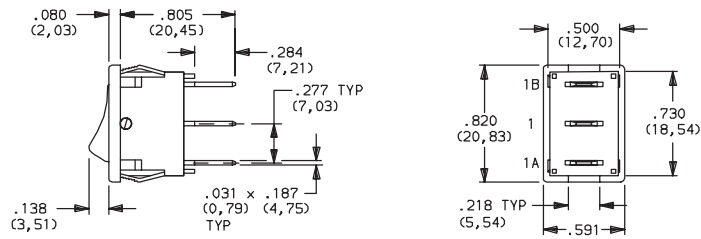
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

# D Series Miniature Snap-in Power Rocker Switches

## SWITCH FUNCTION

NO. POLES	MODEL NO.	AMP RATING*	SWITCH FUNCTION			CONNECTED TERMINALS			SCHEMATIC		
			POS. 1	POS. 2	POS. 3	POS. 1	POS. 2	POS. 3			
SP	D102	4	ON	NONE	OFF	1-1A	N/A	OPEN	SPST		
	D502	10									
	D101	4	ON	NONE	ON			1-1B	OPEN	1-1B	SPDT
	D501	10									
	D103	4		OFF							
	D503	10									
D105	4	MOM.	OFF	MOM.							
D505	10	MOM.	NONE	ON							

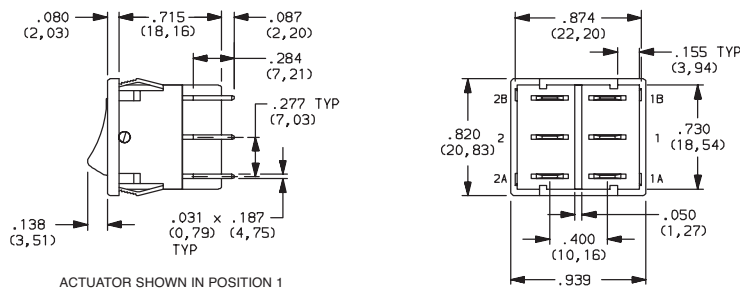
### SPDT



Part number shown: D101J12S215QA

DP	D202	4	ON	NONE	OFF	1-1A, 2-2A	N/A	OPEN	DPST		
	D602	10									
	D201	4	ON	NONE	ON			1-1B, 2-2B	OPEN	1-1B, 2-2B	DPDT
	D601	10									
	D203	4		OFF							
D603	10										
D608	10	MOM.	NONE								

### DPDT



Part number shown: D201J12S215QA

MOM. = Momentary

\*AMP RATING: see G-60

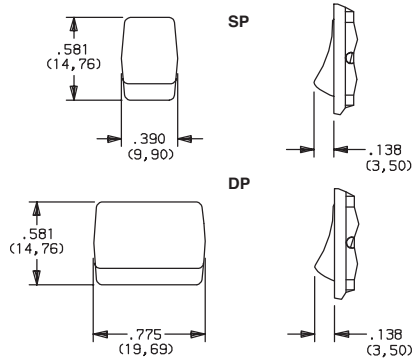
See CONTACT MATERIALS, page G-64.



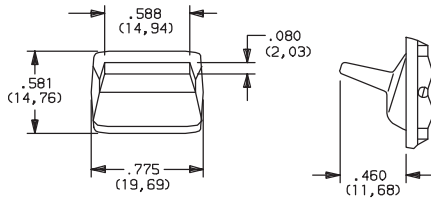
# D Series Miniature Snap-in Power Rocker Switches



## J1 ROCKER



## J5 LEVER



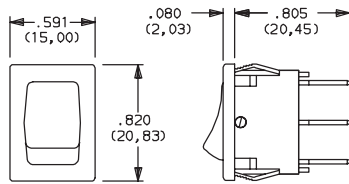
OPTION CODE	ACTUATOR COLOR
2	BLACK
1	WHITE
3	RED

**NOTE:** Actuator finish: matte. Other colors available, consult Customer Service Center.

'J5' actuator available only with DP models D201, D202, D601 and D602.



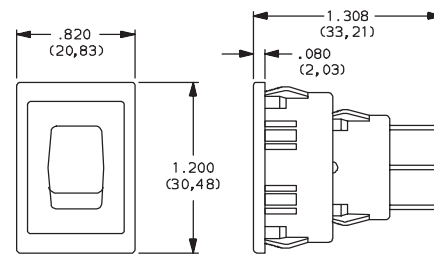
## S SNAP-IN



OPTION CODE	HOUSING COLOR
2	(STD.) BLACK
1	WHITE

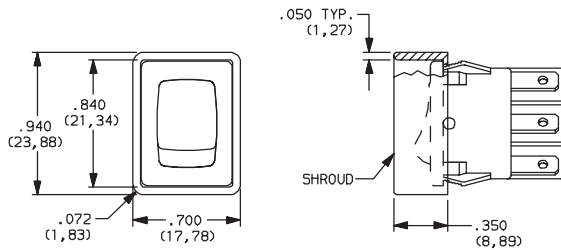
**NOTE:** Frame finish on housing: matte. Other colors available, consult Customer Service Center.

## B2 RECESSED SNAP-IN ACTUATOR GUARD, BLACK



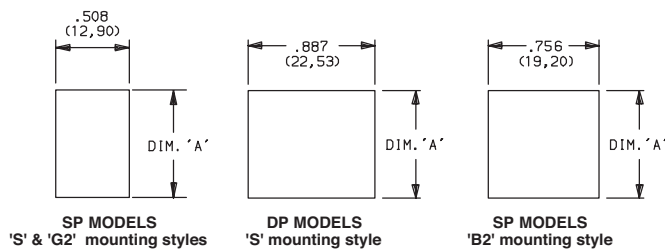
**NOTE:** Vertical mount, SP models only.

## G2 ACTUATOR GUARD, BLACK



**NOTE:** Vertical mount, SP models only.

## PANEL MOUNTING



PANEL THICKNESS	DIM 'A' SP & DP MODELS 'S' MOUNTING STYLE	DIM 'A' WITH 'G2' OPTION SP MODELS ONLY	DIM 'A' SP MODELS 'B' MOUNTING STYLE
.030-.049 (0,76) (1,24)	.756 (19,20)	.764 (19,41)	1.068 (27,13)
.049-.079 (1,24) (2,01)	.764 (19,41)	.780 (19,81)	1.076 (27,33)
.079-.118 (2,01) (3,00)	.780 (19,81)	n/a	1.092 (27,74)

**NOTE:** Blank insert available for SP models only, see page G-64.

Rocker



G



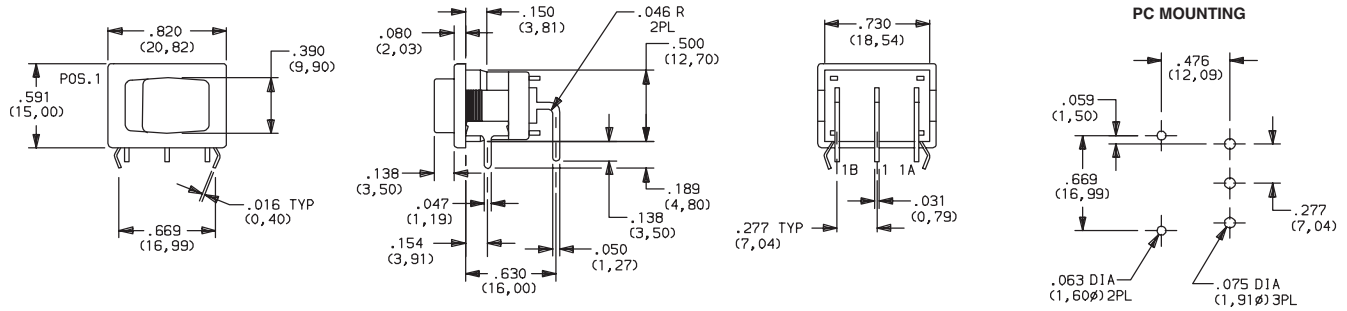
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

www.ck-components.com

# D Series Miniature Snap-in Power Rocker Switches

## TERMINATIONS

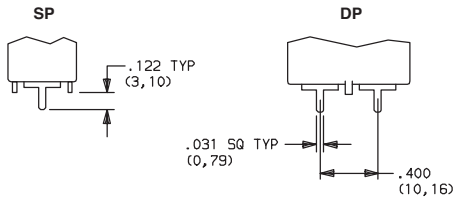
### A RIGHT ANGLE, PC THRU-HOLE



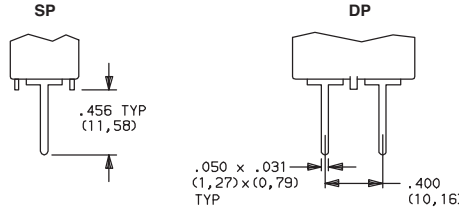
Available with D101, D102, D501, D502 SP models only.

## TERMINATIONS

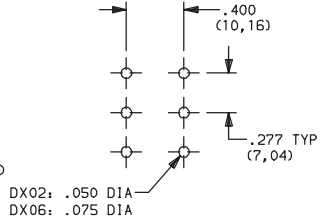
### 02 PC THRU-HOLE



### 06 EXTENDED PC THRU-HOLE



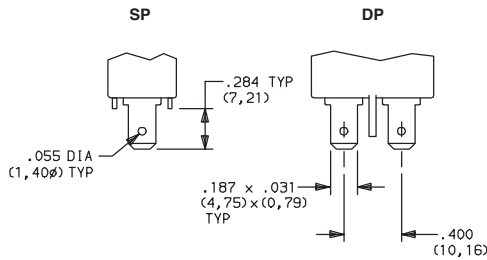
### PC MOUNTING (02 and 06)



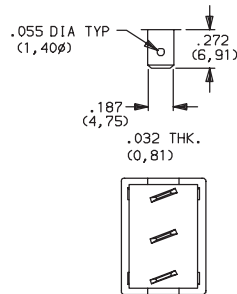
Available with DX01 and DX02 models only.

Available with DX01 and DX02 models only.

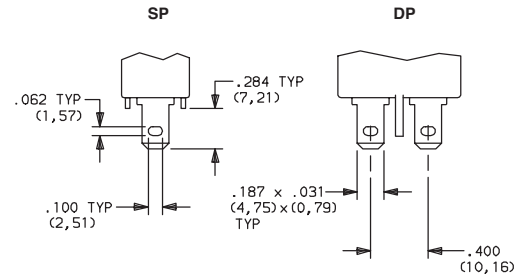
### 15 QUICK CONNECT



### 05 TWISTED QUICK CONNECT



### 17 WIRABLE QUICK CONNECT



Available with DX01 and DX02 models only.

**NOTE:** Terminals are twisted.

Available with DX01 and DX02 models only.

## ACTUATORS

**NONE** NO MARKING

**D** ON-OFF

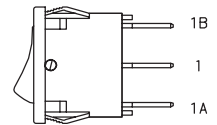
**H** O |

**N** LARGE DOT

**P** O -

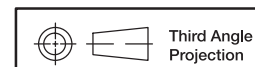
**R** RED RECTANGLE  
ON END

**U** LARGE DOT ON END



'D, H, P & U' marking options: marking color white, standard for all actuator colors except white. Black marking color, standard for white actuators. 'R & N' marking option: red marking color, standard. Consult Customer Service Center for other available marking colors.

**NOTE:** Orientation of actuator markings and terminals.



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



# D Series Miniature Snap-in Power Rocker Switches

## CONTACT MATERIAL

OPTION CODE	CONTACT AND TERMINAL MATERIAL	RATINGS
<b>QA</b>	SILVER 1	D101, D102, D103, D105, D108, D201, D202, D203
		GP (general purpose) 4 AMPS 125 VAC 50/60 Hz T85 10,000 cycles
		2 AMPS 250 VAC 50/60 Hz T85 10,000 cycles
		R (resistive) 4 AMPS 30 VDC T85 10,000 cycles
		D501, D502, D503, D508, D601, D602, D608
		GP (general purpose) 10 AMPS 125 VAC 50/60 Hz T85 10,000 cycles
		5 AMPS 250 VAC 50/60 Hz T85 10,000 cycles
		R (resistive) 10 AMPS 30 VDC T85 10,000 cycles

<sup>1</sup>MOVABLE CONTACT: D10X and D20X MODELS: Copper, silver plated.  
D50X and D60X MODELS: Coin silver, silver plated.

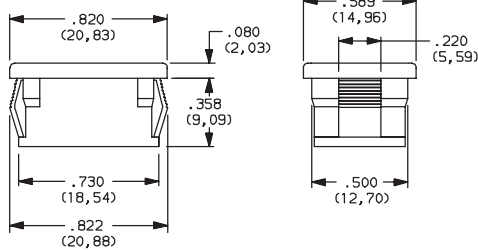


0.4VA @ 20V AC/DC Gold plated options available contact Customer Service.

STATIONARY CONTACTS & TERMINALS: Copper or brass, silver plated.

## AVAILABLE HARDWARE

**Insert**  
SP Only



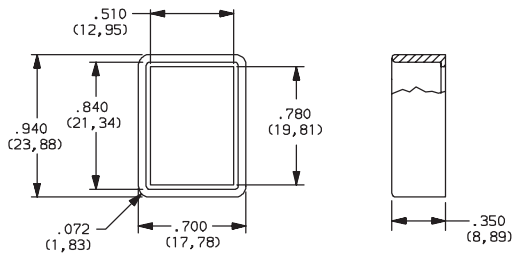
**PART NO.**  
**057190200** BLACK  
Material: Nylon 6/6  
Finish: Matte

**Recessed Actuator Guard,**  
SP Only



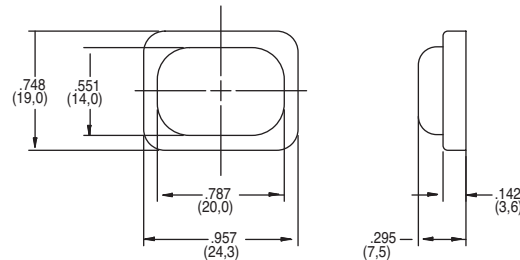
**599D02000** BLACK  
Material: 6/6 Nylon  
Finish: Matte

**Actuator Guard**



**PART NO.**  
**104C22000**  
Material: PBT thermoplastic  
Finish: Matte

**PART NO.**  
**216C00000** IP65 SPLASH PROOF RUBBER  
BOOT



**Rocker**



**G**



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

# DM Series Miniature 2 Pole Power Rocker Switches



### Features/Benefits

- 3 AMPS to 10 AMPS
- Quick connect terminals
- Double pole in miniature size
- Recessed bracket available—prevents accidental actuation
- RoHS compliant

### Typical Applications

- Computers
- Appliances
- Electric tools

UL 61058-1



### Specifications

CONTACT RATING:

DM21, DM22:

GP (general purpose)

3 AMPS 125 VAC 50/60 Hz T85 10,000 cycles

2 AMPS 250 VAC 50/60 Hz T85 10,000 cycles

R (resistive)

3 AMPS 30 VDC T85 10,000 cycles

DM61, DM62:

GP (general purpose)

10 AMPS 125 VAC 50/60 Hz T85 10,000 cycles

5 AMPS 250 VAC 50/60 Hz T85 10,000 cycles

R (resistive)

10 AMPS 30 VDC T85 10,000 cycles

ELECTRICAL LIFE: 10,000 make-and-break cycles at full load.

INSULATION RESISTANCE:  $10^9 \Omega$  min.

DIELECTRIC STRENGTH: 1,000 Vrms min. @ sea level.

OPERATING TEMPERATURE: -20°C to +65°C

### Materials

HOUSING & ACTUATOR: 6/6 nylon (UL94V-2), black.

MOVABLE CONTACTS: DM2X Models: Copper, silver plated.

DM6X Models: Coin silver, silver plated.

STATIONARY CONTACTS & TERMINALS: Copper or brass, silver plated.

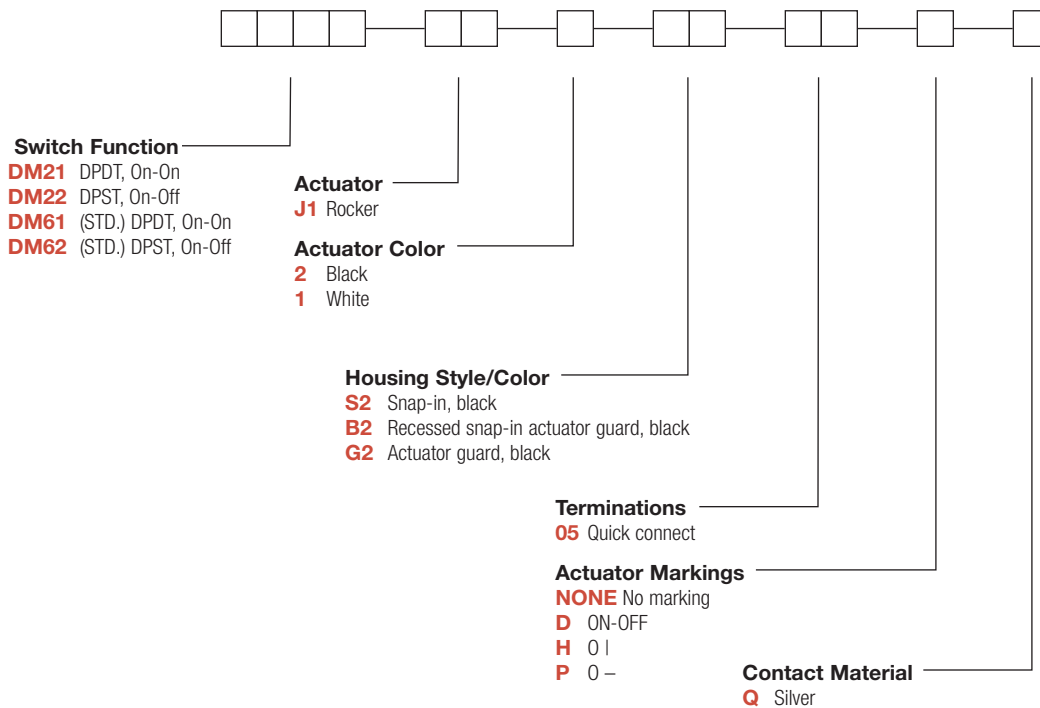
CONTACT SPRING: Music wire or stainless steel.

**NOTE:** Any models supplied with Q contact material are RoHS compliant.

**NOTE:** Specifications and materials listed above are for standard switches. For information on specific and custom switches, consult Customer Service Center.

### Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages G-66 and G-68. For additional options not shown in catalog, consult Customer Service Center.



2 aug 16



# DM Series Miniature 2 Pole Power Rocker Switches

## SWITCH FUNCTION

NO. POLES	MODEL NO.	AMP RATING*	SWITCH FUNCTION		CONNECTED TERMINALS		SCHEMATIC
			POS. 1	POS. 2	POS. 1	POS. 2	
DP	<b>DM22</b>	3	ON	OFF	1-1A, 2-2A	OPEN	 DPST
	<b>DM62</b>	10	ON	OFF	1-1A, 2-2A	OPEN	
	<b>DM21</b>	3	ON	ON	1-1A, 2-2A	1-1B, 2-2B	 DPDT
	<b>DM61</b>	10	ON	ON	1-1A, 2-2A	1-1B, 2-2B	

**DPDT**

Dimensions: .080 [2,03], .793 [20,14], .350 [8,89], .028 TYP [0,71], .138 [3,51], .301 TYP [7,65]

Dimensions: .500 [12,7], .220 TYP [5,59], .820 [20,83], .731 [18,57], .590 [15]

PART NUMBER SHOWN: DM21J1XS205Q

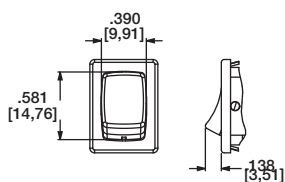
NOTES 1. ACTUATOR SHOWN IN POSITION 1-'ON' POSITION

RATINGS: See page G-65 for complete ratings.

UL 15 UL 61058-1 tested to 30C temperature rise @ 6,000 cycles.

## ACTUATOR

**J1** ROCKER

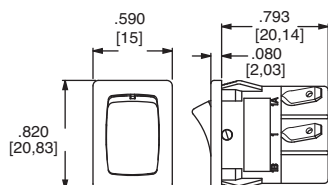


OPTION CODE	ACTUATOR COLOR
<b>2</b>	BLACK
<b>1</b>	WHITE

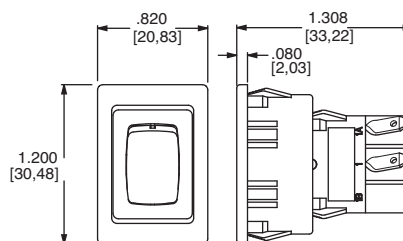
NOTE: Actuator finish: matte. Other colors available, consult Customer Service Center.

## HOUSING STYLE/COLOR

**S2** SNAP-IN, BLACK



**B2** RECESSED SNAP-IN ACTUATOR GUARD, BLACK



Rocker

NOTE: Housing finish: matte. Other colors available, consult Customer Service Center.



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



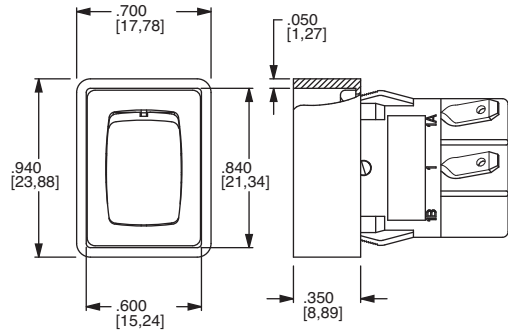
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# DM Series Miniature 2 Pole Power Rocker Switches

## HOUSING STYLE/COLOR

**G2** ACTUATOR GUARD, BLACK



### PANEL MOUNTING



'S2' & 'G2' housing styles

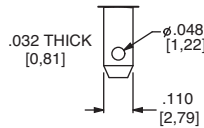
'B2' housing style

NOTE: Blank insert available for SP models only, see page H-76.

PANEL THICKNESS	DIM 'A' 'S2' & 'G2' HOUSING STYLES	DIM 'A' 'G2' OPTION SP MODELS ONLY	DIM 'A' 'B2' HOUSING STYLES
.030-.049 (0,76) (1,24)	.756 (19,20)	0.764 (19,41)	1.068 (27,13)
.049-.079 (1,24) (2,01)	.764 (19,41)	0.780 (19,81)	1.076 (27,33)
.079-.118 (2,01) (3,00)	.780 (19,81)	n/a	1.092 (27,74)

## TERMINATIONS

**05** QUICK CONNECT



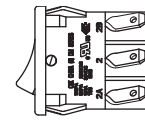
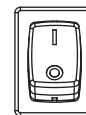
## ACTUATOR MARKINGS

**NONE** NO MARKING

**D** ON-OFF

**H** O I

**P** O -



NOTE: Orientation of actuator markings and terminals.

'D & P' marking options: marking color white, standard for all actuator colors except white actuators. Black marking color standard for white actuators. Consult Customer Service Center for other available marking colors.

## CONTACT MATERIAL

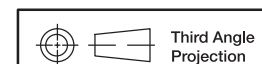
OPTION CODE	CONTACT AND TERMINAL MATERIAL	RATINGS		
<b>Q</b>	SILVER <sup>1,2</sup>	DM21, DM22:	GP (general purpose)	3 AMPS 125 VAC 50/60 Hz T85 10,000 cycles
			R (resistive)	2 AMPS 250 VAC 50/60 Hz T85 10,000 cycles
		DM61, DM62:	GP (general purpose)	3 AMPS 30 VDC T85 10,000 cycles
			R (resistive)	10 AMPS 125 VAC 50/60 Hz T85 10,000 cycles
			5 AMPS 250 VAC 50/60 Hz T85 10,000 cycles	
			10 AMPS 30 VDC T85 10,000 cycles	

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

<sup>1</sup> MOVABLE CONTACT: DM2X Models: Copper, silver plated.  
DM6X Models: Coin silver, silver plated.

<sup>2</sup> STATIONARY CONTACTS & TERMINALS: Copper or brass, silver plated.

NOTE: Any models supplied with Q contact material are RoHS compliant.



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



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Rocker

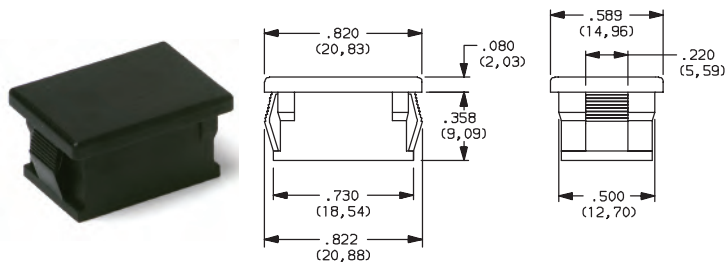


G

# DM Series Miniature 2 Pole Power Rocker Switches

## AVAILABLE HARDWARE

Insert



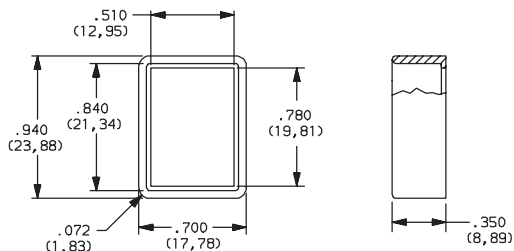
**PART NO.**  
**057190200**  
Material: Nylon 6/6  
Finish: Matte

Recessed Actuator Guard



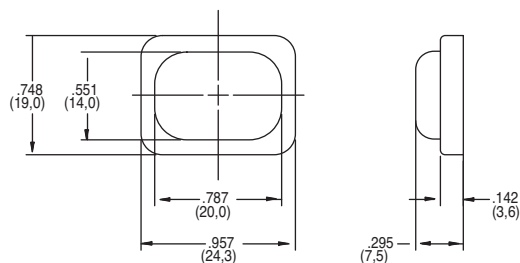
**PART NO.**  
**599D02000**  
Material: 6/6 Nylon  
Finish: Matte

Actuator Guard

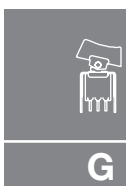


**PART NO.**  
**104C22000**  
Material: PBT thermoplastic  
Finish: Matte

**PART NO.**  
**216C00000** IP65 SPLASH PROOF RUBBER BOOT

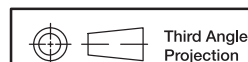


Rocker



**C&K**

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Third Angle  
Projection

Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

# DM Series Miniature Illuminated Power Rocker Switches



## Features/Benefits

- 3 AMPS to 10 AMPS
- Illuminated LED
- Positive detent
- RoHS compliant

## Typical Applications

- Instrumentation
- Industrial
- Office machines



## Specifications

CONTACT RATING: DM14 and DM24 Models: 3 AMPS @ 125 V AC; 2 AMPS @ 250 V AC. DM54 and DM64 Models: 10 AMPS @ 125 V AC; 5 AMPS @ 250 V AC (UL).

ELECTRICAL LIFE: 10,000 make-and-break cycles at full load.

INSULATION RESISTANCE:  $10^9 \Omega$  min.

DIELECTRIC STRENGTH: 1,000 Vrms min. @ sea level.

**NOTE:** Any models supplied with Q contact material are RoHS compliant.

**NOTE:** Specification and materials listed above are for standard switches. For information on specific and custom switches, consult Customer Service Center.

## Materials

HOUSING: 6/6 nylon (UL94V-2), black.

ACTUATOR: 6/6 nylon (UL94V-2), black.

MOVABLE CONTACTS: DM14 and DM24 Models: Copper, silver plated. DM54 and DM64 Models: Coin silver, silver plated.

STATIONARY CONTACTS & TERMINALS: Copper or brass, silver plated.

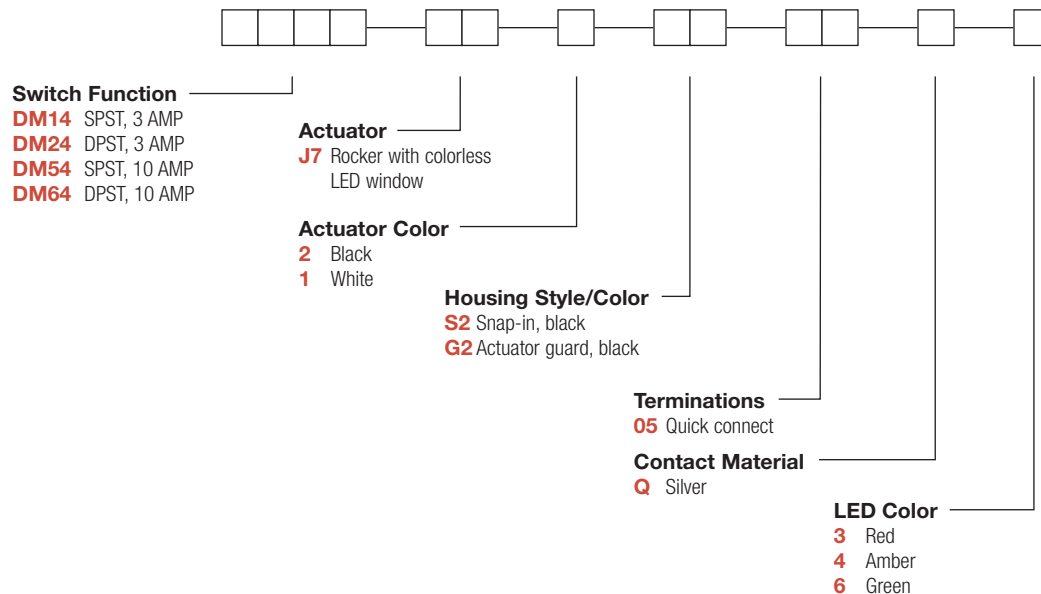
LED TERMINALS: Brass, unplated.

CONTACT SPRING: Music wire or stainless steel.

OPERATING TEMPERATURE: -20°C to +65°C

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages G-70 and G-72. For additional options not shown in catalog, consult Customer Service Center.



# DM Series Miniature Illuminated Power Rocker Switches

## SWITCH FUNCTION

NO. POLES	MODEL NO.	AMP RATING*	SWITCH FUNCTION		CONNECTED TERMINALS		SCHEMATIC
			POS. 1	POS. 2	POS. 1	POS. 2	
SP	<b>DM14</b>	3	ON	OFF	1-1A	OPEN	
	<b>DM54</b>	10					
DP	<b>DM24</b>	3	ON	OFF	1-1A, 2-2A	OPEN	
	<b>DM64</b>	10					

**DPDT**

Actuator shown in pos. 1 – 'ON' position.  
SPST MODELS (DM14 & DM54) OMIT TERMINALS 2 & 2A.

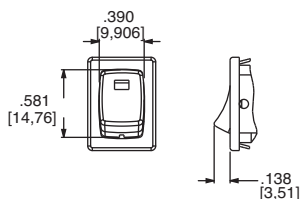
Part number shown: DM24J72S205Q3

\* RATINGS: see page G-69.



## ACTUATOR

**J7** ROCKER WITH COLORLESS LED WINDOW

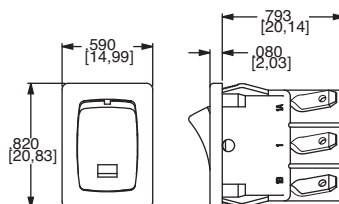


OPTION CODE	ACTUATOR COLOR
<b>2</b>	BLACK
<b>1</b>	WHITE

**NOTE:** Other colors available, consult Customer Service Center.

## HOUSING STYLE/COLOR

**S2** SNAP-IN, BLACK



**NOTE:** Housing finish: matte. Other colors available, consult Customer Service Center.

Rocker



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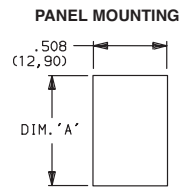
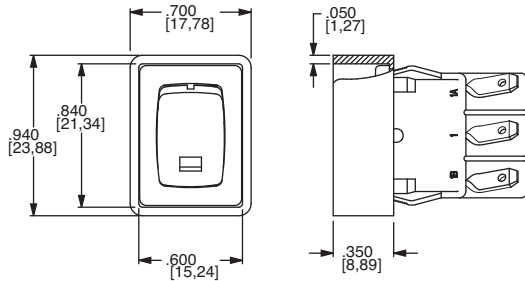


Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

# DM Series Miniature Illuminated Power Rocker Switches

## HOUSING STYLE/COLOR

**G2** ACTUATOR GUARD, BLACK



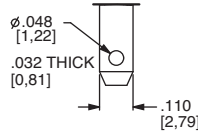
'S2' & 'G2' housing style

NOTE: Blank insert available for SP models only, see page H-80.

PANEL THICKNESS	DIM 'A' 'S2' & 'G2' HOUSING STYLES	DIM 'A' with 'G2' option SP MODELS ONLY
.030-.049 (0,76) (1,24)	0.756 (19,20)	0.764 (19,41)
.049-.079 (1,24) (2,01)	0.764 (19,41)	0.780 (19,81)
.079-.118 (2,01) (3,00)	.780 (19,81)	n/a

## TERMINATIONS

**05** QUICK CONNECT



## CONTACT MATERIAL

OPTION CODE	CONTACT AND TERMINAL MATERIAL	RATINGS	
		POWER	DM14 and DM24 Models: 3 AMPS @ 125 V AC; 2 AMPS @ 250 V AC. DM54 and DM64 Models: 10 AMPS @ 125 V AC; 5 AMPS @ 250 V AC.

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

<sup>1</sup> MOVABLE CONTACTS: DM14 and DM24 models: Copper, silver plated.  
DM54 and DM64 models: Coin silver, silver plated.

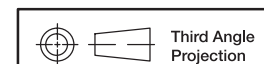
<sup>2</sup> STATIONARY CONTACTS & TERMINALS: Copper or brass, silver plated.

NOTE: Any models supplied with Q contact material are RoHS compliant.



## LED COLOR

OPTION CODE	LED COLOR	FORWARD $V_{FD}$	CURRENT $I_{LED}$	REVERSE $V_R$	INTENSITY $M_{CD}$	RECOMMENDED RESISTOR @ VOLTAGE		
						5V	12V	24V
<b>3</b>	Red	2.1	10	4V	1.6 typ.	270	1K	2.2K
<b>4</b>	Amber	2.2	20	4V	2.5 typ.	150	510	1.2K
<b>6</b>	Green	2.1	20	4V	2.0 typ.	150	510	1.2K



Third Angle Projection  
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



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Rocker

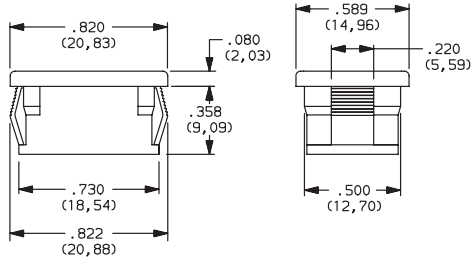


G

# DM Series Miniature Illuminated Power Rocker Switches

## AVAILABLE HARDWARE

Blank Insert



**PART NO.**  
**057190200**

Material: Zinc nylon 6/6  
Finish: Matte

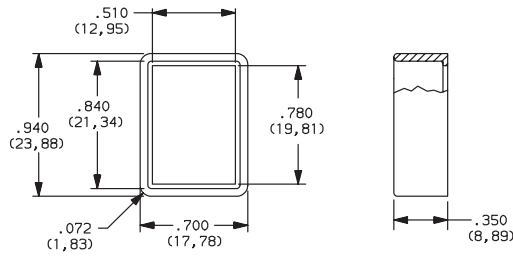
Recessed Bracket



**PART NO.**  
**599D02000**

Material: 6/6 Nylon  
Finish: Matte

Actuator Guard



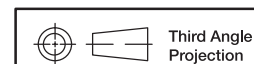
**PART NO.**  
**104C22000**

Material: PBT thermoplastic  
Finish: Matte

Rocker



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Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

# DF Series Power Rocker Switches



## Features/Benefits

- Power switching up to 16 AMPS
- Sub-panel and Front-panel mounting
- PC and quick connect terminals
- Multi-position and multi-pole function
- RoHS compliant

## Typical Applications

- Computers
- Power supplies
- Appliances
- Fitness equipment
- Off-road vehicles



## Specifications

CONTACT RATING: 16 AMPS @ 125, 250 V AC; 1/4 HP @ 125 V AC; 1/2 HP @ 250 V AC; 6 AMPS @ 48 V DC, 2 AMPS @ 60 V DC, 11 AMPS @ 30 V DC  
 ELECTRICAL LIFE: 10,000 make-and-break cycles at full load.  
 INSULATION RESISTANCE: 10<sup>9</sup> Ω min.  
 DIELECTRIC STRENGTH: 1,000 Vrms min. @ sea level.  
 OPERATING TEMPERATURE: -20°C to +85°C

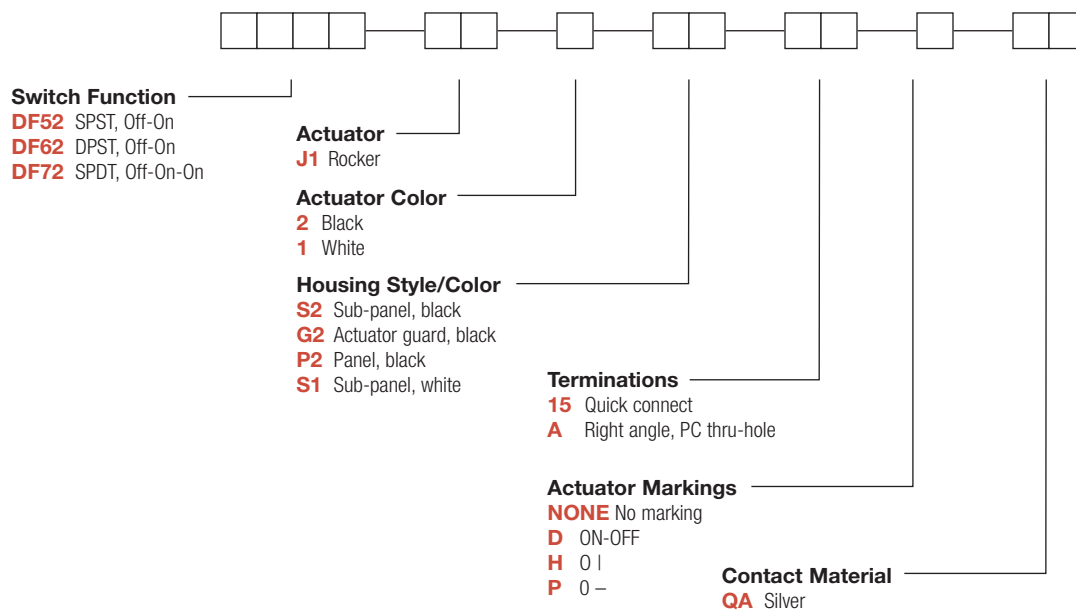
## Materials

HOUSING & ACTUATOR: 6/6 nylon (UL 94V-2), black, finish: matte.  
 CONTACTS: Fine silver, silver plated.  
 TERMINALS: Copper, silver plated.  
 CONTACT SPRING: Music wire or stainless steel.

**NOTE:** Specifications and materials listed above are for standard switches. For information on specific and custom switches, consult Customer Service Center.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages G-74 thru G-76. For additional options not shown in catalog, consult Customer Service Center.



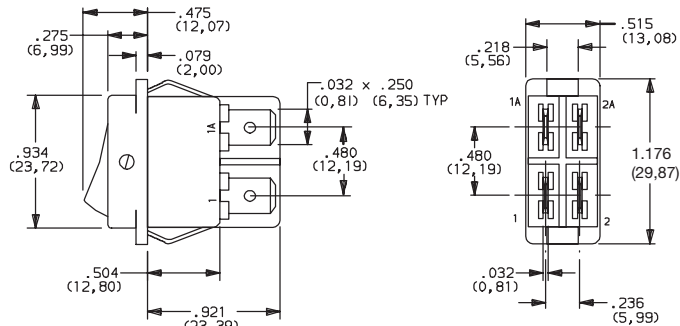
# DF Series Power Rocker Switches

## SWITCH FUNCTION

NO. POLES	MODEL NO.	SWITCH FUNCTION		CONNECTED TERMINALS		SCHEMATIC
		POS. 1	POS. 2	POS. 1	POS. 2	
SP	<b>DF52</b>	OFF	ON	OPEN	1-1A	SPST 
DP	<b>DF62</b>	OFF	ON	OPEN	1-1A, 2-2A	DPST 

NO. POLES	MODEL NO.	POS. 1	POS. 2	POS. 3	POS. 1	POS. 2	POS. 3	SCHEMATIC
SP	<b>DF72</b>	OFF	ON	ON	OPEN	1 / 2-2A	1 / 2-1A 1 / 2-2A	  

### DPST

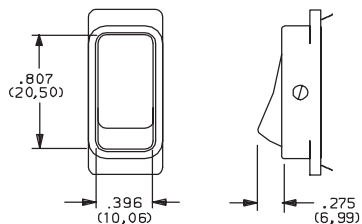


Part number shown: DF62J12S215QA

All models

## ACTUATOR

### J1 ROCKER



OPTION CODE	ACTUATOR COLOR
<b>2</b>	BLACK
<b>1</b>	WHITE

**NOTE:** Actuator finish: matte. Other colors available, consult Customer Service Center.

Rocker



G

**C&K**



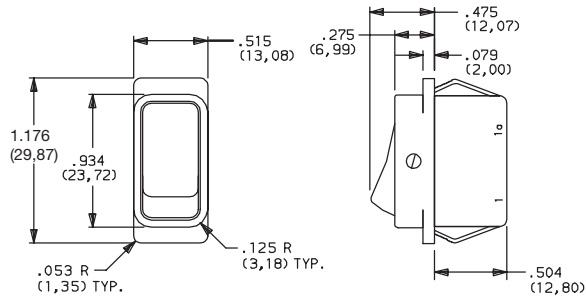
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



# DF Series Power Rocker Switches

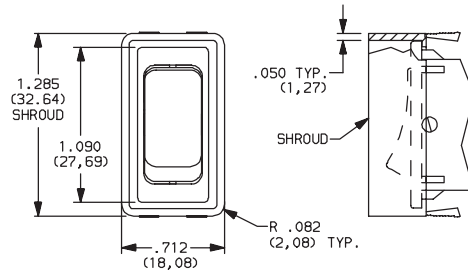
## HOUSING STYLE/COLOR

### S SUB-PANEL



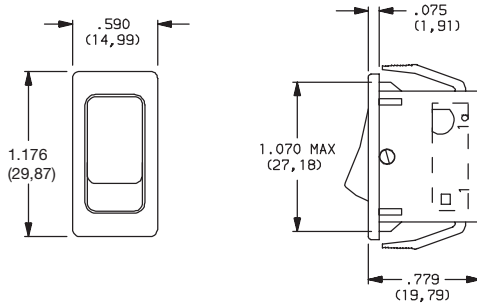
NOTE: DF52 & DF62 models only.

### G2 ACTUATOR GUARD



NOTE: Not available with 'A' termination. Available in black only.

### P PANEL



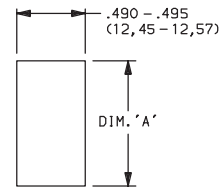
NOTE: Not available with 'A' termination. Available in black only.

OPTION CODE	HOUSING COLOR
2	(STD.) BLACK
1	WHITE

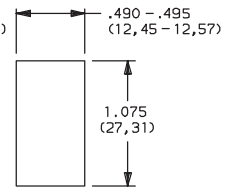
NOTE: Housing finish: matte. Other colors available, consult Customer Service Center.

### PANEL MOUNTING

PANEL THICKNESS	DIM 'A'
.029-.048 (0,74) (1,22)	1.021 (25,93)
.048-.078 (1,22) (1,98)	1.029 (26,14)
.078-.117 (1,98) (2,97)	1.045 (26,54)
.075-.140 (1,91) (3,56)	1.075 (27,31)



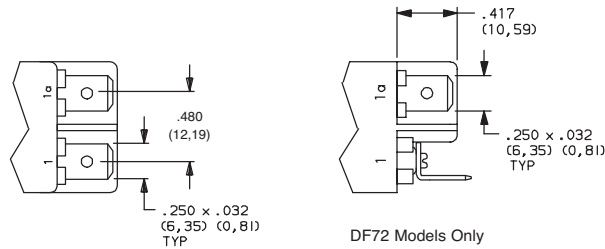
DF52 & DF62 Models with 'S' housing style



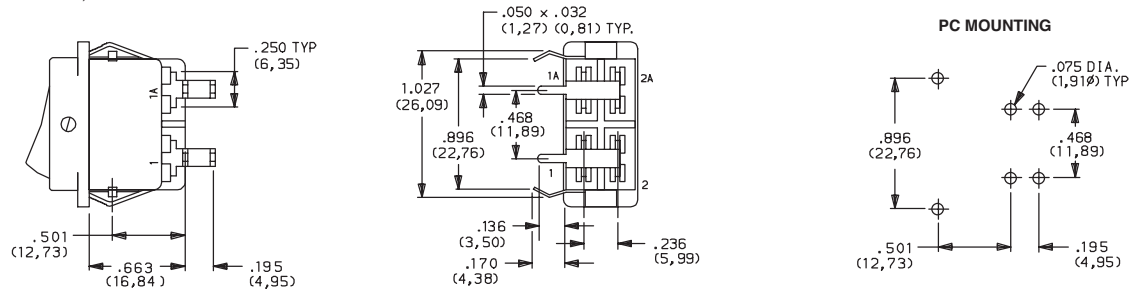
DF52, DF62 & DF72 Models with 'P2' & 'G2' housing style

## TERMINATIONS

### 15 QUICK CONNECT



### A RIGHT ANGLE, PC THRU-HOLE



Actuator shown in Pos. 1

NOTE: DF52 and DF62 Models Only



Third Angle Projection

Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



# DF Series Power Rocker Switches

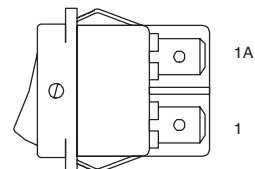
## ACTUATOR MARKINGS

**NONE** NO MARKING

**D** ON-OFF

**H** O |

**P** O -



**NOTE:** Orientation of actuator markings and terminals.

'D, H, & P' marking options: marking color white, standard for all actuator colors except white. Marking color black, standard for white actuators. Consult Customer Service Center for other available marking colors.

## CONTACT MATERIAL

OPTION CODE	CONTACT AND TERMINAL MATERIAL	RATINGS	
		POWER	
<b>QA</b>	SILVER 1,2		16 AMPS @ 125, 250 V AC; 1/4 HP @ 125 V AC; 1/2 HP @ 250 V AC; 6 AMPS @ 48 V DC (UL), 2 AMPS @ 60 V DC, 11 AMPS @ 30 V DC
			16 AMPS @ 125, 250 V AC; 1/4 HP @ 125 V AC; 1/2 HP @ 250 V AC (UL)

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

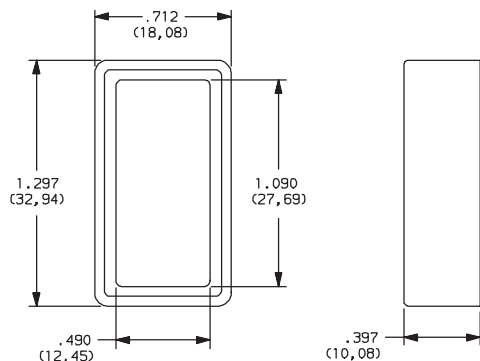
1 CONTACTS: Fine silver, silver plated.

All models 

2 TERMINALS: Copper, silver plated.

## AVAILABLE HARDWARE

### Actuator Guard



### PART NO.

**285B02000**

Material: Nylon 6/6  
Finish: Matte

Rocker



G

**C&K**



Third Angle Projection

Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

# CR Series

## Round Single Pole Specialty Rocker Switches

### Features/Benefits

- Round actuator and body
- Nice styling
- Multiple illuminated versions available
- IP65 splash proof rubber boot option

### Typical Applications

- Appliances, small and large
- Office equipment
- Computers and peripherals
- Audio/Video equipment
- RoHS compliant



**UL** US **UL 61058-1**

### Specifications

#### CONTACT RATING:

16 AMPS @ 125 VAC, 10 AMPS @ 250 VAC.

16 AMPS @ 125 VAC, 10 AMPS @ 250 VAC.

ELECTRICAL LIFE: 10,000 make and break cycles at full load.

INSULATION RESISTANCE: 10<sup>8</sup> Ω min.

DIELECTRIC STRENGTH: 1,500 VRMS @ sea level.

OPERATING TEMPERATURE: -20°C to + 85°C

### Materials

HOUSING AND ACTUATOR: 6/6 nylon (UL94V-2), matte finish.

ILLUMINATED ACTUATOR: Polycarbonate, matte finish.

CENTER CONTACTS: Silver plated, copper alloy.

END CONTACTS: Silver plated AgSnO<sub>2</sub>InO<sub>3</sub>.

ALL TERMINALS: Silver plated, copper alloy.

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

### Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages G-78 through G-80. For additional options not shown in catalog, consult Customer Service Center.

	<div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> </div>		
<b>Switch Function</b> <b>CR101</b> SPDT On-None-On <b>CR102</b> SPST On-None-Off			
<b>Actuator</b> <b>J1</b> Rocker <b>J2*</b> Two-tone rocker <b>J3</b> Illuminated rocker <b>J4**</b> Circle, illuminated rocker <b>J5</b> Oval, illuminated rocker <b>JN</b> Paddle, rocker <b>JP</b> Paddle, illuminated rocker	<b>Actuator Color</b> <b>2</b> Black <b>1</b> White <b>3</b> Red <b>R</b> Red, illuminated <b>A</b> Amber, illuminated <b>G</b> Green, illuminated		
	<b>Mounting Style/Color</b> <b>S2</b> Snap-in, black <b>S1</b> Snap-in, white	<b>Termination</b> <b>15</b> .187" quick connect	<b>Contact Rating</b> <b>QF</b> Silver
			<b>Lamp Rating</b> <b>(NONE)</b> No lamp <b>6</b> LED <b>7</b> 125 VAC neon <b>8</b> 250 VAC neon

\* Refer to table on page G-79 for actuator options.

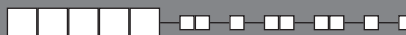


Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

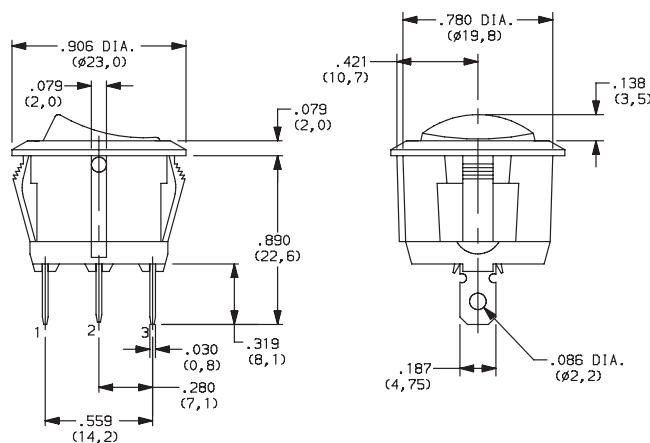


# CR Series Round Single Pole Specialty Rocker Switches

## SWITCH FUNCTION



NO. POLES	MODEL NO.	SWITCH FUNCTION			CONNECTED TERMINALS			SCHEMATIC
		Pos. 1	Pos. 2	Pos. 3	Pos. 1	Pos. 2	Pos. 3	
SP	<b>CR101</b>	ON	NONE	ON	2-3		2-1	
	<b>CR102</b>	ON	NONE	OFF		N/A		<p>OR</p> <p>For 7 &amp; 8 Illuminated Versions</p>



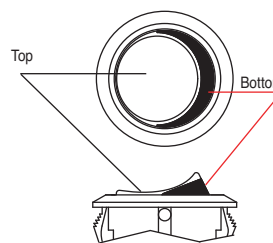
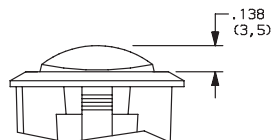
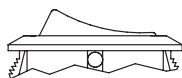
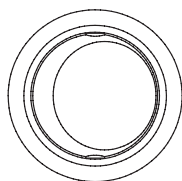
## ACTUATOR



- J1** ROCKER
- J3** ILLUMINATED ROCKER

- J2** TWO-TONE ROCKER

Rocker



**NOTE:** J3 actuator available with the combination of 7 & 8 lamp ratings and CR102 switch function only.



G

**C&K**

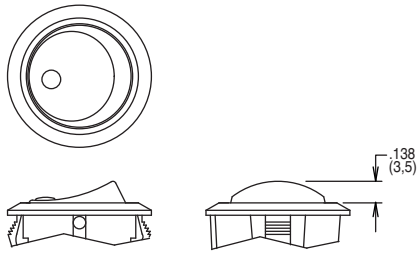


Third Angle Projection  
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

# CR Series Round Single Pole Specialty Rocker Switches

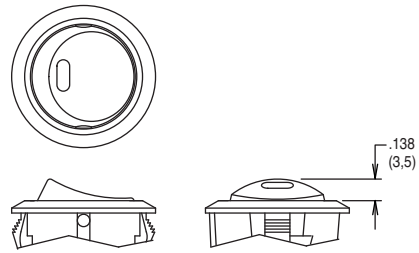
## ACTUATOR

**J4** CIRCLE, ILLUMINATED ROCKER



**NOTE:** Available with the combination of CR102 switch function and 7 & 8 lamp ratings only.

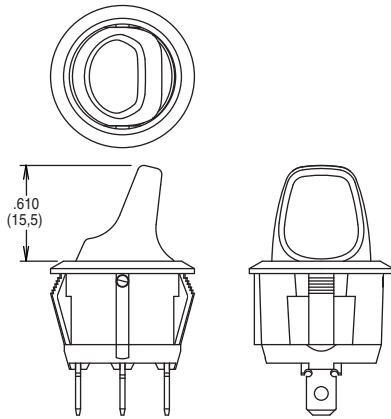
**J5** OVAL, ILLUMINATED ROCKER



**NOTE:** Available with the combination of CR102 switch function and 6 lamp rating only.

**JN** PADDLE, ROCKER

**JP** PADDLE, ILLUMINATED ROCKER

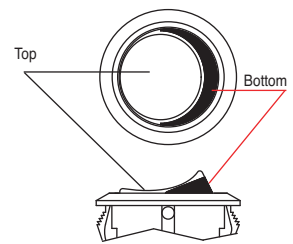


**NOTE:** JP actuator available with the combination of CR102 switch function and 7 & 8 lamp ratings only.

## ACTUATOR COLOR

ACTUATOR	OPTION CODE	ACTUATOR COLOR
<b>J1</b>	<b>2</b>	BLACK
	<b>1</b>	WHITE
	<b>3</b>	RED
<b>J3, J4</b> <b>J5, JP</b>	<b>R</b>	RED, ILLUMINATED
	<b>A</b>	AMBER, ILLUMINATED
	<b>G</b>	GREEN, ILLUMINATED

ACTUATOR	OPTION CODE	ACTUATOR COLOR	
		TOP	BOTTOM
<b>J2</b>	<b>1</b>	WHITE	RED
	<b>2</b>	WHITE	BLACK
	<b>3</b>	RED	WHITE
	<b>4</b>	BLACK	WHITE
	<b>5</b>	BLACK	RED

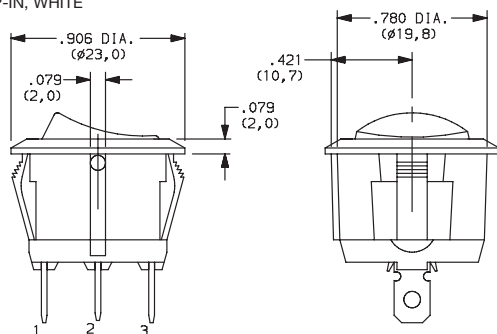


J2 actuator only

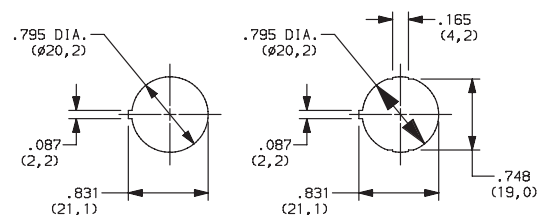
## MOUNTING STYLE/COLOR

**S2** SNAP-IN, BLACK

**S1** SNAP-IN, WHITE



### PANEL MOUNTING



Panel thickness:  
2.0 - 3.0 mm

Panel thickness:  
0.7 - 3.0 mm



Dimensions are shown: Inches (mm)

Specifications and dimensions subject to change

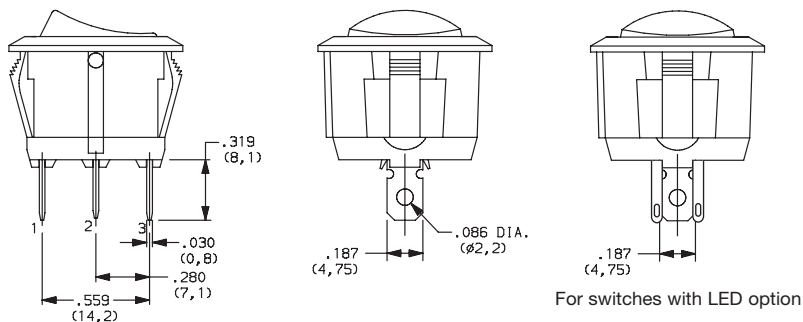
**C&K**




# CR Series Round Single Pole Specialty Rocker Switches

## TERMINATION

**15** .187" QUICK CONNECT



## CONTACT MATERIAL

OPTION CODE	CONTACT AND TERMINAL MATERIAL	RATINGS	
<b>QF</b>	SILVER	POWER	16 AMPS @ 125 VAC; 10 AMPS @ 250 VAC 

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

## LAMP RATING

**(NONE)** NO LAMP

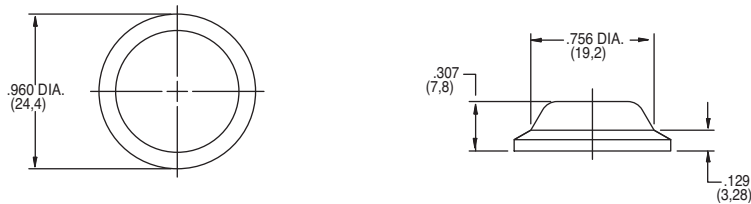
**6** LED RATING @ 10 mA  $V_f=1.85V$

**7** 125 VAC 33kΩ NEON

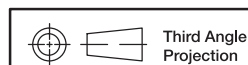
**8** 250 VAC 150kΩ NEON

## ACCESSORIES

**377C00000** IP65 SPLASH PROOF RUBBER BOOT



Rocker



Third Angle Projection  
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



# DIP

## Product Selection Guide



H

DIP

DIP											
Series	TDP	TDA	SDA	SD	BD	BPA	TDD	SPA	RTE	CD	CRD
<b>Switch Type</b>	Half-pitch .050" Side actuated	Half-pitch .050"	Low Profile	Low Profile	Standard Profile	Side Actuated	Jumper Switch	Single In-line Package	Rotary & Coded	8 mm Coded Rotary	10 mm Coded Rotary
<b>No. of Positions</b>	2-10 (even only)	1 & 2-10 (even only)	1-12 (except 11)	2-12 (except 11)	1-12 (except 11)	1-12 (except 11)	1	2-10 (even only)	4 10,16	8, 10 & 16	10 & 16
<b>Contact Style</b>	SPST	SPST	SPST	SPST	SPST	SPST	SPDT	SPST	Coded	Coded	Coded
<b>Profile off PCB</b>	.173 (4,4)	.087 (2,2)	.189 (4,80) Thru-hole .177 (4,5) SMT	.168 (4,27) Thru-hole .160 (4,06) SMT	.297 (7,55) Vertical .380 (9,65) Rt. Angle	.287 (7,3) Thru-hole .277 (7,04) SMT	.090 (2,3)	.244 (6,2) Vertical .169 (4,3) Rt. Angle	.167 (4,25) Thru-hole .335 (8,5) Rt. angle	.168 (4,27) Thru-hole .340 (8,6) Rt. angle	.272 (6,9) Vertical .414 (10,5) Rt. angle
<b>Process Sealed</b>	washable with tape seal	washable with tape seal	washable (tape not required)	washable with tape seal	washable (tape not required)	washable (tape not required)	washable with tape seal	washable (tape not required)	NA	washable (tape not required)	washable (tape not required)
<b>Extended Actuator</b>	•		•	•	•	•		•	•		•
<b>Flush Actuator</b>	•	•	•	•			•	•	•	•	•
<b>Thru-hole</b>			•	•	•	•		•	•	•	•
<b>Vertical</b>		•	•	•	•		•	•	•	•	•
<b>Right Angle</b>	•				•	•		•	•	•	•
<b>Surface Mount</b>	•	•	•	•		•	•	•	•	•	•
<b>Tape &amp; Reel (SMT only)</b>	•	•	•	•		•	•	•	•	•	•
<b>Maximum Current</b>	100mA	100mA	100mA	100mA	100mA	100mA	100mA	10mA	100mA	0.4VA	0.4VA
<b>Retention Feature</b>								•	•	• C option	
<b>Page No.</b>	H-3	H-6	H-9	H-13	H-16	H-18	H-21	H-23	H-25	H-31	H-35



# TDP Series Ultra-miniature Surface Mount Half-pitch Side-Actuated DIP Switches



## Features/Benefits

- World's first ultra-miniature SMT half-pitch side-actuated DIP
- Side actuation allows visual indication of on/off position in horizontal applications
- Process sealed for surface mount soldering and washable processing
- RoHS compliant
- Lead free

## Typical Applications

- Hand-held electronic devices
- Portable computer and electronic devices
- Instrumentation and controls



## Specifications

SWITCH FUNCTION: SPST — 2, 4, 6, 8, 10 positions.

CONTACT RATING:

24 V DC, 25 mA (switching).

50 V DC, 100 mA (steady state).

MECHANICAL AND ELECTRICAL LIFE: 1,000 cycles.

CONTACT RESISTANCE: 100 mΩ max.

INSULATION RESISTANCE: 100 MΩ @ 100 V DC min.

DIELECTRIC STRENGTH: 300 V AC min.

STORAGE TEMPERATURE: -40°C to 85°C.

OPERATING TEMPERATURE: -40°C to 85°C.

OPERATING FORCE: 4,9N max.

SOLDERABILITY: Per MIL-STD-202F method 208D, or

EIA RS-186E method 9 (1 hour steam aging).

PACKAGING: Switches supplied in rigid dispensing tubes in full tube quantities only, this may affect order quantity. Tape and reel packaging also available.

## Materials

CASE & COVER: glass filled PPS (UL94V-0).

ACTUATOR: PA6T (UL94V-0).

CONTACTS: Copper alloy with gold plate over nickel plate.

TERMINALS: Copper alloy, with gold over nickel plate.

All terminals are insert molded.

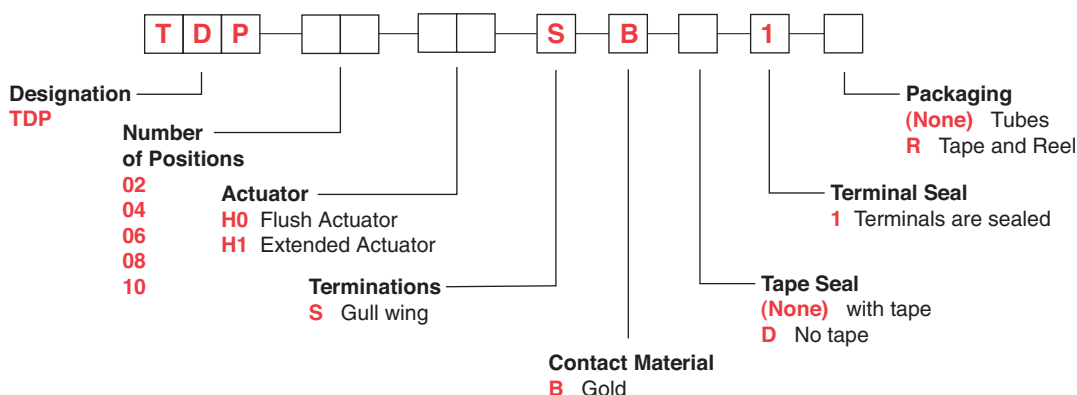
TAPE SEAL: Polyimide.

**Note:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

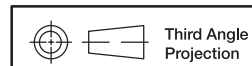
## How To Order

The Build-A Switch concept allows you to mix and match options to create the switch you need. Below is a complete listing of options shown in catalog. To order, simply select desired option from each category and place in the appropriate box.

All switches supplied in "OFF" position.



**Note:** Tape seal is not available with H1 Extended Actuators.

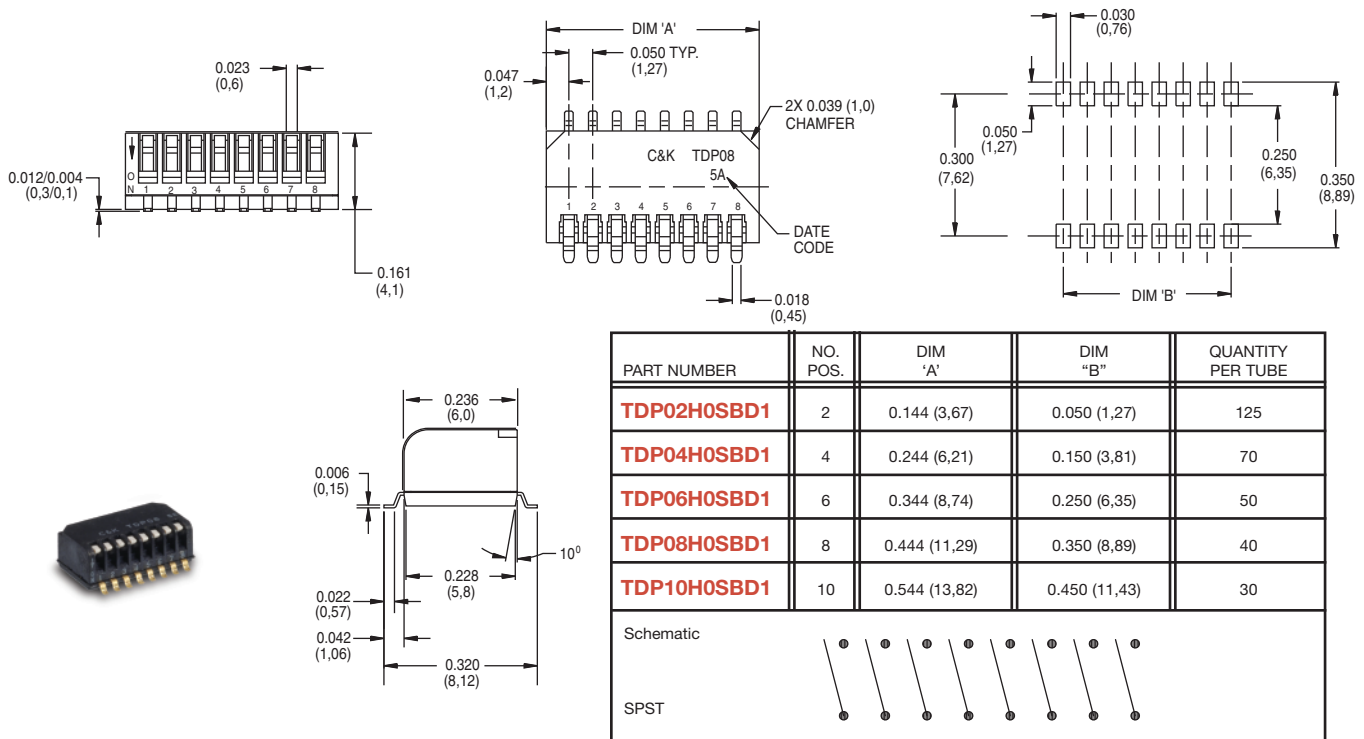


Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

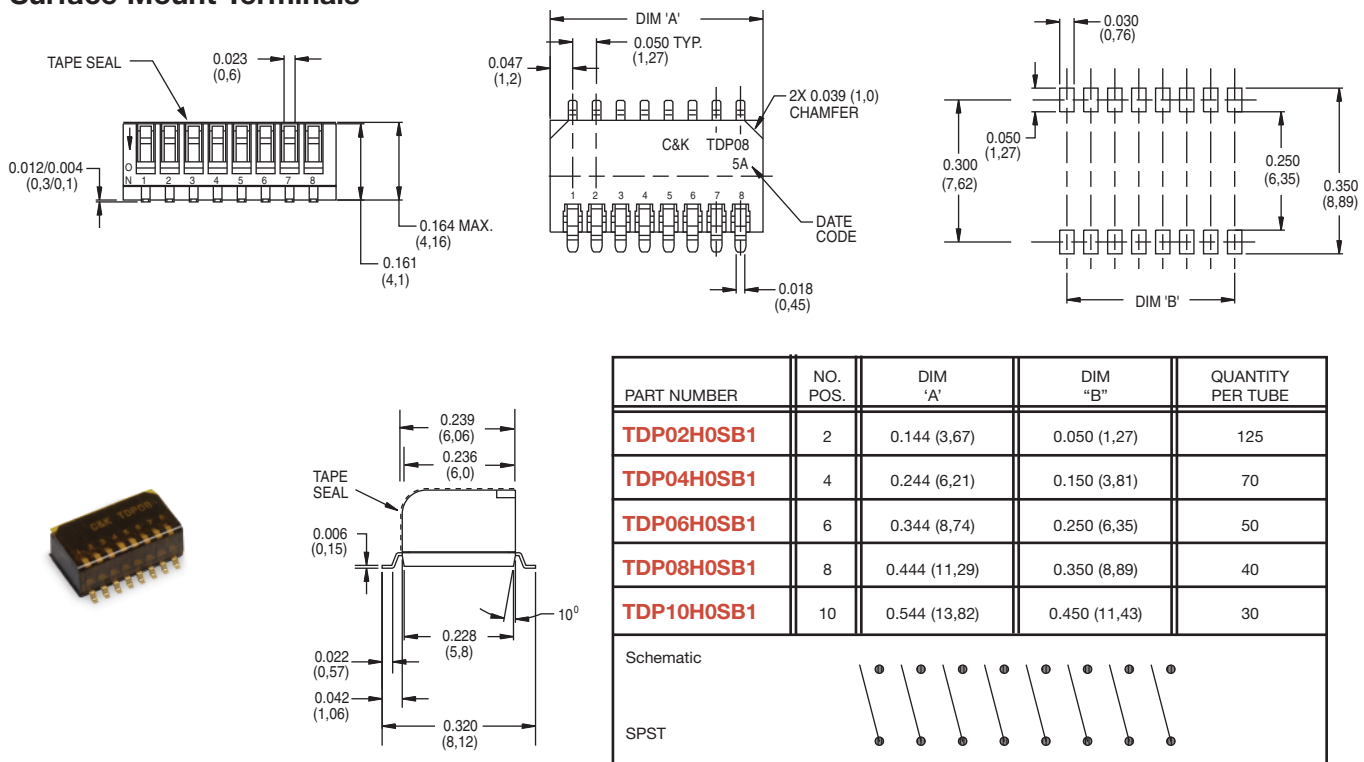


# TDP Series Ultra-miniature Surface Mount Half-pitch Side-Actuated DIP Switches

Flush Actuator-No Top Tape,  
Surface Mount Terminals



Flush Actuator-with Top Tape,  
Surface Mount Terminals



Third Angle  
Projection

Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

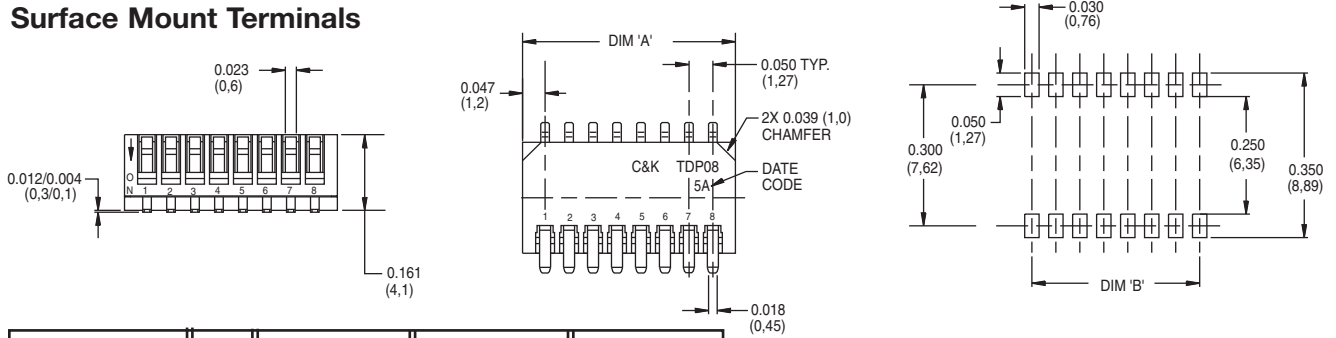


# TDP Series Ultra-miniature Surface Mount Half-pitch Side-Actuated DIP Switches



H  
DIP

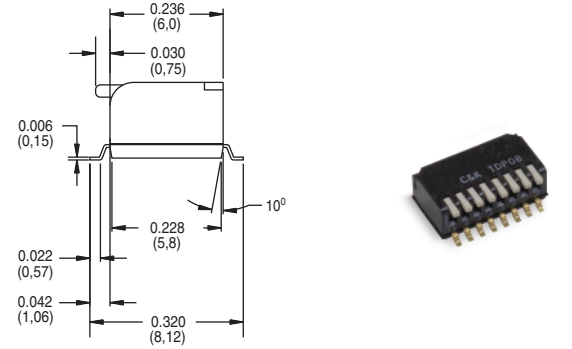
## Extended Actuator-No Top Tape, Surface Mount Terminals



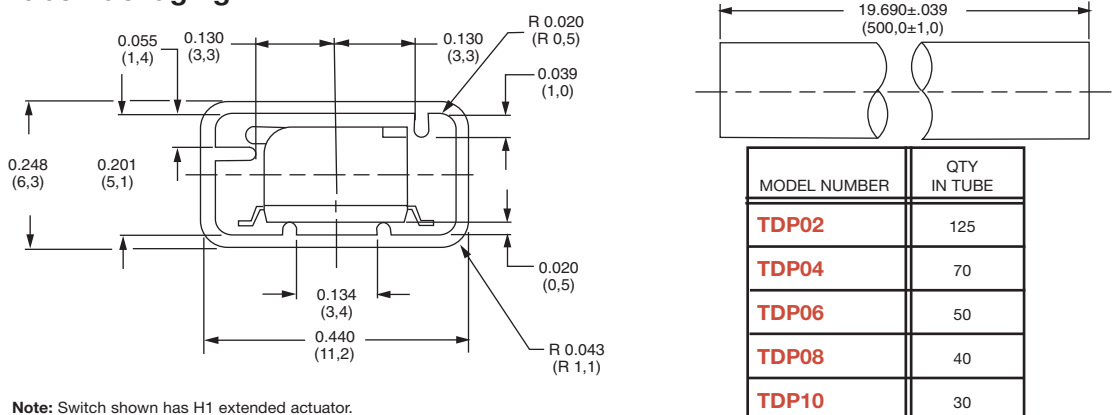
PART NUMBER	NO. POS.	DIM 'A'	DIM "B"	QUANTITY PER TUBE
<b>TDP02H1SBD1</b>	2	0.144 (3,67)	0.050 (1,27)	125
<b>TDP04H1SBD1</b>	4	0.244 (6,21)	0.150 (3,81)	70
<b>TDP06H1SBD1</b>	6	0.344 (8,74)	0.250 (6,35)	50
<b>TDP08H1SBD1</b>	8	0.444 (11,29)	0.350 (8,89)	40
<b>TDP10H1SBD1</b>	10	0.544 (13,82)	0.450 (11,43)	30

Schematic

SPST

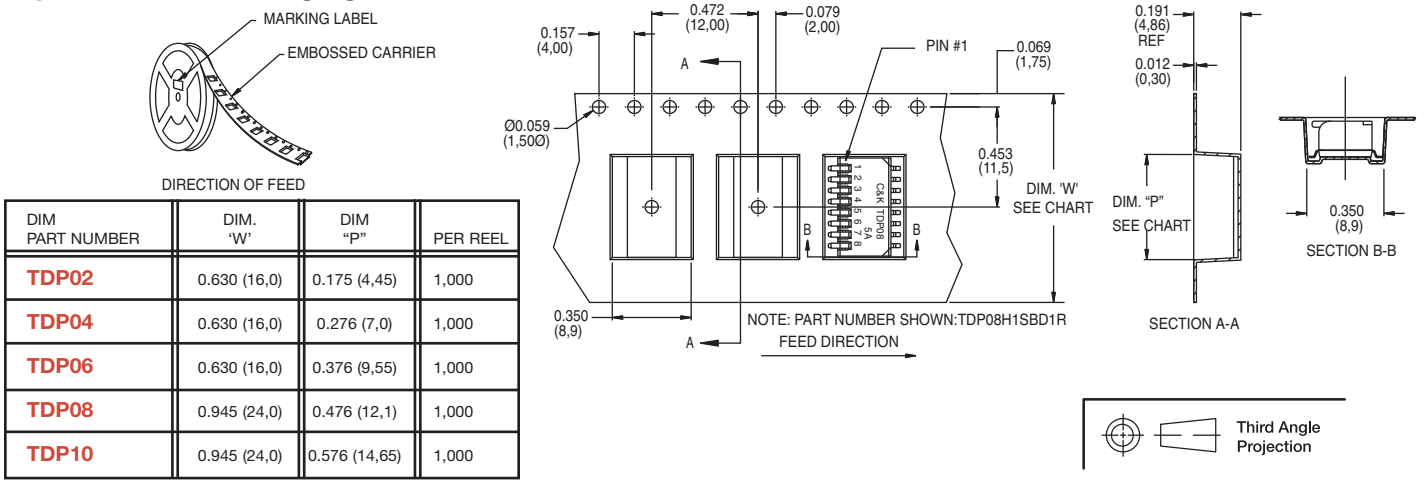


## Tube Packaging



Note: Switch shown has H1 extended actuator.

## Tape and Reel Packaging



Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

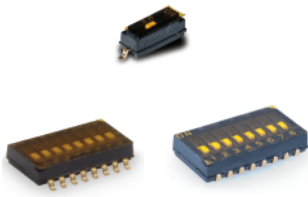
# TDA Series

## Ultra-miniature Surface Mount Half-pitch DIP Switches



H

DIP



### Features/Benefits

- Bifurcated contact for increased electrical reliability
- Process sealed for surface mount soldering and washable processing
- RoHS compliant

### Typical Applications

- Hand-held electronic devices
- Portable computer and electronic devices
- Instrumentation and controls

### Specifications

SWITCH FUNCTION: SPST – 1, 2, 4, 6, 8 & 10 positions.  
 CONTACT RATING:  
 24 V DC, 25 mA (switching).  
 50 V DC, 100 mA (steady state).  
 MECHANICAL AND ELECTRICAL LIFE: 1,000 cycles.  
 CONTACT RESISTANCE: 100 mΩ max.  
 INSULATION RESISTANCE: 100 MΩ @ 100 V DC min.  
 DIELECTRIC STRENGTH: 300 V AC min.  
 STORAGE TEMPERATURE: -40°C to 85°C.  
 OPERATING TEMPERATURE: -40°C to 85°C.  
 OPERATING FORCE: 4.9N max.  
 SOLDERABILITY: Per MIL-STD-202F method 208D, or EIA RS-186E method 9 (1 hour steam aging).

PACKAGING: Switches supplied in rigid dispensing tubes in full tube quantities only, this may affect order quantity. Numbers of switches per tube varies with model. Tape and reel packaging quantity varies with model.

### Materials

CASE & COVER: PPS (UL94V-0)  
 ACTUATOR: LCP (UL94V-0).  
 CONTACTS: Copper alloy, with gold plate over nickel plate.  
 TERMINALS: Copper alloy, with gold flash over nickel plate.  
 All terminals are insert molded.  
 TAPE SEAL: Polyimide.

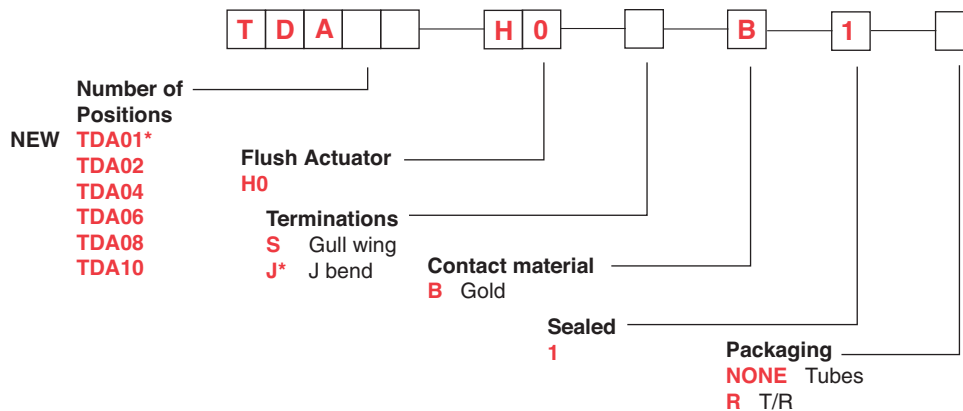
**Note:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

**Note:** All switches supplied in "OFF" position.

### How To Order

The Build-A Switch concept allows you to mix and match options to create the switch you need. Below is a complete listing of options shown in catalog. To order, simply select desired option from each category and place in the appropriate box.

All switches supplied in "OFF" position.



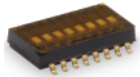
\* TDA01H0JB1R is not available, TDA01 only offered in tape & reel



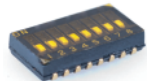
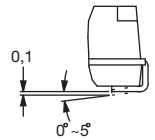
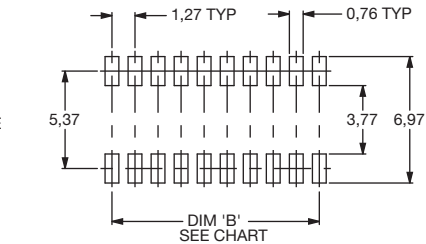
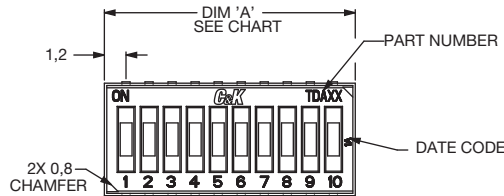
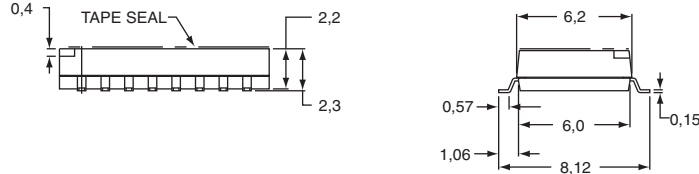
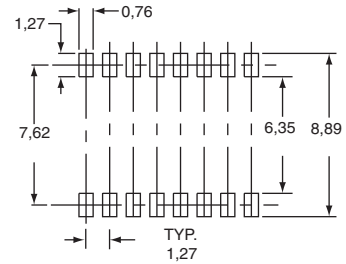
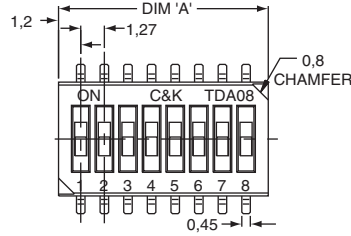
Dimensions are shown: mm  
 Specifications and dimensions subject to change



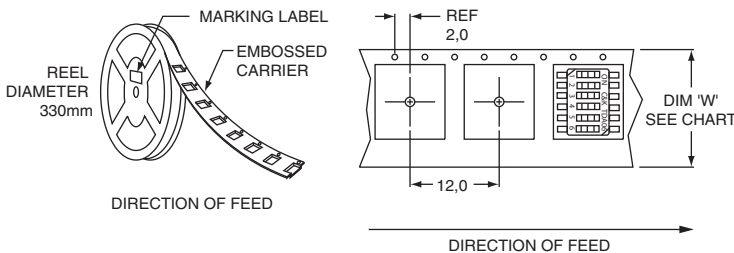
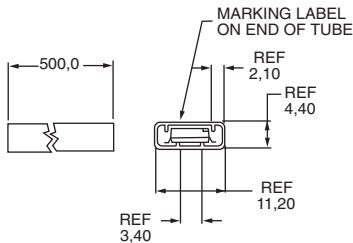
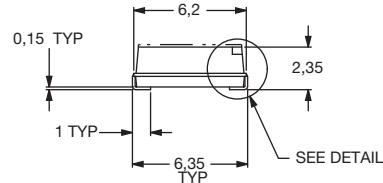
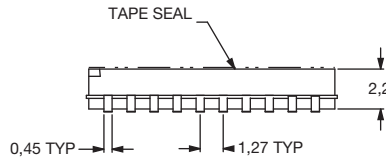
# TDA Series Ultra-miniature Surface Mount Half-pitch DIP Switches



TDA08H0SB1



TDA10H0JB1



## Tube Package

ROHS PART NUMBER	NO. POS.	DIM. 'A'	DIM. 'B'	QUANTITY PER TUBE
TDA01H0SB1	1	2,40	NA	NA
TDA02H0_B1	2	3,67	1,27	125
TDA04H0_B1	4	6,21	3,81	70
TDA06H0_B1	6	8,75	6,35	50
TDA08H0_B1	8	11,29	8,89	40
TDA10H0_B1	10	13,83	11,43	30

Schematic

SPST

## Tape & Reel Package

ROHS PART NUMBER	NO. POS.	DIM. 'W'	QUANTITY PER REEL
TDA01H0SB1R*	1	16,0	2500
TDA02H0_B1R	2	16,0	2000
TDA04H0_B1R	4	16,0	2000
TDA06H0_B1R	6	16,0	2000
TDA08H0_B1R	8	24,0	2000
TDA10H0_B1R	10	24,0	2000

\* see next page for TDA01 tape & reel drawing



Dimensions are shown: mm  
Specifications and dimensions subject to change



# TDA Series

## Ultra-miniature Surface Mount Half-pitch DIP Switches

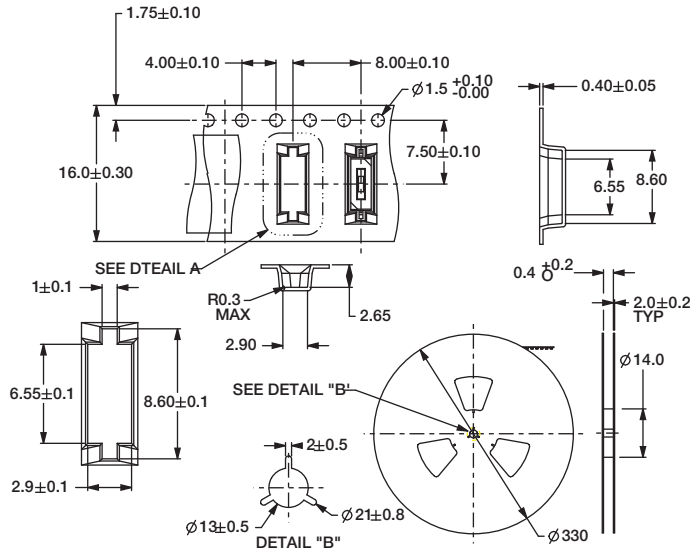


DIP

DIP



TDA01H0SB1R



Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

# SDA Series Low Profile DIP Switches



H

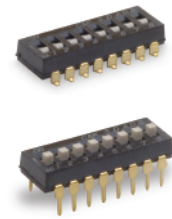
DIP

## Features/Benefits

- Low profile design saves space
- Thru-hole and surface mount models
- Tape and reel packaging available
- RoHS compliant

## Typical Applications

- Address switch for industrial controls
- Logic switching for computers and peripherals
- Function controlling for numerous applications



## Specifications

CONTACT RATING: 25 mA @ 24 V DC or 100 mA @ 5 V DC.  
 MECHANICAL AND ELECTRICAL LIFE: 1,000 cycles at rated loads.  
 CONTACT RESISTANCE: 50 mΩ max. initial.  
 INSULATION RESISTANCE: 100 MΩ between terminals.  
 DIELECTRIC WITHSTANDING VOLTAGE: 300 V DC min. for 1 minute.  
 STORAGE TEMPERATURE: -40°C to 85°C.  
 OPERATING TEMPERATURE: -40°C to 85°C.  
 OPERATING FORCE: 800 grams max.  
 SOLDERABILITY: Dip and look solderability testing per C&K spec. #448. Unplated edges of terminals permitted.  
 PACKAGING: Switches supplied in rigid dispensing tubes in full-tube quantities only, this may affect order quantity. Numbers of switches per tube varies with model. Tape and reel packaging also available for surface mount options.

## Materials

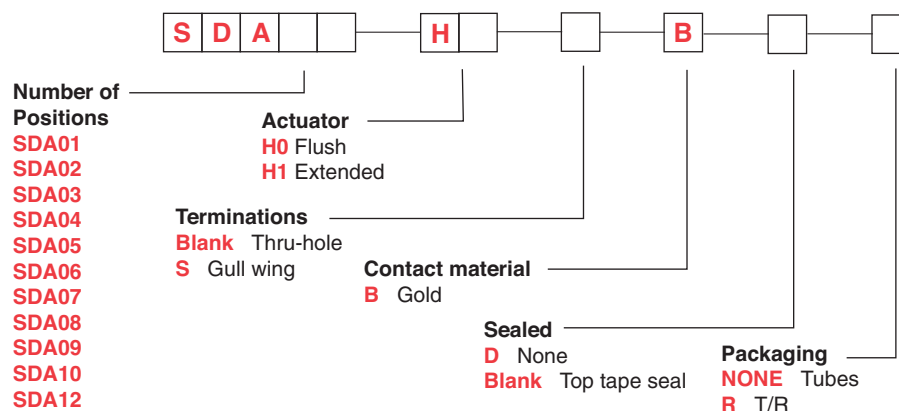
HOUSING: PPS, color black (UL94V-0).  
 COVER: PPS, color black (UL94V-0).  
 ACTUATOR: PA6T (UL94-0)  
 CONTACTS: Gold plated Beryllium copper.  
 TERMINALS: Gold plate over nickel plated brass.  
 TAPE SEAL: Polyimide.

**Note:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center. For Tin Lead options consult customer service center.

## How To Order

The Build-A Switch concept allows you to mix and match options to create the switch you need. Below is a complete listing of options shown in catalog. To order, simply select desired option from each category and place in the appropriate box.

All switches supplied in "OFF" position..



Dimensions are shown: Inch (mm)  
 Specifications and dimensions subject to change



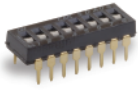
# SDA Series Low Profile DIP Switches



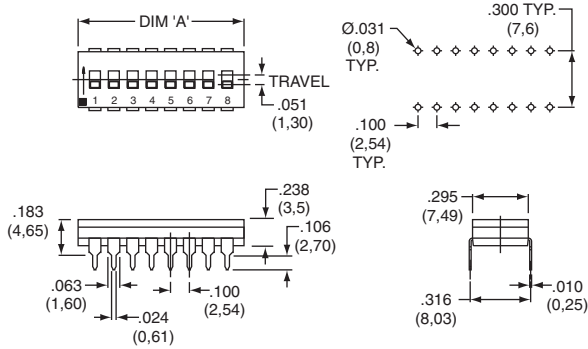
H

DIP

## Flush Actuator – No Tape, Thru-hole Terminals



SDA08H0BD



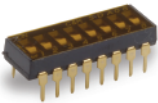
NOTE: SDA 01 options are 4,25mm thick

ROHS PART NUMBER	NO. POS.	DIM. 'A'	QUANTITY PER TUBE
<b>SDA01H0BD</b>	1	.178 (4,52)	100
<b>SDA02H0BD</b>	2	.278 (7,06)	60
<b>SDA03H0BD</b>	3	.378 (9,60)	45
<b>SDA04H0BD</b>	4	.476 (12,10)	35
<b>SDA05H0BD</b>	5	.578 (14,68)	30
<b>SDA06H0BD</b>	6	.676 (17,18)	25
<b>SDA07H0BD</b>	7	.778 (19,76)	20
<b>SDA08H0BD</b>	8	.876 (22,26)	20
<b>SDA09H0BD</b>	9	.978 (24,84)	15
<b>SDA10H0BD</b>	10	1.076 (27,34)	15
<b>SDA12H0BD</b>	12	1.279 (32,50)	14

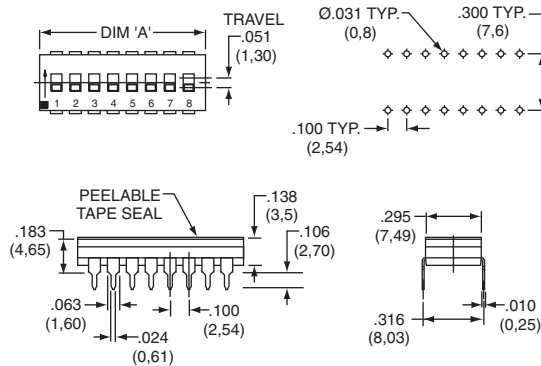
Schematic

SPST

## Flush Actuator – With Top Tape, Thru-hole Terminals



SDA08H0B



NOTE: SDA 01 options are 4,25mm thick

ROHS PART NUMBER	NO. POS.	DIM. 'A'	QUANTITY PER TUBE
<b>SDA01H0B</b>	1	.178 (4,52)	100
<b>SDA02H0B</b>	2	.278 (7,06)	60
<b>SDA03H0B</b>	3	.378 (9,60)	45
<b>SDA04H0B</b>	4	.476 (12,10)	35
<b>SDA05H0B</b>	5	.578 (14,68)	30
<b>SDA06H0B</b>	6	.676 (17,18)	25
<b>SDA07H0B</b>	7	.778 (19,76)	20
<b>SDA08H0B</b>	8	.876 (22,26)	20
<b>SDA09H0B</b>	9	.978 (24,84)	15
<b>SDA10H0B</b>	10	1.076 (27,34)	15
<b>SDA12H0B</b>	12	1.279 (32,50)	14

Schematic

SPST



Third Angle Projection



Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change



# SDA Series Low Profile DIP Switches

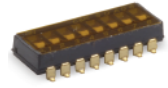
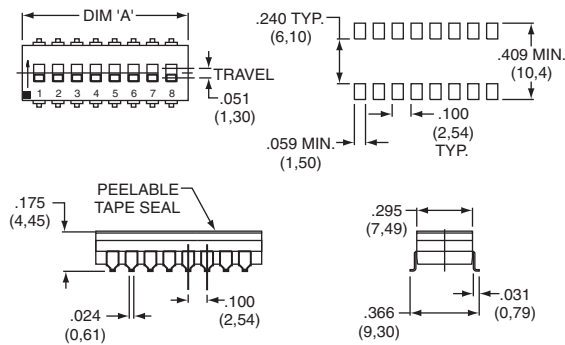


## Flush Actuator – With Top Tape, Surface Mount Terminals

ROHS PART NUMBER	NO. POS.	DIM. 'A'	QUANTITY PER TUBE
<b>SDA01H0SB</b>	1	.178 (4,52)	100
<b>SDA02H0SB</b>	2	.278 (7,06)	60
<b>SDA03H0SB</b>	3	.378 (9,60)	45
<b>SDA04H0SB</b>	4	.476 (12,10)	35
<b>SDA05H0SB</b>	5	.578 (14,68)	30
<b>SDA06H0SB</b>	6	.676 (17,18)	25
<b>SDA07H0SB</b>	7	.778 (19,76)	20
<b>SDA08H0SB</b>	8	.876 (22,26)	20
<b>SDA09H0SB</b>	9	.978 (24,84)	15
<b>SDA10H0SB</b>	10	1.076 (27,34)	15
<b>SDA12H0SB</b>	12	1.279 (32,50)	14

Schematic

SPST



SDA08H0SB

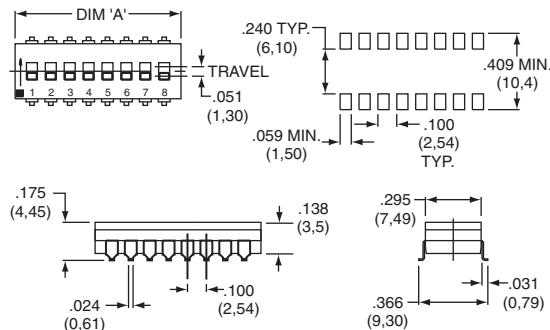
NOTE: SDA 01 options are 4,25mm thick

## Flush Actuator – No Tape, Surface Mount Terminals

ROHS PART NUMBER	NO. POS.	DIM. 'A'	QUANTITY PER TUBE
<b>SDA01H0SBD</b>	1	.178 (4,52)	100
<b>SDA02H0SBD</b>	2	.278 (7,06)	60
<b>SDA03H0SBD</b>	3	.378 (9,60)	45
<b>SDA04H0SBD</b>	4	.476 (12,10)	35
<b>SDA05H0SBD</b>	5	.578 (14,68)	30
<b>SDA06H0SBD</b>	6	.676 (17,18)	25
<b>SDA07H0SBD</b>	7	.778 (19,76)	20
<b>SDA08H0SBD</b>	8	.876 (22,26)	20
<b>SDA09H0SBD</b>	9	.978 (24,84)	15
<b>SDA10H0SBD</b>	10	1.076 (27,34)	15
<b>SDA12H0SBD</b>	12	1.279 (32,50)	14

Schematic

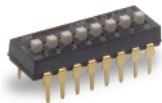
SPST



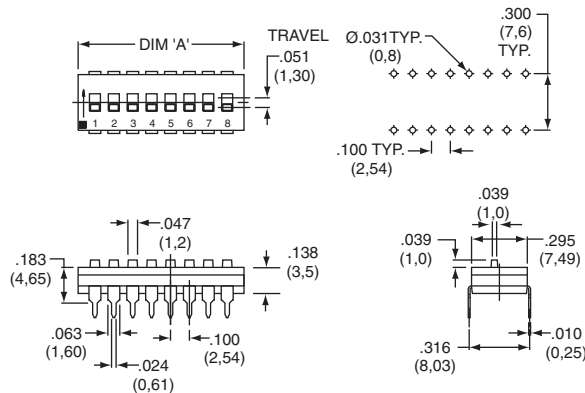
SDA08H0SBD

NOTE: SDA 01 options are 4,25mm thick

## Extended Actuator – No Top Tape, Thru-hole Terminals



SDA08H1BD



NOTE: SDA 01 options are 4,25mm thick

ROHS PART NUMBER	NO. POS.	DIM. 'A'	QUANTITY PER TUBE
<b>SDA01H1BD</b>	1	.178 (4,52)	100
<b>SDA02H1BD</b>	2	.278 (7,06)	60
<b>SDA03H1BD</b>	3	.378 (9,60)	45
<b>SDA04H1BD</b>	4	.476 (12,10)	35
<b>SDA05H1BD</b>	5	.578 (14,68)	30
<b>SDA06H1BD</b>	6	.676 (17,18)	25
<b>SDA07H1BD</b>	7	.778 (19,76)	20
<b>SDA08H1BD</b>	8	.876 (22,26)	20
<b>SDA09H1BD</b>	9	.978 (24,84)	15
<b>SDA10H1BD</b>	10	1.076 (27,34)	15
<b>SDA12H1BD</b>	12	1.279 (32,50)	14

Schematic

SPST



Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

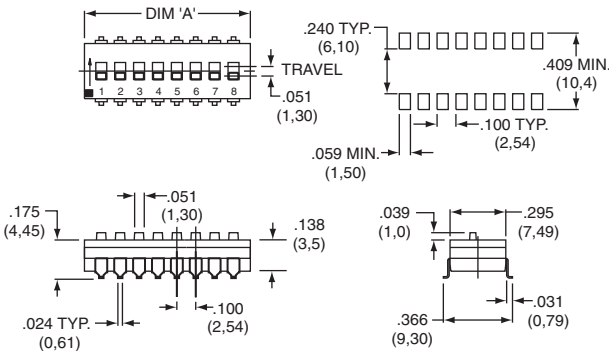


# SDA Series Low Profile DIP Switches

## Extended Actuator – No Top Tape, Surface Mount Terminals



SDA08H1SBD



NOTE: SDA 01 options are 4,25mm thick

ROHS PART NUMBER	NO. POS.	DIM. 'A'	QUANTITY PER TUBE
SDA01H1SBD	1	.178 (4,52)	100
SDA02H1SBD	2	.278 (7,06)	60
SDA03H1SBD	3	.378 (9,60)	45
SDA04H1SBD	4	.476 (12,10)	35
SDA05H1SBD	5	.578 (14,68)	30
SDA06H1SBD	6	.676 (17,18)	25
SDA07H1SBD	7	.778 (19,76)	20
SDA08H1SBD	8	.876 (22,26)	20
SDA09H1SBD	9	.978 (24,84)	15
SDA10H1SBD	10	1.076 (27,34)	15
SDA12H1SBD	12	1.279 (32,50)	14

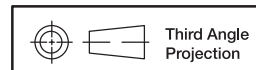
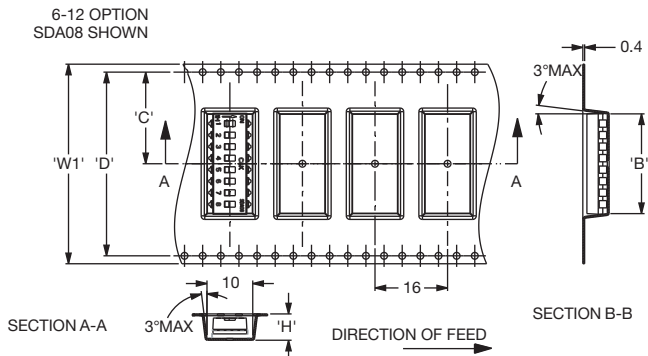
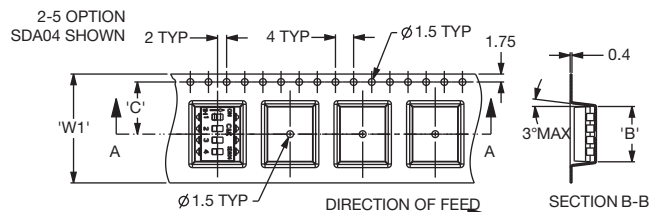
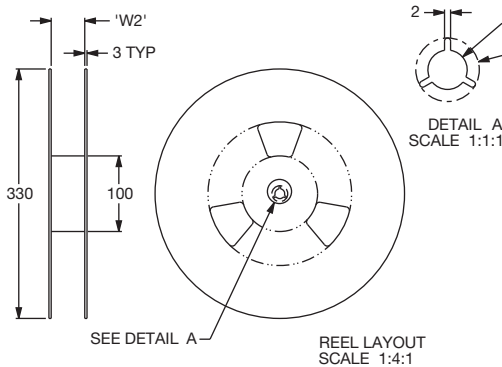
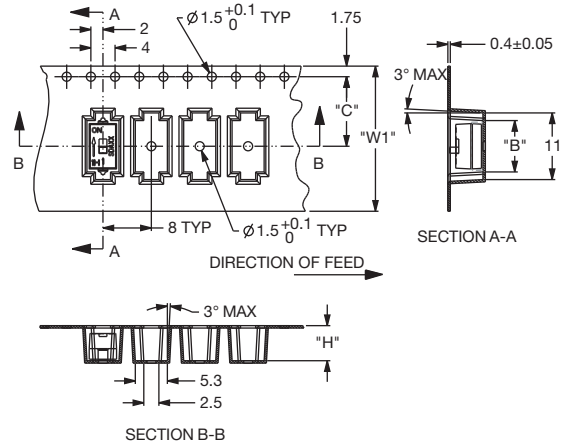
Schematic

SPST

## Tape & Reel Packaging – Surface Mount Options only

MODEL NO. 'S' OPTION	DIM. 'H' (REF.)	DIM. 'W1' (REF.)	DIM. 'W2' (REF.)	DIM. 'B' (REF.)	DIM. 'C' (REF.)	DIM. 'D' (REF.)	QUANTITY PER REEL
SDA01	H0	5.2	24.0	24.4	8.5	N/A	1500
	H1	5.8					1450
SDA02	H0	4.8	24.0	24.4	7.9	N/A	750
	H1	5.8					700
SDA03	H0	4.8	24.0	24.4	10.4	N/A	750
	H1	5.8					700
SDA04	H0	4.8	24.0	24.4	12.9	N/A	750
	H1	5.8					700
SDA05	H0	4.8	24.0	24.4	15.4	N/A	750
	H1	5.8					700
SDA06	H0	4.8	32.0	32.4	18.0	28.4	750
	H1	5.8					700
SDA07	H0	4.8	32.0	32.4	20.5	28.4	750
	H1		NOT CURRENTLY AVAILABLE IN TAPE AND REEL				
SDA08	H0	4.8	44.0	44.4	22.7	40.4	750
	H1	5.8					700
SDA09	H0	4.8	44.0	44.4	25.5	40.4	750
	H1	5.8					700
SDA10	H0	4.8	44.0	44.0	28.1	40.4	750
	H1	5.8					700
SDA12	H0	4.8	44.0	44.4	33.2	40.4	750
	H1		NOT CURRENTLY AVAILABLE IN TAPE AND REEL				

SDA01H1SBD OPTION SHOWN



Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change



# SD Series Low Profile DIP Switches



H

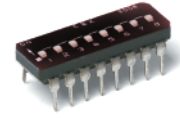
DIP

## Features/Benefits

- Low profile design saves space
- Thru-hole and surface mount models
- Tape and reel packaging available
- Sealed with top tape
- RoHS compliant

## Typical Applications

- Address switch for industrial controls
- Logic switching for computers and peripherals
- Function controlling for numerous applications



## Specifications

SWITCH FUNCTION: SPST - 2, 3, 4, 5, 6, 7, 8, 9, 10 & 12 positions

CONTACT RATING:

Carry: 100 mA @ 50 V DC max.

Switch: 0.1 mA @ 5 V DC min to 100 mA @ 25 V DC max.

MECHANICAL AND ELECTRICAL LIFE: 2,000 make-and-break cycles at full load, each circuit.

CONTACT RESISTANCE: Below 50 milliohms typ. initial @ 2-4 V DC, 100mA.

INSULATION RESISTANCE: 10<sup>9</sup> ohms min.

DIELECTRIC STRENGTH: 500 V RMS min. @ sea level between adjacent terminals.

STORAGE TEMPERATURE: -40°C to 85°C.

OPERATING TEMPERATURE: -40°C to 85°C.

OPERATING FORCE: 100-700g initial.

PACKAGING: Thru-hole switches supplied in rigid dispensing tubes in full-tube quantities only: this may effect order quantity. Surface mount switches available in tape and reel packaging by added 'R' to end of part number; 1,000 pieces per reel. Switch position 1 denotes pin number 1. All switch actuators in 'OFF' position, standard.

## Materials

CASE & COVER: (PPA), flame retardant (UL 94V-0)

ACTUATOR: Nylon, flame retardant (UL 94V-0)

CONTACTS: BeCu with gold plate.

TERMINALS: Bright tin-plated brass.

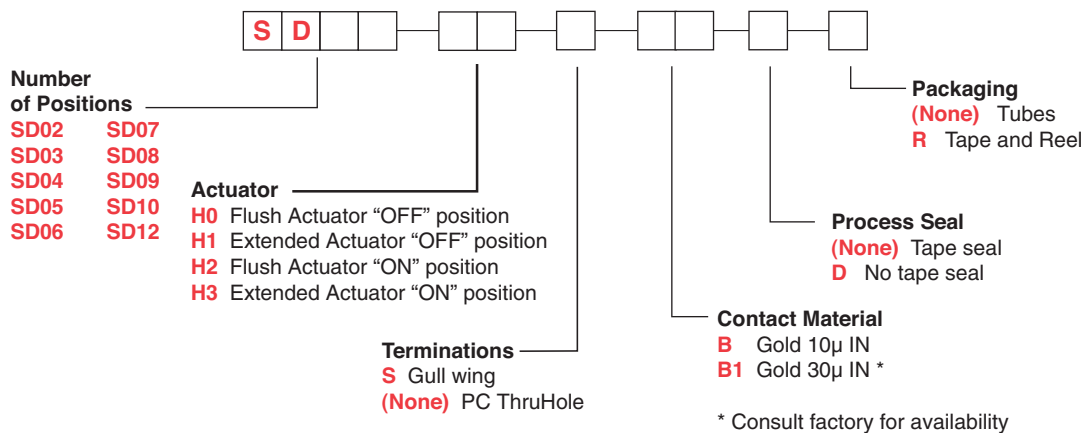
TERMINAL SEAL: All terminals insert molded.

TAPE SEAL: Polyimide.

**Note:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## How To Order

The Build-A Switch concept allows you to mix and match options to create the switch you need. Below is a complete listing of options shown in catalog. To order, simply select desired option from each category and place in the appropriate box.



Third Angle Projection  
Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change



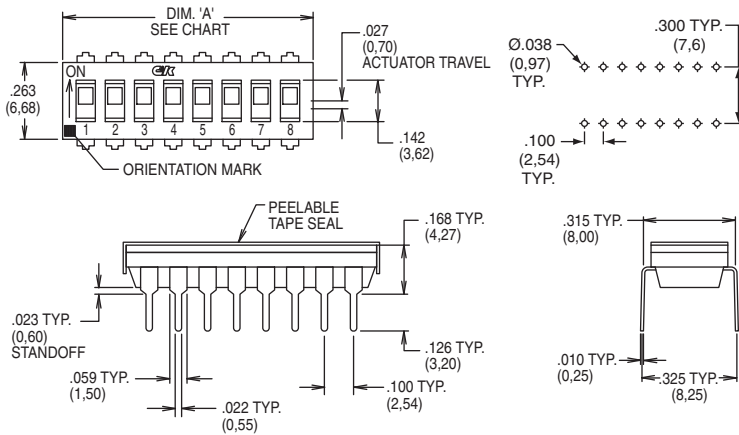
# SD Series Low Profile DIP Switches



DIP

## Sealed Flush Actuator – With Top Tape, Thru-hole Terminals

Process sealed - withstands soldering and cleaning processes

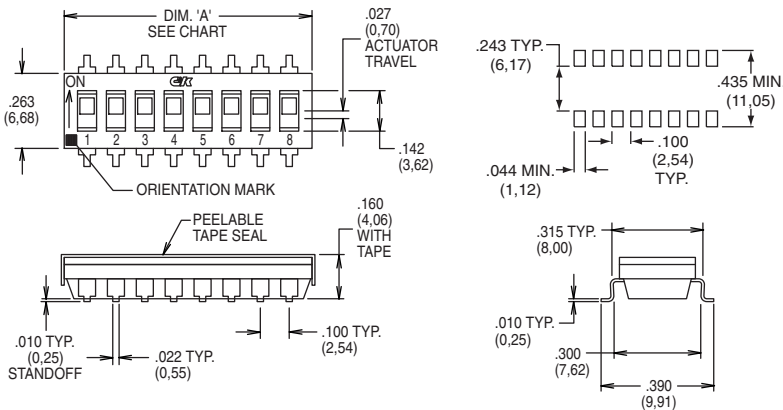


ROHS PART NUMBER	NO. POS.	DIM. 'A'	QUANTITY PER TUBE
<b>SD02H0B</b>	2	.258 (6,55)	85
<b>SD03H0B</b>	3	.358 (9,09)	60
<b>SD04H0B</b>	4	.458 (11,63)	45
<b>SD05H0B</b>	5	.558 (14,17)	40
<b>SD06H0B</b>	6	.658 (16,71)	30
<b>SD07H0B</b>	7	.758 (19,25)	25
<b>SD08H0B</b>	8	.858 (21,79)	25
<b>SD09H0B</b>	9	.958 (24,33)	20
<b>SD10H0B</b>	10	1.058 (26,87)	20
<b>SD12H0B</b>	12	1.258 (31,95)	15



Table applicable to "H0" and "H2" actuator options.

## Sealed Flush Actuator – With Top Tape, Surface Mount Terminals

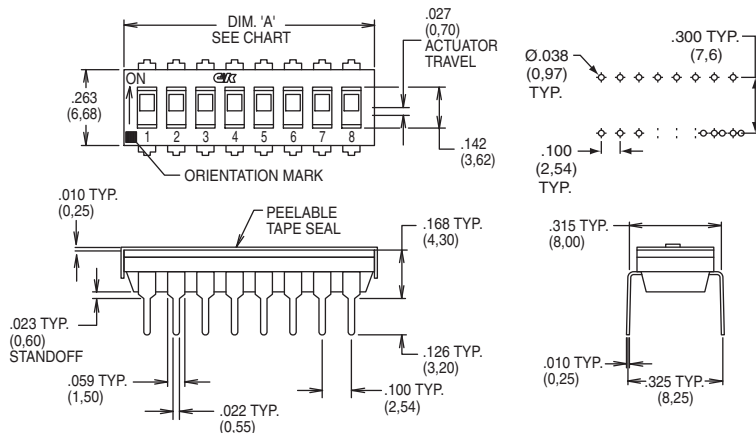


RoHS PART NUMBER	NO. POS.	DIM. 'A'	QUANTITY PER TUBE
<b>SD02H0SB</b>	2	.258 (6,55)	85
<b>SD03H0SB</b>	3	.358 (9,09)	60
<b>SD04H0SB</b>	4	.458 (11,63)	45
<b>SD05H0SB</b>	5	.558 (14,17)	40
<b>SD06H0SB</b>	6	.658 (16,71)	30
<b>SD07H0SB</b>	7	.758 (19,25)	25
<b>SD08H0SB</b>	8	.858 (21,79)	25
<b>SD09H0SB</b>	9	.958 (24,33)	20
<b>SD10H0SB</b>	10	1.058 (26,87)	20
<b>SD12H0SB</b>	12	1.258 (31,95)	15



Table applicable to "H0" and "H2" actuator options.

## Sealed Extended Actuator – With Top Tape, Thru-hole Terminals



RoHS PART NUMBER	NO. POS.	DIM. 'A'	QUANTITY PER TUBE
<b>SD02H1B</b>	2	.258 (6,55)	85
<b>SD03H1B</b>	3	.358 (9,09)	60
<b>SD04H1B</b>	4	.458 (11,63)	45
<b>SD05H1B</b>	5	.558 (14,17)	40
<b>SD06H1B</b>	6	.658 (16,71)	30
<b>SD07H1B</b>	7	.758 (19,25)	25
<b>SD08H1B</b>	8	.858 (21,79)	25
<b>SD09H1B</b>	9	.958 (24,33)	20
<b>SD10H1B</b>	10	1.058 (26,87)	20
<b>SD12H1B</b>	12	1.258 (31,95)	15



Table applicable to "H1" and "H3" actuator options.



Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change



# SD Series Low Profile DIP Switches

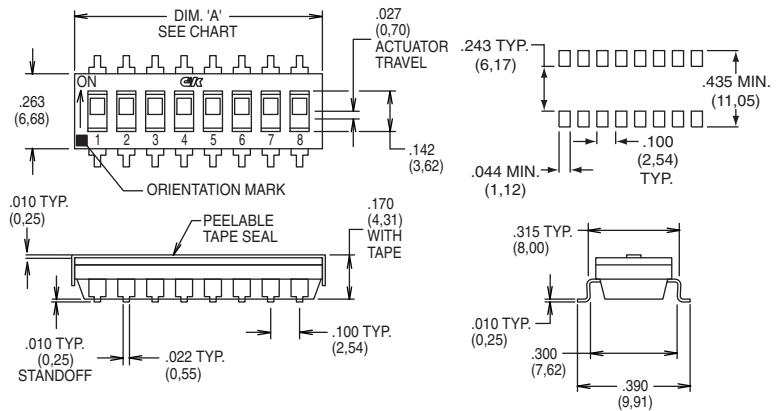


## Sealed Extended Actuator – With Top Tape, Surface Mount Terminals

RoHS PART NUMBER	NO. POS.	DIM. 'A'	QUANTITY PER TUBE
SD02H1SB	2	.258 (6,55)	85
SD03H1SB	3	.358 (9,09)	60
SD04H1SB	4	.458 (11,63)	45
SD05H1SB	5	.558 (14,17)	40
SD06H1SB	6	.658 (16,71)	30
SD07H1SB	7	.758 (19,25)	25
SD08H1SB	8	.858 (21,79)	25
SD09H1SB	9	.958 (24,33)	20
SD10H1SB	10	1.058 (26,87)	20
SD12H1SB	12	1.258 (31,95)	15



Table applicable to "H1" and "H3" actuator options.

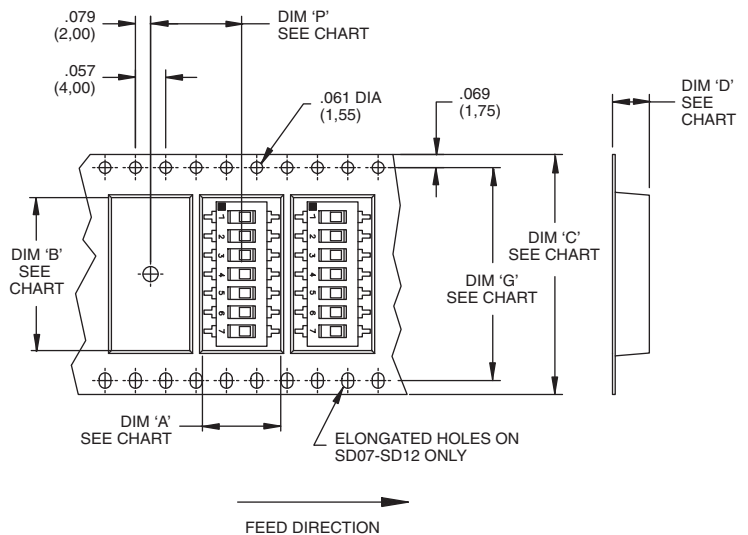


## TAPE & REEL PACKAGING – SURFACE MOUNT OPTIONS ONLY

RoHS PART NUMBER	NO. POS.	DIM. 'A'	QUANTITY PER REEL
SD02H0SBR	2	.258 (6,55)	1000
SD03H0SBR	3	.358 (9,09)	1000
SD04H0SBR	4	.458 (11,63)	1000
SD05H0SBR	5	.558 (14,17)	1000
SD06H0SBR	6	.658 (16,71)	1000
SD07H0SBR	7	.758 (19,25)	1000
SD08H0SBR	8	.858 (21,79)	1000
SD09H0SBR	9	.958 (24,33)	1000
SD10H0SBR	10	1.058 (26,87)	1000
SD12H0SBR	12	1.258 (31,95)	1000



Table applicable to "H0" and "H2" actuator options.



SWITCH NO.	DIM 'A' POCKET LENGTH @ BOTTOM	DIM 'B' POCKET LENGTH @ BOTTOM	DIM 'C' TAPE WIDTH	DIM 'D' POCKET DEPTH	DIM 'G' SPROCKET HOLE SPACING	DIM 'P' PITCH BETWEEN POCKETS
SD02	.413(10,5)	.315(8,0)	.630(16,0)	.177(4,5)	N/A	.472(12,0)
SD03	.406(10,3)	.406(10,3)	.630(16,0)	.177(4,5)	N/A	.472(12,0)
SD04	.429(10,9)	.476(12,1)	.954(24,0)	.177(4,5)	N/A	.472(12,0)
SD05	.406(10,3)	.602(15,3)	.954(24,0)	.177(4,5)	N/A	.472(12,0)
SD06	.406(10,3)	.701(17,8)	.954(24,0)	.177(4,5)	N/A	.472(12,0)
SD07	.406(10,3)	.803(20,4)	1.260(32,0)	.177(4,5)	1.118(28,4)	.472(12,0)
SD08	.406(10,3)	.854(21,7)	1.732(44,0)	.177(4,5)	1.591(40,4)	.472(12,0)
SD09	.406(10,3)	1.028(26,1)	1.732(44,0)	.177(4,5)	1.591(40,4)	.472(12,0)
SD10	.406(10,3)	1.055(26,8)	1.732(44,0)	.177(4,5)	1.591(40,4)	.472(12,0)
SD12	.406(10,3)	1.303(33,1)	1.732(44,0)	.177(4,5)	1.591(40,4)	.472(12,0)

### Reel Information

Outside diameter 13.00 (333,0)  
Pilot hole .512 (13,0)



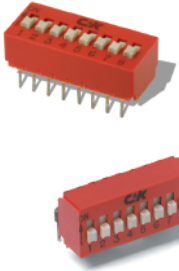
Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change



# BD Series Standard Profile DIP Switches



DIP



## Features/Benefits

- Traditional full profile DIP switch
- Extended actuator for easy actuation
- Open bottom construction allows for solder washing without the need for tape seal
- RoHS compliant

## Typical Applications

- Address switch for industrial controls
- Logic switching for computers and peripherals
- Function controlling for numerous applications

## Specifications

SWITCH FUNCTION: SPST - 1 thru 12 position available (except 11 position).

CONTACT RATING:

Carry: 100 mA max. @ 50 V DC.

Switch: 100 mA max. @ 5 V DC or 25 mA max. @ 25 V DC.

MECHANICAL AND ELECTRICAL LIFE: 10,000 make-and-break cycles at full load, each circuit.

CONTACT RESISTANCE: Below 50 milliohms typ. initial @ 2-4 V DC 100mA.

INSULATION RESISTANCE: 10<sup>9</sup> ohms min.

DIELECTRIC STRENGTH: 500 V RMS min. @ sea level between adjacent terminals.

CAPACITANCE: 5pF max. between adjacent terminals.

STORAGE & OPERATING TEMPERATURE: -40°C to 85°C.

SHOCK: Withstands 20g 11 ms sawtooth waveform with no contact opening greater than 10 microseconds.

VIBRATION: No contact opening greater than 10 microseconds and no contact closure when exposed to vibration .06 in DA or 5g, whichever is less, from 10 to 55 Hz, and 10g from 55 to 500 Hz.

SOLDERABILITY: Per MIL-STD-202F method 208D, or EIA RS-186E method 9 (1 hour steam aging).

PACKAGING: Switches supplied in rigid dispensing tubes in full-tube quantities only: this may effect order quantity. Number of switches per tube varies with model. Switch position 1 denotes pin number 1. All switch actuators in 'OFF' position, standard.

## Materials

CASE & COVER: Glass filled polyester (PBT), flame retardant (UL 94V-0).

ACTUATOR: Glass filled nylon 6/6, flame retardant, heat stabilized (UL 94V-0)

CONTACTS: Gold over nickel over phosphor bronze.

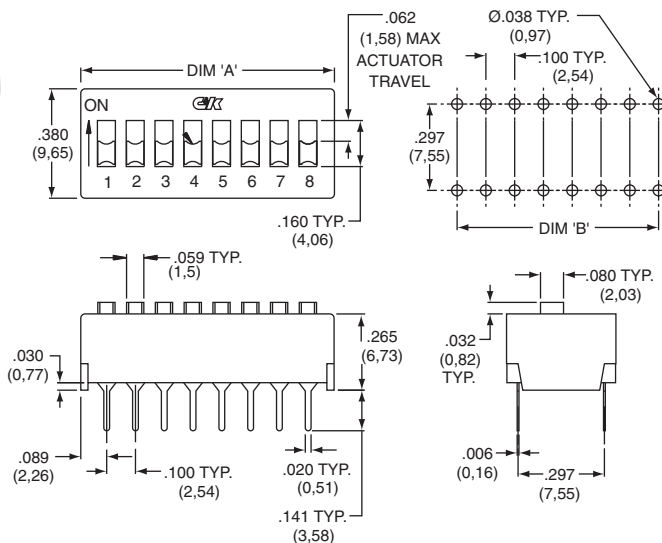
TERMINALS: Matte-tin over nickel over phosphor bronze.

**Note:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## Vertical Full Profile DIP

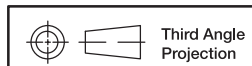


BD08



PART NUMBER	NO.POS.	DIM. 'A'	DIM. 'B'	QUANTITY PER TUBE
<b>BD01</b>	1	.180 (4,57)	NA	115
<b>BD02</b>	2	.280 (7,11)	.100 (2,54)	74
<b>BD03</b>	3	.380 (9,65)	.200 (5,08)	54
<b>BD04</b>	4	.480 (12,19)	.300 (7,62)	43
<b>BD05</b>	5	.580 (14,73)	.400 (10,16)	35
<b>BD06</b>	6	.680 (17,27)	.500 (12,75)	30
<b>BD07</b>	7	.780 (19,81)	.600 (15,24)	26
<b>BD08</b>	8	.880 (22,35)	.700 (17,78)	23
<b>BD09</b>	9	.980 (24,89)	.800 (20,32)	21
<b>BD10</b>	10	1.080 (27,43)	.900 (22,86)	19
<b>BD12</b>	12	1.280 (32,51)	1.100 (27,94)	16

Schematic  
SPST



Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change



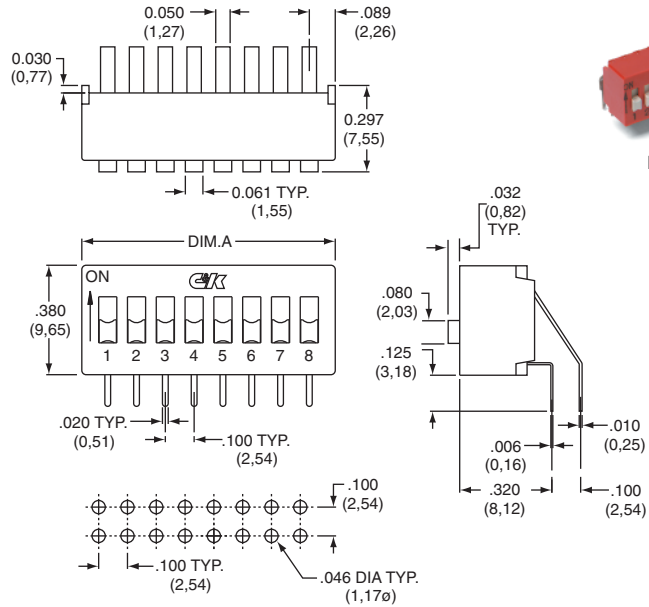
# BD Series Standard Profile DIP Switches

## Open Base and AV Right Angle Terminal Style

PART NUMBER	NO.POS.	DIM. 'A'	QUANTITY PER TUBE
<b>BD02AV</b>	2	.280 (7,11)	72
<b>BD03AV</b>	3	.380 (9,65)	52
<b>BD04AV</b>	4	.480 (12,19)	42
<b>BD05AV</b>	5	.580 (14,73)	35
<b>BD06AV</b>	6	.680 (17,27)	29
<b>BD07AV</b>	7	.780 (19,81)	26
<b>BD08AV</b>	8	.880 (22,35)	23
<b>BD09AV</b>	9	.980 (24,89)	20
<b>BD10AV</b>	10	1.080 (27,43)	18
<b>BD12AV</b>	12	1.280 (32,51)	15

Schematic

SPST



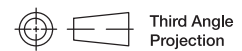
BD08AV

H  
DIP

## Installation, Soldering and Cleaning

All BD Series Standard Profile DIP Switches can be hand soldered or machine soldered without the use of boot, caps, tapes or special attention. Open base washable models have unique design, allowing solvent cleaners and water/detergent solutions to flush and clean the electrical contacts of the contaminants and fluxes. For best results, follow these directions:

- 1) Wave soldering recommended at 500° F (260°C) solder temperature.
- 2) Hand solder using 30 watt small tip iron controlled at 500° F (260°C), 10 seconds max./terminal.
- 3) Open base washable models: Clean flux using forced rinse, high agitation or triple bath cleaning method.  
DO NOT mask or cover switch in any way during cleaning. Switch is designed for easy solvent flush out.
- 4) All switch actuators must be in 'OFF' position during soldering and cleaning processes.



Third Angle  
Projection

Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

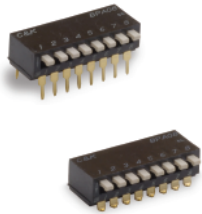


# BPA Series Side Actuated DIP Switches

10  
9  
8  
7  
6  
5  
4  
3  
2  
1

H

DIP



## Features/Benefits

- Side actuated contacts
- Available in thru-hole or SMT models
- High pressure contact system does not require tape seal for washing
- RoHS compliant & compatible

## Typical Applications

- Address switch for industrial controls
- Logic switching for computers and peripherals
- Function controlling for numerous applications

## Specifications

SWITCH FUNCTION: 1 thru 10 and 12 position available.  
 CONTACT RATING: 100 mA max. @ 5 V DC or 25 mA max. @ 24 V DC.  
 MECHANICAL AND ELECTRICAL LIFE: 1,000 cycles min. @ 5 V DC 10mA.  
 CONTACT RESISTANCE: 50 milliohms initial max.  
 INSULATION RESISTANCE: 100 V DC 100 megohms min.  
 DIELECTRIC WITHSTAND VOLTAGE: 300 V AC for 1 minute.  
 STORAGE TEMPERATURE: -40°C to 85°C.  
 OPERATING TEMPERATURE: -20°C to 85°C.  
 OPERATING FORCE: 800 grams max.  
 SOLDERABILITY: Flow solderable and washable (soldering: 260°C for 10 sec. max.)

PACKAGING: Switches supplied in rigid dispensing tubes in full-tube quantities only, this may affect order quantity. Numbers of switches per tube varies with model. Tape and reel packaging available for SMT options.

## Materials

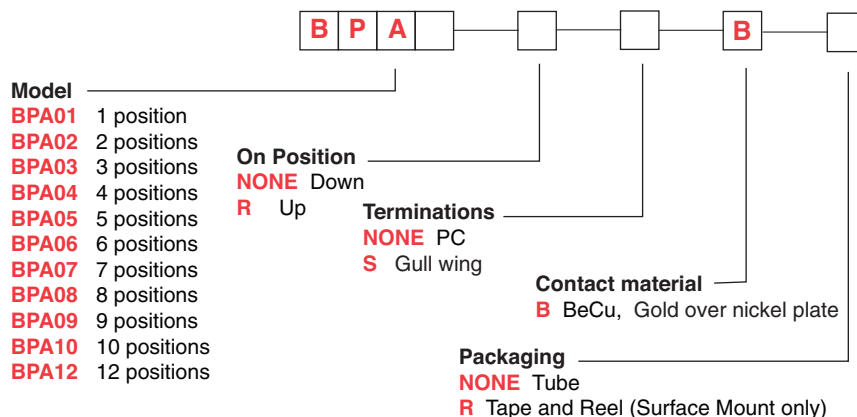
HOUSING: PPS, color black (UL94V-0).  
 COVER: PPS, color black (UL94V-0).  
 ACTUATOR: PA-6T UL94V-0).  
 CONTACTS: Beryllium Copper with Gold over Nickel plate.  
 TERMINALS: Brass, Gold over Nickel plate.

**Note:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## How To Order

The Build-A Switch concept allows you to mix and match options to create the switch you need. Below is a complete listing of options shown in catalog. To order, simply select desired option from each category and place in the appropriate box.

All switches supplied in "OFF" position.



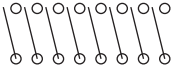
Dimensions are shown: Inch (mm)  
 Specifications and dimensions subject to change



# BPA Series Side Actuated DIP Switches

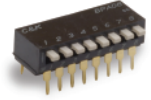
## Side Actuator – Thru-hole Terminals

ROHS PART NUMBER	NO. POS.	DIM. 'A'	DIM. 'B'	QUANTITY PER TUBE
<b>BPA01B</b>	1	.176 (4,48)	N/A	100
<b>BPA02B</b>	2	.276 (7,0)	.100 (2,54)	60
<b>BPA03B</b>	3	.376 (9,6)	.200 (5,08)	45
<b>BPA04B</b>	4	.476 (12,1)	.300 (7,62)	35
<b>BPA05B</b>	5	.575 (14,6)	.400 (10,16)	30
<b>BPA06B</b>	6	.677 (17,2)	.500 (12,70)	25
<b>BPA07B</b>	7	.776 (19,7)	.600 (15,24)	20
<b>BPA08B</b>	8	.878 (22,3)	.700 (17,78)	20
<b>BPA09B</b>	9	.976 (24,8)	.800 (20,32)	15
<b>BPA10B</b>	10	1.075 (27,3)	.900 (22,86)	15
<b>BPA12B</b>	12	1.280 (32,5)	1.100 (27,94)	14

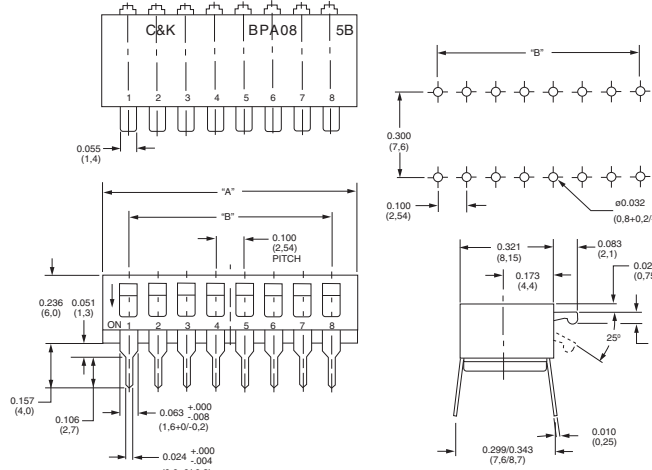
Schematic 

SPST

**NOTE:** Reverse throw available, contact C&K for P/N and quote.

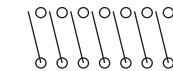


BPA08B



## Side Actuator – Surface Mount Terminals

ROHS PART NUMBER	NO. POS.	DIM. 'A'	DIM. 'B'	QUANTITY PER TUBE
<b>BPA01SB</b>	1	.176 (4,48)	N/A	100
<b>BPA02SB</b>	2	.276 (7,0)	.100 (2,54)	60
<b>BPA03SB</b>	3	.376 (9,6)	.200 (5,08)	45
<b>BPA04SB</b>	4	.476 (12,1)	.300 (7,62)	35
<b>BPA05SB</b>	5	.575 (14,6)	.400 (10,16)	30
<b>BPA06SB</b>	6	.677 (17,2)	.500 (12,70)	25
<b>BPA07SB</b>	7	.776 (19,7)	.600 (15,24)	20
<b>BPA08SB</b>	8	.878 (22,3)	.700 (17,78)	20
<b>BPA09SB</b>	9	.976 (24,8)	.800 (20,32)	15
<b>BPA10SB</b>	10	1.075 (27,3)	.900 (22,86)	15
<b>BPA12SB</b>	12	1.280 (32,5)	1.100 (27,94)	14

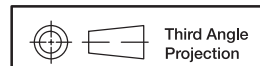
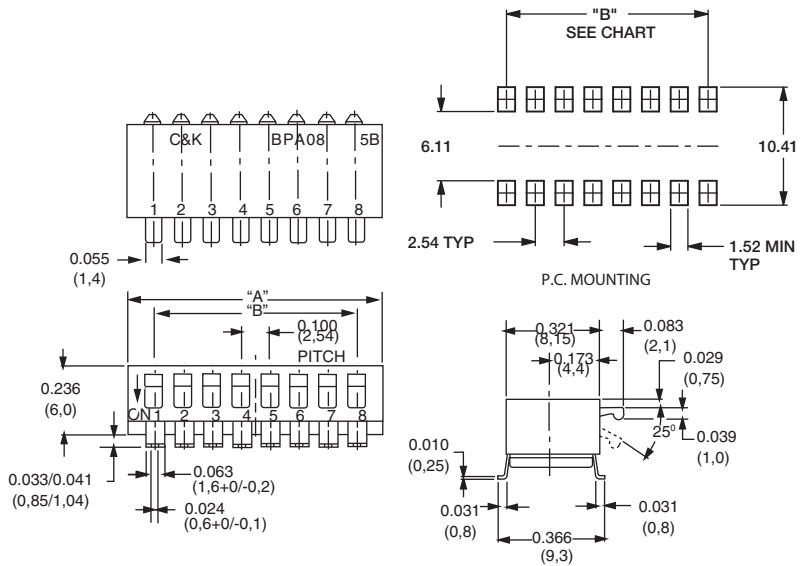
Schematic 

SPST

**NOTE:** Tape and reel packaging available by adding "R" to end of project number.



BPA08SB



Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

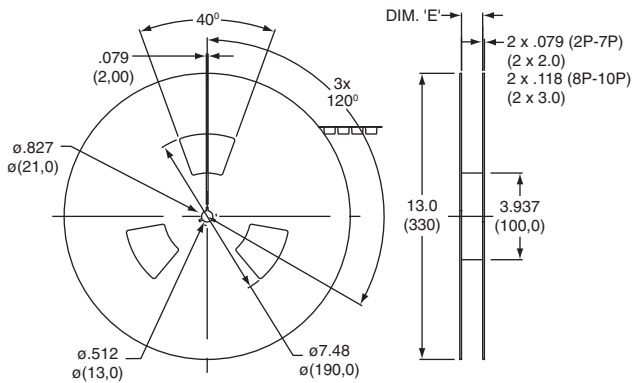


# BPA Series Side Actuated DIP Switches

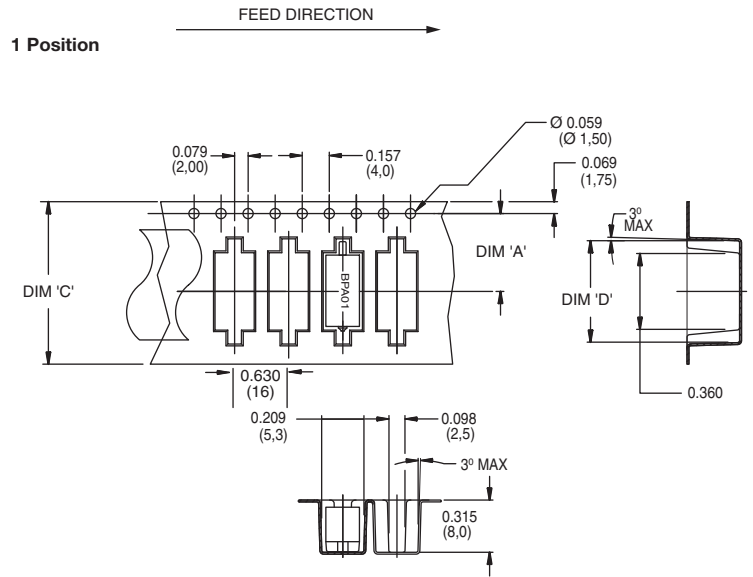
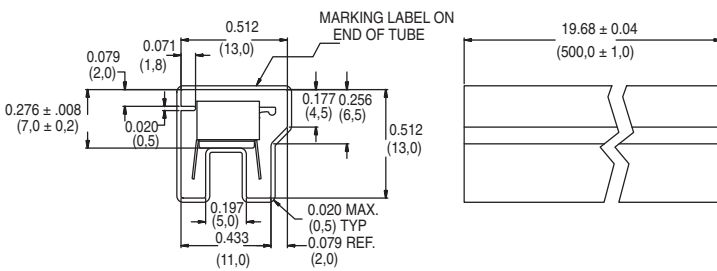
## Tape & Reel Packaging – Surface Mount Options Only

QTY/ REEL	POLES	DIM. 'A'	DIM. 'B'	DIM. 'C'	DIM. 'D'	DIM. 'E'
500	1	.453 (11,5)	—	.945 (24,0)	.530 (13,45)	.960 (24,4)
500	2	.453 (11,5)	—	.945 (24,0)	.311 (7,9)	.960 (24,4)
500	3	.453 (11,5)	—	.945 (24,0)	.409 (10,4)	.960 (24,4)
500	4	.453 (11,5)	—	.945 (24,0)	.508 (12,9)	.960 (24,4)
500	5	.453 (11,5)	—	.945 (24,0)	.606 (15,4)	.960 (24,4)
500	6	.559 (14,2)	1.118 (28,4)	1.260 (32,0)	.709 (18,0)	1.275 (32,4)
500	7	.559 (14,2)	1.118 (28,4)	1.260 (32,0)	.807 (20,5)	1.275 (32,4)
500	8	.795 (20,2)	1.590 (40,4)	1.732 (44,0)	.894 (22,7)	1.748 (44,4)
500	9	.795 (20,2)	1.590 (40,4)	1.732 (44,0)	1.004 (25,5)	1.748 (44,4)
500	10	.795 (20,2)	1.590 (40,4)	1.732 (44,0)	1.106 (28,1)	1.748 (44,4)
500	12	.795 (20,2)	1.590 (40,4)	1.732 (44,0)	1.311 (33,3)	1.748 (44,4)

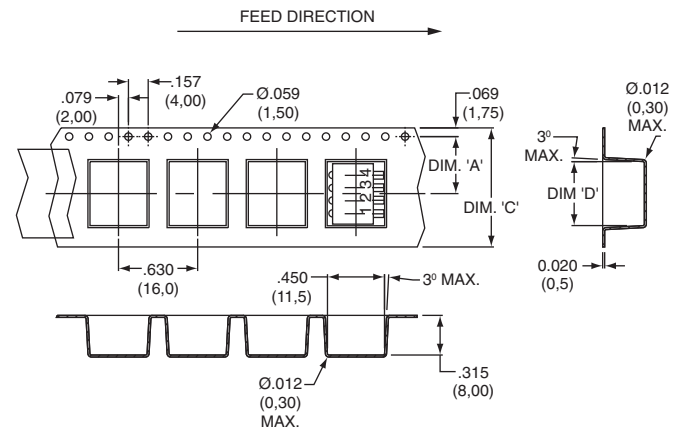
Note: For tape and reel packaging, add 'R' to end of part number.



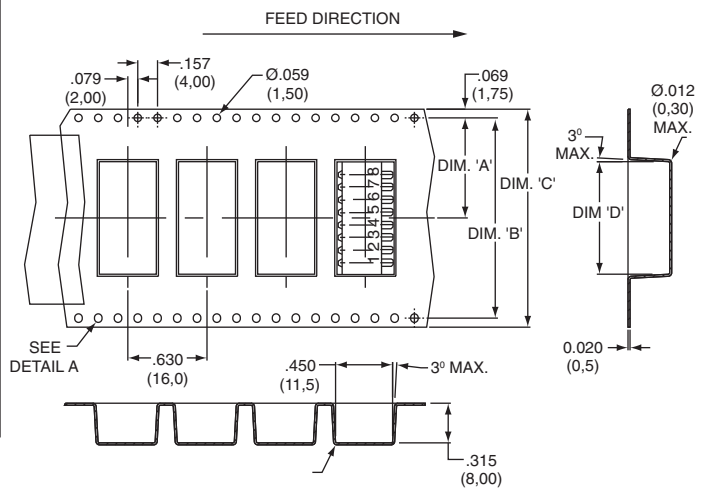
## Tube Packaging



### 2, 3, 4 & 5 Positions



### 6, 7, 8, 9, 10 & 12 Positions



Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change



# TDD Series Jumper Switch



H

DIP

## Features/Benefits

- **Bifurcated contact for increased electrical reliability**
- **Process sealed for surface mount soldering and washable processing**
- **RoHS compliant**

## Typical Applications

- **Hand-held electronic devices**
- **Portable computer and electronic devices**
- **Instrumentation and controls**
- **Inverters**



## Specifications

CONTACT RATING: 25 mA @ 24 V DC (switching) or 100 mA @ 50 V DC (steady state).  
 MECHANICAL AND ELECTRICAL LIFE: 200 cycles at rated loads.  
 CONTACT RESISTANCE: 100 mΩ max. initial. @ 2 V DC /10 mA  
 INSULATION RESISTANCE: 100 MΩ @ 100 V DC min.  
 DIELECTRIC STRENGTH: 300 V AC /minute  
 STORAGE TEMPERATURE: -40°C to 85°C.  
 OPERATING TEMPERATURE: -30°C to 85°C.  
 OPERATING FORCE: 4.9 N max.  
 SOLDERABILITY: Per MIL-STD-202F method 208D, or EIA RS-186E method 9 (1 hour steam aging).  
 PACKAGING: 1,000 pieces tape & reel

## Materials

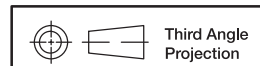
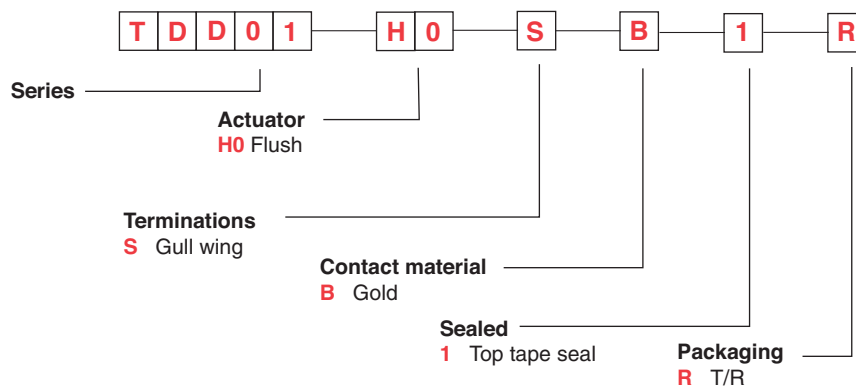
CASE AND COVER: PPS, color black (UL94V-0).  
 ACTUATOR: LCP (UL94-0)  
 CONTACTS: Copper alloy with gold plate over nickel plate  
 TERMINALS (INSERT MOLDED): Copper alloy gold flash over nickel plate  
 TAPE SEAL: Polyamide

**Note:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center. For Tin Lead options consult customer service center.

## How To Order

The Build-A Switch concept allows you to mix and match options to create the switch you need. Below is a complete listing of options shown in catalog. To order, simply select desired option from each category and place in the appropriate box.

All switches supplied in "OFF" position..



Third Angle Projection  
 Dimensions are shown: Inch (mm)  
 Specifications and dimensions subject to change

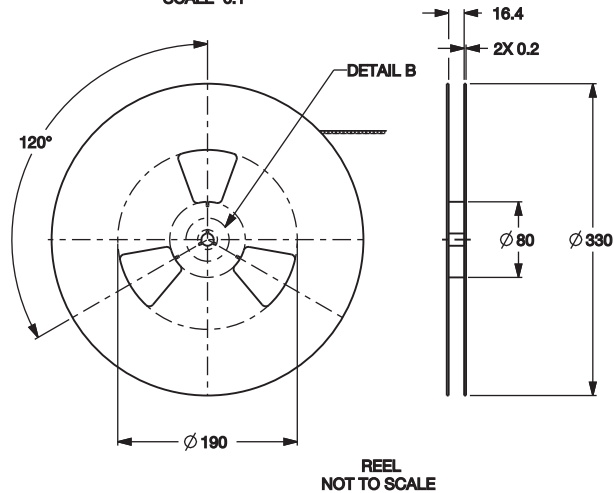
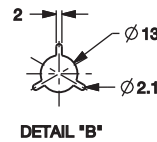
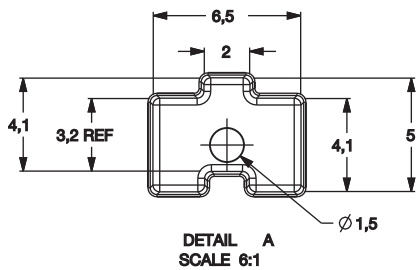
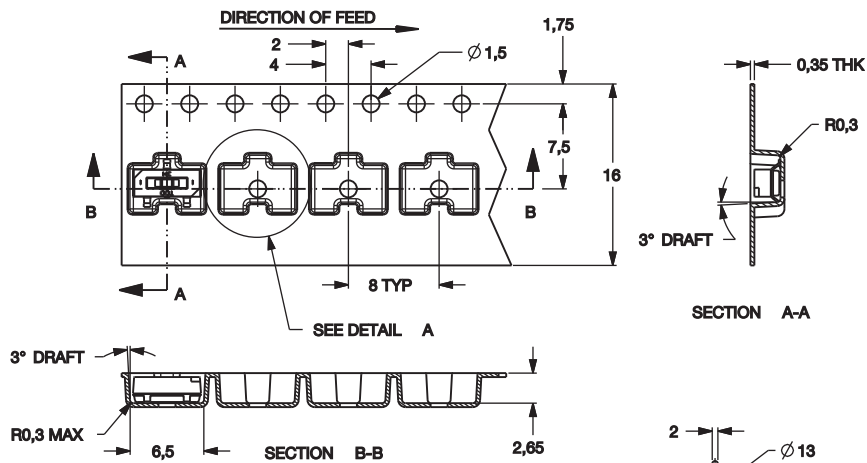
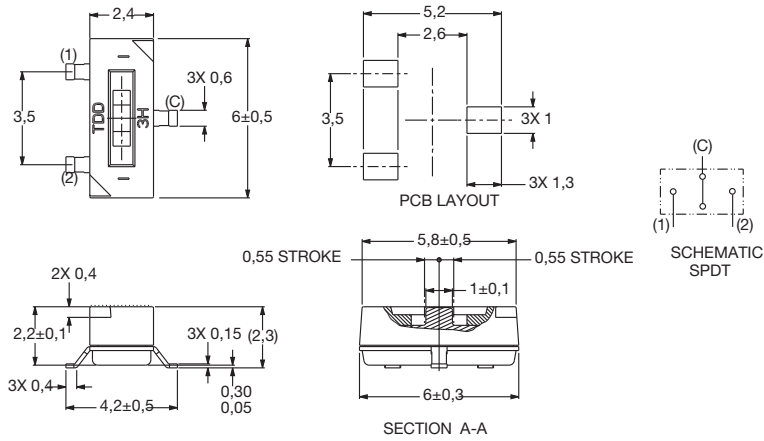


# TDD Series Jumper Switch



DIP

H



Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change



# SPA Series Single In-line Package Switches



H

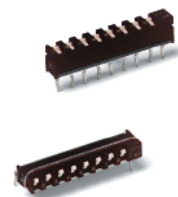
DIP

## Features/Benefits

- **Thin Single In-line Packaging saves PCB space**
- **Retention feature holds part to PCB prior to soldering**
- **Available in vertical or right angle models**
- **High pressure contact system does not require tape sealing**
- **RoHS compliant**

## Typical Applications

- **Address switch for industrial controls**
- **Logic switching for computers and peripherals**
- **Function controlling for numerous applications**



## Specifications

### CONTACT RATING:

Carry: 10 mA @ 5VDC

Switching: 0.1 mA @ 0.1m VDC min.

MECHANICAL AND ELECTRICAL LIFE: 1,000 cycles min.

CONTACT RESISTANCE: 50 mΩ max. @ 20 V DC 10mA.

INSULATION RESISTANCE: 100 MΩ min. @ 100 V DC.

DIELECTRIC STRENGTH: 1 minute @ 300 V AC.

CAPACITANCE: 5pF max. between adjacent terminals.

OPERATING TEMPERATURE: -30°C to 60°C.

STORAGE TEMPERATURE: -30°C to 80°C.

OPERATING FORCE: 5.9N max.

SOLDERABILITY: Dip & look solderability testing per C&K spec. #448. Unplated edges of terminals permitted.

PACKAGING: Switches supplied in rigid dispensing tubes in full-tube quantities only, this may affect order quantity. Numbers of switches per tube varies with model.

## Materials

BASE: PPS (UL94V-0).

COVER: PBT (UL94V-0).

ACTUATOR: 4/6 Nylon (UL 94V-0).

MOVABLE CONTACT: Beryllium copper alloy, gold over nickel plate.

FIXED CONTACT: Copper alloy, gold over nickel plate.

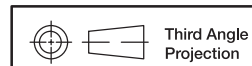
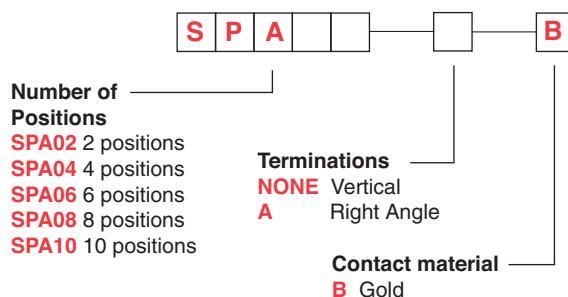
CLIP: Phosphor bronze wire. Phosphor bronze, Tin over nickel plate.

**Note:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## How To Order

The Build-A Switch concept allows you to mix and match options to create the switch you need. Below is a complete listing of options shown in catalog. To order, simply select desired option from each category and place in the appropriate box.

All switches supplied in "OFF" position.



Dimensions are shown: Inch (mm)

Specifications and dimensions subject to change

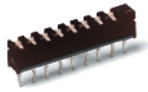


# SPA Series Single In-line Package Switches

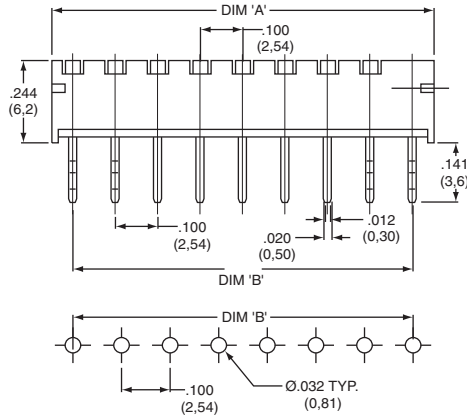
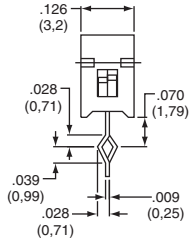
## Vertical



DIP H



SPA08B



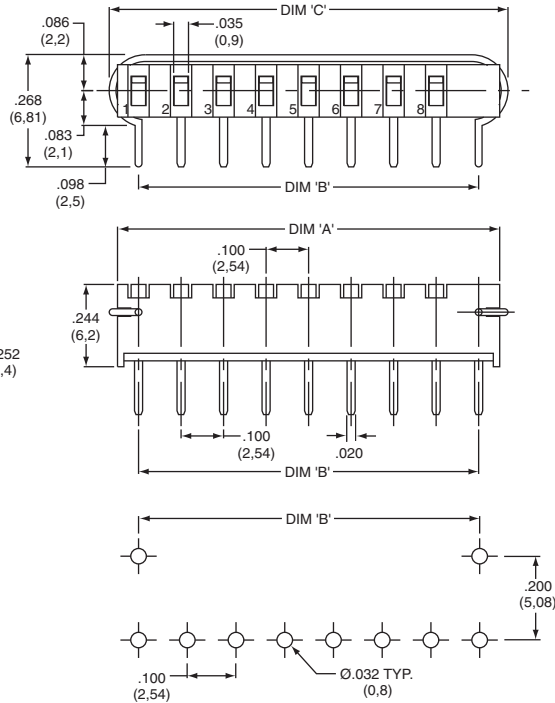
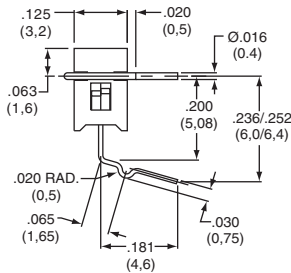
ROHS PART NUMBER	NO. POS.	DIM. 'A'	DIM. 'B'	QUANTITY PER TUBE
<b>SPA02B</b>	2	.342 (8,68)	.200 (5,08)	50
<b>SPA04B</b>	4	.542 (13,76)	.400 (10,16)	30
<b>SPA06B</b>	6	.742 (18,84)	.600 (15,24)	25
<b>SPA08B</b>	8	.942 (23,92)	.800 (20,32)	20
<b>SPA10B</b>	10	1.142 (29,00)	1.000 (25,40)	15

Schematic

SPST



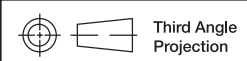
SPA08AB



ROHS PART #	NO. POS.	DIM. 'A'	DIM. 'B'	DIM. 'C'	QTY PER TUBE
<b>SPA02AB</b>	2	.342 (8,68)	.200 (5,08)	.339 (8,6)	50
<b>SPA04AB</b>	4	.542 (13,76)	.400 (10,16)	.540 (13,7)	30
<b>SPA06AB</b>	6	.742 (18,84)	.600 (15,24)	.736 (18,7)	25
<b>SPA08AB</b>	8	.942 (23,92)	.800 (20,32)	.937 (23,8)	20
<b>SPA10AB</b>	10	1.142 (29,00)	1.000 (25,40)	1.138 (28,9)	15

Schematic

SPST



Third Angle Projection

Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change



# RTE Series Low Profile Rotary DIP Switches

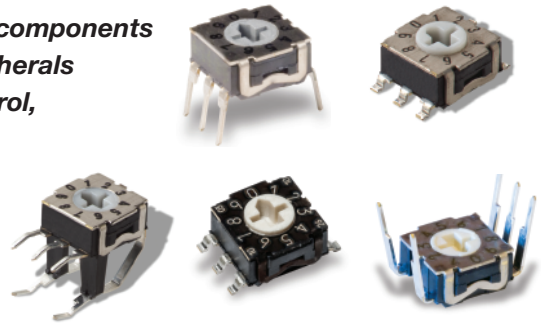


## Features/Benefits

- Thru-hole and surface mount models
- Miniature size with robust metal cover in black or silver nickel finish
- 4, 10, & 16 positions
- Large choice of codings
- Vertical or reverse versions
- RoHS compliant

## Typical Applications

- Timers, automation components
- Computer and peripherals
- Alarms, access control, smoke detectors
- Instrumentation



## Specifications

CONTACT RATING:  
Gold: 100 mA max. 10µ A min. 30 V DC max. 20 mVDC min.  
MECHANICAL LIFE: 20,000 actuations  
CONTACT RESISTANCE: 100 mΩ max. initial;  
150 mΩ after life  
INSULATION RESISTANCE: 10<sup>10</sup> Ω min. initial  
DIELECTRIC STRENGTH: 300 Vrms 1 mn  
OPERATING TEMPERATURE: -25°C to 85°C.  
STORAGE TEMPERATURE: -40°C to 85°C.  
PACKAGING: N or R terminations in tube.  
V termination in box. G termination in reel, 750 pieces per reel. G termination with flush actuator, 1250 pieces per reel.

## Materials

COVER: Brass, nickel plated (black or silver)  
BASE: PPS  
ACTUATOR: LCP  
MOVABLE CONTACTS: Bronze, gold plated.  
STATIONARY CONTACTS: Brass, gold plated.  
TERMINALS: See page I-28 to I-29  
O-RING: Silicone

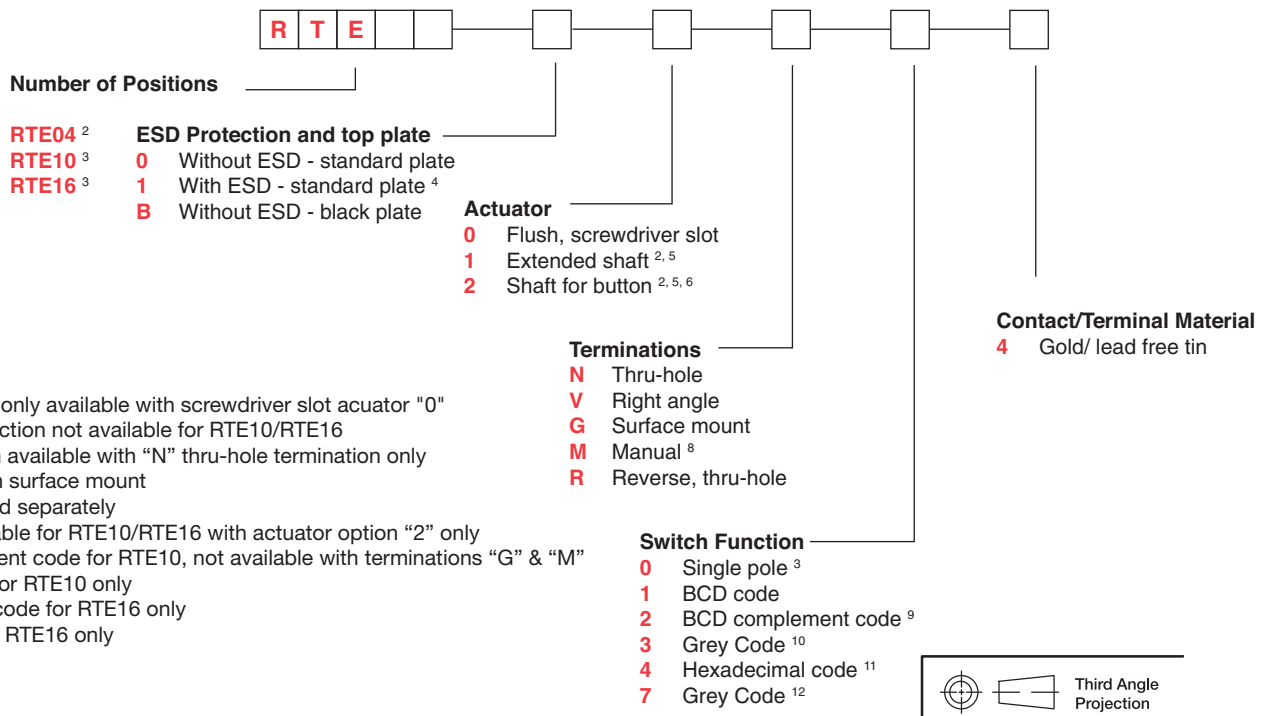
**Note:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

Solderability: Wave soldering 260°/10 s.  
SMT are reflow compatible according to C&K lead free specification for SMT components PS-LF-001.

## How To Order

The Build-A Switch concept allows you to mix and match options to create the switch you need. Below is a complete listing of options shown in catalog. To order, simply select desired option from each category and place in the appropriate box.

**NOTE:** Some of the configurations may not be available or could require some development.



Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

# RTE Series Low Profile Rotary DIP Switches

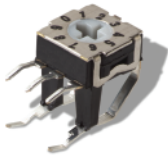
## SWITCHES WITH STANDARD OPTIONS

### PC Mount-Terminal Option N



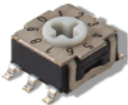
PART NUMBER WITHOUT ESD PIN	WITH ESD PIN	NO. POS.	FUNCTION	QTY PER TUBE
<b>RTE0400N04</b>	<b>RTE0410N04</b>	4	SP4T	65
<b>RTE1000N14</b>	<b>RTE1010N14</b>	10	BCD	65
<b>RTE1600N44</b>	<b>RTE1610N44</b>	16	HEXADECIMAL	65

### Right Angle Mount-Terminal Option V



PART NUMBER	NO. POS.	FUNCTION	QUANTITY
<b>RTE0400V04</b>	4	SP4T	150 per box
<b>RTE1000V14</b>	10	BCD	150 per box
<b>RTE1600V44</b>	16	HEXADECIMAL	150 per box

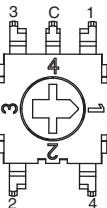
### Surface Mount-Terminal Option G



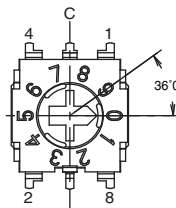
PART NUMBER	NO. POS.	FUNCTION	QUANTITY PER REEL
<b>RTE0400G04</b>	04	SP4T	1250
<b>RTE1000G14</b>	10	BCD	1250
<b>RTE1600G44</b>	16	HEXADECIMAL	1250

## NUMBER OF POSITIONS

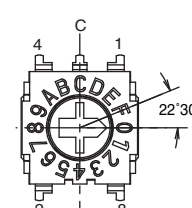
### RTE04 4 POSITION



### RTE10 10 POSITION



### RTE16 16 POSITION



Third Angle  
Projection



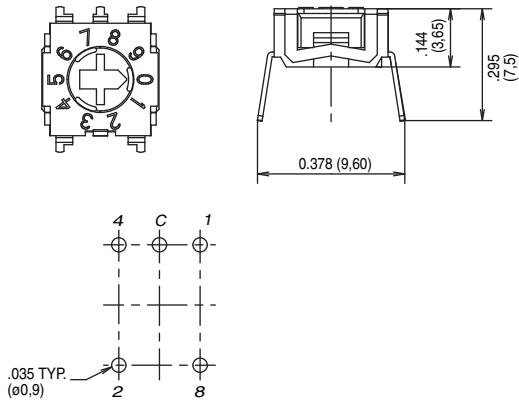
# RTE Series Low Profile Rotary DIP Switches

ESD PROTECTION 

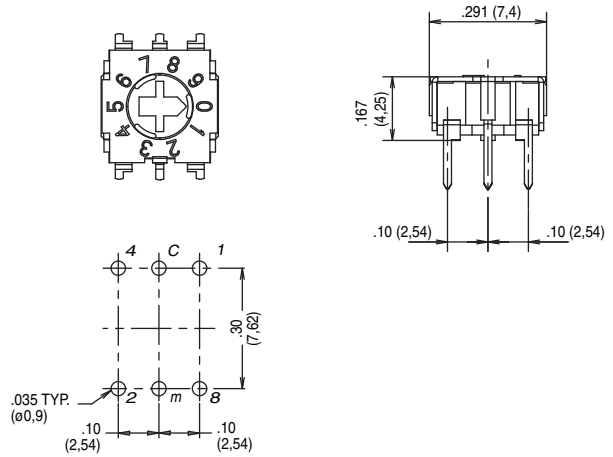


H  
DIP

0 WITHOUT

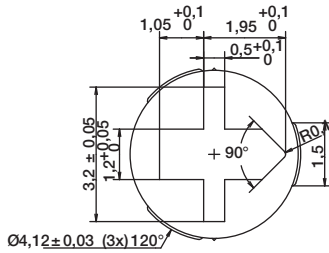


1 WITH

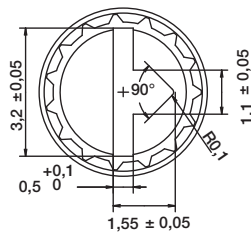


ACTUATOR 

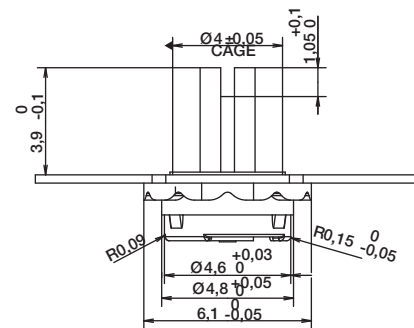
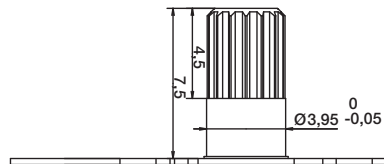
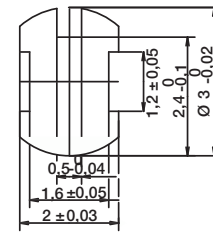
0 FLUSH, SCREWDRIVER SLOT



1 EXTENDED SHAFT  
(not available in surface mount)



2 SHAFT FOR BUTTON



Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

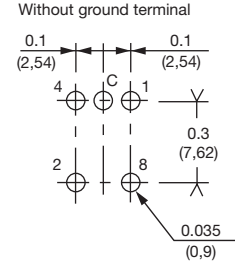
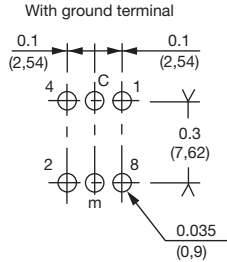
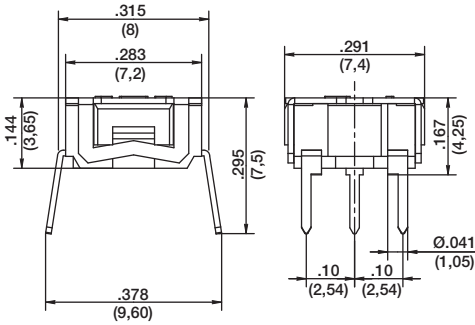
# RTE Series Low Profile Rotary DIP Switches

## TERMINATIONS

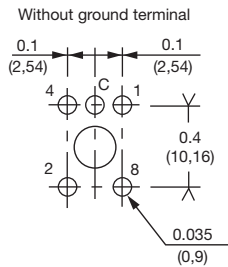
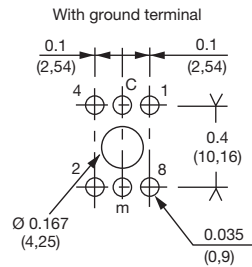
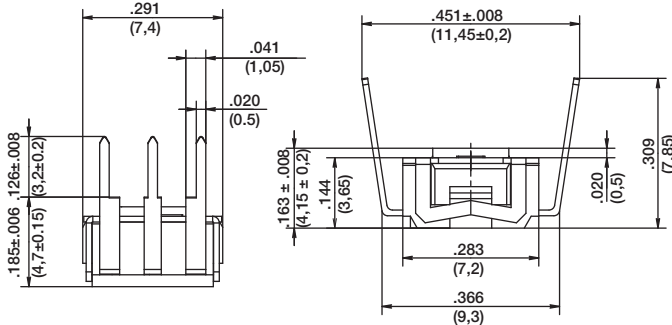


DIP H

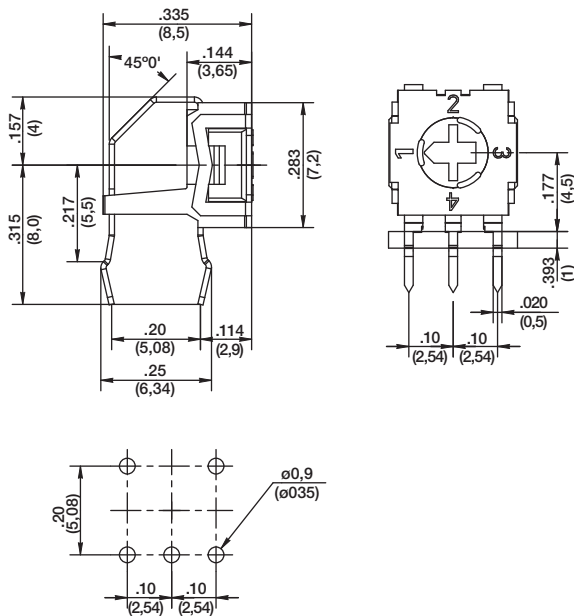
### N THRU-HOLE



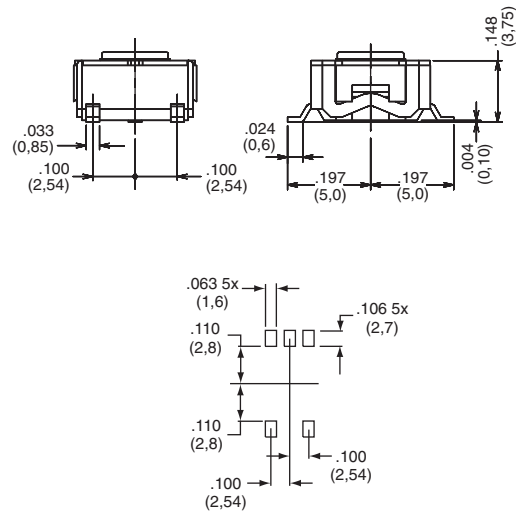
### R REVERSE, THRU-HOLE



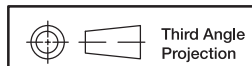
### V RIGHT ANGLE, THRU-HOLE



### G SURFACE MOUNT



PCB layout seen component side



Third Angle  
Projection

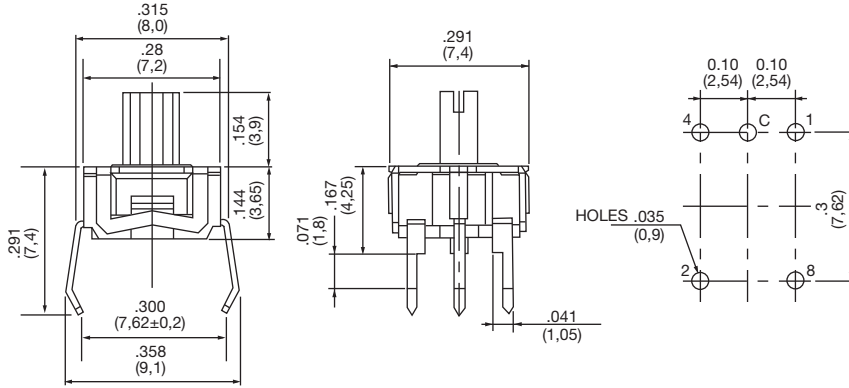


Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

# RTE Series Low Profile Rotary DIP Switches

## TERMINATIONS

**M** OPTION



H  
DIP

## SWITCH FUNCTION

**0** SINGLE POLE

POS.	1	2	3	4
C	●	●	●	●
1	●			
2		●		
3			●	
4				●

**1** BCD CODE

POS.	0	1	2	3	4	5	6	7	8	9
C	●	●	●	●	●	●	●	●	●	●
1		●				●				●
2			●				●			
4				●	●	●	●			
8								●	●	

**2** BCD COMPLEMENT CODE

POS.	0	1	2	3	4	5	6	7	8	9
C	●	●	●	●	●	●	●	●	●	●
1	●				●				●	
2	●	●				●				●
4	●	●	●							●
8	●	●	●	●						

Other codes available by request.

**3** GREY CODE (for RTE10 only)

POS.	0	1	2	3	4	5	6	7	8	9
C	●	●	●	●	●	●	●	●	●	●
1		●	●			●				●
2			●	●	●					
4				●	●	●	●	●	●	
8									●	●

**4** HEXADECIMAL CODE

POS.	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
C	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
1		●		●		●		●		●		●		●		●
2			●	●			●				●		●			●
4				●	●	●	●					●	●	●	●	
8								●	●	●	●	●	●	●	●	

**7** GREY CODE (for RTE04 only)

POS.	1	2	3	4
C	●	●	●	●
1	●			
2		●		
4			●	
8				●

(for RTE16 only)

POS.	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
C	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
1		●				●					●				●	
2			●	●			●					●	●			
4				●	●	●	●						●	●	●	
8								●	●	●	●	●	●	●	●	

## CONTACT MATERIAL

OPTION CODE	RoHS COMPLIANT	RoHS COMPATIBLE	CONTACT MATERIAL	TERMINAL PLATING
<b>4</b>	YES	YES	GOLD	LEAD FREE TIN



Third Angle Projection



Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

# RTE Series Low Profile Rotary DIP Switches

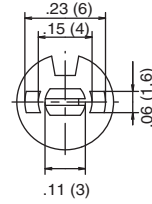
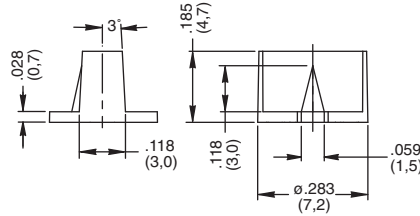
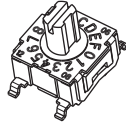


DIP H

## BUTTONS AVAILABLE

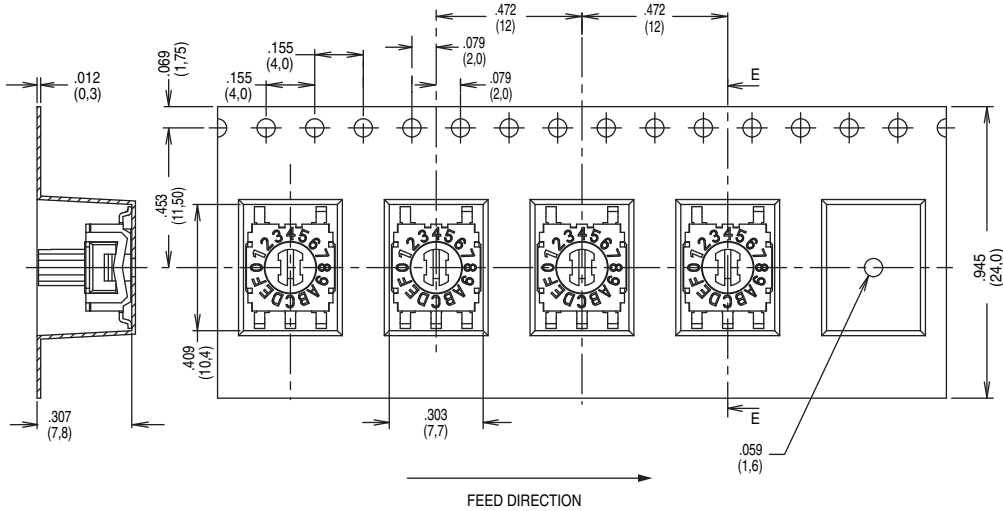
Buttons are ordered separately, shipped in bulk.

Part Number	Color
<b>BTN RTE 40</b>	Red
<b>BTN RTE 50</b>	Green
<b>BTN RTE 90</b>	Black

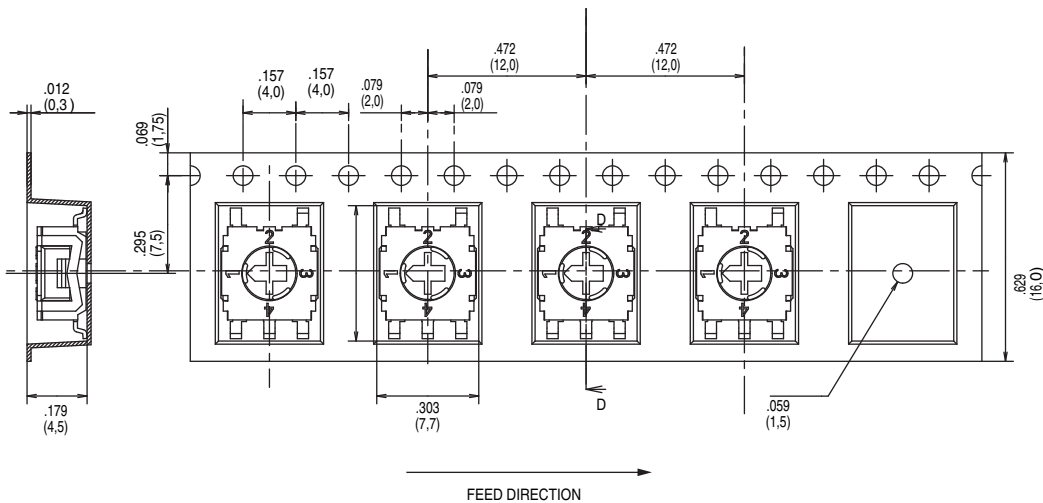


## TAPE AND REEL

Tape and reel for RTExx02Gxx  
750 pieces per reel.



Tape and reel for RTExx00Gxx  
1,250 pieces per reel.



Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change



# CD Series 8mm DIP Coded Rotary Switches

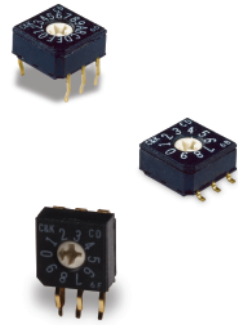


## Features/Benefits

- **Process sealed – withstands soldering and cleaning**
- **Thru-hole and surface mount models**
- **Compact size saves space – 36% smaller than traditional 10mm DIP**
- **Crisp, positive detent ensures actuation**
- **RoHS compliant**

## Typical Applications

- **Address switching applications**
- **Data storage devices**
- **Computer and peripherals**
- **Instrumentation**



## Specifications

CONTACT RATING: 0.4 VA max. @ 20 V AC or V DC max.  
 MECHANICAL AND ELECTRICAL LIFE:  
 CD10 & CD16: 20,000 actuations.  
 CD08: 12,000 actuations.  
 CONTACT RESISTANCE: 50 milliohms max. initial.  
 INSULATION RESISTANCE: 100 megohms min.  
 @ 250 V AC min.  
 DIELECTRIC STRENGTH: 250 V RMS min. @ sea level.  
 OPERATING TEMPERATURE: -25°C to 85°C.  
 STORAGE TEMPERATURE: -40°C to 85°C.  
 SOLDERABILITY: Per MIL-STD-202F method 208D or EIA RS-186E, method 9 (1 hour steam aging).  
 PACKAGING: Switches supplied in rigid tubes in full-tube quantities only: this may affect order quantity. Tube quantity is 60 pieces per tube. Surface mount switches available in tape & reel packaging per EIA 481A, 800 per reel, surface mount with “M0” actuator only.

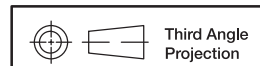
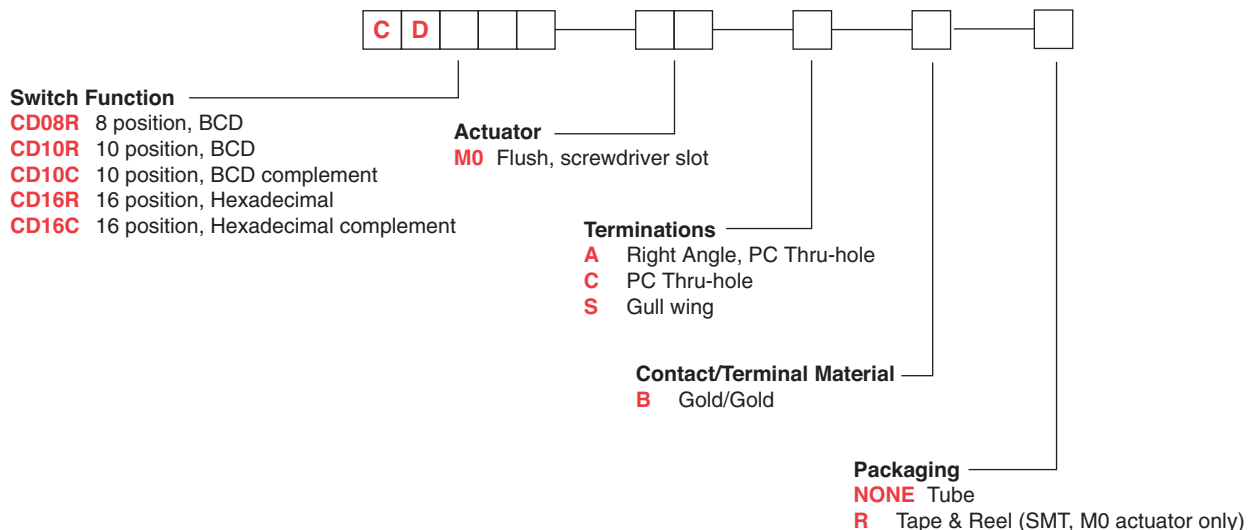
## Materials

COVER: PPS (UL94V-0), Color; Black.  
 BASE: PPS (UL94V-0), Color; Black  
 ACTUATOR: LCP (UL 94V-0), Color White (CDXXR)  
 Color Black (CDXXC)  
 Note: internal o-ring seal standard with all actuators.  
 MOVABLE CONTACTS: Copper alloy with gold plate over nickel plate.  
 STATIONARY CONTACTS: Copper alloy with gold plate over nickel plate.  
 TERMINALS: Copper alloy with gold plate over nickel plate.

**Note:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## How To Order

The Build-A Switch concept allows you to mix and match options to create the switch you need. Below is a complete listing of options shown in catalog. To order, simply select desired option from each category and place in the appropriate box.



Dimensions are shown: Inch (mm)  
 Specifications and dimensions subject to change



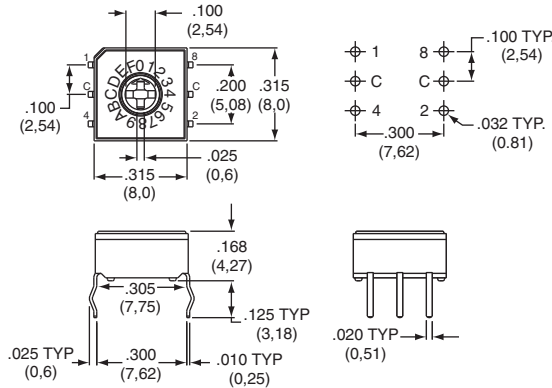
# CD Series 8mm DIP Coded Rotary Switches

## SWITCHES WITH STANDARD OPTIONS

### PC Mount



CD16RM0CB

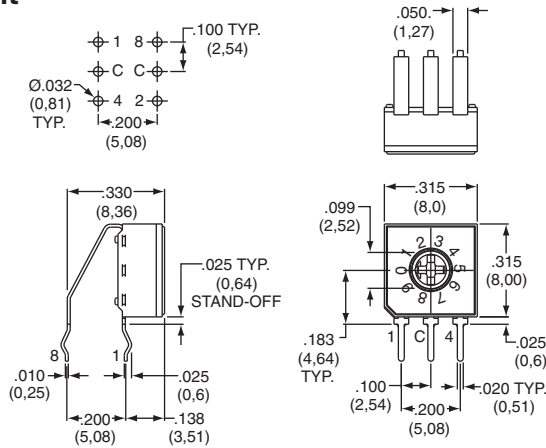


PART NUMBER	NO. POS.	QUANTITY PER TUBE
CD08RM0CB	8	60
CD10RM0CB	10	60
CD10CM0CB	10	60
CD16RM0CB	16	60
CD16CM0CB	16	60

### Right Angle Mount



CD10RM0AB

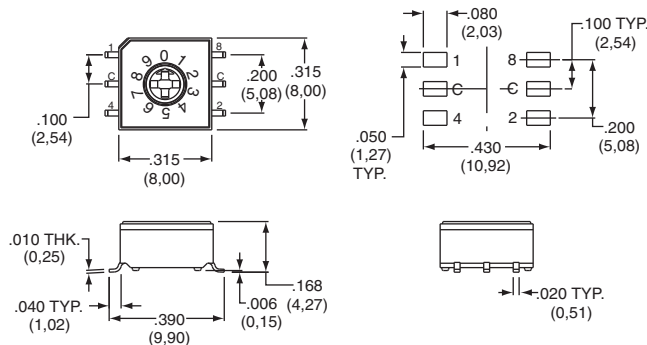


PART NUMBER	NO. POS.	QUANTITY PER TUBE
CD08RM0AB	8	60
CD10RM0AB	10	60
CD10CM0AB	10	60
CD16RM0AB	16	60
CD16CM0AB	16	60

### Surface Mount



CD10RM0SB



PART NUMBER	NO. POS.	QUANTITY PER TUBE
CD08RM0SB	8	60
CD10RM0SB	10	60
CD10CM0SB	10	60
CD16RM0SB	16	60
CD16CM0SB	16	60

Note: For tape and reel packaging, add 'R' to end of part number.



Third Angle Projection

Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change



# CD Series 8mm DIP Coded Rotary Switches

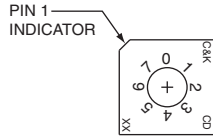


H  
DIP

## SWITCH FUNCTION

**CD08R** 8 POSITION, BCD  
ACTUATOR COLOR: WHITE

POS.	0	1	2	3	4	5	6	7
C	●	●	●	●	●	●	●	●
1		●	●		●	●		●
2			●	●		●	●	
4				●	●	●	●	
8								



Switches ship and to be solder processed in position "0"

**CD10R** 10 POSITION, BCD  
ACTUATOR COLOR: WHITE

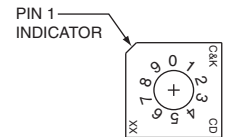
POS.	0	1	2	3	4	5	6	7	8	9
C	●	●	●	●	●	●	●	●	●	●
1		●	●		●	●		●	●	
2			●	●		●	●			
4				●	●	●	●			
8									●	●

Switches ship and to be solder processed in position "0"

**CD10C** 10 POSITION, BCD COMPLEMENT  
ACTUATOR COLOR: BLACK

POS.	0	1	2	3	4	5	6	7	8	9
C	●	●	●	●	●	●	●	●	●	●
1	●		●		●		●		●	
2	●			●		●		●		●
4	●	●	●	●					●	●
8									●	●

Switches ship and to be solder processed in position "7"



**CD16R** 16 POSITION, HEXADECIMAL  
ACTUATOR COLOR: WHITE

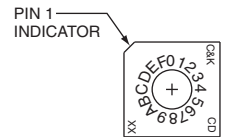
POS.	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
C	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
1		●		●		●		●		●		●		●		●
2			●	●		●		●		●		●		●		●
4				●	●	●		●		●		●		●		●
8																

Switches ship and to be solder processed in position "0"

**CD16C** 16 POSITION, HEXADECIMAL COMPLEMENT  
ACTUATOR COLOR: BLACK

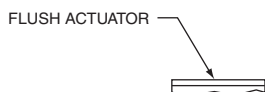
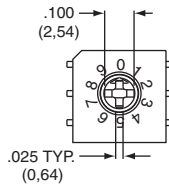
POS.	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
C	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
1	●		●		●		●		●		●		●		●	
2	●			●		●		●		●		●		●		●
4	●	●	●	●												
8																

Switches ship and to be solder processed in position "F"



## ACTUATOR

**M0** (STD.) FLUSH WITH SCREWDRIVER SLOT



NOTE: Designed for #0 Phillips screwdriver.



Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change



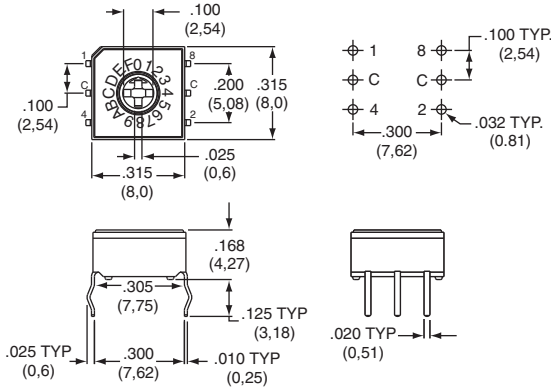
# CD Series 8mm DIP Coded Rotary Switches

## TERMINATIONS

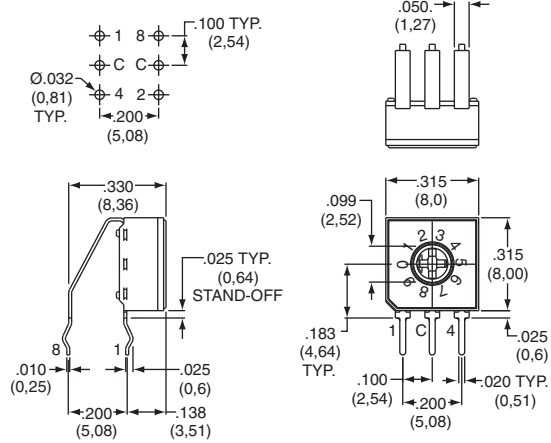
DIP H

DIP H

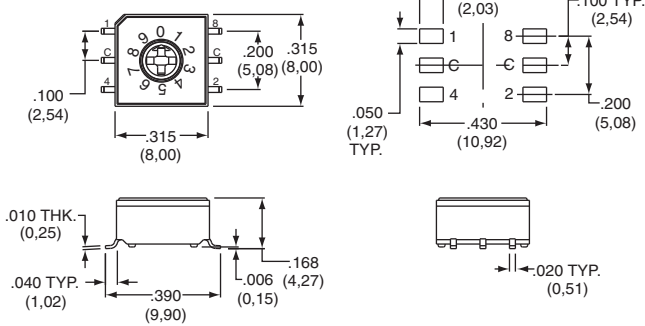
### C PC, THRU-HOLE



### A RIGHT ANGLE, PC THRU-HOLE



### S SURFACE MOUNT



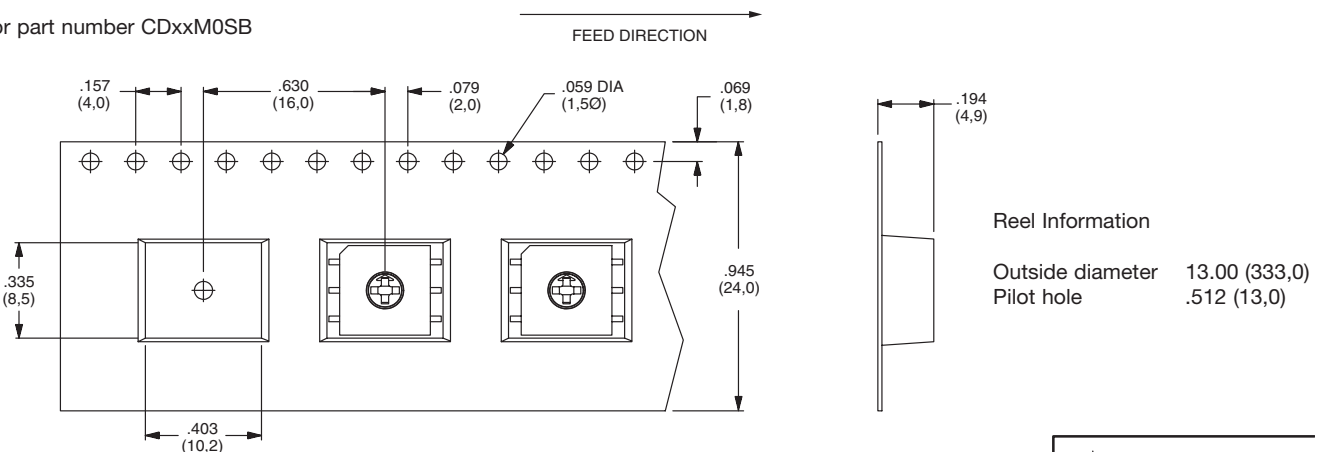
## CONTACT MATERIAL

OPTION CODE	RoHS COMPLIANT*	RoHS COMPATIBLE*	CONTACT MATERIAL	TERMINAL PLATING	RATING	
B	YES	YES	GOLD	GOLD	LOW LEVEL/DRY CIRCUIT	0.4 VC MAX. @ 20 V AC or DC MAX.

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

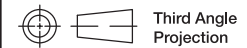
## TAPE & REEL

For part number CDxxM0SB



### Reel Information

Outside diameter 13.00 (333,0)  
Pilot hole .512 (13,0)



Third Angle Projection

Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change





# CRD Series 10mm DIP Coded Rotary Switches



H

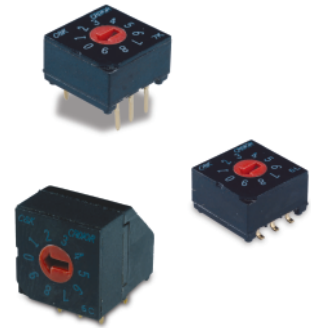
DIP

## Features/Benefits

- **Process sealed – withstands soldering and cleaning**
- **Thru-hole and surface mount models**
- **Crisp, positive detent ensures actuation**
- **Computer and peripherals**
- **RoHS compliant**

## Typical Applications

- **Address switching applications**
- **Data storage devices**
- **Computer and peripherals**
- **Instrumentation**



## Specifications

CONTACT RATING: 0.4 V AC, DC 20 V max.  
 ELECTRICAL LIFE: 20,000 steps min. @ 5 V DC 10 mA.  
 MECHANICAL LIFE: 30,000 steps min.  
 CONTACT RESISTANCE: 100 milliohms max. initial @ 2 V DC 10 mA.  
 INSULATION RESISTANCE: 1000 megohms min. @ 100 V DC  
 DIELECTRIC STRENGTH: 300 V AC for 1 minute.  
 OPERATING TEMPERATURE: -20°C to 85°C.  
 STORAGE TEMPERATURE: -40°C to 85°C.  
 OPERATING FORCE: 1000 grams max.  
 PACKAGING: Switches supplied in anti-static tubes in full quantities only. This may affect order quantity. Surface mount models with MO actuators available in tape and reel, 500 pieces per reel.

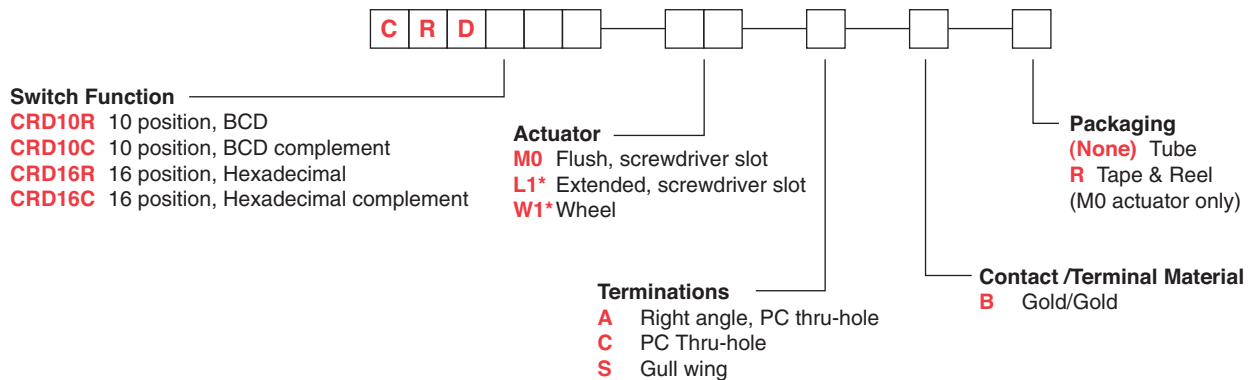
## Materials

COVER: PPS (black)  
 HOUSING: PPS (black)  
 ACTUATOR: PA 6T M0 actuator option; PBT L1 and W1 actuator option.  
 CONTACTS: Beryllium Copper with Gold over Nickel plate  
 TERMINALS: Brass with Gold Nickel plate.

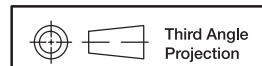
**Note:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## How To Order

The Build-A Switch concept allows you to mix and match options to create the switch you need. Below is a complete listing of options shown in catalog. To order, simply select desired option from each category and place in the appropriate box.



\* Note - L1 and W1 actuators are not available in termination "S"



Dimensions are shown: Inch (mm)  
 Specifications and dimensions subject to change



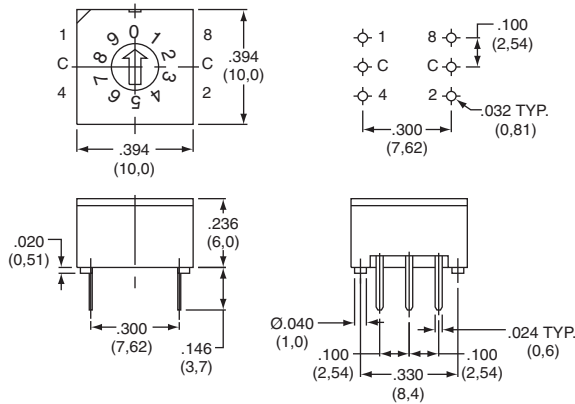
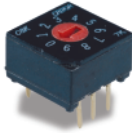
# CRD Series 10mm DIP Coded Rotary Switches

## SWITCHES WITH STANDARD OPTIONS



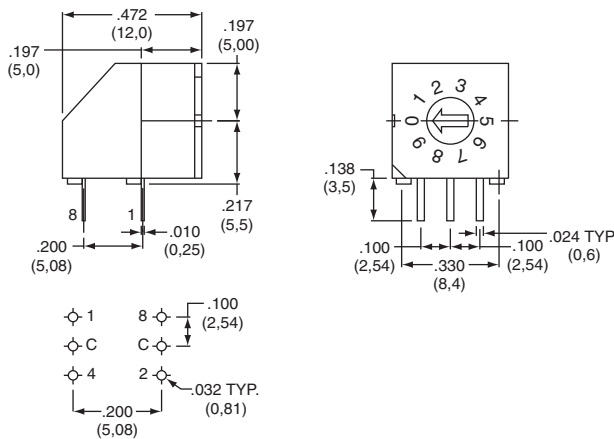
DIP

### PC Mount



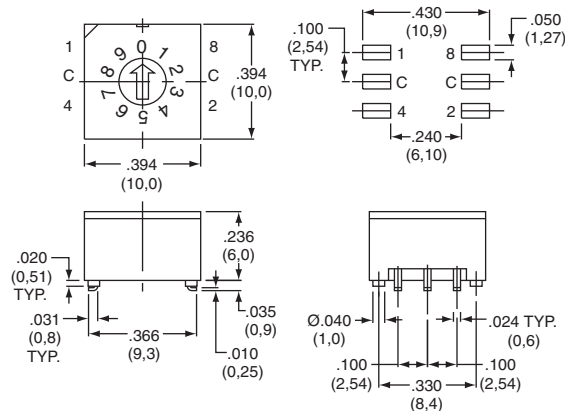
PART NUMBER	NO. POS.	QUANTITY PER TUBE
<b>CRD10RM0CB</b>	10	45
<b>CRD16RM0CB</b>	16	45

### Right Angle Mount

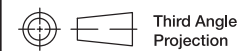


PART NUMBER	NO. POS.	QUANTITY PER TUBE
<b>CRD10RM0AB</b>	10	45
<b>CRD16RM0AB</b>	16	45

### Surface Mount



PART NUMBER	NO. POS.	QUANTITY PER TUBE
<b>CRD10RM0SB</b>	10	45
<b>CRD16RM0SB</b>	16	45



Third Angle Projection

Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change



# CRD Series 10mm DIP Coded Rotary Switches



H

DIP

## SWITCH FUNCTION

### CRD10R

10 POSITION, BCD  
ACTUATOR COLOR: RED

POS.	0	1	2	3	4	5	6	7	8	9
C	●	●	●	●	●	●	●	●	●	●
1		●		●		●		●		●
2			●		●		●		●	
4				●		●		●		●
8					●		●		●	●

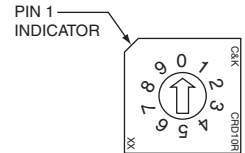
Switches ship and to be solder processed in position "0"

### CRD10C

10 POSITION, BCD COMPLEMENT  
ACTUATOR COLOR: ORANGE

POS.	0	1	2	3	4	5	6	7	8	9
C	●	●	●	●	●	●	●	●	●	●
1	●									
2	●	●								
4	●	●	●							
8	●	●	●	●						

Switches ship and to be solder processed in position "7"



### CRD16R

16 POSITION, HEXADECIMAL  
ACTUATOR COLOR: BLACK

POS.	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
C	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
1		●														
2			●		●		●		●		●		●		●	
4				●		●		●		●		●		●		●
8					●		●		●		●		●		●	●

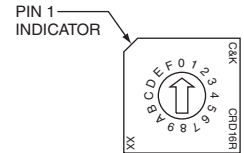
Switches ship and to be solder processed in position "0"

### CRD16C

16 POSITION, HEXADECIMAL COMPLEMENT  
ACTUATOR COLOR: WHITE

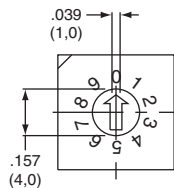
POS.	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
C	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
1	●															
2	●	●														
4	●	●	●													
8	●	●	●	●												

Switches ship and to be solder processed in position "F"



## ACTUATOR

(STD.) FLUSH WITH SCREWDRIVER SLOT

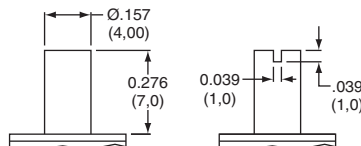
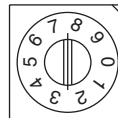


FLUSH ACTUATOR



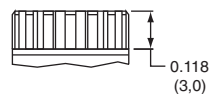
### L1\*

EXTENDED WITH SCREWDRIVER SLOT



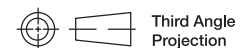
### W1\*

WHEEL



**NOTE:** Designed for #0 Phillips screwdriver.

\* L1 and W1 actuators are not available in termination "S"



Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change



# CRD Series 10mm DIP Coded Rotary Switches

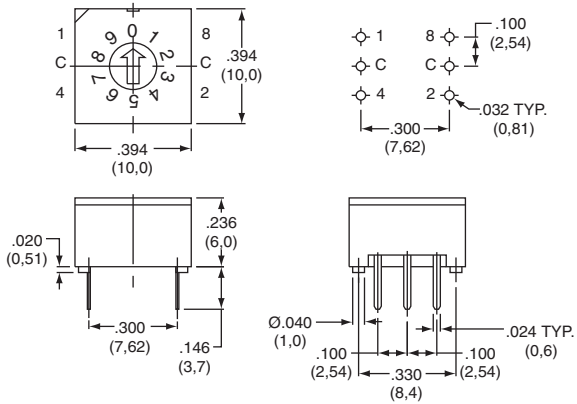


DIP H

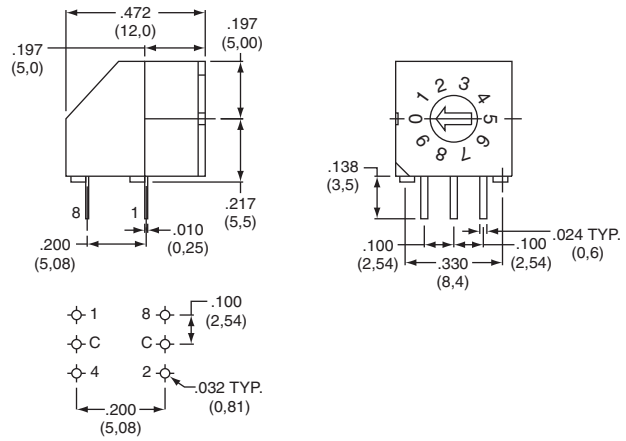
## TERMINATIONS



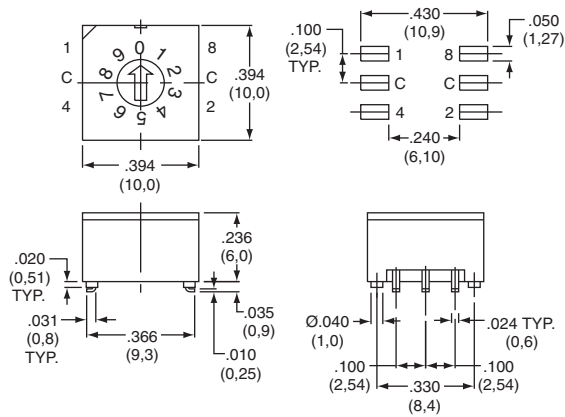
### C PC, THRU-HOLE



### A RIGHT ANGLE, PC THRU-HOLE



### S SURFACE MOUNT



M0

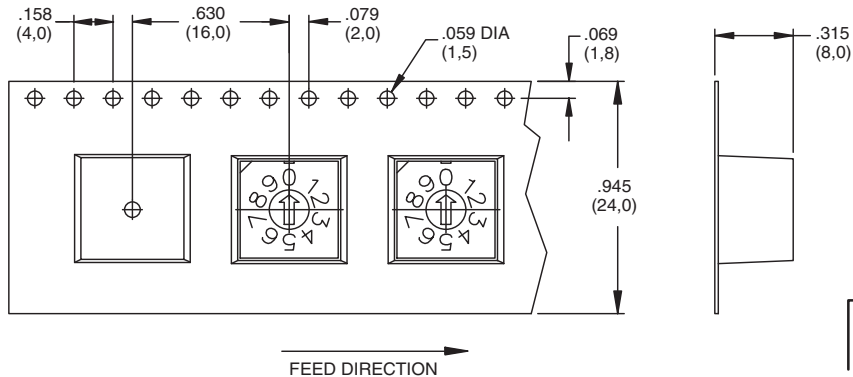
## CONTACT MATERIAL



OPTION CODE	RoHS COMPLIANT*	RoHS COMPATIBLE*	CONTACT MATERIAL	TERMINAL PLATING	RATING	
B	YES	YES	GOLD	GOLD	LOW LEVEL/DRY CIRCUIT	0.4 VC MAX. @ 20 V AC or DC MAX.

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

## TAPE & REEL











Third Angle Projection  
Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change



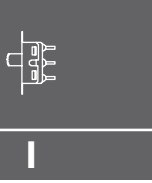
# Slides

## Product Selection Guide

Slide								
Series	ES	TS	1000	GS	L	LP	S	V
Switch Type	Tiny	Tiny	Miniature	Ultra-miniature	Miniature	Miniature	Power	Power & Line Voltage
Poles	1 & 2	1	1 & 2	1	1 & 2	1 & 2	1 & 2	1 & 2
Momentary			•		•		•	
Process Sealed	•			•				
Splashproof	•				•			
Screwdriver Slot					•		•	•
Housing Marking						•	•	
Tape & Reel	•			•				
Max. Current	0.4 VA	3 A	6 A	0.4 VA	4 A	11 A	15 A	10.1 A
Terminations								
Wire Wrap		•	•		•			
Quick Connect			•				•	•
Wire Lead					•	•	•	
Solder Lug			•		•	•	•	
PC	•	•	•	•	•		•	•
PCB Mount Options								
Thru-hole	•	•	•	•	•	•	•	•
Vertical	•	•	•	•	•	•	•	•
Right Angle	•	•	•	•			•	•
Surface Mount	•			•				
Panel Mount Options								
Snap-in						•	•	•
Mounting Ears			•		•		•	•
Right Angle	•	•	•	•			•	•
Page No.	I-4	I-8	I-11	I-17	I-19	I-25	I-28	I-33

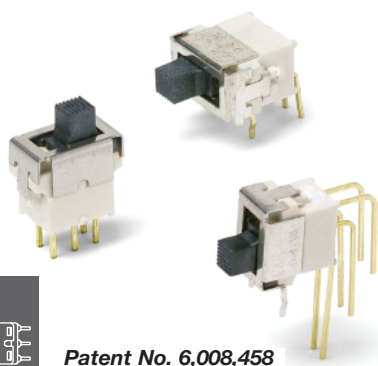
# Slides Product Selection Guide

Slide								
Series	OS	PCM	AYZ	JS	JSM	JSX	SK	SS
Switch Type	Miniature	Low Profile	Low Profile	Low Profile	Low Profile	Low Profile	Miniature	Miniature
Poles	1 & 2	1 & 2	1 & 2	1 & 2	1	1	1, 2 & 4	1, 2 & 4
Momentary					•	•		
Process Sealed								
Splashproof								
Screwdriver Slot								
Housing Marking								
Tape & Reel		•		•	•	•		
Max. Current	200mA	0.3A	100mA	0.3A	0.3A	0.3A	0.3A	0.3A
Terminations								
Wire Wrap								
Quick Connect								
Wire Lead								
Solder Lug	•							
PC	•	•	•	•			•	•
PCB Mount Options								
Thru-hole	•			•			•	•
Vertical	•			•				•
Right Angle	•			•			•	
Surface Mount		•	•	•	•	•	•	•
Panel Mount Options								
Snap-in								
Mounting Ears	•							•
Right Angle								
Page No.	I-37	I-44	I-46	I-49	I-55	I-60	I-61	I-91



Slide

# ES Series Sealed Tiny Slide Switches



Patent No. 6,008,458

## Features/Benefits

- Process compatible—internal o-ring and epoxy base seal
- Thru-hole & surface mount models
- Reliable contact design ensures long electrical life
- Robust actuator for easy actuation
- RoHS compliant

## Typical Applications

- Computer peripherals & network products
- Test & measurement equipment
- Telephone & cable modems

Slide

## Specifications

CONTACT RATING: 0.4 VA max. @ 20 V AC or DC max.  
 MECHANICAL & ELECTRICAL LIFE: 40,000 make-and-break cycles at full load.  
 CONTACT RESISTANCE: 50 m Ω max. initial @ 2-4 V DC, 100 mA.  
 INSULATION RESISTANCE: 10<sup>9</sup> Ω min.  
 DIELECTRIC STRENGTH: 500 Vrms min.  
 OPERATING TEMPERATURE: -30°C to 85°C.  
 SOLDERABILITY: Per MIL-STD-202F method 208D, or EIA RS-186E method 9.  
 DEGREE OF PROTECTION: IP57; Protection against harmful dust deposit, full-scale voltage protection, temporary immersion.  
 ESD ENDURANCE: 8kv min. (EIA 545).  
 PACKAGING: Thru-hole switches supplied in anti-static trays. Surface mount switches available in tape and reel packaging.

## Materials

HOUSING & BASE: Nylon (UL 94V-0).  
 ACTUATOR: LCP (UL 94V-0) black, standard.  
 SURFACE PLATE: Stainless steel with tin plate.  
 MOVABLE CONTACT: Bronze with gold plate over nickel plate.  
 STATIONARY CONTACTS: Copper alloy, with gold plate over nickel plate.  
 TERMINALS: Copper alloy, with gold over nickel plate. All terminals insert molded.  
 BASE & TERMINAL SEAL: Epoxy.

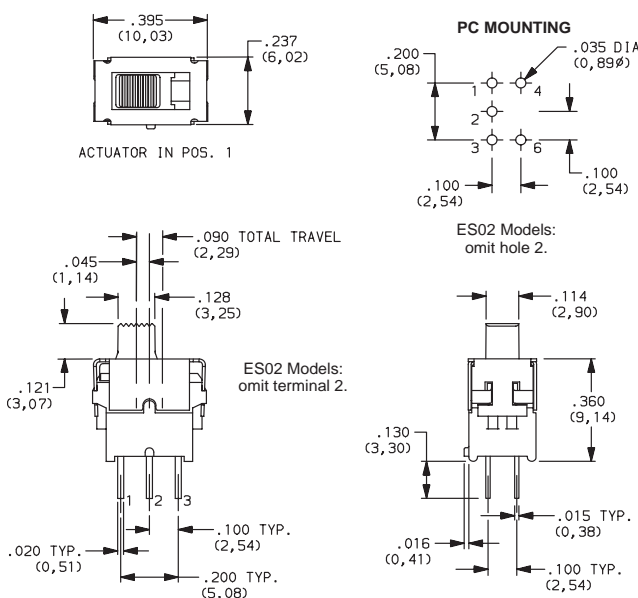
**NOTE:** All models RoHS compliant and compatible with all options.

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## How To Order

Complete part numbers for ES Series Sealed Tiny Slide Switches are shown on pages I-5 through I-7. These unique tiny slide switches are process compatible. An internal o-ring and epoxy base seal protects the switch from wave and reflow soldering, as well as cleaning processes.

PART NUMBER	SWITCH FUNCTION		
	POS. 1	POS. 2	POS. 3
<b>ES01MCBE</b>	ON	NONE	ON
<b>ES03MCBE</b>	ON	OFF	ON
CONN. TERMINALS	2-3	OPEN	2-1
SCHEMATIC			
SPDT			
<b>ES02MCBE</b>	OFF	NONE	ON
CONN. TERMINALS	OPEN	N/A	3-1
SCHEMATIC			
SPST			



ES01MCBE  
SPDT



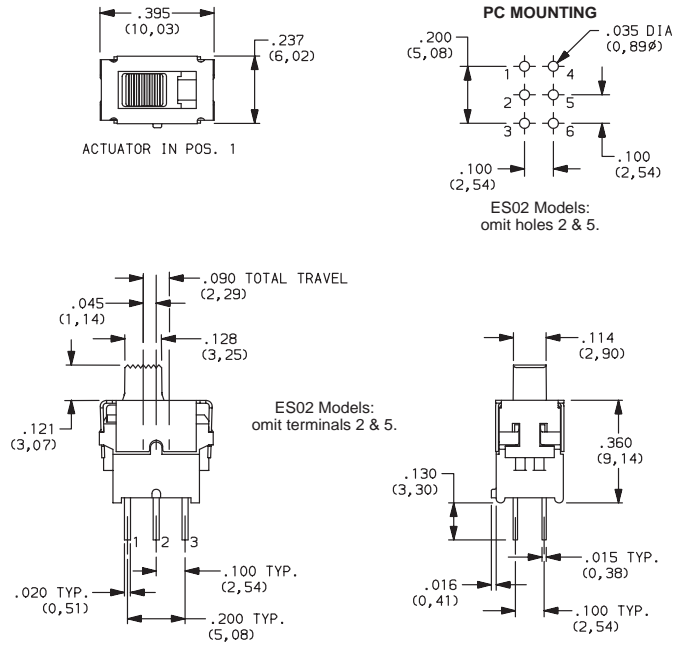
Dimensions are shown: Inch (mm)  
 Specifications and dimensions subject to change



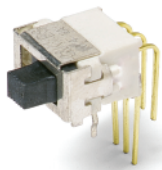
# ES Series Sealed Tiny Slide Switches



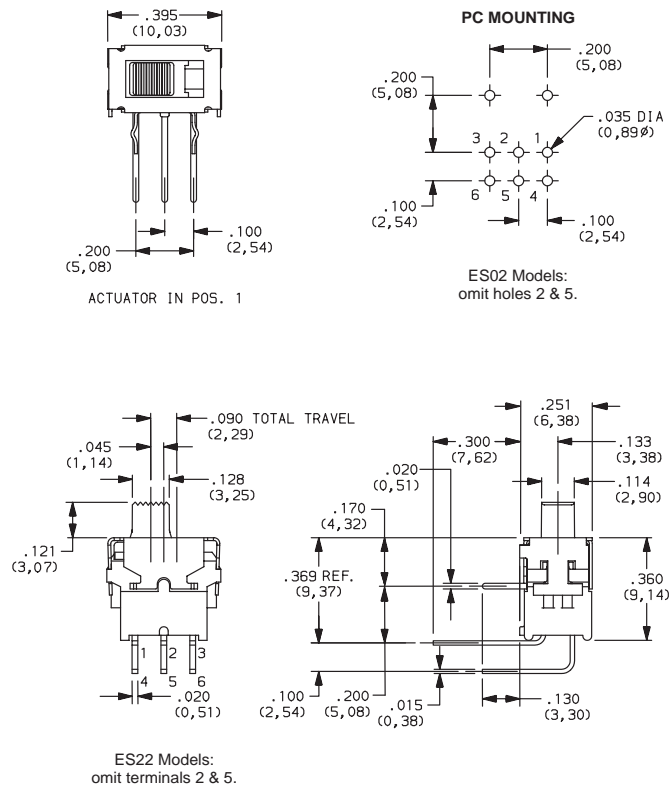
ES21MCBE  
DPDT



PART NUMBER	SWITCH FUNCTION		
	POS. 1	POS. 3	POS. 2
ES21MCBE	ON	NONE	ON
ES23MCBE	ON	OFF	ON
CONN. TERMINALS	2-3, 5-6	OPEN	2-1, 5-4
SCHEMATIC			
DPDT			
ES22MCBE	OFF	NONE	ON
CONN. TERMINALS	OPEN	N/A	3-1, 6-4
SCHEMATIC			
DPST			



ES21MABE  
DPDT

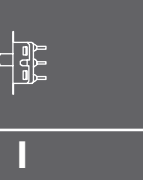


PART NUMBER	SWITCH FUNCTION		
	POS. 1	POS. 2	POS. 3
ES21MABE	ON	NONE	ON
ES23MABE	ON	OFF	ON
CONN. TERMINALS	2-3, 5-6	OPEN	2-1, 5-4
SCHEMATIC			
DPDT			
ES22MABE	OFF	NONE	ON
CONN. TERMINALS	OPEN	N/A	3-1
SCHEMATIC			
DPST			



Third Angle  
Projection  
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

www.ck-components.com



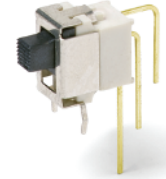
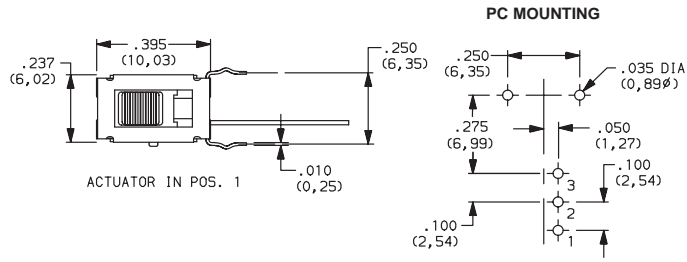
Slide



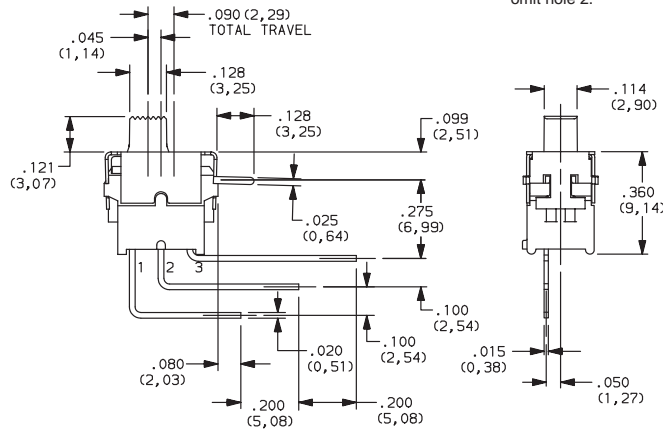
# ES Series Sealed Tiny Slide Switches

Slide

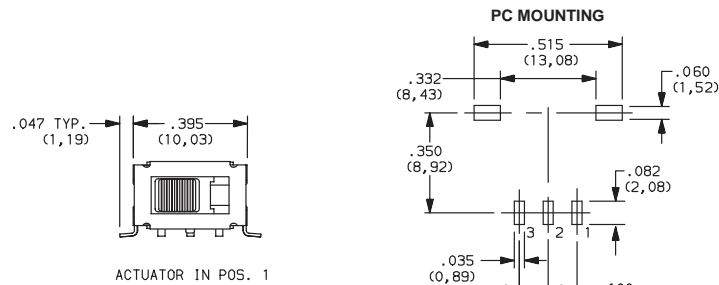
PART NUMBER	SWITCH FUNCTION		
	POS. 1	POS. 2	POS. 3
<b>ES01MAVBE</b>	ON	NONE	ON
<b>ES03MAVBE</b>	ON	OFF	ON
CONN. TERMINALS	2-3	OPEN	2-1
SCHEMATIC			



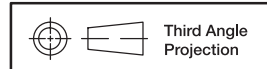
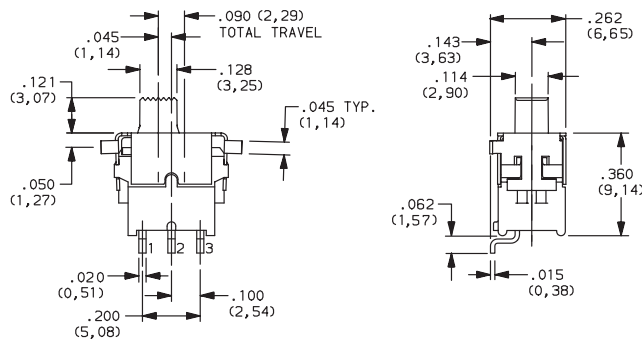
**ES01MAVBE  
SPDT**



PART NUMBER	SWITCH FUNCTION		
	POS. 1	POS. 2	POS. 3
<b>ES01MSABE</b>	ON	NONE	ON
<b>ES03MSABE</b>	ON	OFF	ON
CONN. TERMINALS	2-3	OPEN	2-1
SCHEMATIC			
SPDT			
<b>ES02MSABE</b>	OFF	NONE	ON
CONN. TERMINALS	OPEN	N/A	3-1
SCHEMATIC			
SPST			



**ES01MSABE  
Horizontal Actuation  
SPDT**



Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

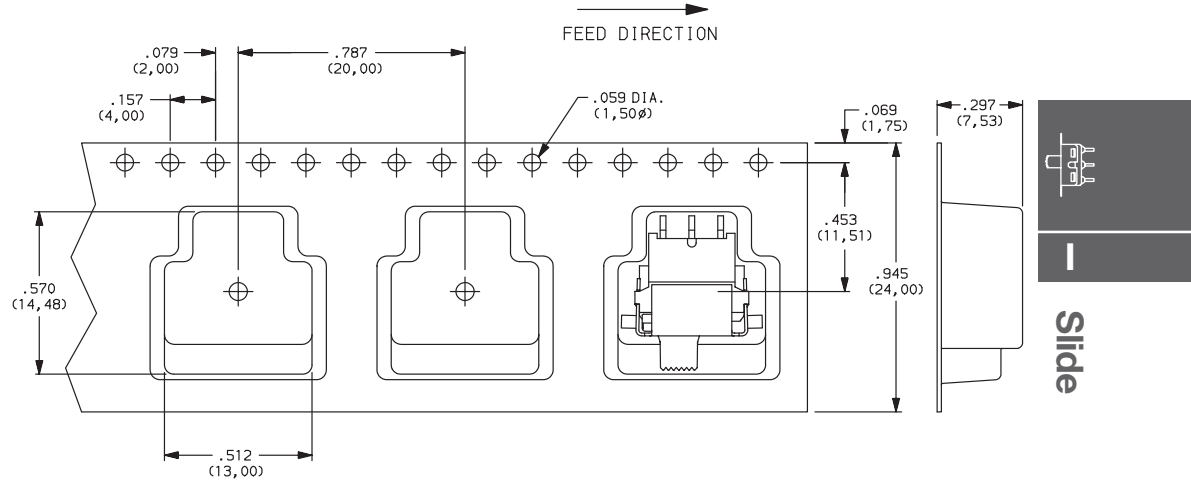


# ES Series Sealed Tiny Slide Switches

## TAPE & REEL

For part numbers ESXXMSABE

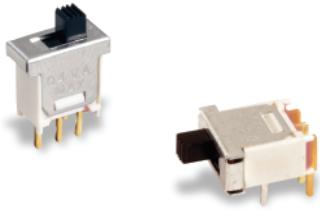
REEL INFORMATION	
OUTSIDE DIAMETER	13.00 (330,0)
PILOT HOLE	.512 (13,0)
QUANTITY PER REEL	300



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

[www.ck-components.com](http://www.ck-components.com)

# TS Series Tiny Slide Switches



Models Available

## Features/Benefits

- **Reliable contact design ensures long electrical life**
- **Ratings up to 3 AMPS**
- **Epoxy terminal-seal compatible with bottom wash cleaning**
- **RoHS compliant**

## Typical Applications

- **Test & measurement equipment**
- **Computers & peripherals**
- **Telecommunications & networking equipment**

## Specifications

**CONTACT RATING:** B contact material: 0.4 VA max. @ 20 V AC or DC max. Q contact material (TS01 Model): 3 AMPS @ 120 V AC or 28 V DC; (TS02, TS03 Models): 1 AMP @ 120 V AC or 28 V DC. See page I-10 for additional ratings.

### ELECTRICAL LIFE:

TS01 MODELS: 60,000 make-and-break cycles at full load.  
TS02, TS03 MODELS: 30,000 cycles.

**CONTACT RESISTANCE:** Below 20 m  $\Omega$  typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

**INSULATION RESISTANCE:** 10<sup>9</sup>  $\Omega$  min.

**DIELECTRIC STRENGTH:** 1,000 Vrms min. @ sea level.

**OPERATING TEMPERATURE:** -30°C to 85°C

**SOLDERABILITY:** Per MIL-STD-202F method 208D, or EIA RS-186E method 9 (1 hour steam aging).

## Materials

**CASE:** Glass filled nylon 4/6, flame retardant, heat stabilized.

**ACTUATOR:** Nylon, black standard.

**HOUSING:** Stainless steel or stainless steel, nickel plated.

**END CONTACTS:** B contact material: Copper alloy, with gold plate over nickel plate. Q contact material: Coin silver, silver plated. See page I-10 for additional contact materials.

**CENTER CONTACT & ALL TERMINALS:** B contact material: Copper alloy, with gold plate over nickel plate. Q contact material: Copper alloy, silver plated. See page I-10 for additional contact materials.

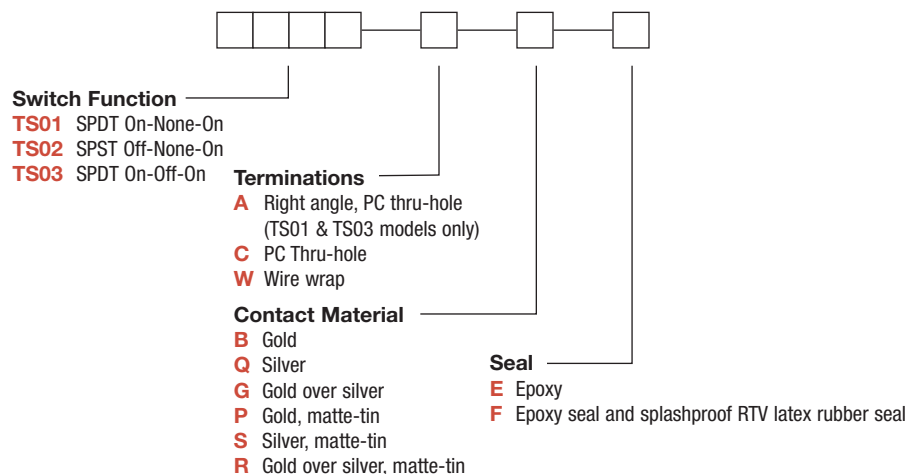
**TERMINAL SEAL:** Epoxy. Refer to Soldering and Cleaning in Technical Data chapter.

**NOTE:** Any models supplied with Q, B, G, P, S or R contact material are RoHS compliant.

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages I-9 and I-10. For additional options not shown in catalog, consult Customer Service Center. All models have epoxy terminal seal and are compatible with all "bottom-wash" PCB cleaning methods.



Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

# TS Series Tiny Slide Switches

## SWITCH FUNCTION

NO. POLES	MODEL NO.	SWITCH FUNCTION			CONNECTED TERMINALS			SCHEMATIC
		POS. 1	POS. 2	POS. 3	POS. 1	POS. 2	POS. 3	
SP	<b>TS01</b>	ON	NONE	ON	1-2	OPEN	2-3	
	<b>TS03</b>	ON	OFF	ON				SPDT
	<b>TS02</b>	OFF	NONE	ON	OPEN	N/A	3-1	SPST

**SPDT**

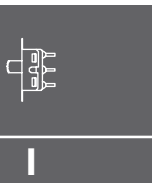
Part number shown: TS01CBE

TS02 models: Omit center terminal

Terminal Nos. For Reference Only

All models with all options when ordered with G, Q, R or S contact material.

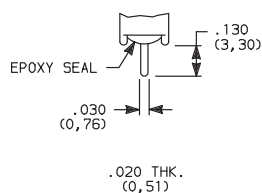
TS02 model not available with A terminations.



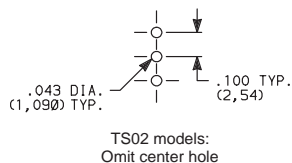
Slide

## TERMINATIONS

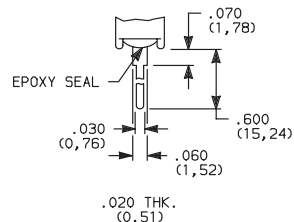
### C PC THRU-HOLE



### PC MOUNTING



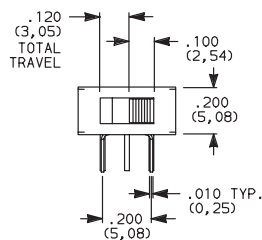
### W WIRE WRAP



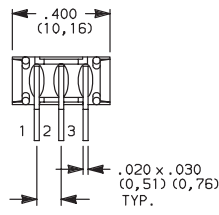
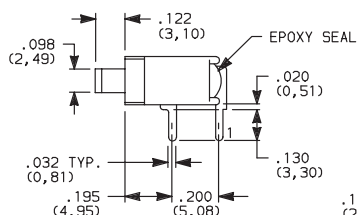
## SPDT and SPST

## SPDT and SPST

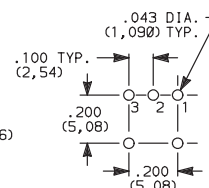
### A RIGHT ANGLE, PC THRU-HOLE



Actuator shown in pos. 1



### PC MOUNTING



TS01ABE  
Horizontal Actuation  
SPDT

Not available with TS02 model.



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



# TS Series Tiny Slide Switches

## CONTACT MATERIAL

OPTION CODE	CONTACT MATERIAL	TERMINAL PLATING	RATINGS	
<b>B</b>	GOLD <sup>1</sup>	GOLD <sup>3</sup>	LOW LEVEL/DRY CIRCUIT	0.4 VA MAX. @ 20 V AC OR DC MAX.
<b>P</b>		MATTE-TIN <sup>6</sup>		
<b>Q</b>	SILVER <sup>4,5</sup>	SILVER <sup>5</sup>	POWER	TS01 MODELS: 3 AMPS @ 120 V AC OR 28 V DC. TS02, TS03 MODELS: 1 AMP @ 120 V AC OR 28 V DC.
<b>S</b>		MATTE-TIN <sup>6</sup>		
<b>G</b>	GOLD OVER SILVER <sup>2,3</sup>	GOLD <sup>3</sup>	LOW LEVEL/DRY CIRCUIT OR POWER	TS01 MODELS: 0.4 VA MAX @20 V AC OR DC MAX. OR 3 AMPS @ 120 V AC OR 28 V DC. TS02, TS03 MODELS: 0.4 VA MAX @ 20 V AC OR DC MAX. OR 1 AMP @ 120 V AC OR 28 V DC.
<b>R</b>		MATTE-TIN <sup>6</sup>		

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

<sup>1</sup> CONTACTS & TERMINALS: Copper alloy, with gold plate over nickel plate.


<sup>2</sup> END CONTACTS: Coin silver, with gold plate over nickel plate.

<sup>3</sup> CENTER CONTACTS & ALL TERMINALS: Copper alloy, with gold plate over nickel plate.

<sup>4</sup> END CONTACTS: Coin silver, silver plated.

<sup>5</sup> CENTER CONTACT & ALL TERMINALS: Copper alloy, silver plated.

<sup>6</sup> TERMINALS: Copper alloy, with matte-tin over nickel plate

All models  with all options when ordered with G, S or R contact material.

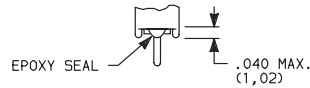
B contact material standard with A and W terminations.

Q contact material standard with C terminations.

**NOTE:** Any models supplied with Q, B, G, P, S or R contact material are RoHS compliant.

## SEAL

**E** EPOXY SEAL



**F** EPOXY SEAL AND SPLASHPROOF RTV LATEX RUBBER SEAL



**NOTE:** RTV latex rubber seal peels off easily after installation. Epoxy terminal seal standard. Not available with A termination.

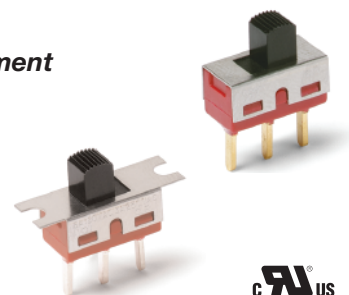
# 1000 Series Miniature Slide Switches

## Features/Benefits

- Variety of actuators and terminations
- Panel mount tabs available
- Epoxy terminal seal—compatible with bottom-wash cleaning
- RoHS compliant

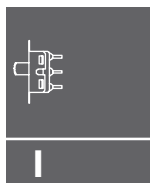
## Typical Applications

- Test & measurement equipment
- Telecommunications
- Computer & peripherals



C&K<sup>®</sup> US

Models Available



Slide

## Specifications

**CONTACT RATING:** B contact material: 0.4 VA max. @ 20 V AC or DC max. Q contact material: 6 AMPS @ 120 V AC or 28 V DC, 3 AMPS @ 250 V AC. See page I-16 for additional ratings.

**ELECTRICAL LIFE:** 100,000 make-and-break cycles at full load on models with B, K or P contact material; 40,000 cycles on models with G, Q, L, M, S or R contact material.

**CONTACT RESISTANCE:** Below 10 m Ω typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

**INSULATION RESISTANCE:** 10<sup>9</sup> Ω min.

**DIELECTRIC STRENGTH:** 1,000 Vrms min. @ sea level.

**OPERATING TEMPERATURE:** -30°C to 65°C

**SOLDERABILITY:** Per MIL-STD-202F method 208D, or EIA RS-186E method 9 (1 hour steam aging).

## Materials

**CASE:** diallyl phthalate (DAP), (UL 94V-0).

**ACTUATOR:** Nylon, black, standard.

**HOUSING:** Stainless steel.

**SWITCH SUPPORT:** Brass or steel, matte-tin plated.

**END CONTACTS:** B contact material: Copper alloy, with gold plate over nickel plate. Q contact material: Coin silver, silver plated. See page I-16 for additional contact materials.

**CENTER CONTACT & ALL TERMINALS:** B contact material: Copper alloy, with gold plate over nickel plate. Q contact material: Copper alloy, silver plated. See page I-16 for additional contact materials.

**TERMINAL SEAL:** Epoxy. Refer to Soldering and Cleaning in Technical Data chapter

**NOTE:** Any models supplied with Q, B, G, P, S or R contact material are RoHS compliant.

**NOTE:** Specifications and materials listed above are for switches with standard options.

For information on specific and custom switches, consult Customer Service Center.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages I-12 through I-16. For additional options not shown in catalog, consult Customer Service Center. All models have epoxy terminal seal and are compatible with all “bottom-wash” PCB cleaning methods.

<div style="border: 1px solid black; width: 100%; height: 15px; margin-bottom: 5px;"></div> <div style="border: 1px solid black; width: 100%; height: 15px; margin-bottom: 5px;"></div> <div style="border: 1px solid black; width: 100%; height: 15px; margin-bottom: 5px;"></div> <div style="border: 1px solid black; width: 100%; height: 15px; margin-bottom: 5px;"></div> <div style="border: 1px solid black; width: 100%; height: 15px; margin-bottom: 5px;"></div> <div style="border: 1px solid black; width: 100%; height: 15px; margin-bottom: 5px;"></div> <div style="border: 1px solid black; width: 100%; height: 15px; margin-bottom: 5px;"></div> <div style="border: 1px solid black; width: 100%; height: 15px; margin-bottom: 5px;"></div> <div style="border: 1px solid black; width: 100%; height: 15px; margin-bottom: 5px;"></div> <div style="border: 1px solid black; width: 100%; height: 15px; margin-bottom: 5px;"></div> <div style="border: 1px solid black; width: 100%; height: 15px; margin-bottom: 5px;"></div> <div style="border: 1px solid black; width: 100%; height: 15px; margin-bottom: 5px;"></div> <div style="border: 1px solid black; width: 100%; height: 15px; margin-bottom: 5px;"></div> <div style="border: 1px solid black; width: 100%; height: 15px; margin-bottom: 5px;"></div> <div style="border: 1px solid black; width: 100%; height: 15px; margin-bottom: 5px;"></div> <div style="border: 1px solid black; width: 100%; height: 15px; margin-bottom: 5px;"></div> <div style="border: 1px solid black; width: 100%; height: 15px; margin-bottom: 5px;"></div> <div style="border: 1px solid black; width: 100%; height: 15px; margin-bottom: 5px;"></div> <div style="border: 1px solid black; width: 100%; height: 15px; margin-bottom: 5px;"></div> <div style="border: 1px solid black; width: 100%; height: 15px; margin-bottom: 5px;"></div> <div style="border: 1px solid black; width: 100%; height: 15px; margin-bottom: 5px;"></div> <div style="border: 1px solid black; width: 100%; height: 15px; margin-bottom: 5px;"></div>				<p><b>Switch Function</b></p> <p><b>1101</b> SP On-None-On</p> <p><b>1103</b> SP On-Off-On</p> <p><b>1108</b> SP Mom-None-On</p> <p><b>1201</b> DP On-None-On</p> <p><b>1203</b> DP On-Off-On</p>	<p><b>Mounting Style</b></p> <p><b>M2</b> PC mount without tabs</p> <p><b>M1</b> Panel mount with tabs</p>	<p><b>Actuator</b></p> <p><b>S3</b> .200" high</p> <p><b>S1</b> .040" high</p> <p><b>S2</b> .140" high</p> <p><b>S4</b> .285" high</p> <p><b>S5</b> .370" high</p> <p><b>S6</b> .485" high</p> <p><b>T3</b> .200" high</p>	<p><b>Terminations</b></p> <p><b>A</b> Right angle, PC thru-hole</p> <p><b>C</b> PC Thru-hole</p> <p><b>AV2</b> Vertical right angle, PC thru-hole</p> <p><b>Z</b> Solder lug</p> <p><b>V3</b> V-bracket</p> <p><b>V4</b> V-bracket</p> <p><b>W</b> .750" long, wire wrap</p> <p><b>Z3</b> Quick connect</p>	<p><b>Contact Material</b></p> <p><b>B</b> Gold</p> <p><b>Q</b> Silver</p> <p><b>G</b> Gold over silver</p> <p><b>P</b> Gold, matte-tin</p> <p><b>S</b> Silver, matte-tin</p> <p><b>R</b> Gold over silver, matte-tin</p>	<p><b>Seal</b></p> <p><b>E</b> Epoxy</p> <p><b>D</b> No epoxy seal</p> <p><b>I</b> Epoxy potted base</p>	<p><b>Actuator Color</b></p> <p><b>2</b> Black</p> <p><b>1</b> White</p> <p><b>3</b> Red</p>
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Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

# 1000 Series Miniature Slide Switches

## SWITCH FUNCTION

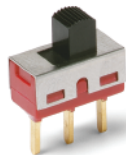
NO. POLES	MODEL NO.	SWITCH FUNCTION			CONNECTED TERMINALS			SCHEMATIC
		POS. 1	POS. 2	POS. 3	POS. 1	POS. 2	POS. 3	
SP	1101	ON	NONE	ON		N/A		
	1103	ON	OFF	ON	1-2	OPEN	2-3	
	1108	MOM.	NONE	ON		N/A		
<p><b>SPDT</b></p> <p>Part number shown: 1101M2S3CQE2</p> <p>Terminal Nos. For Reference Only</p>								
DP	1201	ON	NONE	ON	2-1,5-4	OPEN	2-3,5-6	
	1203	ON	OFF	ON				
<p><b>DPDT</b></p> <p>Part number shown: 1201M2S3CQE2</p> <p>Terminal Nos. For Reference Only</p>								

MOM. = Momentary

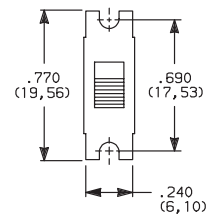
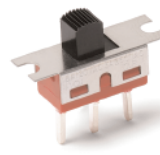
All models with all options when ordered with G, Q, S or R contact material.

## MOUNTING STYLE

**M2** PC MOUNTING WITHOUT TABS



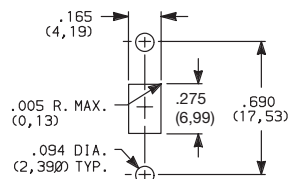
**M1** PANEL MOUNTING WITH TABS



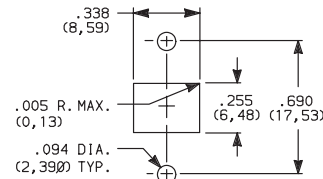
**NOTE:** Available with A, AV2, C, V3, V4, W terminations only.

**NOTE:** Available with C, W, Z, Z3 terminations only. No mounting hardware supplied.

### PANEL MOUNTING



All actuators except T3.  
Single pole



For T3 actuator only.  
Double pole



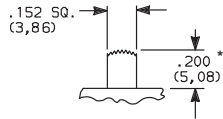
Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change



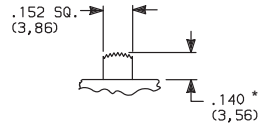
# 1000 Series Miniature Slide Switches

## ACTUATOR

**S3** .200" HIGH

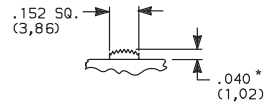


**S2** .140" HIGH



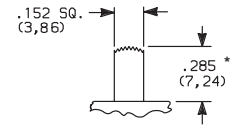
110X models only.

**S1** .040" HIGH

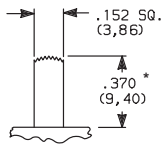


120X models only.

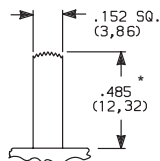
**S4** .285" HIGH



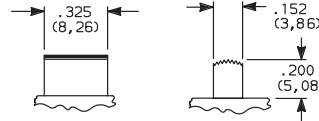
**S5** .370" HIGH



**S6** .485" HIGH



**T3** .200" HIGH



120X models only.

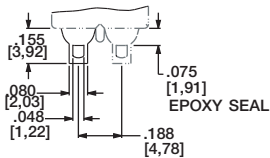
OPTION CODE	ACTUATOR COLOR
2	BLACK
1	WHITE
3	RED
7	BLUE
9	GRAY

Other colors available, consult Customer Service Center.

\* Subtract .014 (0,36) from actuator height, all models with A, AV2 - 2 pole, V3, V4 terminations.

## TERMINATIONS

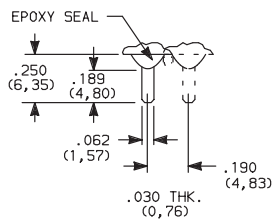
**Z** SOLDER LUG



Not available with P, S or R contact materials.

**SPDT & DPDT**

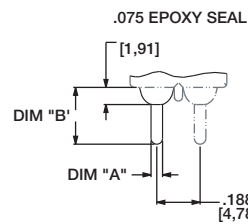
**Z3** QUICK CONNECT



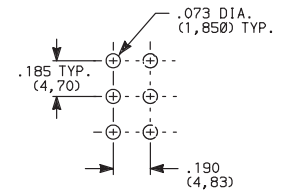
Not available with P, S or R contact materials. Mating quick connector available; order part number 530100000, page I-16.

**SPDT & DPDT**

**C** PC THRU-HOLE



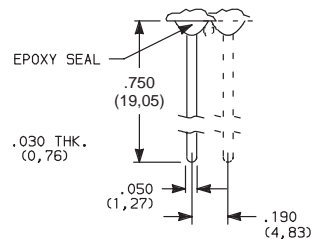
PC MOUNTING



OPTION	DIM "A"	DIM "B"
C	.050 [0,76]	.250 [6,35]

**SPDT & DPDT**

**W** WIRE WRAP

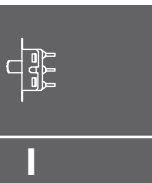


**SPDT & DPDT**



Third Angle Projection

Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



Slide



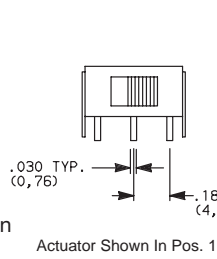
# 1000 Series Miniature Slide Switches

## TERMINATIONS

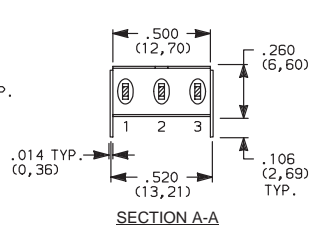
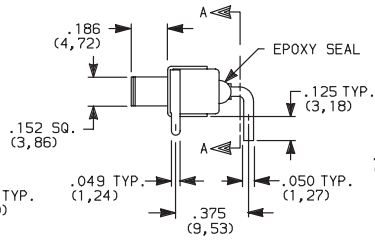
**A** RIGHT ANGLE, PC THRU-HOLE



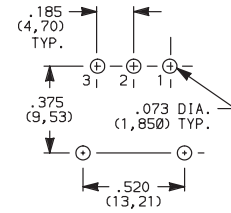
**1101M2S3ABE2**  
Horizontal Actuation  
**SPDT**



Actuator Shown In Pos. 1



**PC MOUNTING**

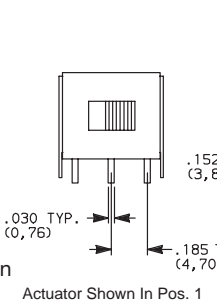


Not available with M1 mounting style, I seal option.  
Terminal bend radii and lead-in manufacturing option.

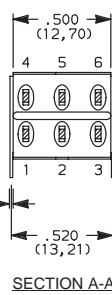
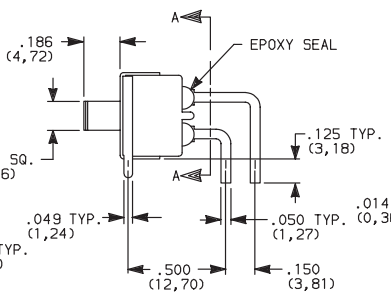
**A** RIGHT ANGLE, PC THRU-HOLE



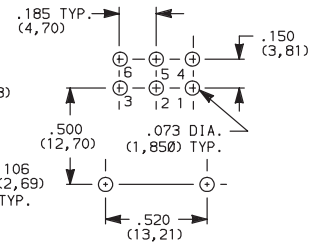
**1201M2S3ABE2**  
Horizontal Actuation  
**DPDT**



Actuator Shown In Pos. 1

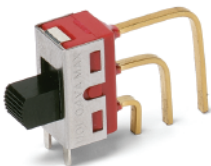


**PC MOUNTING**

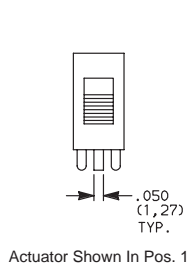


Not available with M1 mounting style, I seal option.  
Terminal bend radii and lead-in manufacturing option.

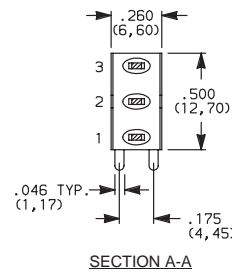
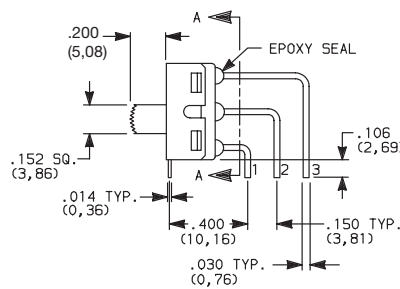
**AV2** VERTICAL RIGHT ANGLE, PC THRU-HOLE,  
.150" PITCH



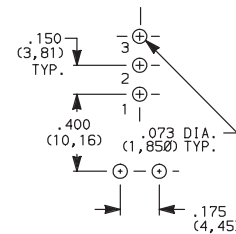
**1101M2S3AV2BE2**  
Vertical Actuation  
**SPDT**



Actuator Shown In Pos. 1

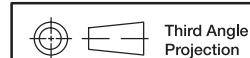


**PC MOUNTING**



Not available with M1 mounting style, I seal option.  
Terminal bend radii and lead-in manufacturing option.

Slide

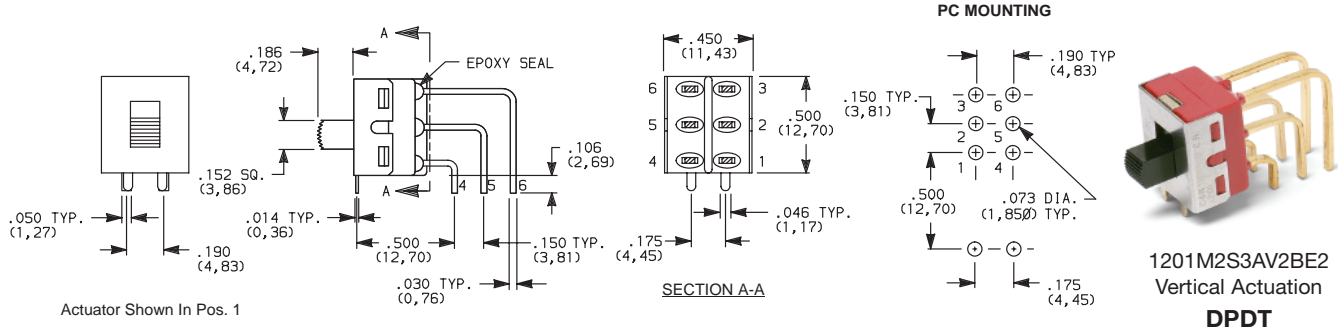


Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

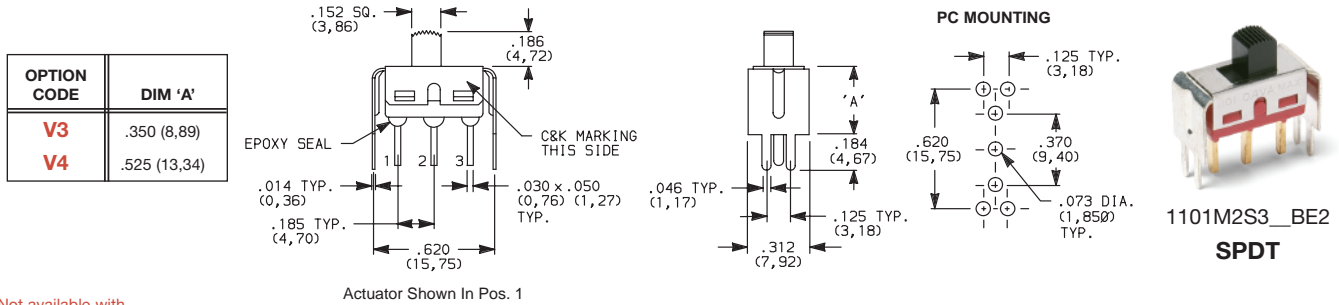
# 1000 Series Miniature Slide Switches

## TERMINATIONS

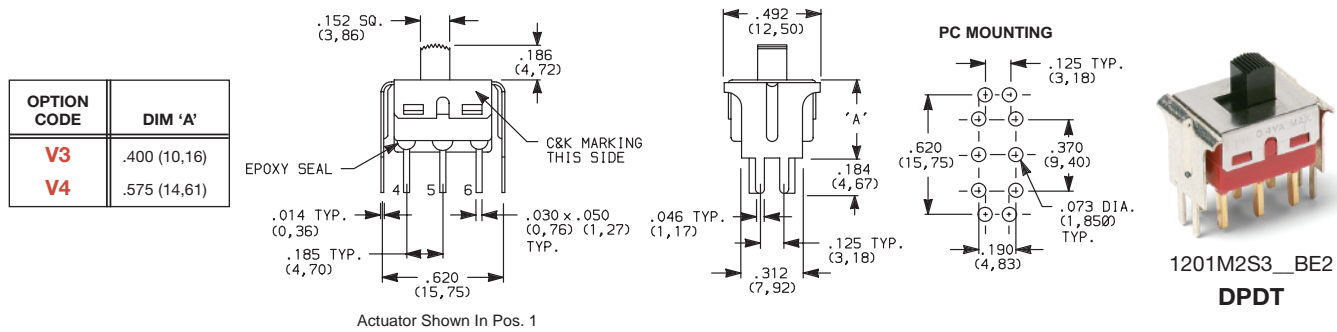
**AV2** VERTICAL RIGHT ANGLE, PC THRU-HOLE,  
.150" PITCH



**V3, V4** VERTICAL MOUNT,  
V-BRACKET



**V3, V4** VERTICAL MOUNT,  
V-BRACKET



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

www.ck-components.com

# 1000 Series Miniature Slide Switches

## CONTACT MATERIAL

OPTION CODE	CONTACT MATERIAL	TERMINAL PLATING	RATINGS	
<b>B</b>	GOLD <sup>1</sup>	GOLD <sup>3</sup>	LOW LEVEL/ DRY CIRCUIT	0.4 VA MAX. @ 20 V AC OR DC MAX.
<b>P</b>		MATTE-TIN <sup>6</sup>		
<b>Q</b>	SILVER <sup>4,5</sup>	GOLD <sup>3</sup>	POWER	6 AMPS @ 120 V AC OR 28 V DC; 3 AMPS @ 250 V AC.
<b>S</b>		MATTE-TIN <sup>6</sup>		
<b>G</b>	GOLD OVER SILVER <sup>2,3</sup>	GOLD <sup>3</sup>	LOW LEVEL/DRY CIRCUIT OR POWER	0.4 VA MAX @ 20 V AC OR DC MAX OR 6 AMPS @ 120 V AC OR 0.4 MAX. 28 V DC; 3 AMPS @ 250 V AC.
<b>R</b>		MATTE-TIN <sup>6</sup>		

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

<sup>1</sup> CONTACTS & TERMINALS: Copper alloy, with gold plate over nickel plate.

<sup>2</sup> END CONTACTS: Coin silver, with gold plate over nickel plate.

<sup>3</sup> CENTER CONTACTS & ALL TERMINALS: Copper alloy, with gold plate over nickel plate.

<sup>4</sup> END CONTACTS: Coin silver, silver plated.

<sup>5</sup> CENTER CONTACT & ALL TERMINALS: Copper alloy, silver plated.

<sup>6</sup> TERMINALS: Copper alloy, with matte-tin over nickel plate.

All models **C** **AL** **US** with all options when ordered with G, Q, S or R contact material.

B contact material standard with all terminations except C, Z, Z3.

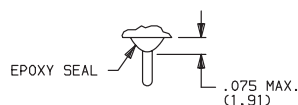
Q contact material standard with C, Z, Z3 terminations.

P, S or R contact materials not available with Z, Z3 terminations.

**NOTE:** Any models supplied with Q, B, G, P, S or R contact material are RoHS compliant.

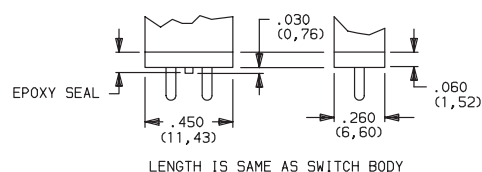
## SEAL

**E** EPOXY SEAL



**D** NO EPOXY SEAL

**I** EPOXY POTTED BASE



**NOTE:** Available with C, W, W3, Z, Z3 terminations only.

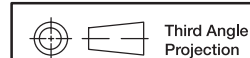
## AVAILABLE HARDWARE

Fits Z3 Termination  
female connector



PART NO.  
**530100000**

Available in loose pieces.



Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

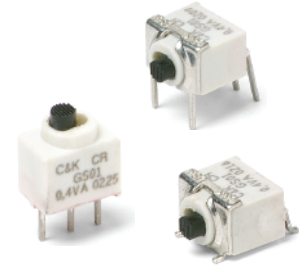
# GS Series Sealed Ultraminiature Slide Switches

## Features/Benefits

- Ultraminiature design saves PCB space
- Sealed construction, process compatible with most PCB wash processes
- Available in thru-hole and surface mount
- Long life contact design
- RoHS compliant

## Typical Applications

- Computer peripherals & network products
- Test & measurement equipment
- Telephone & cable modems



## Specifications

CONTACT RATING: 0.4 VA max. @ 20 V AC or DC max.  
 MECHANICAL & ELECTRICAL LIFE: 40,000 make-and-break cycles at full load.  
 CONTACT RESISTANCE: Below 50 m Ω typ. initial @ 2-4 V DC, 100 mA.  
 INSULATION RESISTANCE: 10<sup>9</sup> Ω min.  
 DIELECTRIC STRENGTH: 500 Vrms min. @ sea level.  
 STORAGE & OPERATING TEMPERATURE: -40°C to 85°C.  
 SOLDERABILITY: Per MIL-STD-202F method 208D, or EIA RS-186E method 9 (1 hour steam aging).  
 PACKAGING: Switches available in embossed anti-static tape and reels per EIA 481A. Some models available on embossed anti-static tape and reels per EIA 481-3, consult Customer Service Center.

## Materials

HOUSING & BASE: Glass filled 4/6, flame retardant, heat stabilized (UL 94V-0).  
 ACTUATOR: Polyetherimide PEI (UL 94V-0), with standard internal seal.  
 SWITCH SUPPORT: Brass, matte-tin plated.  
 MOVABLE CONTACT: Copper with gold plate over nickel plate.  
 STATIONARY CONTACTS: Copper alloy, with gold plate over nickel plate.  
 TERMINALS: Copper alloy, with gold plate over nickel plate.  
 TERMINAL SEAL: Epoxy. All terminals insert molded.

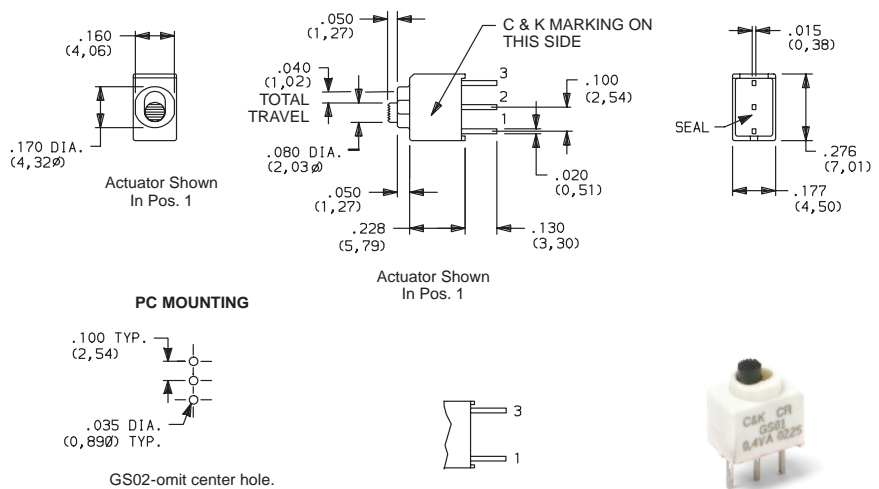
**NOTE:** All models are RoHS compliant and compatible with all options.

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## How To Order

Complete part numbers for GS Series Sealed Ultraminiature Slide Switches are shown below and on page I-18.

PART NUMBER	SWITCH FUNCTION		SCHEMATIC
	POS.1	POS. 2	
<b>GS01MCBE</b>	ON	ON	 1 ● 2 (COMM) ● 3 SPDT
Conn. Terms.	2-1	2-3	
<b>GS02MCBE</b>	OFF	ON	 1 ● 3 SPST
Conn. Terms.	OPEN	3-1	
<b>GS04MCBE</b>	ON	OFF	 1 ● 3 SPST
Conn. Terms.	1-3	OPEN	

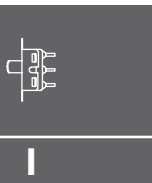


GS01MCBE  
SPDT



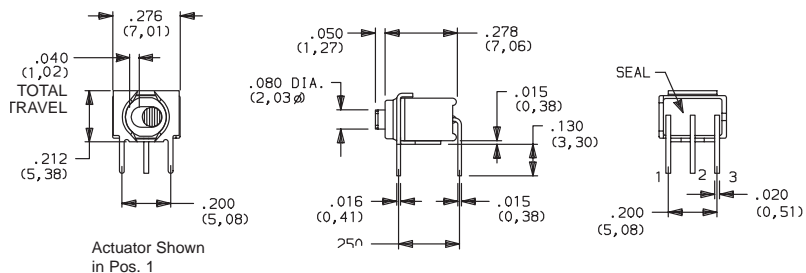
Third Angle Projection

Dimensions are shown: Inches (mm)  
 Specifications and dimensions subject to change



Slide

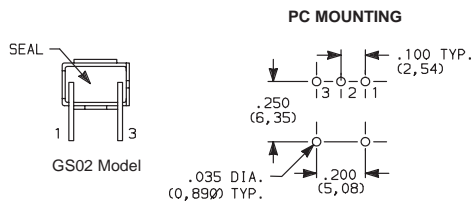
# GS Series Sealed Ultraminiature Slide Switches



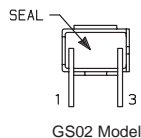
Actuator Shown  
in Pos. 1



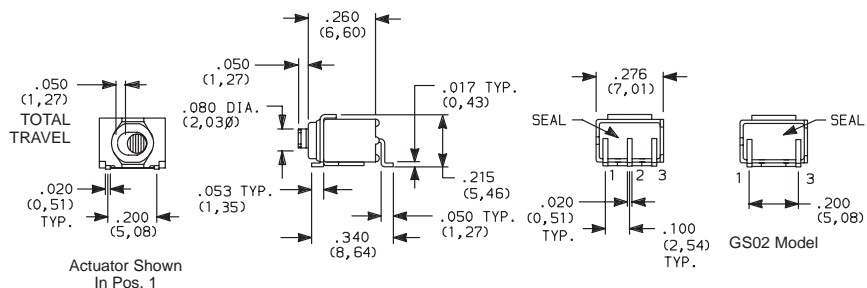
**GS01MABE**  
Horizontal Actuation  
**SPDT**



PC MOUNTING



PART NUMBER	SWITCH FUNCTION		SCHEMATIC
	POS.1	POS. 2	
<b>GS01MABE</b>	ON	ON	
Conn. Terms.	2-1	2-3	SPDT
<b>GS02MABE</b>	OFF	ON	
Conn. Terms.	OPEN	3-1	SPST
<b>GS04MABE</b>	ON	OFF	
Conn. Terms.	1-3	OPEN	SPST

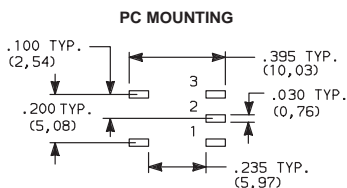


Actuator Shown  
In Pos. 1

**SMT**



**GS01MSABE**  
Horizontal Actuation  
**SPDT**



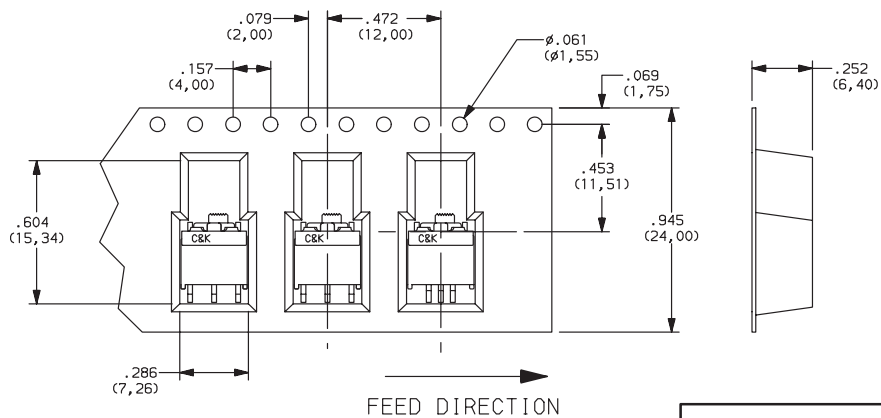
PC MOUNTING

PART NUMBER	SWITCH FUNCTION		SCHEMATIC
	POS.1	POS. 2	
<b>GS01MSABE</b>	ON	ON	
Conn. Terms.	2-1	2-3	SPDT
<b>GS02MSABE</b>	OFF	ON	
Conn. Terms.	OPEN	3-1	SPST
<b>GS04MSABE</b>	ON	OFF	
Conn. Terms.	1-3	OPEN	SPST

## TAPE & REEL

FOR PART NUMBERS GS01MSABE, GS02MSABE, GS04MSABE

REEL INFORMATION	
OUTSIDE DIAMETER	13.00 (330,0)
PILOT HOLE	.512 (13,0)
QUANTITY PER REEL	600



Third Angle  
Projection

Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change



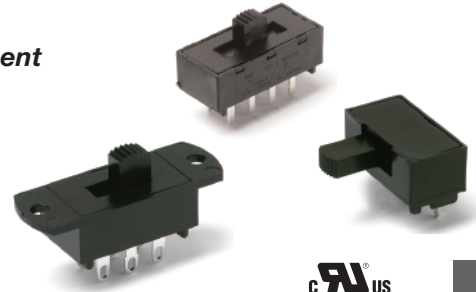
# L Series Miniature Slide Switches

## Features/Benefits

- Positive detent
- Enclosed housing
- Maintained and momentary functions
- PC and panel mounting
- RoHS compliant

## Typical Applications

- Communications equipment
- Lighting devices



C&K US

Models Available

## Specifications

CONTACT RATING: Q contact material (LX0X, LX1X Models): 4 AMPS @ 125 V AC or 28 V DC; 2 AMPS @ 250 V AC; 0.5 AMP @ 125 V DC (UL). See page I-23 for additional ratings.  
 ELECTRICAL LIFE: 10,000 make-and-break cycles at full load.  
 CONTACT RESISTANCE: Below 10 m Ω typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.  
 INSULATION RESISTANCE: 10<sup>9</sup> Ω min.  
 DIELECTRIC STRENGTH: 1,000 Vrms min. @ sea level.  
 OPERATING TEMPERATURE: -30°C to +65°C  
 STORAGE TEMPERATURE: -30°C to +85°C

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## Materials

HOUSING: 6/6 nylon (UL94V-2), black.  
 ACTUATOR: 6/6 nylon (UL94V-2), black. '13' actuator, natural (standard).  
 CONTACTS: Q contact material: Copper, silver plated. See page I-23 for additional contact materials.  
 TERMINALS: Q contact material: Copper, silver plated. See page I-23 for additional contact materials.  
 CONTACT SPRING: Music wire or stainless steel.  
 TERMINAL SEAL: Epoxy.

**NOTE:** Any models supplied with Q, B or G contact material are RoHS compliant.

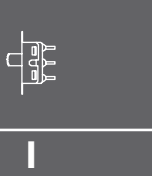
## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages I-20 through I-24. For additional options not shown in catalog, consult Customer Service Center.

<b>Switch Function</b>		<b>Actuator</b>		<b>Detent</b>		<b>Mounting Style</b>		<b>Terminations</b>		<b>Contact Material</b>		<b>Seal</b>		<b>Cap Color</b>
L202 DPDT		01 .200" high		1 With detent		MS PC Thru-hole		02 PC Thru-hole		Q Silver		NONE No seal		2 Black
L203 DP3T		02 .335" high		2 Without detent		MA Right angle, PC thru-hole		03 Solder lug with notch		B Gold		E Epoxy seal		NONE No cap
L101 SPST		03 .375" high				ML Right angle, PC thru-hole		04 PC Thru-hole		G Gold over silver				
L102 SPDT		05 .312" high				MV Right angle, PC thru-hole		06 Wire wrap						
L103 SP3T		11 .100" high				SS Panel with mounting ears		12 PC Thru-hole						
L104 SP4T		12 Screwdriver slot				TS Panel with integral mounting ears								
L112 SPDT, mom.		13 Plunger without cap												
L113 SP3T, mom. to one end		14 Plunger with .200" dia. cap												
L123 SP3T, mom. to both ends		15 Plunger with .310" dia. cap												
L201 DPST		17 Plunger with .458" dia. cap												
L204 DP4T		19 Plunger with .590" dia. cap												
L212 DPDT, mom.														



Dimensions are shown: Inches (mm)  
 Specifications and dimensions subject to change



Side

# L Series Miniature Slide Switches

## SWITCH AND LOCK FUNCTION



NO. POLES	MODEL NO.	SWITCH FUNCTION	SCHEMATIC	AVAILABLE MOUNTING STYLES
SP	L101	SPST		ML, MS, SS
	L102	SPDT		ML, MS, SS
	L112	SPDT-MOM.		ML, MS, MV, SS
	L103	SP3T		MA, MS, TS
	L113	SP3T-MOM. to one end		MA, MS, TS
	L123	SP3T-MOM. to both ends		MA, MS, TS
	L104	SP4T		MS

NO. POLES	MODEL NO.	SWITCH FUNCTION	SCHEMATIC	AVAILABLE MOUNTING STYLES
DP	L201	DPST		MA, MS, SS
	L202	DPDT		MA, MS, SS
	L212	DPDT-MOM.		MV
	L203	DP3T		MS, TS
	L204	DP4T		MS

**NOTE:** and MOM. in table indicates momentary action.

All models with all options when ordered with 'G' or 'Q' contact material.

Contacts make on side actuator thrown.

Slide

## ACTUATOR



### ACTUATOR OPTIONS FOR 'MS, MA, ML, SS, & TS' MOUNTING STYLES

<b>01</b> .200" HIGH 	<b>02</b> .335" HIGH 	<b>03</b> .375" HIGH 	<b>05</b> .312" HIGH 	<b>11</b> .100" HIGH 	<b>12</b> SCREWDRIVER SLOT 
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------------

**NOTE:** No actuator color option code is required. Standard actuator color is black, other colors and heights available, consult Customer Service Center. See pages I-20 and I-22 for available mounting styles.

### ACTUATOR OPTIONS FOR 'MV' MOUNTING STYLE

<b>13</b> PLUNGER WITHOUT CAP 	<b>14</b> PLUNGER WITH CAP  Cap part number 7089	<b>15</b> PLUNGER WITH CAP  Cap part number 8018
<b>17</b> PLUNGER WITH CAP  Cap part number 7982	<b>19</b> PLUNGER WITH CAP  Cap part number 8940	

OPTION CODE	ACTUATOR CAP COLORS
<b>2</b>	BLACK
<b>NONE</b>	01-13 ACTUATORS

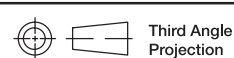
Other colors available, consult Customer Service Center.

### ACTUATOR CAPS

Caps supplied are not installed standard. To order actuator options '14 thru 19,' select desired cap color from chart and place option code in last box of ordering format. Leave box empty for all other actuator options. Caps may also be ordered separately and user installed, see pages I-23 and I-24. Specify the four digit part number and desired cap color. For switches without caps, order '13' or '23' actuator option. Cap finish: gloss (excluding square cap part number 7982, finish: matte).

### SPLASH CAPS

New protective splash caps for PC mounted slide switches are available separately and reusable. They provide splash protection during soldering and cleaning processes. To order specify correct part number, see page I-24.



Dimensions are shown: Inch (mm)

Specifications and dimensions subject to change



# L Series Miniature Slide Switches

## DETENT

### 1 WITH DETENT

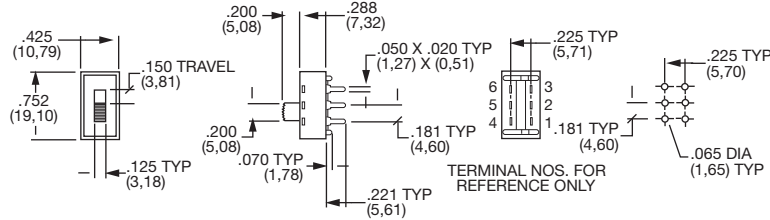
Standard with all maintained models: L101, L102, L103, L104, L113, L201, L202, L203 and L204.

### 2 WITHOUT DETENT

Standard with all momentary models: L112, L123, and L212.

## MOUNTING STYLE

### MS PC THRU-HOLE, 2 POSITION MODELS



#### AVAILABLE WITH:

**Models:** L101, L102, L112, L103, L113 L123, L201, L202, L203, L104 and L204

**Terminations:** 02, 06, 10 and 12

**Actuators:** 01, 02, 03, 05, 11 and 12

#### PC MOUNTING

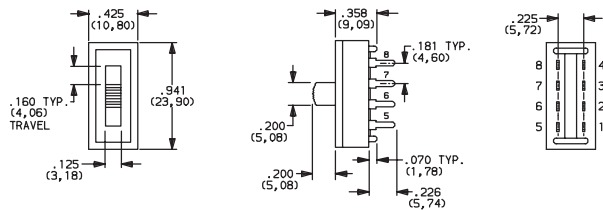
For mounting information, see TERMINATIONS section, page I-23.

Splash caps are available separately and reusable, see page I-24.

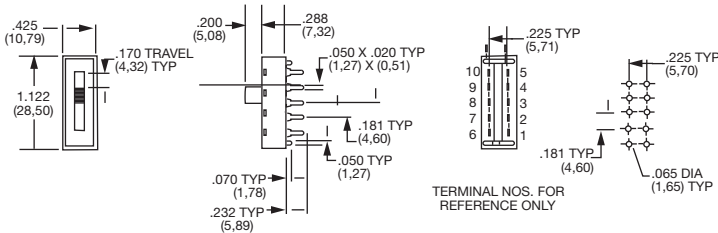


L203011MS02Q  
DP3T

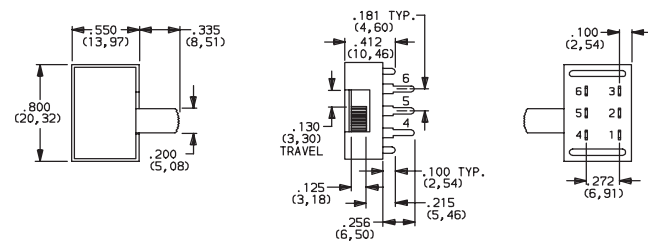
### PC THRU-HOLE, 3 POSITION MODELS



### PC THRU HOLE, 4 POSITION MODELS



### MA RIGHT ANGLE, PC THRU-HOLE



#### AVAILABLE WITH:

**Models:** L103, L201, L202, L113 and L123

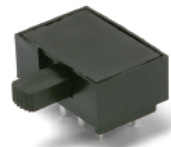
**Terminations:** 04

**Actuators:** 02 and 12

#### PC MOUNTING

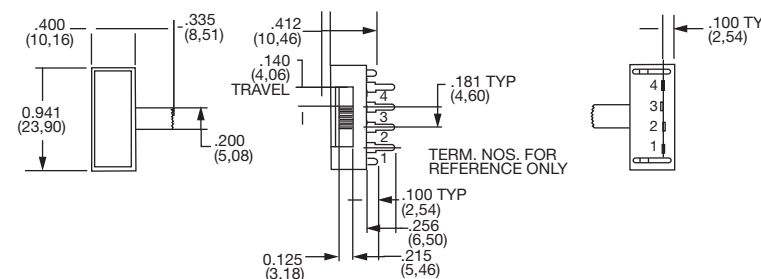
For mounting information, see TERMINATIONS section, page I-23.

Splash caps are available separately and reusable, see page I-24.



L202021MA04Q  
Horizontal Actuation  
DPDT

### RIGHT ANGLE, PC, SP-3 POSITION MODELS

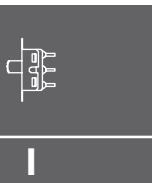


Third Angle  
Projection

Dimensions are shown: Inches (mm)

Specifications and dimensions subject to change

**C&K**



Slide

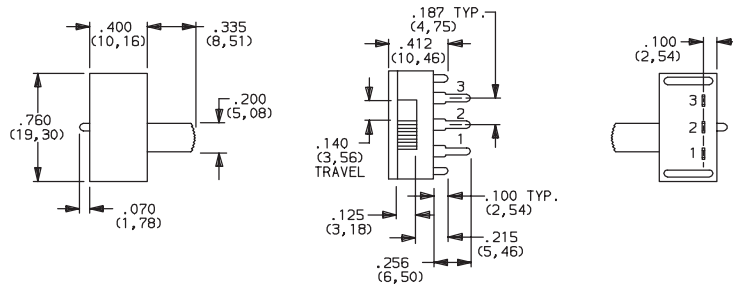


# L Series Miniature Slide Switches

## MOUNTING STYLE



### ML RIGHT ANGLE, PC THRU-HOLE



#### AVAILABLE WITH:

**Models:** L101, L102, L112  
**Terminations:** 04  
**Actuators:** 01, 02, 05, 11 and 12  
**PC MOUNTING**

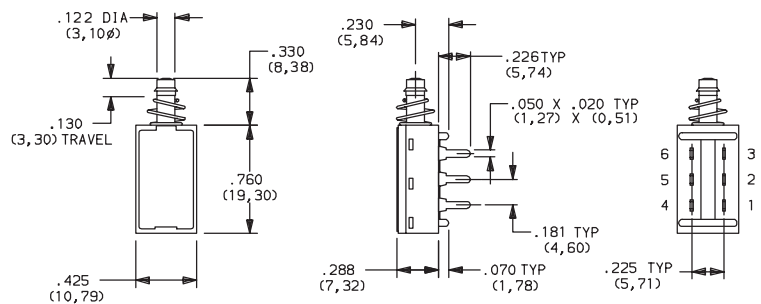
For mounting information, see TERMINATIONS section, page I-23.

Splash caps are available separately and reusable, see page I-24.



**L102021ML04Q**  
Horizontal Actuation  
**SPDT**

### MV RIGHT ANGLE, PC THRU-HOLE



#### AVAILABLE WITH:

**Models:** L112 and L212  
**Terminations:** 02, 06, 10 and 12  
**Actuators:** 13 thru 19

#### PC MOUNTING

For mounting information, see TERMINATIONS section, page I-23.

Splash caps are available separately and reusable, see page I-24.

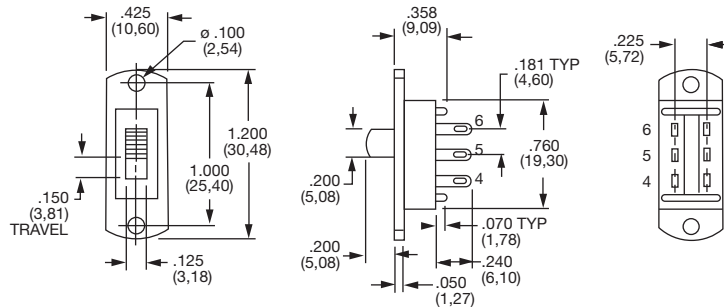


**L212132MV02Q**  
**DPDT**

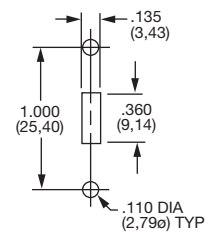
### SS PANEL WITH MOUNTING EARS



**L202011SS03Q**  
**DPDT**



#### PANEL MOUNTING



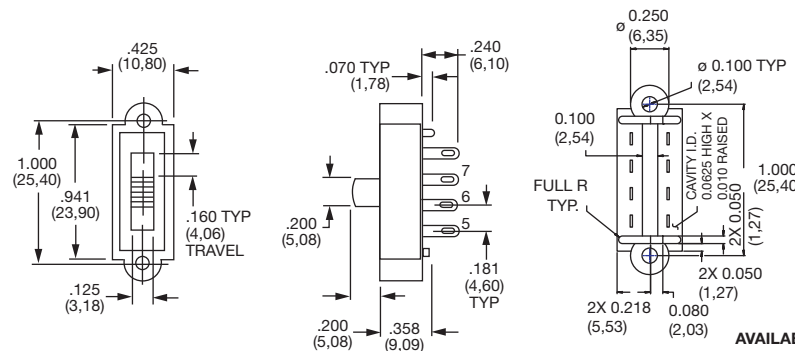
#### AVAILABLE WITH:

**Models:** L101, L102, L112, L201 and L202  
**Terminations:** 01, 02, 03, 06, 10, 12  
**Actuators:** 01, 02, 03, 05, 11 and 12

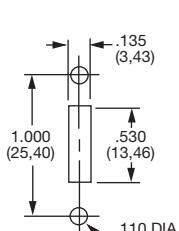
### TS PANEL WITH INTEGRAL MOUNTING EARS



**L203011TS03Q**  
**DP3T**



#### PANEL MOUNTING



#### AVAILABLE WITH:

**Models:** L103, L113, L123 and L203  
**Terminations:** 01, 02, 03, 06, 10, 12  
**Actuators:** 01, 02, 03, 05, 11 and 12

Slide



Slide



Slide

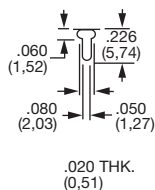


# L Series Miniature Slide Switches

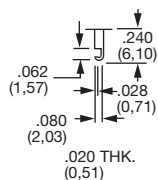
## TERMINATIONS

'MS, MV, SS & TS' Mounting Styles Only

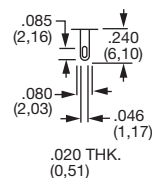
**02** PC THRU-HOLE



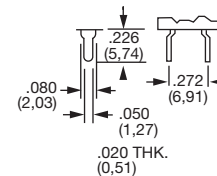
**01** SOLDER LUG WITH NOTCH



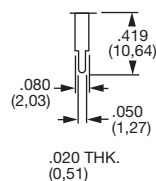
**03** SOLDER LUG WITH HOLE



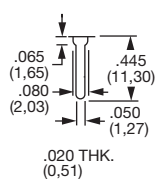
**10** PC THRU-HOLE



**12** PC THRU-HOLE

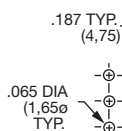
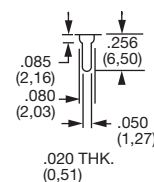


**06** WIRE WRAP

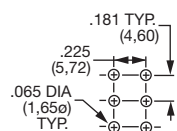


'MA & ML' Mounting Styles Only

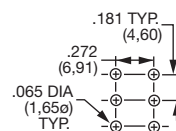
**04** PC THRU-HOLE



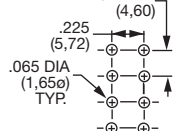
All models with '04' terminations and 'ML' mounting style.



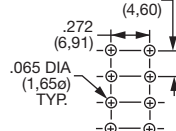
All 2 position models, except '04' and '10' terminations.



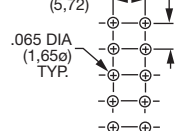
All 2 position models with '04' and '10' terminations.



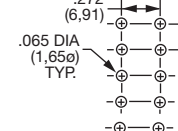
All 3 position models except '04' and '10' terminations.



All 3 position models, with '10' termination.



All 4 position models, except '04' and '10' terminations.



All 4 position models, with '10' terminations.

## CONTACT MATERIAL

OPTION CODE	CONTACT MATERIAL	RATINGS	
<b>Q</b>	SILVER <sup>2</sup>	LOW LEVEL/DRY CIRCUIT	LX0X, LX1X MODELS: 4 AMPS @ 125 V AC or 28 V DC; 2 AMPS @ 250 V AC; 0.5 AMP @ 125 V DC (UL). LX6X MODELS: 4 AMPS @ 125 V AC or 28 V DC; 2 AMPS @ 250 V AC (UL).
<b>B</b>	GOLD <sup>1</sup>	POWER	0.4 VA MAX. @20 V AC OR DC max.
<b>G</b>	GOLD OVER SILVER <sup>3</sup>	LOW LEVEL/DRY CIRCUIT OR POWER	LX0X, LX1X MODELS: 0.4 VA MAX. @ 20 V AC or DC MAX. or 4 AMPS @ 125 V AC or 28 V DC; 2 AMPS @ 250 V AC; 0.5 AMP @ 125 V DC (UL). LX6X MODELS: 0.4 VA MAX. @ 20 V AC or DC MAX. or 4 AMPS @ 125 V AC or 28 V DC; 2 AMPS @ 250 V AC (UL).

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

<sup>1</sup> CONTACTS & TERMINALS: Copper, with gold plate over nickel plate.

<sup>2</sup> CONTACTS & TERMINALS: Copper, silver plated (standard with all termination options).

<sup>3</sup> CONTACTS & TERMINALS: Copper, with gold plate over nickel plate over silver plate.

**NOTE:** Any models supplied with Q, B or G contact material are RoHS compliant.

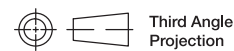
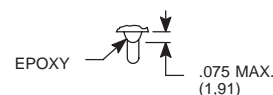
All models  with all options when ordered with 'G' or 'Q' contact material.

NOTE: 'G' contact material is equivalent to both 'B' and 'Q' contact materials.

## SEAL

**NONE** NO SEAL

**E** EPOXY SEAL



Third Angle  
Projection

Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

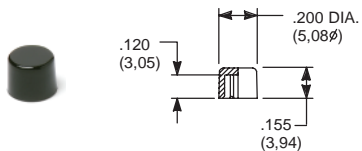
**C&K**

Slide

# L Series Miniature Slide Switches

## AVAILABLE HARDWARE

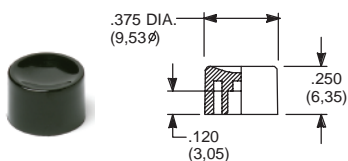
Cap  
Compatible with 13-19 actuators



**PART NO.**  
708902000 BLACK  
708903000 RED

Material: Nylon  
Finish: Gloss

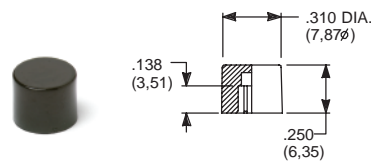
Cap  
Compatible with 13-19 actuators



**PART NO.**  
752702000 BLACK  
752703000 RED

Material: Nylon  
Finish: Gloss

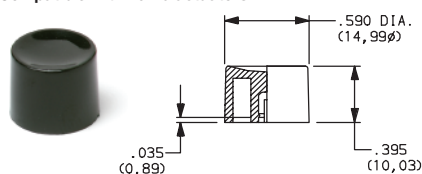
Cap  
Compatible with 13-19 actuators



**PART NO.**  
801802000 BLACK  
801803000 RED

Material: Nylon  
Finish: Gloss

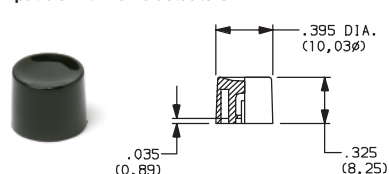
Cap  
Compatible with 13-19 actuators



**PART NO.**  
452D02000 BLACK  
452D03000 RED

Material: Nylon  
Finish: Gloss

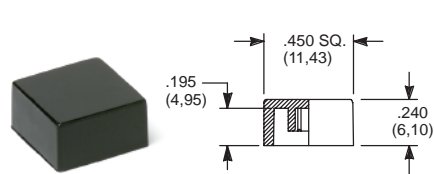
Cap  
Compatible with 13-19 actuators



**PART NO.**  
894102000 BLACK  
894103000 RED

Material: Nylon  
Finish: Gloss

Cap  
Compatible with 13-19 actuators



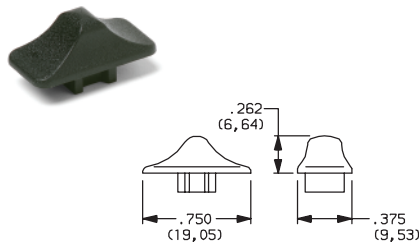
**PART NO.**  
484602000 BLACK  
484603000 RED

**PART NO.**  
798202263 BLACK  
798203000 RED

Material: Nylon  
Finish: Gloss

Material: Nylon  
Finish: Matte

Cap  
Compatible with 01-05 actuators



**PART NO.**  
120100602 BLACK

Material: Nylon  
Finish: Matte

Splash Cap



Fits 'MS' mounting style,  
LXX1 & LXX2 models only.

**PART NO.**  
120100200

Material: Nylon

Splash Cap



Fits 'MV' mounting style,  
LX1X models only.

**PART NO.**  
120100300

Material: Nylon

Splash Cap



Fits 'MA' mounting style,  
LXX3 models only.

**PART NO.**  
120100400

Material: Nylon

**NOTE:** Other colors available,  
consult Customer Service Center.



Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

# LP Series Miniature Snap-in Slide Switches

## Features/Benefits

- 6 to 11 AMPS available
- Easy assembly—Snap-in mounting
- Contamination resistant—extended actuator
- Positive detent
- RoHS compliant

## Typical Applications

- Small appliances
- Outdoor appliances
- Portable tools



**C&K** US  
Models Available

## Specifications

**CONTACT RATING:** Q contact material (LP0X, LP2X Models: 6 AMPS @ 125 V AC or 28 V DC; 3 AMPS @ 250 V AC (UL/CSA). (LP7X, LP8X Models): 11 AMPS @ 125/250 V AC (UL/CSA). See page I-27 for additional ratings.

**ELECTRICAL LIFE:** 10,000 make-and-break cycles at full load.

**INSULATION RESISTANCE:**  $10^9 \Omega$  min.

**DIELECTRIC STRENGTH:** 1,000 Vrms min. @ sea level.

**CONTACT RESISTANCE:** Below 10 m  $\Omega$  typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

**OPERATING TEMPERATURE:** -30°C to +65°C

**STORAGE TEMPERATURE:** -30°C to +85°C

**NOTE:** Any models supplied with Q, B or G contact material are RoHS compliant.

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## Materials

**HOUSING:** 6/6 nylon (UL94V-2), black.

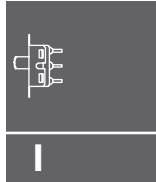
**ACTUATOR:** Glass filled acetal, UV and petroleum resistant, black.

**CONTACTS:** Q contact material: Copper, silver plated. See page I-27 for additional contact materials.

**TERMINALS:** Q contact material: Copper, silver plated. See page I-27 for additional contact materials.

**CONTACT SPRING:** Music wire or stainless steel.

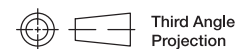
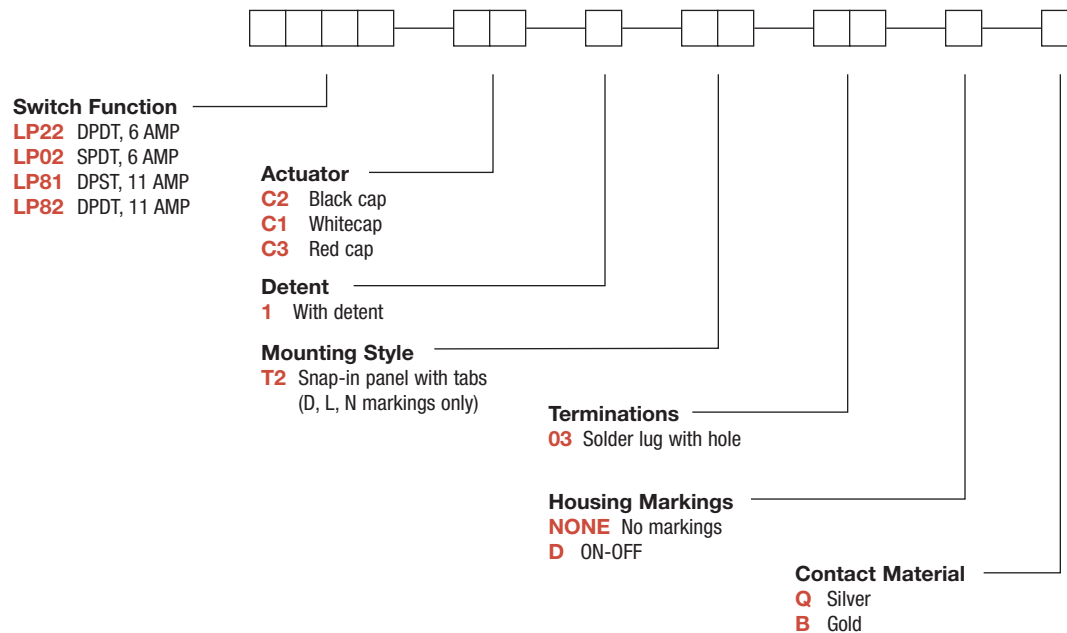
**TERMINAL SEAL:** Epoxy.



Side

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages I-26 and I-27. For additional options not shown in catalog, consult Customer Service Center.



Dimensions are shown: Inches (mm)

Specifications and dimensions subject to change

**C&K**

# LP Series Miniature Snap-in Slide Switches

## SWITCH FUNCTION

NO. POLES	MODEL NO.	AMP RATING*	SWITCH FUNCTION	SCHEMATIC
SP	<b>LP02</b>	6	SPDT	

NO. POLES	MODEL NO.	AMP RATING*	SWITCH FUNCTION	SCHEMATIC
DP	<b>LP22</b>	6	DPDT	
	<b>LP81</b>	11	DPST	
	<b>LP82</b>	11	DPDT	

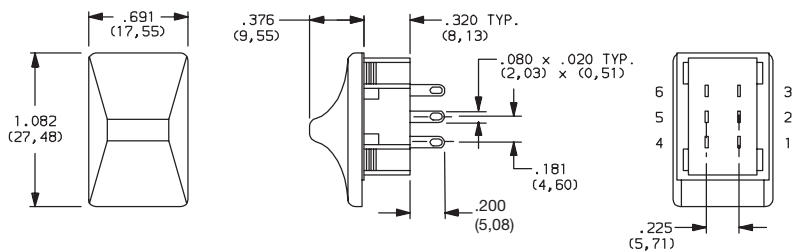
All models **CRLUS** with all options when ordered with 'Q' contact material.

Contacts make on side actuator thrown.

\* For complete contact ratings, see CONTACT MATERIALS Section, page I-27.



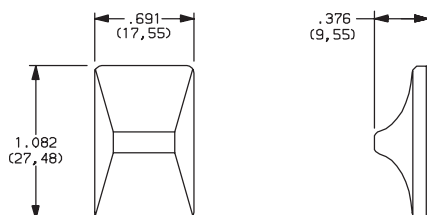
Slide



Part number shown: LP22C21S203Q

## ACTUATOR

**C1; C2; C3**



OPTION CODE2	ACTUATOR CAP COLOR
<b>C2</b>	BLACK
<b>C1</b>	WHITE
<b>C3</b>	RED

**NOTE:** Actuator finish: gloss. Other colors available, consult Customer Service Center.

## DETENT

**1** WITH DETENT

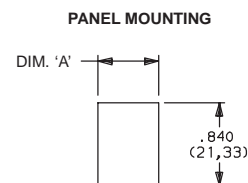
## MOUNTING STYLE

**T2** SNAP-IN PANEL WITH TABS



Mounting style T2 suitable for markings. See HOUSING MARKINGS options.

PANEL THICKNESS	DIM 'A'
.030-.045 (0,76) (1,14)	.578 (14,68)
.046-.059 (1,17) (1,50)	.585 (14,86)
.060-.089 (1,52) (2,26)	.598 (15,19)
.090-.120 (2,29) (3,05)	.610 (15,49)



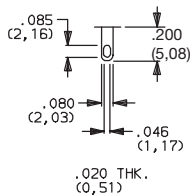
Dimensions are shown: Inch (mm)  
 Specifications and dimensions subject to change



# LP Series Miniature Snap-in Slide Switches

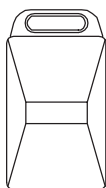
## TERMINATIONS

### 03 SOLDER LUG WITH HOLE

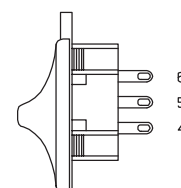
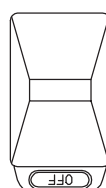
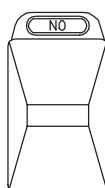


## HOUSING MARKINGS

### NONE NO MARKINGS



### D ON-OFF



**NOTE:** Housing markings are available with 'T2' mounting style only. The marking color on all housings with marking options 'D' is white, standard. Other marking colors are available, consult Customer Service Center.

Orientation of actuator and terminals.

## CONTACT MATERIAL

OPTION CODE	CONTACT MATERIAL	RATINGS	
Q	SILVER <sup>2</sup>	POWER	LP0X, LP2X MODELS: 6 AMPS @ 125 V AC or 28 V DC; 3 AMPS @ 250 V AC (UL/CSA). LP7X, LP8X MODELS: 11 AMPS @ 125/250 V AC (UL/CSA).
B	GOLD <sup>1</sup>	LOW LEVEL/DRY CIRCUIT	0.4 VA MAX. @20 V AC OR DC MAX.

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

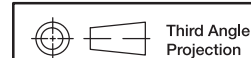
<sup>1</sup> CONTACTS & TERMINALS: Copper, with gold plate over nickel plate.

<sup>2</sup> CONTACTS & TERMINALS: Copper, silver plated (standard with all termination options).

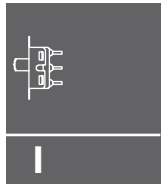
<sup>3</sup> CONTACTS & TERMINALS: Copper, with gold plate over nickel plate over silver plate.

**NOTE:** Any models supplied with Q or B contact material are RoHS compliant.

All models  with all when ordered with 'Q' contact material.

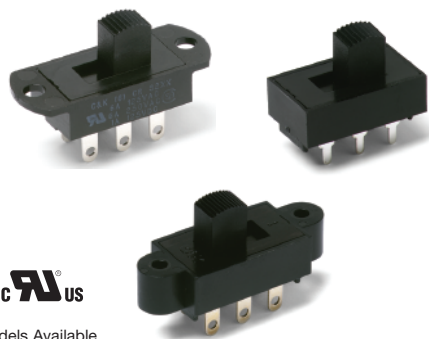


Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



Side

# S Series Slide Switches



Models Available

## Features/Benefits

- 6 to 15 AMPS
- Enclosed housing
- PC and Snap-in panel mounting
- Reversing option
- RoHS compliant

## Typical Applications

- Portable tools
- Small appliances
- Floor care products

## Specifications

**CONTACT RATING:** Q contact material (S1XX, S2XX Models): 6 AMPS @ 125 V AC; 6 AMPS @ 250 V AC; 1 AMP @ 125 V DC . (S5XX, S6XX Models): 12 AMPS @ 125 V AC; 6 AMPS @ 250 V AC; 1 AMP @ 125 V DC . (S7XX, S8XX Models): 15 AMPS @ 125 V AC; 6AMPS @ 250 V AC . See page I-32 for additional ratings.

**ELECTRICAL LIFE:** 10,000 make-and-break cycles at full load.

**CONTACT RESISTANCE:** Below 10 m Ω typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

**INSULATION RESISTANCE:** 10<sup>9</sup> Ω min.

**DIELECTRIC STRENGTH:** 1,000 Vrms min. @ sea level.

**OPERATING TEMPERATURE:** -30°C to +65°C

**STORAGE TEMPERATURE:** -30°C to +85°C

## Materials

**HOUSING:** 6/6 nylon (UL94V-2), black.

**TOP PLATE:** 6/6 nylon (UL94V-2), black.

**ACTUATOR:** 6/6 nylon (UL94V-2), black (standard).

**CONTACTS:** Q contact material: Copper, silver plated. See page I-32 for additional contact materials.

**TERMINALS:** Q contact material: Copper, silver plated. See page I-32 for additional contact materials.

**CONTACT SPRING:** Music wire or stainless steel.

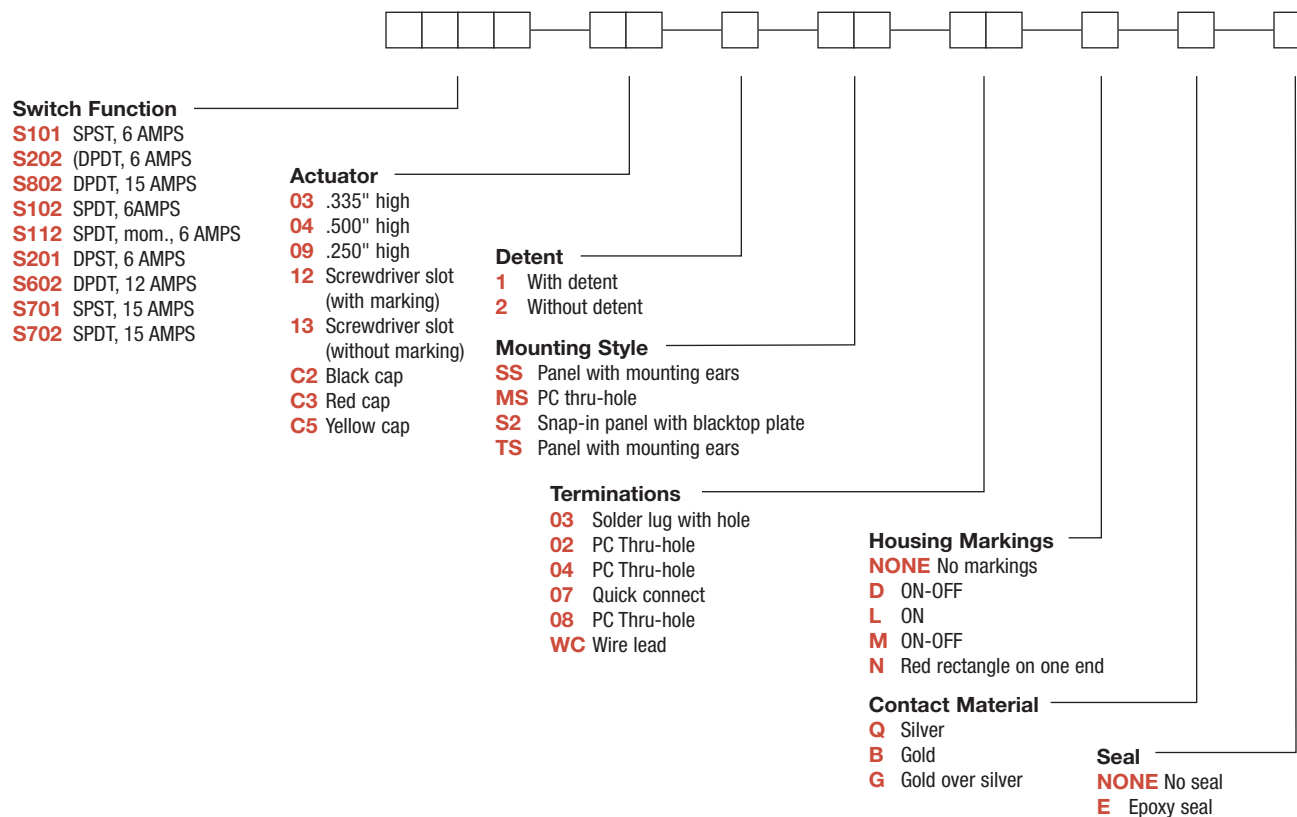
**TERMINAL SEAL:** Epoxy.

**NOTE:** Any models supplied with Q, B or G contact material are RoHS compliant.

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages I-29 through I-32. For additional options not shown in catalog, consult Customer Service Center.



Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

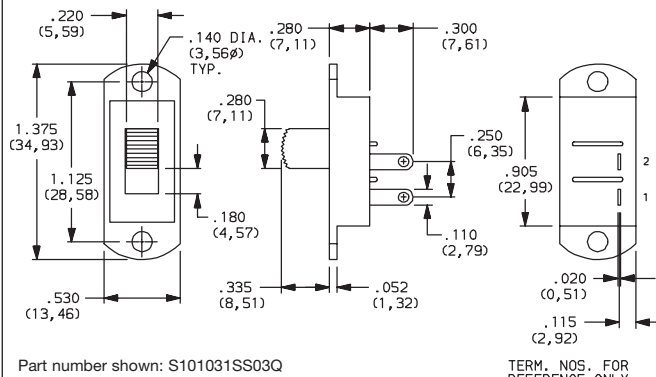
# S Series Slide Switches

## SWITCH FUNCTION

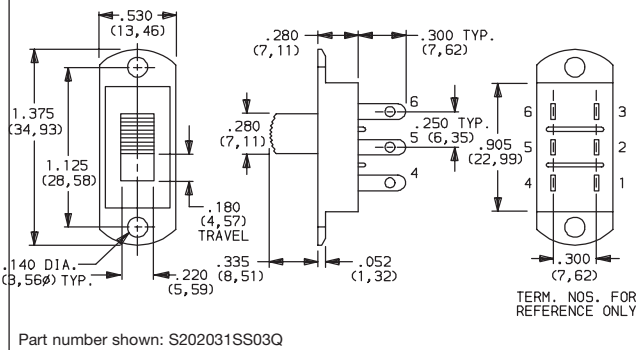


NO. POLES	MODEL NO.	AMP RATING	SWITCH FUNCTION	SCHEMATIC	AVAILABLE MOUNTING STYLES
SP	<b>S101</b>	6	SPST		SS
	<b>S102</b>	6	SPDT		MS,SS
	<b>S112</b>	6	SPDT-MOM.		MS,SS
	<b>S701</b>	15	SPST		S1,S2,S3,ST
	<b>S702</b>	15	SPDT		S1,S2,S3,ST
DP	<b>S201</b>	6	DPST		MS,SS,TS
	<b>S202</b>	6	DPDT		MS,SS,TS
	<b>S602</b>	12	DPDT		MS,SS,TS
	<b>S802</b>	15	DPDT		S1,S2,S3,ST

### SPST



### DPDT



**NOTE:** and MOM. in table indicates momentary action.

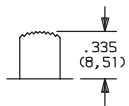
All models with all options when ordered with 'G' or 'Q' contact material.

Contacts make on side actuator throw.

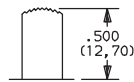
## ACTUATOR



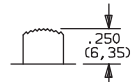
**03** .335" HIGH



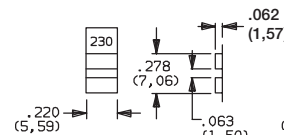
**04** .500" HIGH



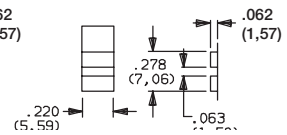
**09** .250" HIGH



**12** SCREWDRIVER SLOT (WITH MARKING)



**13** SCREWDRIVER SLOT (WITHOUT MARKING)

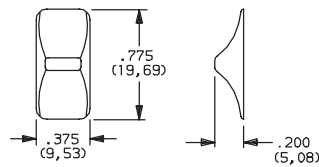


**NOTE:** Standard actuator color is black, other colors available, consult Customer Service Center. Alternate heights are available with '03, 04 and 09' actuators, consult Customer Service Center. Models with S2 mounting style, subtract .090 (2, 29). Actuators '12' and '13' are available with DPST and DPDT models only.

White 115-230 markings (std.).

Without markings.

**C2; C3; C5** SNAP-ON CAP



Available with S2 mounting style only.

OPTION CODE2	C1-CT CAP COLOR
<b>C2</b>	BLACK
<b>C3</b>	RED
<b>C5</b>	YELLOW

**NOTE:** Actuator finish: matte. If no color is specified, black will be supplied. Colored actuator caps may also be ordered separately and user installed, see page I-32.



Dimensions are shown: Inches (mm)

Specifications and dimensions subject to change





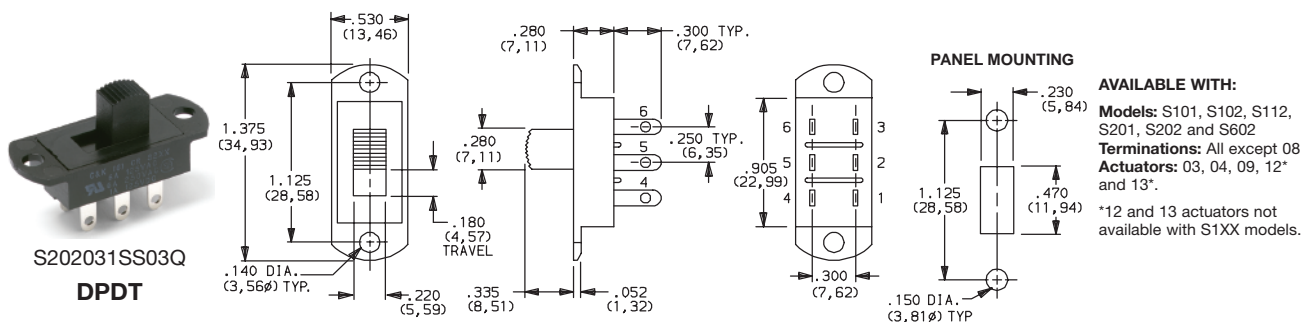
# S Series Slide Switches

## DETENT

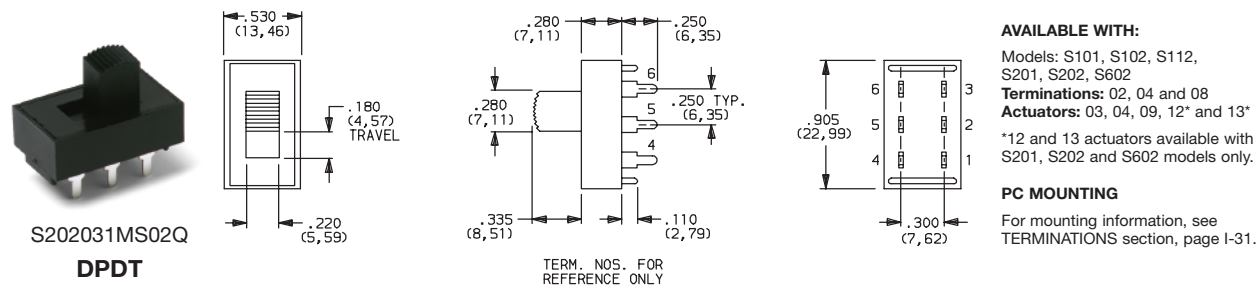
- 1 WITH DETENT**  
Standard with all maintained models: S101, S102, S201, S202, S602, S701, S702, and S802.
- 2 WITHOUT DETENT**  
Standard with all momentary models: S112.

## MOUNTING STYLE

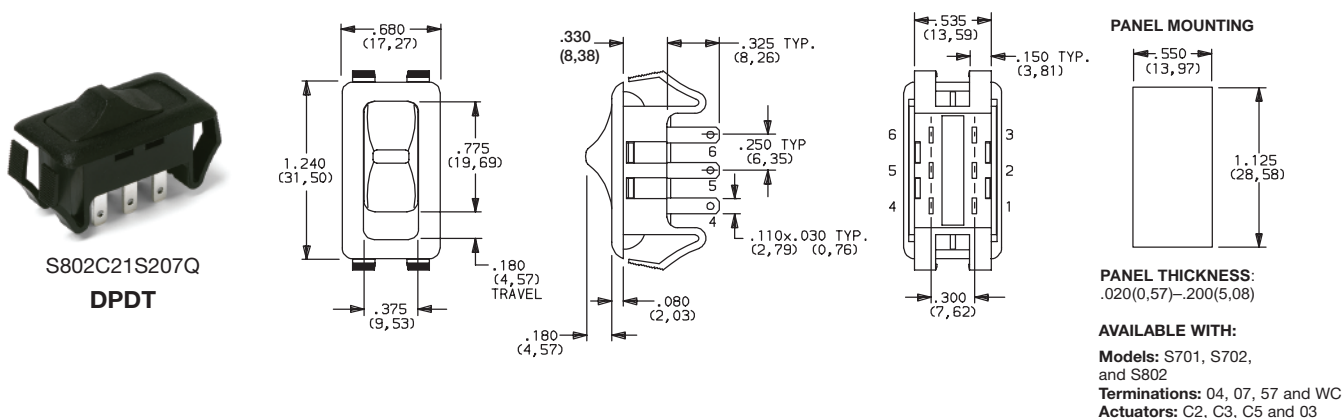
### SS PANEL WITH MOUNTING EARS



### MS PC THRU-HOLE



### S2 SNAP-IN PANEL



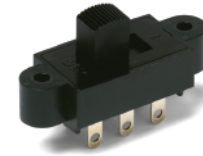
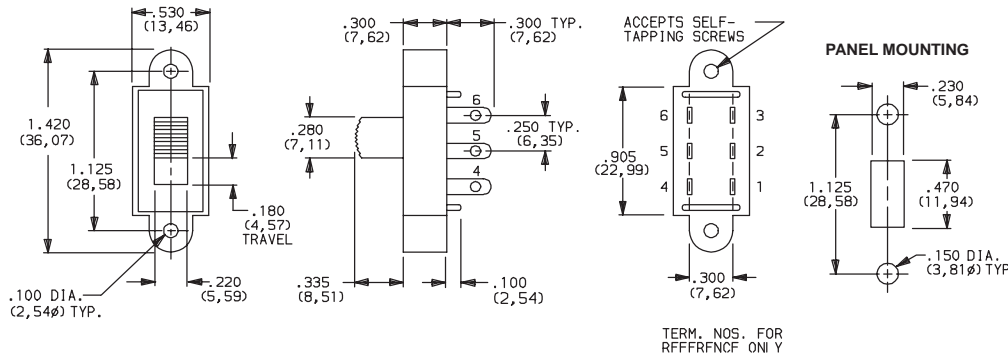
Dimensions are shown: Inch (mm)  
 Specifications and dimensions subject to change



# S Series Slide Switches

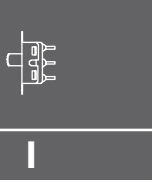
## MOUNTING STYLE

### TS PANEL WITH MOUNTING EARS



S202031TS03Q  
DPDT

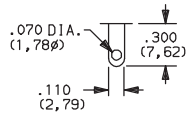
**AVAILABLE WITH:**  
**Models:** S201, S202, and S602  
**Terminations:** All  
**Actuators:** 03, 04 and 12.



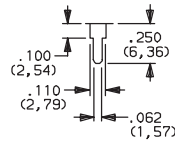
Slide

## TERMINATIONS

### 03 SOLDER LUG WITH HOLE

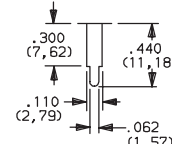


### 02 PC THRU-HOLE



Recommended with 'MS' mounting style only.

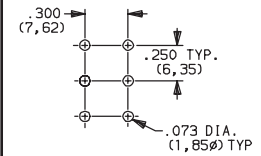
### 04 PC THRU-HOLE



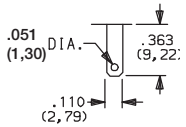
Recommended with double pole models only.

### PC MOUNTING

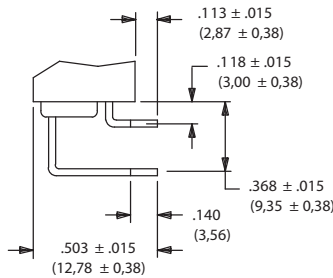
02 & 04 terminations



### 07 QUICK CONNECT

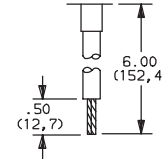


### 08 PC THRU-HOLE



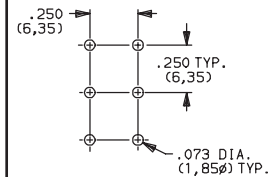
MS mounting style only.

### WC WIRE LEAD



18 AWG wire for S1XX and S2XX models. 16 AWG wire for all other models. Black wire standard, other colors and lengths available, consult Customer Service Center. UL style 1015.

08 terminations with MS mounting style.



**NOTE:** All terminals on S1XX, S2XX and S6XX models are .020 (0,51) thick; all terminals on S7XX and S8XX models are .031 (0,79) thick.



Third Angle Projection

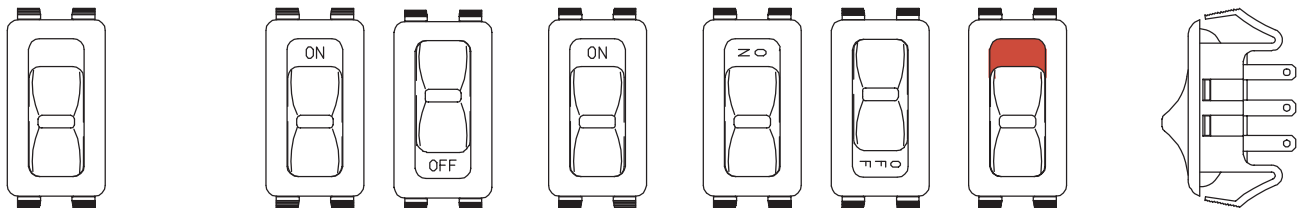


Dimensions are shown: Inches (mm)  
 Specifications and dimensions subject to change

# S Series Slide Switches

## TOP PLATE MARKINGS

**NONE** NO MARKINGS      **D** ON-OFF      **L** ON      **M** ON-OFF      **N** RED RECTANGLE ON ONE END



**NOTE:** Top plate markings are available with 'S2' mounting style only. The marking color on all top plates with marking options 'D, L and M' is white, standard. (except white top plates: marking color is black, standard). The marking color on all top plates with 'N' marking option is red, standard. Other marking colors are available, consult Customer Service Center.

**Note:** Orientation of actuator markings and terminals.

## CONTACT MATERIAL

OPTION CODE	CONTACT MATERIAL	RATINGS	
<b>Q</b>	SILVER <sup>2</sup>	POWER	S1XX, S2XX MODELS: 6 AMPS @ 125 V AC; 6 AMPS @ 250 V AC; 1 AMP @ 125 V DC  S S6XX MODELS: 12 AMPS @ 125 V AC; 6 AMPS @ 250 V AC; 1 AMP @ 125 V DC  S S7XX, S8XX MODELS: 15 AMPS @ 125 V AC; 6 AMPS @ 250 V AC  S
<b>B</b>	GOLD <sup>1</sup>	LOW LEVEL/DRY CIRCUIT	0.4 VA MAX. @ 20 V AC OR DC max.
<b>G</b>	GOLD OVER SILVER <sup>3</sup>	LOW LEVEL/DRY CIRCUIT OR POWER	S1XX, S2XX MODELS: 0.4 VA MAX. @ 20 V AC OR DC MAX. OR 6 AMPS @ 125 V AC; 6 AMPS @ 250 V AC; 1 AMP @ 125 V DC  S S6XX MODELS: 0.4 VA MAX. @ 20 V AC OR DC MAX. OR 12 AMPS @ 125 V AC; 6 AMPS @ 250 V AC; 1 AMP @ 125 V DC  S S7XX, S8XX MODELS: 0.4 VA MAX. @ 20 V AC OR DC MAX. OR 15 AMPS @ 125 V AC; 6 AMPS @ 250 V AC  S

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

<sup>1</sup> CONTACTS & TERMINALS: Copper, with gold plate over nickel plate.

<sup>2</sup> CONTACTS & TERMINALS: Copper, silver plated (standard with all termination options).

<sup>3</sup> CONTACTS & TERMINALS: Copper, with gold plate over nickel plate over silver plate.

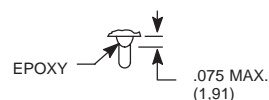
**NOTE:** Any models supplied with Q, B or G contact material are RoHS compliant. All models S with all options when ordered with 'G' or 'Q' contact material.

**NOTE:** 'G' contact material is equivalent to both 'B' and 'Q' contact materials.

## SEAL

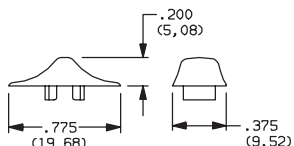
**NONE** NO SEAL

**E** EPOXY SEAL



## AVAILABLE HARDWARE

Cap, C2; C3 actuators

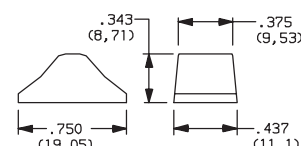


**PART NO.**

**121160100** WHITE  
**121160200** BLACK  
**121160300** RED

Material: 6/6 Nylon  
Finish: Matte

Cap, 03 actuator



**PART NO.**

**121000101** WHITE  
**121000102** BLACK  
**121000103** RED

Material: 6/6 Nylon  
Finish: Gloss

**NOTE:** Other cap colors available, consult Customer Service Center.



Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change



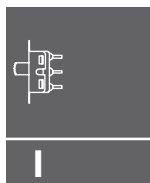
# V Series Power & Line Voltage Select Slide Switches

## Features/Benefits

- Ratings up to 10 AMPS
- Snap-in panel and PC mounting
- Actuators with screwdriver slot
- Quick connect terminals available
- RoHS compliant

## Typical Applications

- Appliances



Side

## Specifications

CONTACT RATING: 10 GPA @ 125 V AC 50/60 Hz T85;  
5 GPA @ 250 V AC 50/60 Hz T85;  
2 (0.5)A @ 250 VAC 50/60 Hz T85;  
4RA @ 30 VDC T85

ELECTRICAL LIFE: 10,000 make-and-break cycles at full load.

CONTACT RESISTANCE: Below 10 m Ω typ. initial  
@ 2-4 V DC, 100 mA.

INSULATION RESISTANCE: 10<sup>9</sup> Ω min.

DIELECTRIC STRENGTH: 1,000 Vrms min. @ sea level.

OPERATING TEMPERATURE: -30°C to +85°C.

## Materials

HOUSING: 6/6 nylon (UL94V-2), black.

TOP PLATE: 6/6 nylon (UL94V-2), black.

ACTUATOR: Glass filled polyester (UL94V-0), '01 and 02' styles, black (standard); '12, 13 and 14' styles, red (standard).

CONTACTS: Copper, silver plated.

TERMINALS: Copper, silver plated.

CONTACT SPRING: Music wire or stainless steel.

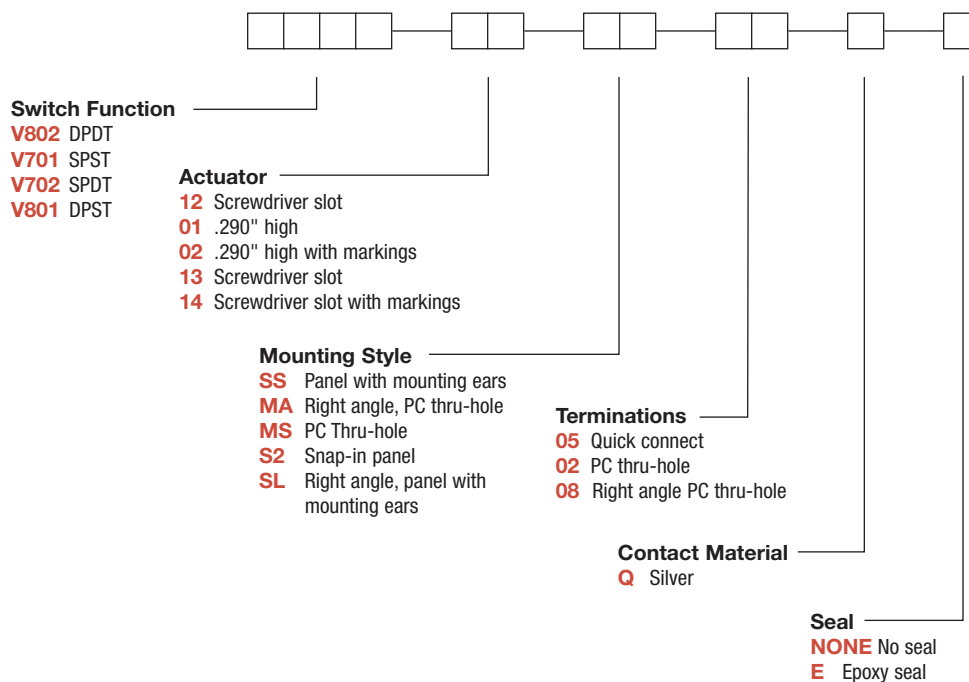
TERMINAL SEAL: Epoxy.

**NOTE:** Any models supplied with Q, B or G contact material are RoHS compliant.

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages I-34 through I-36. For additional options not shown in catalog, consult Customer Service Center.



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

# V Series Power & Line Voltage Select Slide Switches

## SWITCH FUNCTION

NO. POLES	MODEL NO.	SWITCH FUNCTION	SCHEMATIC	AVAILABLE MOUNTING STYLES
SP	V701	SPST		ALL
	V702	SPDT		ALL

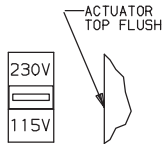
All models with all options.

Contacts make on side actuator throw.

NO. POLES	MODEL NO.	SWITCH FUNCTION	SCHEMATIC	AVAILABLE MOUNTING STYLES
DP	V801	DPST		ALL
	V802	DPDT		ALL

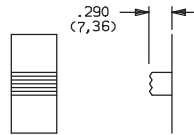
## ACTUATOR

**12** SCREWDRIVER SLOT WITH MARKING



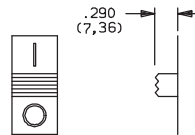
Actuator color is red with white 115V-230V markings (std.).

**01** .290" HIGH



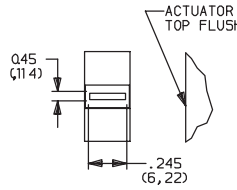
Actuator color is black.

**02** .290" HIGH WITH MARKINGS



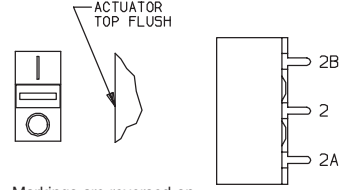
markings are reversed on V702 and V802 models. Actuator color is black with white markings (std.).

**13** SCREWDRIVER SLOT NO MARKING



Actuator color is red.

**14** SCREWDRIVER SLOT WITH MARKINGS



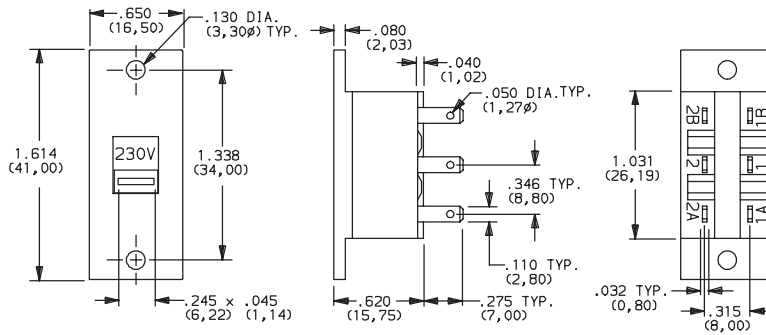
Markings are reversed on V702 and V802 models. Actuator color is red with white markings (std.). **Note:** Orientation of actuator markings and terminals.

## MOUNTING STYLE

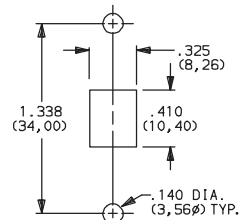
**SS** PANEL WITH MOUNTING EARS



V80212SS05Q  
DPDT



PANEL MOUNTING

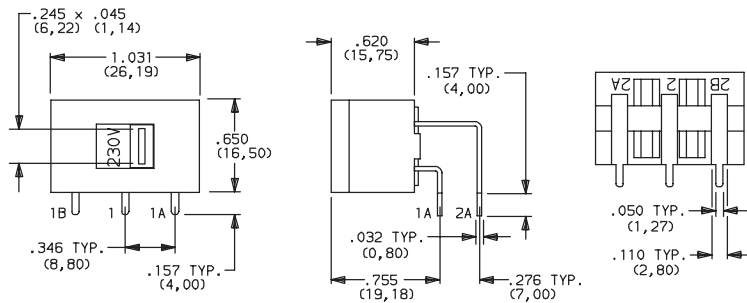


**AVAILABLE WITH:**  
Models: All.  
Terminations: 02 and 05

**MA** RIGHT ANGLE, PC THRU-HOLE



V80212MA08Q  
Horizontal Actuation  
DPDT



**AVAILABLE WITH:**

Models: All  
Terminations: 08

**PC MOUNTING**

PC mount, side actuated.  
For mounting information, see TERMINATIONS section, page I-36.



Third Angle Projection

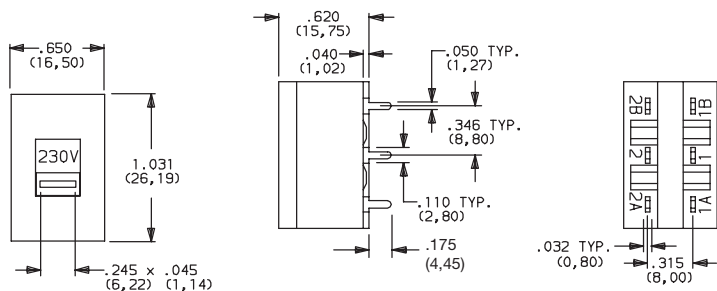
Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change



# V Series Power & Line Voltage Select Slide Switches

## MOUNTING STYLE

### MS PC THRU-HOLE



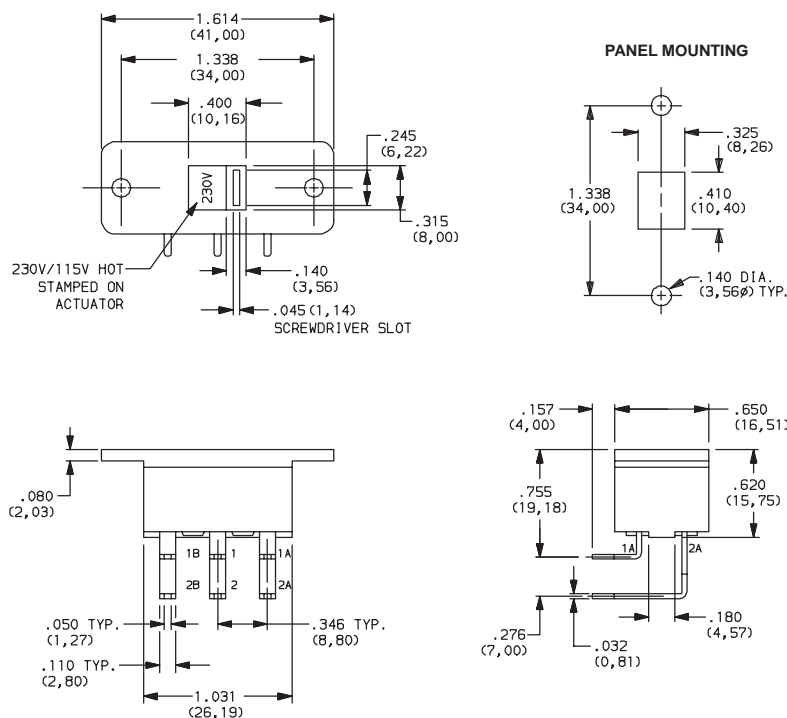
**AVAILABLE WITH:**  
All models with 02 terminations

**PC MOUNTING**  
PC mount, top actuated.  
For mounting information,  
see TERMINATIONS section, page I-36.



V80212MS02Q  
DPDT

### SL RIGHT ANGLE PANEL WITH MOUNTING EARS

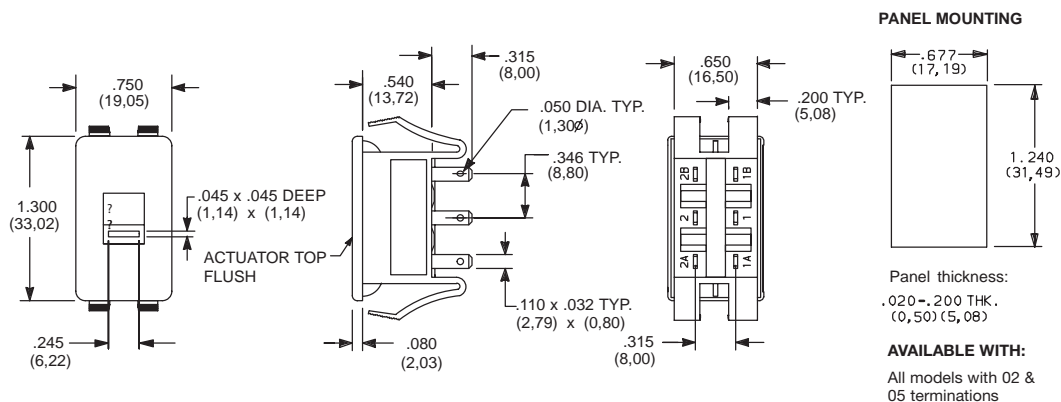


**AVAILABLE WITH:**  
All models with 08 terminations



V80213SL08Q  
Horizontal Actuation  
DPDT

### S2 SNAP-IN PANEL MOUNT



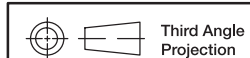
#### PANEL MOUNTING

Panel thickness:  
.020-.200 THK.  
(0,50) (5,08)

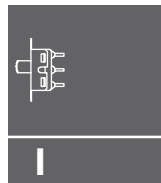
**AVAILABLE WITH:**  
All models with 02 &  
05 terminations



V80212S205Q  
DPDT



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

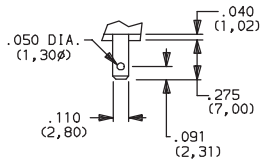


Slide

# V Series Power & Line Voltage Select Slide Switches

## TERMINATIONS

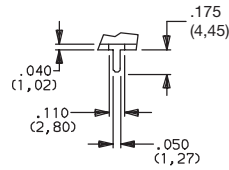
### 05 QUICK CONNECT



.032 THK.  
(0,80)

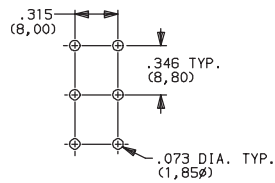
Fits .110 in. quick connector.

### 02 PC THRU-HOLE



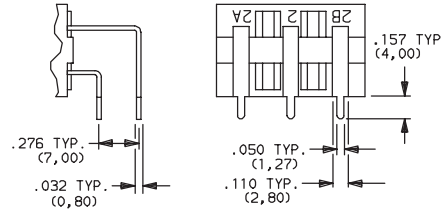
.032 THK.  
(0,80)

#### PC MOUNTING



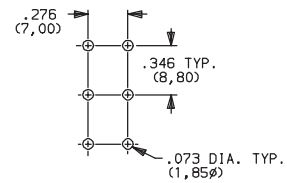
MS, SS Mounting Styles.

### 08 PC THRU-HOLE



Not available with 'MS, SS or S2' mounting styles.

#### PC MOUNTING



MA, SL Mounting Styles.

## CONTACT MATERIAL

OPTION CODE	CONTACT MATERIAL	RATINGS	
Q	SILVER <sup>1</sup>	POWER	10 GPA @ 125 V AC 50/60 Hz T85; 5 GPA @ 250 V AC 50/60 Hz T85; 2 (0.5)A @ 250 VAC 50/60 Hz T85; 4RA @ 30 VDC T85

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

<sup>1</sup> CONTACTS & TERMINALS: Copper, silver plated (standard with all termination options).

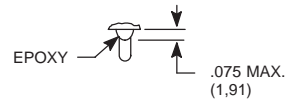
All models   <sup>15</sup> with all options.

**NOTE:** Any models supplied with Q contact material are RoHS compliant.

## SEAL

**NONE** NO SEAL

**E** EPOXY SEAL



Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

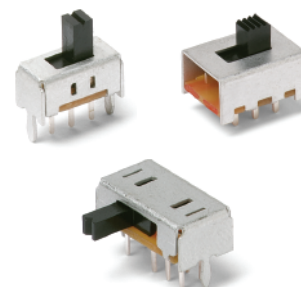
# OS Series Miniature Slide Switches

## Features/Benefits

- Variety of actuators & terminations
- PC and panel mounting
- Shorting or non-shorting contacts
- RoHS compliant
- Halogen free material

## Typical Applications

- Test & measurement equipment
- Computer peripherals & network products
- Consumer products



## Specifications

CONTACT RATING: See individual parts.  
 MECHANICAL & ELECTRICAL LIFE: 10,000 cycles.  
 CONTACT RESISTANCE: 20 mΩ or less.  
 INSULATION RESISTANCE: 100 MΩ min. at 500 VDC.  
 DIELECTRIC STRENGTH: 500 VAC for 1 minute.  
 OPERATING TEMPERATURE: -30°C to +70°C.  
 PACKAGING: Bulk

\* For RoHS compatible switches contact customer service.

## Materials

BASE: Phenolic resin.  
 ACTUATOR: Standard: POM, Black.  
 High Temperature Option: PA46, Black.  
 HOUSING PLATE: Non-compatible; SPCC Sn plated.  
 Compatible; SPCC Ni plated.  
 MOVABLE CONTACT: Copper alloy, silver plated.  
 STATIONARY CONTACTS: Brass, silver plated.  
 TERMINALS: Brass, silver plated.  
 TERMINAL SEALED.

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

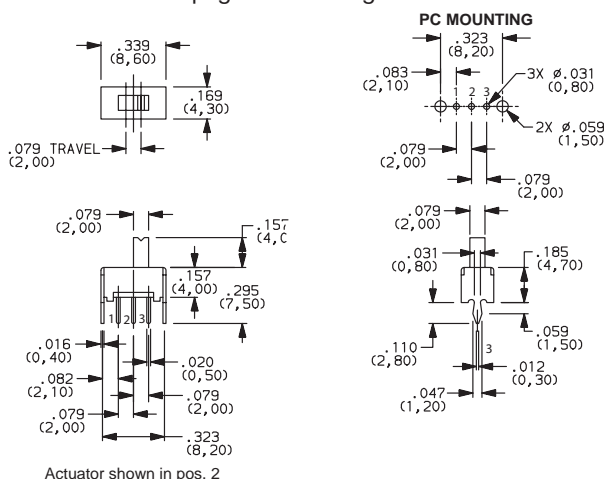
## How To Order

Complete part numbers for OS Series Slide Switches are shown on pages I-37 through I-43.

PART NUMBER			SWITCH FUNCTION	
	RoHS Compliant	RoHS Compatible	POS.1	POS.2
<b>OS102011MS2QN1</b> (non-shorting)	YES	NO	ON	ON
<b>OS102011MS2QN1C*</b> (non-shorting)	YES	YES	ON	ON
<b>OS102011MS2QS1</b> (shorting)	YES	NO	ON	ON
<b>OS102011MS2QS1C*</b> (shorting)	YES	YES	ON	ON
CONN. TERMINALS			1-2	2-3
SCHMATIC				
SPDT				

CONTACT RATING: 0.1A @ 12 VDC

\* "C" option at the end of part number designates high temperature actuators



Actuator shown in pos. 2

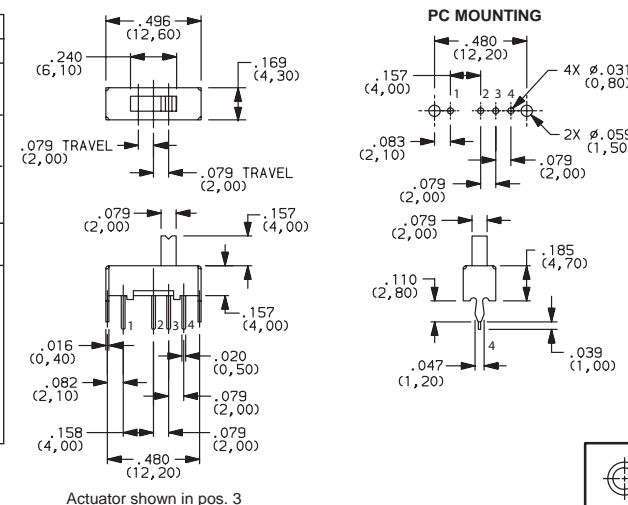


OS102011MS2QN1  
SPDT

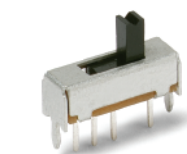
PART NUMBER			SWITCH FUNCTION		
	ROHS Compliant	ROHS Compatible	POS.1	POS.2	POS.3
<b>OS103011MS8QP1</b> (Non-specified)	YES	NO	ON	ON	ON
<b>OS103011MS8QP1C*</b> (Non-specified)	YES	YES	ON	ON	ON
CONN. TERMINALS			1-2	2-3	2-4
SCHMATIC					
SP3T					

CONTACT RATING: 0.1A @ 12 VDC

\* "C" option at the end of part number designates high temperature actuators



Actuator shown in pos. 3



OS103011MS8QP1  
SP3T

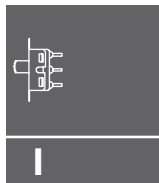


Third Angle Projection

Dimensions are shown: Inches (mm)  
 Specifications and dimensions subject to change



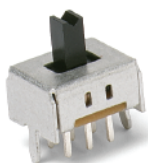
8 aug 17



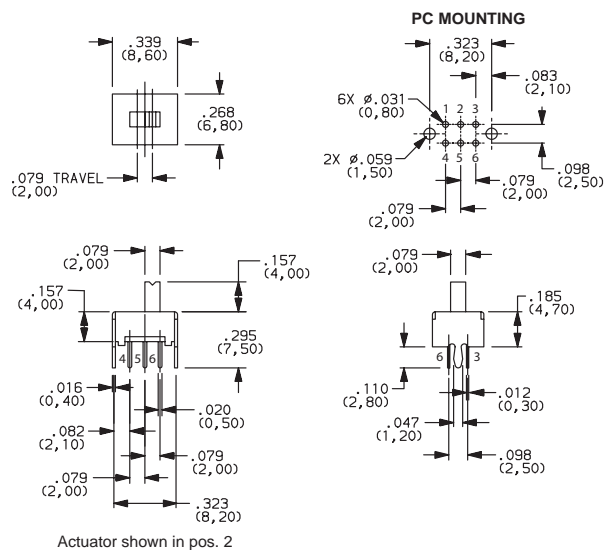
Slide



# OS Series Miniature Slide Switches

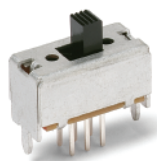


OS202011MS2QS1  
DPDT

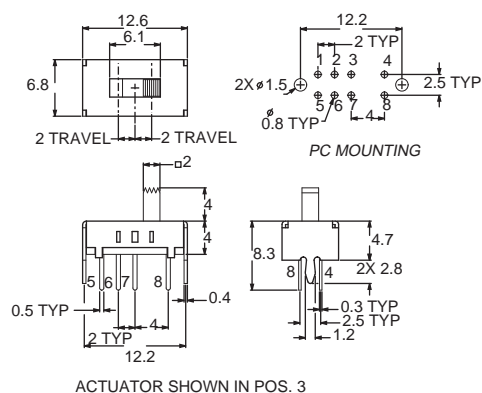


PART NUMBER	RoHS Compliant	RoHS Compatible	SWITCH FUNCTION	
			POS.1	POS.2
OS202011MS2QS1 (Shorting)	YES	NO	ON	ON
OS202011MS2QN1 (Non-shorting)	YES	NO	ON	ON
CONN. TERMINALS			1-2, 4-5	2-3, 5-6
SCHEMATIC				
DPDT				

CONTACT RATING: 0.1A @ 12 VDC

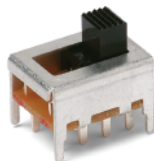


OS203011MS1QP1  
DP3T

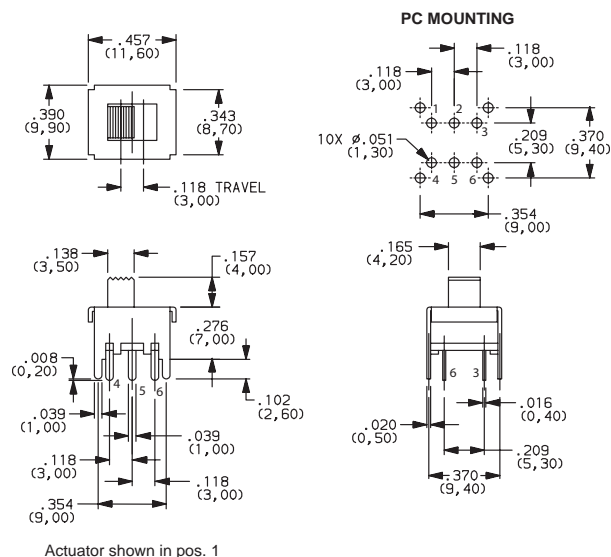


PART NUMBER	ROHS Compliant	ROHS Compatible	SWITCH FUNCTION		
			POS.1	POS.2	POS.3
OS203011MS1QP1 (Non-specified)	YES	NO	ON	ON	ON
CONN. TERMINALS			1-3, 5-7	2-3, 6-7	3-4, 7-8
SCHEMATIC					
DP3T					

CONTACT RATING: 0.3A @ 30 VDC

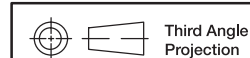


OS202013MT5QN1  
DPDT



PART NUMBER	RoHS Compliant	RoHS Compatible	SWITCH FUNCTION	
			POS.1	POS.2
OS202013MT5QN1 (Non-shorting)	YES	NO	ON	ON
CONN. TERMINALS			1-2, 4-5	2-3, 5-6
SCHEMATIC				
DPDT				

CONTACT RATING: 0.3A @ 30 VDC



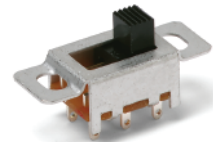
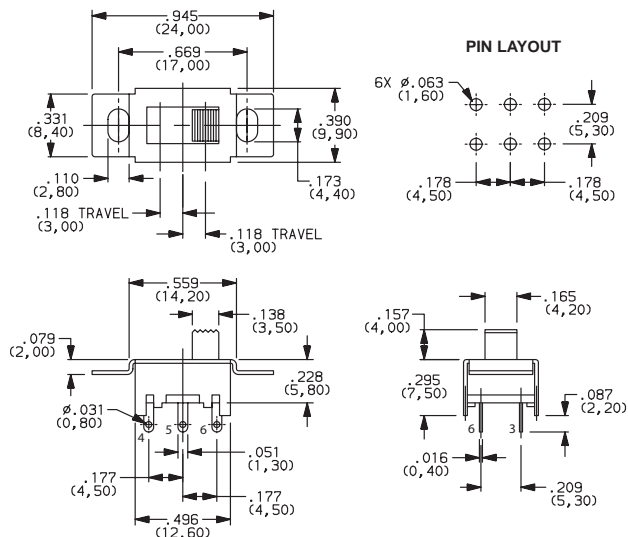
Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change



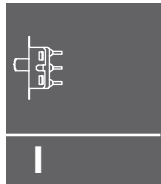
# OS Series Miniature Slide Switches

PART NUMBER	ROHS		SWITCH FUNCTION		
	Compliant	Compatible	POS.1	POS.2	POS.3
<b>OS203013MT7QN1</b> (Non-shorting)	YES	NO	ON	OFF	ON
CONN. TERMINALS			1-2, 4-5		2-3, 5-6
SCHEMATIC					
DP3T					

CONTACT RATING: 0.3A @ 30 VDC



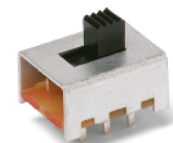
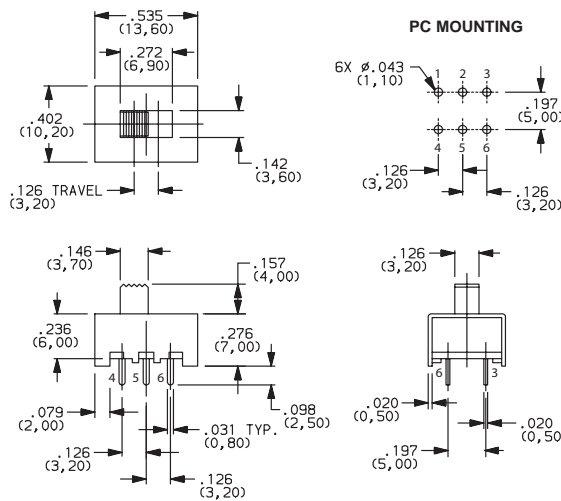
OS203013MT7QN1  
DP3T



Slide

PART NUMBER	ROHS		SWITCH FUNCTION	
	Compliant	Compatible	POS.1	POS.2
<b>OS202013MT8QN1</b> (Non-shorting)	YES	NO	ON	ON
CONN. TERMINALS			1-2, 4-5	2-3, 5-6
SCHEMATIC				
DPDT				

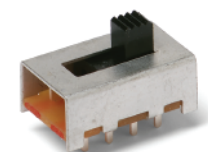
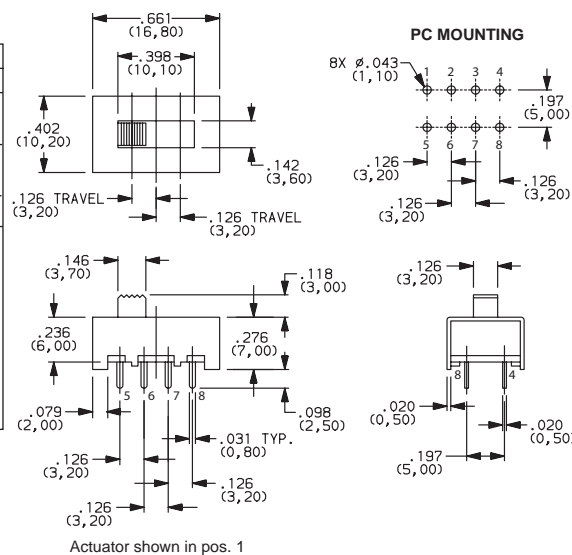
CONTACT RATING: 0.3A @ 30 VDC



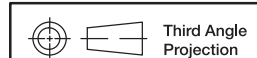
OS202013MT8QN1  
DPDT

PART NUMBER	ROHS		SWITCH FUNCTION		
	Compliant	Compatible	POS.1	POS.2	POS.3
<b>OS203013MT8QN1</b> (Non-shorting)	YES	NO	ON	ON	ON
CONN. TERMINALS			1-2, 5-6	2-3, 6-7	3-4, 7-8
SCHEMATIC					
DP3T					

CONTACT RATING: 0.3A @ 30 VDC



OS203013MT8QN1  
DP3T

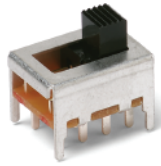


Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

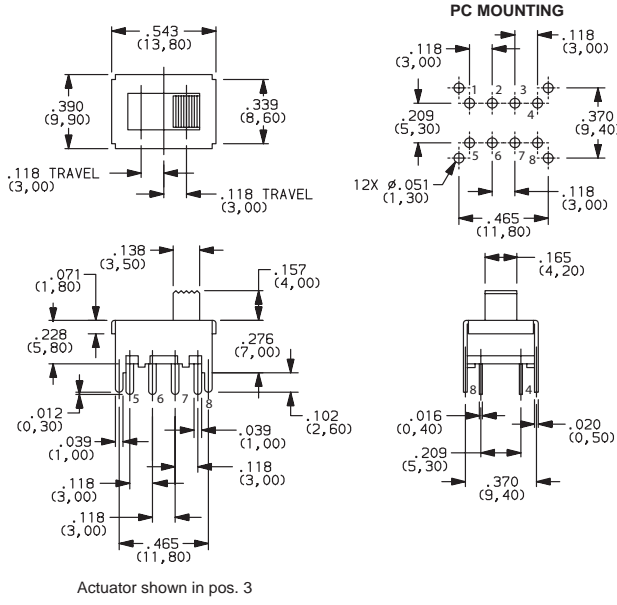


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# OS Series Miniature Slide Switches



OS203013MT6QN1  
DP3T

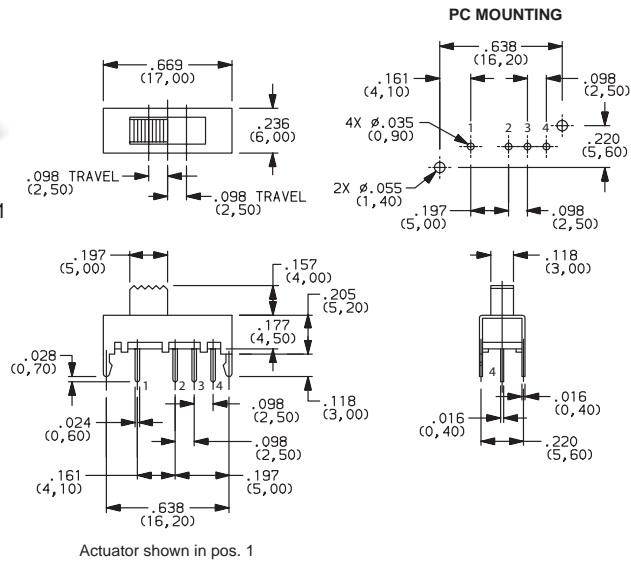


PART NUMBER	ROHS Compliant	ROHS Compatible	SWITCH FUNCTION		
			POS.1	POS.2	POS.3
OS203013MT6QN1 (Non-shorting)	YES	NO	ON	ON	ON
CONN. TERMINALS			1-2, 5-6	2-3, 6-7	3-4, 7-8
SCHEMATIC					
DP3T					

CONTACT RATING: 0.2A @ 30 VDC

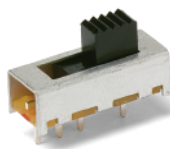


OS103012MU1QP1  
SP3T

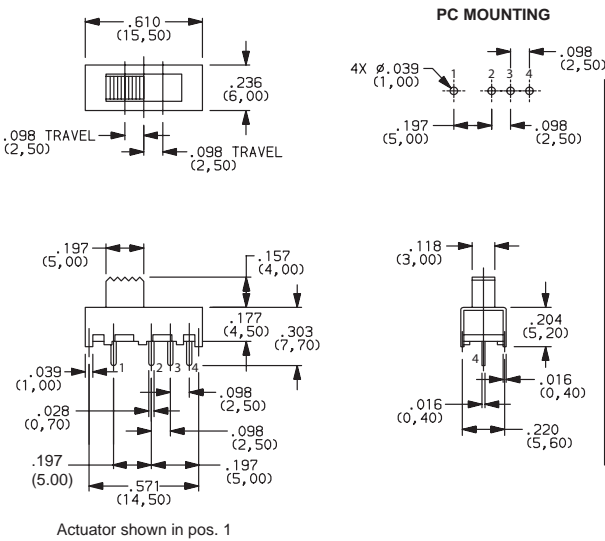


PART NUMBER	ROHS Compliant	ROHS Compatible	SWITCH FUNCTION		
			POS.1	POS.2	POS.3
OS103012MU1QP1 (Non-shorting)	YES	NO	ON	ON	ON
CONN. TERMINALS			1-2	2-3	2-4
SCHEMATIC					
SP3T					

CONTACT RATING: 0.2A @ 30 VDC

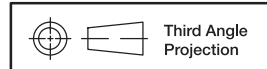


OS103012MU2QP1  
SP3T



PART NUMBER	ROHS Compliant	ROHS Compatible	SWITCH FUNCTION		
			POS.1	POS.2	POS.3
OS103012MU2QP1 (Non-shorting)	YES	NO	ON	ON	ON
CONN. TERMINALS			1-2	2-3	2-4
SCHEMATIC					
SP3T					

CONTACT RATING: 0.2A @ 30 VDC



Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

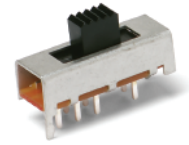
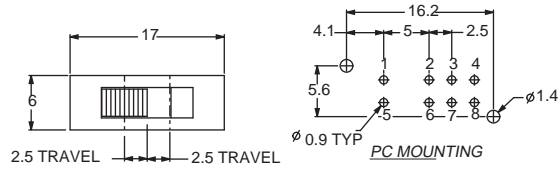


Slide

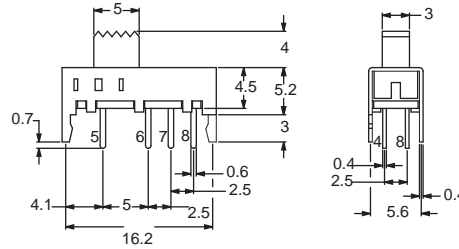
# OS Series Miniature Slide Switches

PART NUMBER	ROHS Compliant	ROHS Compatible	SWITCH FUNCTION		
			POS.1	POS.2	POS.3
<b>OS203012MU5QP1</b> (Non-specified)	YES	NO	ON	ON	ON
CONN. TERMINALS			1-2, 5-6	2-3, 6-7	2-4, 6-8
SCHEMATIC					
<b>DP3T</b>					

CONTACT RATING: 0.1A @ 30 VDC



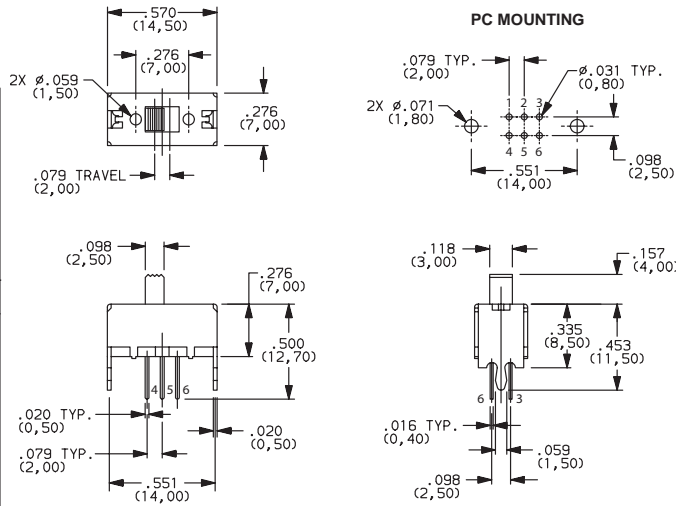
OS203012MU5QP1  
**DP3T**



ACTUATOR SHOWN IN POS. 1

PART NUMBER	RoHS Compliant	RoHS Compatible	SWITCH FUNCTION	
			POS.1	POS.2
<b>OS202011MV4QN1</b> (Non-shorting)	YES	NO	ON	ON
<b>OS202011MV4QS1</b> (Shorting)	YES	NO	ON	ON
CONN. TERMINALS			1-2, 4-5	2-3, 5-6
SCHEMATIC				
<b>DPDT</b>				

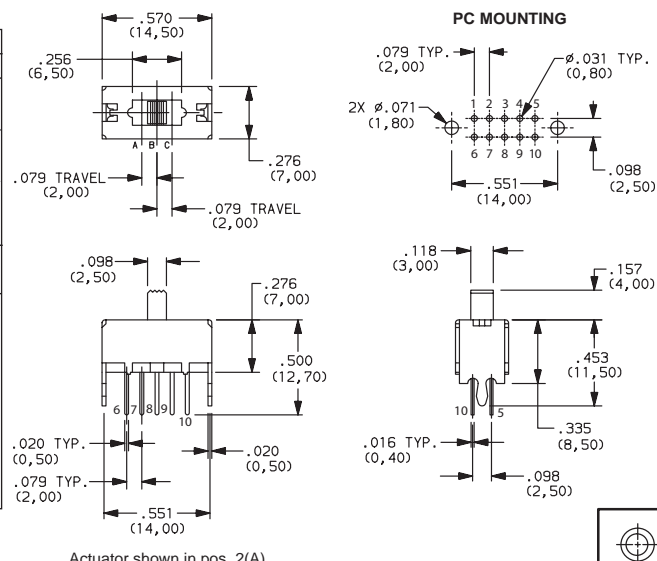
CONTACT RATING: 0.1A @ 30 VDC



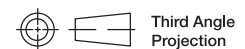
OS202011MV4QN1  
**DPDT**

PART NUMBER	ROHS Compliant	ROHS Compatible	SWITCH FUNCTION		
			POS.1	POS.2	POS.3
<b>OS203011MV9QS1</b> (Shorting)	YES	NO	ON	ON	ON
<b>OS203011MV9QN1</b> (Non-Shorting)	YES	NO	ON	ON	ON
CONN. TERMINALS			1-2-5 6-7-10	1-3-5 6-8-10	1-4-5 6-9-10
SCHEMATIC					
<b>DP3T</b>					

CONTACT RATING: 0.1A @ 30 VDC



OS203011MV9QS1  
**DP3T**



Third Angle Projection

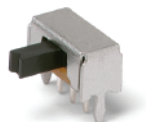
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



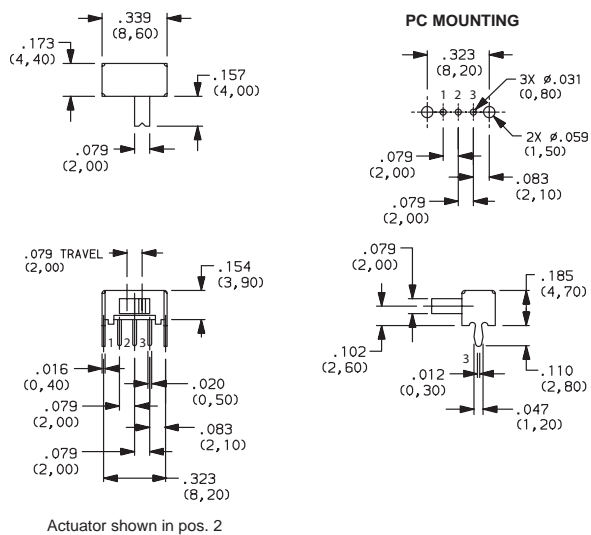
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# OS Series Miniature Slide Switches



OS102011MA1QN1  
SPDT



PART NUMBER	RoHS Compliant	RoHS Compatible	SWITCH FUNCTION	
			POS.1	POS.2
OS102011MA1QN1 (Non-shorting)	YES	NO	ON	ON
OS102011MA1QN1C* (Non-shorting)	YES	YES	ON	ON
OS102011MA1QS1 (Shorting)	YES	NO	ON	ON
OS102011MA1QS1C* (Shorting)	YES	YES	ON	ON
CONN. TERMINALS			1-2	2-3
SCHEMATIC				
<p>SPDT</p>				

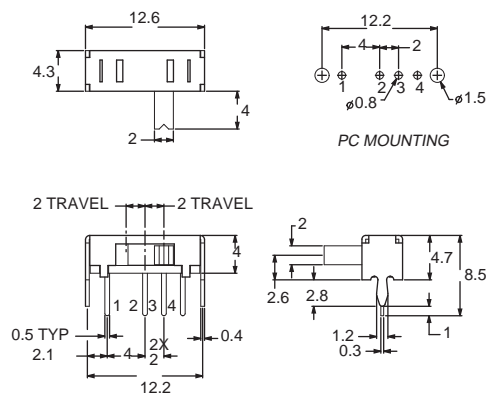
CONTACT RATING: 0.1A @ 12 VDC

\* "C" option at the end of part number designates high temperature actuators

Slide



OS103011MA7QP1  
SP3T



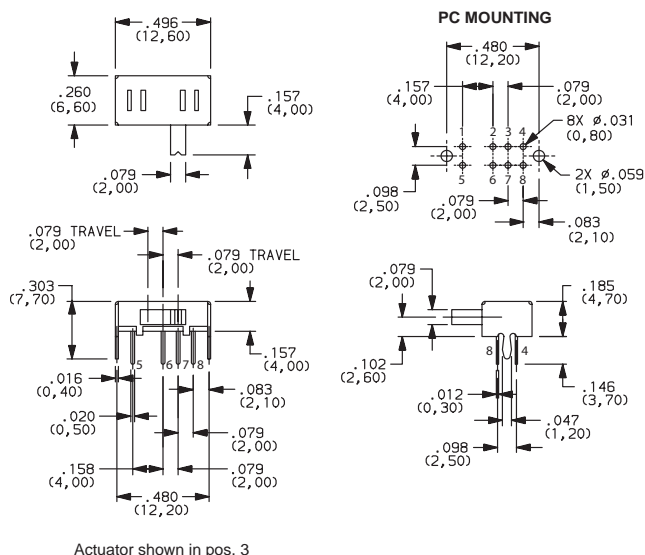
PART NUMBER	RoHS Compliant	RoHS Compatible	SWITCH FUNCTION		
			POS.1	POS.2	POS.3
OS103011MA7QP1 (Non-specified)	YES	NO	ON	ON	ON
OS103011MA7QP1C* (Non-specified)	YES	YES	ON	ON	ON
CONN. TERMINALS			1-2	2-3	2-4
SCHEMATIC					
<p>SP3T</p>					

CONTACT RATING: 0.1A @ 12 VDC

\* "C" option at the end of part number designates high temperature actuators

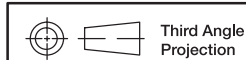


OS203011MA2QP1  
DP3T



PART NUMBER	RoHS Compliant	RoHS Compatible	SWITCH FUNCTION		
			POS.1	POS.2	POS.3
OS203011MA2QP1 (Non-specified)	YES	NO	ON	ON	ON
CONN. TERMINALS			1-2, 5-6	2-3, 6-7	2-4, 6-8
SCHEMATIC					
<p>DP3T</p>					

CONTACT RATING: 0.1A @ 12 VDC



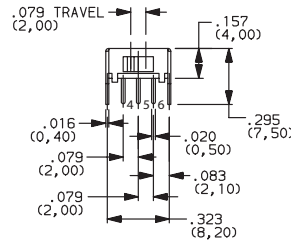
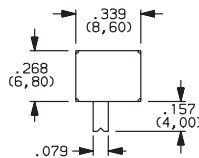
Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change



# OS Series Miniature Slide Switches

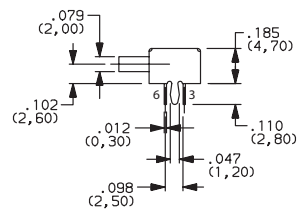
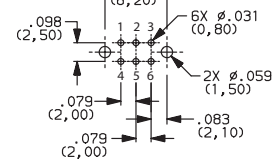
PART NUMBER	RoHS Compliant	RoHS Compatible	SWITCH FUNCTION	
			POS.1	POS.2
<b>OS202011MA0QN1</b> (Non-shorting)	YES	NO	ON	ON
<b>OS202011MA0QS1</b> (Shorting)	YES	NO	ON	ON
CONN. TERMINALS			1-2, 4-5	2-3, 5-6
SCHEMATIC				
<b>DPDT</b>				

CONTACT RATING: 0.1A @ 12 VDC

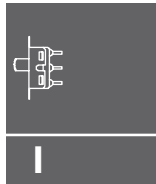


Actuator shown in pos. 1

## PC MOUNTING



OS202011MA0QN1  
DPDT



Slide

# PCM Series Ultraminiature Surface Mount Slide Switches



## Features/Benefits

- Ultraminiature surface mount
- Low profile
- SPDT & SP3T models
- RoHS compliant

## Typical Applications

- Computer peripherals & network products
- Telecommunication products
- Test & measurement equipment

## Specifications

CONTACT RATING: 0.3A @ 6 VDC.  
 MECHANICAL LIFE: 10,000 cycles.  
 CONTACT RESISTANCE: 70 m Ω max.  
 INSULATION RESISTANCE: 100 M Ω min. @ 500V.  
 DIELECTRIC STRENGTH: 500 VAC min.  
 OPERATING TEMPERATURE: -20°C to +85°C.  
 SOLDERABILITY: 255C max. solder temperature.  
 PACKAGING: Tape & reel.

## Materials

CASE: PA6T  
 COVER: Stainless steel.  
 SLIDER: Nylon 4/6  
 BRUSH: Copper alloy silver clad.  
 TERMINALS: Copper alloy, silver plated.

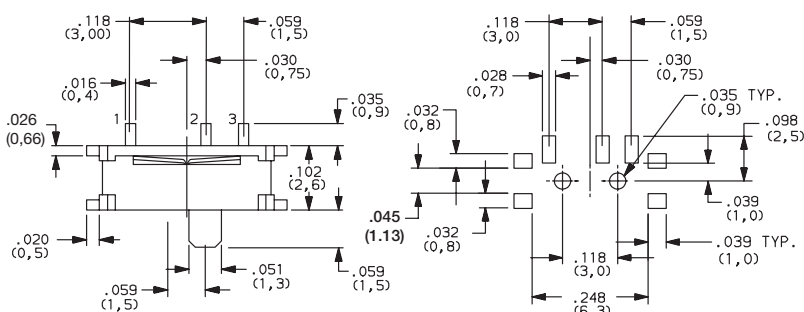
**NOTE:** All models RoHS compliant and compatible with all options.

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

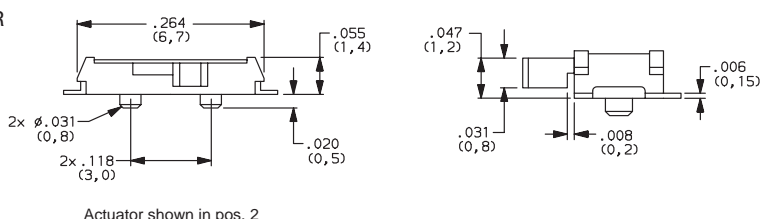
## How To Order

Complete part numbers for PCM Series Ultraminiature Surface Mount Slide Switches are shown below and on page I-45.

### PC MOUNTING



PCM12SMTR  
SPDT

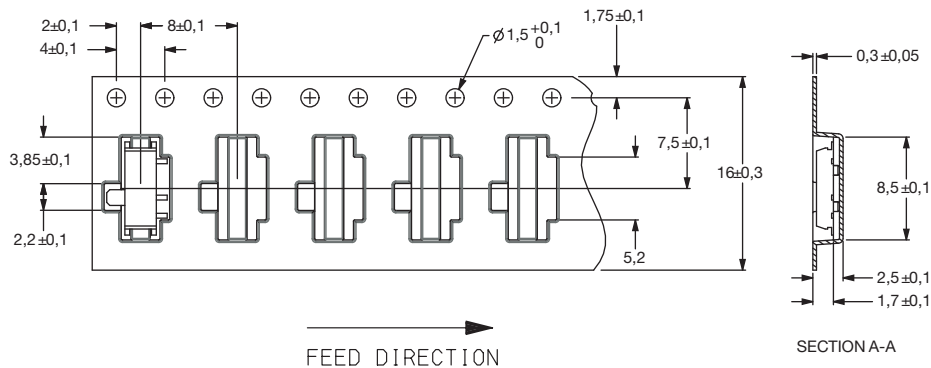


PART NUMBER	SWITCH FUNCTION	
	POS. 1	POS. 2
<b>PCM12SMTR</b>	ON	ON
CONN. TERMINALS	1-2	2-3
SCHEMATIC		
SPDT		

### TAPE & REEL

For part number PCM12SMTR

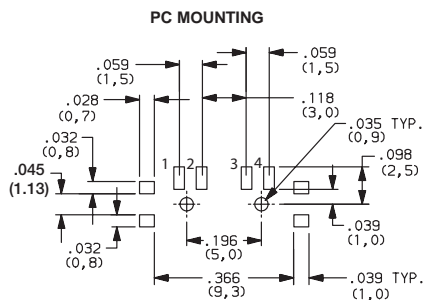
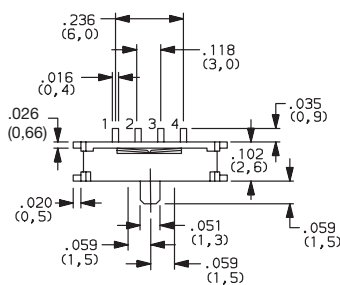
Quantity per reel 3500



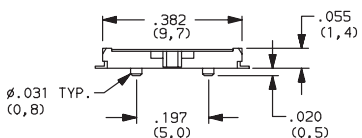
Dimensions are shown: Inch (mm)  
 Specifications and dimensions subject to change

# PCM Series Ultraminiature Surface Mount Slide Switches

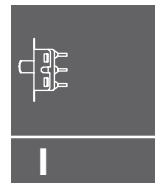
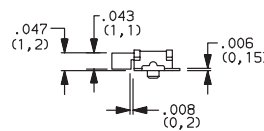
PART NUMBER	SWITCH FUNCTION		
	POS. 1	POS. 2	POS. 3
<b>PCM13SMTR</b>	ON	ON	ON
CONN. TERMINALS	1-3	2-3	3-4
SCHEMATIC			
SP3T			



PCM13SMTR  
SP3T



Actuator shown in pos. 2

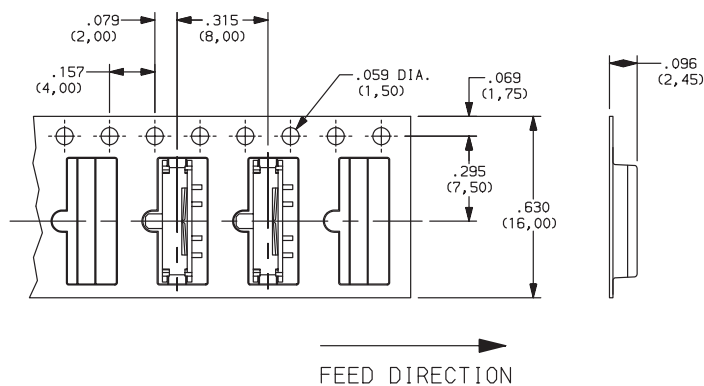


Slide

## TAPE & REEL

For part number PCM13SMTR

Quantity per reel 3500



Third Angle  
Projection

Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



# AYZ Series Miniature Slide Switches



## Features/Benefits

- Low profile
- Single & double pole models
- Double & triple throw models
- RoHS compatible

## Typical Applications

- Computer peripherals & network products
- Telecommunication products
- Test & measurement equipment

## Specifications

MAX. SWITCHING POWER: 1.2 VA  
 MAX. SWITCHING VOLTAGE: 12 VDC  
 MAX. SWITCHING CURRENT: 100 mA  
 MECHANICAL LIFE: 10,000 operations.  
 CONTACT RESISTANCE: <math><80\text{m}\Omega</math>  
 INSULATION RESISTANCE: >10  $\Omega$   
 DIELECTRIC STRENGTH: 0.1 kV at 50 Hz/1 min.  
 OPERATING TEMPERATURE: -10°C to +60°C  
 PACKAGING: Tape & reel, see page I-47.

## Materials

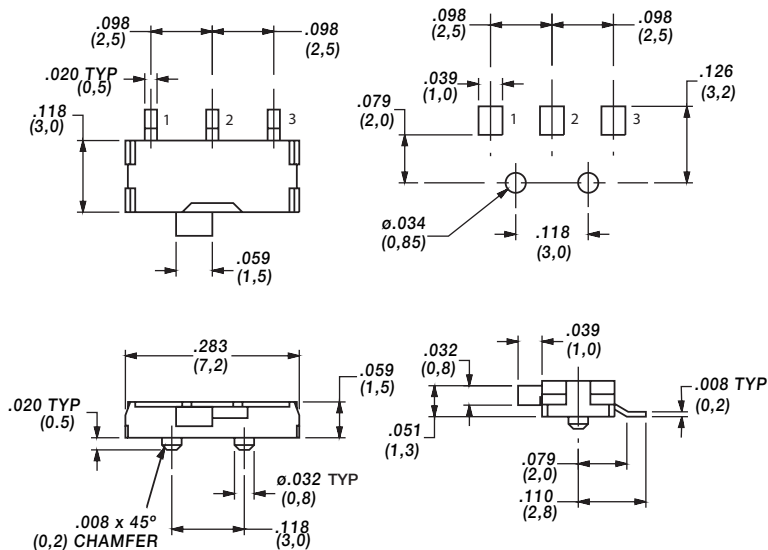
HOUSING: Glass filled nylon 4/6 (UL 94V-0).  
 ACTUATOR: Glass filled nylon 6/6 (UL 94V-0), except options ending in C which are glass filled nylon 4/6 (UL94V-0).  
 COVER: Nickel silver.  
 MOVABLE CONTACT: Copper alloy, silver plated.  
 FIXED CONTACT: Brass, silver plated.  
 CONTACT SPRING: Contact bronze.

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## How To Order

Complete part numbers for AYZ Series Miniature Slide Switches are shown on pages I-46 through I-48.

### PC MOUNTING



SWITCH SHOWN IN POSITION 1

PART NUMBER	RoHS		SWITCH FUNCTION	
	Compliant	Compatible	POS.1	POS.2
<b>AYZ0102AGRLC</b>	YES	YES		
CONN. TERMINALS			1-2	2-3
SCHEMATIC				
SPDT				

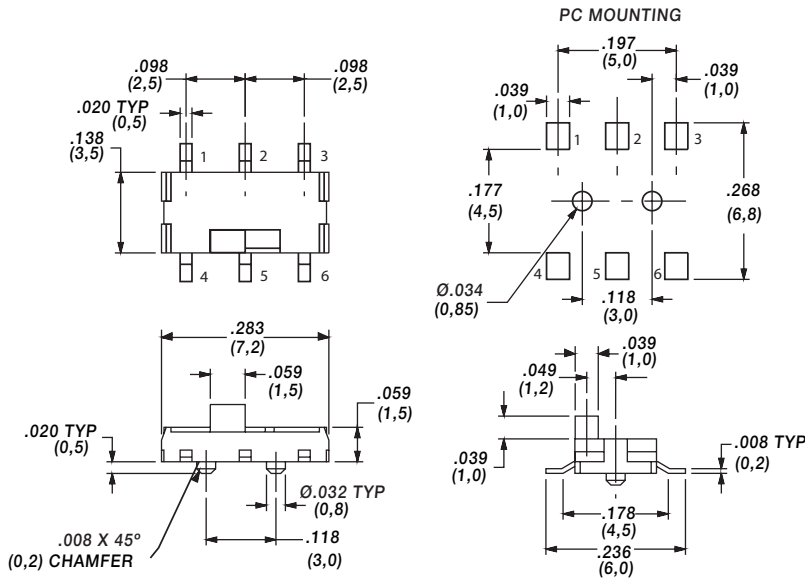


Dimensions are shown: Inch (mm)  
 Specifications and dimensions subject to change



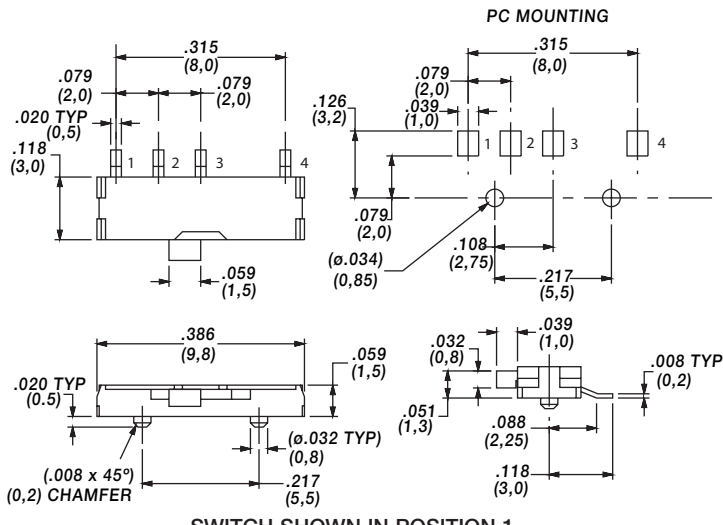
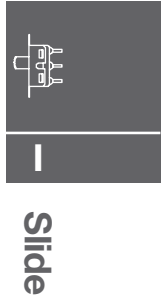
Slide

# AYZ Series Miniature Slide Switches



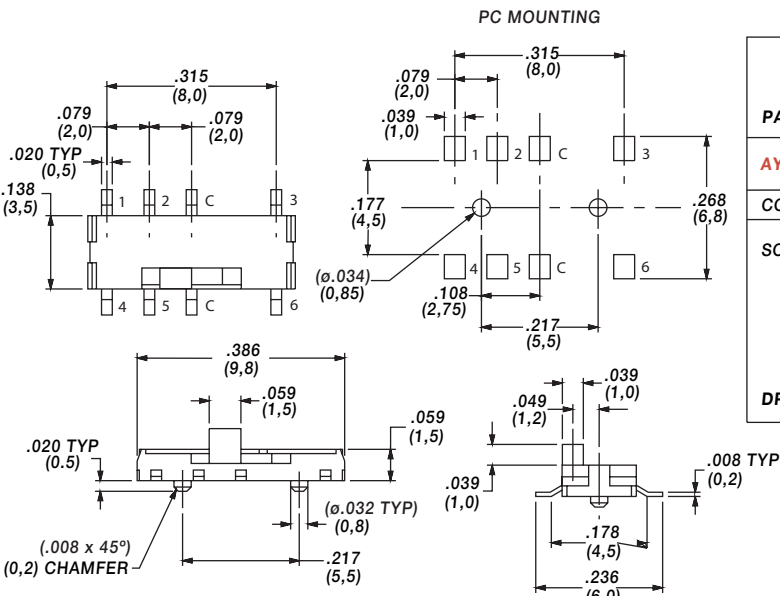
SWITCH SHOWN IN POSITION 1

PART NUMBER	RoHS Compliant	RoHS Compatible	SWITCH FUNCTION	
			POS.1	POS.2
<b>AYZ0202AGRLC</b>	YES	YES	ON	ON
CONN. TERMINALS			1-2,4-5	2-3,5-6
SCHEMATIC				
DPDT				



SWITCH SHOWN IN POSITION 1

PART NUMBER	ROHS Compliant	ROHS Compatible	SWITCH FUNCTION		
			POS.1	POS.2	POS.3
<b>AYZ0103AGRLC</b>	YES	YES	ON	ON	ON
CONN. TERMINALS			1-3	2-C	3-4
SCHEMATIC					
SP3T					



SWITCH SHOWN IN POSITION 1

PART NUMBER	ROHS Compliant	ROHS Compatible	SWITCH FUNCTION		
			POS.1	POS.2	POS.3
<b>AYZ0203AGRLC</b>	YES	YES	ON	ON	ON
CONN. TERMINALS			1-C,4-C	2-C,5-C	3-C,6-C
SCHEMATIC					
DP3T					



Third Angle Projection

Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

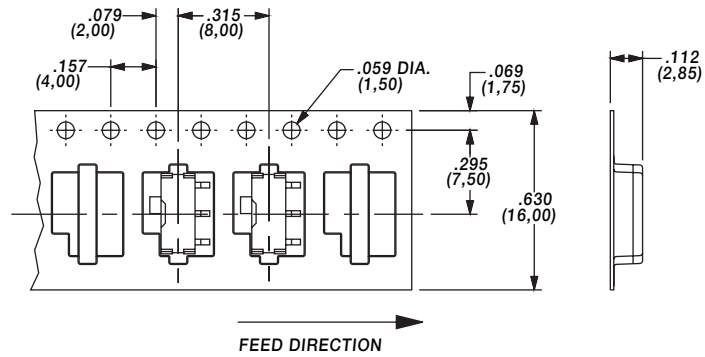


# AYZ Series Miniature Slide Switches

## TAPE & REEL

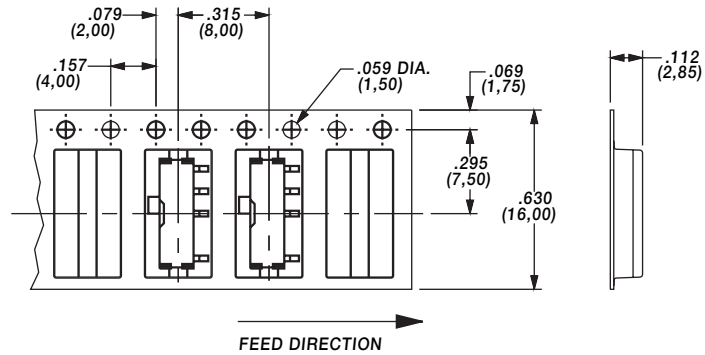
For part number AYZ0102AGRLC

Quantity per reel 4000



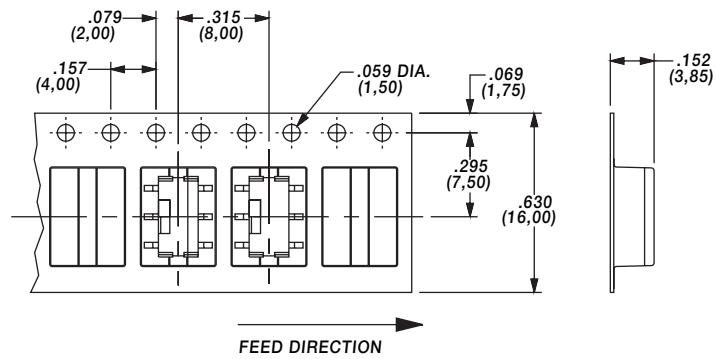
For part number AYZ0103AGRLC

Quantity per reel 4000



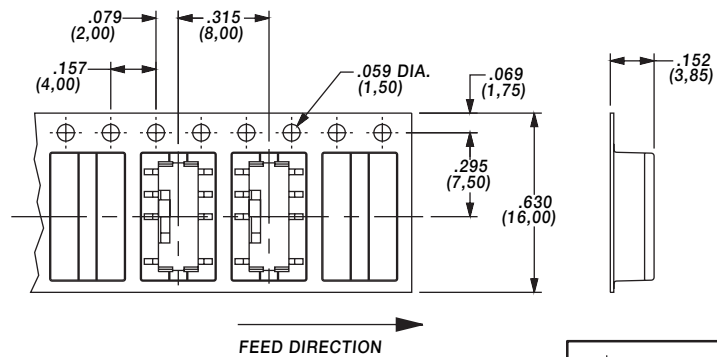
For part number AYZ0202AGRLC

Quantity per reel 3000



For part number AYZ0203AGRLC

Quantity per reel 3000



Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change



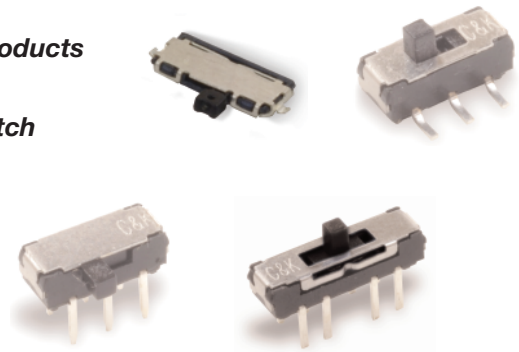
# JS Series Sub-Miniature Slide Switches

## Features/Benefits

- Positive detent
- Low profile
- IR reflow to 260° solder profile
- Surface and thru hole mounting
- SPDT, DPDT, DP3T models
- RoHS compliant

## Typical Applications

- Telecommunication products
- Computer peripherals
- Thermostat select switch
- Instrumentations



## Specifications

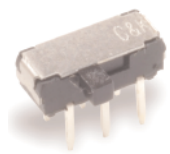
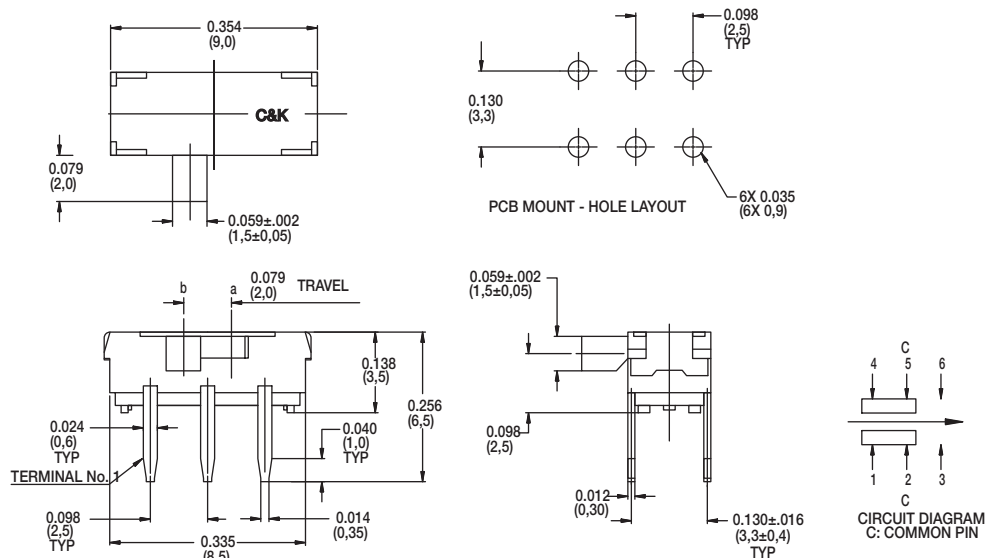
CONTACT RATING: 6 VDC @ 0.3A  
 ELECTRICAL LIFE: 5,000 make-and-break cycles  
 CONTACT RESISTANCE: 70 m Ω max.  
 INSULATION RESISTANCE: 100 M Ω min. @ 500V.  
 DIELECTRIC STRENGTH: 500 VAC min. @ sea level.  
 OPERATING TEMPERATURE: -40°C to +85°C  
 STORAGE TEMPERATURE: -40°C to +85°C

**NOTE:** Specifications and materials listed above are for switches with standard options.  
 For information on specific and custom switches, consult Customer Service Center.

## Materials

HOUSING: 4/6 nylon (UL94V-2), black.  
 ACTUATOR: 4/6 nylon (UL94V-2), black (some options white).  
 CONTACTS: Copper alloy, silver plated.  
 TERMINALS: Brass, silver plated

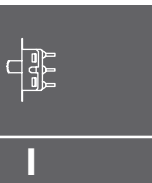
## RIGHT ANGLE, PC THRU-HOLE



Part Number  
JS202011AQN  
**DPDT**

Shown in position b

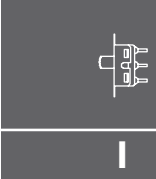
Shown in position b



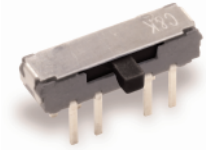
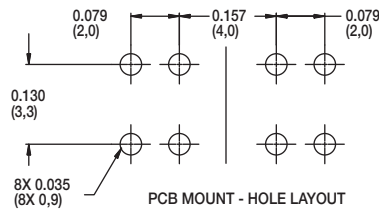
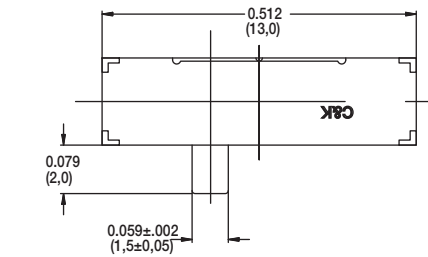
Slide

# JS Series Sub-Miniature Slide Switches

RIGHT ANGLE, PC THRU-HOLE

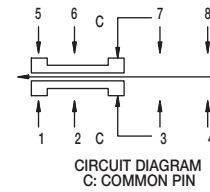
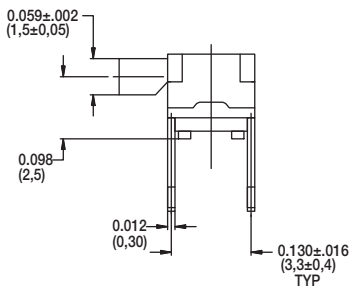
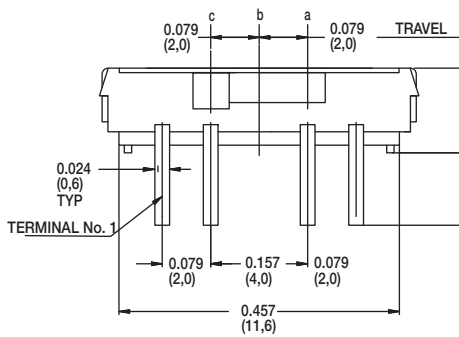


Slide



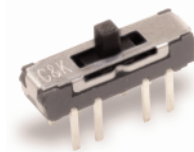
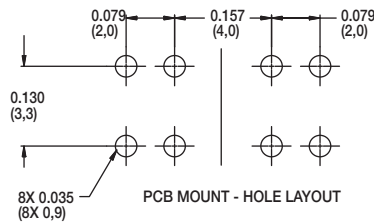
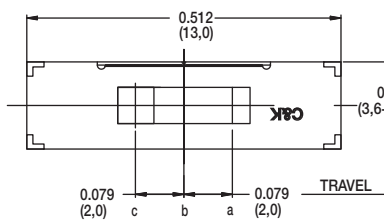
Part Number  
JS203011AQN  
DP3T

Shown in position b



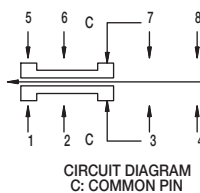
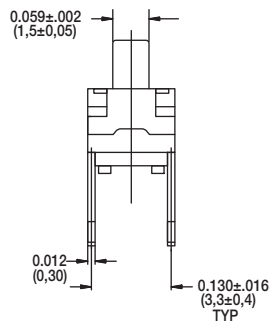
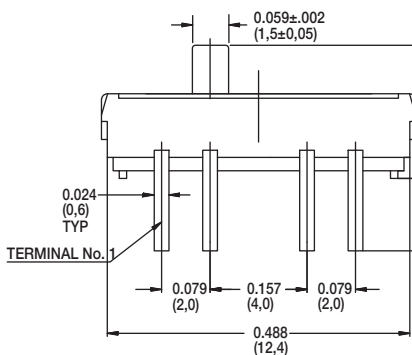
Shown in position c

PC THRU-HOLE



Part Number  
JS203011CQN  
DP3T

Shown in position b



Shown in position c

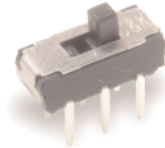
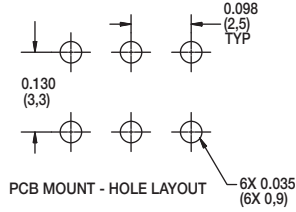
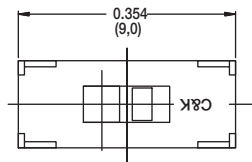


Third Angle  
Projection

Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

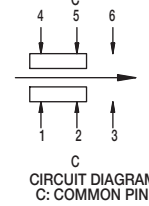
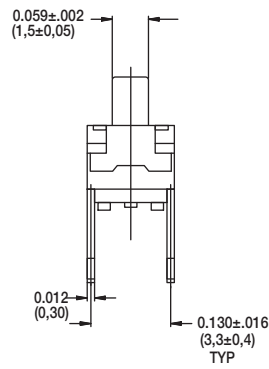
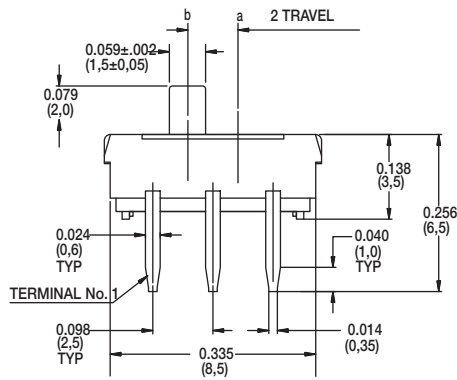
# JS Series Sub-Miniature Slide Switches

## PC THRU-HOLE

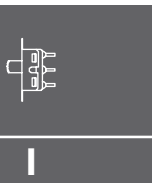


Part Number  
JS202011CQCN  
DPDT

Shown in position a

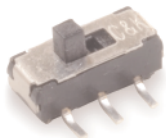


Shown in position b



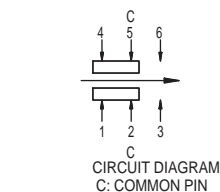
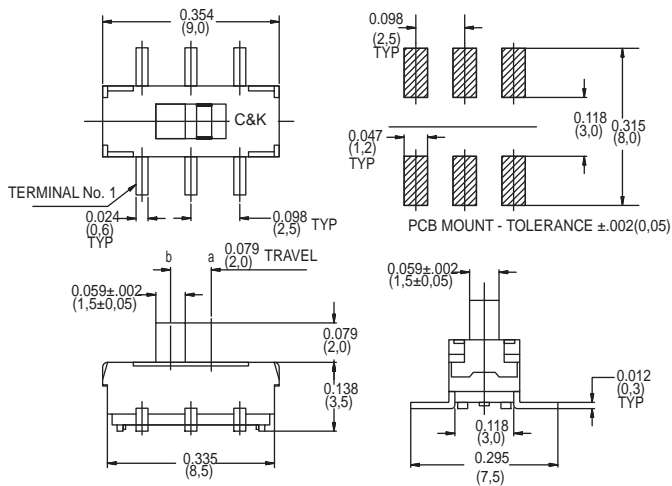
Slide

## SURFACE MOUNT



Part number  
JS203011SCQN  
DP3T

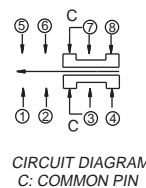
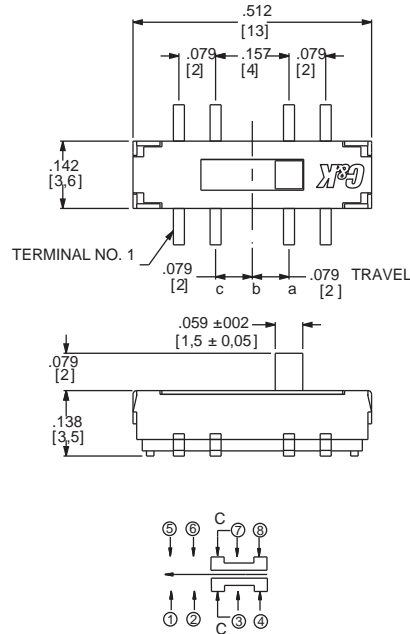
Shown in position b. Quantity per reel 1000  
Available in tape & reel only, see page I-58



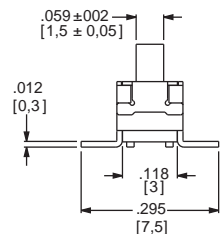
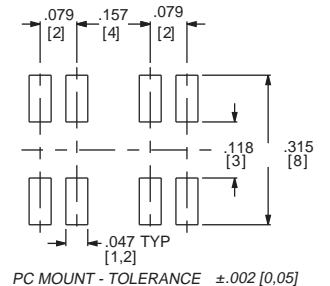
Shown in position b

Part number  
JS203011SCQN  
DP3T

Quantity per reel 900  
Available in tape & reel only, see page I-60



Shown in position a

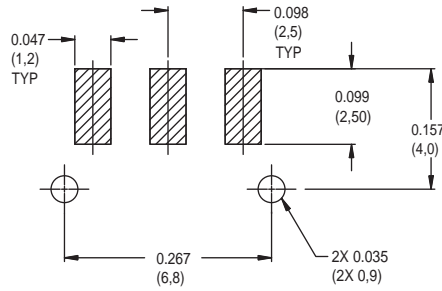
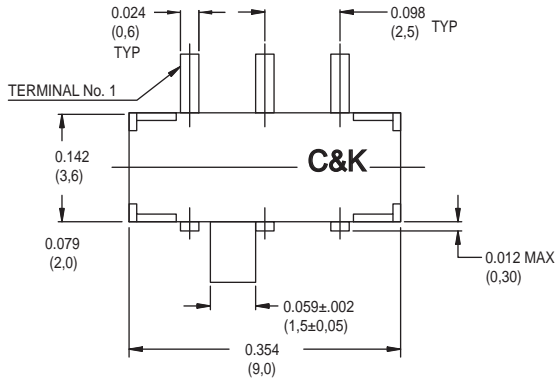


Third Angle  
Projection

Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

# JS Series Sub-Miniature Slide Switches

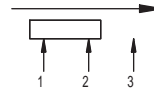
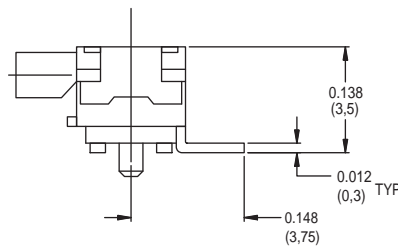
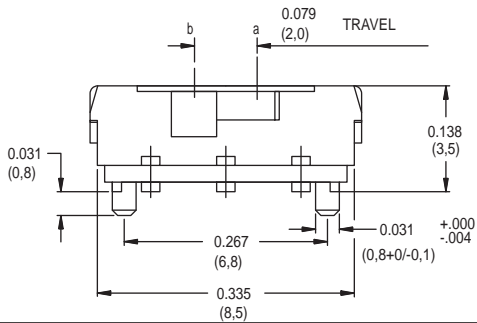
RIGHT ANGLE SURFACE MOUNT



Part Number  
JS102011SAQN  
SPDT

Shown in position a

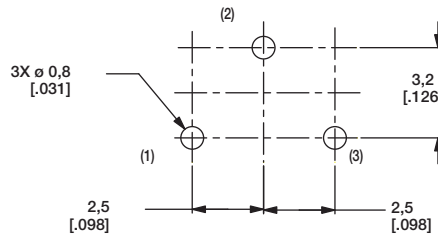
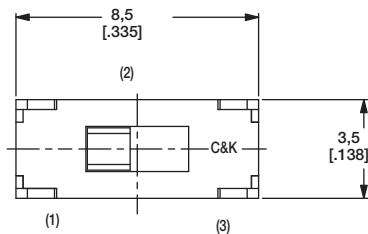
Available in tape & reel only, see page I-59



Shown in position b

Slide

PC THRU-HOLE

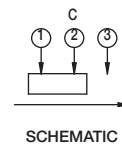
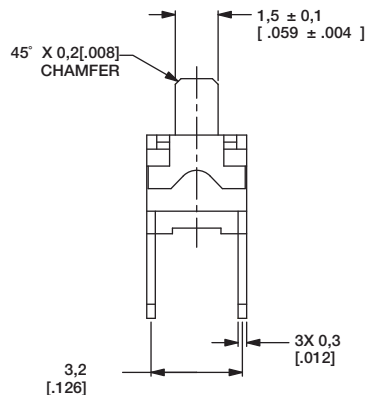
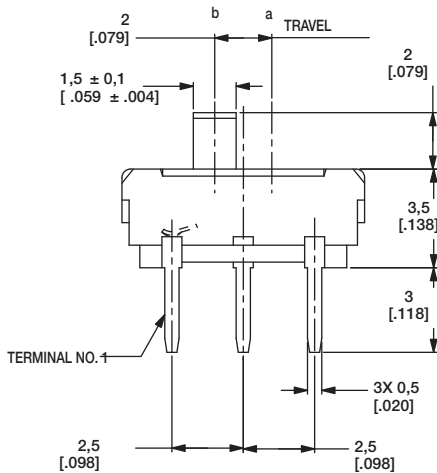


PCB LAYOUT RECOMMENDED



Part Number  
JS102011CQN  
SPDT

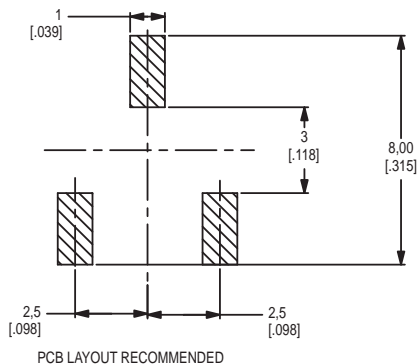
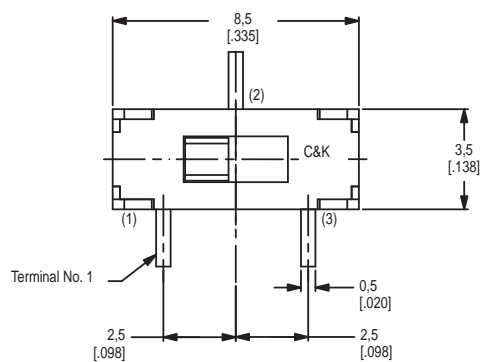
Shown in position a



Shown in position b

# JS Series Sub-Miniature Slide Switches

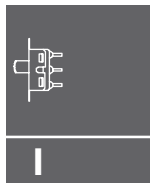
## SURFACE MOUNT



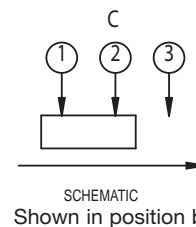
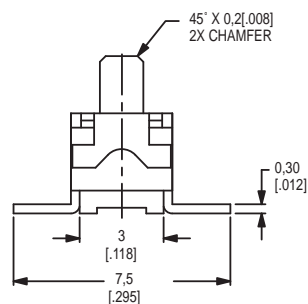
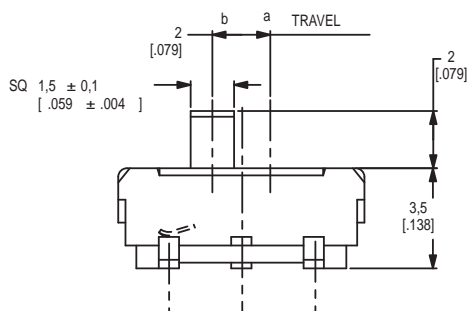
Part Number  
JS102011SCQN  
SPDT

Shown in position a

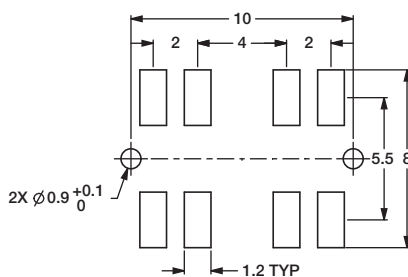
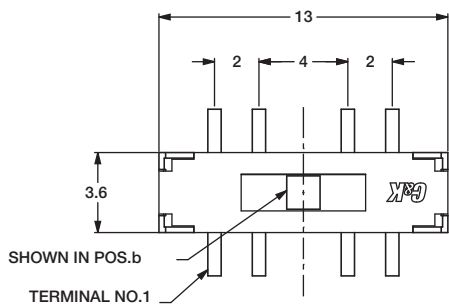
Available in tape & reel  
only, see page I-59



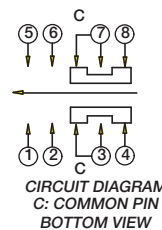
Slide



## SURFACE MOUNT



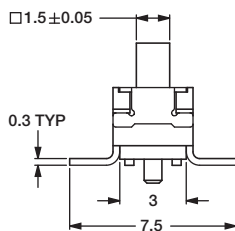
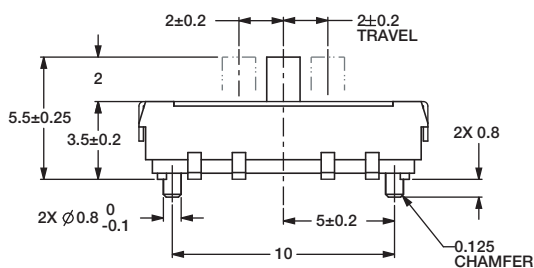
PC MOUNT - TOLERANCE ± .05



Part Number  
JS207011SCQNR  
DP3T

Shown in position b

Available in tape & reel  
only, see page I-58

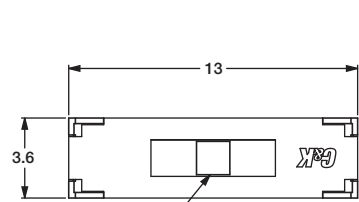


SWITCH FUNCTION		
POS.c	POS.b	POS.a
C&K (MOM)	C&K ON	C&K ON
CONNECTED TERMINALS		
1-3,5-7	2-3,6-7	3-4,7-8

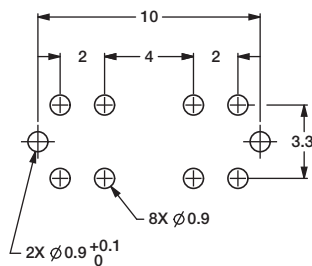


# JS Series Sub-Miniature Slide Switches

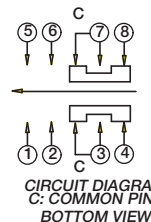
## PC THRU-HOLE



SHOWN IN POS.b



PC MOUNT - TOLERANCE  $\pm .05$



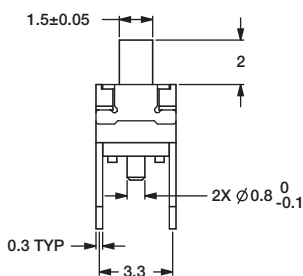
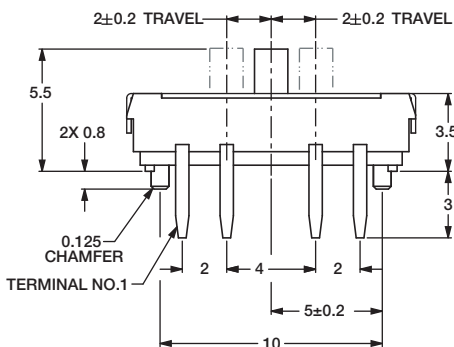
CIRCUIT DIAGRAM  
C: COMMON PIN  
BOTTOM VIEW

SWITCH FUNCTION		
POS.c	POS.b	POS.a
(MOM)	ON	ON
CONNECTED TERMINALS		
1-3,5-7	2-3,6-7	3-4,7-8



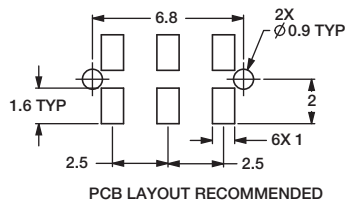
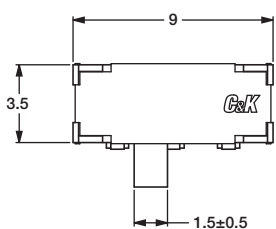
Part Number  
JS207011CQNR  
**DP3T**

Shown in position b

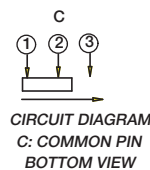


Slide

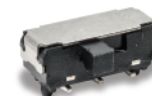
## RIGHT ANGLE SURFACE MOUNT



PCB LAYOUT RECOMMENDED



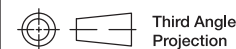
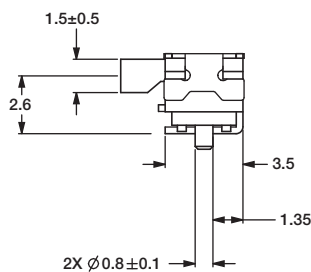
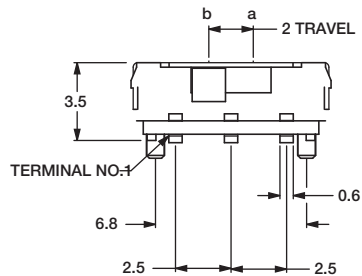
CIRCUIT DIAGRAM  
C: COMMON PIN  
BOTTOM VIEW



Part Number  
JS102011JAQN  
**SPDT**

Shown in position

Available in tape & reel  
only, see page I-59



Third Angle  
Projection

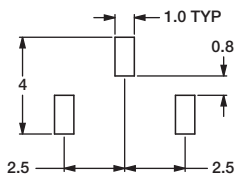
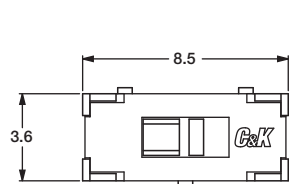
Dimensions are shown: mm  
Specifications and dimensions subject to change



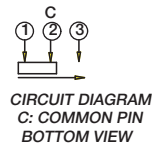
29 jun 16

# JS Series Sub-Miniature Slide Switches

## VERTICAL MOUNT SMT - J BEND

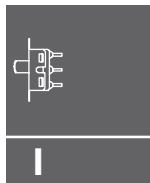


PCB LAYOUT RECOMMENDED

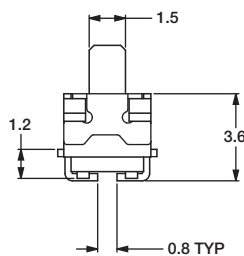
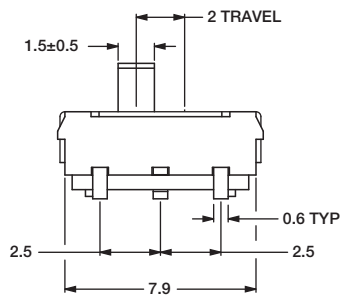


**NEW**  
Part Number  
JS102011JCQN  
**SPDT**

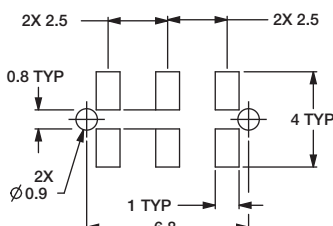
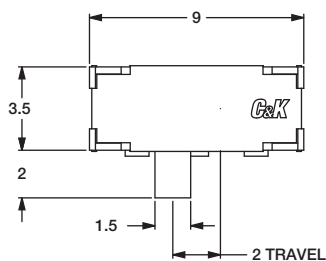
Available in tape & reel  
only, see page I-59



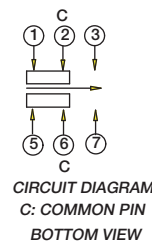
Slide



## RIGHT ANGLE SURFACE MOUNT



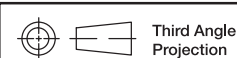
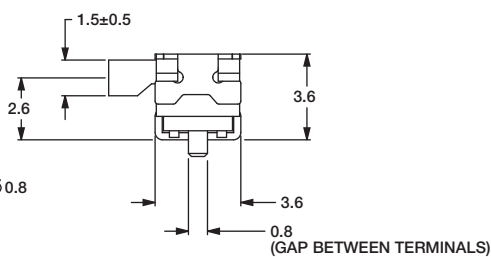
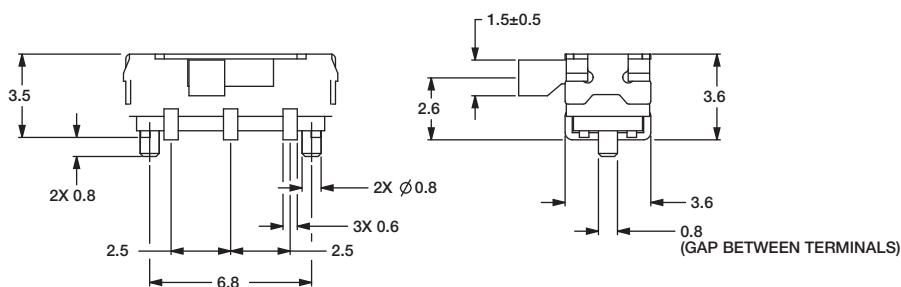
PCB LAYOUT RECOMMENDED



**NEW**  
Part Number  
JS202011JAQN  
**DPDT**

Shown in position

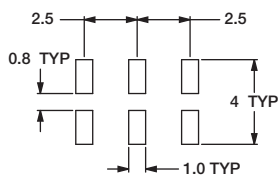
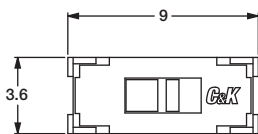
Available in tape & reel  
only, see page I-61



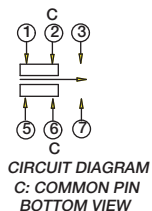
Dimensions are shown: mm  
Specifications and dimensions subject to change

# JS Series Sub-Miniature Slide Switches

## VERTICAL MOUNT SMT - J BEND



PCB LAYOUT RECOMMENDED



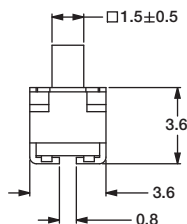
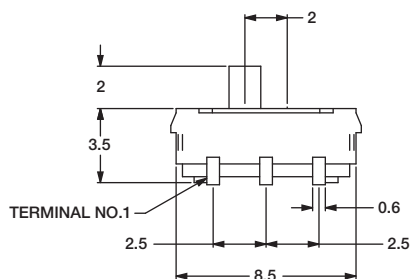
**NEW**

Part Number  
JS202011JCQN

**DPDT**

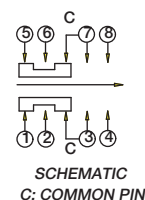
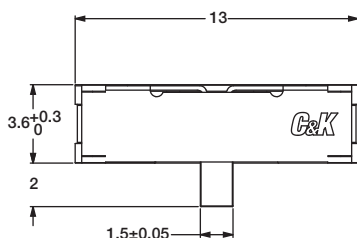
Shown in position

Available in tape & reel  
only, see page I-61



Slide

## RIGHT ANGLE MOUNT SMT - J BEND



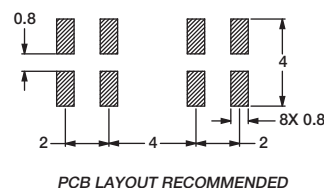
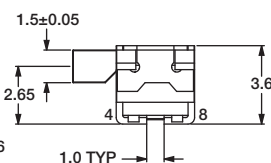
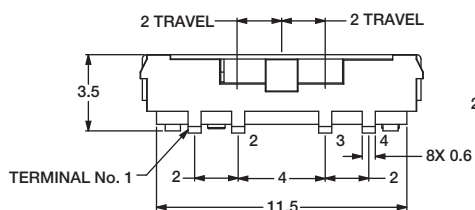
**NEW**

Part Number  
JS203011JAQN

**DP3T**

Shown in position

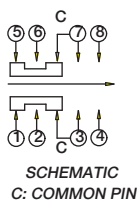
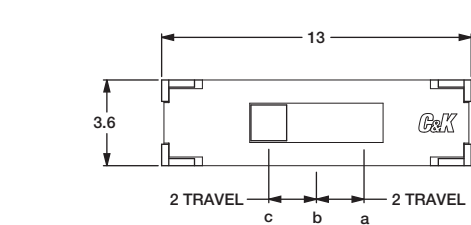
Available in tape & reel  
only, see page I-60



PCB LAYOUT RECOMMENDED

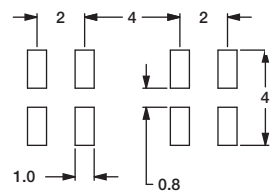
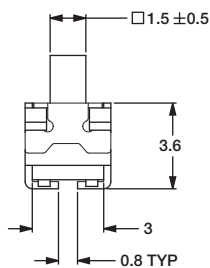
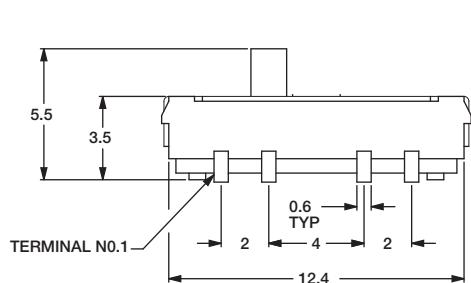
# JS Series Sub-Miniature Slide Switches

## VERTICAL MOUNT SMT - J BEND

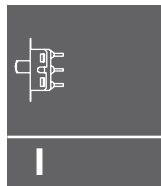


Part Number  
JS203011JCQN  
DP3T

Available in tape & reel  
only, see page I-60

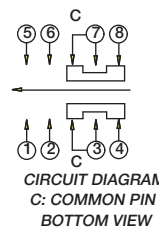
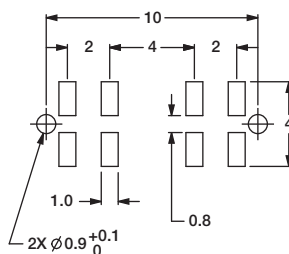
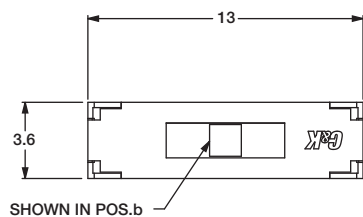


PCB LAYOUT RECOMMENDED



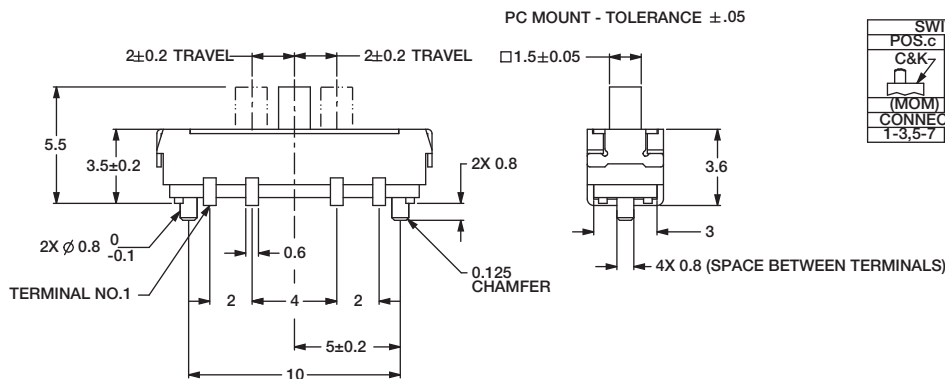
Slide

## SURFACE MOUNT - J BEND



Part Number  
JS207011JCQNR  
SP3T

Available in tape & reel  
only, see page I-58



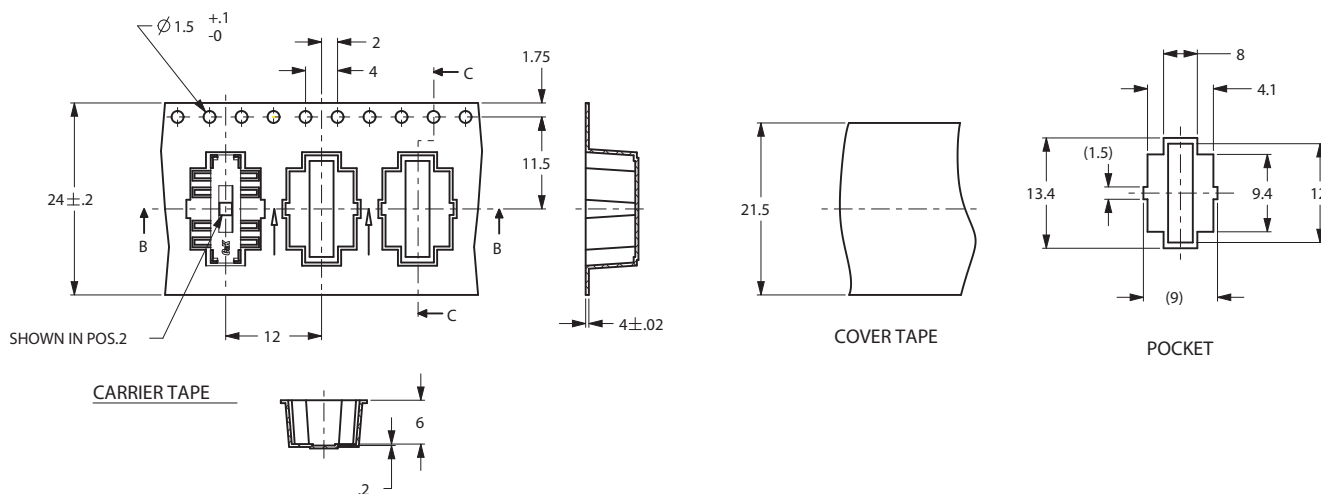
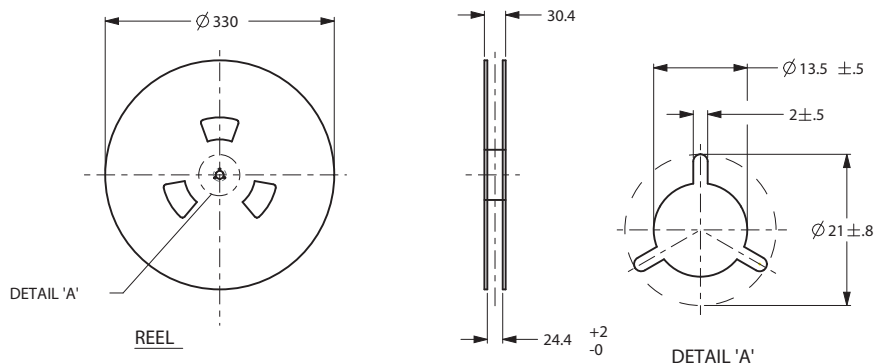
SWITCH FUNCTION		
POS.c	POS.b	POS.a
(MOM)	ON	ON
CONNECTED TERMINALS	1-3,5-7	2-3,6-7
	3-4,7-8	

# JS Series Sub-Miniature Slide Switches

TAPE AND REEL FOR PART NUMBER JS207011SCQNR, JS207011JCQNR

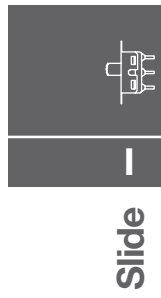
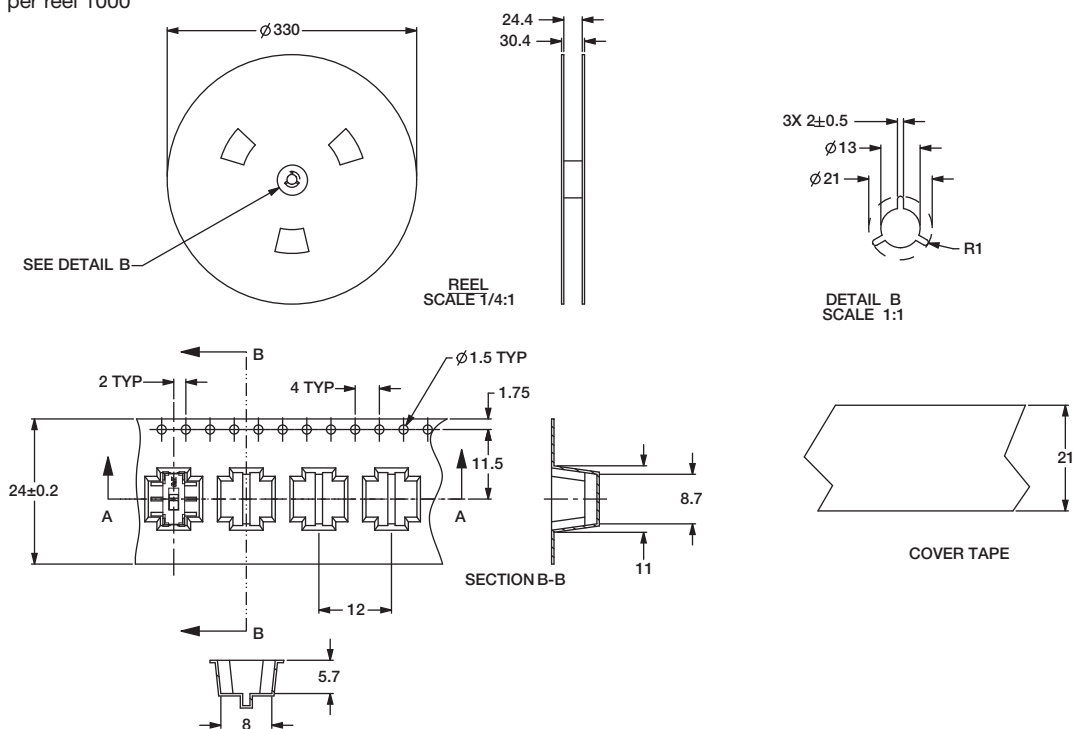
Quantity per reel 800

PACKING DETAIL 800 PCS



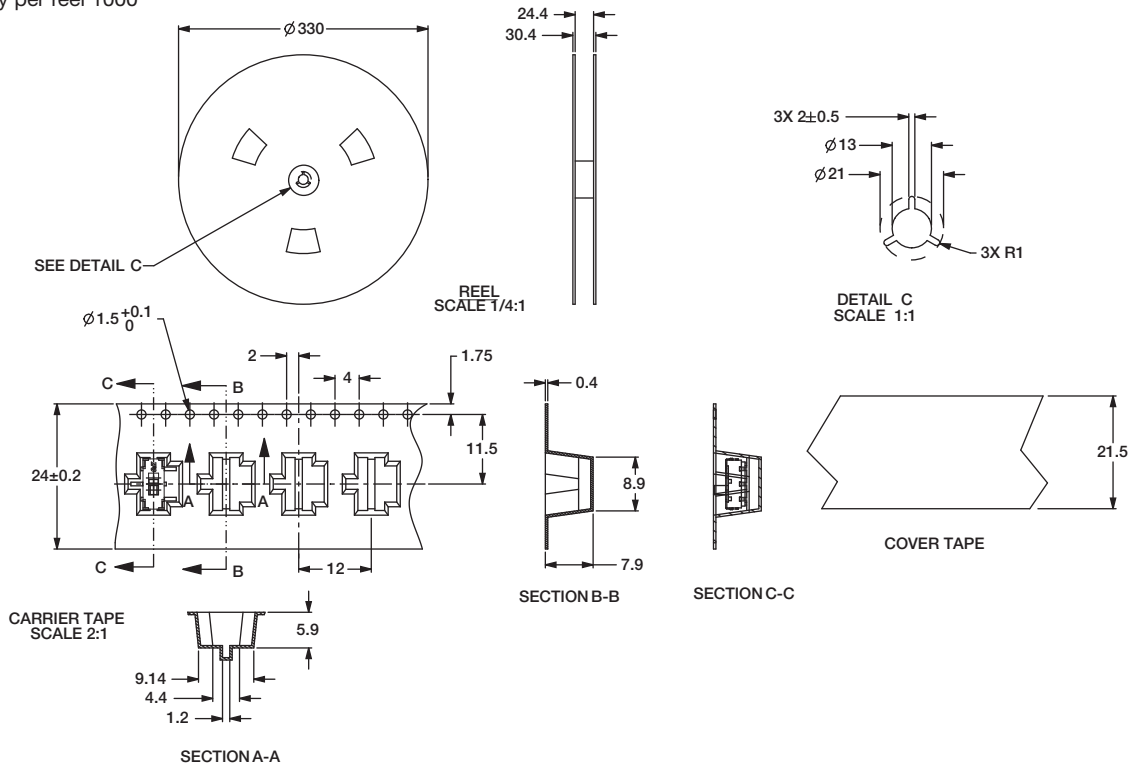
TAPE AND REEL FOR PART NUMBER JS202011SCQN

Quantity per reel 1000



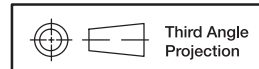
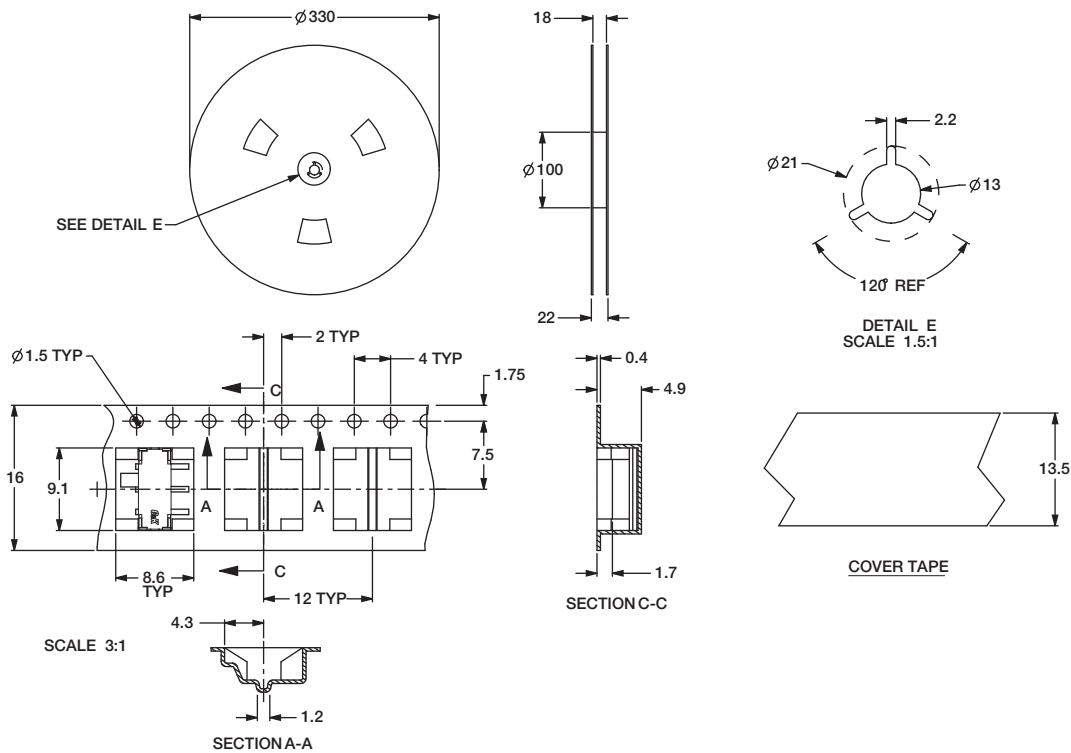
# JS Series Sub-Miniature Slide Switches

**TAPE AND REEL FOR**  
**PART NUMBER JS102011SCQN, JS102011JCQN**  
 Quantity per reel 1000

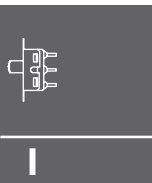


**TAPE AND REEL FOR PART NUMBER JS102011SAQN, JS102011JAQN**

Quantity per reel 1000



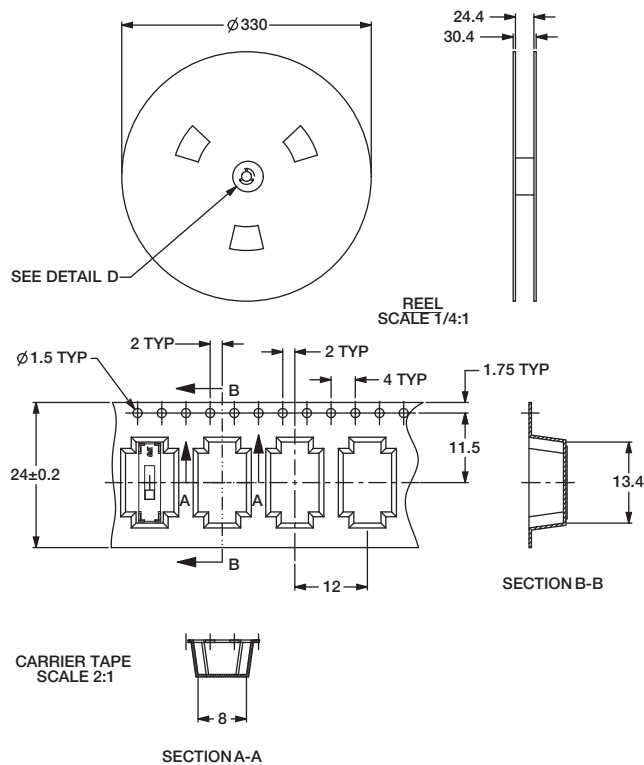
Dimensions are shown: mm  
 Specifications and dimensions subject to change



Slide

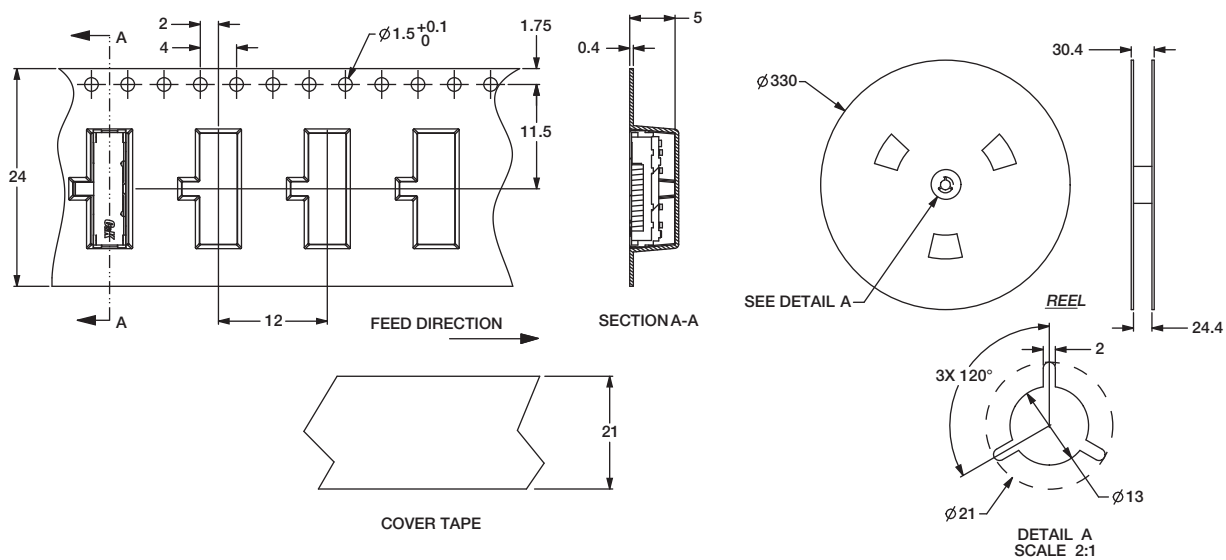
# JS Series Sub-Miniature Slide Switches

**TAPE AND REEL FOR PART NUMBER JS203011SCQN, JS203011JCQN**  
Quantity per reel 900



## TAPE AND REEL FOR PART NUMBER JS203011JAQN

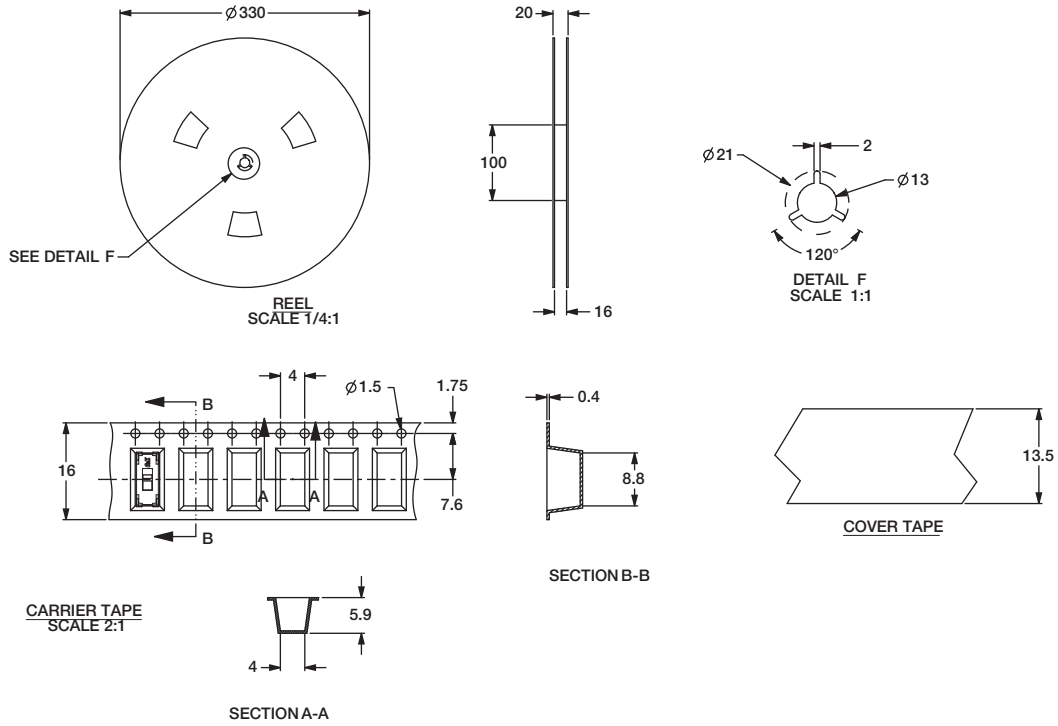
Quantity per reel 1000



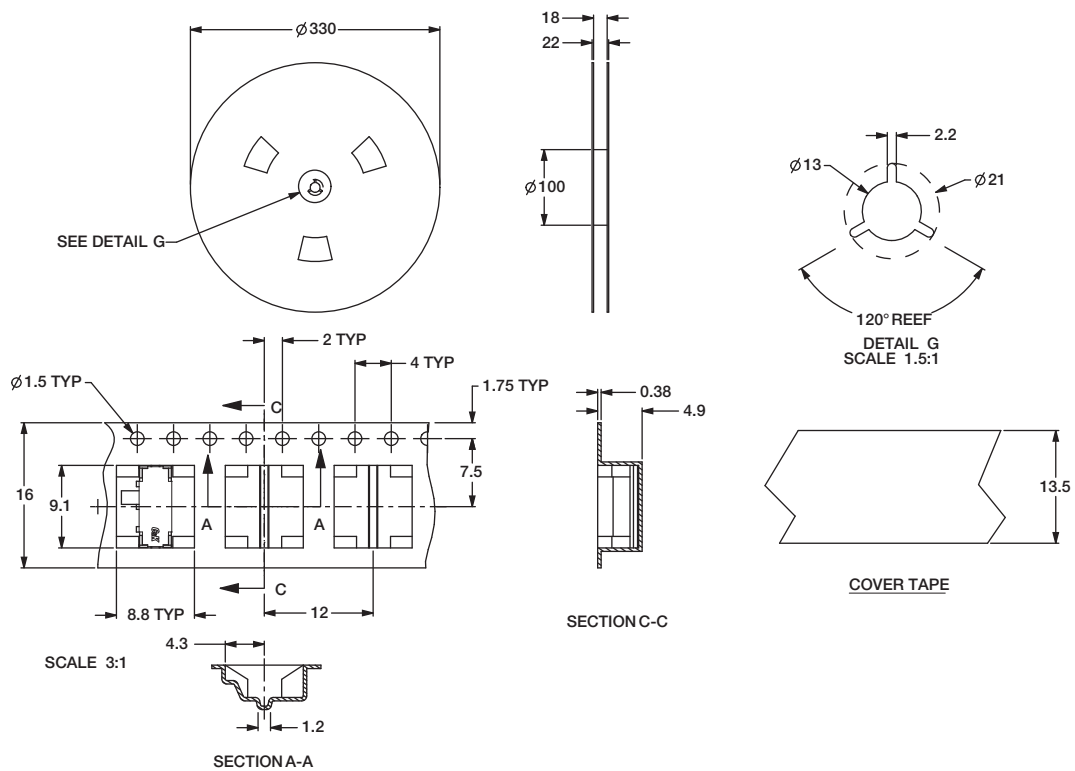
Dimensions are shown: mm  
Specifications and dimensions subject to change

# JS Series Sub-Miniature Slide Switches

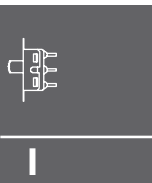
**TAPE AND REEL FOR**  
**PART NUMBER JS202011JCQN**  
Quantity per reel 1300



**TAPE AND REEL FOR PART NUMBER JS202011JAQN**  
Quantity per reel 1000



Dimensions are shown: mm  
Specifications and dimensions subject to change



Slide



# JS Series Sub-Miniature Slide Switches

## RIGHT ANGLE SURFACE MOUNT

LOW PROFILE .028±.004 (0.7±0.1) HIGH



Part Number  
JS102000SAQN  
SPDT

## Specifications

CONTACT RATING: 5 VDC @ 1MA

ELECTRICAL LIFE: 15,000 cycles.

CONTACT RESISTANCE: <100 m ohms (initial) <200 m ohms (after processing).

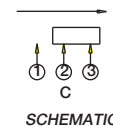
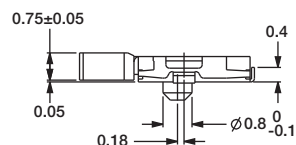
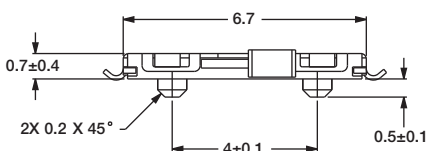
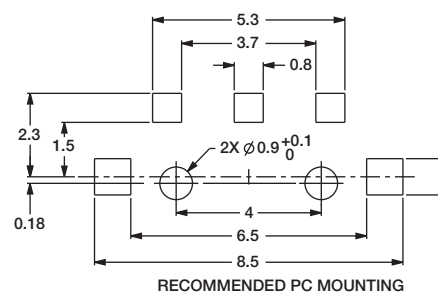
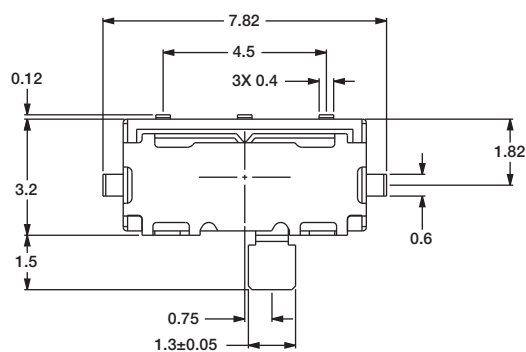
INSULATION RESISTANCE: 100 m ohms @500 VDC.

DIELECTRIC STRENGTH: 250 VAC.

OPERATING TEMPERATURE: -40°C to +85°C

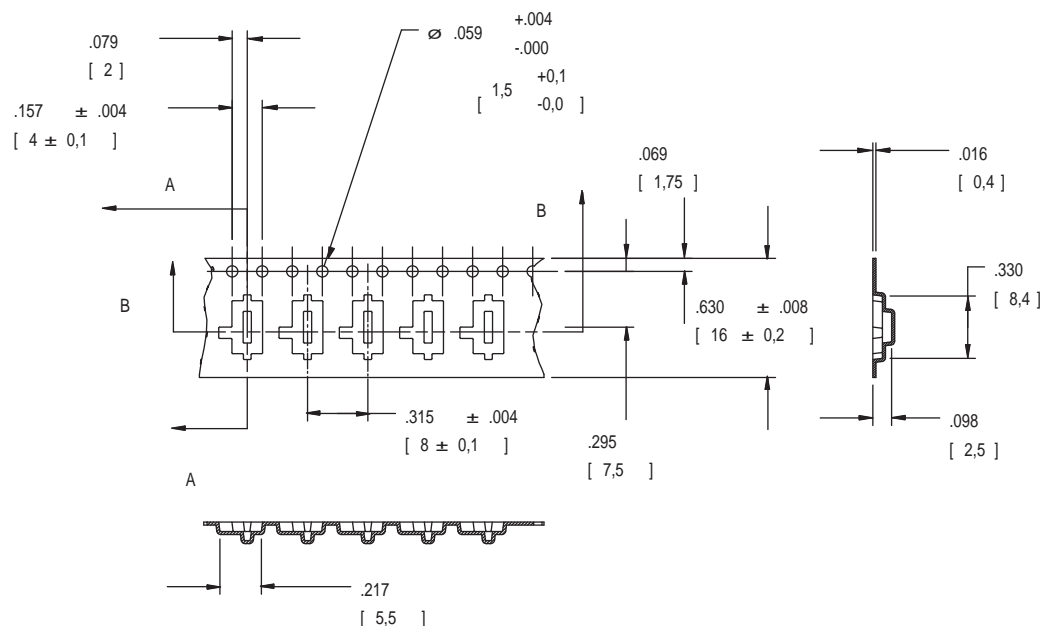


Slide



## TAPE AND REEL FOR PART NUMBER JS102000SAQN

Quantity per reel 4000



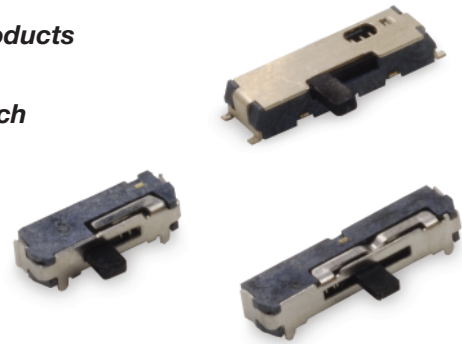
# JSM Series Sub-Miniature Slide Switches

## Features/Benefits

- RoHS compliant and meets all requirements of RoHS directive 2002/95EC, Halogen Free
- Positive detent
- Low profile
- IR reflow to 260° solder profile
- Surface and thru hole mounting
- Maintained and momentary functions
- SPDT, SP3T models

## Typical Applications

- Telecommunication products
- Computer peripherals
- Thermostat select switch
- Instrumentations



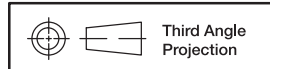
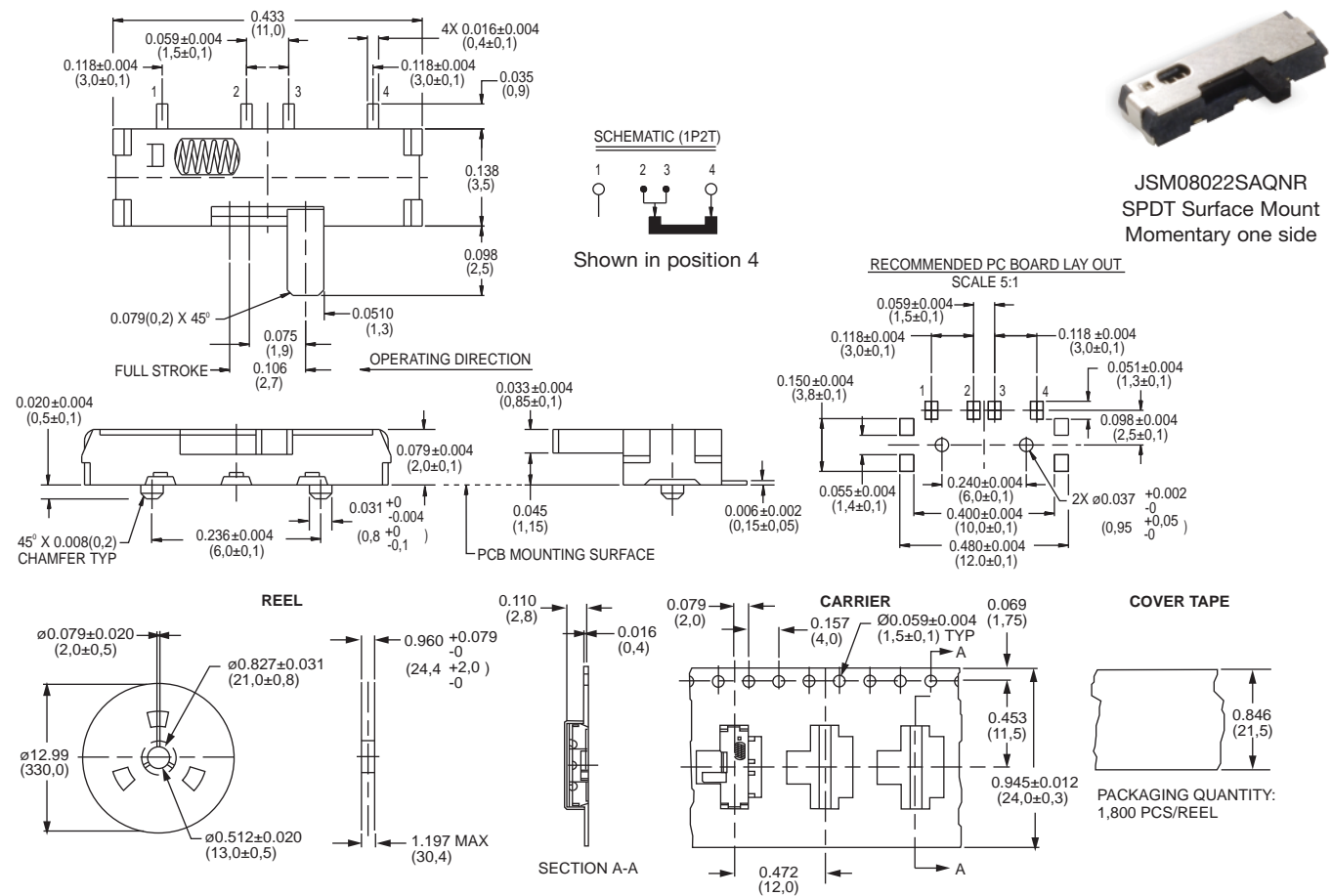
## Specifications

CONTACT RATING: 4 VDC @ 0.3A  
 ELECTRICAL LIFE: 10,000 make-and-break cycles at full load.  
 CONTACT RESISTANCE: 70 m Ω max.  
 INSULATION RESISTANCE: 100 M Ω min. @ 500V.  
 DIELECTRIC STRENGTH: 100 VAC min. @ sea level.  
 OPERATING TEMPERATURE: -10°C to +60°C  
 STORAGE TEMPERATURE: -30°C to +85°C

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## Materials

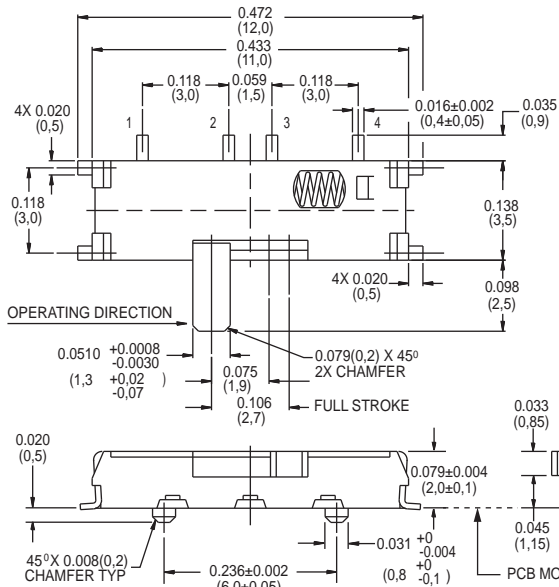
HOUSING: LCP, Glass filled (Halogen free)  
 ACTUATOR: 4/6 nylon (UL94V-2), black.  
 CONTACTS: Beryllium copper, silver plated.  
 TERMINALS: Brass, silver plated.  
 COVER: Stainless steel  
 RETURN SPRING: Stainless steel



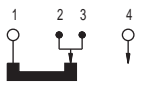
Dimensions are shown: Inches (mm)  
 Specifications and dimensions subject to change

www.ck-components.com

# JSM Series Sub-Miniature Slide Switches

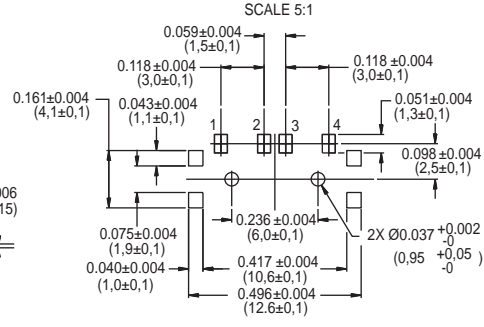


SCHEMATIC (1P2T)

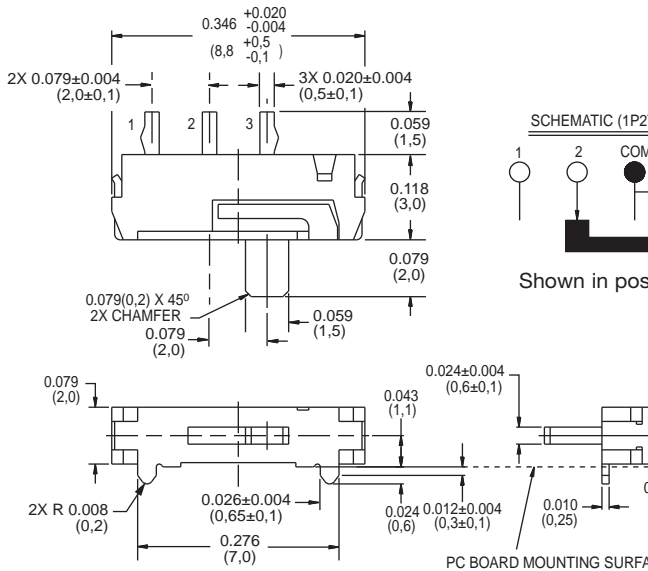
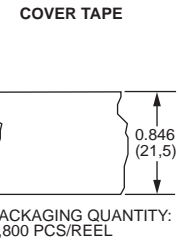
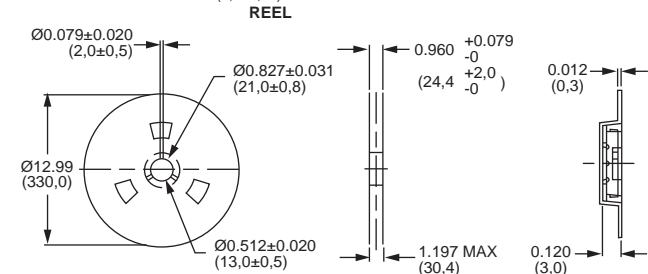


Shown in position 1

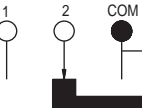
RECOMMENDED PC BOARD LAY OUT



JSM08022SAQNL  
SPDT Surface Mount  
Momentary only

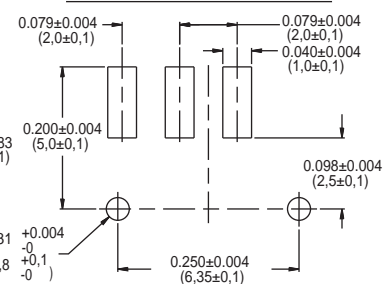


SCHEMATIC (1P2T)

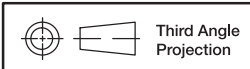
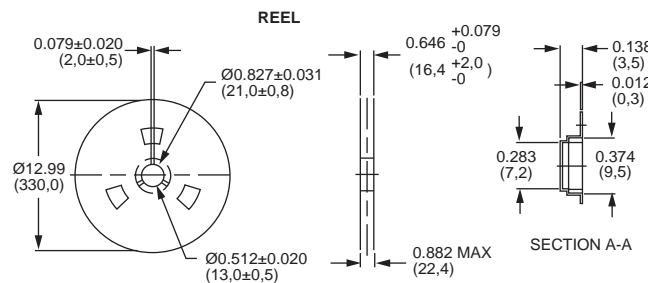


Shown in position 2

RECOMMENDED PC BOARD LAY OUT



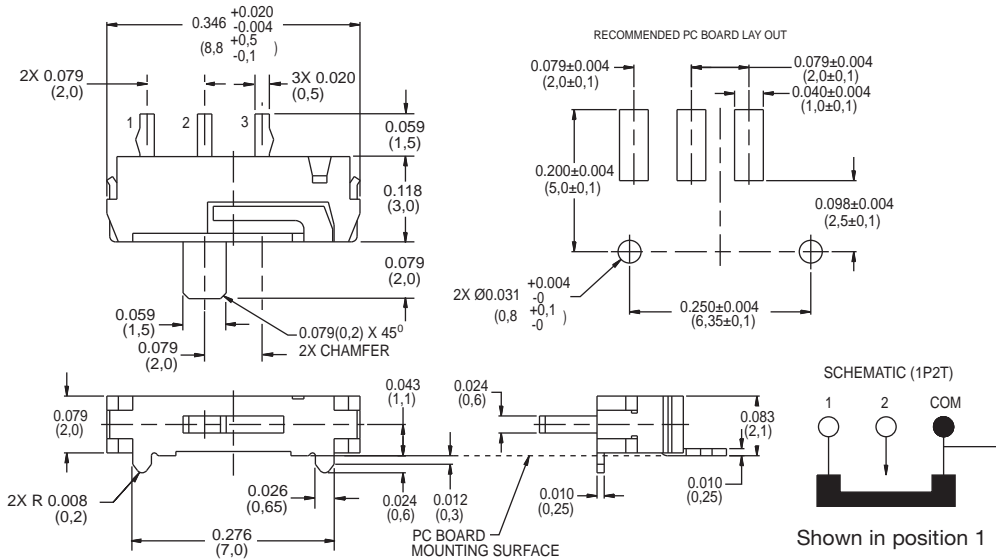
JSM08011SAQNR  
SPDT Surface Mount  
Momentary only



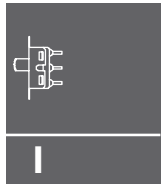
Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change



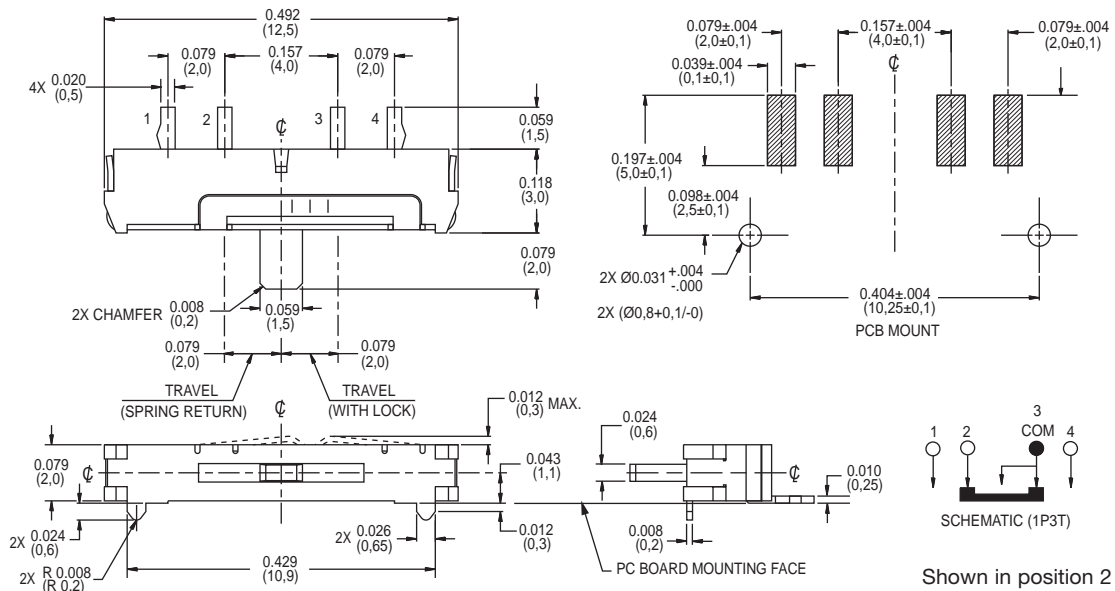
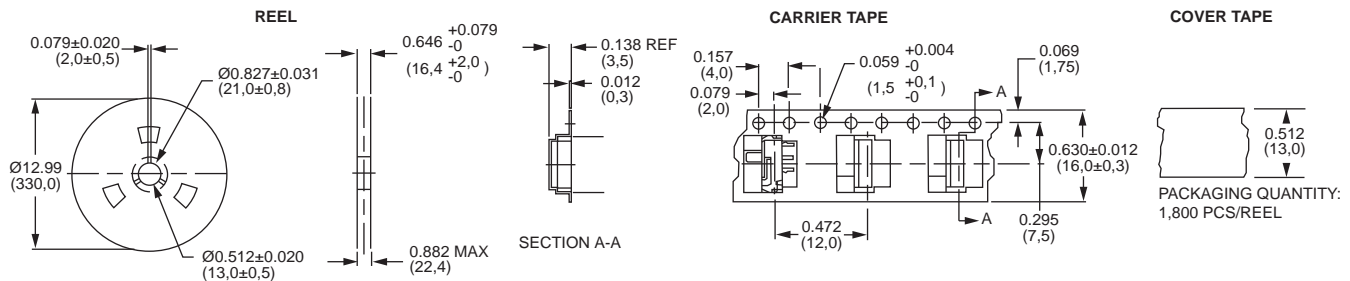
# JSM Series Sub-Miniature Slide Switches



JSM08011SAQNL  
SPDT Surface Mount  
Momentary only

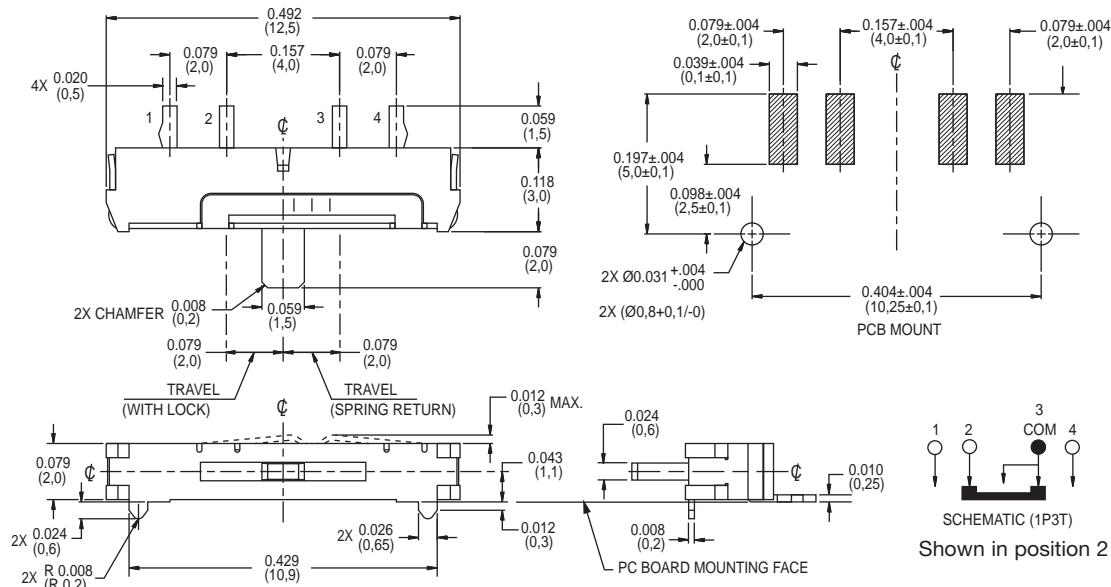


Slide



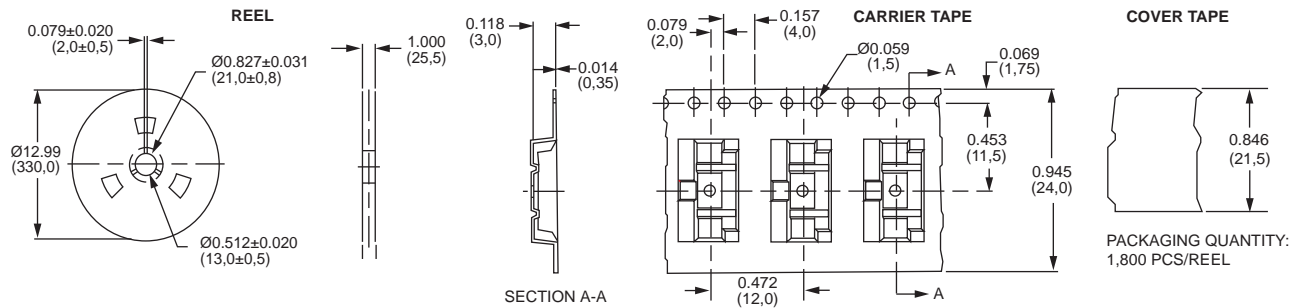
JSM07011SAQNR  
SP3T Surface Mount  
Momentary one side  
& Maintained the other

# JSM Series Sub-Miniature Slide Switches



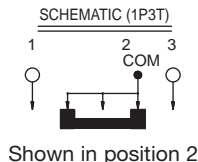
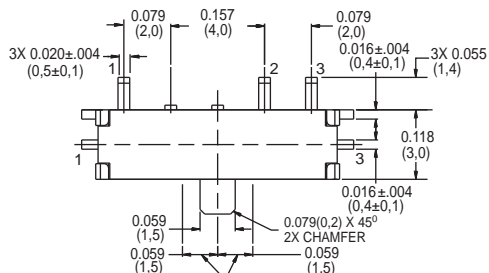
JSM07011SAQNL  
SP3T Surface Mount  
Momentary one side  
& Maintained the other

## Packaging for JSM07011SAQNR and JSM07011SAQNL

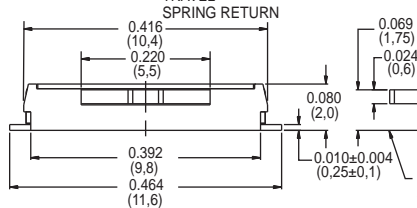


Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

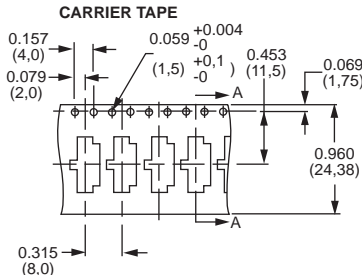
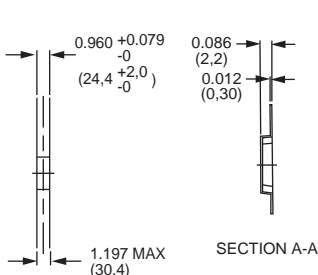
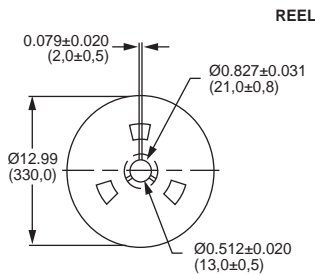
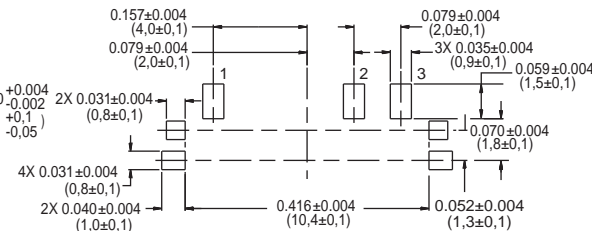
# JSM Series Sub-Miniature Slide Switches



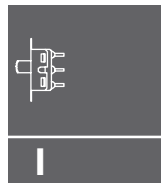
JSM05000SAQN  
SP3T Surface Mount  
Momentary both  
sides



RECOMMENDED PC BOARD LAY OUT  
SCALE 5:1



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



Side

# JSX Series Sub-Miniature Slide Switch



## Features/Benefits

- **RoHS compliant and meets all requirements of RoHS directive 2002/95EC**
- **Low profile**
- **SPDT momentary action**
- **Long electrical and mechanical life**

## Typical Applications

- **On/Off touch screens**
- **Handheld games**
- **Remote controls**
- **Instrumentation**



Slide

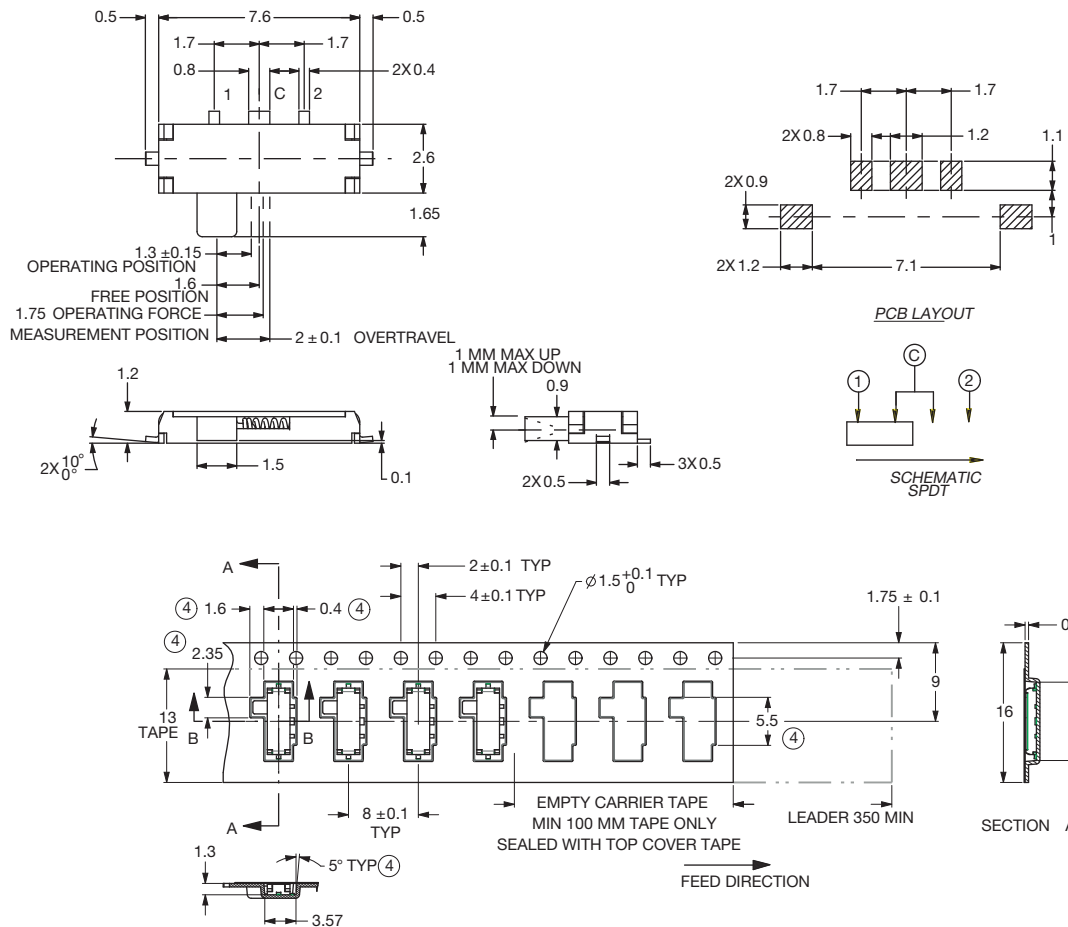
## Specifications

CONTACT RATING: 10 mA @ 5VDC (resistive).  
 ELECTRICAL LIFE: 100,000 cycles.  
 CONTACT RESISTANCE: 70 m Ω max. initial.  
 200 m Ω max. after life testing.  
 INSULATION RESISTANCE: 100 M Ω min. @ 100VDC.  
 DIELECTRIC STRENGTH: 100 VAC for 1 min. @ 50/60 Hz/2mA.  
 OPERATING TEMPERATURE: -25°C to +70°C  
 STORAGE TEMPERATURE: -40°C to +85°C  
 -25°C to +55°C (in tape & reel packaging)

## Materials

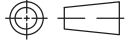
HOUSING: LCP, Glass filled.  
 ACTUATOR: 4/6 nylon (UL94V-2), black.  
 CONTACTS: Beryllium copper, silver plated.  
 TERMINALS: Phosphur bronze or StSt, silver plated.  
 COVER: Nickel silver or Stainless steel, silver plated.  
 RETURN SPRING: Stainless steel.

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.



JSX08001SAQNL  
SPDT Surface Mount  
Momentary only



 Third Angle  
Projection  
Dimensions are shown: mm  
Specifications and dimensions subject to change

# SK Series Miniature Slide Switches

## Features/Benefits

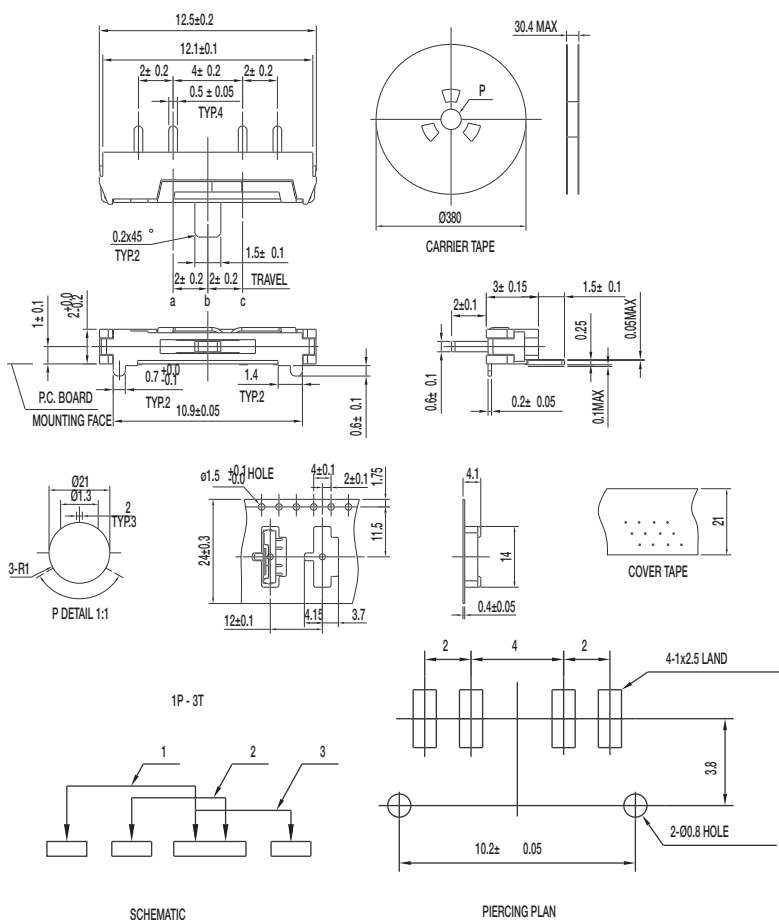
- Broad range of products
- Various circuit design, SPDT, 4P3T, vertical, right angle
- Compact miniature slide switch
- Shorting or non-shorting
- Custom design available

## Typical Applications

- Consumer electronics
- Computer peripherals
- Telecommunication
- Audio & visual equipment
- Medical
- Automotive



## SK-13D21-G 2RT 1P3T NON-SHORTING



## Specifications

CONTACT RATING: 0.3A @ 4 VDC  
 INITIAL CONTACT RESISTANCE: 70 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 125 ± 50 gf (1.23 ± 0.49N)  
 200 ± 50 gf (1.96 ± 0.49N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

## Materials

HOUSE: LCP (UL 94V-0)  
 KNOB: PA (UL 94V-0)  
 FRAME: SUS  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

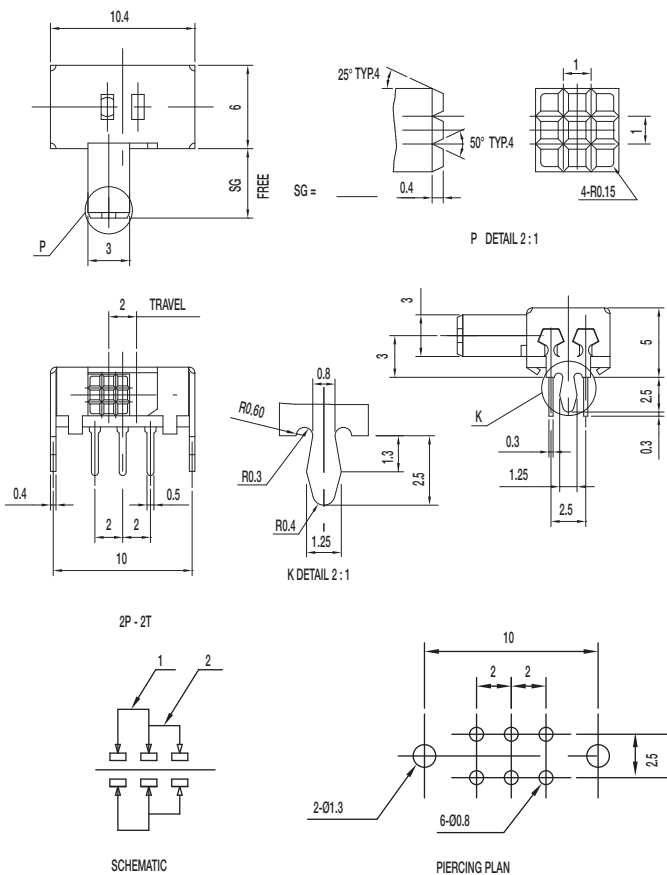


Side



# SK Series Miniature Slide Switches

**SK-22D01-SG NS** DPDT NON-SHORTING



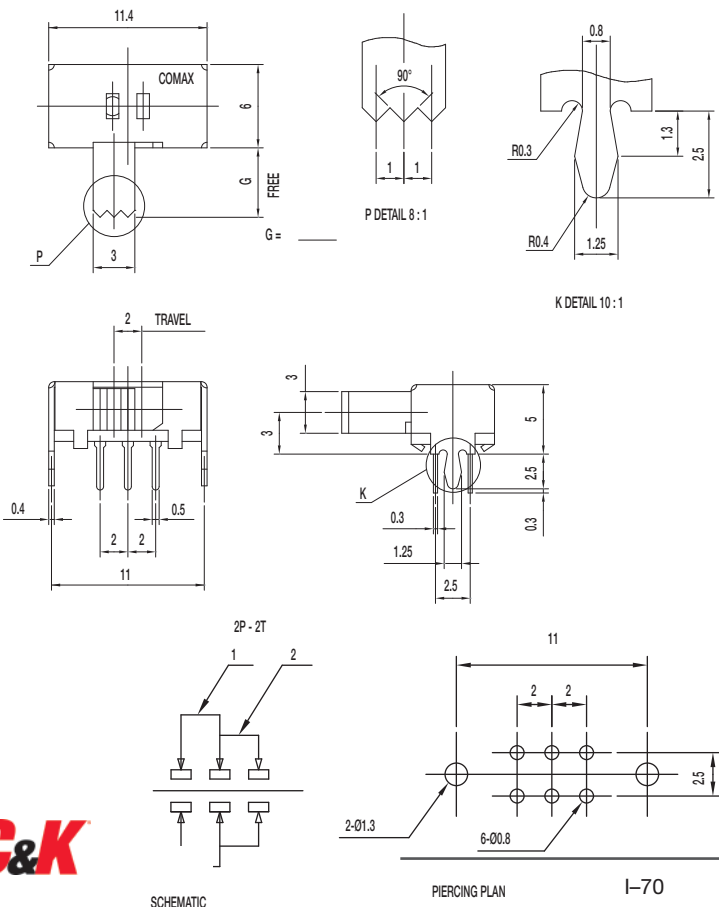
## Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 250 ± 100 gf (2.45 ± 0.98N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

## Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

**SK-22D05-G NS** DPDT NON-SHORTING



## Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 250 ± 100 gf (2.45 ± 0.98N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

## Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

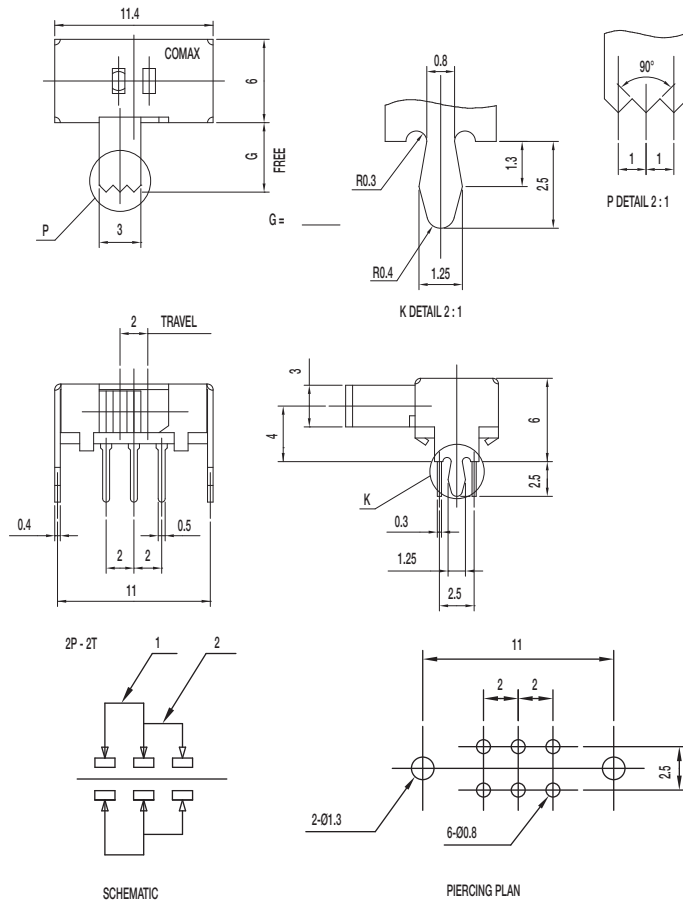


Dimensions are shown:mm  
 Specifications and dimensions subject to change

[www.ck-components.com](http://www.ck-components.com)

# SK Series Miniature Slide Switches

## SK-22D06-G NS DPDT NON-SHORTING

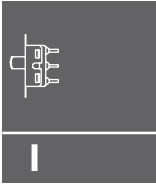


### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 250 ± 100 gf (2.45 ± 0.98N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

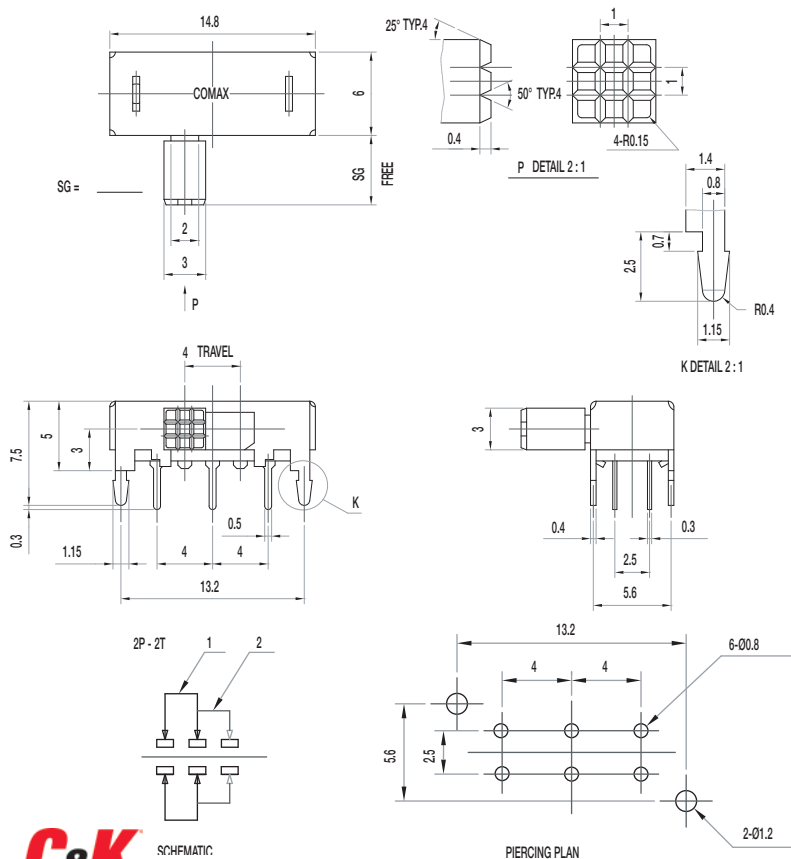
### Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated



Side

## SK-22H06-SG DPDT NON-SHORTING



### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 TRAVEL: 4 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated



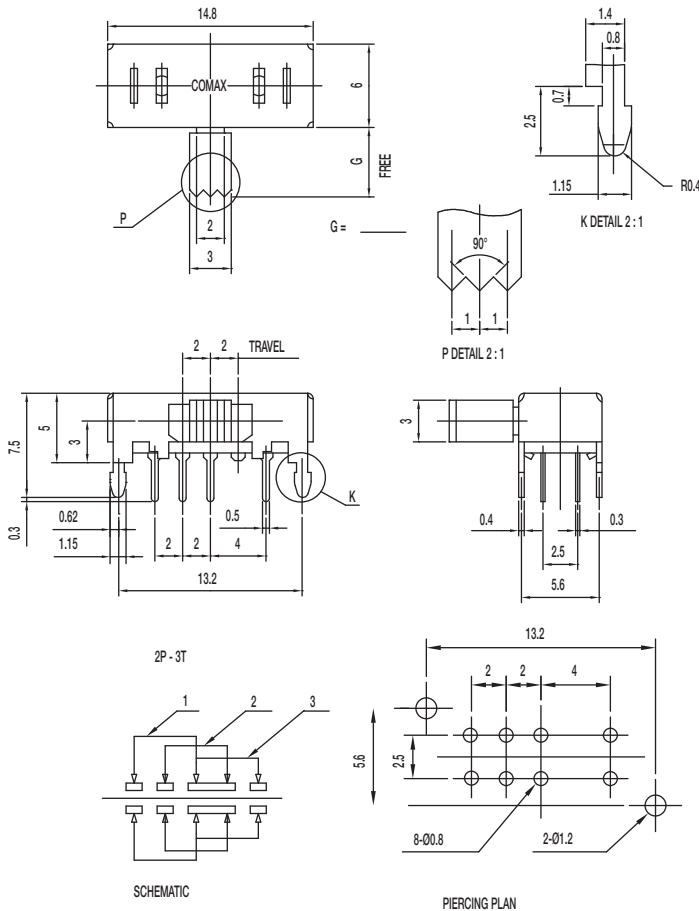
SCHMATIC

PIERCING PLAN

Dimensions are shown: mm  
 Specifications and dimensions subject to change

# SK Series Miniature Slide Switches

## SK-23D05-G 2P3T



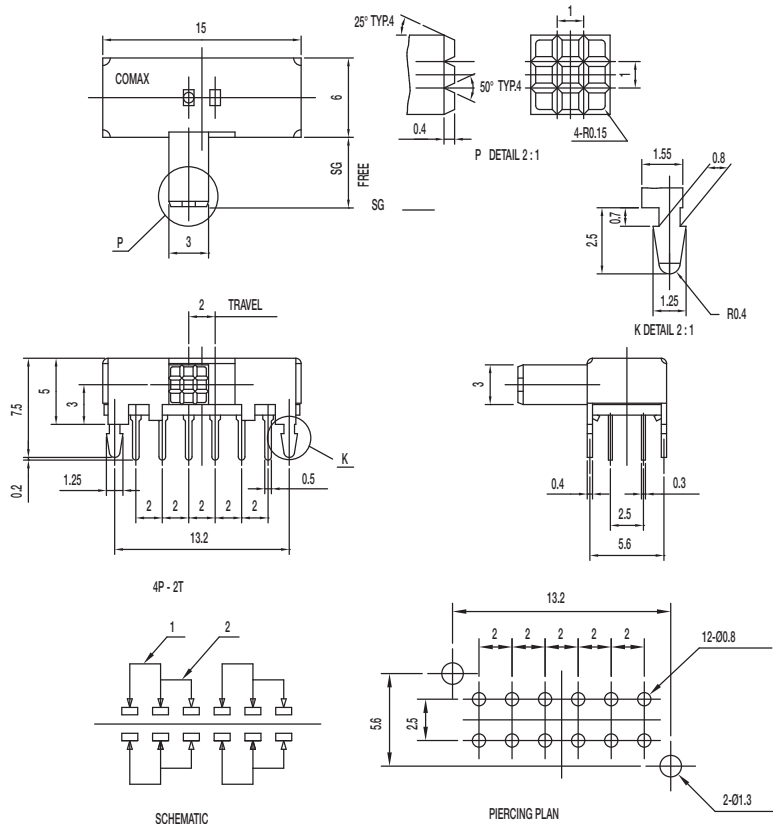
### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 250 ± 100 gf (2.45 ± 0.98N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

## SK-42D05-SG NS 4P2T NON-SHORTING



### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 250 ± 100 gf (2.45 ± 0.98N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

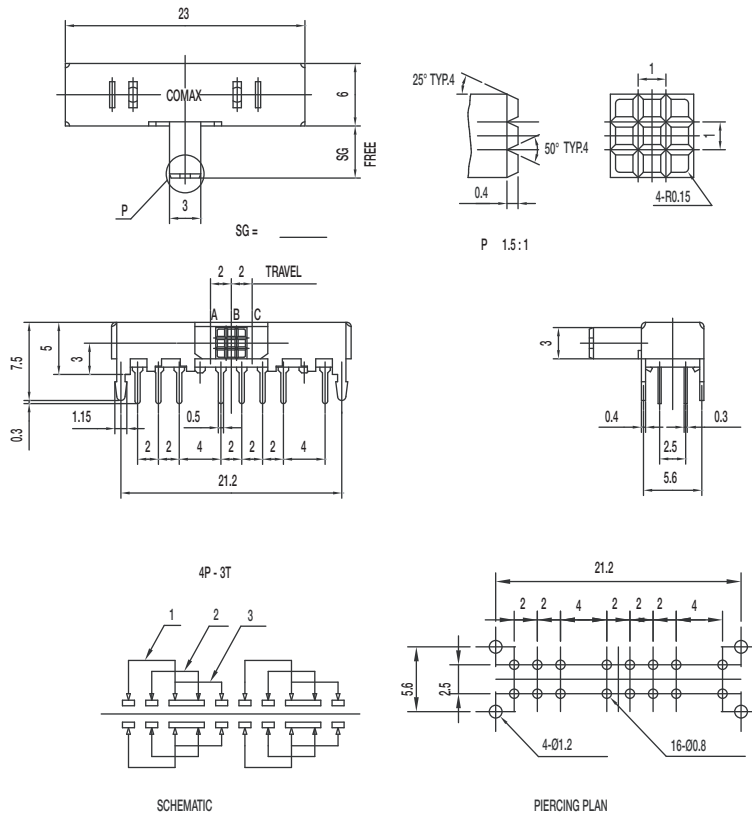
KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated



Dimensions are shown: mm  
 Specifications and dimensions subject to change

# SK Series Miniature Slide Switches

## SK-43D05-SG 4P3T

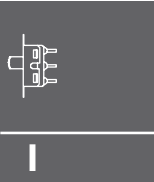


### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 300 ± 100 gf (2.94 ± 0.98N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

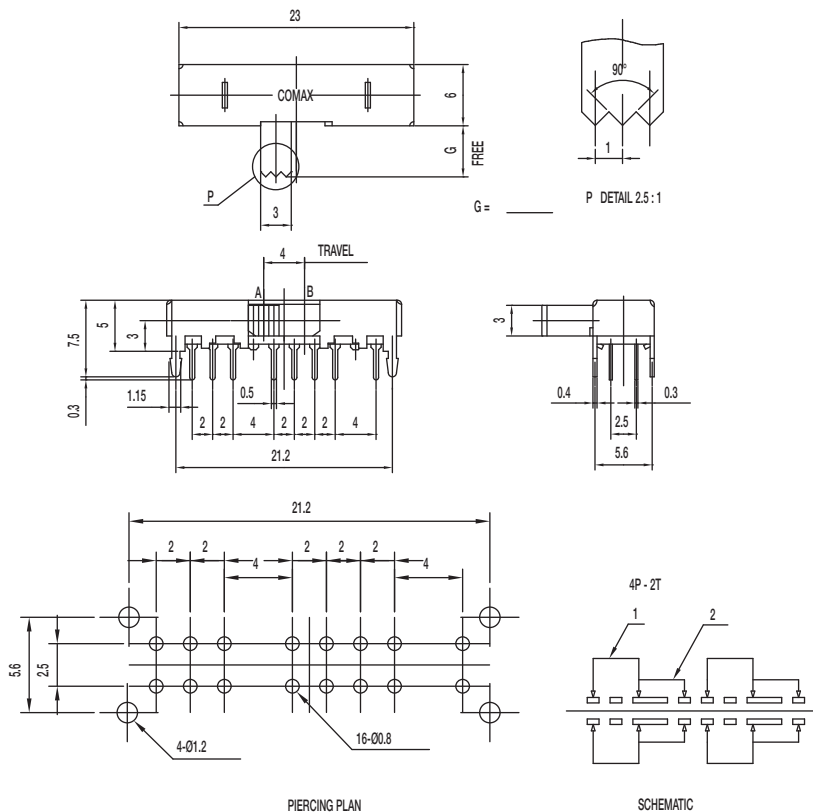
### Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated



Side

## SK-42H03-G 4P2T NON-SHORTING



### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 TRAVEL: 4 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

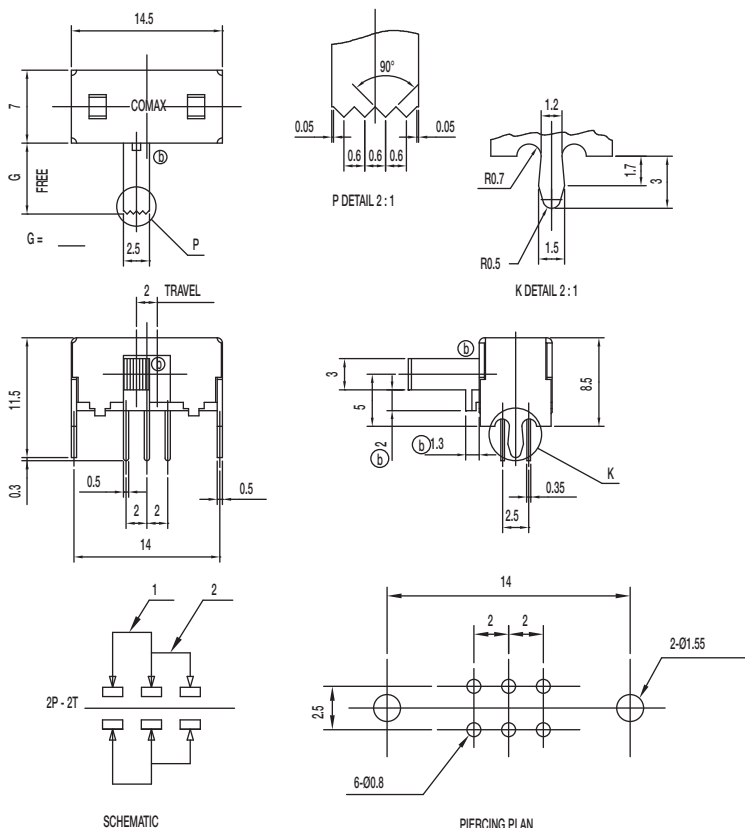
KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated



Dimensions are shown: mm  
 Specifications and dimensions subject to change

# SK Series Miniature Slide Switches

## SK-22D28-G NS DPDT NON-SHORTING



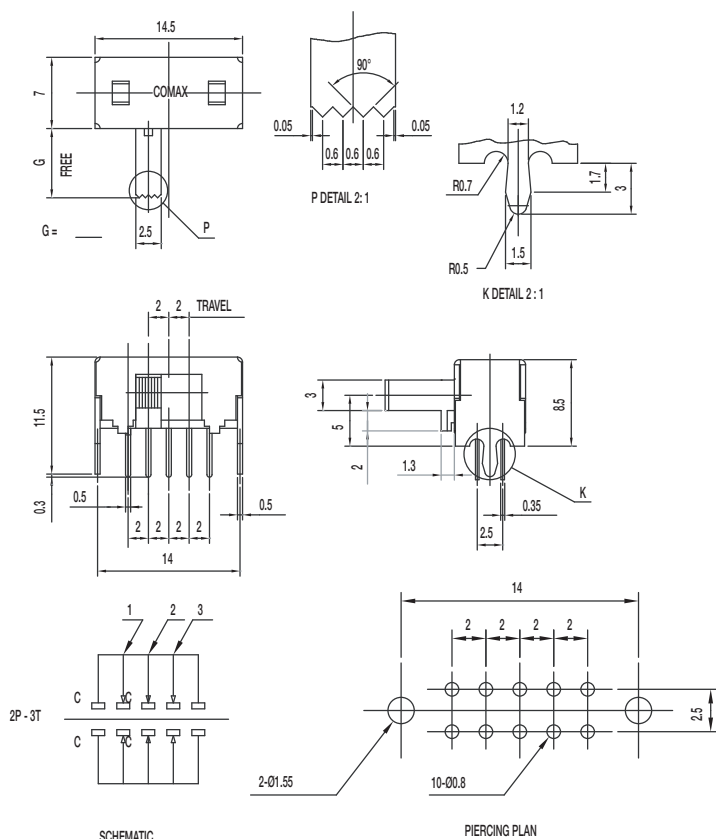
### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

## SK-23D28-G NS 2P3T NON-SHORTING



### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 300 ± 150 gf (2.94 ± 1.47N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

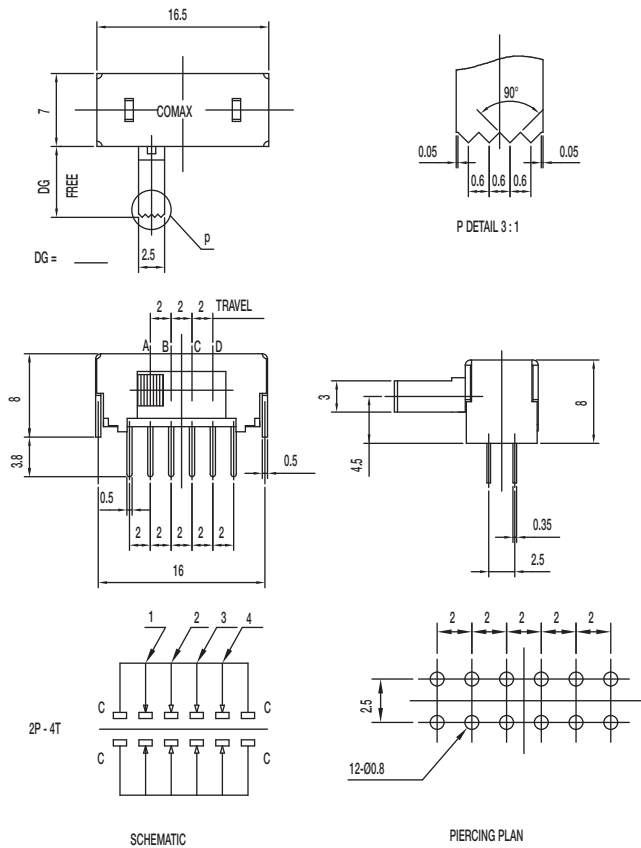
KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated



Dimensions are shown: mm  
 Specifications and dimensions subject to change

# SK Series Miniature Slide Switches

## SK-24D18-DG NS 2P4T NON-SHORTING

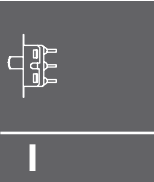


### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 250 ± 100 gf (2.45 ± 0.98N); 300 ± 150 gf (2.94 ± 1.47N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

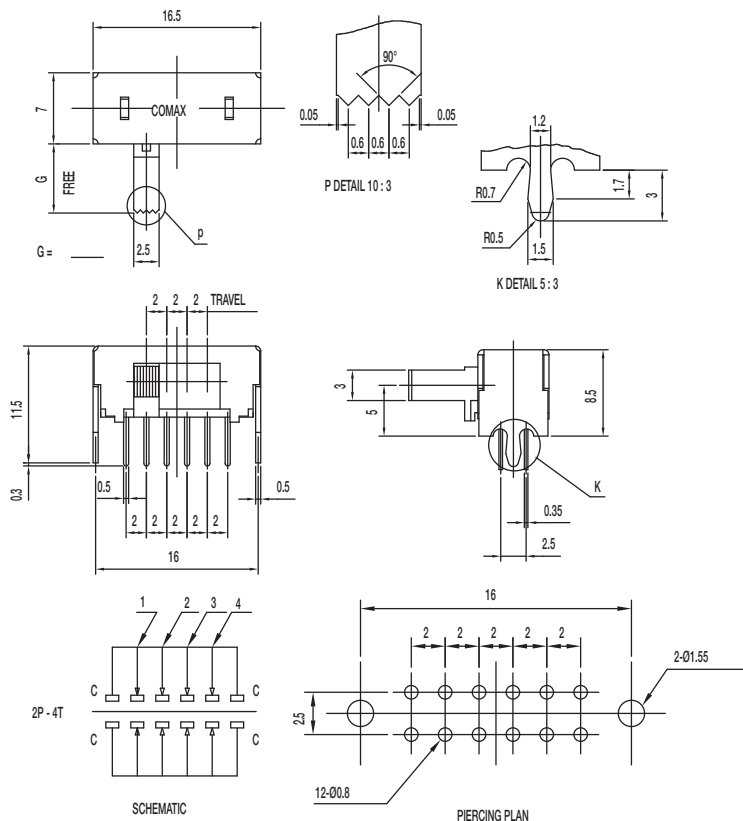
### Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated



Side

## SK-24D28-G NS 2P4T NON-SHORTING



### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 250 ± 100 gf (2.45 ± 0.98N); 300 ± 150 gf (2.94 ± 1.47N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

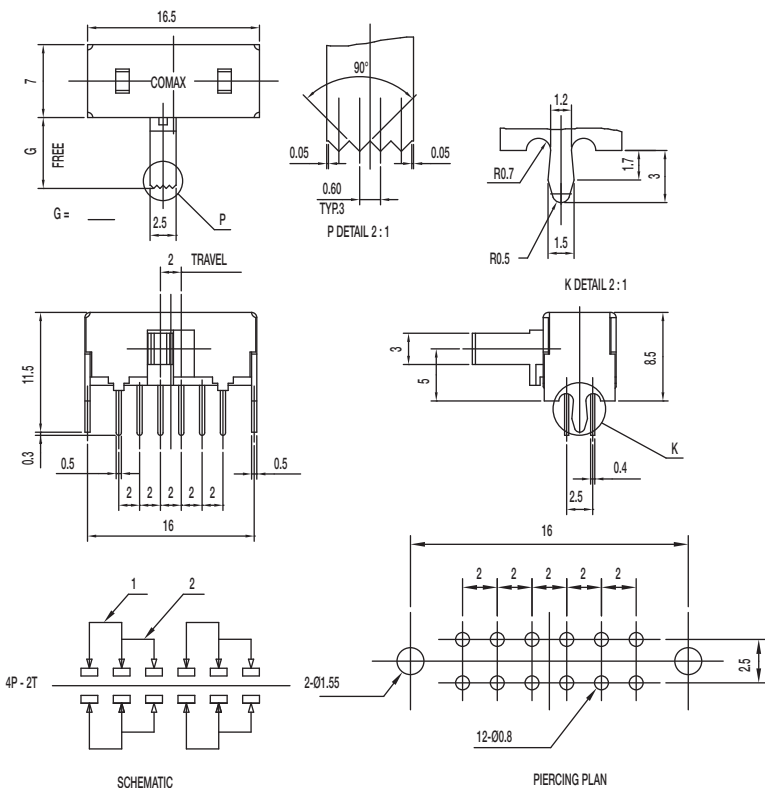
KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated



Dimensions are shown: mm  
 Specifications and dimensions subject to change

# SK Series Miniature Slide Switches

**SK-42D28-G NS** 4P2T NON-SHORTING



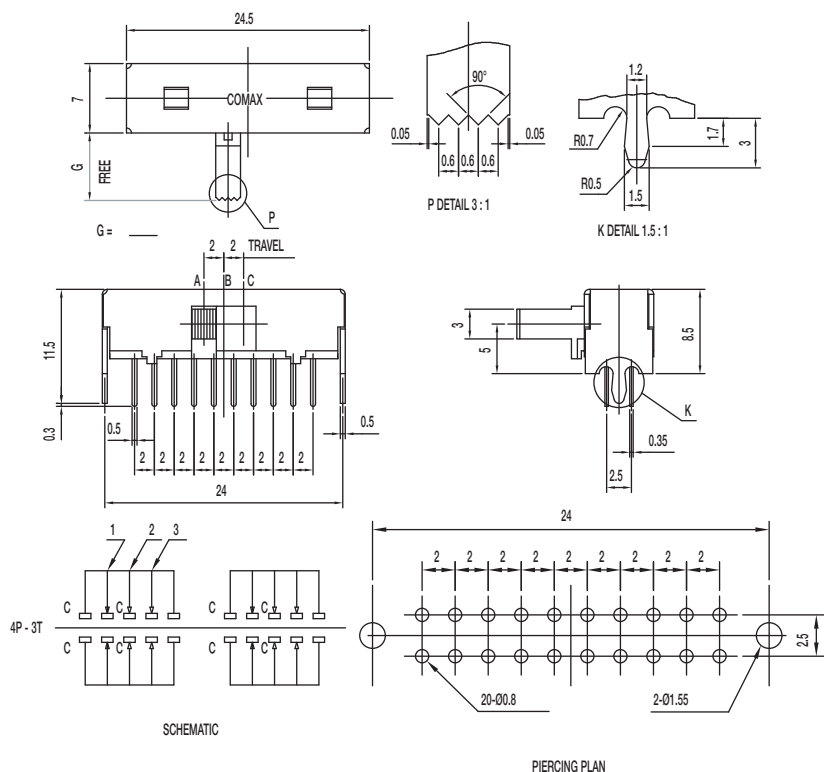
## Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE:  $200 \pm 100$  gf ( $1.96 \pm 0.98$ N)  
 TRAVEL:  $2 \pm 0.3$  mm  
 OPERATING TEMPERATURE:  $-20^{\circ}\text{C}$  to  $70^{\circ}\text{C}$

## Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

**SK-43D28-G NS** 4P3T NON-SHORTING



## Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE:  $200 \pm 100$  gf ( $1.96 \pm 0.98$ N)  
 $300 \pm 150$  gf ( $2.94 \pm 1.47$ N)  
 TRAVEL:  $2 \pm 0.3$  mm  
 OPERATING TEMPERATURE:  $-20^{\circ}\text{C}$  to  $70^{\circ}\text{C}$

## Materials

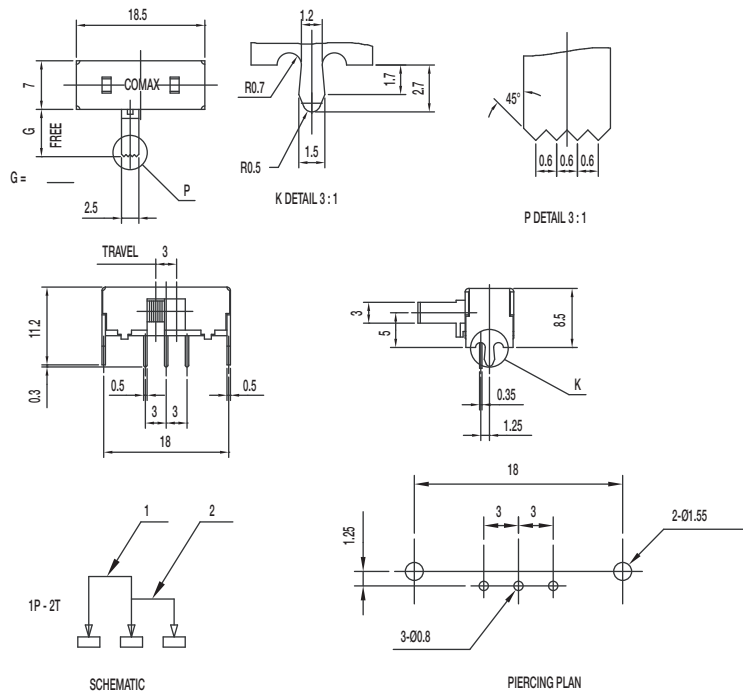
KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

Dimensions are shown: mm  
 Specifications and dimensions subject to change



# SK Series Miniature Slide Switches

## SK-12F28-G NS 1P2T NON-SHORTING



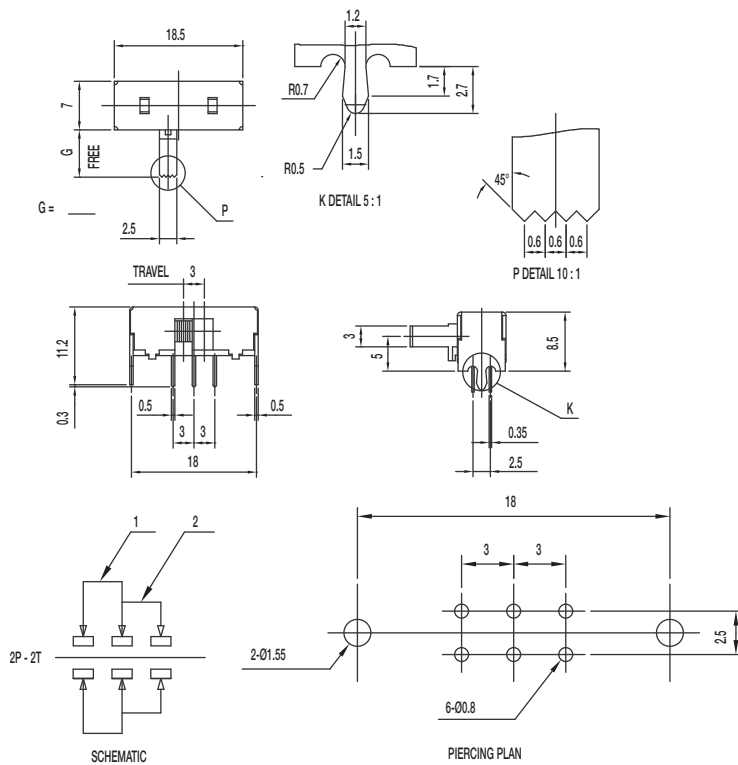
### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 TRAVEL: 3 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

## SK-22F28-G NS DPDT NON-SHORTING

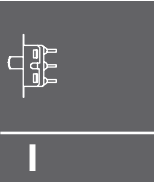


### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 TRAVEL: 3 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

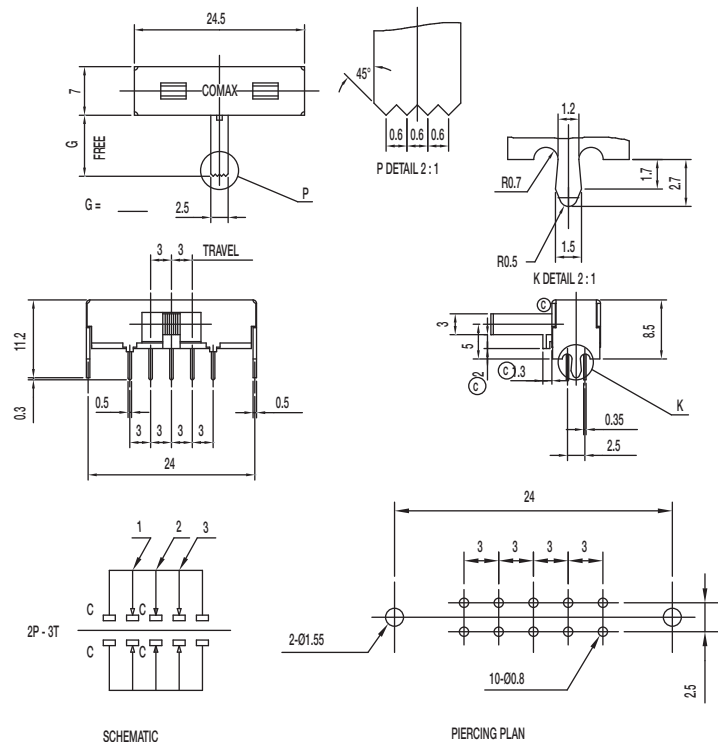


Side



# SK Series Miniature Slide Switches

## SK-23F28-G NS 2P3T NON-SHORTING



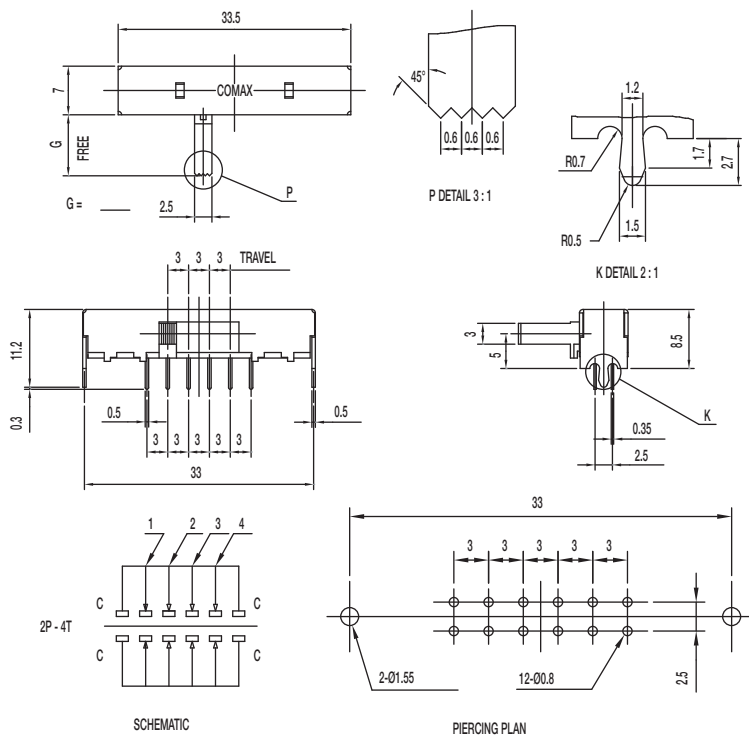
### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 150 ± 80 gf (1.47 ± 0.78N)  
 200 ± 100 gf (1.96 ± 0.98N)  
 TRAVEL: 3 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

## SK-24F28-G NS 2P4T NON-SHORTING



### Specifications

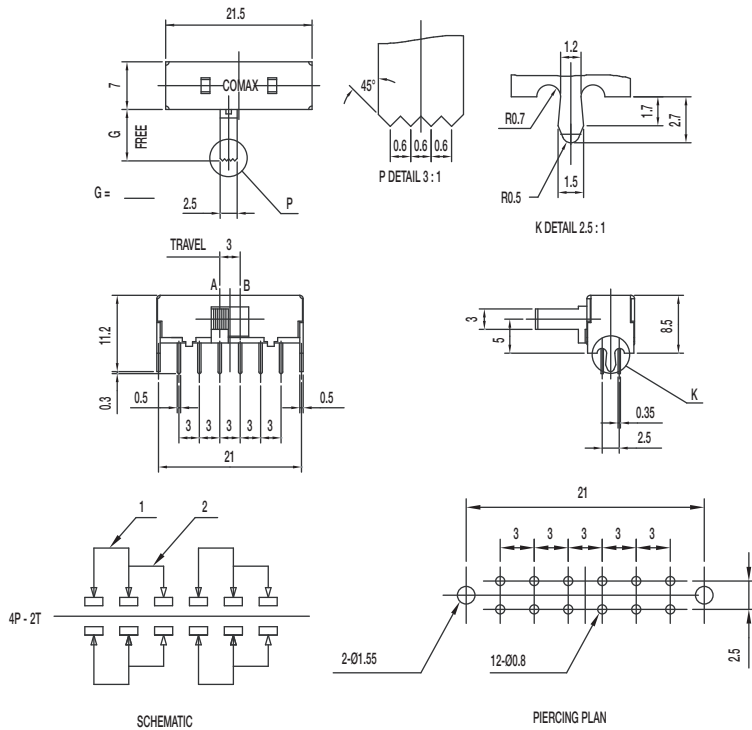
CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 250 ± 100 gf (2.45 ± 0.98N)  
 TRAVEL: 3 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

# SK Series Miniature Slide Switches

## SK-42F28-G NS 2P4T NON-SHORTING

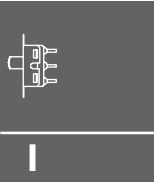


### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE:  $200 \pm 100$  gf ( $1.96 \pm 0.98$ N)  
 $250 \pm 100$  gf ( $2.45 \pm 0.98$ N)  
 TRAVEL:  $3 \pm 0.3$  mm  
 OPERATING TEMPERATURE:  $-20^{\circ}\text{C}$  to  $70^{\circ}\text{C}$

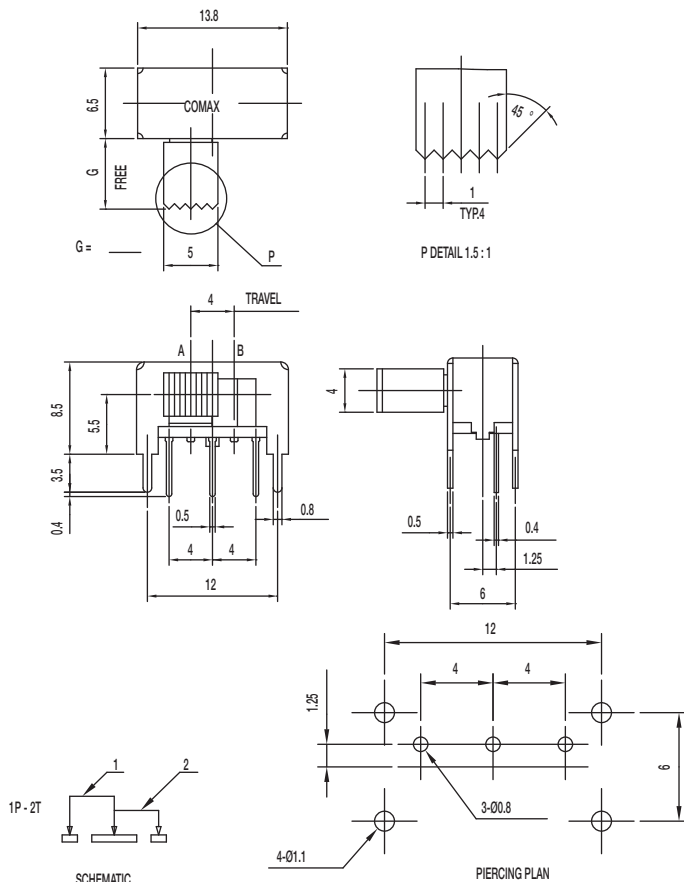
### Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated



Side

## SK-12H04-G NS 1P2T NON-SHORTING



### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE:  $250 \pm 100$  gf ( $2.45 \pm 0.98$ N)  
 TRAVEL:  $4 \pm 0.3$  mm  
 OPERATING TEMPERATURE:  $-20^{\circ}\text{C}$  to  $70^{\circ}\text{C}$

### Materials

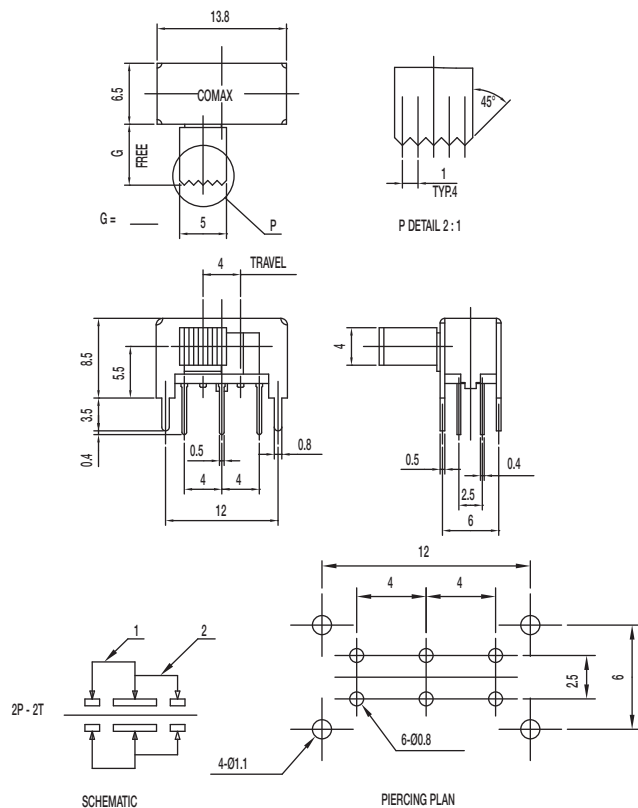
KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated



Dimensions are shown: mm  
 Specifications and dimensions subject to change

# SK Series Miniature Slide Switches

## SK-22H04-G NS DPDT NON-SHORTING



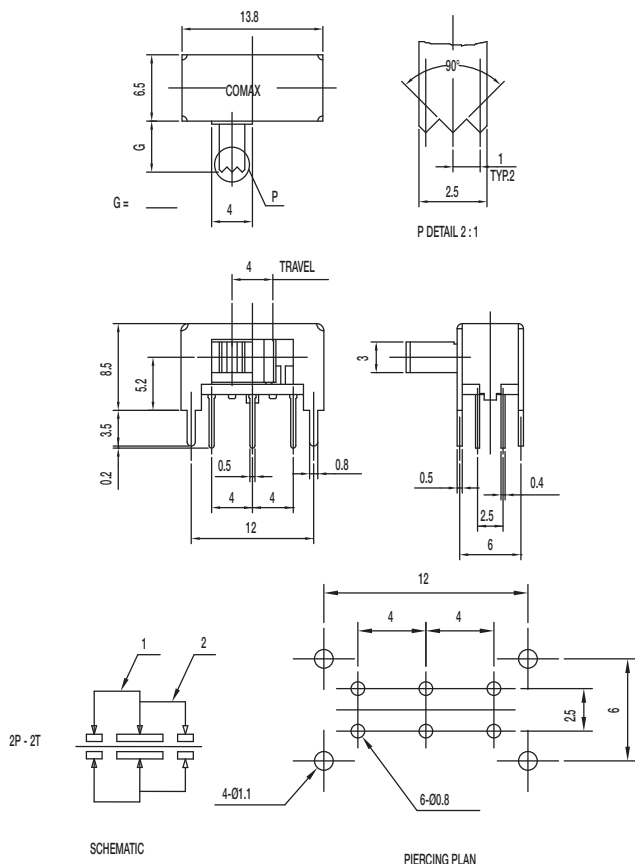
### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 250 ± 100 gf (2.45 ± 0.98N)  
 TRAVEL: 4 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

## SK-22H24-G NS DPDT NON-SHORTING



### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 250 ± 100 gf (2.45 ± 0.98N)  
 TRAVEL: 4 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

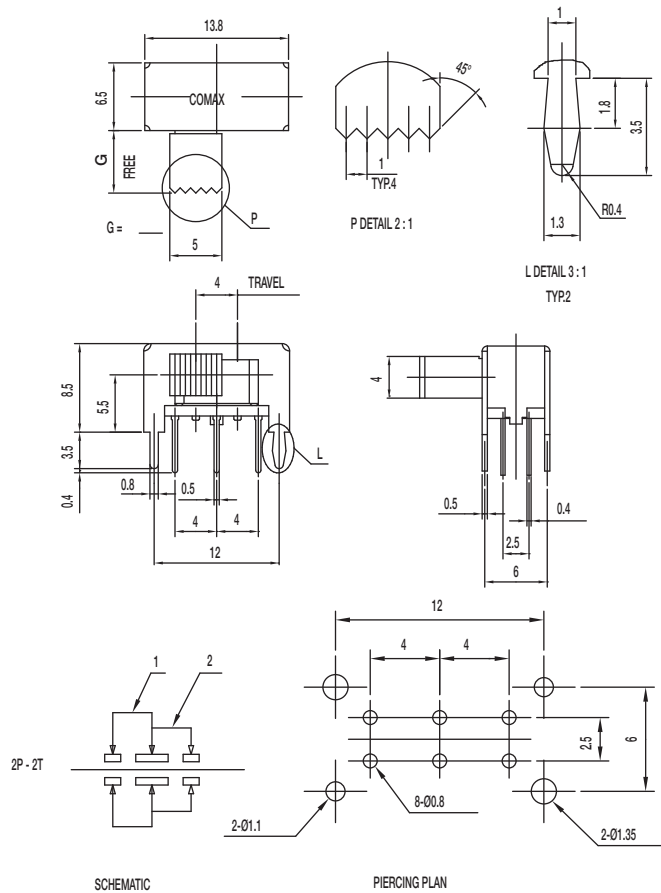


Dimensions are shown: mm  
 Specifications and dimensions subject to change

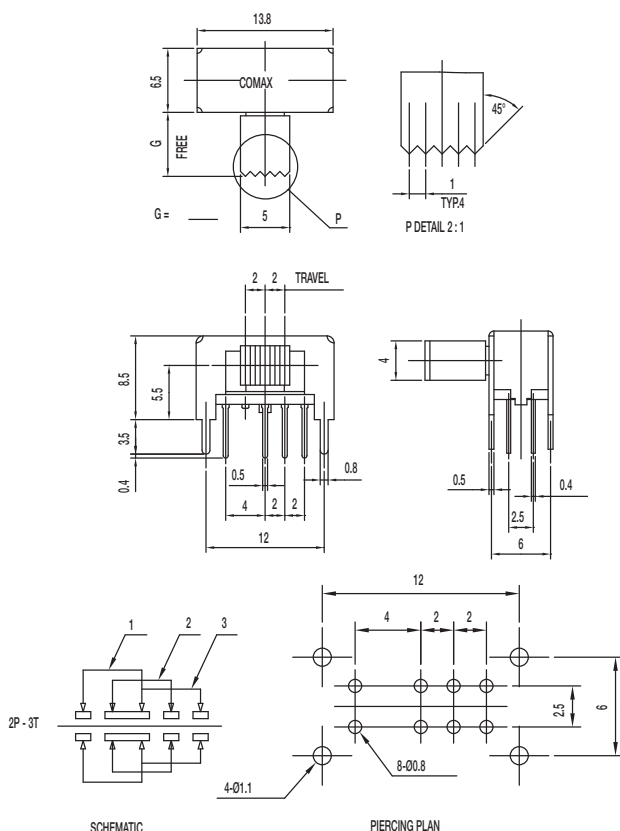
Slide

# SK Series Miniature Slide Switches

## SK-22H44-G NS DPDT NON-SHORTING



## SK-23D04-G 2P3T



### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 250 ± 150 gf (2.45 ± 1.47N)  
 TRAVEL: 4 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 300 ± 150 gf (2.94 ± 1.47N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

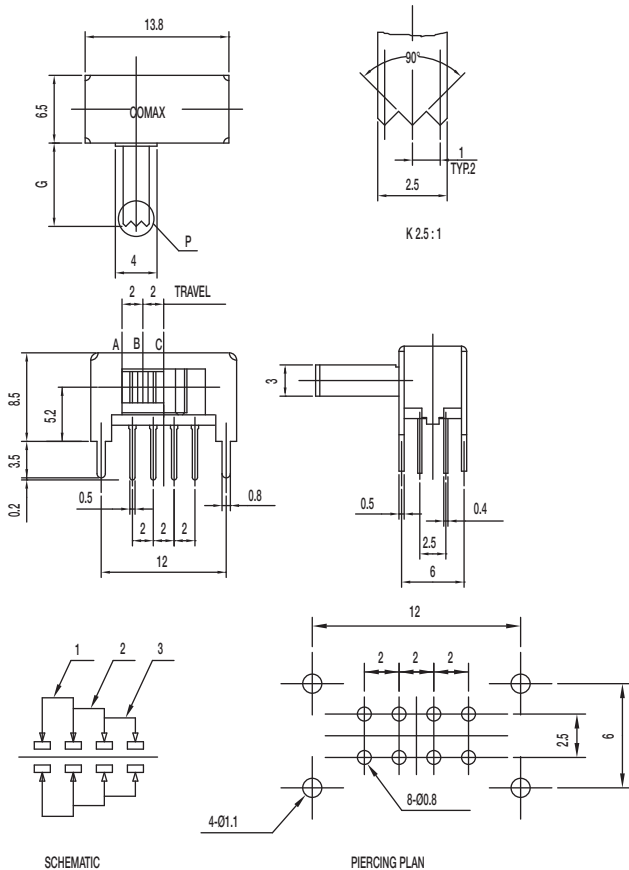


Dimensions are shown: mm  
 Specifications and dimensions subject to change



# SK Series Miniature Slide Switches

## SK-23D23-G NS 2P3T NON-SHORTING



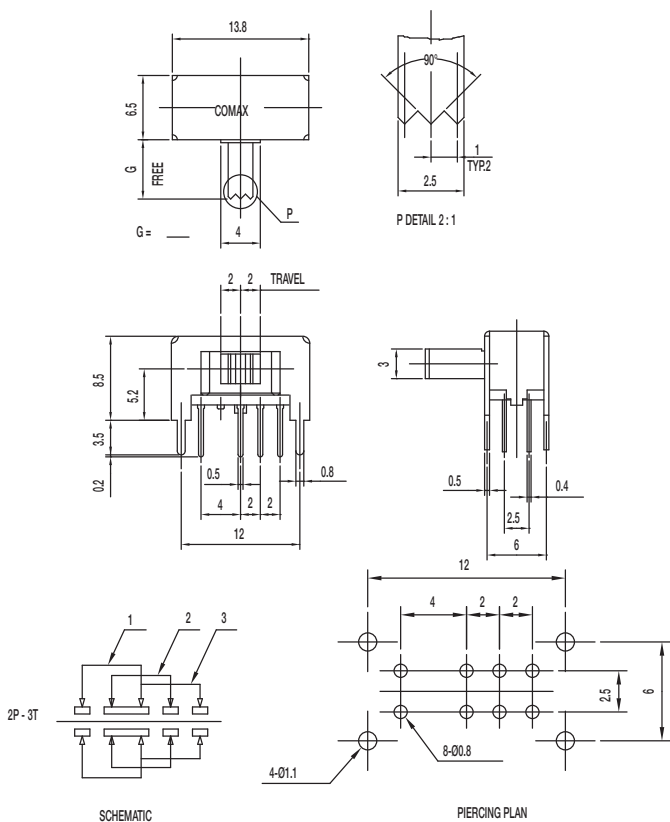
### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 300 ± 150 gf (2.94 ± 1.47N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

## SK-23D24-G 2P3T



### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 300 ± 150 gf (2.94 ± 1.47N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

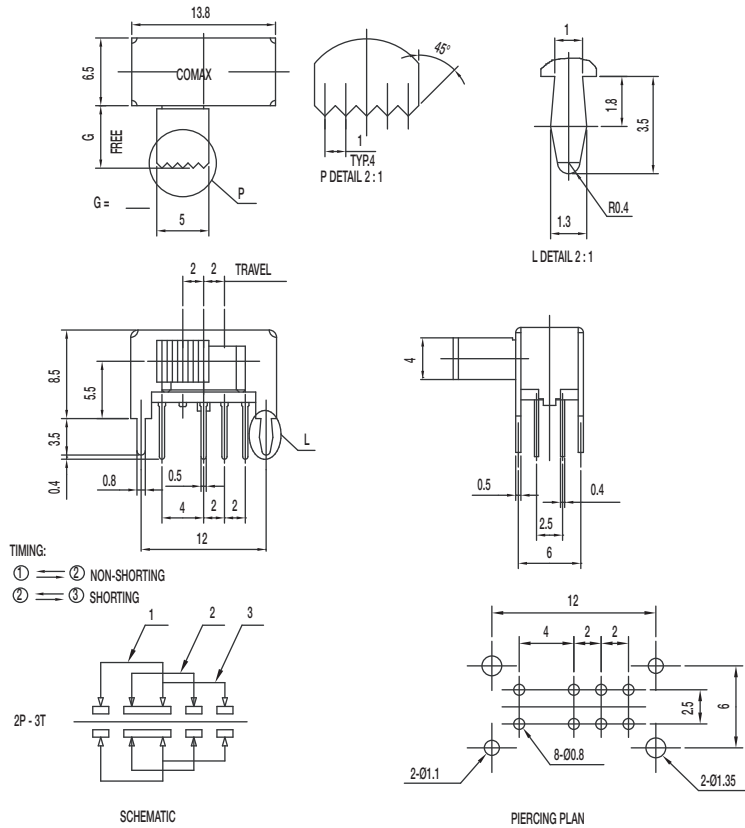
KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated



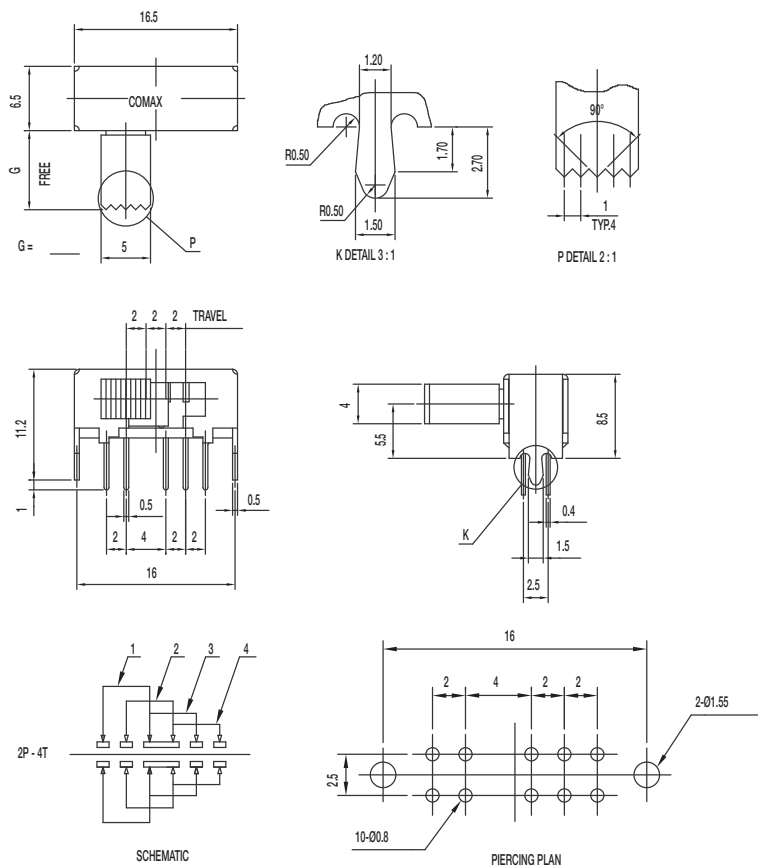
Dimensions are shown: mm  
 Specifications and dimensions subject to change

# SK Series Miniature Slide Switches

## SK-23D44-G K 2P3T NON-SHORTING AND SHORTING

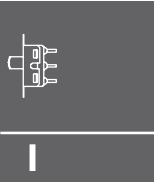


## SK-24D04-G 2P4T



**C&K**

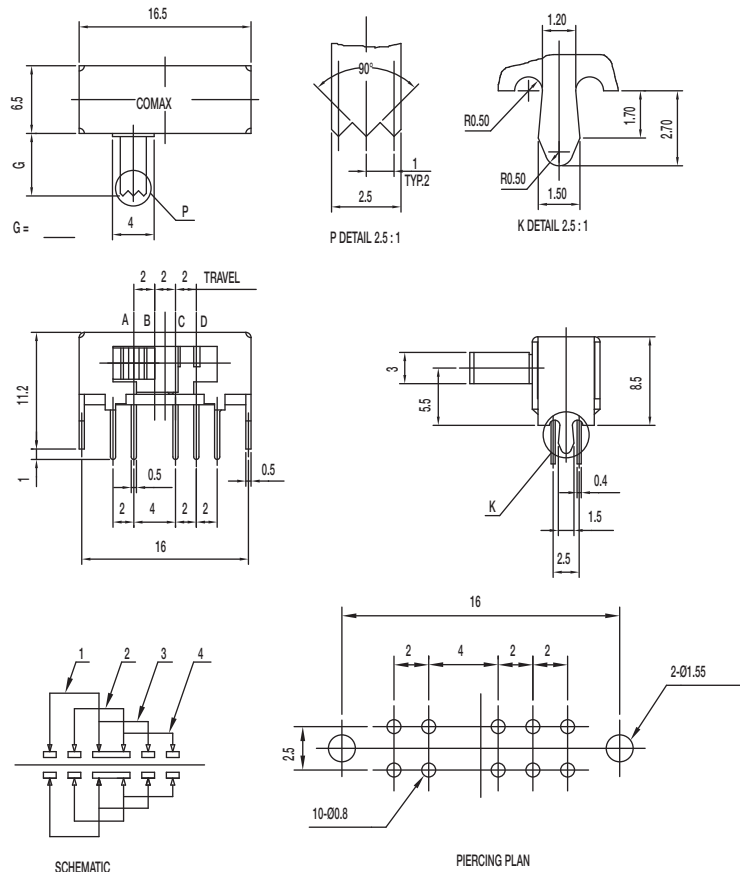
Dimensions are shown: mm  
 Specifications and dimensions subject to change



Side

# SK Series Miniature Slide Switches

## SK-24D24 1P3T NON-SHORTING



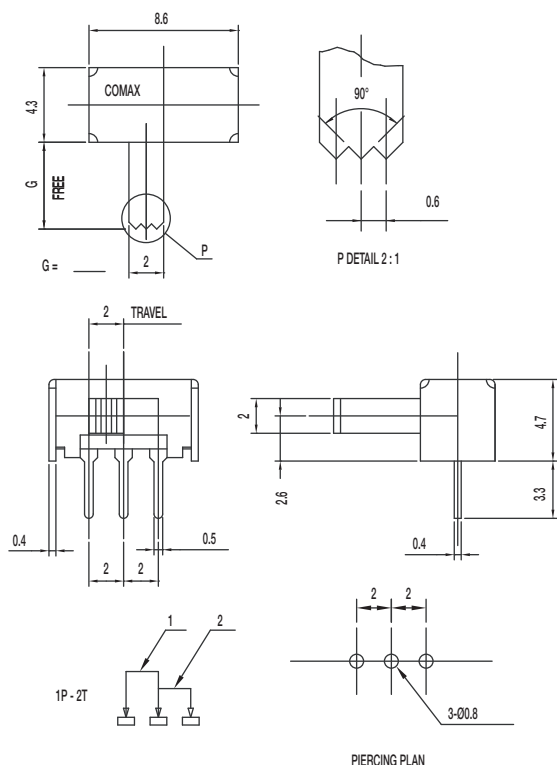
### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 300 ± 150 gf (2.94 ± 1.47N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

## SK-12D04-G NS 1P2T NON-SHORTING



### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 250 ± 100 gf (2.45 ± 0.98N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

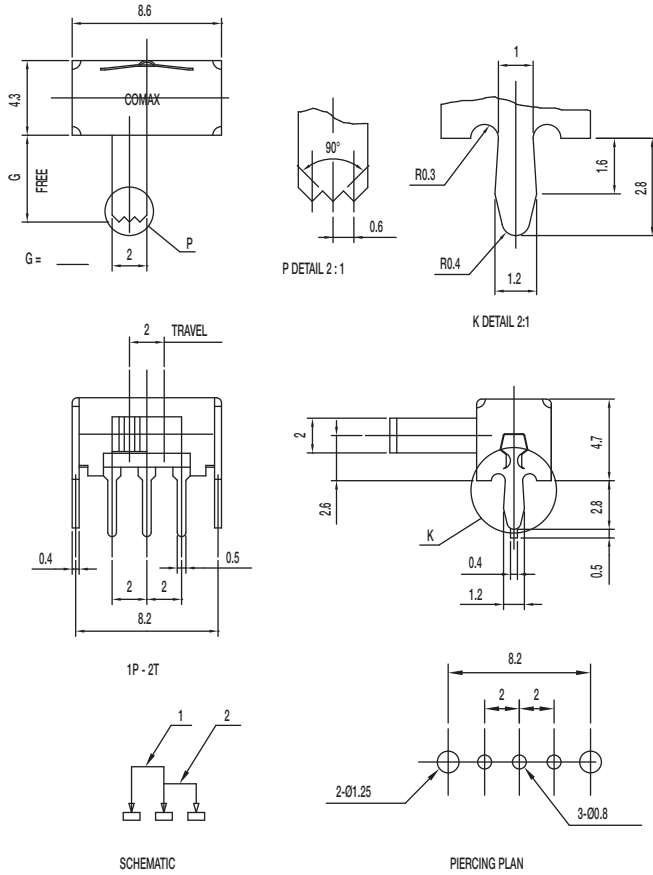
### Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

Dimensions are shown: mm  
 Specifications and dimensions subject to change

# SK Series Miniature Slide Switches

## SK-12D07-G NS PA 1P2T NON-SHORTING



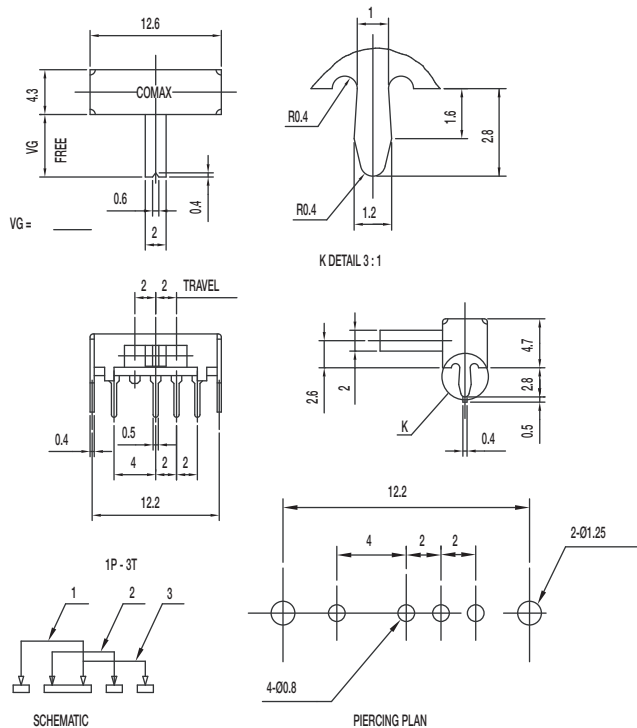
### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 250 ± 100 gf (2.45 ± 0.98N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

KNOB: PA  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

## SK-13D16-VG PA 1P3T

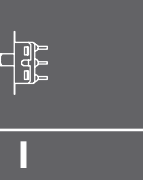


### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 250 ± 100 gf (2.45 ± 0.98N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

KNOB: PA  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

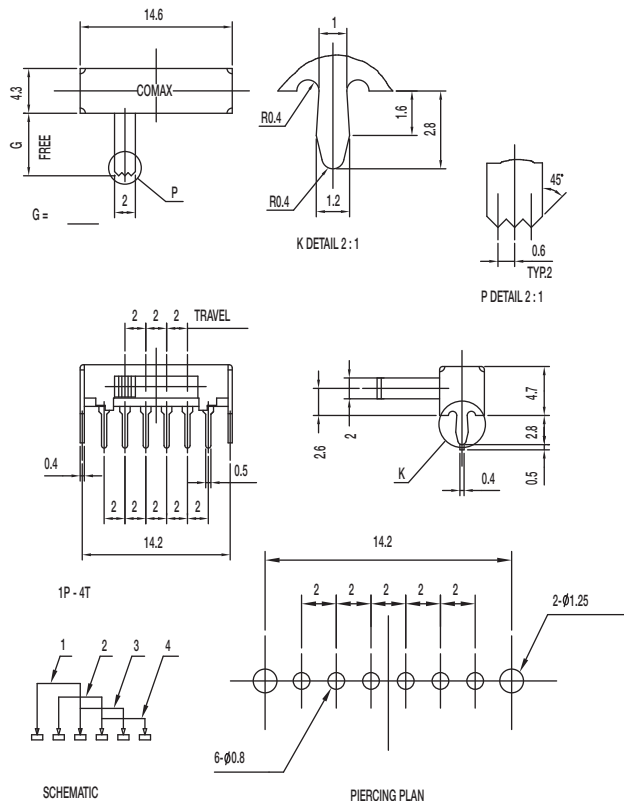


Slide



# SK Series Miniature Slide Switches

## SK-14D01-G 1P4T



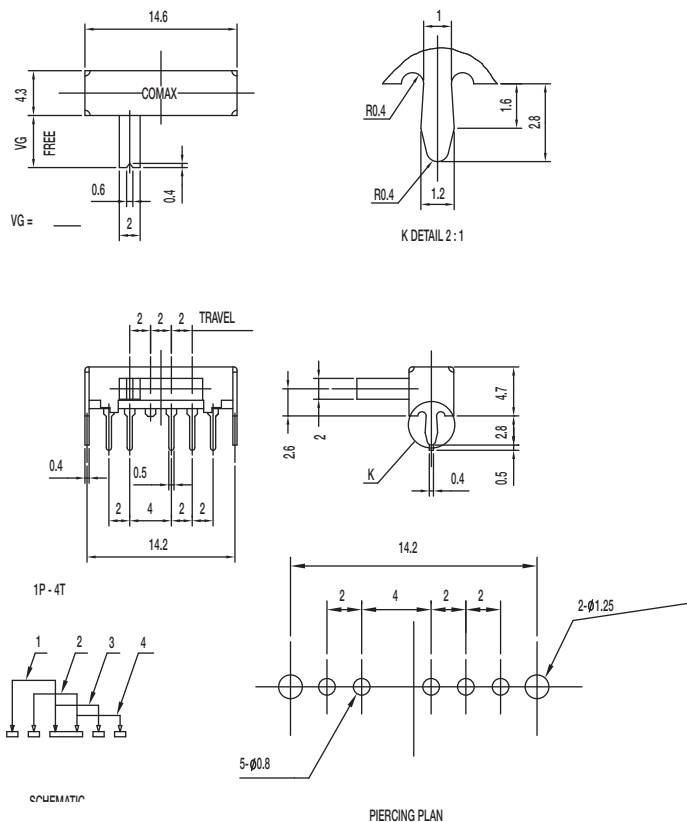
### Specifications

- CONTACT RATING: 0.3A @ 30 VDC
- INITIAL CONTACT RESISTANCE: 30 m ohms max.
- INSULATION RESISTANCE: 100 M ohms min.
- DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
- OPERATING LIFE: 10,000 cycles with load
- OPERATING FORCE:  $200 \pm 100$  gf ( $1.96 \pm 0.98$ N)  
 $250 \pm 100$  gf ( $2.45 \pm 0.98$ N)
- TRAVEL:  $2 \pm 0.3$  mm
- OPERATING TEMPERATURE:  $-20^{\circ}\text{C}$  to  $70^{\circ}\text{C}$

### Materials

- KNOB: POM
- FRAME: SPCC
- CONTACT: Silver clad
- TERMINAL: Silver plated

## SK-14D07-VG PA 1P4T



### Specifications

- CONTACT RATING: 0.3A @ 30 VDC
- INITIAL CONTACT RESISTANCE: 30 m ohms max.
- INSULATION RESISTANCE: 100 M ohms min.
- DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
- OPERATING LIFE: 10,000 cycles with load
- OPERATING FORCE:  $200 \pm 100$  gf ( $1.96 \pm 0.98$ N)  
 $250 \pm 100$  gf ( $2.45 \pm 0.98$ N)
- TRAVEL:  $2 \pm 0.3$  mm
- OPERATING TEMPERATURE:  $-20^{\circ}\text{C}$  to  $70^{\circ}\text{C}$

### Materials

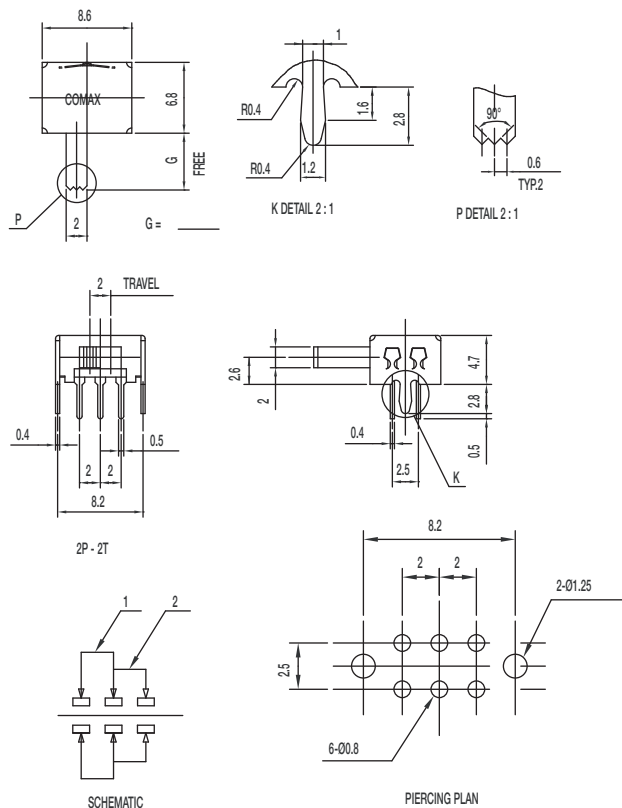
- KNOB: PA (UL94-V0)
- FRAME: SPCC
- CONTACT: Silver clad
- TERMINAL: Silver plated



Dimensions are shown: mm  
Specifications and dimensions subject to change

# SK Series Miniature Slide Switches

## SK-22D07-G NS PA DPDT NON-SHORTING



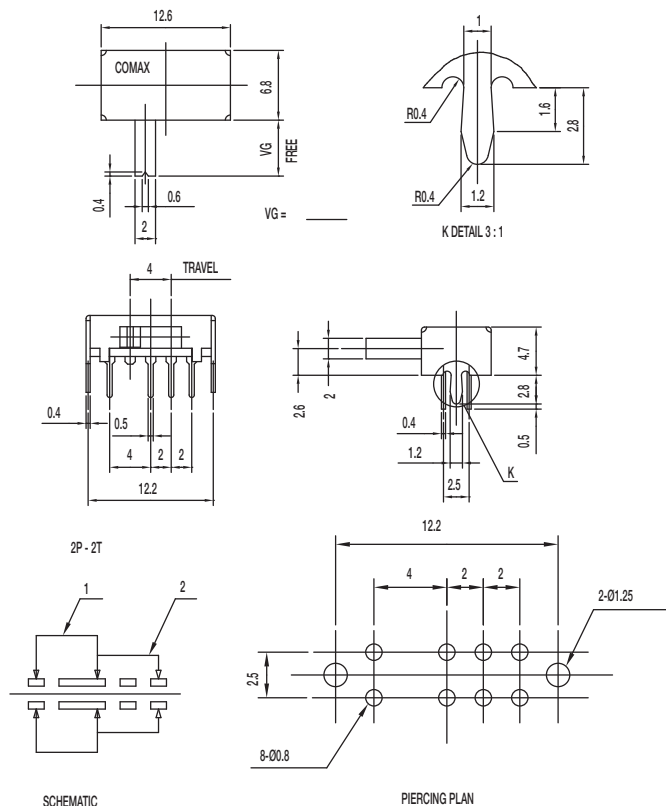
### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 250 ± 100 gf (2.45 ± 0.98N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

KNOB: PA (UL94V-0)  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

## SK-22H07-VG DPDT NON-SHORTING



### Specifications

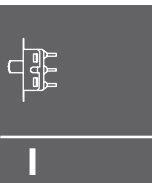
CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 TRAVEL: 4 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated



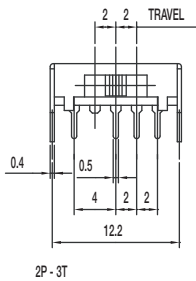
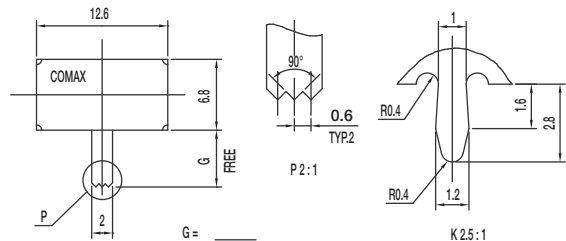
Dimensions are shown: mm  
 Specifications and dimensions subject to change



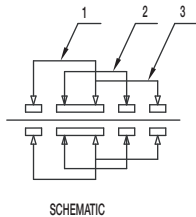
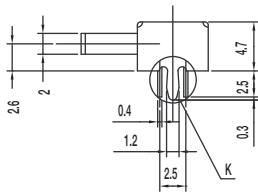
Slide

# SK Series Miniature Slide Switches

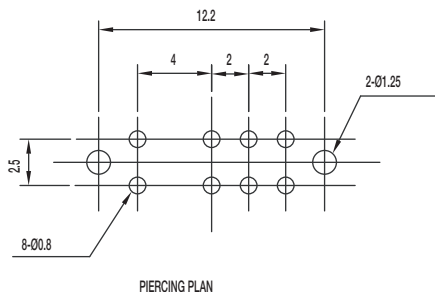
## SK-23D09-G 2P3T



2P - 3T



SCHEMATIC



PIERCING PLAN

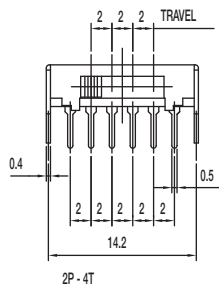
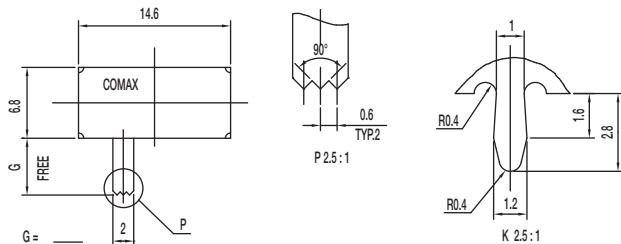
### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 250 ± 100 gf (2.45 ± 0.98N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

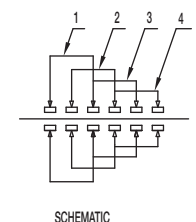
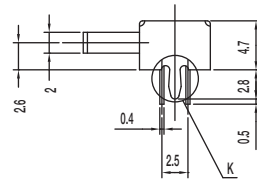
### Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

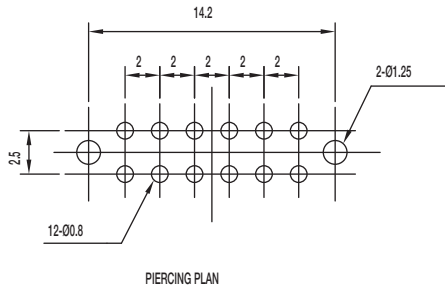
## SK-24D02-G 2P4T



2P - 4T



SCHEMATIC



PIERCING PLAN

### Specifications

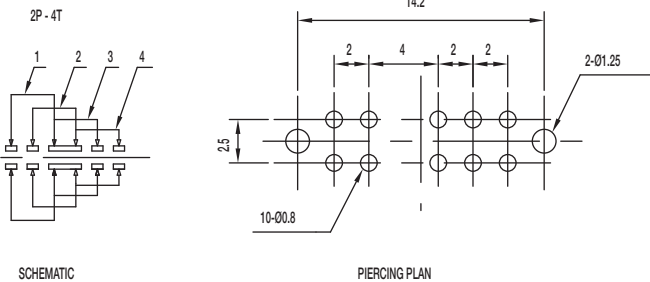
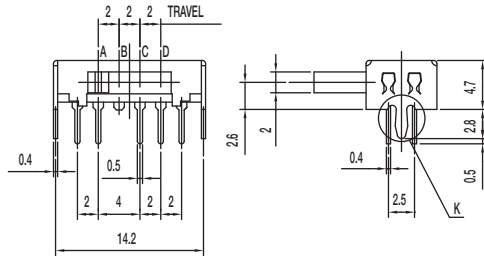
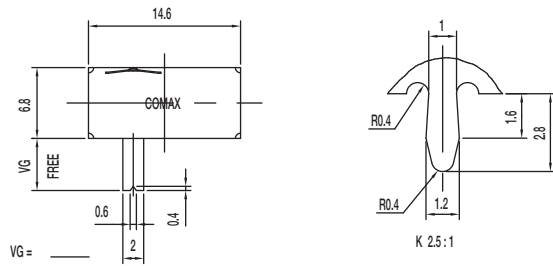
CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 250 ± 100 gf (2.45 ± 0.98N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

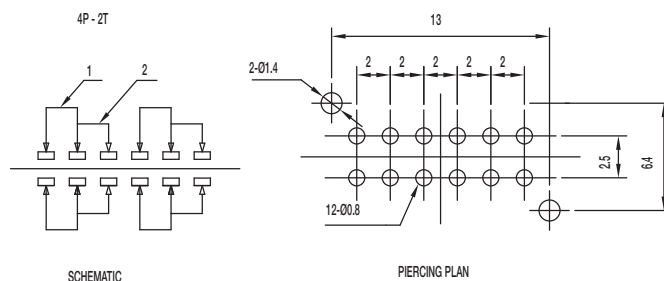
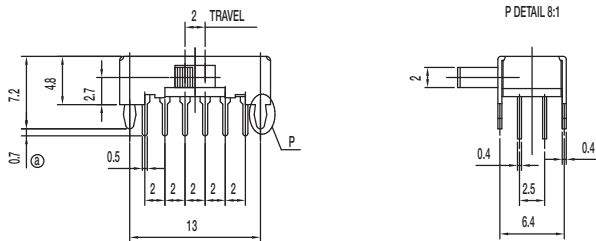
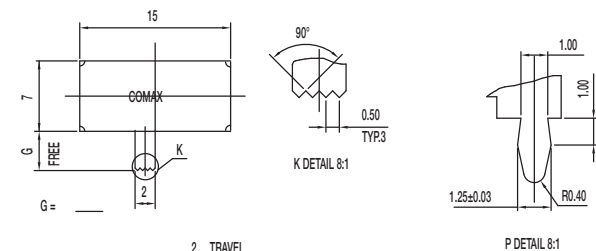
KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

# SK Series Miniature Slide Switches

## SK-24D07-VG NS (S) 2P4T NON-SHORTING



## SK-42D07-G NS 4P2T NON-SHORTING



### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 350 ± 150 gf (3.43 ± 1.47N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

### Specifications

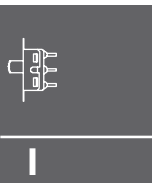
CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 250 ± 100 gf (2.45 ± 0.98N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated



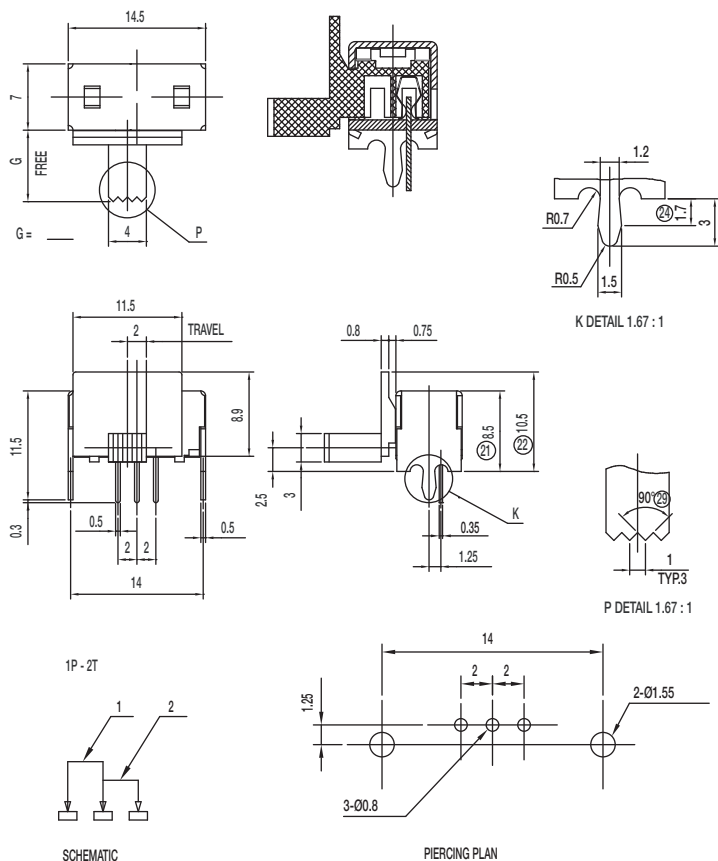
Dimensions are shown: mm  
 Specifications and dimensions subject to change



Slide

# SK Series Miniature Slide Switches

**SK-12D26-G 6.5 NS GY** 1P2T NON-SHORTING



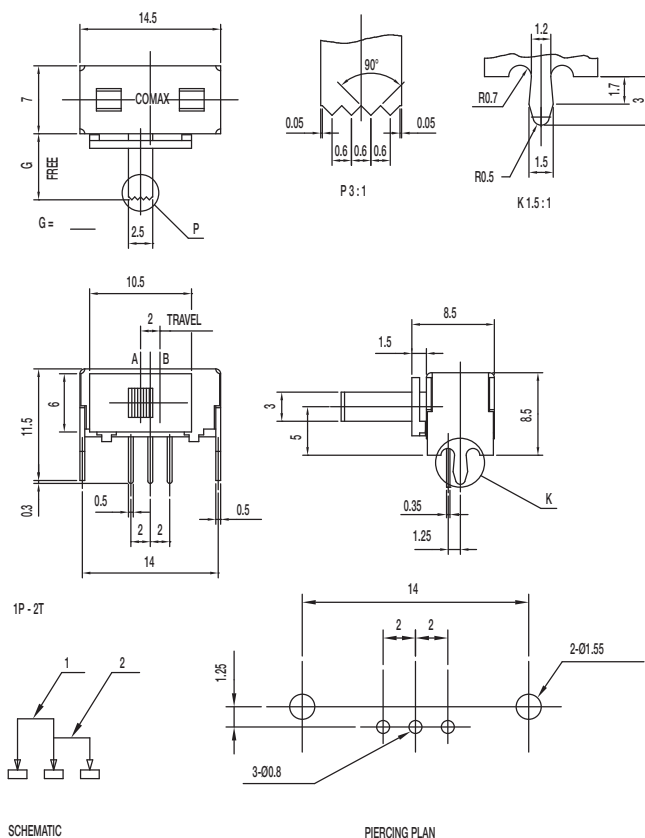
## Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 20 m ohms max.  
 INSULATION RESISTANCE: 500 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 250 ± 100 gf (2.45 ± 0.98N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

## Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

**SK-12D37-G NS** 1P2T NON-SHORTING



## Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

## Materials

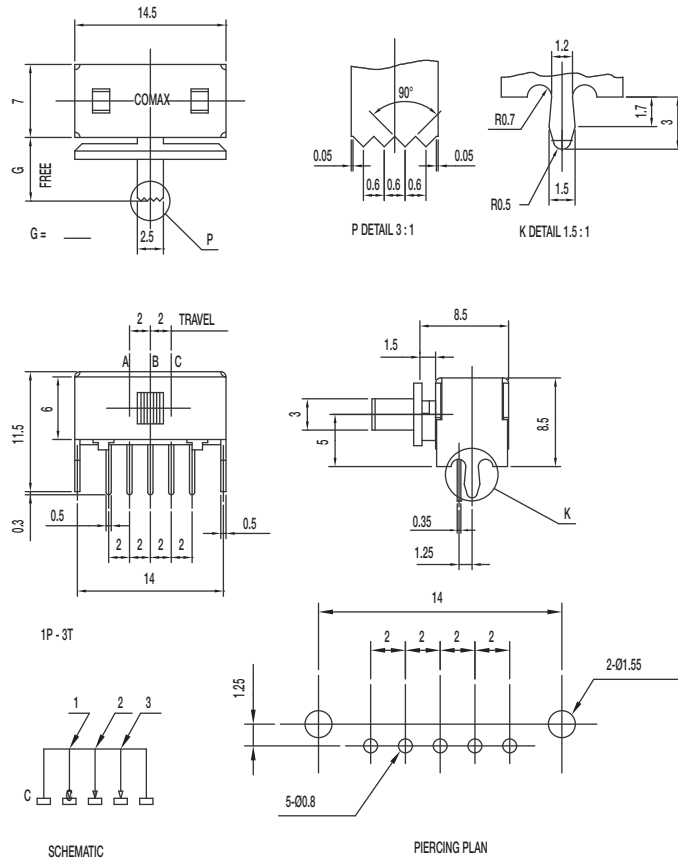
KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated



Dimensions are shown: mm  
 Specifications and dimensions subject to change

# SK Series Miniature Slide Switches

## SK-13D37-G NS 1P3T NON-SHORTING

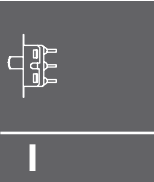


### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 300 ± 150 gf (2.94 ± 1.47N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

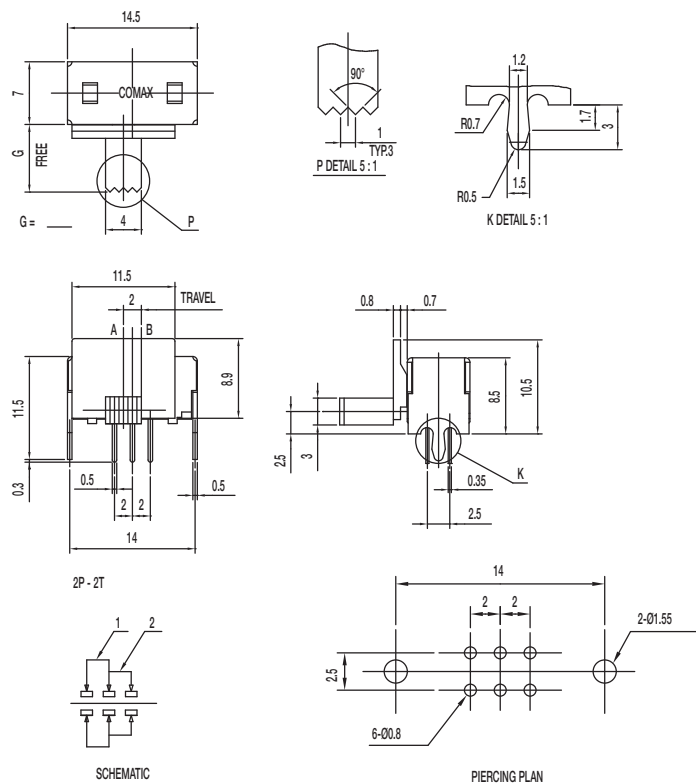
### Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated



Slide

## SK-22D27-G NS DPDT NON-SHORTING



### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 250 ± 100 gf (2.45 ± 0.98N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

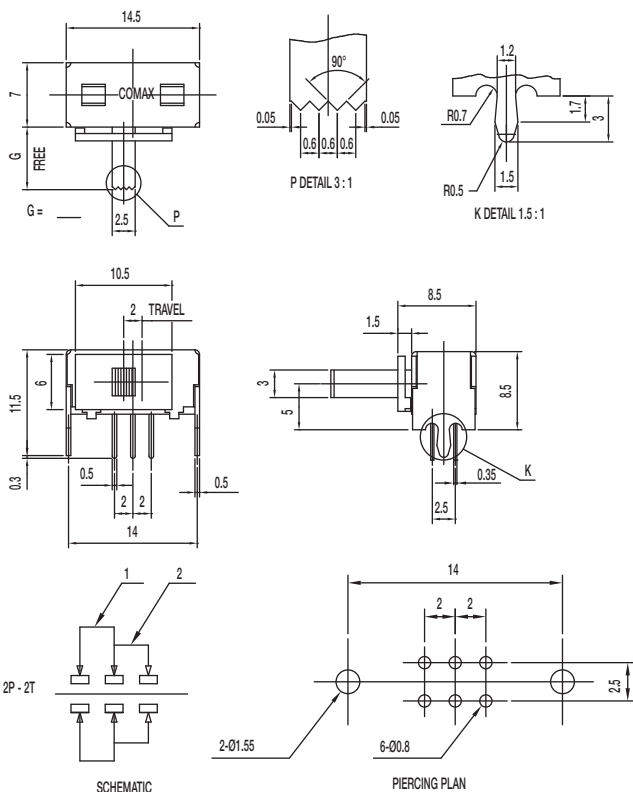
KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated



Dimensions are shown: mm  
 Specifications and dimensions subject to change

# SK Series Miniature Slide Switches

**SK-22D37-G NS** DPDT NON-SHORTING



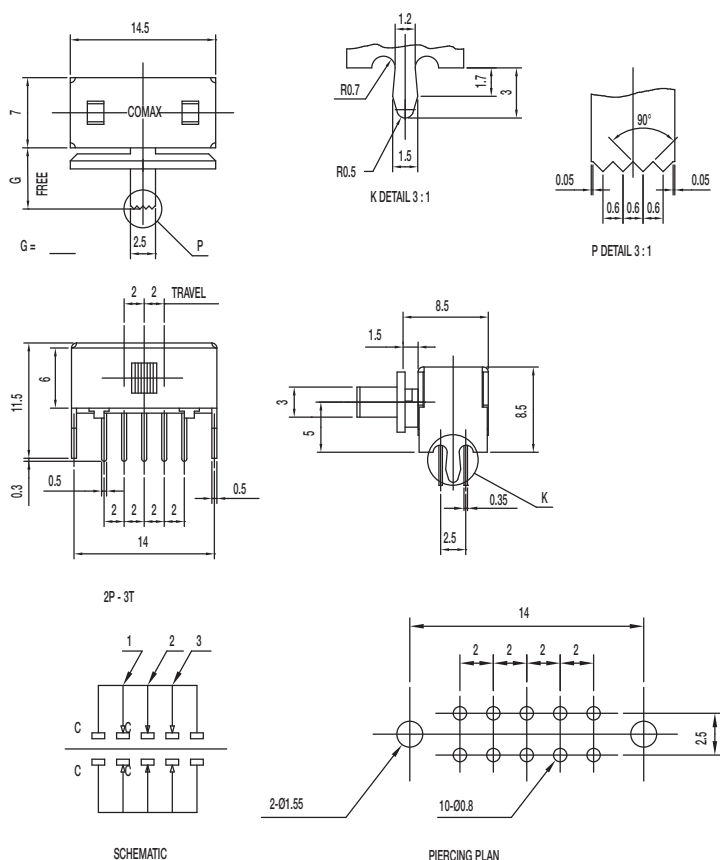
## Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

## Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

**SK-23D37-G NS** 2P3T NON-SHORTING



## Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 300 ± 150 gf (2.94 ± 1.47N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

## Materials

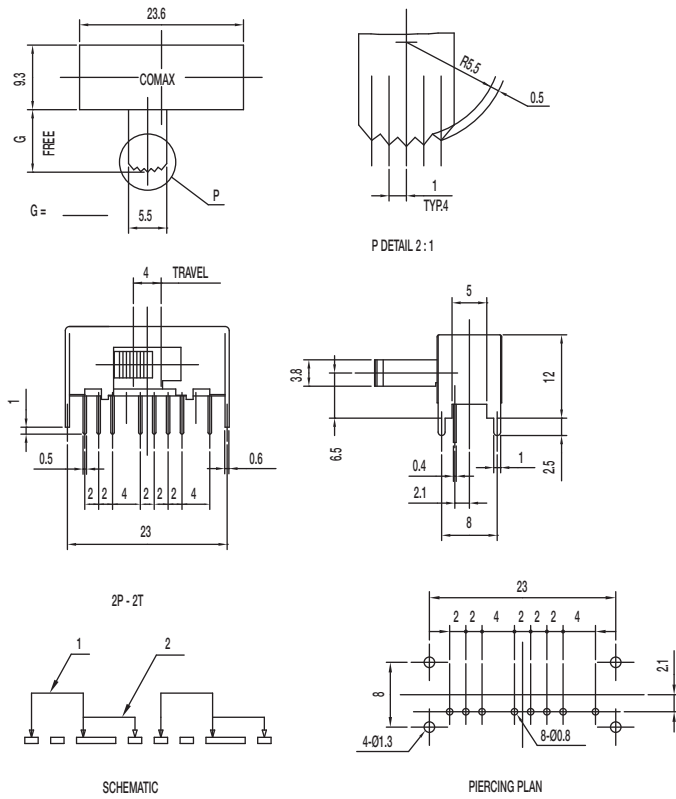
KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated



Dimensions are shown: mm  
 Specifications and dimensions subject to change

# SK Series Miniature Slide Switches

## SK-22H01-G RP DPDT NON-SHORTING

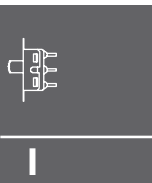


### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 250 ± 100 gf (2.45 ± 0.98N)  
 TRAVEL: 4 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

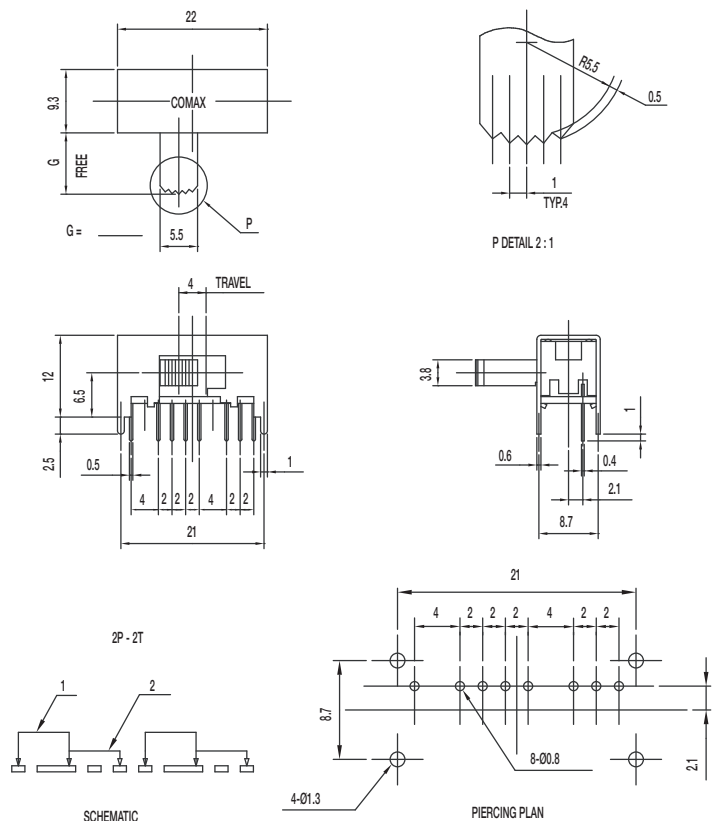
### Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated



Side

## SK-22H17-G DPDT NON-SHORTING



### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 250 ± 100 gf (2.45 ± 0.98N)  
 TRAVEL: 4 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

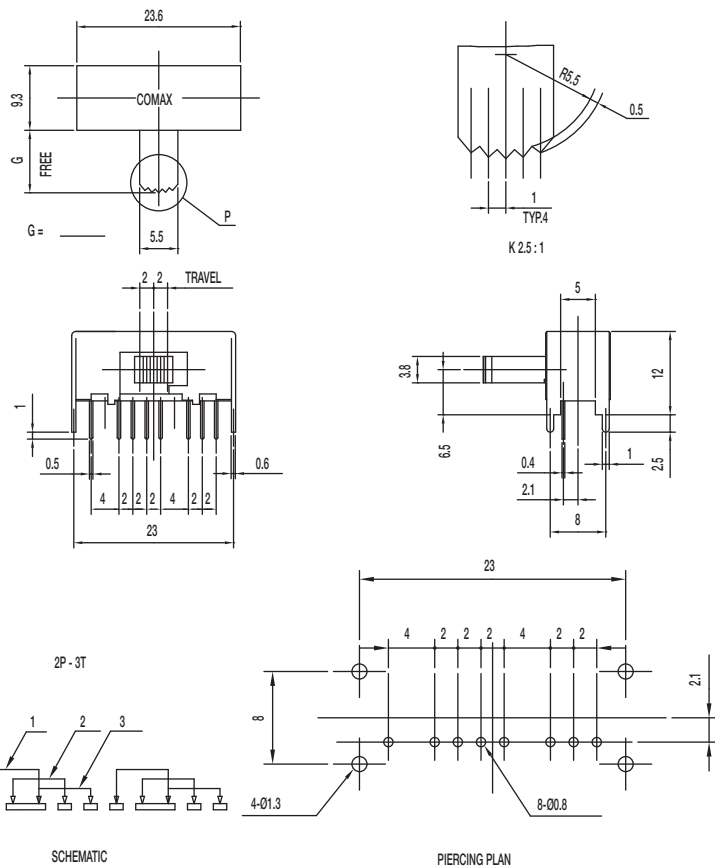


Dimensions are shown: mm  
 Specifications and dimensions subject to change



# SK Series Miniature Slide Switches

## SK-23D10-G 2P3T



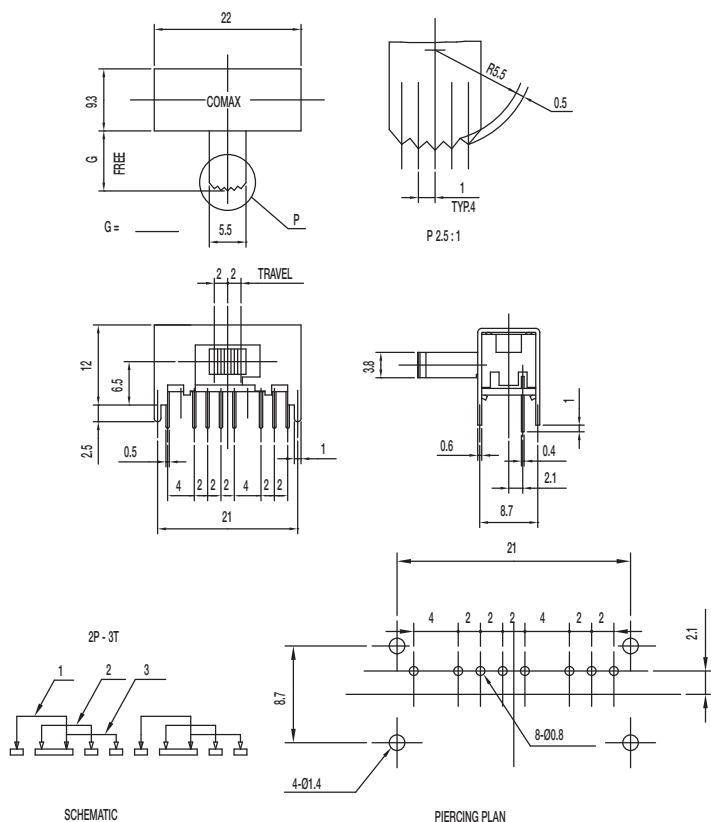
### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 350 ± 150 gf (3.43 ± 1.47N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

## SK-23D13-G 2P3T



### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 300 ± 150 gf (2.94 ± 1.47N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

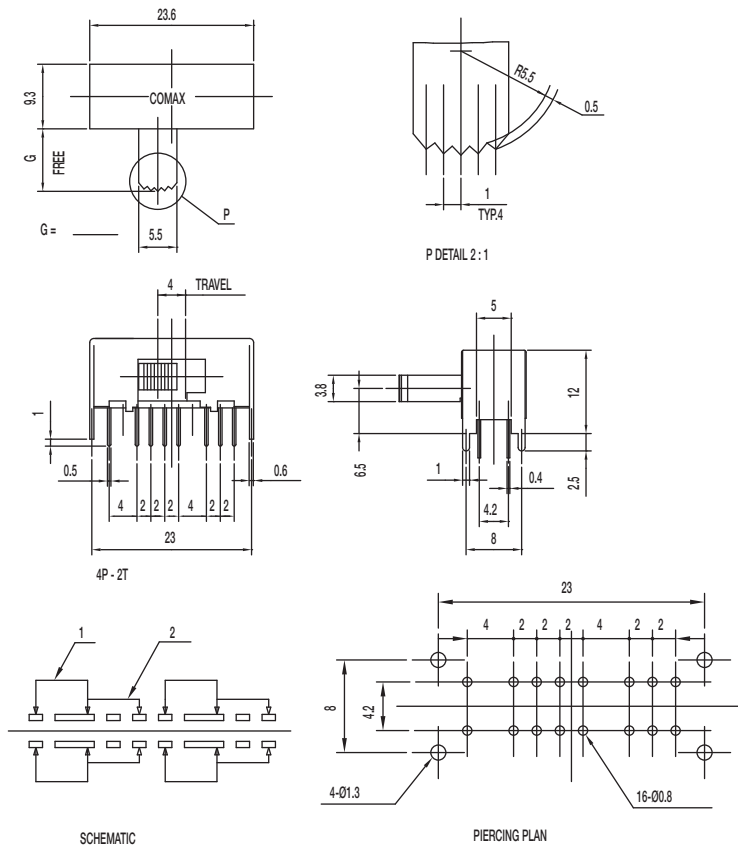
### Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

Dimensions are shown: mm  
 Specifications and dimensions subject to change

# SK Series Miniature Slide Switches

## SK-42H01-G 4P2T NON-SHORTING



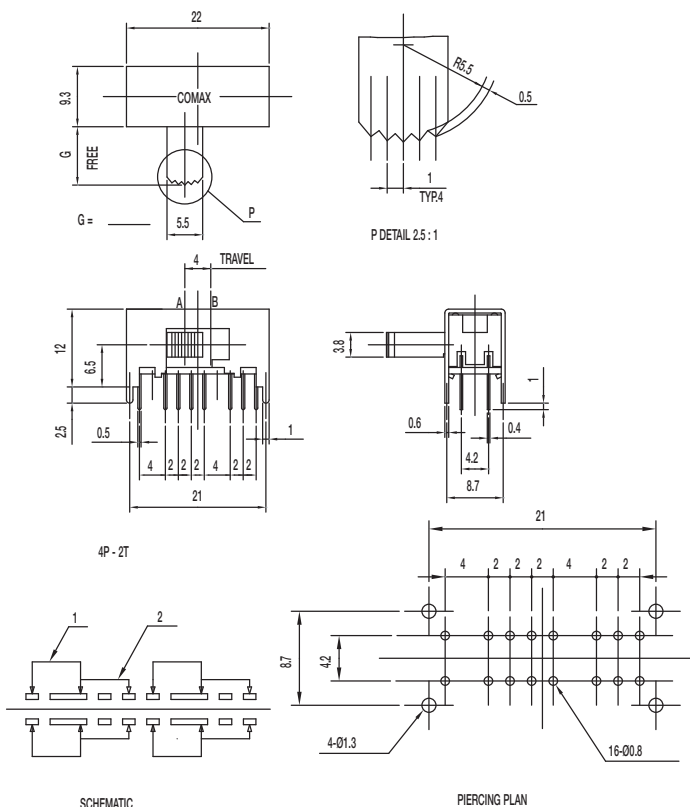
### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 250 ± 100 gf (2.45 ± 0.98N)  
 TRAVEL: 4 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

## SK-42H02-G 4P2T NON-SHORTING



### Specifications

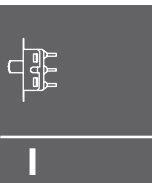
CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 250 ± 100 gf (2.45 ± 0.98N)  
 TRAVEL: 4 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated



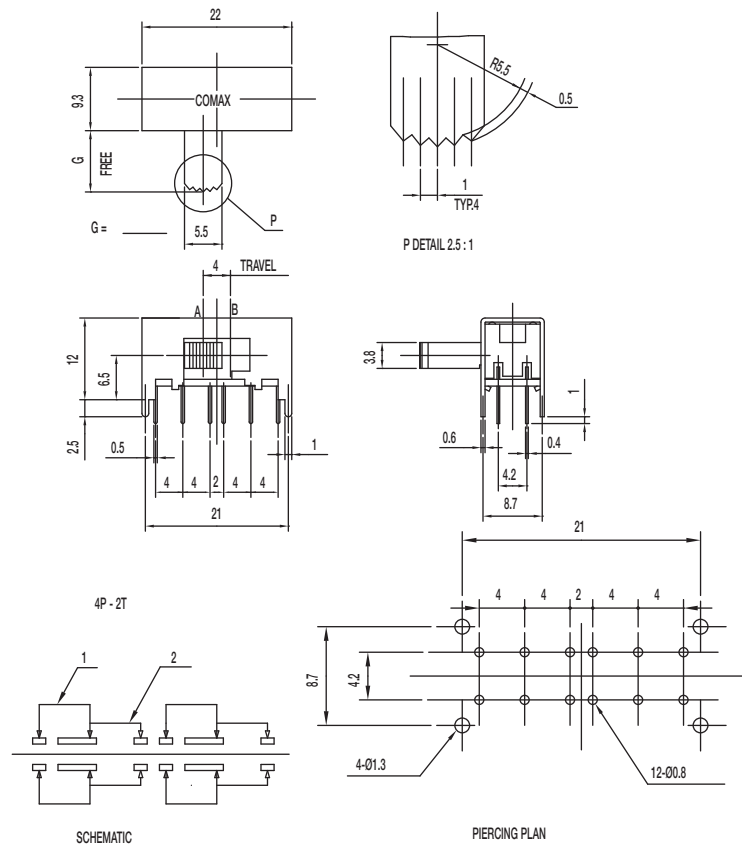
Dimensions are shown: mm  
 Specifications and dimensions subject to change



Slide

# SK Series Miniature Slide Switches

## SK-42H05 4P2T NON-SHORTING



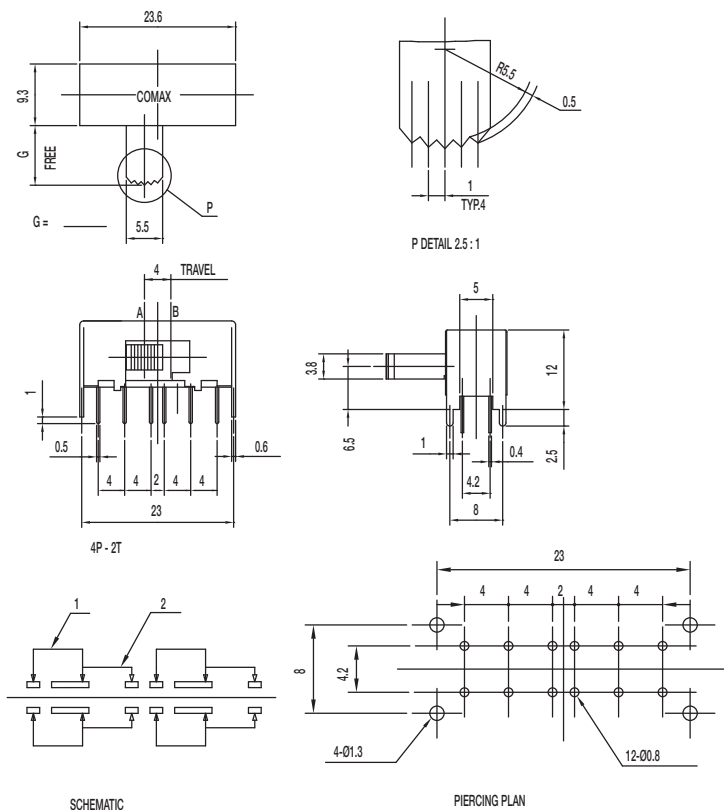
### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE:  $250 \pm 100$  gf ( $2.45 \pm 0.98$ N)  
 TRAVEL:  $4 \pm 0.3$  mm  
 OPERATING TEMPERATURE:  $-20^{\circ}\text{C}$  to  $70^{\circ}\text{C}$

### Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

## SK-42H06-G 4P2T NON-SHORTING



### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE:  $250 \pm 100$  gf ( $2.45 \pm 0.98$ N)  
 $350 \pm 150$  gf ( $3.43 \pm 1.47$ N)  
 TRAVEL:  $4 \pm 0.3$  mm  
 OPERATING TEMPERATURE:  $-20^{\circ}\text{C}$  to  $70^{\circ}\text{C}$

### Materials

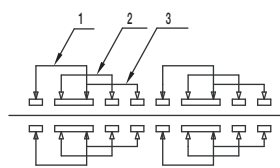
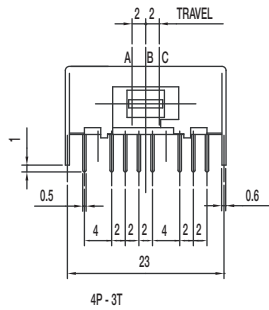
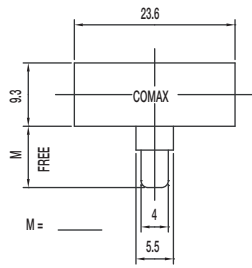
KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated



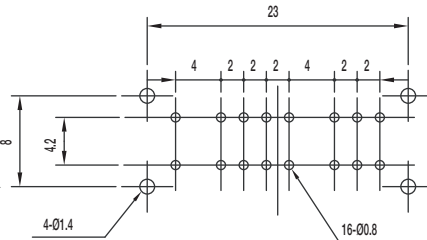
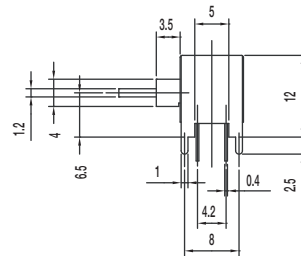
Dimensions are shown: mm  
 Specifications and dimensions subject to change

# SK Series Miniature Slide Switches

## SK-43D01-G 4P3T



SCHEMATIC



PIERCING PLAN

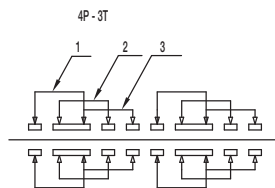
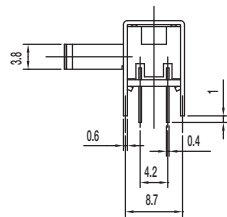
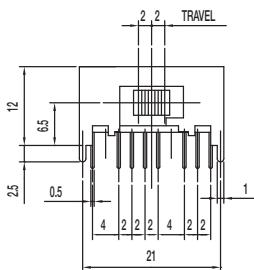
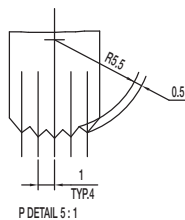
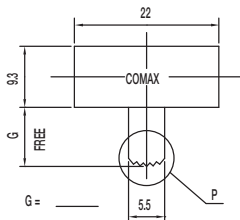
### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 250 ± 100 gf (2.45 ± 0.98N)  
 350 ± 150 gf (3.43 ± 1.47N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

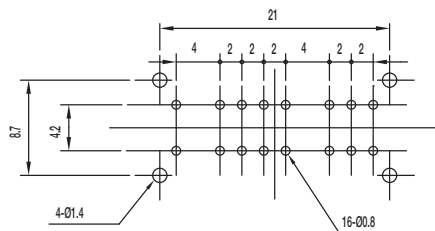
### Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

## SK-43D03-G 4P3T SHORTING



SCHEMATIC



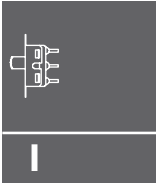
PIERCING PLAN

### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 250 ± 100 gf (2.45 ± 0.98N)  
 350 ± 150 gf (3.43 ± 1.47N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated



Side



Dimensions are shown: mm  
 Specifications and dimensions subject to change

# SK Series Miniature Slide Switches

**SK-44D01-G** 4P4T SHORTING

## Specifications

CONTACT RATING: 0.3A @ 30 VDC

INITIAL CONTACT RESISTANCE: 30 m ohms max.

INSULATION RESISTANCE: 100 M ohms min.

DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.

OPERATING LIFE: 10,000 cycles with load

OPERATING FORCE: 150 ± 50 gf (1.47 ± 0.49N)

200 ± 100 gf (1.96 ± 0.98N); 250 ± 100 gf (2.45 ± 0.98N)

TRAVEL: 2 ± 0.3 mm

OPERATING TEMPERATURE: -20°C to 70°C



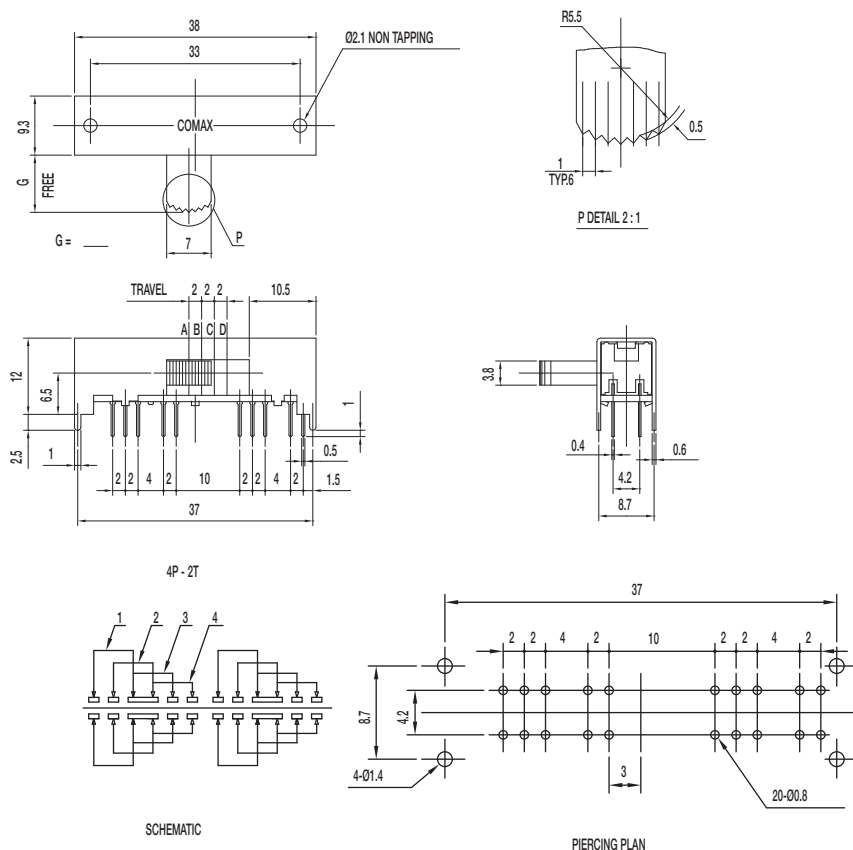
## Slide Materials

KNOB: POM

FRAME: SPCC

CONTACT: Silver clad

TERMINAL: Silver plated



Dimensions are shown: mm  
Specifications and dimensions subject to change

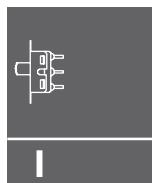
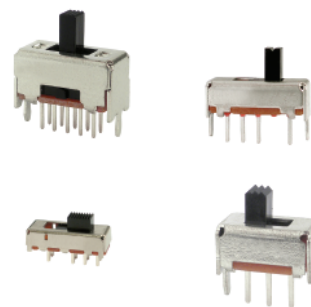
# SS Series Miniature Slide Switches

## Features/Benefits

- Broad range of products
- Various circuit design, SPDT, 4P3T, vertical, right angle
- Compact miniature slide switch
- Shorting or non-shorting
- Custom design available

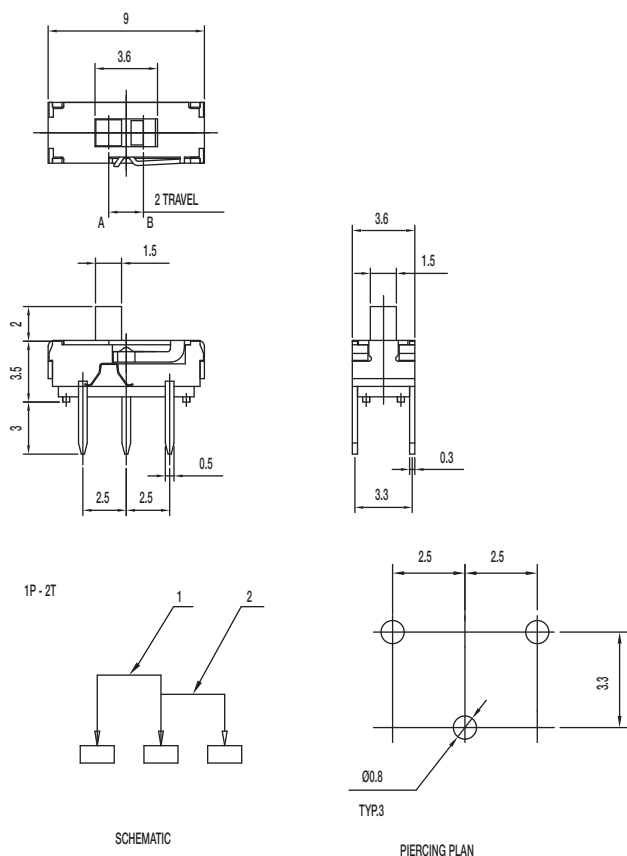
## Typical Applications

- Consumer electronics
- Computer peripherals
- Telecommunication
- Audio & visual equipment
- Medical
- Automotive



Slide

## SS-12D1305-G 2 1P2T NON-SHORTING



## Specifications

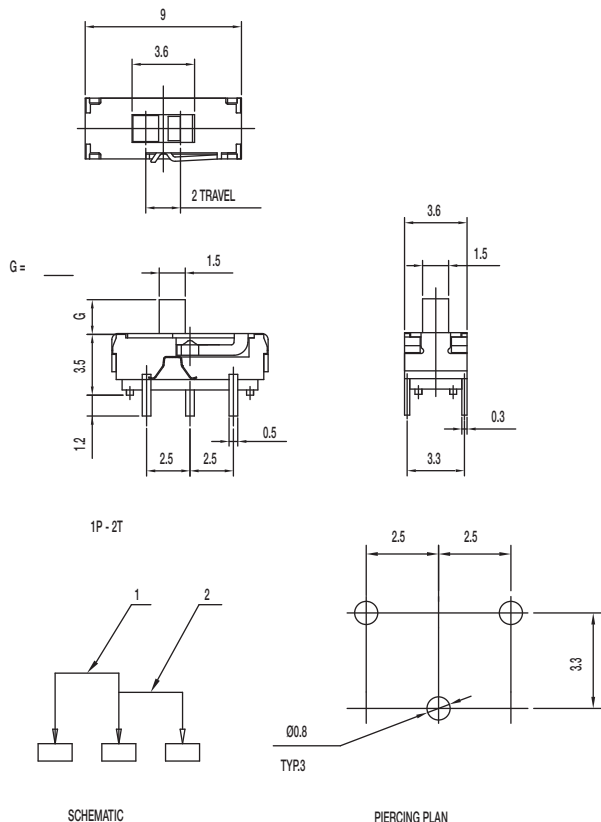
- CONTACT RATING: 0.3A @ 6 VDC
- INITIAL CONTACT RESISTANCE: 70 m ohms max.
- INSULATION RESISTANCE: 100 M ohms min.
- DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
- OPERATING LIFE: 10,000 cycles with load
- OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)
- TRAVEL: 2 ± 0.3 mm
- OPERATING TEMPERATURE: -20°C to 70°C

## Materials

- KNOB: PA
- COVER: SUS
- HOUSING: PA
- CONTACT: Silver clad
- TERMINAL: Silver plated

# SS Series Miniature Slide Switches

**SS-12D1505-G** 1P2T NON-SHORTING



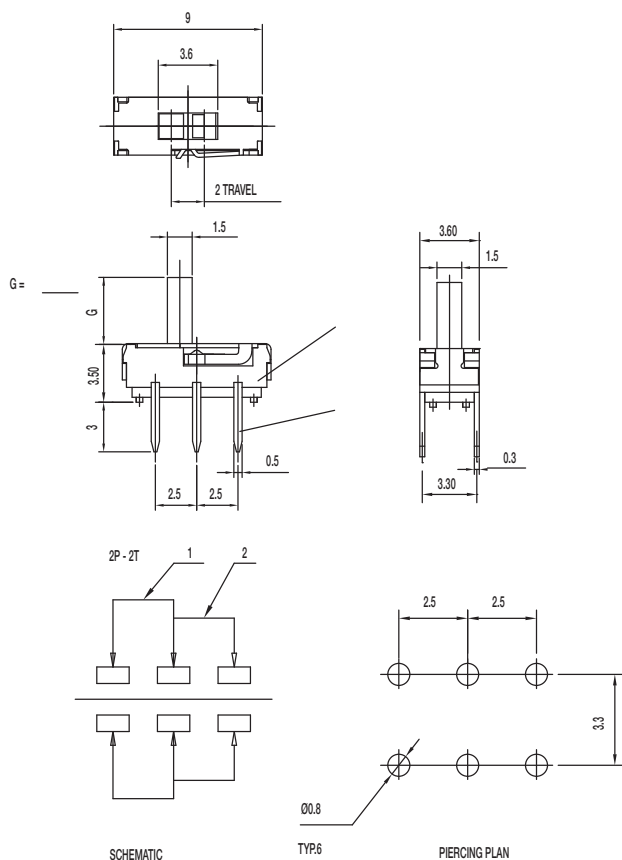
## Specifications

CONTACT RATING: 0.3A @ 6 VDC  
 INITIAL CONTACT RESISTANCE: 70 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 80°C

## Materials

KNOB: PA  
 COVER: SUS  
 HOUSING: PA  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

**SS-22D0205-G** DPDT NON-SHORTING



## Specifications

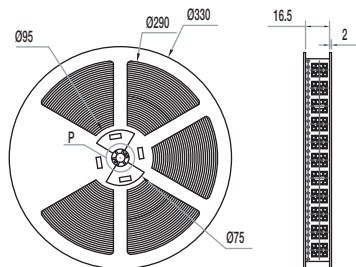
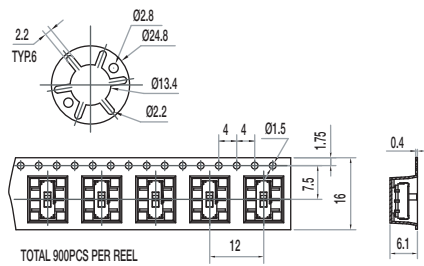
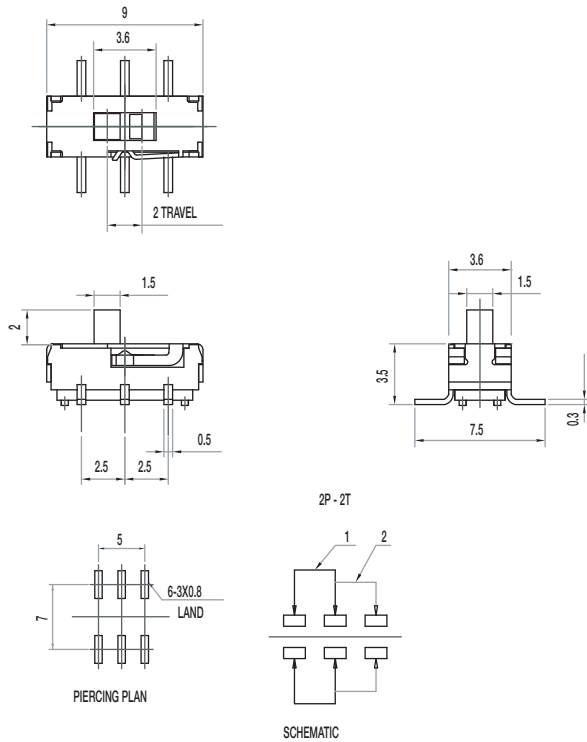
CONTACT RATING: 0.3A @ 6 VDC  
 INITIAL CONTACT RESISTANCE: 70 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 80°C

## Materials

KNOB: PA  
 COVER: SUS  
 HOUSING: PA  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

# SS Series Miniature Slide Switches

**SS-22D0205-G 2 -LT** DPDT NON-SHORTING

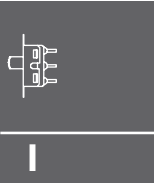


## Specifications

CONTACT RATING: 0.3A @ 6 VDC  
 INITIAL CONTACT RESISTANCE: 70 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

## Materials

KNOB: PA  
 COVER: SUS  
 HOUSING: PA  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

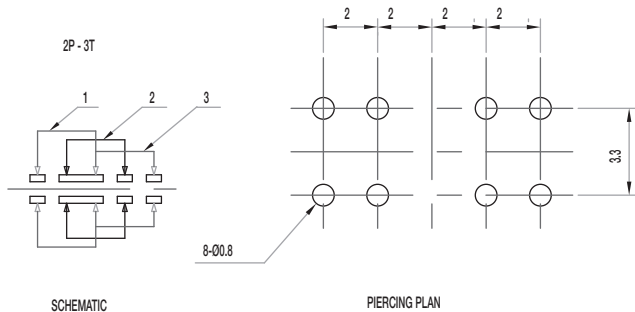
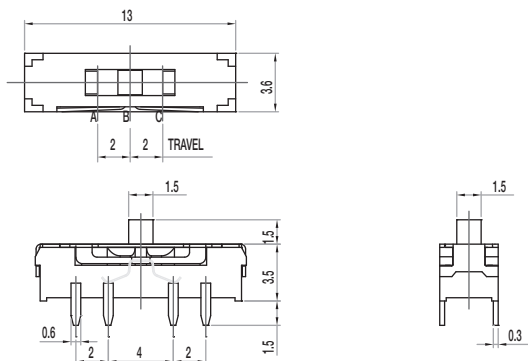


Side



# SS Series Miniature Slide Switches

**SS-23D31-G 1.5 NS** 2P3T NON-SHORTING



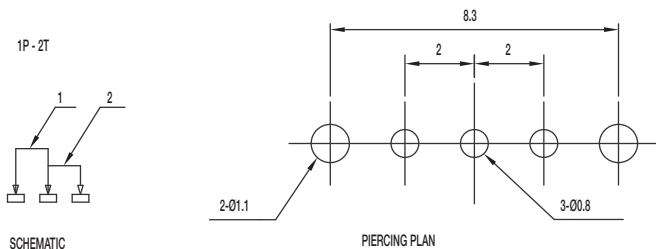
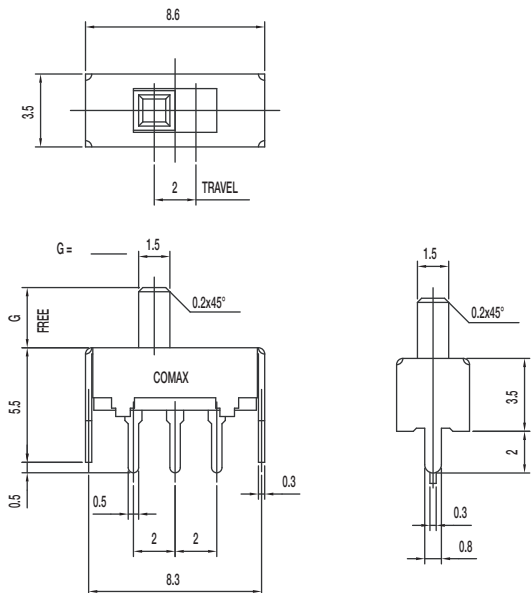
## Specifications

CONTACT RATING: 0.3A @ 6 VDC  
 INITIAL CONTACT RESISTANCE: 70 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 250 ± 100 gf (2.47 ± 0.98N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

## Materials

KNOB: PA  
 COVER: SUS  
 HOUSING: PA  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

**SS-12D01-G E NS** 1P2T NON-SHORTING



## Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

## Materials

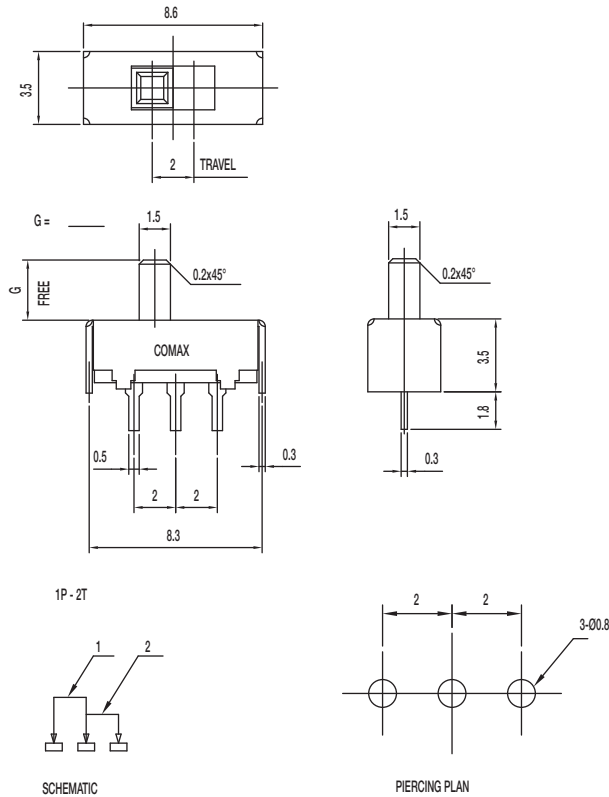
KNOB: POM  
 COVER: SUS  
 FRAME: SPTE  
 CONTACT: Silver clad  
 TERMINAL: Silver plated



Dimensions are shown: mm  
 Specifications and dimensions subject to change

# SS Series Miniature Slide Switches

## SS-12D05-G E NS 1P2T NON-SHORTING

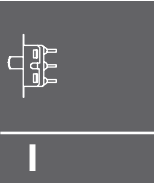


### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

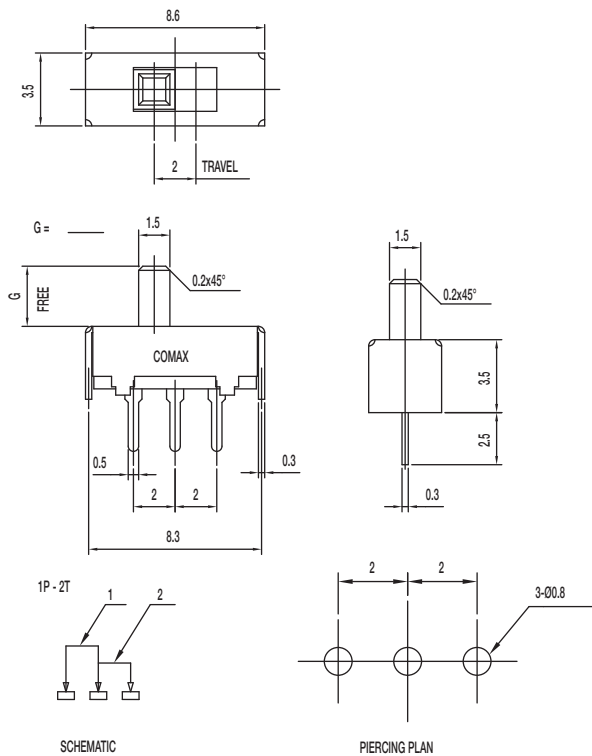
### Materials

KNOB: POM  
 FRAME: SPTE  
 CONTACT: Silver clad  
 TERMINAL: Silver plated



Side

## SS-12D06-G E NS 1P2T NON-SHORTING



### Specifications

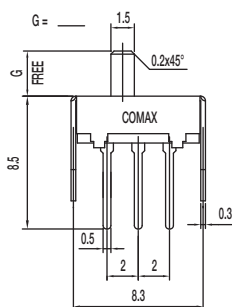
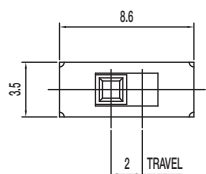
CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

KNOB: POM  
 FRAME: SPTE  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

# SS Series Miniature Slide Switches

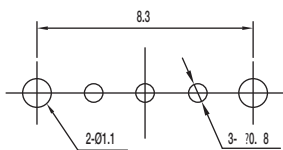
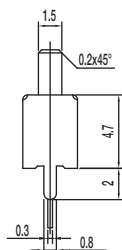
**SS-12D11-G E NS** 1P2T NON-SHORTING



1P - 2T



SCHEMATIC



PIERCING PLAN

## Specifications

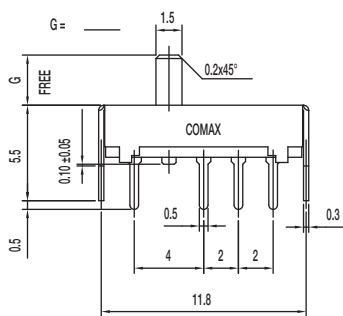
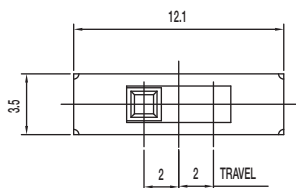
CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

## Materials

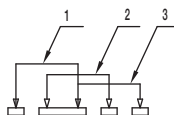
KNOB: POM  
 FRAME: SPTE  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

Slide

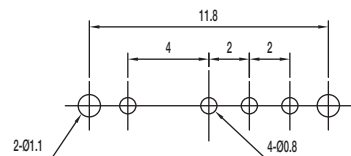
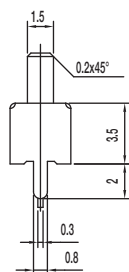
**SS-13D01-G** 1P3T



1P - 3T



SCHEMATIC



PIERCING PLAN

## Specifications

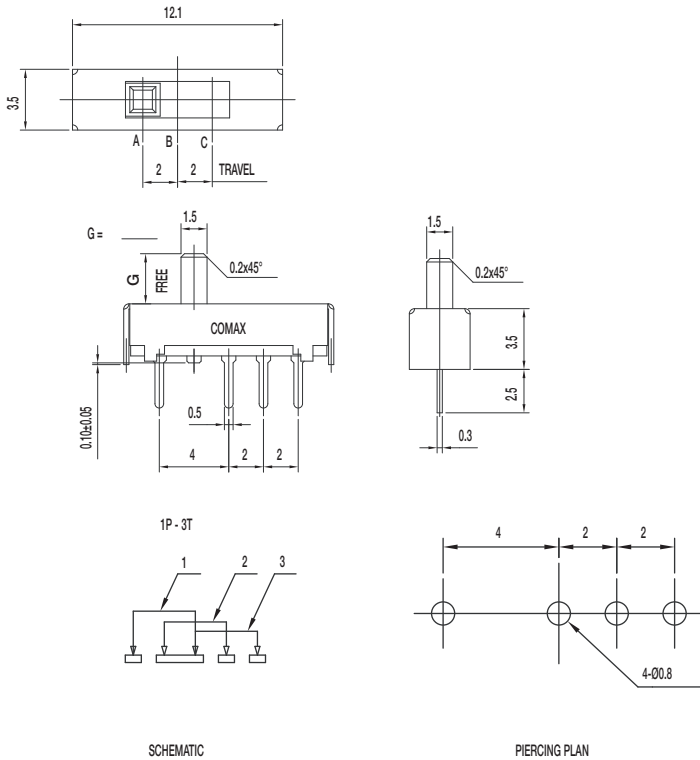
CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 250 ± 100 gf (2.47 ± 0.98N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

## Materials

KNOB: POM  
 FRAME: SPTE  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

# SS Series Miniature Slide Switches

## SS-13D04-G 1P3T

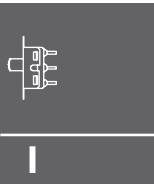


### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 250 ± 100 gf (2.47 ± 0.98N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

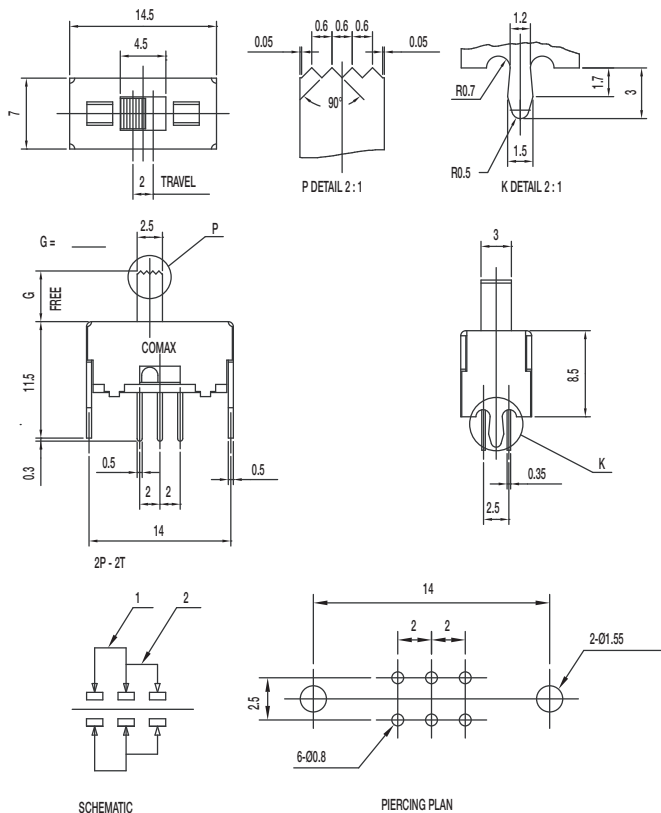
### Materials

KNOB: POM  
 FRAME: SPTE  
 CONTACT: Silver clad  
 TERMINAL: Silver plated



Side

## SS-22D28-G NS 2P2T NON-SHORTING



### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

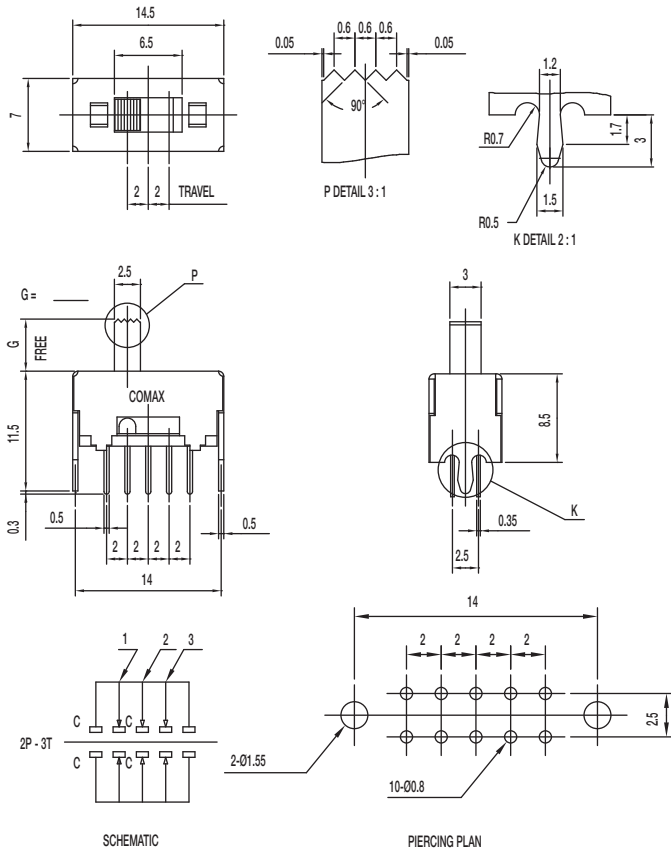
KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated



Dimensions are shown: mm  
 Specifications and dimensions subject to change

# SS Series Miniature Slide Switches

## SS-23D28-G NS 2P3T NON-SHORTING



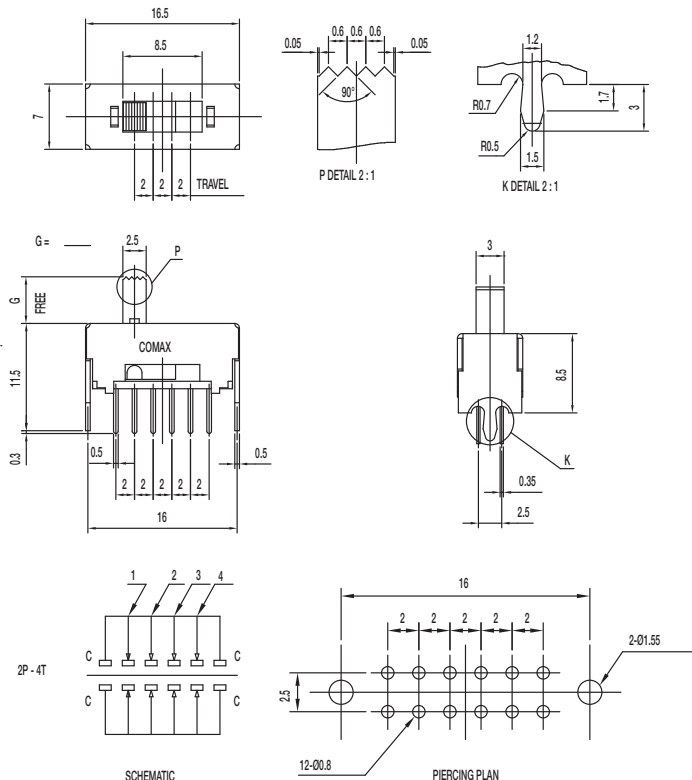
### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 300 ± 150 gf (2.94 ± 1.47N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

## SS-24D28-G NS 2P4T NON-SHORTING



### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 250 ± 100 gf (2.45 ± 0.98N); 300 ± 100 gf (2.94 ± 0.98N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

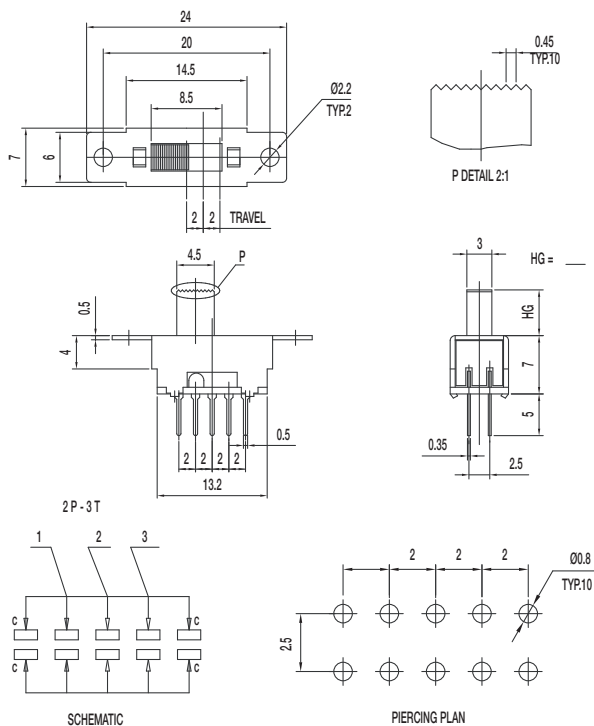


Dimensions are shown: mm  
 Specifications and dimensions subject to change



# SS Series Miniature Slide Switches

**SS-23D32-HG NS** 2P3T NON-SHORTING



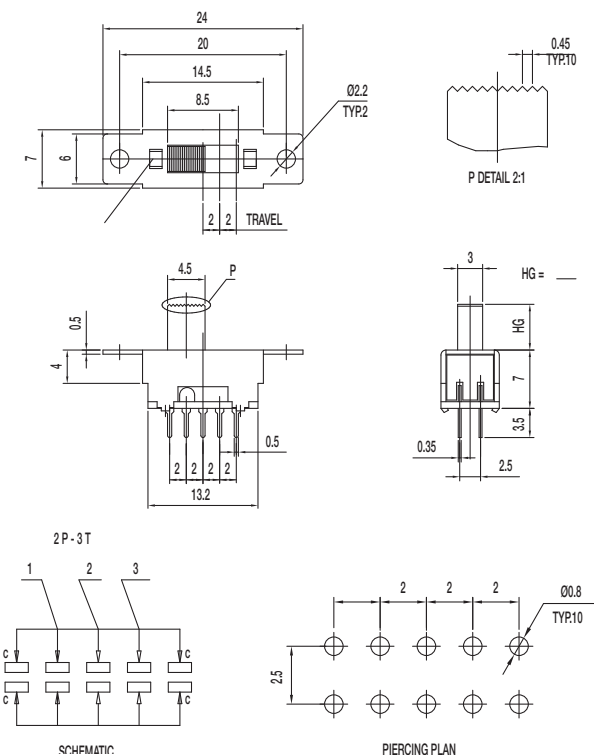
## Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 300 ± 100 gf (2.94 ± 0.98N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

## Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

**SS-23D33-HG NS** 2P3T NON-SHORTING



## Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 300 ± 100 gf (2.94 ± 0.98N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

## Materials

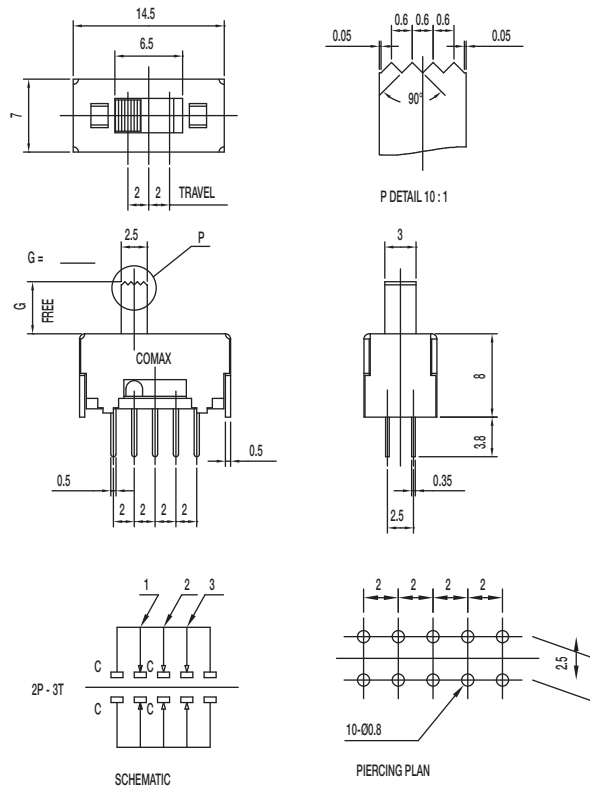
KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated



Dimensions are shown: Inch (mm)  
 Specifications and dimensions subject to change

# SS Series Miniature Slide Switches

## SS-23D37-G NS 2P3T NON-SHORTING

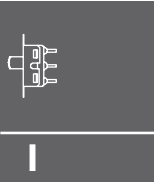


### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 300 ± 100 gf (2.94 ± 0.98N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -10°C to 60°C

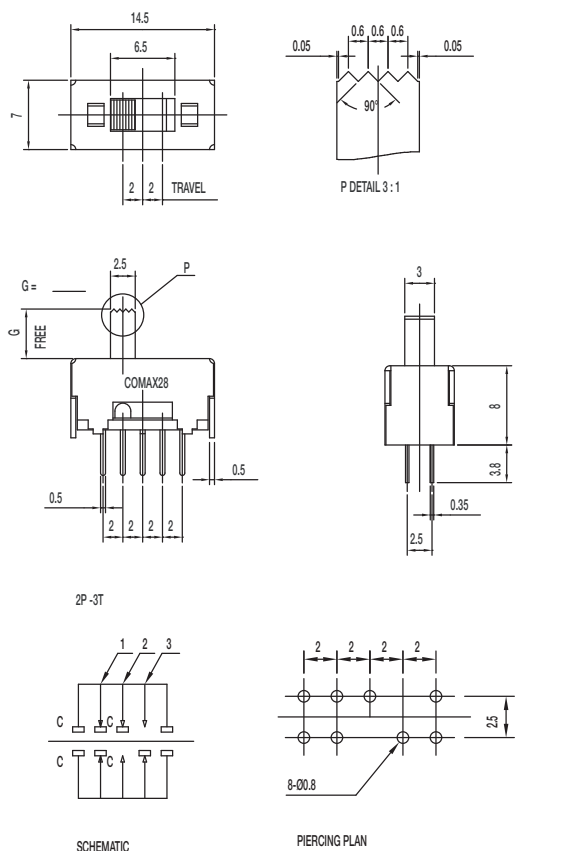
### Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated



Side

## SS-23D47-G NS 2P3T NON-SHORTING



### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 300 ± 100 gf (2.94 ± 0.98N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

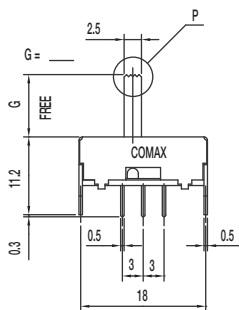
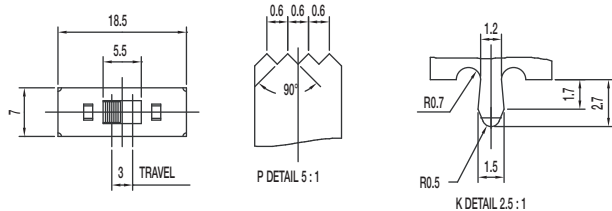


Dimensions are shown: mm  
 Specifications and dimensions subject to change

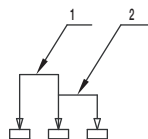


# SS Series Miniature Slide Switches

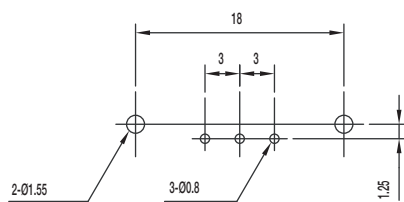
## SS-12F28-G NS 1P2T NON-SHORTING



1P - 2T



SCHEMATIC



PIERCING PLAN

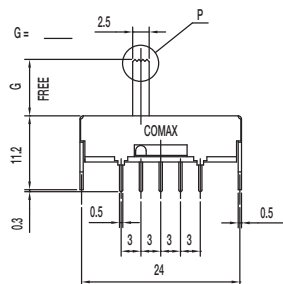
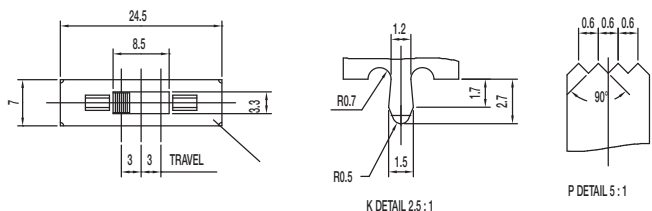
### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 TRAVEL: 3 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

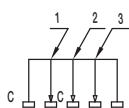
### Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

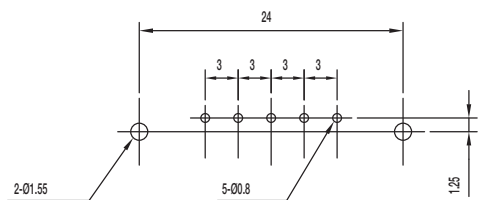
## SS-13F28-G NS 1P3T NON-SHORTING



1P - 3T



SCHEMATIC



PIERCING PLAN

### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 180 ± 50 gf (1.76 ± 0.49N)  
 220 ± 100 gf (2.16 ± 0.98N)  
 TRAVEL: 3 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

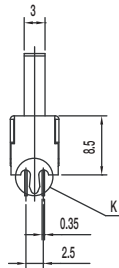
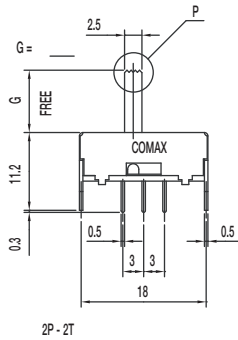
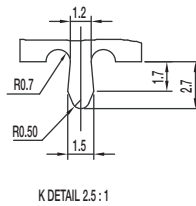
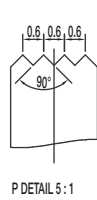
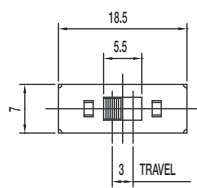
KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

Dimensions are shown: mm  
 Specifications and dimensions subject to change



# SS Series Miniature Slide Switches

## SS-22F28-G S DPDT SHORTING

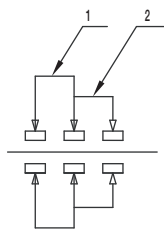


### Specifications

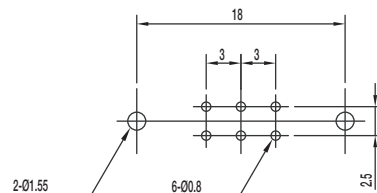
CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 TRAVEL: 3 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

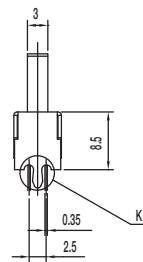
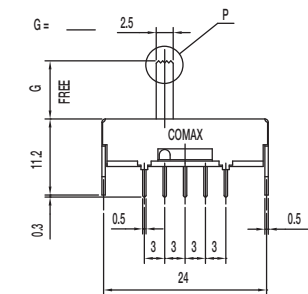
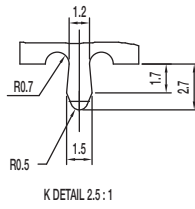
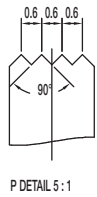
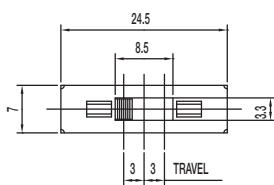


SCHEMATIC



PIERCING PLAN

## SS-23F28-G 6 NS 2P3T NON-SHORTING

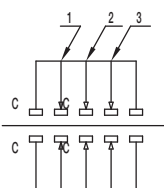


### Specifications

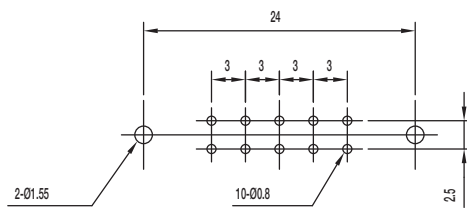
CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 180 ± 50 gf (1.76 ± 0.49N) (A->B / C->B)  
 220 ± 100 gf (2.16 ± 0.98N) (B->C / B->A)  
 TRAVEL: 3 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C  
 KNOB LENGTH: 6mm

### Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated



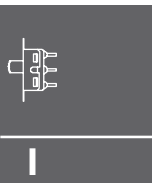
SCHEMATIC



PIERCING PLAN



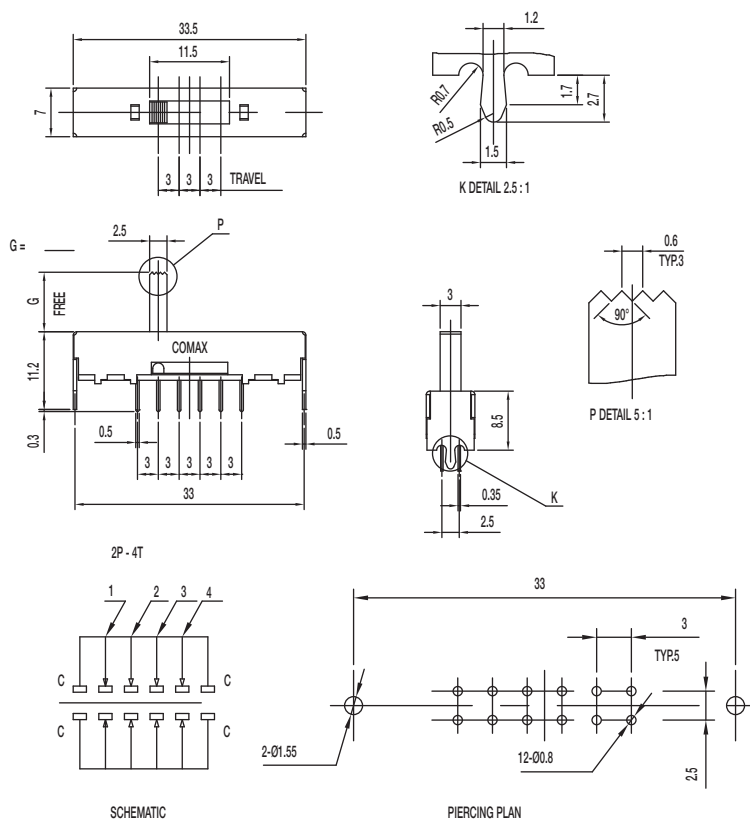
Dimensions are shown: mm  
 Specifications and dimensions subject to change



Slide

# SS Series Miniature Slide Switches

## SS-24F28-G 2P4T NON-SHORTING



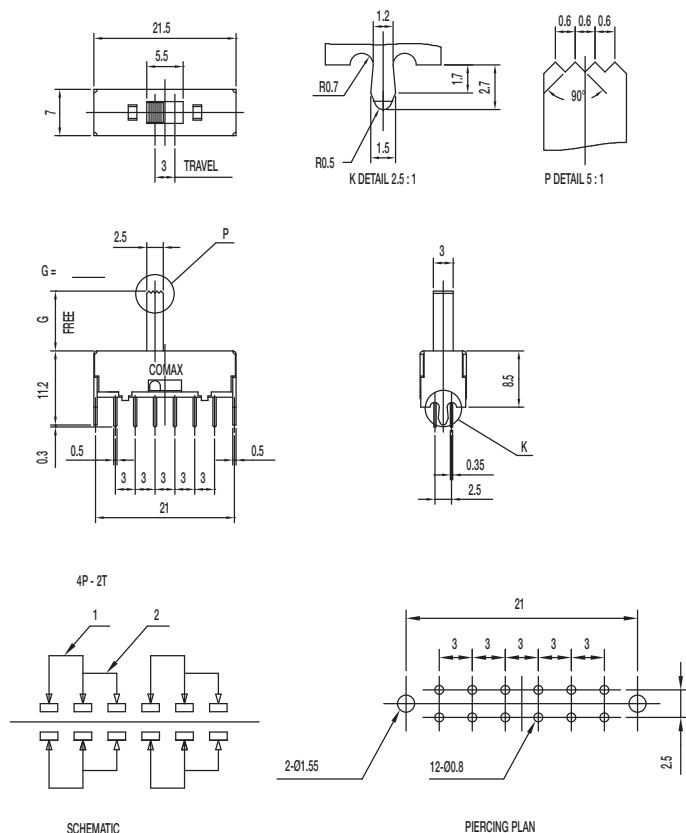
### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 250 ± 100 gf (2.45 ± 0.98N)  
 TRAVEL: 3 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

## SS-42F28-G NS 4P2T NON-SHORTING



### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 TRAVEL: 3 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

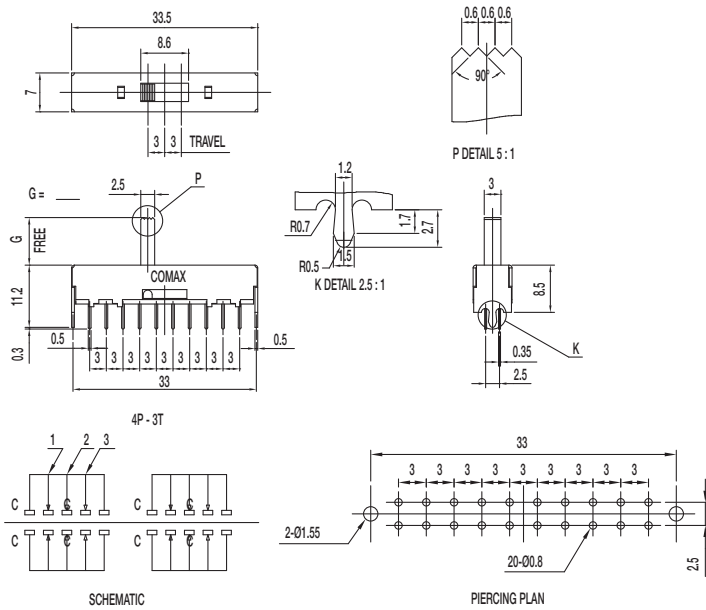
KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated



Dimensions are shown: mm  
 Specifications and dimensions subject to change

# SS Series Miniature Slide Switches

## SS-43F28-G NS 4P3T NON-SHORTING



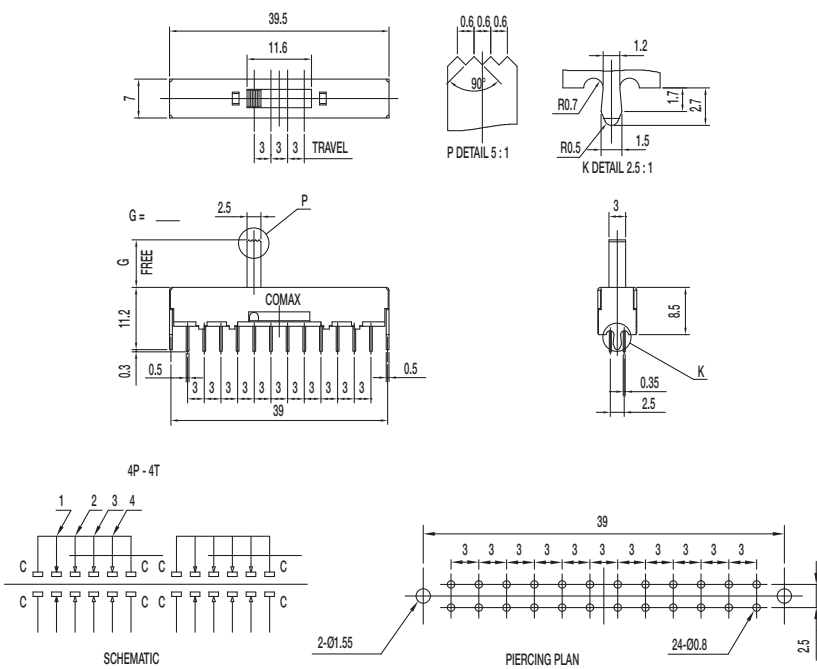
### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 250 ± 100 gf (2.45 ± 0.98N)  
 TRAVEL: 3 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

## SS-44F28-G NS 4P4T NON-SHORTING



### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 250 ± 100 gf (2.45 ± 0.98N)  
 TRAVEL: 3 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

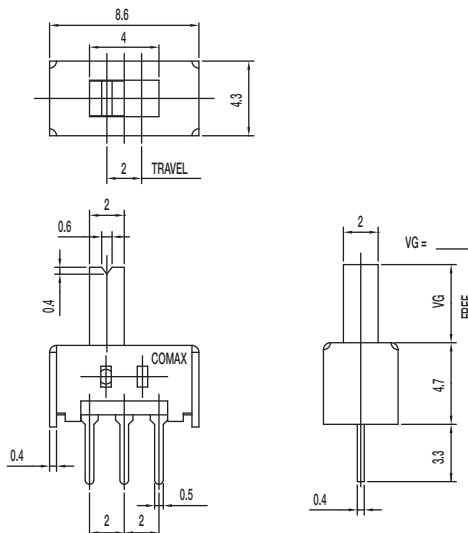
KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated



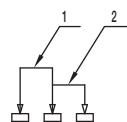
Side

# SS Series Miniature Slide Switches

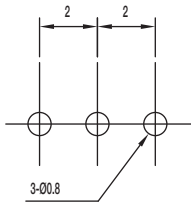
## SS-12D04-VG NS 1P2T NON-SHORTING



1P-2T



SCHEMATIC



PIERCING PLAN

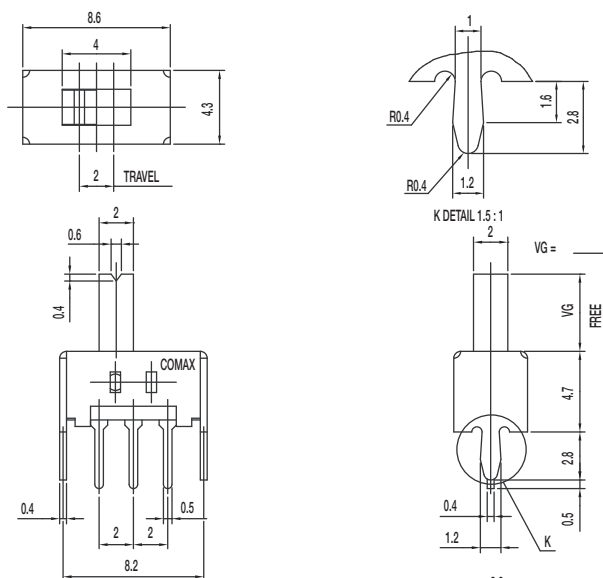
### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

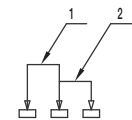
### Materials

KNOB: POM  
 FRAME: SPTE  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

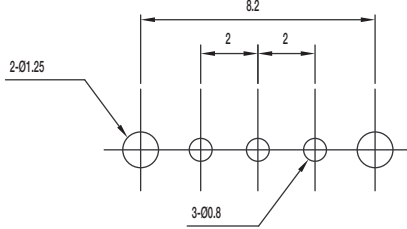
## SS-12D07-G NS 1P2T NON-SHORTING



1P-2T



SCHEMATIC



PIERCING PLAN

### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 250 ± 100 gf (2.45 ± 0.98N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

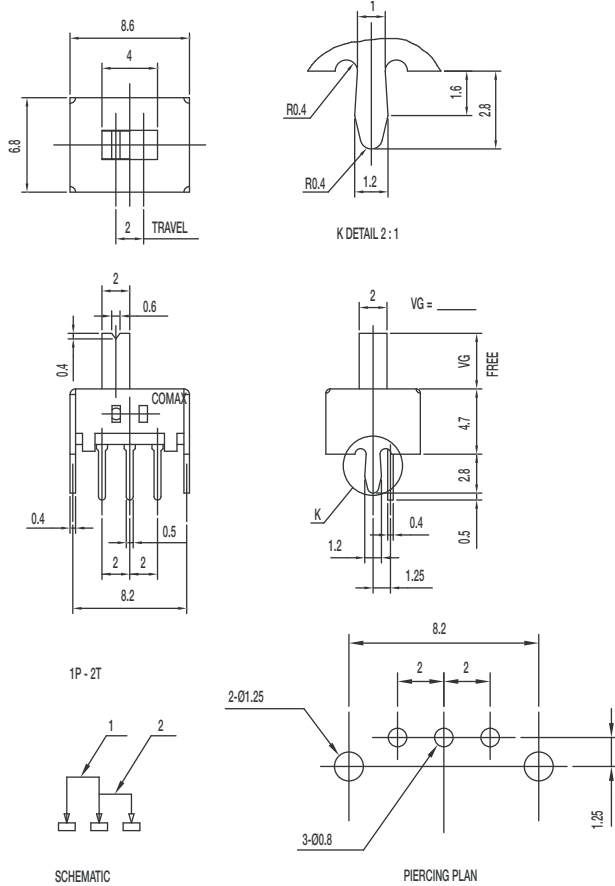
KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated



Dimensions are shown: mm  
 Specifications and dimensions subject to change

# SS Series Miniature Slide Switches

## SS-12D17-VG NS 1P2T NON-SHORTING

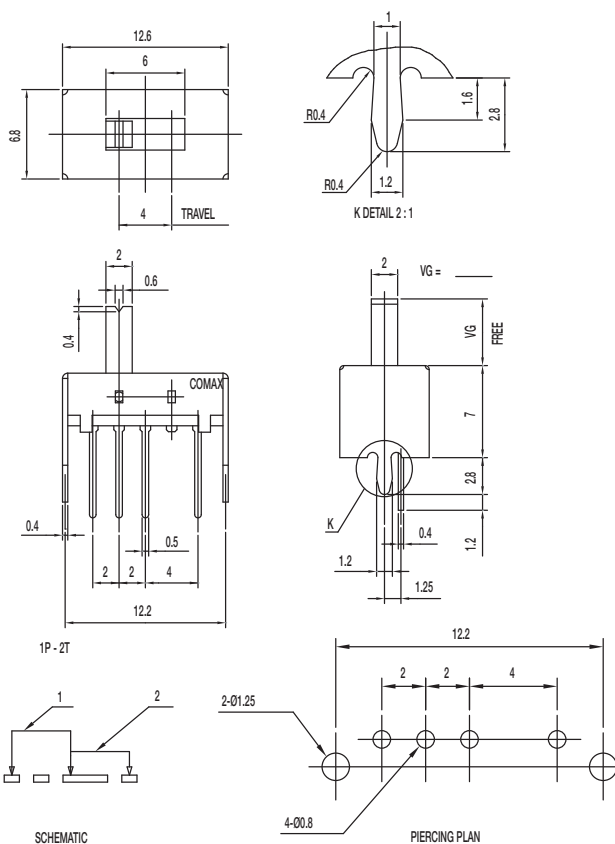


1P - 2T

SCHEMATIC

PIERCING PLAN

## SS-12H16-VG 1P2T NON-SHORTING



1P - 2T

SCHEMATIC

PIERCING PLAN

### Specifications

- CONTACT RATING: 0.3A @ 30 VDC
- INITIAL CONTACT RESISTANCE: 30 m ohms max.
- INSULATION RESISTANCE: 100 M ohms min.
- DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
- OPERATING LIFE: 10,000 cycles with load
- OPERATING FORCE: 250 ± 100 gf (2.45 ± 0.98N)
- TRAVEL: 2 ± 0.3 mm
- OPERATING TEMPERATURE: -20°C to 70°C

### Materials

- KNOB: POM
- FRAME: SPCC
- CONTACT: Silver clad
- TERMINAL: Silver plated

### Specifications

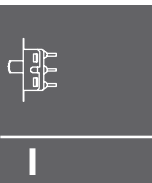
- CONTACT RATING: 0.3A @ 30 VDC
- INITIAL CONTACT RESISTANCE: 30 m ohms max.
- INSULATION RESISTANCE: 100 M ohms min.
- DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
- OPERATING LIFE: 10,000 cycles with load
- OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)
- TRAVEL: 4 ± 0.3 mm
- OPERATING TEMPERATURE: -20°C to 70°C

### Materials

- KNOB: POM
- FRAME: SPCC
- CONTACT: Silver clad
- TERMINAL: Silver plated



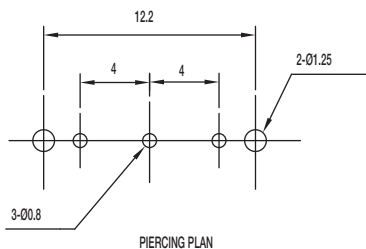
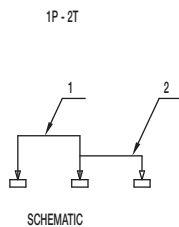
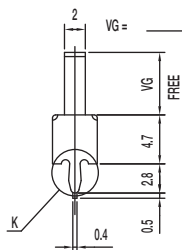
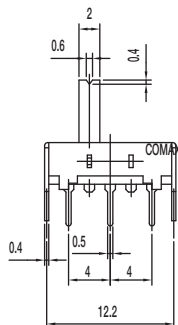
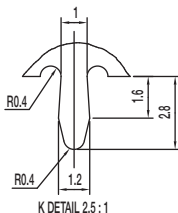
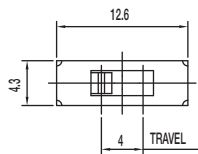
Dimensions are shown: mm  
Specifications and dimensions subject to change



Slide

# SS Series Miniature Slide Switches

**SS-12H26-VG** 1P2T NON-SHORTING



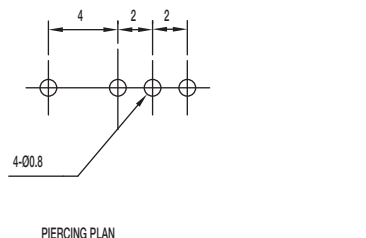
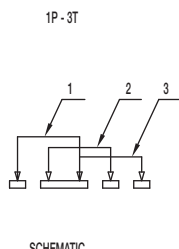
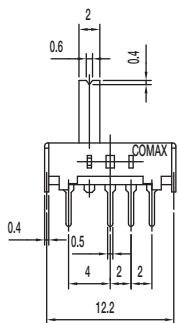
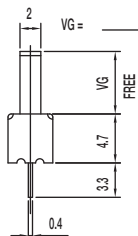
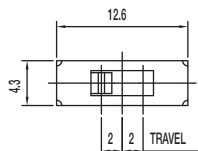
## Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 150 ± 100 gf (1.47 ± 0.98N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

## Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

**SS-13D06-VG** 1P3T



## Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 250 ± 100 gf (2.45 ± 0.98N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

## Materials

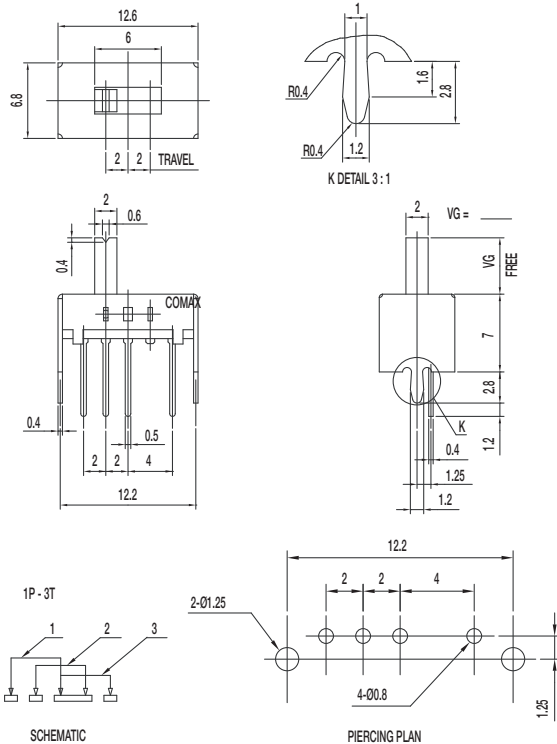
KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated



Dimensions are shown: mm  
 Specifications and dimensions subject to change

# SS Series Miniature Slide Switches

## SS-13D08-VG 1P3T



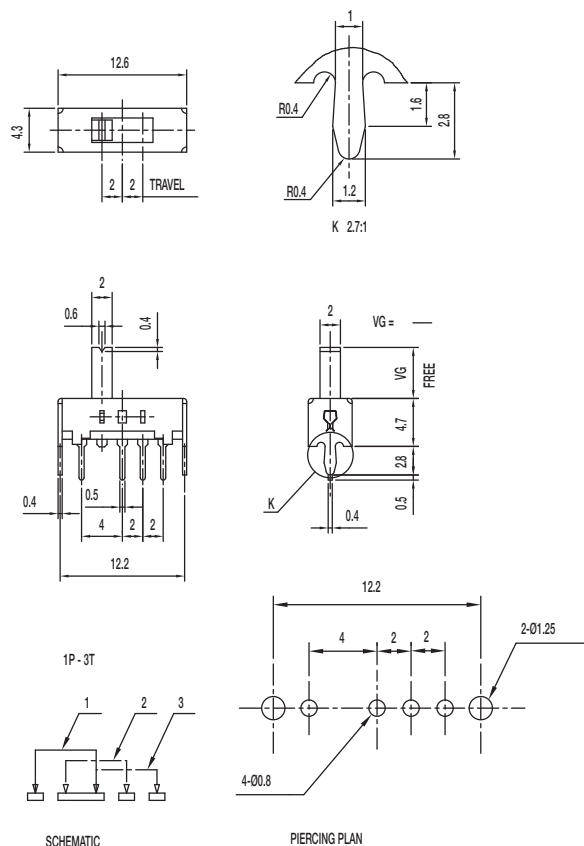
### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 150 ± 50 gf (1.47 ± 0.49N)  
 200 ± 100 gf (1.96 ± 0.98N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

## SS-13D16-VG 1P3T



### Specifications

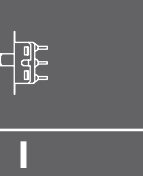
CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 250 ± 100 gf (2.45 ± 0.98N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated



Dimensions are shown: mm  
 Specifications and dimensions subject to change

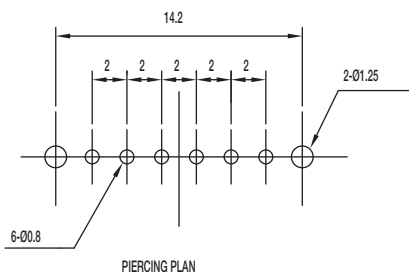
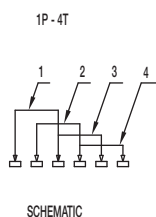
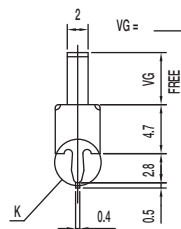
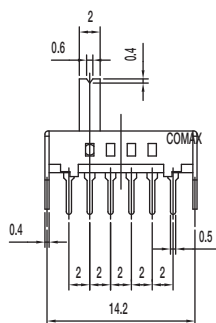
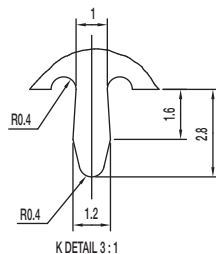
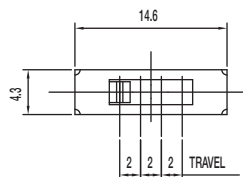


Slide



# SS Series Miniature Slide Switches

## SS-14D01-VG 1P4T



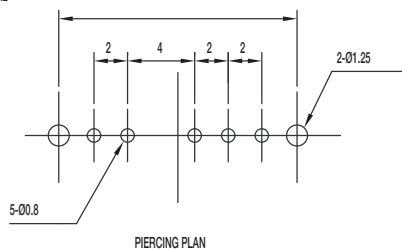
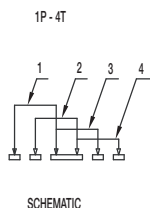
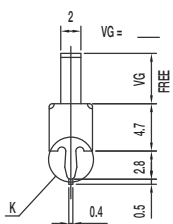
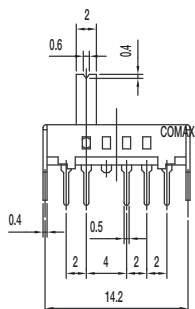
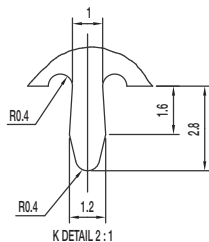
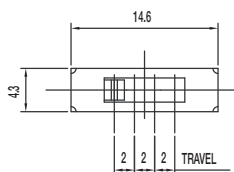
### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

## SS-14D07-VG 1P4T



### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

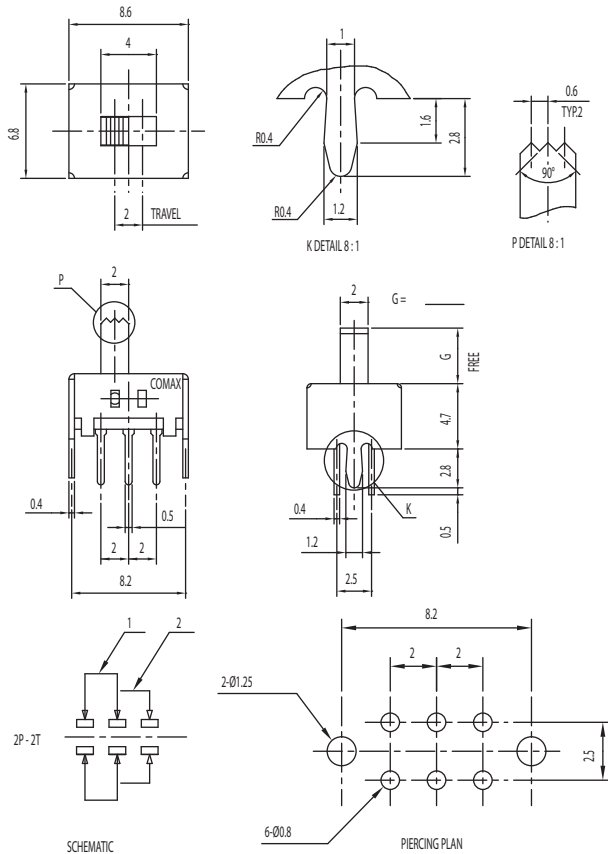
KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated



Dimensions are shown: mm  
 Specifications and dimensions subject to change

# SS Series Miniature Slide Switches

## SS-22D07-VG S DPDT SHORTING



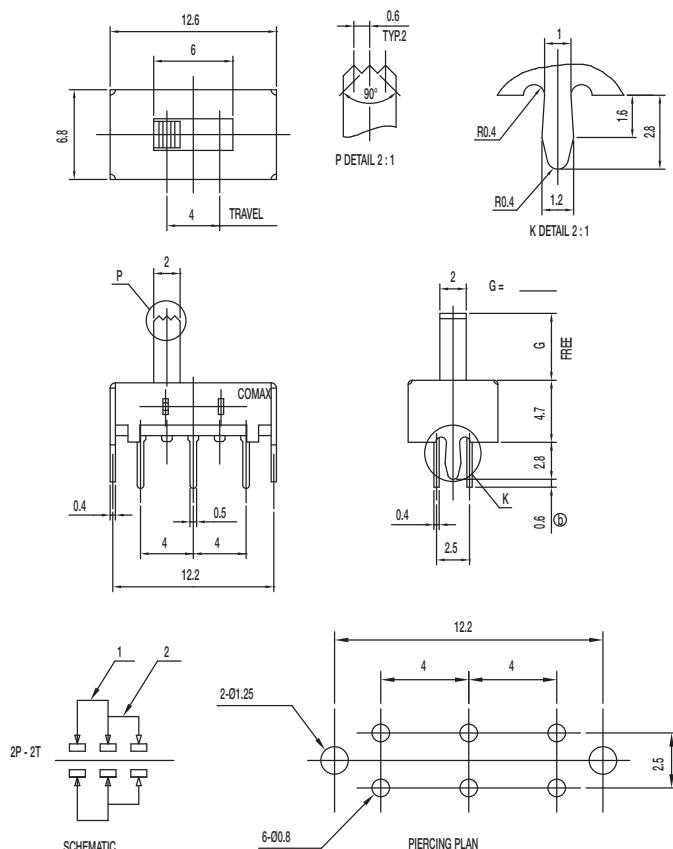
### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 250 ± 100 gf (2.45 ± 0.98N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

## SS-22H08-G DPDT NON-SHORTING



### Specifications

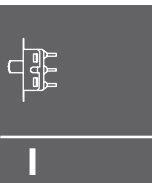
CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 TRAVEL: 4 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated



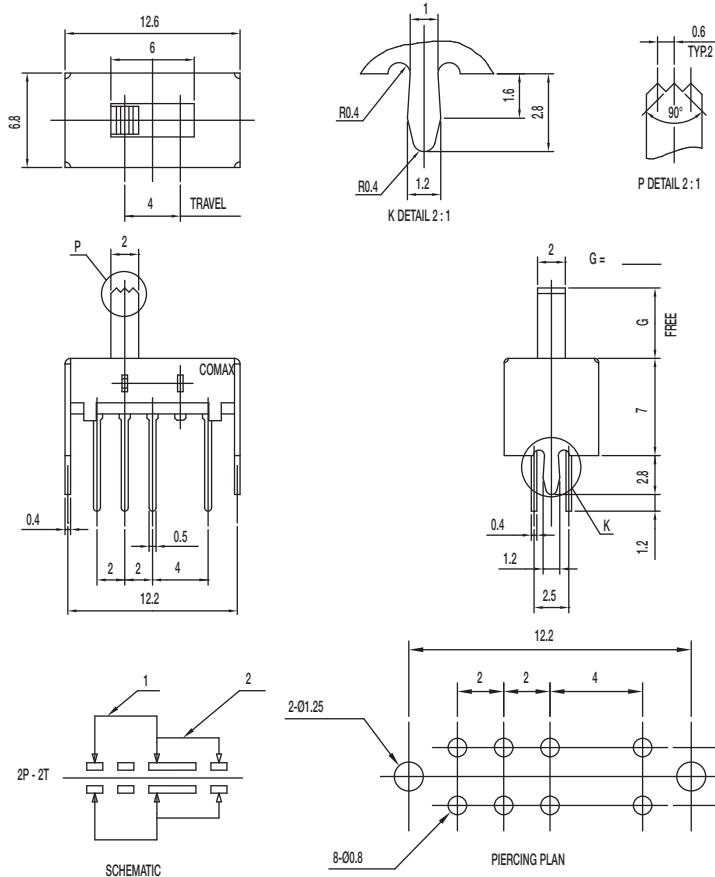
Dimensions are shown: mm  
 Specifications and dimensions subject to change



Side

# SS Series Miniature Slide Switches

**SS-22H16-G** DPDT NON-SHORTING



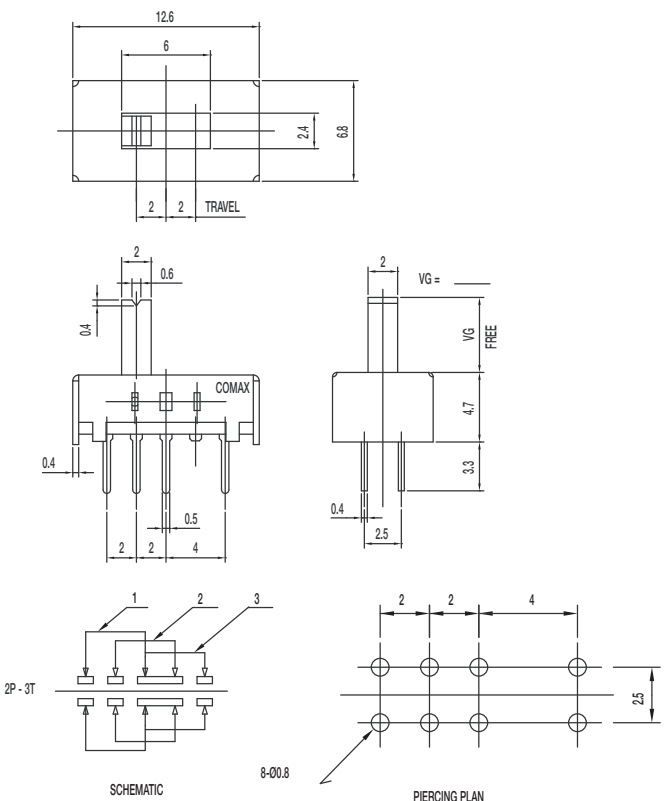
## Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 TRAVEL: 4 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

## Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

**SS-23D04-VG** 2P3T NON-SHORTING



## Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 150 ± 50 gf (1.47 ± 0.49N)  
 200 ± 100 gf (1.96 ± 0.98N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

## Materials

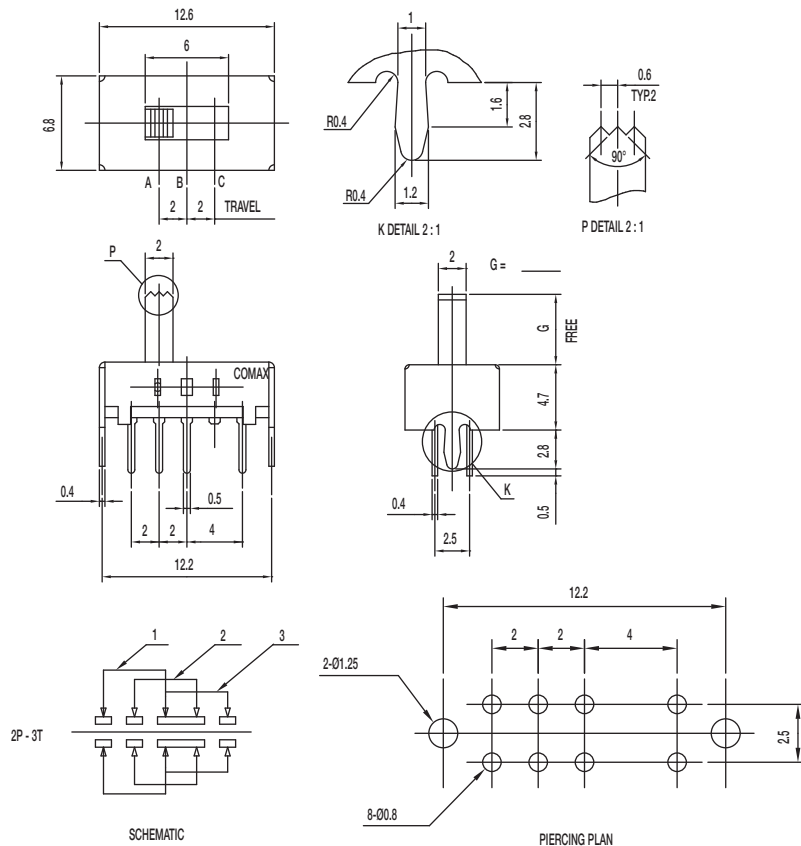
KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated



Dimensions are shown: mm  
 Specifications and dimensions subject to change

# SS Series Miniature Slide Switches

## SS-23D07-G PA 2P3T NON-SHORTING



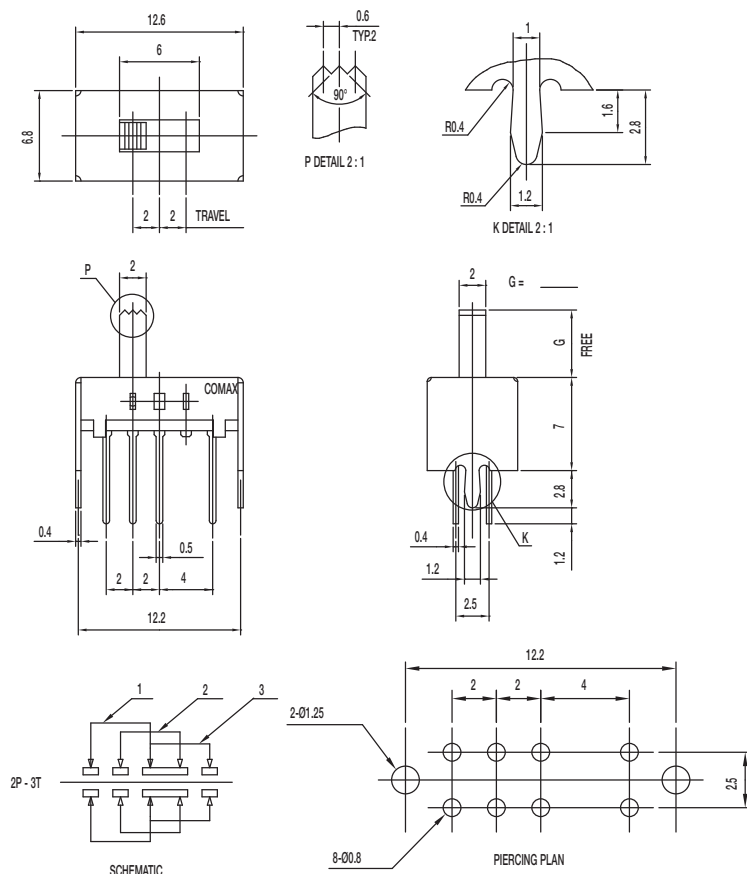
### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 250 ± 150 gf (2.45 ± 1.47N)  
 300 ± 150 gf (2.94 ± 1.47N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 80°C

### Materials

KNOB: PA  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

## SS-23D08-G 2P3T



### Specifications

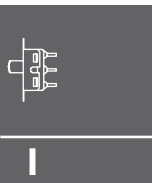
CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 150 ± 50 gf (1.47 ± 0.49N)  
 200 ± 100 gf (1.96 ± 0.98N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated



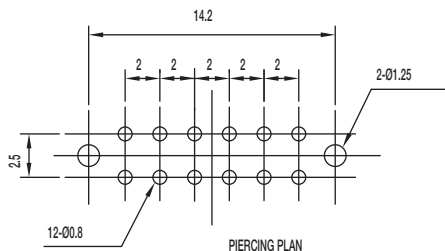
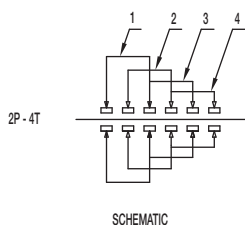
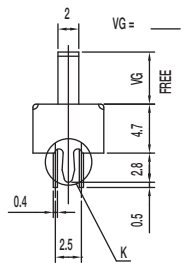
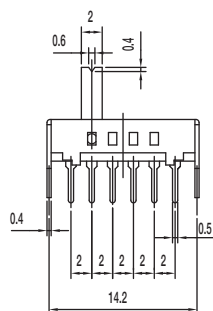
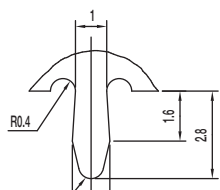
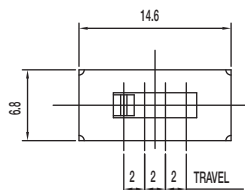
Dimensions are shown: mm  
 Specifications and dimensions subject to change



Side

# SS Series Miniature Slide Switches

**SS-24D02-VG** 2P4T



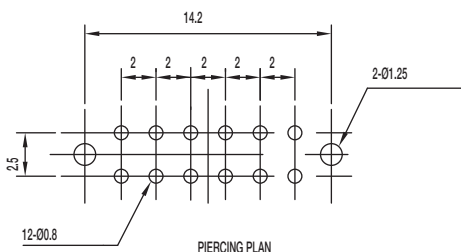
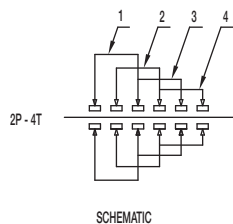
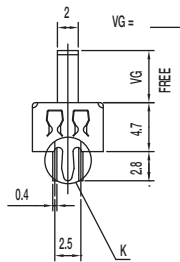
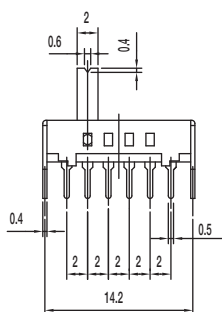
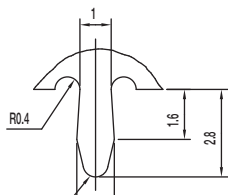
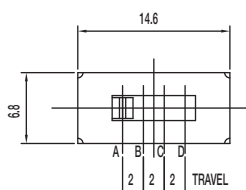
## Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 250 ± 100 gf (2.45 ± 0.98N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

## Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

**SS-24D04-VG PA** 2P4T



## Specifications

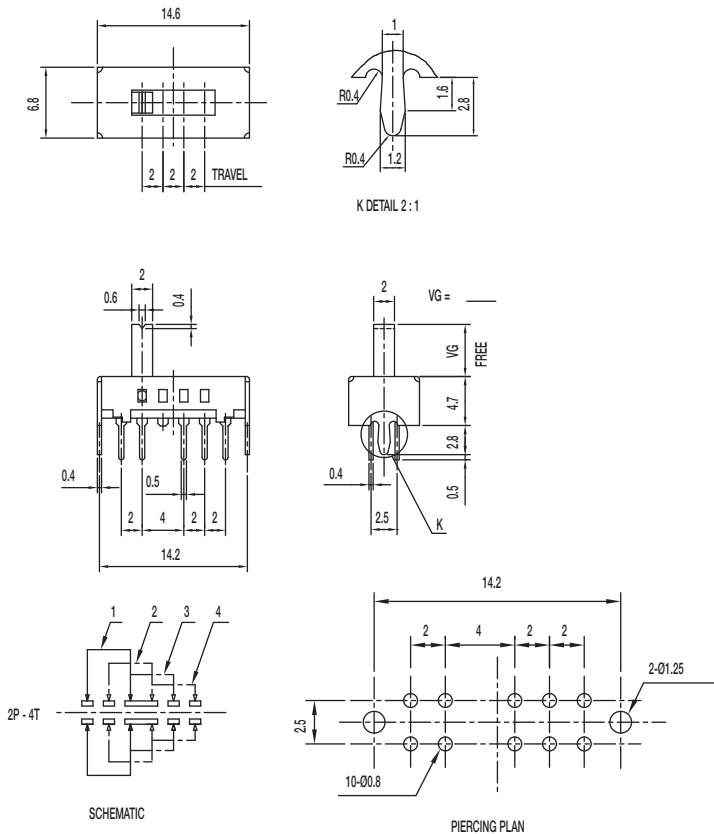
CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 250 ± 100 gf (2.45 ± 0.98N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

## Materials

KNOB: PA  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

# SS Series Miniature Slide Switches

## SS-24D07-VG PA 2P4T



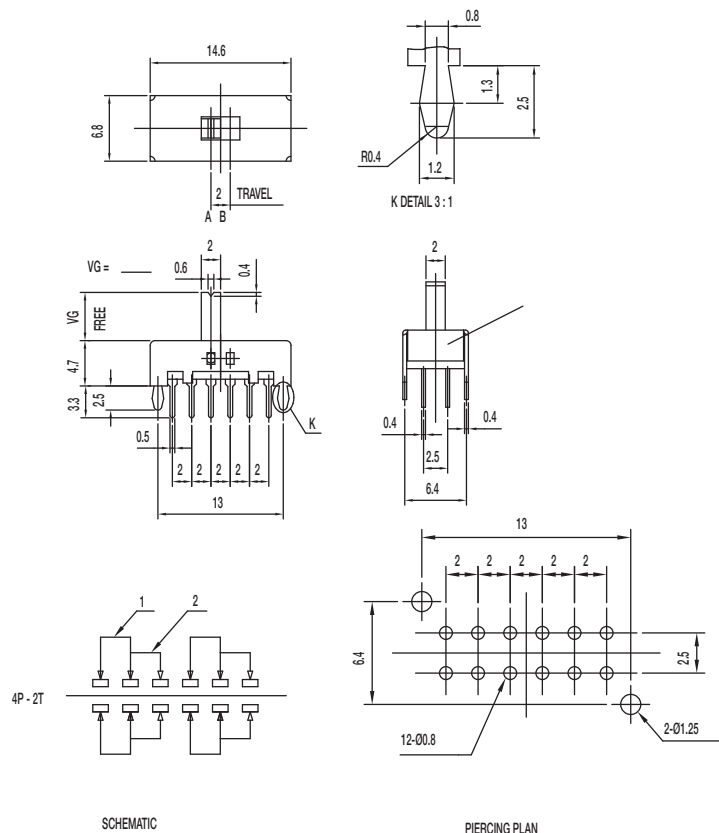
### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 250 ± 100 gf (2.45 ± 0.98N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

KNOB: PA  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

## SS-42D07-VG NS 4P2T NON-SHORTING



### Specifications

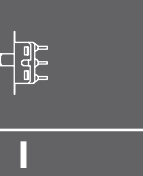
CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 250 ± 100 gf (2.45 ± 0.98N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated



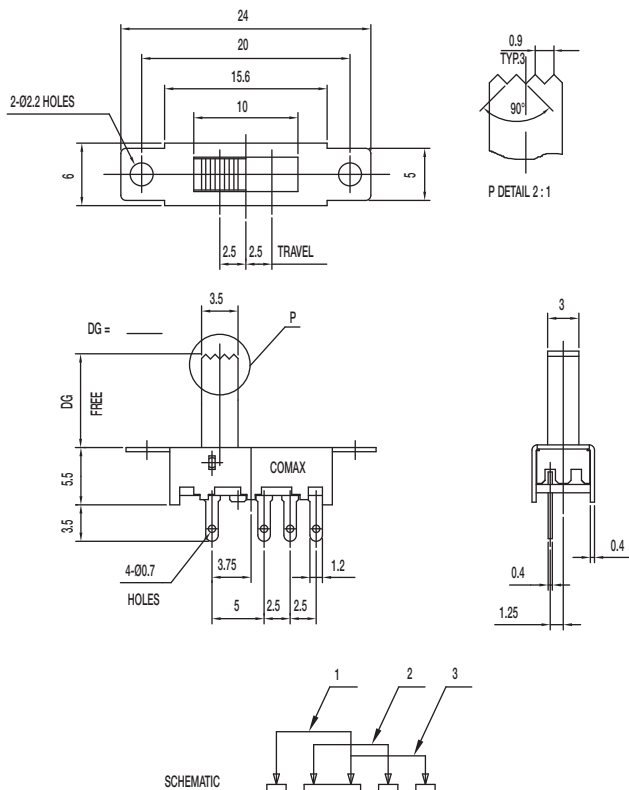
Dimensions are shown: mm  
 Specifications and dimensions subject to change



Side

# SS Series Miniature Slide Switches

**SS-13E08-DG** 1P3T



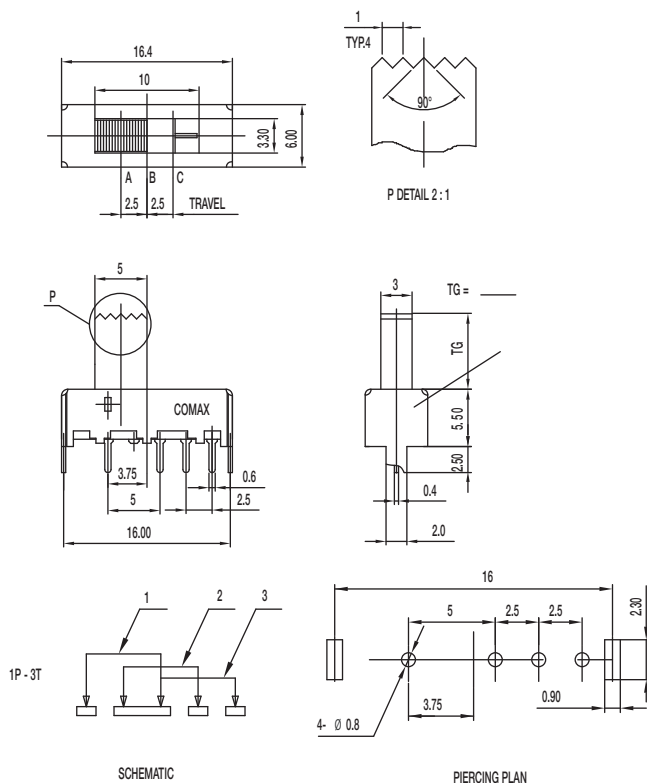
## Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 250 ± 100 gf (2.45 ± 0.98N)  
 TRAVEL: 2.5 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

## Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

**SS-13E29-TG** 1P3T



## Specifications

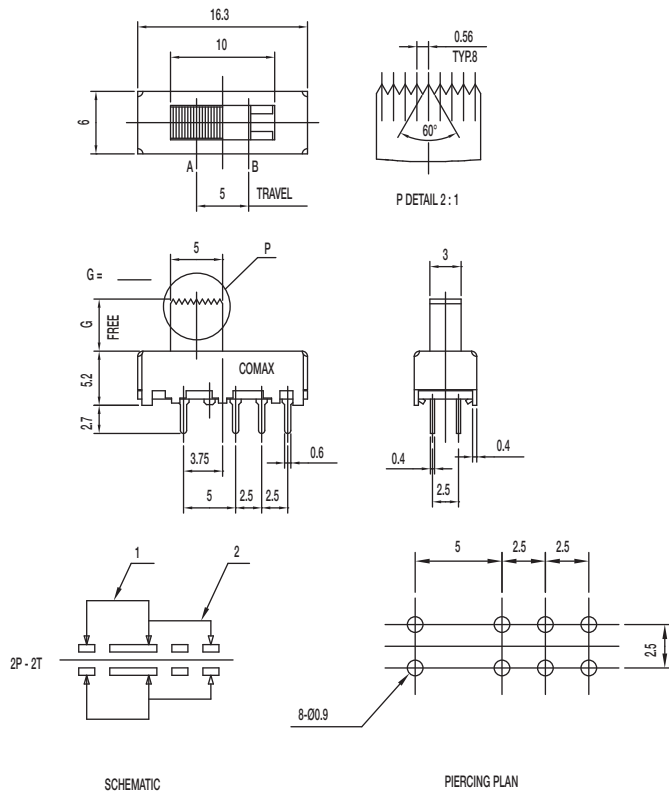
CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 250 ± 100 gf (2.45 ± 0.98N)  
 TRAVEL: 2.5 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

## Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

# SS Series Miniature Slide Switches

## SS-22J08-G DPDT NON-SHORTING



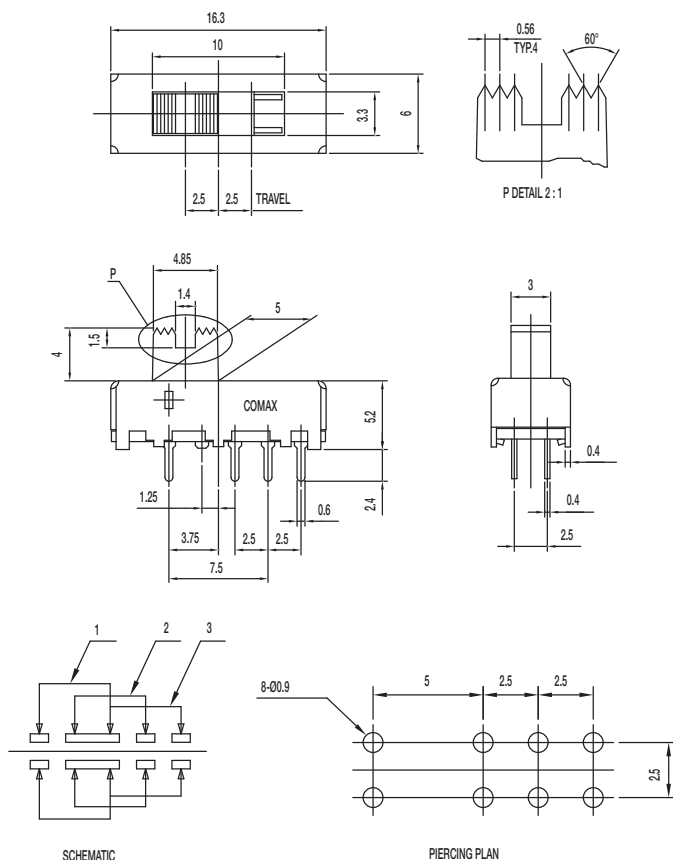
### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 TRAVEL: 5 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

## SS-23E05-G 4 2P3T



### Specifications

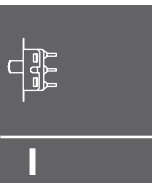
CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 300 ± 100 gf (2.94 ± 0.98N)  
 TRAVEL: 2.5 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated



Dimensions are shown: mm  
 Specifications and dimensions subject to change

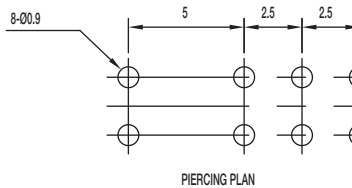
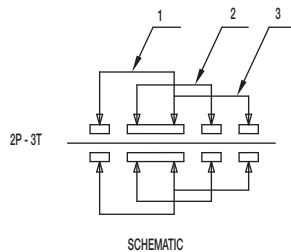
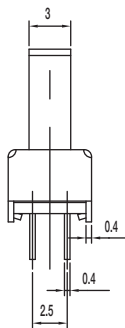
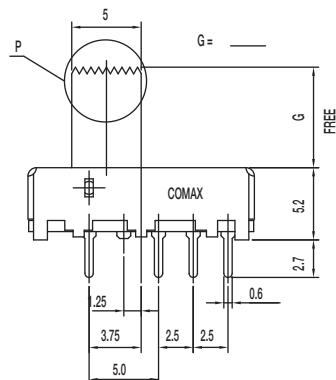
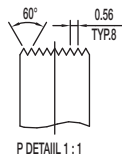
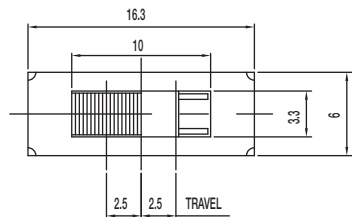


Side



# SS Series Miniature Slide Switches

**SS-23E06-G** 2P3T



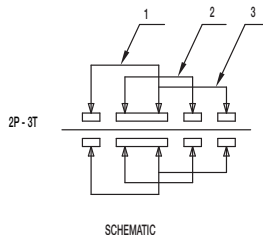
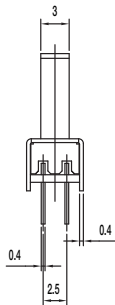
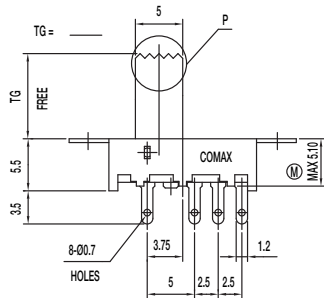
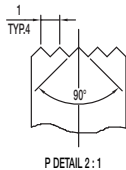
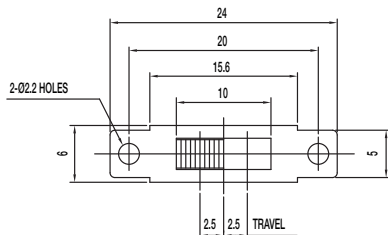
## Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 250 ± 100 gf (2.45 ± 0.98N)  
 TRAVEL: 2.5 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

## Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

**SS-23E08-TG** 2P3T



TG=6,8,9mm Max 5.10mm

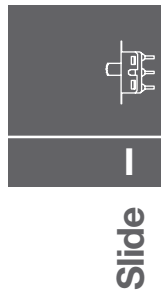
## Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 250 ± 100 gf (2.45 ± 0.98N)  
 TRAVEL: 2.5 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 80°C

## Materials

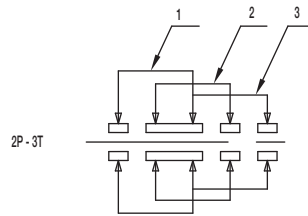
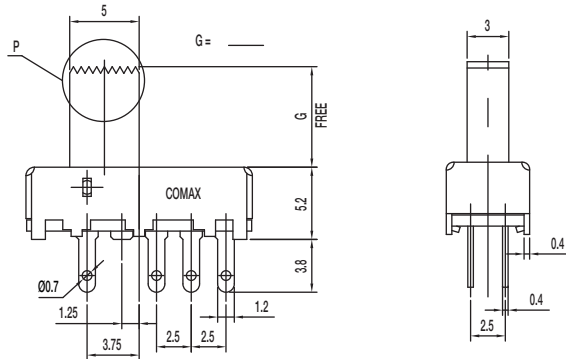
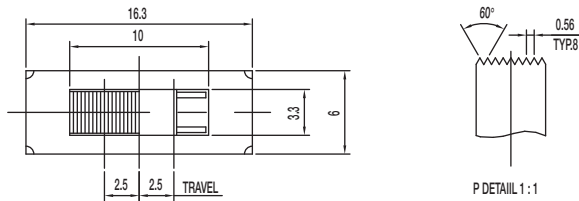
KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

Dimensions are shown: mm  
 Specifications and dimensions subject to change



# SS Series Miniature Slide Switches

## SS-23E10-G 2P3T



SCHMATIC

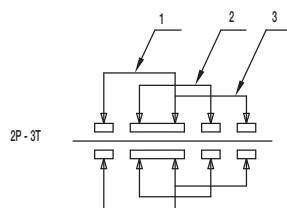
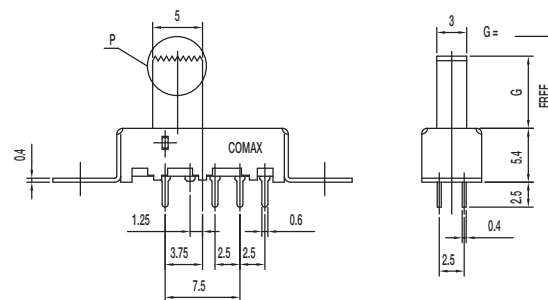
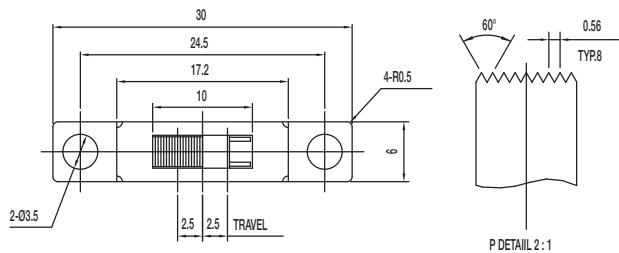
### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 250 ± 100 gf (2.45 ± 0.98N)  
 TRAVEL: 2.5 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

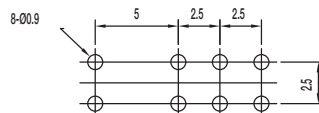
### Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

## SS-23E11-G 2P3T



SCHMATIC



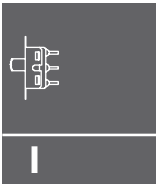
PIERCING PLAN

### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 250 ± 100 gf (2.45 ± 0.98N)  
 TRAVEL: 2.5 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

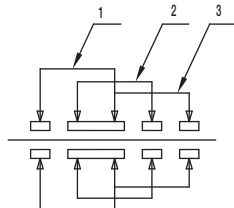
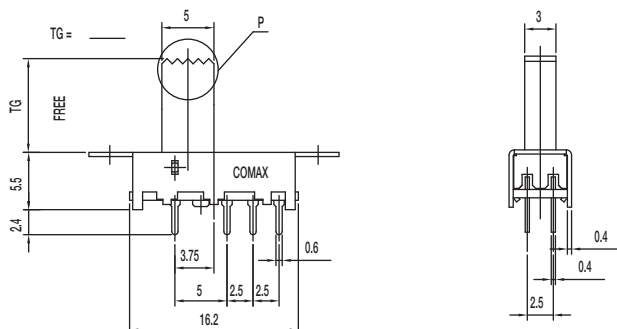
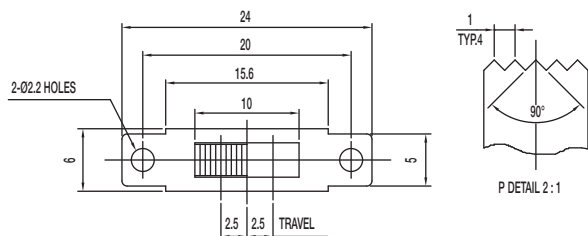
KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated



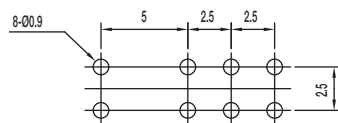
Slide

# SS Series Miniature Slide Switches

**SS-23E12-TG** 2P3T



SCHEMATIC



PIERCING PLAN

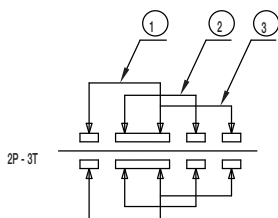
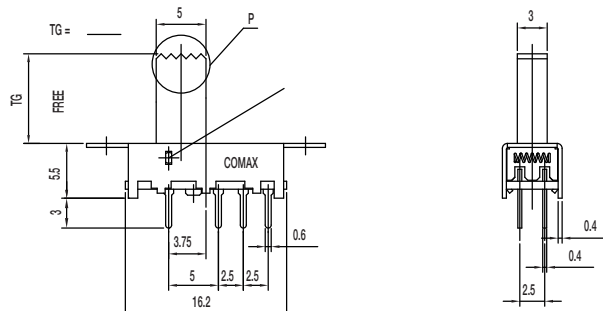
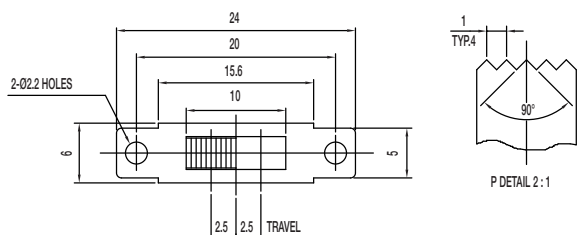
## Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 250 ± 100 gf (2.45 ± 0.98N)  
 TRAVEL: 2.5 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

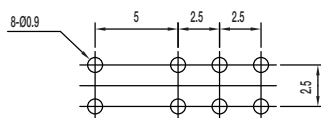
## Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

**SS-23E14-TG NS** 2P3T NON-SHORTING



SCHEMATIC



PIERCING PLAN

## Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 250 ± 100 gf (2.45 ± 0.98N)  
 TRAVEL: 2.5 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

## Materials

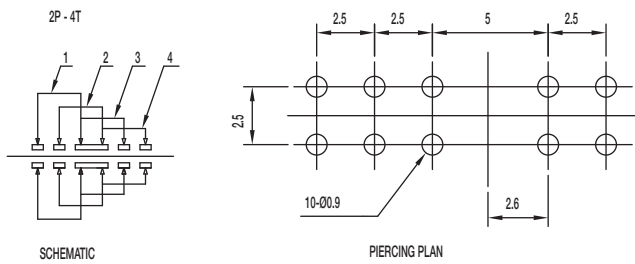
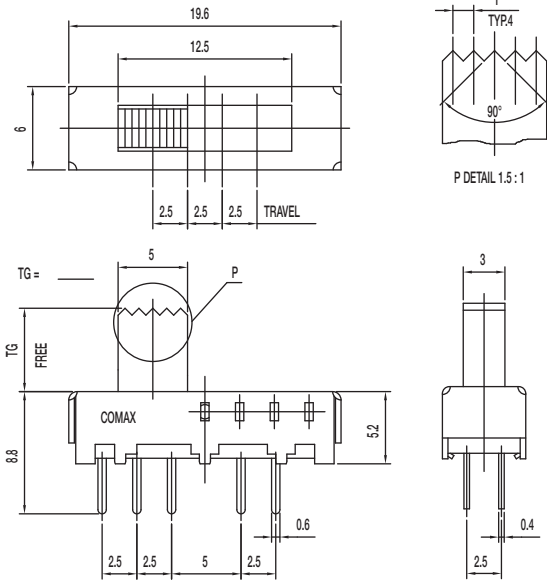
KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated



Dimensions are shown: mm  
 Specifications and dimensions subject to change

# SS Series Miniature Slide Switches

## SS-24E06-TG 2P4T SHORTING

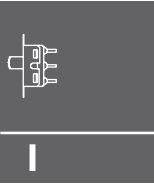


### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 250 ± 100 gf (2.45 ± 0.98N)  
 TRAVEL: 2.5 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

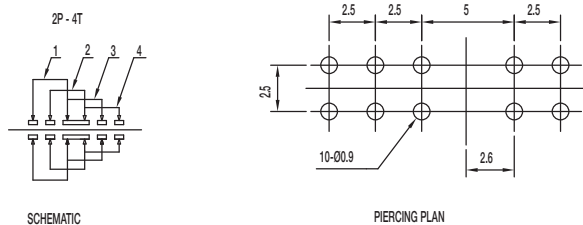
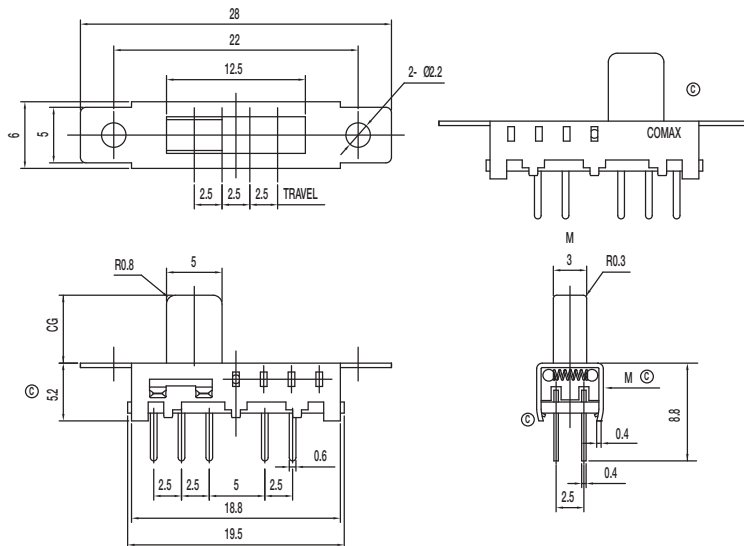
### Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated



Side

## SS-24E08-CG 2P4T



### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 250 ± 100 gf (2.45 ± 0.98N)  
 TRAVEL: 2.5 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

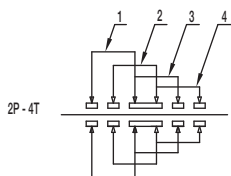
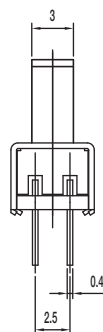
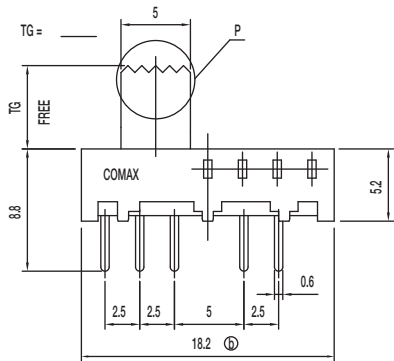
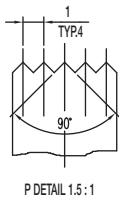
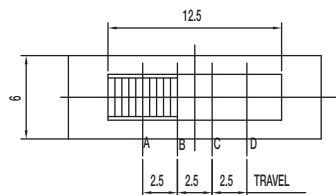
KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated



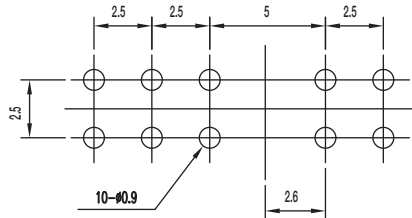
Dimensions are shown: mm  
 Specifications and dimensions subject to change

# SS Series Miniature Slide Switches

**SS-24E09-TG** 2P4T



SCHEMATIC



PIERCING PLAN

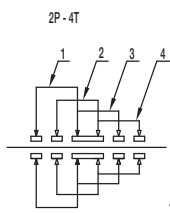
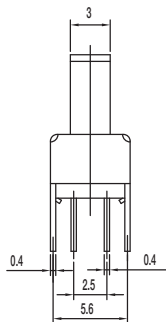
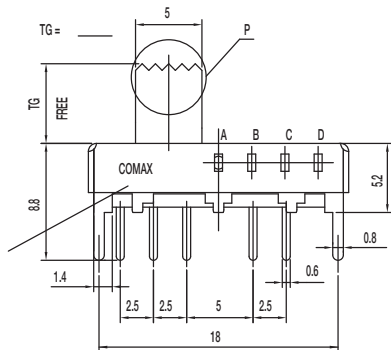
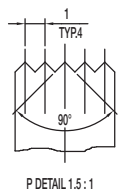
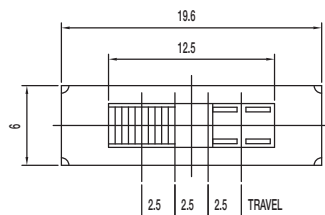
## Specifications

- CONTACT RATING: 0.3A @ 30 VDC
- INITIAL CONTACT RESISTANCE: 30 m ohms max.
- INSULATION RESISTANCE: 100 M ohms min.
- DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
- OPERATING LIFE: 10,000 cycles with load
- OPERATING FORCE: 250 ± 100 gf (2.45 ± 0.98N)
- TRAVEL: 2.5 ± 0.3 mm
- OPERATING TEMPERATURE: -20°C to 70°C

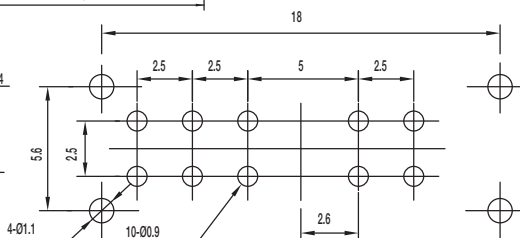
## Materials

- KNOB: POM
- FRAME: SPCC
- CONTACT: Silver clad
- TERMINAL: Silver plated

**SS-24E10-TG** 2P4T



SCHEMATIC



PIERCING PLAN

## Specifications

- CONTACT RATING: 0.3A @ 30 VDC
- INITIAL CONTACT RESISTANCE: 30 m ohms max.
- INSULATION RESISTANCE: 100 M ohms min.
- DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
- OPERATING LIFE: 10,000 cycles with load
- OPERATING FORCE: 250 ± 100 gf (2.45 ± 0.98N)
- TRAVEL: 2.5 ± 0.3 mm
- OPERATING TEMPERATURE: -20°C to 70°C

## Materials

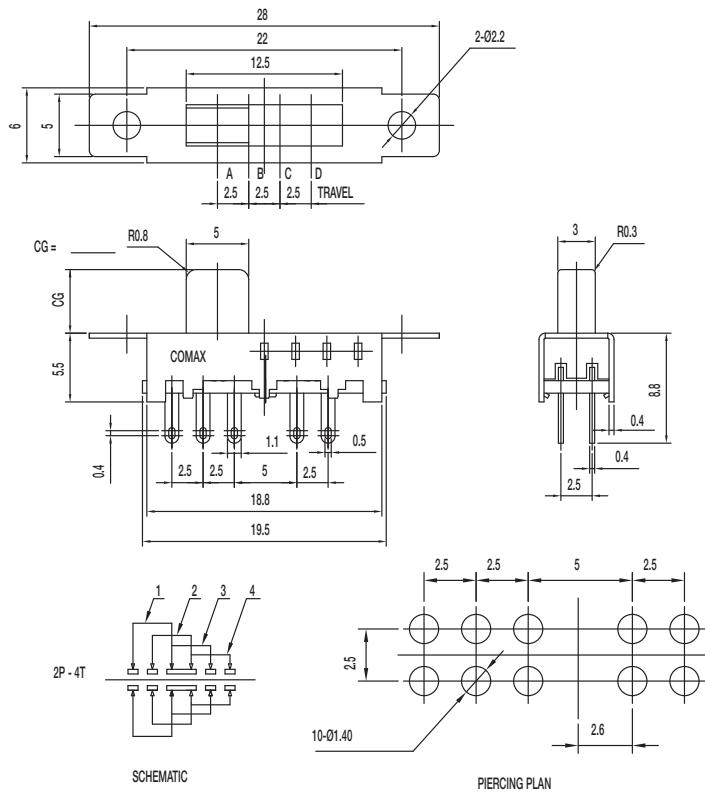
- KNOB: POM
- FRAME: SPCC
- CONTACT: Silver clad
- TERMINAL: Silver plated



Dimensions are shown: mm  
Specifications and dimensions subject to change

# SS Series Miniature Slide Switches

## SS-24E18-CG 2P4T

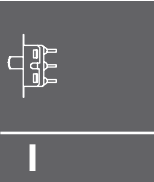


### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 250 ± 100 gf (2.45 ± 0.98N)  
 TRAVEL: 2.5 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

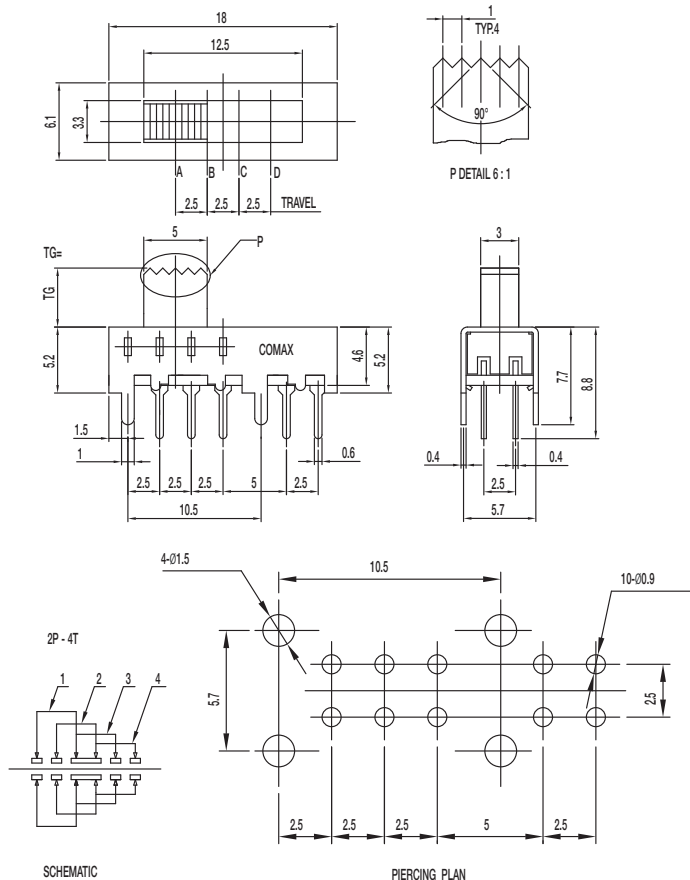
### Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated



Side

## SS-24E19-TG 2P4T



### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 250 ± 100 gf (2.45 ± 0.98N)  
 TRAVEL: 2.5 ± 0.3 mm  
 OPERATING TEMPERATURE: -10°C to 60°C

### Materials

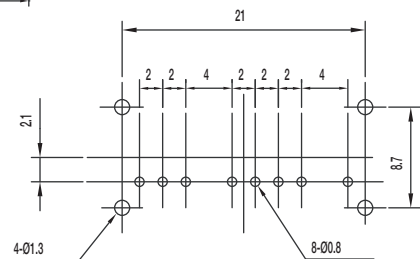
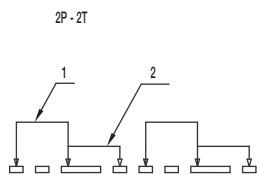
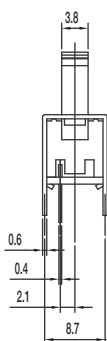
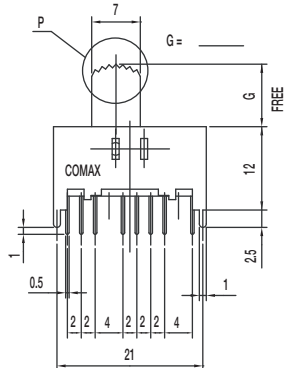
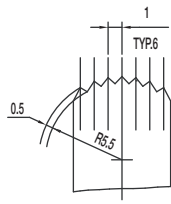
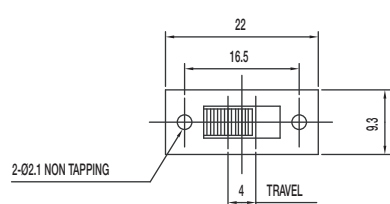
KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated



Dimensions are shown: mm  
 Specifications and dimensions subject to change

# SS Series Miniature Slide Switches

**SS-22H18-G** DPDT NON-SHORTING



SCHEMATIC

PIERCING PLAN

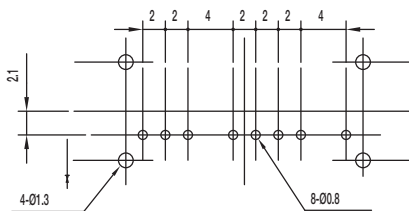
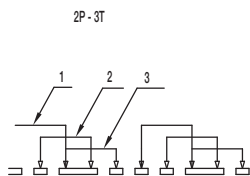
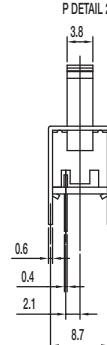
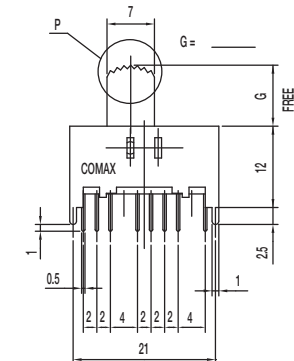
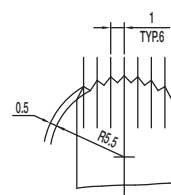
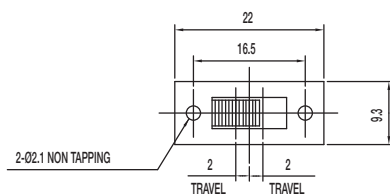
## Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 TRAVEL: 4 ± 0.3 mm  
 OPERATING TEMPERATURE: -10°C to 60°C

## Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

**SS-23D10-G** 2P3T



SCHEMATIC

PIERCING PLAN

## Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 300 ± 150 gf (2.94 ± 1.47N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

## Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated



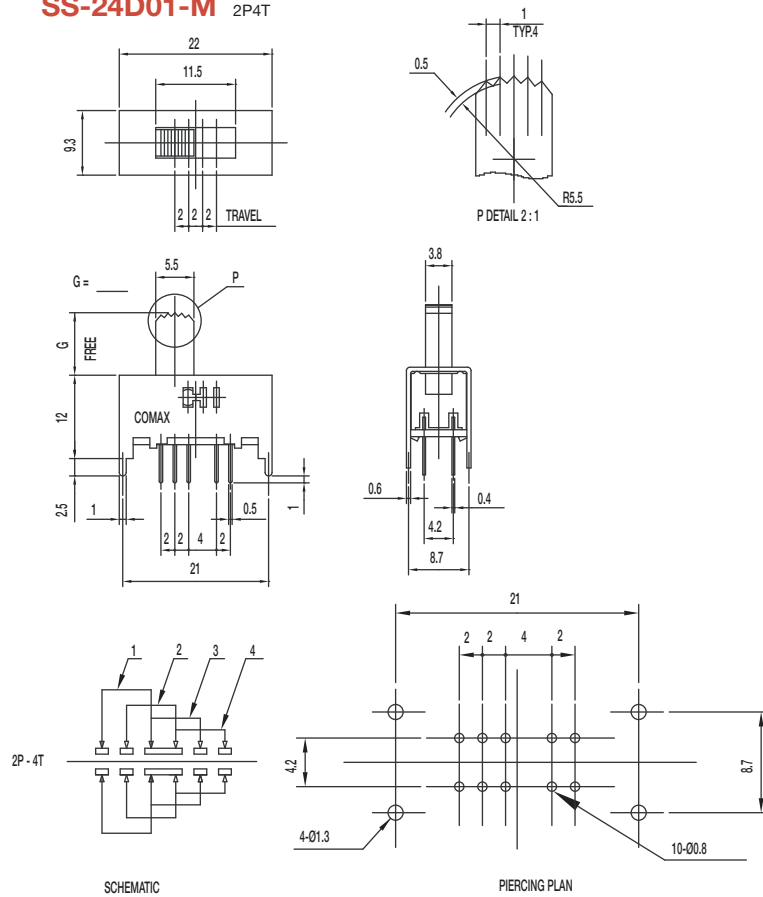
Dimensions are shown: mm  
 Specifications and dimensions subject to change

Slide



# SS Series Miniature Slide Switches

## SS-24D01-M 2P4T

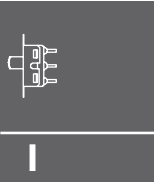


### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 300 ± 100 gf (2.94 ± 0.98N); 450 ± 150 gf (4.41 ± 1.47N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

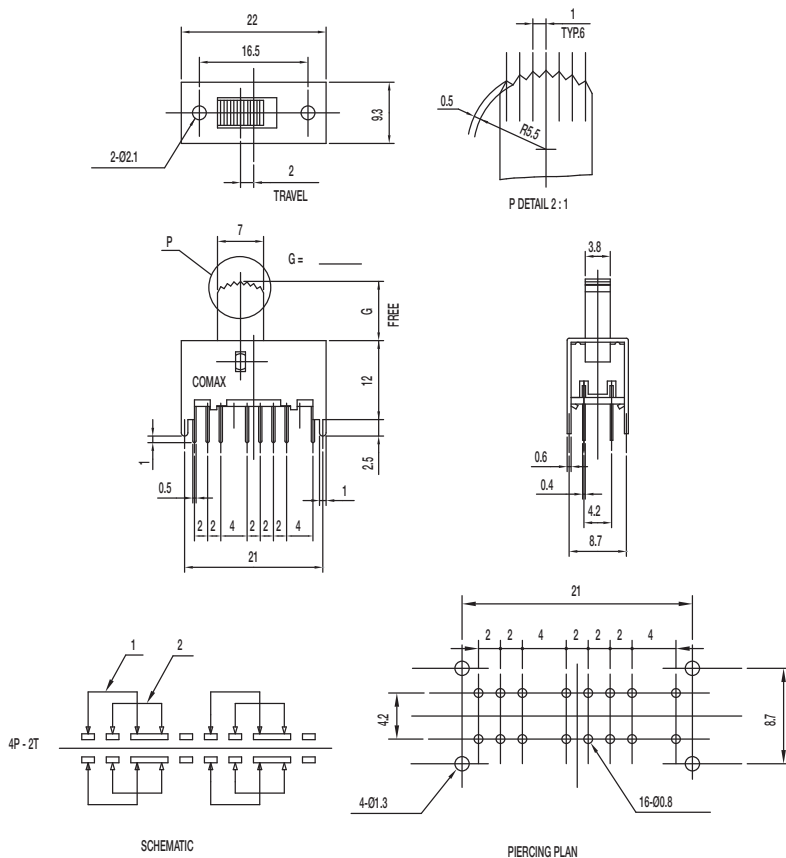
### Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated



Slide

## SS-42D11-G 4P2T SHORTING



### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

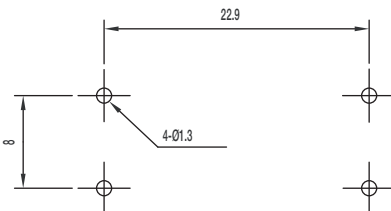
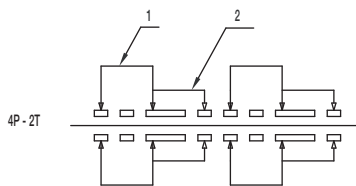
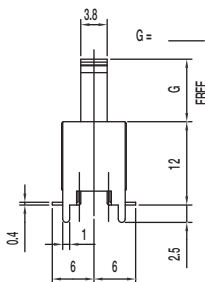
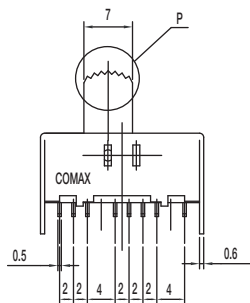
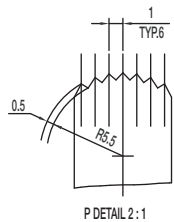
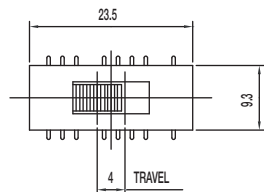


Dimensions are shown: mm  
 Specifications and dimensions subject to change



# SS Series Miniature Slide Switches

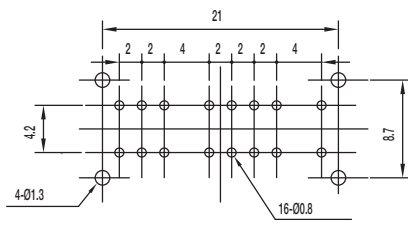
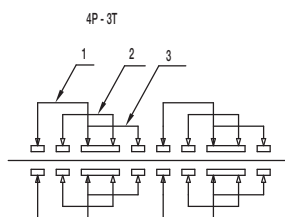
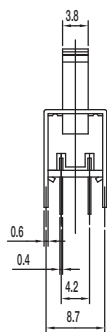
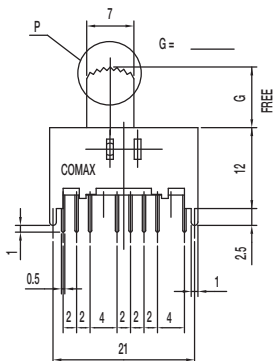
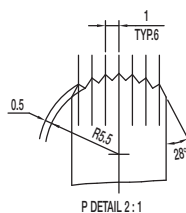
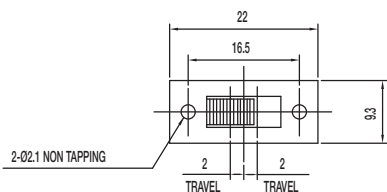
**SS-42H06-G** 4P2T NON-SHORTING



SCHMATIC

PIERCING PLAN

**SS-43D01-G** 4P3T



SCHMATIC

PIERCING PLAN

## Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 TRAVEL: 4 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

## Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

## Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 300 ± 150 gf (2.94 ± 1.47N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

## Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

Dimensions are shown: mm  
 Specifications and dimensions subject to change

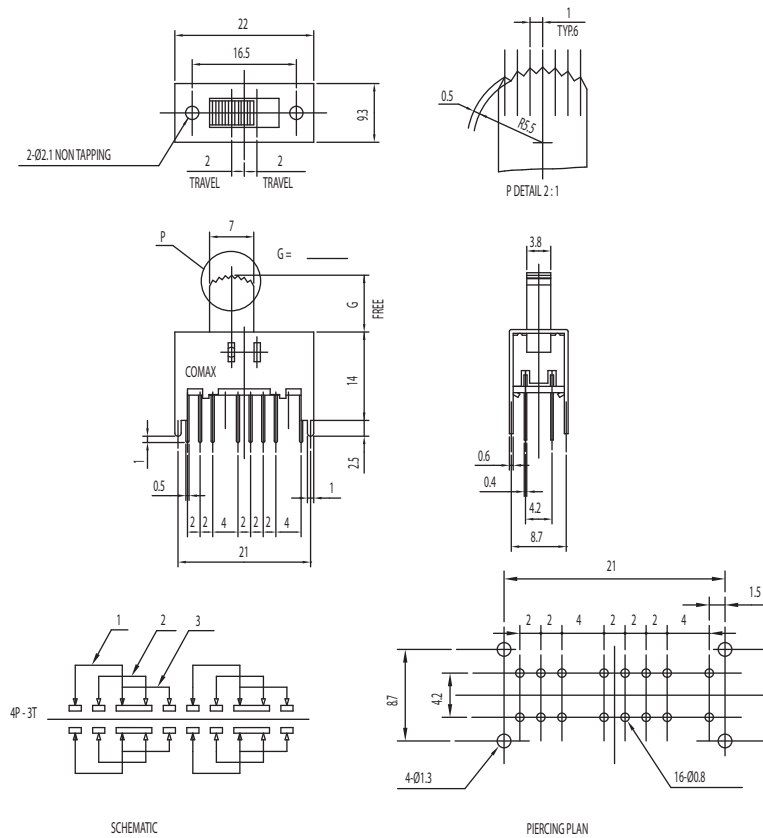


Slide



# SS Series Miniature Slide Switches

## SS-43D02-G 4P3T

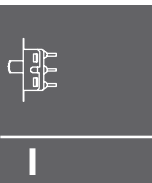


### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 300 ± 150 gf (2.94 ± 1.47N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

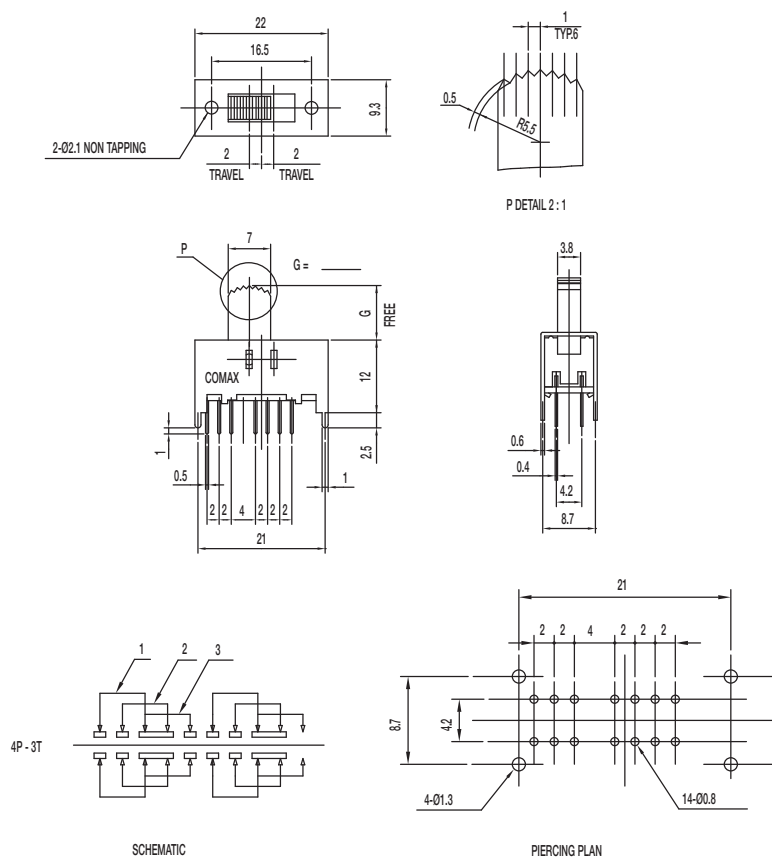
### Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated



Side

## SS-43D03-G 4P3T



### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 300 ± 150 gf (2.94 ± 1.47N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

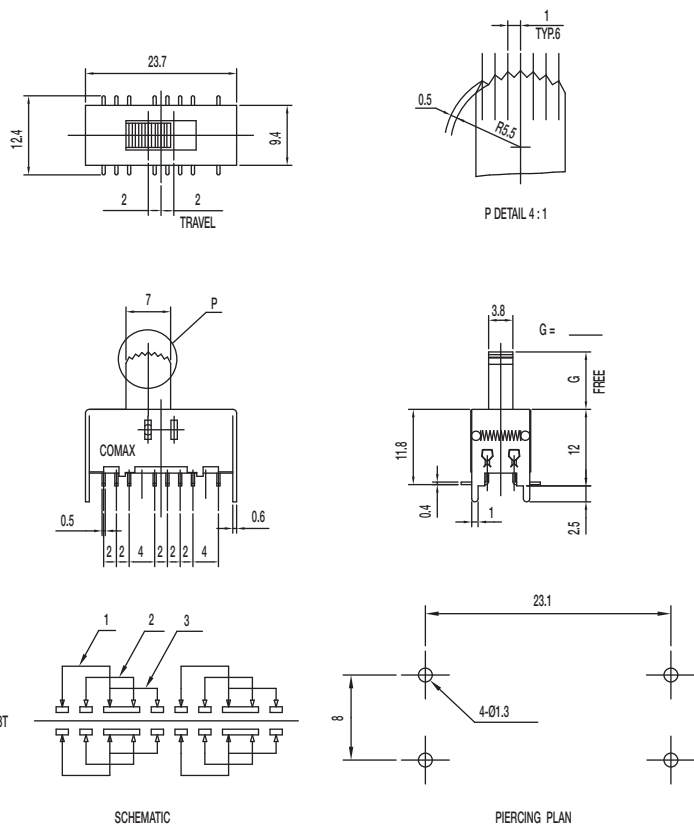
KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated



Dimensions are shown: mm  
 Specifications and dimensions subject to change

# SS Series Miniature Slide Switches

## SS-43D06-G 4P3T



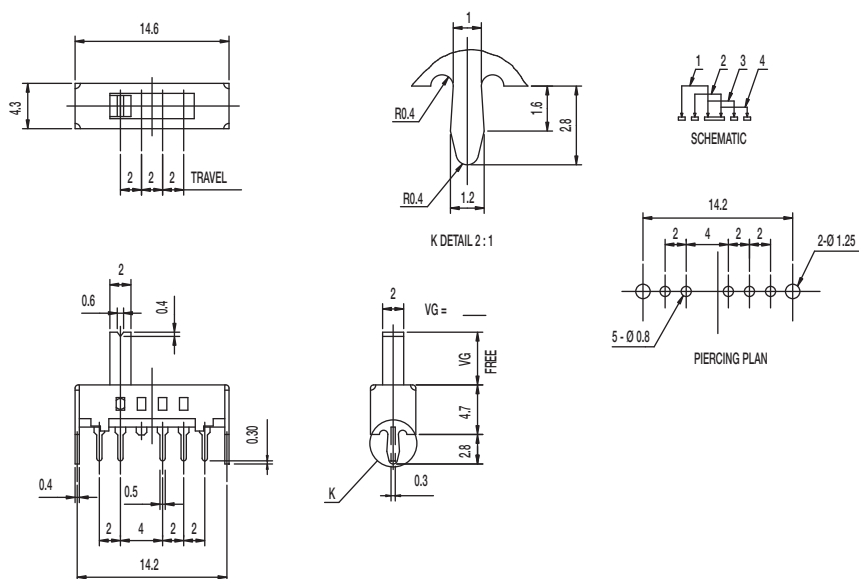
### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles with load  
 OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)  
 350 ± 150 gf (3.43 ± 1.47N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials

KNOB: POM  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated

## SS-14D0839-VG 5 PA 1P4T



### Specifications

CONTACT RATING: 0.3A @ 30 VDC  
 INITIAL CONTACT RESISTANCE: 30 m ohms max.  
 INSULATION RESISTANCE: 100 M ohms min.  
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.  
 OPERATING LIFE: 10,000 cycles without load; 5,000 cycles with load  
 OPERATING FORCE: 250 ± 100 gf (2.45 ± 0.98N)  
 TRAVEL: 2 ± 0.3 mm  
 OPERATING TEMPERATURE: -20°C to 70°C

### Materials



KNOB: PA  
 FRAME: SPCC  
 CONTACT: Silver clad  
 TERMINAL: Silver plated



Dimensions are shown: mm  
 Specifications and dimensions subject to change

# Snap-acting Product Selection Guide

Snap-acting





<b>Snap-acting</b>							
<b>Series</b>	<b>TF</b>	<b>TFS</b>	<b>TF2</b>	<b>TM</b>	<b>LC</b>	<b>LCA</b>	<b>LCS</b>
<b>Switch Type</b>	Miniature	Sealed Miniature	Sealed Miniature	Miniature	Subminiature Precision	Subminiature	Sealed Subminiature
<b>Poles/Throws</b>	SPST, SPDT	SPDT	SPDT	SPST, SPDT	SPST, SPDT	SPDT	SPST
<b>Maximum Current</b>	21 Amps	10 Amps	10 Amps	15 Amps	10.1 Amps	10 Amps	6 Amps
<b>Terminations</b>							
Solder	•		•	•	•	•	•
Turret							
Quick Connect	•	•	•	•	•	•	•
Screw			•	•			
Wire Leads		•			•		•
PC					•	•	•
Formed PC					•	•	
Extended Operations	•	•		•	•	•	
Sealed		•					•
<b>Page No.</b>	J-6	J-12 / J-16	J-20	J-26	J-32	J-36	J-40

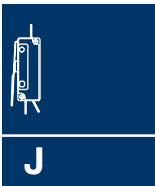
<b>Snap-acting</b>								
<b>Series</b>	<b>MM</b>	<b>ZM</b>	<b>ZMA</b>	<b>ZMB</b>	<b>ZMS</b>	<b>ZMSM</b>	<b>MDS</b>	<b>HB</b>
<b>Switch Type</b>	Subminiature Precision	Subminiature	Subminiature	Subminiature	Sealed Subminiature	Sealed Subminiature	Subminiature	Standard Precision
<b>Poles/Throws</b>	SPDT	SPDT	SPDT	SPDT	SPDT	SPDT	SPDT	SPST, SPDT
<b>Maximum Current</b>	7 Amps	3 Amps	3 Amps	0.1 Amps	3 Amps	3 Amps	300 m Amps	20 Amps
<b>Terminations</b>								
Solder			•	•	•	•	•	•
Quick Connect								•
Wire Leads					•	•		
Screw								•
PCB Thru-hole	•	•	•	•	•	•	•	
Flat & Step Base								•
<b>Bushing</b>								15/32-32
Sealed					•	•		
<b>Page No.</b>	J-44	J-47	J-50	J-54	J-57	J-61	J-65	J-71



Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

# Snap-acting Product Selection Guide

<b>Snap-acting</b>				
<b>Series</b>	<b>A</b>	<b>TL</b>	<b>DS</b>	<b>LCB</b>
<b>Switch Type</b>	General Purpose	Door Interlock	Door Interlock	Subminiature
<b>Poles/Throws</b>	SPST, SPDT, DP	SPDT	SPDT, DPDT	SPST, SPDT
<b>Maximum Current</b>	30.1 Amps	15 Amps	0.1, 10, 16A	5A
<b>Terminations</b>				
Solder				•
Quick Connect	•	•	•	•
Wire Leads				
Screw		•		
PCB Thru-hole				•
Flat & Step Base				
<b>Bushing</b>	3/8-23			
<b>Page No.</b>	J-77	J-82	J-85	J-88



Snap-acting






# Snap-acting Technical Data

## HOW TO CHOOSE PRECISION SNAP-ACTING SWITCHES AND ACTUATORS

This catalog describes electric switches that satisfy the following definition: "A precision snap-acting switch is a mechanically operated electric switch having predetermined and accurately controlled characteristics and having contacts other than blade-and-jaw, or mercury-type, where the maximum separation between any butting contacts is 1/8 inch."

In choosing a switch, the first thing to consider is its electrical rating. As a basic part of an electric control system, the switch must be able to carry the full load current in the system, to interrupt this current, and to handle any surge of current that may occur when the switch contacts close or any transients that occur when contacts open.

The method of applying mechanical force to operate the switch influences the choice of actuator. Basic switches are provided with leaf spring, levers, or other linkages between the switch plunger and the actuating device, which are typically used to provide additional overtravel and reduce the operating force. The differential travel measured at the free end of the leaf or lever is considerably greater than that measured at the switch plunger and max. operating force is adequately smaller. Table 1 relates types of actuators to means of applying operating force.

MOTION OF APPLIED OPERATING FORCES	ACTUATOR								
	Pin	Overtravel Plunger	Roller Plunger	Leaf	Roller Leaf	Hinged Lever	Hinged Roller Lever	Reverse-Acting Hinged Lever	Reverse-Acting Hinged Roller Lever
	Basic	D, Q, J	R	L	W	T	A	Y	F
 CAM Rotary			√	√	√	√	√	√ <sup>1</sup>	√ <sup>1</sup>
 LEVER Angular	√	√ <sup>2</sup>	√ <sup>2</sup>	√	√	√	√	√	√
 SLIDE Wedge			√		√		√		√
 PLUNGER In-Line	√ <sup>3</sup>	√		√		√		√	
 BI-METAL or BELLOWS Slow In-Line	√	√							

√ Suitable for this actuating method.

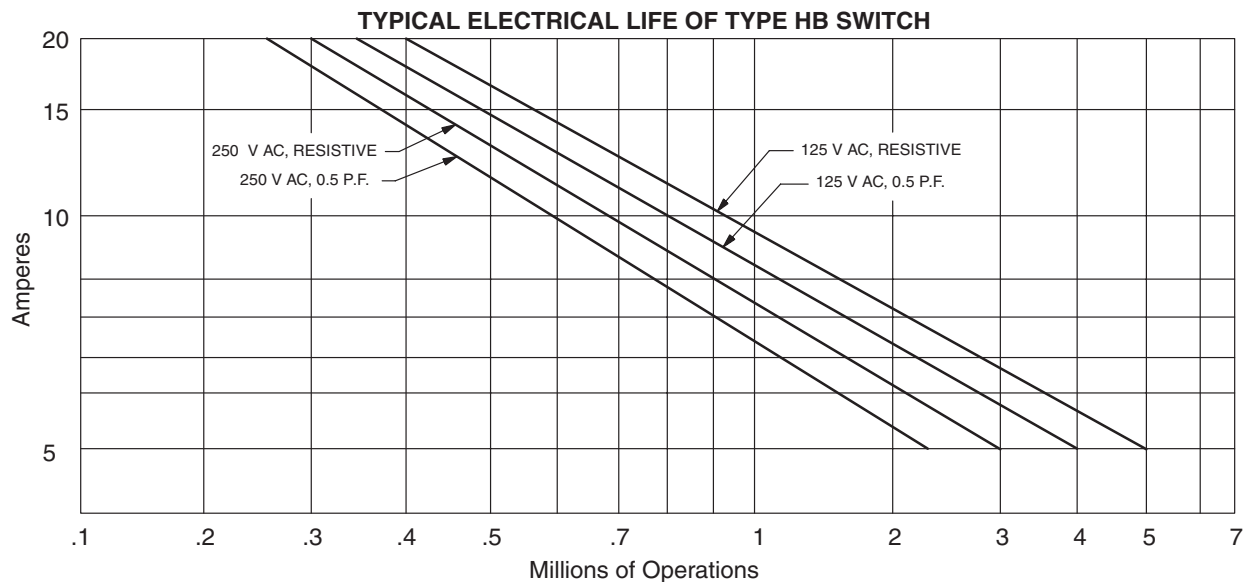
<sup>1</sup> Where large overtravel is required.

<sup>2</sup> Do not use when there is side thrust.

<sup>3</sup> Use only where the actuating device contains provisions for absorbing excess over travel.

## ELECTRICAL LIFE CHARACTERISTICS FOR SNAP-ACTING SWITCHES

The primary limitation to electrical life of a switch is wear of the contacts. In general, contacts wear out more quickly as current or voltage is increased and as power-factor is decreased. This is indicated by the graph below, which shows electrical life of switches tested under ordinary atmospheric conditions, operated 60 times a minute, with AC power handled on both the normally open and the normally closed contacts. The high inrush current encountered in lamp loads and in motor or other inductive loads is responsible for decreased contact life under such loading.



Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

# Snap-acting Technical Data

## MECHANICAL LIFE CHARACTERISTICS FOR SNAP-ACTING SWITCHES

Fatigue of the internal spring blade is the limiting factor in the mechanical life of a switch. This fatigue can often be reduced and the life thereby extended, by reducing overtravel. One method is to use a leaf or lever actuator or a plunger containing an overtravel-absorbing spring. Tests on switches of the types covered in this catalog indicate that the mechanical life of a lever actuated switch is more than double that of a switch having the operating force applied directly on the pin.

Mechanical life is also affected by the combination of total travel and operating force. Thus a high-sensitivity switch which has small travel and light force, has about twice the life expectancy of a high current type switch, in which the travel/ force combination is relatively high. Experience indicates that million of operations is a reasonable mechanical life expectancy for a basic snap switch.

For the best mechanical life, the applied overtravel force should not exceed three times the operating force.

## AC RATINGS FOR SNAP-ACTING SWITCHES

Switches used to control alternating current loads, up to the ratings shown in this catalog, will maintain repeatability of characteristics and provide long electrical life (refer to graph on page K-3). In special circumstances, higher currents or voltages may be controlled, but changes in performance must be anticipated.

Switches used to control "dry circuits" can be furnished, but factory recommendations should be secured.

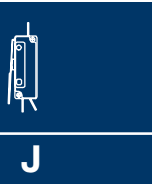
## DC RATINGS FOR SNAP-ACTING SWITCHES

To use the table below, determine the contact separation of the switch and select the ratings from the appropriate line. The maximum current rating must be limited to the current value listed for that switch type in the body of the catalog.

CONTACT SEPARATION	DIRECT CURRENT VOLTAGE	ACTUATOR				INDUCTIVE			
		Heater Load		Lamp Load (tungsten)		Motor, Relay, or Solenoid Load			
		Normally Open Contact	Normally Closed Contact	Normally Open Contact	Normally Closed Contact	Sea Level		50,000 Feet	
						Normally Open Contact	Normally Closed Contact	Normally Open Contact	Normally Closed Contact
Inches	Volts	Amperes	Amperes	Amperes	Amperes	Amperes	Amperes	Amperes	Amperes
.010	6-8	15.0	20.0	1.5	3.0	8.0	8.0	7.0	7.0
	12-14	15.0	20.0	1.5	3.0	5.0	5.0	5.0	5.0
	24-30	2.0	2.0	1.5	2.0	1.0	1.0	1.0	1.0
	110-115	0.4	0.4	0.4	0.4	0.03	0.03	0.02	0.02
	220-230	0.2	0.2	0.2	0.2	0.02	0.02	0.01	0.01
.020	6-8	15.0	20.0	1.5	3.0	15.0	20.0	15.0	15.0
	12-14	15.0	20.0	1.5	3.0	10.0	10.0	8.0	8.0
	24-30	6.0	6.0	1.5	2.0	5.0	5.0	2.0	2.0
	110-115	0.4	0.4	0.4	0.4	0.05	0.05	0.03	0.03
	220-230	0.2	0.2	0.2	0.2	0.03	0.03	0.02	0.02
.040	6-8	15.0	20.0	1.5	3.0	15.0	20.0	15.0	15.0
	12-14	15.0	20.0	1.5	3.0	15.0	20.0	15.0	15.0
	24-30	10.0	10.0	1.5	2.0	10.0	10.0	5.0	5.0
	110-115	0.6	0.6	0.6	0.6	0.1	0.1	0.05	0.05
	220-230	0.3	0.3	0.3	0.3	0.05	0.05	0.03	0.03
.070	6-8	15.0	20.0	1.5	3.0	15.0	20.0	15.0	15.0
	12-14	15.0	20.0	1.5	3.0	15.0	20.0	15.0	15.0
	24-30	15.0	20.0	1.5	2.0	10.0	10.0	7.5	7.5
	110-115	0.75	0.75	0.75	0.75	0.4	0.4	0.2	0.2
	220-230	0.3	0.3	0.3	0.3	0.2	0.2	0.1	0.1



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



Snap-acting

# TF Series Miniature Snap-acting Switches



## Features/Benefits

- Broad range of operating forces
- Ratings up to 21 AMPS
- Wide variety of actuator styles
- Quick connect terminations

## Typical Applications

- Motor controls
- Thermostatics
- Portable tools



## Specifications

CONTACT RATING: From low level\* to 21 AMPS @ 277 V AC.  
 ELECTRICAL LIFE: 300,000 cycles at 10 AMPS @ 250 V AC, consult Customer Service Center for typical life of higher rated switches.  
 INSULATION RESISTANCE: 1,000 M ohm min.  
 DIELECTRIC STRENGTH: 1,500 Vrms min. @ sea level.  
 OPERATING TEMPERATURE: -40°F to 185°F (-40°C to 85°C).  
 OPERATING FORCE: From 15 to 400 grams at actuator button available.  
 MOUNTING: Torque screws 2-5 in/lbs.

\* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max. Standard electrical life per UL 1054, rated for 6,000 operations.

## Materials

SWITCH HOUSING: Thermoplastic (UL 94V-0).  
 ACTUATOR BUTTON: Thermoplastic (UL 94V-0).  
 SPRING: Copper alloy.  
 PIVOT: Brass alloy.  
 MOVABLE CONTACTS: Gold alloy for ratings 1 AMP or less.  
 Fine silver for ratings greater than 1 AMP up to 15 AMPS.  
 Precious metal alloy for ratings greater than 15 AMPS.  
 STATIONARY CONTACTS: Gold alloy for ratings 1 AMP or less.  
 Fine silver for ratings greater than 1 AMP.  
 TERMINALS: Brass alloy for ratings up to 10 AMPS.  
 Copper alloy for ratings greater than 10 AMPS.

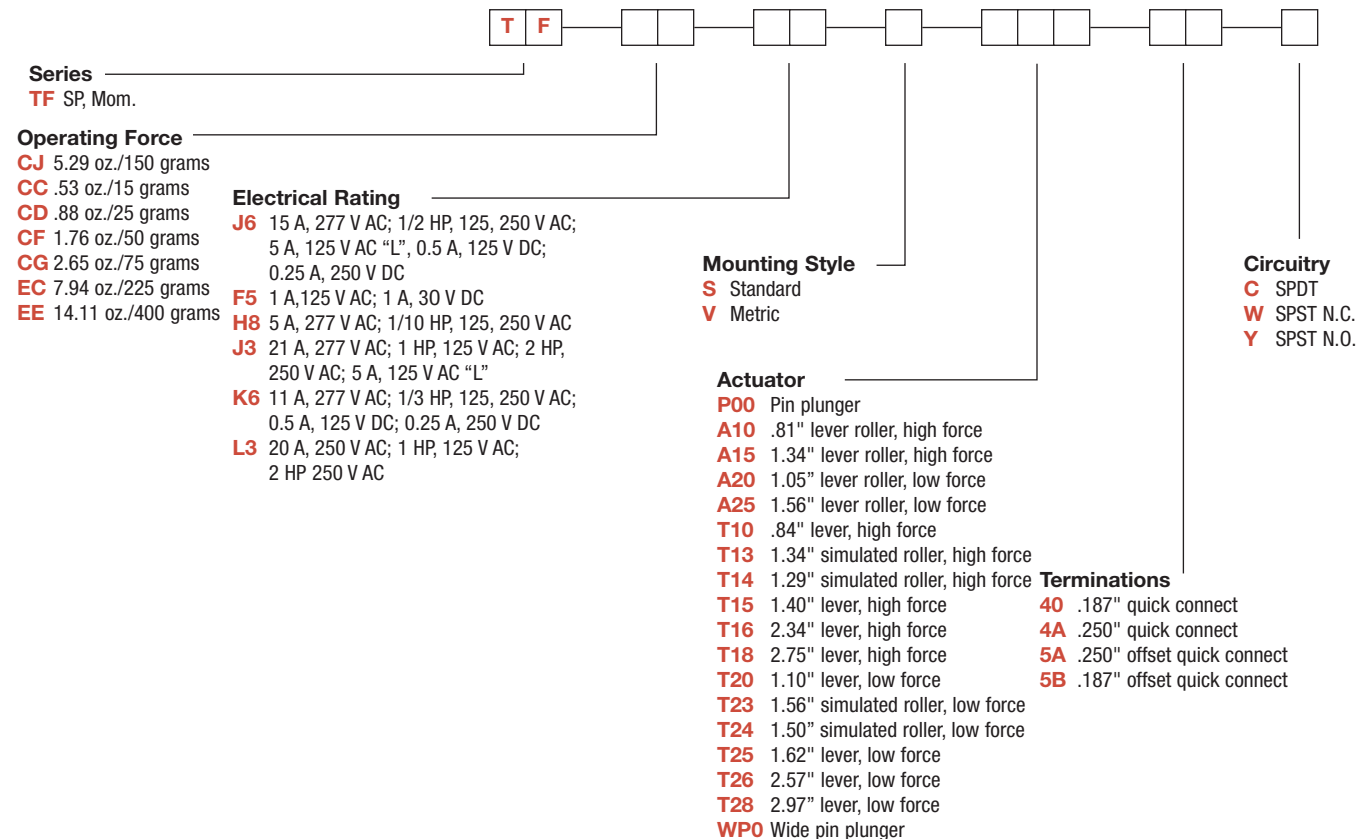
**NOTE:** Specifications and materials listed above are switches with standard options. For information on specific and custom switches, consult Customer Service Center.



Snap-acting

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages J-6 through J-11. For additional options not shown in catalog, consult Customer Service Center.



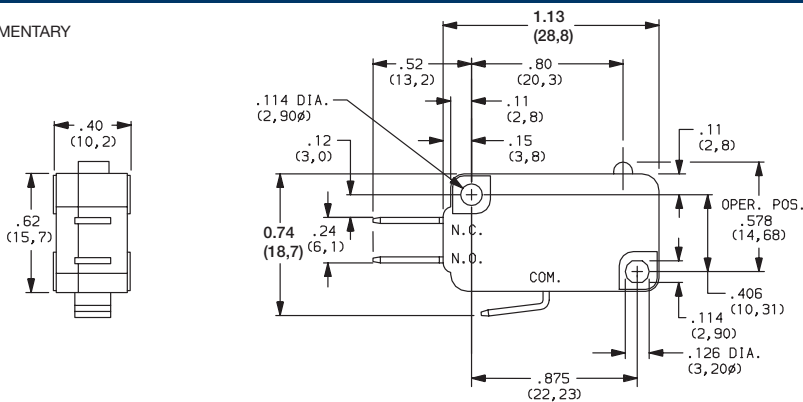
Dimensions are shown: Inch (mm)  
 Specifications and dimensions subject to change



# TF Series Miniature Snap-acting Switches

## SERIES

**TF** MINIATURE SNAP-ACTING SWITCHES – SP MOMENTARY



## OPERATING FORCE

OPTION CODE	BASIC SWITCH OPERATING FORCE (OZ./GRAMS)
<b>CC</b>	.53 15
<b>CD</b>	.88 25
<b>CF</b>	1.76 50
<b>CG</b>	2.65 75
<b>CJ</b>	5.29 150
<b>EC</b>	7.94 225
<b>EE*</b>	14.11 400

\*Minimums may apply, consult Customer Service Center.

Operating Force option 'CC' not available with 'T18 & T26' Actuator options.  
Operating force varies with actuator option, see ACTUATOR option section.



Snap-acting

## ELECTRICAL RATING

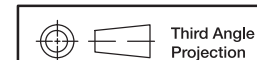
OPTION CODE	RoHS COMPLIANT *	RoHS COMPATIBLE *	CONTACT MATERIAL		ELECTRICAL RATING
			MOVABLE CONTACT	STATIONARY CONTACT	
<b>F5</b>	Yes	Yes	Gold alloy	Gold alloy	From low level* to 1 AMP @ 125 V AC, 1 AMP @ 30 V DC.
<b>H8</b>	Yes	Yes	Fine Silver	Fine Silver	5 AMPS @ 277 V AC; 1/10 HP @ 125 & 250 V AC.
<b>J3</b>	Yes	Yes			21 AMPS @ 277 V AC; 1 HP @ 125 V AC; 2 HP @ 250 V AC; 5 AMPS @ 125 V AC "L".
<b>J6</b>	Yes	Yes			15 AMPS @ 277 V AC; 1/2 HP @ 125 & 250 V AC; 5 AMPS @ 125 V AC "L". 0.5 AMP @ 125 V DC; 0.25 AMP @ 250 V DC.
<b>K6</b>	Yes	Yes			11 AMPS @ 277 V AC; 1/3 HP @ 125 & 250 V AC; 0.5 AMP @ 125 V DC; 0.25 AMP @ 250 V DC.
<b>L3</b>	Yes	Yes	Silver alloy		20 AMPS @ 250 V AC; 1 HP @ 125 V AC; 2 HP @ 250 V AC

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

All models

Consult Customer Service center for availability and delivery of nonstandard ratings.

\* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.



Third Angle Projection

Dimensions are shown: Inches (mm)

Specifications and dimensions subject to change



# TF Series Miniature Snap-acting Switches

## ELECTRICAL RATING

ELECTRICAL RATING	AMPS (REF.)	OPERATING FORCE						
		CC (15)	CD (25)	CF (50)	CG (75)	CJ (150)	EC (225)	EE (400)
F5	1	•	•	•	•	•	•	
H8	5	•	•	•	•	•	•	•
J3	21	X	X	X	X	•	•	•
J6	15	X	X	X	X	•	•	•
K6	11	X	•	•	•	•	•	•
L3	20	X	X	X	X	•	•	•

- AVAILABLE
- X NOT AVAILABLE
- \*\* Available with 4A & 5A terminations only, see page J-10.

All models **c** **AL** **us**

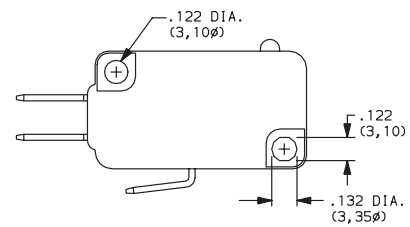
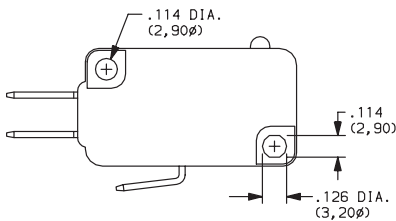
Consult Customer Service center for availability and delivery of nonstandard ratings.

\* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

## MOUNTING STYLE

**S** STANDARD  
For 4-40 screw size

**V** Metric  
For 3 mm screw size

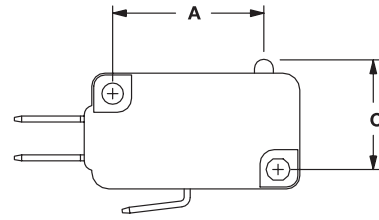


Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

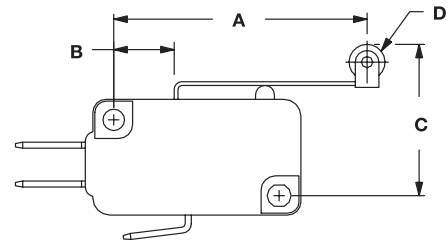
# TF Series Miniature Snap-acting Switches

## ACTUATOR

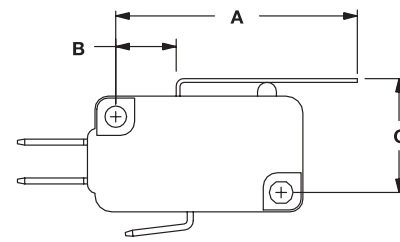
OPTION CODE	FIG.	DIM. A	DIM. B	DIM. C	DIM. D
<b>P00</b>	1	.80 (20,3)	—	.578 ± .015 (14,68 ± 0,38)	—
<b>A10</b>	2	.81 (20,6)	.32 (8,1)	.810 ± .020 (20,57 ± 0,51)	.19 dia. (4,80)
<b>A15</b>	2	1.34 (34,0)	.32 (8,1)	.810 ± .030 (20,57 ± 0,76)	.19 dia. (4,80)
<b>A20</b>	2	1.05 (26,7)	.54 (13,7)	.810 ± .050 (20,57 ± 1,27)	.19 dia. (4,80)
<b>A25</b>	2	1.56 (39,6)	.54 (13,7)	.810 ± .075 (20,57 ± 1,91)	.19 dia. (4,80)
<b>T10</b>	3	.84 (21,3)	.32 (8,1)	.600 ± .020 (15,24 ± 0,51)	—
<b>T15</b>	3	1.40 (35,6)	.32 (8,1)	.600 ± .040 (15,24 ± 1,02)	—
<b>T16</b>	3	2.34 (59,4)	.32 (8,1)	.600 ± .065 (15,24 ± 1,65)	—
<b>T18</b>	3	2.75 (69,9)	.32 (8,1)	.600 ± .080 (15,24 ± 2,03)	—
<b>T20</b>	3	1.10 (27,9)	.54 (13,7)	.600 ± .050 (15,24 ± 1,27)	—
<b>T25</b>	3	1.62 (41,1)	.54 (13,7)	.600 ± .070 (15,24 ± 1,78)	—
<b>T26</b>	3	2.57 (65,3)	.54 (13,7)	.600 ± .150 (15,24 ± 3,81)	—
<b>T28</b>	3	2.97 (75,4)	.54 (13,7)	.600 ± .187 (15,24 ± 4,75)	—
<b>T13</b>	4	1.34 (34,0)	.32 (8,1)	.810 ± .030 (20,57 ± 0,76)	.19 dia. (4,80)
<b>T14</b>	4	1.29 (32,8)	.32 (8,1)	.730 ± .030 (18,54 ± 0,76)	.19 dia. (6,40)
<b>T23</b>	4	1.56 (39,6)	.54 (13,7)	.810 ± .065 (20,57 ± 1,65)	.19 dia. (4,80)
<b>T24</b>	4	1.50 (38,1)	.54 (13,7)	.730 ± .060 (18,54 ± 1,52)	.25 dia. (6,40)
<b>WP0</b>	5	.80 (20,3)	—	.635 ± .015 (16,13 ± 0,38)	—



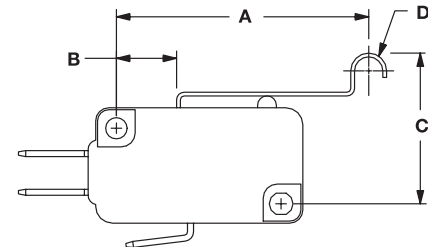
**FIG. 1**  
Pin Plunger



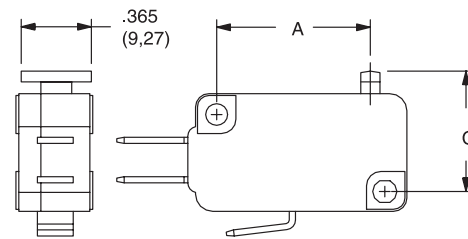
**FIG. 2**  
Lever Roller



**FIG. 3**  
Lever



**FIG. 4**  
Simulated Roller

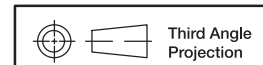


**FIG. 5**  
Wide Pin

NOTE: Switch characteristics chart on following page.



**Snap-acting**



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

# TF Series Miniature Snap-acting Switches

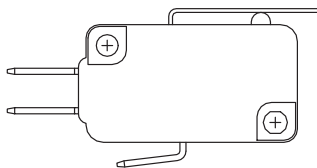
ACTUATOR

## SWITCH CHARACTERISTICS

OPTION CODE	MAXIMUM OPERATING FORCE (OZ./GRAMS)						MINIMUM RELEASE FORCE (OZ./GRAMS)						MAXIMUM DIFFERENTIAL TRAVEL	MAXIMUM PRETRAVEL	MINIMUM OVERTRAVEL		
	CC (15)	CD (25)	CF (50)	CG (75)	CJ (150)	EC (225)	EE (400)	CC (15)	CD (25)	CF (50)	CG (75)	CJ (150)	EC (225)	EE (400)	ALL FORCES	ALL FORCES	ALL FORCES
A10	.63 18	1.06 30	2.29 65	3.17 90	6.35 180	7.94 225	14.11 400	.21 6	.35 10	.35 10	.53 15	.71 20	1.98 56	3.88 110	.015 (0,38)	.060 (1,52)	.030 (0,76)
A15	.28 8	.42 12	1.06 30	1.59 45	3 85	4.59 130	7.94 225	.07 2	.14 4	.14 4	.18 5	.35 10	.71 20	2.82 80	.030 (0,76)	.100 (2,54)	.065 (1,65)
A20	0.53 15	0.71 20	1.41 40	2.12 60	4.23 120	6 170	9.7 275	0.07 2	0.11 3	0.11 3	0.18 5	0.42 12	0.71 20	1.41 40	0.025 (0,64)	0.12 (3,05)	0.055 (1,40)
A25	.18 5	.28 8	.56 16	.85 24	1.69 48	2.65 75	4.41 125	.04 1	.07 2	.07 2	.07 2	.21 6	.35 10	.71 20	.050 (1,27)	.250 (6,35)	.120 (3,05)
P00	.53 15	.88 25	1.76 50	2.65 75	5.29 150	7.94 225	14.11 400	.21 6	.35 10	.35 10	.53 15	1.23 35	1.98 56	3.88 110	.010 (0,25)	.047 (1,19)	.050 (1,27)
T10	.63 18	1.06 30	2.29 65	3.17 90	6.35 180	7.94 225	14.11 400	.21 6	.35 10	.35 10	.53 15	.71 20	1.98 56	3.88 110	.015 (0,38)	.060 (1,52)	.030 (0,76)
T13	.28 8	.42 12	1.06 30	1.59 45	3 85	4.59 130	7.94 225	.07 2	.14 4	.14 4	.18 5	.35 10	.71 20	2.82 80	.030 (0,76)	.100 (2,54)	.065 (1,65)
T14	.28 8	.42 12	1.23 35	1.76 50	3.17 90	4.76 135	7.94 225	.07 2	.14 4	.14 4	.18 5	.35 10	.71 20	2.82 80	.030 (0,76)	.100 (2,54)	.060 (1,52)
T15	.25 7	.42 12	1.06 30	1.41 40	2.82 80	4.41 125	7.94 225	.07 2	.14 4	.14 4	.18 5	.28 8	.63 18	2.82 80	.030 (0,76)	.110 (2,79)	.065 (1,65)
T16	.18 5	.28 8	.53 15	.78 22	1.59 45	2.47 70	4.23 120	.04 1	.07 2	.07 2	.07 2	.28 8	.35 10	.71 20	.045 (1,14)	.250 (6,35)	.125 (3,18)
T18	N/A	.21 6	.42 12	.71 20	1.41 40	2.12 60	3.53 100	N/A	.04 1	.04 1	.07 2	.18 5	.28 8	.56 16	.062 (1,57)	.300 (7,62)	.155 (3,94)
T20	.53 15	.71 20	1.41 40	2.12 60	4.23 120	6 170	9.70 275	.21 6	.35 10	.35 10	.53 15	.71 20	1.98 56	3.88 110	.030 (0,76)	.140 (3,56)	.060 (1,52)
T23	.18 5	.28 8	.56 16	.85 24	1.69 48	2.65 75	4.41 125	.04 1	.07 2	.07 2	.07 2	.21 6	.35 10	.71 20	.050 (1,27)	.250 (6,35)	.120 (3,05)
T24	0.18 5	0.28 8	0.56 16	0.88 25	1.76 50	2.65 75	4.76 135	0.04 1	0.07 2	0.07 2	0.11 3	0.21 6	0.35 10	0.71 20	.005 (1,27)	0.23 (5,84)	0.11 (2,79)
T25	.18 5	.28 8	.53 15	.88 25	1.59 45	2.47 70	4.23 120	.04 1	.07 2	.07 2	.07 2	.21 6	.35 10	.99 28	.055 (1,40)	.250 (6,35)	.125 (3,18)
T26	N/A	.14 4	.28 8	.42 12	.85 24	1.27 36	2.26 64	N/A	.04 1	.04 1	.05 1.5	.12 3.5	.21 6	.39 11	.100 (2,54)	.500 (12,70)	.235 (5,97)
T28	N/A	N/A	N/A	0.42 12	0.71 20	1.06 30	1.94 55	N/A	N/A	N/A	0.04 1	0.11 3	0.18 5	0.32 9	0.12 (3,05)	.0560 (14,22)	0.285 (7,24)
WP0	.53 15	.88 25	1.76 50	2.65 75	5.29 150	7.94 225	14.11 400	.21 6	.35 10	.35 10	.53 15	1.23 35	1.97 56	3.88 110	.010 (0,25)	.047 (1,19)	.030 (0,51)

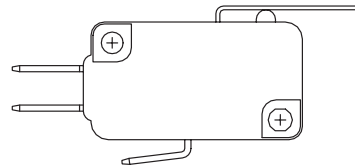
NOTE: For basic switch operating forces, see page J-6.

### HIGH FORCE, LOW MOTION PIVOT POSITION



Available with actuators A10, A15, T10, T13, T14, T15, T16 and T18.

### LOW FORCE, HIGH MOTION PIVOT POSITION



Available with actuators A20, A25, T20, T23, T24, T25, T26, and T28.

NOTE: Lever actuator options are available in either of two pivot positions. Levers located in the forward pivot position have lower forces and higher motions. Levers located in the rear pivot position have higher forces and lower motions.



Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

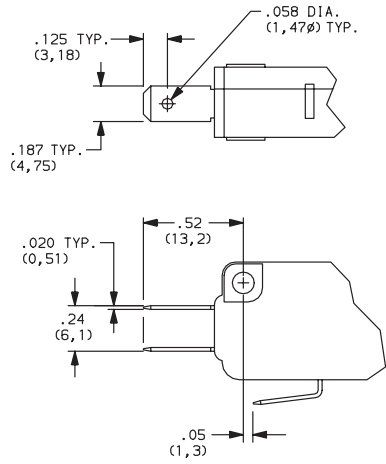
Snap-acting



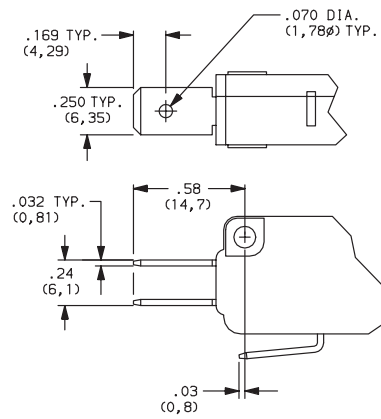
# TF Series Miniature Snap-acting Switches

## TERMINATIONS

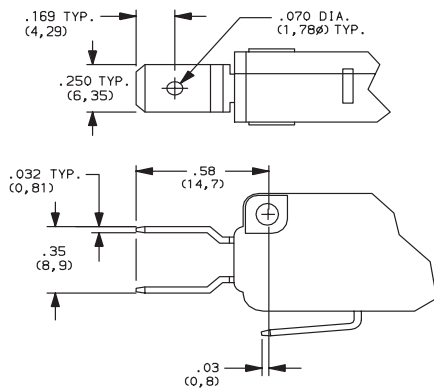
**40** .187" QUICK CONNECT



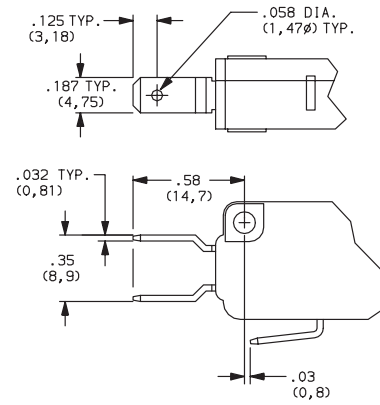
**4A** .250" QUICK CONNECT



**5A** OFFSET .250" QUICK CONNECT

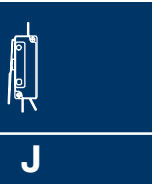


**5B** OFFSET .187" QUICK CONNECT

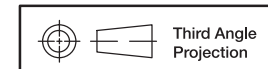


## CIRCUITRY

- C** SPDT (Single Pole, Double Throw)
- W** SPST N.C. (Single Pole, Single Throw, Normally Closed)
- Y** SPST N.O. (Single Pole, Single Throw, Normally Open)



Snap-acting



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

# TFS Series Splash Proof Miniature Snap-acting Switches



## Features/Benefits

- **Reliable snap action mechanism**
- **Low cost - high performance**
- **RoHS compatible**

## Typical Applications

- **Alarm devices / Home security**
- **Air conditioner**
- **Food processor**
- **Water heaters**
- **Industrial**
- **Forklifts**

UL61058-1  

## Specifications

CONTACT RATING / ELECTRICAL LIFE:

- 0.1A @ 125/250 V AC / 10,000 operations
- 3A @ 125/250 VAC / 10,000 operations
- 6A @ 125/250 VAC / 10,000 operations
- 10A @ 125/250 VAC / 10,000 operations

ELECTRICAL OPERATING FREQUENCY: 10-30 operations per min.

MECHANICAL LIFE: 1,000,000 operations

MECHANICAL OPERATING FREQUENCY: 120 operations per min.

INSULATION RESISTANCE: (at 500 VDC/minute) 100 M ohm min.

DIELECTRIC STRENGTH: 1500 VAC (50 -60 Hz)

OPERATING TEMPERATURE: -40°C to 85°C (with no icing)

OPERATING FORCE: 200 grams.

## Materials

CASE: Nylon

COVER: PBT

ACTUATOR: PBT

MOVABLE CONTACTS: Silver alloy

TERMINALS: Brass

LEVER: Stainless steel

WIRE: PVC+CU

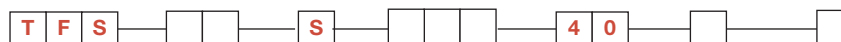
**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.



Snap-acting

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages J-12 thru J-15. For additional options not shown in catalog, consult Customer Service Center.



### Electrical Rating

ELECTRICAL RATING	AMPS (GRAMS)	OPERATING FORCE				
		S (200)	D (50)	J (100)	L (150)	H (300)
01	0.1	•	•	•	•	•
03	3	•	•	•	•	•
06	6	•	•	•	•	•
10	10	•	X	X	X	•

- Available
- X Not available

### Operating Force

- S** 200 grams
- D** 50 grams
- J** 100 grams
- L** 150 grams
- H** 300 grams

### Actuator Lever Fixed

- P00** Button
- T10** Lever - high force
- T20** Lever - low force
- A05** Lever roller - High force, short lever
- A10** Lever roller - high force
- A20** Lever roller - low force
- A25** Lever roller - Low force, short lever

### Circuit Arrangement

- C** SPDT
- Y** SPST N.O.
- W** SPST N.C.

### Mounting Hole Size

- NONE** 3.1 mm (3 mm screw clearance hole)
- S** 2.9 mm (4-40 screw clearance hole)

### Terminal Type

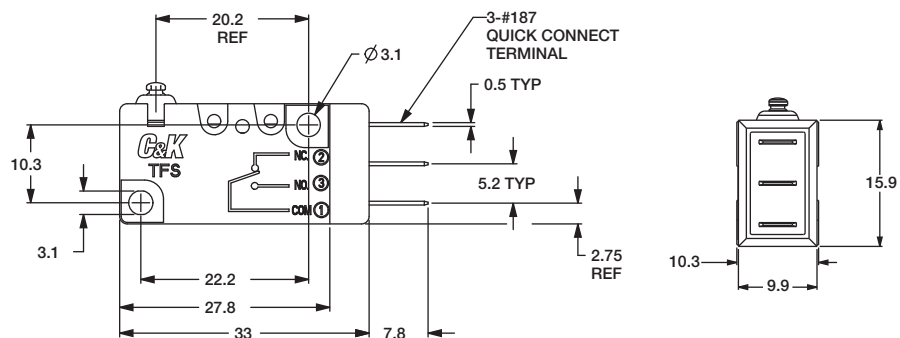
- 40** .187" quick connect



# TFS Series Splash Proof Miniature Snap-acting Switches

## SERIES

**TFS** SUB-MINIATURE SNAP-ACTING SWITCHES



## ELECTRICAL RATING

OPTION CODE	RoHS COMPLIANT	RoHS COMPATIBLE	ELECTRICAL RATING
<b>10</b>	Yes	Yes	10A @ 125/250 V AC / 10,000 operations
<b>06</b>	Yes	Yes	6A @ 125/250 VAC / 10,000 operations
<b>03</b>	Yes	Yes	3A @ 125/250 VAC / 10,000 operations
<b>01</b>	Yes	Yes	0.1A @ 125/250 VAC / 10,000 operations



Snap-acting

## OPERATING FORCE

OPTION CODE	BASIC SWITCH OPERATING FORCE
<b>S</b>	200 GRAMS
<b>D</b>	50 grams
<b>J</b>	100 grams
<b>L</b>	150 grams
<b>H</b>	300 grams



Third Angle  
Projection

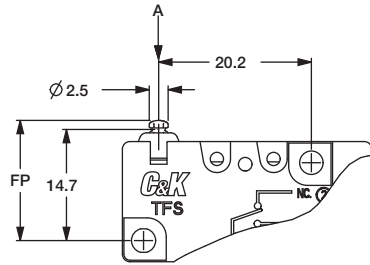
Dimensions are shown: mm  
Specifications and dimensions subject to change



# TFS Series Splash Proof Miniature Snap-acting Switches

## ACTUATOR

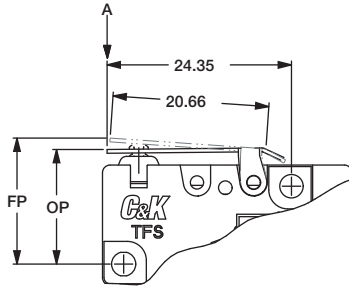
**P00** BUTTON



Measure at Point "A"

Max. operating force	200 grams
Min. release force	30 grams
Operating position OP	14.7 ± 0.4 mm
Max. movement differential	0.4 mm
Min. over travel OT	1.0 mm
Max. pre-travel PT	1.2 mm

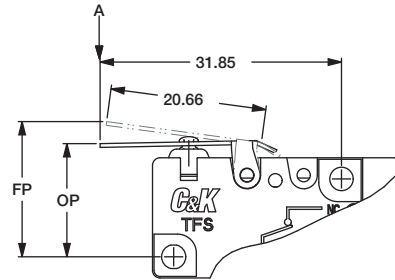
**T10** LEVER, HIGH FORCE



Measure at Point "A"

Max. operating force	160 grams
Min. release force	25 grams
Operating position OP	15.1 ± 0.6 mm
Max. movement differential	0.6 mm
Min. over travel OT	1.1 mm
Max. pre-travel PT	2.6 mm

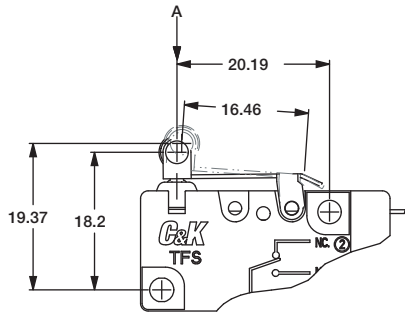
**T20** LEVER, LOW FORCE



Measure at Point "A"

Max. operating force	90 grams
Min. release force	10 grams
Operating position OP	15 ± 1.1 mm
Max. movement differential	1.1 mm
Min. over travel OT	1.2 mm
Max. pre-travel PT	5.1 mm

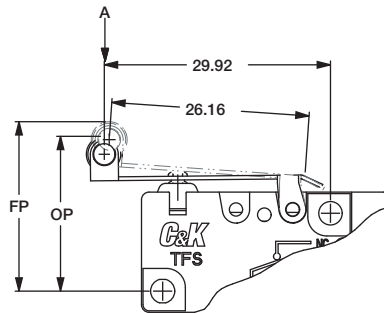
**A05** LEVER ROLLER  
HIGH FORCE, SHORT LEVER



Measure at Point "A"

Max. operating force	200 grams
Min. release force	30 grams
Operating position OP	20.6 ± 0.5 mm
Max. movement differential	0.5 mm
Min. over travel OT	1.0 mm
Max. pre-travel PT	2.1 mm

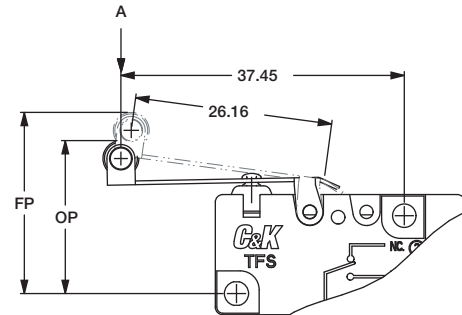
**A10** LEVER ROLLER  
HIGH FORCE



Measure at Point "A"

Max. operating force	130 grams
Min. release force	20 grams
Operating position OP	20.4 ± 0.7 mm
Max. movement differential	0.7 mm
Min. over travel OT	1.3 mm
Max. pre-travel PT	3.3 mm

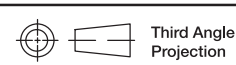
**A20** LEVER ROLLER  
LOW FORCE



Measure at Point "A"

Max. operating force	70 grams
Min. release force	10 grams
Operating position OP	20.2 ± 1.2 mm
Max. movement differential	1.4 mm
Min. over travel OT	1.5 mm
Max. pre-travel PT	6.5 mm

Snap-acting



Third Angle  
Projection

Dimensions are shown: mm  
Specifications and dimensions subject to change

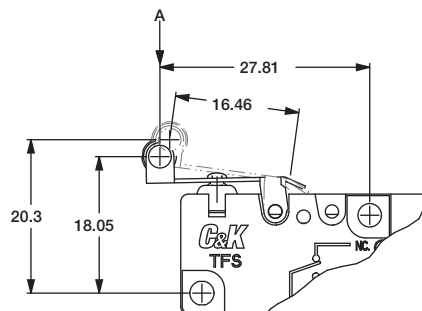




# TFS Series Splash Proof Miniature Snap-acting Switches

## ACTUATOR

**A25** LEVER ROLLER  
LOW FORCE, SHORT LEVER

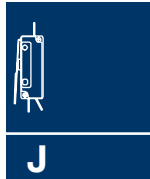
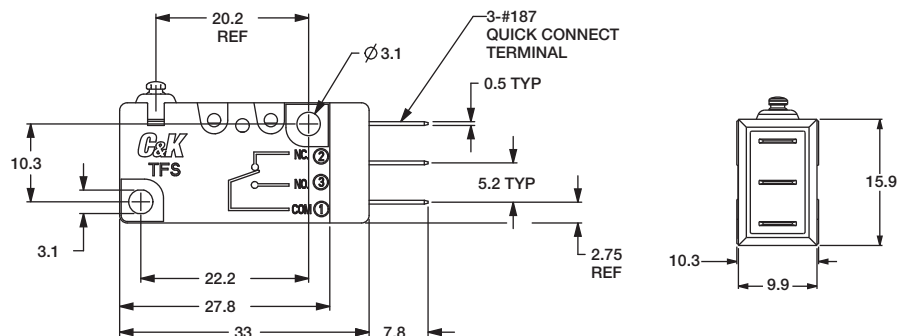


Measure at Point "A"

Max. operating force	150 grams
Min. release force	15 grams
Operating position OP	20.4 ± 0.9 mm
Max. movement differential	0.9 mm
Min. over travel OT	1.2 mm
Max. pre-travel PT	4.2 mm

## TERMINAL TYPE

**40** .187" QUICK CONNECT



Snap-acting

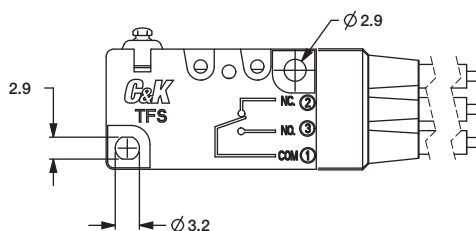
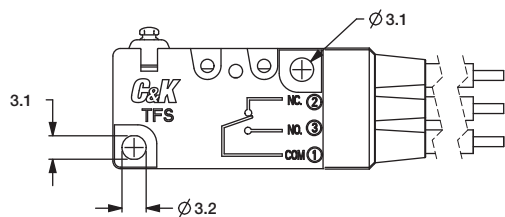
## CIRCUITRY

- C** SPDT (Single Pole, Double Throw)
- Y** SPST N.O. (Single Pole, Single Throw, Normally Open)
- W** SPST N.C. (Single Pole, Single Throw, Normally Closed)

## MOUNTING HOLE SIZE

**NONE** 3.1 mm (3mm SCREW CLEARANCE HOLE)

**S** 2.9 mm (4-40 SCREW CLEARANCE HOLE)



Third Angle  
Projection  
Dimensions are shown: mm  
Specifications and dimensions subject to change

**C&K**

# TFS Series Sealed Miniature Snap-acting Switches (Water Proof)



## Features/Benefits

- IP67
- Reliable snap action mechanism
- Low cost - high performance
- RoHS compatible

## Typical Applications

- Alarm devices / Home security
- Air conditioner
- Food processor
- Water heaters
- Industrial
- Forklifts

UL61058-1



## Specifications

CONTACT RATING / ELECTRICAL LIFE:  
 0.1A @ 125/250 V AC / 10,000 operations  
 3A @ 125/250 VAC / 10,000 operations  
 6A @ 125/250 VAC / 10,000 operations  
 10A @ 125/250 VAC / 10,000 operations  
 ELECTRICAL OPERATING FREQUENCY: 10-30 operations per min.  
 MECHANICAL LIFE: 1,000,000 operations  
 MECHANICAL OPERATING FREQUENCY: 120 operations per min.  
 INSULATION RESISTANCE: (at 500 VDC/minute) 100 M ohm min.  
 DIELECTRIC STRENGTH: 1500 VAC (50 -60 Hz)  
 OPERATING TEMPERATURE: see wire type  
 OPERATING FORCE: 200 grams.

## Materials

CASE: Nylon  
 COVER: PBT  
 ACTUATOR: PBT  
 MOVABLE CONTACTS: Silver alloy.  
 TERMINALS: Brass.  
 LEVER: Stainless steel  
 WIRE: PVC+CU

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

Snap-acting

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages J-17 thru J-19. For additional options not shown in catalog, consult Customer Service Center.

**Electrical Rating**  
see chart below

**Operating Force**

- S** 200 grams
- D** 50 grams
- J** 100 grams
- L** 150 grams
- H** 300 grams

**Actuator Lever Fixed**

- P00** Button
- T10** Lever - high force
- T20** Lever - low force
- A05** Lever roller - High force, short lever
- A10** Lever roller - high force
- A20** Lever roller - low force
- A25** Lever roller - Low force, short lever

**Terminal Type**

- W** Wire

**Circuit Arrangement**

- C** SPDT
- Y** SPST N.O.
- W** SPST N.C.

**Wire UL #**

- B** UL1015 (T55)

**Mounting Hole Size**

- NONE** 3.1 mm (3 mm screw clearance hole)
- S** 2.9 mm (4-40 screw clearance hole)

**Wire Type**

- C** 16 AWG
- D** 18 AWG
- E** 20 AWG
- F** 22 AWG
- G** 24 AWG
- H** 26 AWG

**OPERATING TEMPERATURE**

-40°C to + 85°C (with UL1015 wire)

ELECTRICAL RATING	AMPS	WIRE TYPE				
		C 16AWG	D 18AWG	E 20AWG	F 22AWG	G 24AWG H 26AWG
01	0.1	•	•	•	•	•
03	3	•	•	•	X	X
06	6	•	•	X	X	X
10	10	•	X	X	X	X

• Available  
 X Not available

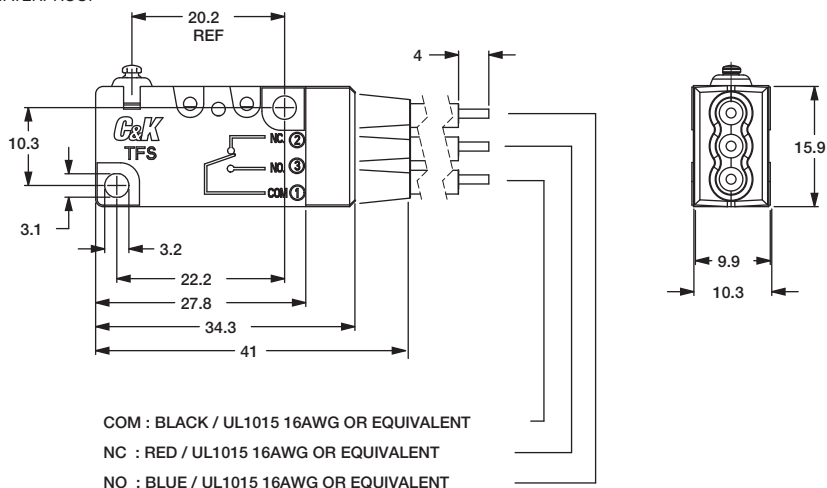


Dimensions are shown: mm  
 Specifications and dimensions subject to change

# TFS Series Sealed Miniature Snap-acting Switches (Water Proof)

## SERIES

**TFS** SUB-MINIATURE SNAP-ACTING SWITCHES – WATERPROOF



## ELECTRICAL RATING

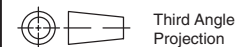
OPTION CODE	RoHS COMPLIANT	RoHS COMPATIBLE	ELECTRICAL RATING
<b>10</b>	Yes	Yes	10A @ 125/250 V AC / 10,000 operations
<b>06</b>	Yes	Yes	6A @ 125/250 VAC / 10,000 operations
<b>03</b>	Yes	Yes	3A @ 125/250 VAC / 10,000 operations
<b>01</b>	Yes	Yes	0.1A @ 125/250 VAC / 10,000 operations

## OPERATING FORCE

OPTION CODE	BASIC SWITCH OPERATING FORCE
<b>S</b>	200 GRAMS
<b>D</b>	50 grams
<b>J</b>	100 grams
<b>L</b>	150 grams
<b>H</b>	300 grams



Snap-acting



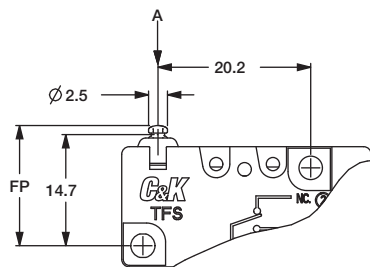
Third Angle Projection

Dimensions are shown: mm  
 Specifications and dimensions subject to change

# TFS Series Sealed Miniature Snap-acting Switches (Water Proof)

## ACTUATOR

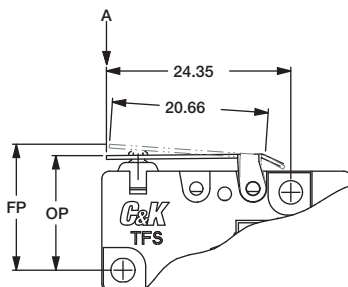
**P00** BUTTON



Measure at Point "A"

Max. operating force	200 grams
Min. release force	30 grams
Operating position OP	14.7 ± 0.4 mm
Max. movement differential	0.4 mm
Min. over travel OT	1.0 mm
Max. pre-travel PT	1.2 mm

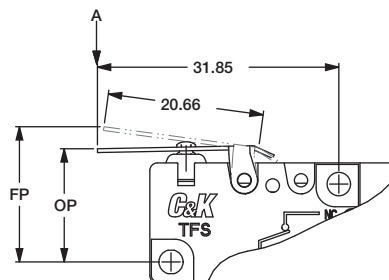
**T10** LEVER, HIGH FORCE



Measure at Point "A"

Max. operating force	160 grams
Min. release force	25 grams
Operating position OP	15.1 ± 0.6 mm
Max. movement differential	0.6 mm
Min. over travel OT	1.1 mm
Max. pre-travel PT	2.6 mm

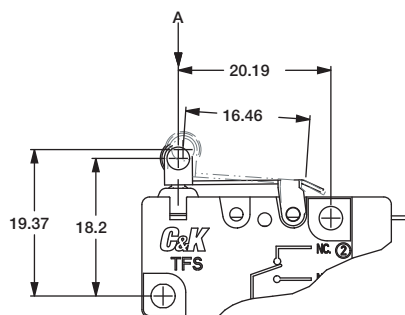
**T20** LEVER, LOW FORCE



Measure at Point "A"

Max. operating force	90 grams
Min. release force	10 grams
Operating position OP	15 ± 1.1 mm
Max. movement differential	1.1 mm
Min. over travel OT	1.2 mm
Max. pre-travel PT	5.1 mm

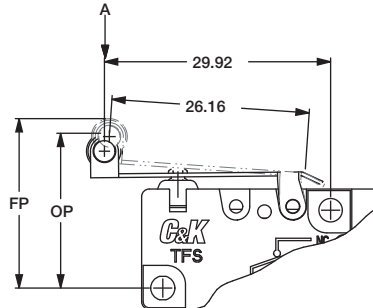
**A05** LEVER ROLLER  
HIGH FORCE, SHORT LEVER



Measure at Point "A"

Max. operating force	200 grams
Min. release force	30 grams
Operating position OP	20.6 ± 0.5 mm
Max. movement differential	0.5 mm
Min. over travel OT	1.0 mm
Max. pre-travel PT	2.1 mm

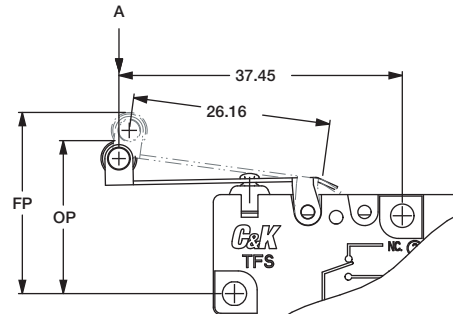
**A10** LEVER ROLLER  
HIGH FORCE



Measure at Point "A"

Max. operating force	130 grams
Min. release force	20 grams
Operating position OP	20.4 ± 0.7 mm
Max. movement differential	0.7 mm
Min. over travel OT	1.3 mm
Max. pre-travel PT	3.3 mm

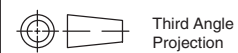
**A20** LEVER ROLLER  
LOW FORCE



Measure at Point "A"

Max. operating force	70 grams
Min. release force	10 grams
Operating position OP	20.2 ± 1.2 mm
Max. movement differential	1.4 mm
Min. over travel OT	1.5 mm
Max. pre-travel PT	6.5 mm

Snap-acting



Third Angle  
Projection

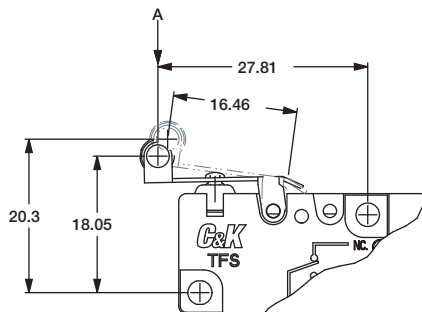
Dimensions are shown: (mm)  
Specifications and dimensions subject to change



# TFS Series Sealed Miniature Snap-acting Switches (Water Proof)

## ACTUATOR

**A25** LEVER ROLLER  
LOW FORCE, SHORT LEVER

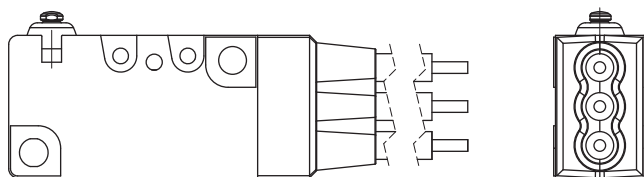


Measure at Point "A"

Max. operating force	150 grams
Min. release force	15 grams
Operating position OP	20.4 ± 0.9 mm
Max. movement differential	0.9 mm
Min. over travel OT	1.2 mm
Max. pre-travel PT	4.2 mm

## TERMINAL TYPE

**W** WIRE UL1015



Snap-acting

## CIRCUITRY

- C** SPDT (Single Pole, Double Throw)
- Y** SPST N.O. (Single Pole, Single Throw, Normally Open)
- W** SPST N.C. (Single Pole, Single Throw, Normally Closed)

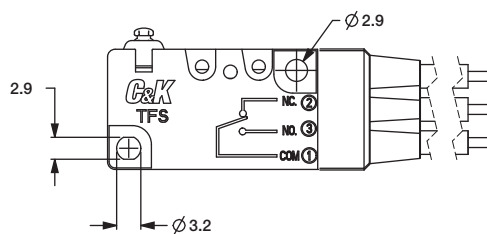
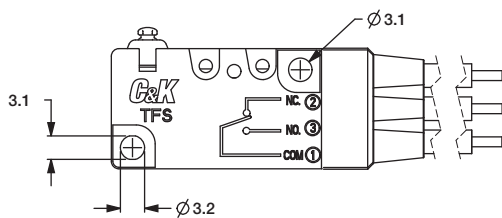
## WIRE TYPE

- C** 16 AWG
- D** 18 AWG
- E** 20 AWG
- F** 22 AWG
- G** 24 AWG
- H** 26 AWG

## MOUNTING HOLE SIZE

**NONE** 3.1 mm (3mm SCREW CLEARANCE HOLE)

**S** 2.9 mm (4-40 SCREW CLEARANCE HOLE)



Third Angle Projection

Dimensions are shown: (mm)  
Specifications and dimensions subject to change



# TF2 Series Miniature Snap-acting Switches



## Features/Benefits

- Broad range of operating forces
- Ratings up to 10 AMPS
- Wide variety of actuator styles
- Quick connect terminations

## Typical Applications

- Motor controls
- Thermostatics
- Portable tools
- Air Conditioner



## Specifications

CONTACT RATING: From low level\* to 10 AMPS @125/250 V AC.  
 ELECTRICAL LIFE: 10,000 cycles  
 MECHANICAL LIFE: 1,000,000 cycles at 0.1A and 6A  
 400,000 cycles at 10A  
 INSULATION RESISTANCE: 1,000 M ohm min.  
 DIELECTRIC STRENGTH: 1,500 Vrms min. @ sea level.  
 OPERATING TEMPERATURE: -40°C to 125°C (-40°C to 85°C).  
 OPERATING FORCE: From 18 to 330 grams at actuator button available.  
 MOUNTING: Torque screws 2-5 in/lbs.

\* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max. Standard electrical life per UL 1054, rated for 6,000 operations.

## Materials

SWITCH HOUSING: Nylon 6/6  
 ACTUATOR BUTTON: Nylon 6/6  
 SPRING: Stainless Steel  
 PIVOT: Brass Alloy  
 MOVABLE CONTACTS: See electric rating page J-21  
 MOVABLE BLADE: BeCu  
 STATIONARY CONTACTS: See electric rating page J-21  
 TERMINALS: Brass Alloy

**NOTE:** Specifications and materials listed above are switches with standard options. For information on specific and custom switches, consult Customer Service Center.



Snap-acting

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages J-21 through J-25. For additional options not shown in catalog, consult Customer Service Center.

Series **TF2** SP, Mom.

Operating Force  
**CC** 18 grams  
**CF** 45 grams  
**CG** 75 grams  
**CH** 110 grams  
**CJ** 170 grams  
**EC** 230 grams  
**EE** 330 grams

Electrical Rating Chart

OPTION CODE	UL US 61058-1	ENEC 15
F5	0.1A 125/250 V AC (T85) Min. 10,000 operations	0.1A 125/250 V AC μT125, 1E4
H8	6A 125/250 V AC (T85) Min. 10,000 operations	6A 125/250 V AC μT125, 1E4
K6	10A 125/250 V AC (T85) Min. 10,000 operations	10(4)A 125/250 V AC μT125, 1E4

Mounting Style  
**S** Standard  
**V** Metric

Actuator  
**P00** Pin plunger  
**A10** Lever roller 12.5 mm  
**A15** Lever roller 25.9 mm  
**A20** Lever roller 12.5 mm  
**A25** Lever roller 25.9 mm  
**T10** Lever 14 mm  
**T14** Simulated roller 24.5 mm  
**T15** Lever 27.5 mm  
**T16** Lever 31.7 mm  
**T17** Lever 35 mm  
**T20** Lever 14 mm  
**T24** Simulated lever 24.5 mm  
**T25** Lever 27.5 mm  
**T26** Lever 31.7 mm  
**T27** Lever 35 mm

Circuitry  
**C** SPDT  
**W** SPST N.C.  
**Y** SPST N.O.

\* Note: No UL & ENEC 15 safety for Termination option "60"

**Terminations**  
**40** .187" quick connect  
**4A** .250" quick connect  
**5A** .250" off set quick connect  
**5B** .187" off set quick connect  
**60** Screw style \*  
**10** Solder

see chart on following pages for detailed information

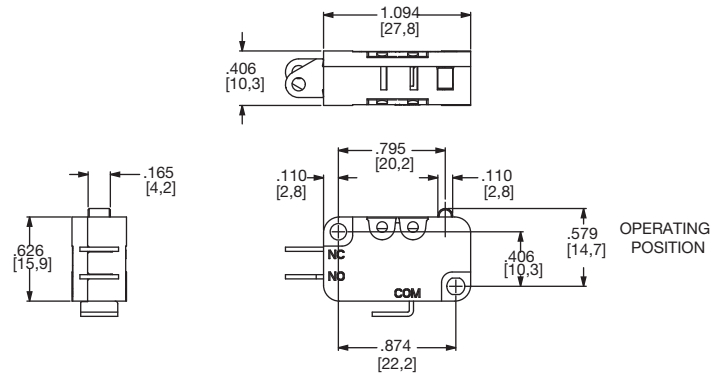


Dimensions are shown: mm  
 Specifications and dimensions subject to change

# TF2 Series Miniature Snap-acting Switches

## SERIES

**TF2** MINIATURE SNAP-ACTING SWITCHES



## OPERATING FORCE

OPTION CODE	BASIC SWITCH OPERATING FORCE (grams)
<b>CC</b>	18
<b>CF</b>	45
<b>CG</b>	75
<b>CH</b>	110
<b>CJ</b>	170
<b>EC</b>	230
<b>EE*</b>	330

\*Minimums may apply, consult Customer Service Center.

## ELECTRICAL RATING

OPTION CODE	CONTACT MATERIAL		MOVABLE CONTACT	STATIONARY CONTACT
	RoHS COMPLIANT *	RoHS COMPATIBLE *		
<b>F5</b>	Yes	Yes	Silver alloy	Silver alloy
<b>H8</b>	Yes	Yes		
<b>K6</b>	Yes	Yes		

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

All models  



Dimensions are shown: inches (mm)  
Specifications and dimensions subject to change



# TF2 Series Miniature Snap-acting Switches

## ELECTRICAL RATING

INTERNATIONAL RATING SYMBOLS	
μ	Microgap construction (less than 3 mm).
~	Alternating current.
T__	Maximum rated use temperature.
50E3	Cycles over 50,000 at rated current.
10E3	Cycles over 10,000 at rated current.
10(3)	Current Rating: First number represents resistive rating; second number represents inductive (motor) rating.

ELECTRICAL RATING	AMPS (REF.)	OPERATING FORCE						
		CC (18)	CF (45)	CG (75)	CH (110)	CJ (170)	EC (230)	EE (330)
F5	0.1	•	•	•	•	•	•	X
H8	6	X	•	•	•	•	•	•
K6	10	X	X	X	•	•	•	•

• AVAILABLE  
X NOT AVAILABLE



Snap-acting

All models

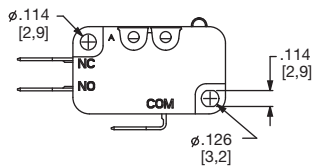
Consult Customer Service center for availability and delivery of nonstandard ratings.

\* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

## MOUNTING STYLE

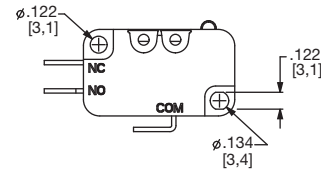
**S** STANDARD  
For 4-40 screw size

**V** Metric  
For 3 mm screw size



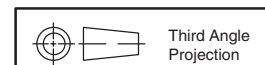
TF2 SWITCH WITH TYPE 40 (.187 QC) TERMINALS AND P00 ACTUATOR SHOWN

NOTE: TORQUE MOUNTING SCREWS 2-5 IN/LBS.



TF2 SWITCH WITH TYPE 10 (SOLDER) TERMINALS AND P00 ACTUATOR SHOWN

NOTE: TORQUE MOUNTING SCREWS 2-5 IN/LBS.



Dimensions are shown: inches (mm)  
Specifications and dimensions subject to change

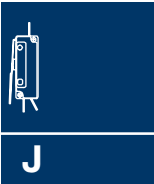


# TF2 Series Miniature Snap-acting Switches

## ACTUATOR

OPTION CODE	FIG	DIM. A	DIM. B	DIM. C	DIM. D	DIM. E
P00	2	.795 (20,2)	-	.578 ± .019 (14,70 ± 0,05)	0.068 (1,72)	-
A10	1	.822 (20,9)	.33 (8,4)	.816 ± .050 (20,73 ± 1,27)	.106 (2,70)	∅.19 (∅ 4,8)
A15	1	1.35 (34,3)	.33 (8,4)	.816 ± .059 (20,73 ± 1,5)	.165 (4,20)	∅.19 (∅ 4,8)
A20	1	1.05 (26,8)	.56 (14,3)	.816 ± .050 (20,73 ± 1,27)	.183 (4,65)	∅.19 (∅ 4,8)
A25	1	1.58 (40,2)	.56 (14,3)	.816 ± .086 (20,73 ± 2,2)	.366 (9,30)	∅.19 (∅ 4,8)
T10	3	.882 (22,39)	.33 (8,4)	.602 ± .020 (15,3 ± 0,50)	.110 (2,80)	-
T14	4	1.295 (32,9)	.33 (8,4)	.737 ± .059 (18,72 ± 1,5)	.216 (5,50)	∅.275 (∅ 7,0)
T15	3	1.405 (35,69)	.33 (8,4)	.600 ± .059 (15,24 ± 1,5)	.232 (5,90)	-
T16	3	1.58 (40,01)	.33 (8,4)	.604 ± .068 (15,35 ± 1,75)	.196 (5,0)	-
T17	3	1.708 (43,39)	.33 (8,4)	.603 ± .062 (15,33 ± 1,57)	.216 (5,50)	-
T20	3	1.11 (28,3)	.56 (14,3)	.604 ± .045 (15,34 ± 1,14)	.204 (5,20)	-
T24	4	1.527 (38,8)	.56 (14,3)	.742 ± .090 (18,84 ± 2,29)	.342 (8,70)	∅.275 (∅ 7,0)
T25	3	1.631 (41,43)	.56 (14,3)	.609 ± .090 (15,47 ± 2,3)	.381 (9,70)	-
T26	3	1.811 (46,00)	.56 (14,3)	.616 ± .125 (15,65 ± 3,18)	.389 (9,90)	-
T27	3	1.94 (49,3)	.56 (14,3)	.598 ± .150 (15,2 ± 3,8)	.433 (11,0)	-

NOTE: Switch characteristics chart on following page.



Snap-acting

### Lever Roller

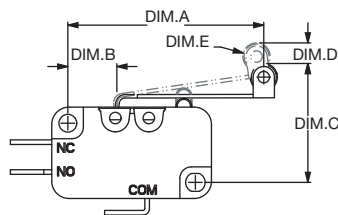


FIG. 1  
LEVER ROLLER  
TF2XXXXMA1510C

### Pin Roller

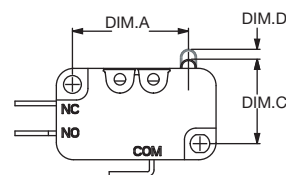


FIG. 2  
PIN ROLLER  
TF2XXXXMP0010C

### Lever

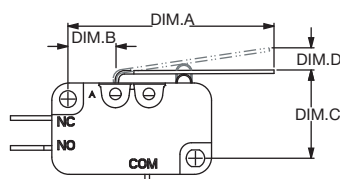


FIG. 3  
LEVER  
TF2XXXXST1510C SHOWN

### Simulated Roller

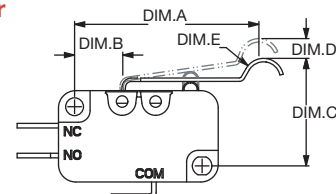


FIG. 4  
SIMULATED ROLLER  
TF2XXXXST1410C



Third Angle  
Projection

Dimensions are shown: inches (mm)  
Specifications and dimensions subject to change

**C&K**

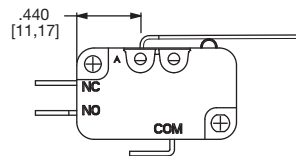
# TF2 Series Miniature Snap-acting Switches

## ACTUATOR

Lever Type		CC	CF	CG	CH Grams	CJ	EC	EE	Pre-Travel max. mm	Max Differential max. mm	Over Travel Min. mm
P00	OF	18	45	75	110	170	230	330	1.72	0.4	0.8
	RF	3	7	14	20	34	42	60			
T10	OF	18	45	75	110	170	230	330	2.8	0.5	0.6
	RF	-	6	11	17	25	35	50			
T20	OF	8	27	43	50	85	120	175	5.2	0.9	1.55
	RF	-	3	5	7	13	17	25			
T14	OF	10	28	43	65	110	140	205	5.5	1.1	1.4
	RF	-	3	5	8	14	17	31			
T24	OF	7	16	24	35	56	70	100	8.7	1.7	3.2
	RF	-	-	-	4	5	9	12			
A10	OF	20	55	80	110	170	230	330	2.7	0.45	0.6
	RF	-	5	11	16	28	31	45			
A20	OF	8	35	55	70	100	120	175	4.65	0.8	1.4
	RF	-	3	5	7	14	18	28			
A15	OF	8	30	45	65	100	125	180	4.2	1.25	1.6
	RF	-	-	5	7	12	16	25			
A25	OF	7	20	30	40	51	65	90	9.3	1.8	2.8
	RF	-	-	-	-	6	8	9			
T17	OF	16	25	35	50	80	100	140	5.5	1.2	0.55
	RF	-	2	4	6	11	14	20			
T27	OF	13	18	24	32	45	55	90	11	2.3	3.6
	RF	-	-	2	3	5	7	10			
T16	OF	15	17	32	55	85	110	150	5	1.05	1.8
	RF	-	-	4	6	12	15	22			
T26	OF	10	12	18	35	45	65	90	9.9	2.05	3.6
	RF	-	-	2	4	6	8	11			
T15	OF	18	22	37	50	86	125	180	5.9	1	1.6
	RF	-	3	5	9	14	17	24			
T25	OF	5	16	25	30	51	65	90	9.7	2.2	3.1
	RF	-	-	3	4	6	8	11			

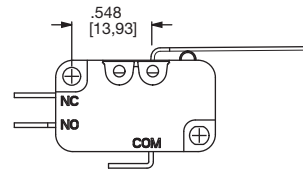
Snap-acting

**HIGH FORCE, LOW MOTION PIVOT POSITION**



Available with actuators A10, A15, T10, T13, T14, T15, T16 and T18.

**LOW FORCE, HIGH MOTION PIVOT POSITION**



Available with actuators A20, A25, T20, T23, T24, T25, T26, and T28.

**NOTE:** Lever actuator options are available in either of two pivot positions. Levers located in the forward pivot position have lower forces and higher motions. Levers located in the rear pivot position have higher forces and lower motions.



Third Angle  
Projection

Dimensions are shown: mm

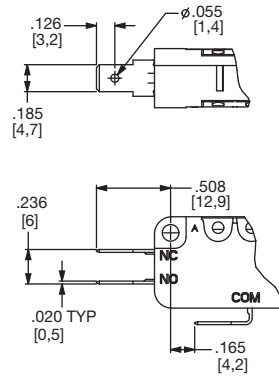
Specifications and dimensions subject to change



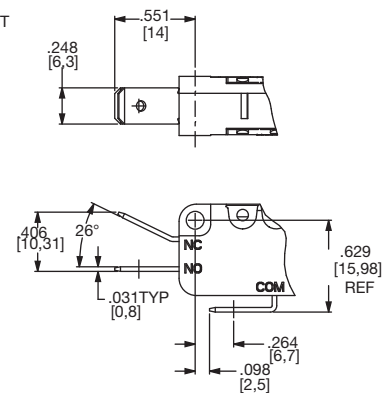
# TF2 Series Miniature Snap-acting Switches

## TERMINATIONS

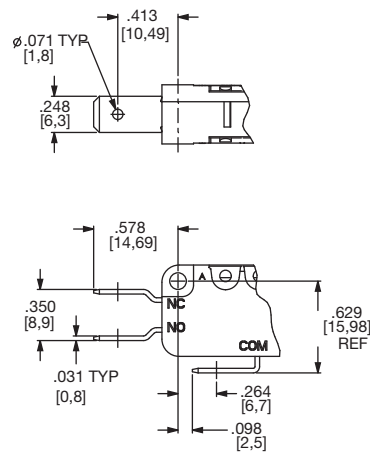
**40** .187" QUICK CONNECT



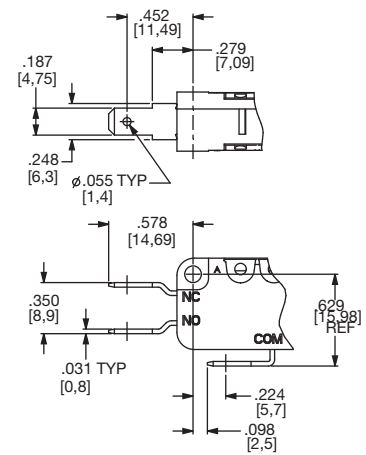
**4A** .250" QUICK CONNECT



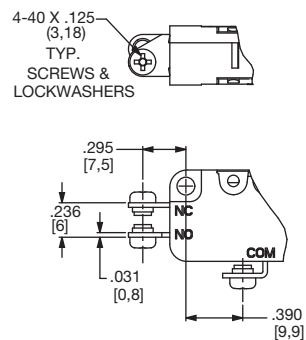
**5A** .250" OFF SET QUICK CONNECT



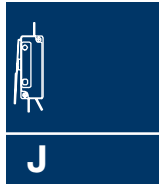
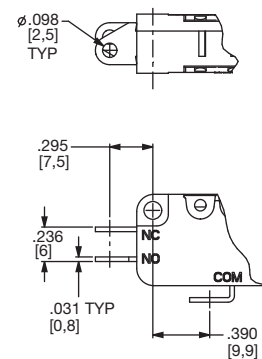
**5B** .187" OFF SET QUICK CONNECT



**60** SCREW STYLE



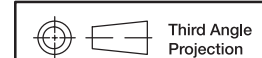
**10** SOLDER



Snap-acting

## CIRCUITRY

- C** SPDT (Single Pole, Double Throw)
- W** SPST N.C. (Single Pole, Single Throw, Normally Closed)
- Y** SPST N.O. (Single Pole, Single Throw, Normally Open)



Third Angle  
Projection  
Dimensions are shown: inches (mm)  
Specifications and dimensions subject to change

**C&K**

# TM Series Miniature Snap-acting Switches



## Features/Benefits

- Broad range of operating forces available
- Wide variety of actuator and terminal styles
- Cost-effective solution

## Typical Applications

- Pumps and motors
- White goods
- Consumer appliances



## Specifications

CONTACT RATING: From low level\* to 15 AMPS @ 250 V AC.  
 ELECTRICAL LIFE: 150,000 cycles at 15 AMPS @ 250 V AC, models with 150 grams operating force. 350,000 cycles at 10 AMPS @ 250 V AC, models with 75 grams operating force.  
 INSULATION RESISTANCE: 1,000 M ohms min.  
 DIELECTRIC STRENGTH: 1,000 Vrms min. @ sea level.  
 OPERATING TEMPERATURE: -67°F to 302°F (-55°C to 150°C).  
 OPERATING FORCE: 50, 75 and 150 grams at actuator available; refer to chart for lever style forces.  
 MOUNTING: Torque screws 2-5 in/lbs.

\* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

## Materials

SWITCH HOUSING: Thermoplastic or general purpose phenolic (UL 94V-0).  
 ACTUATOR BUTTON: Thermoplastic (UL 94V-0).  
 SPRING: Copper alloy.  
 PIVOT: Brass alloy.  
 MOVABLE CONTACTS: Gold alloy for ratings 1 AMP @ 125 V AC or less. Fine silver for ratings greater than 1 AMP @ 125 V AC.  
 STATIONARY CONTACTS: Gold alloy for ratings 1 AMP or less. Fine silver for ratings greater than 1 AMP.  
 TERMINALS: Brass alloy for ratings up to 10 AMPS @ 250 V AC. Copper alloy for 15 AMPS @ 250 V AC ratings.

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.



Snap-acting

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages J-26 through J-31. For additional options not shown in catalog, consult Customer Service Center. Available extended electrical life per UL 1054, rated for 100,000 operations, consult factory.

<div style="border: 1px solid black; padding: 5px; display: inline-block;"> <b>T M</b> </div>								
<b>Series</b>	_____							
<b>TM</b>	SP, Mom.							
<b>Operating Force</b>	_____							
<b>CG</b>	2.65 oz./75 grams							
<b>CJ</b>	5.29 oz./150 grams							
<b>CF</b>	1.76 oz./50 grams							
<b>Electrical Rating</b>	_____							
<b>D6</b>	10 A @ 125 & 250 V AC; 1/3 HP @ 125 & 250 V AC; 1/2 A @ 125 V DC; 1/4 A @ 250 V DC							
<b>G6</b>	15 A @ 125 & 250 V AC; 1/4 A @ 250 V DC; 1/2 A @ 125 V DC; 1/2 HP @ 125 & 250 V AC; 3 A @ 125 V AC "L"							
<b>F5</b>	1 A @ 125 V AC; 1 A @ 30 V DC							
<b>H3</b>	5 A @ 250 V AC; 1/6 HP @ 125 & 250 V AC							
<b>Mounting Style</b>	_____							
<b>S</b>	Standard							
<b>V</b>	Metric							
<b>Actuator</b>	_____							
<b>P00</b>	Pin plunger							
<b>A10</b>	.81" lever roller, high force							
<b>A15</b>	1.34" lever roller, high force							
<b>A20</b>	1.02" lever roller, low force							
<b>A25</b>	1.56" lever roller, low force							
<b>T10</b>	.84" lever, high force							
<b>T13</b>	1.34" simulated roller, high force							
<b>T14</b>	1.29" simulated roller, high force							
<b>T15</b>	1.40" lever, high force							
<b>T16</b>	2.34" lever, high force							
<b>T17</b>	2.00" lever, high force							
<b>T18</b>	2.75" lever, high force							
<b>T20</b>	1.06" lever, low force							
<b>T23</b>	1.56" simulated roller, low force							
<b>T24</b>	1.50" simulated roller, low force							
<b>T25</b>	1.62" lever, low force							
<b>T26</b>	2.56" lever, low force							
<b>T27</b>	2.22" lever, low force							
<b>T28</b>	2.97" lever, low force							
<b>Terminations</b>	_____							
<b>40</b>	.187" quick connect							
<b>10</b>	Solder							
<b>4A</b>	.250" quick connect							
<b>60</b>	Screw							
<b>Circuitry</b>	_____							
<b>C</b>	SPDT							
<b>W</b>	SPST N.C.							
<b>Y</b>	SPST N.O.							

\* All models



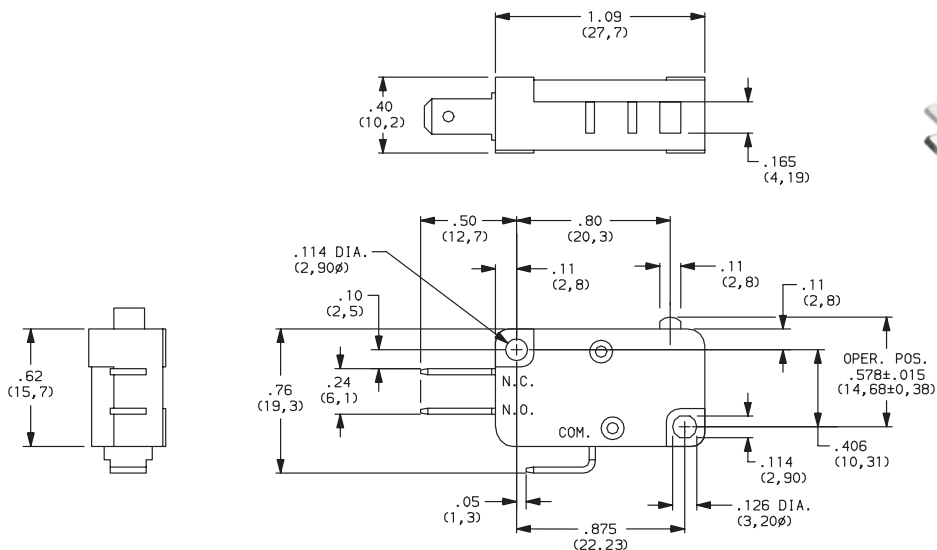
Dimensions are shown: Inch (mm)

Specifications and dimensions subject to change

# TM Series Miniature Snap-acting Switches

SERIES 

**TM** MINIATURE SNAP-ACTING SWITCHES – SP MOMENTARY



OPERATING FORCE 


OPTION CODE	BASIC SWITCH OPERATING FORCE (OZ./GRAMS)
<b>CG</b>	2.65 75
<b>CJ</b>	5.29 150
<b>CF</b>	1.76 50

Operating Force option 'CF' not available with 'T18, T27 and T28' actuator options. Operating force varies with actuator option, see ACTUATOR option section.

ELECTRICAL RATING 

OPTION CODE	RoHS COMPLIANT*	RoHS COMPATIBLE*	CONTACT MATERIAL		ELECTRICAL RATING
			MOVABLE CONTACT	STATIONARY CONTACT	
<b>D6</b>	Yes	Yes	Fine Silver	Fine Silver	10 AMPS @ 125 & 250 V AC; 1/3 HP @ 125 & 250 V AC; 1/2 AMP @ 125 V DC; 1/4 AMP @ 250 V DC.
<b>F5</b>	Yes	Yes	Gold alloy	Gold alloy	From low level* to 1 AMP @ 125 V AC, 1 AMP @ 30 V DC.
<b>G6</b>	Yes	Yes	Fine Silver	Fine Silver	15 AMPS @ 125 & 250 V AC; 0.25 AMP @ 250 V DC; 0.5 AMP @ 125 V DC; 1/2 HP @ 125 & 250 V AC; 3 AMPS @ 125 V AC "L".
<b>H3</b>	Yes	Yes			5 AMPS @ 250 V AC; 1/6 HP @ 125 & 250 V AC.

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

\* All models 

Contact Customer Service Center for availability and delivery of nonstandard ratings.

\* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.



Third Angle Projection

Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

**C&K**



Snap-acting

# TM Series Miniature Snap-acting Switches

## ELECTRICAL RATING

### AVAILABLE COMBINATIONS

ELECTRICAL RATING	MAXIMUM OPERATING FORCE (OZ./GRAMS)		
	1.76/50 CF	2.65/75 CG	5.29/150 CJ
D6	•	•	•
F5	•	•	•
G6	X	X	•
H3	•	•	•

• AVAILABLE  
X NOT AVAILABLE



\* All models US

Contact Customer Service Center for availability and delivery of nonstandard ratings.

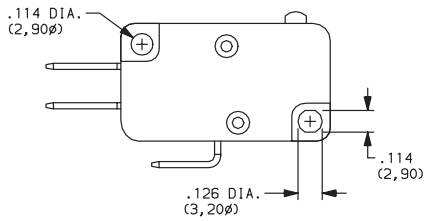
\* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

## MOUNTING STYLE

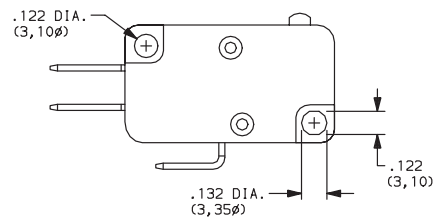
Snap-acting

**S** Standard

**V** Metric



Recommended maximum screw size: 4-40.



Recommended maximum screw size: 3 mm.

**NOTE:** Torque mounting screws 2-5 in/lbs.



Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

# TM Series Miniature Snap-acting Switches

## ACTUATOR

OPTION CODE	FIG.	DIM. A	DIM. B	DIM. C	DIM. D
<b>P00</b>	2	.80 (20,3)	—	.578 ± .015 (14,68 ± 0,38)	—
<b>A10</b>	1	.81 (20,6)	.36 (9,1)	.810 ± .020 (20,57 ± 0,51)	.19 dia. (4,80)
<b>A15</b>	1	1.34 (34,0)	.36 (9,1)	.810 ± .040 (20,57 ± 1,02)	.19 dia. (4,80)
<b>A20</b>	1	1.03 (26,2)	.58 (14,7)	.810 ± .050 (20,57 ± 1,27)	.19 dia. (4,80)
<b>A25</b>	1	1.56 (39,6)	.58 (14,7)	.810 ± .080 (20,57 ± 2,03)	.19 dia. (4,80)
<b>T10</b>	3	.84 (21,3)	.36 (9,1)	.600 ± .020 (15,24 ± 0,51)	—
<b>T13</b>	4	1.34 (34,0)	.36 (9,1)	.810 ± .040 (20,57 ± 1,02)	.19 dia. (4,80)
<b>T14</b>	4	1.28 (32,5)	.36 (9,1)	.743 ± .050 (18,9 ± 1,3)	.236 dia. (6,00)
<b>T15</b>	3	1.40 (35,6)	.36 (9,1)	.600 ± .040 (15,24 ± 1,02)	—
<b>T16</b>	3	2.34 (59,4)	.36 (9,1)	.600 ± .062 (15,24 ± 1,57)	—
<b>T17</b>	3	2.00 (50,8)	.36 (9,1)	.600 ± .052 (15,24 ± 1,33)	—
<b>T18</b>	3	2.75 (69,9)	.36 (9,1)	.600 ± .093 (15,24 ± 2,36)	—
<b>T20</b>	3	1.06 (26,9)	.58 (14,7)	.600 ± .045 (15,24 ± 1,14)	—
<b>T23</b>	4	1.56 (39,6)	.58 (14,7)	.810 ± .065 (20,57 ± 1,65)	.19 dia. (4,80)
<b>T24</b>	4	1.50 (38,1)	.58 (14,7)	.743 ± .090 (18,80 ± 2,29)	.236 dia. (6,00)
<b>T25</b>	3	1.62 (41,1)	.58 (14,7)	.600 ± .080 (15,24 ± 2,03)	—
<b>T26</b>	3	2.56 (65,0)	.56 (14,7)	.600 ± .125 (15,24 ± 3,18)	—
<b>T27</b>	3	2.22 (56,4)	.58 (14,7)	.600 ± .125 (15,24 ± 3,18)	—
<b>T28</b>	3	2.97 (75,4)	.58 (14,7)	.600 ± .187 (15,24 ± 4,75)	—

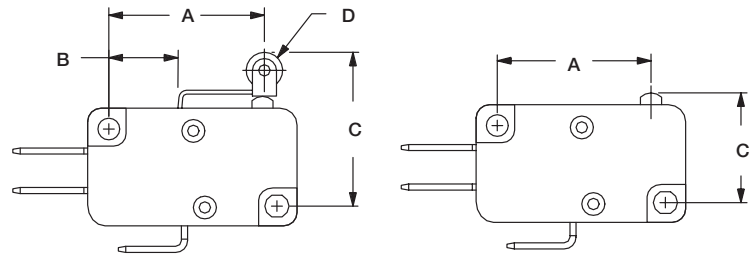


FIG. 1  
Lever Roller

FIG. 2  
Pin Roller

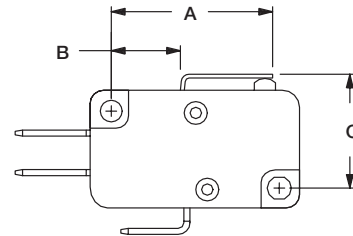


FIG. 3  
Lever

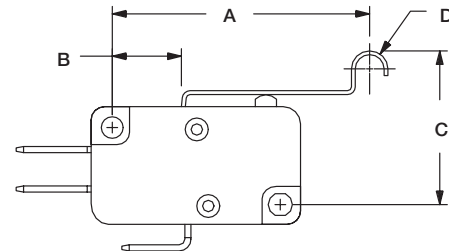
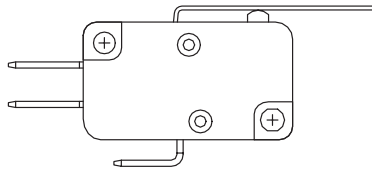


FIG. 4  
Simulated Roller



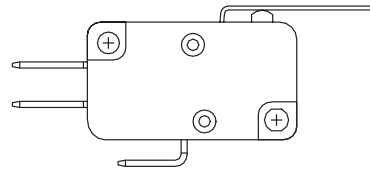
Snap-acting

### HIGH FORCE, LOW MOTION PIVOT POSITION



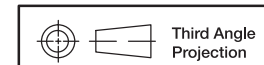
Available with actuators A10, A15, T10, T13, T14, T15, T16, T17 and T18.

### LOW FORCE, HIGH MOTION PIVOT POSITION



Available with actuators A20, A25, T20, T23, T24, T25, T26, T27 and T28.

**NOTE:** Lever actuator options are available in either of two pivot positions. Levers located in the forward pivot position have lower forces and higher motions. Levers located in the rear pivot position have higher forces and lower motions.



Third Angle  
Projection

Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

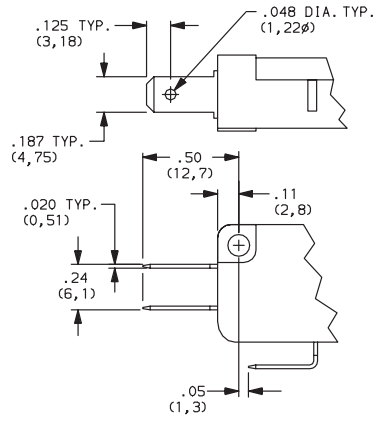




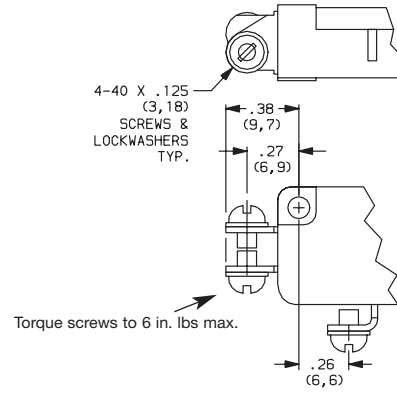
# TM Series Miniature Snap-acting Switches

## TERMINATIONS

### 40 .187" QUICK CONNECT

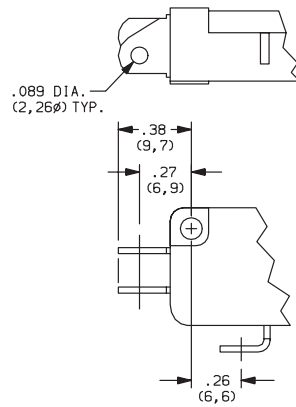


### 60 SCREW TERMINALS



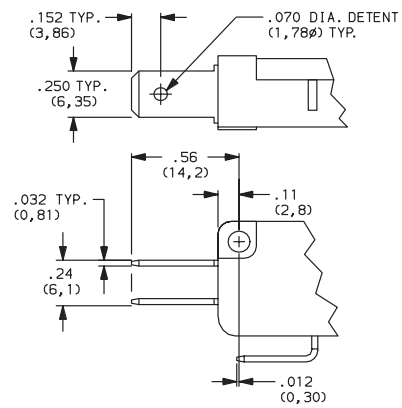
Not available with 'F5' rating option.

### 10 SOLDER



Not available with 'F5' rating option.

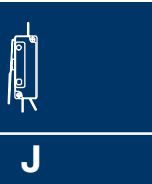
### 4A .250" QUICK CONNECT



Not available with 'F5' rating option.

## CIRCUITRY

- C** SPDT (Single Pole, Double Throw)
- W** SPST N.C. (Single Pole, Single Throw, Normally Closed)
- Y** SPST N.O. (Single Pole, Single Throw, Normally Open)



Snap-acting



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

# LC Series Subminiature Precision Snap-acting Switches



## Features/Benefits

- Compact design
- Long life and high electrical capacity
- Quick connect, wire lead or PC mounting
- Wide variety of actuator styles

## Typical Applications

- Motorized equipment
- Sump pump
- Thermostatic controls

UL61058-1  

## Specifications

CONTACT RATING: From low level\* to 10.1 AMPS @ 250 V AC.  
 ELECTRICAL LIFE: 100,000 cycles  
 INSULATION RESISTANCE: 1,000 M ohm min.  
 DIELECTRIC STRENGTH: 1,000 Vrms min. @ sea level.  
 OPERATING TEMPERATURE: -17°F to 185°F (-25°C to 85°C).  
 OPERATING FORCE: From 142 to 170 grams at actuator button.  
 Forces are less at free end of lever actuators; (see OPERATING FORCE and ACTUATOR option sections).  
 MOUNTING: 2-56 screws, torque 2.3 in/lbs max.

\* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service center.

## Materials

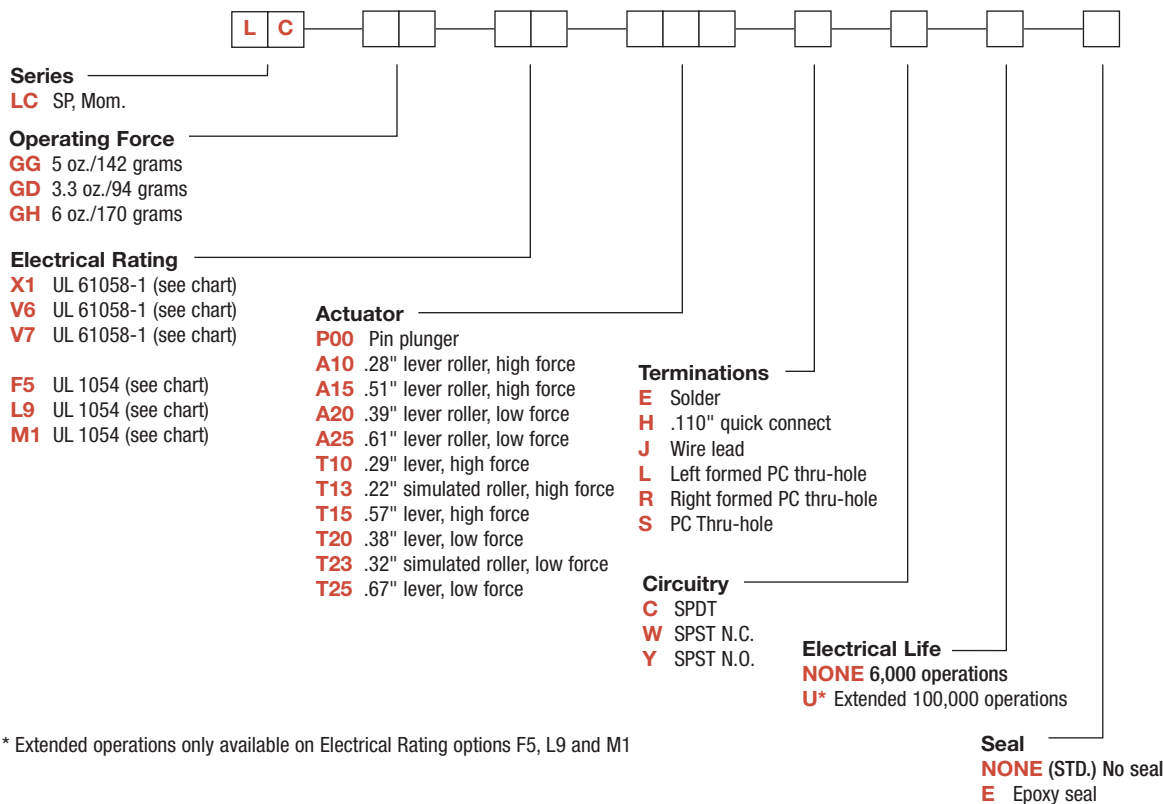
SWITCH HOUSING: Thermoplastic polyester or high temperature thermoplastic (PTS) (UL 94V-0).  
 ACTUATOR BUTTON: Thermoplastic polyester (UL 94V-0).  
 SPRING: Copper alloy.  
 PIVOT: Copper alloy.  
 MOVABLE CONTACTS: Fine silver for ratings greater than 1 AMP @ 125 V AC. Fine silver with 24K gold plate for 1 AMP @ 125 V AC or less.  
 STATIONARY CONTACTS: Fine silver welded on copper alloy for ratings greater than 1 AMP @ 125 V AC. Gold alloy welded on copper alloy for ratings less than 1 AMP @ 125 V AC.  
 TERMINALS: Copper alloy.  
 TERMINAL SEAL: Epoxy.



Snap-acting

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages J-33 through J-35. For additional options not shown in catalog, consult Customer Service Center.



\* Extended operations only available on Electrical Rating options F5, L9 and M1

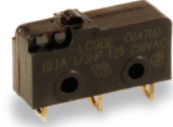
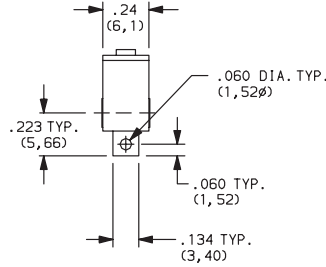
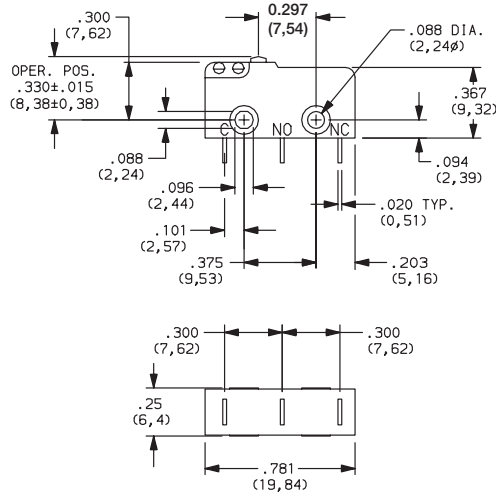


Dimensions are shown: Inch (mm)  
 Specifications and dimensions subject to change

# LC Series Subminiature Precision Snap-acting Switches

SERIES ■■■■■■■■■■

**LC** SUBMINIATURE PRECISION SNAP-ACTING SWITCHES  
SP MOMENTARY



## OPERATING FORCE ■■■■■■■■■■

OPTION CODE	BASIC SWITCH OPERATING FORCES (OZ./GRAMS)
<b>GG</b>	5 142
<b>GD</b>	3.3 94
<b>GH</b>	6 170

NOTE: Operating force varies with actuator option, see ACTUATOR option section.

## ELECTRICAL RATING ■■■■■■■■■■

OPTION CODE	ELECTRICAL RATING	CONTACT MATERIAL		RoHS COMPLIANT*	RoHS COMPATIBLE*
		MOVABLE CONTACT	STATIONARY CONTACT		
<b>X1</b>	1A GP, 250 Vac, 50/60 Hz, 25E3, T85 1RA, 30 Vdc, 1E4, T85	Fine silver with 24K gold plate	Fine silver with 24K gold plate on copper base alloy	Yes	Yes
<b>V6</b>	5(2)A RM, 250 Vac, 50/60 Hz, 1E4, T85 5A GP, 250 Vac, 50/60 Hz, 1E4, T85 5RA, 30 Vdc, 1E4, T85 1/3 HP, 125/250 Vac, 50/60 Hz, 1E4, T85	Fine silver	Fine silver welded on copper base alloy	Yes	Yes
<b>V7</b>	10(2)A RM, 250 Vac, 50/60 Hz, 1E4, T85 10A GP, 250 Vac, 50/60 Hz, 1E4, T85 10RA, 30 Vdc, 1E4, T85 1/3 HP, 125/250 Vac, 50/60 Hz, 1E4, T85	Fine silver	Fine silver welded on copper base alloy	Yes	Yes

OPTION CODE	ELECTRICAL RATING	CONTACT MATERIAL		RoHS COMPLIANT*	RoHS COMPATIBLE*
		MOVABLE CONTACT	STATIONARY CONTACT		
<b>F5</b>	1A, 125 V AC, 30 VDC 100,000 cycles ("U" option)	Fine silver with 24K gold plate	Fine silver with 24K gold plate on copper base alloy	Yes	Yes
<b>L9</b>	5A, 1/3 HP @ 125 and 250 V AC 100,000 cycles ("U" option)	Fine silver	Fine silver welded on copper base alloy	Yes	Yes
<b>M1</b>	10.1A, 1/3 HP @ 125 and 250 V AC 100,000 cycles ("U" option)	Fine silver	Fine silver welded on copper base alloy	Yes	Yes



\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definition and specifications.  
Consult Customer Service Center for availability and delivery of nonstandard ratings.  
\*Low Level = conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.



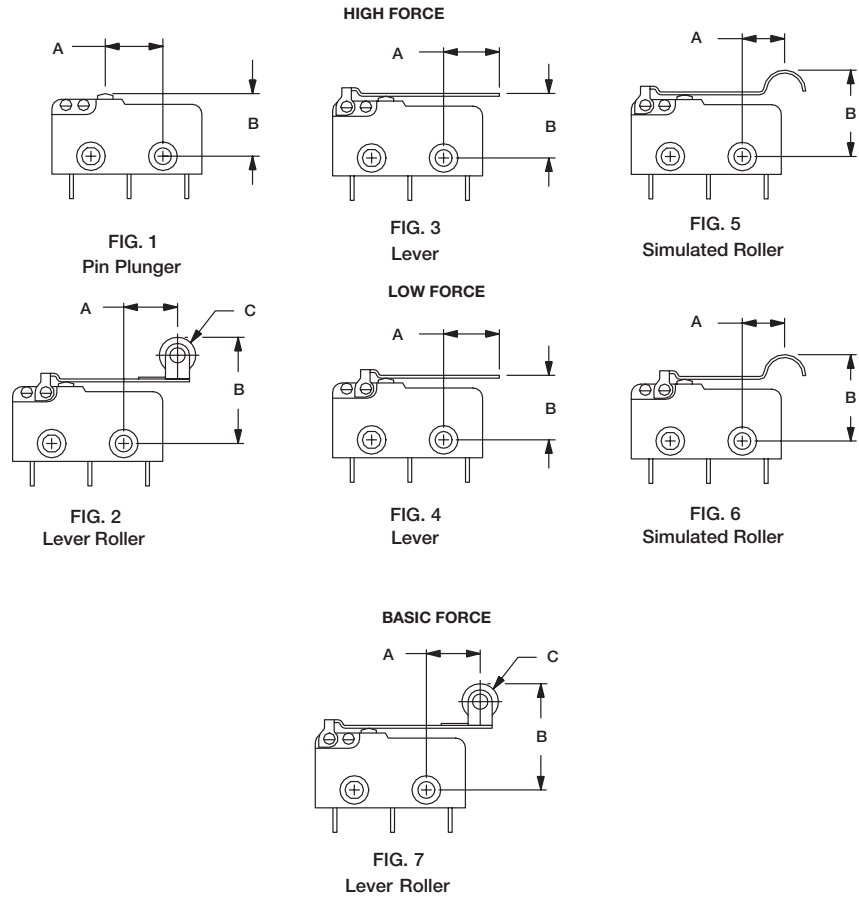
Third Angle Projection  
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



# LC Series Subminiature Precision Snap-acting Switches

ACTUATOR 

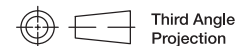
OPTION CODE	FIG.	DIM. A	DIM. B	DIM. C
P00	1	0.297 (7,6)	.330 ± .015 (8,38 ± 0,38)	—
A10	7	0.28 (7,1)	.570 ± .070 (14,48 ± 1,78)	.19 dia. (4,80)
A25	2	0.61 (15,5)	.570 ± .175 (14,22 ± 4,45)	.19 dia. (4,80)
T10	3	0.29 (7,4)	.340 ± .070 (8,64 ± 1,78)	—
T13	5	0.220 (5,3)	.455 ± .065 (11,56 ± 1,65)	—
T20	4	0.39 (9,9)	.340 ± .140 (8,64 ± 3,56)	—
T23	6	0.32 (8,1)	.455 ± .125 (11,56 ± 3,18)	—
T25	4	0.67 (17,0)	.340 ± .091 (8,64 ± 4,70)	—
A15	7	0.51 (13,0)	.560 ± .090 (14,22 ± 2,29)	.19 dia. (4,80)
A20	2	0.38 (9,7)	.560 ± .135 (14,22 ± 2,29)	.19 dia. (4,80)
T15	3	0.57 (14,51)	.340 ± .100 (8,64 ± 2,54)	—



## SWITCH CHARACTERISTICS

OPTION CODE	MAXIMUM OPERATING FORCE (OZ./GRAMS)			MINIMUM RELEASE FORCE (OZ./GRAMS)			MAXIMUM DIFFERENTIAL TRAVEL ALL FORCES	MAXIMUM PRETRAVEL ALL FORCES	MINIMUM OVERTRAVEL ALL FORCES
	GG	GD	GH	GG	GD	GH			
A10	1.69 48	1 28	2.0 57	.21 6	.11 3	.42 12	.034 (0,86)	.140 (3,56)	.029 (0,74)
A15	1.3 37	.68 19	1.6 44	.16 4.5	.07 2	.32 9	.044 (1,12)	.180 (4,57)	.037 (0,94)
A20	0.9 26	.52 15	1.1 31	.11 3	.05 15	.21 6	.067 (1,70)	.272 (6,91)	.053 (1,53)
A25	.70 20	.42 12	.85 24	.07 2	.04 1	.16 4.5	.086 (2,18)	.351 (8,92)	.068 (1,73)
P00	5 142	3.3 95	6 170	1 28	.05 14	2.0 57	.004 (0,10)	.030 (0,76)	.010 (0,25)
T10	1.7 48	1 28	2.1 60	.21 6	.10 3	.39 11	.035 (0,90)	.140 (3,56)	.029 (0,74)
T13	1.8 52	1.2 34	2.2 62	.21 6	.03 1	.42 12	.032 (0,81)	.130 (3,30)	.026 (0,66)
T20	0.9 26	.52 15	1.1 30	.10 3	.03 1	.21 6	.067 (1,70)	.276 (7,01)	.053 (1,35)
T23	1.0 28	.52 15	1.2 34	.10 3	.03 1	.21 6	.062 (1,57)	.252 (6,40)	.049 (1,24)
T25	0.7 19	.05 14	0.8 24	.07 2	.03 1	.14 4	.090 (2,29)	.372 (9,45)	.072 (1,83)
T15	1.2 35	1.3 39	1.5 42	0.14 4	.21 6	.28 81	.047 (1,19)	.190 (4,83)	.040 (1,02)

NOTE: For basic switch operating forces, see page J-32.



Third Angle Projection

Dimensions are shown: Inch (mm)

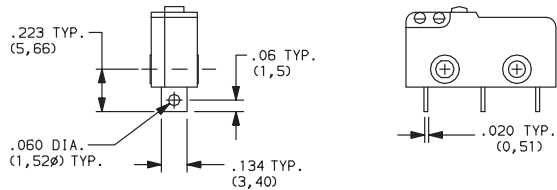
Specifications and dimensions subject to change

**C&K**

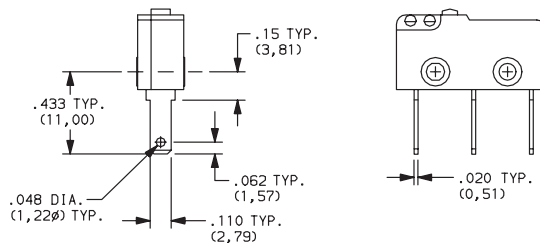
# LC Series Subminiature Precision Snap-acting Switches

## TERMINATIONS

**E** SOLDER

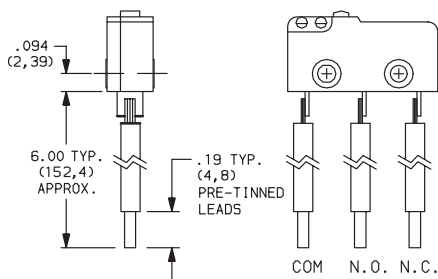


**H** .110" QUICK CONNECT



**NOTE:** Use Amp Quick Connect Part No. 640932-1.

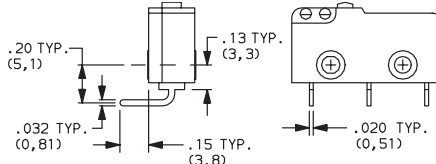
**J** WIRE LEAD



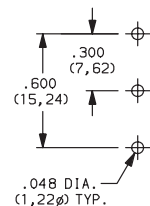
RATING	WIRE SIZE
1 AMP	22 AWG
5 AMPS	20 AWG
10.1 AMPS	18 AWG

TERMINAL	WIRE COLOR
COMMON	BLACK
NORMALLY OPEN	WHITE
NORMALLY CLOSED	RED

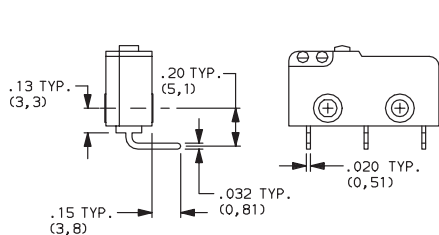
**L** LEFT FORMED PC THRU-HOLE



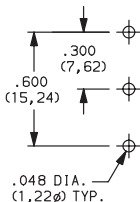
**PC MOUNTING**



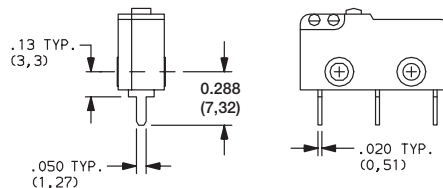
**R** RIGHT FORMED PC THRU-HOLE



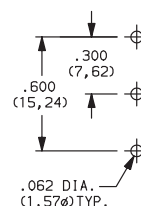
**PC MOUNTING**



**S** PC THRU-HOLE



**PC MOUNTING**



## CIRCUITRY

**C** SPDT (Single Pole, Double Throw)

**W** SPST N.C. (Single Pole, Single Throw, Normally Closed)

**Y** SPST N.O. (Single Pole, Single Throw, Normally Open)

## ELECTRICAL LIFE

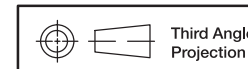
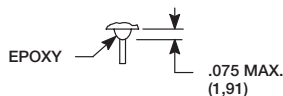
**NONE** 6,000 OPERATIONS

**U** EXTENDED 100,000 OPERATIONS

## SEAL

**NONE** NO SEAL

**E** EPOXY SEAL



Third Angle Projection

Dimensions are shown: mm  
Specifications and dimensions subject to change

**C&K**

# LCA Series Subminiature Snap-acting Switches



## Features/Benefits

- Compact design
- Long life and high electrical capacity
- Quick connect, solder terminals, PC terminals
- Wide variety of actuator styles
- RoHS compatible

## Typical Applications

- Motorized equipment
- Sump pump
- Thermostatic controls

UL61058-1  

## Specifications

CONTACT RATING: From low level to 10.1 AMPS @ 125/250 V AC  
 ELECTRICAL LIFE: see chart below  
 MECHANICAL LIFE: 300,000 cycles.  
 INSULATION RESISTANCE: 100 M ohm min.  
 DIELECTRIC STRENGTH: 1,500 Vrms min. @ sea level.  
 OPERATING TEMPERATURE: -40°C to +125°C  
 OPERATING FORCE: 150 grams at actuator button MAX.  
 Forces are less at free end of lever actuators; (see ACTUATOR'S option sections).  
 MOUNTING: 2-56 screws, torque 2.3 in/lbs max.

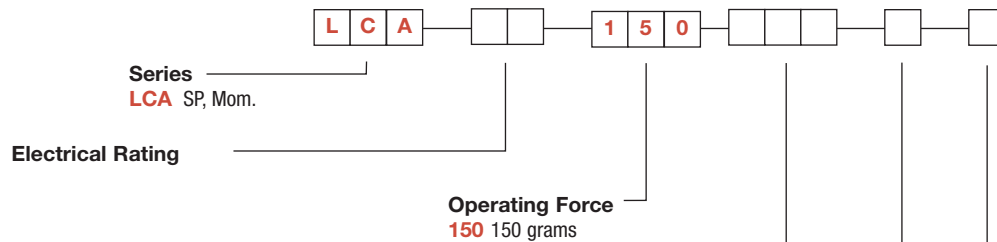
## Materials


SWITCH HOUSING: Thermoplastic polyester  
 ACTUATOR BUTTON: Thermoplastic polyester.  
 SPRING: Copper alloy.  
 PIVOT: Copper alloy.  
 MOVABLE CONTACTS: Silver alloy  
 STATIONARY CONTACTS: Silver alloy  
 TERMINALS: Copper alloy.  
 ACTUATOR LEVER: Stainless steel.

**NOTE:** Specifications and materials listed above are for switches with standard options.  
 For information on specific and custom switches, consult Customer Service center.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages J-36 thru J-39. For additional options not shown in catalog, consult Customer Service Center.



Option Code	UL 1054	UL 61058-1	
01	0.1 A 125/250 V AC 1E4	0.1 A 125/250 V AC 1E4	0.1 A 125/250 V AC 1E4
06	6 A 125/250 V AC 1E4	6 A 125/250 V AC 1E4	6 (2)A 125/250 V AC 1E4
10	10.1 A 125/250 V AC 1E4	10.1 A 125/250 V AC 1E4	10.1 A 125/250 V AC 1E4
S5	NA	5 A 125/250 V AC 1E5	NA

## Actuator

- P00 Pin plunger
- T05 4.8 mm short lever
- T06 6.8 mm lever
- T09 8.8 mm lever
- T12 12.9 mm lever
- T16 15.2 mm lever
- T18 18.1 mm lever
- T21 20.1 mm lever
- T23 23.4 mm lever
- T43 43.5 mm lever
- S06 6.0 mm simulated lever
- S09 9.2 mm simulated lever
- A05 5.0 mm lever roller

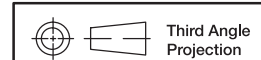
## Terminations

- S Solder
- Q .110 Quick Connect
- P PC Thru Hole
- L Left Form PC
- R Right Form PC

## Circuitry

- C SPDT
- W SPST N.C.
- Y SPST N.O.

Snap-acting

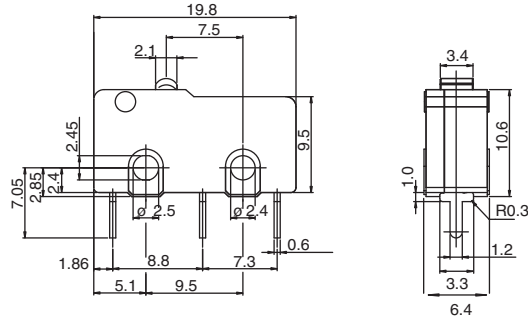


Dimensions are shown: mm  
 Specifications and dimensions subject to change

# LCA Series Subminiature Snap-acting Switches

SERIES 

LCA



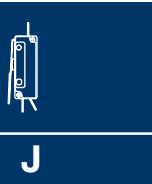
ELECTRICAL RATING 

RoHS COMPLIANT *	RoHS COMPATIBLE *	OPTION CODE	ELECTRICAL RATING
YES	YES	<b>01</b>	0.1A, 125/250 VAC
YES	YES	<b>06</b>	6A, 125/250 VAC
YES	YES	<b>10</b>	10.1A, 125/250 VAC
YES	YES	<b>S5</b>	5A, 125/250 VAC

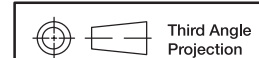
\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definition and specifications.

OPERATING FORCE 

OPTION CODE	OPERATING FORCES (grams)
<b>150</b>	150 grams max.



Snap-acting



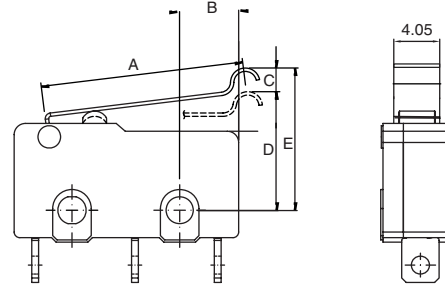
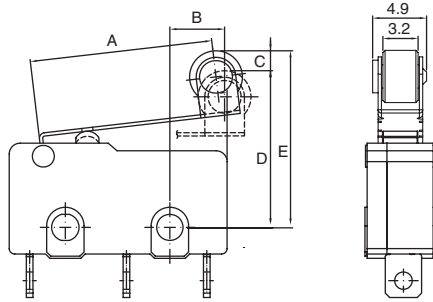
Dimensions are shown: mm  
Specifications and dimensions subject to change

# LCA Series Subminiature Snap-acting Switches

## ACTUATOR

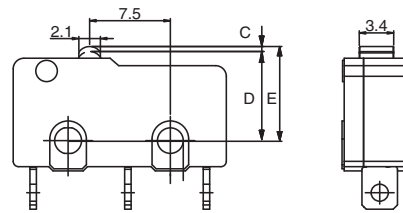
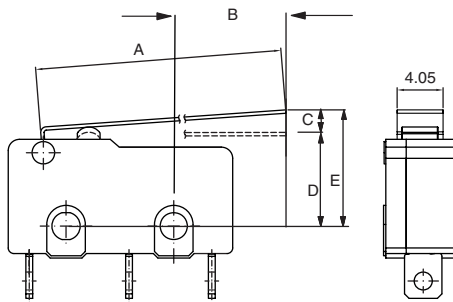
**A05** LEVER ROLLER

**SXX** SIMULATED ROLLER



**TXX** LEVER

**P00**



ACTUATOR OPTION CODE	A mm	B r mm	eC mm	D mm	E mm	Diff. Motion mm max	Oper. Force max. grams	Release Force min. grams	Over Travel min.
	LENGTH OF LEVER	Lever length for front mtg. hole to OP	PRE TRAVEL (MAX)	OPERATING POSITION	FREE POSITION (MAX)				
P00	NA	NA	1.10	8.55 ± 0.3	9.35	0.20	150	25	0.4
T05	16.70	4.80	3.60	8.95 ± 0.8	11.75	0.80	50	6	0.6
T06	18.70	6.80	4.03	8.9 ± 0.9	12.09	0.90	45	5	0.67
T09	20.60	9.10	5.64	9.15 ± 1.35	13.45	1.83	33	2	0.75
T12	24.80	12.90	3.35	8.95 ± 1.5	13.10	1.19	34	2	0.89
T16	27.10	15.20	7.20	9.15 ± 1.7	15.15	1.30	40	1	0.70
T18	30.00	18.10	7.70	8.95 ± 1.9	14.65	1.50	32	1	1.2
T21	32.00	20.10	8.00	8.15 ± 1.85	15.55	1.60	35	1	1.0
T23	35.20	23.40	8.60	8.95 ± 2.0	15.55	1.80	25	1	1.5
T43	55.20	43.50	10.45	8.95 ± 3.0	19.25	2.90	15	1	1.0
S06	17.90	6.00	3.86	10.85 ± 0.9	17.81	0.86	47	5	0.64
S09	21.10	9.20	5.7	16.15 ± 1.5	20.35	1.00	42	2	1.0
A05	16.60	5.00	3.8	14.65 ± 0.8	17.65	0.80	50	6	0.6



Dimensions are shown: mm  
Specifications and dimensions subject to change

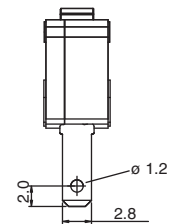
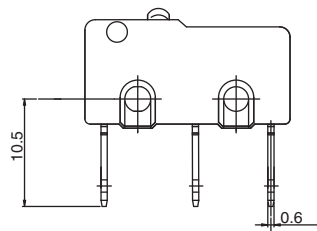
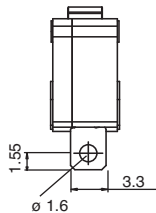
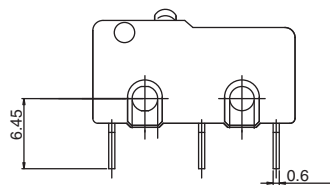


# LCA Series Subminiature Snap-acting Switches

## TERMINATIONS

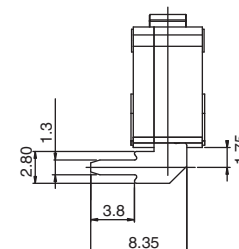
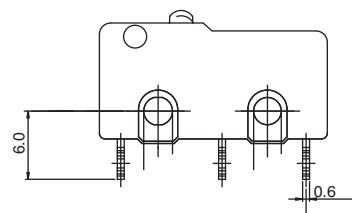
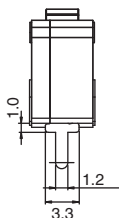
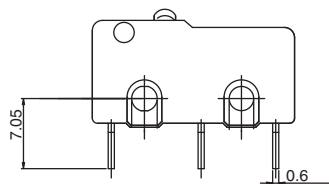
**S** SOLDER

**Q** QUICK CONNECT

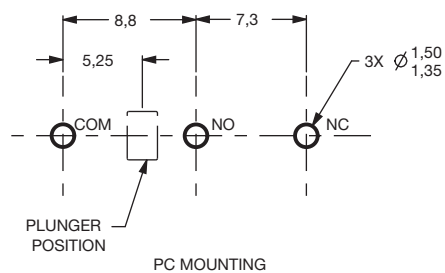
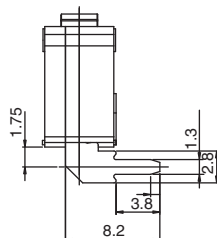
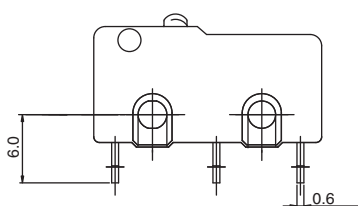


**P** PC THRU HOLE

**L** LEFT FORM PC



**R** RIGHT FORM PC



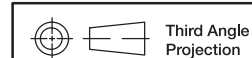
Snap-acting

## CIRCUITRY

**C** SPDT (Single Pole, Double Throw)

**W** SPST N.C. (Single Pole, Single Throw, Normally Closed)

**Y** SPST N.O. (Single Pole, Single Throw, Normally Open)



Third Angle Projection

Dimensions are shown: mm  
Specifications and dimensions subject to change



# LCS Series Subminiature Sealed Snap-acting Switches



UL61058-1  

## Features/Benefits

- Compact design
- Long life and high electrical capacity
- Quick connect, solder terminals, PC terminals, wire leads
- Wide variety of actuator styles
- RoHS compatible, RoHS compliant
- IP67

## Typical Applications

- Motorized equipment
- Sump pump
- Thermostatic controls
- Computers
- Air conditioners

## Specifications

CONTACT RATING: from low level to 5 Amp  
 ELECTRICAL LIFE: 10,000 cycles  
 INSULATION RESISTANCE: 100 M ohm min.  
 DIELECTRIC STRENGTH: 1,000 VAC  
 OPERATING TEMPERATURE:  
 -40°C to +120°C (without wire)  
 -40°C to +85°C (with UL1007 wire)  
 -40°C to +105°C (with UL1015 wire)  
 -40°C to +105°C (with UL1430 wire)  
 -40°C to +80°C (with UL1061 wire)  
 -40°C to +120°C (with UL1330 wire)  
 OPERATING FORCE: (see ACTUATOR'S option sections).  
 MOUNTING: 2-56 screws, torque 2.3 in/lbs max.

## Materials

SWITCH HOUSING: Thermoplastic polyester or high temperature thermoplastic (PTS) (UL 94V-0).  
 ACTUATOR BUTTON: Thermoplastic polyester.  
 SPRING: Copper alloy.  
 PIVOT: Copper alloy.  
 MOVABLE CONTACTS: Option "01" Gold plating over silver alloy  
 Option "05" Silver alloy  
 STATIONARY CONTACTS: Option "01" Gold plating over silver alloy  
 Option "05" Silver alloy  
 TERMINALS: Copper alloy.  
 ACTUATOR LEVEL: Stainless steel.

**NOTE:** Specifications and materials listed above are for switches with standard options.  
 For information on specific and custom switches, consult Customer Service center.

Snap-acting

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages J-40 thru J-43. For additional options not shown in catalog, consult Customer Service Center.

Series			LCS		Operating Force		2 203 grams		Actuator		Circuitry	
Electrical Rating			0.1 A 125/250 V AC		5 A 125/250 V AC		6 A 250 V AC		P00 Pin plunger		C SPDT	
Option Code			01		05		NA		T00 11.9 mm short lever		W SPST N.C.	
									T05 17.4 mm short lever		Y SPST N.O.	
									T07 19.4 mm short lever			
									T13 25.5 mm lever			
									T19 33.3 mm lever			
									T28 40.7 mm lever			
									T43 55.9 mm lever			
									S26 18.6 mm simulated lever			
									A05 17.2 mm lever roller			
									Terminations			
									S Solder			
									Q 0.110 Quick Connect			
									P PC Thru Hole			
									W Wire leads potted			
									Z Wire leads non-potted			
									Wire Type AWG		Wire UL # (when required)	
									20 20 AWG		A UL1007	
									22 22 AWG		B UL1015	
									24 24 AWG		C UL1430	
									26 26 AWG		D UL1061	
									Wire Side (when required)			
									A Wire out the bottom			
									B Wire out the right side			
									C Wire out the left side			
									D None			

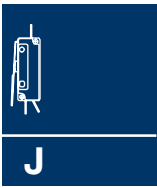
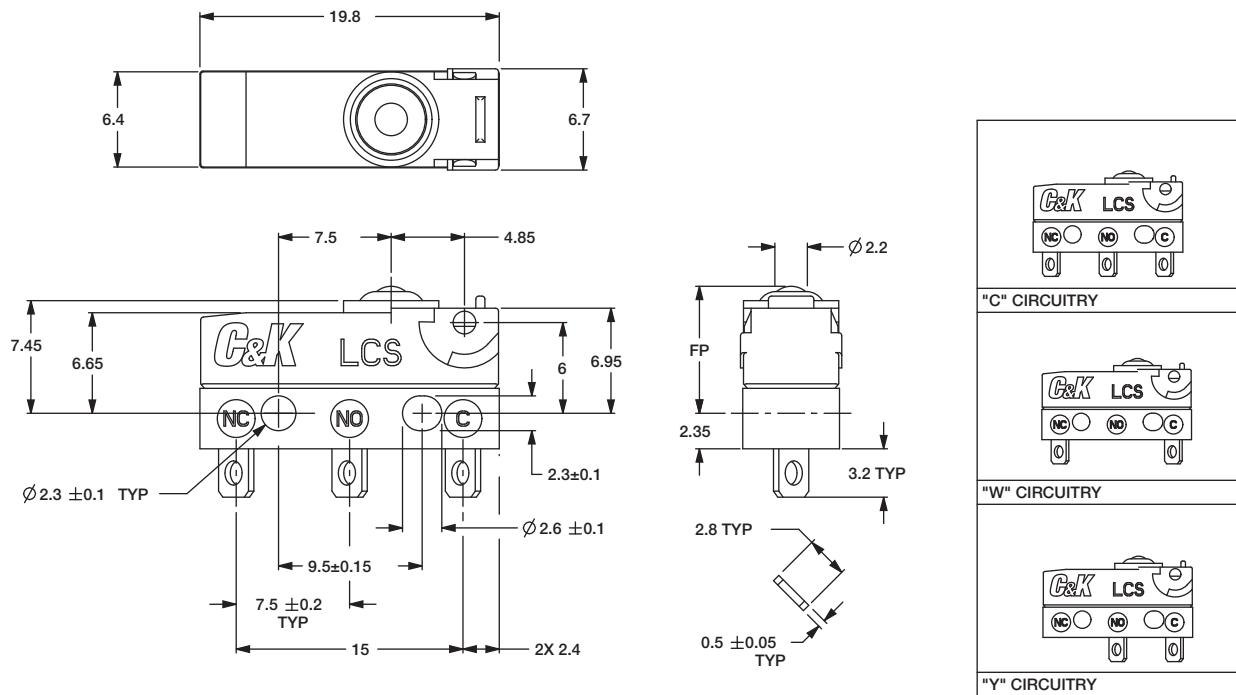


Dimensions are shown: mm  
 Specifications and dimensions subject to change

# LCS Series Subminiature Sealed Snap-acting Switches

## SERIES

**LCS**



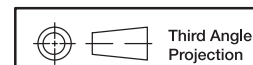
**Snap-acting**

## ELECTRICAL RATING

RoHS COMPLIANT *	RoHS COMPATIBLE *	OPTION CODE	ELECTRICAL RATING
YES	YES	<b>05</b>	5 AMP, 125/250 V AC
YES	YES	<b>01</b>	0.1 AMP, 125/250 V AC

## OPERATING FORCE

OPTION CODE	OPERATING FORCES (grams)
<b>2</b>	203 g. max.

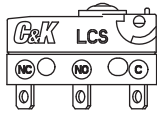


*Dimensions are shown: mm  
Specifications and dimensions subject to change*

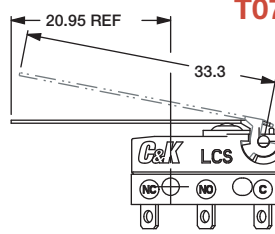
# LCS Series Subminiature Sealed Snap-acting Switches

ACTUATOR 

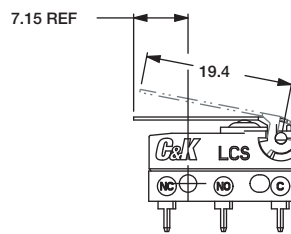
P00



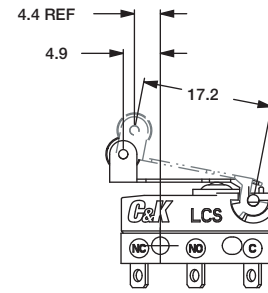
T19



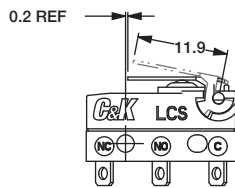
T07



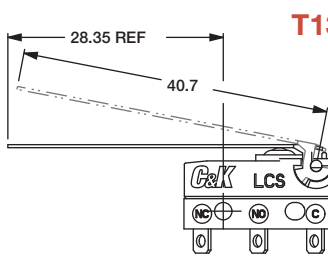
A05



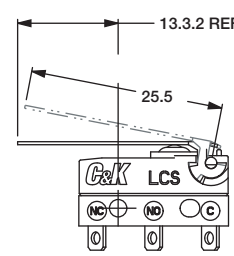
T00



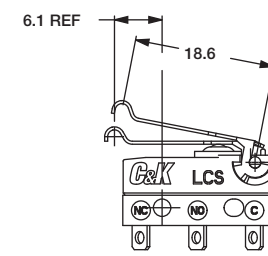
T28



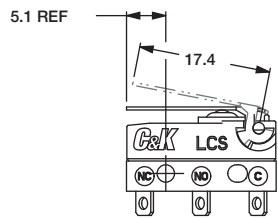
T13



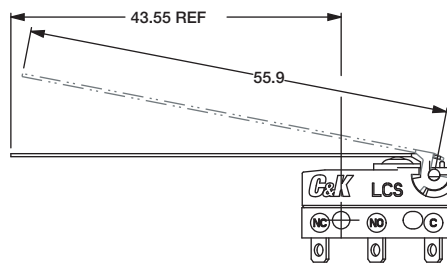
S26



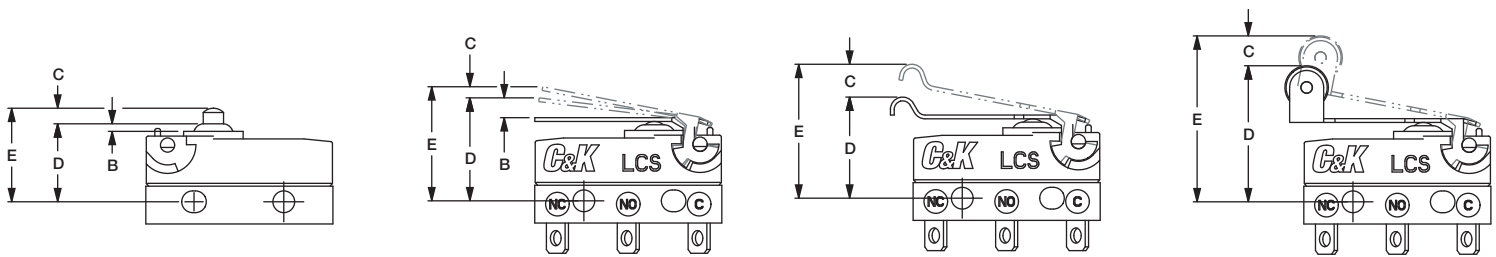
T05



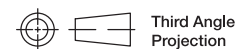
T43



Snap-acting



ACTUATOR OPTION CODE	A	B	C	D	E	DIFFERENTIAL MOTION (MAX)	OPERATING FORCE (MAX)	RELEASE FORCE (MIN)
	LENGTH OF LEVER	OVER TRAVEL (MIN)	PRE TRAVEL (MAX)	OPERATING POSITION	FREE POSITION (MAX)	203	203	203
P00	N/A	0.6	1.2	8.4 ± 0.3	9.9	0.2	203	50
T00	11.9	0.6	3.2	8.8 ± 0.9	11.1	0.5	98	21
T05	17.40	0.9	4.3	8.8 ± 1.1	12	0.6	82	16
T07	19.40	1	4.8	8.8 ± 1.2	12.4	0.7	66	13
T13	25.5	1.6	6.3	8.8 ± 1.6	13.5	0.9	54	11
T19	33.3	1.95	8	8.8 ± 2.0	15	1.75	40	5
T28	40.7	2.1	10.1	8.8 ± 2.6	16.3	2.3	39	8
T43	55.9	2.9	13.8	8.8 ± 3.5	19.1	3.6	33	7
S26	18.6	1	4.6	10.7 ± 1.2	14.1	0.65	68	14
A05	17.20	0.9	4.3	14.5 ± 1.1	17.7	0.6	72	15



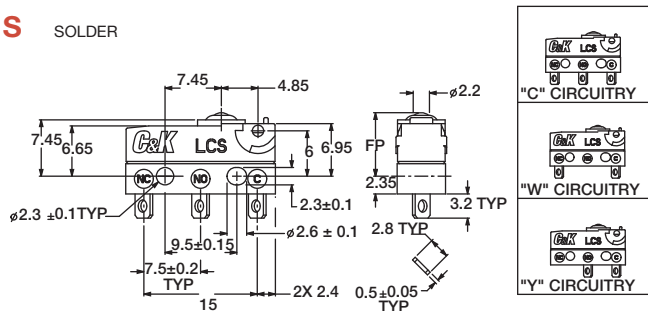
Third Angle  
Projection  
Dimensions are shown: mm  
Specifications and dimensions subject to change



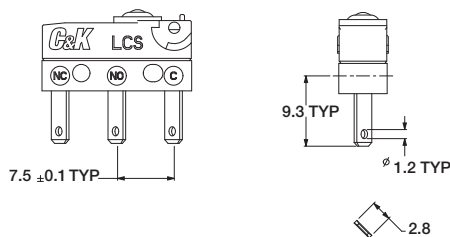
# LCS Series Subminiature Sealed Snap-acting Switches

## TERMINATIONS

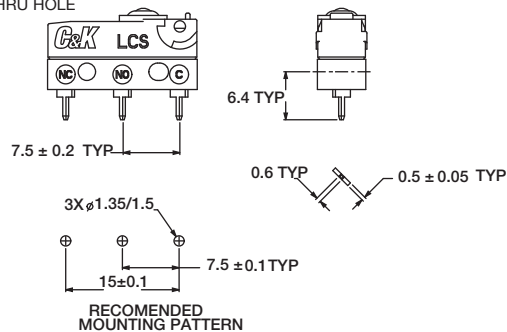
**S** SOLDER



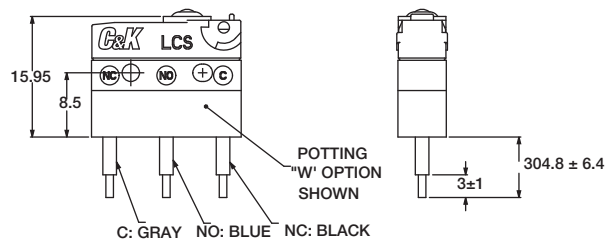
**Q** QUICK CONNECT 2.8mm / 0.110"



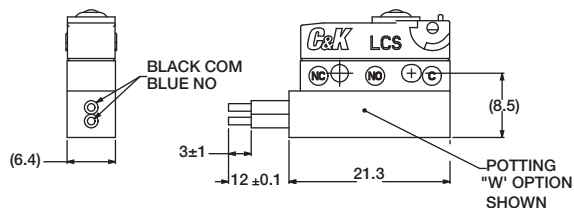
**P** PC THRU HOLE



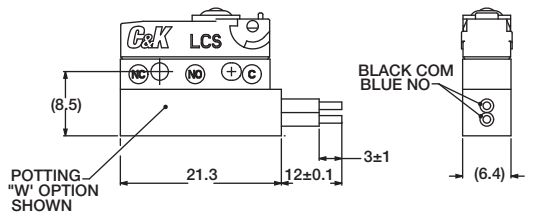
**Z or W** "A" WIRE ORIENTATION



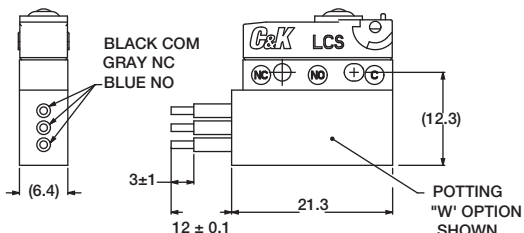
**Z or W** "B" WIRE ORIENTATION  
"Y" OR "W" CIRCUITRY



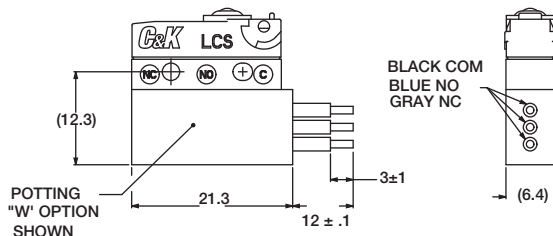
**Z or W** "C" WIRE ORIENTATION  
"Y" OR "W" CIRCUITRY



**Z or W** "B" WIRE ORIENTATION  
"C" CIRCUITRY



**Z or W** "C" WIRE ORIENTATION  
"C" CIRCUITRY



## CIRCUITRY

- C** SPDT (Single Pole, Double Throw)
- W** SPST N.C. (Single Pole, Single Throw, Normally Closed)
- Y** SPST N.O. (Single Pole, Single Throw, Normally Open)



Third Angle  
Projection

Dimensions are shown: mm  
Specifications and dimensions subject to change



Snap-acting

# MM Series Subminiature Precision Snap-acting Switches



## Features/Benefits

- Low level and power switching
- Long electrical and mechanical life
- Increased overtravel
- Reliable snap-acting mechanism

## Typical Applications

- Limited space constraints
- Communication devices

## Specifications

CONTACT RATING: From low level\* to 7 AMPS @ 250 V AC.  
 ELECTRICAL LIFE: 100,000 cycles at full rated load.  
 INSULATION RESISTANCE: 1,000 ohm min.  
 DIELECTRIC STRENGTH: 1,000 V RMS min. @ sea level.  
 OPERATING TEMPERATURE: -67 F to 275 F (-55 C to 135 C).  
 OPERATING FORCE: 5 oz. (142 grams) max. at actuator button.  
 MOUNTING: 2-56 screws, torque 2 in/lbs max.

\*Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service center.

## Materials

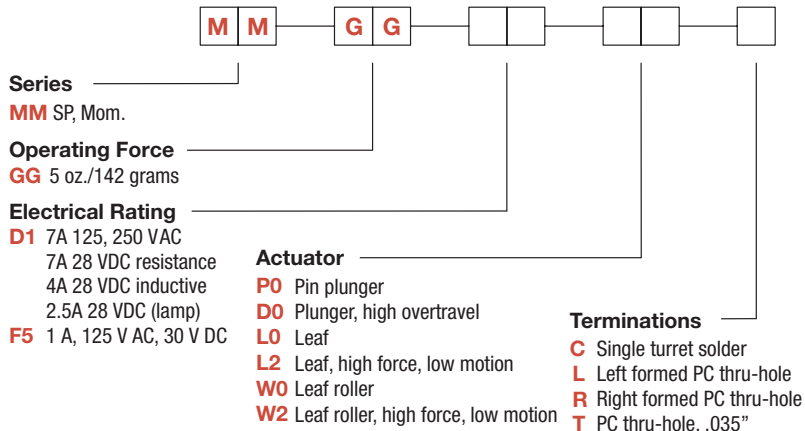
SWITCH HOUSING: Heat resistant phenolic (UL 94V-0).  
 ACTUATOR BUTTON: Heat resistant phenolic (UL 94V-0).  
 SPRING: Beryllium copper CDA alloy C17200.  
 PIVOT: Brass CDA alloy 260.  
 MOVABLE CONTACTS: Fine silver for ratings greater than 1 AMP @ 125 V AC. 24K gold for 1 AMP @ 125 V AC or less.  
 STATIONARY CONTACTS: Fine silver inlay on copper CDA alloy C10200 for ratings greater than 1 AMP @ 125 V AC. 24K gold on copper CDA alloy C10200 for 1 AMP @ 125 V AC or less.  
 TERMINALS: Copper CDA alloy C18700.



Snap-acting

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages J-44 through J-49. For additional options not shown in catalog, consult Customer Service Center.



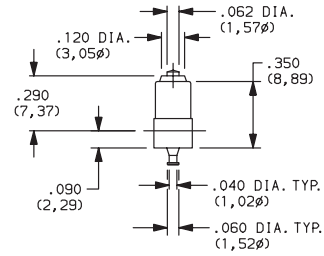
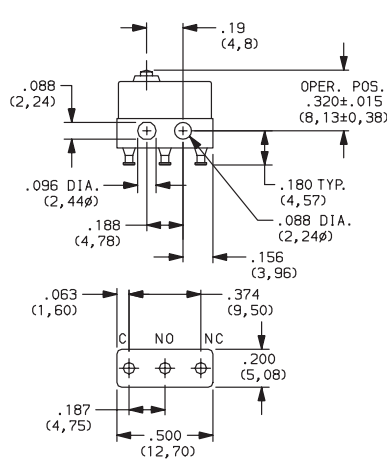
Dimensions are shown: Inch (mm)  
 Specifications and dimensions subject to change

# MM Series Subminiature Precision Snap-acting Switches

## SWITCH WITH STANDARD OPTIONS



MMGGD1P0C



PART NUMBER	BASIC OPERATING FORCE (OZ./GRAMS)	ELECTRICAL RATING
<b>MMGGD1P0C</b>	5 142	7 AMPS @ 250 V AC.

### SERIES ■ ■ ■ ■ ■ ■ ■ ■

**MM** SPDT MOMENTARY

### OPERATING FORCE ■ ■ ■ ■ ■ ■ ■ ■

OPTION CODE	BASIC SWITCH OPERATING FORCE
<b>GG</b>	5 oz. (142 grams) maximum for basic switch with pin plunger actuator ('PO' actuator option).

NOTE: Operating force varies with actuator option, see ACTUATOR option section.

### ELECTRICAL RATING ■ ■ ■ ■ ■ ■ ■ ■

OPTION CODE	RoHS COMPLIANT*	RoHS COMPATIBLE*	CONTACT MATERIAL		ELECTRICAL RATING
			MOVABLE CONTACT	STATIONARY CONTACT	
<b>D1</b>	Yes	Yes	Fine silver.	Fine silver inlay on copper alloy.	7A 125, 250 VAC; 7A 28 VDC resistance 4A 28 VDC inductive; 2.5A 28 VDC (lamp)
<b>F5</b>	Yes	Yes	24K Gold.	24K Gold on copper alloy.	From low level* to 1 AMP @ 125 V AC, 30 V DC.

Note: See Technical Data section of this catalog for RoHS compliant and compatible definition and specifications.

All models with all options.

Consult Customer Service Center for availability and delivery of nonstandard ratings.

\* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

### ACTUATOR ■ ■ ■ ■ ■ ■ ■ ■

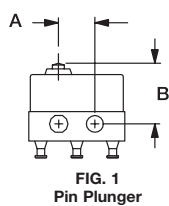


FIG. 1  
Pin Plunger

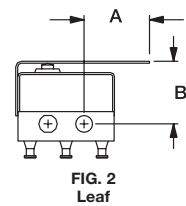


FIG. 2  
Leaf

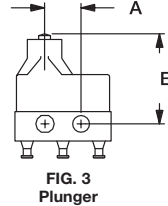


FIG. 3  
Plunger

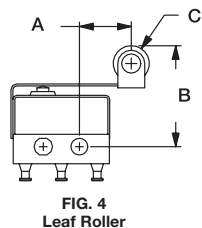


FIG. 4  
Leaf Roller

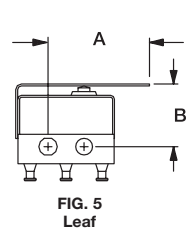


FIG. 5  
Leaf

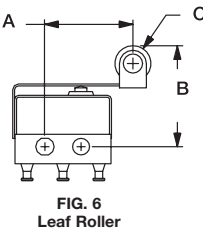


FIG. 6  
Leaf Roller

OPTION CODE	FIG.	DIM. A	DIM. B	DIM. C
<b>P0</b>	1	.19 (4,8)	.320 ± .015 (8,13 ± 0,38)	—
<b>D0</b>	3	.19 (4,8)	.475 ± .031 (12,07 ± 0,79)	—
<b>L0</b>	2	.34 (8,6)	.330 ± .015 (8,38 ± 0,38)	—
<b>L2</b>	5	.53 (13,5)	.330 ± .015 (8,38 ± 0,38)	—
<b>W0</b>	4	.27 (6,9)	.532 ± .025 (13,51 ± 0,64)	.188 dia. (4,780)
<b>W2</b>	6	.46 (11,7)	.532 ± .025 (13,51 ± 0,64)	.188 dia. (4,780)



Third Angle  
Projection

Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



Snap-acting

# MM Series Subminiature Precision Snap-acting Switches

## ACTUATOR

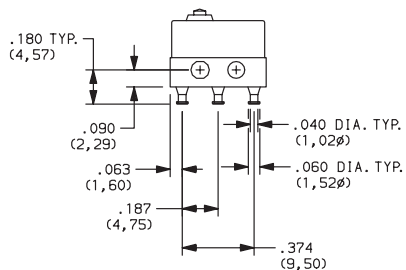
### SWITCH CHARACTERISTICS

OPTION CODE	MAXIMUM OPERATING FORCE (OZ./GRAMS)	MINIMUM RELEASE FORCE (OZ./GRAMS)	MAXIMUM DIFFERENTIAL TRAVEL	MAXIMUM PRETRAVEL	MINIMUM OVERTRAVEL
D0	5 142	.7 20	.004 (0,10)	.030 (0,76)	.040 (1,02)
L0	4 115	.7 20	.025 (0,64)	.090 (2,29)	.045 (1,14)
L2	6 170	.7 20	.012 (0,30)	.075 (1,90)	.015 (0,38)
P0	5 142	1 28	.002 (0,05)	.020 (0,51)	.004 (0,10)
W0	4 115	.7 20	.025 (0,64)	.090 (2,29)	.045 (1,14)
W2	6 170	.7 20	.012 (0,30)	.075 (1,90)	.015 (0,38)

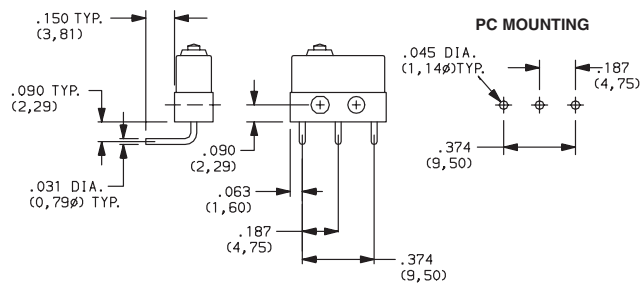
NOTE: For basic switch operating forces, see page J-44

## TERMINATIONS

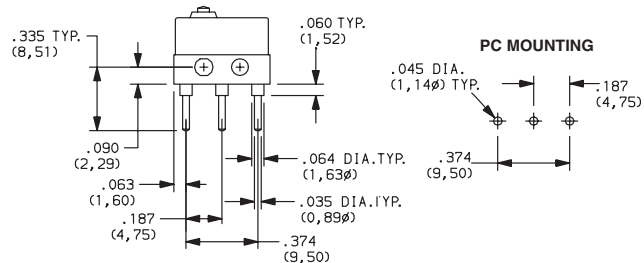
### C SINGLE TURRET SOLDER



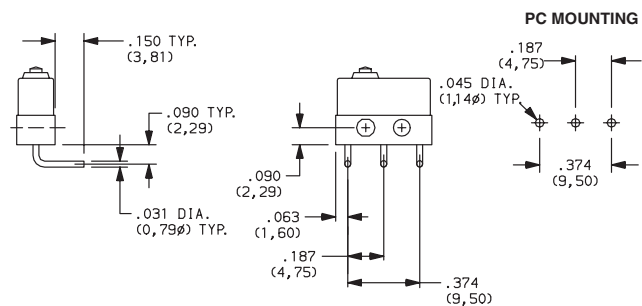
### L LEFT FORMED PC THRU-HOLE



### T PC THRU-HOLE, .035"



### R RIGHT FORMED PC THRU-HOLE



Snap-acting



Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change



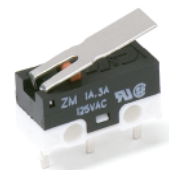
# ZM Series Subminiature Snap-acting Switches

## Features/Benefits

- **Reliable snap-acting mechanism**
- **Long electrical and mechanical life**
- **Compact size—Ideal when space is limited**
- **Various PCB terminals and actuators**
- **RoHS compliant / compatible**

## Typical Applications

- **PCB detection switch**
- **Communication devices**
- **Testing equipment**
- **Security/Alarm systems**
- **Consumer electronics**



UL61058-1



## Specifications

CONTACT RATING: F7: 3A @ 125 VAC  
M9: 0.2A @ 60 VDC.  
ELECTRICAL LIFE: 10,000 Cycles. @ 3A  
INSULATION RESISTANCE: 100 M ohm min.  
DIELECTRIC STRENGTH: 1000 Vrms.  
OPERATING TEMPERATURE: -30°C to 85°C.  
OPERATING FORCE: CJ: 150 grams, CH: 90 grams.

\* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

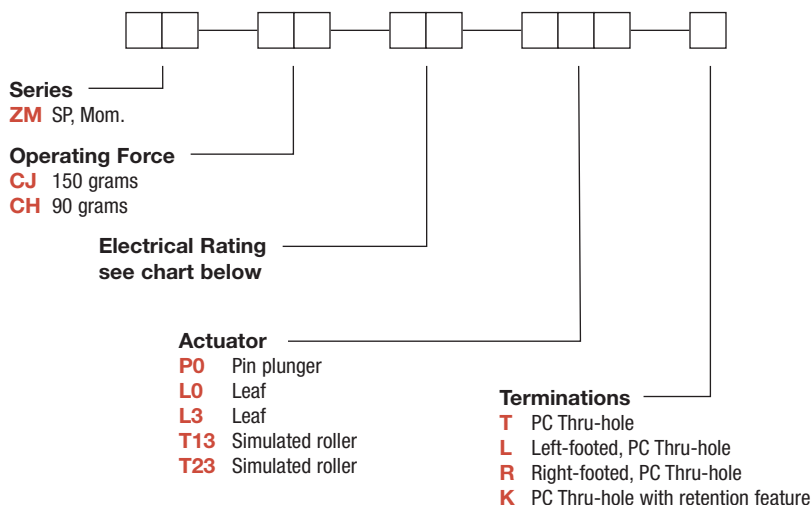
## Materials

COVER: Nylon 6/6  
ACTUATOR BUTTON: Nylon 6/6  
CASE: Nylon 6/6  
SPRING: SUS  
MOVABLE BLADE: BeCu  
MOVABLE CONTACT: Silver alloy (M9 option gold plated)  
FIXED CONTACTS: Silver alloy (M9 option gold plated)  
FIXED TERMINALS: Brass - Ag plated.  
ACTUATOR (Leaf / Roller options): SUS

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages J-48 and J-49. For additional options not shown in catalog, consult Customer Service Center.



Option Code	UL 1054	UL 61058-1	RoHS
<b>F7</b>	3 A 125 V AC	3 A 125 V AC 3 A 30 V DC	3 A 125 V AC
<b>M9</b>	0.1 A 48 V DC	0.1 A 48 V DC	0.1 A 48 V DC
	0.2 A 60 V DC	0.2 A 60 V DC	0.2 A 60 V DC
	0.1 A 125 V AC	0.1 A 125 V AC	0.1 A 125 V AC



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

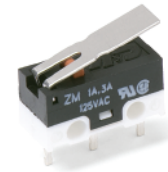
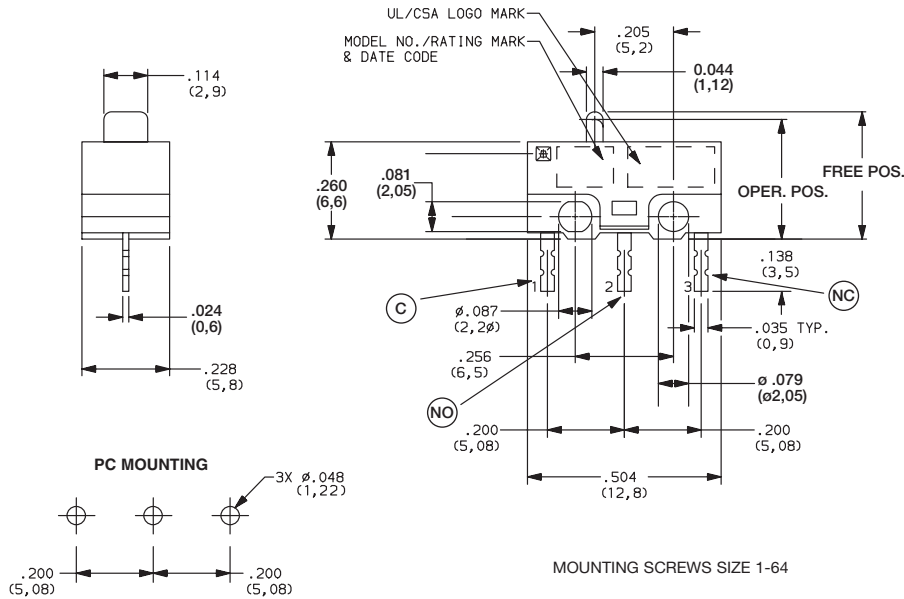


Snap-acting

# ZM Series Subminiature Snap-acting Switches

SERIES **ZM** ■ ■ ■ ■ ■ ■ ■ ■

**ZM** SUBMINIATURE SNAP-ACTING SWITCHES – SP MOMENTARY



ZMCJF7L0T  
SPDT

## OPERATING FORCE ■ ■ ■ ■ ■ ■ ■ ■

OPTION CODE	BASIC SWITCH OPERATING FORCE (OZ./GRAMS)
<b>CJ</b>	5.29 150
<b>CH</b>	3.15 90

## ELECTRICAL RATING ■ ■ ■ ■ ■ ■ ■ ■

OPTION CODE	RoHS COMPLIANT*	RoHS COMPATIBLE*	CONTACT MATERIAL		ELECTRICAL RATING
			MOVABLE CONTACT	STATIONARY CONTACT	
<b>F7</b>	Yes	Yes	Silver alloy		see chart
<b>M9</b>	Yes	Yes	Gold plating or silver alloy		see chart

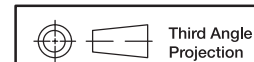
\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definition and specifications.

All models **cULus** with all options.

Consult Customer Service center for availability and delivery of nonstandard ratings.

Option Code	<b>cULus</b> 1054	<b>cULus</b> 61058-1	
<b>F7</b>	3 A 125 V AC	3 A 125 V AC 3 A 30 V DC	3 A 125 V AC
<b>M9</b>	0.1 A 48 V DC 0.2 A 60 V DC 0.1 A 125 V AC	0.1 A 48 V DC 0.2 A 60 V DC 0.1 A 125 V AC	0.1 A 48 V DC 0.2 A 60 V DC 0.1 A 125 V AC

Snap-acting

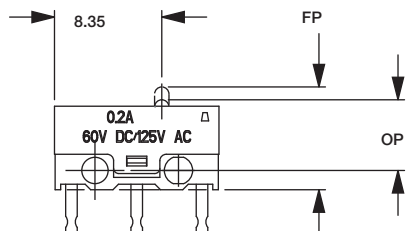


Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

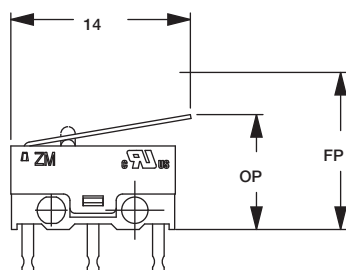
# ZM Series Subminiature Snap-acting Switches

## ACTUATOR

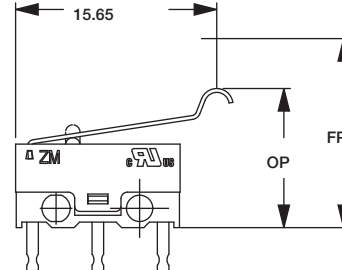
**P0** PIN PLUNGER



**L0** LEAF, 50 GRAMS (CJ ONLY)  
**L3** LEAF, 30 GRAMS (CH ONLY)



**T13** SIMULATED ROLLER, 40 GRAMS (CJ ONLY)  
**T23** SIMULATED ROLLER, 25 GRAMS (CH ONLY)



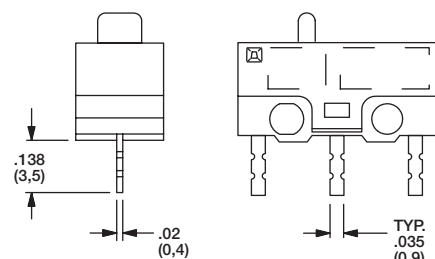
ACTUATOR OPTION CODE	A (mm)	B Ref (mm)	C (mm)	D (mm)	E (mm)	DIFF. MOTION mm MAX	OPER. FORCE grams MAX		RELEASED FORCE Grams MAX	OVER TRAVEL MIN
	LENGTH OF LEVER	LEVER LENGTH MTG. HOLE TO OP	PRE- TRAVEL MAX	OPERATING POSITION	FREE POSITION MAX		CJ	CH		
P0 PIN PLUNGER	NA	NA	1.3	7.0 ±0.3	8.0	0.3	150	90	15-20	0.2
L0 LEAF	13.0	4.03	3.4	8.4 ±0.8	11.0	1.3	50	-	8	0.6
L3 LEAF	13.0	4.03	3.4	8.4 ±0.8	11.0	1.3	-	30	5	0.6
T13 SIMULATED ROLLER	15.0	5.36	3.8	10.5 ±0.8	13.0	1.5	40	-	7	0.6
T23 SIMULATED ROLLER	15.0	5.36	3.8	10.5 ±0.8	13.0	1.5	-	25	4	0.6



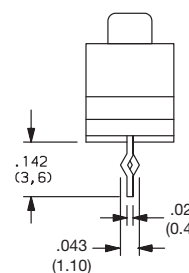
Snap-acting

## TERMINATIONS

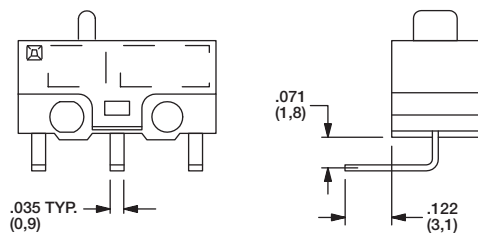
**T** (STD.) PC THRU-HOLE



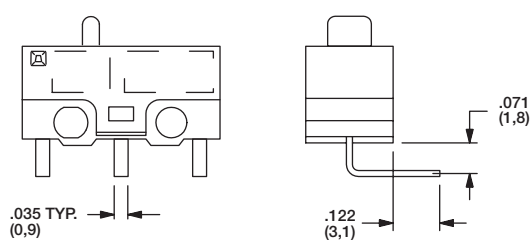
**K** PC THRU-HOLE WITH RETENTION FEATURE



**L** LEFT FOOTED, PC THRU-HOLE



**R** RIGHT FOOTED, PC THRU-HOLE



Third Angle  
Projection

Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

**C&K**

# ZMA Series Subminiature Snap-acting Switches



## Features/Benefits

- **Reliable snap-acting mechanism**
- **Long electrical and mechanical life**
- **Compact size—Ideal when space is limited**
- **Various PCB terminals and actuators**
- **RoHS compatible & compliant**

## Typical Applications

- **PCB detection switch**
- **Communication devices**
- **Testing equipment**
- **Security/Alarm systems**
- **Consumer electronics**

UL61058-1



## Specifications

CONTACT RATING: 3A @ 125 V AC 24 V DC  
 1 A @125 / 250 V AC 24 V DC  
 0.1A @ 125 V AC 60 V DC

ELECTRICAL LIFE: 300,000 cycles @ 0.1A / 10,000 cycles @ 3A.  
 MECHANICAL LIFE: 1,000,000 cycles.  
 INSULATION RESISTANCE: 100 M ohm min.  
 DIELECTRIC STRENGTH: 500 Vrms.  
 OPERATING TEMPERATURE: -40°C to 85°C  
 OPERATING FORCE: 80 or 150 grams.

## Materials

CASE/COVER: PBT  
 ACTUATOR: Button nylon 6/6  
 MOVABLE CONTACTS: Silver alloy or gold plated  
 STATIONARY CONTACTS: Silver alloy or gold plated  
 TERMINALS: Brass, silver plated.

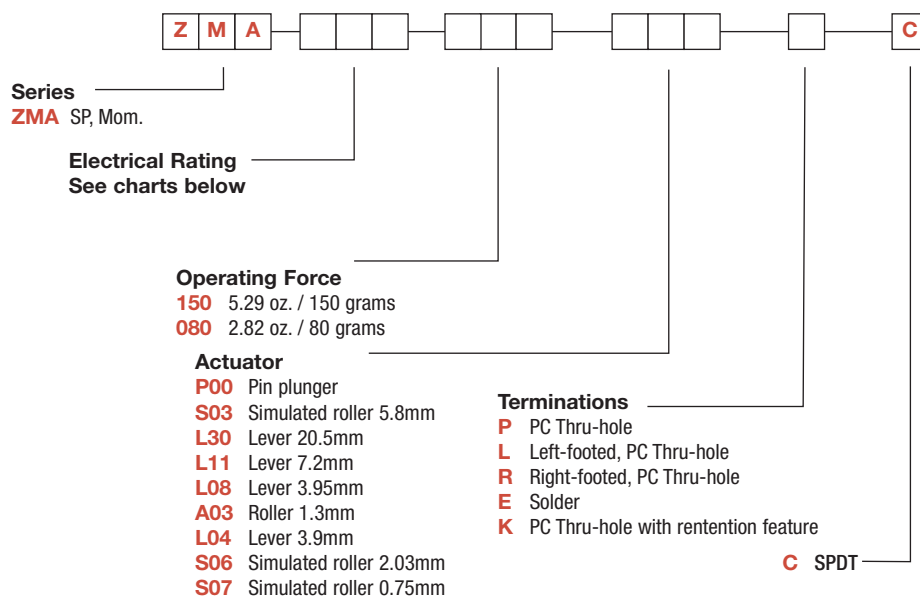
**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

\* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max.  
 @ 20 V AC or DC max.



## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages J-51 and J-53. For additional options not shown in catalog, consult Customer Service Center.



### Silver Contacts

Option Code	UL 1054	UL 61058-1	14	15
<b>00A</b>	0.1A 60 V DC 0.1A 125 V AC	0.1A 60 V DC 0.1A 125 V AC	0.1A 125 V AC	
<b>03A</b>	3 A 125 V AC	3 A 125 V AC 3 A 24 V DC	3A 125 V AC	
<b>01A</b>		1 A 24 V DC 1 A 125 / 250 V AC		1 A 24 V DC 1 A 125 / 250 V AC

### Gold Plated Contacts

Option Code	UL 1054	UL 61058-1	14	15
<b>G00</b>	0.1A 60 V DC 0.1A 125 V AC	0.1A 60 V DC 0.1A 125 V AC	0.1A 125 V AC	
<b>G03</b>	3 A 125 V AC	3 A 125 V AC 3 A 24 V DC	3A 125 V AC	
<b>G01</b>		1 A 24 V DC 1 A 125 / 250 V AC		1 A 24 V DC 1 A 125 / 250 V AC

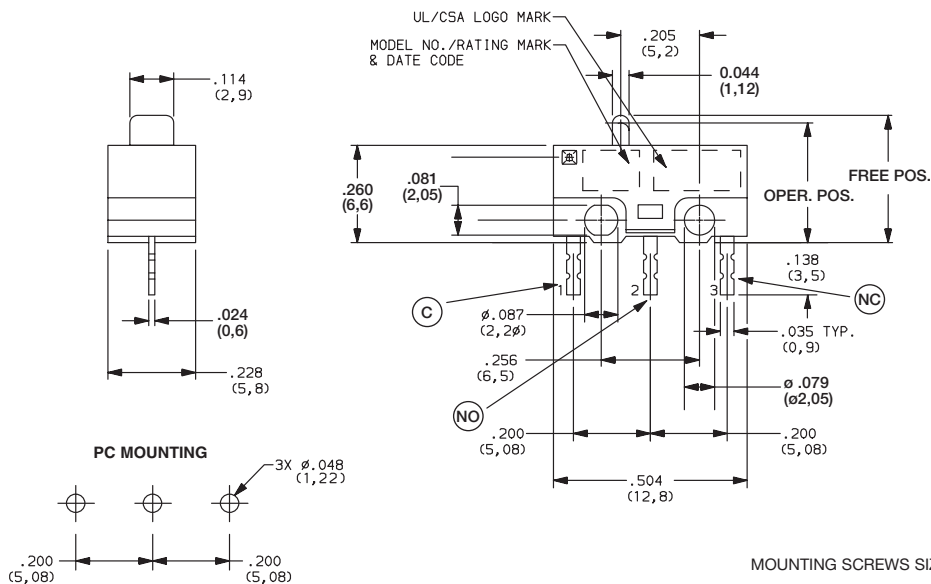


Dimensions are shown: Inch (mm)  
 Specifications and dimensions subject to change

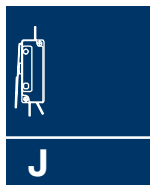
# ZMA Series Subminiature Snap-acting Switches

SERIES **Z M** ■ ■ ■ ■ ■ ■ ■ ■

**ZMA** SUBMINIATURE SNAP-ACTING SWITCHES – SP MOMENTARY



ZMA03A150L04PC  
SPDT



ELECTRICAL RATING ■ ■ ■ ■ ■ ■ ■ ■

Snap-acting

### Silver Contacts

### Gold Plated Contacts

Option Code	UL cUL US 1054	UL cUL US 61058-1	UL 14	UL 15	Option Code	UL cUL US 1054	UL cUL US 61058-1	UL 14	UL 15
00A	0.1A 60 V DC 0.1A 125 V AC	0.1A 60 V DC 0.1A 125 V AC	0.1A 125 V AC		G00	0.1A 60 V DC 0.1A 125 V AC	0.1A 60 V DC 0.1A 125 V AC	0.1A 125 V AC	
03A	3 A 125 V AC	3 A 125 V AC 3 A 24 V DC	3A 125 V AC		G03	3 A 125 V AC	3 A 125 V AC 3 A 24 V DC	3A 125 V AC	
01A		1 A 24 V DC 1 A 125 / 250 V AC		1 A 24 V DC 1 A 125 / 250 V AC	G01		1 A 24 V DC 1 A 125 / 250 V AC		1 A 24 V DC 1 A 125 / 250 V AC

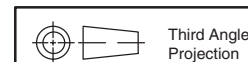
\* Note: See Technical Data in section N of this catalog for RoHS compliant and compatible definition and specifications.

All models **cUL US** with all options.

Consult Customer Service center for availability and delivery of nonstandard ratings.

OPERATING FORCE ■ ■ ■ ■ ■ ■ ■ ■

OPTION CODE	BASIC SWITCH OPERATING FORCE (OZ./GRAMS)
150	5.29 150
080	2.82 80



Third Angle  
Projection

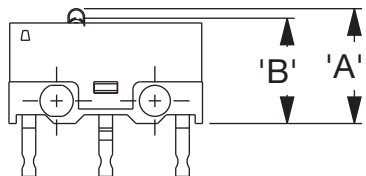
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



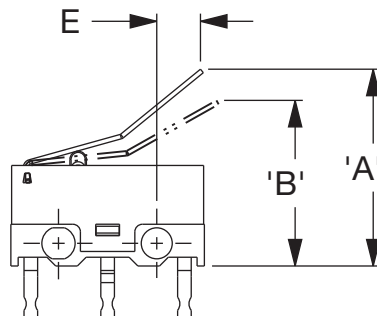
# ZMA Series Subminiature Snap-acting Switches

## ACTUATOR

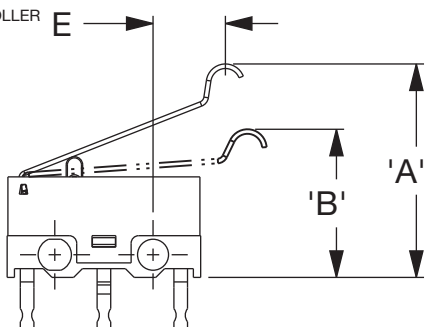
**P00** PIN PLUNGER



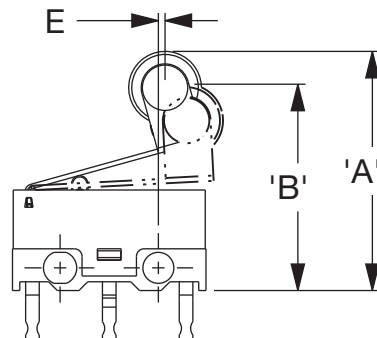
**L08** LEVER  
3.95MM



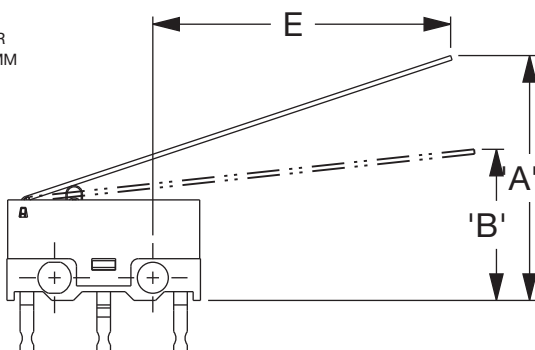
**S03** SIMULATED ROLLER  
5.8MM



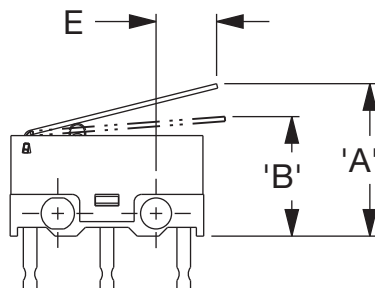
**A03** ROLLER  
1.3MM



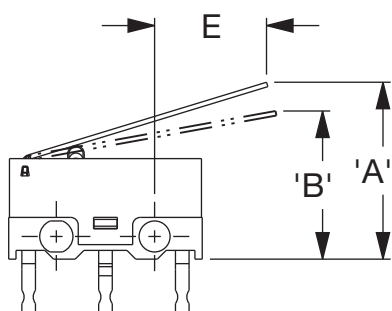
**L30** LEVER  
20.5MM



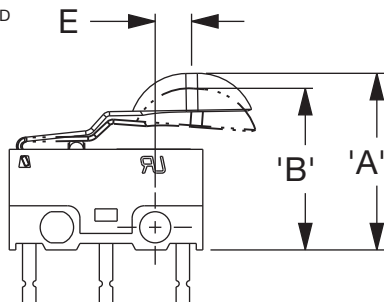
**L04** LEVER  
3.49MM



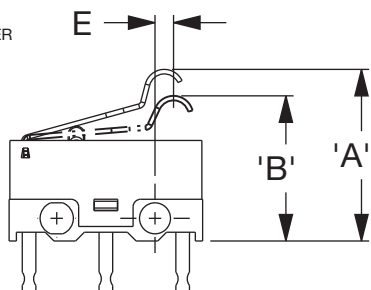
**L11** LEVER  
7.2MM



**S06** SIMULATED ROLLER  
2.03MM



**S07** SIMULATED ROLLER  
0.75MM



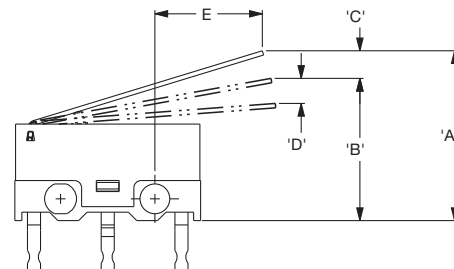
Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change



# ZMA Series Subminiature Snap-acting Switches

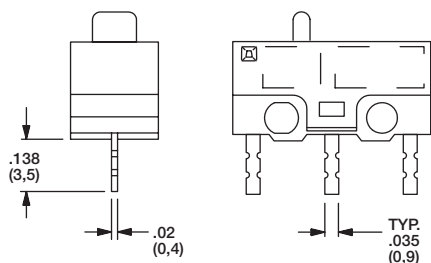
## SWITCH CHARACTERISTICS

CODE	OPER. FORCE MAX. (GRAMS)		REL. FORCE MIN. (GRAMS)		'A' FP MAX. (MM)	'B' OP MAX. (MM)	'C' PT MAX. (MM)	'D' OT MIN. (MM)	'E' MIN. (MM)
P00	80	150	21	35	7.35	6.9 ±0.3	0.62	0.2	
S03	25	43	5	7	14.2	9.8 ±0.9	3.5	0.7	5.41
L30 (80gf)	13	21	2	3	16.8	9.5 ±1.9	6.9	0.55	20.15
L30 (150 gf)	13	21	2	3	16.8	9.75 ±1.9	6.9	0.55	20.15
L11	25	39	4	6	11.7	8.68 ±1	4.4	0.6	7.33
L08	27	48	3	8	13.5	10.75 ±0.8	3.5	0.3	3.82
A03	34	65	6	10	16.55	13.65 ±1	3.9	0.5	0.56
L04	30	50	5	8	10.1	7.9 ±0.7	3.0	0.5	3.49
S06	33	49	5	11	12.43	10.7 ±0.8	1.43	1.25	1.97
S07	40	65	2	5	13.0	9.7 ±1	4.3	0.5	0.49

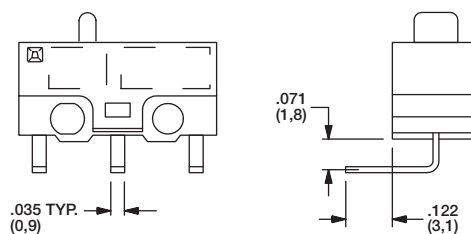


## TERMINATIONS

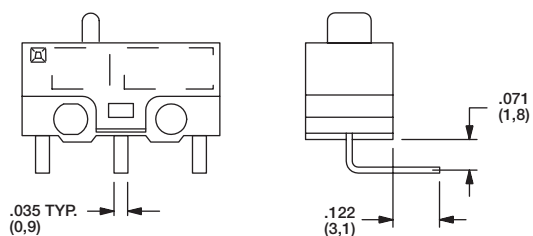
### P PC THRU-HOLE



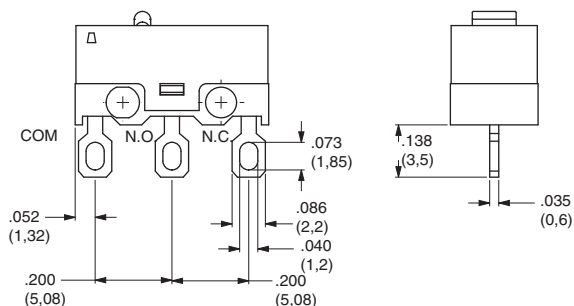
### L LEFT FOOTED, PC THRU-HOLE



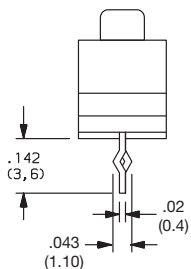
### R RIGHT FOOTED, PC THRU-HOLE



### E SOLDER



### K PC THRU-HOLE WITH RETENTION FEATURE



Snap-acting



Third Angle  
Projection

Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



# ZMB Series Subminiature Snap-acting Switches



## Features/Benefits

- **Compact design**
- **Various operating forces**
- **Different lever options**
- **PCB or solder terminal options**
- **Detect interlock and movement**

## Typical Applications

- **Consumer electronics**
- **Communications**
- **Industrial meters**
- **Security systems**
- **Office equipment**

## Specifications

CONTACT ARRANGEMENT: SPDT  
 CONTACT RATING: 0.1 A @ 30 V DC  
 INITIAL CONTACT RESISTANCE: 50 mΩ max.  
 INSULATION RESISTANCE: 100 M Ω min. @ 500 VDC  
 DIELECTRIC STRENGTH: 1000 VAC (50-60 Hz)  
 MECHANICAL LIFE: 500,000 cycles  
 ELECTRICAL LIFE: 50,000 cycles  
 PRE-TRAVEL: 0.5 mm max.  
 OVER-TRAVEL: 0.5 mm min.  
 OPERATING TEMPERATURE: -20°C to + 70°C

## Materials

COVER / HOUSING: PBT (black)  
 KNOB: PBT (red)  
 CONTACT: Copper alloy, silver plated  
 TERMINALS: Copper alloy, silver plated  
 LEVER: Stainless steel

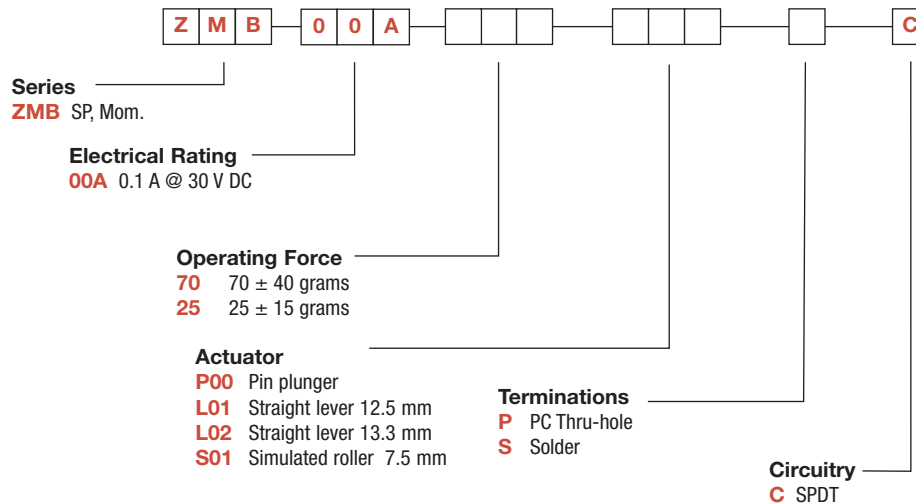
**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.



Snap-acting

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages J-55 and J-56. For additional options not shown in catalog, consult Customer Service Center.



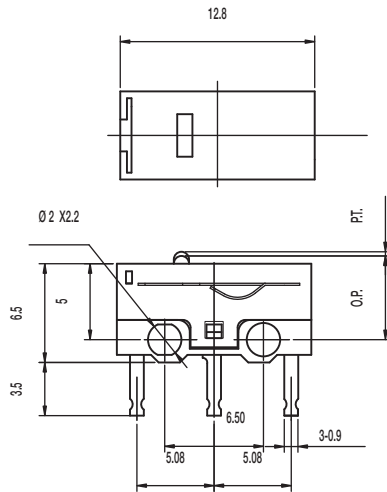
Dimensions are shown: Inch (mm)  
 Specifications and dimensions subject to change



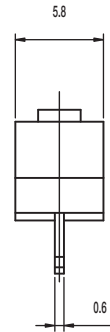
# ZMB Series Subminiature Snap-acting Switches

## ZMB00A70P00PC

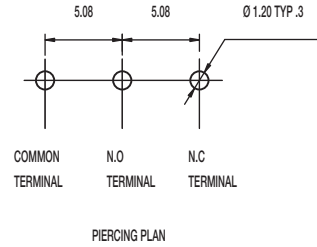
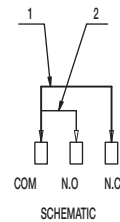
PIN PLUNGER, PC THRU-HOLE



OPERATING FORCE:  $70 \pm 40$  gf  
 OPERATING POSITION (OP):  $5.5 \pm 0.30$  mm  
 FREE POSITION (FP): N/A

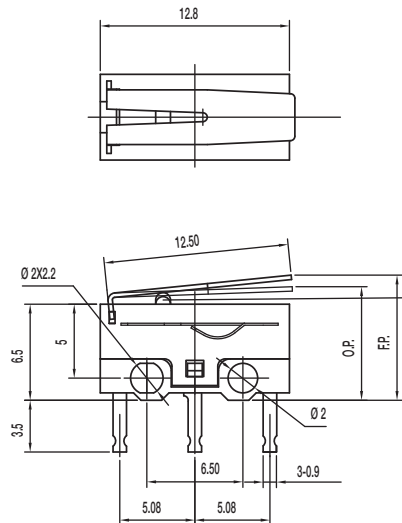


1 P - 2 T

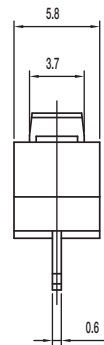


## ZMB00A25L01PC

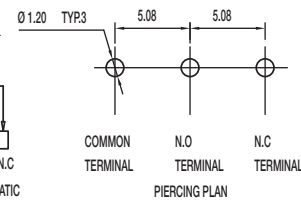
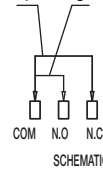
STRAIGHT LEVER 12.5 MM, PC THRU-HOLE



OPERATING FORCE:  $25 \pm 15$  gf  
 OPERATING POSITION (OP):  $7.2 \pm 0.8$  mm  
 FREE POSITION (FP): 10 mm max.

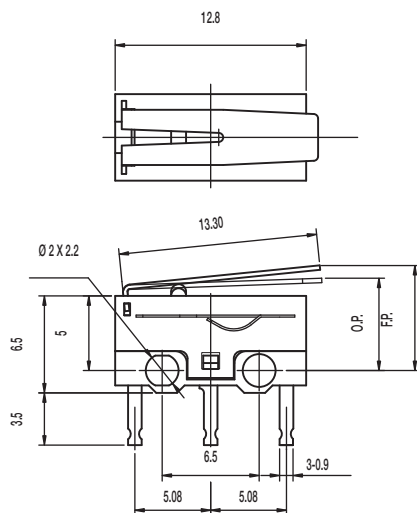


1 P - 2 T

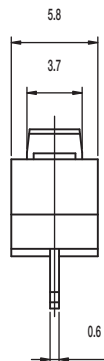


## ZMB00A25L02PC

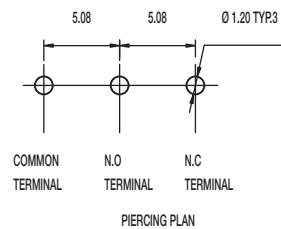
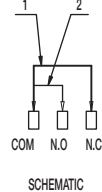
STRAIGHT LEVER 13.3 MM, PC THRU-HOLE



OPERATING FORCE:  $25 \pm 15$  gf  
 OPERATING POSITION (OP):  $6.0 \pm 0.8$  mm  
 FREE POSITION (FP): 8.5 mm max.



1 P - 2 T

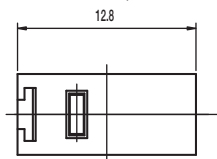


Snap-acting

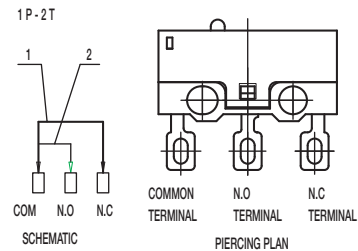
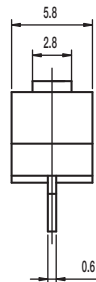
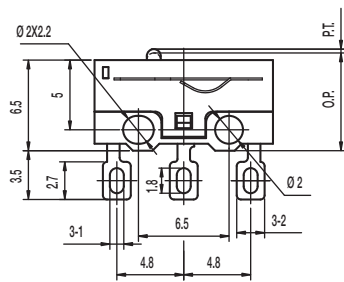
# ZMB Series Subminiature Snap-acting Switches

## ZMB00A70P00SC

PIN PLUNGER, SOLDER

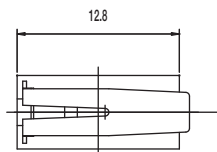


OPERATING FORCE:  $70 \pm 40$  gf  
 OPERATING POSITION (OP):  $7.0 \pm 0.30$  mm  
 FREE POSITION (FP): N/A

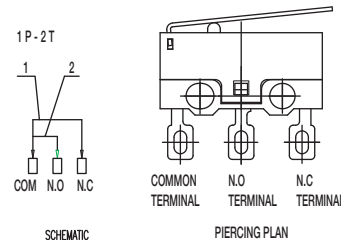
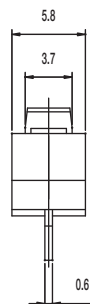
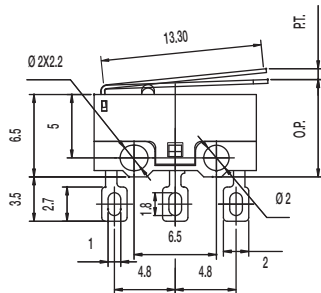


## ZMB00A25L02SC

STRAIGHT LEVER 13.3 MM, SOLDER

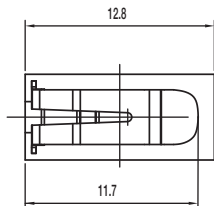


OPERATING FORCE:  $25 \pm 15$  gf  
 OPERATING POSITION (OP):  $7.5 \pm 0.8$  mm  
 FREE POSITION (FP): 10 mm max.

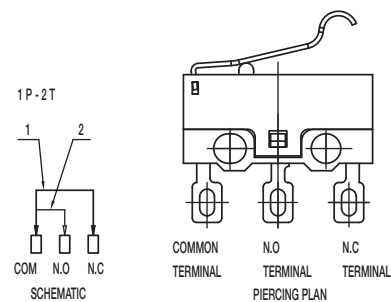
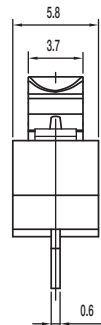
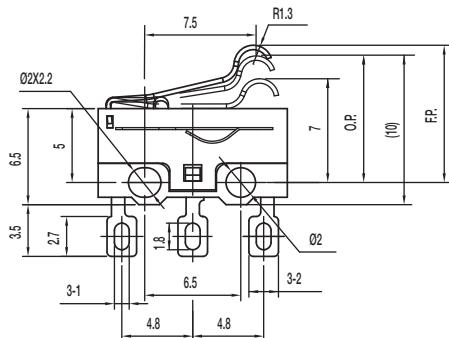


## ZMB00A25S01SC

SIMULATED ROLLER 7.5 MM, SOLDER



OPERATING FORCE:  $25 \pm 15$  gf  
 OPERATING POSITION (OP):  $8.5 \pm 0.8$  mm  
 FREE POSITION (FP): 9.5 mm max.



# ZMS Series Subminiature Snap-acting Switches (IP65)

## Features/Benefits

- **Reliable snap-acting mechanism**
- **Long electrical and mechanical life**
- **Compact size—Ideal when space is limited**
- **Various PCB terminals and actuators**
- **RoHS compatible**
- **IP67 with potted wires only**

## Typical Applications

- **PCB detection switch**
- **Communication devices**
- **Testing equipment**
- **Security/Alarm systems**
- **Consumer electronics**



UL61058-1  
UL1054



## Specifications

CONTACT RATING: 3A@ 125 V AC/ 3A@ 12 V DC, 0.01A @ 12 V DC  
ELECTRICAL LIFE: 100,000 cycles @ 0.01A 12V DC  
100,000 cycles @ 3A 12 V DC  
6,000 cycles @ 3A 125 V AC  
MECHANICAL LIFE: 500,000 cycles  
INSULATION RESISTANCE: 100 M ohm min.  
DIELECTRIC STRENGTH: 500 Vrms.  
OPERATING TEMPERATURE: -40°C + 85°C.  
OPERATING FORCE: 130 grams.

\* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max.  
@ 20 V AC or DC max.

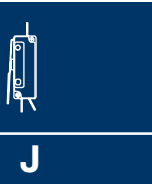
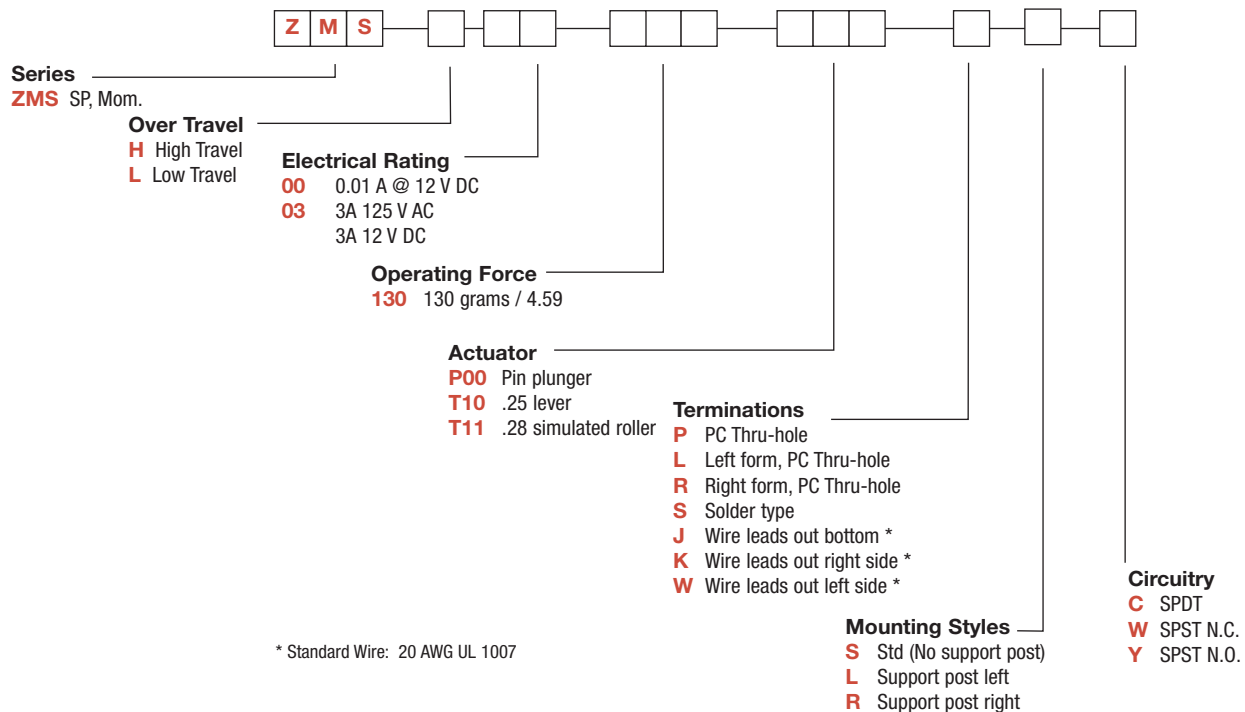
## Materials

CASE: Nylon  
COVER/ACTUATOR: PBT  
MOVABLE CONTACTS: 3 Amp silver alloy, 0.01A gold plating over silver alloy  
STATIONARY CONTACTS: 3 Amp silver alloy, 0.01 A gold plating over silver alloy  
TERMINALS: Brass, silver plated  
LEVER: Stainless steel

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages J-58 through J-60. For additional options not shown in catalog, consult Customer Service Center.



Snap-acting

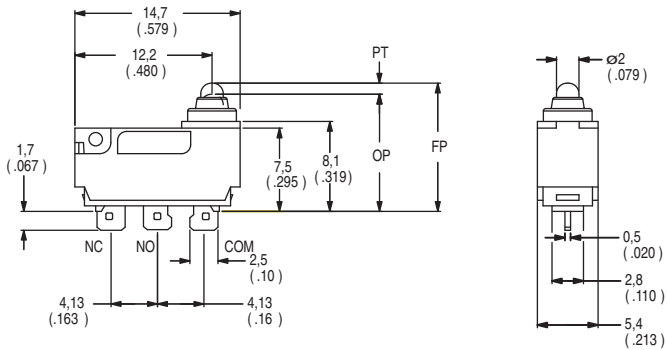


Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

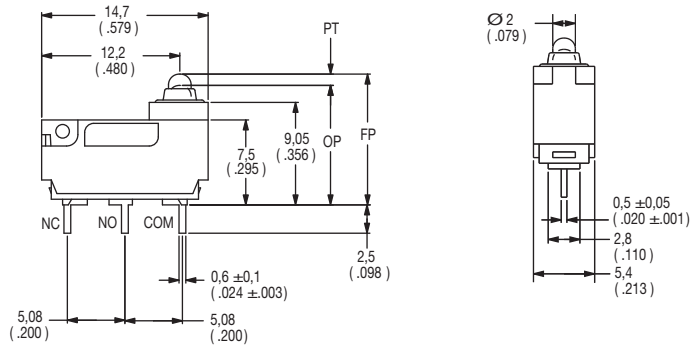
# ZMS Series Subminiature Snap-acting Switches (IP65)

## SERIES ZMS ■ ■ ■ ■ ■ ■ ■ ■

**ZMSH** HIGH OVER TRAVEL  
Switch option shown: ZMSH00P00SSC



**ZMSL** LOW OVER TRAVEL  
Switch option shown: ZMSL00P00PSC



Snap-acting

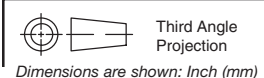
## ELECTRICAL RATING ■ ■ ■ ■ ■ ■ ■ ■

OPTION CODE	CONTACT MATERIAL	UL61058-1 UL1054	ENEC
	MOVABLE CONTACT / STATIONARY CONTACT	ELECTRICAL RATING	ELECTRICAL RATING
<b>00</b>	Gold plating over silver alloy	0.01 AMP @ 12 V DC 0.1 AMP @ 12 V DC	10m AMP @ 12 V DC 5E5
<b>03</b>	Silver alloy	3 AMPS @ 125 V AC 3 AMPS @ 12 V DC	3 AMPS @ 12 V DC 1E5

Consult Customer Service center for availability and delivery of nonstandard ratings.

## OPERATING FORCE ■ ■ ■ ■ ■ ■ ■ ■

OPTION CODE	BASIC SWITCH OPERATING FORCE (OZ./GRAMS)
<b>130</b>	130 4.59



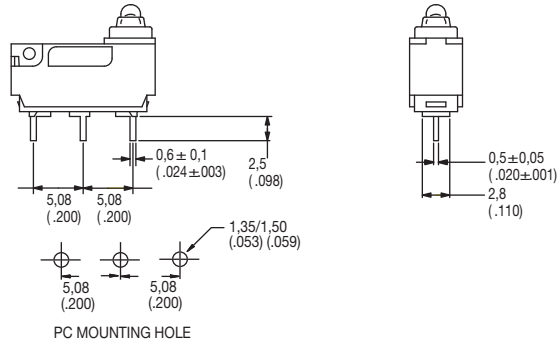
Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change



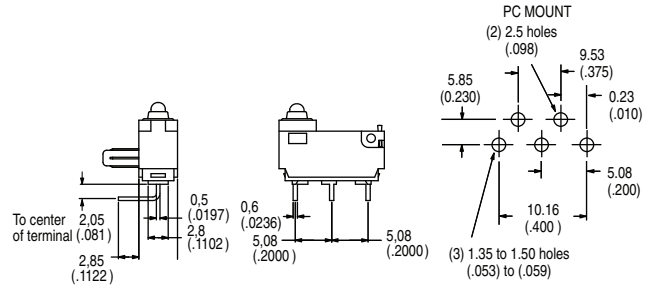
# ZMS Series Subminiature Snap-acting Switches (IP65)

## TERMINATIONS

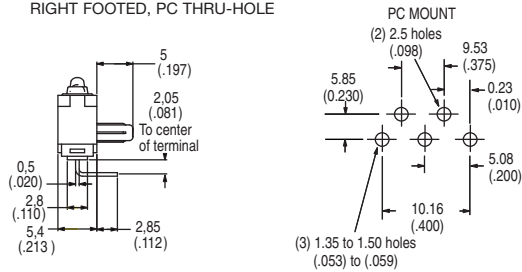
**P** PC THRU-HOLE



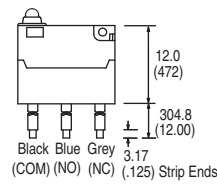
**L** LEFT FOOTED, PC THRU-HOLE



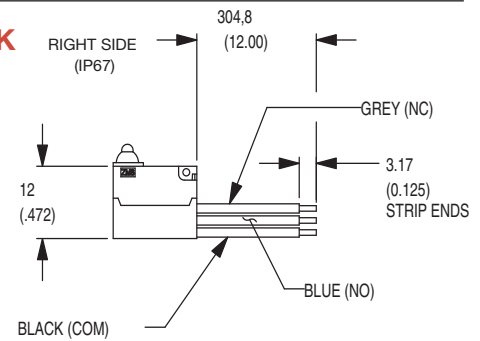
**R** RIGHT FOOTED, PC THRU-HOLE



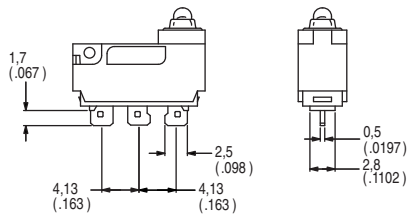
**J** WIRE LEADS BOTTOM (IP67)



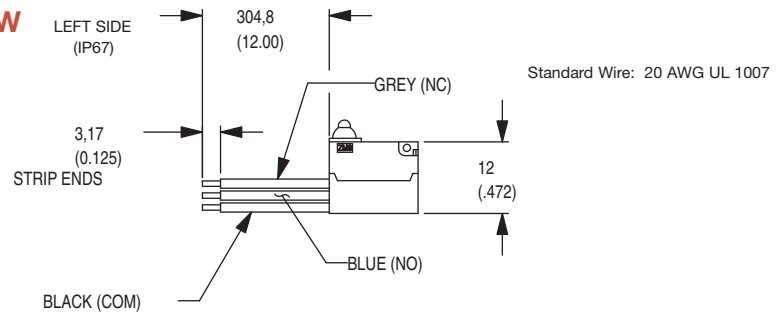
**K** RIGHT SIDE (IP67)



**S** SOLDER TYPE

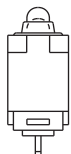


**W** LEFT SIDE (IP67)

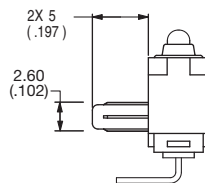


## MOUNTING STYLES

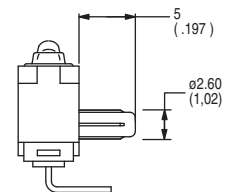
**S** STD (NO SUPPORT POST)



**L** SUPPORT POST LEFT



**R** SUPPORT POST RIGHT

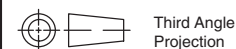


## CIRCUITRY

**C** SPDT (Single Pole, Double Throw)

**W** SPST, NC (Single Pole, Single Throw, Normally Closed)

**Y** SPST, NO (Single Pole, Single Throw, Normally Open)



Third Angle  
Projection

Dimensions are shown: mm (inch)  
Specifications and dimensions subject to change



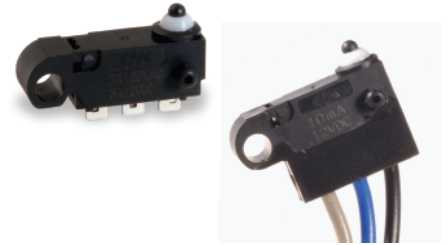
# ZMSM Series with Mounting Hole Subminiature Snap-acting Switches (IP65)

## Features/Benefits

- Reliable snap-acting mechanism
- Long electrical and mechanical life
- Various PCB terminals and actuators
- RoHS compatible
- IP67 with potted wires only

## Typical Applications

- Communication devices
- Testing equipment
- Security/Alarm systems



UL61058-1 

## Specifications

CONTACT RATING: 3A@ 125 V AC/ 3A@ 12 V DC, 0.01 A@ 12 V DC.

ELECTRICAL LIFE: 100,000 cycles @ 0.01 A, 12 V DC / 100,000 cycles @ 3A, 12 V DC, 6,000 cycles @ 3A, 125 VAC

INSULATION RESISTANCE: 100 M ohm min.

DIELECTRIC STRENGTH: 500 Vrms.

OPERATING TEMPERATURE: see chart below.

OPERATING FORCE: 130 grams.

\* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

## Materials

CASE: Nylon

COVER/ACTUATOR: PBT

MOVABLE CONTACTS: 3 Amp silver, 0.01A gold

STATIONARY CONTACTS: 3 Amp silver, 0.01A gold

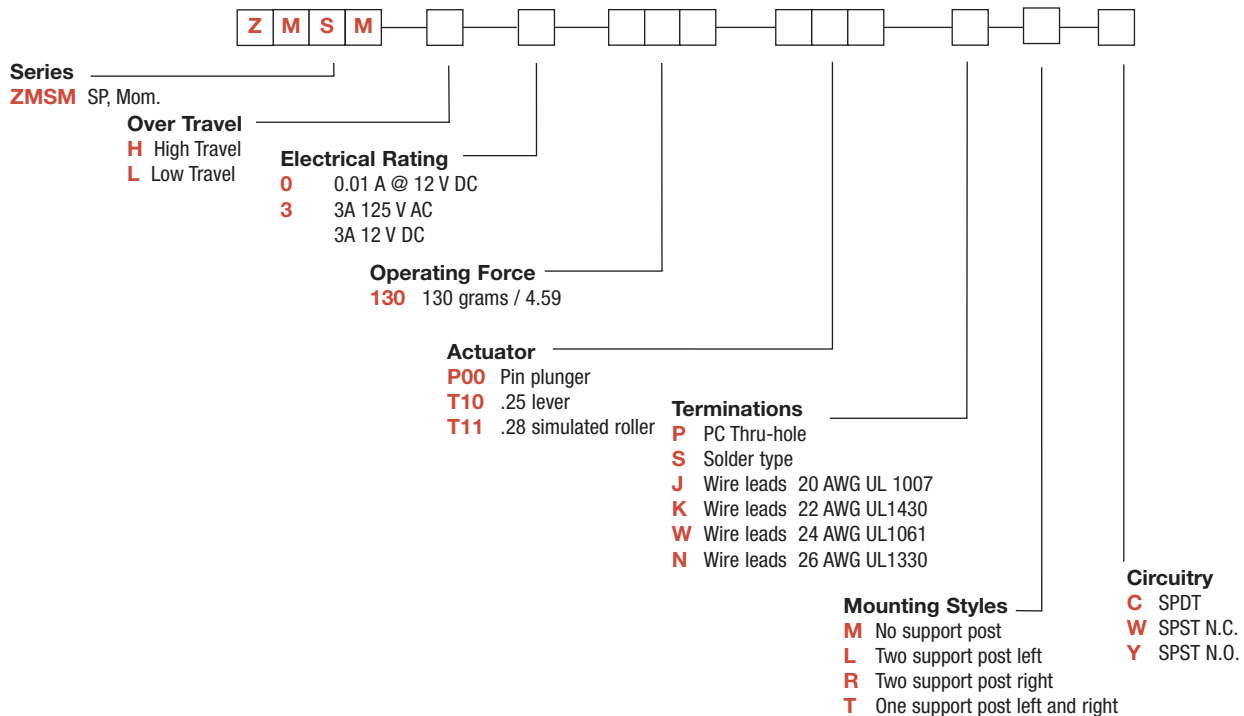
TERMINALS: Brass, Pre-plated with silver

LEVER: Stainless steel

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages J-62 through J-64. For additional options not shown in catalog, consult Customer Service Center.



Dimensions are shown: mm  
 Specifications and dimensions subject to change

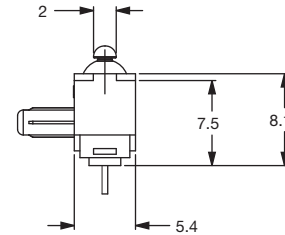
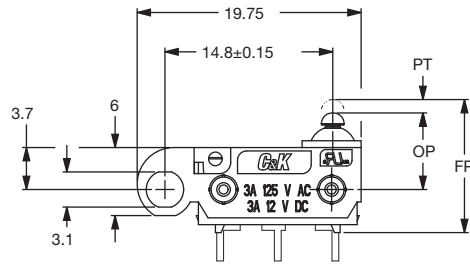
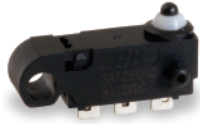


Snap-acting

# ZMSM Series with Mounting Hole Subminiature Snap-acting Switches (IP65)

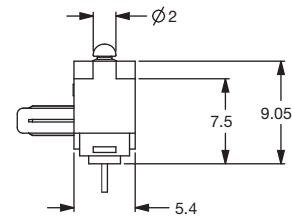
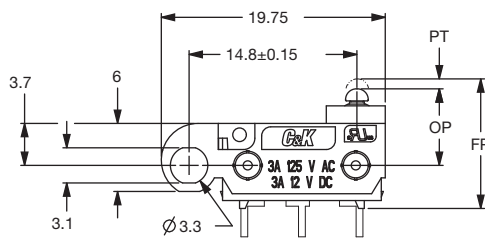
## SERIES

**ZMSMH** HIGH OVER TRAVEL



**ZMSML** LOW OVER TRAVEL

MODEL SHOWN: ZMSMHXXXP00PLC



MODEL SHOWN: ZMSMLXXXP00PLC



Snap-acting

## ELECTRICAL RATING

OPTION CODE	RoHS COMPLIANT*	RoHS COMPATIBLE*	CONTACT MATERIAL		ELECTRICAL RATING
			MOVABLE CONTACT	STATIONARY CONTACT	
0	Yes	Yes	Gold alloy		0.01 A @ 12 V DC
3	Yes	Yes	Silver alloy		3 AMPS @ 125 V AC 3 AMPS @ 12 V DC

Model **C&K** with option "S" (solder type) only.  
Consult Customer Service center for availability and delivery of nonstandard ratings.

## OPERATING FORCE

OPTION CODE	BASIC SWITCH OPERATING FORCE (OZ./GRAMS)
130	130 4.59



Dimensions are shown: mm  
Specifications and dimensions subject to change

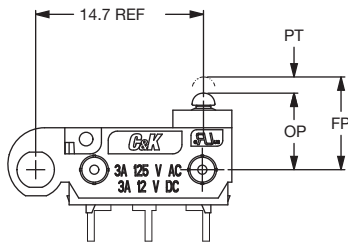




# ZMSM Series with Mounting Hole Subminiature Snap-acting Switches (IP65)

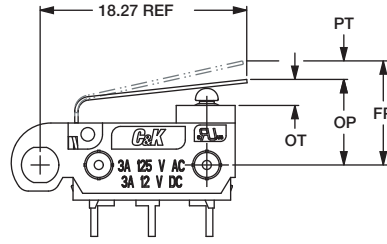
## ACTUATOR

**P00** PIN PLUNGER (IP65)



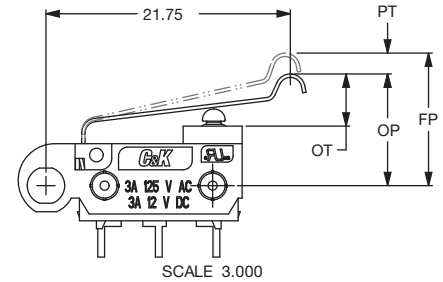
MODEL SHOWN: ZMSMLXXXP00PLC

**T10** .25 LEVER (IP65)



MODEL SHOWN: ZMSMLXXXT10PLC

**T11** LEVER (IP65)



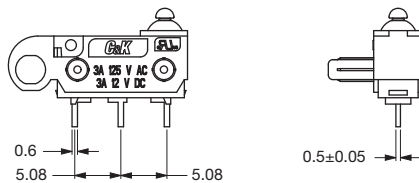
MODEL SHOWN: ZMSMLXXXT11PLC

### SWITCH CHARACTERISTICS

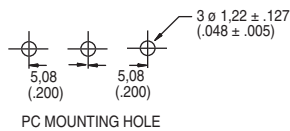
Actuator code	Maximum Operate Force (grams/oz.)	Minimum Release Force (grams/oz.)	Free Position Max (mm)	Maximum Pre-travel (mm)	Operate Position (mm)	Maximum Differential (mm)	Low Overtravel min. (mm)	High Overtravel min. (mm)
<b>P00</b>	130 4.59	13 0.45	7.35	0.8	6.75 ± 0.3	0.3	0.8	1.75
<b>T10</b>	195 6.88	55 1.93	10.70	3.85	7.40 ± 0.8	0.5	1.35	2.3
<b>T11</b>	160 5.64	45 1.58	13.80	4.8	9.90 ± 0.8	0.7	1.65	2.6

## TERMINATIONS

**P** PC THRU-HOLE (IP65)

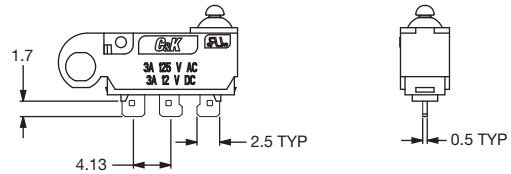


MODEL SHOWN: ZMSMHXXXP00PLC



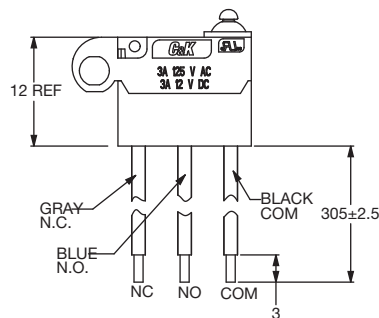
PC MOUNTING HOLE

**S** SOLDER TYPE (IP65)



MODEL SHOWN: ZMSMHXXXP00SMC

**J** WIRE LEADS BOTTOM (IP67)



Standard Wire: 20 AWG UL 1007

Available options - must specify

22AWG UL1430

24AWG UL1061

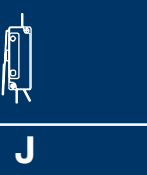
26AWG UL1330



Third Angle  
Projection

Dimensions are shown: mm  
Specifications and dimensions subject to change

**C&K**

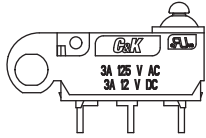
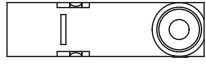


Snap-acting

# ZMSM Series with Mounting Hole Subminiature Snap-acting Switches (IP65)

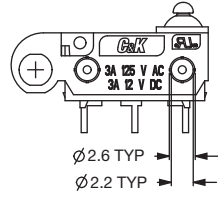
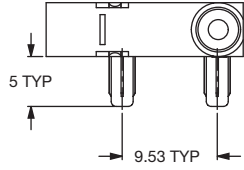
## MOUNTING STYLES

**M** NO SUPPORT POSTS



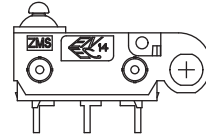
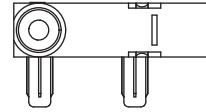
MODEL SHOWN:  
ZMSMHXXXXP00PMC

**L** TWO SUPPORT POSTS LEFT



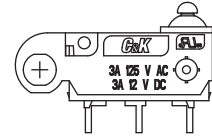
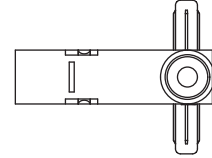
POSTS LEFT  
MODEL SHOWN:  
ZMSMHXXXXP00PLC

**R** TWO SUPPORT POSTS RIGHT



POSTS RIGHT  
MODEL SHOWN:  
ZMSMHXXXXP00PRC

**T** ONE SUPPORT POST LEFT & RIGHT



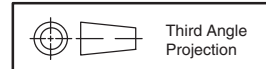
LEFT & RIGHT  
MODEL SHOWN:  
ZMSMHXXXXP00PTC



Snap-acting

## CIRCUITRY

- C** SPDT (Single Pole, Double Throw)
- W** SPST, NC (Single Pole, Single Throw, Normally Closed)
- Y** SPST, NO (Single Pole, Single Throw, Normally Open)



Dimensions are shown: mm  
Specifications and dimensions subject to change



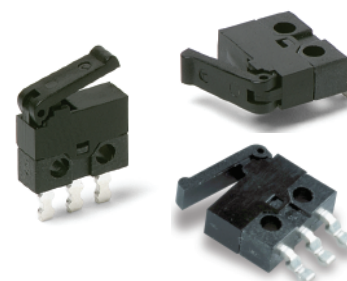
# MDS Series Micro Snap-acting Detect Switches

## Features/Benefits

- Snap-acting tactile feel
- Small package size
- Available in vertical or right angle PCB mount
- RoHS compliant and compatible

## Typical Applications

- Detect the presence of a mechanical device
- Medical devices
- Consumer electronic devices
- ATCA applications



## Specifications

CONTACT RATING: 300mA @ 30 VDC.  
 MECHANICAL & ELECTRICAL LIFE: 30,000 operations.  
 CONTACT RESISTANCE: 100 m Ω max. initial  
 OPERATING TEMPERATURE: -25°C to +70°C.  
 SOLDERABILITY: According to lead free solder profiles.  
 PACKAGING: Available in bulk or tape and reel.  
 OPERATING FORCE: 50g Max.  
 RELEASE FORCE: 3g Min.

## Materials

BASE: PA9T  
 COVER & ACTUATOR: PA9T  
 MOVABLE CONTACT: Copper alloy, silver plated.  
 STATIONARY CONTACTS: Copper alloy, silver plated.  
 TERMINALS: Copper alloy, silver plated.

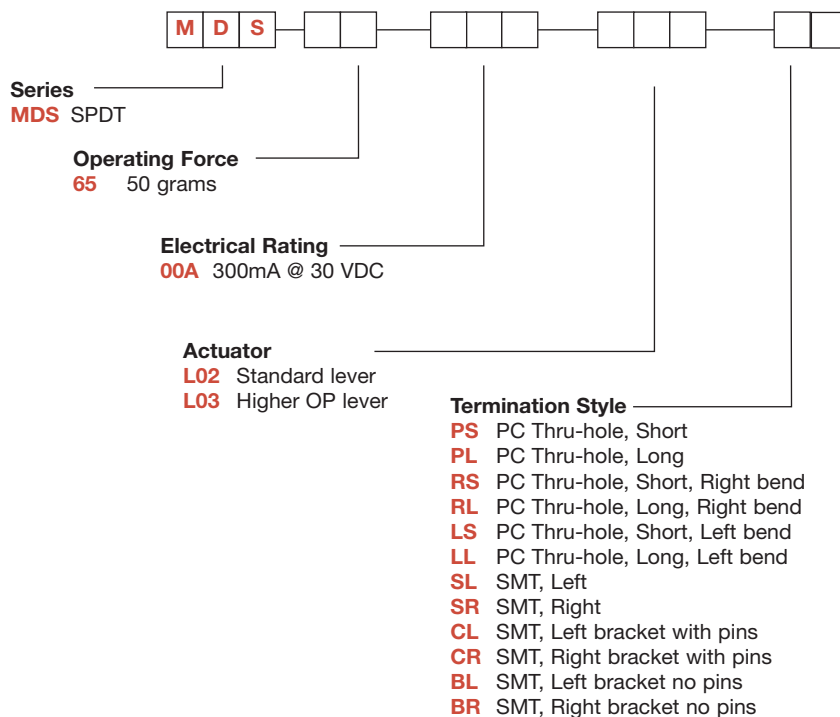
**NOTE:** MDS series is RoHS compliant, and compatible. See technical data section of this catalog for RoHS compliant and compatible definitions and specifications.

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.



## Build-A-Switch

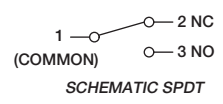
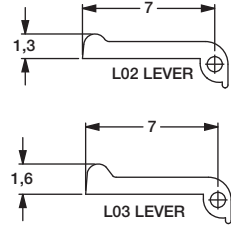
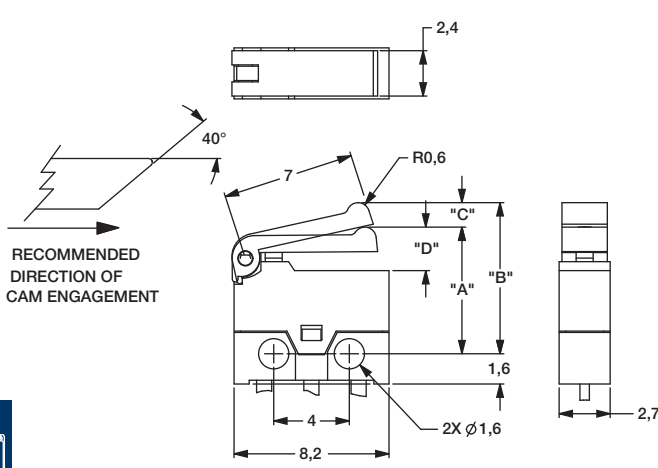
To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages J-66 through J-70. For additional options not shown in catalog, consult Customer Service Center.



Snap-acting

# MDS Series Micro Snap-acting Detect Switches

## SERIES **MDS** ■■■■■■■■



OPERATING CHARACTERISTICS			
		LEVER L02	LEVER L03
OPERATING POSITION	DIM 'A'	6.7±0.5	7.0 +/-0.5
FREE POSITION	DIM 'B'	8 MAX	8.5 MAX
PRETRAVEL	DIM 'C'	1,8 MAX	1.8 MAX
OVER TRAVEL	DIM 'D'	0.3 MIN	0.3 MIN
CONTACT RATING		0.3A @ 30 VDC	0.3A @ 30VDC
OPERATING FORCE		50 GRAMS F. MAX	50 GRAMS F. MAX

Snap-acting

## OPERATING FORCE ■■■■■■■■

OPTION CODE	OPERATING FORCE
<b>65</b>	50 grams max.

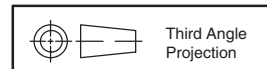
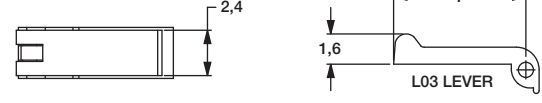
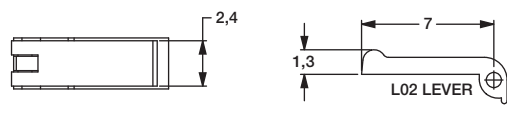
## ELECTRICAL RATING ■■■■■■■■

OPTION CODE	ELECTRICAL RATING
<b>00A</b>	300mA @ 30 V DC

## ACTUATOR ■■■■■■■■

**L02** STANDARD LEVER

**L03** HIGHER OP LEVER

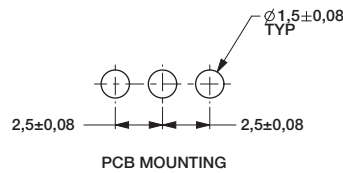


Dimensions are shown: mm  
Specifications and dimensions subject to change

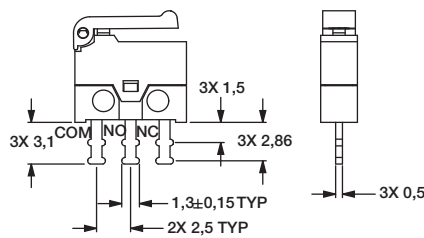
# MDS Series Micro Snap-acting Detect Switches

## TERMINATIONS

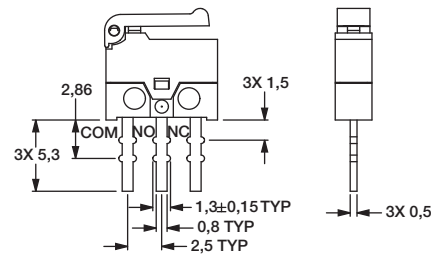
### PCB Mounting Pattern



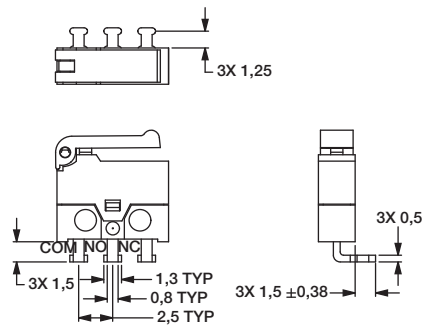
### PS PC THRU-HOLE, SHORT STRAIGHT



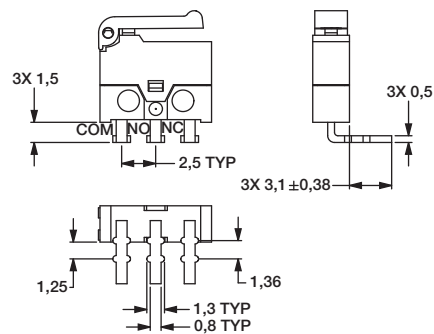
### PL PC THRU-HOLE, LONG STRAIGHT



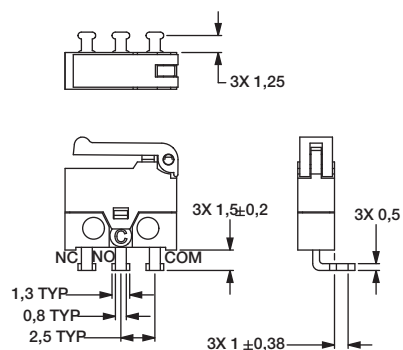
### RS PC THRU-HOLE, SHORT RIGHT BEND



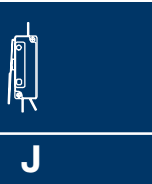
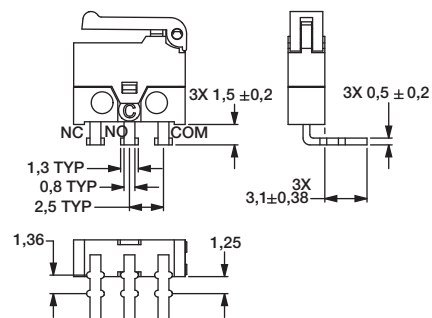
### RL PC THRU-HOLE, LONG SHORT BEND



### LS PC THRU-HOLE, SHORT LEFT BEND



### LL PC THRU-HOLE, LONG LEFT BEND

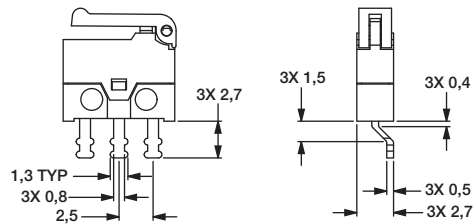


Snap-acting

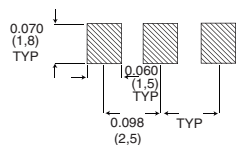
# MDS Series Micro Snap-acting Detect Switches

## TERMINATIONS

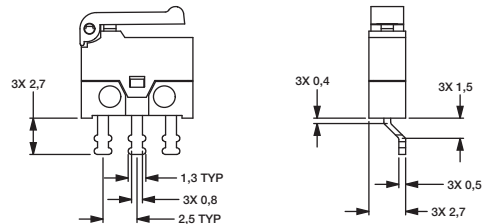
**SL** SMT, LEFT MOUNT



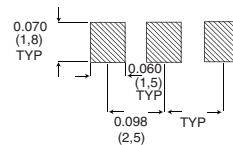
**SMT Mounting Pattern**



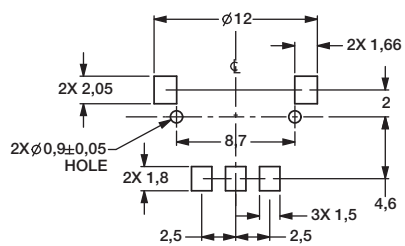
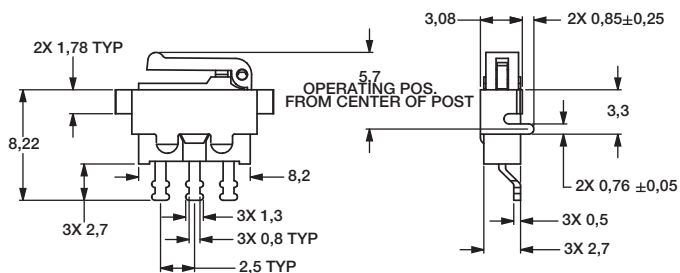
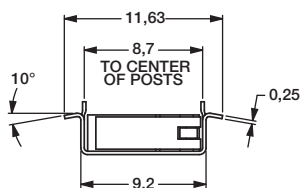
**SR** SMT, RIGHT MOUNT



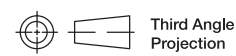
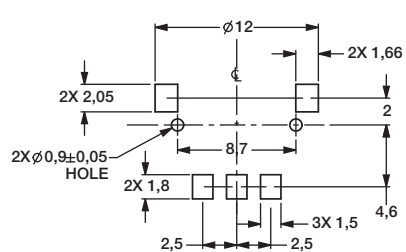
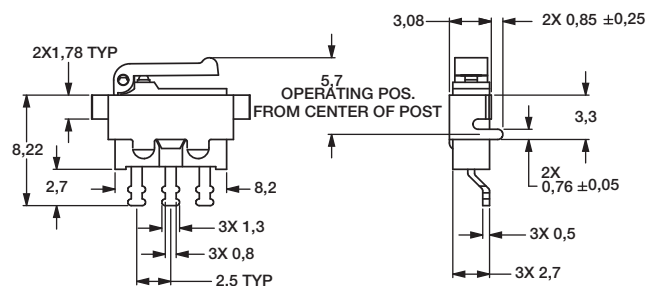
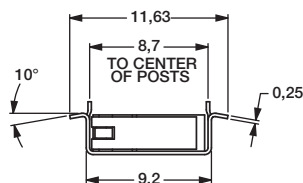
**SMT Mounting Pattern**



**CL** SMT, LEFT BRACKET WITH PINS



**CR** SMT, RIGHT BRACKET WITH PINS



Third Angle Projection

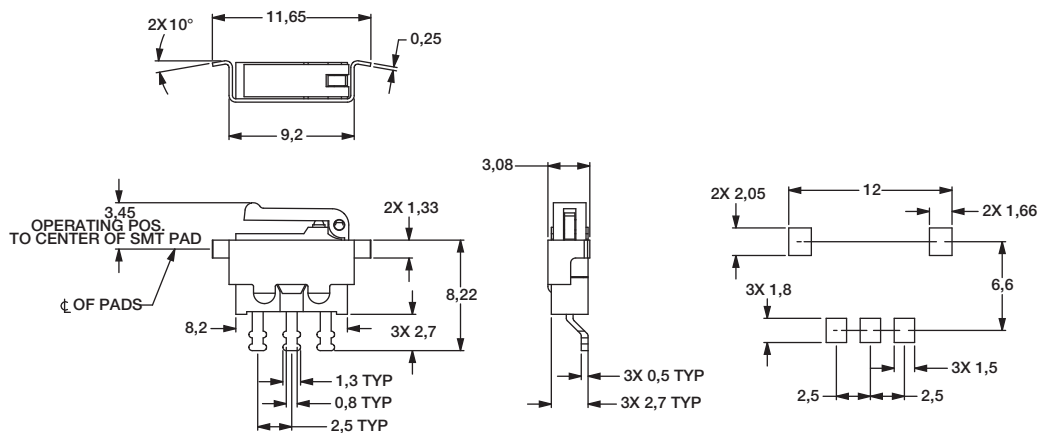
Dimensions are shown: mm  
Specifications and dimensions subject to change



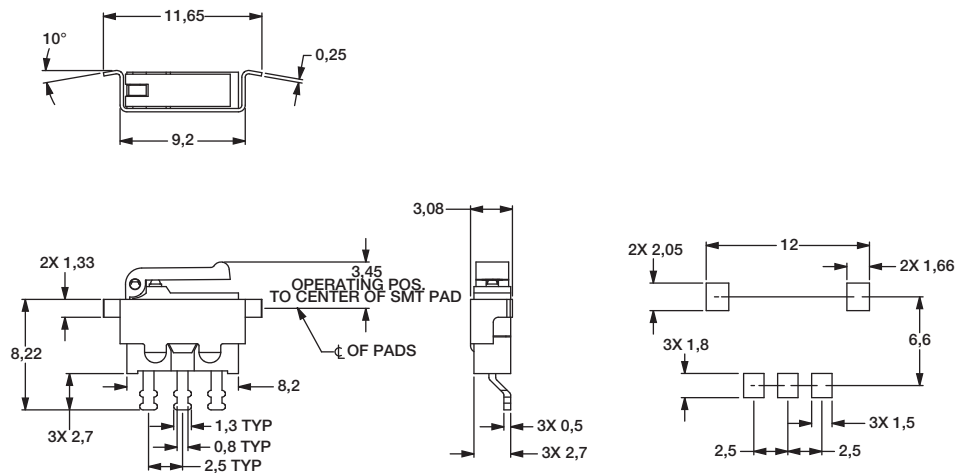
# MDS Series Micro Snap-acting Detect Switches

## TERMINATIONS

**BL** SMT, LEFT BRACKET NO PINS



**BR** SMT, RIGHT BRACKET NO PINS



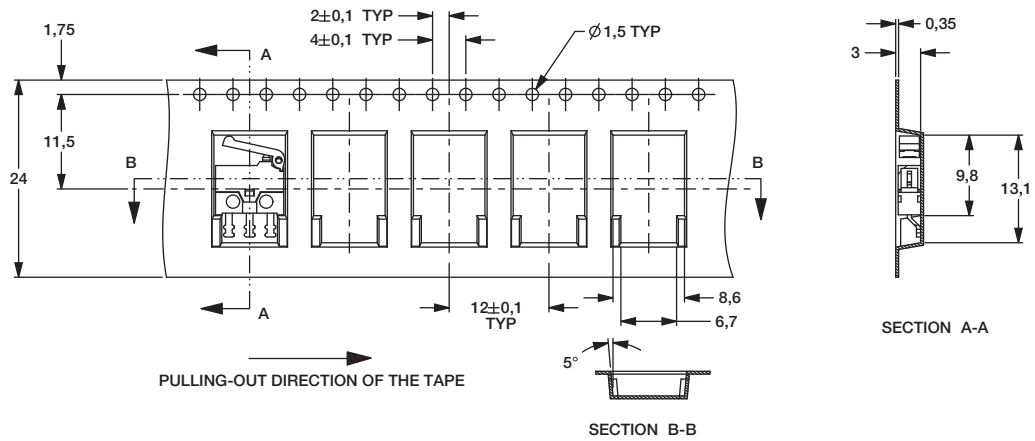
Snap-acting

# MDS Series Micro Snap-acting Detect Switches

## TAPE AND REEL

**SL** SMT, LEFT MOUNT

**SR** SMT, RIGHT MOUNT

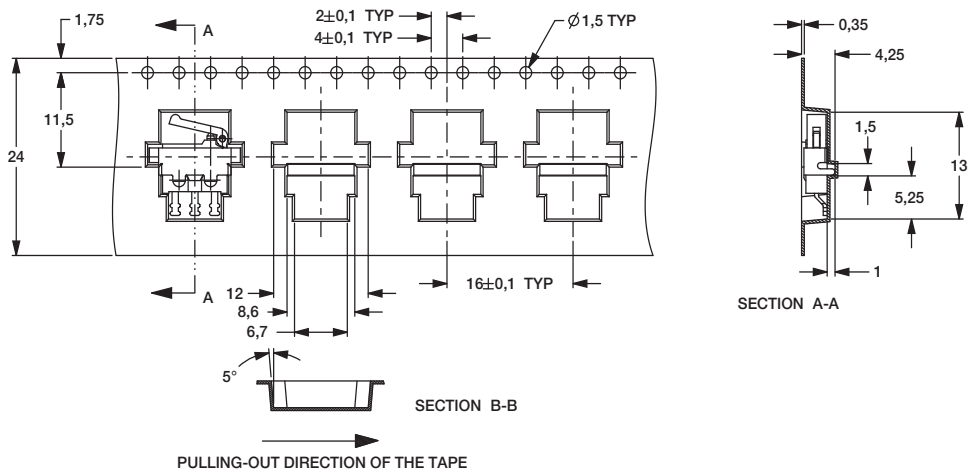


**CL** SMT, LEFT MOUNT

**CR** SMT, RIGHT MOUNT

**BL** SMT, LEFT MOUNT

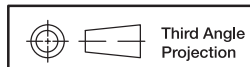
**BR** SMT, RIGHT MOUNT



Supplied in carrier tape meeting the EIA-481-2 standard for 24mm tape.

Packaging quantity: SL and SR; 1,600 pieces per reel  
CL, CR, BL and BR; 1,000 pieces per reel

Snap-acting



Dimensions are shown: mm  
Specifications and dimensions subject to change

**C&K**



# HB Series Single Pole Standard Precision Snap-acting Switches

## Features/Benefits

- Low differential travel, high repeatability
- Long life—150,000 cycles typical
- Single and double pole circuitry
- Sealed actuator and case

## Typical Applications

- Thermostats
- Motors
- Industrial controls



## Specifications

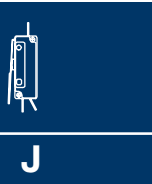
CONTACT RATING: From low level\* to 20 AMPS @ 480 V AC; see ELECTRICAL RATING option section for complete listings.  
 ELECTRICAL LIFE: 150,000 cycles at 20 AMPS @ 250 V AC. consult Customer Service Center for typical life at other ratings.  
 INSULATION RESISTANCE: 1,000 M ohm min.  
 DIELECTRIC STRENGTH: 1,500 Vrms min. @ sea level.  
 OPERATING TEMPERATURE: -67°F to 302°F (-55°C to 150°C).  
 OPERATING FORCE: From 4 oz. to 26 oz. max. at actuator button available.  
 MOUNTING SCREWS: Torque 3 in/lbs max.  
 (Note: Exceeding 3 in/lbs torque may change operating characteristics and increase the possibility of cracking switch case).  
 TERMINAL SCREWS: Torque 4 in/lbs max.  
 PANEL MOUNTING BUSHING: Torque 4-6 in/lbs max.  
 DEGREE OF PROTECTION: IP65; Dust-proof, water splash and dew condensation.

\* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

## Materials

SWITCH HOUSING: Heat resistant/electrical grade phenolic.  
 INSERTS: Brass alloy.  
 ACTUATOR BUTTON: Moisture resistant phenolic.  
 SPRING: Copper alloy.  
 PIVOT: Brass alloy.  
 MOVABLE CONTACTS: Gold alloy for ratings 1 AMP or less. Fine silver for ratings greater than 1 AMP and motor load ratings less than 1/2 HP @ 125 V AC. Silver alloy for motor load ratings 1/2 HP @ 125 V AC or greater.  
 STATIONARY CONTACTS: Gold alloy for ratings 1 AMP or less. Fine silver welded to copper base for ratings greater than 1 AMP and motor load ratings less than 1/2 HP @ 125 V AC. Silver alloy on copper base for motor load ratings 1/2 HP @ 125 V AC or greater.  
 TERMINALS: Brass alloy, bright tin plated.

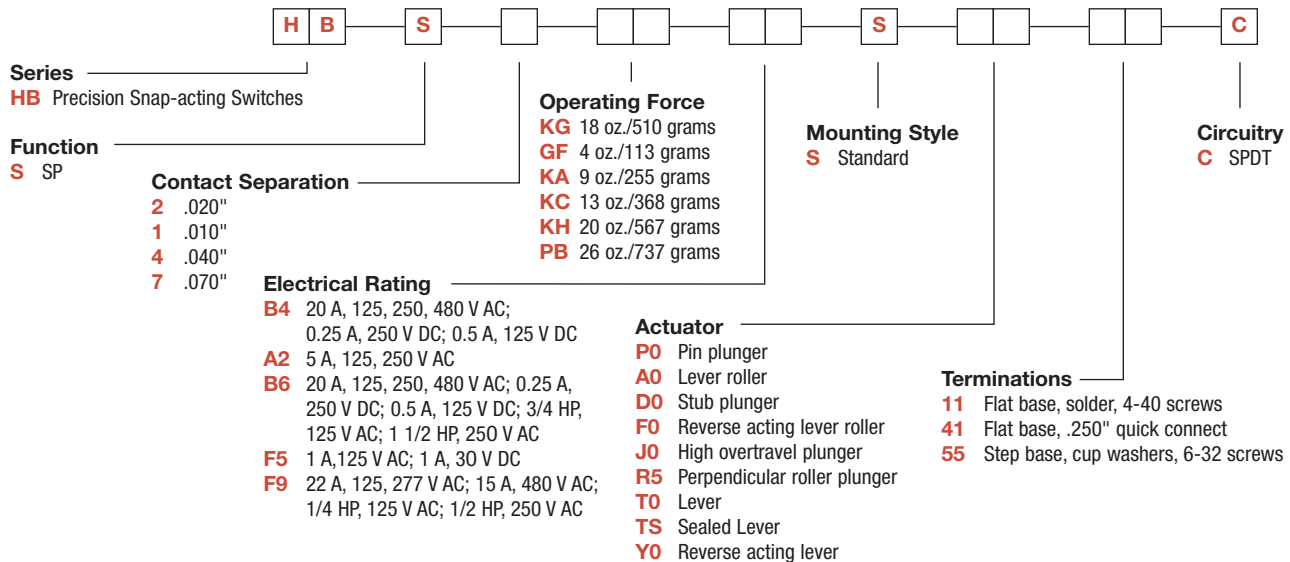
**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.



Snap-acting

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages J-72 through J-76. For additional options not shown in catalog, consult Customer Service Center.



Dimensions are shown: mm  
 Specifications and dimensions subject to change

# HB Series Single Pole Standard Precision Snap-acting Switches

## Sealed Actuator and Case

To provide reliable service under environmental conditions that might damage standard precision switches, various HB Series switch models are sealed against the entrance of airborne contaminants and/or splashing liquids. The clearance between the operating plunger and the cover is sealed with a silicone boot and the base cover joint is sealed with an epoxy adhesive. These models are designed to meet requirements of IP65 (dust proof, water splash and dew condensation). For additional information on sealed switches, consult our Customer Service Center.

## SERIES

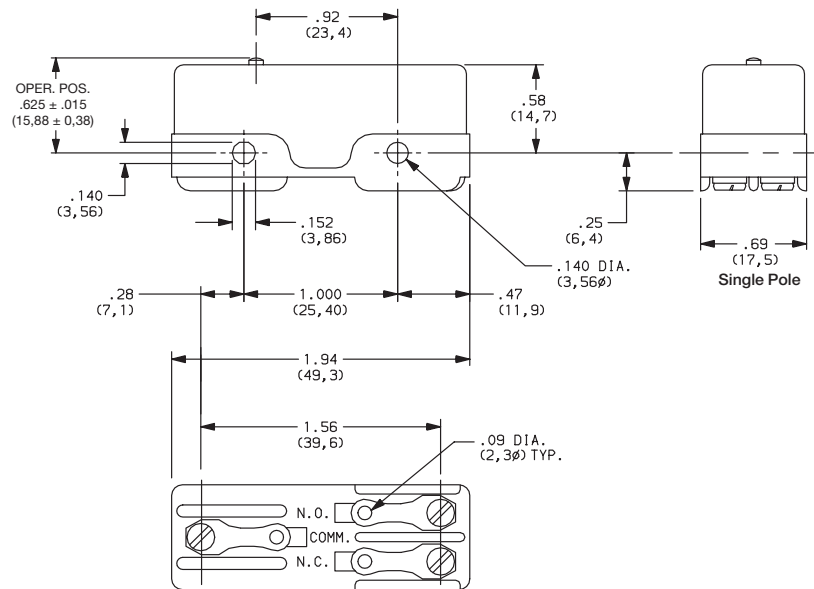
**HB** PRECISION SNAP-ACTING SWITCHES

## FUNCTION

**S** SINGLE POLE SWITCH



Snap-acting

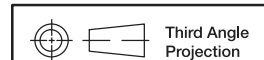
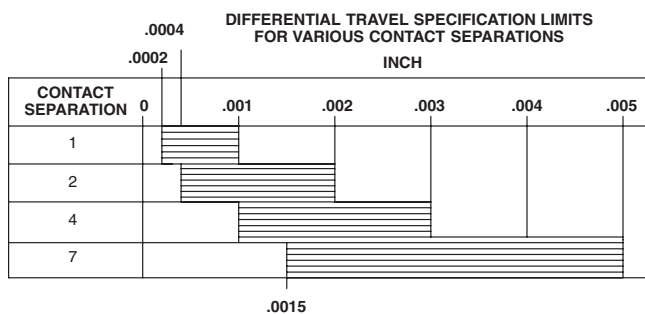


**NOTE:** To select switching function, see CIRCUITRY section, page J-52.

## CONTACT SEPARATION

OPTION CODE	NOMINAL CONTACT SEPARATION (in./mm)
<b>2</b>	.020 (0,51)
<b>1</b>	.010 (0,25)
<b>4</b>	.040 (1,02)
<b>7</b>	.070 (1,78)

Switches with 1 AMP rating (option code 'F5') are available only with .020 contact separation (option '2').  
Switches with 1/2 HP, 125 V AC rating or greater (option codes 'B5 and B6') are not available with .010 contact separation (option code '1').



Dimensions are shown in (mm)

Specifications and dimensions subject to change

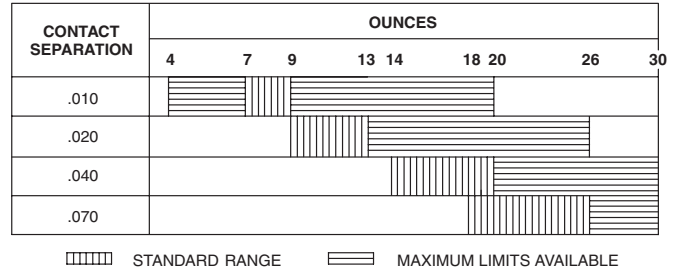


# HB Series Single Pole Standard Precision Snap-acting Switches

## OPERATING FORCE

OPTION CODE	MAXIMUM OPERATING FORCE (OZ./GRAMS)	STANDARD CONTACT SEPARATION (inch)
<b>KG</b>	18 510	.020
<b>GF</b>	4 115	.010
<b>KA</b>	9 255	.010
<b>KC</b>	13 370	.020
<b>KH</b>	20 570	.040
<b>PB</b>	26 740	.070

OPERATING FORCE SPECIFICATION LIMITS  
FOR VARIOUS CONTACT SEPARATIONS



**NOTE:** All listed differential travel characteristics are based on standard operating force and contact separation. For any other force or contact separation, consult Customer Service Center. Operating force varies with actuator option, see ACTUATOR option section.

## ELECTRICAL RATING

OPTION CODE	MOVABLE CONTACT	STATIONARY CONTACT	ELECTRICAL RATING
<b>B4</b>	Fine silver.	Fine silver welded to copper base.	20 AMPS @ 125, 250 & 480 V AC; 0.25 AMPS @ 250 V DC; 0.5 AMPS @ 125 V DC (UL).
<b>A2</b>			5 AMPS @ 125 & 250 V AC (UL).
<b>B6</b>	Precious metal alloy.	Precious metal alloy.	20 AMPS @ 125, 250 & 480 V AC; 0.25 AMP @ 250 V DC; 0.5 AMP @ 125 V DC; 3/4 HP @ 125 V AC; 1 1/2 HP @ 250 V AC (UL).
<b>F5</b>	Gold alloy.	Gold alloy.	Low level* to 1 AMP @ 125 V AC; 1 AMP @ 30 V DC (UL).
<b>F9</b>	Fine silver.	Fine silver welded to copper base.	22 AMPS @ 125 & 277 V AC; 15 AMPS @ 480 V AC; 1/4 HP @ 125 V AC; 1/2 HP @ 250 V AC; 277 V AC (UL).

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definition and specifications.

### AVAILABLE COMBINATIONS

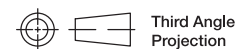
ELECTRICAL RATING	OPERATING FORCE (oz.)					
	4 GF	9 KA	13 KC	18 KG	20 KH	26 PB
A2	•	•	•	•	•	•
B4	x	•	•	•	•	•
B6	x	x	x	•	•	•
F5	x	x	•	•	•	•
F9	x	x	x	•	•	•

• AVAILABLE  
x NOT AVAILABLE

All models with all options

Consult Customer Service center for availability and delivery of nonstandard ratings.

\* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.



Dimensions are shown: Inch (mm)

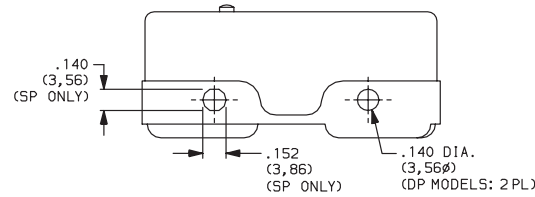
Specifications and dimensions subject to change



# HB Series Single Pole Standard Precision Snap-acting Switches

## MOUNTING STYLE

**S** Standard



**NOTE:** Mounting holes will accept pins or screws of .139 dia. (3,53) max. on 1.000 ± .002 (25,4 ± 0,05) centers.

**NOTE:** Torque mounting screws 3 inlbs max.

## ACTUATOR

OPTION CODE	NO. POLES	FIG.	DIM. A	DIM. B	DIM. C	DIM. D
<b>A0</b>	SP	1	.86 (21,8)	1.120 ± .060 (28,45 ± 1,52)	.38 dia. (9,70)	1.03 (26,2)
<b>D0</b>	SP	3	.92 (23,4)	.844 ± .020 (21,44 ± 0,51)	—	—
<b>F0</b>	SP	2	.09 (2,3)	1.120 ± .050 (28,45 ± 1,27)	.38 dia. (9,70)	.74 (18,8)
<b>J0</b>	SP	4	.86 (21,8)	.860 ± .030 (21,84 ± 0,76)	—	—
<b>P0</b>	SP	5	.92 (23,4)	.625 ± .010 (15,88 ± 0,25)	—	—
<b>R5</b>	SP	6	.92 (23,4)	.62 (15,7)	.50 dia. (12,70)	0.61 (15,5)
<b>T0</b>	SP	7	1.310 (33,27)	.720 ± .060 (18,28 ± 1,52)	1.03 dia. (26,20)	—
<b>TS*</b>	SP	7	1.47 (37,3)	.720 ± .060 (18,28 ± 1,52)	1.03 dia. (26,20)	—
<b>Y0</b>	SP	8	.05 (1,3)	.720 ± .030 (18,29 ± 0,76)	.74 dia. (18,80)	2.65 (6,73)

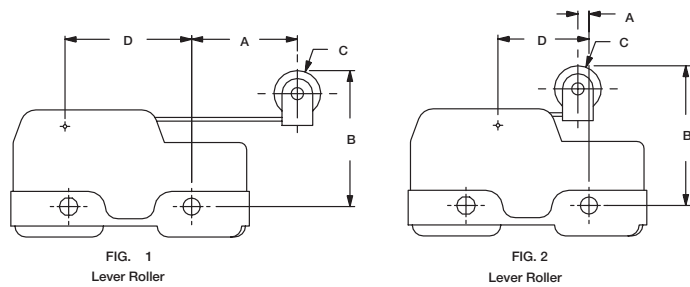


FIG. 1  
Lever Roller

FIG. 2  
Lever Roller

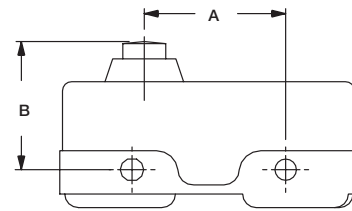


FIG. 3  
Stub Plunger

Snap-acting

\* Actuators sealed against the entrance of airborne contaminants and/or splashing liquids.

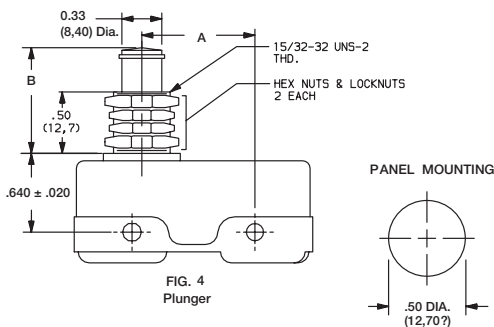


FIG. 4  
Plunger

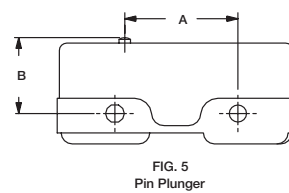


FIG. 5  
Pin Plunger

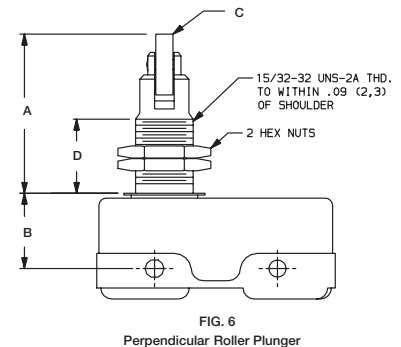


FIG. 6  
Perpendicular Roller Plunger

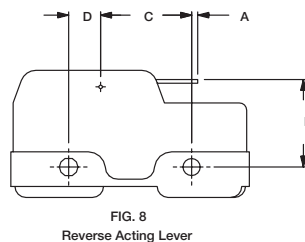


FIG. 8  
Reverse Acting Lever

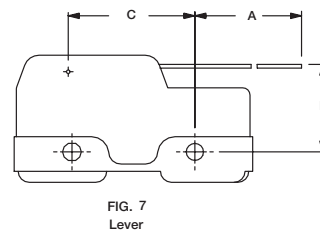
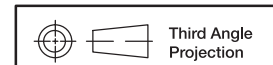


FIG. 7  
Lever



Third Angle Projection

Dimensions are shown: Inches (mm)

Specifications and dimensions subject to change



# HB Series

## Single Pole Standard Precision Snap-acting Switches

### ACTUATOR

	OPTION CODE	ACTUATOR								* SEALED ACTUATOR
		A0	D0	F0	J0	P0	R5	T0	Y0	TS
<b>MAXIMUM OPERATING FORCE (OZ./GRAMS)</b>	GF	—	—	—	—	4 115	—	—	—	—
	KA	3 85	9.5 269	10 284	10 284	9 255	10 284	2 60	10 284	2 56
	KC	—	13 370	10 284	13 370	13 370	13 370	—	10 284	—
	KG	3.5 100	—	—	—	18 510	—	2.5 71	—	2.5 71
	KH	4 115	20 570	20 570	20 570	20 570	20 570	3 85	20 570	3 85
	PB	4.5 130	26 740	20 570	26 740	26 740	26 740	3.5 100	20 570	3.5 100
<b>MINIMUM RELEASE FORCE (OZ./GRAMS)</b>	GF	—	—	—	—	1 28	—	—	—	—
	KA	.75 21	4 110	3 85	4 110	4 110	4 110	.5 14	3 85	.5 14
	KC	1.7 48	4 110	3 85	4 110	4 110	4 110	—	3 85	—
	KG	.75 21	—	—	—	4 110	—	.5 14	—	.5 14
	KH	.75 21	4 110	3 85	4 110	4 110	4 110	.5 14	3 85	.5 14
	PB	.75 21	4 110	3 85	4 110	4 110	4 110	.5 14	3 85	.5 14

**NOTE:** For basic switch operating forces, see page J-71. \* Actuators sealed against the entrance of airborne contaminants and/or splashing liquids.

	OPTION CODE	ACTUATOR								* SEALED ACTUATOR
		A0	D0	F0	J0	P0	R5	T0	Y0	TS
<b>MAXIMUM DIFFERENTIAL TRAVEL (IN/MM)</b>	GF	—	—	—	—	.0005 (0,013)	—	—	—	—
	KA	.020 (0,51)	.0005 (0,013)	.005 (0,13)	—	.0005 (0,013)	—	.047 (1,19)	.005 (0,13)	.047 (1,19)
	KC	—	.002 (0,05)	.008 (0,20)	—	.002 (0,05)	—	—	.009 (0,23)	—
	KG	.062 (1,57)	—	—	—	.003 (0,08)	—	.078 (1,98)	—	.078 (1,98)
	KH	.080 (2,03)	.003 (0,76)	.020 (0,51)	—	.003 (0,08)	—	.093 (2,36)	.020 (0,51)	.093 (2,36)
	PB	.125 (3,18)	.007 (0,18)	.030 (0,76)	—	.005 (0,13)	—	.156 (3,96)	.031 (0,79)	.156 (3,96)
<b>MAXIMUM PRETRAVEL (IN/MM)</b>	GF	—	—	—	—	.020 (0,51)	—	—	—	—
	KA	.312 (7,92)	.020 (0,51)	0.8 (2,0)	.015 (0,38)	.015 (0,38)	.015 (0,38)	.38 (9,7)	.09 (2,3)	.38 (9,7)
	KC	—	.020 (0,51)	0.8 (2,0)	.020 (0,51)	.020 (0,51)	.020 (0,51)	—	.09 (2,3)	—
	KG	.312 (7,92)	—	—	—	.025 (0,64)	—	.38 (9,7)	—	.38 (9,7)
	KH	.38 (9,7)	.025 (0,64)	0.9 (2,3)	.025 (0,64)	.025 (0,64)	.025 (0,64)	.38 (9,7)	0.9 (2,3)	.38 (9,7)
	PB	.38 (9,7)	.030 (0,76)	0.9 (2,3)	.030 (0,76)	.030 (0,76)	.030 (0,76)	.38 (9,7)	0.9 (2,3)	.38 (9,7)
<b>MINIMUM OVERTRAVEL (IN/MM)</b>	GF	—	—	—	—	.005 (0,13)	—	—	—	—
	KA	.156 (3,96)	.055 (1,40)	.06 (1,5)	.22 (5,6)	.005 (0,13)	.141 (3,58)	.19 (4,8)	.06 (1,5)	.19 (4,8)
	KC	—	.055 (1,40)	0.9 (2,3)	.22 (5,6)	.005 (0,13)	.141 (3,58)	—	0.9 (2,3)	—
	KG	.156 (3,96)	—	—	—	.005 (0,13)	—	.19 (4,8)	—	.19 (4,8)
	KH	.156 (3,96)	.055 (1,40)	0.9 (2,3)	.22 (5,6)	.005 (0,13)	.141 (3,58)	.19 (4,8)	0.9 (2,3)	.19 (4,8)
	PB	.156 (3,96)	.055 (1,40)	0.9 (2,3)	.22 (5,6)	.005 (0,13)	.141 (3,58)	.19 (4,8)	0.9 (2,3)	.19 (4,8)



*Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change*

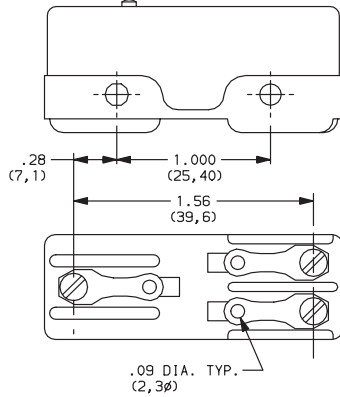


**Snap-acting**

# HB Series Single Pole Standard Precision Snap-acting Switches

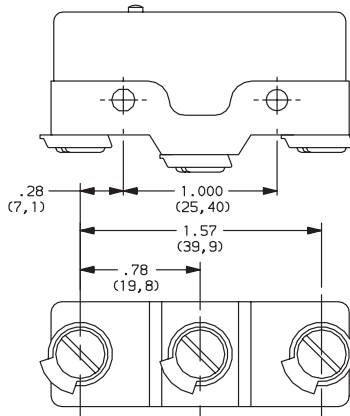
## TERMINATIONS

### 11 FLAT BASE, SOLDER TERMINALS AND 4-40 SCREWS



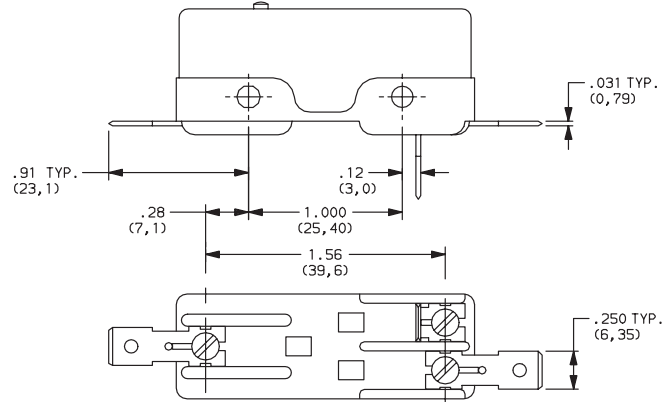
**NOTE:** Switches with flat base option have molded ribs that provide increased creep distance.

### 55 STEP BASE, 6-32 SCREWS AND CUP WASHERS



**NOTE:** Switches with step base option provide wide electrical clearance for screw terminal options.

### 41 FLAT BASE, .250" QUICK CONNECT TERMINALS



## CIRCUITRY

### C DT (Double Throw, Normally Closed & Normally Open)

Snap-acting



# A Series General Purpose Snap-acting Switches

## Features/Benefits

- Low cost—high performance
- Long electrical life
- Single and double pole
- Sealed actuator option available

## Typical Applications

- Enclosure equipment
- Garage door openers
- Vending machines



## Specifications

CONTACT RATING: From low level\* to 30 AMPS @ 277 V AC.  
 ELECTRICAL LIFE: 75,000 cycles at 25 AMPS @ 250 V AC,  
 200,000 cycles at 15 AMPS @ 250 V AC.  
 INSULATION RESISTANCE: 1,000 M ohm min.  
 DIELECTRIC STRENGTH: 1,000 Vrms min. @ sea level.  
 OPERATING TEMPERATURE: -67°F to 185°F (-55°C to 85°C).  
 OPERATING FORCE: 20 oz. (567 grams) max. SP models.  
 40 oz. (1134 grams) max. DP models at actuator button.  
 MOUNTING: Torque screws 3 in/lbs max.  
 MOUNTING NUT: 20 in/lbs max. torque

\* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

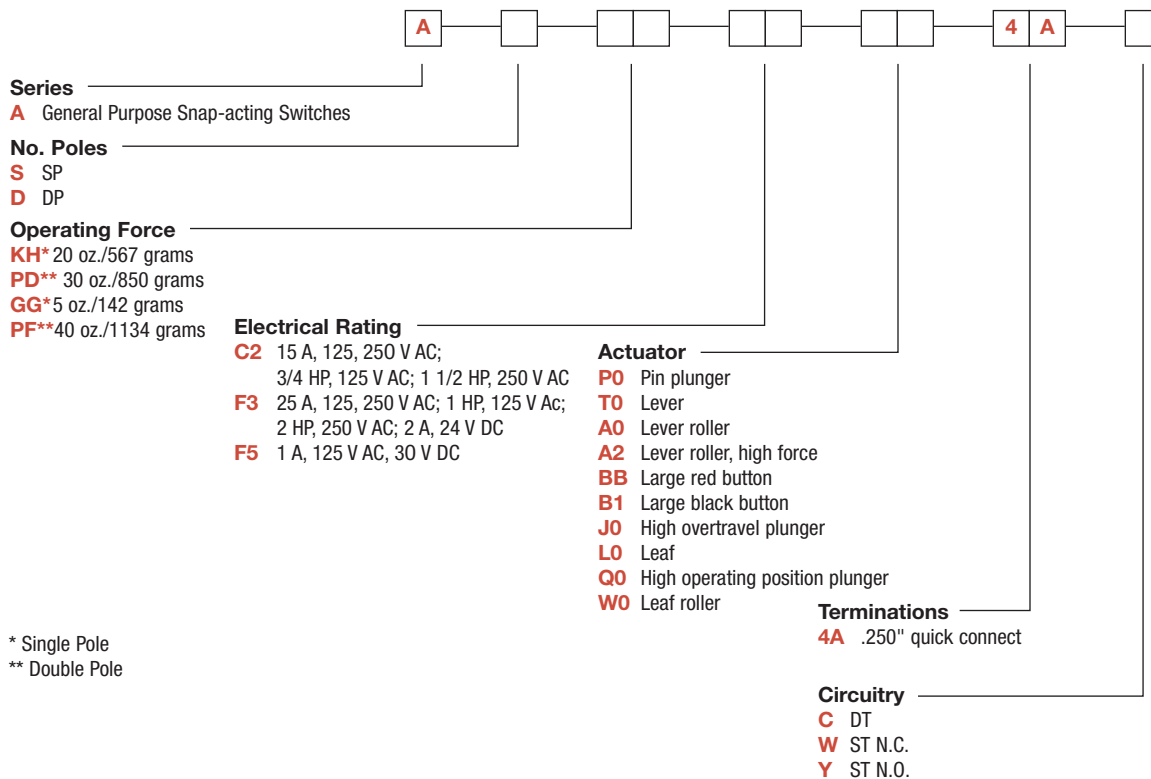
**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## Materials

SWITCH HOUSING: Heat resistant phenolic (UL 94V-0).  
 ACTUATOR BUTTON: Heat resistant phenolic (UL 94V-0).  
 SPRING: Copper alloy.  
 PIVOT: Brass alloy for models up to 15 AMPS.  
 Copper for 25 AMP models.  
 MOVABLE CONTACTS: Gold alloy for ratings 1 AMP or less.  
 Fine silver for ratings up to 15 AMPS. Silver alloy for ratings of 30.1 AMPS.  
 STATIONARY CONTACTS: Gold alloy on brass base alloy for ratings 1 AMP or less. Fine silver welded on brass base alloy for ratings greater than 1 AMP up to 15 AMPS. Fine silver welded on copper alloy for ratings 30.1 AMPS.  
 TERMINALS: Brass alloy for 1 AMP up to 15 AMPS.  
 Copper alloy for 30.1 AMPS.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages J-78 through J-81. For additional options not shown in catalog, consult Customer Service Center.



Snap-acting



Dimensions are shown: Inch (mm)  
 Specifications and dimensions subject to change

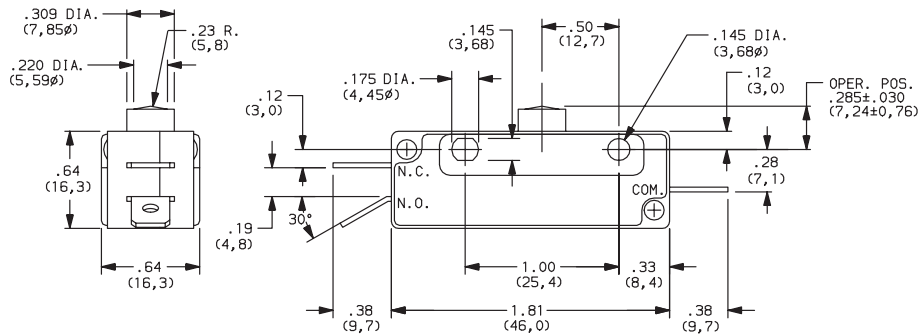
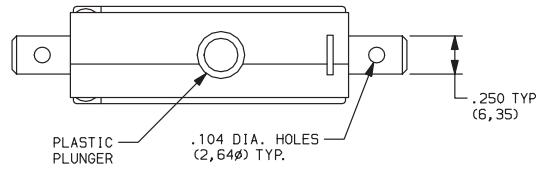
# A Series General Purpose Snap-acting Switches

SERIES ■ ■ ■ ■ ■ ■ ■ ■ ■ ■

**A** GENERAL PURPOSE SNAP-ACTING SWITCHES

NO. POLES ■ ■ ■ ■ ■ ■ ■ ■ ■ ■

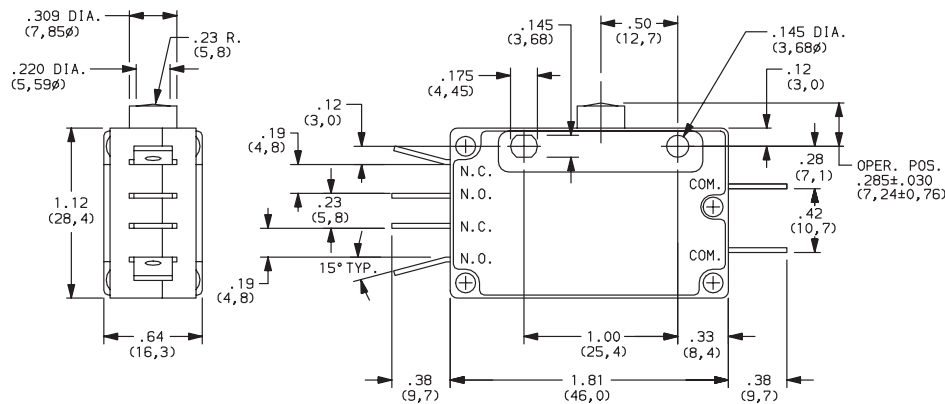
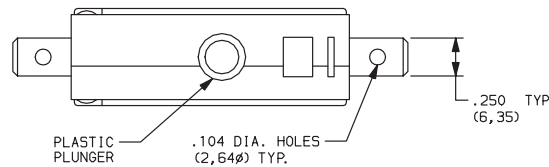
**S** SINGLE POLE SWITCH



Mounting holes will accept pins or screws of .139 dia. (3,53) max., on 1.000 (25,40) centers.

Snap-acting

**D** DOUBLE POLE SWITCH



Mounting holes will accept pins or screws of .139 dia. (3,53) max., on 1.000 (25,40) centers.

**NOTE:** To select switching function, see CIRCUITRY section, page J-81.



Third Angle  
Projection

Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change





# A Series General Purpose Snap-acting Switches

## OPERATING FORCE

OPTION CODE	NO. POLES	BASIC SWITCH OPERATING FORCE (OZ./GRAMS)
<b>KH</b>	SP	20 567
<b>PD</b>	DP	30 850
<b>GG</b>	SP	5 142
<b>PF</b>	DP	40 1134

**NOTE:** Operating force varies with actuator, see ACTUATOR option section.

## ELECTRICAL RATING

OPTION CODE	CONTACT MATERIAL		ELECTRICAL RATING
	MOVABLE CONTACT	STATIONARY CONTACT	
<b>C2</b>	Fine silver.	Fine silver welded on brass base alloy.	15 AMPS @ 125 & 250 V AC; 3/4 HP @ 125 V AC; 1-1/2 HP @ 250 V AC.
<b>F3</b>	Silver alloy.	Silver welded on copper base alloy.	25 AMPS @ 125 & 250 V AC; 1 HP @ 125 V AC; 2 HP @ 250 V AC; 2 AMPS @ 24 V DC.
<b>F5</b>	Gold alloy.	Gold alloy on brass base alloy.	From low level* to 1 AMP @ 125 V AC, 30 V DC.

All models  with all options.

Contact Customer Service Center for availability and delivery of nonstandard ratings.

\* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

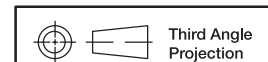
\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definition and specifications.

### AVAILABLE COMBINATIONS

ELECTRICAL RATING	OPERATING FORCE (OZ./GRAMS)			
	GG 5 142	KH 20 567	PD 30 850	PF 40 1134
C2	•	•	•	•
F3	X	•	•	•
F5	•	•	•	•

• AVAILABLE

X NOT AVAILABLE



Dimensions are shown: Inch (mm)

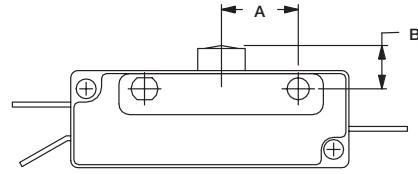
Specifications and dimensions subject to change



# A Series General Purpose Snap-acting Switches

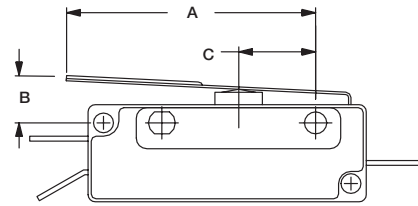
## ACTUATOR

OPTION CODE	FIG.	DIM. A	DIM. B	DIM. C	DIM. D	DIM. E	DIM. F
<b>P0</b>	1	.50 (12,7)	.285 ± .030 (7,24 ± 0,76)	—	—	—	—
<b>A0</b>	3	1.38 (35,1)	.718 ± .062 (18,24 ± 1,57)	.375 dia. (9,530)	.50 (12,7)	.50 (12,7)	—
<b>A2</b>	4	1.25 (31,8)	.718 ± .062 (18,24 ± 1,57)	.375 dia. (9,530)	.50 (12,7)	—	—
<b>B1</b>	6	1.50 (38,1)	.40 ± 0.1 (10,2 ± 2.54)	.98 dia. (24,90)	—	—	—
<b>BB</b>	6	1.50 (38,1)	.40 ± 0.1 (10,2 ± 2.54)	.98 dia. (24,90)	—	—	—
<b>J0</b>	5	.50 (12,7)	.810 ± .030 (20,6 ± 0,8)	.38 (9,7)	.25 dia. (6,40)	—	—
<b>L0</b>	2	1.62 (41,1)	.312 ± .062 (17,92 ± 1,57)	.50 (12,7)	—	—	—
<b>Q0</b>	5	.50 (12,7)	.670 ± .030 (17,02 ± 0,76)	.38 (9,6)	.25 dia. (6,40)	—	—
<b>T0</b>	7	1.50 (38,1)	.318 ± .062 (8,08 ± 1,57)	.50 (12,7)	.50 (12,7)	—	—
<b>W0</b>	8	1.50 (38,1)	.801 ± .062 (20,34 ± 1,57)	.375 dia. (9,530)	.50 (12,7)	—	—

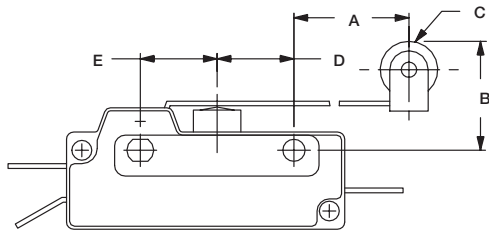


**FIG. 1**  
High Overtravel Plunger

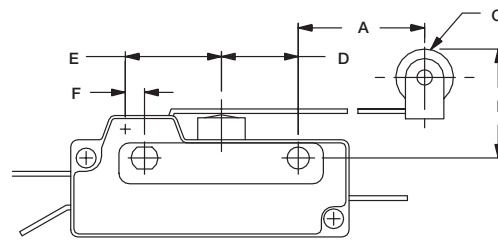
**NOTE:** The "H0" high overtravel plunger option provides .100 (2,54) min. overtravel and longer mechanical life (1,000,000 operations typical).



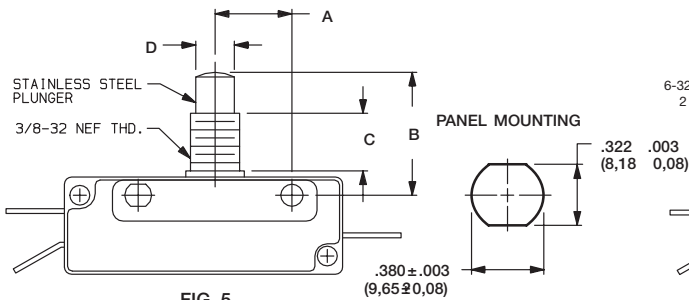
**FIG. 2**  
Leaf



**FIG. 3**  
Lever Roller

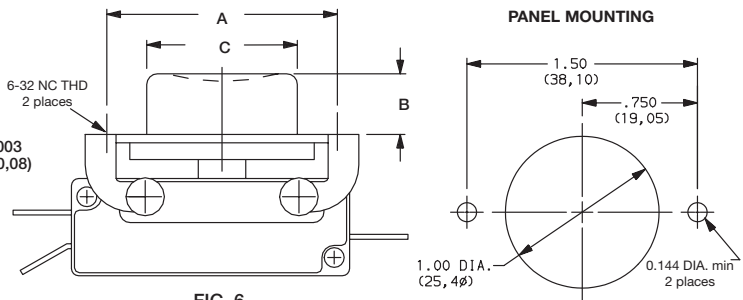


**FIG. 4**  
Lever roller (High Force)

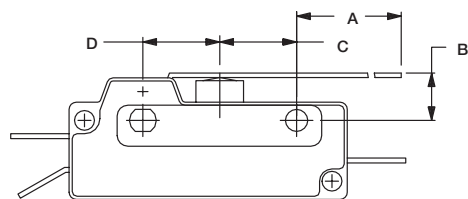


**FIG. 5**  
High Overtravel Plunger

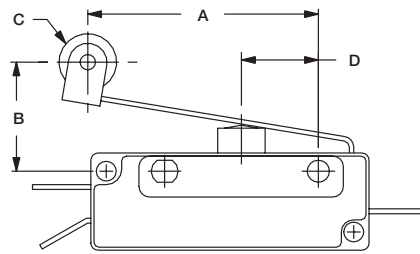
Torque 20 in/lbs max. (Nut)



**FIG. 6**  
B1 - Black Button  
BB - Red Button

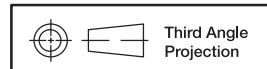


**FIG. 7**  
Lever



**FIG. 8**  
Leaf Roller

Snap-acting



Dimensions are shown in inches (mm)

Specifications and dimensions subject to change



# A Series General Purpose Snap-acting Switches

## ACTUATOR

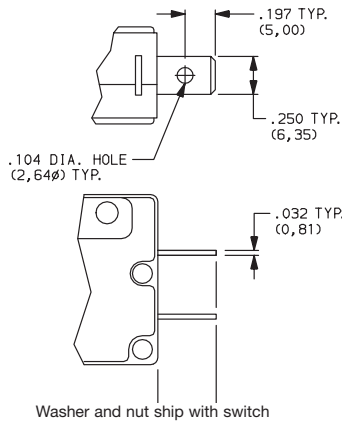
### SWITCH CHARACTERISTICS

OPTION CODE	MAXIMUM OPERATING FORCE (OZ./GRAMS)				MINIMUM RELEASE FORCE (OZ./GRAMS)				MAXIMUM PRETRAVEL				MINIMUM OVERTRAVEL				OPERATING POSITION			
	GG S.P.	KH S.P.	PD D.P.	PF D.P.	GG S.P.	KH S.P.	PD D.P.	PF D.P.	GG S.P.	KH S.P.	PD D.P.	PF D.P.	GG S.P.	KH S.P.	PD D.P.	PF D.P.	GG S.P.	KH S.P.	PD D.P.	PF D.P.
A0	1.5 42.5	4 113	6 170	10 283	0.3 8.5	0.5 14	1 28		.312 (7,92)				312 (7,92)	.187 (4,75)			.718 (18,24)			
A2	1.5 42.5	4 113	6 170	10 283	0.4 11	0.5 14	1 28		.25 (6,4)				.14 (5,6)			.718 (18,24)				
B1	8 227	20 567	30 850	40 1134	1 28	3 85	6 170		.050 (1,27)				.050 (1,27)			—				
BB	8 227	20 567	30 850	40 1134	1 28	3 85	6 170		.050 (1,27)				.050 (1,27)			—				
J0	5 142	20 567	30 850	40 1134	1 28	3 85	6 170		.050 (1,27)				.187 (4,75)			—				
L0	3 85	12 340	18 510	22 624	0.5 14	1 28	2 56.7		.281 (7,14)				.062 (1,57)			.312 (7,92)				
P0	8 227	20 567	30 850	40 1134	1 28	3 85	6 170		.050 (1,27)				.050 (1,27)			—				
Q0	5 142	20 567	30 850	40 1134	1 28	3 85	6 170		.050 (1,27)				.050 (1,27)			—				
T0	1.5 42.5	4 113	6 170	10 283	0.3 8.5	0.5 14	1 28		.312 (7,92)				.187 (4,75)			312 (7,92)				
W0	3 85	12 340	18 510	22 624	0.5 14	1 28	2 56.7		.281 (7,14)				.062 (1,57)			.718 (18,24)				

NOTE: For basic switch operating forces, see page J-77.

## TERMINATIONS

### 4A .250" QUICK CONNECT



NOTE: Terminals can be supplied at various angles. Other terminal styles can be supplied for special applications. Consult Customer Service Center for special requirements.

## CIRCUITRY

- C** DT (Double Throw, Normally Open & Normally Closed)
- W** ST N.C. (Single Throw, Normally Closed)
- Y** ST N.O. (Single Throw, Normally Open)

NOTE: To select number of poles, see NO. POLES section, page J-56



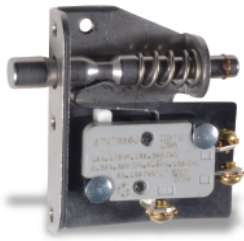
Third Angle  
Projection

Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



Snap-acting

# TL Series Door Interlock Switches



## Features/Benefits

- Push/pull motion
- Multiple mounting configurations
- Wide variety of termination options
- Ratings up to 15 AMPS

## Typical Applications

- Computer enclosures
- Panel builders
- Industrial enclosures

## Specifications

CONTACT RATING: 15 AMPS @ 125 & 250 V AC; 0.25 AMP @ 250 V DC; 0.5 AMP @ 125 V DC; 1/2 HP @ 125 & 250 V AC; 3 AMPS @ 125 V AC "L".

ELECTRICAL LIFE: 150,000 cycles at 15 AMPS @ 250 V AC.

INSULATION RESISTANCE: 1,000 M ohm min.

DIELECTRIC STRENGTH: 1,000 Vrms min. @ sea level.

OPERATING TEMPERATURE: -67°F to 302°F (-55°C to 150°C).

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## Materials

SWITCH HOUSING: Thermoplastic or general purpose phenolic (UL 94V-0).

MOUNTING BRACKET: Stainless steel.

PLUNGER: Stainless steel.

ACTUATOR BUTTON: Thermoplastic (UL 94V-0).

SPRING: Copper alloy.

PIVOT: Brass alloy.

MOVABLE CONTACT: Fine silver.

STATIONARY CONTACTS: Fine silver.

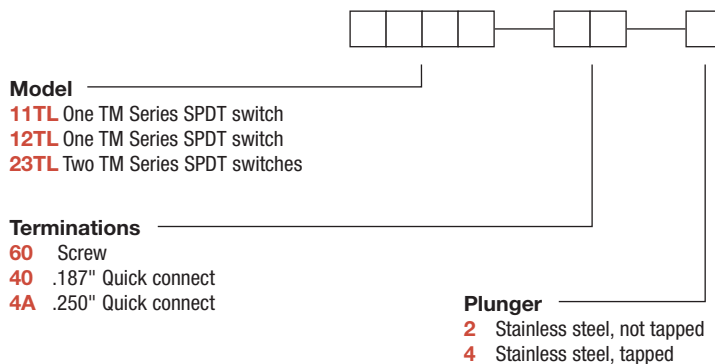
TERMINALS: Copper alloy.



Snap-acting

## Build-A-Switch

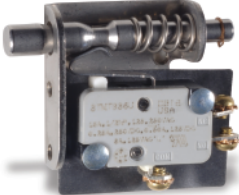
To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages J-83 and J-84. For additional options not shown in catalog, consult Customer Service Center.



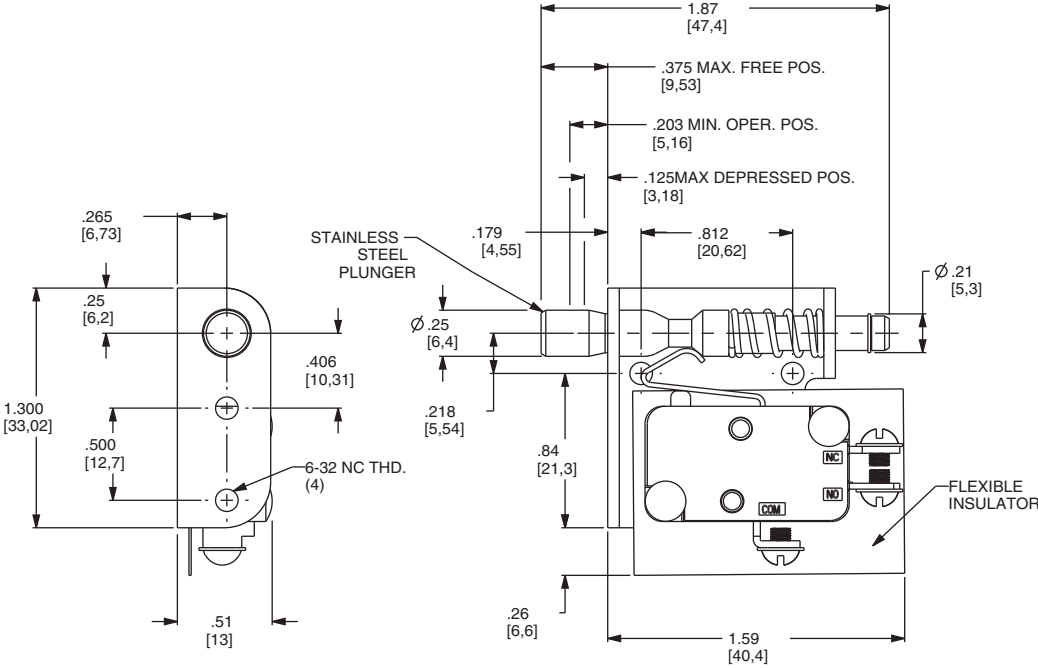
# TL Series Door Interlock Switches

MODEL    ■ ■ ■ ■

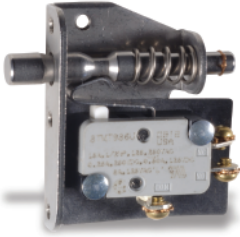
**11TL** WITH SMALL BRACKET



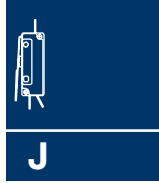
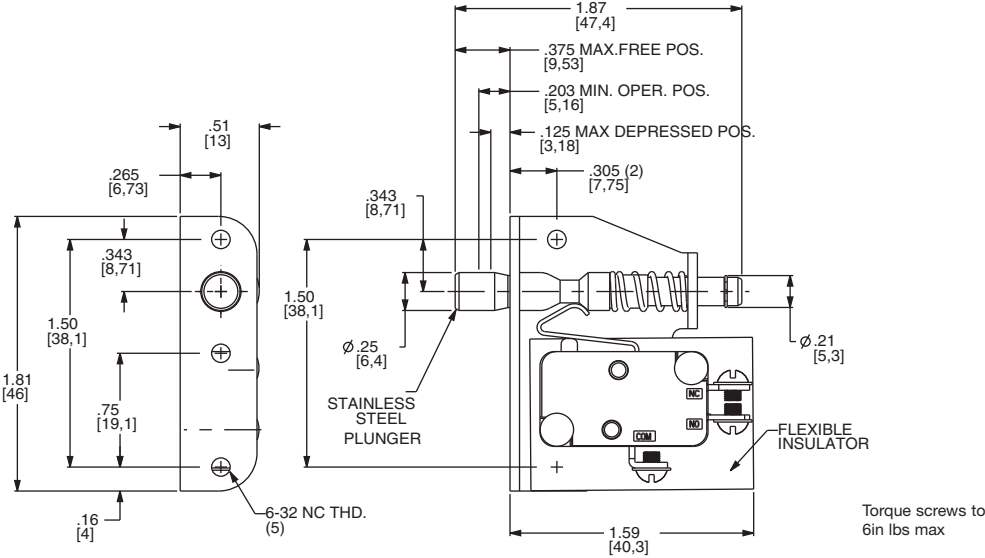
11TL602  
SPDT



**12TL** WITH LARGE BRACKET



12TL602  
SPDT



Snap-acting

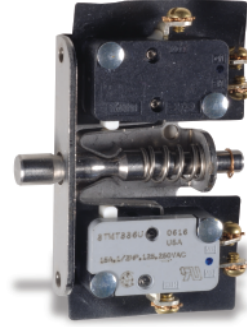
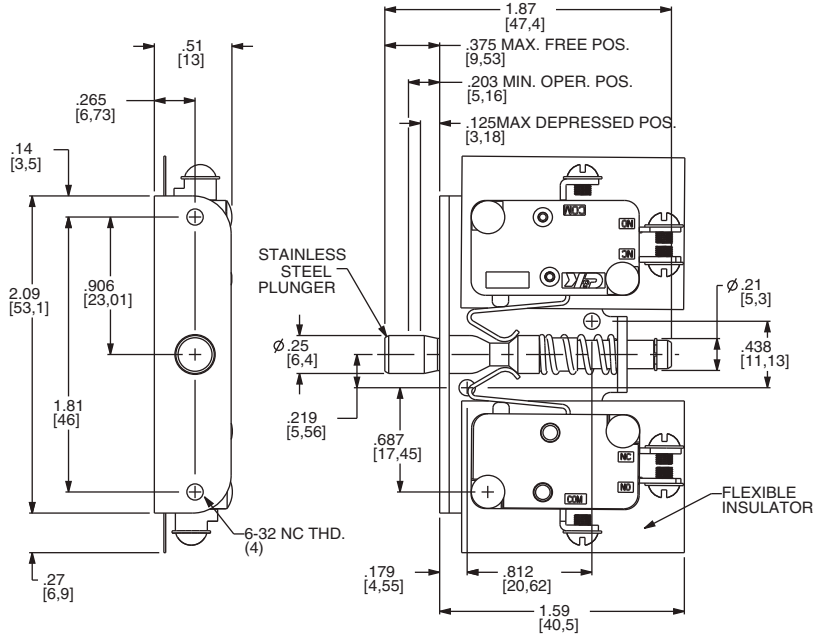


Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

# TL Series Door Interlock Switches

MODEL

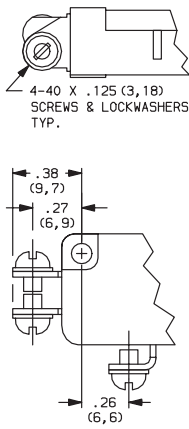
**23TL** WITH TWO SWITCHES



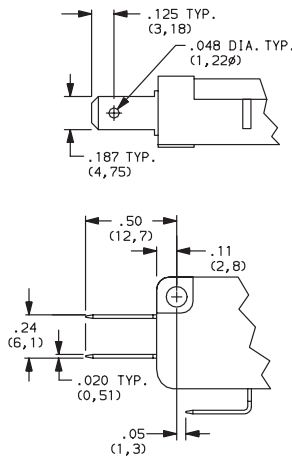
**23TL602  
SPDT**

TERMINATIONS

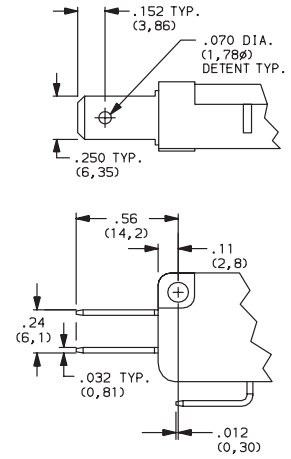
**60** SCREW TERMINALS



**40** .187" QUICK CONNECT



**4A** .250" QUICK CONNECT



Snap-acting

PLUNGERS

**2** STAINLESS STEEL, NOT TAPPED

**4** STAINLESS STEEL, TAPPED 4-40 x .375 (9,52) min. depth



Third Angle Projection

Dimensions are shown: Inches (mm)

Specifications and dimensions subject to change

# DS Series Interlock Pushbutton Switches

## Features/Benefits

- Snap-in mounting
- Reliable snap action mechanism
- Latch or momentary
- RoHS compliant
- Halogen free material

## Typical Applications

- Interlock switch
- Detection switch
- Circuit interrupt



## Specifications

FUNCTION: Single pole double throw / Double pole double throw  
MOUNTING TYPE: Snap in style

## Electrical

ELECTRICAL LIFE: see ratings chart below  
DIELECTRIC STRENGTH: 1500 V (50-60 Hz @ sea level)  
INSULATION RESISTANCE: 100 M  $\Omega$  min.  
INITIAL CONTACT RESISTANCE: 30 milli-ohms

## Materials

HOUSING, COVER, ACTUATOR, KNOB: PA 66/6 halogen free, UL94V-0  
NO & NC FIXED TERMINALS: Copper alloy  
COMMON TERMINALS: Copper alloy, silver plate  
CONTACTS: Silver alloy / F5 rating gold plated over silver alloy  
RETURN SPRINGS: Stainless steel

## Operating Environment

OPERATING TEMPERATURE: -40°C to +85°C

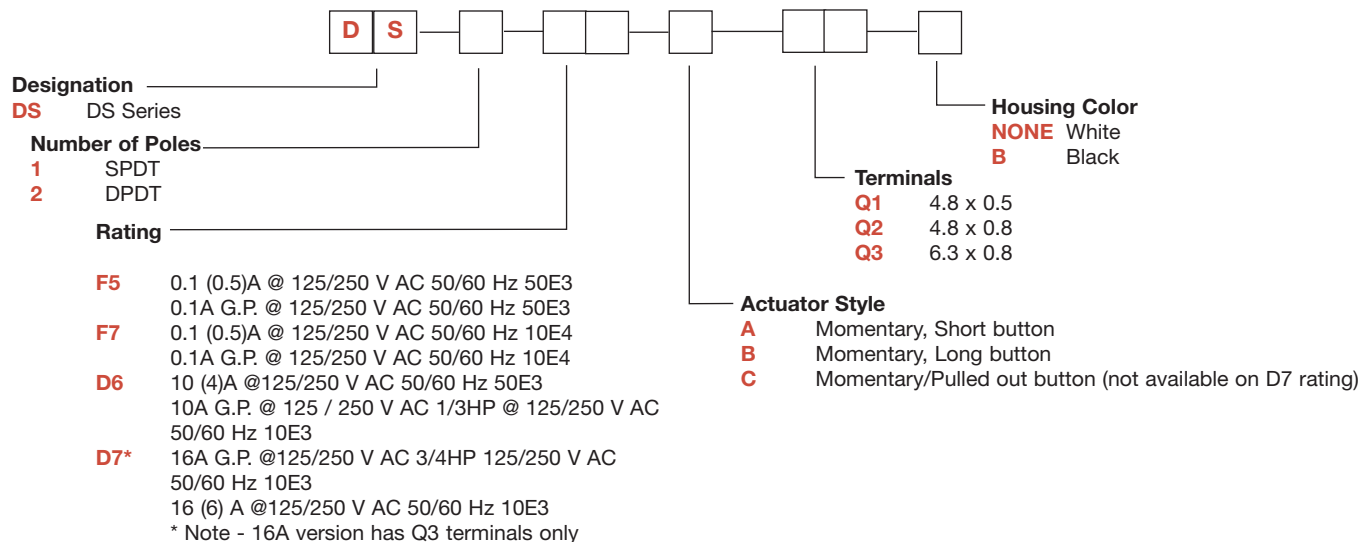
**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.



Snap-acting

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box.



## International Rating Symbols

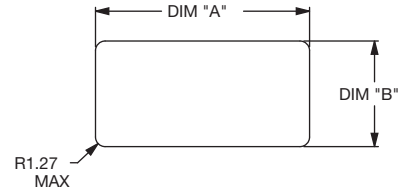
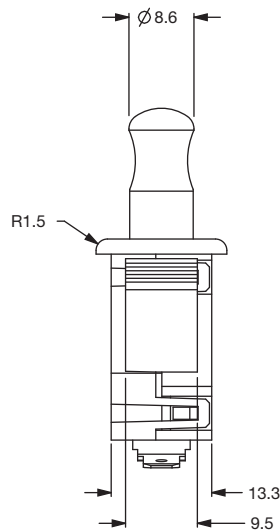
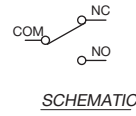
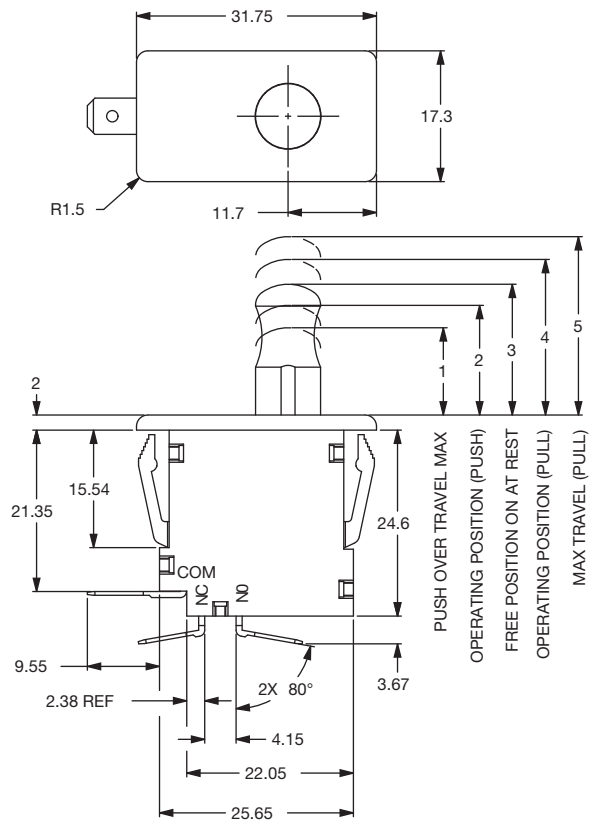
10E3	Cycles 10,000
10E4	Cycles 100,000
50E3	Cycles 50,000
10(4)	Current rating: First number represents resistive rating. Second number represents inductive (motor) rating
GP	General purpose rating UL1054



# DS Series Interlock Pushbutton Switches

## NUMBER OF POLES

### 1 SPDT

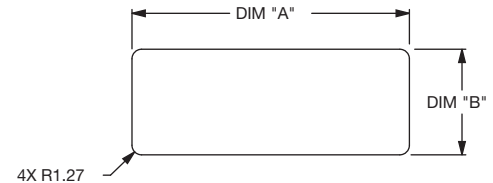
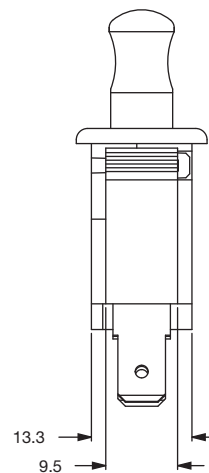
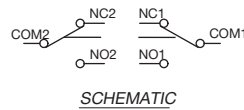
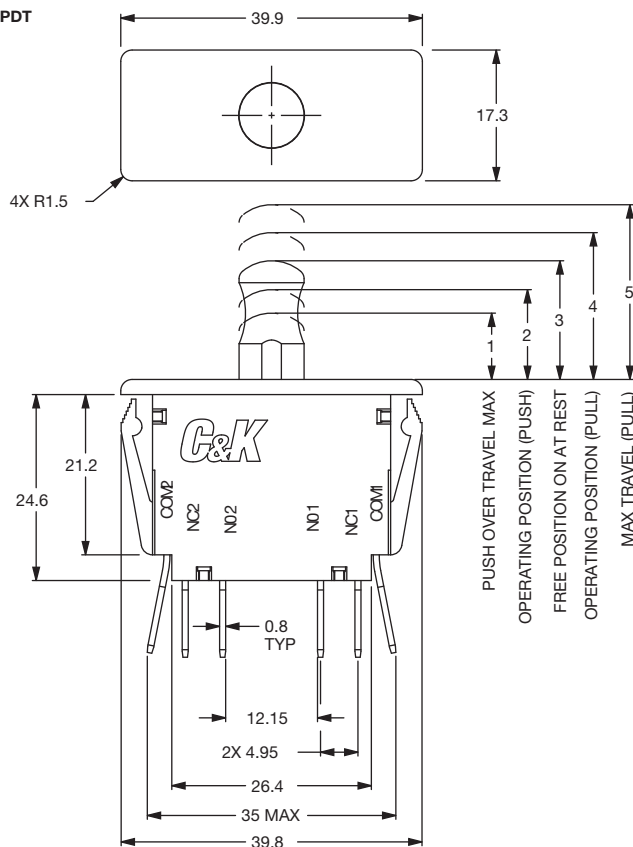


PANEL MOUNTING		
PANEL THICKNESS	DIM "A" mm	DIM "B" mm
1.14	28.32	13.97
2.54	28.58	13.97



Snap-acting

### 2 DPDT

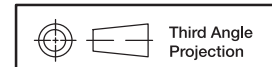


PANEL MOUNTING		
PANEL THICKNESS	DIM "A" mm	DIM "B" mm
1.14	36.70	13.97
2.54	36.96	13.97



31 oct 16

J-86



Dimensions are shown: mm  
Specifications and dimensions subject to change

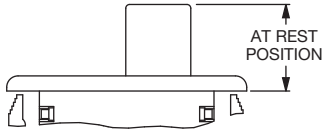
[www.ck-components.com](http://www.ck-components.com)



# DS Series Interlock Pushbutton Switches

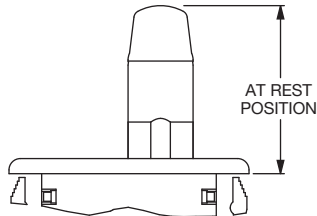
## ACTUATOR STYLE / SPECIFICATIONS

**A** SHORT BUTTON



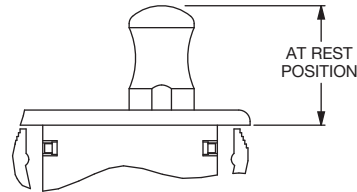
SHORT BUTTON

**B** LONG BUTTON

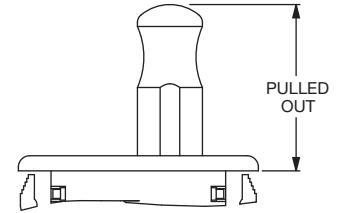


LONG BUTTON

**C** MOMENTARY/PULLED OUT



FREE POSITION



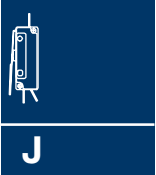
PULLED OUT POSITION

### SPDT Specification

BUTTON STYLE	OVER TRAVEL POSITION PUSH MAX	OVER TRAVEL POSITION PULL MAX	OPERATING POSITION PUSH	OPERATING POSITION PULL	FREE POSITION AT REST	OPERATING FORCE	
A	3.20	NA	8.90 ± 1.25	NA	11.45 ± 0.75	425 gf	
B	10.15	NA	19.55 ± 1.25	NA	22.25 ± 0.75	425 gf	
C	13.20	24.90	16.75 ± 1.25	21.60 ± 1.25	19.30 ± 0.75	PUSH 385gf	PULL 475gf

### DPDT Specification

BUTTON STYLE	OVER TRAVEL POSITION PUSH MAX	OVER TRAVEL POSITION PULL MAX	OPERATING POSITION PUSH	OPERATING POSITION PULL	FREE POSITION AT REST	OPERATING FORCE	
A	3.20	NA	8.90 ± 1.25	NA	11.45 ± 0.75	680 gf	
B	10.15	NA	19.55 ± 1.25	NA	22.25 ± 0.75	680gf	
C	13.20	24.90	16.75 ± 1.25	21.60 ± 1.25	19.30 ± 0.75	PUSH 560gf	PULL 750gf

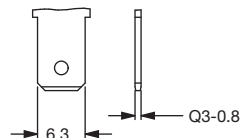
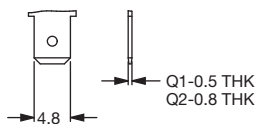


Snap-acting

## TERMINALS

**Q1** 4.8 x 0.5  
**Q2** 4.8 x 0.8

**Q3** 6.3 x 0.8



31 oct 16





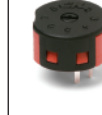




Third Angle Projection

Dimensions are shown: mm  
Specifications and dimensions subject to change

# Rotary Switches

## Product Selection Guide

Rotary							
Series	A	RTA	M	R	F	H	RW
Switch Type	Multi-pole/ Multi-position	Multi-pole/ Multi-position	Half-inch	Rota-slide	Rota-slide	Power Rota-slide	Subminiature Rotary SMT
Miniature		•			•		•
Low Profile					•		•
Screwdriver Slot	•	•	•	•	•		
Illumination							
Power						•	
Maximum Current	2.5 Amps	150 mA	6 Amps	5 Amps	4 Amps	12 Amps	0.1 A 10mA
Poles	1-4	1-4	1 & 2	1 & 2	1 & 2	1 & 2	1
Indexing	30°, 45°, 90°	22.5°, 30° 36°	30° & 36°	36°	45° & 90°	45° & 90°	36° & 45°
Splashproof	•		•				
Sealed			• F option				
Non-shorting/ Shorting Contacts	•						
Panel Mount Options							
Front Mount							
Rear Mount	•	•	•	•	•	•	
PCB Mount Options							
Vertical	•	•	•	•	•		•
Terminations							
Solder Lug	•	•	•	•	•	•	
Wire Lead				•	•	•	
Quick Connect						•	
PC	•	•	•	•	•		•
Page No.	K-3	K-8	K-13	K-18	K-21	K-25	K-28



K

Rotary

# A Series 1-4 Pole Rotary Switches

## Features/Benefits

- Multi-pole and multi-position
- Positive detent
- Shorting & non-shorting contacts
- Panel and PCB mounting
- RoHS Compliant



Models Available

## Typical Applications

- Automotive
- Major and small appliances
- Industrial equipment



## Specifications

**CONTACT RATING:** Q contact material: Switch - 2.5 AMPS @ 125 V AC; 350 mA @ 125 V DC (UL/CSA). Carry - 5 AMPS continuous. See page K-6 for additional ratings.

**ELECTRICAL LIFE:** 15,000 make-and-break cycles at full load up to 300,000 detent operations.

**CONTACT RESISTANCE:** Below 20 m Ω typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

**INSULATION RESISTANCE:** 10<sup>9</sup> Ω min.

**DIELECTRIC STRENGTH:** 1,000 Vrms min. @ sea level.  
Operating and storage temp: -30° to 85°C

**OPERATING & STORAGE TEMPERATURE:** -30°C to 85°C

**NOTE:** Any models supplied with Q, B or G contact material are RoHS compliant.

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## Materials

**HOUSING & BUSHING:** Glass filled 6/6 nylon (UL 94V-0).

**ACTUATOR:** Glass filled 6/6 nylon (UL 94V-0).

**MOVABLE CONTACTS:** Q contact material: Coin silver, silver plated. See page K-6 for additional contact materials.

**STATIONARY CONTACTS & TERMINALS:** Q contact material: Brass, silver plated. See page K-6 for additional contact materials.

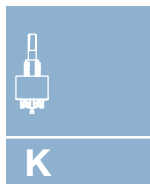
**HARDWARE:** Nut - zinc, nickel plated. Lockwasher — steel, bright zinc plated. Stop Ring - brass, nickel plated.

**TERMINAL SEAL:** Epoxy.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages K-4 through K-7. For additional options not shown in catalog, consult Customer Service Center.

<b>Switch Function</b>							
<b>A100</b> SP, 30° Index, 12 pos. no stops							
<b>A102</b> SPDT, 30° Index							
<b>A103</b> SP, 30° Index, 3 pos.							
<b>A104</b> SP, 30° Index, 4 pos.							
<b>A105</b> SP, 30° Index, 5 pos.							
<b>A106</b> SP, 30° Index, 6 pos.							
<b>A107</b> SP, 30° Index, 7 pos.							
<b>A108</b> SP, 30° Index, 8 pos.							
<b>A109</b> SP, 30° Index, 9 pos.							
<b>A110</b> SP, 30° Index, 10 pos.							
<b>A112</b> SP, 30° Index, 12 pos.							
<b>A114</b> SP, 90° Index, 2 pos.							
<b>A115</b> SP, 45° Index, 3 pos.							
<b>A124</b> SP, 90° Index, 4 pos.							
<b>A125</b> SP, 45° Index, 8 pos.							
<b>A203</b> DP, 30° Index, 3 pos.							
<b>A204</b> DP, 30° Index, 4 pos.							
<b>A205</b> DP, 30° Index, 5 pos.							
<b>A206</b> DP, 30° Index, 6 pos.							
<b>A214</b> DP, 90° Index, 2 pos.							
<b>A303</b> 3P, 30° Index, 3 pos.							
<b>A304</b> 3P, 30° Index, 4 pos.							
<b>A402</b> 4PDT, 30° Index							
<b>A403</b> 4P, 30° Index, 3 pos							
	<b>Actuator</b>						
	<b>15</b> 1.500" high, flatted						
	<b>03</b> .375" high, flatted						
	<b>05</b> .500" high, flatted						
	<b>14</b> 1.500" high, flatted						
	<b>42</b> 1.654" high, metric						
	<b>S1</b> Screwdriver Slot						
	<b>Mounting Style</b>						
	<b>R</b> 3/8-32 threaded						
	<b>M</b> M10 x .75 metric						
	<b>Shorting/Non-shorting Contacts</b>						
	<b>N</b> Non-shorting contacts						
	<b>S</b> Shorting contacts (Not available with models A114, A124 & A214)						
	<b>Terminations</b>						
	<b>Z</b> Solder lug						
	<b>C</b> PC Thru-hole						
	<b>MC</b> Modular base						
	<b>Contact Material</b>						
	<b>Q</b> Silver						
	<b>B</b> Gold						
	<b>G</b> Gold over silver						
	<b>Seal</b>						
	<b>NONE</b> No seal						
	<b>E</b> Epoxy seal						
	<b>F</b> Splashproof bushing seal						
	<b>K</b> Epoxy & splashproof bushing seal						



Rotary



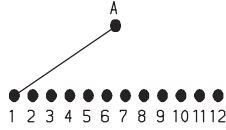
Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

# A Series 1-4 Pole Rotary Switches

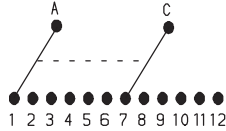
## SWITCH FUNCTION

30° INDEXING			
NO. POLES	MODEL NO.	SWITCH FUNCTION	TERMINALS
SP	A100	12 Position No Stops	A,1-12
	A102	SPDT	A,1,2*
	A103	3 Position	A,1-3*
	A104	4 Position	A,1-4*
	A105	5 Position	A,1-5*
	A106	6 Position	A,1-6*
	A107	7 Position	A,1-7
	A108	8 Position	A,1-8
	A109	9 Position	A,1-9
	A110	10 Position	A,1-10
A112	12 Position	A,1-12	
DP	A203	3 Position	A,C,1-3,7-9
	A204	4 Position	A,C,1-4,7-10
	A205	5 Position	A,C,1-5,7-11
	A206	6 Position	A,C,1-12
3P	A303	3 Position	A,B,C,1-3,5-7,9-11
	A304	4 Position	A,B,C,1-12

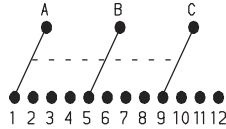
### SP MODELS SCHEMATIC



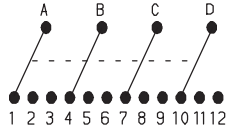
### DP MODELS SCHEMATIC



### 3P MODELS SCHEMATIC



### 4P MODELS SCHEMATIC

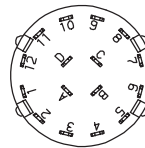


30° INDEXING			
NO. POLES	MODEL NO.	SWITCH FUNCTION	TERMINALS
4P	A402	4PDT	A,B,C,D,1,2,4,5,7,8,10,11
	A403	3 Position	All Terminals

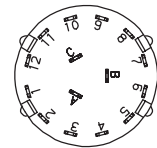
45° INDEXING			
NO. POLES	MODEL NO.	SWITCH FUNCTION	TERMINALS
SP	A115	3 Position	A,1,2,4*
	A125	8 Position	A,1,2,4,5,7,8,10,11

90° INDEXING			
NO. POLES	MODEL NO.	SWITCH FUNCTION	TERMINALS
SP	A114	2 Position	A,1,4*
	A124	4 Position	A,1,4,7,10
DP	A214	2 Position	A,C,1,4,7,10

### TERMINAL NUMBERS



Terminal numbers molded on bottom of housing.

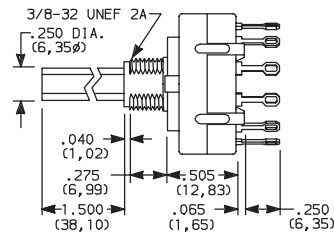
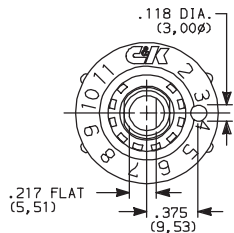


4P MODELS  
SP MODELS (omit terminals B, C & D)  
DP MODELS (omit terminals B & D)

3P MODELS

**NOTE:** \* These models with 'C' or 'MC' terminations have additional terminal no. 9 as switch support only. This terminal is not connected electrically inside switch.

All models **C&K** with all options when ordered with 'G' or 'Q' contact material, see page K-6.



TERM. NOS. MOLDED ON HOUSING

Rotary  
K



Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

# A Series 1-4 Pole Rotary Switches

## ACTUATOR

**15** 1.500" HIGH

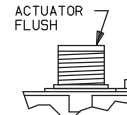
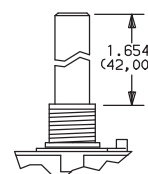
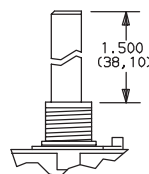
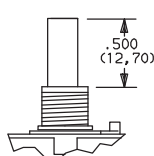
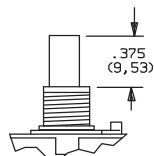
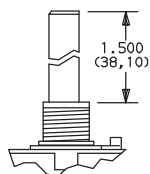
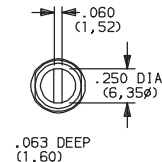
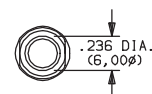
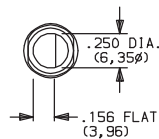
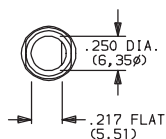
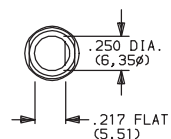
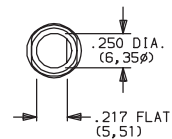
**03** .375" HIGH

**05** .500" HIGH

**14** 1.500" HIGH

**42** 1.654" METRIC

**S1** SCREWDRIVER SLOT

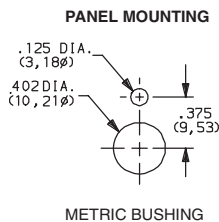
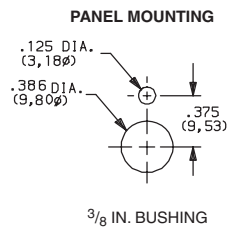
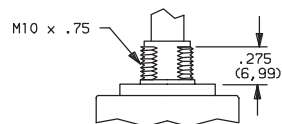
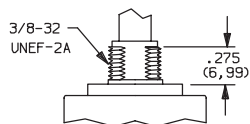


NOTE: Actuators shown in position 1, fully CCW.

## MOUNTING STYLE

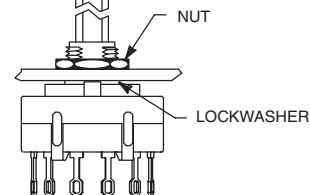
**R** 3/8-32 THREAD

**M** M10 x .75 METRIC



### TYPICAL INSTALLATION

Maximum force to push on knob should not exceed 10 lbs.



Install switch with stop ring (if used) and lockwasher in back of panel. Tighten hex nut from front of panel.

On PC mounted switches, use hex nut and lockwasher to hold stop ring in place.

Actuation torque: 8-16 oz./in.  
Maximum torque: 30 oz./in.

## SHORTING/NON-SHORTING CONTACTS

**N** NON-SHORTING CONTACTS (break-before-make)

**S** SHORTING CONTACTS (make-before-break)

NOTE: 'S' shorting contacts are not available with A114, A124 and A214 models.



Third Angle  
Projection

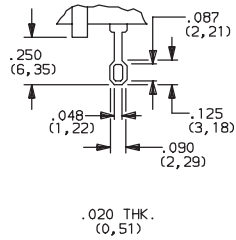
Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change



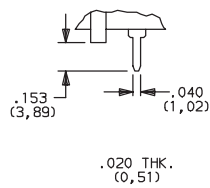
# A Series 1-4 Pole Rotary Switches

## TERMINATIONS

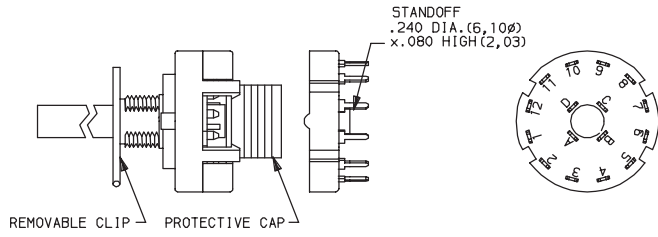
**Z** SOLDER LUG



**C** PC THRU-HOLE

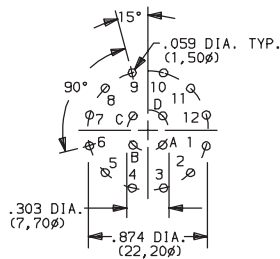


**MC** MODULAR BASE (for wave soldering)

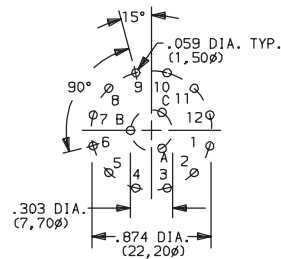


**NOTE:** Switches with 'C' or 'MC' terminations have additional terminal no. 9 as switch support only. This terminal is not connected electrically inside switch. Solder and clean switch base on PC board with other components, then snap on housing/actuator assembly. See page K-7 for installation instructions.

## PC MOUNTING



4P MODEL  
SP MODEL (omit terminals B, C & D)  
DP MODEL (omit terminals B & D)



3P MODEL

## CONTACT MATERIAL

OPTION CODE	CONTACT AND TERMINAL MATERIAL	RATING	
<b>Q</b>	SILVER <sup>2</sup>	POWER	SWITCH-2.5 AMPS @ 125 V AC; 350 mA @ 125V DC (UL/CSA). CARRY-5 AMPS CONTINUOUS.
<b>B</b>	GOLD <sup>1</sup>	LOW LEVEL/DRY CIRCUIT	0.4 VA MAX. @ 20 V AC or DC MAX
<b>G</b>	GOLD OVER SILVER <sup>3</sup>	LOW LEVEL/DRY CIRCUIT OR POWER	0.4 VA MAX. @ 20 V AC or DC MAX. or SWITCH-2.5 AMPS @ 125 V AC; 350 mA @ 125 V DC (UL/CSA). CARRY-5 AMPS CONTINUOUS.


\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definition and specifications.

<sup>1</sup> MOVABLE CONTACTS: Copper alloy, with gold plate over nickel plate.  
STATIONARY CONTACTS & TERMINALS: Brass, with gold plate over nickel plate.

<sup>2</sup> MOVABLE CONTACTS: Coin silver, silver plated.  
STATIONARY CONTACTS & TERMINALS: Brass, silver plated (standard with all termination options).

<sup>3</sup> MOVABLE CONTACTS: Coin silver, with gold plate over nickel plate over silver plate.  
STATIONARY CONTACTS & TERMINALS: Brass, with gold plate over nickel plate over silver plate.

**NOTE:** Any models supplied with Q, B or G contact material are RoHS compliant.

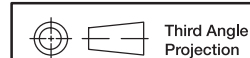
All models  with all options when ordered with 'G' or 'Q' contact material.

**NOTE:** 'G' contact material is equivalent to both 'B' and 'Q' contact materials.

Rotary



K



# A Series 1-4 Pole Rotary Switches

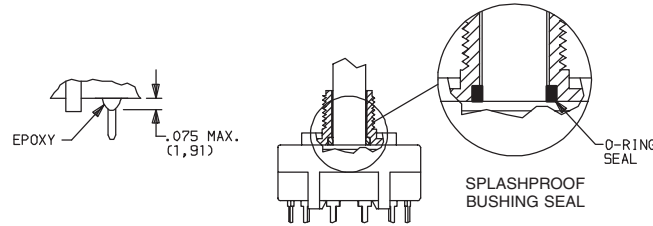
## FUNCTION

**NONE** NO SEAL

**E** EPOXY SEAL

**F** SPLASHPROOF BUSHING SEAL

**K** EPOXY & SPLASHPROOF BUSHING SEAL



### Setting Stops on A112 and A125 Models

The number of switch positions is adjustable on A112 and A125 models only by means of a stop ring provided with each switch. The number of positions is pre-set on all other models and the stop ring is factory installed.

To set stops: Turn shaft fully counter-clockwise and insert stop ring tab in desired hole. Install lockwasher and nut to retain stop ring for both PC and panel mounting. Switch without stop ring has 12 positions.

### Soldering, Cleaning and Assembly Instructions for 'MC' Termination Option

#### Soldering

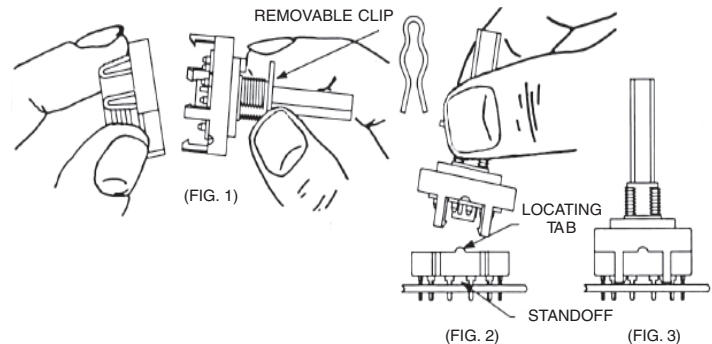
1. Insert switch base only into PC board.
2. Do not bend terminals.
3. Wave soldering recommended at 500F solder temperature.
4. Hand solder at 500F, 10 sec. max./terminal.

#### Cleaning

1. Flux clean using vapor degreaser and forced rinse or triple bath method.
2. Do not allow switch base to 'trap' fluids.
3. Freon TMC, TF or Methylene Chloride give excellent results.

#### Switch Assembly

1. Hold housing/shaft assembly by housing. Remove protective cap by squeezing tabs and discard. (FIG. 1)
2. Do not push on switch shaft. Detent mechanism will come apart.
3. While holding switch housing, align locating tab on base with notch on housing and engage 4 housing latches in slots on base. (FIG. 2)
4. Push firmly on housing until latches snap in place.
5. Remove clip from shaft and discard. Assembly is complete. (FIG. 3)

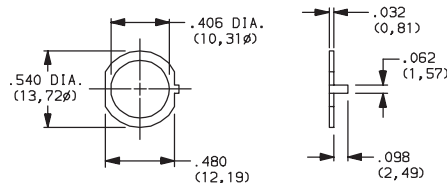


**K**

Rotary

## AVAILABLE HARDWARE

Stop ring



PART NO.

**767B00201**

Material: Brass

Finish: Nickel plated



Dimensions are shown: Inch (mm)

Specifications and dimensions subject to change

**C&K**

# RTA Series 1-4 Poles Coded Rotary Switches



## Features/Benefits

- PCB or hand soldering versions
- Bushing mounting
- Multiple poles
- Decimal and hexadecimal codes
- Screwdriver slot or extended actuator
- RoHS Compliant

## Typical Applications

- Appliances
- Electronic alarm systems
- Medical
- Building automation
- HVAC air conditioning

### Electrical Data

	Silver	Gold
SWITCHING MODE:	BBM	BBM
MAX. SWITCHING POWER	5 VA	0.5 VA
MAX. SWITCHING CURRENT:	150 mA	20 mA
MAX. CARRYING CURRENT:	5 A	1 A
NOMINAL VOLTAGE AT 50 Hz	60 V	25 V
CONTACT RESISTANCE:	< 150 mΩ	< 150 mΩ
DIELECTRIC STRENGTH AT 50 Hz BETWEEN CONTACTS AND GROUND TERMINALS:	500 V r	500 V r
INSULATION RESISTANCE BETWEEN CONTACTS OR CONTACTS AND FRAME (500 V ⇒):	10 <sup>9</sup> Ω	10 <sup>9</sup> Ω
NO. OF OPERATIONS:	10,000	10,000
BOUNCE:	< 5 ms	< 5 ms

### Mechanical Data

MAX. NO. OF BANKS: 1.  
OPERATING TORQUE: 5 Ncm±20%.  
END STOP TORQUE: < 60 Ncm.  
STOP: With/without or adjustable  
MOUNTING: By fixed index 9.5 mm (0.374) of center, for bushing mount only

### Materials

BUSHING/HOUSING: PETP Thermoplastic  
STATIONARY CONTACTS & TERMINALS: Nickel Plated Brass with additional plating of Gold or Silver.  
ROTOR: Gold or Silver plated Brass or PCB.  
CODING PLATE: PA thermoplastic  
ACTUATOR: Polysulfon thermoplastic  
HARDWARE: Stop pin: Aluminum. Ball & Spring: Stainless steel. Washer: PA. Nut: Brass.

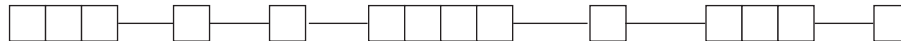
### Environmental Data

OPERATING TEMPERATURE: -20°C to + 70°C    -20°C to + 70°C  
STORAGE TEMPERATURE: -40°C to + 85°C    -40°C to + 85°C

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

### Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages K-9 thru K-12. For additional options not shown in catalog, consult Customer Service Center.



#### Designation

**RTA**

#### Termination

- P** With PC Thru-hole
- H** Horizontal with PC Thru-hole

#### Switch Function

- 1W12** SP, 30° Index, 12 pos. no stop
- 1W10** SP, 36° Index, 10 pos. no stop
- 1S02** SP, 30° /36° Index, 2 pos.
- 1S03** SP, 30° /36° Index, 3 pos.
- 1S04** SP, 30° /36° Index, 4 pos.
- 1S05** SP, 30° /36° Index, 5 pos.
- 1S06** SP, 30° /36° Index, 6 pos.
- 1S07** SP, 30° /36° Index, 7 pos.
- 1S08** SP, 30° /36° Index, 8 pos.
- 1S09** SP, 30° /36° Index, 9 pos.
- 1S10** SP, 30° /36° Index, 10 pos.
- 1S11** SP, 30° Index, 11 pos.
- 1S12** SP, 30° Index, 12 pos.
- 2S02** DP, 30° /36° Index, 2 pos.
- 2S03** DP, 30° /36° Index, 3 pos.
- 2S04** DP, 30° /36° Index, 4 pos.
- 2S05** DP, 30° /36° Index, 5 pos.
- 2S06** DP, 30° Index, 6 pos.
- 3S02** 3P, 30° /36° Index, 2 pos.

#### Indexing

- 2** 22.5 index (coded only)
- 3** 30° index (12 positions max.)
- 4** 36° index (10 positions max.)

**3S03** 3P, 30° /36° Index, 3 pos.

**4S02** 4P, 30° /36° Index, 2 pos.

**EW10** Direct + complement, 36° Index, no stop

**EW12** Direct + complement, 30° Index, no stop

**DW16** Direct, 22.5° Index, no stop

**ES\_\_** Direct + complement, 30°/36° Index, with stop

(specify stop position)

**DS\_\_** Direct, 22.5° Index, with stop

(specify stop position)

#### Mounting Style

- W** Without bushing
- R** 3/8-32 Threaded Bushing
- M** M10x.75 Metric Threaded Bushing
- A** 3/8-32 Threaded Bushing with Offset Bracket
- B** M10x.75 Metric Threaded Bushing with Offset Bracket

#### Contact Material

- S** Silver plated, matte-tin terminal
- P** Gold plated, matte-tin terminal

#### Actuator (max.)

- 25N** .984 (25,0) with screwdriver slot
- 50N** 1.97 (50,0) with screwdriver slot
- FLS** Flush shaft with screwdriver slot and position indicator
- 25F** .984 (25,0) Shaft with flat
- 06F** .236 (6,0) Shaft with flat

- C** 3/8-32 Threaded Bushing with Straight Bracket
- D** M10x.75 Metric Threaded Bushing with Straight Bracket



7 nov 16

Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

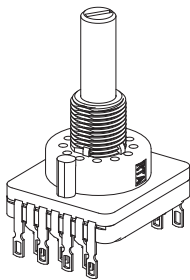


# RTA Series 1-4 Poles Coded Rotary Switches

## DESIGNATION



### RTA

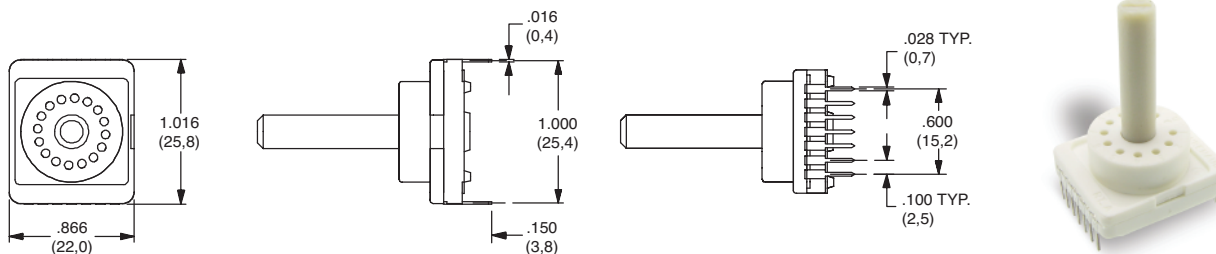


## TERMINATION



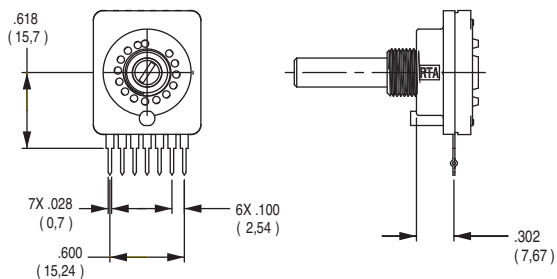
### P

WITH PC PINS



### H

Horizontal with PC Thru-hole



Note: "H" termination only available with the following options:

1. With A or B mounting styles
2. 36° degree indexing
3. Up to 5 positions max

## INDEXING



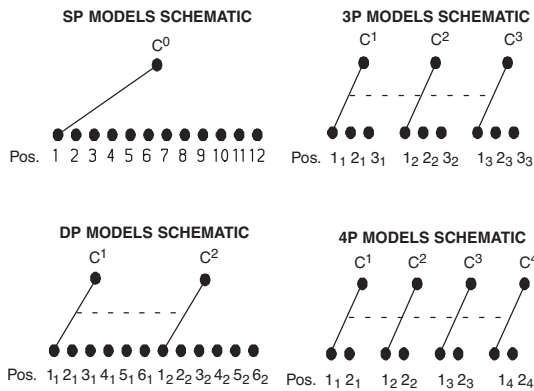
- 2** 22.5 index, 16 positions max.
- 3** 30 index, 12 positions max.
- 4** 36 index, 10 positions max.

Both commons must be connected by user to ground.

# RTA Series 1-4 Poles Coded Rotary Switches

## SWITCH FUNCTION

NO. POLES	MODEL NO.	SWITCH FUNCTION	INDEX
SP	1W12	12 Positions No Stop	30°
	1W10	10 Positions No Stop	36°
	1S02	2 Positions	30°/36°
	1S03	3 Positions	30°/36°
	1S05	5 Positions	30°/36°
	1S06	6 Positions	30°/36°
	1S08	8 Positions	30°/36°
	1S09	9 Positions	30°/36°
	1S10	10 Positions	30°/36°
	1S11	11 Positions	30°
	1S12	12 Positions	30°

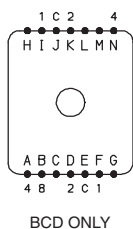


NO. POLES	MODEL NO.	SWITCH FUNCTION	INDEX
DP	2W05	5 Positions No Stop	30°/36°
	2W06	6 Positions No Stop	30°
	2S02	2 Positions	30°/36°
	2S03	3 Positions	30°/36°
	2S04	4 Positions	30°/36°
	2S05	5 Positions	30°/36°
	2S06	6 Positions	30°
	3P	3S02	2 Positions
3S03		3 Positions	30°/36°
4P	4S02	2 Positions	30°/36°

MODEL NO.	SWITCH FUNCTION	INDEX
EW10	Direct + complement, No stop	36°
EW12	Direct + complement, No stop	30°
DW16	Direct, No stop	22.5°
ES__	Direct + complement, with stop (specify stop position)	30° & 36°
DS__	Direct, with stop (specify stop position)	22.5°

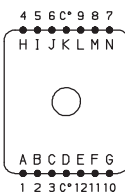
22.5°	30°	36°		Pos.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
Term.	Term.	Term.																			
E,J	M,N	L,N	C		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
F,I	H	D	1			*				*		*		*		*		*		*	
D,K	D	B	2				*	*			*	*			*	*			*	*	
A,N	A	I	4					*	*	*	*					*	*	*	*	*	
B	J	J	8									*	*	*	*	*	*	*	*	*	
-	C	K	1		*		*		*		*		*		*		*		*		
-	K	H	2		*	*			*	*			*	*		*	*				
-	B	A	4		*	*	*	*				*	*	*	*						
-	I	C	8		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	

### Indexing Option Code 2, 22.5 INDEXING ANGLE PCB LAYOUT



BCD ONLY

### Indexing Option Code 3, 30 INDEXING ANGLE PCB LAYOUT



1 POLE



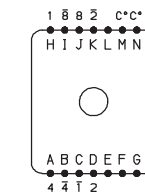
2 POLES



3 POLES



4 POLES



BCD + COMPLEMENTS

### Indexing Option Code 4, 36 INDEXING ANGLE PCB LAYOUT



1 POLE



2 POLES



3 POLES



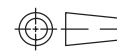
4 POLES



BCD + COMPLEMENTS

**NOTE:** Layout view from component side.

Common terminals that are in locations A-G are not connected to common terminals that are in locations H-N. For 7-12 position output customer must tie these commons together.



Third Angle Projection

Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

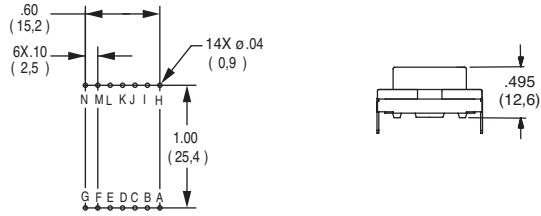


7 nov 16

# RTA Series 1-4 Poles Coded Rotary Switches

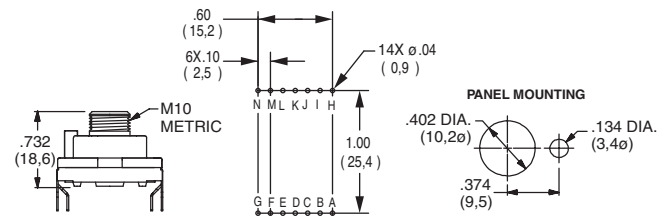
## MOUNTING STYLE

### W WITHOUT BUSHING



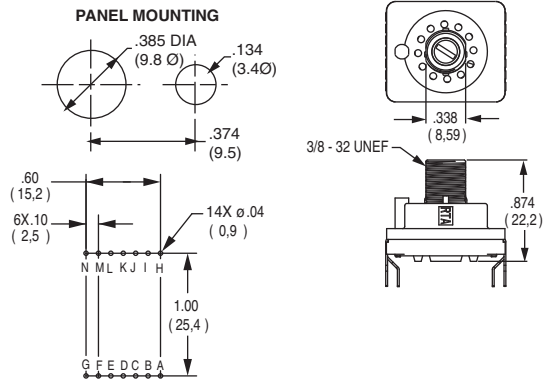
Note: W mounting style not available with H termination.

### M M10 x .75 METRIC THREADED BUSHING



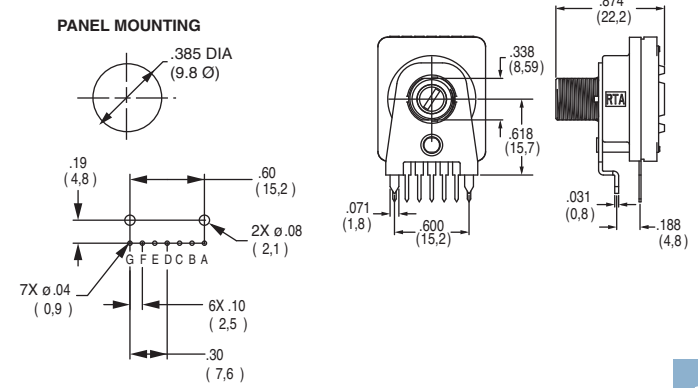
Note: M mounting style not available with H termination.

### R 3/8-32 THREADED BUSHING



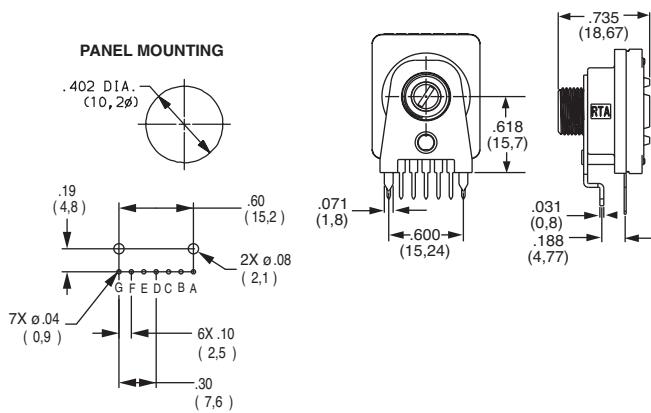
Note: R mounting style not available with H termination.

### A 3/8-32 THREADED BUSHING WITH BRACKET



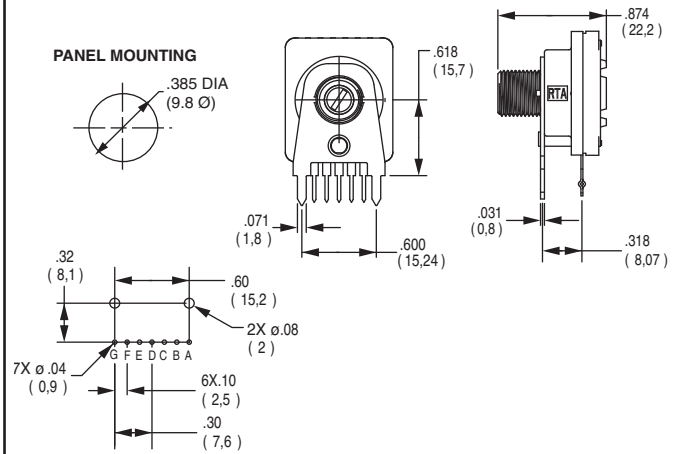
Note: A mounting style only available with H termination.

### B M10 x .75 METRIC THREADED BUSHING WITH BRACKET

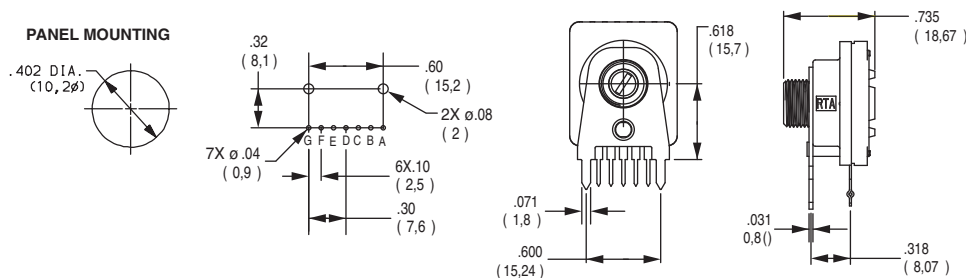


Note: B mounting style only available with H termination.

### C 3/8-32 THREADED BUSHING WITH STRAIGHT BRACKET



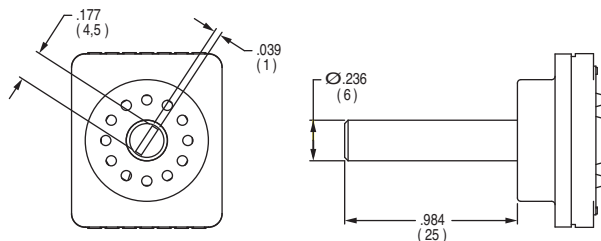
### D M10 x .75 METRIC THREADED BUSHING WITH STRAIGHT BRACKET



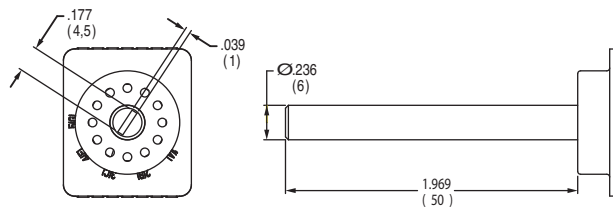
# RTA Series 1-4 Poles Coded Rotary Switches

## ACTUATOR

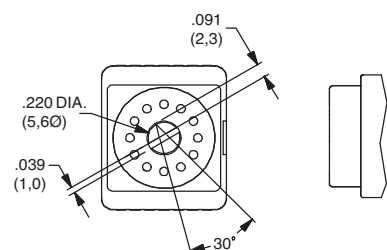
**25N** .984 (25,0) WITH SCREWDRIVER SLOT



**50N** 1.97 (50,0) WITH SCREWDRIVER SLOT

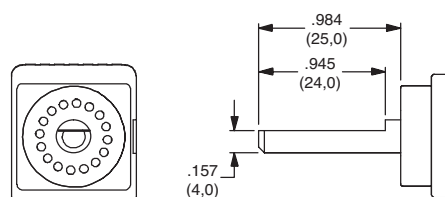


**FLS** FLUSH SHAFT WITH SCREWDRIVER SLOT AND POSITION INDICATOR



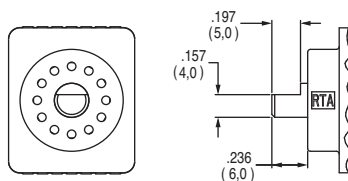
Note: only available with "W" Mounting Style

**25F** .984 (25,0) SHAFT WITH FLAT



Note: only available with "W" Mounting Style

**06F** .236 (6,0) SHAFT WITH FLAT



Note: only available with "W" Mounting Style

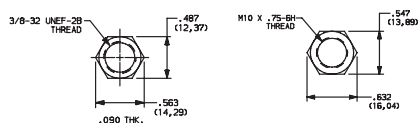
## CONTACT MATERIAL

OPTION CODE	CONTACT AND TERMINAL MATERIAL	RATING	
<b>S</b>	SILVER	LOW LEVEL/DRY CIRCUIT	SWITCH: 150 mA MAXIMUM, 60 V NOMINAL. POWER: 5 VA MAXIMUM. CARRY-5 AMPS MAXIMUM.
<b>P</b>	GOLD	LOW LEVEL/DRY CIRCUIT OR POWER	SWITCH: 20 mA MAXIMUM, 25 V NOMINAL. POWER: 0.5 VA MAXIMUM. CARRY: 1 AMP MAXIMUM.

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definition and specifications.

## AVAILABLE HARDWARE

### Mounting Nuts



PART NO.  
**472706201**  
Standard

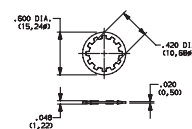
PART NO.  
**495100201**  
Metric

### Stop pins



PART NO.  
**Y200300200PCH**

### Lockwasher



PART NO.  
**472800202**

NOTE: Additional nuts and lockwashers available separately, see section "Technical Data and Additional Hardware".



Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change



K

Rotary

# M Series Half-inch Rotary Switches

## Features/Benefits

- Multi-pole and multi-positions
- Panel and PCB mounting
- Stainless steel actuator
- Non-shorting contacts
- RoHS Compliant
- IP67 (F option only)

## Typical Applications

- Test equipment
- Industrial equipment
- Medical equipment



Models Available

## Specifications

**CONTACT RATING:** Q contact material: Carry-6 AMPS continuous. Switch-250 mA max. @ 125 V AC or 28 DC. Non-shorting contacts standard. See page K-16 for additional ratings.

**ELECTRICAL LIFE:** 10,000 make-and-break cycles at 150 mA, 125 V AC or 28 DC.

**CONTACT RESISTANCE:** Below 20 mΩ typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

**INSULATION RESISTANCE:** 10<sup>10</sup> Ω min.

**DIELECTRIC STRENGTH:** 600 Vrms min. @ sea level.

**OPERATING & STORAGE TEMPERATURE:** -30°C to 85°C.

**OPERATING TORQUE:** 4-7 ounces-inches typ. initial.

**SOLDERABILITY:** Per MIL-STD-202F method 208D, or EIA RS-186E method 9 (1 hour steam aging).

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## Materials

**HOUSING AND BUSHING:** Zinc alloy, bright zinc plated, with clear chromate finish.

**ACTUATOR:** Zinc alloy, nickel plated or stainless steel.

**BASE:** Diallylphthalate (DAP) or melamine phenolic, with insert molded terminals.

**ROTOR:** Glass filled polyester (UL 94V-0).

**MOVABLE CONTACTS:**  
Non-shorting: Q contact material: Copper alloy, silver plated. See page K-16 for additional contact materials.

**STATIONARY CONTACT & ALL TERMINALS:** Q contact material: Copper alloy, silver plated. All terminals insert molded. All terminals present regardless of number of switch positions. See page K-16 for additional contact materials.

**CONTACT SPRING:** Music wire, phosphate coated.

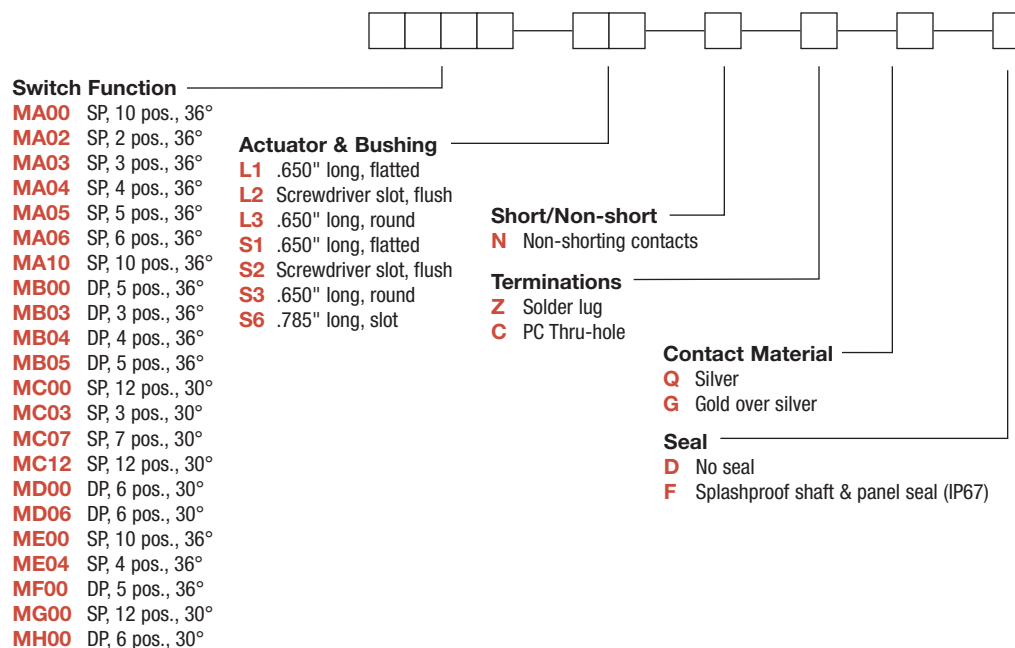
**STOP PIN:** Stainless steel.

**STOP RING:** Brass.

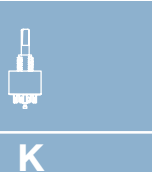
**HARDWARE:** Nut: Brass, nickel plated; Lockwasher: Steel, nickel plated.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages K-14 thru K-17. For additional options not shown in catalog, consult Customer Service Center.



Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change



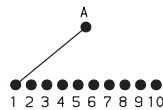
Rotary

# M Series Half-inch Rotary Switches

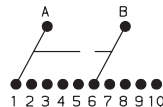
## SWITCH FUNCTION

36° INDEXING			
NO. POLES	MODEL NO. WITH STOP PINS	MODEL NO. WITH STOP RINGS	SWITCH FUNCTION
SP	MA00	ME00	10 Positions No Stops
	MA02	—	2 Positions
	MA03	—	3 Positions
	MA04	ME04	4 Positions
	MA05	—	5 Positions
	MA06	—	6 Positions
	MA10	—	10 Positions
DP	MB00	MF00	5 Positions No Stops
	MB03	—	3 Positions
	MB04	—	4 Positions
	MB05	—	5 Positions

SP MODELS 36° INDEXING SCHEMATIC

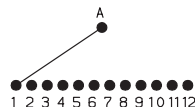


DP MODELS 36° INDEXING SCHEMATIC

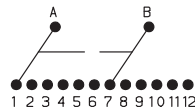


30° INDEXING			
NO. POLES	MODEL NO. WITH STOP PINS	MODEL NO. WITH STOP RINGS	SWITCH FUNCTION
SP	MC00	MG00	12 Positions No Stops
	MC03	—	3 Positions
	MC07	—	7 Positions
	MC12	—	12 Positions
DP	MD00	MH00	6 Positions No Stops
	MD06	—	6 Positions

SP MODELS 30° INDEXING SCHEMATIC



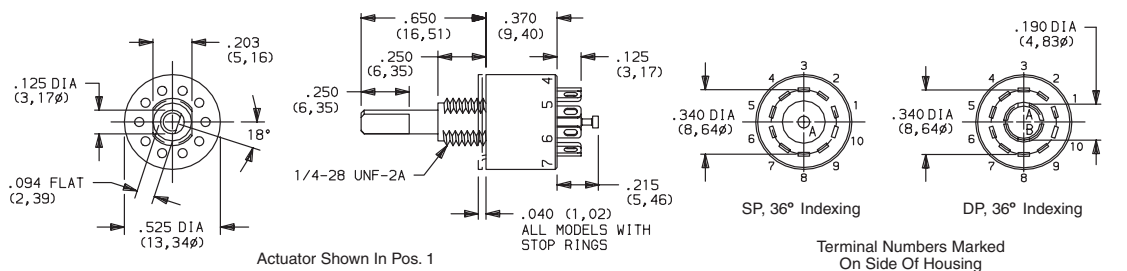
DP MODELS 30° INDEXING SCHEMATIC



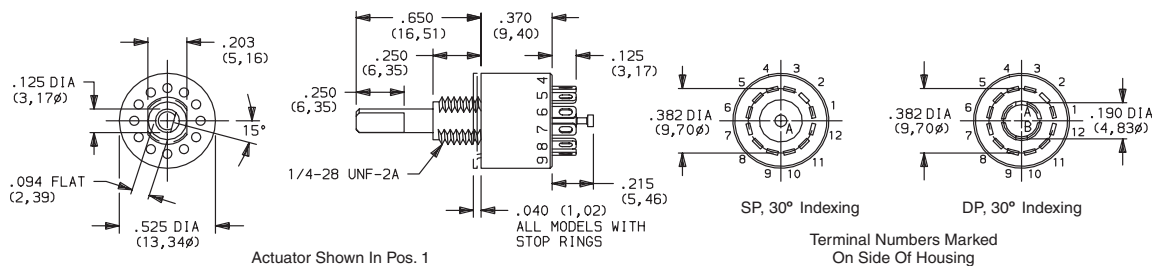
All models  with all options when ordered with S1-S6 stainless steel actuator options.

**NOTE:** Number of positions or stops preset at factory (NOTE: MX00 models have full 360 rotation with no stops. Stop pins or stop rings supplied for user-selectable stops, see above). All terminals present regardless of number of switch positions. Hardware is available separately, see section "Technical Data and Additional Hardware".

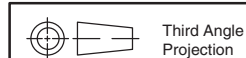
Rotary



Part number shown: MA00L1NZQD



Part number shown: MC00L1NZQD



Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

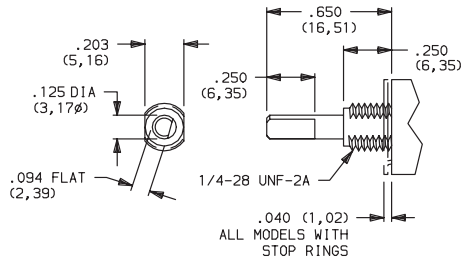


# M Series Half-inch Rotary Switches

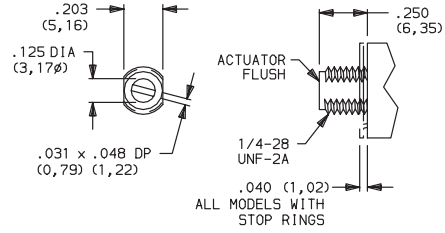
## ACTUATOR (ZINC ALLOY)



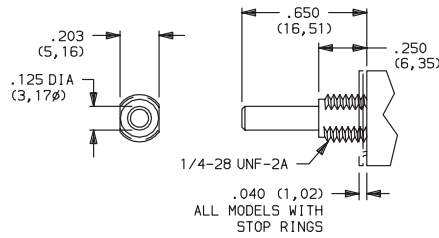
**L1** .650" LONG, FLATTED



**L2** SCREWDRIVER SLOT, FLUSH



**L3** .650" LONG, ROUND

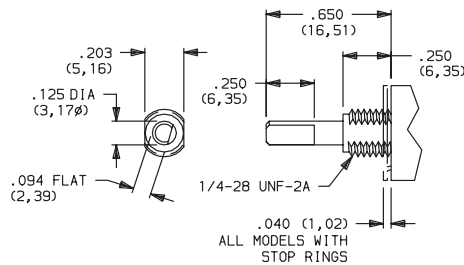


All actuators shown in pos. 1

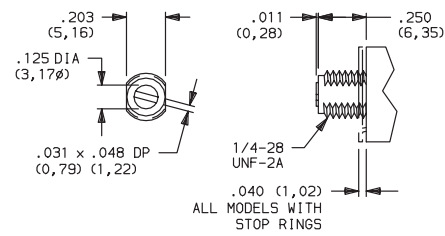
## ACTUATOR (STAINLESS STEEL)



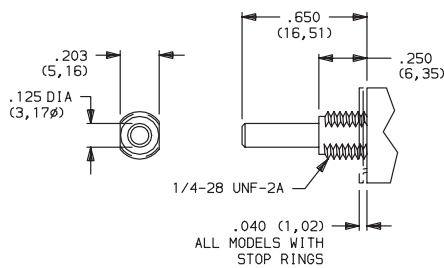
**S1** .650" LONG, FLATTED



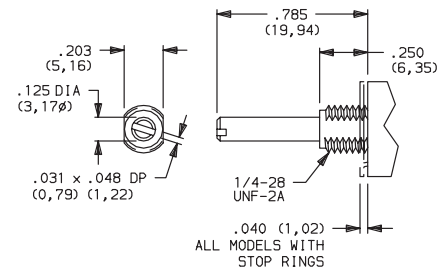
**S2** SCREWDRIVER SLOT, FLUSH



**S3** .650" LONG, ROUND



**S6** .785" LONG, SLOT



All actuators shown in pos. 1

All models  when ordered with stainless steel actuators.



Third Angle  
Projection



# M Series Half-inch Rotary Switches

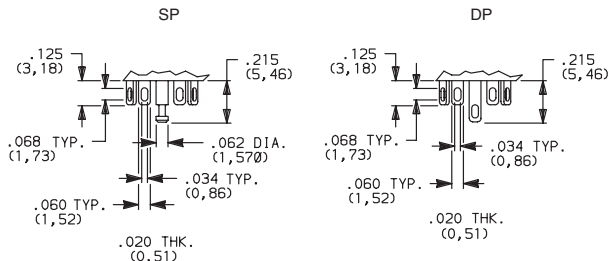
## SHORTING/NON-SHORTING CONTACTS

### N NON-SHORTING CONTACTS

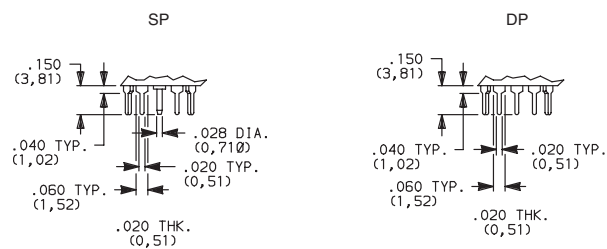
Break-before-make

## TERMINATIONS

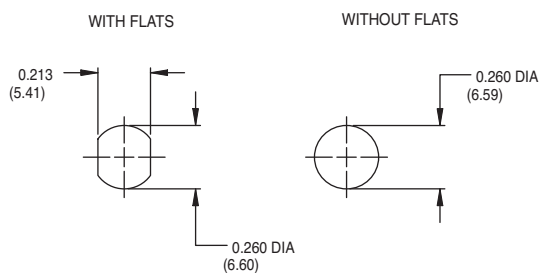
### Z SOLDER LUG



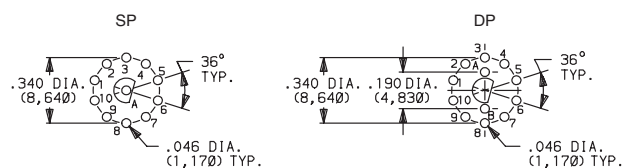
### C PC THRU-HOLE



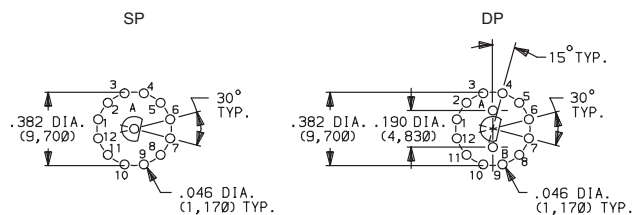
### PANEL MOUNTING



### PC MOUNTING 36° INDEXING



### PC MOUNTING 30° INDEXING



Hardware: All models, one mounting nut and lockwasher supplied standard. MA00 thru MD00 models: two stop pins and adhesive mylar washer supplied. ME00 thru MH00 models: two stop rings supplied. Hardware is available separately, see section "Technical Data and Additional Hardware".

\* Will withstand 12 in. - lbs of torque with no distortion.

**NOTE:** Q contact material standard. Terminal numbers marked on side of housing. All terminals insert molded. All terminals present regardless of number of switch positions.

Actuators and schematics shown in pos. 1.

## CONTACT MATERIAL

OPTION CODE	CONTACT MATERIAL	TERMINAL PLATING	RATING	
			POWER	CARRY: 6 AMPS CONTINUOUS. SWITCH: 250 mA @ 125 V AC or 28 V DC.
Q	SILVER <sup>1,2</sup>	SILVER <sup>2</sup>	POWER	CARRY: 6 AMPS CONTINUOUS. SWITCH: 250 mA @ 125 V AC or 28 V DC.
G	GOLD OVER SILVER <sup>3,4</sup>	GOLD <sup>4</sup>	LOW LEVEL/DRY CIRCUIT OR POWER	0.4 VA MAX. @ 20 V AC or DC MAX. or, CARRY: 6 AMPS CONTINUOUS. SWITCH: 250 mA @ 125 V AC or 28 V DC.

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definition and specifications.


<sup>1</sup> MOVABLE CONTACTS: Non-shorting: Copper alloy, silver plated.

<sup>2</sup> STATIONARY CONTACTS & ALL TERMINALS: Copper alloy, silver plated.

<sup>3</sup> MOVABLE CONTACTS: Non-shorting: Copper alloy, with gold plate over nickel plate, over silver plate.

<sup>4</sup> STATIONARY CONTACTS & ALL TERMINALS: Copper alloy, with gold plate over nickel plate over silver plate.

**NOTE:** Any models supplied with Q, G contact material are RoHS compliant.

All models  when ordered with S1-S6 stainless steel actuator options.



Third Angle Projection

Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change



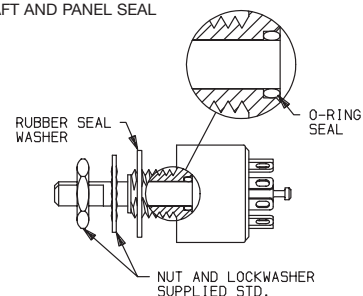


# M Series Half-inch Rotary Switches

SEAL 

**D** NO EPOXY SEAL

**F** SPLASHPROOF SHAFT AND PANEL SEAL  
IP67 approved



## Setting Stops With Stop Pins

### MA00, MB00, MC00 & MD00 Models Only:

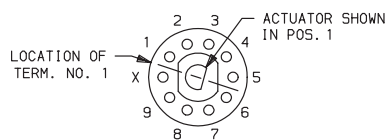
The number of switch positions or stops are adjustable by means of stop pins provided with each switch. Switches are normally shipped with stop pins and hardware in bulk, not installed. Without stop pins, switches have full 360° rotation and no stops. Note that all two pole models begin to repeat when actuated 180° or more.

To set stops, refer to figures 1 & 2. Orient switch so that terminal no. 1 is as shown. Turn actuator to position 1, using flats on bushing and terminal no. 1 as reference. Install CCW stop pin in hole designated 'X'. Install second stop pin in hole number corresponding to the number of positions desired. Note that two pole models will begin to repeat when actuated 180° or more. To retain stop pins, use adhesive mylar washer included; see figure 3.

All models except MX00 models have number of switch positions or stops pre-set at factory and are not adjustable.

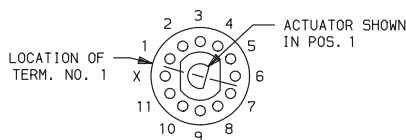
### Hardware:

Two stop pins, mounting nut, and lockwasher supplied standard.



36° Indexing Models  
Top View

Fig. 1



30° Indexing Models  
Top View

Fig. 2

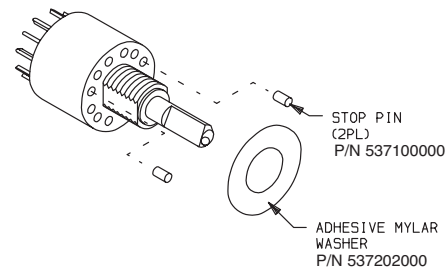


Fig. 3

## Setting Stops With Stop Rings

### ME00, MF00, MG00 & MH00 Models Only:

The number of switch positions or stops are adjustable by means of stop rings provided with each switch. These models are normally shipped with stop rings and hardware in bulk, not installed. Without stop rings, switches have full 360° rotation and no stops. Note that all two pole models begin to repeat when actuated 180° or more.

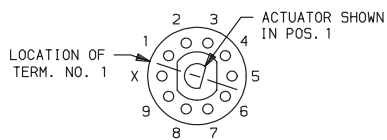
To set stops refer to figures 4 & 5. Orient switch so that terminal no. 1 is as shown. Turn actuator to pos. 1 using flats on bushing and terminal no. 1 as reference. See figure 6 and install inner stop ring with short tab in hole designated 'X'. Install outer stop ring with long tab in hole number corresponding to the number of positions desired. Note that all two pole models begin to repeat when actuated 180° or more. Use mounting nut and lockwasher to retain stop rings.

### All MEXX, MFXX, MGXX & MHXX Models (Except MX00 models):

Number of switch positions or stops are preset at factory, but are user adjustable.

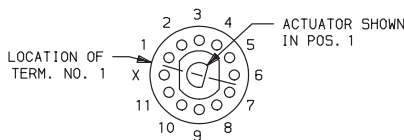
### Hardware:

Two stop rings, mounting nut and lockwasher supplied standard.



36° Indexing Models  
Top View

Fig. 4



30° Indexing Models  
Top View

Fig. 5

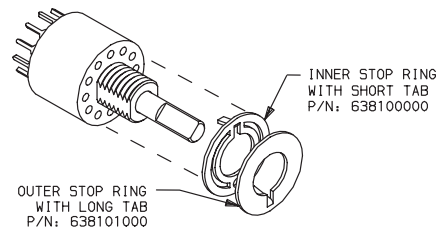
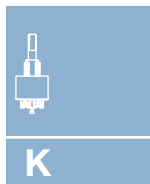


Fig. 6



# R Series ROTA-SLIDE® Rotary Switches



Models Available

## Features/Benefits

- Multi-pole and multi-position
- Positive detent
- Panel and PCB mounting
- Enclosed
- RoHS Compliant

## Typical Applications

- Ceiling fans
- Industrial equipment
- Portable tools

## Specifications

CONTACT RATING: Q contact material: 5 AMPS @ 125 V AC; 2.5 AMPS @ 250 V AC; 0.5 AMP @ 125 V DC; 1/8 HP @ 125 and 250 VAC (UL/CSA).

See page K-20 for additional ratings.

ELECTRICAL LIFE: 10,000 make-and-break cycles at full load.

CONTACT RESISTANCE: Below 10 m Ω typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

INSULATION RESISTANCE: 10<sup>9</sup> Ω min.

DIELECTRIC STRENGTH: 1,000 Vrms min. @ sea level.

INDEXING: 36°-one contact models, 10 position max.; two contact models, 5 position max.

OPERATING & STORAGE TEMPERATURE: -30°C to 95°C

## Materials

HOUSING & BUSHING: 6/6 nylon (UL 94V-2).

ACTUATOR: 6/6 nylon (UL 94V-2).

CONTACTS & TERMINALS: Q contact material: Copper, silver plated. See page K-20 for additional contact materials.

CONTACT SPRING: Music wire or stainless steel.

MOUNTING NUT: Steel, zinc plated.

TERMINAL SEAL: Epoxy.

**NOTE:** Any models supplied with Q or B contact material are RoHS compliant.

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages K-19 and K-20. For additional options not shown in catalog, consult Customer Service Center.



### Switch Function

- R100** SP, 36° Index, 10 pos. no stops
- R103** SP, 36° Index, 3 pos.
- R104** SP, 36° Index, 4 pos.
- R108** SP, 36° Index, 8 pos.
- R203** DP, 36° Index, 3 pos.
- R204** DP, 36° Index, 4 pos.
- R205** DP, 36° Index, 5 pos.

### Actuator

- 07** .500" high with .156" flat
- 05** .375" high with .156" flat
- 15** Screwdriver slot without bushing

### Mounting Style

- RR** 3/8-32 threaded bushing
- RN** PC without bushing
- RS** PC without bushing

### Terminations

- 03** Solder lug with hole
- 01** Solder lug with notch
- 02** PC Thru-hole
- WC** Wire Lead

### Contact Material

- Q** Silver
- B** Gold

### Seal

- NONE** No seal
- E** Epoxy seal



K

Rotary



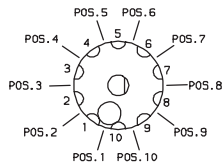
Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

# R Series ROTA-SLIDE® Rotary Switches

## SWITCH FUNCTION

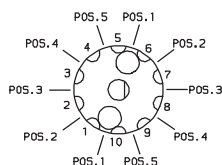
SP MODELS 36° INDEXING			
NO. POLES	MODEL NO.	SWITCH FUNCTION	TERMINALS
SP	R100	10 Position No Stops	All Terminals
	R103	3 Position	10-1-2-3
	R104	4 Position	10-1-2-3-4
	R108	8 Position	10-1-2-3-4-5-6-7-8

SP MODELS 36° INDEXING  
SCHEMATIC



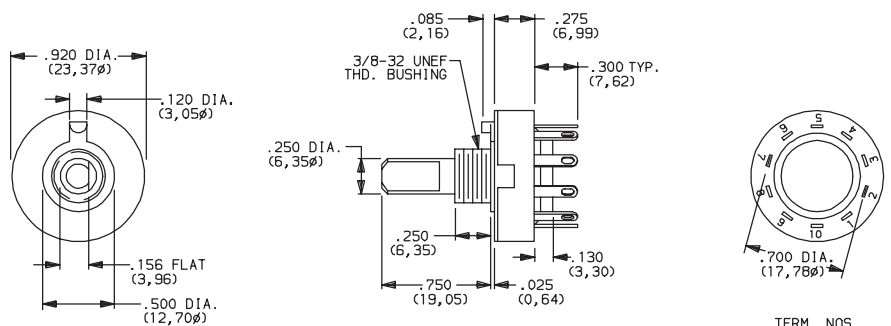
DP MODELS 36° INDEXING			
NO. POLES	MODEL NO.	SWITCH FUNCTION	TERMINALS
DP	R203	3 Position	10-1-2-3-5-6-7-8
	R204	4 Position	All Terminals
	R205	5 Position	All Terminals

DP MODELS 36° INDEXING  
SCHEMATIC



All models  with all options when ordered with 'Q' contact material.

**NOTE:** Break-before-make contacts. Actuators and contacts are shown in position 1. No common terminal is present. Switching function is provided by movable contacts shorting adjacent pairs of stationary contacts.



TERM. NOS.  
MOLDED ON HOUSING

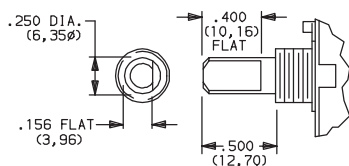
Part number show: R10007RR03Q

## ACTUATOR

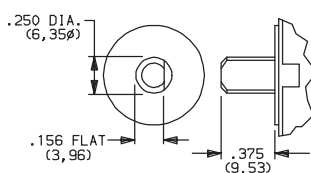
**07** .500" HIGH WITH .156" FLAT

**05** .375" HIGH WITH .156" FLAT

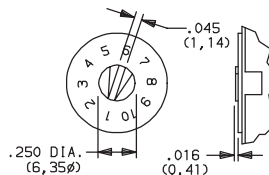
**15** SCREWDRIVER SLOT



Shown with 'RR' mounting style. For mounting styles without bushing, add .250 (6,35) to actuator length.



Shown with 'RN' mounting style.



Arrow on actuator marked red (std.). Shown with 'RS' mounting style.



Third Angle  
Projection



Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change



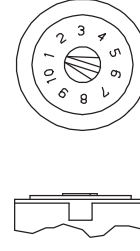
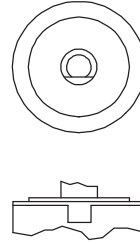
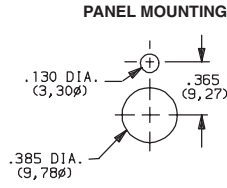
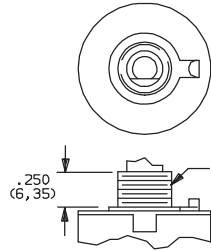
# R Series ROTA-SLIDE® Rotary Switches

## MOUNTING STYLE

**RR** 3/8-32 THREADED BUSHING

**RN** PC WITHOUT BUSHING

**RS** PC SCREWDRIVER SLOT WITHOUT BUSHING



Position numbers and characters are molded on housing.

Mounting nut included (part number 175000100).

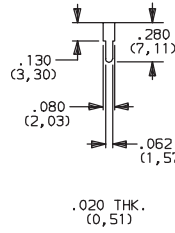
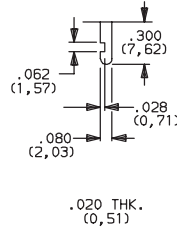
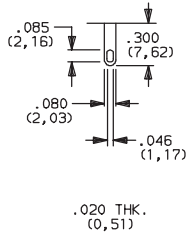
## TERMINATIONS

**03** SOLDER LUG WITH HOLE

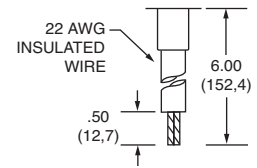
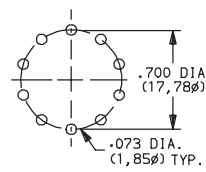
**01** SOLDER LUG WITH NOTCH

**02** PC THRU-HOLE

**WC** WIRE LEAD



### PC MOUNTING



K

Rotary


## CONTACT MATERIAL

OPTION CODE	CONTACT AND TERMINAL MATERIAL	RATING	
<b>Q</b>	SILVER <sup>2</sup>	POWER	5 AMPS @ 125 V AC; 2.5 AMPS @ 250 V AC; 0.5 AMP @ 125 V DC (UL/CSA); 1/8 HP @ 125 and 250 VAC (UL/CSA).
<b>B</b>	GOLD <sup>1</sup>	LOW LEVEL/DRY CIRCUIT	0.4 VA MAX. @ 20 V AC or DC MAX.

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definition and specifications.

<sup>1</sup> CONTACTS & TERMINALS: Copper, with gold plate over nickel plate.  
<sup>2</sup> CONTACTS & TERMINALS: Copper, silver plated. (Standard with all termination options.)

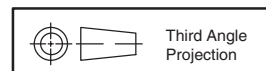
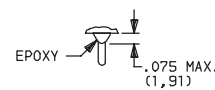
**NOTE:** Any models supplied with Q, B or G contact material are RoHS compliant.

All models  with all options when ordered with 'Q' contact material.

## SEAL

**NONE** NO SEAL

**E** EPOXY SEAL



Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

# F Series Miniature ROTA-SLIDE® Rotary Switches

## Features/Benefits

- Multi-pole and multi-position
- Panel and PCB mounting
- Positive detent
- Value added capability
- RoHS Compliant

## Typical Applications

- Small appliances
- Testing fixtures
- Safety equipment



Models Available

## Specifications

CONTACT RATING: Q contact material: 4 AMPS @ 125 V AC or 28 V DC; 2 AMPS @ 250 V AC (UL/CSA). See page K-24 for additional ratings.

ELECTRICAL LIFE: 10,000 make-and-break cycles at full load.

CONTACT RESISTANCE: Below 10 m Ω typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

INSULATION RESISTANCE: 10<sup>9</sup> Ω min.

DIELECTRIC STRENGTH: 1,000 Vrms min. @ sea level.

INDEXING: 45° or 90° -one contact models; two contact models, 4 pos. max. Models with common terminal -90°, 4 pos. max.

OPERATING & STORAGE TEMPERATURE: -30°C to 65°C

## Materials

HOUSING & BUSHING: 6/6 Nylon (UL 94V-2).

ACTUATOR: 6/6 nylon (UL 94V-2).

CONTACTS: Q contact material: Copper, silver plated. See page K-24 for additional contact materials.

TERMINALS: Q contact material: Copper, silver plated. See page K-24 for additional contact materials.

CONTACT SPRING: Music wire or stainless steel.

MOUNTING NUT: Brass, nickel plated.

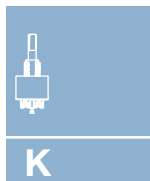
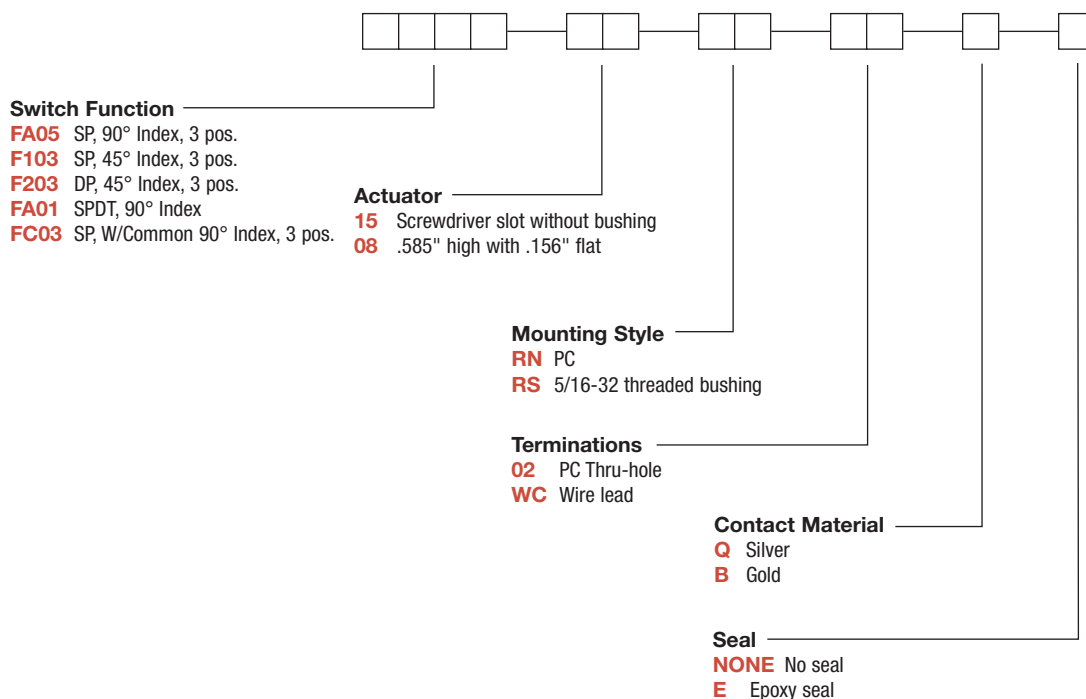
TERMINAL SEAL: Epoxy.

**NOTE:** Any models supplied with Q or B contact material are RoHS compliant.

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages K-22 thru K-24. For additional options not shown in catalog, consult Customer Service Center.



K

Rotary



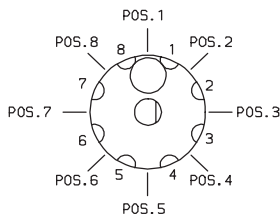
Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

# F Series Miniature ROTA-SLIDE® Rotary Switches

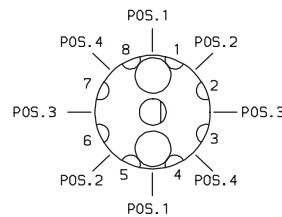
## SWITCH FUNCTION

45° INDEXING			
NO. POLES	MODEL NO.	SWITCH FUNCTION	TERMINALS
SP	<b>F103</b>	3 Position	8-1-2-3*
DP	<b>F203</b>	3 Position	All Terminals

### 45° INDEXING SCHEMATICS



F1XX MODELS



F2XX MODELS

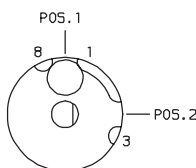
Break-before-make contacts. Terminal numbers are molded on bottom of housing. Actuators are shown in position 1.

**NOTE:** \*Switches with '02' PC terminations have additional terminal no. 5 as switch support only. This terminal is not connected electrically inside switch.

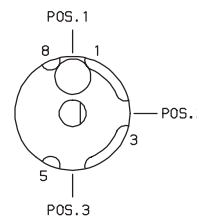
F1XX, F2XX models: No common terminal is present. Switching function is provided by movable contacts shorting adjacent pairs of stationary contacts.

90° INDEXING			
NO. POLES	MODEL NO.	SWITCH FUNCTION	TERMINALS
SP	<b>FA01</b>	SPDT	8-1-3
	<b>FA05</b>	3 Position	8-1-3-5
SP WITH COMMON	<b>FC03</b>	3 Position	C-1,C-2,C-3

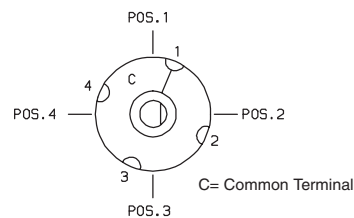
### 90° INDEXING SCHEMATICS



FA01 MODEL



FA05 MODEL



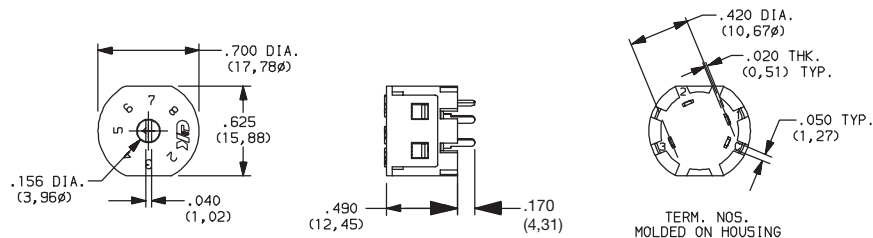
FCXX MODEL

Break-before-make contacts. Terminal numbers are molded on bottom of housing. Actuators are shown in position 1.

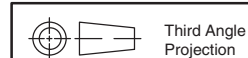
FCXX models: Common terminal is present.

FAXX models: No common terminal is present. Switching function is provided by movable contacts shorting adjacent pairs of stationary contacts.

**NOTE:** \*Switches with '02' PC terminations have additional terminal no. 5 as switch support only. This terminal is not connected electrically inside switch.



Part number show: FC0315RN02Q



Third Angle Projection

Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change



K

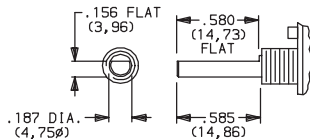
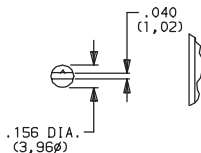
Rotary

# F Series Miniature ROTA-SLIDE® Rotary Switches

## ACTUATOR

**15** SCREWDRIVER SLOT WITHOUT BUSHING

**08** .585" HIGH WITH .156" FLA



Shown with 'RN' mounting style; not available with 'RS' mounting style or FCXX models.

Must be ordered with 'RS' mounting style.

## MOUNTING STYLE

**RN** PC

**RS** 5/16-32 THREADED BUSHING

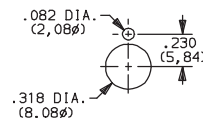


PC mount, no bushing, position numbers molded standard. Shown with '15' actuator; not available with '08' actuator or FCXX models.



Panel mount, with 5/16 in.-32 threaded bushing. Mounting nut (P/N 175020201) included. Must be ordered with '08' actuator option.

PANEL MOUNTING

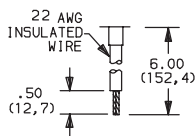
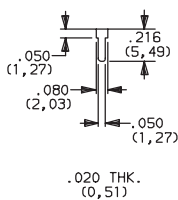


5/16 IN. BUSHING

## TERMINATIONS

**02** PC THRU-HOLE

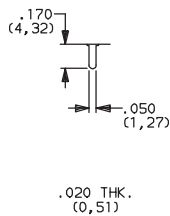
**WC** WIRE LEAD



Black wire standard, other colors and lengths available, consult Customer Service Center. UL style 1015.

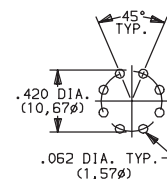
**F1XX, F2XX & FAXX Models**

**02** PC THRU-HOLE



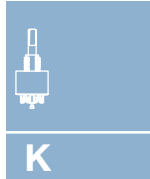
**FCXX Models**

PC MOUNTING



 Third Angle Projection

Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change



Rotary

# F Series Miniature ROTA-SLIDE® Rotary Switches


## CONTACT MATERIAL

OPTION CODE	CONTACT AND TERMINAL MATERIAL	RATING	
<b>Q</b>	SILVER <sup>2</sup>	POWER	4 AMPS @ 125 V AC or 28 V DC; 2 AMPS @ 250 V AC (UL/CSA).
<b>B</b>	GOLD <sup>1</sup>	LOW LEVEL/DRY CIRCUIT	0.4 VA MAX. @ 20 V AC or DC MAX.

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definition and specifications.

<sup>1</sup> CONTACTS & TERMINALS: Copper, with gold plate over nickel plate.  
<sup>2</sup> CONTACTS & TERMINALS: Copper, silver plated (standard with all termination options).

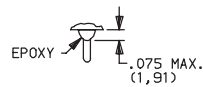
**NOTE:** Any models supplied with Q or B contact material are RoHS compliant.

All models  with all options when ordered with 'Q' contact material.

## SEAL

**NONE** NO SEAL

**E** EPOXY SEAL

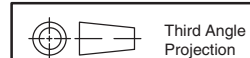


Not available on FCXX models.



**K**

Rotary



Dimensions are shown: Inch (mm)  
 Specifications and dimensions subject to change



# H Series Power ROTA-SLIDE® Rotary Switches

## Features/Benefits

- Multi-pole and multi-position
- Positive detent
- Power switching up to 12 AMPS
- Value added capability
- RoHS Compliant

## Typical Applications

- Small appliances
- Industrial equipment
- Elevators



Models Available

## Specifications

CONTACT RATING: 12 Amps @ 125 V AC; 6 AMPS @ 250 V AC;  
1 AMP @ 125 V DC (UL/CSA).  
ELECTRICAL LIFE: 10,000 make-and-break cycles at full load.  
INSULATION RESISTANCE:  $10^9 \Omega$  min.  
DIELECTRIC STRENGTH: 1,000 Vrms min. @ sea level.  
INDEXING: 45°-one contact models, 8 positions max.; two contact  
models, 4 positions max.  
OPERATING & STORAGE TEMPERATURE: -30°C to 95°C

## Materials

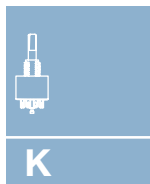
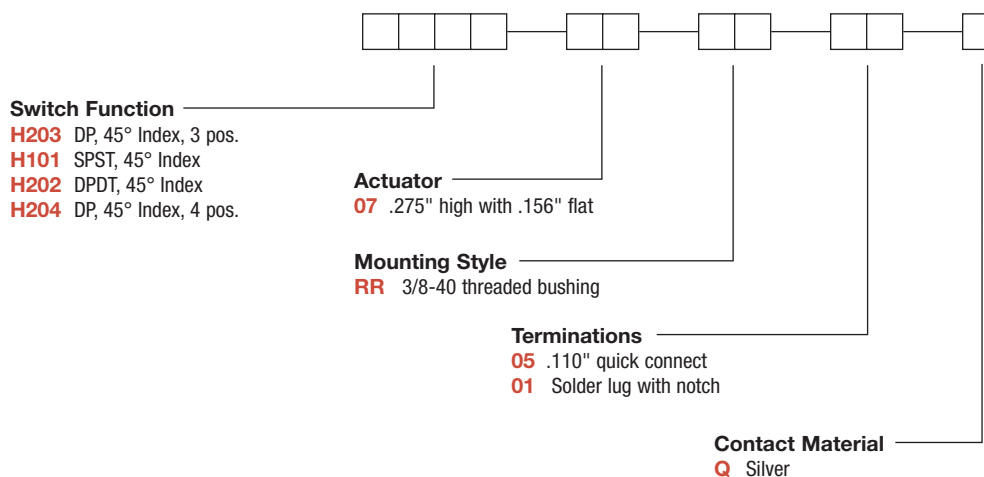
HOUSING & BUSHING: 6/6 nylon (UL 94V-2).  
ACTUATOR: 6/6 nylon (UL 94V-2).  
CONTACTS & TERMINALS: Copper, silver plated.  
CONTACT SPRING: Music wire or stainless steel.  
MOUNTING NUT: Steel, zinc plated.  
TERMINAL SEAL: Epoxy.

**NOTE:** Any models supplied with Q, B or G contact material are RoHS compliant.

**NOTE:** Specifications and materials listed above are for switches with standard options.  
For information on specific and custom switches, consult Customer Service Center.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages K-26 thru K-27. For additional options not shown in catalog, consult Customer Service Center.



Rotary



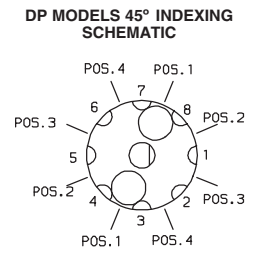
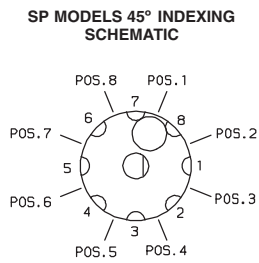
Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

# H Series Power ROTA-SLIDE® Rotary Switches

## SWITCH FUNCTION

SP MODELS 45° INDEXING			
NO. POLES	MODEL NO.	SWITCH FUNCTION	TERMINALS
SP	<b>H101</b>	SPST	8-1

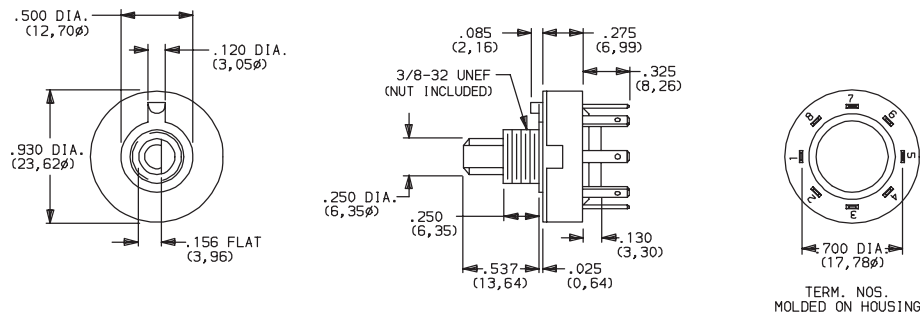
DP MODELS 45° INDEXING			
NO. POLES	MODEL NO.	SWITCH FUNCTION	TERMINALS
DP	<b>H202</b>	DPDT	7-8-1, 3-4-5
	<b>H203</b>	3 Position	All Terminals
	<b>H204</b>	4 Position	All Terminals



NOTE: Break-before-make contacts. Terminal numbers are molded on bottom of housing. Actuators and contacts are shown in position 1. No common terminal is present. Switching function is provided by movable contacts shorting adjacent pairs of stationary contacts.

All models  with all options.

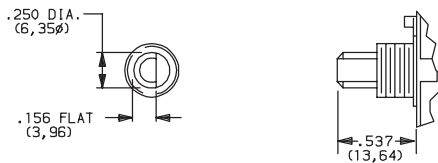
Rotary  
K



Part number shown: H10107RR05Q

## ACTUATOR

**07** .275" HIGH WITH .156" FLAT



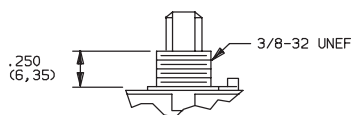
Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change



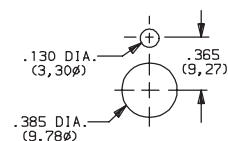
# H Series Power ROTA-SLIDE® Rotary Switches

## MOUNTING STYLE

**RR** 3/8-32 THREADED BUSHING



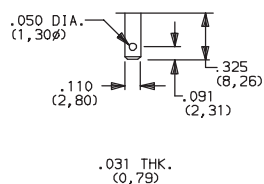
### PANEL MOUNTING



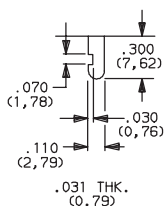
Mounting nut included (part number 925C00000).

## TERMINATIONS

**05** SOLDER LUG WITH HOLE



**01** SOLDER LUG WITH NOTCH



Not available on models with 90° indexing.

## CONTACT MATERIAL

OPTION CODE	CONTACT AND TERMINAL MATERIAL	RATING	
		<b>Q</b>	SILVER <sup>1</sup>

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definition and specifications.

<sup>1</sup> CONTACTS & TERMINALS: Copper, silver plated.

**NOTE:** Any models supplied with Q contact material are RoHS compliant.

All models  with all options.



**K**

Rotary

**C&K**



Third Angle  
Projection

Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

# RW Series Sub-miniature Rotary Switches



## Features/Benefits

- 8 and 10 positions
- SMT version
- Subminiature design

## Typical Applications

- Digital cameras
- Audio & visual equipment
- Consumer electronics
- Selector dial interface

PART NUMBER	PACKAGING
<b>RW-108 NS RT</b>	800 pieces per reel



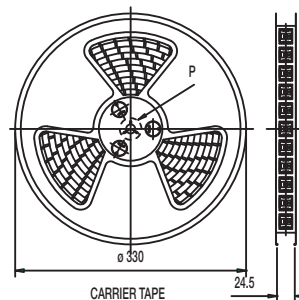
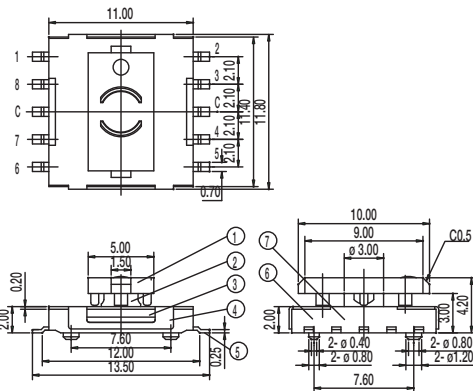
## Specifications

CONTACT ARRANGEMENT: 1 Pole 8 Position  
 CONTACT RATING: 0.1 A @ 16 V DC.  
 ELECTRICAL LIFE: 10,000 cycles.  
 INITIAL CONTACT RESISTANCE: 100 mΩ max.  
 INSULATION RESISTANCE: 10M Ω min.  
 DIELECTRIC STRENGTH: 100V (50-60 Hz).  
 TWIST FORCE: 150 ± 100 gf  
 OPERATING TEMPERATURE: -20°C to 70°C

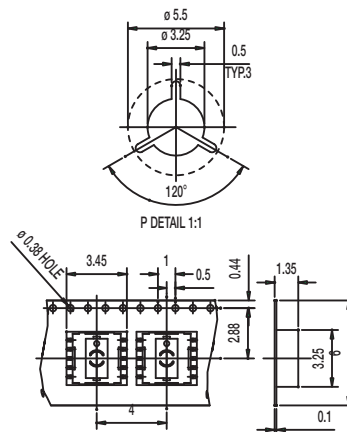
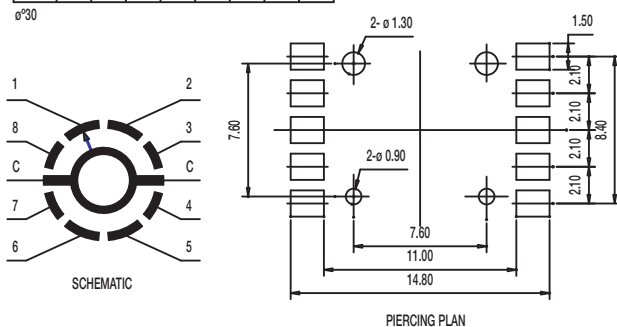
## Materials

KNOB: PA (UL 94V-0).  
 COVER: SUS  
 HOUSING: PA (UL94V-0)  
 TERMINAL: Silver plated.

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.



	0°	45°	90°	135°	180°	225°	270°	315°	360°
C-1	ION	---	---	---	OFF	---	---	---	OFF
C-2	OFF	---	ION	---	---	---	---	---	OFF
C-3	OFF	---	---	ION	---	---	---	---	OFF
C-4	OFF	---	---	---	ION	---	---	---	OFF
C-5	OFF	---	---	---	---	ION	---	---	OFF
C-6	OFF	---	---	---	---	---	ION	---	OFF
C-7	OFF	---	---	---	---	---	---	ION	OFF
C-8	OFF	---	---	---	---	---	---	---	ION



Dimensions are shown: mm  
 Specifications and dimensions subject to change

# RW Series Sub-miniature Rotary Switches

## Specifications

CONTACT ARRANGEMENT: 1 Pole, 10 Position

CONTACT RATING: 10 mA @ 5 V DC.

ELECTRICAL LIFE: 7,000 cycles.

INITIAL CONTACT RESISTANCE: 200 mΩ max.

INSULATION RESISTANCE: 250M Ω min.

DIELECTRIC STRENGTH: 250 VAC (50-60 Hz).

TWIST FORCE: 90 ± 15 gf

OPERATING TEMPERATURE: -30°C to 80°C

## Materials

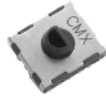
KNOB: PA (UL 94V-0).

COVER: Silver plated.

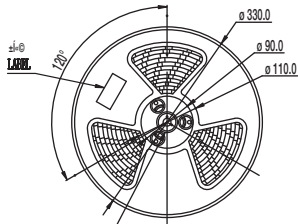
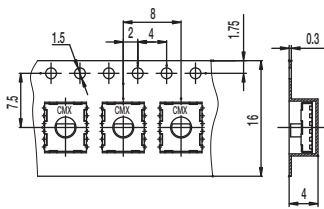
HOUSING: LCP (UL94V-0)

TERMINAL: Silver plated.

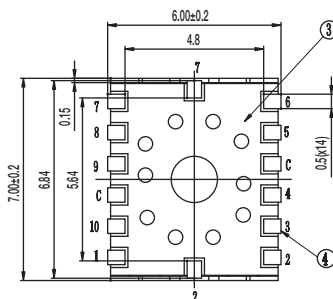
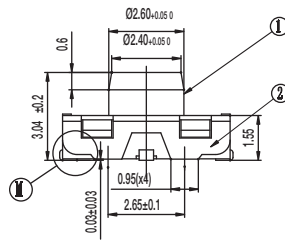
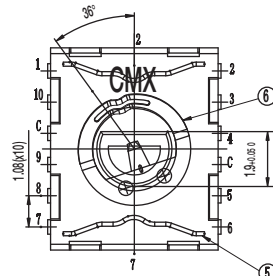
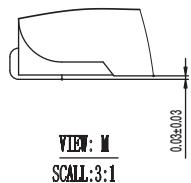
PART NUMBER	PACKAGING
<b>RW-1106-NS RT</b>	2,000 pieces per reel



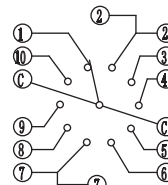
**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.



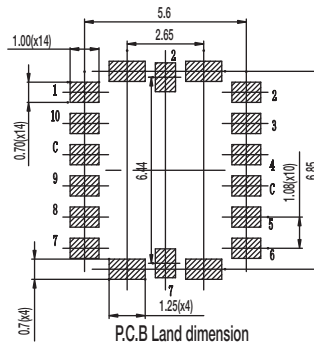
VIEW: P



	0°	36°	72°	108°	144°	180°	216°	252°	288°	324°	360°
C-1	ON										ON
C-2	OFF	ON									OFF
C-3	OFF		ON								OFF
C-4	OFF			ON							OFF
C-5	OFF				ON						OFF
C-6	OFF					ON					OFF
C-7	OFF						ON				OFF
C-8	OFF							ON			OFF
C-9	OFF								ON		OFF
C-10	OFF									ON	OFF



Circuit Diagram



PC.B Land dimension



# RM Series Subminiature Rotary Switches



## Features/Benefits

- Subminiature design saves space
- Screwdriver slot or extended shaft
- Positive detent
- RoHS compliant

## Typical Applications

- Audio & visual equipment
- Consumer electronics
- Telecom equipment

## Specifications

CONTACT RATING: 0.5A 24 V DC; 0.2A 48 V DC  
 OPERATING LIFE: 2,000 cycles  
 INSULATION RESISTANCE: 100 M  $\Omega$  min. 500 V DC  
 DIELECTRIC STRENGTH: 500 V AC for 1 minute  
 OPERATING FORCE: 270  $\pm$  100 gf cm  
 OPERATING TEMPERATURE: -40°C to 85°C

## Materials

COVER: PA66  
 BASE: PA6T  
 ACTUATOR: PA66  
 CONTACTS & TERMINALS: Brass with gold plate over nickel plate  
 SPRING: Brass

**NOTE:** Specifications and materials listed above are for switches with standard options.  
 For information on specific and custom switches, consult Customer Service Center.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages K-30 thru K-32. For additional options not shown in catalog, consult Customer Service Center.



K

Rotary

### Switch Function

- RM100** 45° Index, 8 pos. No stops
- RM101** 45° Index, 1 pos. + Off
- RM102** 45° Index, 2 pos.
- RM103** 45° Index, 3 pos.
- RM104** 45° Index, 4 pos.
- RM105** 45° Index, 5 pos.
- RM106** 45° Index, 6 pos.
- RM107** 45° Index, 7 pos.

### Actuator

- 77** 7.7 mm high, flattened, screwdriver slot
- 00** Flush, screwdriver slot

### Actuator Color

- 2** Black

### Torque

- B** 270 GF \* CM

### Termination

- C** PC Thru-hole

### Contact Material

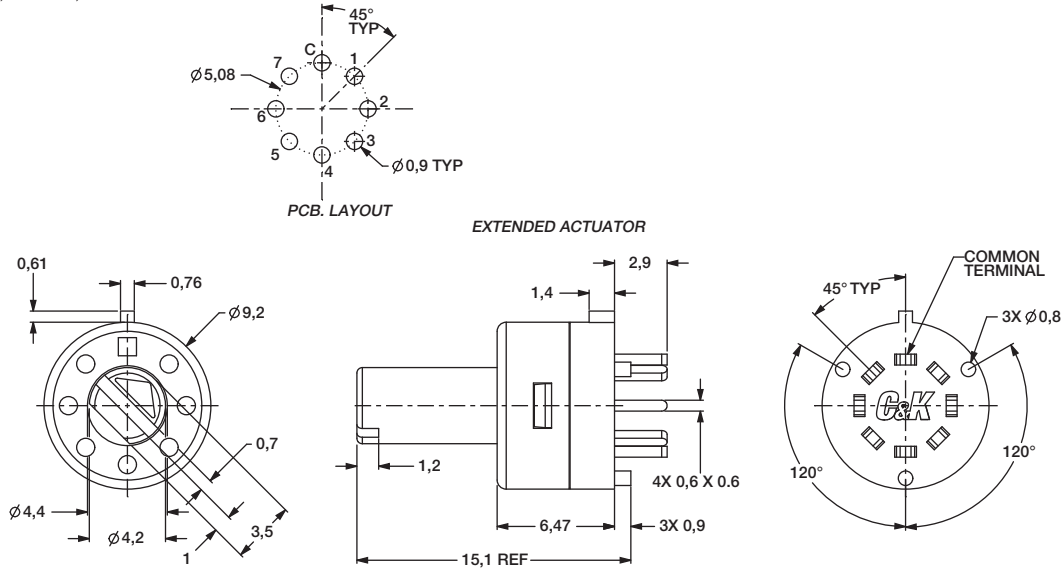
- B** Gold



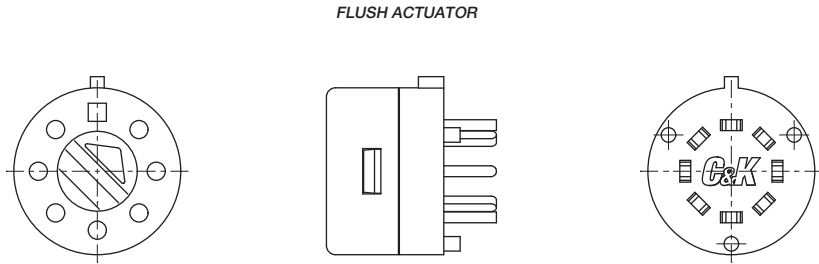
Dimensions are shown: mm  
 Specifications and dimensions subject to change

# RM Series Subminiature Rotary Switches

**77** 7.7 MM HIGH, FLATTED, SCREWDRIVER SLOT

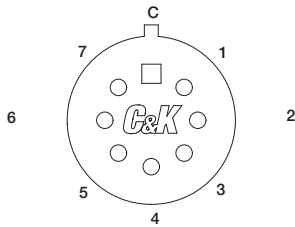


**00** FLUSH, SCREWDRIVER SLOT



ELECTRICAL SCHEMATIC - RM SERIES SWITCHES								
SWITCH FUNCTION	TRAVEL POSITION 0°	TRAVEL POSITION 45°	TRAVEL POSITION 90°	TRAVEL POSITION 135°	TRAVEL POSITION 180°	TRAVEL POSITION 225°	TRAVEL POSITION 270°	TRAVEL POSITION 315°
RM100	C-C(OFF)	C-1	C-2	C-3	C-4	C-5	C-6	C-7
RM101	C-C(OFF)	X	X	X	X	X	X	C-7
RM102	X	C-1	C-2	X	X	X	X	X
RM103	X	C-1	C-2	C-3	X	X	X	X
RM104	X	C-1	C-2	C-3	C-4	X	X	X
RM105	X	C-1	C-2	C-3	C-4	C-5	X	X
RM106	X	C-1	C-2	C-3	C-4	C-5	C-6	X
RM107	X	C-1	C-2	C-3	C-4	C-5	C-6	C-7

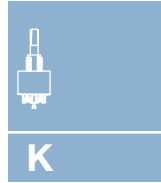
TERMINAL ID NUMBERS ARE SHOWN FOR REFERENCE ONLY AND ARE NOT MARKED ON BOTTOM OF THE SWITCH



EXTERIOR KEY TAB SHOWN IDENTIFIES "C" (COMMON TERMINAL)



Dimensions are shown: mm  
Specifications and dimensions subject to change



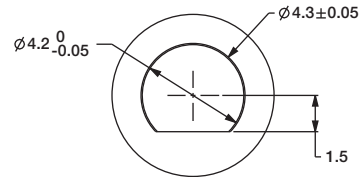
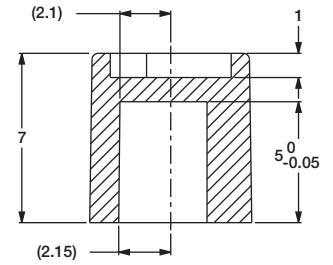
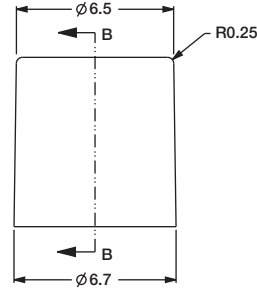
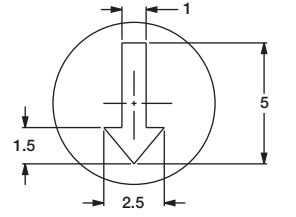
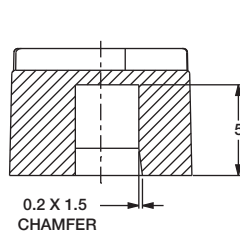
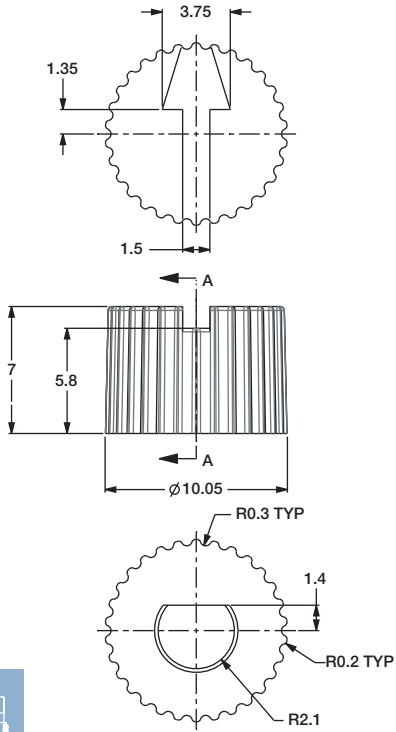
Rotary

# RM Series Subminiature Rotary Switches

## KNOBS

297F02000

296F02000



K

Rotary



# ENC Series Optical Encoder



## Features/Benefits

- Clear detent/haptic feel
- Two channel, 2-bit code output
- Quadrature (Incremental type)
- Integrated pushbutton
- Panel mount with screw thread
- Cable and connector termination

## Typical Applications

- Automotive interior control
- Industrial equipment
- Test & Instrumentation
- Medical equipment

## Specifications

### ROTARY

#### ELECTRICAL & MECHANICAL

OPERATING VOLTAGE: DC 5 ± 0.25V, 30mA max.

OUTPUT VOLTAGE: Logic high > 3V DC  
Logic low < 1V DC

ROTATIONAL TORQUE: 265 gf-cm initially

MECHANICAL LIFE: 300K cycles

### PUSHBUTTON

#### ELECTRICAL & MECHANICAL

OPERATING VOLTAGE: DC 5V, 10mA

INITIAL CONTACT RESISTANCE: 10 ohm max.

ACTUATION FORCE: 600 ± 20% gf

SHAFT TRAVEL: 0.74 ± 0.2mm

CONTACT BOUNCE: < 4ms make, < 10ms break

MECHANICAL LIFE: 300K cycles

## Environmental Data

OPERATING TEMPERATURE: -40°C to + 90°C

OPERATING RELATIVE HUMIDITY: ≤ 96% RH, +40°C

STORAGE TEMPERATURE: -40°C to +90°C

## Materials

ACTUATOR: Zinc Alloy

HOUSING FRAME: Zinc Alloy

DETENT ROTOR: POM, HB

DETENT SPRING: SUS

HOUSING UPPER: PA66, V0

HOUSING LOWER: POM, HB

PUSHBUTTON DOME: SUS

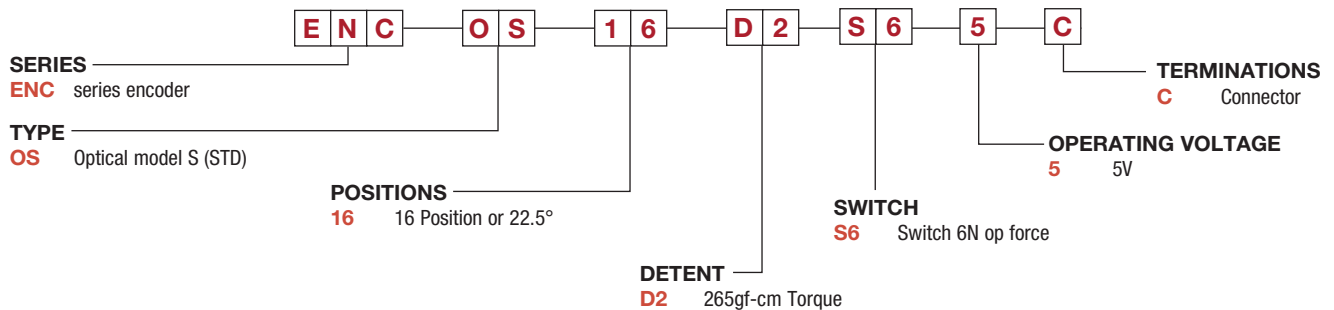


K

Rotary

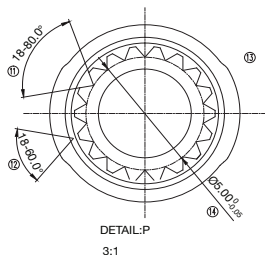
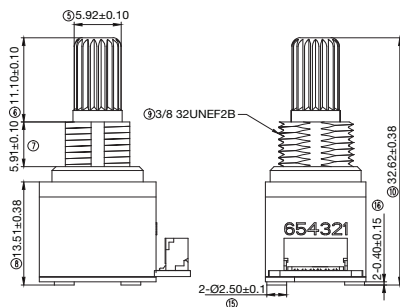
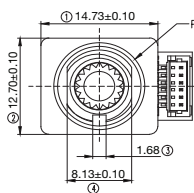
## Build-A-Switch

Product specifications and technical information listed above are for standard offer on Optical Encoder. For special options and custom request, please contact your sales representative.



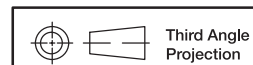
# ENC Series Optical Encoder

PART NUMBER	PACKAGING
<b>ENCOS16D2S65C</b>	Tray



K

Rotary








Third Angle  
Projection

Dimensions are shown: mm  
Specifications and dimensions subject to change

# Switchlocks

## Product Selection Guide

<b>Switchlock</b>					
<b>Series</b>	<b>Y</b>	<b>YF</b>	<b>YM</b>	<b>P</b>	<b>PF &amp; PM</b>
<b>Switch Type</b>	4,5,6 Tumbler	4 Tumbler	4 Tumbler	4 Tumbler	5 Tumbler
<b>Lock</b>	Metal	Metal	Metal	Plastic	Plastic
<b>Latch Pawl</b>	•				
<b>Miniature</b>		•	•		•
<b>Anti-static</b>	•				
<b>Momentary</b>	•				
<b>Poles</b>	1 & 2	1 & 2	1	1 & 2	1 & 2
<b>Indexing</b>	45° & 90°	90°	90°	45° & 90°	45° & 90°
<b>Max. Current</b>	4 Amps	4 Amps	4 Amps	4 Amps	4 Amps
<b>Panel Mount Options</b>					
Snap-in				•	•
Bushing	•	•	•		
PC Thru-hole	•				
<b>Page No.</b>	L-3	L-11	L-15	L-18	L-22/L-26

<b>Switchlock</b>			
<b>Series</b>	<b>A</b>	<b>H</b>	<b>PL</b>
<b>Switch Type</b>	4 & 5 Tumbler	4 & 6 Tumbler	5 Tumbler
<b>Lock</b>	Metal	Metal	Plastic
<b>Cam</b>			•
<b>Miniature</b>			•
<b>Anti-static</b>	•		
<b>Momentary</b>			
<b>Poles</b>	1 - 4	1 & 2	N/A
<b>Indexing</b>	30°, 45°, 90°	45° & 90°	90°
<b>Max. Current</b>	2.5 Amps	12 Amps	
<b>Panel Mount Options</b>			
Snap-in			•
Bushing	•	•	
Thru-hole	•		
<b>Page No.</b>	L-29	L-34	L-39



Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

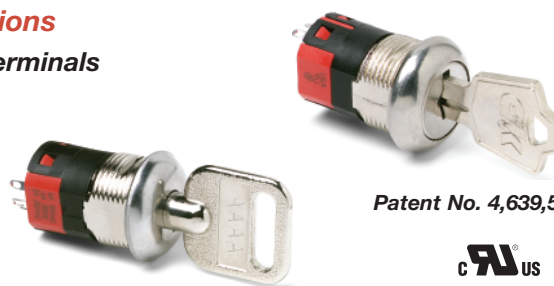
# Y Series 4, 5 & 6 Tumbler Switchlocks

## Features/Benefits

- **Anti-static switch—exceeds 20 KV DC static resistance**
- **Momentary models available**
- **Wire leads and harnesses available**

## Typical Applications

- **Point-of-sale terminals**
- **Cash registers**
- **Computers**



Patent No. 4,639,562



## Specifications

**CONTACT RATING:** Q contact material: 4 AMPS @ 125 V AC or 28 V DC; 2 AMPS @ 250 V AC (UL/CSA). See page L-9 for additional ratings.

**ELECTRICAL LIFE:** 10,000 make-and-break cycles at full load.

**CONTACT RESISTANCE:** Below 10 m Ω typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

**INSULATION RESISTANCE:** 10<sup>9</sup> Ω min.

**DIELECTRIC STRENGTH:** 1,000 Vrms min. @ sea level.

**INDEXING:** 45° or 90°, 2-4 positions (4&5 tumbler switchlocks). 45°, 3 positions; or 90°, 2 positions (6 tumbler tubular switchlocks). Other functions available, consult Customer Service Center.

**STATIC RESISTANCE:** Anti-static models exceed 20 KV DC static resistance @ sea level, lock body to terminals.

**MOUNTING TORQUE:** 10 in./lbs.; 14 in./lbs max.

## Materials

**LOCK:** Zinc alloy with stainless steel facing, std. (4 & 5 tumbler lock and 6 tumbler tubular lock).

**KEYS:** Two nickel plated brass keys, with code number, std. (4 and 5 tumbler lock). Two die cast chrome plated zinc alloy keys, std. (6 tumbler lock).

**SWITCH HOUSING:** Glass filled polyester (UL 94V-0).

**CONTACTS AND TERMINALS:** Q contact material: Copper, silver plated. See page L-9 for additional contact materials.

**MOUNTING NUT:** Zinc alloy.

**MOUNTING CLIP:** Steel, zinc plated.

**DRESS NUT:** Brass, nickel plated.

**TERMINAL SEAL:** Epoxy.

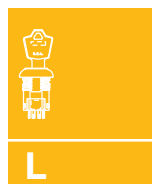
**NOTE:** Any models supplied with Q, B or G contact material are RoHS compliant.

**NOTE:** Specifications and materials listed above are for switchlocks with standard options. For information on specific and custom switchlocks, consult Customer Service Center.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages L-4 through L-10. For additional options not shown in catalog, consult Customer Service Center.

<p><b>Switch and Lock Function</b></p> <p><b>Y10013</b> SP, 45°, keypull pos. 1</p> <p><b>Y1011U</b> SP, 90°, keypull pos. 1 &amp; 2</p> <p><b>Y1001U</b> SP, 45°, keypull pos. 1 &amp; 3</p> <p><b>Y2001U</b> DP, 45°, keypull pos. 1 &amp; 3</p> <p><b>Y10082</b> SP, 45°, keypull pos. 1</p> <p><b>Y20082</b> DP, 45°, keypull pos. 1</p> <p><b>Y100AA</b> SP, 45°, keypull pos. 1, 2 &amp; 3</p> <p><b>Y200AA</b> DP, 45°, keypull pos. 1, 2 &amp; 3</p> <p><b>Y100AB</b> SP, 45°, keypull pos. 1, 2, 3 &amp; 4</p> <p><b>Y200AB</b> DP, 45°, keypull pos. 1, 2, 3 &amp; 4</p> <p><b>Y10113</b> SP, 90°, keypull pos. 1</p> <p><b>Y20113</b> DP, 90°, keypull pos. 1</p> <p><b>Y1011C</b> SP, 90°, keypull pos.2</p> <p><b>Y2011C</b> DP, 90°, keypull pos. 2</p> <p><b>Y2011U</b> DP, 90°, keypull pos. 1 &amp; 2</p> <p><b>Y14173</b> SP, 90°, keypull pos. 1</p> <p><b>Y1417U</b> SP, 90°, keypull pos. 1,2 &amp; 3</p> <p><b>Y10812</b> SP, 45°, mom., keypull pos. 1</p> <p><b>Y20812</b> DP, 45°, mom., keypull pos. 1</p> <p><b>Y19073</b> SP w/common, 90°, keypull pos. 1</p> <p><b>Y1907U</b> SP w/common, 90°, keypull pos. 1, 2 &amp; 3</p> <p><b>Y1900S</b> SP w/common, 90°, keypull pos. 1, 2, 3 &amp; 4</p>	<p><b>Keying</b></p> <p><b>2</b> Two nickel plated brass keys (4 &amp; 5 tumbler) or two die cast zinc alloy keys with chrome plating (6 tumbler)</p> <p><b>6</b> Two nickel plated brass keys with code on lock face</p> <p><b>Lock Type</b></p> <p><b>A</b> 4 Tumbler lock (YX08 models)</p> <p><b>C</b> 4 Tumbler lock with detent</p> <p><b>V</b> 6 Tumbler tubular lock</p> <p><b>B</b> 5 Tumbler lock</p> <p><b>R</b> 4 Tumbler lock with detent and anti-Static switch</p> <p><b>W</b> 6 Tumbler tubular lock with anti-Static switch</p> <p><b>Lock Finish</b></p> <p><b>2</b> Stainless steel facing</p> <p><b>8</b> Gloss black facing</p> <p><b>F</b> Polished nickel facing</p>	<p><b>Terminations</b></p> <p><b>03</b> Solder lug with hole</p> <p><b>01</b> Solder lug with notch</p> <p><b>02</b> PC Thru-hole</p> <p><b>07</b> Solder lug with hole (Y190XX models only)</p> <p><b>WC</b> Wire lead</p> <p><b>Mounting/Lock Style</b></p> <p><b>N</b> With nut</p> <p><b>D</b> With clip</p> <p><b>L</b> With removable dress nut and latch pawl</p> <p><b>R</b> With removable dress nut</p>	<p><b>Contact Material</b></p> <p><b>Q</b> Silver</p> <p><b>B</b> Gold</p> <p><b>G</b> Gold over silver</p> <p><b>Seal</b></p> <p><b>NONE</b> No seal</p> <p><b>E</b> Epoxy seal</p>



Switchlock



Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

# Y Series 4, 5 & 6 Tumbler Switchlocks

## SWITCH AND LOCK FUNCTION



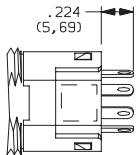
SINGLE & DOUBLE POLE SWITCHES									
NO. TUMBLERS	NO. POLES	MODEL NO.	CONNECTED TERMINALS				KEY PULL POSITIONS	LOCK CONFIGURATION	INDEXING
			POS. 1	POS. 2	POS. 3	POS. 4			
4, 5 & 6	SP	<b>Y10013</b>	8-1	1-2	2-3		Position 1		
4, 5 & 6	SP DP	<b>Y1001U</b> <b>Y2001U</b>	8-1 8-1, 4-5	1-2 1-2, 5-6	2-3 2-3, 6-7		Positions 1 & 3		
4 & 5	SP DP	<b>Y10082</b> <b>Y20082</b>	8-1 8-1, 4-5	1-2 1-2, 5-6	7-8 7-8, 3-4		Position 1		45°
4	SP DP	<b>Y100AA</b> <b>Y200AA</b>	8-1 8-1, 4-5	1-2 1-2, 5-6	7-8 7-8, 3-4		Positions 1, 2 & 3		
4	SP DP	<b>Y100AB</b> <b>Y200AB</b>	8-1 8-1, 4-5	1-2 1-2, 5-6	2-3 2-3, 6-7	3-4 3-4, 7-8	Positions 1, 2, 3 & 4		
4, 5 & 6	SP DP	<b>Y10113</b> <b>Y20113</b>	8-1 8-1, 4-5	1-3 1-3, 5-7			Position 1		
4 & 5	SP DP	<b>Y1011C</b> <b>Y2011C</b>	8-1 8-1, 4-5	1-3 1-3, 5-7			Position 2		
4, 5 & 6	SP DP	<b>Y1011U</b> <b>Y2011U</b>	8-1 8-1, 4-5	1-3 1-3, 5-7			Positions 1 & 2		90°
4	SP	<b>Y14173</b>	7-1	1-3	6-7		Position 1		
4	SP	<b>Y1417U</b>	7-1	1-3	6-7		Positions 1, 2 & 3		
SINGLE & DOUBLE POLE MOMENTARY SWITCHES									
NO. TUMBLERS	NO. POLES	MODEL NO.	CONNECTED TERMINALS				KEY PULL POSITIONS	LOCK CONFIGURATION	INDEXING
			POS. 1	POS. 2	POS. 3	POS. 4			
4	SP DP	<b>Y10812</b> <b>Y20812</b>	8-1 8-1, 4-5	1-2 1-2, 5-6			Position 1		45° Mom.



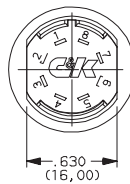
Switchlock

### LEGEND

- ▲ = Momentary Positions (45°)
- = Detent Positions (45° or 90°)
- ⊙ = Key pull possible in these positions.
- ⊙ = Stop Positions



### TERMINAL NUMBERS



Terminal numbers molded on bottom of housing.

All models **C&K** with all options when ordered with 'G' or 'Q' contact material.



Third Angle Projection

Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change



# Y Series 4, 5 & 6 Tumbler Switchlocks

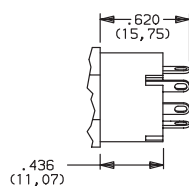
## SWITCH AND LOCK FUNCTION



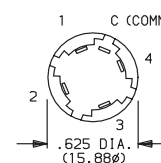
SINGLE POLE SWITCHES WITH COMMON									
NO. TUMBLERS	NO. POLES	MODEL NO.	CONNECTED TERMINALS				KEY PULL POSITIONS	LOCK CONFIGURATION	INDEXING
			POS. 1	POS. 2	POS. 3	POS. 4			
4	SP	Y19073	C-1	C-2	C-4		Position 1		90°
		Y1907U					Positions 1, 2 & 3		
		Y1900S	C-1	C-2	C-3	C-4	Positions 1, 2, 3 & 4		

### LEGEND

- = Detent Positions (45° or 90°)
- ⊙ = Key pull possible in these positions.
- ⊙ = Stop Positions



### TERMINAL NUMBERS

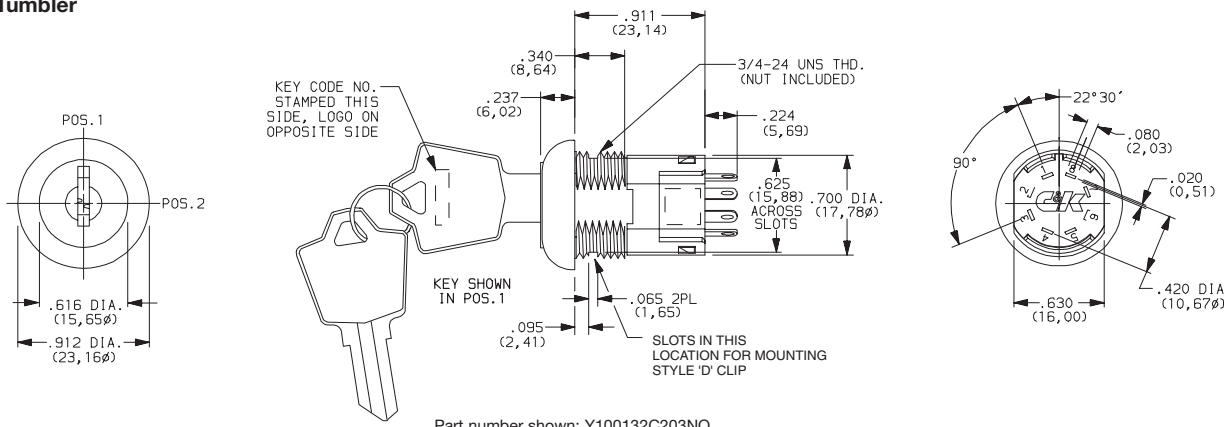


Terminal numbers marked on insulator.

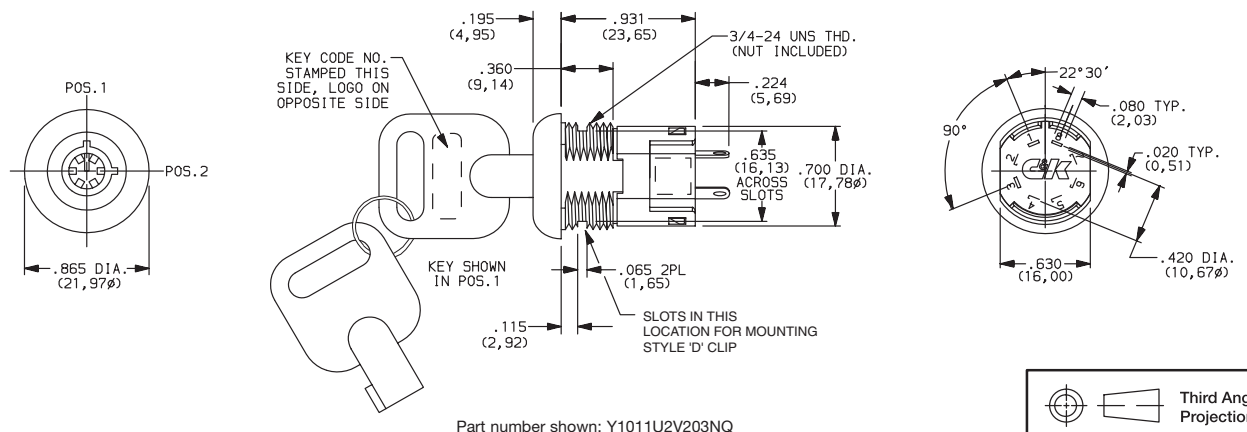
All models **C&K** US with all options when ordered with 'G' or 'Q' contact material.

**NOTE:** Epoxy seal not available. Removable dress nut not available with any Y190XX models.

### 4 & 5 Tumbler

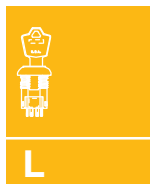


### 6 Tumbler



Third Angle Projection

Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change



Switchlock

# Y Series 4, 5 & 6 Tumbler Switchlocks

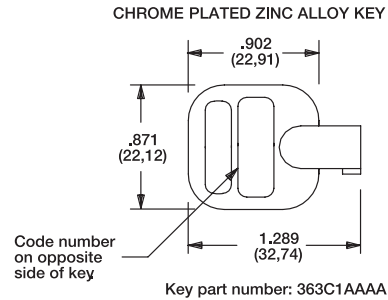
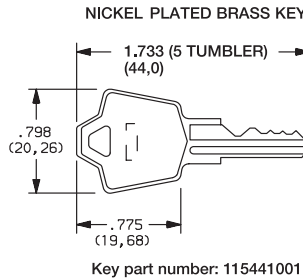
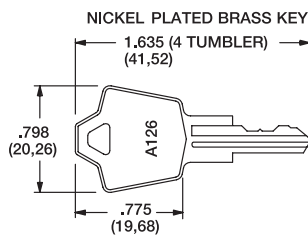
## SWITCH AND LOCK FUNCTION

AVAILABLE OPTION COMBINATIONS															
MODELS	LOCK TYPES						TERMINATIONS					MOUNTING/LOCK STYLES			
	A	B	C	R	V	W	01	02	03	07	WC	D	L	N	R
YX0013		•	•		•	•	•	•	•		•	•		•	•
YX001U		•	•	•	•	•	•	•	•		•	•	•	•	•
YX0082		•	•	•			•	•	•		•	•		•	
YX00AX			•	•			•	•	•		•	•		•	•
YX0113		•	•	•	•	•	•	•	•		•	•		•	•
YX011C		•	•	•			•	•	•		•	•		•	•
YX01IU		•	•	•	•	•	•	•	•		•	•	•	•	•
Y141XX			•	•			•	•	•		•	•		•	•
YX0812	•						•	•	•		•	•		•	
Y190XX			•	•				•		•	•	•		•	

## KEYING

OPTION CODE	KEYING OPTIONS	CODE NO. ON KEY	CODE NO. ON LOCK
2	2 NICKEL PLATED BRASS KEYS (4 & 5 TUMBLER) or 2 DIE CAST CHROME PLATED ZINC ALLOY KEYS (6 TUMBLER)	YES	NO
6	2 NICKEL PLATED BRASS KEYS, 4 & 5 TUMBLER ONLY	YES	YES

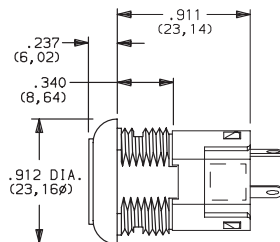
**NOTE:** All orders keyed alike, standard. For more than one key code, master keying, replacement keys, or other special features, consult Customer Service Center.



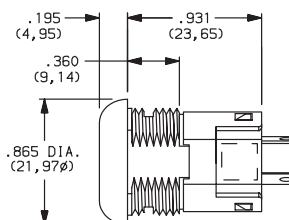
**NOTE:** Keys are available separately, see page L-10. Key head shape subject to change without notice.

## LOCK TYPE

- C** 4 TUMBLER LOCK WITH DETENT
- B** 5 TUMBLER LOCK

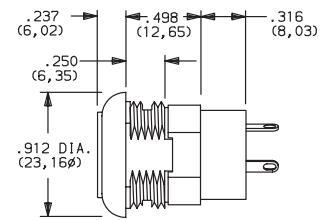


- V** 6 TUMBLER TUBULAR LOCK



Available with Lock Finish '2' only

- A** 4 TUMBLER LOCK (MOMENTARY MODELS ONLY)



Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

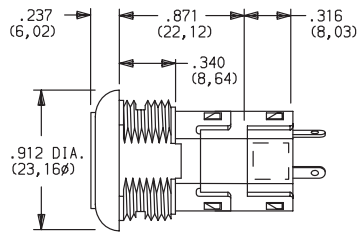


# Y Series 4, 5 & 6 Tumbler Switchlocks

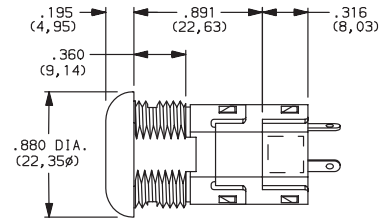
## LOCK TYPE

### SHORT ANTI-STATIC LOCK TYPES

**R** 4 TUMBLER LOCK WITH DETENT AND SHORT ANTI-STATIC SWITCH.



**W** 6 TUMBLER TUBULAR LOCK WITH ANTI-STATIC SWITCH



Available with Lock Finish '2' only.

**NOTE:** For available option combinations, see page L-9.  
U.S. Pat. No. 4,639,562 Exceeds 20 KV DC static resistance @ sea level, lock body to terminals.

## LOCK FINISH

**2** STAINLESS STEEL

**8** GLOSS BLACK

**F** POLISHED NICKEL



Available with Lock Types 'V' & 'W' only.

**NOTE:** For available option combinations, see page L-9.

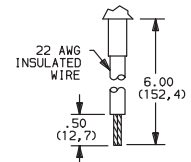
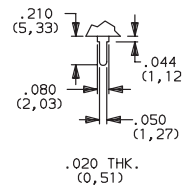
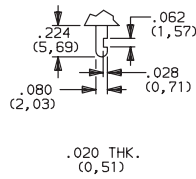
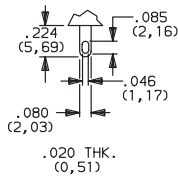
## TERMINATIONS

**03** SOLDER LUG WITH HOLE

**01** SOLDER LUG WITH NOTCH

**02** PC THRU-HOLE

**WC** WIRE LEAD



Black wire standard. other colors and lengths available, consult Customer Service Center. UL style 1015.

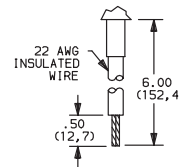
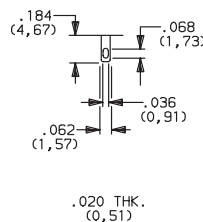
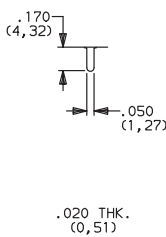
All Models Except Y190

**02** PC THRU-HOLE

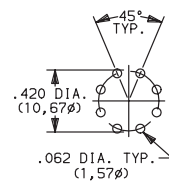
**07** SOLDER LUG WITH HOLE

**WC** WIRE LEAD

PC MOUNTING



Black wire standard. other colors and lengths available, consult Customer Service Center. UL style 1015.



Third Angle Projection

Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change



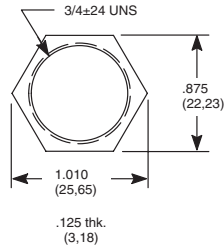
Switchlock



# Y Series 4, 5 & 6 Tumbler Switchlocks

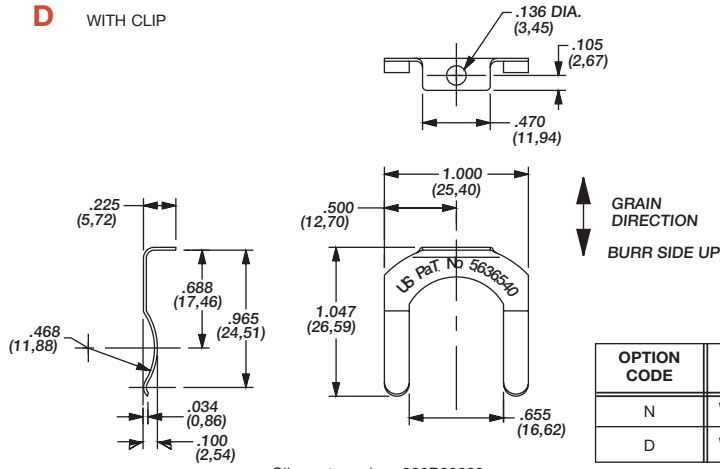
## MOUNTING/LOCK STYLE

**N** WITH NUT



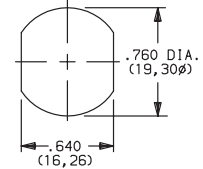
Nut part number: 937C00000

**D** WITH CLIP



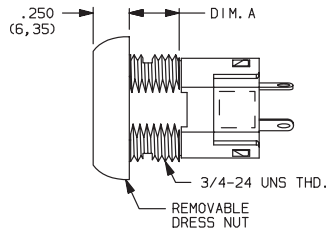
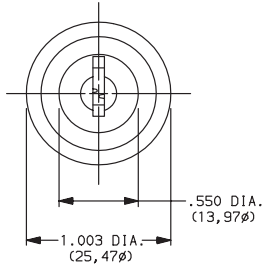
Clip part number: 906B00000

PANEL MOUNTING

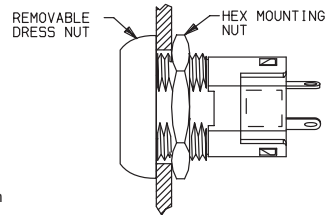
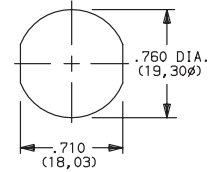


OPTION CODE	MOUNTING STYLE	PANEL THICKNESS
N	WITH NUT	.085-.105 (2,16-2,67)
D	WITH CLIP	.085-.105 (2,16-2,67)

**R** REMOVABLE DRESS NUT



PANEL MOUNTING



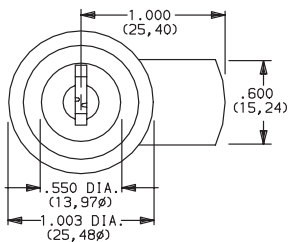
LOCK DIMENSIONS	
LOCK TYPES	DIMENSIONS
A, N	.270 (6,68)
C, R	.360 (9,14)

### TYPICAL INSTALLATION

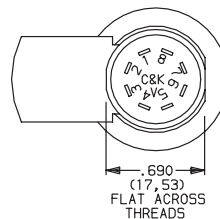
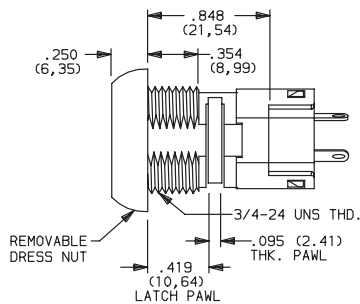
Install hex nut with enough clearance to allow for dress nut and panel. Place switch through cutout in rear of panel. Install and tighten dress nut by hand, then tighten hex nut. Always tighten assembly with back of panel hex nut to avoid damaging front of panel.

**NOTE:** Removable dress nut not available with Y1900A or Y100AA model options.

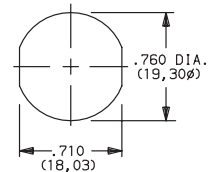
**L** REMOVABLE DRESS NUT WITH LATCH PAWL



Latch pawl shown in pos. 1.



PANEL MOUNTING



Switchlock



Third Angle Projection  
Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change



# Y Series 4, 5 & 6 Tumbler Switchlocks

## MOUNTING/LOCK STYLE

### Mounting Information (All Models)

PANEL THICKNESS			
MOUNTING STYLES	A, B LOCK TYPES	C, R LOCK TYPES	V, W LOCK TYPES
D	.065-.085 (1, 65-2, 16)		.085-.105 (2, 16-2, 67)
N	.105 (2, 67) max.	.195 (4, 95) max.	.215 (5, 46) max.
L	.215 (5, 46) max.		-
R	.125 (3, 18) max.	.215 (5, 46) max.	-


AVAILABLE OPTION COMBINATIONS									
MOUNTING STYLES	LOCK FINISHES			LOCK TYPES					
	2	8	F	A	B	C	R	V	W
D	●	●	●	●	●	●	●	●	●
N	●	●	●	●	●	●	●	●	●
R		●	●	●		●	●		
L		●	●			●	●		

## CONTACT MATERIAL

OPTION CODE	RoHS COMPLIANT*	RoHS COMPATIBLE*	CONTACT AND TERMINAL MATERIAL	RATING	
<b>Q</b>	YES	YES	SILVER <sup>2</sup>	POWER	4 AMPS @ 125 V AC or 28 V DC; 2 AMPS @ 250 AC V AC (UL/CSA).
<b>B</b>	YES	YES	GOLD <sup>1</sup>	LOW LEVEL/DRY CIRCUIT	0.4 VA MAX. @ 20 V AC or DC MAX
<b>G</b>	YES	YES	GOLD SILVER <sup>3</sup>	LOW LEVEL/DRY CIRCUIT OR POWER	0.4 VA MAX. @ 20 V AC or DC MAX. or 4 AMPS @ 125 V AC or 28 V DC; 2 AMPS @ 250 V AC (UL/CSA)

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

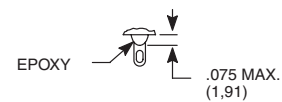
- <sup>1</sup> CONTACTS & TERMINALS: Copper, with gold plate over nickel plate.  
<sup>2</sup> CONTACTS & TERMINALS: Copper, silver plated (std. with all termination options).  
<sup>3</sup> CONTACTS & TERMINALS: Copper, with gold plate over silver plate.

All models  with all options when ordered with 'G' or 'Q' contact material.

## SEAL

**NONE** NO SEAL

**E** EPOXY SEAL



Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change



# Y Series 4, 5 & 6 Tumbler Switchlocks

## AVAILABLE HARDWARE



Key Code: A126  
4 TUMBLER  
**PART NO. (ONE KEY)**  
**115140126**  
**Material:** Brass  
Finish: Nickel plate

Key Code: D001  
5 TUMBLER  
**PART NO. (ONE KEY)**  
**115441001**  
**Material:** Brass  
Finish: Nickel plate



Key Code: AAAA  
**PART NO. (ONE KEY)**  
**363C1AAAA**

**Material:** Zinc alloy  
Finish: Chrome plate



Switchlock



Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

# YF Series 4 Tumbler Miniature Switchlocks

## Features/Benefits

- Multi-pole and multi-position
- Positive detent
- Low level and power capability

## Typical Applications

- Computer servers
- Point-of-sale terminals
- Cash registers



Models Available

## Specifications

CONTACT RATING: Q contact material: 4 AMPS @ 125 V AC or 28 V DC; 2 AMPS @ 250 V AC (UL/CSA). See page L-14 for additional ratings.

ELECTRICAL LIFE: 10,000 make-and-break cycles at full load.

CONTACT RESISTANCE: Below 10 m Ω typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

INSULATION RESISTANCE: 10<sup>9</sup> Ω min.

DIELECTRIC STRENGTH: 1,000 Vrms min. @ sea level.

INDEXING: 90°:2 positions max.

## Materials

LOCK: Zinc alloy with stainless steel facing. 4 tumbler, single bitted lock with integral detent mechanism.

KEYS: Two nickel plated brass keys with code number.

SWITCH HOUSING: 6/6 Nylon (UL 94V-2).

CONTACTS & TERMINALS: Q contact material: Copper, silver plated. See page L-14 for additional contact materials.

MOUNTING NUT: Brass, bright zinc plated.

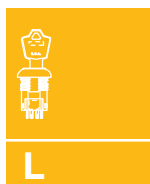
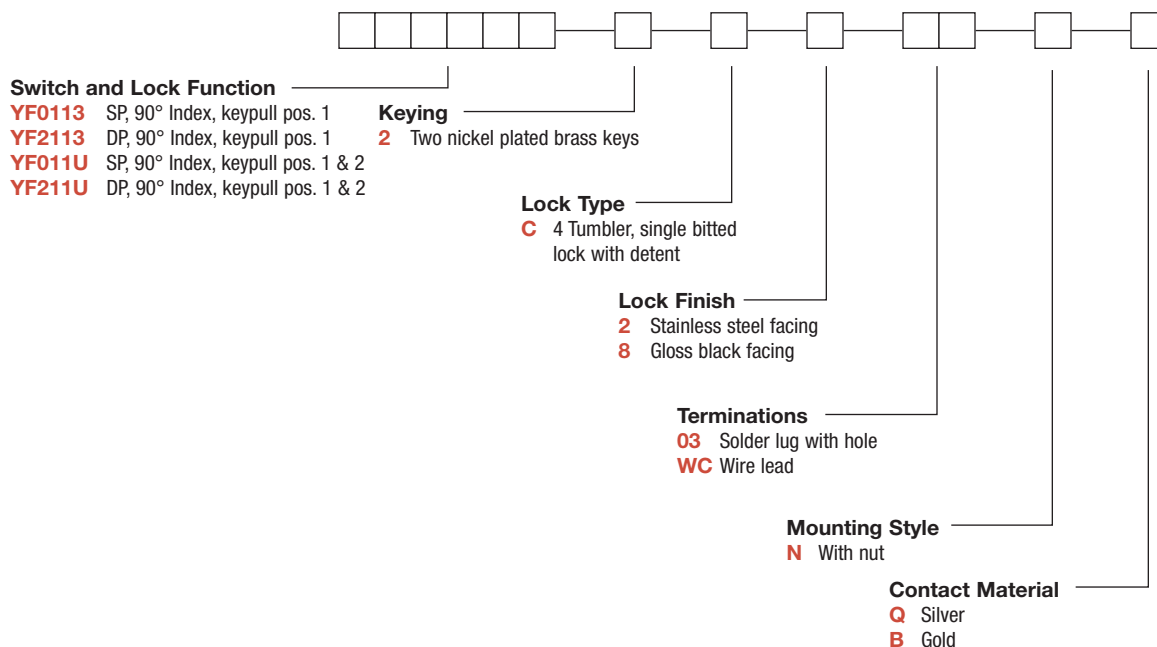
TERMINAL SEAL: Epoxy.

**NOTE:** Any models supplied with Q or B contact material are RoHS compliant.

**NOTE:** Specifications and materials listed above are for switchlocks with standard options. For information on specific and custom switchlocks, consult Customer Service Center.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages L-12 through L-14. For additional options not shown in catalog, consult Customer Service Center.



Switchlock



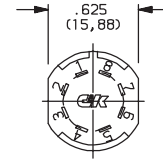
Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

# YF Series 4 Tumbler Miniature Switchlocks

## SWITCH AND LOCK FUNCTION

SINGLE & DOUBLE POLE SWITCHES							
NO. POLES	MODEL NO.	CONNECTED TERMINALS			KEY PULL POSITIONS	LOCK CONFIGURATION	INDEXING
		POS. 1	POS. 2	POS. 3			
SP DP	YF0113 YF2113	8-1	1-3		Position 1		90°
		8-1, 4-5	1-3, 5-7				
SP DP	YF011U YF211U	8-1	1-3		Positions 1 & 2		
		8-1, 4-5	1-3, 5-7				

TERMINAL NUMBERS

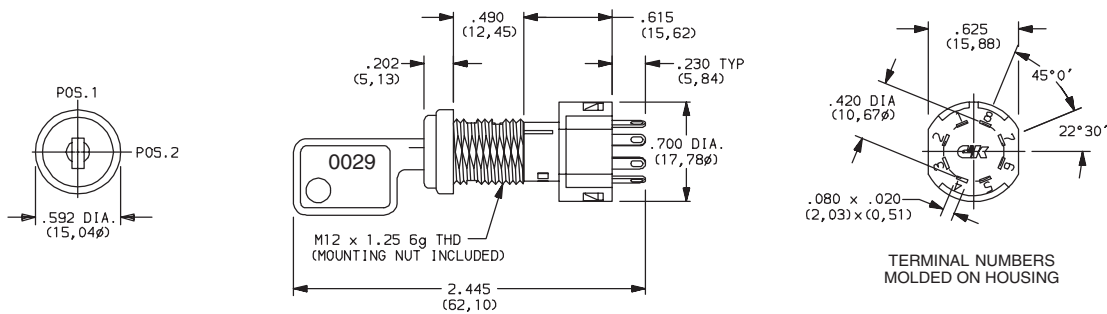


Terminal numbers molded on bottom of housing.

All models with all options when ordered with 'Q' contact material.

### LEGEND

- = Detent Positions (45° or 90°)
- ⊙ = Key pull possible in these positions.
- ⊙ = Stop Positions



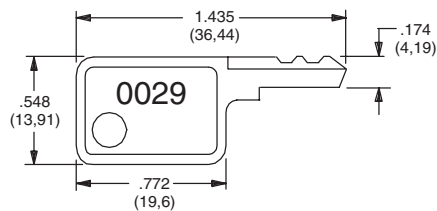
Part number shown: YF01132C203NQ



Switchlock

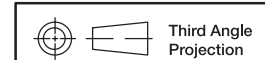
## KEYING

2 TWO NICKEL PLATED BRASS KEYS



Key Part Number: 960B10029

**NOTE:** All orders keyed alike with code number on key. For more than one key code, replacement keys, or other special features, consult Customer Service Center.



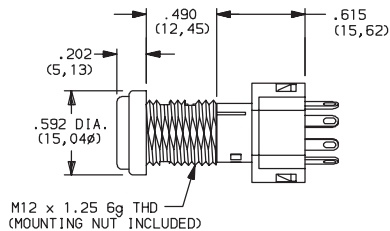
Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change



# YF Series 4 Tumbler Miniature Switchlocks

## LOCK TYPE

**C** 4 TUMBLER, SINGLE BITTED LOCK WITH DETENT



## LOCK FINISH

**2** STAINLESS STEEL FACING

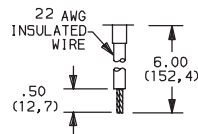
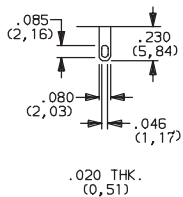
**8** GLOSS BLACK FACING



## TERMINATIONS

**03** SOLDER LUG WITH HOLE

**WC** WIRE LEAD



Black wire standard, other colors and lengths available, consult Customer Service Center. UL style 1015.



Switchlock



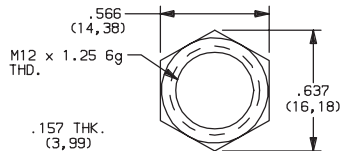
Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

[www.ck-components.com](http://www.ck-components.com)

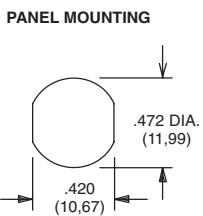
# YF Series 4 Tumbler Miniature Switchlocks

## MOUNTING STYLE

**N** WITH NUT

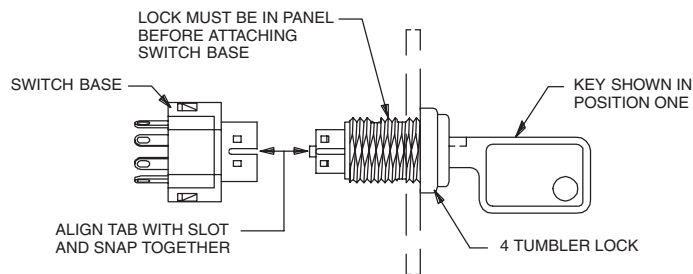


Nut part number: 1790901A47



Panel thickness:  
.300 (7,62) max.

### Switch and Lock Assembly Instructions



**NOTE:** Switch installation is permanent. Switch cannot be removed from lock after assembly. Attempts to separate switch and lock may damage switch.

## CONTACT MATERIAL

OPTION CODE	RoHS COMPLIANT*	RoHS COMPATIBLE*	CONTACT AND TERMINAL MATERIAL	RATING	
<b>Q</b>	YES	YES	SILVER <sup>2</sup>	POWER	4 AMPS @ 125 V AC or 28 V DC; 2 AMPS @ 250 V AC (UL/CSA).
<b>B</b>	YES	YES	GOLD <sup>1</sup>	LOW LEVEL/DRY CIRCUIT	0.4 VA MAX. @ 20 V AC or DC MAX.

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

<sup>1</sup> CONTACTS & TERMINALS: Copper, with gold plate over nickel plate.

<sup>2</sup> CONTACTS & TERMINALS: Copper, silver plated (standard with all termination options).

All models with all options when ordered with 'Q' contact material.

## AVAILABLE HARDWARE



Switchlock



Key Code: 0029

**PART NO. (ONE KEY)**

**960B10029**

**Material:** Brass  
**Finish:** Nickel plate



Third Angle Projection

Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

**C&K**

# YM Series 4 Tumbler Miniature Switchlocks

## Features/Benefits

- Snap-together assembly allows for pre-wiring of switch
- Wire lead terminations available
- 4 Tumbler lock with positive detent

## Typical Applications

- Cable TV connectors
- Automotive accessories
- Computers



Models Available

## Specifications

CONTACT RATING: Q contact material: 4 AMPS @ 125 V AC or 28 V DC; 2 AMPS @ 250 V AC (UL/CSA). 4 AMPS @ 125 V AC, 2 AMPS @ 250 V AC, T65, class 1 (VDE). See page L-17 for additional ratings.

ELECTRICAL LIFE: 10,000 make-and-break cycles at full load.

CONTACT RESISTANCE: Below 10 m Ω typ. initial @ 2-4 V DC, 100 mA.

INSULATION RESISTANCE: 10<sup>9</sup> Ω min.

DIELECTRIC STRENGTH: 1,000 Vrms min. @ sea level.

INDEXING: 90°:2 positions.

## Materials

LOCK: Zinc alloy with stainless steel facing. 4 tumbler single bitted lock with integral detent mechanism.

KEYS: Two nickel plated brass keys with code number.

SWITCH HOUSING: 6/6 Nylon (UL 94V-2).

CONTACTS & TERMINALS: Q contact material: Copper, silver plated. See page L-17 for additional contact materials.

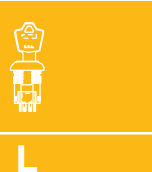
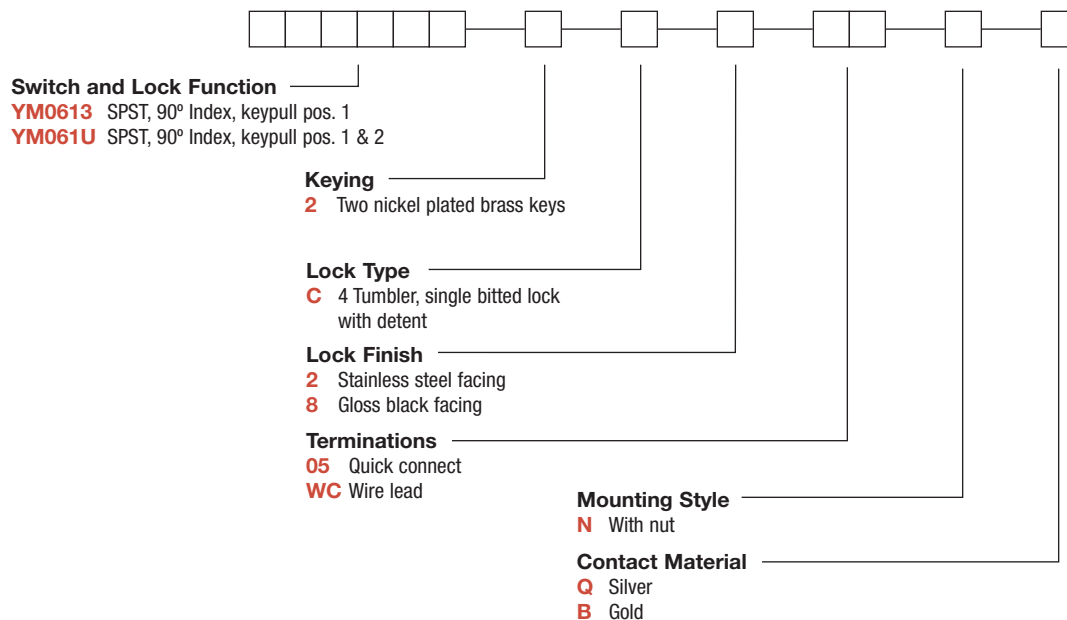
MOUNTING NUT: Brass, bright zinc plated.

**NOTE:** Any models supplied with Q or B contact material are RoHS compliant.

**NOTE:** Specifications and materials listed above are for switchlocks with standard options. For information on specific and custom switchlocks, consult Customer Service Center.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages L-16 and L-17. For additional options not shown in catalog, consult Customer Service Center.



Switchlock



Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change



# YM Series 4 Tumbler Miniature Switchlocks

## SWITCH AND LOCK FUNCTION

NO. POLES	MODEL NO.	SWITCH FUNCTION		KEY PULL POSITIONS	LOCK CONFIGURATION	INDEXING	SCHEMATIC
		POS. 1	POS. 2				
SP	YM0613	OFF	ON	Position 1		90°	
	YM061U			Positions 1 & 2			
<p><b>SPST</b></p> <p>Part number shown: YM0613C205NQ</p>							

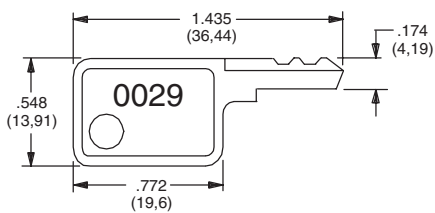
All models with all options when ordered with 'Q' contact material.

### LEGEND

- = Detent Positions (90°)
- ⊙ = Key pull possible in these positions
- ⊙ = Stop Positions

## KEYING

- 2** TWO NICKEL PLATED BRASS KEYS

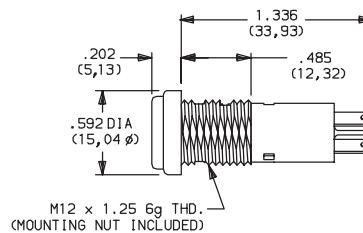


Key part number: 960B10029

**NOTE:** All orders keyed alike with code number on key. For more than one key code, replacement keys, or other special features, consult Customer Service Center.

## LOCK TYPE

- C** 4 TUMBLER SINGLE BITTED LOCK WITH DETENT



Switchlock

## LOCK FINISH

- 2** STAINLESS STEEL FACING



- 8** GLOSS BLACK FACING



**C&K**



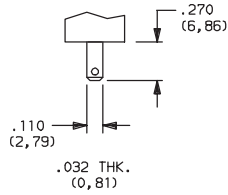
Third Angle  
Projection

Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

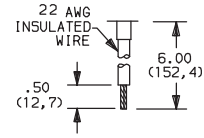
# YM Series 4 Tumbler Miniature Switchlocks

## TERMINATIONS

**05** QUICK CONNECT



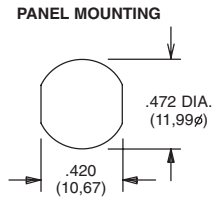
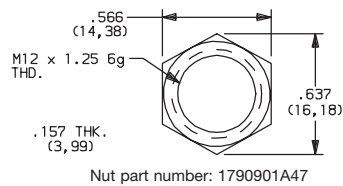
**WC** WIRE LEAD



Black wire standard, other colors and lengths available, consult Customer Service Center. UL style 1015.

## MOUNTING STYLE

**N** WITH NUT



Panel thickness:  
.300 (7,62) max.

## CONTACT MATERIAL

OPTION CODE	RoHS COMPLIANT*	RoHS COMPATIBLE*	CONTACT AND TERMINAL MATERIAL	RATING	
				POWER	4 AMPS @ 125 V AC or 28 V DC; 2 AMPS @ 250 AC V AC (UL/CSA).
<b>Q</b>	YES	YES	SILVER <sup>2</sup>	LOW LEVEL/DRY CIRCUIT	0.4 VA MAX. @ 20 V AC or DC MAX.
<b>B</b>	YES	YES	GOLD <sup>1</sup>		

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

<sup>1</sup> CONTACTS & TERMINALS: Copper, with gold plate over nickel plate.

<sup>2</sup> CONTACTS & TERMINALS: Copper, silver plated (standard with all termination options).

All models **CRL** with all options when ordered with 'Q' contact material.

## AVAILABLE HARDWARE



Key Code: 0029

**PART NO.** (ONE KEY)

**960B10029**

**Material:** Brass  
**Finish:** Nickel plate



Third Angle Projection

Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change



Switchlock

# P Series 4 Tumbler Snap-in Switchlocks



Models Available

## Features/Benefits

- Snap-in mounting
- Multi-pole and multi-position
- Positive detent

## Typical Applications

- Computers
- Communication equipment

## Specifications

CONTACT RATING: Q contact material: 4 AMPS @ 125 V AC;  
1 AMP @ 250 V AC (UL) See page L-20 for additional ratings.  
ELECTRICAL LIFE: 10,000 make-and-break cycles at full load.  
CONTACT RESISTANCE: Below 10 m Ω typ. initial @  
2-4 V DC, 100 mA for both silver and gold plated contacts.  
INSULATION RESISTANCE: 10<sup>9</sup> Ω min.  
DIELECTRIC STRENGTH: 1,000 Vrms min. @ sea level.  
INDEXING: 45° or 90°, 2-3 positions.

## Materials

SWITCH HOUSING & LOCK: One piece construction,  
6/6 Nylon (UL 94V-2), black  
4 disc tumbler mechanism.  
KEYS: One nickel plated brass key and one key with insert  
molded plastic head.  
TUMBLERS: Disc tumblers, brass.  
CONTACTS & TERMINALS: Q contact material: Copper, silver  
plated. See page L-20 for additional contact materials.

**NOTE:** Any models supplied with Q or B contact material are RoHS compliant.

**NOTE:** Specifications and materials listed above are for switchlocks with standard options. For information on specific and custom switchlocks, consult Customer Service Center.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages L-19 and L-21. For additional options not shown in catalog, consult Customer Service Center.

### Switch and Lock Function

- P10113** SP, 90° Index, keypull pos. 1
- P20113** DP, 90° Index, keypull pos. 1 & 2
- P100AF** SP, 45° Index, keypull pos. 1, 2 & 3
- P200AF** DP, 45° Index, keypull pos. 1, 2 & 3
- P1011U** SP, 90° Index, keypull pos. 1 & 2

### Keying

- 2** Two nickel plated brass keys
- T** One nickel plated brass key with insert molded plastic square head and one nickel plated brass key

### Lock Type

- C** 4 tumbler lock with detent

### Lock Finish

- M** Plastic lock with matte finish

### Terminations

- 03** Solder lug
- WC** Wire lead

### Contact Material

- Q** Silver
- G** Gold over silver

### Lock Color

- 2** Black

### Key Color

- 2** Black
- NONE** Nickel plated brass



Switchlock



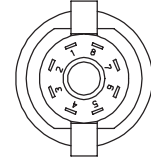
Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

# P Series 4 Tumbler Snap-in Switchlocks

## SWITCH AND LOCK FUNCTION

NO. POLES	MODEL NO.	CONNECTED TERMINALS			KEY PULL POSITIONS	LOCK CONFIGURATION	INDEXING
		POS. 1	POS. 2	POS. 3			
SP DP	<b>P10113</b> <b>P20113</b>	8-1 8-1, 4-5	1-3 1-3, 5-7		Position 1		90°
DP	<b>P100AF</b> <b>P200AF</b>	8-1 8-1, 4-5	1-2 1-2, 5-6	2-3 2-3, 6-7	Positions 1, 2 & 3		45°
SP	<b>P1011U</b>	8-1	1-3		Positions 1 & 2		90°

### TERMINAL NUMBERS

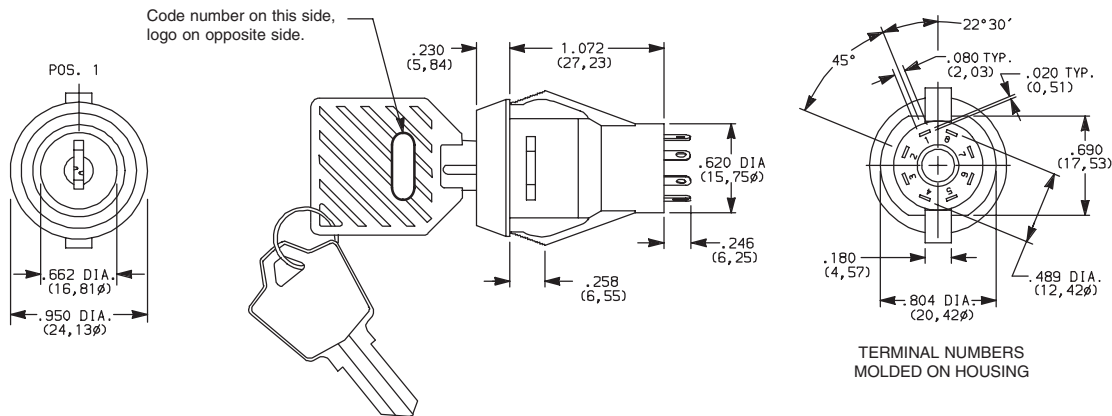


Terminal numbers molded on housing.

All models with all options when ordered with 'Q' contact material.

### LEGEND

- = Detent Positions (45° or 90°)
- ⊙ = Key pull possible in these positions.
- = Stop Positions



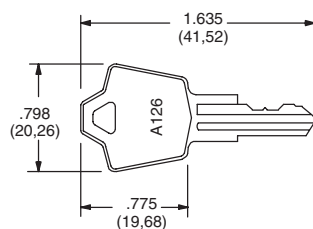
TERMINAL NUMBERS  
MOLDED ON HOUSING

Part number shown: P100AFTCM03Q22

## KEYING

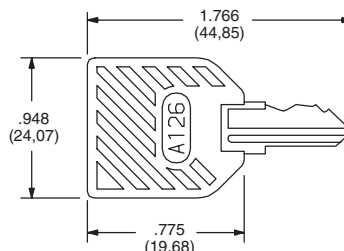
OPTION CODE	KEYING OPTIONS	CODE NO. ON KEY	CODE NO. ON LOCK
<b>2</b>	2 NICKEL PLATED BRASS KEYS	YES	NO
<b>T</b>	1 NICKEL PLATED BRASS KEYS, WITH PLASTIC INSERT MOLDED SQUARE HEAD & 1 NICKEL PLATED BRASS KEY	YES	NO

### NICKEL PLATED BRASS KEY



Key part number: 115140126

### NICKEL PLATED BRASS KEY WITH PLASTIC INSERT MOLDED SQUARE HEAD



Key part number: 11599112602

**NOTE:** All orders keyed alike with code number on key. For more than one key code, replacement keys, or other special features, consult Customer Service Center.



Third Angle  
Projection

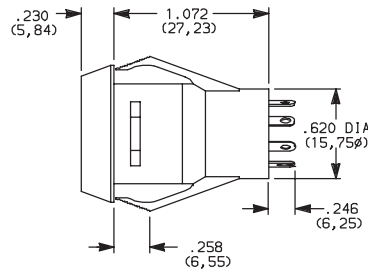
Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change



# P Series 4 Tumbler Snap-in Switchlocks

## LOCK TYPE

**C** 4 TUMBLER LOCK WITH DETENT



OPTION CODE	LOCK COLOR
<b>2</b>	BLACK

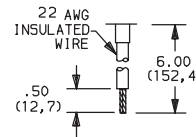
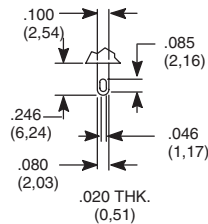
## LOCK FINISH

**M** PLASTIC LOCK WITH MATTE FINISH

## TERMINATIONS

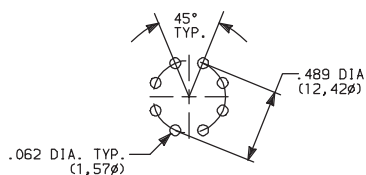
**03** SOLDER LUG

**WC** WIRE LEAD

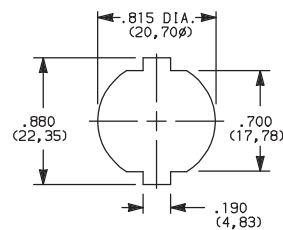


Black wire standard, other colors and lengths available, consult Customer Service Center. UL style 1015.

### PC MOUNTING



### PANEL MOUNTING



Panel Thickness: .100-.200 (2,54-5,08)

## CONTACT MATERIAL

OPTION CODE	RoHS COMPLIANT*	RoHS COMPATIBLE*	CONTACT AND TERMINAL MATERIAL	RATING	
				POWER	4 AMPS @ 125 V AC; 1 AMP @ 250 V AC (UL/CSA)
<b>Q</b>	YES	YES	SILVER <sup>2</sup>	LOW LEVEL/DRY CIRCUIT OR POWER	0.4 VA MAX. @ 20 V AC or DC MAX. or 4 AMPS @ 125 V AC; 1 AMP @ 250 V AC (UL/CSA)
<b>G</b>	YES	YES	GOLD OVER SILVER <sup>3</sup>		

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

<sup>2</sup> CONTACTS & TERMINALS: Copper, silver plated (standard with all termination options)  
<sup>3</sup> CONTACTS & TERMINALS: Copper, with gold plate over silver plate termination

All models **C&K** **US** with all options when ordered with 'Q' contact material.



Third Angle Projection

Dimensions are shown: Inch (mm)  
 Specifications and dimensions subject to change

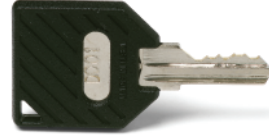


# P Series 4 Tumbler Snap-in Switchlocks

## AVAILABLE HARDWARE



Key Code: A126  
4 TUMBLER  
**PART NO. (ONE KEY)**  
**115140126**  
**Material:** Brass  
Finish: Nickel plate



Key Code: A126  
4 TUMBLER  
**PART NO. (ONE KEY)**  
**1159112602** BLACK  
**Material:** Brass  
Finish: Nickel plate  
6/6 Nylon insert molded head



Switchlock

# PF Series 5 Tumbler Miniature Snap-in Switchlocks



## Features/Benefits

- Snap-in mounting
- Multi-pole and multi-position
- Positive detent

## Typical Applications

- Computers
- Point-of-sale terminals
- Instrumentation



Models Available

## Specifications

CONTACT RATING: Q contact material: 4 AMPS @ 125 V AC or 28 V DC; 2 AMPS @ 250 V AC (UL/CSA). See page L-25 for additional ratings.

ELECTRICAL LIFE: 10,000 make-and-break cycles at full load.

CONTACT RESISTANCE: Below 10 m Ω typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

INSULATION RESISTANCE: 10<sup>9</sup> Ω min.

DIELECTRIC STRENGTH: 1,000 Vrms min. @ sea level.

INDEXING: 45°: 3 positions, 90°:2 positions.

## Materials

LOCK: 6/6 nylon with matte finish (UL 94V-2), black,

5 tumbler, single bitted lock with integral detent mechanism.

KEYS: Two nickel plated brass keys with black plastic head.

SWITCH HOUSING: 6/6 nylon (UL 94V-2).

CONTACTS & TERMINALS: Q contact material: Copper, silver plated. See page L-25 for additional contact materials.

TERMINAL SEAL: Epoxy.

**NOTE:** Any models supplied with Q or B contact material are RoHS compliant.

**NOTE:** Specifications and materials listed above are for switchlocks with standard options. For information on specific and custom switchlocks, consult Customer Service Center.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages L-23 through L-25. For additional options not shown in catalog, consult Customer Service Center.

### Switch and lock Function

**PF011U** SP, 90° Index, keypull pos. 1 & 2

**PF201U** DP, 45° Index, keypull pos. 1 & 3

**PF211U** DP, 90° Index, keypull pos. 1 & 2

### Keying

**E** Two nickel plated brass keys with insert molded plastic head

### Lock Type

**B** 5 Tumbler lock with detent

### Lock Finish

**M** Plastic lock with matte finish

### Terminations

**03** Solder lug with hole

**WC** Wire lead

### Lock Style

**K** Cone shaped facing

### Contact Material

**Q** Silver

**B** Gold

### Lock Color

**2** Black

### Key Color

**2** Black



Dimensions are shown: Inch (mm)

Specifications and dimensions subject to change



# PF Series 5 Tumbler Miniature Snap-in Switchlocks

## SWITCH AND LOCK FUNCTION



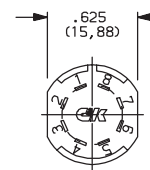
SINGLE & DOUBLE POLE SWITCHES							
NO. POLES	MODEL NO.	CONNECTED TERMINALS			KEY PULL POSITIONS	LOCK CONFIGURATION	INDEXING
		POS. 1	POS. 2	POS. 3			
DP	<b>PF201U</b>	8-1, 4-5	1-2, 5-6	2-3, 6-7	Positions 1 & 3		45°
SP DP	<b>PF011U</b> <b>PF211U</b>	8-1 8-1, 4-5	1-3 1-3, 5-7		Positions 1 & 2		90°

All models with all options when ordered with 'Q' contact material.

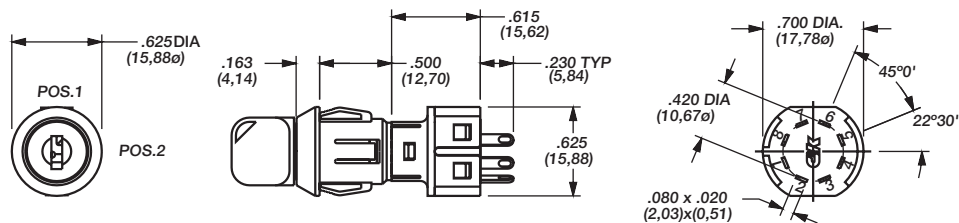
### LEGEND

- = Detent Positions (45° or 90°)
- ⊙ = Key pull possible in these positions.
- ⊙ = Stop Positions

### TERMINAL NUMBERS



Terminal numbers molded on housing.

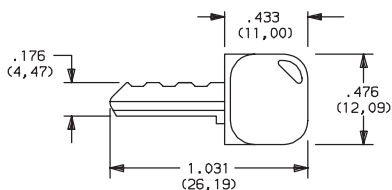


Part number shown: PF011UEBM03KQ22

## KEYING



**E** TWO NICKEL PLATED BRASS KEYS WITH INSERT MOLDED PLASTIC HEAD



Key part number: 617D1004102

OPTION CODE	KEY COLOR
<b>2</b>	BLACK

**NOTE:** All orders keyed alike, standard. For more than one key code, replacement keys, or other special features, consult Customer Service Center.



Dimensions are shown: Inch (mm)

Specifications and dimensions subject to change



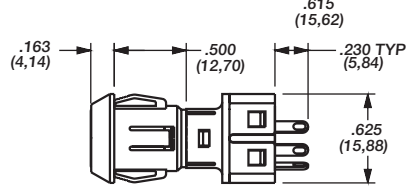
Switchlock



# PF Series 5 Tumbler Miniature Snap-in Switchlocks

**LOCK TYPE**  LOCK COLOR

**B** 5 TUMBLER LOCK WITH DETENT



OPTION CODE	LOCK COLOR
<b>2</b>	BLACK

**LOCK FINISH** 

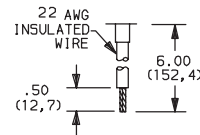
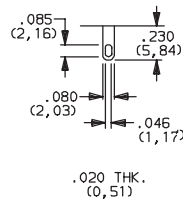
**M** PLASTIC LOCK WITH MATTE FINISH



**TERMINATIONS** 

**03** SOLDER LUG WITH HOLE

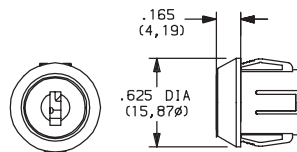
**WC** WIRE LEAD



Black wire standard, other colors and lengths available, consult Customer Service Center. UL style 1015.

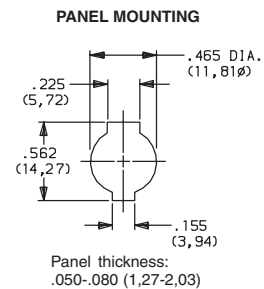
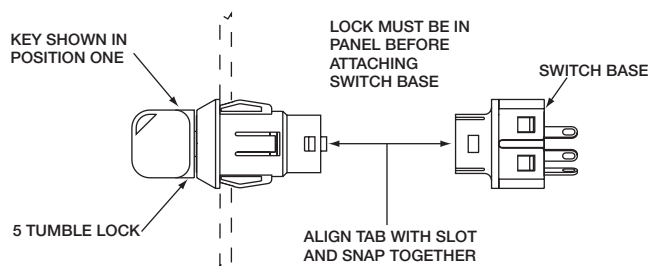
**LOCK STYLE** 

**K** CONE SHAPED FACING



Switchlock

## Switch and Lock Assembly Instructions



**NOTE:** Switch installation is permanent. Switch cannot be removed from lock after assembly. Attempts to separate switch and lock may damage switch.



Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change



# PF Series 5 Tumbler Miniature Snap-in Switchlocks


## CONTACT MATERIAL

OPTION CODE	RoHS COMPLIANT*	RoHS COMPATIBLE*	CONTACT AND TERMINAL MATERIAL	RATING	
<b>Q</b>	YES	YES	SILVER <sup>2</sup>	POWER	4 AMPS @ 125 V AC or 28 V DC; 2 AMPS @ 250 V AC (UL/CSA).
<b>B</b>	YES	YES	GOLD <sup>1</sup>	LOW LEVEL/DRY CIRCUIT	0.4 VA MAX. @ 20 V AC or DC MAX.

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

<sup>1</sup> CONTACTS & TERMINALS: Copper, with gold plate over nickel plate.

<sup>2</sup> CONTACTS & TERMINALS: Copper, silver plated (standard with all termination options).

All models  with all options when ordered with 'Q' contact material.

## AVAILABLE HARDWARE



Key Code: 041

**PART NO. (ONE KEY)**

**617D1004102** BLACK

**Material:** Brass  
Finish: Nickel plate  
6/6 Nylon insert molded head



Switchlock



Dimensions are shown: Inch (mm)

Specifications and dimensions subject to change

# PM Series 5 Tumbler Miniature Snap-in Switchlocks



Models Available

## Features/Benefits

- International agency listings
- Snap-in mounting
- Wire lead terminations available
- 5 Tumbler lock with positive detent

## Typical Applications

- Computers
- Point-of-sale terminals
- Marine equipment

## Specifications

CONTACT RATING: Q contact material: 4 AMPS @ 125 V AC or 28 V DC; 2 AMPS @ 250 V AC (UL/CSA); 4 AMPS @ 125 V AC, 2 AMPS @ 250 V AC, T65 (VDE). See page L-28 for additional ratings.

ELECTRICAL LIFE: 10,000 make-and-break cycles at full load.

CONTACT RESISTANCE: Below 10 m Ω typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

INSULATION RESISTANCE: 10<sup>9</sup> Ω min.

DIELECTRIC STRENGTH: 1,000 Vrms min. @ sea level.

INDEXING: 90°:2 positions.

## Materials

LOCK: 6/6 nylon with matte finish (UL 94V-2), color black, 5 tumbler, single bitted lock with integral detent mechanism.

KEYS: Two nickel plated brass keys with black plastic head, other colors available.

SWITCH HOUSING: 6/6 nylon (UL 94V-2).

CONTACTS & TERMINALS: Q contact material: Copper, silver plated. See page L-28 for additional contact materials.

**NOTE:** Any models supplied with Q or B contact material are RoHS compliant.

**NOTE:** Specifications and materials listed above are for switchlocks with standard options. For information on specific and custom switchlocks, consult Customer Service Center.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages L-27 and L-28. For additional options not shown in catalog, consult Customer Service Center.

### Switch and lock Function

**PM0613** SP, 90°, Index, keypull pos. 1

**PM061U** SP, 90° Index, keypull pos. 1 & 3

### Keying

**E** Two nickel plated brass keys with insert molded plastic head

### Lock Type

**B** 5 Tumbler lock with detent

### Lock Finish

**M** Plastic lock with matte finish

### Terminations

**05** Quick connect

**WC** Wire lead

### Lock Style

**K** Cone shaped facing

### Contact Material

**Q** Silver

**B** Gold

### Lock Color

**2** Black

### Key Color

**2** Black

Switchlock



Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

# PM Series 5 Tumbler Miniature Snap-in Switchlocks

## SWITCH AND LOCK FUNCTION



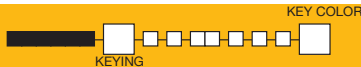
NO. POLES	MODEL NO.	SWITCH FUNCTION		KEY PULL POSITIONS	LOCK CONFIGURATION	INDEXING
		POS. 1	POS. 2			
SP	PM0613	OFF	ON	Position 1		90°
	PM061U			Positions 1 & 2		
<b>SP</b> <p>Part number shown: PM0613EBM05KQ22</p>						

All models with all options when ordered with 'Q' contact material.

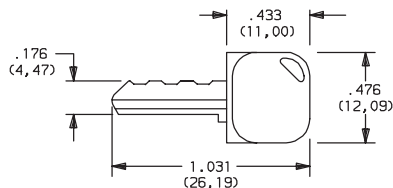
### LEGEND

- = Detent Position (90°)
- ⊙ = Key pull possible in these positions.
- ⦿ = Stop Positions

## KEYING



**E** TWO NICKEL PLATED BRASS KEYS WITH INSERT MOLDED PLASTIC HEAD

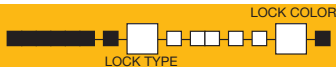


Key part number: 617D1004102

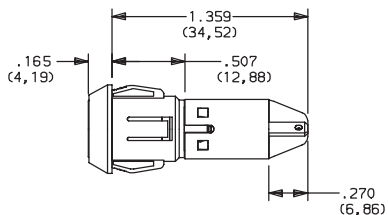
OPTION CODE	KEY COLOR
2	BLACK

**NOTE:** Molded plastic head color is black, standard. For more than one key code, replacement keys, or other special features, consult Customer Service Center.

## LOCK TYPE



**B** 5 TUMBLER LOCK WITH DETENT



OPTION CODE	LOCK COLOR
2	BLACK



Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change



Switchlock

# PM Series 5 Tumbler Miniature Snap-in Switchlocks

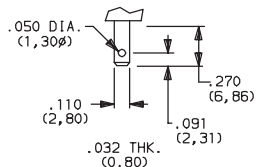
## LOCK FINISH

**M** PLASTIC LOCK WITH MATTE FINISH

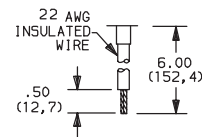


## TERMINATIONS

**05** QUICK CONNECT



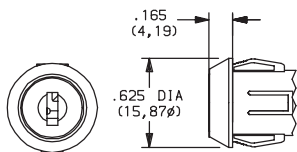
**WC** WIRE LEAD



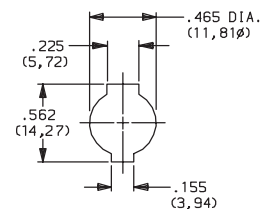
UL style 1015.  
Black wire standard, other colors and lengths available, consult Customer Service Center.

## LOCK STYLE

**K** CONE SHAPED FACING



**PANEL MOUNTING**



Panel thickness:  
.050-.080 (1,27-2,03)

## CONTACT MATERIAL

OPTION CODE	RoHS COMPLIANT*	RoHS COMPATIBLE*	CONTACT AND TERMINAL MATERIAL	RATING	
<b>Q</b>	YES	YES	SILVER <sup>2</sup>	POWER	4 AMPS @ 125 V AC or 28 V DC; 2 AMPS @ 250 V AC (UL/CSA). 4 AMPS @ 125 V AC; or 2 AMPS @ 250 V AC; T65 (VDE).
<b>B</b>	YES	YES	GOLD <sup>1</sup>	LOW LEVEL/DRY CIRCUIT	0.4 VA MAX. @ 20 V AC or DC MAX.

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

<sup>1</sup> CONTACTS & TERMINALS: Copper, with gold plate over nickel plate.

All models



with all options when ordered with 'Q' contact material.

<sup>2</sup> CONTACTS & TERMINALS: Copper, silver plated (standard with all termination options).



Switchlock

## AVAILABLE HARDWARE



Key Code: 041

**PART NO. (ONE KEY)**

**617D1004102** BLACK

**Material:** Brass  
**Finish:** Nickel plate  
6/6 Nylon insert molded head



Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change



# A Series 4 & 5 Tumbler 1-4 Pole Switchlocks

## Features/Benefits

- Multi-pole and multi-position
- Shorting and non-shorting contacts available
- Low level and power capability
- PCB mounting

## Typical Applications

- Security alarm systems
- Medical equipment
- Computer servers



Models Available

## Specifications

**CONTACT RATING:** Q contact material: Switch-2.5 AMPS @ 125 V AC; 350 mA @ 125 V DC (UL/CSA). Carry-5 AMPS continuous. See page L-33 for additional ratings.

**ELECTRICAL LIFE:** 15,000 make-and-break cycles at full load up to 300,000 detent operations.

**CONTACT RESISTANCE:** Below 20 m Ω typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

**INSULATION RESISTANCE:** 10<sup>9</sup> Ω min.

**DIELECTRIC STRENGTH:** 1,000 Vrms min. @ sea level.

**OPERATING TEMPERATURE:** -30°C to 85°C.

**INDEXING:** 30°: 2-4 positions, 45° or 90°: 2-3 positions.

**STATIC RESISTANCE:** Anti-static models exceed 20 KV DC static resistance @ sea level, lock body to terminals.

## Materials

**LOCK:** Zinc alloy with stainless steel facing.

**KEYS:** Two nickel plated brass keys with code number.

**SWITCH HOUSING:** Glass filled 6/6 nylon (UL 94V-0).

**MOVABLE CONTACT:** Q contact material: Coin silver, silver plated. See page L-38 for additional contact materials.

**STATIONARY CONTACTS & TERMINALS:** Q contact material: Brass, silver plated. See page L-33 for additional contact materials.

**MOUNTING NUT:** Zinc alloy.

**DRESS NUT:** Brass, nickel plated.

**TERMINAL SEAL:** Epoxy.

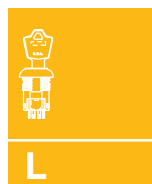
**NOTE:** Any models supplied with Q or B contact material are RoHS compliant.

**NOTE:** Specifications and materials listed above are for switchlocks with standard options. For information on specific and custom switchlocks, consult Customer Service Center.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages L-30 through L-33. For additional options not shown in catalog, consult Customer Service Center.

<p><b>Switch and lock Function</b></p> <p><b>A21613</b> DP, 30°, keypull pos. 1</p> <p><b>A11413</b> SP, 90°, keypull pos. 1</p> <p><b>A31413</b> 3P, 90°, keypull pos. 1</p> <p><b>A3141U</b> 3P, 90°, keypull pos. 1 &amp; 2</p> <p><b>A11513</b> SP, 45°, keypull pos. 1</p> <p><b>A31513</b> 3P, 45°, keypull pos. 1</p> <p><b>A3151U</b> 3P, 45°, keypull pos. 1 &amp; 3</p> <p><b>A21582</b> DP, 45°, keypull pos. 1</p> <p><b>A11613</b> SP, 30°, keypull p05. 1</p> <p><b>A1161U</b> SP, 30°, keypull pos. 1 &amp; 4</p> <p><b>A12112</b> SP, 45°, keypull p05. 1</p> <p><b>A42112</b> 4P, 45°, keypull pos. 1</p>	<p><b>Keying</b></p> <p><b>2</b> Two nickel plated brass keys</p>	<p><b>Lock Type</b></p> <p><b>A</b> 4 Tumbler lock</p> <p><b>G</b> 5 Tumbler lock with anti-static switch</p> <p><b>Y</b> 4 Tumbler lock with anti-static switch</p>	<p><b>Lock Finish</b></p> <p><b>2</b> Stainless steel facing</p> <p><b>1</b> Nickel plated with removable dress nut</p> <p><b>8</b> Gloss black facing</p>	<p><b>Shorting/Non-Shorting</b></p> <p><b>N</b> Non-shorting contacts</p> <p><b>S</b> Shorting contacts</p>	<p><b>Terminations</b></p> <p><b>Z</b> Solder lug</p> <p><b>C</b> PC Thru-hole</p>	<p><b>Mounting/Lock Style</b></p> <p><b>N</b> With nut</p> <p><b>R</b> With removable dress nut</p>	<p><b>Contact Material</b></p> <p><b>Q</b> Silver</p> <p><b>B</b> Gold</p>	<p><b>Seal</b></p> <p><b>NONE</b> No seal</p> <p><b>E</b> Epoxy seal</p>
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Switchlock



Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

# A Series 4 & 5 Tumbler 1-4 Pole Switchlocks

## SWITCH AND LOCK FUNCTION

NO. POLES	MODEL NO.	CONNECTED TERMINALS				KEY PULL POSITIONS	LOCK CONFIGURATION	INDEXING
		POS. 1	POS. 2	POS. 3	POS. 4			
SP 3P	<b>A11413</b> * <b>A31413</b>	A-1 A-1, B-5, C-9	A-4 A-4, B-8, C-12			Position 1		90°
3P	<b>A3141U</b>	A-1, B-5, C-9	A-4, B-8, C-12			Positions 1 & 2		
SP 3P	<b>A11513</b> * <b>A31513</b>	A-1 A-1, B-5, C-9	A-2 A-2, B-6, C-10	A-4 A-4, B-8, C-12		Position 1		45°
3P	<b>A3151U</b>	A-1, B-5, C-9	A-2, B-6, C-10	A-4, B-8, C-12		Positions 1 & 3		
DP	<b>A21582</b>	A-4, C-10	A-5, C-11	A-2, C-8		Position 1		
SP DP	<b>A11613</b> * <b>A21613</b>	A-1 A-1, C-7	A-2 A-2, C-8	A-3 A-3, C-9	A-4 A-4, C-10	Position 1		30°
SP	<b>A1161U</b> *	A-1	A-2	A-3	A-4	Positions 1 & 4		
SP 4P	<b>A12112</b> * <b>A42112</b>	A-1 A-1, B-4, C-7, D-10	A-2 A-2, B-5, C-8, D-11			Position 1		45°

### LEGEND

- = Detent Positions (30°, 45° or 90°)
- ⊙ = Key pull possible in these positions.
- = Stop Positions

### TERMINAL NUMBERS



4P MODEL



3P MODEL

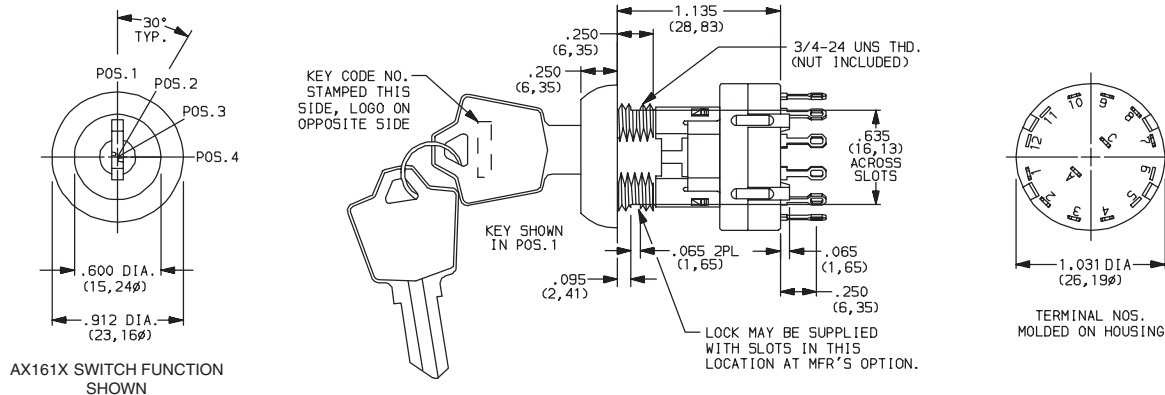
**\*NOTE:** Switchlock models A114XX, A115XX, A116XX and A12112 with 'C' terminations have additional terminal no. 8 as switch support only. This terminal is not connected electrically inside switch.

All models **C&K** **US** with all options when ordered with 'Q' contact material.  
AX14 models not available with 'S' shorting contacts.

SP MODEL (omit terminals B, C & D)  
DP MODEL (omit terminals B & D)

Terminal numbers molded on housing bottom.

Switchlock



AX161X SWITCH FUNCTION SHOWN

Part number shown: A116132Y2NZNQ



Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

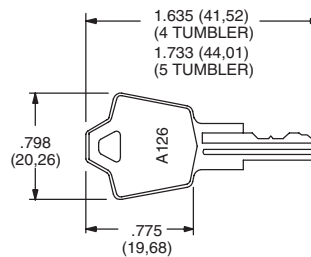


# A Series 4 & 5 Tumbler 1-4 Pole Switchlocks

## KEYING

OPTION CODE	KEYING OPTIONS	CODE NO. ON KEY	CODE NO. ON LOCK
2	2 NICKEL PLATED BRASS KEYS	YES	NO

**NOTE:** All orders keyed alike, standard. For more than one key code, replacement keys, or other special features, consult Customer Service Center.

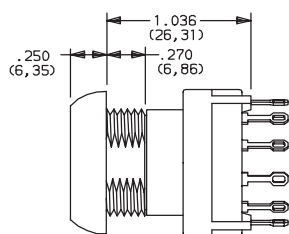


Key part number: 115140126

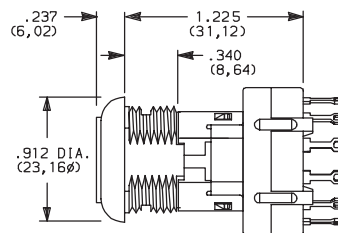
**NOTE:** Key head shape subject to change without notice.

## LOCK TYPE

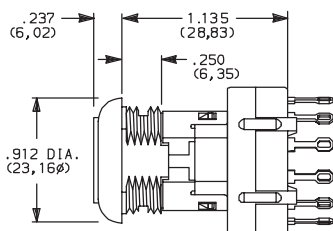
**A** 4 TUMBLER LOCK WITH REMOVABLE DRESS NUT



**G** 5 TUMBLER LOCK WITH ANTI-STATIC SWITCH



**Y** 4 TUMBLER LOCK WITH ANTI-STATIC SWITCH



Not available with AX23 models.

AVAILABLE OPTION COMBINATIONS		
LOCK TYPES	MOUNTING STYLES	
	N	R
G	•	
A		•
Y	•	

**NOTE:** For available option combinations, see page L-38.

## LOCK FINISH

**2** STAINLESS STEEL

**1** NICKEL

**8** GLOSS BLACK



AVAILABLE OPTION COMBINATIONS					
FINISH OPTIONS	LOCK TYPES			MOUNTING STYLES	
	G	A	Y	N	R
1		•			•
2	•		•	•	
8	•	•	•		•

**NOTE:** For available option combinations, see page M-38.

## SHORTING/NON-SHORTING

**N** NON-SHORTING CONTACTS (break-before-make)

**S** SHORTING CONTACTS (make-before-break)

Not available with AX14 models.



Third Angle Projection

Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change



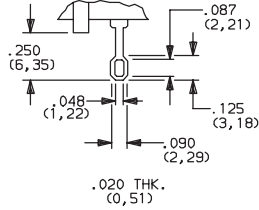
Switchlock



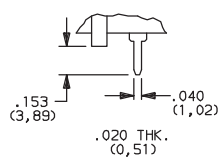
# A Series 4 & 5 Tumbler 1-4 Pole Switchlocks

## TERMINATIONS

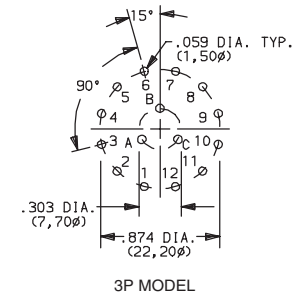
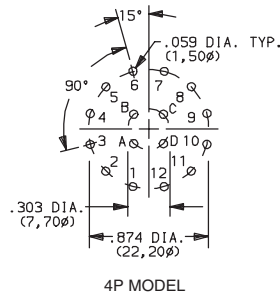
**Z** SOLDER LUG



**C** PC THRU-HOLE



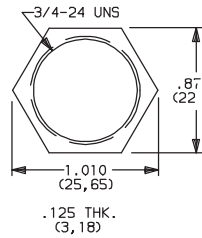
**PC MOUNTING**



SP MODEL (omit terminals B, C, D)  
DP MODEL (omit terminals B & D)

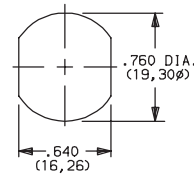
## MOUNTING/LOCK STYLE

**N** WITH NUT

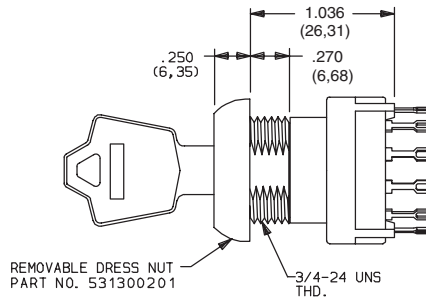
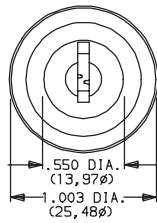


Nut part number: 937C00000

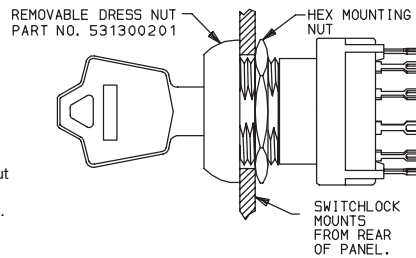
**PANEL MOUNTING**



**R** REMOVABLE DRESS NUT



REMOVABLE DRESS NUT  
PART NO. 531300201

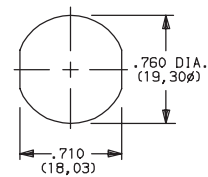


REMOVABLE DRESS NUT  
PART NO. 531300201

HEX MOUNTING NUT

SWITCHLOCK MOUNTS FROM REAR OF PANEL.

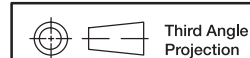
**PANEL MOUNTING**



### TYPICAL INSTALLATION

Install hex nut with enough clearance to allow for dress nut and panel. Place switch through cutout in rear of panel. Install and tighten dress nut by hand, then tighten hex nut. Always tighten assembly with back of panel hex nut to avoid damaging front of panel.

Switchlock



Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

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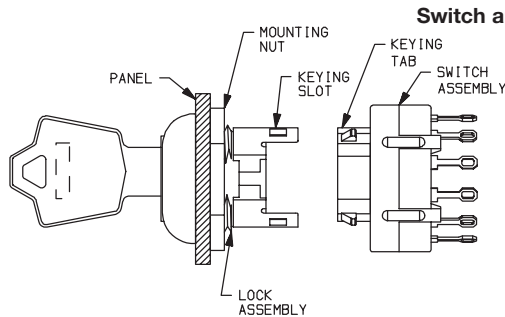
# A Series 4 & 5 Tumbler 1-4 Pole Switchlocks

## MOUNTING/LOCK STYLE

### Mounting Information (All Models)

MOUNTING STYLES	PANEL THICKNESS	
	A & Y LOCK TYPES	G LOCK TYPES
N	.105 (2,67) max.	.195 (4,95) max.
R	.125 (3,18) max.	.215 (5,46) max.

MOUNTING STYLES	AVAILABLE OPTION COMBINATIONS					
	LOCK FINISHES			LOCK TYPES		
	1	2	8	G	A	Y
N		•	•	•		•
R	•		•		•	



### Switch and Lock Assembly Instructions


1. Place lock assembly in mounting hole on panel, secure with mounting nut.
2. Align keying tab on switch assembly with keying slot on lock assembly.
3. Snap assemblies together.
4. Switch installation is permanent. Switch cannot be removed from lock after assembly. Attempting to separate switch and lock may cause damage to switchlock.

## CONTACT MATERIAL

OPTION CODE	RoHS COMPLIANT*	RoHS COMPATIBLE*	CONTACT AND TERMINAL MATERIAL	RATING	
<b>Q</b>	YES	YES	SILVER <sup>2</sup>	POWER	SWITCH-2.5 AMPS @ 125 V AC; 350 mA @ 125 V DC (UL/CSA). CARRY-5 AMPS CONTINUOUS.
<b>B</b>	YES	YES	GOLD <sup>1</sup>	LOW LEVEL/DRY CIRCUIT	0.4 VA MAX. @ 20 V AC or DC MAX.

<sup>1</sup> MOVABLE CONTACT: Copper alloy, with gold plate over nickel plate.  
STATIONARY CONTACTS & TERMINALS: Brass, with gold plate over nickel plate.  
<sup>2</sup> MOVABLE CONTACT: Coin silver, silver plated.  
STATIONARY CONTACTS & TERMINALS: Brass, silver plated (standard with all termination options).

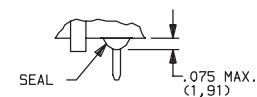
\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

All models  with all options when ordered with 'Q' contact material.

## SEAL

**NONE** NO SEAL

**E** EPOXY SEAL

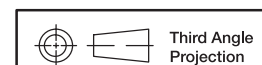


## AVAILABLE HARDWARE



Key Code: A126  
4 TUMBLER  
**PART NO. (ONE KEY)**  
**115140126**  
**Material:** Brass  
Finish: Nickel plate

Key Code: D001  
5 TUMBLER  
**PART NO. (ONE KEY)**  
**115441001**  
**Material:** Brass  
Finish: Nickel plate

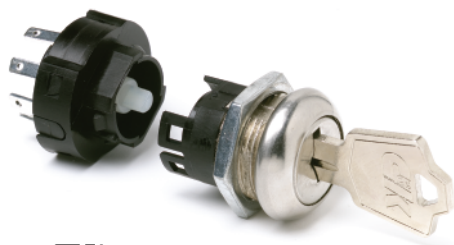


Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change



Switchlock

# H Series 4 & 6 Tumbler Power Switchlocks



Models Available

## Features/Benefits

- Positive detent
- Multi-pole and multi-position
- Snap-together assembly
- Power switching

## Typical Applications

- Machine controls
- Elevators

## Specifications

CONTACT RATING: Q contact material: 12 AMPS @ 125 V AC; 6 AMPS @ 250 V AC; 1 AMP @ 125 V DC (UL/CSA). See page L-37 for additional ratings.

ELECTRICAL LIFE: 10,000 make-and-break cycles at full load.

CONTACT RESISTANCE: Below 10 m Ω typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

INSULATION RESISTANCE: 10<sup>9</sup> Ω min.

DIELECTRIC STRENGTH: 1,000 Vrms min. @ sea level.

OPERATING TEMPERATURE: -30°C to 85°C.

INDEXING: 45° or 90°, 2-4 Positions.

**NOTE:** Any models supplied with Q or B contact material are RoHS compliant.

**NOTE:** Specifications and materials listed above are for switchlocks with standard options. For information on specific and custom switchlocks, consult Customer Service Center.

## Materials

LOCK: Zinc alloy with stainless steel facing (4 tumbler locks and 6 tumbler tubular lock).

KEYS: Two nickel plated brass keys with code number (4 tumbler). Two die cast chrome plated zinc alloy keys (6 tumbler).

SWITCH HOUSING: 6/6 nylon (UL 94V-2).

CONTACTS & TERMINALS: Q contact material: Copper, silver plated. See page L-37 for additional contact materials.

CONTACT SPRING: Music wire or stainless steel.

MOUNTING NUT: Zinc alloy.

MOUNTING CLIP: Steel, zinc plated.

DRESS NUT: Brass, nickel plated.

TERMINAL SEAL: Epoxy.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages L-35 through L-38. For additional options not shown in catalog, consult Customer Service Center.



### Switch and Lock Function

- H10113** SP, 90° Index, keypull pos.1
- H2011U** DP, 90° Index, keypull pos. 1 & 2
- H100AA** SP, 45° Index, keypull pos. 1,2 & 3
- H200AA** DP, 45° Index, keypull pos. 1, 2 & 3
- H20113** DP, 90° Index, keypull pos. 1
- H1011U** SP, 90° Index, keypull pos.1 & 2
- H1417U** SP, 90° Index, keypull pos. 1,2 & 3

### Keying

- 2** Two nickel plated brass keys (4 tumbler) or two die cast zinc alloy keys with chrome plating (6 tumbler)
- T** One nickel plated brass key with plastic insert molded square head and one nickel plated brass key

### Lock Type

- F** 4 Tumbler lock with detent
- V** 6 Tumbler tubular lock

### Lock Finish

- 2** Stainless steel facing
- 8** Gloss black facing

### Terminations

- 05** Quick connect
- WC** Wire lead

### Mounting/Lock Style

- N** With nut
- D** With clip

### Contact Material

- Q** Silver
- B** Gold

### Key Color

- NONE** Nickel plated brass (4 tumbler) or chrome plated zinc alloy (6 tumbler)
- 2** Black



Switchlock



Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

# H Series 4 & 6 Tumbler Power Switchlocks

## SWITCH AND LOCK FUNCTION



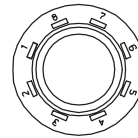
NO. TUMBLERS	NO. POLES	MODEL NO.	CONNECTED TERMINALS				KEY PULL POSITIONS	LOCK CONFIGURATION	INDEXING
			POS. 1	POS. 2	POS. 3	POS. 4			
4	SP DP	<b>H100AA</b> <b>H200AA</b>	7-8 7-8, 3-4	8-1 8-1, 4-5	6-7 6-7, 2-3		Positions 1, 2 & 3		45°
4 & 6	SP DP	<b>H10113</b> <b>H20113</b>	7-8 7-8, 3-4	8-2 8-2, 4-6			Position 1		
4 & 6	SP DP	<b>H1011U</b> <b>H2011U</b>	7-8 7-8, 3-4	8-2 8-2, 4-6			Positions 1 & 2		90°
4	SP	<b>H1417U</b>	6-8	8-2	5-6		Positions 1, 2 & 3		

All models with all options when ordered with 'G' or 'Q' contact material.

### TERMINAL NUMBERS

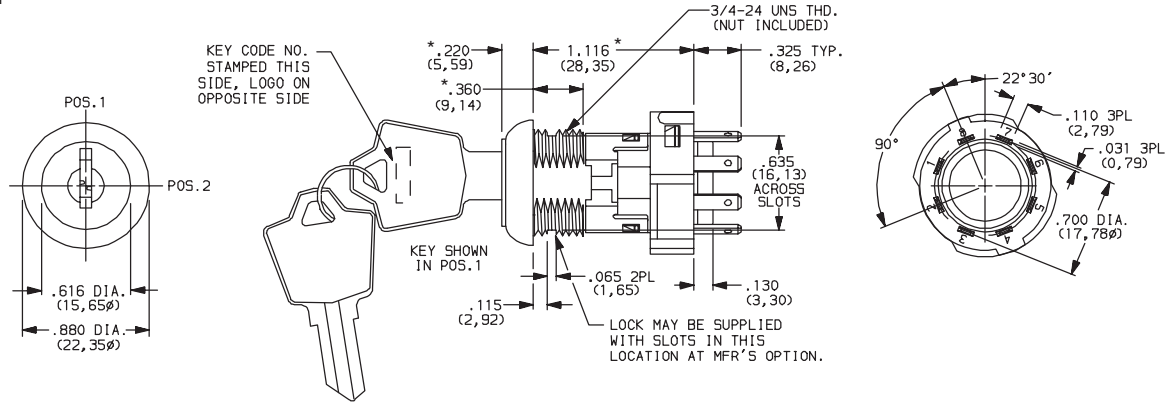
### LEGEND

- = Detent Positions (45° or 90°)
- ⊙ = Key pull possible in these positions.
- = Stop Positions



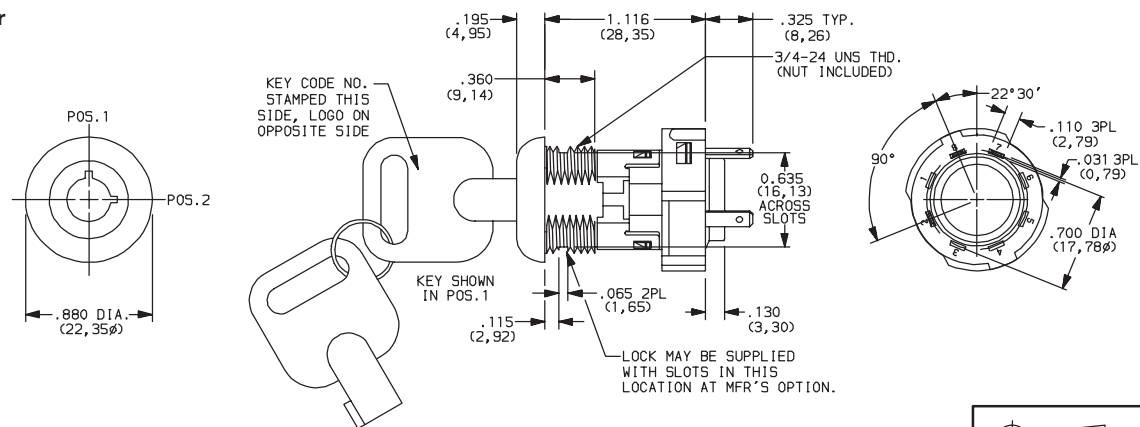
Terminal numbers molded on housing.

### 4 Tumbler



Part number shown: H101132F205NQ

### 6 Tumbler



Part number shown: H1011U2V205NQ



Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change



Switchlock

# H Series 4 & 6 Tumbler Power Switchlocks

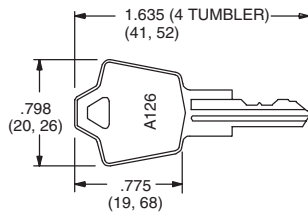
## KEYING

OPTION CODE	KEY OPTIONS	CODE NO. ON KEY	CODE NO. ON LOCK
<b>2</b>	2 NICKEL PLATED BRASS KEYS (4 TUMBLER) OR 2 CHROME PLATED ZINC ALLOY KEYS (6 TUMBLER)	YES	NO
<b>T</b>	1 NICKEL PLATED BRASS KEY WITH PLASTIC INSERT MOLDED SQUARE HEAD & 1 NICKEL PLATED BRASS KEY	YES	NO

OPTION CODE	KEY COLOR
<b>NONE</b>	NICKEL PLATED BRASS (4 TUMBLER) OR CHROME PLATED ZINC ALLOY (6 TUMBLER)
<b>2</b>	BLACK

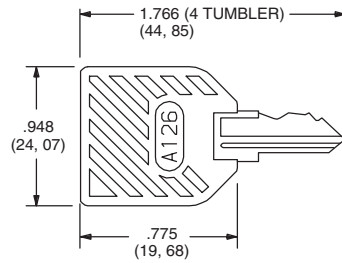
**NOTE:** All orders keyed alike, standard. For more than one key code, replacement keys, or other special features, consult Customer Service Center.

NICKEL PLATED BRASS KEY



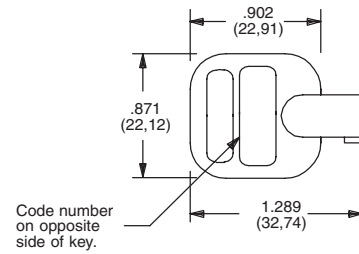
Key part number: 115140126

NICKEL PLATED BRASS KEY WITH PLASTIC INSERT MOLDED SQUARE HEAD



Key part number: 11599112602

CHROME PLATED ZINC ALLOY KEY

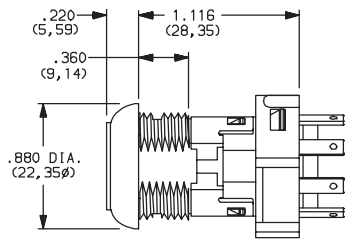


Key part number: 363C1AAAA

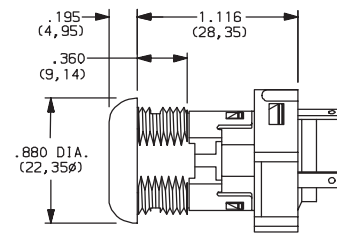
**NOTE:** Key head shape subject to change without notice.

## LOCK TYPE

**F** 4 TUMBLER LOCK WITH ADDED DETENT



**V** 6 TUMBLER TUBULAR LOCK



## LOCK FINISH

**2** STAINLESS STEEL FACING



Available with V lock type only.

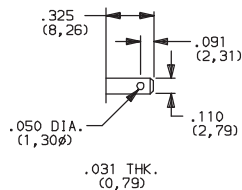
**8** GLOSS BLACK FACING



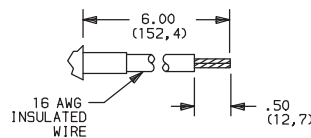
Switchlock

## TERMINATIONS

**05** .110" QUICK CONNECT



**WC** WIRE LEAD



Black wire standard, other colors, gages and lengths available, consult Customer Service Center. UL style 1015.



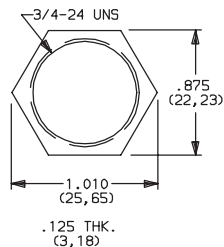
Third Angle Projection  
Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change



# H Series 4 & 6 Tumbler Power Switchlocks

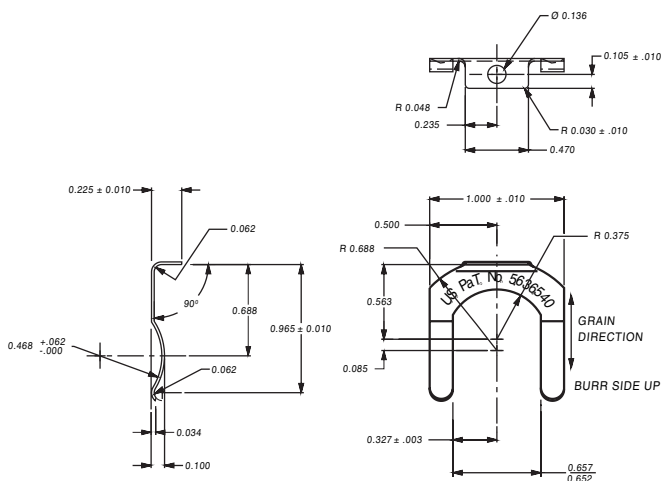
## MOUNTING/LOCK STYLE

**N** WITH NUT



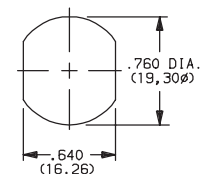
Nut part number: 937C00000

**D** WITH CLIP



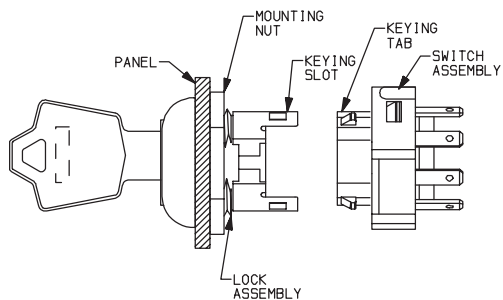
Clip part number: 906B00000

PANEL MOUNTING



MOUNTING STYLES	PANEL THICKNESS
D	.065-.085 (1,65-2,16)
N	.195 (4,95) max.

## Switch and Lock Assembly Instructions



1. Place lock assembly in mounting hole on panel, secure with mounting nut.
2. Align keying tab on switch assembly with keying slot on lock assembly.
3. Snap assemblies together.
4. Switch installation is permanent. Switch cannot be removed from lock after assembly. Attempting to separate switch and lock may cause damage to switchlock.

## CONTACT MATERIAL

OPTION CODE	RoHS COMPLIANT*	RoHS COMPATIBLE*	CONTACT AND TERMINAL MATERIAL	RATING	
				POWER	12 AMPS @ 125 V AC; 6 AMPS @ 250 V AC; 1 AMP @ 125 V DC (UL/CSA).
<b>Q</b>	YES	YES	SILVER <sup>2</sup>	LOW LEVEL/DRY CIRCUIT	0.4 VA MAX. @ 20 V AC or DC MAX.
<b>B</b>	YES	YES	GOLD <sup>1</sup>		

<sup>1</sup> CONTACTS & TERMINALS: Copper, with gold plate over nickel plate.  
<sup>2</sup> CONTACTS & TERMINALS: Copper, silver plated.

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definition and specifications.

All models  with all options when ordered with 'Q' contact material.



Third Angle Projection

Dimensions are shown: Inch (mm)  
 Specifications and dimensions subject to change

www.ck-components.com



Switchlock

# H Series 4 & 6 Tumbler Power Switchlocks

## AVAILABLE HARDWARE



Key Code: A126  
4 TUMBLER  
**PART NO. (ONE KEY)**  
**115140126**  
**Material:** Brass  
Finish: Nickel plate



Key Code: AAAA  
**PART NO. (ONE KEY)**  
**363C1AAAA**  
**Material:** Zinc Alloy  
Finish: Chrome plate



Key Code: A126  
4 TUMBLER  
**PART NO. (ONE KEY)**  
**1159112602 BLACK**  
**Material:** Brass  
Finish: Nickel plate  
6/6 Nylon insert molded head



Switchlock

# PL Series 5 Tumbler Miniature Camlocks

## Features/Benefits

- Cost-effective security
- Custom cams available

## Typical Applications

- Office furniture
- Cash registers
- Copy machines



## Specifications

INDEXING: 90°: 2 positions.

**NOTE:** Specifications and materials listed above are for camlocks with standard options. For information on specific and custom camlocks, consult Customer Service Center.

## Materials

LOCK: 6/6 nylon (UL 94V-2). Color, black.

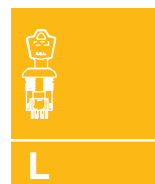
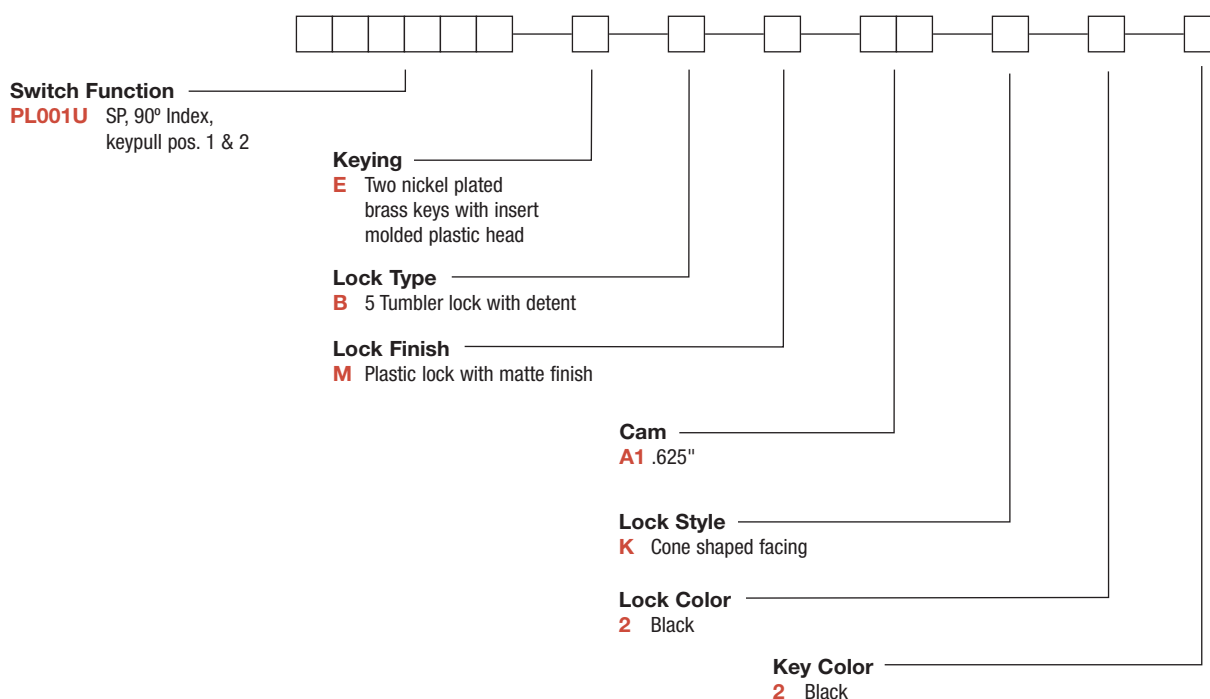
5 tumbler, single bitted lock with integral detent mechanism.

KEYS: Two nickel plated brass keys with black plastic insert molded head.

CAM: 6/6 nylon (UL 94V-2).

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages L-40 and L-41. For additional options not shown in catalog, consult Customer Service Center.




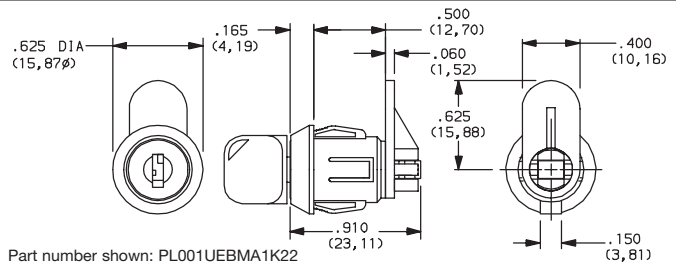
Switchlock



# PL Series 5 Tumbler Miniature Camlocks

## LOCK FUNCTION

MODEL NO.	KEY PULL POSITIONS	LOCK CONFIGURATION	INDEXING
<b>PL001U</b>	Positions 1 & 2		90°

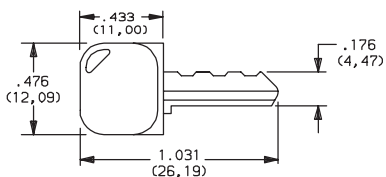
Part number shown: PL001UEBMA1K22

### LEGEND

- = Detent Position (90°)
- ⊙ = Key pull possible in these positions.
- ⊙ = Stop Positions

## KEYING

**E** TWO NICKEL PLATED BRASS KEYS WITH INSERT MOLDED PLASTIC HEAD



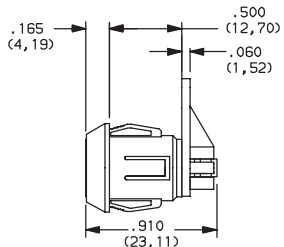
Key part number: 617D1004102

OPTION CODE	KEY COLOR
<b>2</b>	BLACK

**NOTE:** All orders keyed alike, standard. For more than one key code, replacement keys, or other special features, consult Customer Service Center.

## LOCK TYPE

**B** 5 TUMBLER LOCK WITH DETENT



OPTION CODE	LOCK COLOR
<b>2</b>	BLACK

## LOCK FINISH

**M** PLASTIC LOCK WITH MATTE FINISH



Third Angle Projection

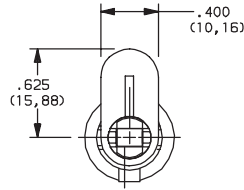
Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change



# PL Series 5 Tumbler Miniature Camlocks

## CAM

**A1** .625"

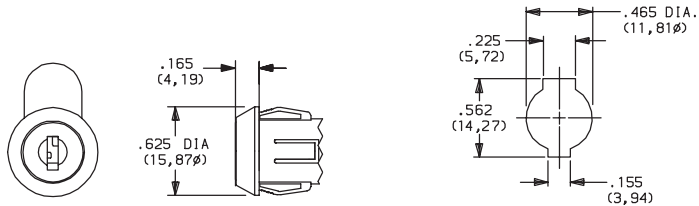


**NOTE:** Cam not assembled to switch. Other cam lengths and styles available, consult Customer Service Center.

## LOCK STYLE

**K** CONE SHAPED FACING

PANEL MOUNTING



Panel thickness: .050-.080 (1,27-2,03)

## AVAILABLE HARDWARE



Key Code: 041

**PART NO. (ONE KEY)**

**617D1004102** BLACK

**Material:** Brass  
Finish: Nickel plate  
6/6 Nylon insert molded head




Switchlock



Dimensions are shown: Inch (mm)

Specifications and dimensions subject to change

# Thumbwheel Product Selection Guide

<b>Thumbwheel</b>	
<b>Series</b>	<b>3</b>
<b>Switch Type</b>	Thumbwheel
<b>Sealed</b>	•
<b>Dust Lens</b>	•
<b>Max. Current</b>	1 Amp
<b>Actuators</b>	
Thumbwheel Actuator	•
<b>Number of Positions</b>	
10 Position	•
16 Position	•
<b>Mounting Options</b>	
Board Mount w/Pins	•
Front Mount	•
Rear Mount	•
Snap-in	•
<b>Page Number</b>	M-3

**Thumbwheel**



*Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change*

# 3 Series Thumbwheel Switches

## Features/Benefits

- Most complete product offering in the industry
- Spacers available to fit most panel cutouts
- Front or rear mounting options

## Typical Applications

- Test & measurement equipment
- Industrial equipment
- Computer devices



## Specifications

CONTACT RATING:  
 CARRY: 1 AMP continuous.  
 SWITCH: 100 mA max.  
 OPERATING VOLTAGE: 50 mV to 28 V DC or 120 V AC.  
 ELECTRICAL LIFE: 100,000 actuations.  
 CONTACT RESISTANCE: Below 100 m Ω typ. initial @  
 2-4 V DC, 100 mA.  
 INSULATION RESISTANCE: 10<sup>9</sup> Ω min.  
 DIELECTRIC STRENGTH: 500 Vrms min. @ sea level  
 between common terminal and any output.  
 OPERATING TEMPERATURE: -40°C to 65°C.

## Materials

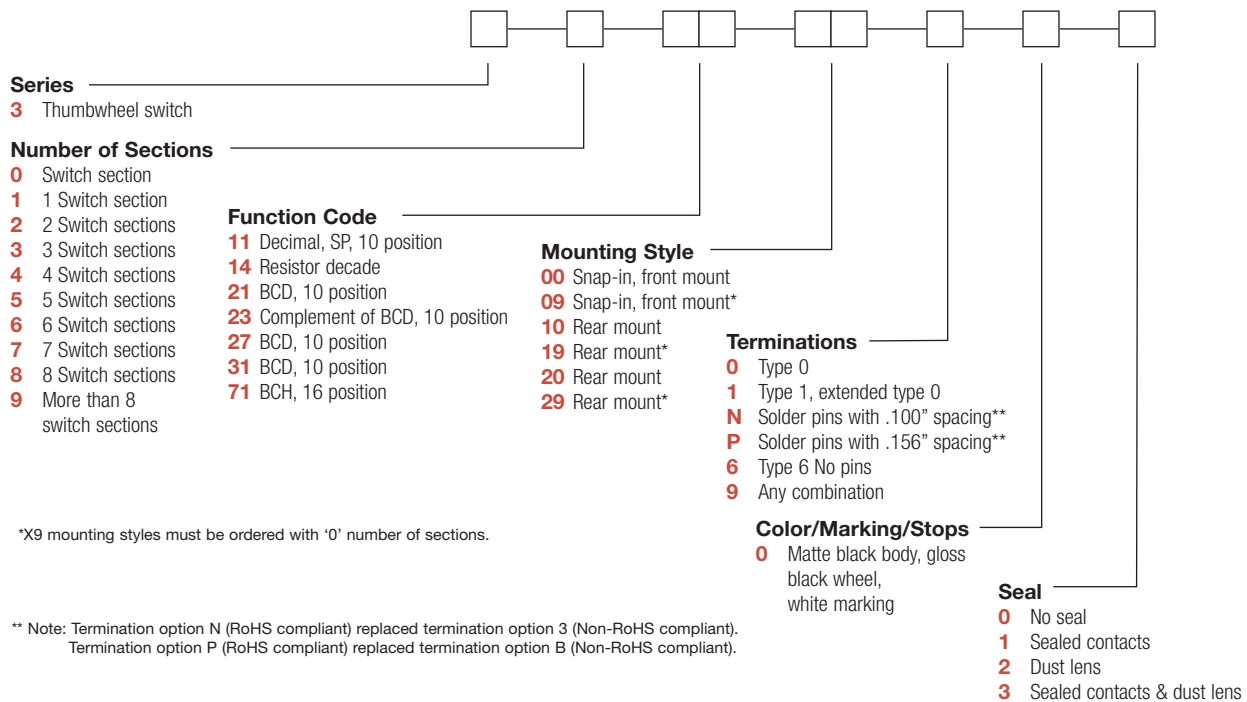
HOUSING: ABS plastic.  
 THUMBWHEEL: ABS plastic.  
 ROTOR CONTACTS: Precious metal on copper alloy.  
 STATOR CONTACTS: Hard gold over nickel over copper  
 on epoxy fiberglass.

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

\* Note: All models listed are RoHS compliant. See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages M-4 thru M-10. For additional options not shown in catalog, consult Customer Service Center. Consult factory for illumination availability.



Thumbwheel

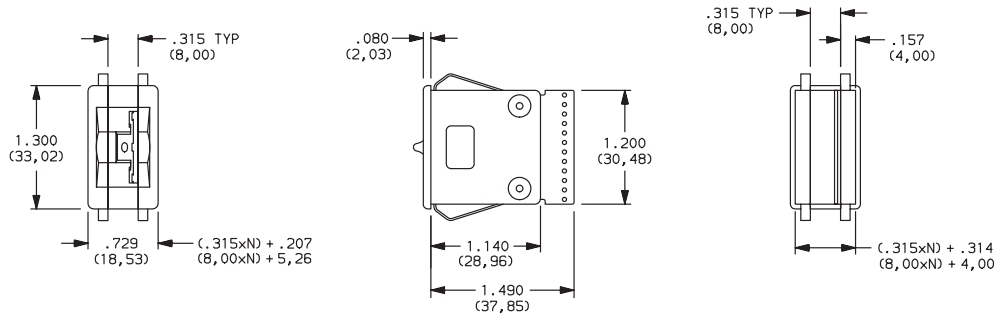


Dimensions are shown: Inches (mm)  
 Specifications and dimensions subject to change

# 3 Series Thumbwheel Switches

## SERIES

### 3 THUMBWHEEL SWITCHES



## NUMBER OF SECTIONS

- 0** Switch section only, no assembly. Blank bodies are considered sections; endplates are not sections. Must be ordered with 09 or 19 mounting style options, see pages M-5 and M-6.
- 1-8** Number of switch sections in assembly, includes endplates.
- 9** More than 8 switch sections, specify on CONFIGURATION FORM, page M-10 and consult Customer Service Center.

**NOTE:** Endplates and blank sections available separately, see pages M-13 and M-14.

## FUNCTION CODE

- 11** DECIMAL-1 POLE; 10 POSITION
- 14** RESISTOR DECADE; 1-2-2-2-2 CODE (RESISTORS NOT SUPPLIED)
- 21** BCD 1-2-4-8; 10 POSITION

Thumbwheel



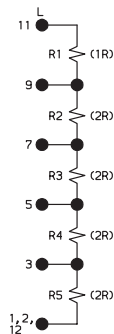
M

W H E E L	SIGNALS CONNECTED TO COMMON SIGNAL C										C
	0	1	2	3	4	5	6	7	8	9	
0	●										●
1		●									●
2			●								●
3				●							●
4					●						●
5						●					●
6							●				●
7								●			●
8									●		●
9										●	●
	2	3	4	5	6	7	8	9	10	11	12
	TERM. LOCATION										

Available Terminations: 0, 1, N  
See fig. 1, page M-7.

W H E E L	SWITCH CIRCUIT											
	0	1	2	3	4	5	6	7	8	9	11	12
0	●											
1	●	●										
2	●	●	●									
3	●	●	●	●								
4	●	●	●	●	●							
5	●	●	●	●	●	●						
6	●	●	●	●	●	●	●					
7	●	●	●	●	●	●	●	●				
8	●	●	●	●	●	●	●	●	●			
9	●	●	●	●	●	●	●	●	●	●		
	11	9	7	5	3	1,2	12					
	TERM. LOCATION											

Available Terminations: 1  
See fig. 1, page M-7.



W H E E L	SIGNALS CONN. TO COMM. SIG. C				
	1	2	4	8	
0				●	
1	●			●	
2		●		●	
3	●	●		●	
4			●	●	
5	●	●	●	●	
6	●	●	●	●	
7	●	●	●	●	
8			●	●	
9	●			●	
	3	5	7	11	9
	TERM. LOCATION				

Available Terminations: 0, 1, N  
See fig. 1, page M-7.

**NOTE:** For terminal location diagram, see page M-7.

Third Angle Projection  
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



# 3 Series Thumbwheel Switches

## FUNCTION CODE

**23** COMPLEMENT OF BCD 1-2-4-8;  
10 POSITION

W H E E L	SIGNALS CONN. TO COMM. SIG. C			
	1	2	4	8
0	●	●	●	●
1	●	●	●	●
2	●	●	●	●
3	●	●	●	●
4	●	●	●	●
5	●	●	●	●
6	●	●	●	●
7	●	●	●	●
8	●	●	●	●
9	●	●	●	●
TERM. LOCATION				
	3	9	11	5
	7			

Available Terminations: 0, 1, N  
See fig. 1, page M-7.

**27** BCD 1-2-4-8; 10 POSITION

W H E E L	SIGNALS CONN. TO COMM. SIG. C			
	1	2	4	8
0				●
1	●			●
2	●			●
3	●			●
4	●			●
5	●			●
6	●			●
7	●			●
8	●			●
9	●			●
TERM. LOCATION				
	4	5	1	2
	3			

Available Terminations: P  
See fig. 2, page M-7.

**31** BCD 1-2-4-8; 10 POSITION

W H E E L	SIGNALS CONN. TO COMM. SIG. C			
	1	2	4	8
0				●
1	●			●
2	●			●
3	●			●
4	●			●
5	●			●
6	●			●
7	●			●
8	●			●
9	●			●
TERM. LOCATION				
	2	3	11	9
	8			

Available Terminations: 0, 1, N  
See fig. 1, page M-7.

**71** BINARY CODED HEXADECIMAL,  
16 POSITION

W H E E L	SIGNALS CONN. TO COMM. SIG. C			
	1	2	4	8
0				●
1	●			●
2	●			●
3	●			●
4	●			●
5	●			●
6	●			●
7	●			●
8	●			●
9	●			●
A	●	●	●	●
B	●	●	●	●
C	●	●	●	●
D	●	●	●	●
E	●	●	●	●
F	●	●	●	●
TERM. LOCATION				
	3	5	7	11
	9			

Available Terminations: 0, 1, N  
See fig. 1, page M-7.

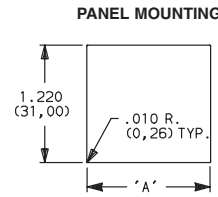
**NOTE:** For terminal location diagram, see page M-7.

## MOUNTING STYLE

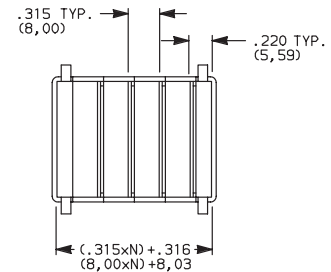
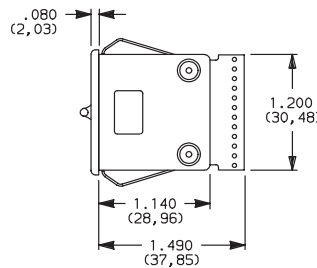
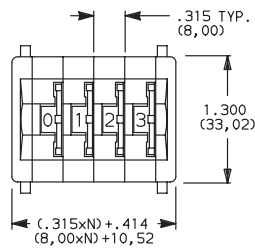
### Type 0 Snap-In Front Mount

MOUNTING STYLE	DIM. 'A'
00	$(.315 \times N) + .326$ $(8,00 \times N) + (8,28)$

N = Number of sections.  
Recommended panel thickness:  
0.46-.125  
(1,16-3,18)



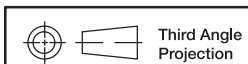
**00** SWITCH ASSEMBLY W/ ENDPLATES--315 (8,00) SECTION PITCH



N = Number of sections.

**09** SWITCH SECTION ONLY--UNASSEMBLED WITHOUT ENDPLATES OR SPACERS  
(Must be ordered with number of sections option "0", see Page M-4.)

**NOTE:** Endplates, blank sections, spacers  
and assembly hardware available separately, see pages M-8 and M-9.



Third Angle Projection  
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



# 3 Series Thumbwheel Switches

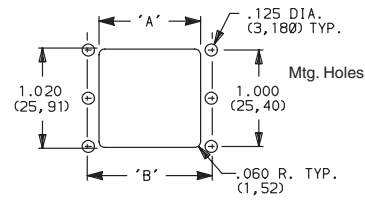
## MOUNTING STYLE

### Type 1 Rear Mount

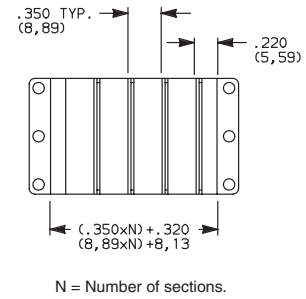
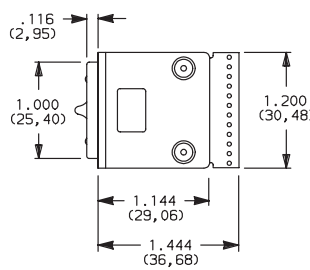
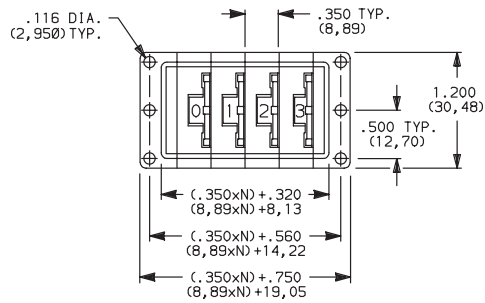
MOUNTING STYLE	DIM. 'A'	DIM. 'B'
10	$(.350 \times N) + .340$ (8,89 x N) + (8,64)	$(.350 \times N) + .560$ (8,89 x N) + (14,22)

N = Number of sections.  
Recommended panel thickness:  
0,46-.125  
(1,16-3,18)

### PANEL MOUNTING



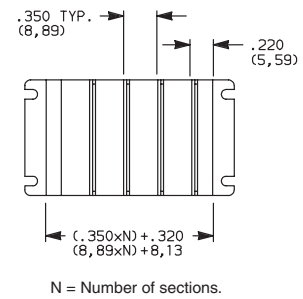
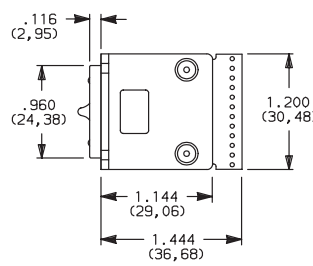
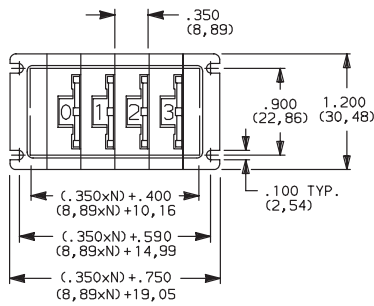
### 10 SWITCH ASSEMBLY W/ ENDPLATES--.350 (8,89) SECTION PITCH



### 19 SWITCH SECTION ONLY--UNASSEMBLED WITHOUT ENDPLATES OR SPACERS (Must be ordered with number of sections option "0", see Page M-4.)

### Type 2 Rear Mount

### 20 SWITCH ASSEMBLY W/ ENDPLATES--.350 (8,89) SECTION PITCH



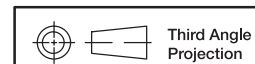
### 29 SWITCH SECTION ONLY--UNASSEMBLED WITHOUT ENDPLATES OR SPACERS (Must be ordered with number of sections option "0", see Page M-4.)

Thumbwheel



M

**NOTE:** Endplates, blank sections, spacers and assembly hardware available separately, see pages M-8 and M-9.



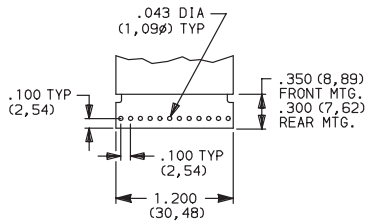
Third Angle Projection  
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



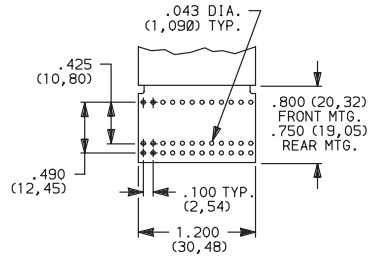
# 3 Series Thumbwheel Switches

## TERMINATIONS

### 0 TYPE 0

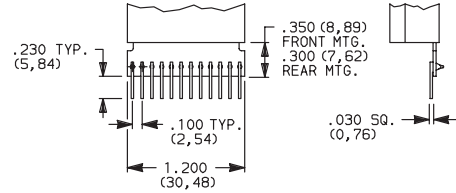


### 1 TYPE 1, EXTENDED TYPE 0

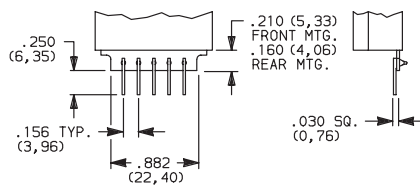


Signal traces cut except for common(s).

### N SOLDER PINS WITH .100" SPACING

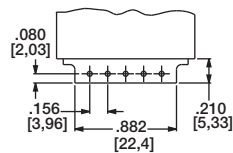


### P SOLDER PINS WITH .156" SPACING



PC Board 1/32" (0,79) thick.

### 6 TYPE 6, NO PINS



### 9 ANY COMBINATION OF TERMINATION CONFIGURATIONS OR SPECIAL TERMINATIONS.

Specify on configuration form, page M-10 and consult Customer Service Center.

**NOTE:** All terminal holes shown may not be present for all function codes, consult Customer Service Center. Terminal connector available for termination options 0 & 1, see page M-9.

**NOTE:** Termination option N (RoHS compliant) replaced termination option 3 (Non-RoHS compliant). Termination option P (RoHS compliant) replaced termination option B (Non-RoHS compliant).

## Terminal Location Numbers

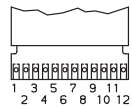


FIG. 1

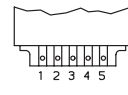
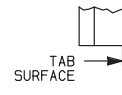


FIG. 2



**NOTE:** See function codes, pages M-4 and M-5, for signal locations.

## COLOR/MARKING/STOPS

### 0 MATTE BLACK HOUSING (Gloss black wheel with white characters; no stops.)

**NOTE:** Stop pins are available separately, see page M-8.

## SEAL

### 0 UNSEALED SWITCHING CONTACTS.

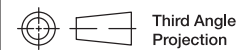
**1 SEALED SWITCHING CONTACTS.** (Sealing is by means of an o-ring rotary seal and a cured-in-place elastomer gasket. Switching contact area is protected from moisture, oil, and airborne contaminants.)

**2 DUST LENS.** (Protects the character face of the wheel from abrasion and dirt).

**3 SEALED SWITCHING CONTACTS AND DUST LENS**



Dust Lens



Third Angle Projection

Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change





# 3 Series Thumbwheel Switches

## AVAILABLE HARDWARE

Blank sections, Type 0,  
.315 THK.



**PART NO.**  
**413602000** W/RIB-BLACK  
**400502000** W/RIB & W/OUT SPRINGS-BLACK

Blank sections, Front mount, Type 0,  
.315 THK.



**PART NO.**  
**413502000** PLAIN-BLACK  
**400702000** PLAIN & W/OUT SPRINGS-BLACK

Blank sections, Rear mount, Type 1,  
.350 THK.



**PART NO.**  
**400602000** W/RIB-BLACK  
**400802000** PLAIN-BLACK

Blank sections, Rear mount, Type 2,  
.350 THK.



**PART NO.**  
**473402000** W/RIB-BLACK  
**473302000** PLAIN-BLACK

End plates, Front mount, Type 0



**PART NO.**  
**413402000** BLACK  
Two required for complete assembly.

End plates, Rear mount, Type 1



**PART NO.**  
**400402003** BLACK  
Two required for complete assembly.

End plates, Rear mount, Type 2



**PART NO.**  
**473202003** BLACK  
Two required for complete assembly.

Spacers, Front mount, Type 0 & 3, .078 THK.  
(Makes section pitch 10mm)



**PART NO.**  
**410802000** BLACK

Stop pins



**PART NO.**  
**402900000**

Thumbwheel



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

# 3 Series Thumbwheel Switches

## AVAILABLE HARDWARE

### Terminal connector



605A00000



605A02000

**PART NO.**

**605A00000** PC

**605A02000** SOLDER LUG

Fits 0 & 1 terminations only.

Screws for field assembly of thumbwheel switches  
(2 screws needed per assembly + 403500000 nuts)

SCREW PART NUMBER (0-80 UNF THD. SIZE)	NUMBER OF SECTIONS IN ASSEMBLY	
	FRONT MOUNTING	REAR MOUNTING
	MTG. STYLE - 00	MTG. STYLE - 10
<b>412700000</b>	1-2	1-2
<b>412701000</b>	3-4	3
<b>412702000</b>	5-7	4-6

### Nut



Two nuts required per assembly and screws.

**PART NO.**

**403500000**

### Nut driver (For 403500000 nut)



**PART NO.**

**406100652**

Thumbwheel



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

# 3 Series Thumbwheel Switches

## Configuration Form

GRAY SHADED AREAS TO BE FILLED IN BY CUSTOMER SERVICE.

CATALOG PART NO.

**3**

C&K PART NUMBER

C&K PART NUMBER

COMPANY NAME \_\_\_\_\_












CUSTOMER PRINT REVISION:

ADDRESS \_\_\_\_\_ TEL.# \_\_\_\_\_

CUSTOMER CONTACT \_\_\_\_\_ DATE \_\_\_\_\_

DETAILS:

ORIGINATED BY \_\_\_\_\_ SALES REP. \_\_\_\_\_

THUMBWHEEL SECTIONS	NO. OF SEC.	FUNCTION CODE – TERMINATIONS – COLOR/MARKING/STOPS/SEAL – ILLUMINATION <small>ENTER OPTION CODES IN APPROPRIATE BOXES. FUNCTION CODES INCLUDE BLANK SECTIONS (SEE PAGES M-9 &amp; M-10).</small>	DESCRIBE IN APPROPRIATE ROW
	<b>1</b>	3 - <input type="text"/> <input type="text"/> - - <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	
	<b>2</b>	3 - <input type="text"/> <input type="text"/> - - <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	
	<b>3</b>	3 - <input type="text"/> <input type="text"/> - - <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	
	<b>4</b>	3 - <input type="text"/> <input type="text"/> - - <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	
	<b>5</b>	3 - <input type="text"/> <input type="text"/> - - <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	
	<b>6</b>	3 - <input type="text"/> <input type="text"/> - - <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	
	<b>7</b>	3 - <input type="text"/> <input type="text"/> - - <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	
	<b>8</b>	3 - <input type="text"/> <input type="text"/> - - <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	
	<b>9</b>	3 - <input type="text"/> <input type="text"/> - - <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	
	<b>10</b>	3 - <input type="text"/> <input type="text"/> - - <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	
	<b>11</b>	3 - <input type="text"/> <input type="text"/> - - <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	

Thumbwheel



QUALITY CONTROL INSTRUCTIONS

PRODUCTION APPROVAL

DATE

Q.C. APPROVAL

DATE

REV.

INITIALS

DATE

FOR SWITCHES WITH MORE THAN 11 SECTIONS, CONTINUE ON ADDITIONAL SHEETS.

SPECIAL INSTRUCTIONS OR SPECIFICATIONS:

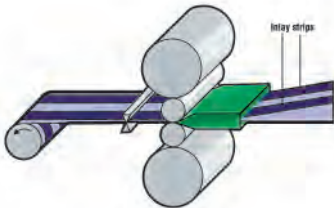
SHEET \_\_\_\_ OF \_\_\_\_



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

# Design Features of C&K Smart Card Connectors

C&K Components has a successful track record of manufacturing innovative interconnect devices with a strong emphasis on reliability and flexibility. As a long established supplier of such devices for Smart Cards in a wide range of applications, we have extensive experience matching performance with the need to remain cost sensitive. We consider the true cost of the interconnect to be a function not just of price, but also the ease with which the device can be integrated into the customer's production process and its performance in the field. We have built in a number of features which set our products apart, such as:



## Inlay contact finish

A means of applying precious metal to the contact area utilizing pressure as opposed to conventional plating. We have found this to be the most durable finish available without compromising the electrical performance of the contact. Our research has shown that our inlay finish lasts over ten times as long as standard gold plating. Where we state the life of the precious metal this is intended to be the "worst case" scenario, because the test has been made using the most abrasive smart card that we can find on the market (given that the equipment maker can rarely control which smart cards are used). Note that the inlay finish is silver in color, being an alloy of gold, silver, and palladium.



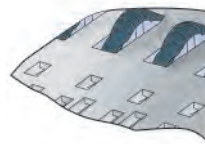
## Card detection switches

As a manufacturer of switches as well as interconnects, we have been able to integrate high performance dome switches into many of our devices. These are variants of switch products which are already in high volume production as stand alone components.



## Mechanical robustness

Four metal pegs, to be soldered in PCB metalized holes at the same time than the SMT terminals, have been designed on the smart card connectors in order to increase the resistance of the connector to card insertion force. This participates to the life time and to the overload resistance.



## Contact design

The geometry of the contact has an important bearing on its electrical performance. Our contacts are designed to give an efficient wiping action and to maximize the stress between contact and card, thus minimizing the contact resistance. The "spooned" contact area is also shaped so as to protect it from damage during card insertion.



## PCI (security standard for POS applications)

Two levels of PCI compatibility level are available:

### PCI ready:

Specific features are designed in the connector in order to ease the integration of security devices around and below the connector.

### PCI:





Additional accessories are integrated on the connector in order to avoid access to the data contacts and to detect any connection attempt.

## Materials

The contact material has been chosen because of its resistance to atmospheric pollution, solderability and performance over time in giving a consistent normal force. Since all of our new interconnects are designed for surface mounting, the plastic materials used must withstand high temperature soldering processes without deforming or adversely affecting performance.



## FULL SIZE CARD CONNECTORS

				
<b>Series</b>	<b>CCM01</b>	<b>CCM02</b>	<b>CCM04</b>	
<b>Applications</b>	Professional	Professional	Consumer/Professional	
<b>PCI*</b>	PCI ready	PCI/PCI ready		
<b>EMV</b>	•	•		
<b>Insertion force</b>	40N max	40N max	10N max	
<b>Overload</b>	250N	180N	40N	
<b>Card guide</b>	•	•		
<b>Sealed switch</b>	•	•		
<b>Operating life</b>	100,000 cycles	500,000 cycles	>50,000 cycles	
<b>Contact plating</b>	inlay	inlay	gold	
<b>Number of contacts</b>	8	8	6 or 8	
<b>Contact type</b>	friction	friction	friction/vandal proof	
<b>Page No.</b>	7	12	17	

## SIM / SAM CARD CONNECTORS

			
<b>Series</b>	<b>CCM03</b>	<b>CCM04</b>	
<b>Applications</b>	Consumer/Professional	Consumer/Professional	
<b>Cover</b>	hinged / fixed	hinged / fixed	
<b>Operating life</b>	10,000 to 50,000 cycles	30,000 cycles	
<b>Sealed switch</b>	•		
<b>Contact plating</b>	inlay / gold	inlay / gold	
<b>Card end travel switch</b>	with / without	without	
<b>Number of contacts</b>	6 or 8	6 or 8	
<b>Page No.</b>	24	43	

\* PCI

**PCI ready:** specific features are designed into the connector in order to ease the integration of security devices around and below the connector.

**PCI:** specific additional accessories are integrated on the connector in order to avoid access to the data contacts and to detect any connection attempt.

The logo for C&K, featuring the letters 'C' and 'K' in a bold, red, sans-serif font, with an ampersand '&' in a smaller, black, sans-serif font between them. The logo is set against a white circular background that is part of a larger red graphic element.

## Full Size Cards



## Features

- Operating life up to 100,000 cycles
- 40N card insertion force
- EMV
- PCI ready
- Card detection sealed switch

## Typical Applications

- Transaction
- Identification
- POS



## Mechanical

Number of Contacts	8
Mechanical life	Up to 500,000 cycles
Card insertion force	40N max.
Card extraction force	1 N min / 10 N max
Contact force	0,2N / 0,50 N max
Card detection switch	0,8 N max for actuation (end travel switch actuation force actuates when card is 0,9mm from card stop)
	1,8 N max for complete depression
Vibration Frequency	10 to 500 Hz. Acceleration 50m/s <sup>2</sup> Duration 6 hours - amplitude 0,35mm
Max elect. discontinuity	1µs
Shock	Peak value 500 m/s <sup>2</sup> – Duration 11 ms 3 shocks in each direction of each axis

## Packaging

Tray 30 parts / Cartons 300 parts  
Reel 200 parts / Cartons 1,000 parts

## Soldering

Compatible with lead free SMT reflow soldering process

## Contact Electrical Data

Insulation resistance	1,000 MΩ min
Resistance	100 mΩ max
Current rating	10 µA min / 1 A max
Dielectric strength	750 Vrms min

## Switch Electrical Data

Card detection switch	Normally open
Contact resistance	100 mΩ max
Dielectric strength	250 Vrms min
Current rating	1 mA min / 10 mA max
Maximum power	0.2 VA

## Environmental Data

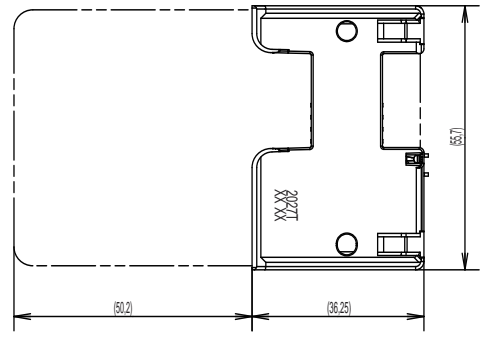
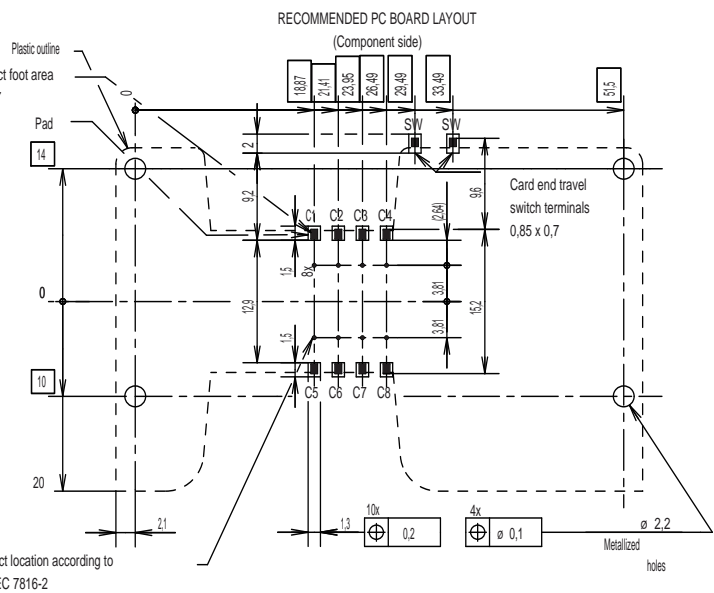
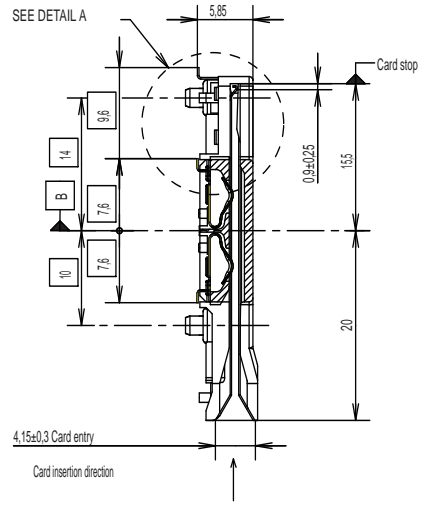
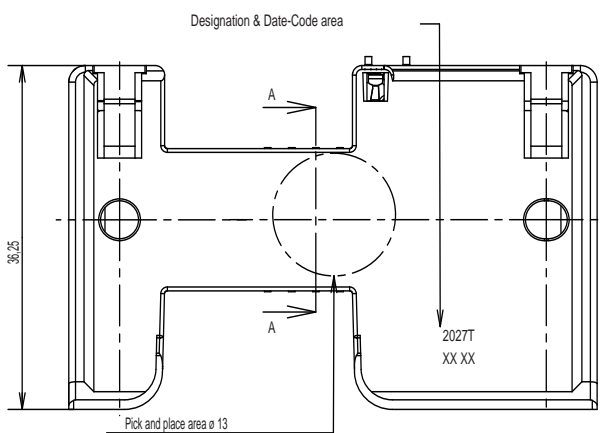
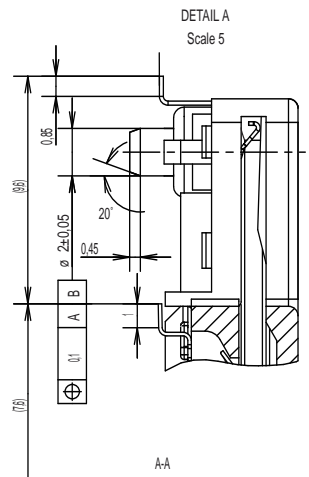
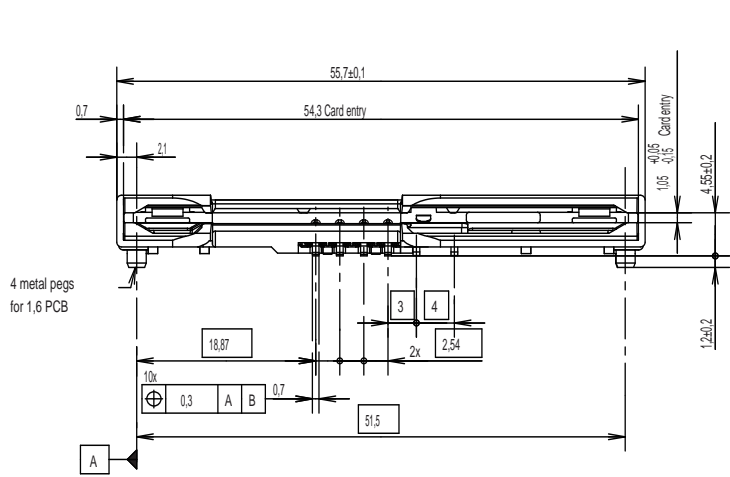
Operating temperature	-40°C to +85°C
Damp heat	IEC 512 test number 11c (10 days)
Salt mist	IEC 512 test number 11f (96 hours)
Card detection switch	Sealed against dust
RoHS compliant	

Designation	Termination	Operating Life	Card Insertion Force
CCM01-2027LFT	SMT	100,000 cycles	40N

# CCM01 MK2 Series

## CCM01-2027 LFT

Full Size



Dimensions are shown in mm  
Specifications and dimensions subject to change

www.ck-components.com



## Features/Benefits

- Operating life 500,000 cycles
- Low profile 4 mm and 3.2 mm height
- PCI ready
- Card detection sealed switch

## Typical Applications

- Transaction
- Identification
- POS
- MPOS



Full Size

## Mechanical

NUMBER OF CONTACTS:	8
MECHANICAL LIFE:	500,000 cycles
CARD INSERTION FORCE:	10 N max.
CARD EXTRACTION FORCE:	1 N min. / 10 N max.
CONTACT FORCE:	0,2 N / 0,60 N max.

## Packaging

Tray 25 parts or Reel 350 parts

## Soldering

Compatible with lead free SMT reflow soldering process

## Contact Electrical Data

INSULATION RESISTANCE:	1,000 M $\Omega$ min.
CONTACT RESISTANCE:	100 m $\Omega$ max.
CURRENT RATING:	10 $\mu$ A min. / 1A max.
DIELECTRIC STRENGTH:	750 Vrms min.

## Switch Electrical Data

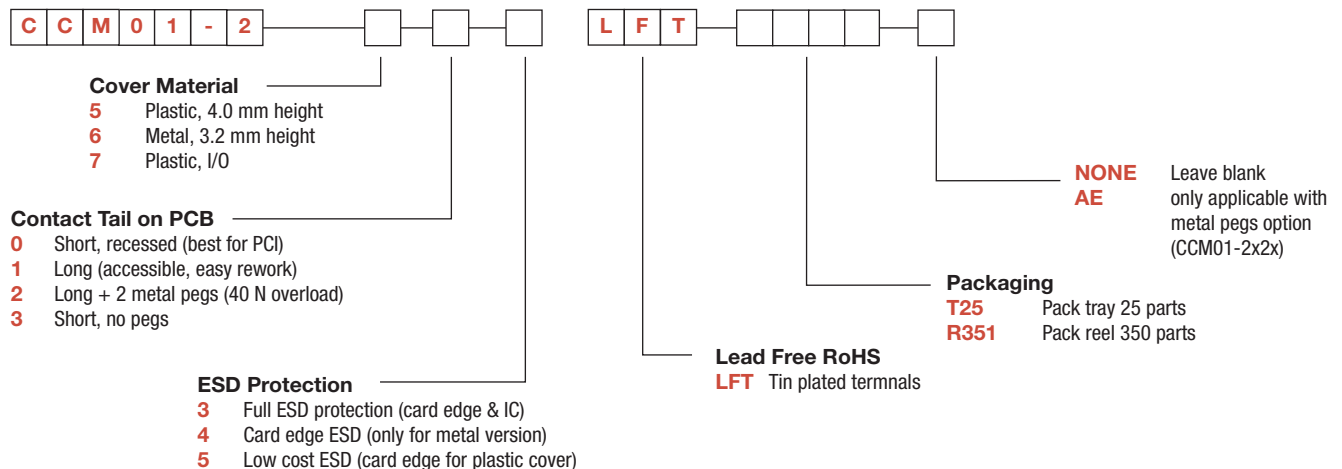
CARD DETECTION SWITCH:	Normally open
CONTACT RESISTANCE:	100 m $\Omega$ max.
DIELECTRIC STRENGTH:	250 Vrms min.
CURRENT RATING:	1 mA min. / 10 mA max.
MAXIMUM POWER:	0.2 VA

## Environmental Data

OPERATING TEMPERATURE:	-40°C to + 85°C
CARD DETECTION SWITCH:	Sealed against dust
RoHS compliant	

## How To Order

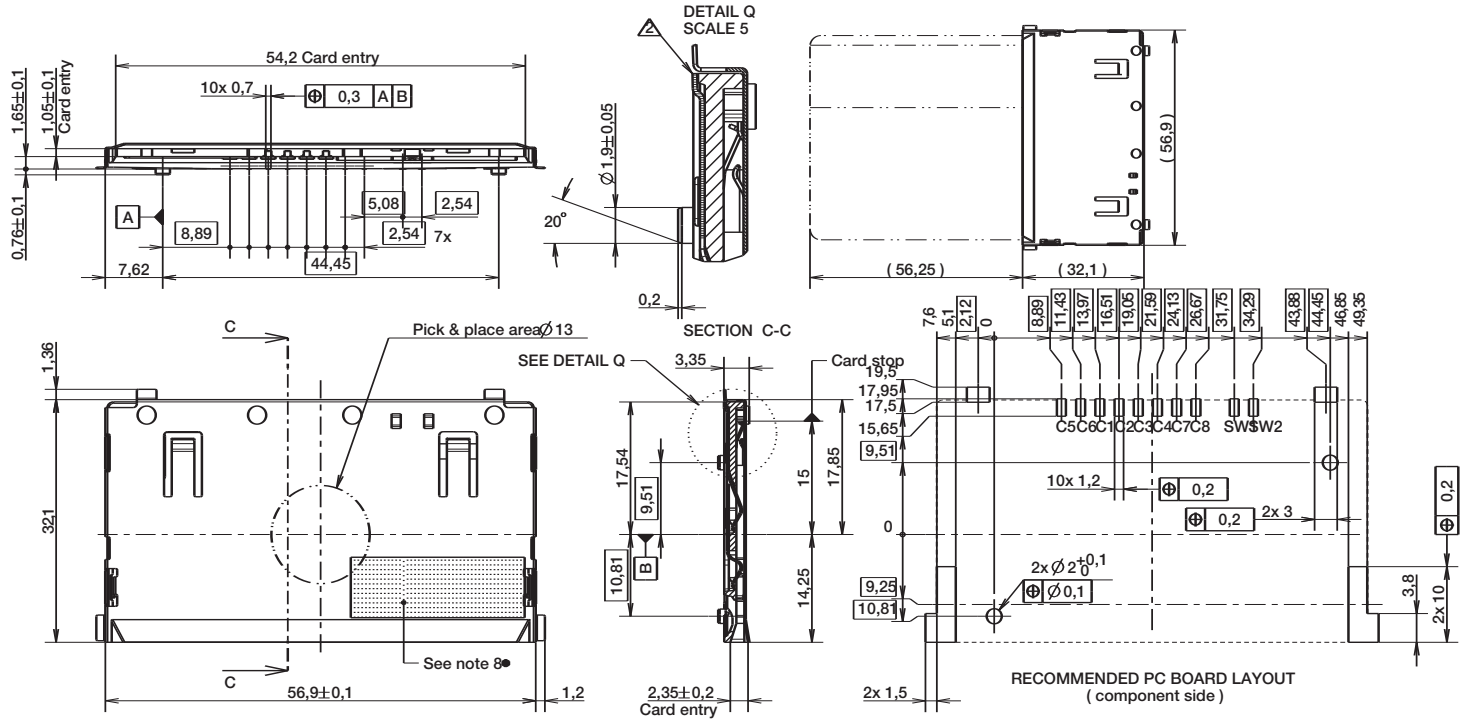
To order, simply select desired option from each category and place in the appropriate box. For additional options not shown in catalog, consult our Customer Service Center.



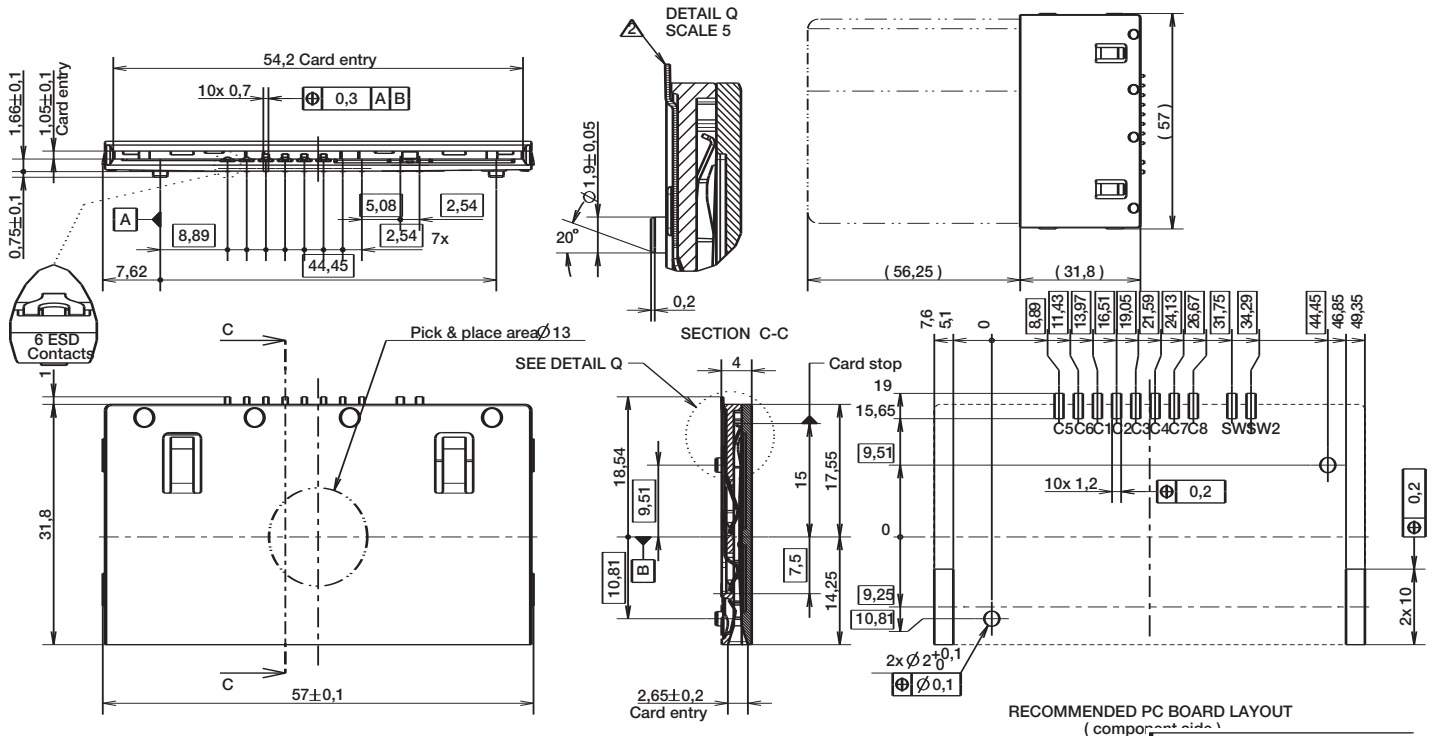
Dimensions are shown in mm  
Specifications and dimensions subject to change

# CCM01 MK5 Series

**CCM01-2604 LFT T25** Metal cover, short tails



**CCM01-2513 LFT T25** Plastic cover, long tails, full ESD protection



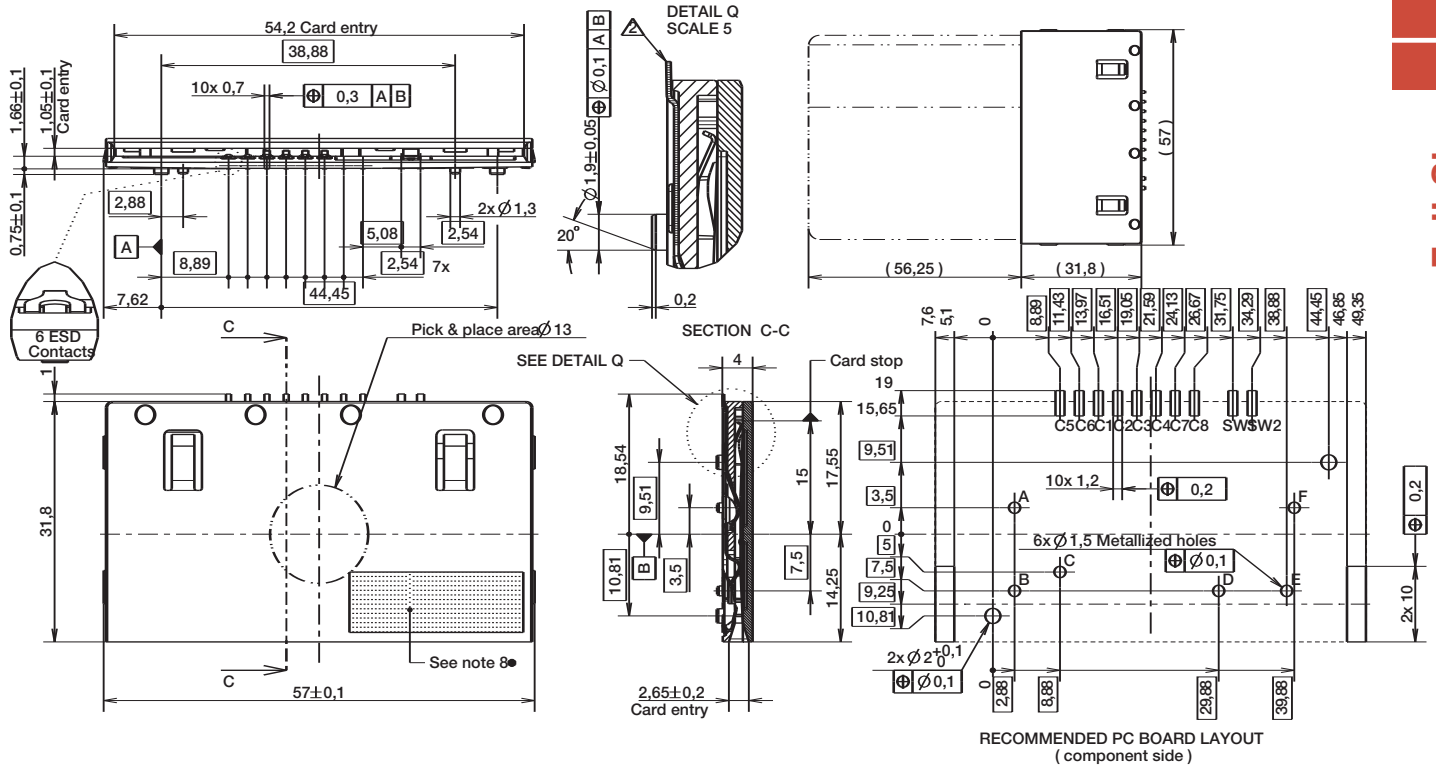
Dimensions are shown in mm  
Specifications and dimensions subject to change

[www.ck-components.com](http://www.ck-components.com)

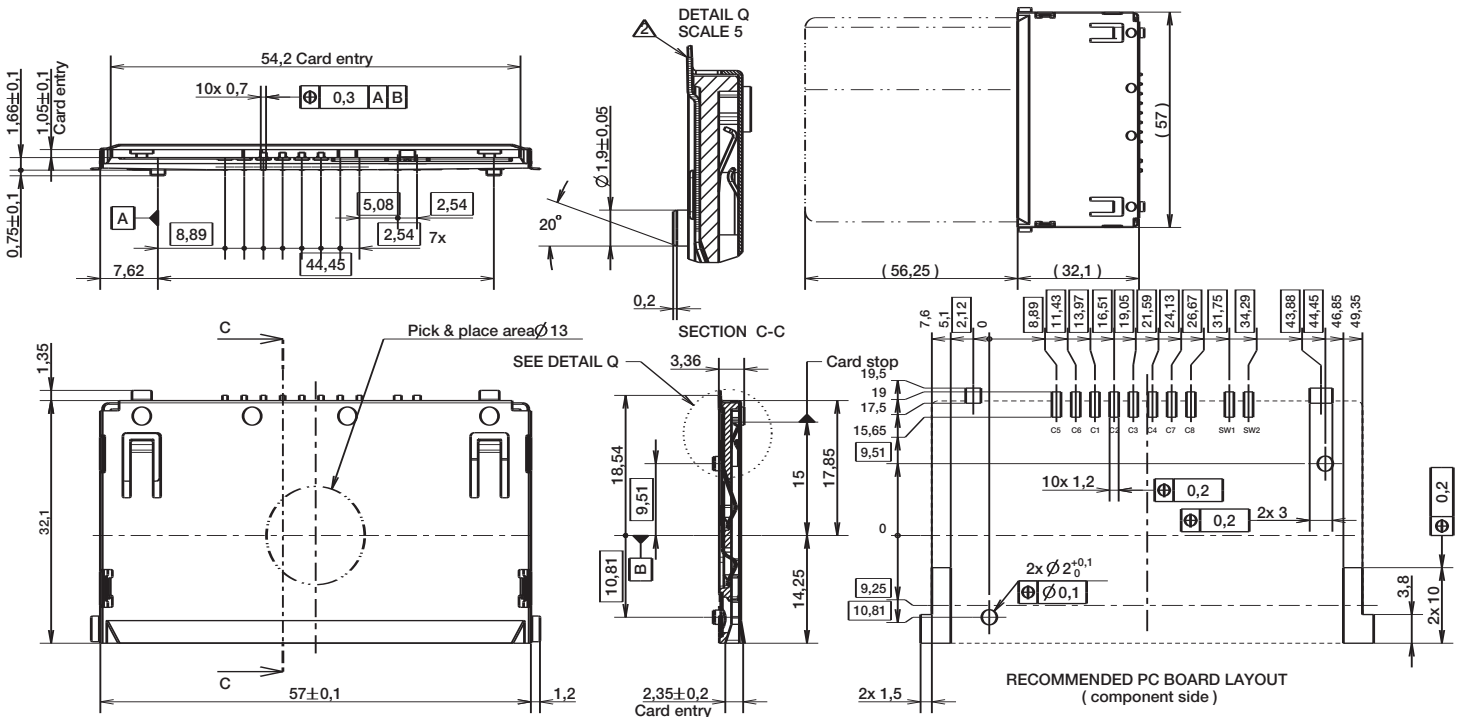
# CCM01 MK5 Series

## CCM01-2523 LFT T25 Plastic cover, long tails, metal pegs

Full Size



## CCM01-2614 LFT T25 Metal cover, long tails, no ESD protection



Dimensions are shown in mm  
Specifications and dimensions subject to change

www.ck-components.com

# CCM02 MK2 Series



## Features

- Operating life 500,000 cycles
- Insertion force 40N
- EMV
- PCI & PCI ready
- Card detection sealed switch

## Typical Applications

- Transaction
- Identification
- POS

## Mechanical

Number of Contacts	8
Mechanical life	500,000 cycles min
Card insertion force	10N to 40N
Card extraction force	1N min / 10N max
Contact force	0,2N / 0,50N max
Card detection switch	0,8 N max for actuation (end travel switch actuation force actuates when card is 0,9mm from card stop) 1,8 N max for complete depression
Vibration Frequency	10 to 500 Hz. Acceleration 50m/s <sup>2</sup> Duration 6 hours - amplitude 0,35mm
Max elect. discontinuity	1µs
Shock	Peak value 500 m/s <sup>2</sup> – Duration 11 ms 3 shocks in each direction of each axis

## Packaging

Tray 30 parts / Cartons 300 parts  
Reel 120 parts

## Soldering

Compatible with lead free reflow soldering process  
For version with security cover, please contact Customer Service for soldering recommendations.

## Contact Electrical Data

Insulation resistance	1,000 MΩ min
Resistance	100 mΩ max
Current rating	10 µA min / 1 A max
Dielectric strength	750 Vrms min

## Switch Electrical Data

Card detection switch	Normally open
Contact resistance	100 mΩ max
Dielectric strength	250 Vrms min
Current rating	1 mA min / 10 mA max
Maximum power	0.2 VA

## Environmental Data

Operating temperature	-40°C to +85°C
Damp heat	IEC 512 test number 11c (10 days)
Salt mist	IEC 512 test number 11f (96 hours)
Card detection switch	Sealed against dust
RoHS compliant	

Designation	Termination	Contact Type	PCI Features		Total Height (mm)	Dimension	PCB version
			I/O Protect	Security Cover			
CCM02-2503LFT	THT	landing			6,25	38,5 X 55,6	4 clips
CCM02-2504LFT	SMT	landing			6,25	38,5 X 55,6	4 clips
CCM02-F503LFT	THT	friction			6,25	38,5 X 55,6	4 clips
CCM02-F504LFT	SMT	friction			6,25	38,5 X 55,6	4 clips
CCM02-F844LFT	SMT	friction	Yes	Yes	6,6	40,5 X 58	4 metal pegs

## PCI: I/O Protect

### Definition

Special accessory in order to avoid and detect frontal access to data contact. It is electrically connected to the PCB through spring finger contacts.

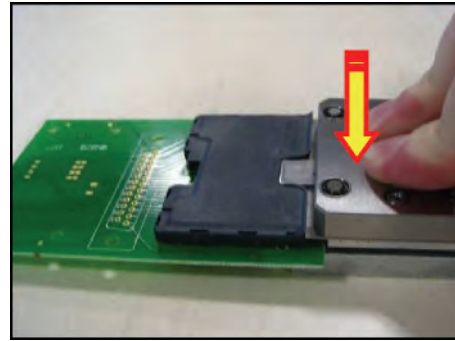
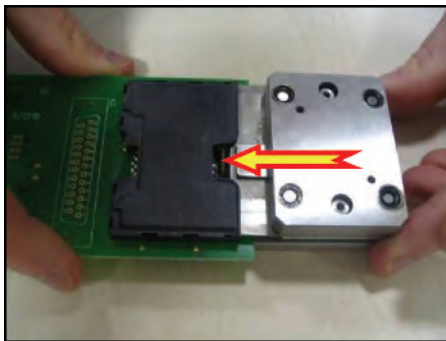
### Process

It must be in open position during the reflow soldering of the connector and has to be locked in closed position after soldering.



### I/O Protect locking tool

C&K is proposing a manual tool to lock the I/O protect accessory after soldering.  
Ordering code: C-CM02-E50



## PCI: Security Cover



### Definition

It is a multilayer cover placed over the connector to avoid and detect data contact access, especially from the top. It is connected to the PCB through 6 SMT terminals that are soldered at the same time as the other smart card terminals.

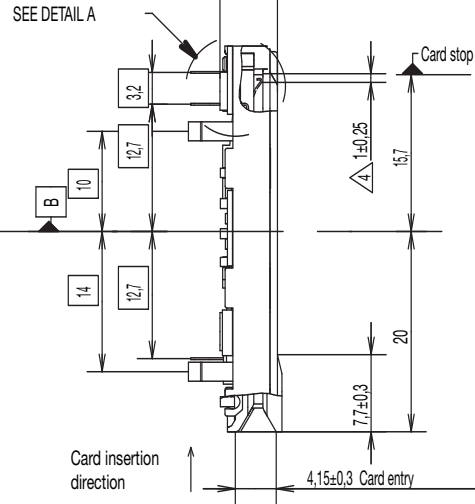
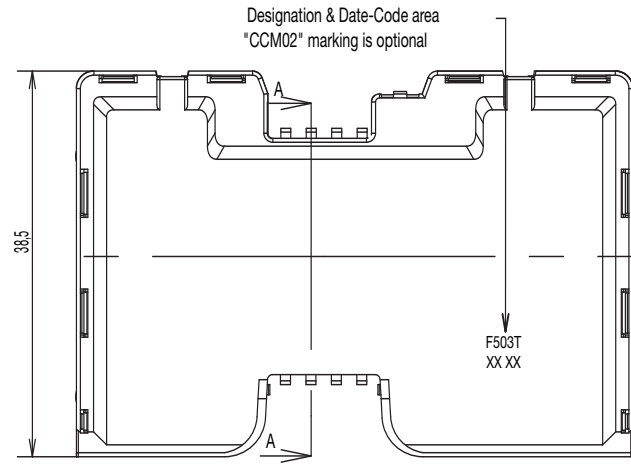
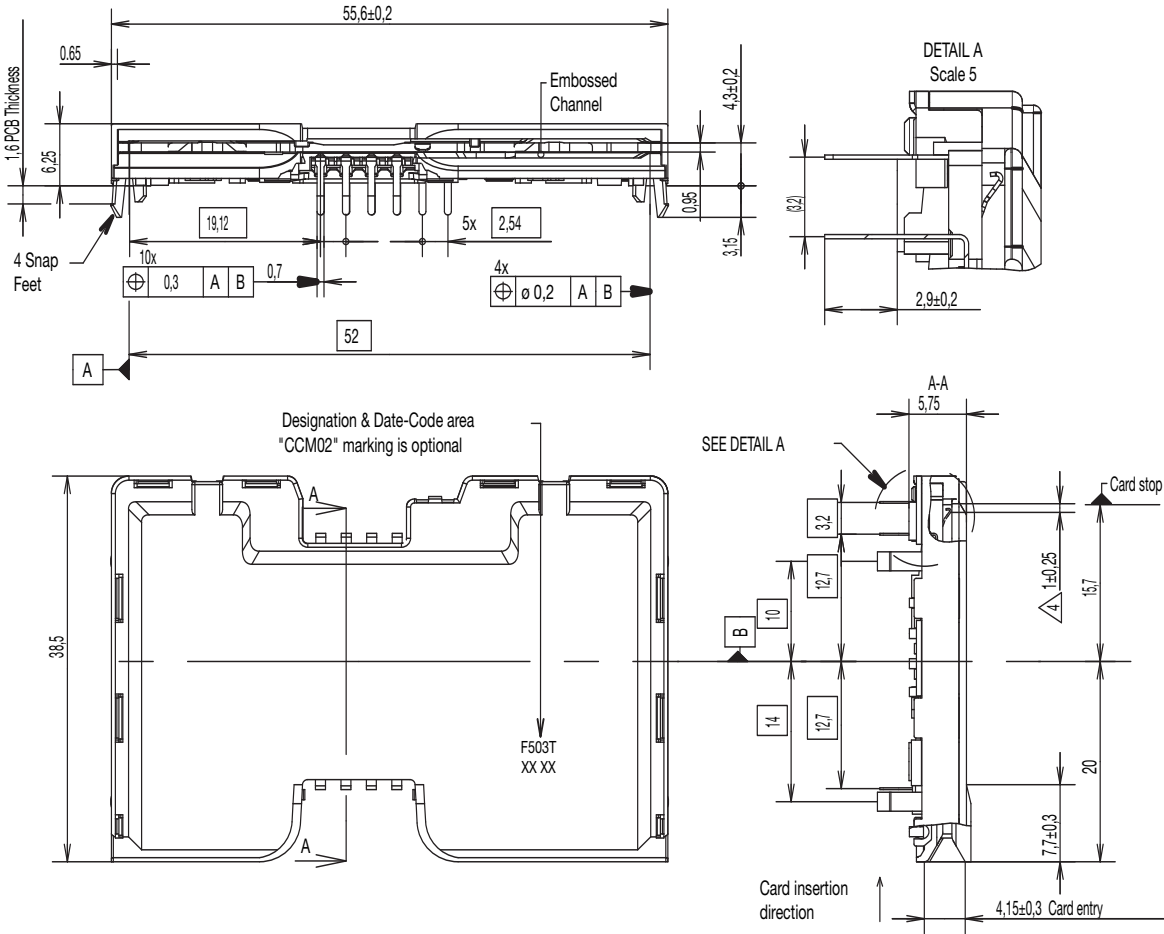
### Process

Please contact your Sales Representative for advice and recommendations about soldering this version.

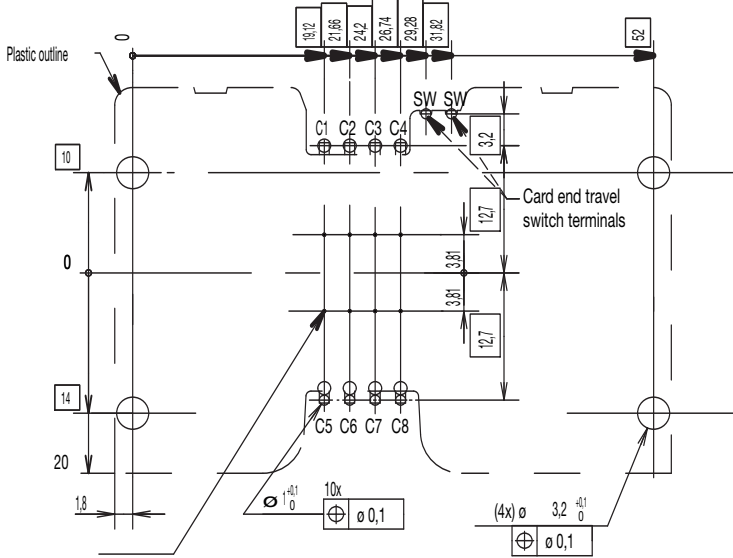
# CCM02 MK2 Series

CCM02-2503 LFT / CCM02-F503 LFT

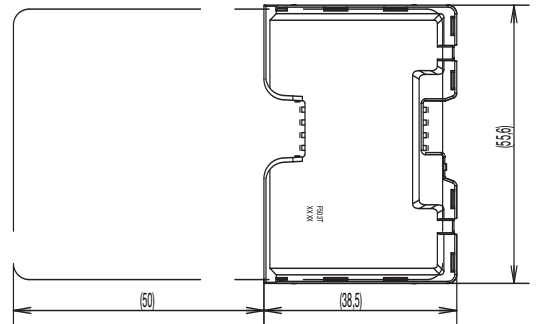
Full Size



RECOMMENDED PC BOARD LAYOUT  
(Component side)



Contact location according to ISO/IEC 7816-2



Dimensions are shown in mm  
Specifications and dimensions subject to change

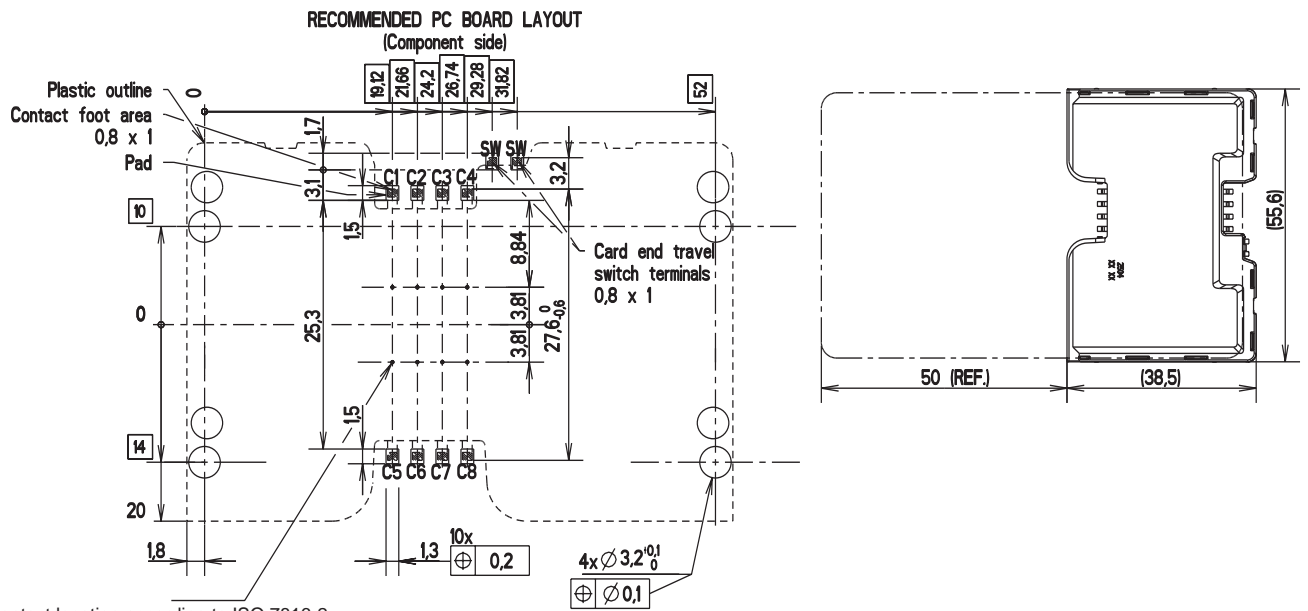
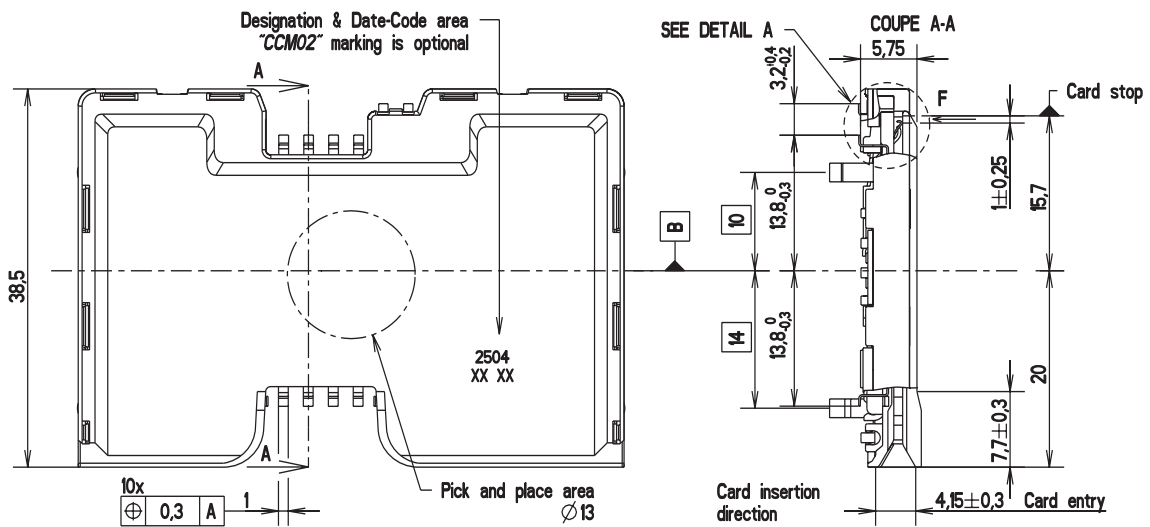
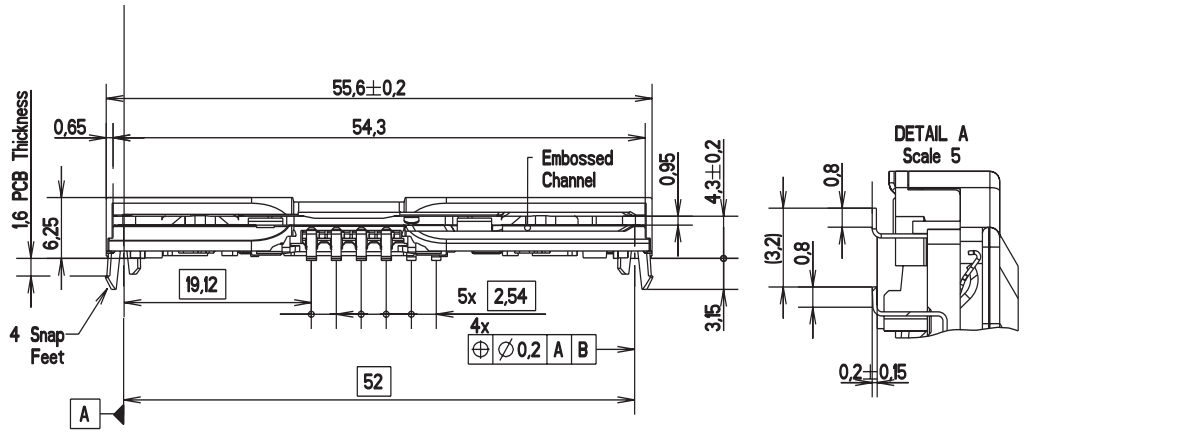
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# CCM02 MK2 Series

## CCM02-2504 LFT / CCM02-F504 LFT

Full Size



Contact location according to ISO 7816-2



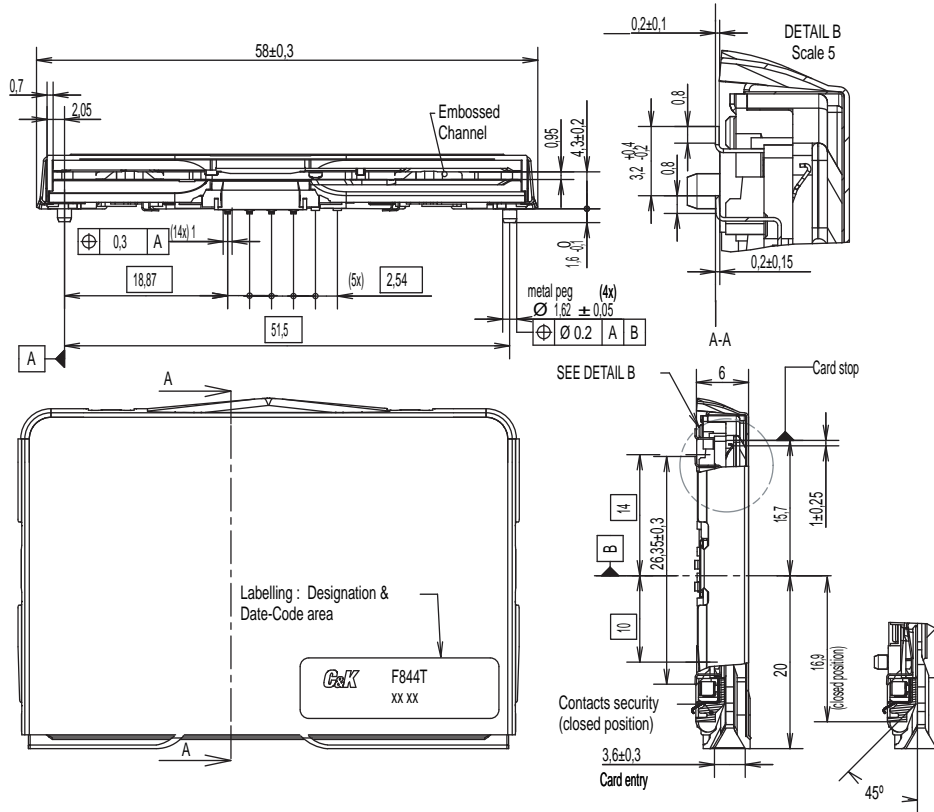
Dimensions are shown in mm  
Specifications and dimensions subject to change

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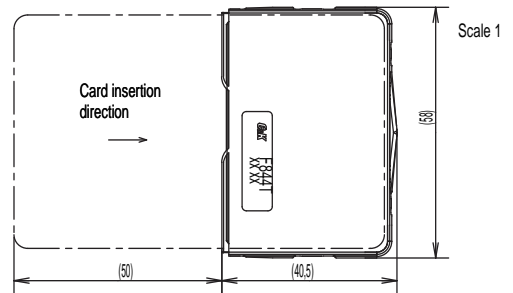
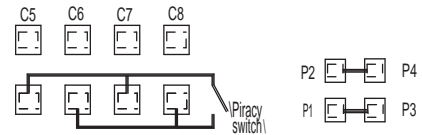
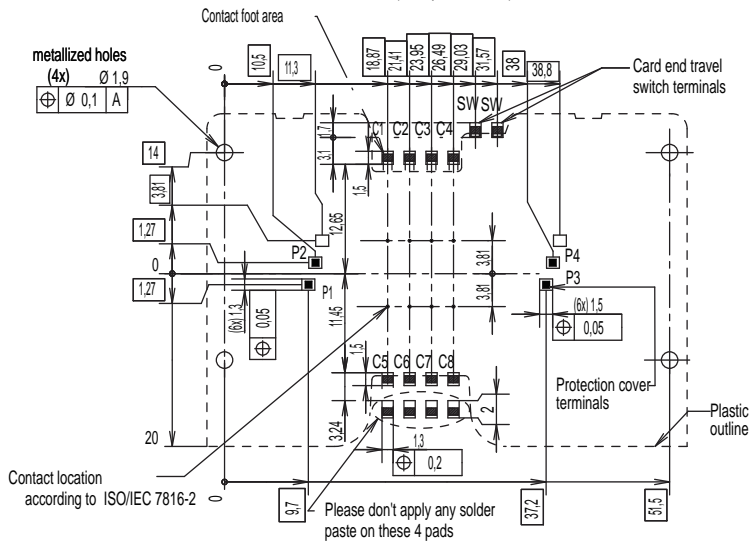
# CCM02 MK2 Series

CCM02-F844A LFT / CCM02-F844B LFT

Full Size



RECOMMENDED PC BOARD LAYOUT  
(Component side)



Dimensions are shown in mm  
Specifications and dimensions subject to change

[www.ck-components.com](http://www.ck-components.com)



## Features

- ID1 full size card acceptance
- Card detection sealed switch
- Compatible with pick and place and lead free soldering

## Typical Applications

- Transaction
- POS
- Identification



## Mechanical

Number of contacts	6 or 8
Mechanical life	50,000 cycles
Card insertion force	10N max
Card extraction force	1N min / 10N max
Contact force	0,4N to 0,7N
Card detection switch	0,8 N max for actuation (end travel switch actuation force actuates when card is 0,9mm from card stop)
	1,8 N max for complete depression
Vibration Frequency	10 to 500 Hz. Acceleration 50m/s <sup>2</sup> Duration 6 hours - amplitude 0,35mm
Shock	Peak value 500 m/s <sup>2</sup> – Duration 11 ms 3 shocks in each direction of each axis
Max elect. discontinuity	1µs

## Packaging

See table below

## Soldering Process

Compatible with lead free SMT reflow soldering process

## Contact Electrical Data

Insulation resistance	1000 MΩ min
Contact resistance max	100 mΩ max
Switching current	10 µA min / 1 A max
Dielectric strength	750 Vrms min

## Switch Electrical Data

Card detection switch	Normally open
Rc card detection switch	100 mΩ max
Dielectric strength	250 Vrms min
Switch current rating	1 mA min / 10 mA max
Maximum switch power	0.2 VA

## Environmental Data

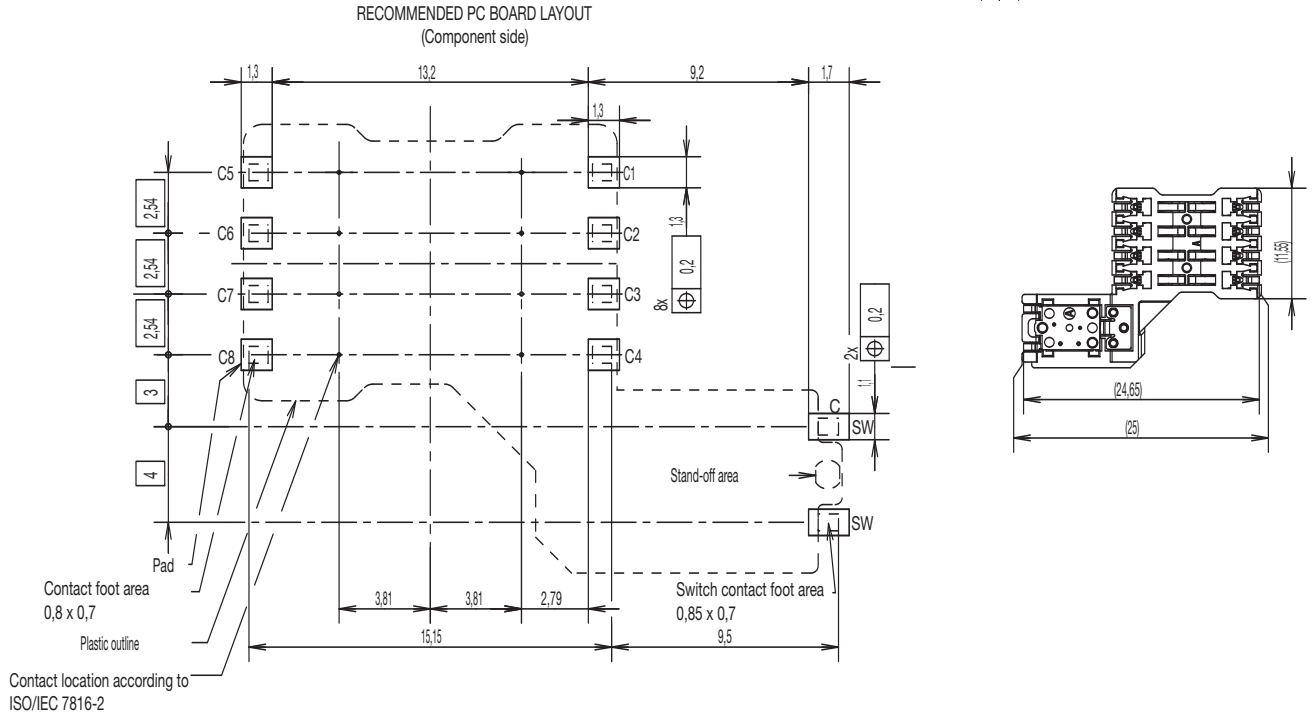
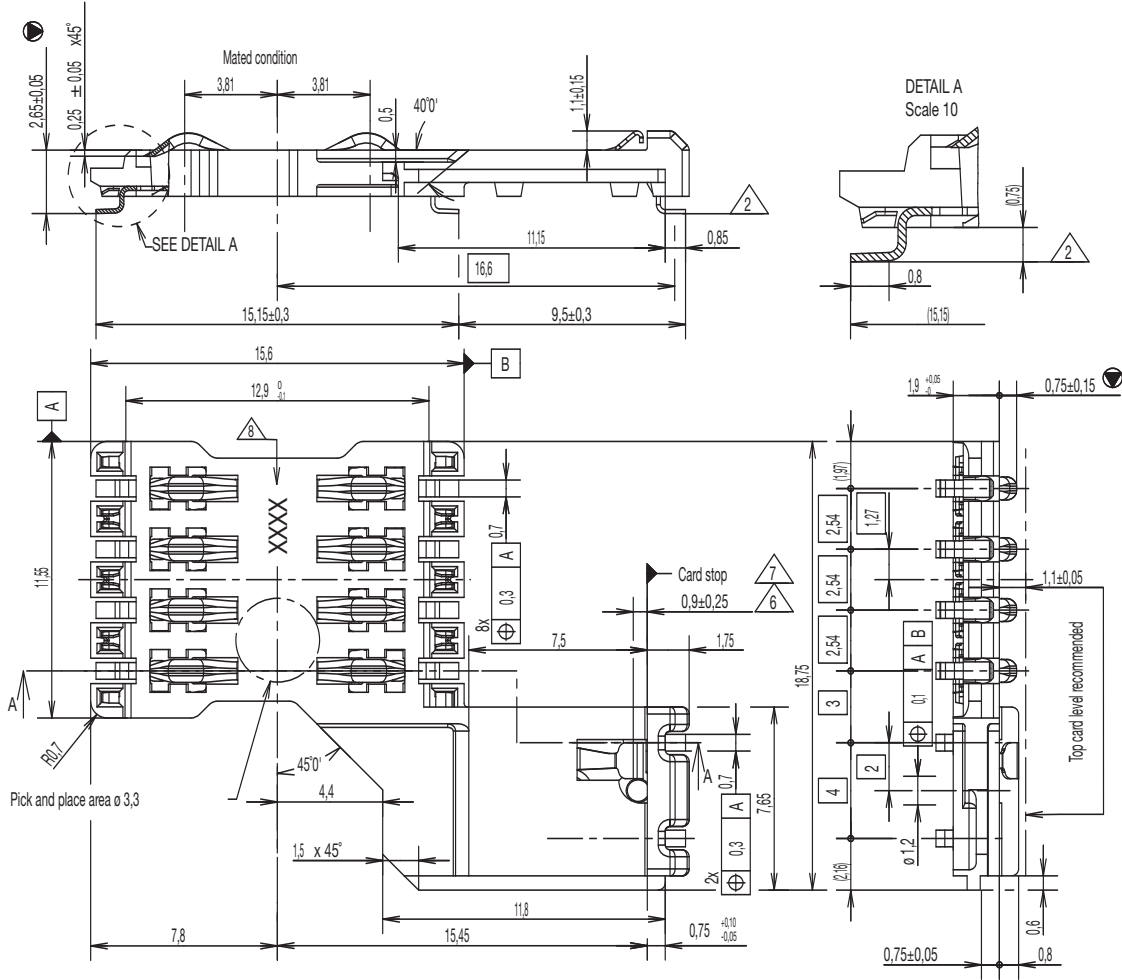
Operating temperature	-40°C to +85°C
Salt mist	IEC 512 test number 11f (96 hours)
Damp heat	IEC 512 test number 11c (10 days)
Card detection switch	Sealed against dust
RoHS compliant	

Designation	Housing Type	# of Contacts	Contact Force	Total Height (mm)	Total Dim. (mm)	Packaging
CCM04-5427LFT	standard	8	0,4N to 0,7N	2,65	18,75 X 25	reels of 1,000 pcs
CCM04-5436LFT	standard	8	0,4N to 0,7N	0,90	18,75 X 26,9	reels of 1,000 pcs
CCM04-5468LFT	stand-off	8	0,4N to 0,7N	3,5	18,75 X 24	reels of 1,000 pcs
CCM04-5454LFT	standard	8	0,4N to 0,7N	0,90	18,75 X 26,9	reels of 1,000 pcs
CCM04-5455LFT	standard	8	0,4N to 0,7N	0,90	18,75 X 26,9	reels of 1,000 pcs

# CCM04 MK4 Series

CCM04-5427 LFT

Full Size

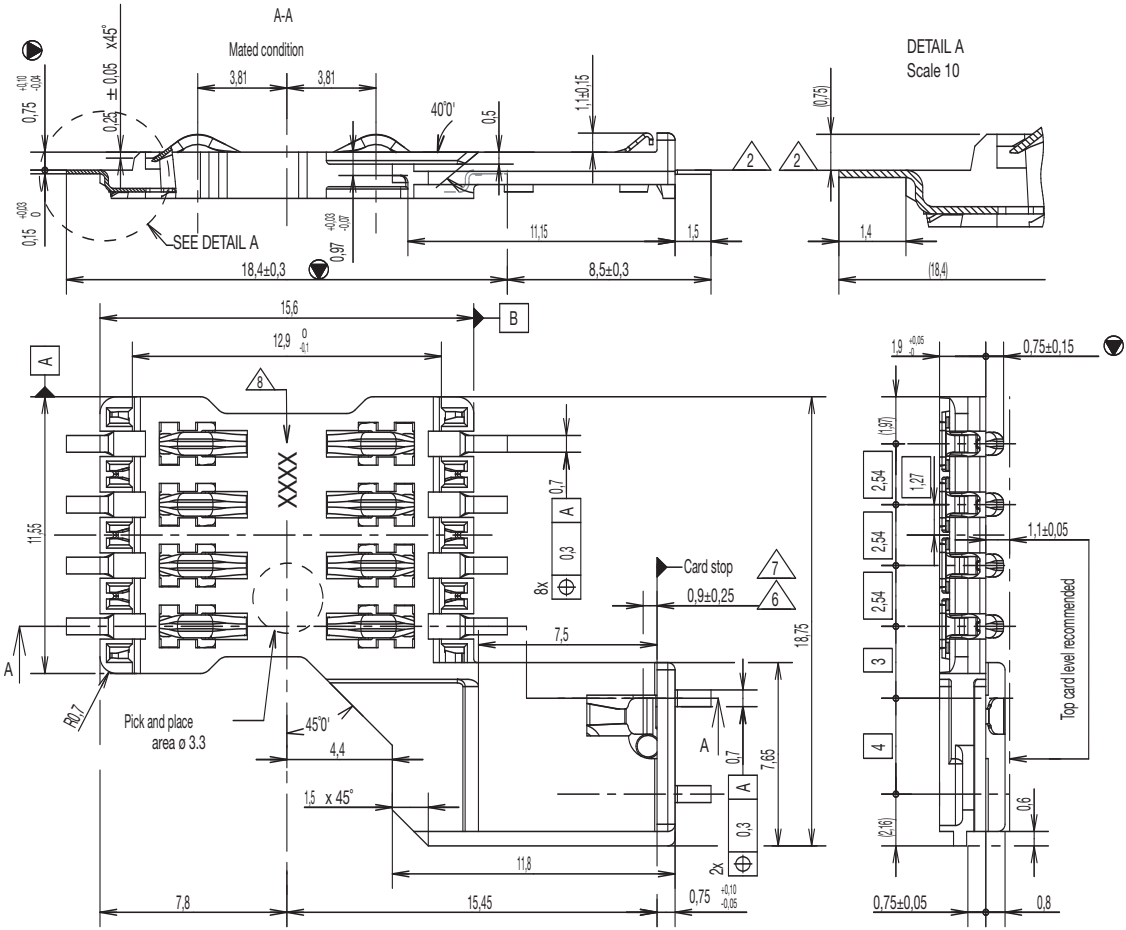


Dimensions are shown in mm  
Specifications and dimensions subject to change

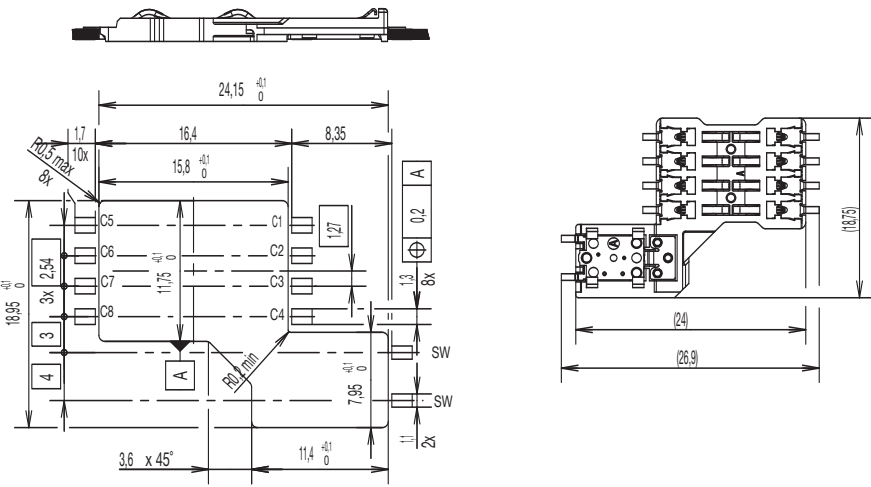
www.ck-components.com

# CCM04 MK4 Series

## CCM04-5436 LFT



RECOMMENDED PC BOARD LAYOUT  
(Component side)



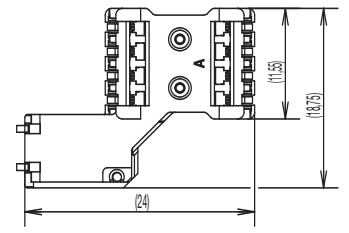
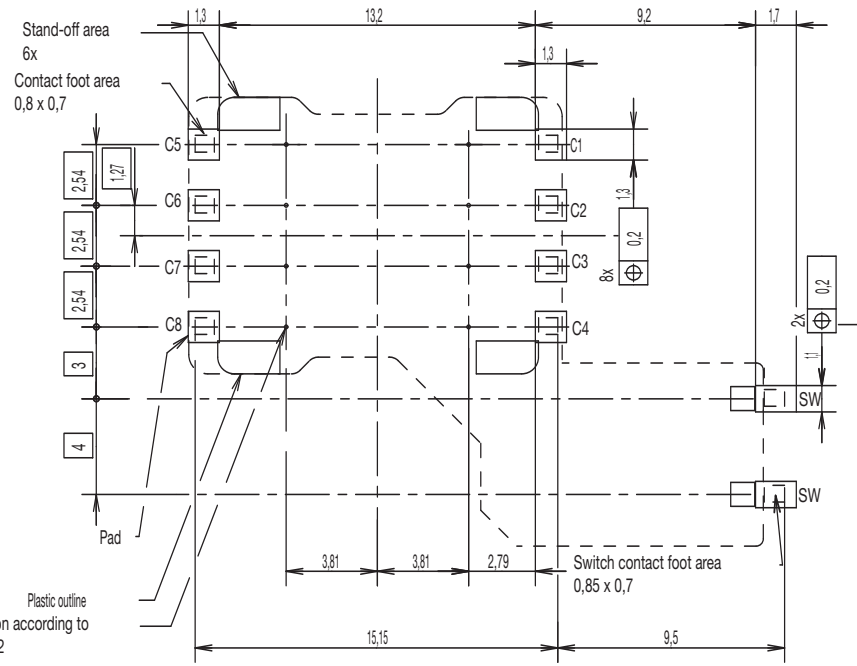
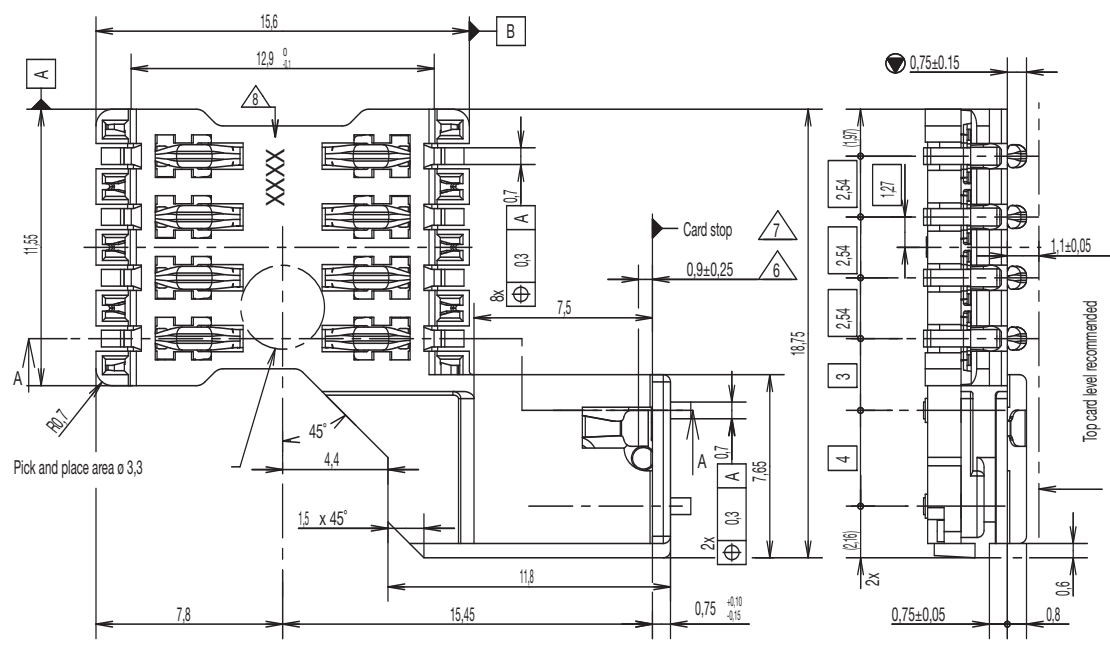
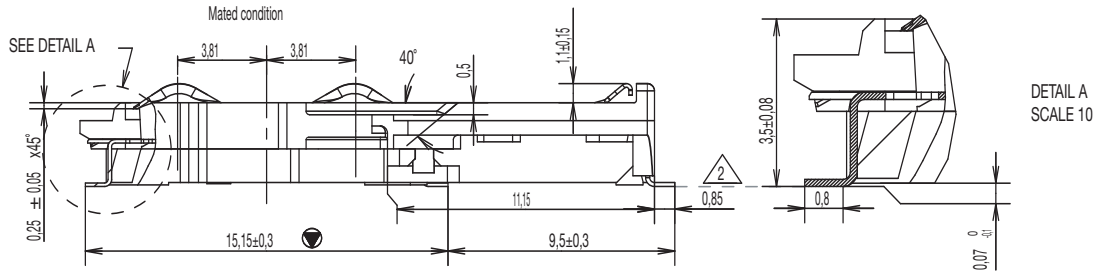
Dimensions are shown in mm  
Specifications and dimensions subject to change

Full Size

# CCM04 MK4 Series

CCM04-5468 LFT

Full Size



Dimensions are shown in mm  
Specifications and dimensions subject to change

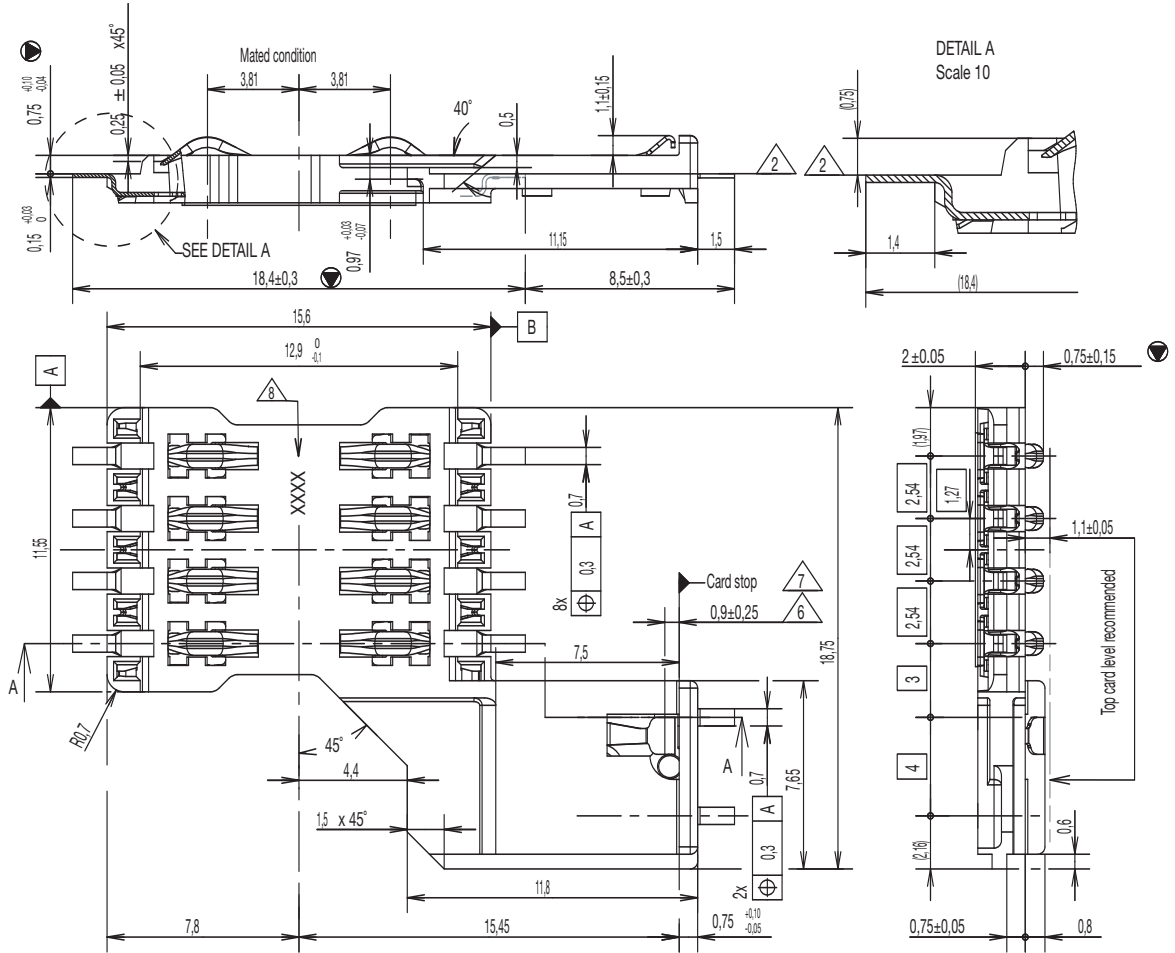
www.ck-components.com



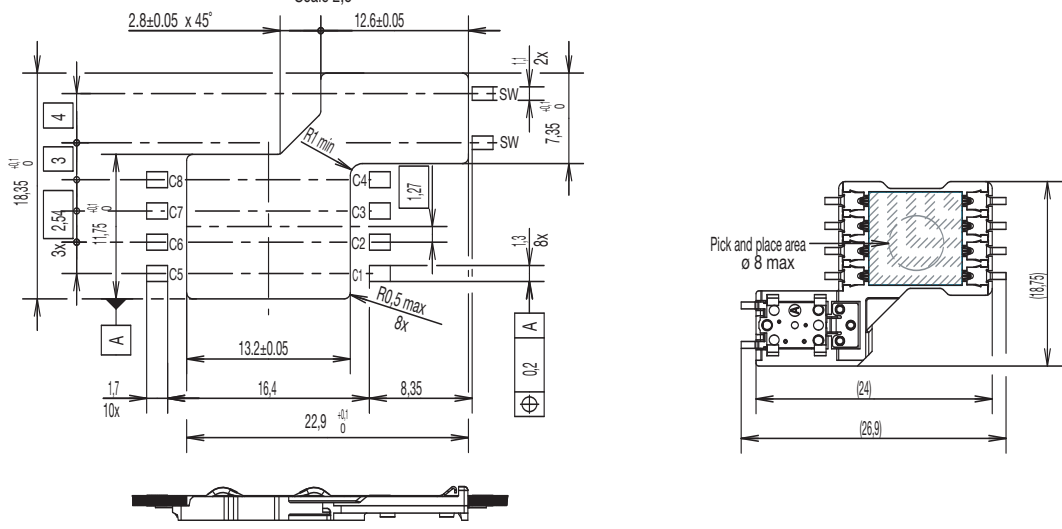
# CCM04 MK4 Series

## CCM04-5454 LFT

Full Size



RECOMMENDED PC BOARD LAYOUT  
(Component side)  
Scale 2,5



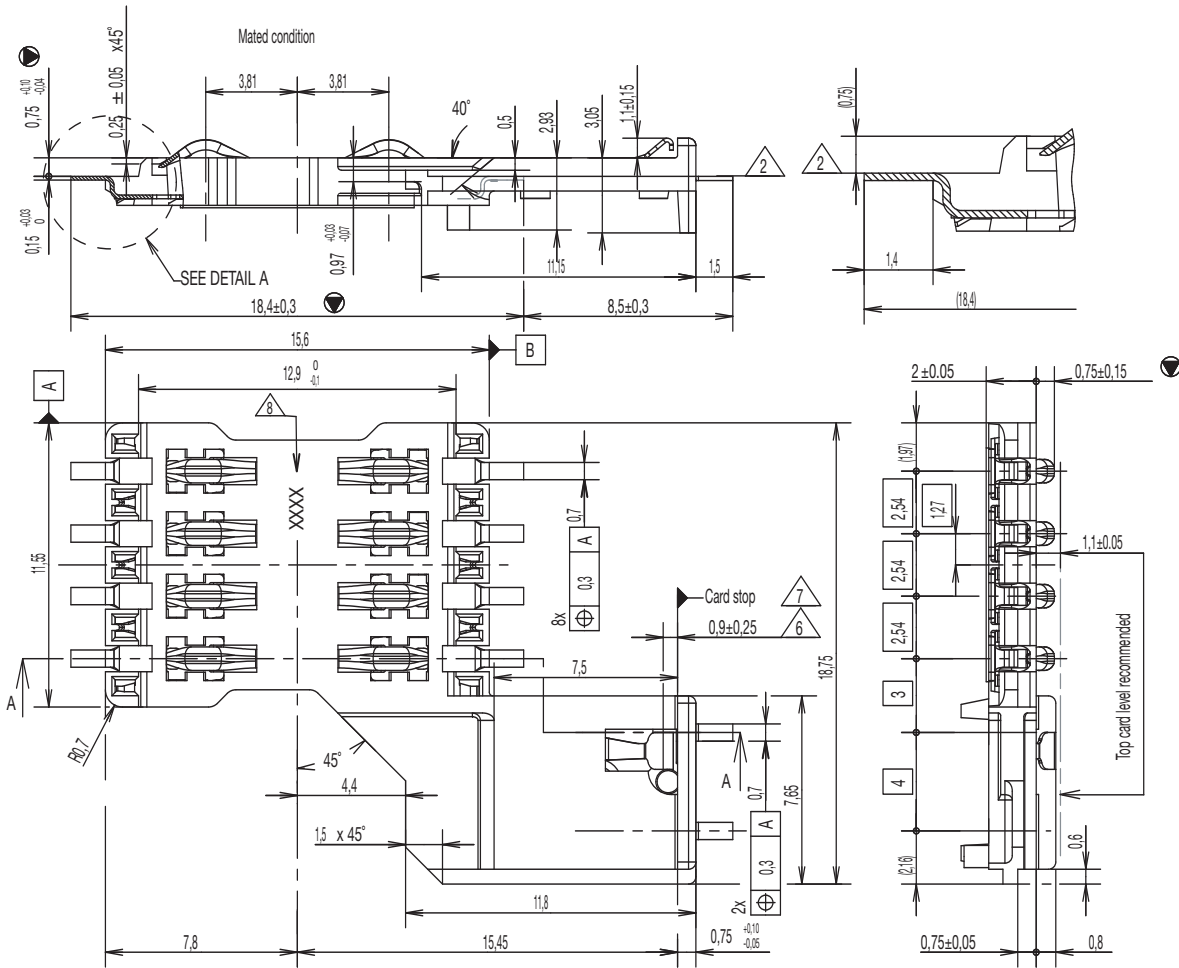
Dimensions are shown in mm  
Specifications and dimensions subject to change

[www.ck-components.com](http://www.ck-components.com)

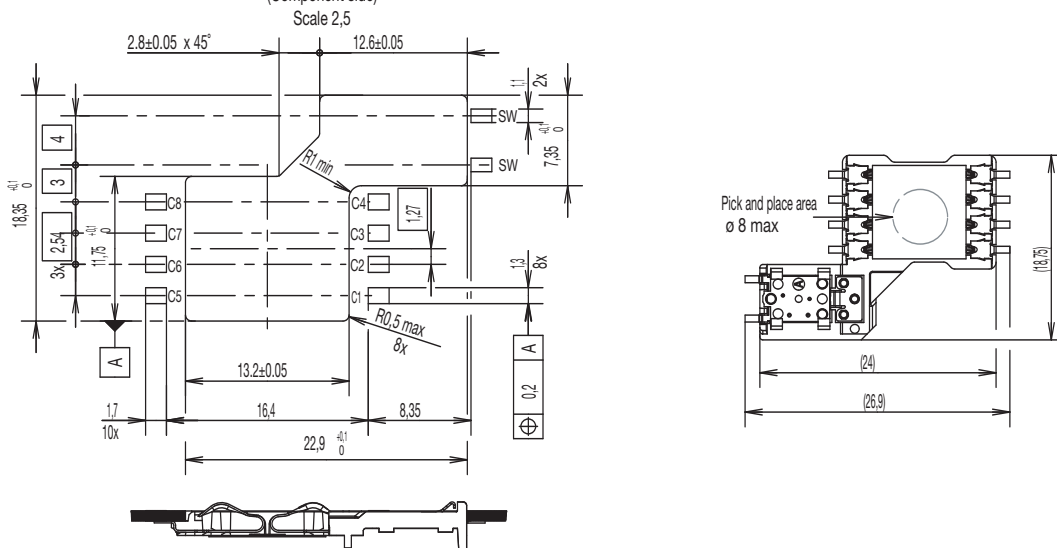
# CCM04 MK4 Series

CCM04-5455 LFT

Full Size



RECOMMENDED PC BOARD LAYOUT  
(Component side)



First Angle Projection

Dimensions are shown in mm  
Specifications and dimensions subject to change

www.ck-components.com





**C&K**<sup>®</sup>



**SIM / SAM Cards**



# CCM03 MK2 Series



## Features

- SIM/SAM card acceptance
- Hinged and fixed covers
- Compatible with pick and place and lead free soldering

## Typical Applications

- Handheld products
- Identification
- POS
- Automotive

## Mechanical

Number of Contacts	6 or 8
Mechanical life, hinged cover	10,000 cycles min
Mechanical life, fixed cover	50,000 cycles
Card insertion force	Hinged cover: 1N max Fixed cover: 3N max
Card extraction force	Hinged cover: 1N max Fixed cover: 0,80N min / 3N max
Contact force	0,25N min / 0,50N max
Slide locking force	2N min / 6N max
Vibration Frequency	1,8N max. for complete depression 10 to 500 Hz. Acceleration 50m/s <sup>2</sup> Duration 6 hours - amplitude 0,35 mm
Max electrical discontinuity	1µs
Shock	Peak value 500 m/s <sup>2</sup> – Duration 11 ms 3 shocks in each direction of each axis

## Switch Electrical Data

Card detection switch	Normally open
Contact resistance	100 mΩ max
Dielectric strength	250 Vrms min
Current rating	1 mA min / 10m A max
Maximum power	0.2 VA

## Environment Data

Operating temperature	-40°C to +85°C
Damp heat	IEC 512 test number 11c (10 days)
Salt mist	IEC 512 test number 11f (96 hours)
RoHS compliant	

## Soldering Process

Compatible with lead free SMT soldering process



## Contact Electrical Data

Insulation resistance	1,000 MΩ min
Resistance	100 mΩ max
Current rating	10 µA min / 1 A max
Dielectric strength	750 Vrms min

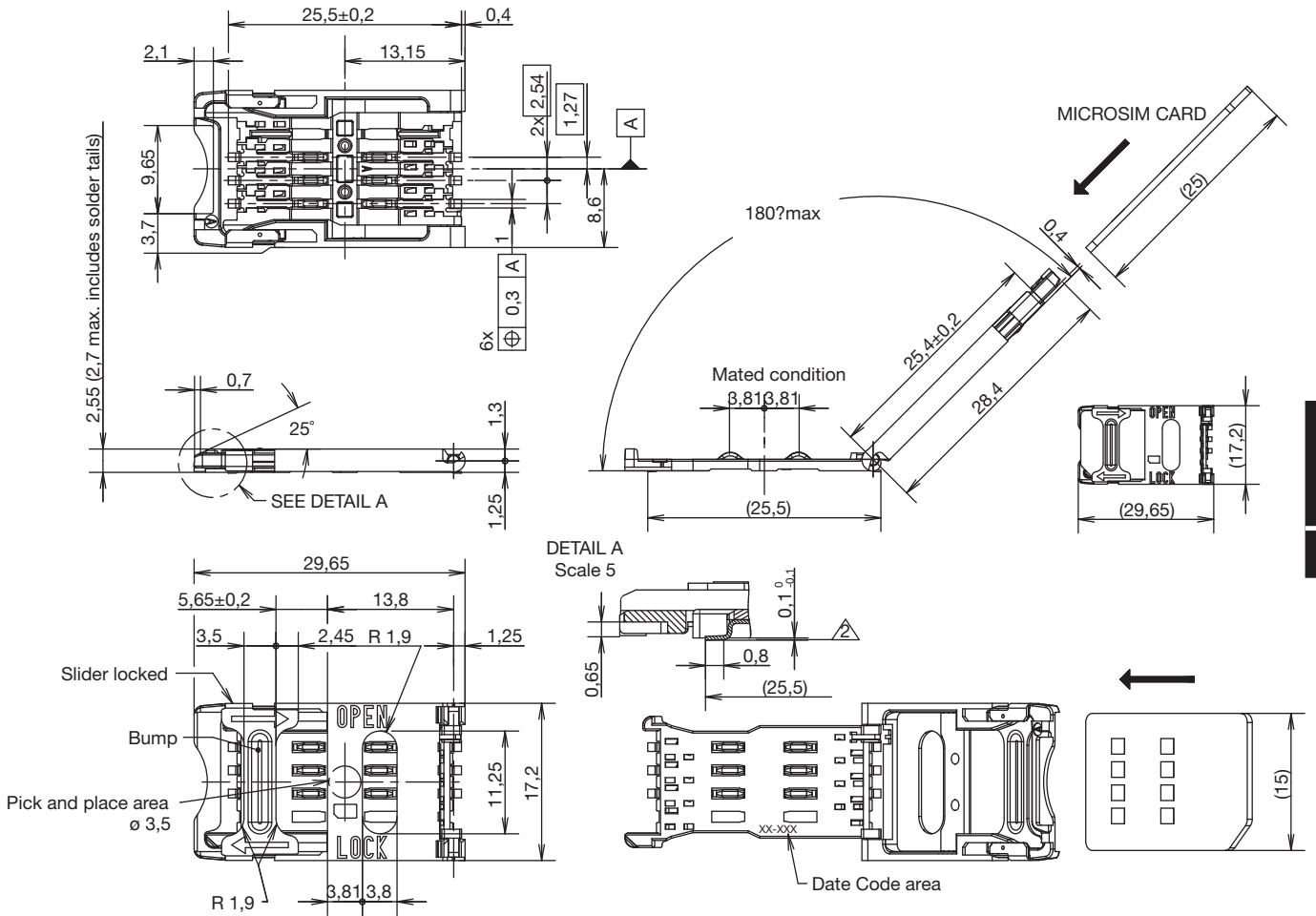
Designation	Contact Plating	Cover	# of Contacts	PCB Version	Card Presence Switch	Operating Life	Total Height (mm)	Dim. (mm)	Packaging
CCM03-3001LFT	inlay	hinged	6		without	10,000	2,55	17,2 x 29,65	reels of 1,000 pcs
CCM03-3002LFT	inlay	hinged	6	2 plastic pegs	without	10,000	2,55	17,2 x 29,65	reels of 1,000 pcs
CCM03-3003LFT	inlay	hinged	8		without	10,000	2,55	17,2 x 29,65	reels of 1,000 pcs
CCM03-3004LFT	inlay	hinged	8	2 plastic pegs	without	10,000	2,55	17,2 x 29,65	reels of 1,000 pcs
CCM03-3009LFT	gold	hinged	6		without	10,000	2,55	17,2 x 29,65	reels of 1,000 pcs
CCM03-3010LFT	gold	hinged	6	2 plastic pegs	without	10,000	2,55	17,2 x 29,65	reels of 1,000 pcs
CCM03-3011LFT	gold	hinged	8		without	10,000	2,55	17,2 x 29,65	reels of 1,000 pcs
CCM03-3012LFT	gold	hinged	8	2 plastic pegs	without	10,000	2,55	17,2 x 29,65	reels of 1,000 pcs
CCM03-3013LFT	gold	hinged	6		with	10,000	2,55	17,2 x 29,65	reels of 1,000 pcs
CCM03-3512LFT	gold	hinged	6	Large soldering pads*	without	10,000	2,55	17,2 x 29,65	reels of 1,000 pcs
CCM03-3504LFT	gold	fixed	8		without	50,000	2,85	17,2 x 25,5	reels of 1,000 pcs
CCM03-3505LFT	gold	fixed	6		without	50,000	2,85	17,2 x 25,5	reels of 1,000 pcs
CCM03-3754LFT	inlay	fixed	6		with	10,000	3,5	16,5 x 18,05	reels of 1,000 pcs
CCM03-3760LFT	inlay	fixed	6		without	10,000	3,45	16,5 x 15,85	reels of 1,000 pcs
CCM03-3764LFT	inlay	none	6		with	10,000	2,9	16,5 x 15,85	reels of 1,000 pcs

\* Can go through reflow upside down

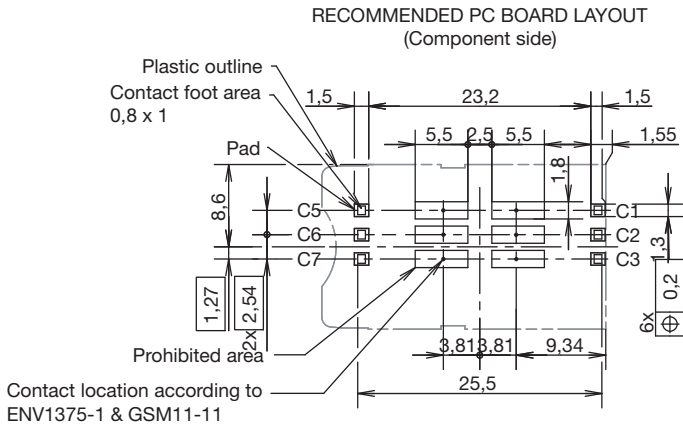


# CCM03 MK2 Series

## CCM03-3001 LFT / CCM03-3009 LFT



SIM/SAM



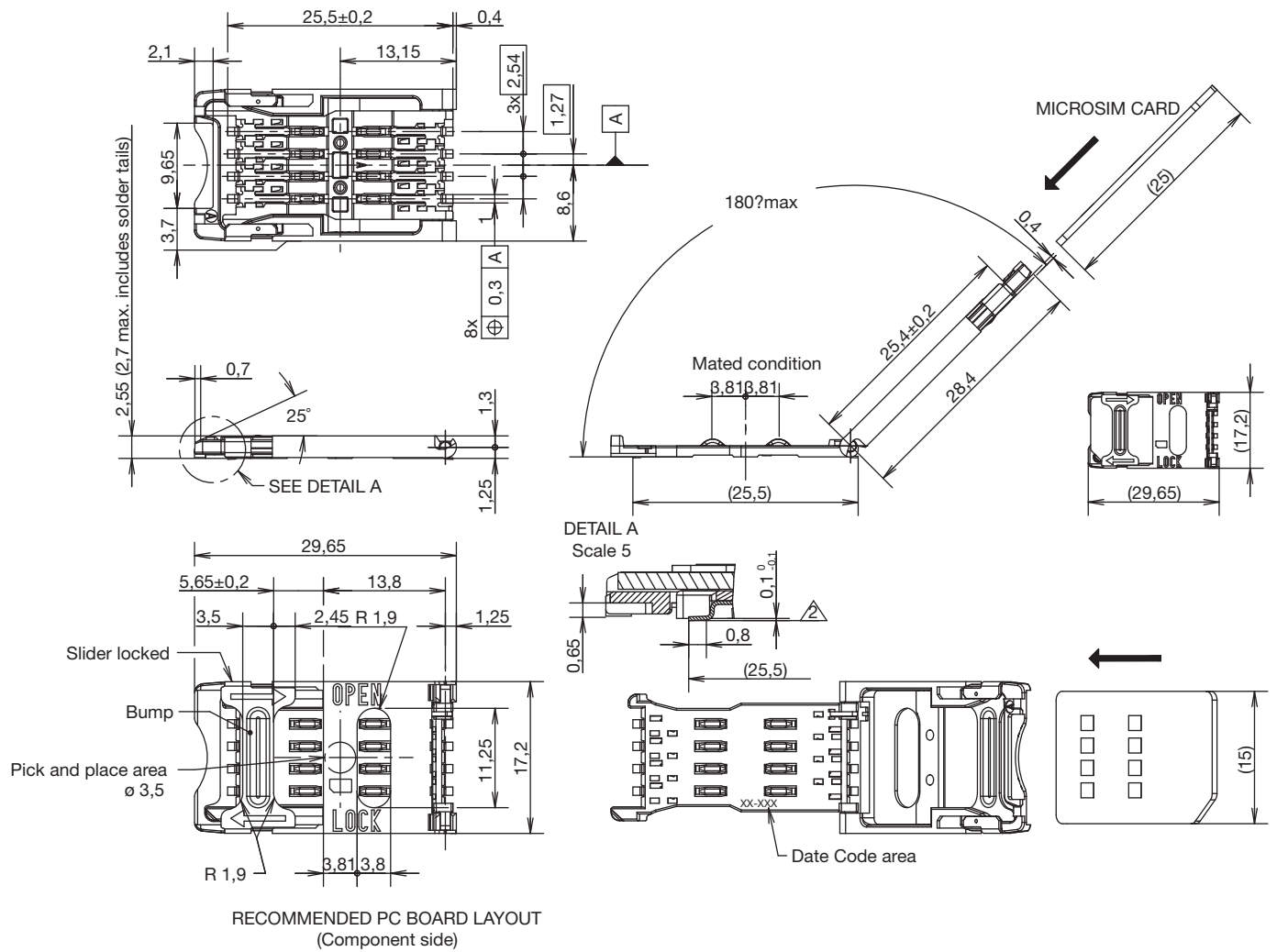
Dimensions are shown in mm  
Specifications and dimensions subject to change

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# CCM03 MK2 Series

## CCM03-3003 LFT



**SIM/SAM**

Contact location according to ENV1375-1 & GSM11-11

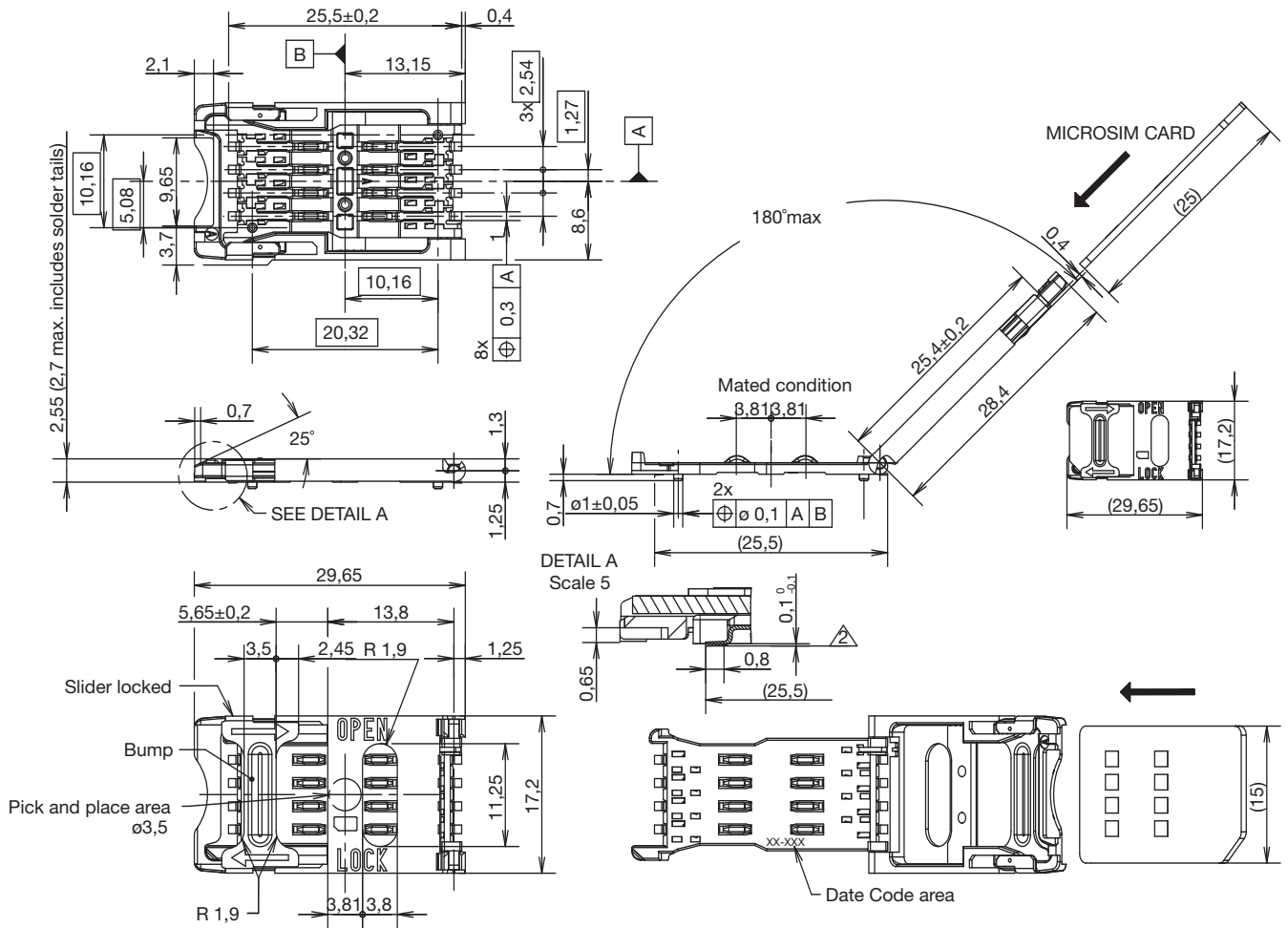


Dimensions are shown in mm  
Specifications and dimensions subject to change

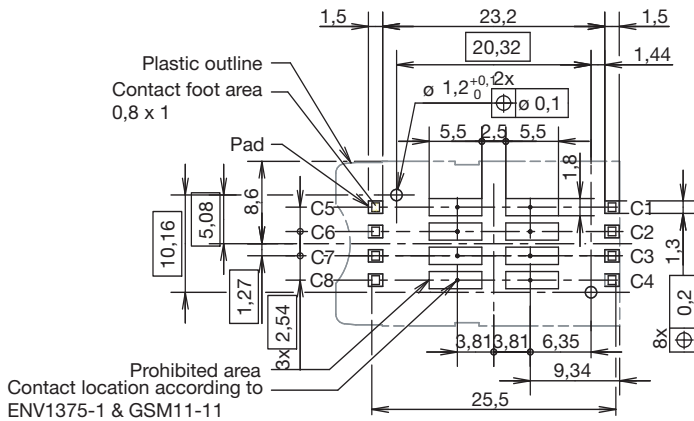
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# CCM03 MK2 Series

CCM03-3004 LFT



RECOMMENDED PC BOARD LAYOUT  
(Component side)



First Angle  
Projection

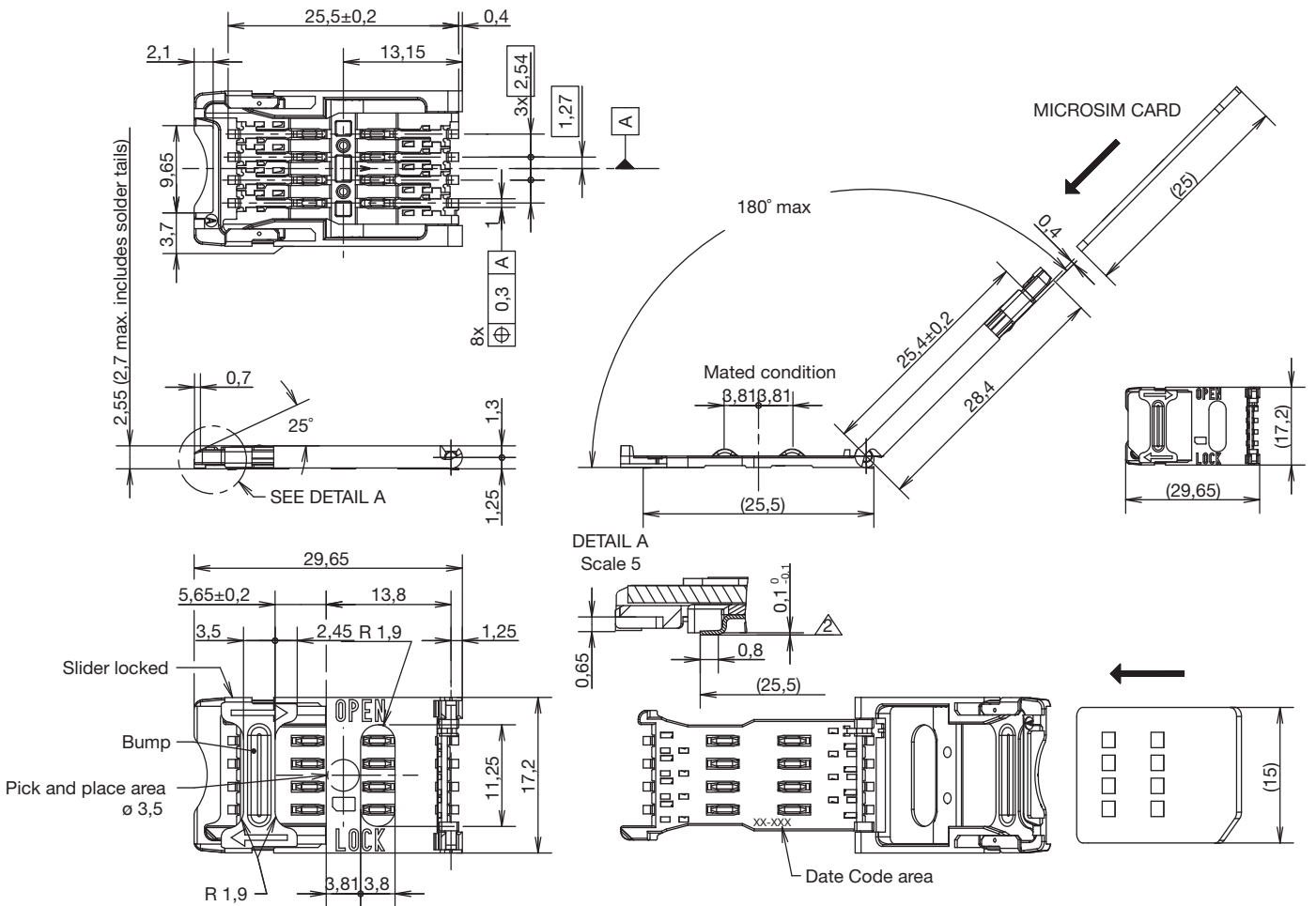
Dimensions are shown in mm  
Specifications and dimensions subject to change

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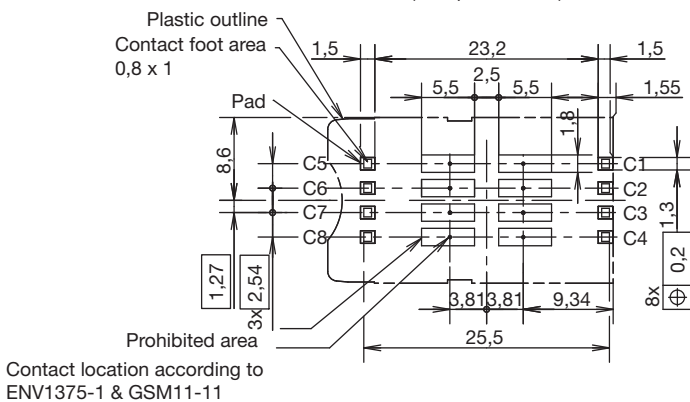


# CCM03 MK2 Series

## CCM03-3011 LFT



### RECOMMENDED PC BOARD LAYOUT (Component side)



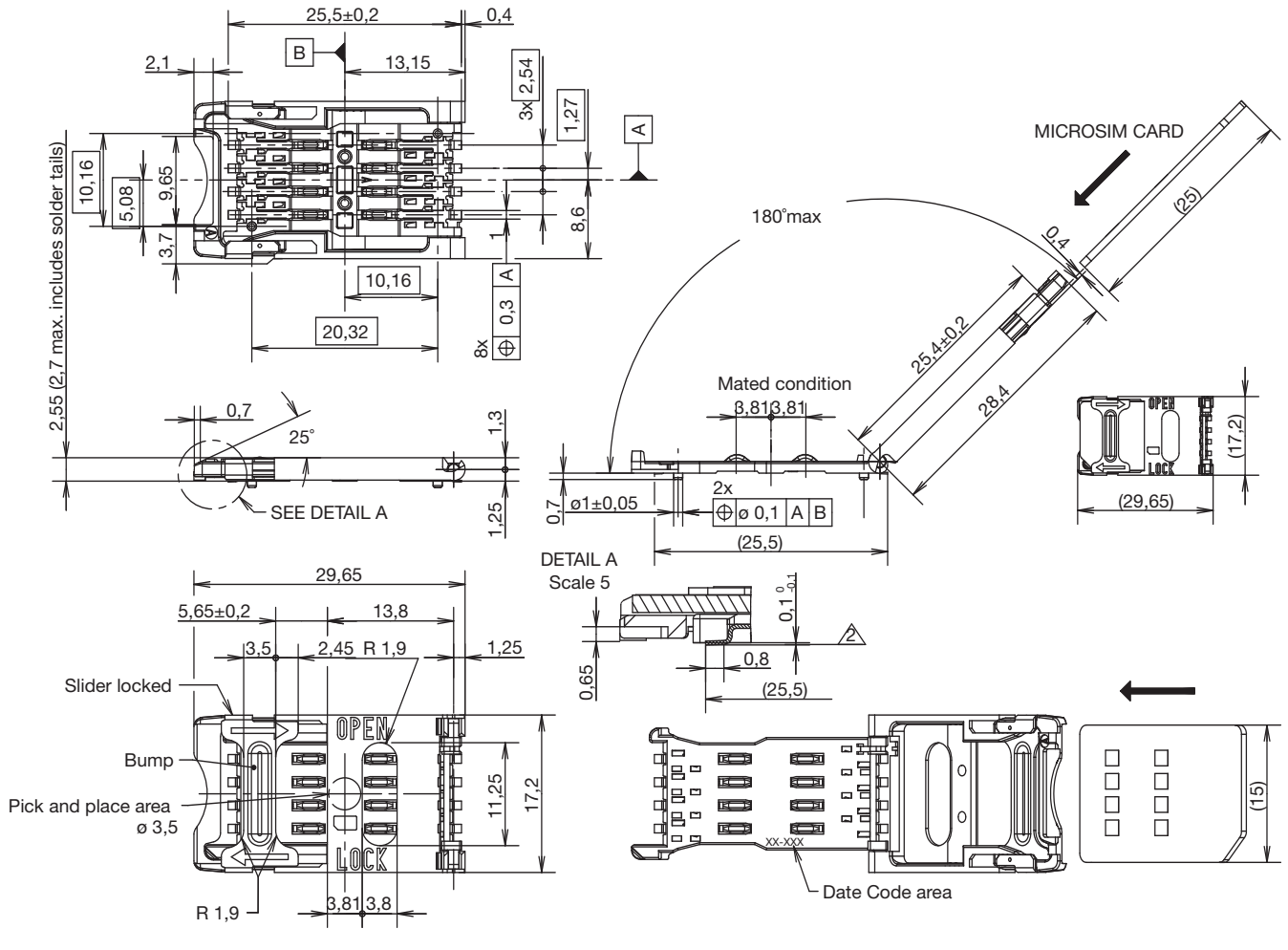
Dimensions are shown in mm  
Specifications and dimensions subject to change

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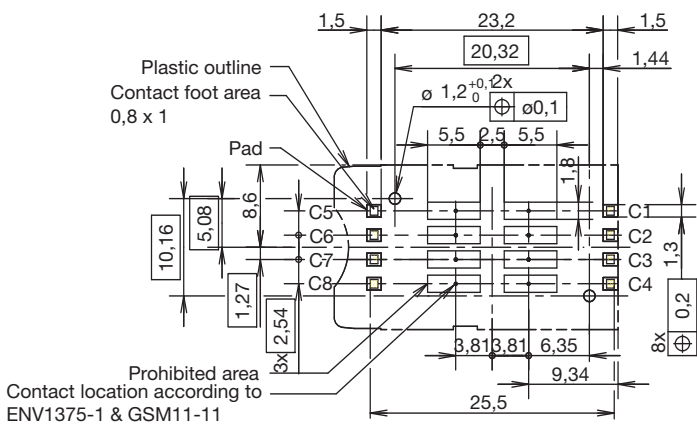
# CCM03 MK2 Series

CCM03-3012 LFT

SIM/SAM



RECOMMENDED PC BOARD LAYOUT  
(Component side)

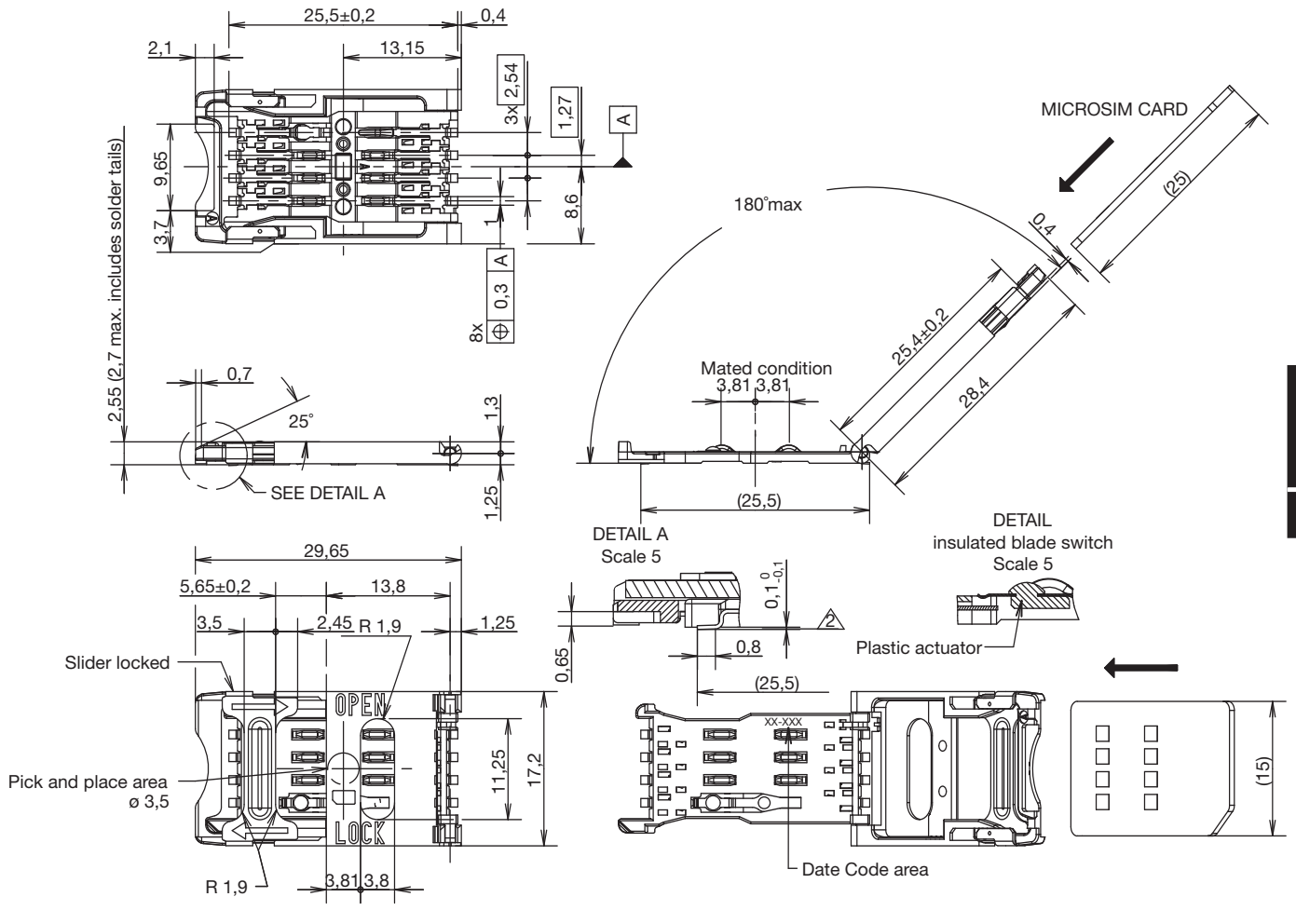


Dimensions are shown in mm  
Specifications and dimensions subject to change

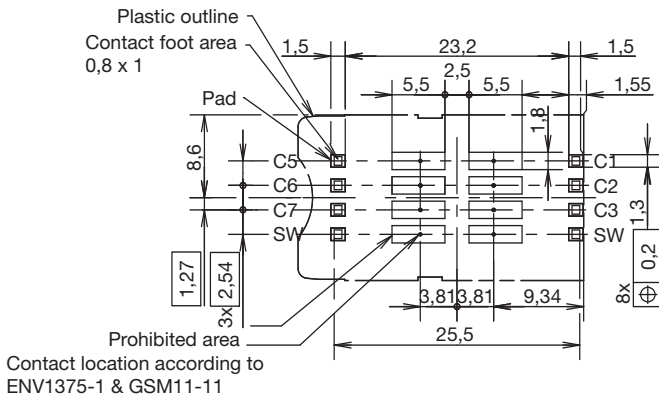


# CCM03 MK2 Series

## CCM03-3013 LFT



### RECOMMENDED PC BOARD LAYOUT (Component side)



SIM/SAM



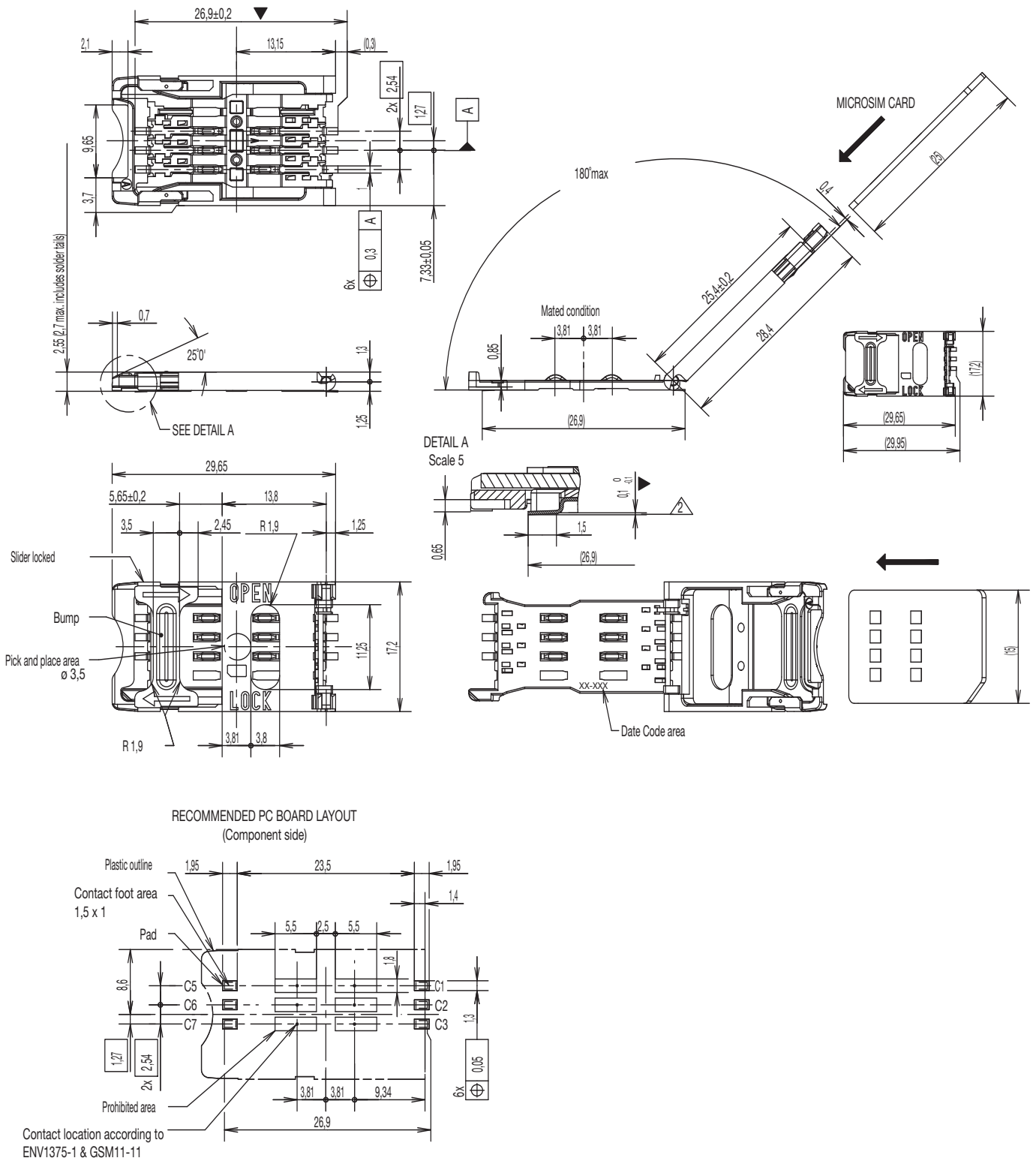
Dimensions are shown in mm  
Specifications and dimensions subject to change

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# CCM03 MK2 Series

CCM03-3512 LFT

SIM/SAM



Dimensions are shown in mm  
Specifications and dimensions subject to change

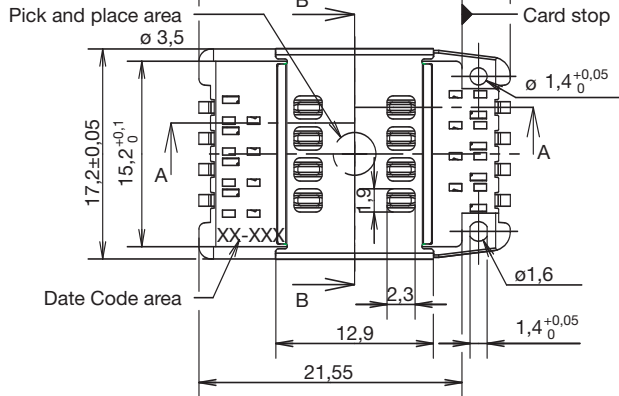
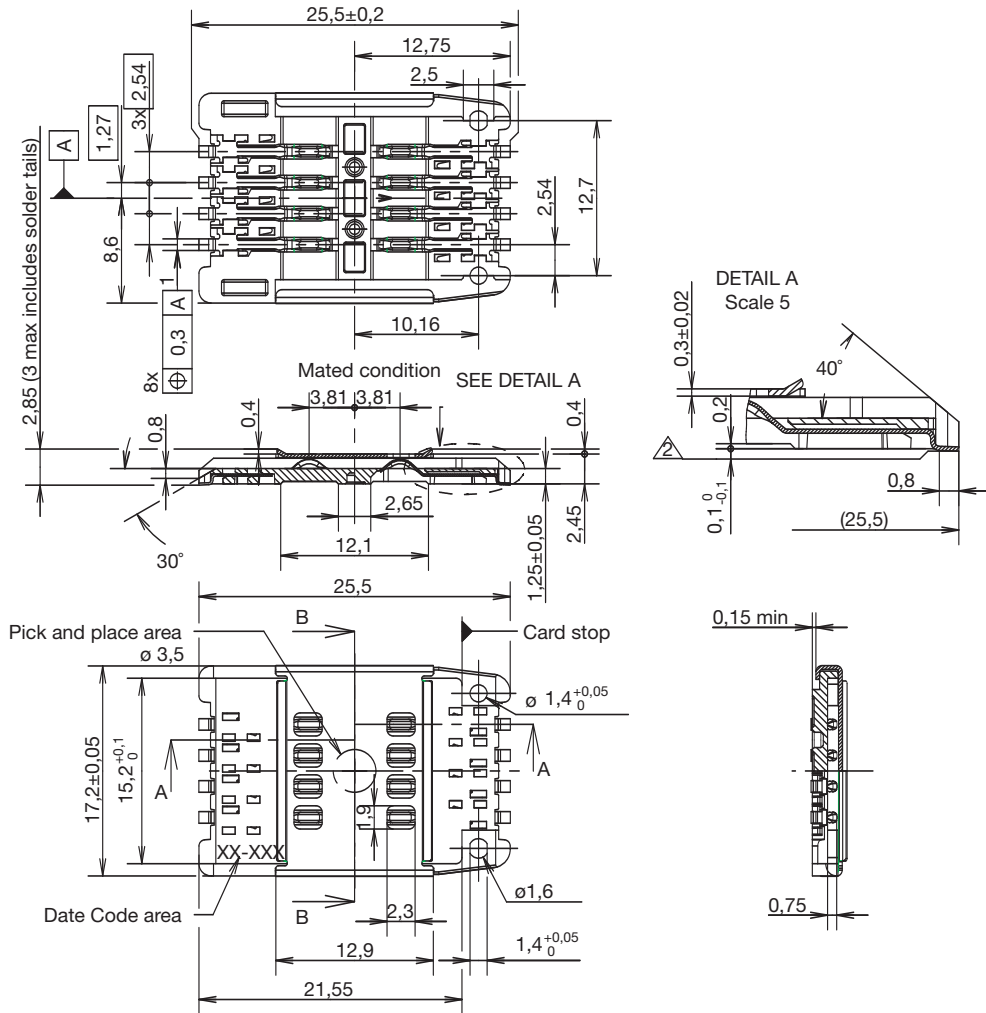
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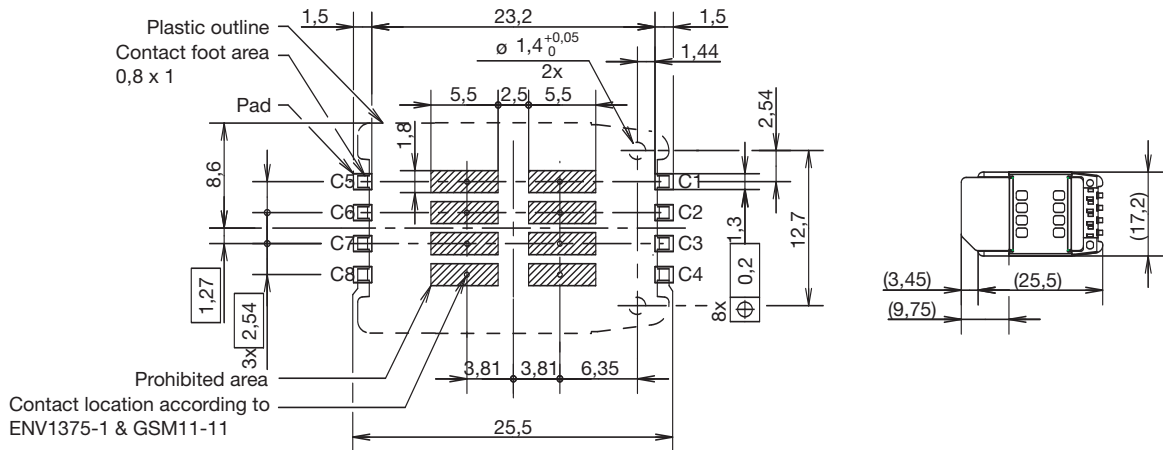


# CCM03 MK2 Series

## CCM03-3504 LFT / CCM03-3505 LFT



RECOMMENDED PC BOARD LAYOUT  
(Component side)



First Angle  
Projection

Dimensions are shown in mm  
Specifications and dimensions subject to change

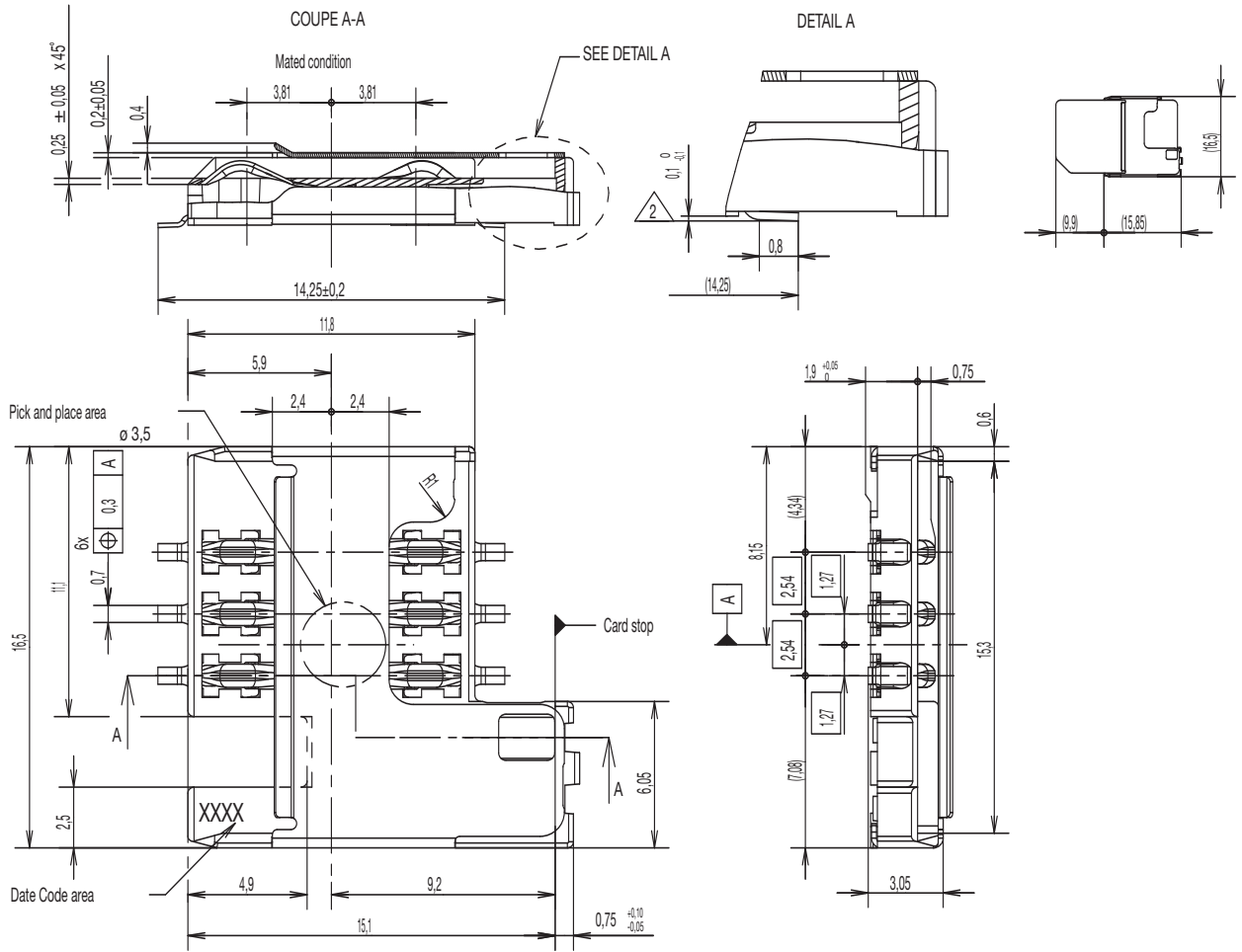
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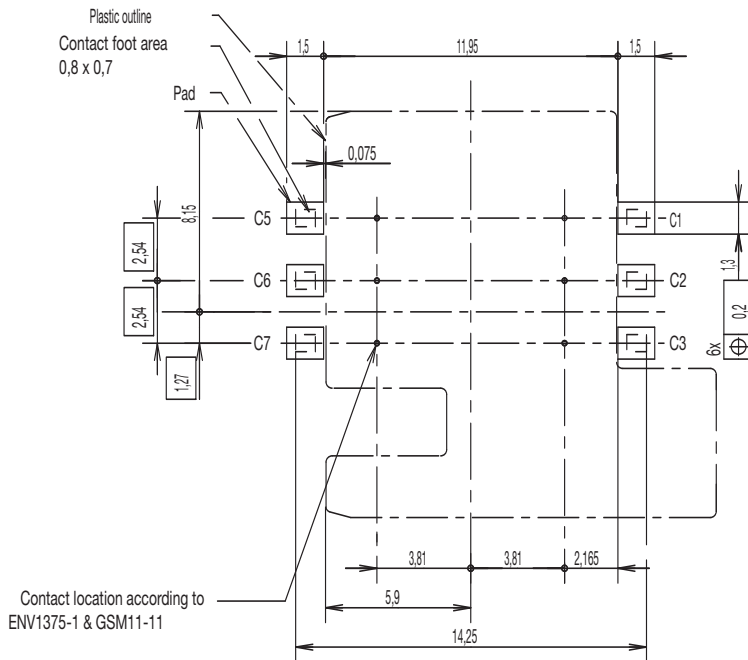


# CCM03 MK2 Series

## CCM03-3760 LFT



RECOMMENDED PC BOARD LAYOUT  
 (Component side)

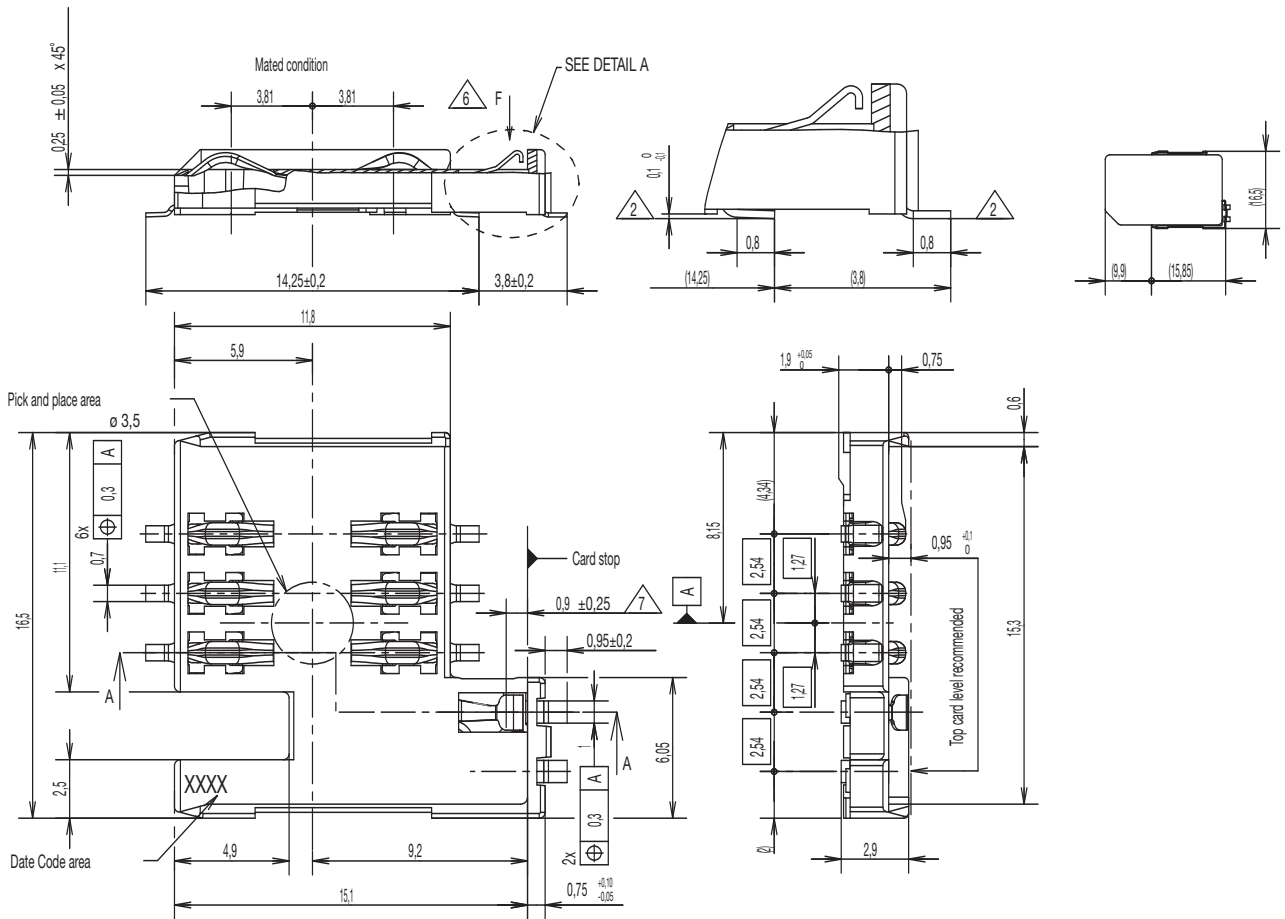


Dimensions are shown in mm  
 Specifications and dimensions subject to change

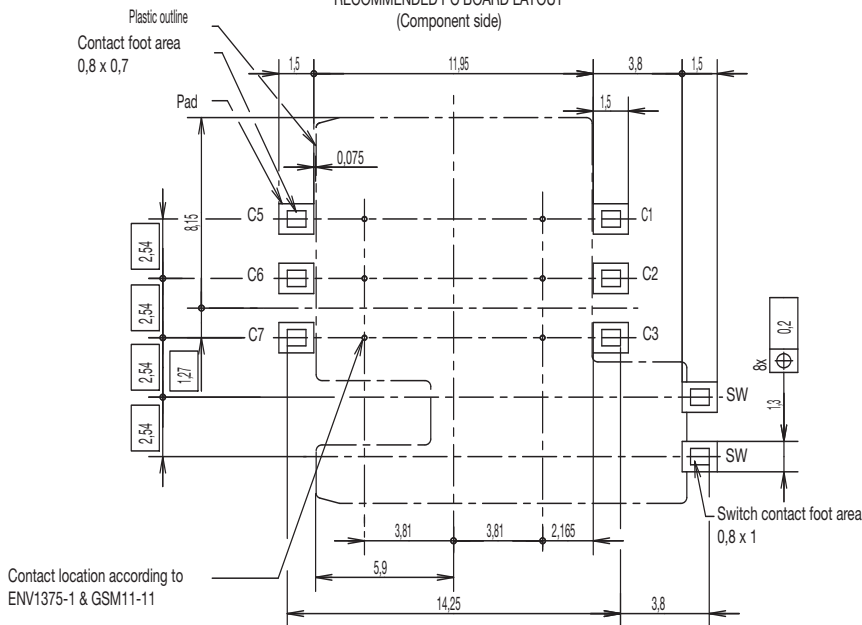
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# CCM03 MK2 Series

CCM03-3764 LFT



RECOMMENDED PC BOARD LAYOUT  
(Component side)



Dimensions are shown in mm  
Specifications and dimensions subject to change

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SIM/SAM



# CCM04 MK3 Series



## Features

- SIM and SAM card acceptance
- Compatible with pick and place and lead free soldering

## Typical Applications

- Mobile
- POS
- Identification
- GPS

## Mechanical

Number of contacts	6 or 8
Mechanical life	30,000 cycles
Card insertion force	10N max
Card extraction force	1N min / 10N max
Contact force	0,35N min to 0,65N
Vibration Frequency	10 to 500 Hz. Acceleration 50m/s <sup>2</sup> Duration 6 hours - amplitude 0,35mm
Shock	Peak value 500 m/s <sup>2</sup> – Duration 11 ms 3 shocks in each direction of each axis
Max elect. discontinuity	1µs

## Packaging

See table below

## Soldering Process

Compatible with lead free SMT soldering process

## Contact Electrical Data

Insulation resistance	1000 MΩ min
Contact resistance max	100 mΩ max
Switching current	10 µA min / 1 A max
Dielectric strength	750 Vrms min

## Environmental Data

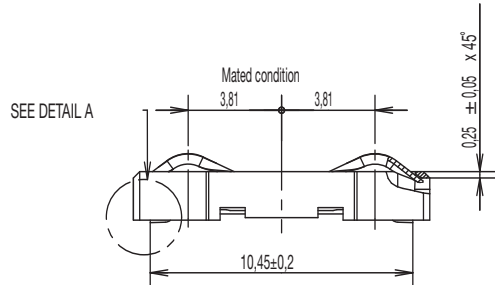
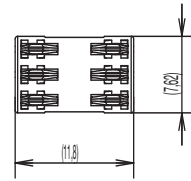
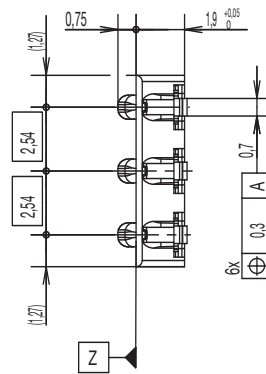
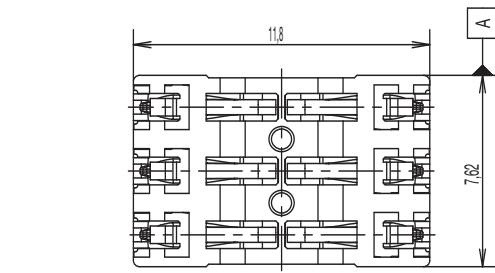
Operating temperature	-40°C to +85°C
Salt mist	IEC 512 test number 11f (96 hours)
Damp heat	IEC 512 test number 11c (10 days)
RoHS compliant	

SIM/SAM

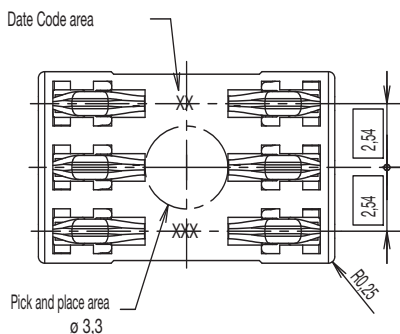
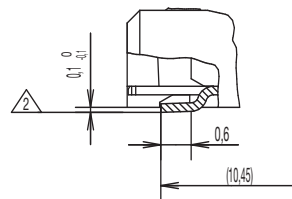
Designation	# of Contacts	Contact Plating	PCB Version	Height (mm)	Dim. (mm)	Packaging
CCM04-5137LFS	6	gold	SMT IN	1,9	8,15 X 10,45	reels of 1,900 pcs

# CCM04 MK3 Series

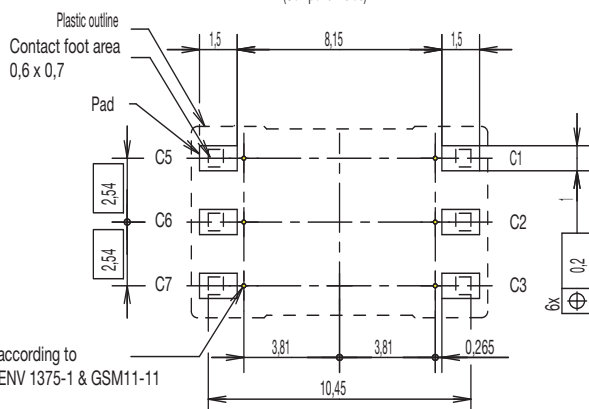
## CCM04-5137 LFS



DETAIL A  
Scale 10



RECOMMENDED PC BOARD LAYOUT  
(Component side)



SIM/SAM



Dimensions are shown in mm  
Specifications and dimensions subject to change

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