



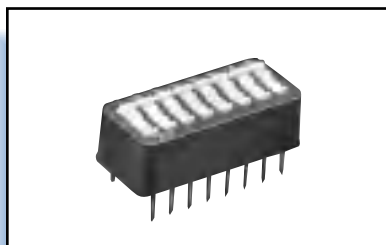
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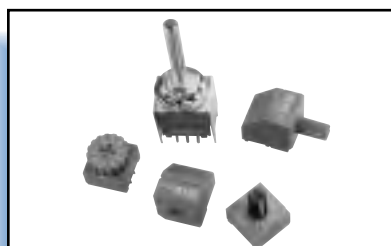
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# DIP Switches

**A**  
DIP Switches

**A**

**DIP Switches**

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ADF03ST	.....A8	ADP05	.....A9	GDH02STR	.....A5	SSV02	.....A18
ADF03STTR	.....A8	ADP05S	.....A9	GDH04S	.....A5	SSV04	.....A18
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ADF05STTR	.....A8	ADP10	.....A9	GDP04S	.....A4		
ADF05T	.....A8	ADP10S	.....A9	GDP06	.....A4		
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ADF06SA	.....A8	ADPA02SA	.....A9	GDP08S	.....A4		
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ADF06ST	.....A8	ADPA04S	.....A9	GDP10	.....A4		
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**DIP Switches, Low Profile, Slide Actuator, Through Hole and Surface Mount**

**FEATURES:**

- Conventional gold wiping contact system
- Available in PC and surface mount configurations
- Traditional tape seal standard
- 95% Minimum solder coverage (90/10 tin lead)
- Withstands wave soldering temperature of 245°C for 3-5 seconds
- Heat deflection temperature of 260°C for surface mount compatibility
- End stackable (GDS version)
- Auto-insertable (GDS and GDB version)
- Vacuum pick and place compatible (GDS, GDB and GDH)
- Half pitch .050" terminal spacing (GDH version)
- Available in optional tape & reel packaging
- Shipped in the off position

**MATERIAL SPECIFICATIONS:**

Moving Contact .....Gold over nickel over copper alloy  
 Fixed Contact .....Gold over nickel over copper alloy  
 Base Material .....PPS UL94V-0  
 Cover Material .....PPS UL94V-0  
 Actuator Material .....High temperature polyester/polyamide  
 Terminal .....Tin lead plated over nickel over copper alloy

**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....0.4 VA @ 24 VDC  
 Initial Contact Resistance .....100 Milliohms max.  
 Insulation Resistance .....100 Megohms min. @ 250 VDC  
 Dielectric Strength .....300 VAC  
 Life Expectancy .....1,000 Cycles  
 Operating Force .....60-600 Grams

**ENVIRONMENTAL SPECIFICATIONS:**

Operating Temperature .....-30°C to +85°C  
 Storage Temperature .....-45°C to +100°C  
 Solder Heat Resistance .....See page M3-4



Part Number								Poles	Length	Dim. M
PC Model		S Model		Tape & Reel		S Model No Tape				
Tyco Electronics	Alcoswitch	Tyco Electronics	Alcoswitch	Tyco Electronics	Alcoswitch	Tyco Electronics	Alcoswitch			
5-1437590-5	GDS02	5-1437590-7	GDS02S	5-1437590-8	GDS02STR	5-1437590-6	GDS02NTS	2	.194(4.94)	.100(2.54)
5-1437590-9	GDS04	6-1437590-1	GDS04S	6-1437590-2	GDS04STR	6-1437590-0	GDS04NTS	4	.394(10.02)	.300(7.62)
6-1437590-3	GDS06	6-1437590-5	GDS06S	6-1437590-6	GDS06STR	6-1437590-4	GDS06NTS	6	.594(15.10)	.500(12.7)
6-1437590-7	GDS08	6-1437590-9	GDS08S	7-1437590-0	GDS08STR	6-1437590-8	GDS08NTS	8	.794(20.18)	.700(17.78)
7-1437590-1	GDS10	7-1437590-2	GDS10S	7-1437590-3	GDS10STR	—	—	10	.994(25.26)	.900(22.86)

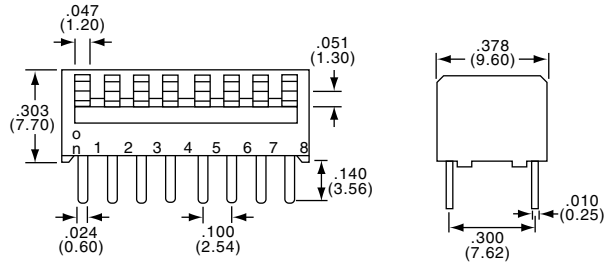
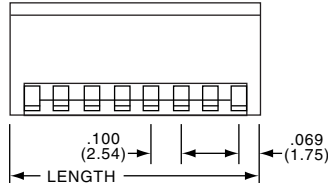
**A**

**DIP Switches, Piano Actuator, Through Hole and Surface Mount**

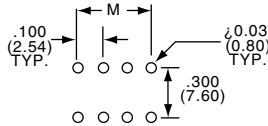
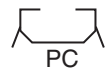
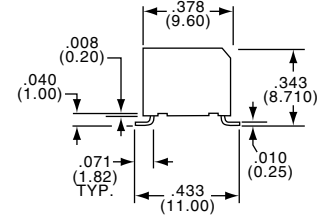
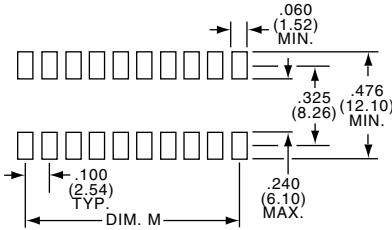
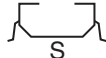
SEE PAGE A3 FOR PRODUCT SPECIFICATIONS

GDP

Classic Profile Piano Actuator



GDP08

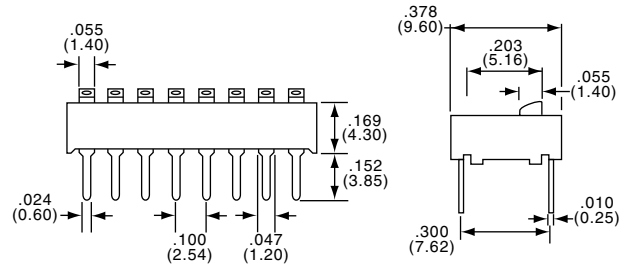
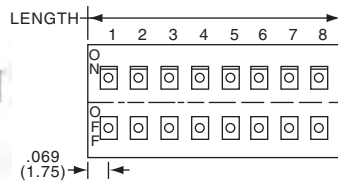


Part Number								Poles	Length	Dim. M
PC Model		S Model		Tape and Reel		S Model No Tape				
Tyco Electronics	Alcoswitch	Tyco Electronics	Alcoswitch	Tyco Electronics	Alcoswitch	Tyco Electronics	Alcoswitch			
3-1437590-2	GDP02	3-1437590-4	GDP02S	1571668-1	GDP02STR	3-1437590-3	GDP02NTS	2	.238(6.04)	.100(2.54)
3-1437590-5	GDP04	3-1437590-7	GDP04S	—	—	3-1437590-6	GDP04NTS	4	.438(11.12)	.300(7.62)
3-1437590-8	GDP06	3-1437590-9	GDP06S	—	—	—	—	6	.638(16.20)	.500(12.7)
4-1437590-0	GDP08	4-1437590-1	GDP08S	4-1437590-2	GDP08STR	—	—	8	.838(21.28)	.700(17.78)
4-1437590-3	GDP10	4-1437590-4	GDP10S	4-1437590-5	GDP10STR	—	—	10	1.038(26.36)	.900(22.86)

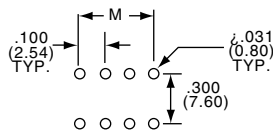
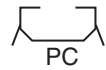
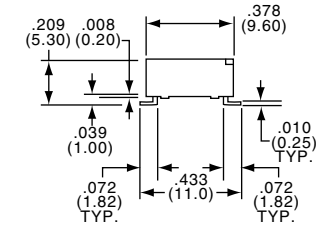
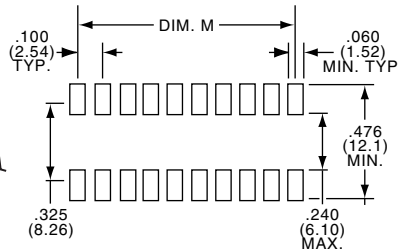
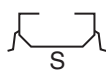
**DIP Switches, Flush Rocker Actuator, Through Hole and Surface Mount**

GDB

Flush Rocker Actuator



GDB08



Part Number								Poles	Length	Dim. M
PC Model		S Model								
Tyco Electronics	Alcoswitch	Tyco Electronics	Alcoswitch							
1437590-1	GDB02	—	GDB02S			2	.238(6.04)	.100(2.54)		
1437590-2	GDB04	1437590-3	GDB04S			4	.438(11.12)	.300(7.62)		
1437590-4	GDB06	1437590-5	GDB06S			6	.638(16.20)	.500(12.7)		
1437590-6	GDB08	1437590-7	GDB08S			8	.838(21.28)	.700(17.78)		
1437590-8	GDB10	1437590-9	GDB10S			10	1.038(26.36)	.900(22.86)		

**DIP Switches, Recessed Rocker, Through Hole and Surface Mount**

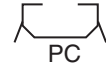
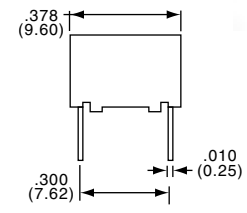
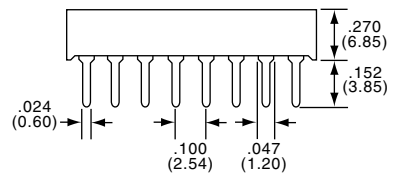
SEE PAGE A3 FOR PRODUCT SPECIFICATIONS

Part Number				Poles	Length	Dim. M
PC Model		S Model				
Tyco Electronics	Alcoswitch	Tyco Electronics	Alcoswitch			
4-1437590-6	GDR02	4-1437590-7	GDR02S	2	.238(6.04)	.100(2.54)
4-1437590-8	GDR04	4-1437590-9	GDR04S	4	.438(11.12)	.300(7.62)
5-1437590-0	GDR06	5-1437590-1	GDR06S	6	.638(16.20)	.500(12.7)
5-1437590-2	GDR08	5-1437590-3	GDR08S	8	.838(21.28)	.700(17.78)
5-1437590-4	GDR10	—	GDR10S	10	1.038(26.36)	.900(22.86)

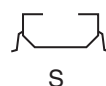
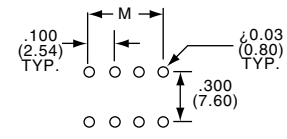
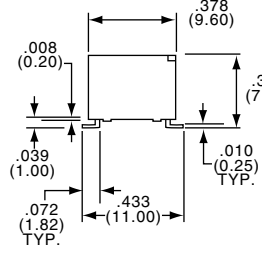
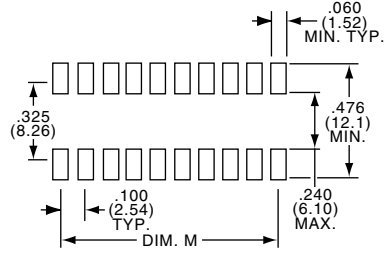
GDR  
Classic Profile  
Recessed Rocker Actuator



GDR08



PC



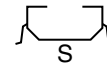
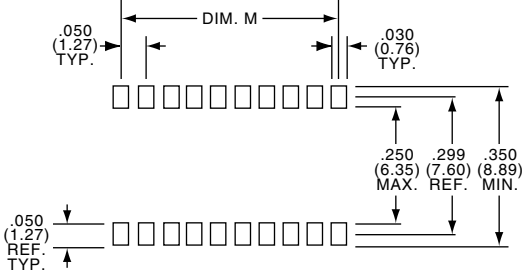
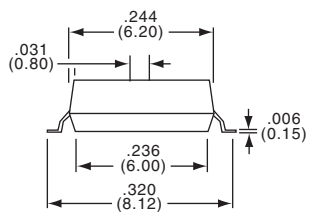
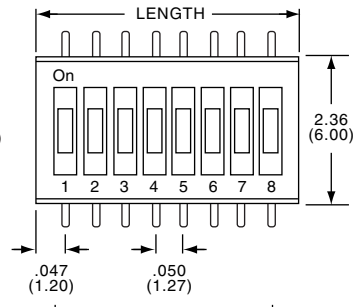
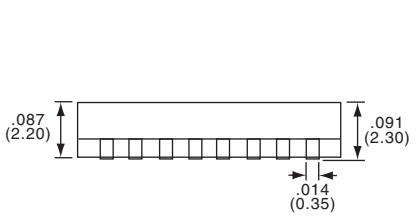
S

**DIP Switches, Half Pitch, Low Profile**

GDH  
Half Pitch .050" Terminal Spacing



GDH08S



S

Part Number				Poles	Length	Dim. M
PC Model		S Model				
Tyco Electronics	Alcoswitch	Tyco Electronics	Alcoswitch			
1-1437590-0	GDH02S	1-1437590-3	GDH02STR	2	.144(3.66)	.050(1.27)
1-1437590-4	GDH04S	1-1437590-6	GDH04STR	4	.244(6.20)	.150(3.81)
1-1437590-9	GDH06S	2-1437590-1	GDH06STR	6	.344(8.75)	.250(6.35)
2-1437590-2	GDH08S	2-1437590-4	GDH08STR	8	.444(11.29)	.350(8.89)
2-1437590-6	GDH10S	2-1437590-8	GDH10STR	10	.544(13.82)	.450(11.43)

**DIP Switches, Half Pitch, Ultra Low Profile, .067" High**

**MATERIAL SPECIFICATIONS:**

Contacts .....Copper alloy, gold plate over nickel  
 Case Material .....High temperature polyamide, UL 94V-0  
 Actuator Material .....High temperature polyester, 94V-0  
 Moving Contact .....Copper alloy, gold plate over nickel  
 Fixed Contact .....Copper alloy, gold plate over nickel  
 Terminals .....Copper alloy, gold flash over nickel

**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....Non-switching: 100 Milliamps @ 50 VDC  
 Switching: 25 Milliamps @ 24 VDC  
 Initial Contact Resistance .....100 Milliohms max.  
 Insulation Resistance .....100 Megohms min. @ 100 VDC  
 Dielectric Strength .....300 VAC, 1 minute  
 Actuation Force .....60 - 600 Grams max.  
 Life Expectancy .....1,000 Cycles min.

**ENVIRONMENTAL SPECIFICATIONS:**

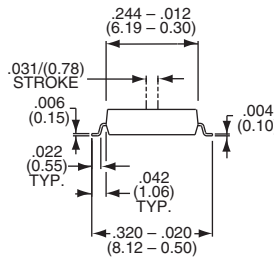
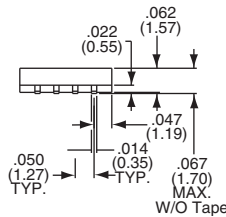
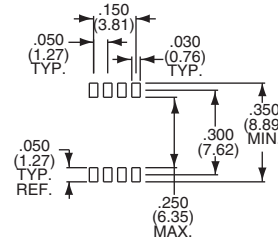
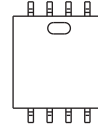
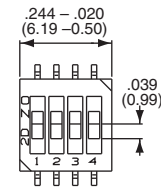
Operating Temperature.....-30°C to +85°C (-22°F to +185°F)  
 Storage Temperature.....-45°C to +100°C (-49°F to +212°F)

**MGDH**

Half Pitch .050" Terminal Spacing, .067" High



MGDH04



Part Number	
Tyco Electronics	Alcoswitch
7-1437590-5	MGDH04

**DIP Switches, Extended Actuator, Auto Insertable, Through Hole and Surface Mount**

**FEATURES:**

- Available in PC or surface mount termination.
- High pressure wiping contact allows aqueous or solvent cleaning without tape seal.
- Auto-insertable
- Tape Seal version available for vacuum pick-n-place
- Unique design can withstand vapor phase reflow or wave soldering conditions.
- Gas tight contacts
- Shipped in the off position

**ENVIRONMENTAL SPECIFICATIONS:**

Operating Temperature .....-30°C to + 85°C  
 Storage Temperature .....-45°C to + 100°C  
 Solder Heat Resistance.....245°C ± 5°C with switch in "off" position 30 seconds when mounted on a .060" thick PCB per MIL-STD202, Method 210  
 Cleaning.....Aqueous solution or solvent

**MATERIAL SPECIFICATIONS:**

Base and Cover .....PPS-UL94V-0, (Black)  
 Actuator.....PA6T-UL94V-0, (White)  
 Fixed Contact/Terminal .....Copper alloy plate-solder/copper  
 Moving Contact .....Copper alloy plate-gold/nickel

**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....0.4 VA @ 20 VDC max.  
 Max Rating Switching-100 Milliamp @ 24VDC  
 Min Rating Switching-1 Microamp @ 1 Millivolt  
 Max Rating Non Switching-1 Amp @ 5VDC  
 Initial Contact Resistance .....50 Milliohms max.  
 Insulation Resistance .....1,000 Megohms min. @ 100 VDC  
 Dielectric Strength .....500 VAC  
 Operating Force .....Less than 800 grams  
 Actuator Travel .....AD/R Series 1.30mm/.050" piano style 25°  
 Life Expectancy .....1,000 Cycles

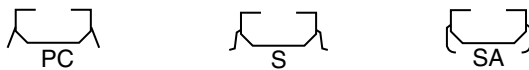


ADE



ADE08  
Extended Actuator

S Termination Shown



PC Term.		"S" Term.		"SA" Term.		No. of Positions	Actuator Style	Dim. L
Tyco Electronics	Alcoswitch	Tyco Electronics	Alcoswitch	Tyco Electronics	Alcoswitch			
1437586-2	ADE02	1437586-4	ADE02S	1437586-5	ADE02SA	2	Slide	.278(7.06)
1437586-7	ADE03	1437586-8	ADE03S	—	ADE03SA	3	Slide	.378(9.60)
1-1437586-0	ADE04	1-1437586-2	ADE04S	1-1437586-3	ADE04SA	4	Slide	.478(12.14)
1-1437586-5	ADE05	1-1437586-7	ADE05S	—	ADE05SA	5	Slide	.578(14.68)
1-1437586-8	ADE06	2-1437586-0	ADE06S	2-1437586-1	ADE06SA	6	Slide	.678(17.22)
2-1437586-3	ADE07	2-1437586-5	ADE07S	—	ADE07SA	7	Slide	.778(19.76)
2-1437586-6	ADE08	2-1437586-8	ADE08S	2-1437586-9	ADE08SA	8	Slide	.878(22.30)
3-1437586-0	ADE09	—	ADE09S	—	ADE09SA	9	Slide	.978(24.84)
3-1437586-2	ADE10	3-1437586-7	ADE10S	—	ADE10SA	10	Slide	1.078(27.38)
3-1437586-8	ADE12	1571337-1	ADE12S	—	ADE12SA	12	Slide	1.278(32.51)

See Page A9 for PC Pad Layout.

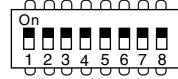
**DIP Switches, Flush Acuator, Auto Insertable, Through Hole, and Surface Mount**

SEE PAGE A7 FOR PRODUCT SPECIFICATIONS

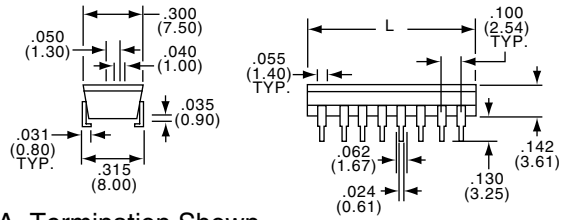
ADF



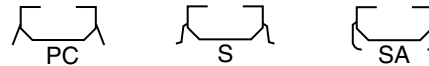
ADF08S  
Flush Actuator



See Page A9 for PC Pad Layout.



SA Termination Shown



PC Term.		PC Term. w/Tape		No. of Positions	Actuator Style	Dim. L
Tyco Electronics	Alcoswitch	Tyco Electronics	Alcoswitch			
4-1437586-2	ADF02	5-1437586-0	ADF02T	2	Slide	.278(7.06)
5-1437586-1	ADF03	5-1437586-6	ADF03T	3	Slide	.378(9.60)
5-1437586-7	ADF04	6-1437586-4	ADF04T	4	Slide	.478(12.14)
6-1437586-5	ADF05	7-1437586-0	ADF05T	5	Slide	.578(14.68)
7-1437586-1	ADF06	8-1437586-0	ADF06T	6	Slide	.678(17.22)
8-1437586-1	ADF07	8-1437586-5	ADF07T	7	Slide	.778(19.76)
8-1437586-6	ADF08	9-1437586-5	ADF08T	8	Slide	.878(22.30)
9-1437586-6	ADF09	—	ADF09T	9	Slide	.978(24.84)
1437587-1	ADF10	1437587-7	ADF10T	10	Slide	1.078(27.38)
—	ADF12	1571336-1	ADF12T	12	Slide	1.278(32.51)

"S" Term.		"S" Term. w/Tape Seal		Tape & Reel		No. of Positions	Actuator Style	Dim. L
Tyco Electronics	Alcoswitch	Tyco Electronics	Alcoswitch	Tyco Electronics	Alcoswitch			
4-1437586-4	ADF02S	4-1437586-8	ADF02ST	4-1437586-9	ADF02STTR	2	Slide	.278(7.06)
5-1437586-2	ADF03S	5-1437586-4	ADF03ST	5-1437586-5	ADF03STTR	3	Slide	.378(9.60)
5-1437586-9	ADF04S	6-1437586-3	ADF04ST	1437583-6	ADF04STTR	4	Slide	.478(12.14)
6-1437586-6	ADF05S	6-1437586-8	ADF05ST	6-1437586-9	ADF05STTR	5	Slide	.578(14.68)
7-1437586-5	ADF06S	7-1437586-8	ADF06ST	7-1437586-9	ADF06STTR	6	Slide	.678(17.22)
8-1437586-2	ADF07S	8-1437586-3	ADF07ST	8-1437586-4	ADF07STTR	7	Slide	.778(19.76)
8-1437586-8	ADF08S	9-1437586-1	ADF08ST	9-1437586-2	ADF08STTR	8	Slide	.878(22.30)
9-1437586-7	ADF09S	9-1437586-8	ADF09ST	9-1437586-9	ADF09STTR	9	Slide	.978(24.84)
1437587-3	ADF10S	1437587-5	ADF10ST	1437587-6	ADF10STTR	10	Slide	1.078(27.38)
1437587-8	ADF12S	—	ADF12ST	1437587-9	ADF12STTR	12	Slide	1.278(32.51)

"SA" Term.		"SA" Term. w/Tape Seal		No. of Positions	Actuator Style	Dim. L
Tyco Electronics	Alcoswitch	Tyco Electronics	Alcoswitch			
4-1437586-5	ADF02SA	4-1437586-6	ADF02SAT	2	Slide	.278(7.06)
5-1437586-3	ADF03SA	—	ADF03SAT	3	Slide	.378(9.60)
6-1437586-0	ADF04SA	6-1437586-1	ADF04SAT	4	Slide	.478(12.14)
—	ADF05SA	—	ADF05SAT	5	Slide	.578(14.68)
7-1437586-6	ADF06SA	7-1437586-7	ADF06SAT	6	Slide	.678(17.22)
—	ADF07SA	—	ADF07SAT	7	Slide	.778(19.76)
8-1437586-9	ADF08SA	9-1437586-0	ADF08SAT	8	Slide	.878(22.30)
—	ADF09SA	—	ADF09SAT	9	Slide	.978(24.84)
—	ADF10SA	1437587-4	ADF10SAT	10	Slide	1.078(27.38)
—	ADF12SA	—	ADF12SAT	12	Slide	1.278(32.51)



**DIP Switches, Piano Acuator, Auto Insertable, Through Hole, and Surface Mount**

**A**  
AD Series

ADP

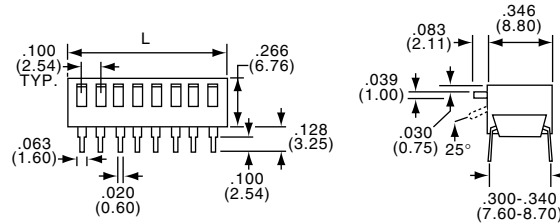


ADP04S

Piano Actuator

"PC" Termination Shown

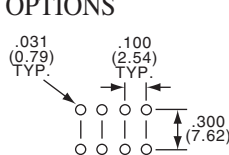
SEE PAGE A7 FOR PRODUCT SPECIFICATIONS



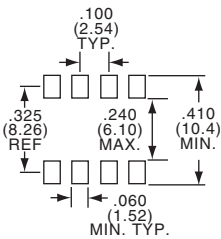
Lever Down "On"		"S" Term Lever Down "On"		"SA" Term. Lever Down "On"		No. of Positions	Actuator Style	Dim. L
Tyco Electronics	Alcoswitch	Tyco Electronics	Alcoswitch	Tyco Electronics	Alcoswitch			
1-1437587-1	ADP02	1-1437587-2	ADP02S	1-1437587-3	ADP02SA	2	Piano	.278(7.06)
1-1437587-5	ADP04	1-1437587-7	ADP04S	1-1437587-8	ADP04SA	4	Piano	.478(12.14)
2-1437587-0	ADP05	2-1437587-1	ADP05S	—	ADP05SA	5	Piano	.578(14.68)
2-1437587-2	ADP06	2-1437587-3	ADP06S	2-1437587-4	ADP06SA	6	Piano	.678(17.22)
2-1437587-5	ADP07	—	ADP07S	—	ADP07SA	7	Piano	.778(19.76)
2-1437587-6	ADP08	2-1437587-8	ADP08S	2-1437587-9	ADP08SA	8	Piano	.878(22.30)
3-1437587-0	ADP09	—	ADP09S	3-1437587-1	ADP09SA	9	Piano	.978(24.84)
3-1437587-3	ADP10	3-1437587-6	ADP10S	—	ADP10SA	10	Piano	1.078(27.38)

Lever Up "On"		"S" Term Lever Up "On"		"SA" Term. Lever Up "On"		No. of Positions	Actuator Style	Dim. L
Tyco Electronics	Alcoswitch	Tyco Electronics	Alcoswitch	Tyco Electronics	Alcoswitch			
4-1437587-7	ADPA02	—	ADPA02S	—	ADPA02SA	2	Piano	.278(7.06)
4-1437587-8	ADPA04	5-1437587-0	ADPA04S	5-1437587-1	ADPA04SA	4	Piano	.478(12.14)
5-1437587-2	ADPA05	5-1437587-3	ADPA05S	—	ADPA05SA	5	Piano	.578(14.68)
5-1437587-4	ADPA06	5-1437587-5	ADPA06S	5-1437587-6	ADPA06SA	6	Piano	.678(17.22)
5-1437587-7	ADPA07	—	ADPA07S	—	ADPA07SA	7	Piano	.778(19.76)
5-1437587-8	ADPA08	6-1437587-0	ADPA08S	—	ADPA08SA	8	Piano	.878(22.30)
—	ADPA09	—	ADPA09S	—	ADPA09SA	9	Piano	.978(24.84)
6-1437587-1	ADPA10	—	ADPA10S	—	ADPA10SA	10	Piano	1.078(27.38)

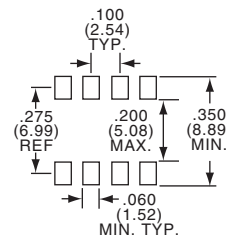
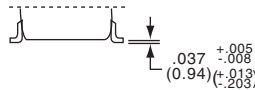
**TERMINATION OPTIONS**



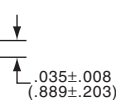
PC Termination



S Termination



SA Termination



**Hybrid DIP Switches, Through Hole and Surface Mount**

**A**  
AR Series

**AUTO-INSERTABLE\* DIP SWITCH WITH INTEGRAL RESISTORS**

SEE PAGE A7 FOR PRODUCT SPECIFICATIONS

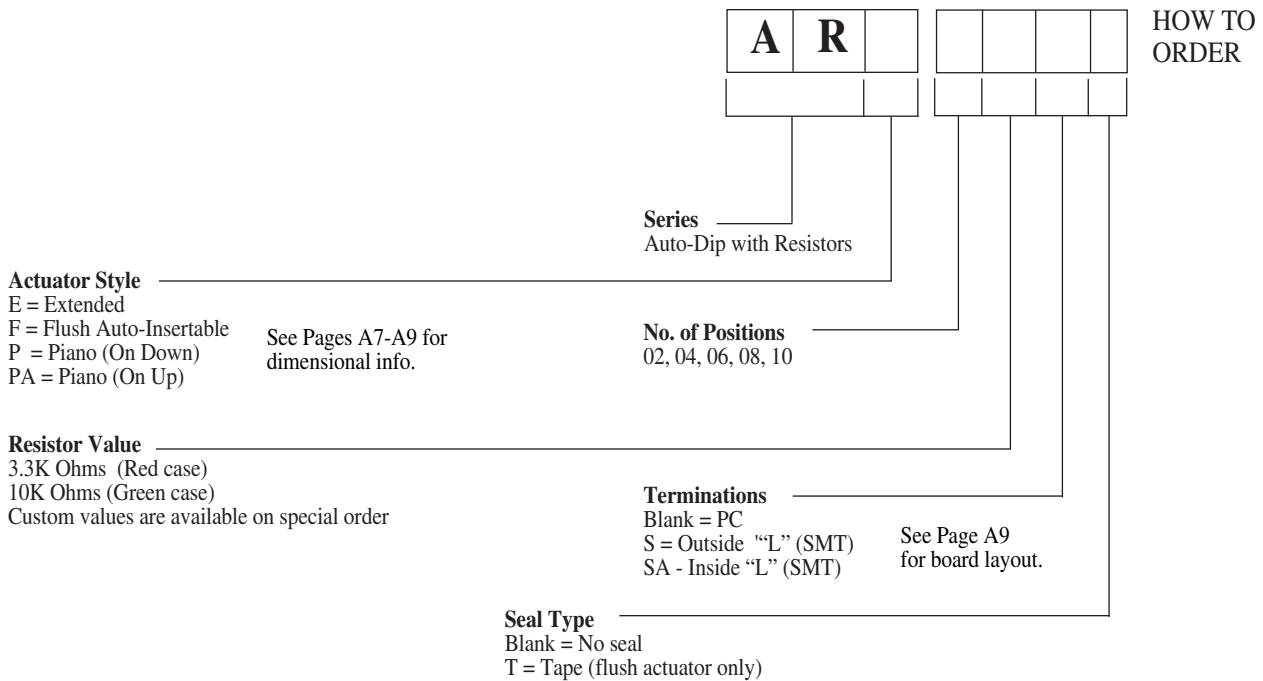
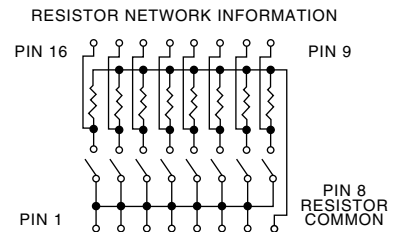
\* Flush actuator versions are auto-insertable

**FEATURES:**

All the features of the AD SERIES - PLUS

- Thick film pull-up resistors molded into the base of the switch.
- Replaces discrete resistor network plus DIP Switch with one component.
- Available with 3.3K ohms or 10K ohms resistors.
- Ceramic substrate allows wave soldering temperatures of 245°C for up to 30 seconds per MIL-STD 202, Method 210.
- Custom resistor values available.
- Shipped in off position.

Rated Pwr.	Resistance	Tolerance	Max. Voltage
125 mW	3.3K Ohms (red)	±5% at 85°C	24V
125 mW	10K Ohms (green)	±5% at 85°C	24V



**Example: ARF 06 10KST = Auto-Dip**  
 Flush actuator  
 06 positions  
 10K ohms resistors  
 Outside "L" terminations & tape seal



Alcoswitch 7000 Series DIP switches are available in standard single pole, single throw; side actuated, single pole, single throw and multiple series versions. Contacts are made of high strength copper alloy with .000030 [0.00076] gold over .000050 [0.00127] nickel plating in contact area and legs plated to meet Tyco Electronics Solderability Specification 109-11-3.

The multiple series switches offer the unique feature of single pole switches coupled mechanically to provide switching of various poles simultaneously. This allows flexibility in programming.

Multipole switches are available with or without lever-actuated rockers and in a variety of configurations in addition to those listed. The maximum number of poles that can be ganged is six.

## DIP Switches

### Performance Characteristics

**Current and Voltage Rating:**

Nonswitching — 1.5 amperes max. at 50 VDC  
 Switching — 100 milliamperes max at 5 VDC (resistive load);  
 25 milliamperes max. at 24 VDC (resistive load)

**Contact Resistance, Dry Circuit:**

100 milliohms max. (end of life) and 50 milliohms (initial) at 50 mV open circuit, 50 milliamperes

**Insulation Resistance:**

1 x 10<sup>9</sup> ohms min. at 100 VDC (initial)

**Dielectric Withstanding Voltage:**

500 VDC min. at standard atmospheric conditions

**Capacitance:**

5 picofarads max.

**Temperature Rating:**

Nonoperating — -73.3°C to +105°C  
 Operating — -55°C to +105°C

**Vibration:**

Discontinuities shall not exceed 10 microseconds when subjected to 10-2000-10 Hz transversing for 20 minutes at .060 [1.52] inches total excursion

**Shock:**

No physical damage or discontinuities greater than 10 microseconds when tested with .10 ampere current applied per Tyco Electronics Specification 109-26, Condition A

**Humidity:**

Withstands an environment of +40°C and 95% RH for 96 hours

**Durability:**

No physical damage or contact resistance greater than 100 milliohms up to 7000 cycles of actuation with a resistive load of 24 VDC and 25 milliamperes max. current applied

**Terminal Strength (Bend Test):**

Two (2) 45° bend cycles per MIL-STD-202, Method 211, Condition B

### Materials

**Housing:**

Glass-filled polyester, 94V-0 rated, black

**Rocker:**

Thermoplastic, 94V-0 rated, white

**Spring Contacts and Leads:**

Copper alloy with .000030 [0.00076] gold over .000050 [0.00127] nickel in contact area and .000150 [0.00381] tin-lead over .000050 [0.00127] nickel on solder legs, plated to meet Tyco Electronics Solderability Specification 109-11-3.

### Technical Documents

**Product Specification:**

108-7519

**Instruction Sheet:**

408-07779

**Application Specification:**

114-1056

**Single Pole  
Single Throw  
Side Actuated  
Low Profile**

**Contact Lead Spacing —**  
.100 x .300 [2.54 x 7.62]  
**Lead Length —** .140 [3.56]  
below mounting surface

**Contact Arrangement**

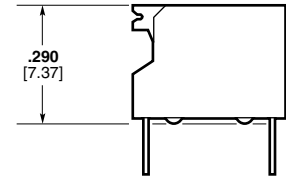


Pin 1

**Note:** Switches shown in open position



Sealed Version Shown



White Dot Identifies Pin 1



Recommended PC Board Hole Pattern

No. of Switches	Dim. A		SPST Side Actuated Part No.		
	inch	mm	Unsealed <sup>1</sup>	Sealed	Tape Sealed
2	.280	7.11	1-435802-0	—	—
3	.380	9.65	435802-2	—	—
4	.480	12.19	435802-3	1-435802-5	—
5	.580	14.73	435802-4	1-435802-6	—
6	.680	17.27	435802-5	1-435802-7	—
7	.780	19.81	435802-6	1-435802-8	—
8	.880	22.35	435802-1	435802-9	3-435802-8
9	.980	24.89	435802-7	1-435802-9	—
10	1.080	27.43	435802-8	2-435802-0	—
11	1.180	29.97	—	2-435802-1	—
12	1.280	32.51	—	2-435802-2	—

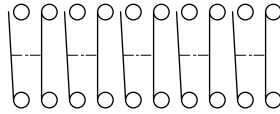
<sup>1</sup> All switches are bottom sealed.

**DIP Switches, Extended Actuator, Single or Double Pole, Double Throw**

**Multiple Single Pole Double Throw**

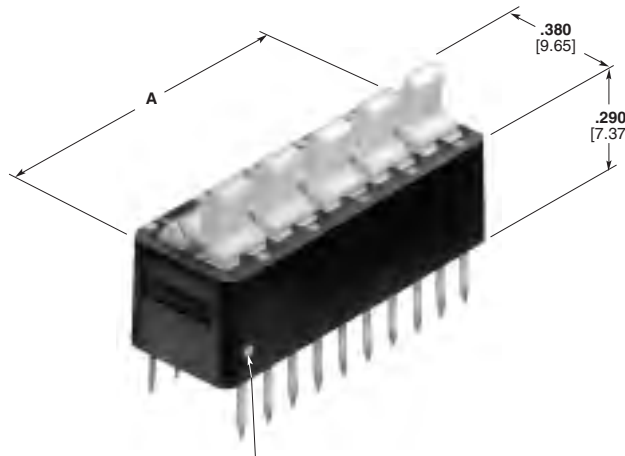
**Contact Lead Spacing** —  
.100 x .300 [2.54 x 7.62]  
**Lead Length** — .140 [3.56]  
below mounting surface

**Contact Arrangement**

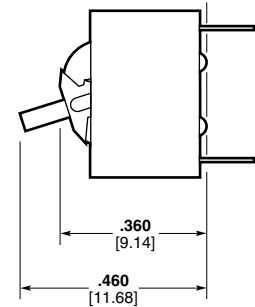


Pin 1

**Note:** Switch positions are closed when rockers are down toward white dots. Switches have make-before-break circuit design.



White Dot Identifies Pin 1



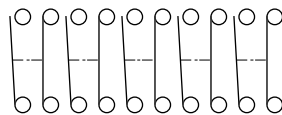
Extended Lever Actuator Shown

No. of Switches	Dim. A		SPDT Part No.	
	inch	mm	Low Profile Actuator	Extended Lever Actuator
1	.280	7.11	435470-7	2-435470-1
2	.480	12.19	435470-1	2-435470-2
3	.680	17.27	435470-2	—
4	.880	22.35	435470-3	2-435470-4
5	1.080	27.43	—	2-435470-5
6	1.280	32.51	—	2-435470-6

**Double Pole Double Throw**

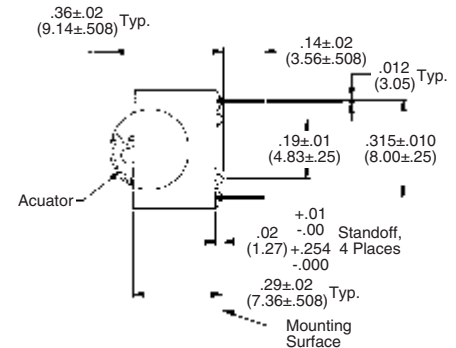
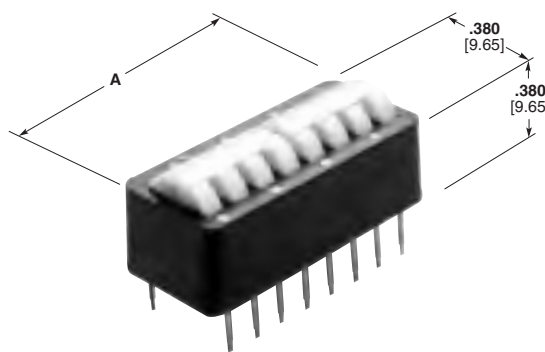
**Contact Lead Spacing** —  
.100 x .300 [2.54 x 7.62]  
**Lead Length** — .140 [3.56]  
below mounting surface

**Contact Arrangement**



Pin 1

**Note:** Switch positions are closed when rockers are down toward white dots. Switches have make-before-break circuit design.



Low Profile Lever Actuator Shown

No. of Switches	Dim. A		DPDT Part No.	
	inch	mm	Low Profile Actuator	Extended Lever Actuator
1	.480	12.19	435470-5	3-435470-1
2	.880	22.35	435470-9	—



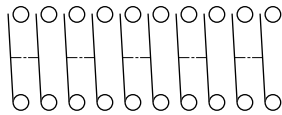
Recommended PC Board Hole Pattern

**DIP Switches, Extended Actuator, Multiple Pole, Single Throw**

**Multiple Double Pole Single Throw**

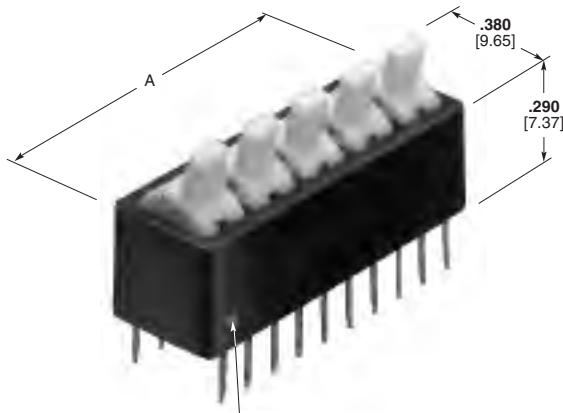
**Contact Lead Spacing** —  
.100 x .300 [2.54 x 7.62]  
**Lead Length** — .140 [3.56]  
below mounting surface

**Contact Arrangement**

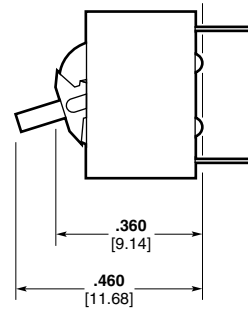


Pin 1

**Note:** Switches shown in open position.



White Dot Identifies Pin 1



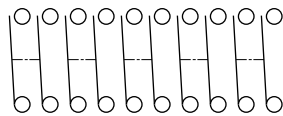
Extended Lever Actuator Shown

No. of Switches	Dim. A		DPST Part No.	
	inch	mm	Low Profile Actuator	Extended Lever Actuator
1	.280	7.11	435469-9	2-435469-1
2	.480	12.19	—	2-435469-2
4	.880	22.35	435469-3	2-435469-4
5	1.080	27.43	—	2-435469-5
6	1.280	32.51	—	2-435469-6

**4-Pole Single Throw**

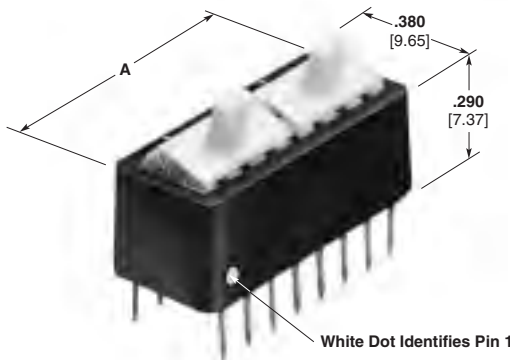
**Contact Lead Spacing** —  
.100 x .300 [2.54 x 7.62]  
**Lead Length** — .140 [3.56]  
below mounting surface

**Contact Arrangement**

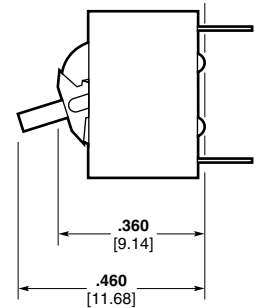


Pin 1

**Note:** Switches shown in open position.

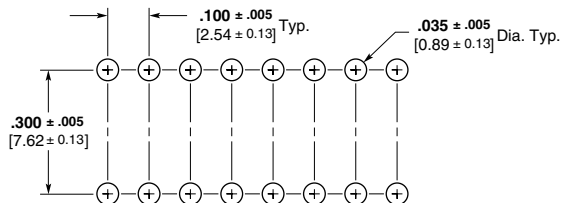


White Dot Identifies Pin 1



Extended Lever Actuator Shown

No. of Switches	Dim. A		4PST Part No.	
	inch	mm	Low Profile Actuator	Extended Lever Actuator
1	.480	12.19	435469-7	3-435469-1



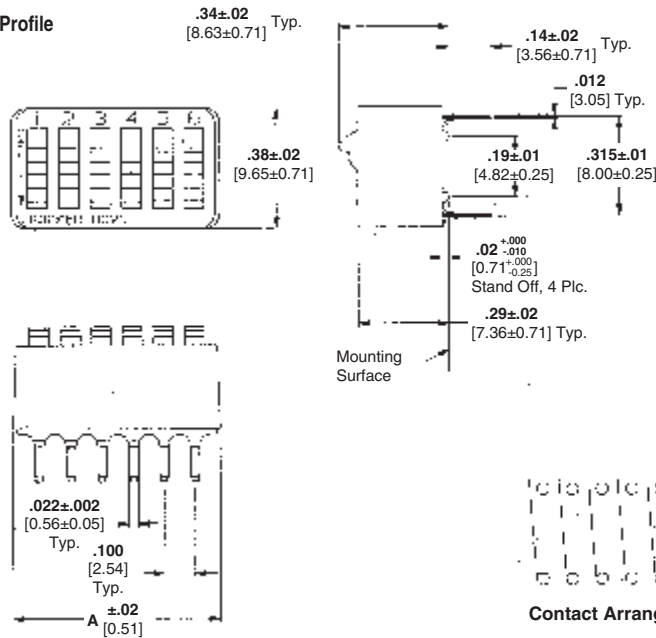
Recommended PC Board Hole Pattern

**DIP Switches, Rocker Style Actuator**

**Contact Lead Spacing** —  
.100 x .300 [2.54 x 7.62]  
**Lead Length** — .140 [3.56]  
below mounting surface



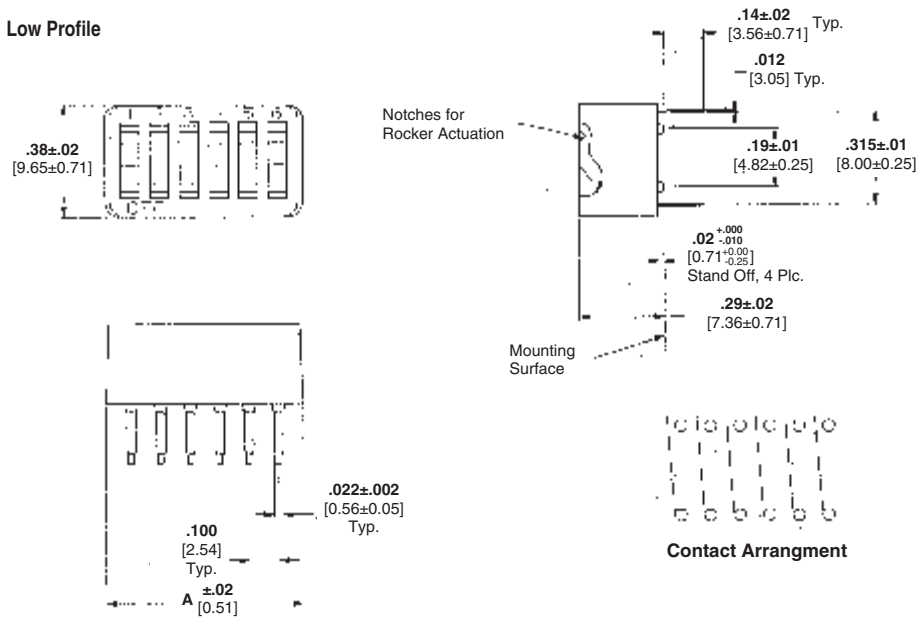
**Standard Profile**



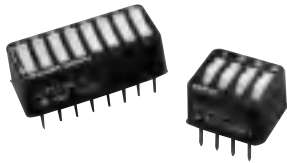
**Contact Lead Spacing** —  
.100 x .300 [2.54 x 7.62]  
**Lead Length** — .140 [3.56]  
below mounting surface



**Low Profile**



Number of Switches	SPST Standard Profile		SPST Low Profile	
	Unsealed	Sealed	Unsealed	Tape Sealed
2	2-435166-9	—	—	3-435626-6
3	—	—	—	3-435626-7
4	435166-2	4-435166-9	435626-1	3-435626-8
5	—	5-435166-0	435626-2	—
6	435166-4	5-435166-1	—	4-435626-0
7	435166-1	5-435166-2	—	4-435626-1
8	435166-5	5-435166-3	435626-5	4-435626-2
9	435166-6	—	—	—
10	435166-7	5-435166-5	—	4-435626-4



Alcoswitch 7100 Series DIP Switches are recommended for programming applications where the number of cycles per pole is limited. These single pole, single throw switches have been designed for a life of up to 2000 cycles per pole and feature contacts of copper alloy with .000030 [0.00076] gold over nickel plating in the contact area and legs plated to meet Tyco Electronics Solderability Specification 109-11-3. In addition, the SPST standard and low profile switches are also available with a top seal to provide protection during soldering and cleaning processes.

## DIP Switches

### Performance Characteristics

#### Current and Voltage Rating:

Nonswitching — 1.0 amperes max. at 40 VDC  
 Switching — 60 milliamperes max at 5 VDC (resistive load);  
 15 milliamperes max. at 24 VDC (resistive load)

#### Contact Resistance, Dry Circuit:

100 milliohms max. (end of life) and 50 milliohms (initial) at 50 mV open circuit, 50 milliamperes

#### Insulation Resistance:

$1 \times 10^9$  ohms min. at 100 VDC (initial)

#### Dielectric Withstanding Voltage:

500 VDC min. at standard atmospheric conditions

#### Capacitance:

5 picofarads max.

#### Temperature Rating:

Nonoperating — -73°C to +105°C  
 Operating — -55°C to +105°C

#### Vibration:

Discontinuities shall not exceed 10 microseconds when subjected to 10-2000-10 Hz transversing for 20 minutes at .060 [1.52] inches total excursion

#### Shock:

No physical damage or discontinuities greater than 10 microseconds when tested with .10 ampere current applied per Tyco Electronics Specification 109-26, Condition A

#### Humidity:

Withstands an environment of +40°C and 95% RH for 96 hours

#### Durability:

No physical damage or contact resistance greater than 100 milliohms after 2000 cycles of actuation with a resistive load of 24 VDC and 25 milliamperes max. current applied

#### Terminal Strength (Bend Test):

Two (2) 45° bend cycles per MIL-STD-202, Method 211, Condition B

### Materials

#### Housing:

Glass-filled polyester, 94V-0 rated, blue

#### Rocker:

Thermoplastic, 94V-0 rated, white

#### Spring Contacts and Leads:

Copper alloy with .000030 [0.00076] gold over .000050 [0.00127] nickel in contact area and .000150 [0.00381] tin-lead over .000050 [0.00127] nickel on solder legs, plated to meet Tyco Electronics Solderability Specification 109-11-3.

### Technical Documents

#### Product Specification:

108-7532

#### Instruction Sheet:

408-07779

#### Application Specification:

114-1056



**DIP Switches, Rocker Style Actuator**

**Single Pole  
Single Throw**

**Contact Lead Spacing** —  
.100 x .300 [2.54 x 7.62]  
**Lead Length** — .140 [3.56]  
below mounting surface

**Contact Arrangement**



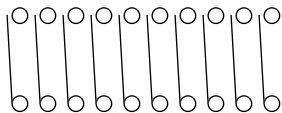
Pin 1

Note: Switches shown in open position.

**Single Pole  
Single Throw  
Low Profile**

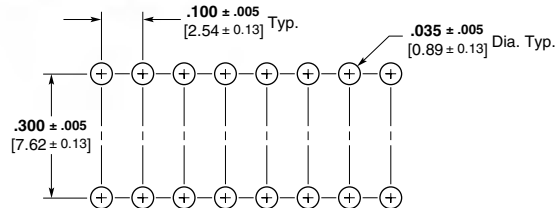
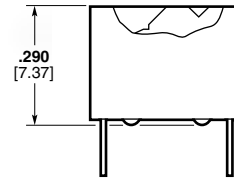
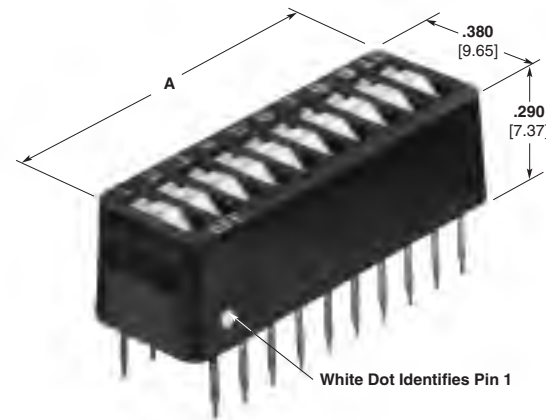
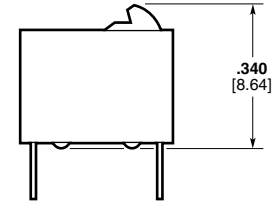
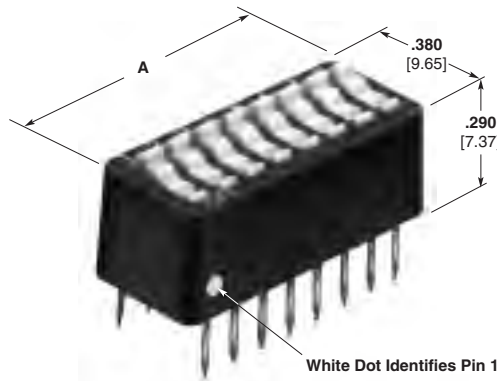
**Contact Lead Spacing** —  
.100 x .300 [2.54 x 7.62]  
**Lead Length** — .140 [3.56]  
below mounting surface

**Contact Arrangement**



Pin 1

Note: Switches shown in open position.



Recommended PC Board Hole Pattern

No. of Switches	Dim. A		SPST Standard Profile		SPST Low Profile	
	inch	mm	Unsealed <sup>1</sup> Part No.	Sealed Part No.	Unsealed <sup>1</sup> Part No.	Tape Sealed Part No.
2	.280	7.11	2-435640-9	—	435668-1	2-435668-6
3	.380	9.65	3-435640-0	—	—	3-435668-3
4	.480	12.19	435640-2	3-435640-5	435668-3	3-435668-4
5	.580	14.73	435640-3	3-435640-6	435668-4	3-435668-5
6	.680	17.27	435640-4	3-435640-7	435668-5	2-435668-5
7	.780	19.81	435640-1	3-435640-8	—	2-435668-7
8	.880	22.35	435640-5	3-435640-9	435668-7	2-435668-8
9	.980	24.89	435640-6	4-435640-0	—	2-435668-9
10	1.080	27.43	435640-7	4-435640-1	435668-9	3-435668-0
11	1.180	29.97	—	—	—	3-435668-1
12	1.280	32.51	3-435640-2	4-435640-3	—	3-435668-2

<sup>1</sup> All switches are bottom sealed.

**Sip Switches, Low Profile, Vertical and Right Angle**

**FEATURES:**

- End-to-end stackable in .100" center (SSV/SLV) versions
- High pressure wiping contacts allows aqueous or solvent cleaning
- Gas tight contacts (280,000 PSI)
- Ceramic substrate allows wave soldering temperature of 245° for up to 10 seconds (SLV Version)
- 2 SIP switches take up less board space than 1 DIP switch

**ENVIRONMENTAL SPECIFICATIONS:**

Operating Temperature .....-30°C to +85°C  
 Storage Temperature .....-45°C to +100°C  
 Solder Heat Resistance .....Wave soldering temperatures of 245°C ± 5°C with switch in off position 30 seconds when mounting on a .060" thick PCB per MIL-STD 202, Method 210

**MATERIAL SPECIFICATIONS:**

Base .....PPS 94V-0/Encapsulated Ceramic (SLV/SLH)  
 Cover .....PBT 94V-0  
 Contacts .....Gold flashed Beryllium copper  
 Actuator Material .....Polyamide  
 Terminals/Fixed Contacts .....Solder coated copper alloy  
 Terminal Seal .....Insert molded  
 Process Seal .....Gas tight contacts

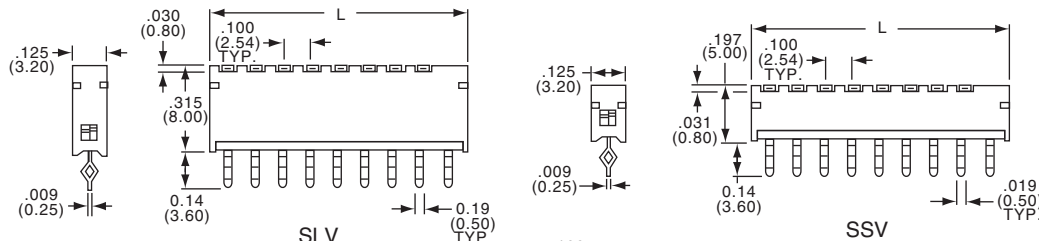
**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....0.4 VA @ 20 VDC max.  
 Initial Contact Resistance .....50 Milliohms max.  
 Insulation Resistance .....100 Megohms min. @ 100 VDC  
 Dielectric Strength .....500 VAC  
 Actuation Force .....800 Grams max.  
 Actuator Travel .....50°  
 Life Expectancy .....1,000 Cycles

**SSV**



SSV08

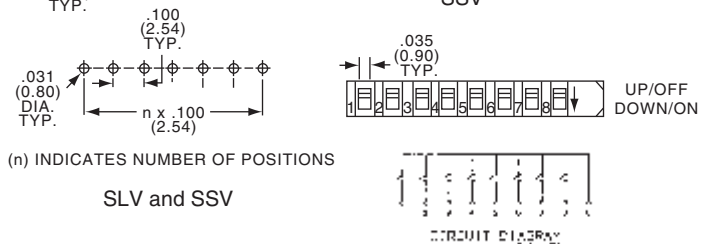


**SLV**



SLV08

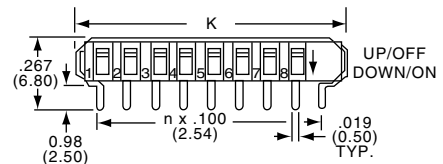
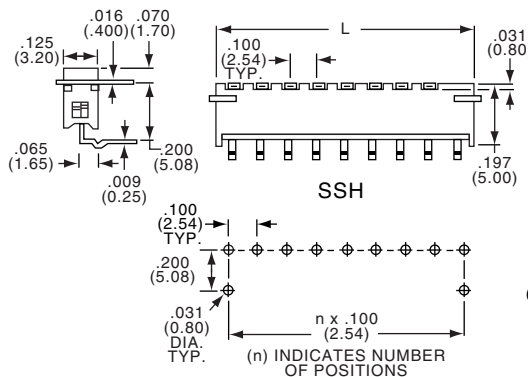
Model		No. of Positions	Dim. L
Tyco Electronics	Alcoswitch		
2-1437589-2	SSV02	2	0.298
2-1437589-3	SSV04	4	0.498
2-1437589-4	SSV06	6	0.698
2-1437589-6	SSV08	8	0.898
2-1437589-7	SSV10	10	1.098
1-1437589-5	SLV04	4	0.498
1-1437589-6	SLV08	8	0.898



**SSH**

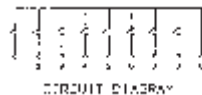


SSH06



**SSH**

Model		No. of Positions	Dim. L	Dim. K
Tyco Electronics	Alcoswitch			
1-1437589-7	SSH02	2	0.298	0.338
1-1437589-8	SSH04	4	0.498	0.538
1-1437589-9	SSH06	6	0.699	0.738
2-1437589-0	SSH08	8	0.898	0.938
2-1437589-1	SSH10	10	1.098	1.138



Alcoswitch DIP Shunts are a highly reliable, low cost means of manually programming various types of electrical/electronic equipment. The shunt consists of a series of conductive straps packaged in a DIP configuration. The straps can be retained intact for a closed circuit or broken with a hand tool to produce an open circuit.

DIP shunts are available in 4- through 12-position configurations. All shunts can be supplied either unprogrammed or preprogrammed.

**DIP Shunts**



**Performance Characteristics**

**Current Rating:**

Standard Pressure — 2 amperes for +20°C rise above ambient (one conductor per shunt)  
Machine Insertable — 1 ampere for +20°C rise above ambient (one conductor per shunt)

**Insulation Resistance:**

1 x 10<sup>10</sup> ohms min. at 100 VDC

**Dielectric Withstanding Voltage:**

500 VDC min.

**Capacitance:**

2 picofarads max. between adjacent straps  
5 picofarads max. across cut straps

**Temperature Rating:**

-55°C to +105°C

**Humidity:**

Withstands an environment of +40°C and 95% RH for 96 hours

**Terminal Strength (Bend Test):**

Two 45° bend cycles per MIL-STD-202, Method 211, Condition B  
Resistance to Soldering Heat: EIA-364-56A Condition C

**Reconnection Option**

Cut straps can be reconnected by soldering bridging. Solder bridging recommendations are:

- Use low temperature solder
- Use solder tip approximately 1/32 [0.79] in diameter
- Do not let solder tip come in contact with plastic material

**Materials**

**Housing:**

Glass-filled thermoplastic, 94V-0 rated

**Metal Parts:**

Copper alloy with electroplated tin finish (gold plated I/O legs are optional)

**Technical Documents**

**Product Specifications:**

108-7533 Through Hole

**Instruction Sheets:**

408-07768 Through Hole

**Application Specifications:**

114-1054 Through Hole

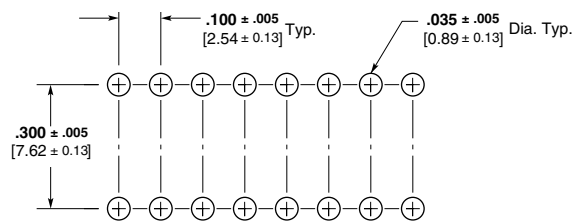
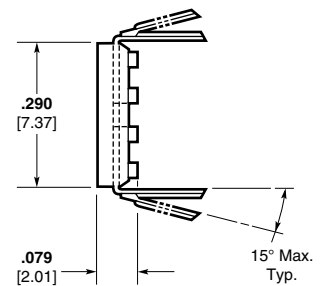
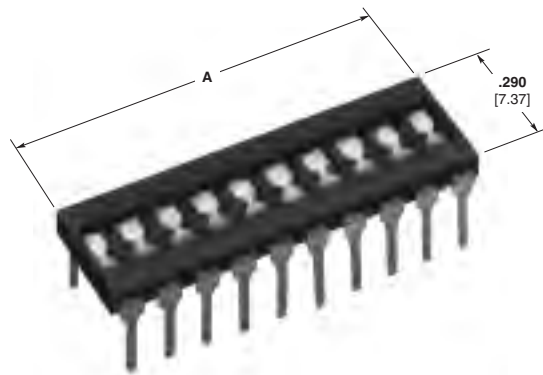
**Standard Shunt  
Standard Pressure**

**Contact Lead Spacing** —  
.100 x .300 [2.54 x 7.62]  
**Lead Length** — .140 [3.56]  
below mounting surface  
**Housing Color** — Black  
**Programming Tool** — See below

**Programming  
Hand Tool  
Part No. 435862-1**



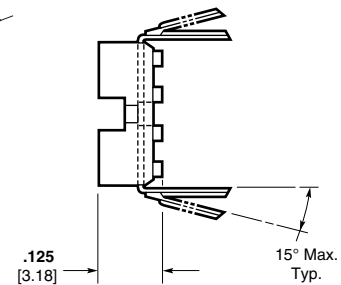
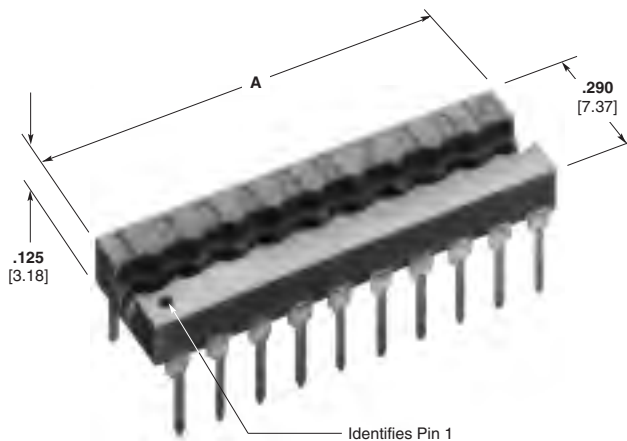
This tool provides a reliable means of programming DIP shunts. It is rugged, lightweight and dependable. No special skills are required to use this tool.



Recommended PC Board Hole Pattern

**Machine Insertable Shunt**  
(Compatible with commercially available IC insertion equipment)

**Contact Lead Spacing** —  
.100 x .300 [2.54 x 7.62]  
**Lead Length** — .140 [3.56]  
below mounting surface  
**Housing Color** — Gray  
**Programming Tool** — None required  
(5 to 10 lbs. [22.2 to 44.4 N] required to manually program each shunt position)



No. of Positions	Dim. A		Standard Shunt Standard Pressure	Machine Insertable Shunt
	inch	mm		
4	.400	10.16	435704-4	—
6	.600	15.24	435704-6	—
7	.700	17.78	435704-7	—
8	.800	20.32	435704-8	436860-7
9	.900	22.86	435704-9	—
10	1.000	25.40	1-435704-0	—
12	1.200	30.48	1-435704-2	—

**Rotary DIP Switches, Low Profile, Process Sealed, 7MM, Through Hole and Surface Mount**

**FEATURES:**

- 40% PCB area space savings over standard rotary dials
- 50% Lower in profile than standard rotary dials
- Hexadecimal or binary code, complement available
- Deflection temperature of 250°C for SMT reflow soldering
- Gold contacts, tin/lead terminals
- Sealed "O" ring design

**MATERIAL SPECIFICATIONS:**

Fixed Contacts/Terminals.....Brass, gold plated / tin/lead  
 Moving Contacts.....BeCu, gold plated  
 Case Material .....PPS UL94V-0  
 Rotor .....Nylon UL94V-0  
 Cover Material .....PPS UL94V-0  
 O-Ring .....Fluoro Rubber

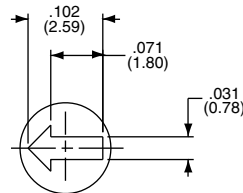
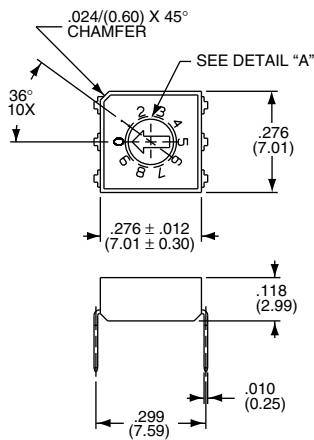
**ENVIRONMENTAL SPECIFICATIONS:**

Operating Temperature.....-10°C to +85°C  
 Storage Temperature.....-45°C to +100°C  
 Solder Heat Resistance .....MIL-STD 202F, Method 210  
 IR Process Capability .....EIA-364-56 Level II (250°C peak)

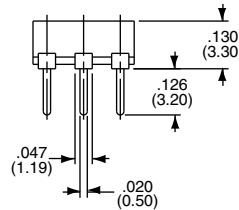
**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....0.4 VA Max. @ 20 VDC  
 Initial Contact Resistance .....50m Max. @ 2 VDC 10mA  
 Insulation Resistance .....1,000 Megohms max.  
 Dielectric Strength .....300 VAC for 1 minute  
 Actuator Travel.....36° 10 Position, 22.5° 16 position  
 Operating Force .....200 Grams avg.  
 Life Expectancy .....20,000 Steps, mechanical

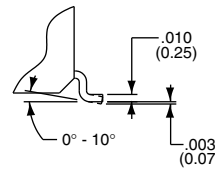
**P.C. MOUNT**



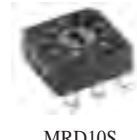
**DETAIL "A"**  
SCALE 8:1



**DETAIL "B"**  
SCALE 8:1



MRD10



MRD10S

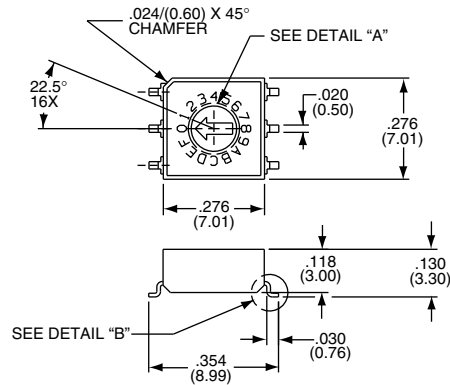


MRD16C



MRD16S

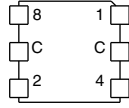
**SURFACE MOUNT**



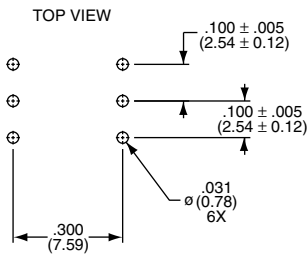
SEE DETAIL "B"

**Rotary DIP Switches, Low Profile, Process Sealed, 7MM, Through Hole and Surface Mount**

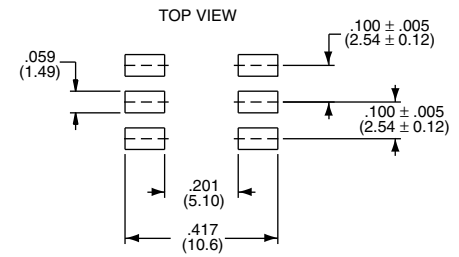
TERMINAL IDENTIFICATION  
VIEWED FROM BOTTOM SWITCH



P.C. LAYOUT (THRU HOLE)



P.C. LAYOUT (SURFACE MOUNT)



**TRUTH TABLES**

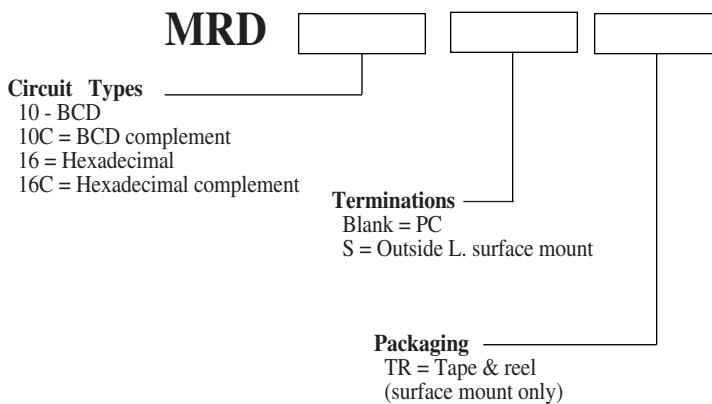
Pos.	0	1	2	3	4	5	6	7	8	9
C	X	X	X	X	X	X	X	X	X	X
1		X		X		X		X		X
2			X	X		X		X		
4					X	X	X	X		
8									X	X

Pos.	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
C	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1		X		X		X		X		X		X		X		X
2			X	X		X		X		X		X		X		X
4					X	X	X	X					X	X	X	X
8									X	X	X	X	X	X	X	X

Pos.	0	1	2	3	4	5	6	7	8	9
C	X	X	X	X	X	X	X	X	X	X
1	X		X		X		X		X	
2	X	X			X	X			X	X
4	X	X	X	X					X	X
8	X	X	X	X	X	X	X	X		

Pos.	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
C	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1	X		X		X		X		X		X		X		X	
2	X	X			X	X			X	X			X	X		
4	X	X	X	X					X	X	X	X				
8	X	X	X	X	X	X	X	X								

**HOW TO ORDER**



Circuit Type	Actuator Color
10	Red
10C	Orange
16	Green
16C	White

Rotary Dip Switches, Process Sealed, Through Hole and Surface Mount

MATERIAL SPECIFICATIONS:

- Contacts .....Gold flashed copper alloy
Terminals .....Tin lead plated brass
Base, Rotor, Case .....PC, Glass filled PBT resin (blue case)
SMT, Polyimide (white case)
Movable Contact.....Gold flashed copper alloy
Ball Support Plate.....Copper alloy
Detent Spring .....Stainless steel (spring)

TYPICAL PERFORMANCE CHARACTERISTICS:

- Contact Rating .....0.4 VA @ 20 VDC max.
Initial Contact Resistance .....50 Milliohms max. @ 2 VDC
Insulation Resistance .....1,000 Megohms min. @100 VDC
Dielectric Strength .....300 VAC RMS @ sea level
Operating Force .....6 Oz.-in. nom.
SMT Operating Force.....3 Oz.-in. nom.
Life Expectancy .....20,000 Steps

ENVIRONMENTAL SPECIFICATIONS:

- Operating Temperature.....-22°F to +185°F (-30°C to +85°C)
Storage Temperature.....-49°F to 212°F (-45°C to +100°C)
Vibration Resistance.....Subjected to vibration of 10-55hz per second with a total amplitude of .06 in. in 3 mutually perpendicular directions for 2 hours each
Shock Resistance .....Will withstand 50G acceleration in 3 different planes for a period of 11 milliseconds
Salt Spray Test .....Withstands an atmosphere of 5% salt water at temperature of 50°C
Hydrogen Sulfide Test .....Withstands an atmosphere of 15-20 PPM hydrogen sulfide gas at temperature of 40°C for 240 hours
Atmospheric Test .....Withstands an atmosphere of 30-50 PPM sulfite gas at a temperature of 40°C for 240 hours
Solder Heat Resistance .....Withstands 5 sec. flow solder bath of 260°C when mounted on a .06" thick PC board per MIL-STD 202, Method 210
Bubble Test.....Withstands submersion in 60°C Flouriert for 1 min. without leakage



DRD10E



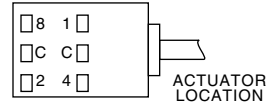
DRD16CE

TRUTH TABLES

Terminal Identification (view from bottom of the switch)



VIEW FROM BOTTOM OF THE SWITCH



ACTUATOR LOCATION

NOTE: COMMON TERMINALS ARE CONNECTED INTERNALLY.

10-Position, BCD (red actuator)

Truth table for 10-Position BCD (red actuator) with columns for positions 0-9 and rows for C, 1, 2, 4, 8.

16-Position, Hexadecimal (black actuator)

Truth table for 16-Position Hexadecimal (black actuator) with columns for positions 0-F and rows for C, 1, 2, 4, 8.

10-Position, BCD Complement (orange actuator)

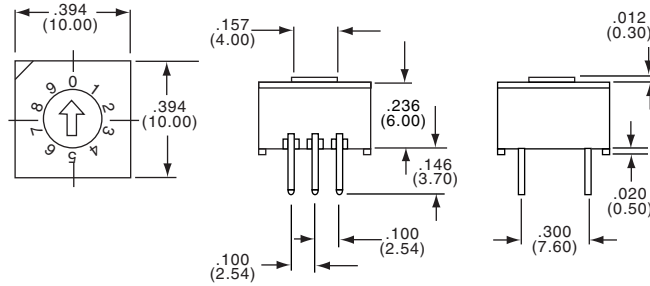
Truth table for 10-Position BCD Complement (orange actuator) with columns for positions 0-9 and rows for C, 1, 2, 4, 8.

16-Position Hexadecimal Complement (white actuator)

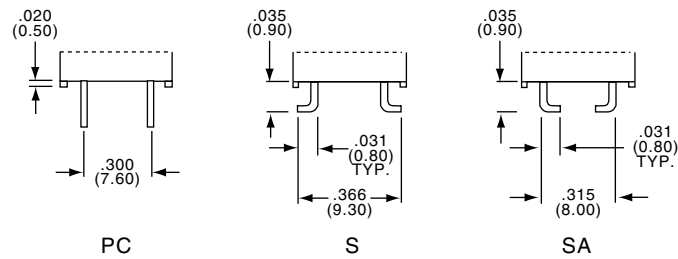
Truth table for 16-Position Hexadecimal Complement (white actuator) with columns for positions 0-F and rows for C, 1, 2, 4, 8.

**Rotary DIP Switches, Process Sealed, Through Hole and Surface Mount**

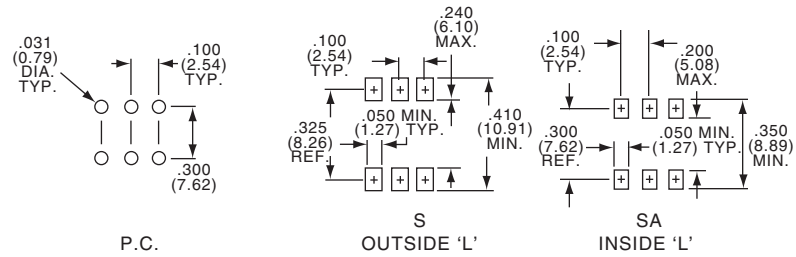
"D" FLUSH ACTUATOR



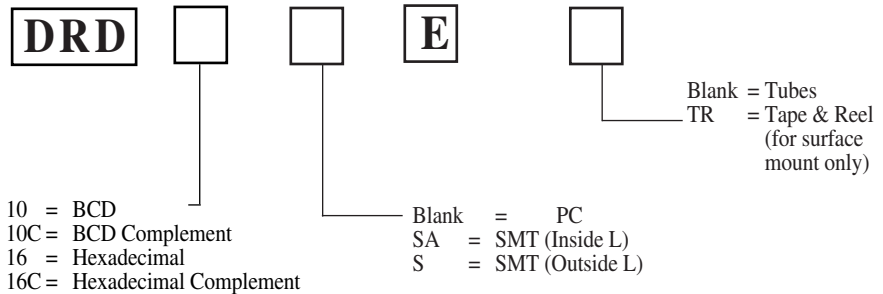
TERMINATIONS



LAYOUTS



HOW TO ORDER





**Rotary DIP Switches, Unsealed, Through Hole, Straight and Right-Angle**

**FEATURES:**

- High pressure contacts (140K PSI) provide 20,000 Steps.
- Unique design utilizes high pressure pin-point sliding contacts to penetrate contaminants on contact surface.
- Terminals insert molded into base.

- Screwdriver, knob and shaft (plastic and steel) type actuators available in both upright and right angle versions.

- 10 And 16 position versions with both real and complement codes.

Note: Common terminals connected internally.

**MATERIAL SPECIFICATIONS:**

Contacts .....Gold flashed copper alloy

Terminals .....Tin Lead Plated

Base, Rotor, Case .....Polyester

**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....0.4 VA @ 20 VDC

Initial Contact Resistance .....50 Milliohms max. @ 2 VDC

Insulation Resistance .....1,000 Megohms min. @ 100 VDC

Dielectric Strength .....300 VAC RMS @ sea level

**ENVIRONMENTAL SPECIFICATIONS:**

Operating Temperature.....-22°F to +185°F (-30°C to +85°C)

Storage Temperature.....-49°F to +212°F (-45°C to +100°C)

Vibration Resistance.....Subjected to vibration of 10-55hz per second with a total amplitude of .06 in. in 3 mutually perpendicular directions for 2 hours each

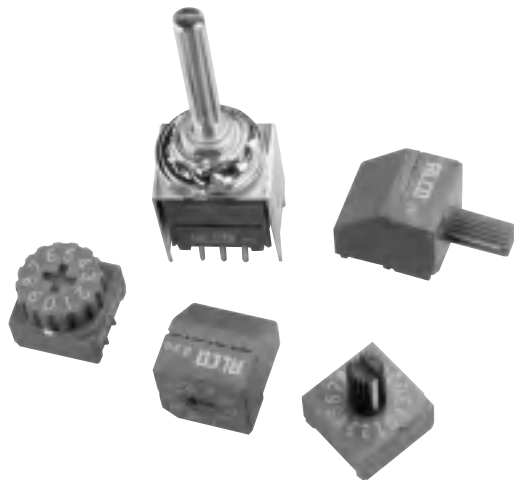
Shock Resistance .....Will withstand 50G acceleration in 3 different planes for a period of 11 milliseconds

Salt Spray Test .....Withstands an atmosphere of 5% salt water at temperature of 50°C

Hydrogen Sulfide Test .....Withstands an atmosphere of 15-20 PPM hydrogen sulfide gas at temperature of 40°C for 240 hours

Atmosphere Test.....Withstands an atmosphere of 30-50 PPM sulfide gas at a temperature of 40°C for 240 hours

Solder Heat Resistance .....Withstands 5 sec. flow solder bath of 260°C when mounted on a .06" thick PC board per MIL-STD 202, Method 210



**Example: DRW 10RA =** Rotary Dip with  
Wheel actuator  
BDC -10 position  
Right angle PC terminations

**Series**  
Rotary Dips (blue case)

**Actuator Style**

- \*D = Flush
- M = Mini plastic shaft
- W = Wheel
- S = Metal shaft

**Circuit Type**

- 10 = BCD
- 10C = BCD complement
- 16 = Hexadecimal
- 16C = Hexadecimal complement

**HOW TO ORDER**

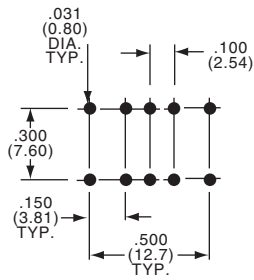
**Terminations**

- Blank = PC
- RA = Right angle for DRM, DRW, DRS only
- RAE = Right angle, Auto Assembly Compatible for DRD type only

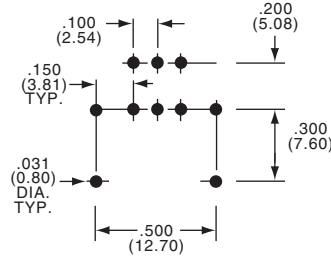
\*DRD Available in RAE version only. For PC or SMT versions, see Pg. A24 DRD "E" Process Sealed Product.

**Rotary DIP Switches, Unsealed, Through Hole, Straight and Right-Angle**

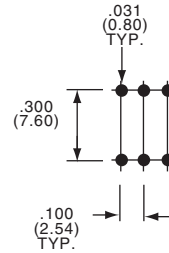
FOOTPRINTS



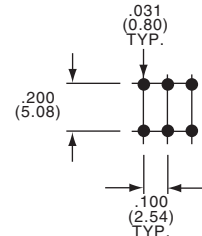
S STYLE VERTICAL  
(METAL SHAFT)



S STYLE RA  
(METAL SHAFT)



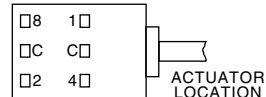
PC



PC  
RIGHT ANGLE

TRUTH TABLES

Terminal Identification  
(view from bottom of the switch)



10-Position, BCD (red actuator)										
Pos.	0	1	2	3	4	5	6	7	8	9
C	X	X	X	X	X	X	X	X	X	X
1		X		X		X		X		X
2			X	X			X	X		
4					X	X	X	X		
8									X	X

16-Position, Hexadecimal (black actuator)																
Pos.	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
C	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1		X		X		X		X		X		X		X		X
2			X	X			X	X			X	X			X	X
4					X	X	X	X					X	X	X	X
8									X	X	X	X	X	X	X	X

10-Position, BCD Complement (orange actuator)										
Pos.	0	1	2	3	4	5	6	7	8	9
$\bar{C}$	X	X	X	X	X	X	X	X	X	X
$\bar{1}$	X		X		X		X		X	
$\bar{2}$	X	X			X	X			X	X
$\bar{4}$	X	X	X	X					X	X
$\bar{8}$	X	X	X	X	X	X	X	X		

16-Position Hexadecimal Complement (white actuator)																
Pos.	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
$\bar{C}$	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
$\bar{1}$	X		X		X		X		X		X		X		X	
$\bar{2}$	X	X			X	X			X	X			X	X		
$\bar{4}$	X	X	X	X					X	X	X	X				
$\bar{8}$	X	X	X	X	X	X	X	X								

**Rotary DIP Switches, Unsealed, Through Hole, Metal Shaft or Wheel Actuator**

“S” METAL SHAFT ACTUATOR



See Section K for knob selection

“W” WHEEL ACTUATOR



A

DR Series

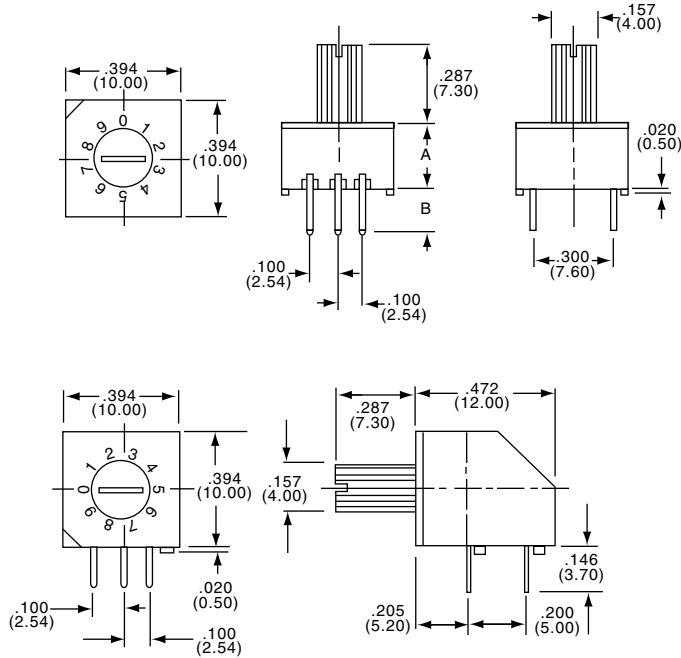
**Rotary DIP Switches, Unsealed, Through-Hole, Flush and Mini Shaft Actuator**

“D” FLUSH ACTUATOR



DIM.	DR	RC, *RA, RR
A	.236 (6.00)	.256 (6.50)
B	.146 (3.70)	.126 (3.20)

“M” MINI-SHAFT ACTUATOR



DIM.	DR	RR
A	.236 (6.00)	.256 (6.50)
B	.146 (3.70)	.126 (3.20)



*ASE/F Series - Page B5*



*SE Series - Page B9*



*STS Series - Page B11*



*TSS Series - Page B16*



*MSS Series - Page B18*



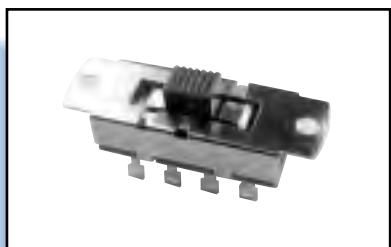
*MSSA Series - Page B24*



*MHS Series - Page B31*



*SSJ Series - Page B33*



*AC Power Slide Switches - Page B48*



**Slide Switches Part Number Index**

**B**

**Slide Switches**

ASE22	B6	ASF62RS	B9	MSSA101DG	B31	SLS1211	B43
ASE22G	B6	ASF62S	B9	MSSA101DGRA	B32	SLS121PC	B43
ASE22GL	B6	CST022NK	B45	MSSA101EG	B31	SLS121RA	B43
ASE22GS	B7	CST023NK	B45	MSSA101EGRA	B32	SLS131PC	B44
ASE22L	B6	CST042NK	B46	MSSA104D	B31	SLS131RA	B44
ASE22R	B5,B6	CST043NK	B46	MSSA104D1	B31	SLS141PC	B44
ASE22RG	B6	CST062NK	B46	MSSA104DRA	B32	SLS141RA	B44
ASE22RGL	B7	KSS10A	B40	MSSA104E	B31	SLS151PC	B44
ASE22RGS	B7	KSS10B	B40	MSSA104ERA	B32	SLS151RA	B44
ASE22RL	B7	KSS20A	B40	MSSA111DG	B30	SLS220	B41
ASE22RS	B7	KSS20B	B40	MSSA111EG	B30	SLS2201	B42
ASE22S	B7	MHS122	B33	MSSA114D	B30	SLS220PC	B40
ASE42	B6	MHS122G	B33	MSSA114E	B30	SLS230PC	B40
ASE42G	B6	MHS122GRA	B34	MSSA1350	B26	SLS240PCA	B40
ASE42GL	B6	MHS122K	B33	MSSA1350G	B26	SLS250PC	B40
ASE42GS	B7	MHS122KG	B33	MSSA1350R	B26	SLS260PC	B40
ASE42L	B6	MHS122RA	B34	MSSA1350RG	B26	SLSA120	B41
ASE42R	B6	MHS123	B33	MSSA1450	B26	SLSA1201	B42
ASE42RG	B6	MHS123G	B33	MSSA1450G	B26	SLSA220	B41
ASE42RGL	B7	MHS123GRA	B34	MSSA1450R	B26	SLSA2201	B42
ASE42RGS	B7	MHS123K	B33	MSSA1450RG	B26	SSA12	B39
ASE42RL	B7	MHS123KG	B33	MSSA201NGRA	B32	SSA12G	B39
ASE42RS	B7	MHS123RA	B34	MSSA201PGRA	B32	SSA22	B39
ASE42S	B7	MHS133	B33	MSSA204N	B31	SSA22G	B39
ASE43	B6	MHS133G	B33	MSSA204N1	B31	SSB12	B38
ASE43G	B6	MHS133GRA	B34	MSSA204NRA	B32	SSB12G	B38
ASE43GL	B6	MHS133K	B33	MSSA204P1	B31	SSB12R	B38
ASE43GS	B7	MHS133KG	B33	MSSA204PRA	B32	SSB12RG	B38
ASE43L	B6	MHS133RA	B34	MSSA211NG	B30	SSB22	B38
ASE43R	B6	MHS222	B33	MSSA214N	B30	SSB22G	B38
ASE43RG	B6	MHS222G	B33	MSSA2350	B27	SSB22R	B38
ASE43RGL	B7	MHS222GRA	B34	MSSA2350G	B27	SSB22RG	B38
ASE43RGS	B7	MHS222K	B33	MSSA2350R	B27	SSB42	B38
ASE43RL	B7	MHS222KG	B33	MSSA2350RG	B27	SSB42G	B38
ASE43RS	B7	MHS222RA	B34	MSSA2450	B27	SSJ12	B35
ASE43S	B7	MHS223	B33	MSSA2450G	B27	SSJ12R	B35
ASE62	B6	MHS223G	B33	MSSA2450R	B27	SSJ13	B35
ASE62G	B5,B6	MHS223GRA	B34	MSSA2450RG	B27	STS121PC	B13
ASE62GL	B6	MHS223K	B33	MSSA3350	B28	STS121RA	B13
ASE62GS	B7	MHS223KG	B33	MSSA3350G	B28	STS1300PC	B14
ASE62L	B6	MHS223RA	B34	MSSA3350R	B28	STS1300RA	B14
ASE62R	B6	MHS233	B33	MSSA3350RG	B28	STS131PC	B13
ASE62RG	B6	MHS233G	B33	MSSA3450	B28	STS131RA	B13
ASE62RGL	B7	MHS233GRA	B34	MSSA3450G	B28	STS1400PC	B14
ASE62RGS	B7	MHS233K	B33	MSSA3450R	B28	STS1400RA	B14
ASE62RL	B7	MHS233KG	B33	MSSA3450RG	B28	STS141PC	B14
ASE62RS	B7	MHS233RA	B34	MSSA4350	B29	STS141RA	B14
ASE62S	B7	MLL1200S	B47	MSSA4350G	B29	STS151PC	B15
ASF22	B5,B8	MLL1200STR	B47	MSSA4350R	B29	STS151RA	B15
ASF22G	B8	MLL1300S	B47	MSSA4450	B29	STS161PC	B15
ASF22GL	B8	MMS12	B36	MSSA4450G	B29	STS161RA	B15
ASF22GS	B9	MMS22	B36	MSSA4450R	B29	STS220PC	B16
ASF22L	B8	MMS22R	B36	MSSA4450RG	B29	STS2300PC	B15
ASF22R	B5,B8	MMS23	B36	S1DGPC	B12	STS230PC	B16
ASF22RG	B8	MMS23R	B36	S1DGRA	B12	STS2400PC	B15
ASF22RGL	B9	MMS42	B37	S1EGPC	B12	STS240PC	B16
ASF22RGS	B9	MMS42R	B37	S1EGRA	B12	STS250PC	B16
ASF22RL	B9	MMS43	B37	S2DGPC	B12	STS260PC	B16
ASF22RS	B9	MMS43R	B37	S2DGRA	B12	STSA220RA	B16
ASF22S	B9	MSS1200	B20	S2EGPC	B12	STSA220RA1	B16
ASF42	B8	MSS1200G	B20	S2EGRA	B12	STSA230RA	B16
ASF42G	B8	MSS1200R	B20	SDS1240RA0	B17	STSA230RA1	B16
ASF42GL	B8	MSS1200RG	B20	SDS1240RA8	B17	TSD21AAGPC	B18
ASF42GS	B9	MSS1300	B20	SDS1340RA0	B17	TSD21DDG1PC	B18
ASF42L	B8	MSS1300G	B20	SDS1340RA8	B17	TSD21DDG1RA	B19
ASF42R	B8	MSS1300R	B20	SDS2240RA0	B17	TSD21DDG2PC	B18
ASF42RG	B8	MSS1400	B21	SDS2240RA8	B17	TSD21DDG2RA	B19
ASF42RGL	B9	MSS1400G	B21	SDS2340RA0	B17	TSD21EEG1RA	B19
ASF42RGS	B9	MSS2225	B21	SDS2340RA8	B17	TSD21EEGRA	B19
ASF42RL	B9	MSS2225G	B21	SE1DGPC	B12	TSD21RG1PC	B18
ASF42RS	B9	MSS2250	B21	SE1DGRA	B12	TSS11AG1PC	B18
ASF42S	B9	MSS2250G	B21	SE1DGRA	B12	TSS11AGPC	B18
ASF43	B8	MSS2250R	B22	SE1DGSMT	B11	TSS11DG1PC	B18
ASF43G	B8	MSS2250RG	B22	SE1DGSMTTR	B11	TSS11DG1RA	B19
ASF43GL	B8	MSS4200	B22	SE1EGPC	B12	TSS11DGPC	B18
ASF43GS	B9	MSS4200G	B22	SE1EGRA	B12	TSS11DGRA	B18
ASF43L	B8	MSS4200R	B23	SE1EGSMT	B11	TSS11DEG1RA	B19
ASF43R	B8	MSS4200RG	B23	SE1EGSMTTR	B11	TSS11EG1PC	B18
ASF43RG	B8	MSS4250	B22	SE1GSM	B11	TSS11EG1RA	B19
ASF43RGL	B9	MSS4300	B23	SE1GSMTR	B11	TSS11EGPC	B18
ASF43RGS	B9	MSS4300G	B23	SE2DGPC	B12	TSS11EGRA	B19
ASF43RL	B9	MSS4300R	B24	SE2DGRA	B12	TSS21KG1PC	B18
ASF43RS	B9	MSS4300RG	B24	SE2EGPC	B12	TSS21KG2PC	B18
ASF43S	B9	MSS4335	B23	SE2EGRA	B12	TSS21NG1PC	B18
ASF62	B8	MSS4350R	B24	SL1000	B40	TSS21NG1RA	B19
ASF62G	B8	MSS4350RG	B24	SL220	B40	TSS21NGPC	B18
ASF62GL	B8	MSS6200	B24	SL330	B40	TSS21NGRA	B19
ASF62GS	B9	MSS6200G	B24	SL550	B40	TSS21PAGRA	B19
ASF62L	B8	MSS6250	B25	SL660	B40	TSS21PG1RA	B19
ASF62R	B8	MSS6350	B25	SL770	B40	TSS21PGPC	B18
ASF62RG	B8	MSS6350G	B25	SL880	B40	TSS21PGRA	B19
ASF62RGL	B9	MSS6350R	B25	SLS120	B41	TSS41NGPC	B18
ASF62RGS	B9	MSS6350RG	B25	SLS1201	B42	TSS41NGRA	B19
ASF62RL	B9			SLS121	B43	1571490	B48
						1571491	B48

B2

**Slide Switch Selection Guide**

**PRODUCT LINE FEATURES**

- One of the broadest lines in the industry.
- One to six pole configurations.
- Current ratings from 0.4V @ 20VDC to 3A @ 115VAC.
- Miniature and sub-miniature case sizes.
- Gold or silver plating available in most series.
- Wave solderable, washable, and surface mount versions.
- Rocker (butt), shoe and bifurcated contact mechanisms.
- Vertical and RA actuator styles.

CIRCUITRY	SERIES	TERMINATION	CONTACT RATING/PLATING	ACTION	LIFE EXPECTANCY
SPST	TSS	P.C.	.4VA/GOLD	STANDARD/FLUSH	80K CYCLES
SPDT	MHS	P.C./RIGHT ANGLE	.4VA/GOLD:300mA/SILVER	STANDARD/BATON	15K CYCLES
	MLL	SURFACE MOUNT	0.3A @ 4 VDC/SILVER	RIGHT ANGLE	10K CYCLES
	MMS	P.C.	100MA/SILVER	STANDARD	10K CYCLES
	MSS	P.C./RIGHT ANGLE	.4VA/GOLD:300MA/SILVER	STANDARD	15K CYCLES
	MSSA <sup>H</sup> H1	P.C./RIGHT ANGLE	.4VA/GOLD	STANDARD	30K CYCLES
	MSSA <sup>H</sup> H4	P.C./RIGHT ANGLE	3A/SILVER	STANDARD	30K CYCLES
	SDS	P.C./RIGHT ANGLE	300mA @ 125VAC/SILVER	STANDARD	10K CYCLES
	SE, S	P.C./RIGHT ANGLE/SMT	.4VA/GOLD	STANDARD	6K CYCLES
	SL	P.C.	250mA/SILVER	STANDARD	6K CYCLES
	SLS	P.C./RIGHT ANGLE	250mA/SILVER	STANDARD	6K CYCLES
	SLS/A	P.C.	500mA/SILVER	STANDARD	10K CYCLES
	SSA	P.C.	100mA/SILVER:.4VA/GOLD	STANDARD	10K CYCLES
	SSB	P.C./RIGHT ANGLE	100MA/SILVER:.4VA/GOLD	STANDARD	10K CYCLES
	SSJ	P.C./RIGHT ANGLE	100mA/SILVER	STANDARD	10K CYCLES
	STS	P.C./RIGHT ANGLE	300mA/SILVER	STANDARD	10K CYCLES
	TSS	P.C./RIGHT ANGLE	.4VA/GOLD	STANDARD/FLUSH	60-80K CYCLES
SP3T	MHS	P.C./RIGHT ANGLE	300MA/SILVER:.4VA/GOLD	STANDARD/BATON	15K CYCLES
	MLL	SURFACE MOUNT	0.3A @ 4 VDC/SILVER	RIGHT ANGLE	10K CYCLES
	MSS	P.C./RIGHT ANGLE	300mA/SILVER:.4VA/GOLD	STANDARD	15K CYCLES
	MSSA	P.C./RIGHT ANGLE	300MA/SILVER:.4VA/GOLD	STANDARD	15K CYCLES
	SDS	P.C./RIGHT ANGLE	300mA @ 125VAC/SILVER	STANDARD	10K CYCLES
	SL	P.C.	250mA/SILVER	STANDARD	6K CYCLES
	SLS	P.C./RIGHT ANGLE	250MA/SILVER	STANDARD	6K CYCLES
	SSJ	P.C.	100mA/SILVER	STANDARD	10K CYCLES
	STS	P.C./RIGHT ANGLE	300mA/SILVER	STANDARD	10K CYCLES
SP4T	MSS	P.C.	300mA/SILVER:.4VA/GOLD	STANDARD	15K CYCLES
	MSSA	P.C./RIGHT ANGLE	300mA/SILVER:.4VA/GOLD	STANDARD	15K CYCLES
	SLS	P.C./RIGHT ANGLE	250mA/SILVER	STANDARD	6K CYCLES
	STS	P.C./RIGHT ANGLE	300mA/SILVER	STANDARD	10K CYCLES
SP5T	SL	P.C.	250mA/SILVER	STANDARD	6K CYCLES
	SLS	P.C./RIGHT ANGLE	250mA/SILVER	STANDARD	6K CYCLES
	STS	P.C./RIGHT ANGLE	300mA/SILVER	STANDARD	10K CYCLES
SP6T	SL	P.C.	250mA/SILVER	STANDARD	6K CYCLES
	STS	P.C./RIGHT ANGLE	300mA/SILVER	STANDARD	10K CYCLES
SP7T	SL	P.C.	250mA/SILVER	STANDARD	6K CYCLES
SP8T	SL	P.C.	250mA/SILVER	STANDARD	6K CYCLES
SP10T	SL	P.C.	250mA/SILVER	STANDARD	6K CYCLES
DPST	TSS	P.C.	.4VA/GOLD	STANDARD/FLUSH	80K CYCLES
DPDT	ASE/F	P.C./RIGHT ANGLE/SMT	.4VA/GOLD:300mA SILVER	STANDARD/FLUSH	10K CYCLES
	CSS	P.C.	300mA/SILVER	BATON	15K CYCLES
	CST	P.C.	300mA/SILVER	BATON	15K CYCLES
	MHS	P.C./RIGHT ANGLE	300mA/SILVER:.4VA/GOLD	STANDARD/BATON	15K CYCLES
	MMS	P.C./RIGHT ANGLE	100mA/SILVER	STANDARD	10K CYCLES
	MSS	P.C./RIGHT ANGLE	300mA/SILVER:.4VA/GOLD	STANDARD	15K CYCLES
	MSSA21	P.C./RIGHT ANGLE	.4VA/GOLD	STANDARD	30K CYCLES

**B**

Slide Switches

**Slide Switch Selection Guide**

**B**  
Slide Switches

CIRCUITRY	SERIES	TERMINATION	CONTACT RATING/PLATING	ACTUATION	LIFE EXPECTANCY	
DPDT	1571491	PANEL	6A/SILVER	STANDARD	5K CYCLES	
	MSSA2H4	P.C./RIGHT ANGLE	3A/SILVER	STANDARD/FLUSH	30K CYCLES	
	SDS	P.C./RIGHT ANGLE	300mA @ 125 VAC/SILVER	STANDARD	10K CYCLES	
	SE, S	P.C./RIGHT ANGLE	.4VA/GOLD	STANDARD	10K CYCLES	
	SLS	P.C.	250mA/SILVER	STANDARD	6K CYCLES	
	SLS/A	P.C.	500mA/SILVER	STANDARD	10K CYCLES	
	SSA	P.C.	100mA/SILVER:.4VA/GOLD	STANDARD	10K CYCLES	
	SSB	P.C./RIGHT ANGLE	100mA/SILVER:.4VA/GOLD	STANDARD	10K CYCLES	
	STS	P.C./RIGHT ANGLE	300 mA/SILVER	STANDARD	10K CYCLE	
	TSS	P.C./RIGHT ANGLE	.4VA/GOLD	STANDARD/FLUSH	60-80K CYCLES	
	DP3T	1571490	PANEL	13A/SILVER	STANDARD	5K CYCLES
		CST	P.C.	300mA/SILVER	BATON	10K CYCLES
		MHS	P.C./RIGHT ANGLE	300mA/SILVER:.4VA/GOLD	STANDARD/BATON	15KCYCLES
MMS		P.C./RIGHT ANGLE	100mA/SILVER	STANDARD	10K CYCLES	
MSSA		P.C./RIGHT ANGLE	300mA/SILVER:.4VA/GOLD	STANDARD	15K CYCLES	
SDS		P.C./RIGHT ANGLE	300mA @ 125 VAC	STANDARD	10K CYCLES	
SLS		P.C.	250mA/SILVER	STANDARD	6K CYCLES	
STS		P.C./RIGHT ANGLE	300mA/SILVER	STANDARD	10K CYCLES	
DP4T		MSS	P.C.	300mA/SILVER:.4VA/GOLD	STANDARD	15K CYCLES
		MSSA	P.C./RIGHT ANGLE	300mA/SILVER:.4VA/GOLD	STANDARD	15K CYCLES
		SLS	P.C.	250mA/SILVER	STANDARD	6K CYCLES
DP5T		STS	P.C./RIGHT ANGLE	300mA/SILVER	STANDARD	10K CYCLES
		SLS	P.C.	250mA/SILVER	STANDARD	6K CYCLES
DP6T	STS	P.C./RIGHT ANGLE	300mA/SILVER	STANDARD	10K CYCLES	
	SLS	P.C.	250mA/SILVER	STANDARD	6K CYCLES	
3P3T	MSSA	P.C./RIGHT ANGLE	300mA/SILVER: .4VA/GOLD	STANDARD	15K CYCLES	
	SSB	P.C.	100mA/SILVER:.4VA/GOLD	STANDARD	10K CYCLES	
	MSSA	P.C./RIGHT ANGLE	300mA/SILVER:.4VA/GOLD	STANDARD	15K CYCLES	
4PDT	ASE/F	P.C./RIGHT ANGLE/SMT	300mA/SILVER:.4VA/GOLD	STANDARD/FLUSH	10K CYCLES	
	CST	P.C.	300mA/SILVER	BATON	10K CYCLES	
	MMS	P.C./RIGHT ANGLE	100mA/SILVER	STANDARD	10K CYCLES	
	MSS	P.C./RIGHT ANGLE	300mA/SILVER:.4VA/GOLD	STANDARD	15K CYCLES	
	SSB	P.C.	100mA/SILVER:.4VA/GOLD	STANDARD	10K CYCLES	
	TSS	P.C./RIGHT ANGLE	.4VA/GOLD	STANDARD	80K CYCLES	
	ASE/F	P.C./RIGHT ANGLE/SMT	300mA/SILVER	STANDARD/FLUSH	10K CYCLES	
4P3T	CST	P.C.	300mA/SILVER	BATON	10K CYCLES	
	MHS	P.C.	300mA/SILVER:.4VA/GOLD	STANDARD	15K CYCLES	
	MMS	P.C./RIGHT ANGLE	100mA/SILVER	STANDARD	10K CYCLES	
	MSS/MSSA	P.C./RIGHT ANGLE	300mA/SILVER:.4VA/GOLD	STANDARD	15L CYCLES	
4P4T	MSSA	P.C./RIGHT ANGLE	300mA/SILVER:.4VA/GOLD	STANDARD	15K CYCLES	
6PDT	ASE/F	P.C./RIGHT ANGLE/SMT	300mA/SILVER:.4VA/GOLD	STANDARD/FLUSH	10K CYCLES	
	CST	P.C.	300mA/SILVER:.4VA/GOLD	BATON	10K CYCLES	
	MSS	P.C.	300mA/SILVER:.4VA/GOLD	STANDARD	15K CYCLES	
6P3T	MSS	P.C./RIGHT ANGLE	300mA/SILVER:.4VA/GOLD	STANDARD	15K CYCLES	



**Slide Switches, Auto-insertable, Through Hole and Surface Mount**

**FEATURES:**

- Unique design allows ASE/F to withstand aqueous or solvent cleaning processes.
- High temperature anti-static plastic construction will withstand most surface mount, vapor phase reflow or wave soldering conditions.
- Three standard types:  
ASF – DIP package with flush actuator allows auto insertion on standard IC equipment. Standard tape seal and closed case construction provide process seal.

- ASFO–Open ended flush actuator without tape seal.
- ASE–extended actuator open-ended case allows washout after process cleaning.
- 2, 4 and 6 pole versions available with top or side actuator.
- Bifurcated double wipe contacts provide dependable, telecom grade switching.
- Industry standard .100 x .300 pin spacing

**MATERIAL SPECIFICATIONS:**

Contacts .....Gold over nickel or  
Silver over nickel flash  
Case Material .....PET  
Actuator Material .....Nylon  
Terminal.....Copper alloy, terminals tin lead plate  
(90/10) over nickel

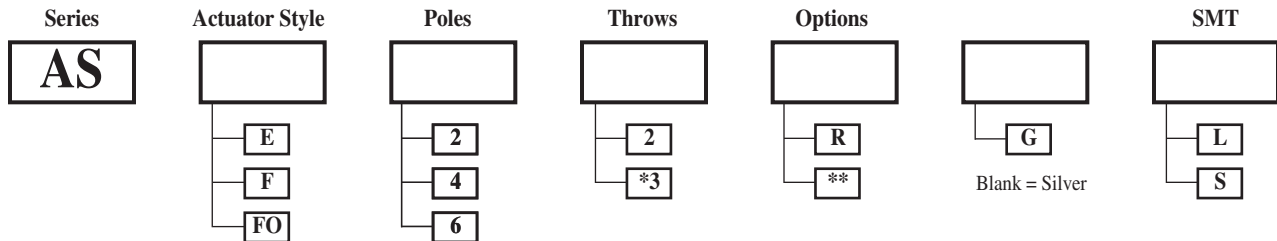
**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....Gold: 0.4 VA @ 20 VDC or peak AC shorting type  
Silver: 300mA @ 115 VAC 28 VDC  
Initial Contact Resistance .....40 Milliohms max.  
Insulation Resistance .....1,000 Megohms @ 500 VDC min.  
Dielectric Strength .....1,000 Volts RMS @ sea level  
Contact Timing .....Shorting  
Life Expectancy .....10,000 Cycles  
Actuation Force ......850g±150grams  
Travel ..... .100 ±.010 [2.54±.25]

**ENVIRONMENTAL SPECIFICATIONS:**

Operating Temperature.....-40°F to +176°F (-40°C to +80°C)  
Storage Temperature.....-40°F to +176°F (-40°C to +80°C)  
Solder Heat Resistance .....See page M3-M4  
Movable Contact .....Copper alloy  
Terminal Seal .....Insert molded

**PART NUMBERING**



ASF: Tape seal, closed (sealed) case, flush top actuator.  
ASE: Open ended case, extended top or side actuator.  
ASFO: Open ended case, flush top or side actuator.

Standard actuator color is white.  
E= Extended actuator  
F= Flush actuator  
FO= Open ended without tape seal  
G= Gold contacts  
R= Side actuator  
\*3= Throw available in 4 pole only  
L= SMT terminal configuration  
S= SMT terminal reverse L configuration (Refer to page B10 for pad layout)



ASE22R

ASE62G



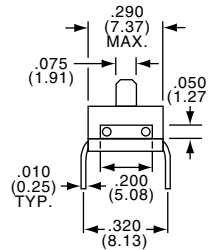
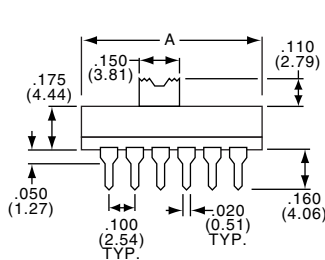
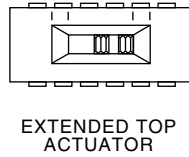
ASF22

ASF22R

\*\*Flush side actuator "R" versions are supplied with open ended case and without tape seal.

**Note: For SPDT requirements, order DPDT version and use either set of contacts for SPDT switching.**

**Slide Switches, Extended Actuator, Through Hole and Surface Mount**

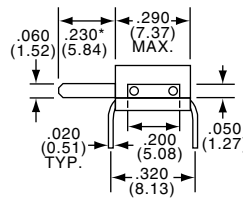
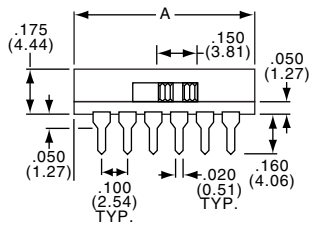
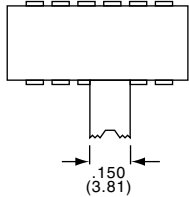


NOTE: See Page B10 for Circuit Diagram and Recommended PC Board Layout.

**Upright, Through Hole, Extended Actuator**

Tyco Electronics	Alcoswitch	Type	Contact	Dim A
1437581-2	ASE22	DPDT	Silver	.400/10.2
1437581-4	ASE22G	DPDT	Gold	.400/10.2
1-1437581-4	ASE42	4PDT	Silver	.700/17.8
1-1437581-6	ASE42G	4PDT	Gold	.700/17.8
2-1437581-5	ASE43	4P3T	Silver	1.10/27.9
2-1437581-6	ASE43G	4P3T	Gold	1.10/27.9
3-1437581-1	ASE62	6PDT	Silver	1.00/25.4
3-1437581-3	ASE62G	6PDT	Gold	1.00/25.4

**EXTENDED SIDE ACTUATOR**

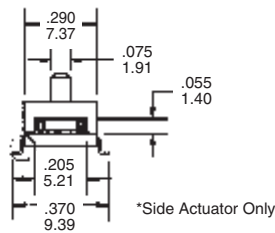
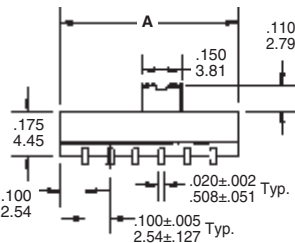
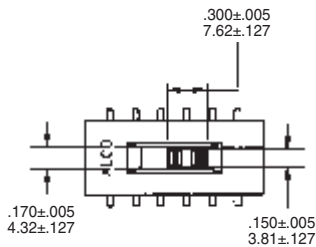


\*.105 (2.67) ASE22R, ASE22RG

NOTE: See Page B10 for Circuit Diagram and Recommended PC Board Layout.

**Right Angle, Through Hole, Extended Actuator**

Tyco Electronics	Alcoswitch	Type	Contact	Dim A
1437581-8	ASE22R	DPDT	Silver	.400/10.2
1437581-9	ASE22RG	DPDT	Gold	.400/10.2
1-1437581-9	ASE42R	4PDT	Silver	.700/17.8
2-1437581-0	ASE42RG	4PDT	Gold	.700/17.8
2-1437581-9	ASE43R	4P3T	Silver	1.10/27.9
3-1437581-0	ASE43RG	4P3T	Gold	1.10/27.9
3-1437581-6	ASE62R	6PDT	Silver	1.00/25.4
3-1437581-7	ASE62RG	6PDT	Gold	1.00/25.4



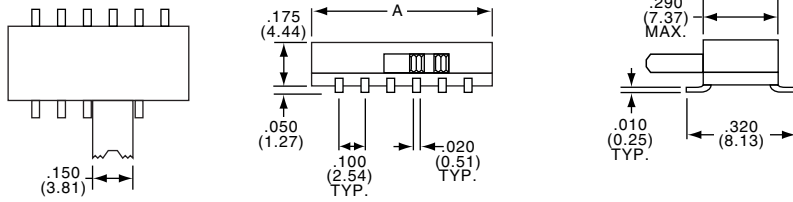
**L Type Surface Mount**

NOTE: See Page B10 for Circuit Diagram and Recommended PC Board Layout.

**Upright, Surface Mount "L" Type, Extended Actuator**

Tyco Electronics	Alcoswitch	Type	Contact	Dim A
1437581-5	ASE22GL	DPDT	Gold	.400/10.2
1437581-7	ASE22L	DPDT	Silver	.400/10.2
1-1437581-7	ASE42GL	4PDT	Gold	.700/17.8
1-1437581-8	ASE42L	4PDT	Silver	.700/17.8
2-1437581-7	ASE43GL	4P3T	Gold	1.10/27.9
2-1437581-8	ASE43L	4P3T	Silver	1.10/27.9
3-1437581-4	ASE62GL	6PDT	Gold	1.00/25.4
3-1437581-5	ASE62L	6PDT	Silver	1.00/25.4

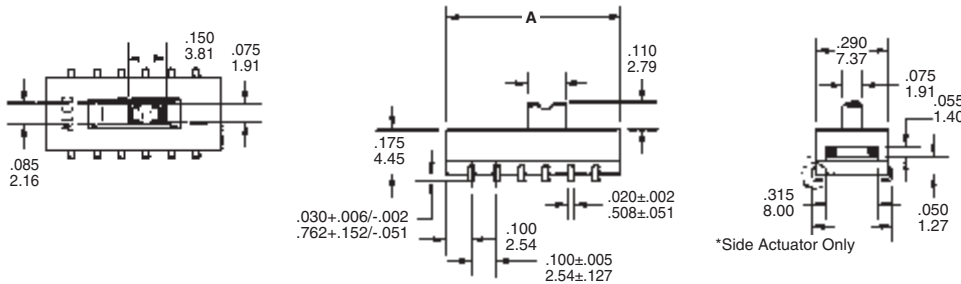
**Slide Switches, Extended Actuator, Through Hole and Surface Mount**



NOTE: See Page B10 for Circuit Diagram and Recommended PC Board Layout.

Right Angle, Surface Mount "L" Type, Extended Actuator

Tyco Electronics	Alcoswitch	Type	Contact	Dim A
—	ASE22RGL	DPDT	Gold	.400/10.2
1-1437581-1	ASE22RL	DPDT	Silver	.400/10.2
2-1437581-1	ASE42RGL	4PDT	Gold	.700/17.8
2-1437581-2	ASE42RL	4PDT	Silver	.700/17.8
—	ASE43RGL	4P3T	Gold	1.10/27.9
—	ASE43RL	4P3T	Silver	1.10/27.9
3-1437581-8	ASE62RGL	6PDT	Gold	1.00/25.4
3-1437581-9	ASE62RL	6PDT	Silver	1.00/25.4

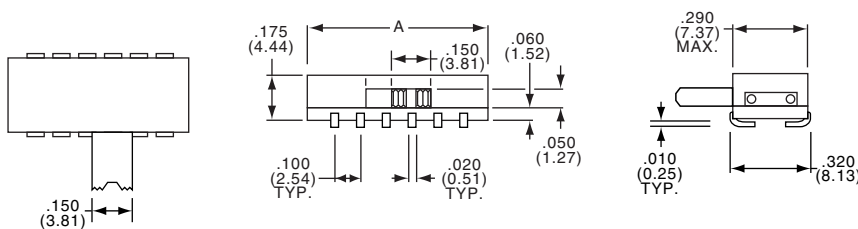


S Type Surface Mount

NOTE: See Page B10 for Circuit Diagram and Recommended PC Board Layout.

Upright, Surface Mount "S" Type, Extended Actuator

Tyco Electronics	Alcoswitch	Type	Contact	Dim A
1437581-6	ASE22GS	DPDT	Gold	.400/10.2
1-1437581-3	ASE22S	DPDT	Silver	.400/10.2
—	ASE42GS	4PDT	Gold	.700/17.8
2-1437581-4	ASE42S	4PDT	Silver	.700/17.8
—	ASE43GS	4P3T	Gold	1.10/27.9
—	ASE43S	4P3T	Silver	1.10/27.9
—	ASE62GS	6PDT	Gold	1.00/25.4
—	ASE62S	6PDT	Silver	1.00/25.4

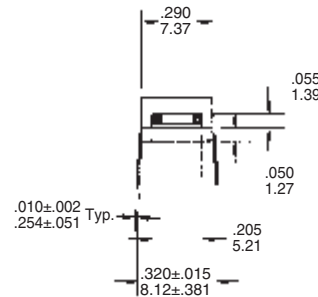
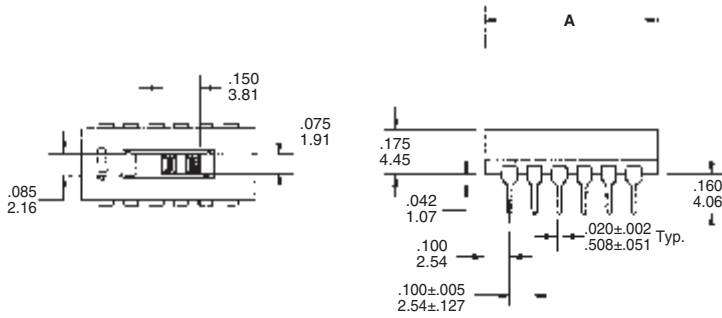


NOTE: See Page B10 for Circuit Diagram and Recommended PC Board Layout.

Right Angle, Surface Mount "S" Type, Extended Actuator

Tyco Electronics	Alcoswitch	Type	Contact	Dim A
1-1437581-0	ASE22RGS	DPDT	Gold	.400/10.2
1-1437581-2	ASE22RS	DPDT	Silver	.400/10.2
—	ASE42RGS	4PDT	Gold	.700/17.8
2-1437581-3	ASE42RS	4PDT	Silver	.700/17.8
—	ASE43RGS	4P3T	Gold	1.10/27.9
—	ASE43RS	4P3T	Silver	1.10/27.9
—	ASE62RGS	6PDT	Gold	1.00/25.4
—	ASE62RS	6PDT	Silver	1.00/25.4

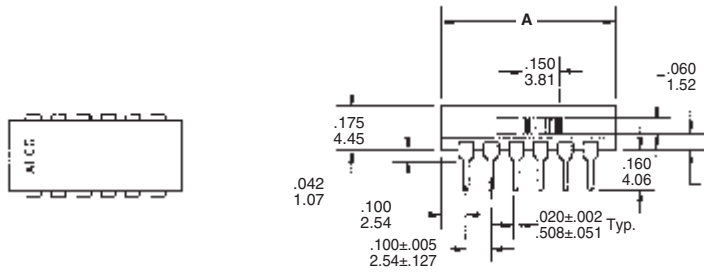
**Slide Switches, Flush Actuator, Through Hole and Surface Mount**



**Upright, Through Hole, Flush Actuator**

Tyco Electronics	Alcoswitch	Type	Contact	Dim A
5-1437581-6	ASF22	DPDT	Silver	.400/10.2
5-1437581-8	ASF22G	DPDT	Gold	.400/10.2
6-1437581-8	ASF42	4PDT	Silver	.700/17.8
7-1437581-0	ASF42G	4PDT	Gold	.700/17.8
7-1437581-8	ASF43	4P3T	Silver	1.10/27.9
7-1437581-9	ASF43G	4P3T	Gold	1.10/27.9
8-1437581-4	ASF62	6PDT	Silver	1.00/25.4
8-1437581-6	ASF62G	6PDT	Gold	1.00/25.4

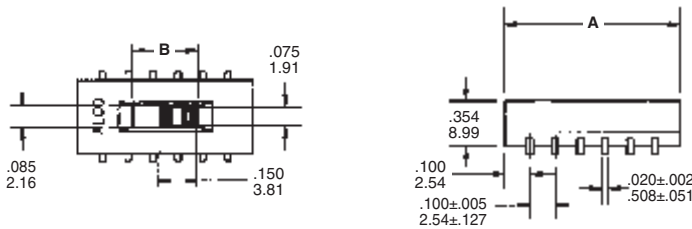
NOTE: See Page B10 for Circuit Diagram and Recommended PC Board Layout.



**Right Angle, Through Hole, Flush Actuator**

Tyco Electronics	Alcoswitch	Type	Contact	Dim A
6-1437581-2	ASF22R	DPDT	Silver	.400/10.2
6-1437581-3	ASF22RG	DPDT	Gold	.400/10.2
7-1437581-3	ASF42R	4PDT	Silver	.700/17.8
7-1437581-4	ASF42RG	4PDT	Gold	.700/17.8
	ASF43R	4P3T	Silver	1.10/27.9
8-1437581-2	ASF43RG	4P3T	Gold	1.10/27.9
8-1437581-9	ASF62R	6PDT	Silver	1.00/25.4
9-1437581-1	ASF62RG	6PDT	Gold	1.00/25.4

NOTE: See Page B10 for Circuit Diagram and Recommended PC Board Layout.



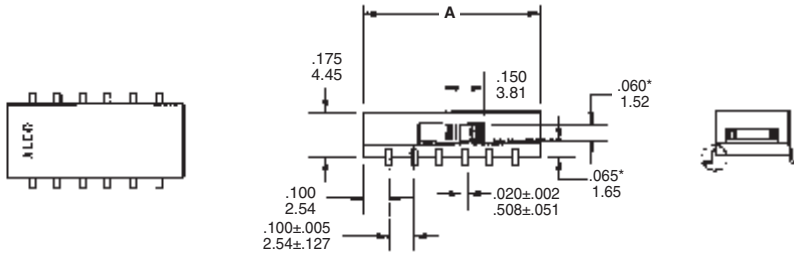
**L Type Surface Mount**

NOTE: See Page B10 for Circuit Diagram and Recommended PC Board Layout.

**Upright, Surface Mount "L" Type, Flush Actuator**

Tyco Electronics	Alcoswitch	Type	Contact	Dim A
5-1437581-9	ASF22GL	DPDT	Gold	.400/10.2
6-1437581-1	ASF22L	DPDT	Silver	.400/10.2
7-1437581-1	ASF42GL	4PDT	Gold	.700/17.8
7-1437581-2	ASF42L	4PDT	Silver	.700/17.8
8-1437581-0	ASF43GL	4P3T	Gold	1.10/27.9
8-1437581-1	ASF43L	4P3T	Silver	1.10/27.9
8-1437581-7	ASF62GL	6PDT	Gold	1.00/25.4
8-1437581-8	ASF62L	6PDT	Silver	1.00/25.4

**Slide Switches, Flush Actuator, Through Hole and Surface Mount**

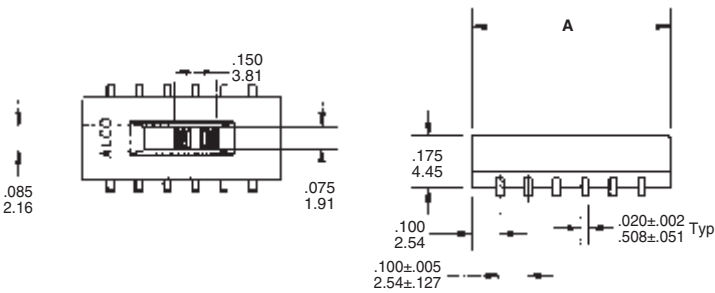


**L Type Surface Mount**

NOTE: See Page B10 for Circuit Diagram and Recommended PC Board Layout.

**Right Angle, Surface Mount "L" Type, Flush Actuator**

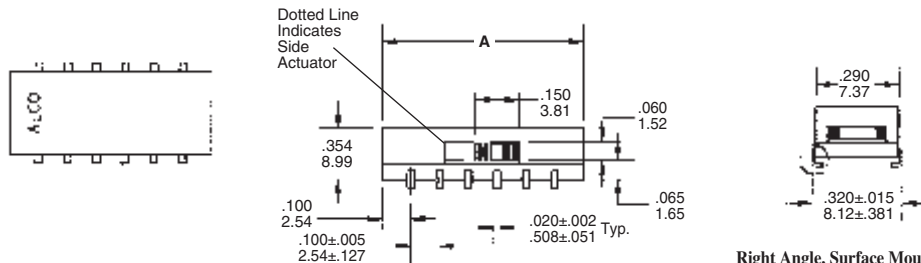
Tyco Electronics	Alcoswitch	Type	Contact	Dim A
6-1437581-4	ASF22RGL	DPDT	Gold	.400/10.2
—	ASF22RL	DPDT	Silver	.400/10.2
7-1437581-5	ASF42RGL	4PDT	Gold	.700/17.8
7-1437581-6	ASF42RL	4PDT	Silver	.700/17.8
—	ASF43RGL	4P3T	Gold	1.10/27.9
—	ASF43RL	4P3T	Silver	1.10/27.9
9-1437581-2	ASF62RGL	6PDT	Gold	1.00/25.4
—	ASF62RL	6PDT	Silver	1.00/25.4



NOTE: See Page B10 for Circuit Diagram and Recommended PC Board Layout.

**Upright, Surface Mount "S" Type, Flush Actuator**

Tyco Electronics	Alcoswitch	Type	Contact	Dim A
6-1437581-0	ASF22GS	DPDT	Gold	.400/10.2
6-1437581-7	ASF22S	DPDT	Silver	.400/10.2
—	ASF42GS	4PDT	Gold	.700/17.8
7-1437581-7	ASF42S	4PDT	Silver	.700/17.8
—	ASF43GS	4P3T	Gold	1.10/27.9
8-1437581-3	ASF43S	4P3T	Silver	1.10/27.9
—	ASF62GS	6PDT	Gold	1.00/25.4
9-1437581-4	ASF62S	6PDT	Silver	1.00/25.4



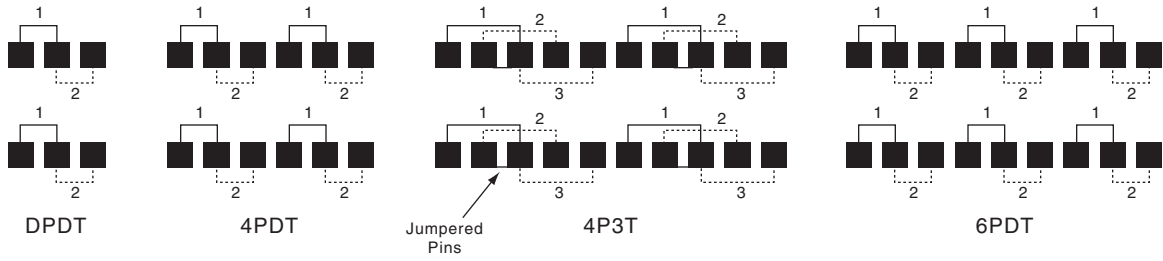
NOTE: See Page B10 for Circuit Diagram and Recommended PC Board Layout.

**Right Angle, Surface Mount "S" Type, Flush Actuator**

Tyco Electronics	Alcoswitch	Type	Contact	Dim A
6-1437581-5	ASF22RGS	DPDT	Gold	.400/10.2
6-1437581-6	ASF22RS	DPDT	Silver	.400/10.2
—	ASF42RGS	4PDT	Gold	.700/17.8
—	ASF42RS	4PDT	Silver	.700/17.8
—	ASF43RGS	4P3T	Gold	1.10/27.9
—	ASF43RS	4P3T	Silver	1.10/27.9
9-1437581-3	ASF62RGS	6PDT	Gold	1.00/25.4
—	ASF62RS	6PDT	Silver	1.00/25.4

**Slide Switches, Auto-insertable, Through Hole and Surface Mount**

CIRCUIT DIAGRAMS

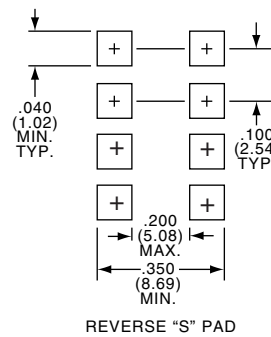
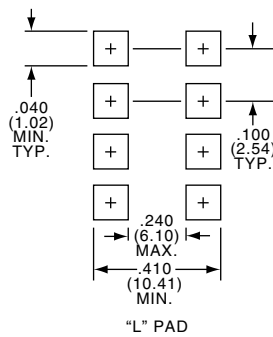


NOTE: For SPDT requirements order DPDT version and use either set of contacts for SPDT switching.

PC LAYOUT



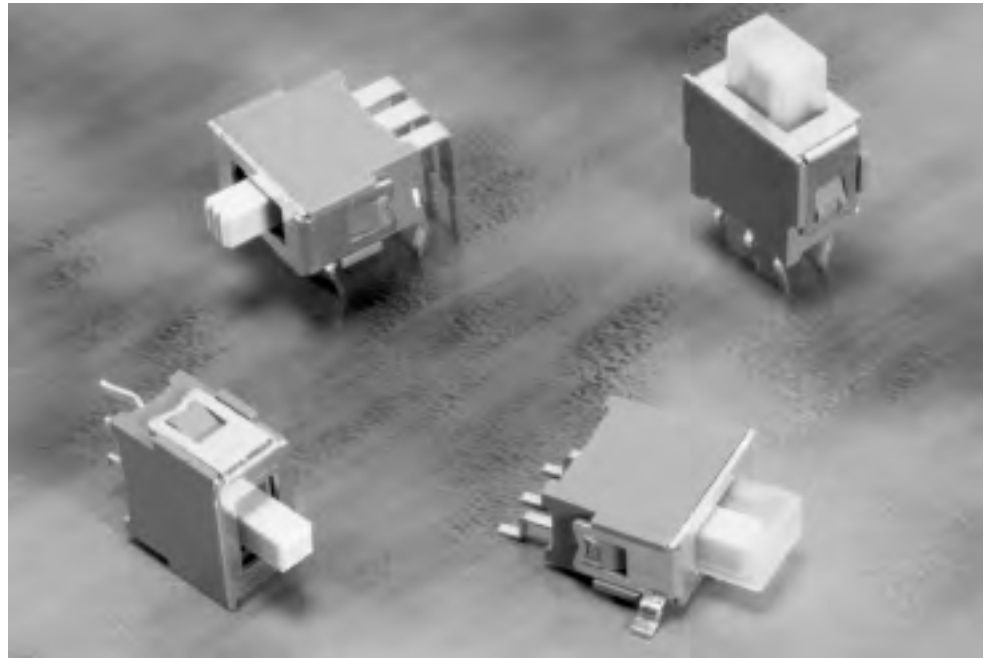
PAD LAYOUT



**S Series Unsealed, SE Series Sealed, Through-Hole and Surface Mount**

**Product Facts**

- Sealed or Unsealed
- Straight or Right-Angle
- Through-hole or Surface-mount
- Bulk or Tape-and-Reel packaged
- Compact size
- Double-pole function in a single-pole body
- PC retention feature
- High reliability contact system
- Epoxy sealed base
- Robust actuator for easy actuation
- Non-shorting (break-before-make)



**Switch, Slide, Surface Mount - SE1 SMT (Shown w/Boot)**

**Electrical Characteristics**

**Contact rating:** .4 VA @ 20 VDC Max.  
50mA 48V AC/DC  
Min. 1 micro A 20 mV AC/DC

**Initial Contact Resistance:** less than 50 milliohms

**Final Contact Resistance:** 100 milliohms max.

**Insulation Resistance:** 500 Megaohms @ 250 VDC

**Dielectric Strength:** 500 VAC between terminals and ground

**Mechanical**

**Mechanical Life:** Up to 10,000 cycles @ max. load

**Actuation Force:** 70 to 500 grams

**Materials and Finish**

**Terminals:** Tin-lead over nickel-plated phosphor bronze

**Contacts:** Gold over nickel plated phosphor bronze

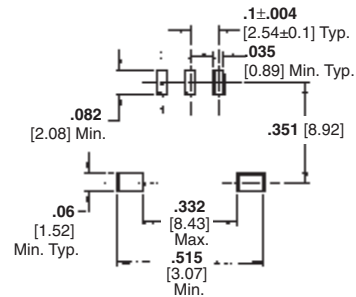
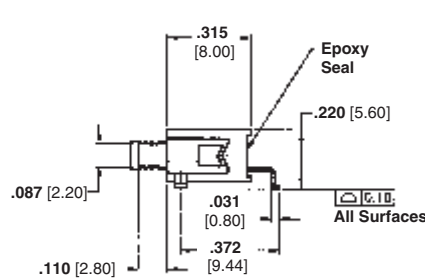
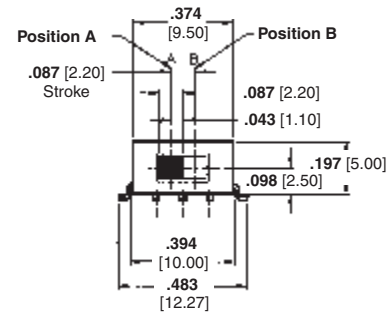
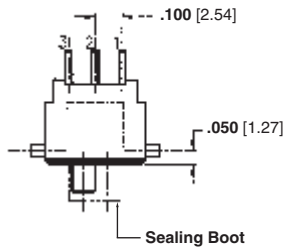
**Frame:** Tin over nickel plated brass

**Case, Actuator, Plunger, Terminal Board:** UL 94V-0 glass-filled Polyamide

**Actuator Boot:** Silicon Rubber

**Standards & Specs**

Sealed switch per IP 67



**Recommended P.C.B. Pad Layout**

**SMT-Sealed Part Numbers**

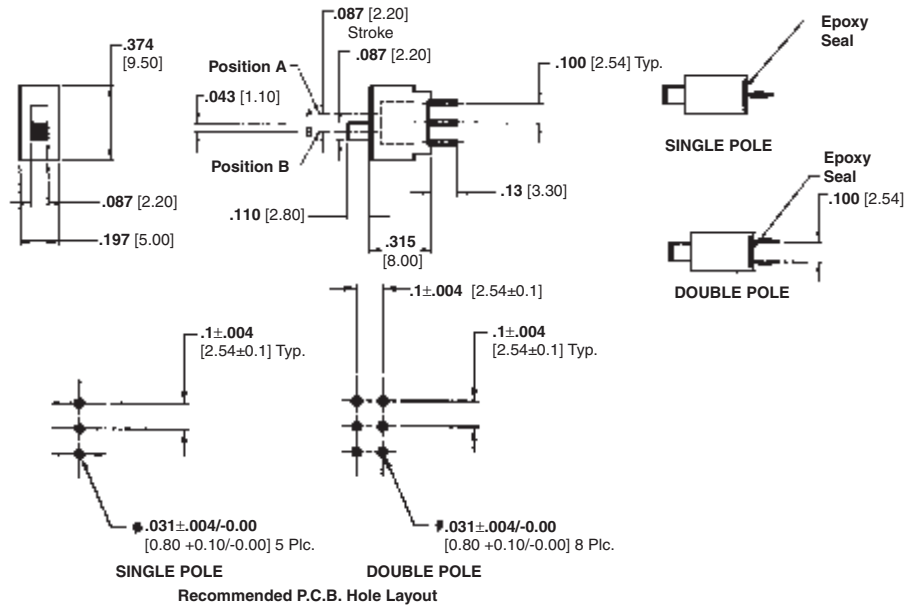
Tyco Electronics	Alcoswitch	Function
1571004-1	SE1GSMT	On-Off
1571004-2	SE1EGSMT	On-Off-On
1571004-3	SE1DGSMT	On-None-On

**Tape & Reel Package**

Tyco Electronics	Alcoswitch	Function
1571004-4	SE1GSMTTR	On-Off
1571004-5	SE1EGSMTTR	On-Off-On
1571004-6	SE1DGSMTTR	On-None-On

**B**  
S/SE Series

**Switch, Slide, PC Tail, S/SE GPC (Shown w/o Boot)**



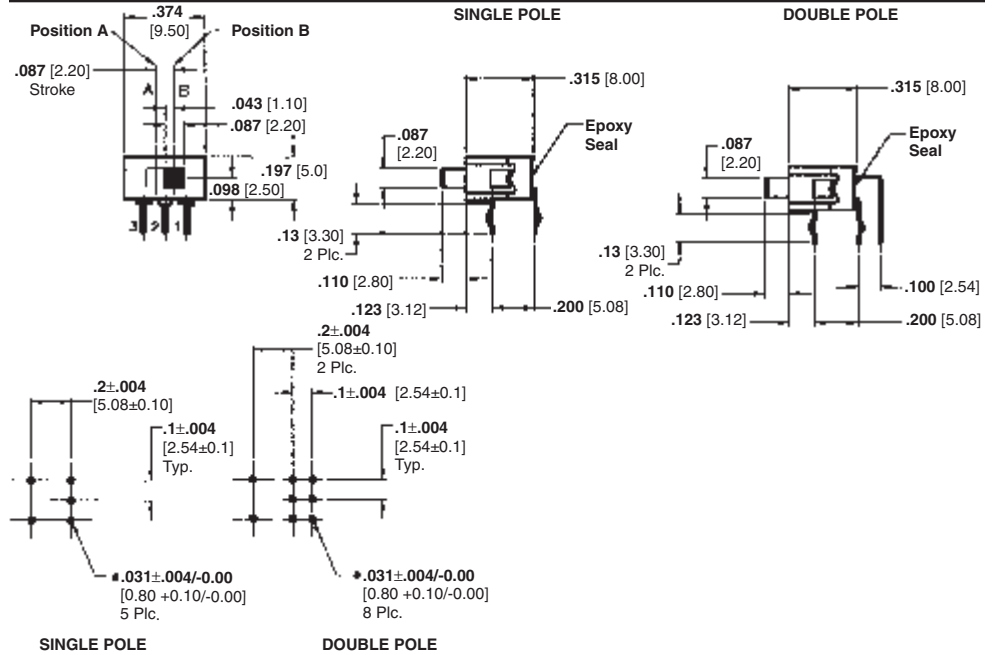
**Sealed Part Numbers w/Boot**

Tyco Electronics	Alcoswitch	Function
1437574-9	SE1DGPC	On-None-On
1-1437574-4	SE1EGPC	On-Off-On
1-1437574-6	SE2DGPC	On-None-On
2-1437574-0	SE2EGPC	On-Off-On

**Unsealed Part Numbers w/o Boot**

Tyco Electronics	Alcoswitch	Function
1571005-1	S1DGPC	On-None-On
1571005-2	S1EGPC	On-Off-On
1571005-3	S2DGPC	On-None-On
1571005-4	S2EGPC	On-Off-On

**Switch, Slide, Right Angle, S/SE GRA (Shown w/o Boot)**



**Sealed Part Numbers w/Boot**

Tyco Electronics	Alcoswitch	Function
1-1437574-1	SE1DGRA	On-None-On
1-1437574-5	SE1EGRA	On-Off-On
1-1437574-8	SE2DGRA	On-None-On
2-1437574-1	SE2EGRA	On-Off-On

**Unsealed Part Numbers w/o Boot**

Tyco Electronics	Alcoswitch	Function
1571006-1	S1DGRA	On-None-On
1571006-2	S1EGRA	On-Off-On
1571006-3	S2DGRA	On-None-On
1571006-4	S2EGRA	On-Off-On



**Slide Switches, Miniature, Low Profile, Economy Grade**

**MATERIAL SPECIFICATIONS:**

Contacts .....Silver clad copper alloy  
 Case Material .....Steel zinc plated  
 Actuator Material .....Polyester (UL 94HB)  
 Terminal Seal .....Epoxy  
 Terminals/Fixed Contacts .....Silver plate copper alloy

**ENVIRONMENTAL SPECIFICATIONS:**

Operating Temperature.....-5°F to 140°F (-15°C to +60°C)  
 Storage Temperature.....-4°F to +158°F (-20°C to +70°C)  
 Solder Heat Resistance .....MIL-STD-202, Method 210

**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....300 mA @ 125 VAC  
 Initial Contact Resistance .....20 Milliohms max.  
 Contact Timing .....Make-before-break  
 Insulation Resistance .....100 Megohms min. @ 500 VDC  
 Dielectric Strength .....500 VAC  
 Actuation Force .....250 Grams, +150 Grams, -100 Grams  
 Actuator Travel.....0.098" (2.49)  
 Life Expectancy .....Up to 10,000 Cycles

**NOTICE: Bifurcated contact produces double wiping, self-cleaning contacts.**

**SPDT**

Part Number			
Tyco Electronics	Alcoswitch	Plating	Mounting Style
5-1437577-8	STS121PC	Silver	Upright

**SPDT**

Part Number			
Tyco Electronics	Alcoswitch	Plating	Mounting Style
5-1437577-9	STS121RA	Silver	Right Angle

**SP3T**

Part Number			
Tyco Electronics	Alcoswitch	Plating	Mounting Style
6-1437577-2	STS131PC	Silver	Upright

**SP3T**

Part Number			
Tyco Electronics	Alcoswitch	Plating	Mounting Style
6-1437577-3	STS131RA	Silver	Right Angle

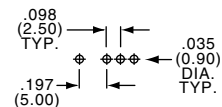
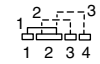
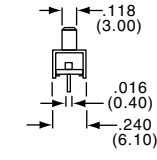
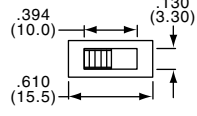
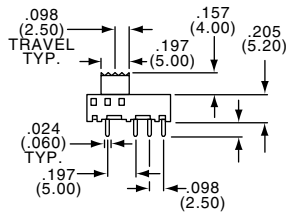
**Slide Switches, Miniature, Low Profile, Economy Grade**

SEE PAGE B13 FOR PRODUCT SPECIFICATIONS

SP3T



STS1300PC

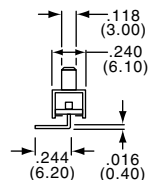
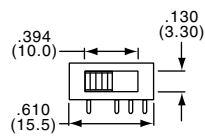


P. C. HOLE LAYOUT

SP3T



STS1300RA

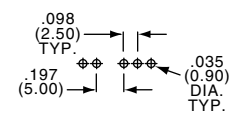
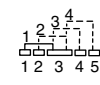
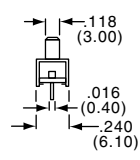
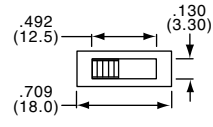
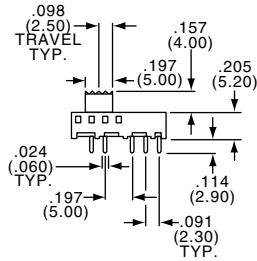


Part Number			
Tyco Electronics	Alcoswitch	Plating	Mounting Style
6-1437577-0	STS1300PC	Silver	Upright
6-1437577-1	STS1300RA	Silver	Right Angle

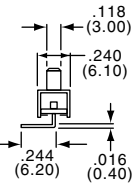
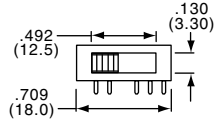
SP4T



STS1400PC



P. C. HOLE LAYOUT

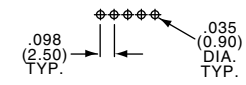
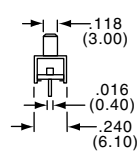
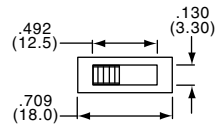
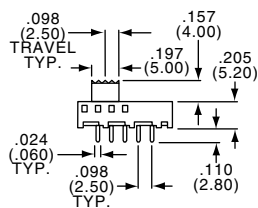


Part Number			
Tyco Electronics	Alcoswitch	Plating	Mounting Style
6-1437577-5	STS1400PC	Silver	Upright
6-1437577-6	STS1400RA	Silver	Right Angle

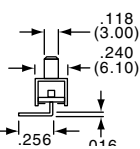
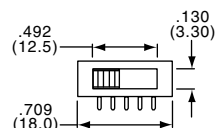
SP4T



STS141RA



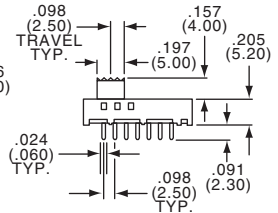
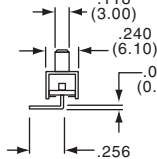
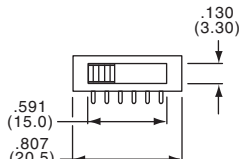
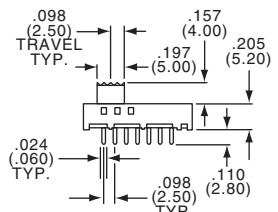
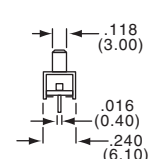
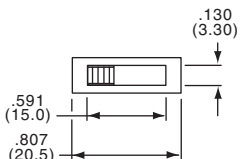
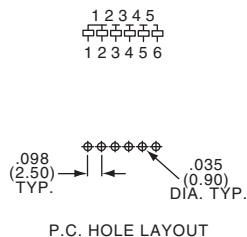
P. C. HOLE LAYOUT



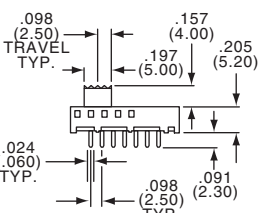
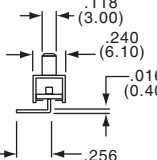
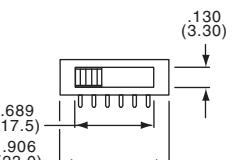
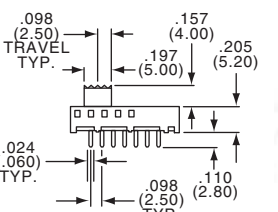
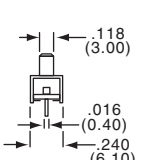
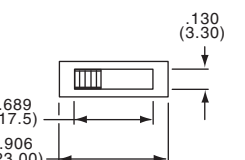
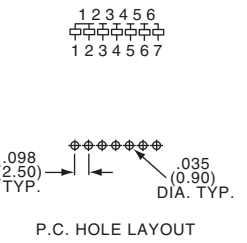
Part Number			
Tyco Electronics	Alcoswitch	Plating	Mounting Style
6-1437577-7	STS141PC	Silver	Upright
6-1437577-8	STS141RA	Silver	Right Angle

**Slide Switches, Miniature, Low Profile, Economy Grade**

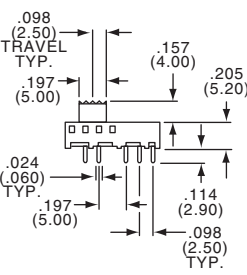
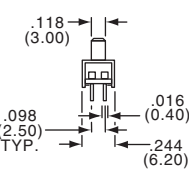
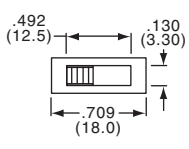
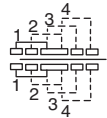
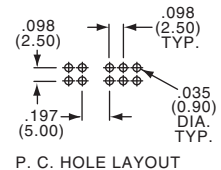
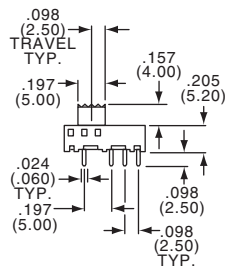
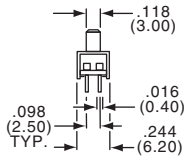
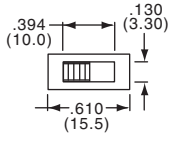
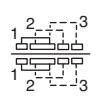
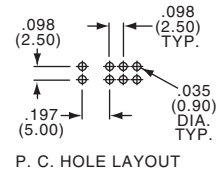
SEE PAGE B13 FOR PRODUCT SPECIFICATIONS



Part Number			
Tyco Electronics	Alcoswitch	Plating	Mounting Style
6-1437577-9	STS151PC	Silver	Upright
7-1437577-0	STS151RA	Silver	Right Angle



Part Number			
Tyco Electronics	Alcoswitch	Plating	Mounting Style
7-1437577-1	STS161PC	Silver	Upright
7-1437577-2	STS161RA	Silver	Right Angle



Part Number				
Tyco Electronics	Alcoswitch	Plating	Mounting Style	
7-1437577-4	STS2300PC	DP3T	Silver	Upright
7-1437577-6	STS2400PC	DP4T	Silver	Upright

**Slide Switches, Miniature, Low Profile, Economy Grade**

SEE PAGE B13 FOR PRODUCT SPECIFICATIONS

DPDT



STSA220RA

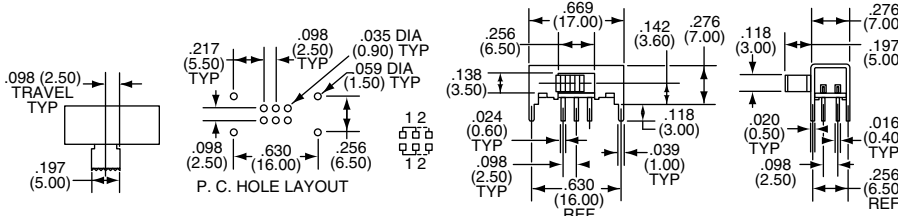


Part Number			
Tyco Electronics	Alcoswitch	Plating	Mounting Style
8-1437577-0	STSA220RA	Silver	Right Angle

DPDT



STSA220RA1

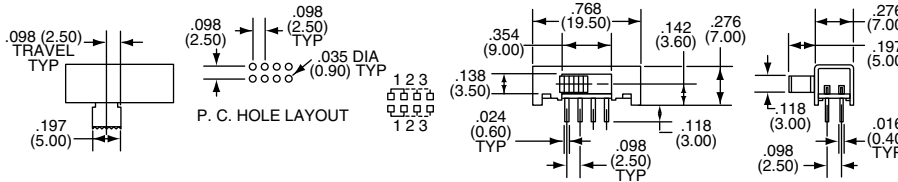


Part Number			
Tyco Electronics	Alcoswitch	Plating	Mounting Style
8-1437577-1	STSA220RA1	Silver	Right Angle

DP3T



STSA230RA

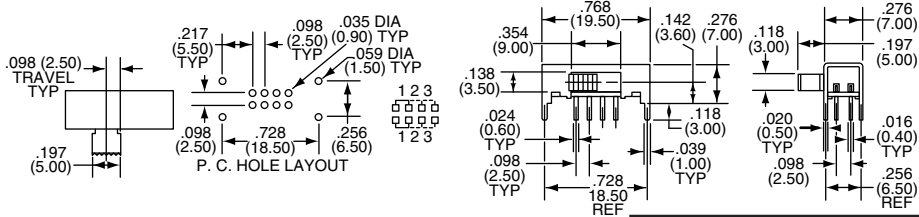


Part Number			
Tyco Electronics	Alcoswitch	Plating	Mounting Style
8-1437577-2	STSA230RA	Silver	Right Angle

DP3T



STSA230RA1

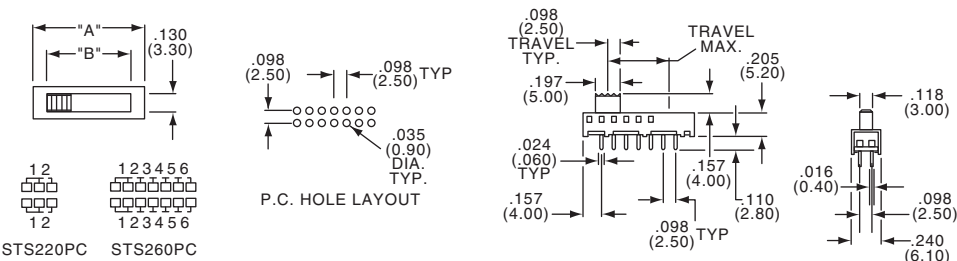


Part Number			
Tyco Electronics	Alcoswitch	Plating	Mounting Style
8-1437577-3	STSA230RA1	Silver	Right Angle

DP6T/DP5T/DP4T/  
DP3T/DP2T



STS220PC



Part Number						Part Number							
Tyco Electronics	Alcoswitch	Type	Dim.A	Dim.B	Travel Max.	Pin Holes	Tyco Electronics	Alcoswitch	Type	Dim.A	Dim.B	Travel Max.	Pin Holes
7-1437577-3	STS220PC	DP2T	.512(13.0)	.295(7.50)	.098(2.50)	6	7-1437577-8	STS250PC	DP5T	.807(20.5)	.591(15.0)	.394(10.0)	12
7-1437577-5	STS230PC	DP3T	.610(15.5)	.394(10.0)	.197(5.00)	8	7-1437577-9	STS260PC	DP6T	.906(23.0)	.689(17.5)	.492(12.5)	14
7-1437577-7	STS240PC	DP4T	.709(18.0)	.492(12.5)	.295(7.50)	10							

B STS/STSA Series

**Slide Switches, Instrument Grade, Decorative**

**MATERIAL SPECIFICATIONS:**

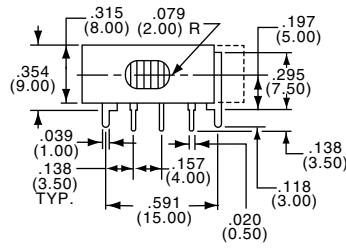
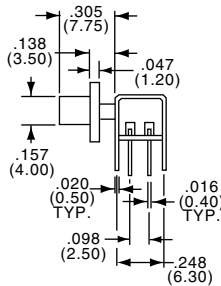
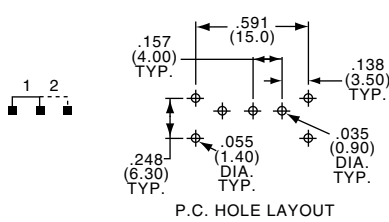
Contacts .....Silver clad copper alloy  
 Case Material .....Steel, tin plated  
 Actuator Material .....Polycarbonate  
 Terminals/Fixed Contacts .....Silver over nickel  
 Terminal Seal .....Epoxy

**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....300 mA @ 125 VAC  
 Initial Contact Resistance .....20 Milliohms max.  
 Insulation Resistance .....1,000 Megohms min. @ 500 VDC  
 Dielectric Strength .....500 VAC  
 Actuation Force .....0.250 Grams, +200/-150  
 Plunger/Actuator Travel .....0.079" (2.01)  
 Life Expectancy .....Up to 10,000 Cycles

**ENVIRONMENTAL SPECIFICATIONS:**

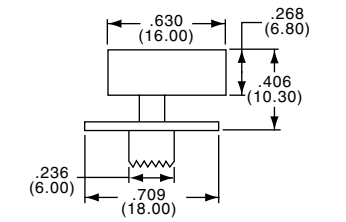
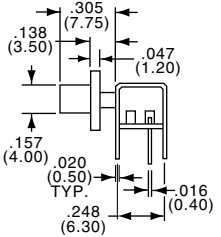
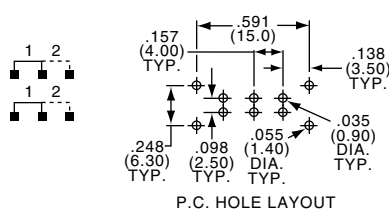
Operating Temperature.....-14°F to +140°F (-10°C to +60°C)  
 Storage Temperature.....-14°F to +140°F (-10°C to +60°C)  
 Solder Heat Resistance.....MIL-STD-202, Method 210



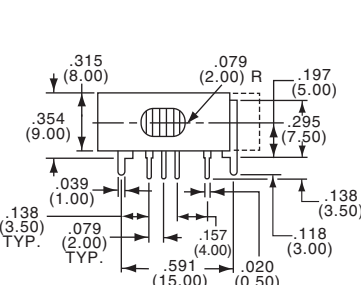
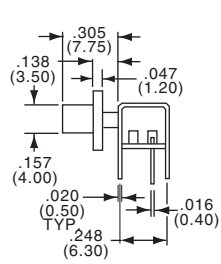
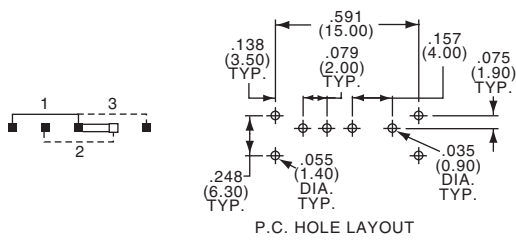
SPDT/DPDT



SDS2240RA0



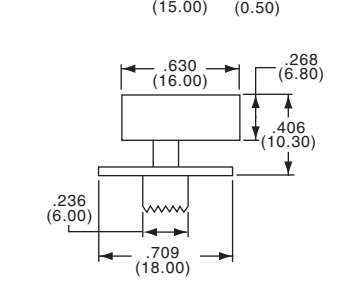
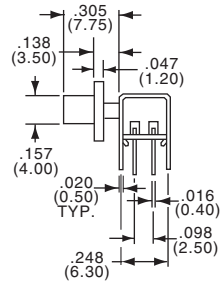
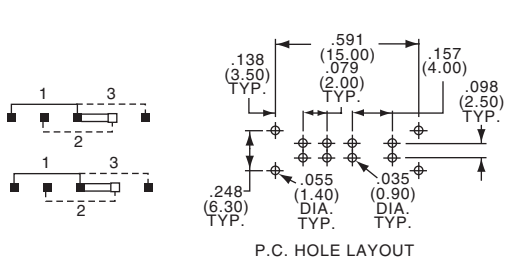
Part Number				Part Number			
Tyco Electronics	Alcoswitch	Type	Actuator Color	Tyco Electronics	Alcoswitch	Type	Actuator Color
1437577-2	SDS1240RA0	SPDT	Black	1437577-6	SDS2240RA0	DPDT	Black
1437577-3	SDS1240RA8	SPDT	Gray	—	SDS2240RA8	DPDT	Gray



SP3T/DP3T



SDS1340RA8



Part Number				Part Number			
Tyco Electronics	Alcoswitch	Type	Actuator Color	Tyco Electronics	Alcoswitch	Type	Actuator Color
1437577-4	SDS1340RA0	SP3T	Black	1437577-7	SDS2340RA0	DP3T	Black
1437577-5	SDS1340RA8	SP3T	Gray	—	SDS2340RA8	DP3T	Gray

**B**  
TSS Series

**Slide Switches, Vertical, Single or Dual Actuator**

**MATERIAL SPECIFICATIONS:**

Contacts .....Copper w/gold plate over nickel  
 Case Material .....High temperature polyester (94-VO)  
 Actuator Material .....Polyester (94-VO)  
 Terminals .....Copper alloy tin/lead/nickel or gold/nickel  
 Terminal Seal .....Epoxy standard: single pole, optional: double pole

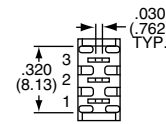
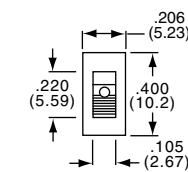
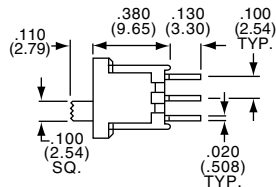
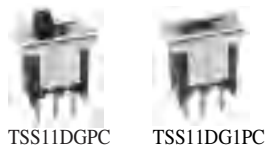
**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....Gold: 0.4 VA max. @ 20 VDC or peak AC  
 Initial Contact Resistance .....20 Milliohms max.  
 Contact Timing .....Non-shorting  
 Insulation Resistance .....1,000 Megohms min. @ 500 VDC  
 Dielectric Strength .....1,000 Volts RMS @ sea level  
 Plunger/Actuator Travel .....0.120" (3.05)  
 Life Expectancy .....Up to 60,000-80,000 Cycles

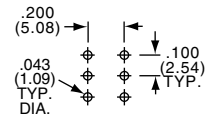
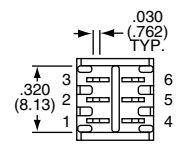
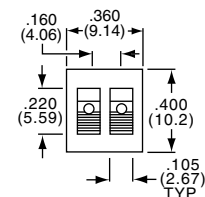
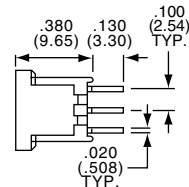
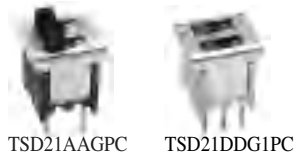
**ENVIRONMENTAL SPECIFICATIONS:**

Operating Temperature .....-4°F to + 176°F (-20°C to + 80°C)  
 Storage Temperature .....-4°F to + 176°F (-20°C to + 80°C)

**SPST/SPDT**



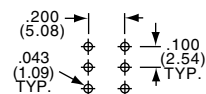
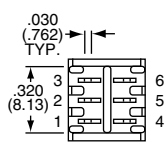
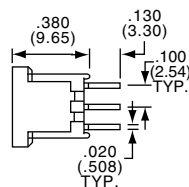
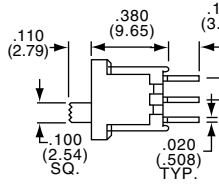
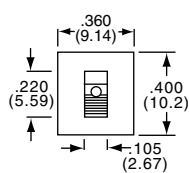
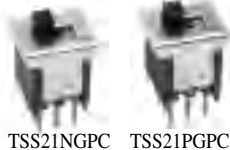
**SPST/SPDT (DUAL)**



Extended Actuator Tyco Electronics	Alcoswitch	Type	Act. Code P. M6	On	None	Off	Extended Dual Actuator Tyco Electronics	Alcoswitch	Type	Act. Code P. M6	On	None	Off
1437578-3	TSS11AGPC	SPST	A	On	None	Off	—	TSD21AAGPC	2 x SPST	A	On	None	Off
1-1437589-0	TSS11DGPC	SPDT	D	On	None	On	1437579-5	TSD21DDGPC	2 x SPDT	D	On	None	On
1-1437579-4	TSS11EGPC	SPDT	E	On	Off	On	<b>Flush Dual Actuator</b>						
—	TSS11AG1PC	SPST	A	On	None	Off	—	TSD21DDG1PC	2 x SPDT	D	On	None	On
1437579-8	TSS11DG1PC	SPDT	D	On	None	On							
1-1437579-2	TSS11EG1PC	SPDT	E	On	Off	On							

Note: No center terminals on "A" action switches.

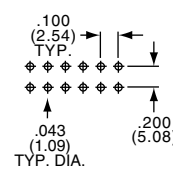
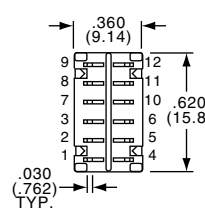
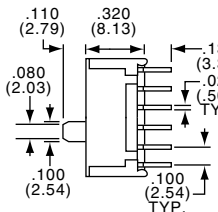
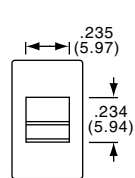
**DPST/DPDT**



Extended Actuator Tyco Electronics	Alcoswitch	Type	Act. Code P. M6	On	None	Off	Flush Actuator Tyco Electronics	Alcoswitch	Act. Code Type	P. M6	On	None	Off
1-1437579-6	TSS21KGPC	DPST	K	On	None	Off	—	TSS21KG1PC	DPST	K	On	None	Off
1-1437579-9	TSS21NGPC	DPDT	N	On	None	On	1-1437579-7	TSS21NG1PC	DPDT	N	On	None	On
2-1437579-3	TSS21PGPC	DPDT	P	On	Off	On	2-1437579-1	TSD21RG1PC	DPDT	P	On	Off	On

Note: No center terminals on "K" action switches.

**4PDT**

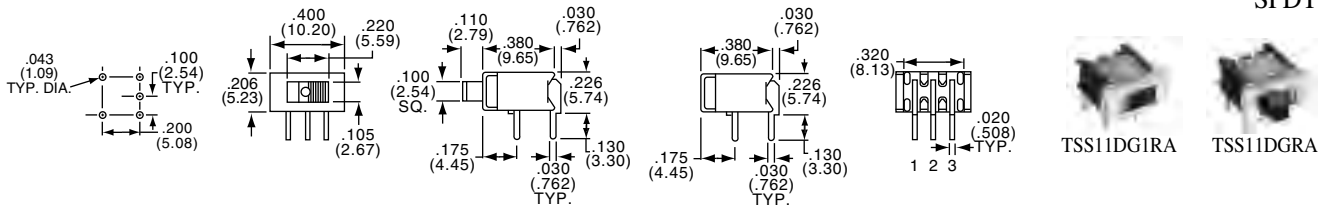


Extended Actuator Tyco Electronics	Alcoswitch	Type	Act. Code P. M6	On	None	Off
2-1437579-5	TSS41NGPC	4PDT	N	On	None	On

**Slide Switches, Right Angle, Single or Dual Actuator**

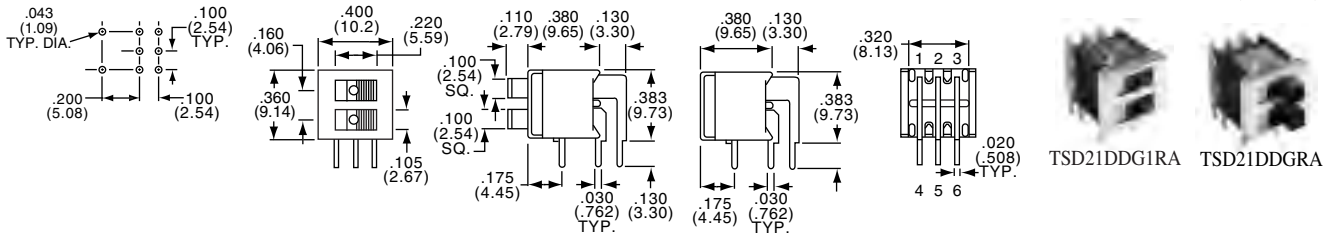
SEE PAGE B18 FOR PRODUCT SPECIFICATIONS

SPDT



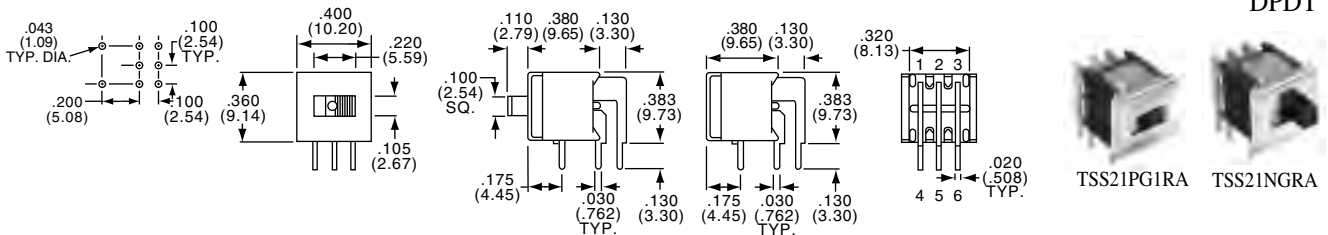
Extended Actuator			Act. Code			Flush Actuator			Act. Code			
Tyco Electronics	Alcoswitch	Type	P. M6	On	None	Tyco Electronics	Alcoswitch	Type	P. M6	On	None	On
1-1437579-1	TSS11DGRA	SPDT	D	On	None	1437579-9	TSS11DG1RA	SPDT	D	On	None	On
1-1437579-5	TSS11EGRA	SPDT	E	On	Off	1-1437579-3	TSS11EG1RA	SPDT	E	On	Off	On

SPDT (DUAL)



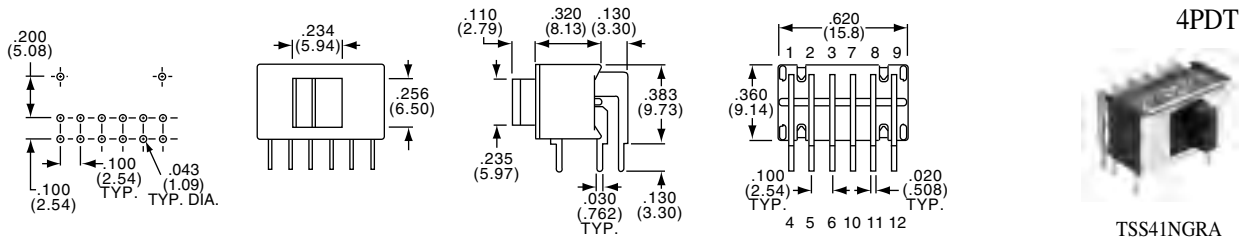
Extended Actuator			Act. Code			Flush Actuator			Act. Code			
Tyco Electronics	Alcoswitch	Type	P. M6	On	None	Tyco Electronics	Alcoswitch	Type	P. M6	On	None	On
1437579-6	TSD21DDGRA	2 x SPDT	D	On	None	1437579-4	TSD21DDG1RA	2 x SPDT	D	On	None	On
1437579-7	TSD21EEGRA	2 x SPDT	E	On	Off	—	TSD21EEG1RA	2 x SPDT	E	On	Off	On

DPDT



Extended Actuator			Act. Code			Flush Actuator			Act. Code			
Tyco Electronics	Alcoswitch	Type	P. M6	On	None	Tyco Electronics	Alcoswitch	Type	P. M6	On	None	On
—	TSS21PAGRA	SP3T	PA	On	On	—	TSS21NG1RA	DPDT	N	On	None	On
2-1437579-0	TSS21NGRA	DPDT	N	On	None	—	TSS21PG1RA	DPDT	P	On	Off	On
2-1437579-4	TSS21PGRA	DPDT	P	On	Off	—	—	—	—	—	—	—

4PDT



Extended Actuator			Act. Code			
Tyco Electronics	Alcoswitch	Type	P. M6	On	None	On
2-1437579-7	TSS41NGRA	4PDT	N	On	None	On

**Slide Switches, Instrumentation Grade**

**MATERIAL SPECIFICATIONS:**

Contacts .....Gold or silver over nickel/copper alloy  
 Frame Material .....Tin plated steel  
 Terminals/Fixed Contacts.....Gold or silver over nickel/over copper alloy  
 Terminal Seal .....Epoxy  
 Actuator Material .....POM-UL94HB

**ENVIRONMENTAL SPECIFICATIONS:**

Operating Temperature.....-4°F to +185°F (-20°C to +85°C)  
 Storage Temperature.....-40°F to +212°F (-40°C to +100°C)  
 Solder Heat Resistance .....See page M3-4

**TYPICAL PERFORMANCE CHARACTERISTICS:**

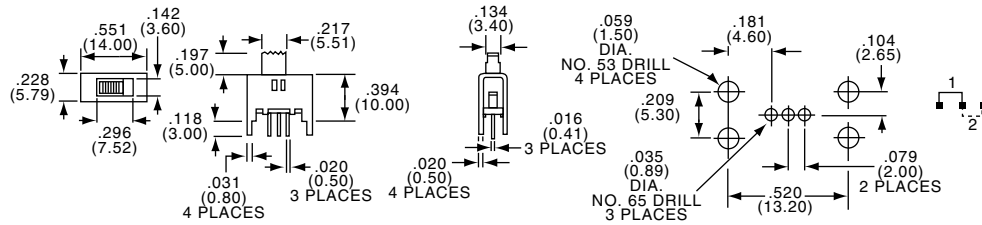
Contact Rating .....Gold: 0.4 VA 20 VDC or peak AC  
 Silver: 300 mA @ 125 VAC  
 Initial Contact Resistance .....20 Milliohms max.  
 Contact Timing .....Make before break  
 Insulation Resistance .....1,000 Megohms min.  
 Dielectric Strength .....500 VAC  
 Actuation Force .....100 to 600 Grams  
 Life Expectancy .....Up to 15,000 Cycles  
 Travel .....0.079" (2.01) (unless otherwise specified)

**B**  
MSS Series

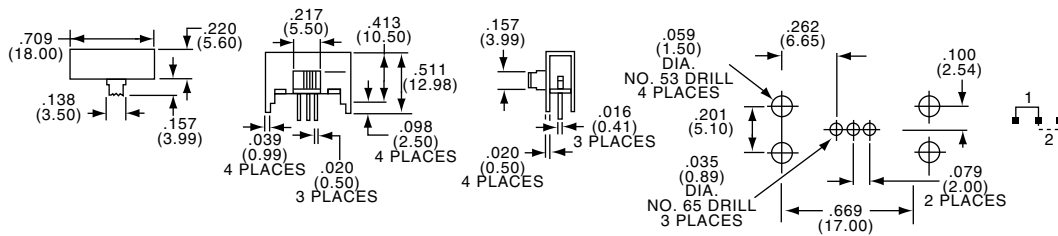
**SPDT**



MSS1200



MSS1200R

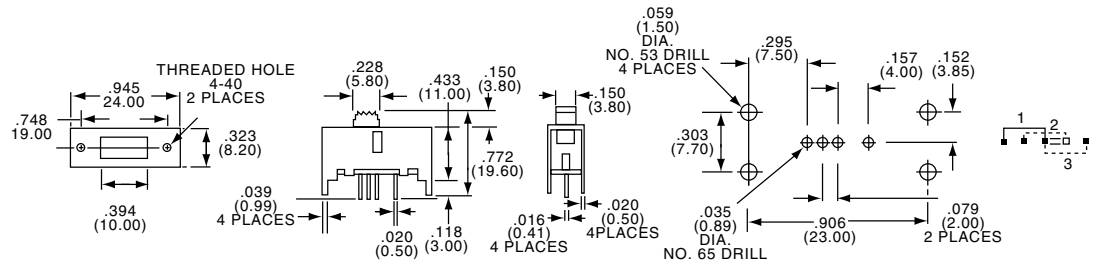


Tyco Electronics	Alcoswitch	Plating	Tyco Electronics	Alcoswitch	Plating
5-1437576-0	MSS1200	Silver	5-1437576-2	MSS1200R	Silver
5-1437576-1	MSS1200G	Gold	5-1437576-3	MSS1200RG	Gold

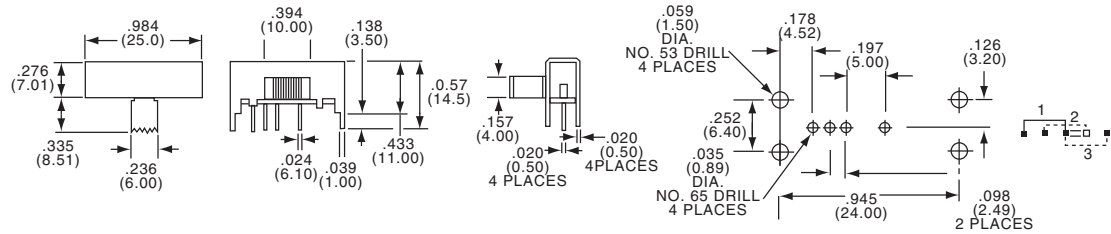
**SP3T**



MSS1300



MSS1300R

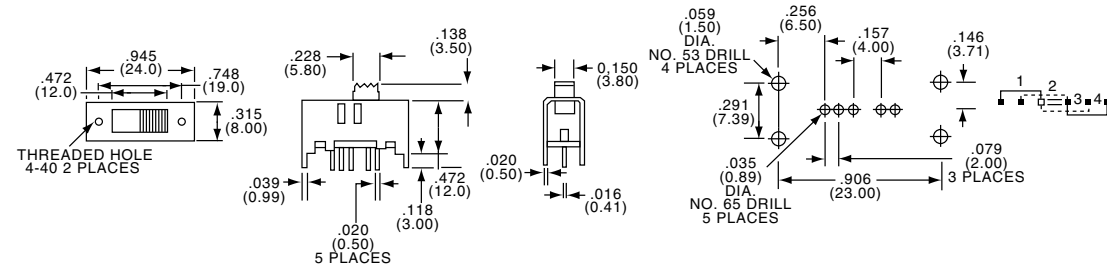


Tyco Electronics	Alcoswitch	Plating	Tyco Electronics	Alcoswitch	Plating	Total Actuator Travel
5-1437576-4	MSS1300	Silver	5-1437576-6	MSS1300R	Silver	.098(2.50)
5-1437576-5	MSS1300G	Gold	5-1437576-7	MSS1300RG	Gold	.098(2.50)



**Slide Switches, Instrumentation Grade**

SEE PAGE B20 FOR PRODUCT SPECIFICATIONS

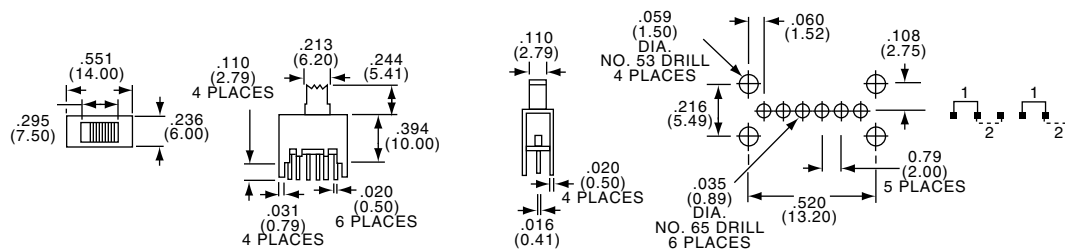


SP4T



MSS1400

Tyco Electronics	Alcoswitch	Plating
5-1437576-8	MSS1400	Silver
1571423-1	MSS1400G	Gold

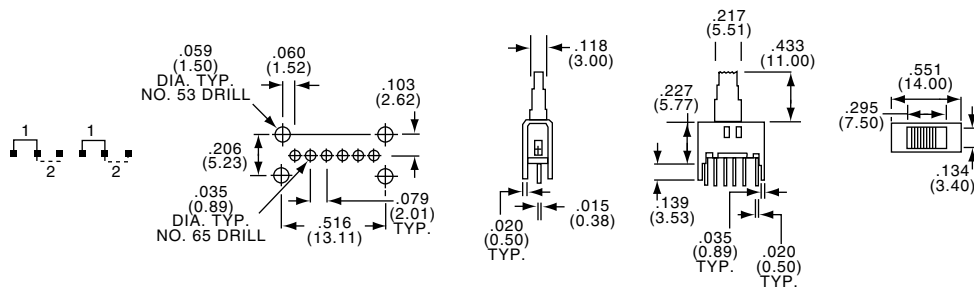


DPDT



MSS2225

Tyco Electronics	Alcoswitch	Plating
6-1437576-3	MSS2225	Silver
6-1437576-4	MSS2225G	Gold



DPDT



MSS2250

Tyco Electronics	Alcoswitch	Plating
6-1437576-5	MSS2250	Silver
6-1437576-6	MSS2250G	Gold

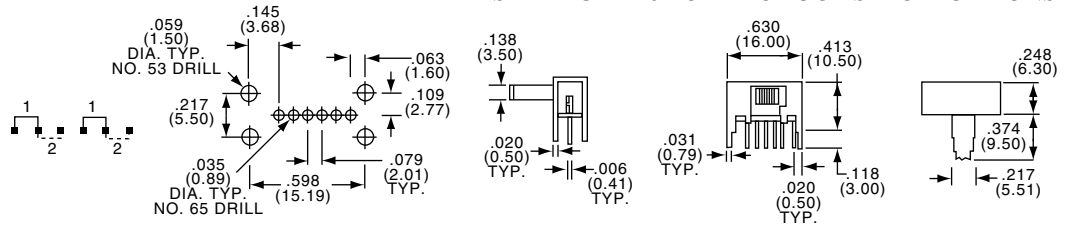
**Slide Switches, Instrumentation Grade**

SEE PAGE B20 FOR PRODUCT SPECIFICATIONS

DPDT



MSS2250R

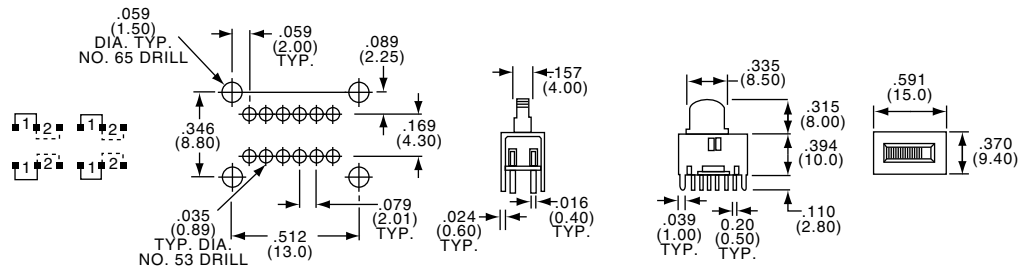


Tyco Electronics	Alcoswitch	Plating
6-1437576-7	MSS2250R	Silver
6-1437576-8	MSS2250RG	Gold

4PDT



MSS4200

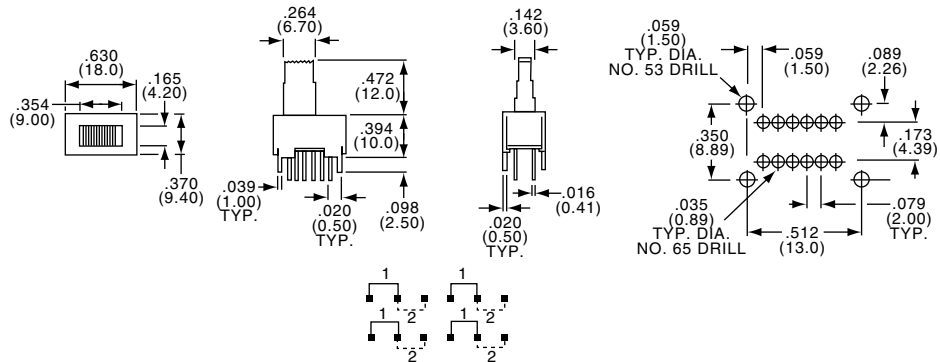


Tyco Electronics	Alcoswitch	Plating
6-1437576-9	MSS4200	Silver
7-1437576-0	MSS4200G	Gold

4PDT



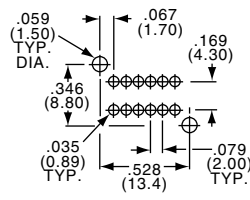
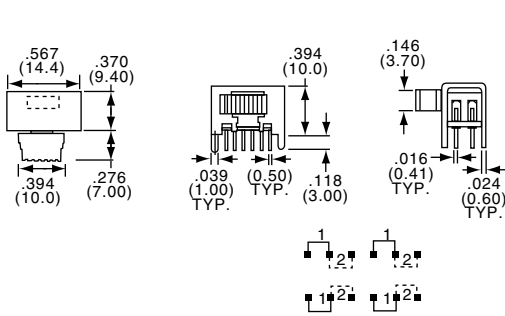
MSS4250



Tyco Electronics	Alcoswitch	Plating
7-1437576-4	MSS4250	Silver

**Slide Switches, Instrumentation Grade**

SEE PAGE B20 FOR PRODUCT SPECIFICATIONS

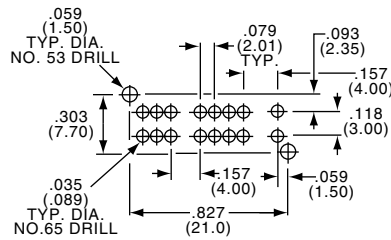
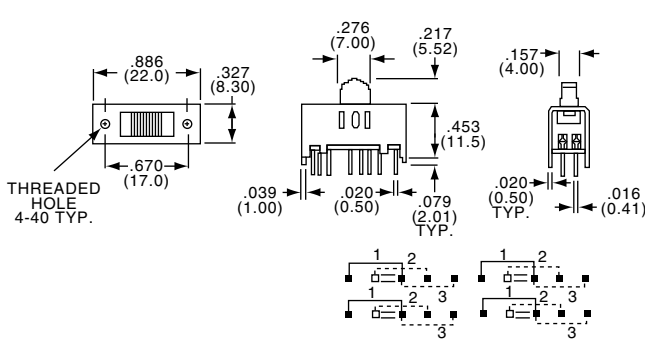


4PDT



MSS4200R

Tyco Electronics	Alcoswitch	Plating
7-1437576-2	MSS4200R	Silver
7-1437576-3	MSS4200RG	Gold

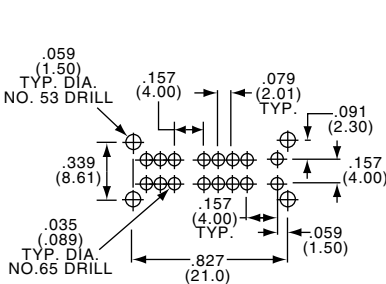
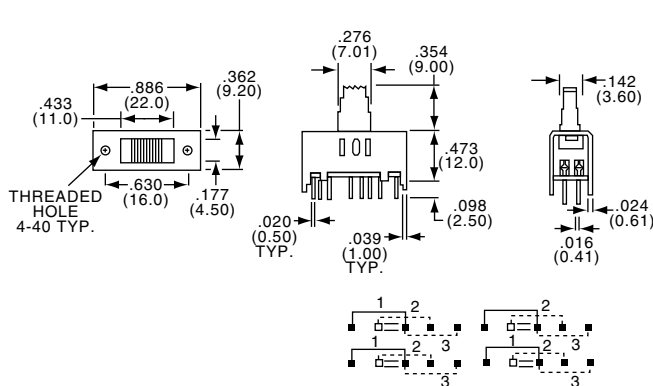


4P3T



MSS4300

Tyco Electronics	Alcoswitch	Plating
7-1437576-5	MSS4300	Silver
7-1437576-6	MSS4300G	Gold



4P3T



MSS4335

Tyco Electronics	Alcoswitch	Plating
7-1437576-9	MSS4335	Silver

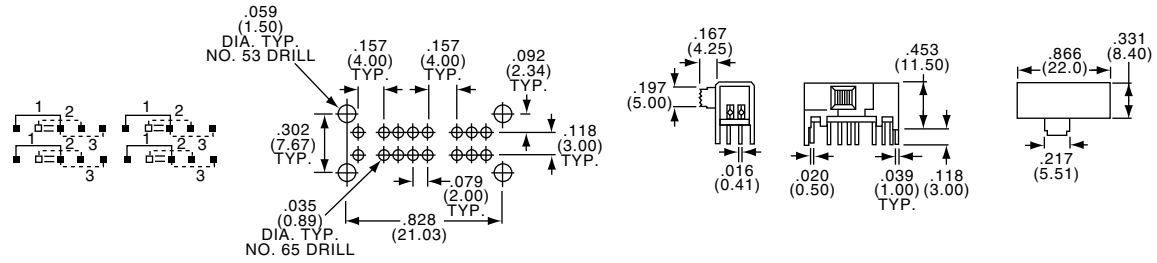
**Slide Switches, Instrumentation Grade**

SEE PAGE B20 FOR PRODUCT SPECIFICATIONS

4P3T



MSS4300R

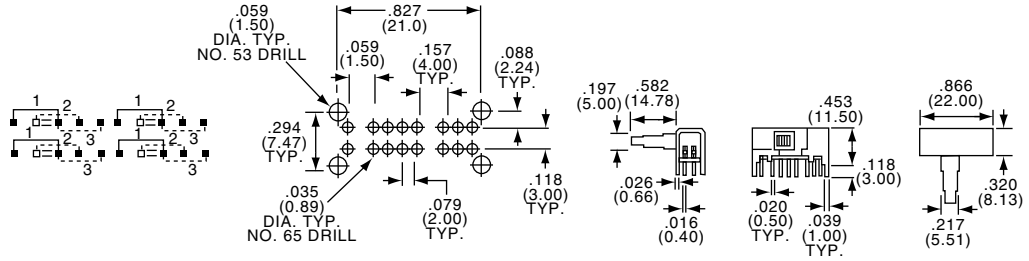


Tyco Electronics	Alcoswitch	Plating
7-1437576-7	MSS4300R	Silver
7-1437576-8	MSS4300RG	Gold

4P3T



MSS4350R

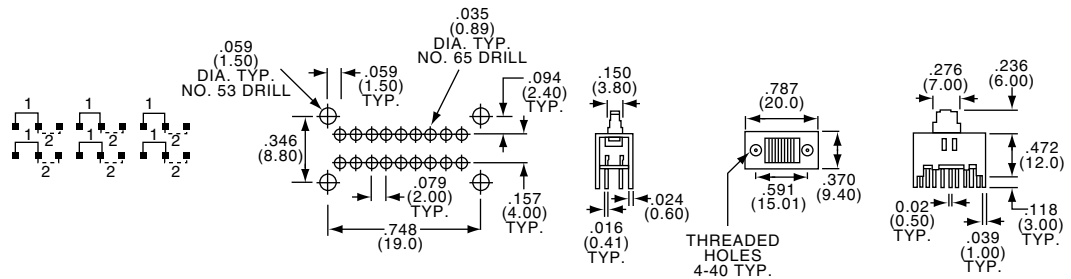


Tyco Electronics	Alcoswitch	Plating
8-1437576-0	MSS4350R	Silver
8-1437576-1	MSS4350RG	Gold

6PDT



MSS6200

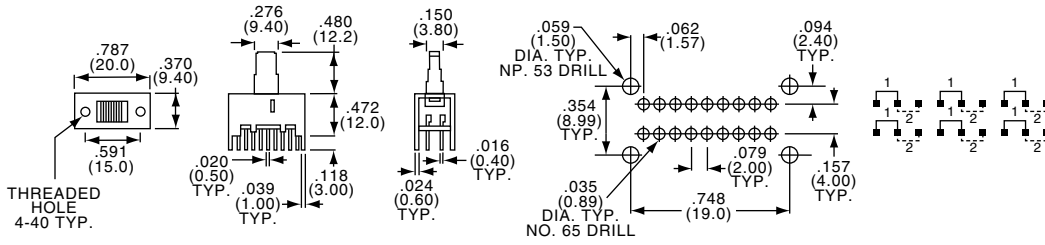


Tyco Electronics	Alcoswitch	Plating
8-1437576-8	MSS6200	Silver
8-1437576-9	MSS6200G	Gold

**B**  
MSS Series

**Slide Switches, Instrumentation Grade**

SEE PAGE B20 FOR PRODUCT SPECIFICATIONS

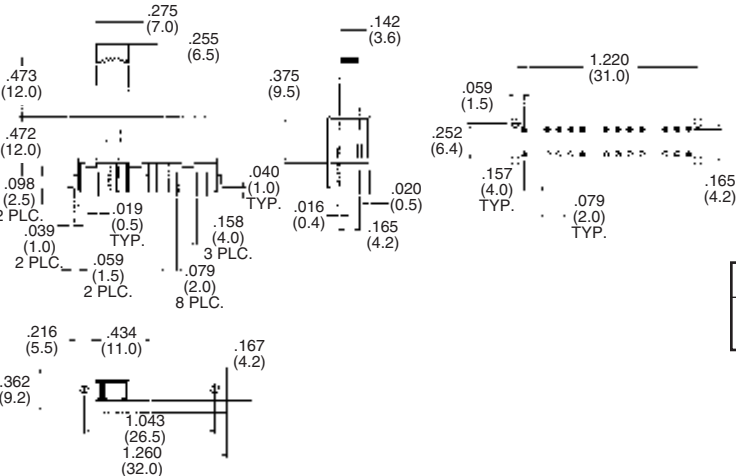


6PDT

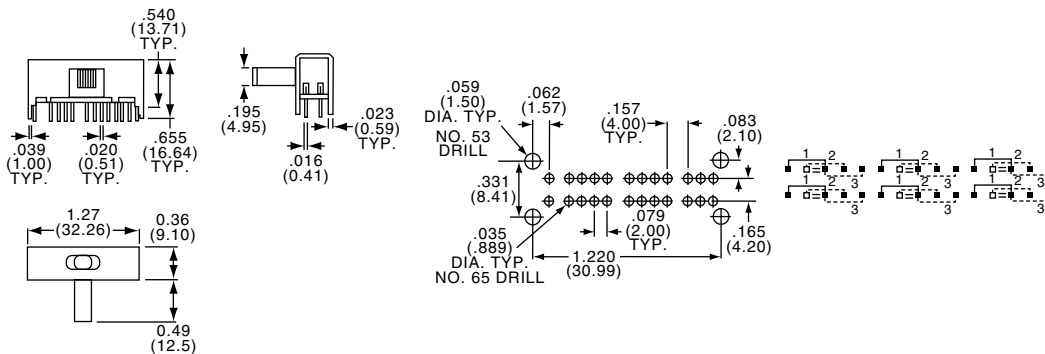


MSS6250

Tyco Electronics	Alcoswitch	Plating
9-1437576-0	MSS6250	Silver



Tyco Electronics	Alcoswitch	Plating
9-1437576-3	MSS6350	Silver
—	MSS6350G	Gold



6P3T



MSS6350R

Tyco Electronics	Alcoswitch	Plating
9-1437576-4	MSS6350R	Silver
—	MSS6350RG	Gold

**Slide Switches, Instrumentation Grade**

**MATERIAL SPECIFICATIONS:**

Contacts .....Silver or gold over copper alloy  
 Case Material .....Cold rolled steel  
 Actuator Material .....Polyester UL94V-0  
 Terminals/Fixed Contacts.....Gold or silver plate over copper alloy  
 Terminal Seal .....Epoxy

**ENVIRONMENTAL SPECIFICATIONS:**

Operating Temperature.....-4°F to +185°F (-20°C to +85°C)  
 Storage Temperature.....-40°F to +212°F (-40°C to +100°C)  
 Solder Heat Resistance.....See page M3-4

**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....Gold: 0.4 VA 20 VDC or peak AC  
 Silver: 300 mA @ 125 VAC  
 Initial Contact Resistance .....30 Milliohms max.  
 Contact Timing.....Make before break  
 Insulation Resistance .....1,000 Megohms min.  
 Dielectric Strength .....500 Volts RMS @ sea level  
 Actuation Force .....600±300/470 Grams average  
 Actuator Travel.....0.079" (2.01) approximate  
 Life Expectancy .....Up to 15,000 Cycles

**B**  
MSSA Series

**SP3T**

MSSA1350

Tyco Electronics	Alcoswitch	Plating	Mounting Style
3-1437580-3	MSSA1350	Silver	Upright
3-1437580-4	MSSA1350G	Gold	Upright

**SP3T**

MSSA1350R

Tyco Electronics	Alcoswitch	Plating	Mounting Style
3-1437580-5	MSSA1350R	Silver	Rt. Angle
3-1437580-6	MSSA1350RG	Gold	Rt. Angle

**SP4T**

MSSA1450

Tyco Electronics	Alcoswitch	Plating	Mounting Style
3-1437580-7	MSSA1450	Silver	Upright
3-1437580-8	MSSA1450G	Gold	Upright

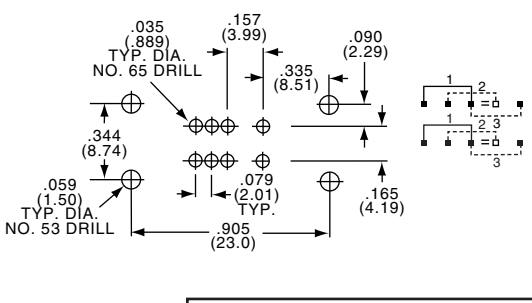
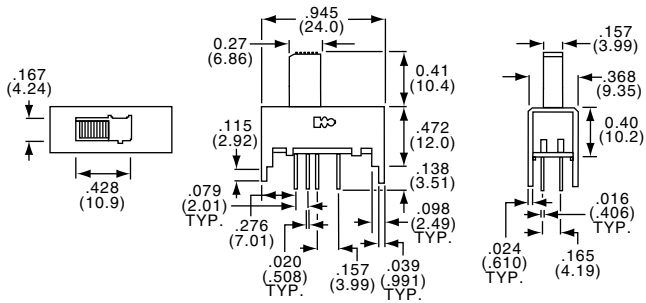
**SP4T**

MSSA1450R

Tyco Electronics	Alcoswitch	Plating	Mounting Style
3-1437580-9	MSSA1450R	Silver	Rt. Angle
4-1437580-0	MSSA1450RG	Gold	Rt. Angle

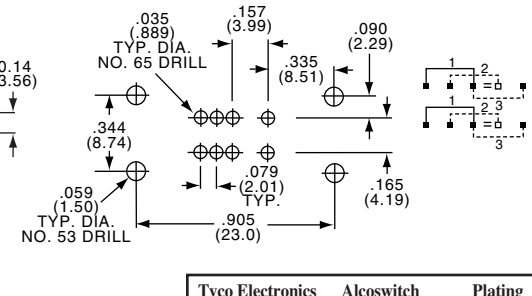
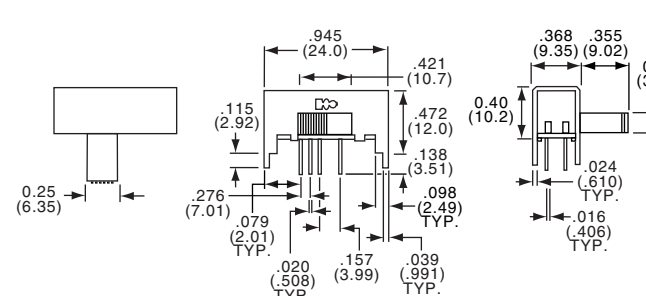
**Slide Switches, Instrumentation Grade**

SEE PAGE B26 FOR PRODUCT SPECIFICATIONS



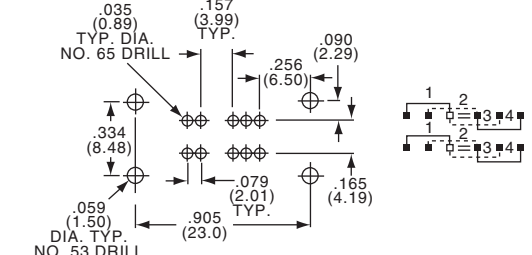
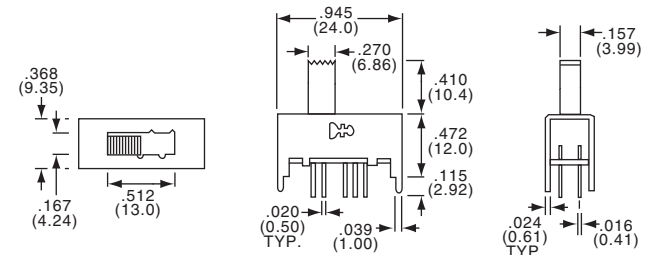
MSSA2350

Tyco Electronics	Alcoswitch	Plating	Mounting Style
5-1437580-3	MSSA2350	Silver	Upright
5-1437580-4	MSSA2350G	Gold	Upright



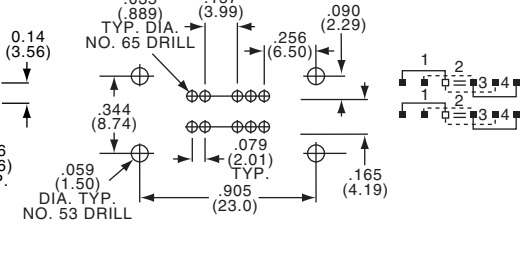
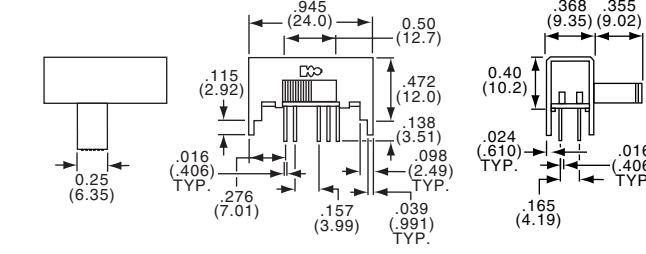
MSSA2350R

Tyco Electronics	Alcoswitch	Plating	Mounting Style
5-1437580-5	MSSA2350R	Silver	Rt. Angle
5-1437580-6	MSSA2350RG	Gold	Rt. Angle



MSSA2450

Tyco Electronics	Alcoswitch	Plating	Mounting Style
5-1437580-7	MSSA2450	Silver	Upright
5-1437580-8	MSSA2450G	Gold	Upright



MSSA2450R

Tyco Electronics	Alcoswitch	Plating	Mounting Style
5-1437580-9	MSSA2450R	Silver	Rt. Angle
6-1437580-0	MSSA2450RG	Gold	Rt. Angle

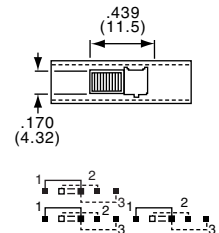
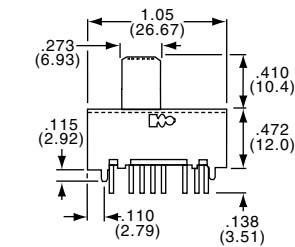
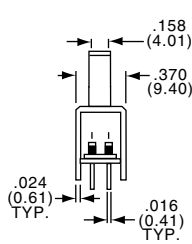
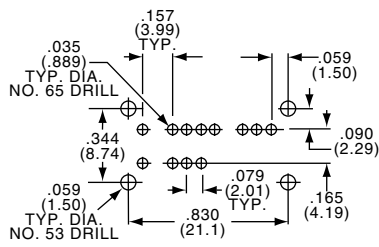
**Slide Switches, Instrumentation Grade**

SEE PAGE B26 FOR PRODUCT SPECIFICATIONS

**3P3T**



MSSA3350

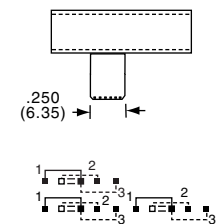
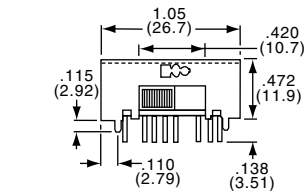
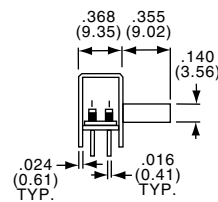
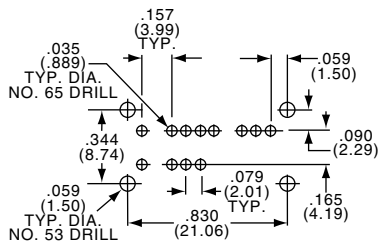


Tyco Electronics	Alcoswitch	Plating	Mounting Style
6-1437580-1	MSSA3350	Silver	Upright
6-1437580-2	MSSA3350G	Gold	Upright

**3P3T**



MSSA3350R

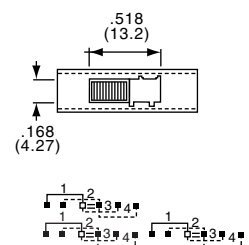
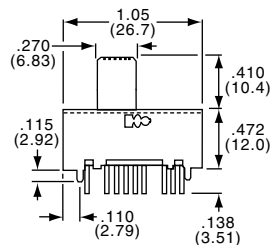
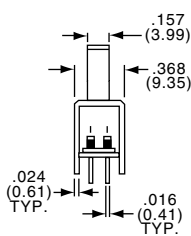
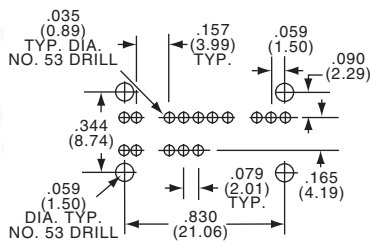


Tyco Electronics	Alcoswitch	Plating	Mounting Style
6-1437580-3	MSSA3350R	Silver	Rt. Angle
6-1437580-4	MSSA3350RG	Gold	Rt. Angle

**3P4T**



MSSA3450

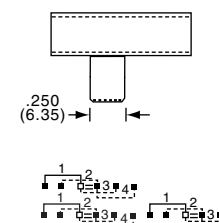
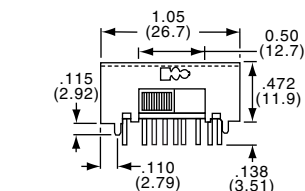
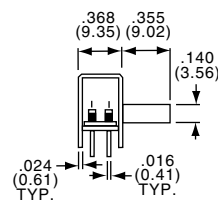
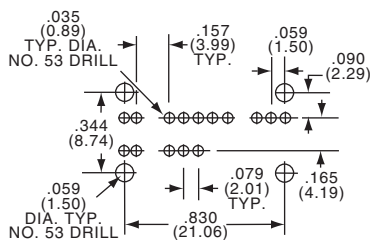


Tyco Electronics	Alcoswitch	Plating	Mounting Style
6-1437580-5	MSSA3450	Silver	Upright
6-1437580-6	MSSA3450G	Gold	Upright

**3P4T**



MSSA3450R



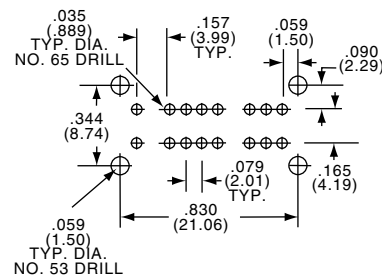
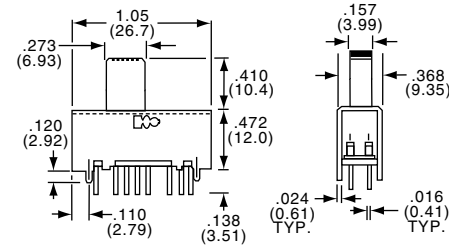
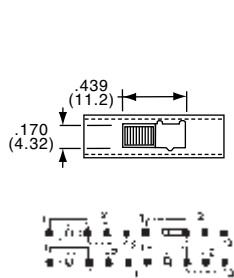
Tyco Electronics	Alcoswitch	Plating	Mounting Style
6-1437580-7	MSSA3450R	Silver	Rt. Angle
6-1437580-8	MSSA3450RG	Gold	Rt. Angle



**Slide Switches, Instrumentation Grade**

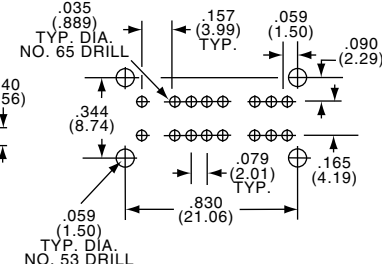
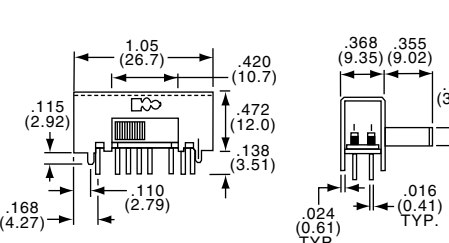
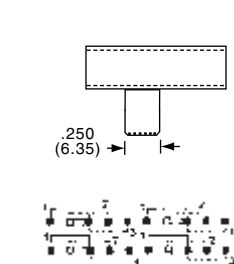
SEE PAGE B26 FOR PRODUCT SPECIFICATIONS

4P3T



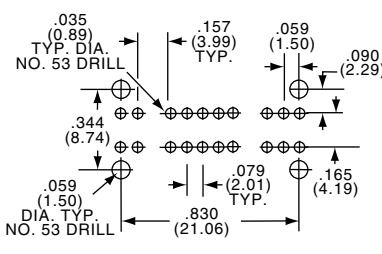
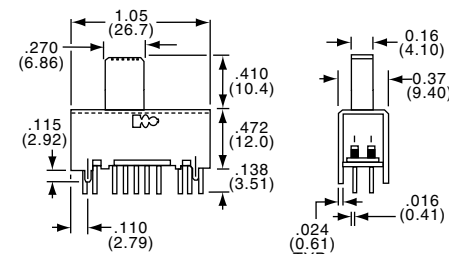
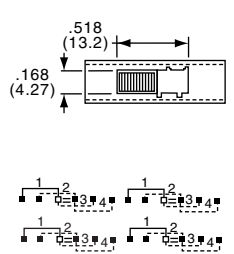
MSSA4350

Tyco Electronics	Alcoswitch	Plating	Mounting Style
6-1437580-9	MSSA4350	Silver	Upright
7-1437580-0	MSSA4350G	Gold	Upright



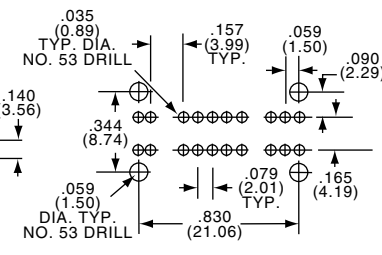
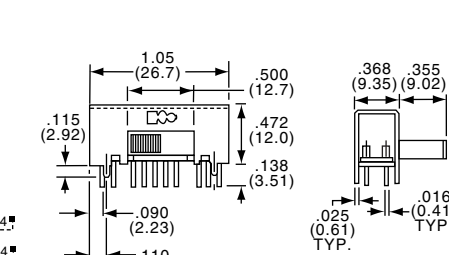
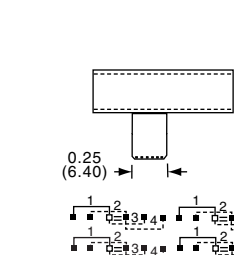
MSSA4350R

Tyco Electronics	Alcoswitch	Plating	Mounting Style
7-1437580-1	MSSA4350R	Silver	Rt. Angle
7-1437580-2	MSSA4350RG	Gold	Rt. Angle



MSSA4450

Tyco Electronics	Alcoswitch	Plating	Mounting Style
7-1437580-3	MSSA4450	Silver	Upright
7-1437580-4	MSSA4450G	Gold	Upright



MSSA4450R

Tyco Electronics	Alcoswitch	Plating	Mounting Style
7-1437580-5	MSSA4450R	Silver	Rt. Angle
7-1437580-6	MSSA4450RG	Gold	Rt. Angle

**Slide Switches, Instrumentation Grade, .200 Terminal Spacing**

**MATERIAL SPECIFICATIONS:**

Contacts .....Silver clad or gold plate  
 Case Material .....Polyester  
 Actuator Material .....Polyamide  
 Terminals .....Gold or silver plate  
 Terminal Seal .....Epoxy

**ENVIRONMENTAL SPECIFICATIONS:**

Operating Temperature.....-4°F to +149°F (-20°C to +65°C)  
 Storage Temperature.....-40°F to +212°F (-40°C to +100°C)  
 Solder Heat Resistance.....See page M3-4

**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....Gold: 0.4 VA max. 20 VDC or peak AC  
 Silver: 3 A @ 115 VAC, 1.5A @ 230 VAC  
 Initial Contact Resistance .....20 Milliohms max.  
 Contact Timing .....Non-shorting  
 Insulation Resistance .....1,000 Megohms @ 500 VDC min.  
 Dielectric Strength .....500 Volts RMS @ sea level  
 Actuation Force .....600 ±300 Grams  
 Actuator Travel......120" (3.05) Approximate  
 Life Expectancy .....Up to 30,000 Cycles

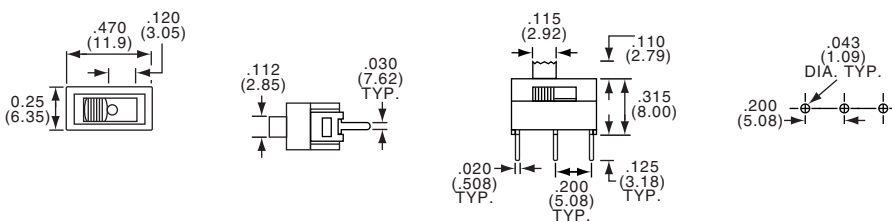
**B**

MSSA-01/04 Series

**SPDT**



MSSA114D

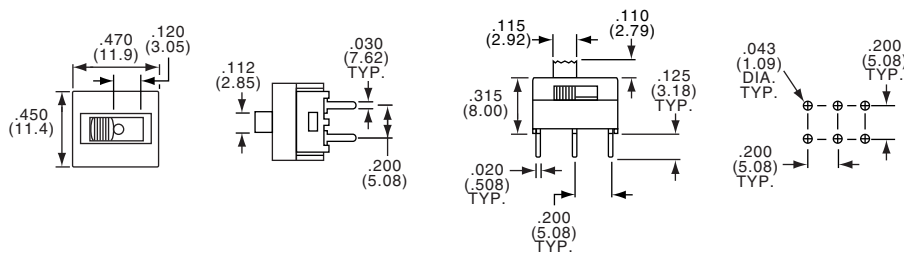


Tyco Electronics	Alcoswitch	Act. Code	Pg. M5				Contacts
2-1437580-9	MSSA111DG	D	On	None	On	Gold	
3-1437580-0	MSSA111EG	E	On	Off	On	Gold	
3-1437580-1	MSSA114D	D	On	None	On	Silver	
3-1437580-2	MSSA114E	E	On	Off	On	Silver	

**DPDT**



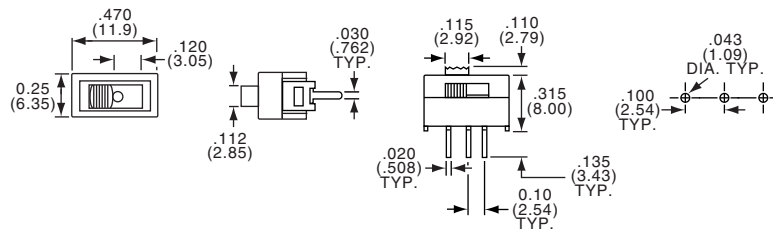
MSSA214N



Tyco Electronics	Alcoswitch	Act. Code	Pg. M5				Contacts
4-1437580-9	MSSA211NG	N	On	None	On	Gold	
5-1437580-2	MSSA214N	N	On	None	On	Silver	

**Slide Switches, Instrumentation Grade, .100 Terminal Spacing**

SEE PAGE B30 FOR PRODUCT SPECIFICATIONS

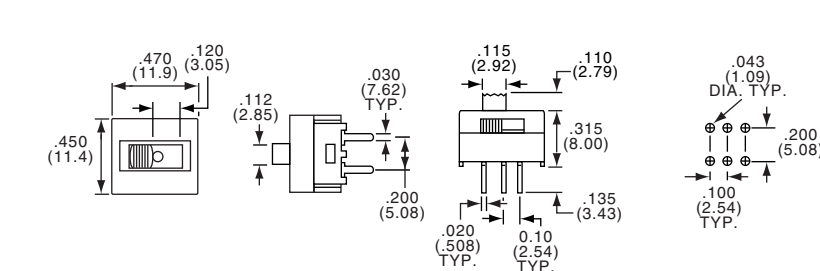


SPDT



MSSA104D

Tyco Electronics	Alcoswitch	Act. Code	Pg. M5				Contacts
1-1437580-7	MSSA101DG	D		On	None	On	Gold
—	MSSA101EG	E		On	Off	On	Gold
2-1437580-3	MSSA104D	D		On	None	On	Silver
2-1437580-6	MSSA104E	E		On	Off	On	Silver

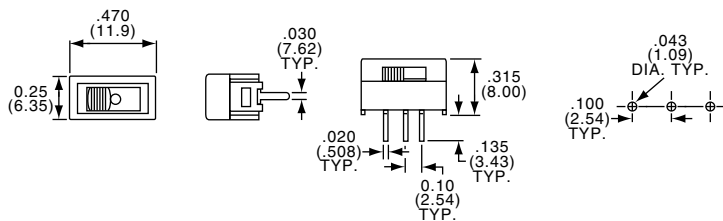


DPDT



MSSA204N

Tyco Electronics	Alcoswitch	Act. Code	Pg. M5				Contacts
4-1437580-4	MSSA204N	N		On	None	On	Silver

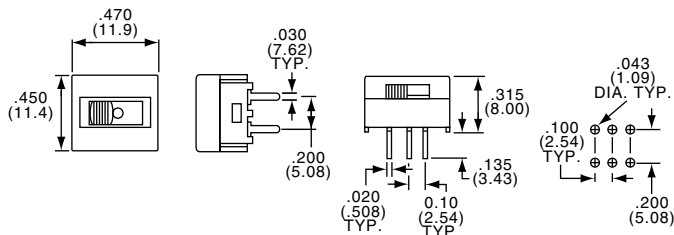


SPDT FLUSH ACTUATOR



MSSA104D1

Tyco Electronics	Alcoswitch	Act. Code	Pg. M5				Contacts
2-1437580-4	MSSA104D1	D		On	None	On	Silver



DPDT FLUSH ACTUATOR



MSSA204N1

Tyco Electronics	Alcoswitch	Act. Code	Pg. M5				Contacts
4-1437580-5	MSSA204N1	N		On	None	On	Silver
4-1437580-8	MSSA204P1	P		On	Off	On	Silver

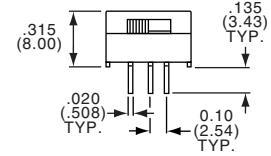
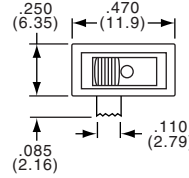
**Slide Switches, Instrumentation Grade, .100 Terminal Spacing**

SEE PAGE B30 FOR PRODUCT SPECIFICATIONS

SPDT



MSSA101DGRA

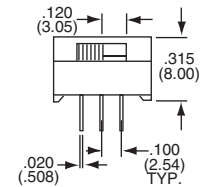
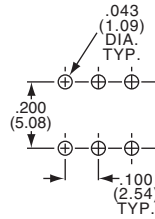


Tyco Electronics	Alcoswitch	Act. Code	Pg. M5	Contacts		
1-1437580-9	MSSA101DGRA	D	On	None	On	Gold
2-1437580-1	MSSA101EGRA	E	On	Off	On	Gold
2-1437580-5	MSSA104DRA	D	On	None	On	Silver
2-1437580-8	MSSA104ERA	E	On	Off	On	Silver

DPDT



MSSA204NRA



Tyco Electronics	Alcoswitch	Act. Code	Pg. M5	Contacts		
4-1437580-2	MSSA201NGRA	N	On	None	On	Gold
8-1437580-2	MSSA201PGRA	P	On	Off	On	Gold
4-1437580-6	MSSA204NRA	N	On	None	On	Silver
—	MSSA204PRA	P	On	Off	On	Silver

**Slide Switches, Low Profile, Instrumentation Grade**

**MATERIAL SPECIFICATIONS:**

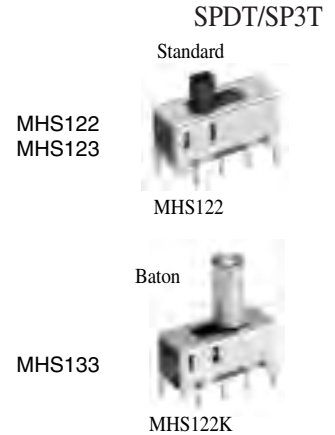
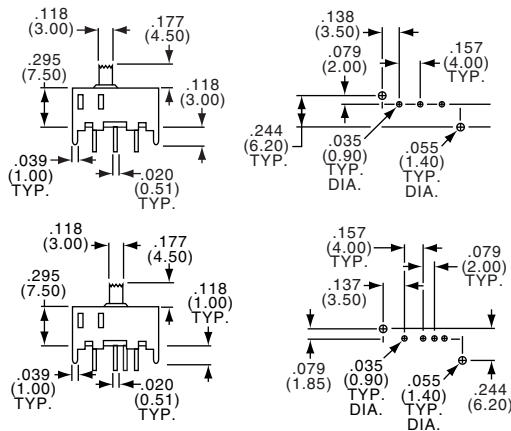
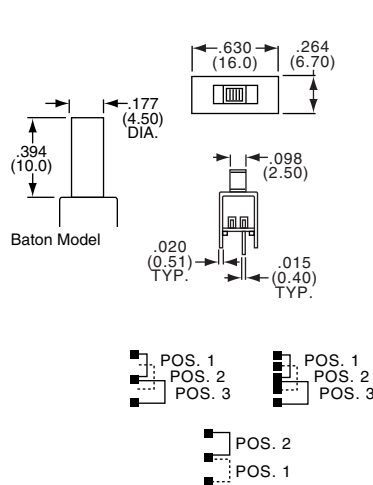
Contacts .....Gold or silver over nickel over Cu alloy  
 Frame Material .....Nickel plated, Steel  
 Actuator Material .....POM 94 HB  
 Terminals/Fixed Contacts.....Gold or silver over nickel over Cu alloy  
 Terminal Seal .....Epoxy

**ENVIRONMENTAL SPECIFICATIONS:**

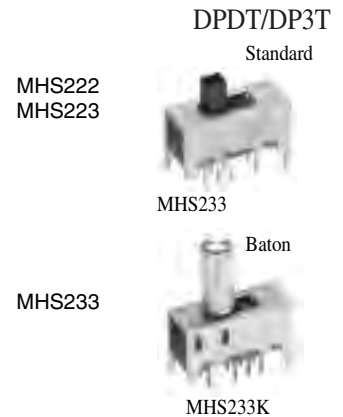
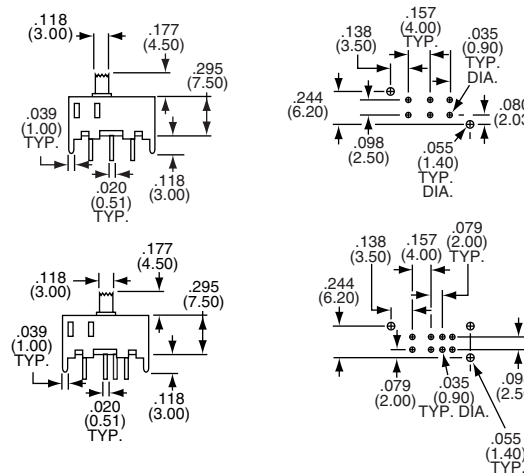
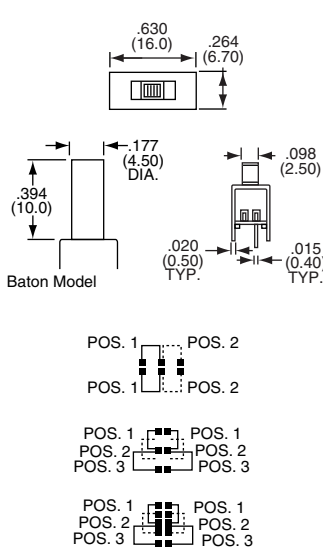
Operating Temperature.....-4°F to +212°F (-20°C to +100°C)  
 Storage Temperature.....-40°F to +212°F (-40°C to + 100°C)  
 Solder Heat Resistance .....See page M3-4  
 Recommended Cleaning.....No chlorine base or Freon can be used.  
 Aqueous or 100% ethanol.

**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....Gold: 0.4 VA 20 VDC or peak AC  
 Silver: 300 mA @ 125 VAC  
 Initial Contact Resistance .....20 Milliohms max.  
 Contact Timing.....Make-before-break  
 Insulation Resistance .....1000 Megohms min.  
 Dielectric Strength .....500 Volts RMS @ sea level  
 Actuation Force .....50 to 450 Grams  
 Actuator Travel.....0.079"-.158" (2.01-4.01)  
 Life Expectancy .....Up to 15,000 Cycles



Standard Model Tyco Electronics	Alcoswitch	Baton Model Tyco Electronics	Alcoswitch	Type	On	None	Off	Contacts
1437576-9	MHS122	1-1437576-2	MHS122K	SPDT	On	None	On	Silver
1-1437576-5	MHS123	1-1437576-7	MHS123K	SPDT	On	Off	On	Silver
1-1437576-9	MHS133	2-1437576-2	MHS133K	SP3T	On	On	On	Silver
1-1437576-0	MHS122G	1-1437576-3	MHS122KG	SPDT	On	None	On	Gold
	MHS123G		MHS123KG	SPDT	On	Off	On	Gold
2-1437576-0	MHS133G	2-1437576-3	MHS133KG	SP3T	On	On	On	Gold



Standard Model Tyco Electronics	Alcoswitch	Baton Model Tyco Electronics	Alcoswitch	Type	On	None	Off	Contacts
2-1437576-5	MHS222	2-1437576-8	MHS222K	DPDT	On	None	On	Silver
3-1437576-1	MHS223	3-1437576-4	MHS223K	DPDT	On	Off	On	Silver
3-1437576-6	MHS233	3-1437576-9	MHS233K	DP3T	On	On	On	Silver
2-1437576-6	MHS222G	2-1437576-9	MHS222KG	DPDT	On	None	On	Gold
3-1437576-2	MHS223G	—	MHS223KG	DPDT	On	Off	On	Gold
3-1437576-7	MHS233G	4-1437576-0	MHS233KG	DP3T	On	On	On	Gold

**Slide Switches, Low Profile, Right Angle, Instrumentation Grade**

SEE PAGE B33 FOR PRODUCT SPECIFICATIONS

**B**  
MHS Series

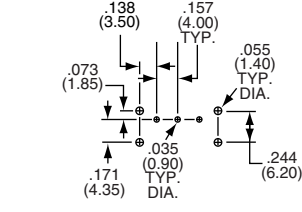
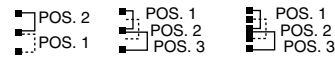
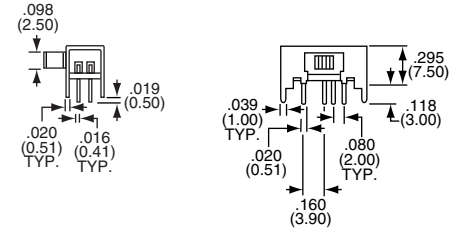
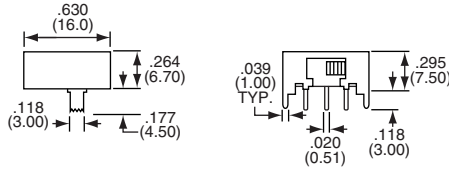
**SPDT/SP3T**



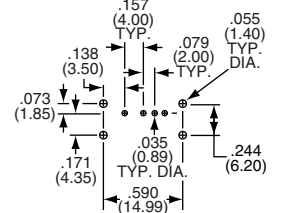
MHS122RA



MHS133GRA



MHS122/123



MHS133

Tyco Electronics	Alcoswitch	Type				Contacts
1-1437576-4	MHS122RA	SPDT	On	None	On	Silver
1-1437576-8	MHS123RA	SPDT	On	Off	On	Silver
2-1437576-4	MHS133RA	SP3T	On	On	On	Silver
1-1437576-1	MHS122GRA	SPDT	On	None	On	Gold
1-1437576-6	MHS123GRA	SPDT	On	Off	On	Gold
2-1437576-1	MHS133GRA	SP3T	On	On	On	Gold

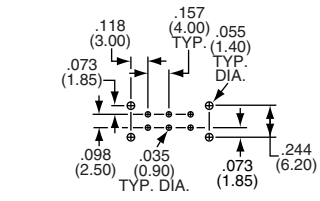
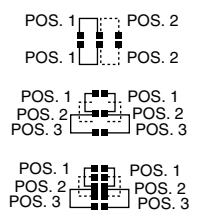
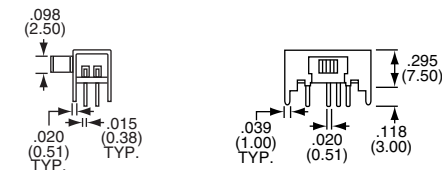
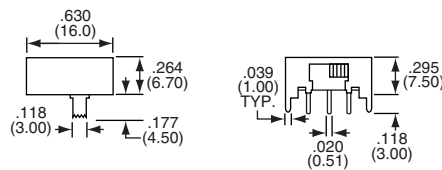
**DPDT/DP3T**



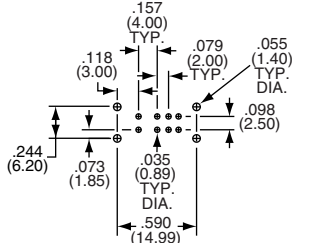
MHS222RA



MHS233GRA



MHS222/223



MHS233

Tyco Electronics	Alcoswitch	Type				Contacts
3-1437576-0	MHS222RA	DPDT	On	None	On	Silver
3-1437576-5	MHS223RA	DPDT	On	Off	On	Silver
4-1437576-1	MHS233RA	DP3T	On	On	On	Silver
2-1437576-7	MHS222GRA	DPDT	On	None	On	Gold
3-1437576-3	MHS223GRA	DPDT	On	Off	On	Gold
3-1437576-8	MHS233GRA	DP3T	On	On	On	Gold

**Slide Switches, Micro Size, Instrumentation Grade**

**MATERIAL SPECIFICATIONS:**

Contacts .....Silver clad plate over copper alloy  
 Cover Base Material .....Polyester  
 Actuator Material .....Polyacetal  
 Terminals .....Silver over nickel plate over copper alloy  
 Terminal Seal .....Molded in

**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....100 Milliamps @ 12 VDC  
 Initial Contact Resistance .....20 Milliohms max.  
 Contact Timing .....Make before break  
 Insulation Resistance .....100 Megohms min.  
 Dielectric Strength .....500 Volts RMS @ sea level  
 Actuation Force .....250 Grams, (+200g, -150g)  
 Actuator Travel .....0.079" (2.01)  
 Life Expectancy .....Up to 10,000 Cycles

**ENVIRONMENTAL SPECIFICATIONS:**

Operating Temperature .....+14°F to +140°F (-10°C to +60°C)  
 Storage Temperature .....-4°F to +140°F (-20°C to +60°C)  
 Solder Heat Resistance .....270°C+10°C, 5 seconds per MIL-STD-202,  
 Method 210

**PCB Hole Layout**

**SPDT**

**SSJ12**

Part Number			
Tyco Electronics	Alcoswitch	Plating	Mounting Style
3-1437575-1	SSJ12	Silver	Upright

**PCB Hole Layout**

**SPDT**

**SSJ12R**

Part Number			
Tyco Electronics	Alcoswitch	Plating	Mounting Style
3-1437575-2	SSJ12R	Silver	Right Angle

**PCB Hole Layout**

**SP3T**

**SSJ13**

Part Number			
Tyco Electronics	Alcoswitch	Plating	Mounting Style
3-1437575-3	SSJ13	Silver	Upright

**Slide Switches, Micro Size, Instrumentation Grade**

**MATERIAL SPECIFICATIONS:**

Contacts .....Silver over nickel over copper alloy  
 Case Material .....Polyacetal UL94HB  
 Actuator Material .....Polyester UL94HB  
 Terminals .....Silver over nickel over copper alloy  
 Terminal Seal .....Epoxy  
 Terminal Board.....UL 94 V-O

**ENVIRONMENTAL SPECIFICATIONS:**

Operating Temperature.....+14°F to +140°F (-10°C to +60°C)  
 Storage Temperature.....+14°F to +140°F (-10°C to +60°C)  
 Solder Heat Resistance.....230 ± 150 grams ± 5°C for 3 seconds per MIL-STD-202, Method 210

**TYPICAL PERFORMANCE CHARACTERISTICS:**

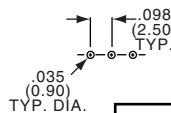
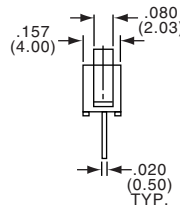
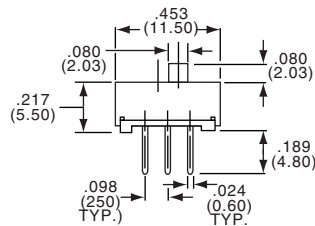
Contact Rating .....100 mA @ 30 VDC or peak AC  
 Initial Contact Resistance .....30 Milliohms max.  
 Contact Timing .....Make before break  
 Insulation Resistance .....100 Megohms min.  
 Dielectric Strength .....500 VAC  
 Actuation Force .....200 ± 150 Grams  
 Life Expectancy .....Up to 10,000 Cycles

**B**  
MMS Series

**SPDT**



MMS12



Circuit Diagram

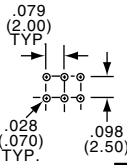
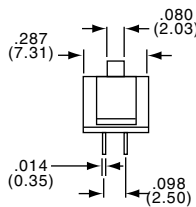
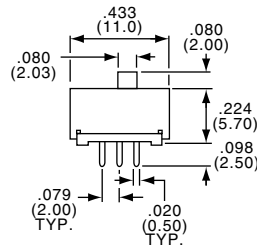


Part Number				
Tyco Electronics	Alcoswitch	Type	Plating	Mounting Style
1437575-4	MMS12	SPDT	Silver	Upright

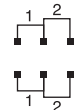
**DPDT**



MMS22



Circuit Diagram

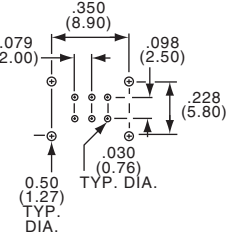
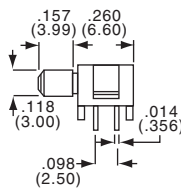
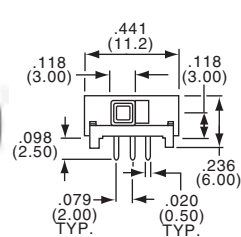


Part Number				
Tyco Electronics	Alcoswitch	Type	Plating	Mounting Style
1437575-5	MMS22	DPDT	Silver	Upright

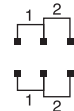
**DPDT**



MMS22R



Circuit Diagram

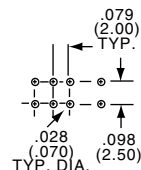
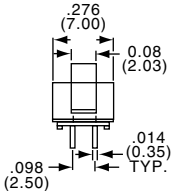
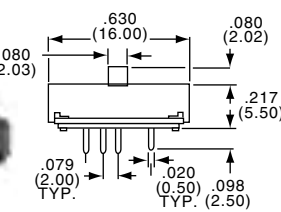


Part Number				
Tyco Electronics	Alcoswitch	Type	Plating	Mounting Style
1437575-6	MMS22R	DPDT	Silver	Right Angle

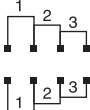
**DP3T**



MMS23



Circuit Diagram

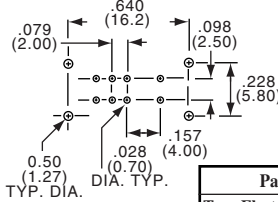
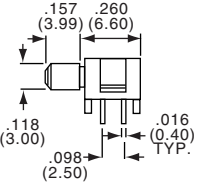
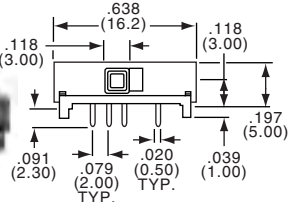


Part Number				
Tyco Electronics	Alcoswitch	Type	Plating	Mounting Style
1437575-8	MMS23	DP3T	Silver	Upright

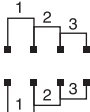
**DP3T**



MMS23R



Circuit Diagram



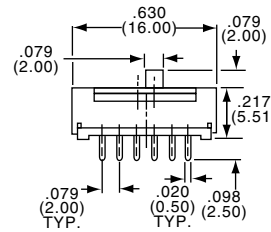
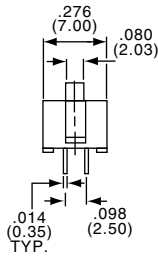
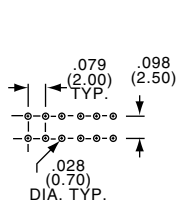
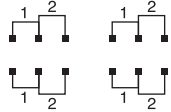
Part Number				
Tyco Electronics	Alcoswitch	Type	Plating	Mounting Style
1437575-9	MMS23R	DP3T	Silver	Right Angle



**Slide Switches, Micro Size, Instrumentation Grade**

SEE PAGE B36 FOR PRODUCT SPECIFICATIONS

Circuit Diagram

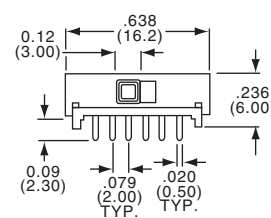
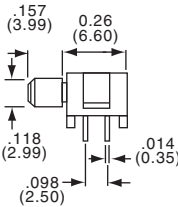
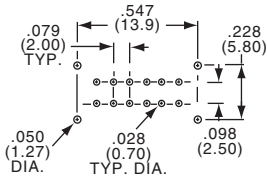
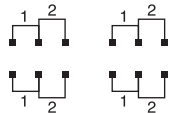


4PDT

MMS42

Part Number				
Tyco Electronics	Alcoswitch	Type	Plating	Mounting Style
I-1437575-0	MMS42	4PDT	Silver	Upright

Circuit Diagram

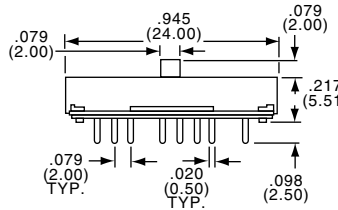
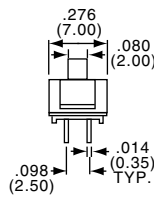
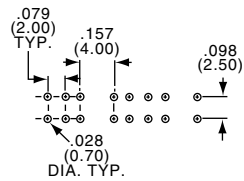
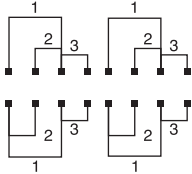


4PDT

MMS42R

Part Number				
Tyco Electronics	Alcoswitch	Type	Plating	Mounting Style
I-1437575-1	MMS42R	4PDT	Silver	Right Angle

Circuit Diagram

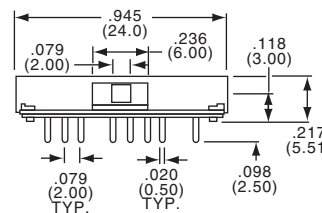
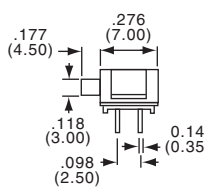
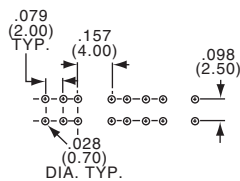
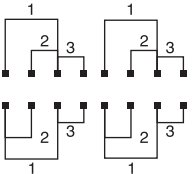


4P3T

MMS43

Part Number				
Tyco Electronics	Alcoswitch	Type	Plating	Mounting Style
I-1437575-2	MMS43	4P3T	Silver	Upright

Circuit Diagram



4P3T

MMS43R

Part Number				
Tyco Electronics	Alcoswitch	Type	Plating	Mounting Style
I-1437575-3	MMS43R	4P3T	Silver	Right Angle

**Slide Switches, Micro Size, Instrumentation Grade**

**MATERIAL SPECIFICATIONS:**

Contacts .....Gold or silver plate over nickel plate  
 Case Material .....Steel, tin plate  
 Actuator Material .....Polyacetal UL94HB  
 Terminals .....Gold or silver plate over nickel plate  
 Terminal Seal .....Epoxy

**ENVIRONMENTAL SPECIFICATIONS:**

Operating Temperature.....-4°F to +176°F (-20°C to +80°C)  
 Storage Temperature.....-40°F to +212°F (-40°C to +100°C)  
 Solder Heat Resistance.....+260°C (+500°F) for 5 seconds  
 per MIL-STD-202, Method 210

**TYPICAL PERFORMANCE CHARACTERISTICS:**

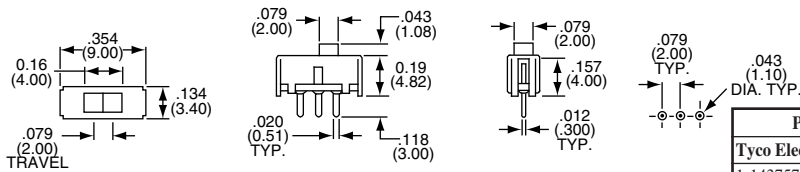
Contact Rating .....Gold: 0.4 VA @ 20 VDC or peak AC  
 Silver: 100 mA @ 30 VDC  
 Initial Contact Resistance.....30 Milliohms max.  
 Contact Timing.....Make before break  
 Insulation Resistance .....100 Megohms min.  
 Dielectric Strength .....500 VAC  
 Actuation Force .....250 ± 150 Grams  
 Life Expectancy .....Up to 10,000 Cycles  
 Travel .....0.079" (2.01)

**B**  
SSB Series

**SPDT**



SSB12



Circuit Diagram

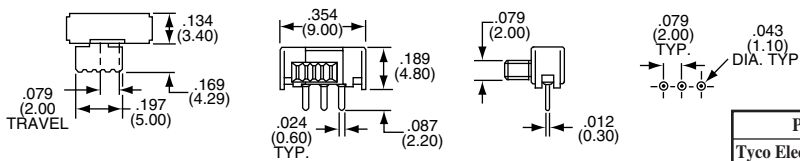


Part Number				
Tyco Electronics	Alcoswitch	Type	Plating	Mounting Style
1-1437575-8	SSB12	SPDT	Silver	Upright
1-1437575-9	SSB12G	SPDT	Gold	Upright

**SPDT**



SSB12R



Circuit Diagram

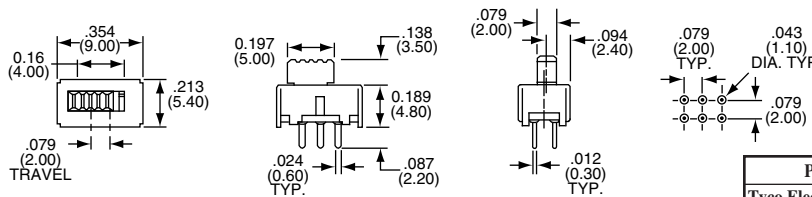


Part Number				
Tyco Electronics	Alcoswitch	Type	Plating	Mounting Style
2-1437575-0	SSB12R	SPDT	Silver	Right Angle
2-1437575-1	SSB12RG	SPDT	Gold	Right Angle

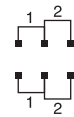
**DPDT**



SSB22



Circuit Diagram

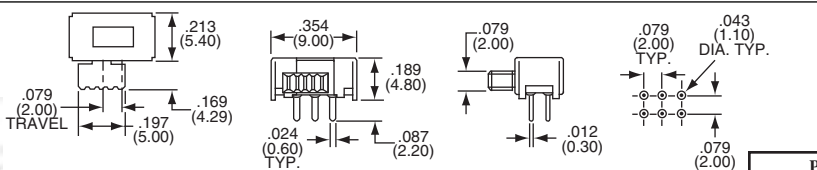


Part Number				
Tyco Electronics	Alcoswitch	Type	Plating	Mounting Style
2-1437575-2	SSB22	DPDT	Silver	Upright
2-1437575-3	SSB22G	DPDT	Gold	Upright

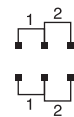
**DPDT**



SSB22R



Circuit Diagram

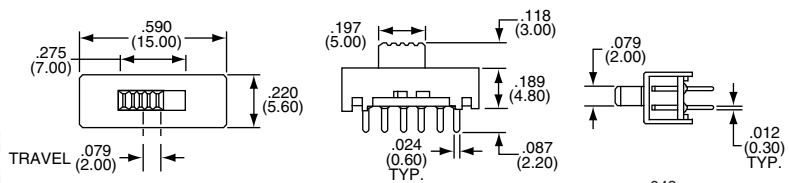


Part Number				
Tyco Electronics	Alcoswitch	Type	Plating	Mounting Style
2-1437575-4	SSB22R	DPDT	Silver	Right Angle
2-1437575-5	SSB22RG	DPDT	Gold	Right Angle

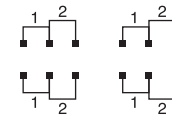
**4PDT**



SSB42



Circuit Diagram



Part Number				
Tyco Electronics	Alcoswitch	Type	Plating	Mounting Style
2-1437575-8	SSB42	4PDT	Silver	Upright
2-1437575-9	SSB42G	4PDT	Gold	Upright

**Slide Switches, Micro Size, Instrumentation Grade**

**MATERIAL SPECIFICATIONS:**

Contacts .....Silver or gold plate  
 Case Material .....Polyester PPS UL94VO  
 Actuator Material .....Polyamide UL94HB  
 Cover Material .....Polyamide UL94HB  
 Terminals .....Silver or gold plate  
 Terminal Seal .....Epoxy

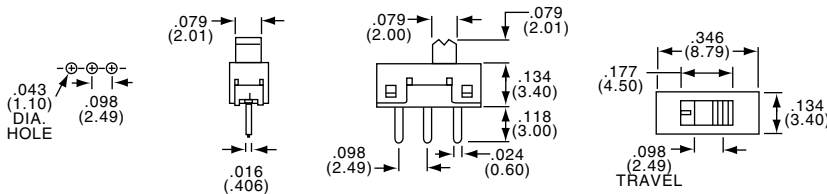
**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....Gold: 0.4 VA max. @ 20 VDC or peak AC  
 Silver: 100 Milliamps @ 30 VDC  
 Initial Contact Resistance .....30 Milliohms max.  
 Contact Timing .....Break-Before-Make  
 Insulation Resistance .....100 Megohms min.  
 Dielectric Strength .....500 VAC  
 Actuation Force .....250 ± 100 Grams  
 Actuator Travel .....0.098" (2.49)  
 Life Expectancy .....Up to 10,000 Cycles

**ENVIRONMENTAL SPECIFICATIONS:**

Operating Temperature .....-4°F to +158°F (-20°C to +70°C)  
 Storage Temperature .....-40°F to +194°F (-40°C to +90°C)  
 Solder Heat Resistance .....260°C (+500°F) for 5 seconds  
 per MIL-STD-202, Method 210

**SPDT**



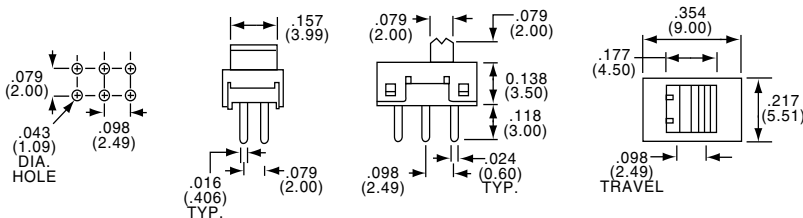
SSA12

Circuit Diagram



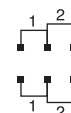
Part Number			
Tyco Electronics	Alcoswitch	Plating	Mounting Style
1-1437575-4	SSA12	Silver	Upright
1-1437575-5	SSA12G	Gold	Upright

**DPDT**



SSA22

Circuit Diagram



Part Number			
Tyco Electronics	Alcoswitch	Plating	Mounting Style
1-1437575-6	SSA22	Silver	Upright
1-1437575-7	SSA22G	Gold	Upright

**Slide Switches, PC Tails, Wiping Contact, Consumer Grade**

**MATERIAL SPECIFICATIONS:**

Contacts .....Silver plate over copper alloy  
 Case Material .....Steel  
 Actuator Material .....Polycarbonate  
 Terminals/Fixed Contacts.....Silver plate over copper alloy  
 Terminal Seal .....Epoxy

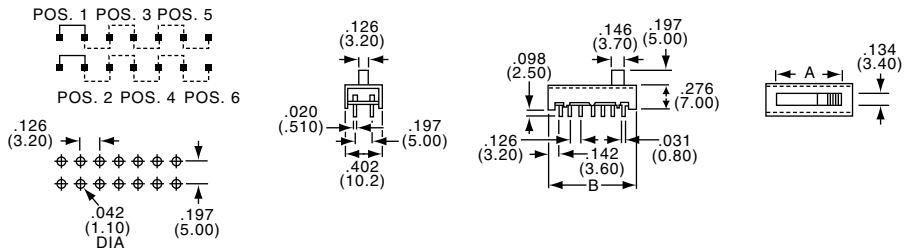
**ENVIRONMENTAL SPECIFICATIONS:**

Operating Temperature.....14°F to +140°F (-10°C to +60°C)  
 Storage Temperature.....14°F to +140°F (-10°C to +60°C)

**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....250 mA @ 125 VAC, 150 mA @ 12 VDC  
 Initial Contact Resistance .....30 Milliohms max.  
 Contact Timing .....Break before make  
 Insulation Resistance .....500 Megohms min.  
 Dielectric Strength .....500 VAC  
 Actuation Force .....100-300 Grams  
 Actuator Travel.....0.126" (3.20)  
 Life Expectancy .....Up to 10,000 Cycles

**2 TO 6 POSITIONS**

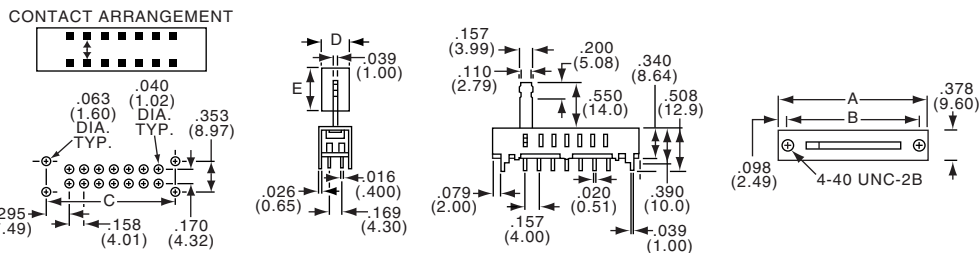


Part Number		Type	Dim.A	Dim.B
Tyco Electronics	Alcoswitch			
3-1437577-9	SLS220PC	2 Positions	.272(6.91)	.535(13.59)
4-1437577-1	SLS230PC	3 Positions	.398(10.11)	.661(16.79)
4-1437577-3	SLS240PCA	4 Positions	.524(13.31)	.787(19.99)
4-1437577-5	SLS250PC	5 Positions	.650(16.51)	.913(23.19)
4-1437577-7	SLS260PC	6 Positions	.776(19.71)	1.039(26.39)

**SL Series**

**Slide Switches, PC Tails, Lever or Knob Actuator**

**2 TO 10 POSITIONS**



Part Number		Type	Dim. A	Dim. B	Dim. C	Knob Only	Description	Dim. D	Dim. E
Tyco Electronics	Alcoswitch								
1437577-9	SL220	2 Positions	.95(24.13)	.750(19.05)	.750(19.05)	KSS10A	Aluminum-Clear Anodize	.270(6.86)	.500(12.70)
1-1437577-0	SL330	3 Positions	1.11(28.19)	.910(23.1)	.910(23.1)	KSS10B	Aluminum-Black Anodize	.270(6.86)	.500(12.70)
1-1437577-1	SL550	5 Positions	1.42(36.07)	1.22(30.99)	1.22(31.1)	KSS20A	Aluminum-Clear Anodize	.305(7.75)	.512(13.00)
1-1437577-2	SL660	6 Positions	1.58(40.13)	1.38(35.05)	1.38(35.1)	KSS20B	Aluminum-Black Anodize	.305(7.75)	.512(13.00)
1-1437577-3	SL770	7 Positions	1.74(44.20)	1.54(39.12)	1.54(39.1)				
1-1437577-4	SL880	8 Positions	1.89(48.01)	1.70(43.18)	1.70(43.1)				
1437577-8	SL1000	10 Positions	2.21(56.13)	2.01(51.05)	2.01(51.5)				

**Slide Switches, Panel Mount, Wiping Contact, Consumer Grade**

**MATERIAL SPECIFICATIONS:**

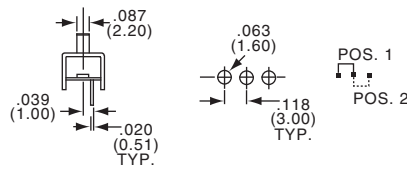
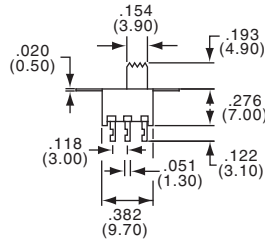
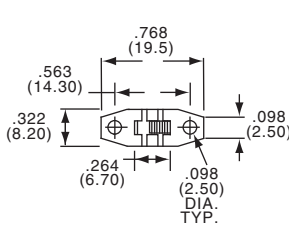
Contacts .....Silver over nickel plate copper alloy  
 Case Material .....Steel-zinc plated  
 Actuator Material .....PBT 30% glass  
 Terminals/Fixed Contacts.....Silver over nickel plate copper alloy  
 Terminal Seal .....Epoxy

**ENVIRONMENTAL SPECIFICATIONS:**

Operating Temperature.....-4°F to +185°F (-20°C to +85°C)  
 Storage Temperature.....-40°F to +212°F (-40°C to +100°C)  
 Solder Heat Resistance .....+300°C (+572°F) for 5 seconds

**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....500 mA @ 125 VAC, 200 mA @ 12 VDC  
 Initial Contact Resistance .....30 Milliohms max.  
 Contact Timing .....Break-Before-Make  
 Insulation Resistance .....500 Megohms min.  
 Dielectric Strength .....500 VAC  
 Actuation Force .....SLS: 100-300 Grams; SLSA: 220, 300 -500 Grams  
 Plunger/Actuator Travel: .....0.106" (2.69)  
 Life Expectancy .....Up to 10,000 Cycles

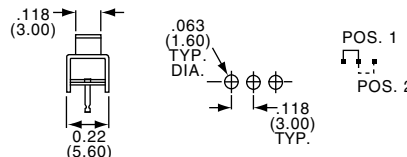
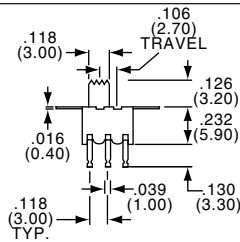
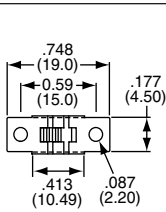


SPDT



SLS120

Part Number					
Tyco Electronics	Alcoswitch	Type	Mounting	Terminals	Contacts
1-1437577-5	SLS120	SPDT	Panel	Lug	

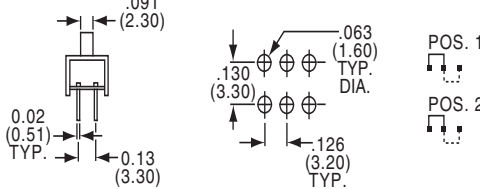
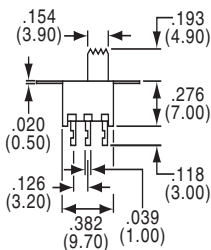
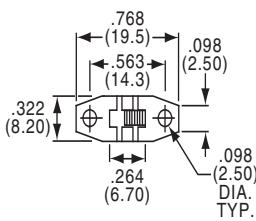


SPDT



SLSA120

Part Number					
Tyco Electronics	Alcoswitch	Type	Mounting	Terminals	Contacts
5-1437577-3	SLSA120	SPDT	Panel	Turret	

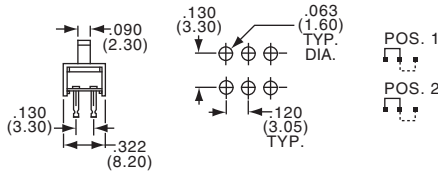
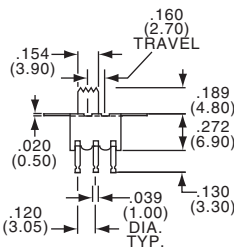
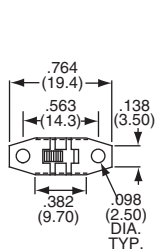


DPDT



SLS220

Part Number					
Tyco Electronics	Alcoswitch	Type	Mounting	Terminals	Contacts
3-1437577-7	SLS220	DPDT	Panel	Lug	



DPDT



SLSA220

Part Number					
Tyco Electronics	Alcoswitch	Type	Mounting	Terminals	Contacts
5-1437577-5	SLSA220	DPDT	Panel	Turret	

**Slide Switches, Wiping Contacts, Consumer Grade**

**MATERIAL SPECIFICATIONS:**

Contacts .....Copper alloy-silver/nickel  
 Case Material .....Steel-zinc plate  
 Actuator Material .....PBT 30% Glass  
 Terminals/Fixed Contacts.....Copper, alloy, silver/nickel plate  
 Terminal Seal .....Epoxy

**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....500 mA @ 125 VAC, 200 mA @ 12 VDC  
 Initial Contact Resistance .....30 Milliohms max.  
 Contact Timing .....Break before make  
 Insulation Resistance .....500 Megohms min.  
 Dielectric Strength .....500 VAC  
 Actuation Force .....350±150 Grams  
 Plunger/Actuator Travel: .....0.106 (2.69)  
 Life Expectancy .....Up to 10,000 Cycles

**ENVIRONMENTAL SPECIFICATIONS:**

Operating Temperature.....-4°F to + 185°F (-20°C to + 85°C)  
 Storage Temperature.....-40°F to + 212°F (-40°C to + 100°C)  
 Solder Heat Resistance .....+300°C (+572°F) for 5 seconds

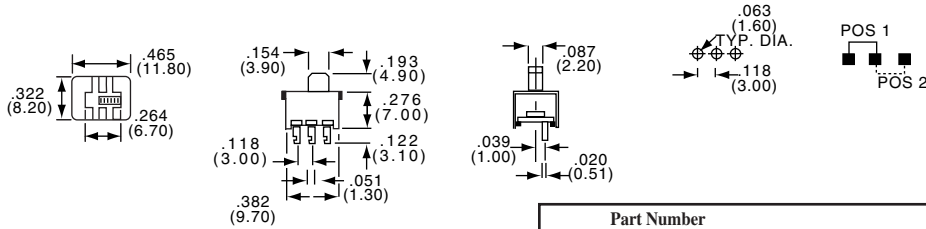
**B**  
SLS/SLSA Series

**SPDT**



Lug

SLS1201



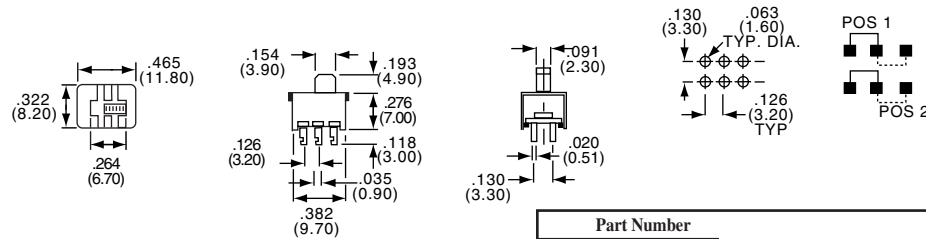
Part Number				
Tyco Electronics	Alcoswitch	Type	Mounting	Terminals Contacts
1-1437577-6	SLS1201	SPDT	PC	Lug

**DPDT**



Lug

SLS2201



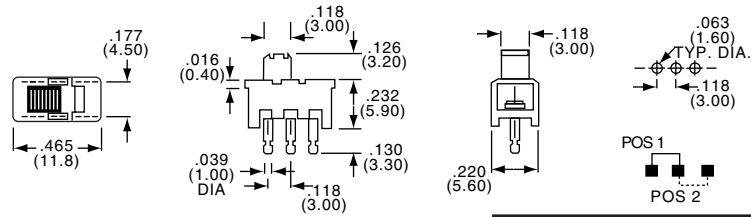
Part Number				
Tyco Electronics	Alcoswitch	Type	Mounting	Terminals Contacts
3-1437577-8	SLS2201	DPDT	PC	Lug

**SPDT**



Turret

SLSA1201



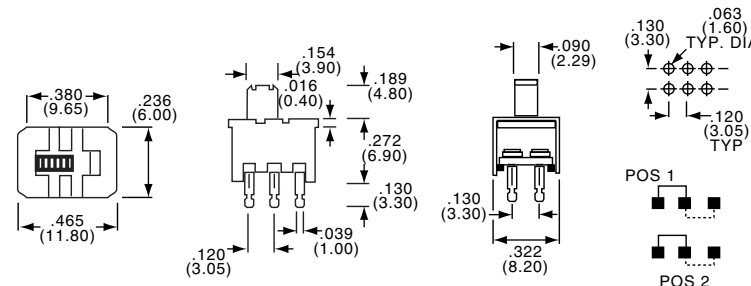
Part Number				
Tyco Electronics	Alcoswitch	Type	Mounting	Terminals Contacts
5-1437577-4	SLSA1201	SPDT	PC	Turret

**DPDT**



Turret

SLSA2201



Part Number				
Tyco Electronics	Alcoswitch	Type	Mounting	Terminals Contacts
5-1437577-6	SLSA2201	DPDT	PC	Turret

**Slide Switches, Miniature, Rolling Contact, Economy Grade**

**MATERIAL SPECIFICATIONS:**

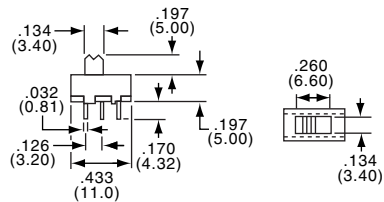
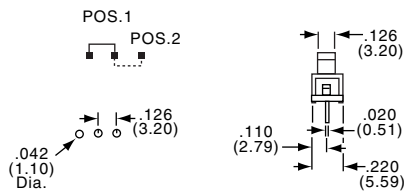
Contacts .....Silver over nickel plate over copper alloy  
 Case Material .....Tin plate over steel  
 Actuator Material .....Polycarbonate  
 Terminals/Fixed Contacts.....Silver over nickel plate over copper alloy

**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....250 mA @ 125 VAC, 150 mA @ 12 VDC  
 Initial Contact Resistance .....30 Milliohms max.  
 Contact Timing .....Break before make  
 Insulation Resistance .....500 Megohms min.  
 Dielectric Strength .....500 VAC  
 Actuation Force .....340 ± 57 Grams  
 Actuator Travel.....0.126" (3.20)  
 Life Expectancy .....Up to 6,000 to 10,000 Cycles

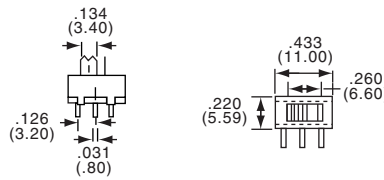
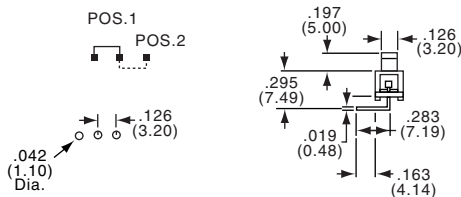
**ENVIRONMENTAL SPECIFICATIONS:**

Operating Temperature.....14°F to +185°F (-10°C to +85°C)  
 Storage Temperature.....14°F to +185°F (-10°C to +85°C)



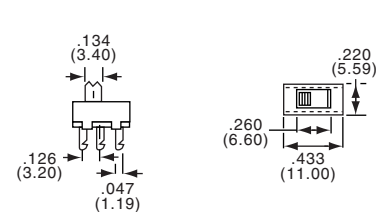
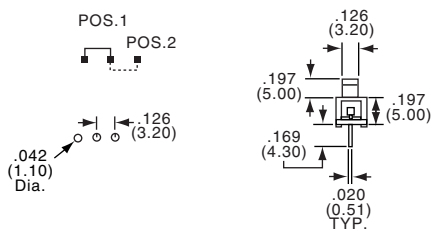
SLS121PC

Part Number		
Tyco Electronics	Alcoswitch	Mounting Style
1-1437577-9	SLS121PC	Printed Circuit



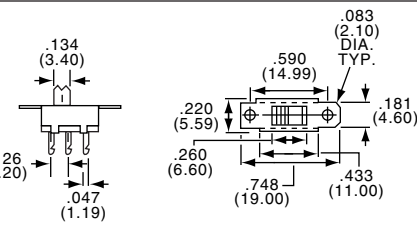
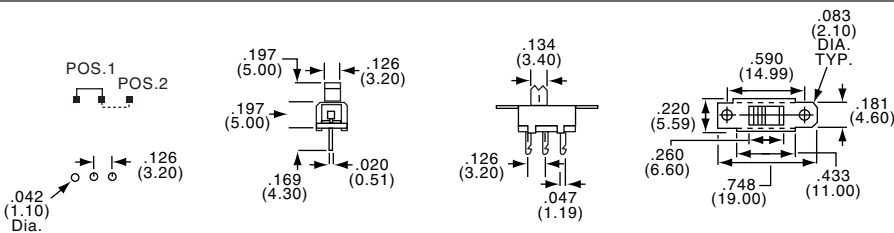
SLS121RA

Part Number		
Tyco Electronics	Alcoswitch	Mounting Style
2-1437577-2	SLS121RA	Right Angle PC



SLS1211

Part Number		
Tyco Electronics	Alcoswitch	Mounting Style
1-1437577-8	SLS1211	Printed Circuit



SLS121

Part Number		
Tyco Electronics	Alcoswitch	Mounting Style
1-1437577-7	SLS121	Panel Mounted

**Slide Switches, Miniature, Rolling Contact, Economy Grade**

**MATERIAL SPECIFICATIONS:**

Contacts .....Silver over nickel flash over copper alloy  
 Case Material .....Steel  
 Actuator Material .....Polycarbonate  
 Terminals/Fixed Contacts.....Silver over nickel over copper alloy

**ENVIRONMENTAL SPECIFICATIONS:**

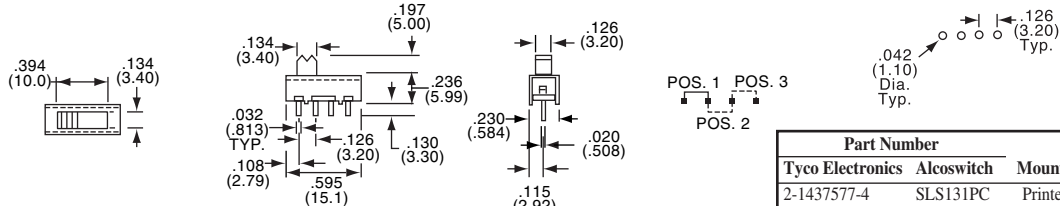
Operating Temperature.....+14°F to +185°F (-10°C to +85°C)  
 Storage Temperature.....+14°F to +185°F (-10°C to +85°C)  
 Solder Heat Resistance.....+260°C for 5 seconds

**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....250mA @ 125 VAC  
 150mA @ 12VDC  
 Initial Contact Resistance .....20 Milliohms max.  
 Contact Timing.....Break-Before-Make  
 Insulation Resistance .....>50 Megohms.  
 Dielectric Strength .....500 Volts RMS @ sea level  
 Actuation Force .....340 ± 57 Grams  
 Plunger/Actuator Travel: .....0.260" to 0.512" (6.60-13.00)  
 Life Expectancy .....Up to 10,000 Cycles at no load

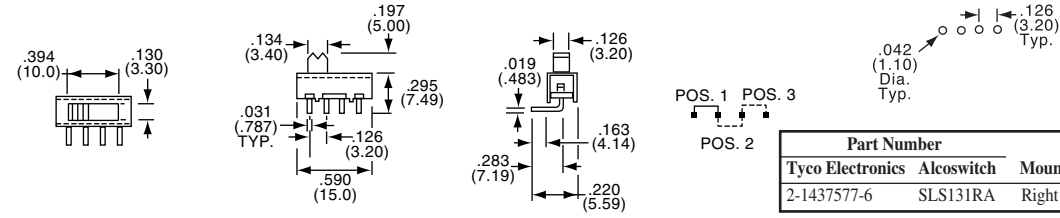
**B**  
SLS Series

**SP3T**



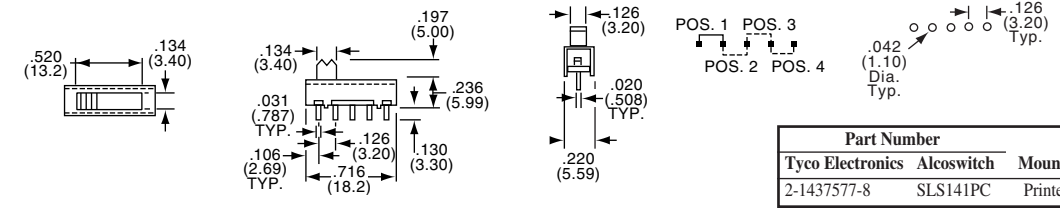
Part Number		
Tyco Electronics	Alcoswitch	Mounting Style
2-1437577-4	SLS131PC	Printed Circuit

**SP3T**



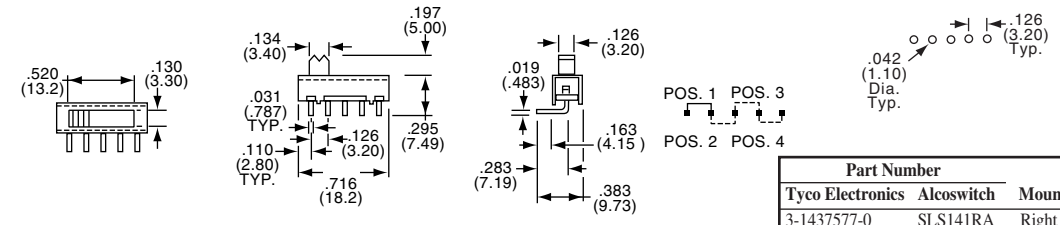
Part Number		
Tyco Electronics	Alcoswitch	Mounting Style
2-1437577-6	SLS131RA	Right Angle PC

**SP4T**



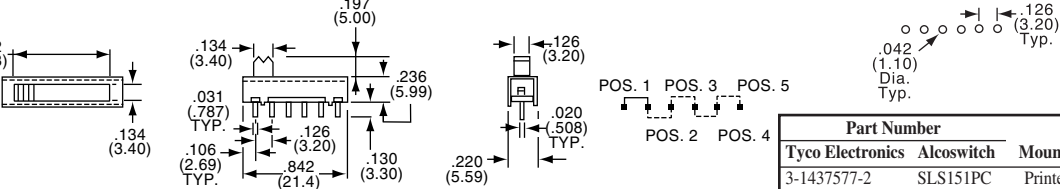
Part Number		
Tyco Electronics	Alcoswitch	Mounting Style
2-1437577-8	SLS141PC	Printed Circuit

**SP4T**



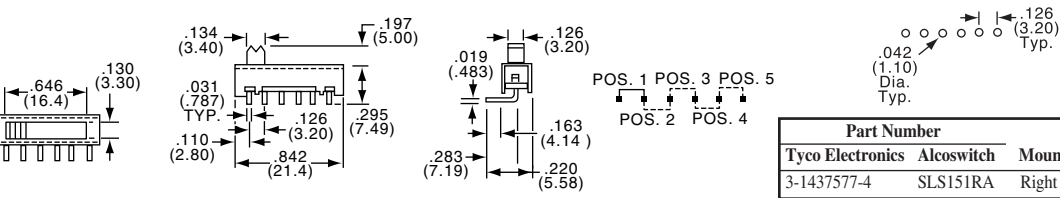
Part Number		
Tyco Electronics	Alcoswitch	Mounting Style
3-1437577-0	SLS141RA	Right Angle PC

**SP5T**



Part Number		
Tyco Electronics	Alcoswitch	Mounting Style
3-1437577-2	SLS151PC	Printed Circuit

**SP5T**



Part Number		
Tyco Electronics	Alcoswitch	Mounting Style
3-1437577-4	SLS151RA	Right Angle PC



**Slide Switches, Baton-Toggle, Multi Pole**

**MATERIAL SPECIFICATIONS:**

Contacts .....Silver clad over nickel plated copper alloy  
 Case Material .....Steel, tin plate  
 Actuator Material .....ABS plastic/Aluminum cap  
 Terminals/Fixed Contacts.....Silver over nickel plated copper alloy  
 Terminal Seal .....Epoxy

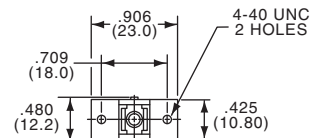
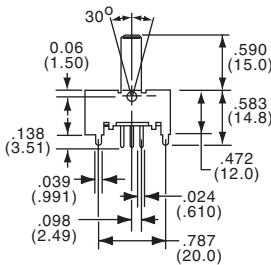
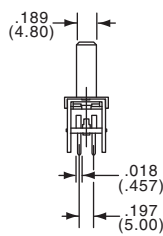
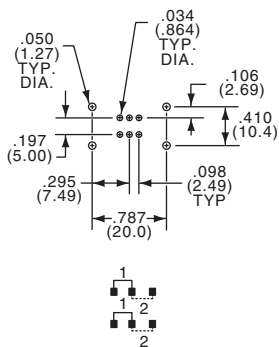
**ENVIRONMENTAL SPECIFICATIONS:**

Operating Temperature.....+5°F to +131°F (-15°C to +55°C)  
 Storage Temperature.....-4°F to +140° F (-20°C to +60°C)  
 Solder Heat Resistance.....Hand: 300°C for 3 seconds  
 Wave: 250°C for 5 seconds

**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....300 mA @ 125 VAC, 200 mA @ 12VDC  
 Initial Contact Resistance .....20 Milliohms max.  
 Contact Timing .....See table below  
 Insulation Resistance .....500 Megohms min.  
 Dielectric Strength .....500 Volts RMS @ sea level  
 Actuation Force .....450 ± 250 Grams  
 Plunger/Actuator Travel .....30°  
 Life Expectancy .....Up to 10,000 Cycles

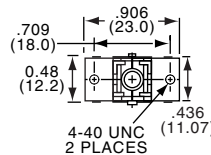
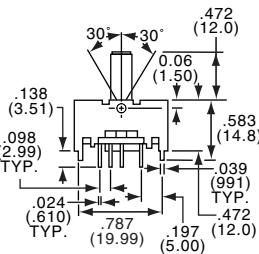
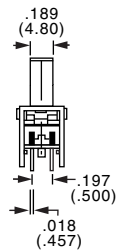
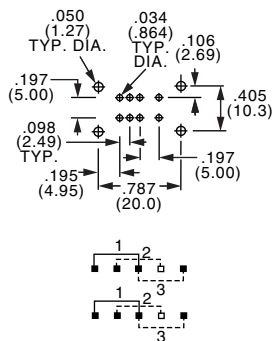
**DPDT**



CST022NK

Part Number					Contact Timing
Tyco Electronics	Alcoswitch				
1437576-2	CST022NK	None	On	On	Non Shorting - Break-Before-Make (On) indicates momentary position.

**DP3T**



CST023NK

Part Number					Contact Timing
Tyco Electronics	Alcoswitch				
1437576-4	CST023NK	On	On	On	Non Shorting

**Slide Switches, Baton-Toggle, Multi Pole**

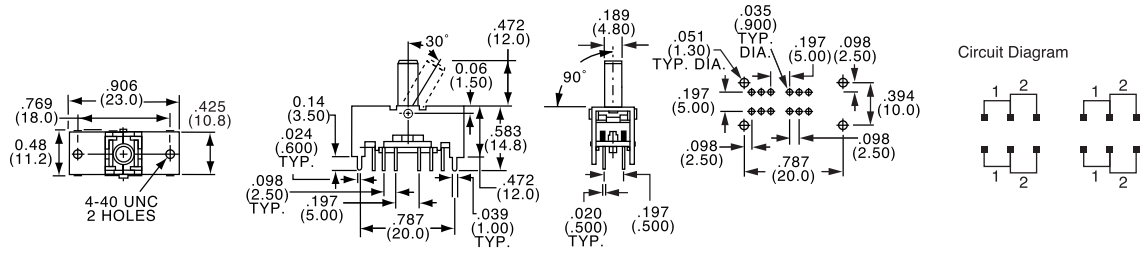
SEE PAGE B45 FOR PRODUCT SPECIFICATIONS

**B**  
CST Series

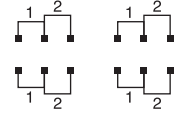
**4PDT**



CST042NK



Circuit Diagram

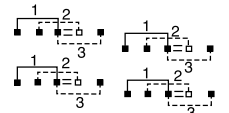
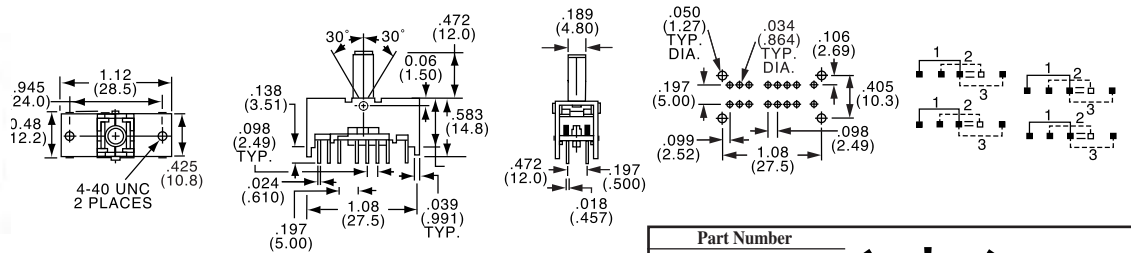


Part Number					
Tyco Electronics	Alcoswitch				Contact Timing
1437576-5	CST042NK	None	On	On	Non Shorting

**4P3T**



CST043NK

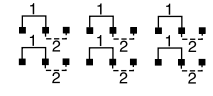
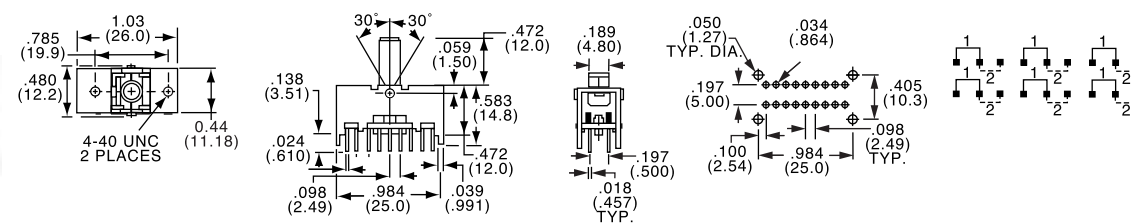


Part Number					
Tyco Electronics	Alcoswitch				Contact Timing
1437576-6	CST043NK	On	On	On	Non Shorting

**6PDT**



CST062NK



Part Number					
Tyco Electronics	Alcoswitch				Contact Timing
1437576-7	CST062NK	None	On	On	Non Shorting

**Slide Switches, Miniature, Right Angle, Surface Mount**

**MATERIAL SPECIFICATIONS:**

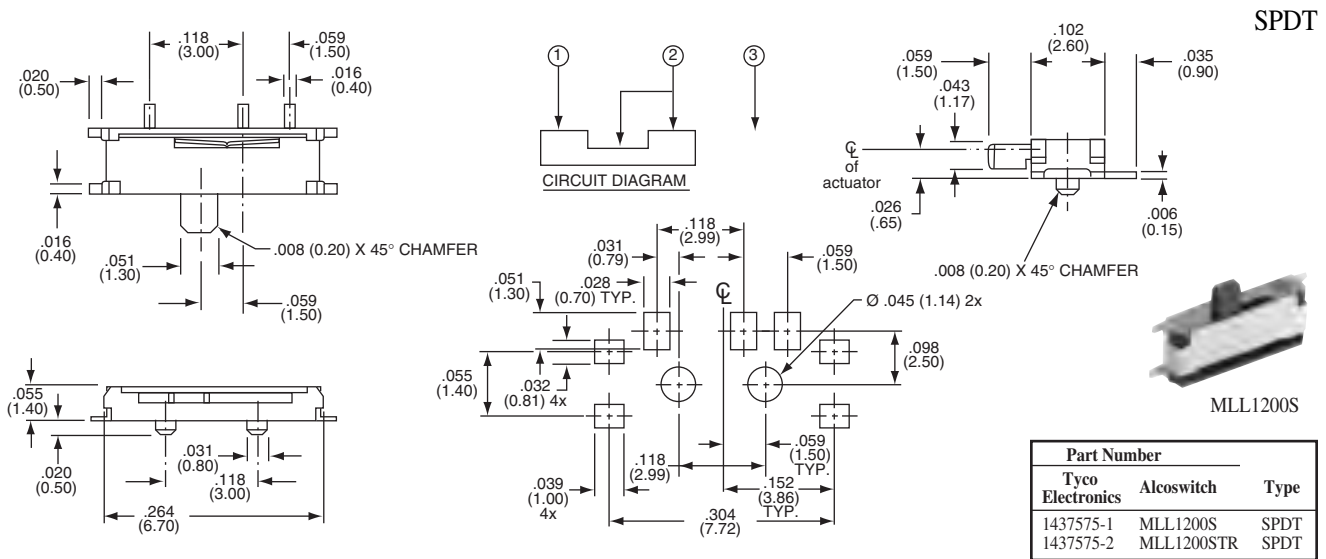
Contacts .....BeCu, copper alloy, 1 micron silver plate  
 Case Material .....40% G.F. PPS, UL94V-0  
 Frame .....Stainless steel, silver plated  
 Actuator Material .....Nylon, UL94HB polyamide  
 Terminals .....Brass, copper alloy, 1 micron silver plate  
 Terminal Seal .....Epoxy

**TYPICAL PERFORMANCE CHARACTERISTICS:**

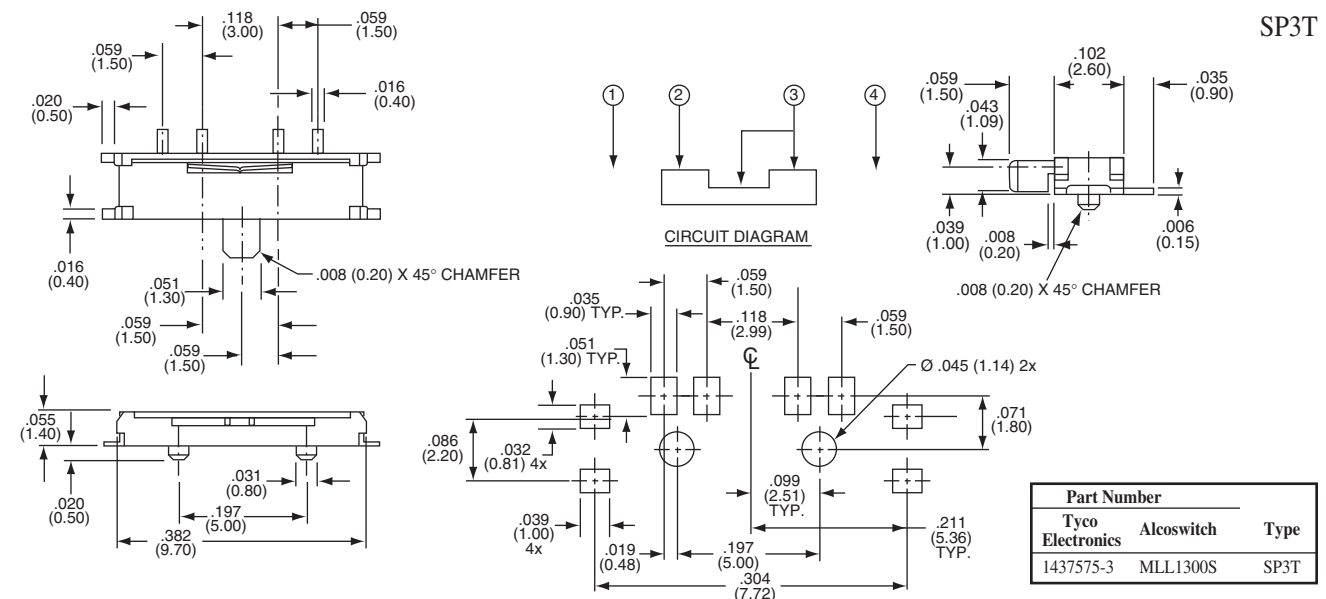
Contact Rating .....0.3 Amp, 4 VDC  
 Initial Contact Resistance .....70 Milliohms  
 Insulation Resistance .....100 Megohms min.  
 Dielectric Strength .....100 VAC min.  
 Actuation Force .....175 ±100 Grams  
 Life Expectancy .....Up to 10,000 Cycles  
 Travel .....0.059 (1.5mm)

**ENVIRONMENTAL SPECIFICATIONS:**

Humidity .....MIL-STD-202, Method 103, Condition B  
 Moisture Resistance .....MIL-STD-202, Method 106  
 Thermal Shock .....MIL-STD-202, Method 107, Condition A  
 Solder Heat Resistance ...230°C per EIA 364-56 Level 2

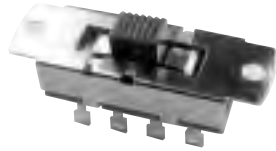


Part Number		
Tyco Electronics	Alcoswitch	Type
1437575-1	MLL1200S	SPDT
1437575-2	MLL1200STR	SPDT



Part Number		
Tyco Electronics	Alcoswitch	Type
1437575-3	MLL1300S	SP3T

**13 Amp & 6 Amp, Panel Mount**



**MATERIAL SPECIFICATIONS:**

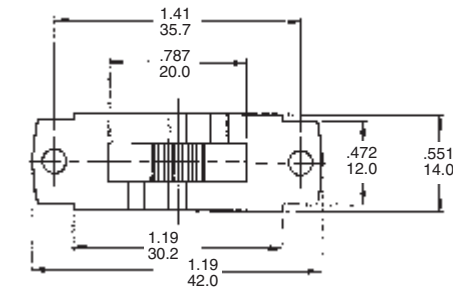
Contacts .....Copper alloy, silver plate  
 Board .....Phenolic, UL94V0  
 Frame .....Steel, nickel plate  
 Actuator Material .....Nylon, UL94V-2  
 Terminals .....Copper alloy, silver plate  
 Terminal Seal .....Epoxy

**ENVIRONMENTAL SEPCIFICATIONS:**

Operating Temperature ..-4°F to 149°F (-20° to +65°C)  
 Storage Temperature .....-13°F to 158°F (-25° to +70°C)  
 Solder Heat Resistance ..Per EIA-364-56A, Procedure 3, Condition B  
 Solderability .....Per EIA-364-52, Class 2, Category 1, 95%  
 minimum coverage

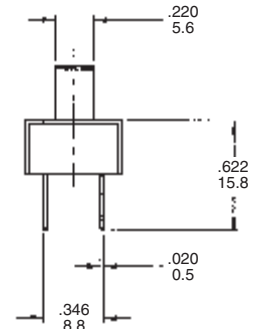
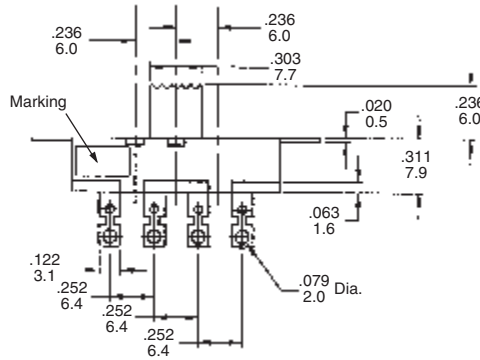
**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....13 Amp, 125 VAC or 6.5 Amp, 250 VAC  
 Initial Contact Resistance.....50 Milliohms max.  
 Insulation Resistance .....100 Megohms min.  
 Dielectric Strength .....1200 VAC  
 Actuation Force .....100-900 Grams  
 Life Expectancy .....Up to 5000 Cycles  
 Travel .....0.236 (6.0mm)



DP3T

Part Number 1571490-1



**MATERIAL SPECIFICATIONS:**

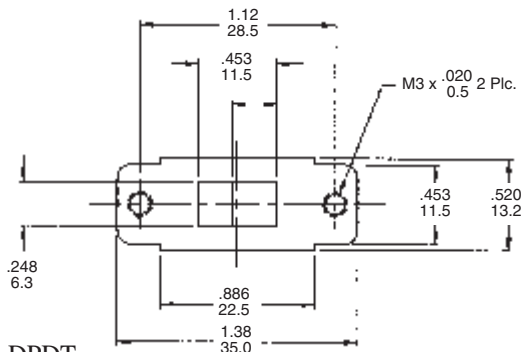
Contacts .....Copper alloy, silver plate  
 Board .....Phenolic, UL94HB  
 Frame .....Steel, nickel plate  
 Actuator Material .....Polycarbonate, UL94V-2  
 Terminals .....Copper alloy, silver plate  
 Terminal Seal .....Epoxy

**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....6 Amp, 125 VAC or 3 Amp, 250 VAC  
 Initial Contact Resistance.....50 Milliohms max.  
 Insulation Resistance .....100 Megohms min.  
 Dielectric Strength .....1800 VAC  
 Actuation Force .....500-900 Grams  
 Life Expectancy .....5000 Cycles  
 Travel .....0.197 (5.0mm)

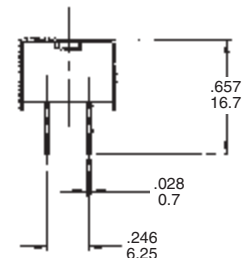
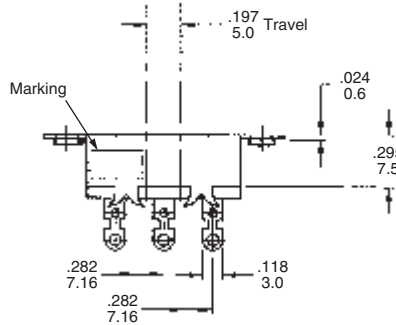
**ENVIRONMENTAL SEPCIFICATIONS:**

Operating Temperature ..-4°F to 149°F (-20° to +65°C)  
 Storage Temperature .....-13°F to 158°F (-25° to +70°C)  
 Solder Heat Resistance ..Per EIA-364-56A, Procedure 3, Condition B  
 Solderability .....Per EIA-364-52, Class 2, Category 1, 95% minimum  
 coverage



DPDT

Part Number 1571491-1





*TST Series - Page C5*



*TT Series - Page C8*



*ATE Series - Page C19*



*A Series - Page C22*



*AE Series - Page C35*



*MT Series - Page C43*



Toggle Switches Part Number Index

A101K1V30B .....C22	A107KAV2Q.....C22	A208SD9AV2Q .....C22,C31	AE108SD1V30B .....C35
A101KAB .....C22	A107KZB .....C22	A208SDCQ .....C30	AE201MD1AB .....C40
A101KAQ .....C22	A107MD9AV2B .....C22	A208SYAB .....C28	AE201MD1AQ .....C40
A101KCC .....C22	A107MD9CQ .....C22	A208SYCB .....C22,C28	AE201MD1AV2B .....C41
A101KD9AQ .....C22	A107MD9V30Q .....C22	A208SYCQ .....C22	AE201MD1AV2Q .....C41
A101KZQ .....C22,C31	A107P3YZQ .....C22,C33	A208SYZQ .....C22,C27	AE201MD1CB .....C41
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A101MD9AB .....C22,C32	A107SYCB .....C22	A208TZQ .....C22	AE201MD1V30B .....C35
A101MD9AG .....C22	A107SYCQ .....C22	A211KZB .....C22,C31	AE201SD1AB .....C42
A101MD9AQ .....C22,C32	A107SYZB .....C27	A211KZQ .....C31	AE201SD1AG .....C35
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TTE11EGPC9T1/4ES	.....C18
TTE11EGRA1ES	.....C17
TTE13A9T1/4	.....C8
TTE13D2T	.....C8
TTE13D8T1/4	.....C8
TTE13D9T1/4	.....C8
TTE13DG2T	.....C8
TTE13E8T1/4	.....C8
TTE21KGPC9T1/4ES	.....C18
TTE21NG2T1/4ES	.....C8
TTE21NGPC1ES	.....C8,C17
TTE21NGPC3TES	.....C8,C18
TTE21NGPC9T1/4ES	.....C18
TTE21NGPC9T1/4ES	.....C8
TTE21NGRA1ES	.....C8,C17
TTE21NGT	.....C17
TTE21PGPC1ES	.....C18
TTE21PGPC3TES	.....C18
TTE21PGPC9T1/4ES	.....C18
TTE21PGRA1ES	.....C17
TTE23N2T	.....C8
TTE23N8T1/4	.....C8
TTE23N9T1/4	.....C8
TTE23NG2T	.....C8
TTE23P8T1/4	.....C8
TTE41NGPC1	.....C8
TTE41NGWW2T	.....C8
TTE43N8T1/4	.....C8
TTE43N9T1/4	.....C8
TTE43N9T1/4E	.....C8
TTE43P8T1/4	.....C8

**Toggle Switches**

**Toggle Switches, Poles, Throws & Functions Selection Guide**

SERIES/CURRENT RATING/PAGE NUMBER

ATE Series .....0.4VA .....Page C19  
 A/AE Series 0.4VA ..5 Amps.....Page C22/35

TT Series .....0.4VA 3 Amps .....Page C8  
 TST Series .....0.4VA .....Page C5  
 MT Series .....6 Amps .....Page C43

G  
Toggle Switch Selection Guide

	SPDT	DPDT	3PDT	4PDT
On - None - On 2 Position	ATE Gemini Tiny/TST Green	ATE Gemini Tiny Green	Green	Tiny Green ATE
On - Off - On 3 Position	ATE Gemini Tiny/TST Green	ATE Gemini Tiny Green	Green	Tiny Green
On - None - (On) 2 Position	ATE Gemini Tiny/TST Green	Gemini Tiny Green	Green	Tiny
(On) - Off - (On) 3 Position	ATE Gemini Green TST	ATE Gemini Green	Green	
On - Off - (On) 3 Position	Gemini Green	Gemini Green	Green	
On - On - On 3 Position		Gemini Green		Green
(On) - On - (On) 3 Positions		Gemini Green		
On - On - (On) 3 Position		Gemini Green		
On - Off 2 Position	Tiny	Tiny		



**Toggle Switches, Tiny, Sealed, Through Hole and Surface Mount**

**FEATURES:**

- Rating 0.4VA max. at 20VAC/DC
- High temperature plastics - Liquid crystal polymer (LCP)
- Specifically designed for thru-hole and surface mount applications - Tin lead plated terminals
- Washable process sealed construction - Internal actuator "O" Ring
- Ultrasonic welded case

**MATERIAL SPECIFICATIONS:**

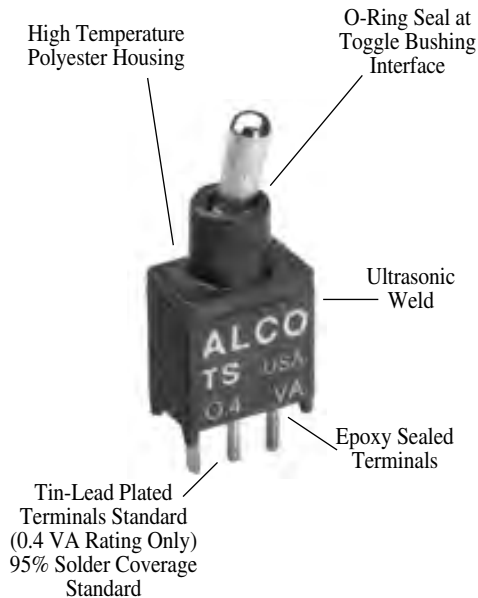
Contacts .....Copper alloy with gold over nickel plate  
 Case Material .....LCP  
 Actuator Material .....Nickel plated brass  
 Terminals .....Copper alloy with gold over nickel plating inside, tin plating outside  
 Terminal Seal .....Epoxy  
 Support Bracket .....Tin plated steel

**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....0.4 VA @ 20 VAC/DC  
 Initial Contact Resistance .....20 Milliohms max.  
 Contact Timing .....Break-before-make  
 Insulation Resistance .....1,000 Megohms 500 VDC min.  
 Dielectric Strength .....1,000 Volt RMS @ sea level  
 Actuator Travel .....22° for E and D function  
 18° for F, G function  
 Life Expectancy .....D Function: Up to 80,000 cycles  
 E Function: Up to 60,000 cycles  
 F, G Function: Up to 30,000 cycles

**ENVIRONMENTAL SPECIFICATIONS**

Operating Temperature.....-22°F to +185°F (-30°C to +85°C)  
 Storage Temperature.....-67°F to +185°F (-55°C to +85°C)

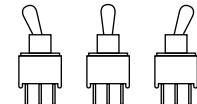


**FUNCTION CHART**

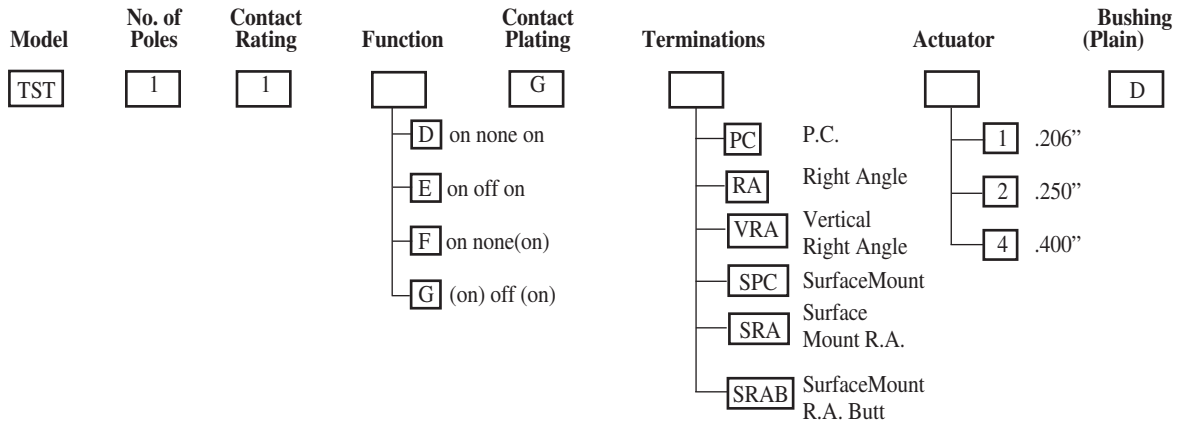
The following functions available in single pole.

- None - indicates no mechanical position.
- Off - indicates a mechanical position with no electrical connection.
- (On) - indicates momentary connection.

<b>D</b>	2 Positions	On	None	On
<b>E</b>	3 Positions	On	Off	On
<b>F</b>	2 Positions	On	None	(On)
<b>G</b>	3 Positions	(On)	Off	(On)
Terminals Connected		1-2	-	2-3



**PART NUMBERING MATRIX**

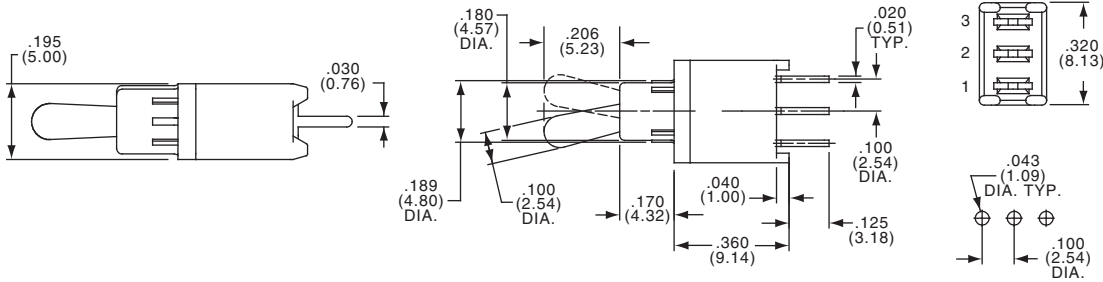


**APPLICATION NOTE:**

For sealed pushbutton switches, see page D3 - D5

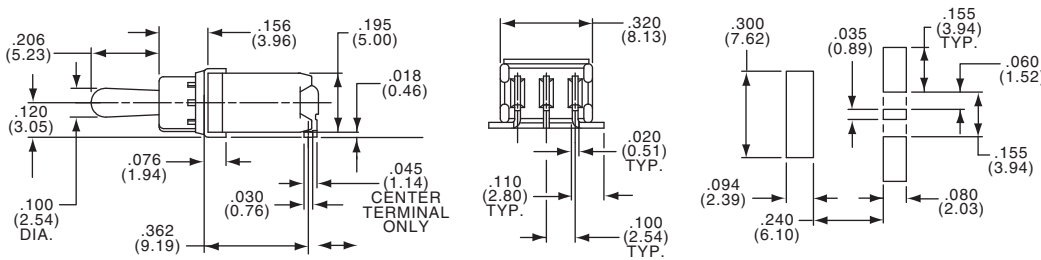
**Toggle Switches, Tiny, Sealed, Through Hole and Surface Mount**

PC MOUNT **PC**



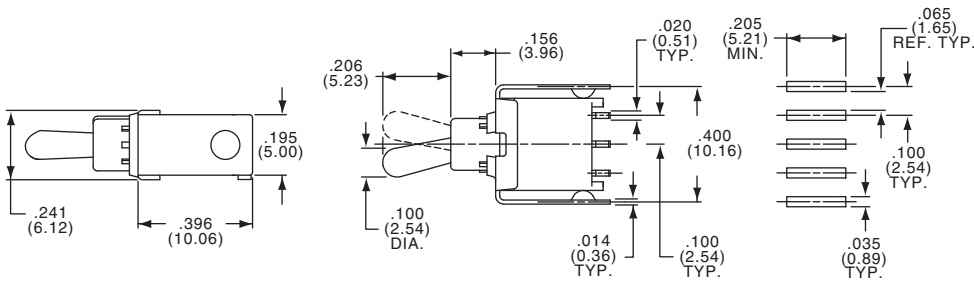
TST11DGPC1D

SURFACE MOUNT RIGHT ANGLE "L" BEND **SRA**



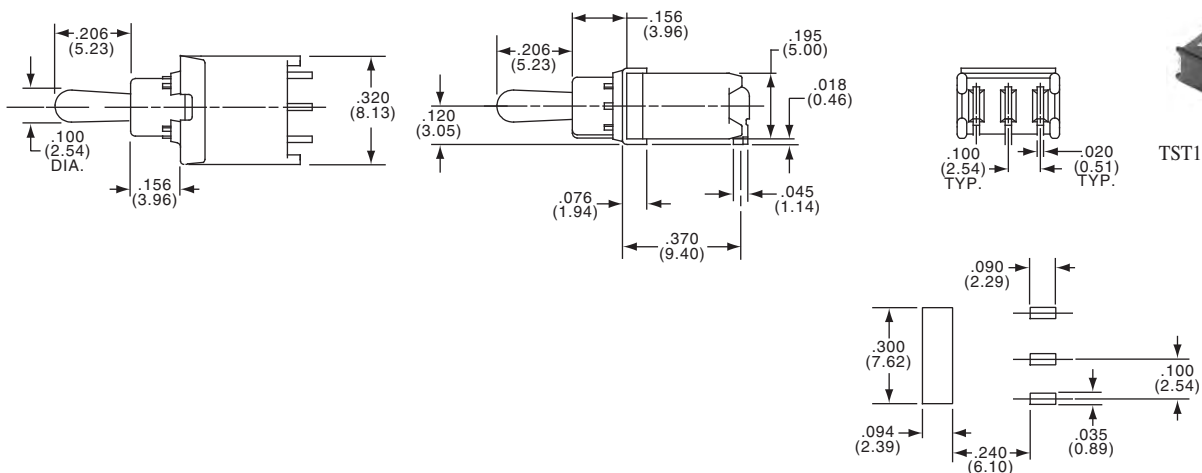
TST11DGSRA1D

SURFACE MOUNT **SPC**



TST11DGSPC1D

SURFACE MOUNT RIGHT ANGLE BUTT **SRAB**



TST11DGSRA1D

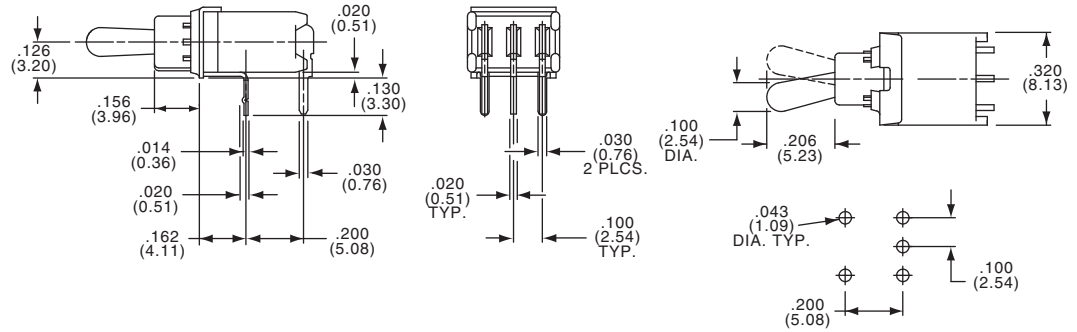
**Toggle Switches, Tiny, Sealed, Through Hole and Surface Mount**

**RA**

Right Angle



TST11DGRA1D

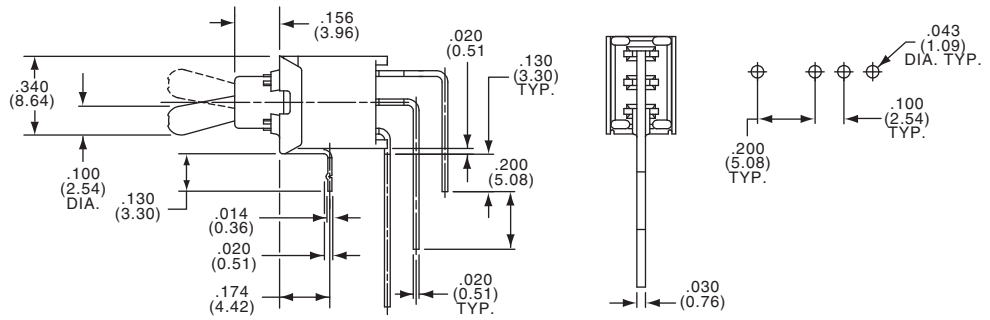


**VRA**

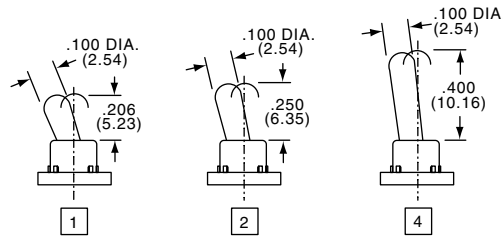
Vertical Right Angle



TST11DGVRA1D



**ACTUATORS**



TST Series

**Toggle Switches, Tiny, Part Number Matrix**

**MATERIAL SPECIFICATIONS:**

Contacts.....Gold over nickel or silver plate  
 Case Material.....Thermoplastic 94V-0  
 Terminals/Fixed Contacts.....Tin lead plate  
 Terminal Seal.....Epoxy on single pole, optional  
 on double pole  
 Process Seal.....ES version only (see page C16 - C17)

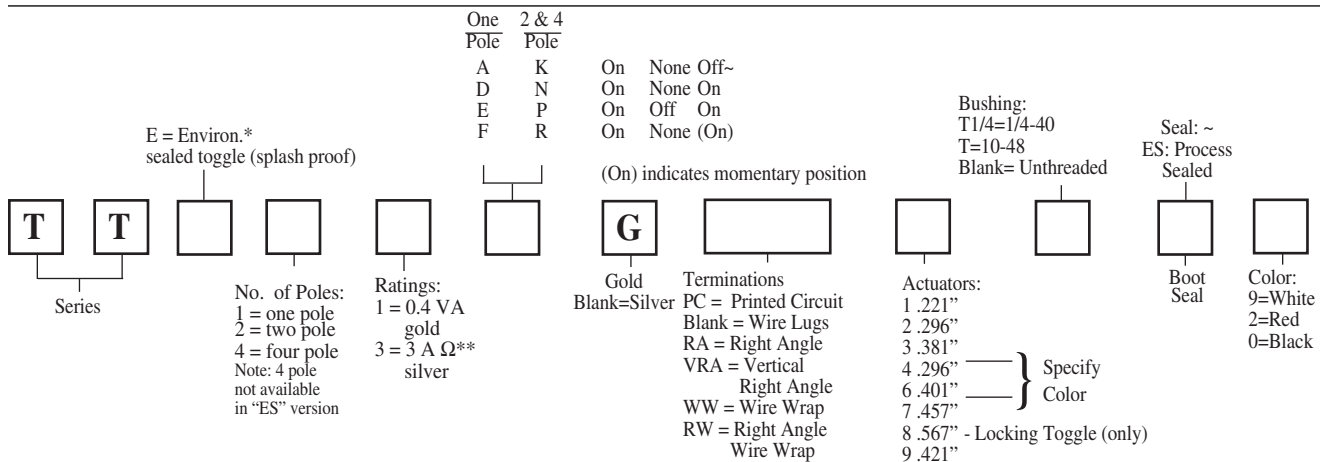
**ENVIRONMENTAL SPECIFICATIONS**

Operating Temperature.....-22°F to +185°F (-30°C to +85°C)  
 Storage Temperature.....-67°F to +185°F (-55°C to +85°C)  
 Solder Heat Resistance.....See page M3-4  
 U.L. (File E-46765).....Silver only

**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating..... Gold: 0.4 VA max. @ 20 VDC or peak AC  
 Silver (2 pos.): 3 A @ 125 VAC or 28 VDC  
 Silver (3 pos.): 2 A @ 125 VAC or 28 VDC  
 Initial Contact Resistance..... 20 Milliohms max.  
 Contact Timing..... Break before Make  
 Insulation Resistance..... 1,000 Megohms 500 VDC min.  
 Dielectric Strength..... 1,000 Volts RMS @ sea level  
 Plunger/Actuator Travel..... 26°  
 High Torque Bushing Shoulder ..... Yes  
 Life Expectancy..... See chart below  
 Note: Hardware included with switch

TT Series



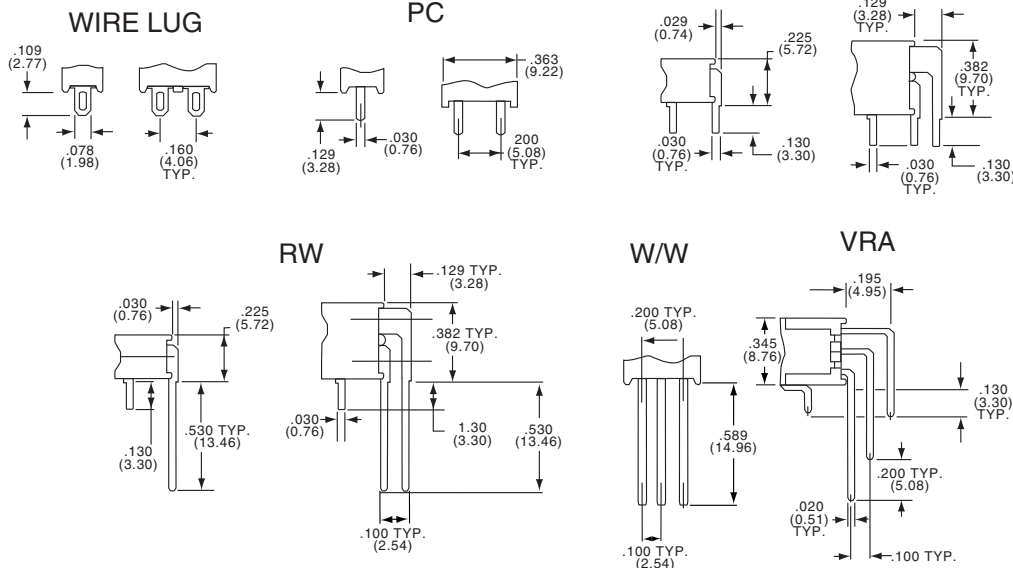
One Pole	0.4VA	80,000 (2 Pos.)	60,000 (3 Pos.)
Two Pole	0.4VA	80,000 (2 Pos.)	60,000 (3 Pos.)
Three Pole	3 Amp	20,000 (2 Pos.)	10,000 (3 Pos.)
Four Pole	0.4VA	80,000 (2 Pos.)	60,000 (3 Pos.)
Three Pole	3 Amp	20,000 (2 Pos.)	10,000 (3 Pos.)

**APPLICATION NOTE:**

For surface mount termination, use the "TST" series on page C5.  
 For 3 pole refer to the MT Series on page C43

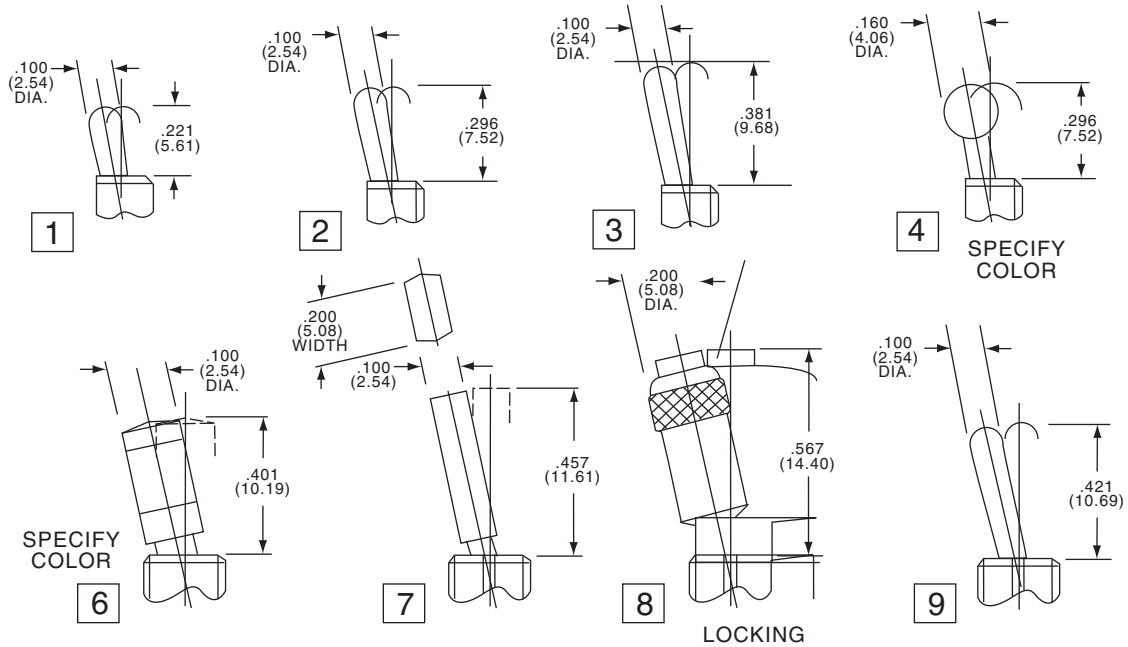
Actuator Dimensions shown with 1,2,3,4,6 7,8,9	10-48 bushing 1/4-40 bushing	* Not available on 7 actuator or with VRA. ** Not available in RA. Ω Available in PC & WL only. ~ Available in WL & PC only.
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**TERMINATIONS**

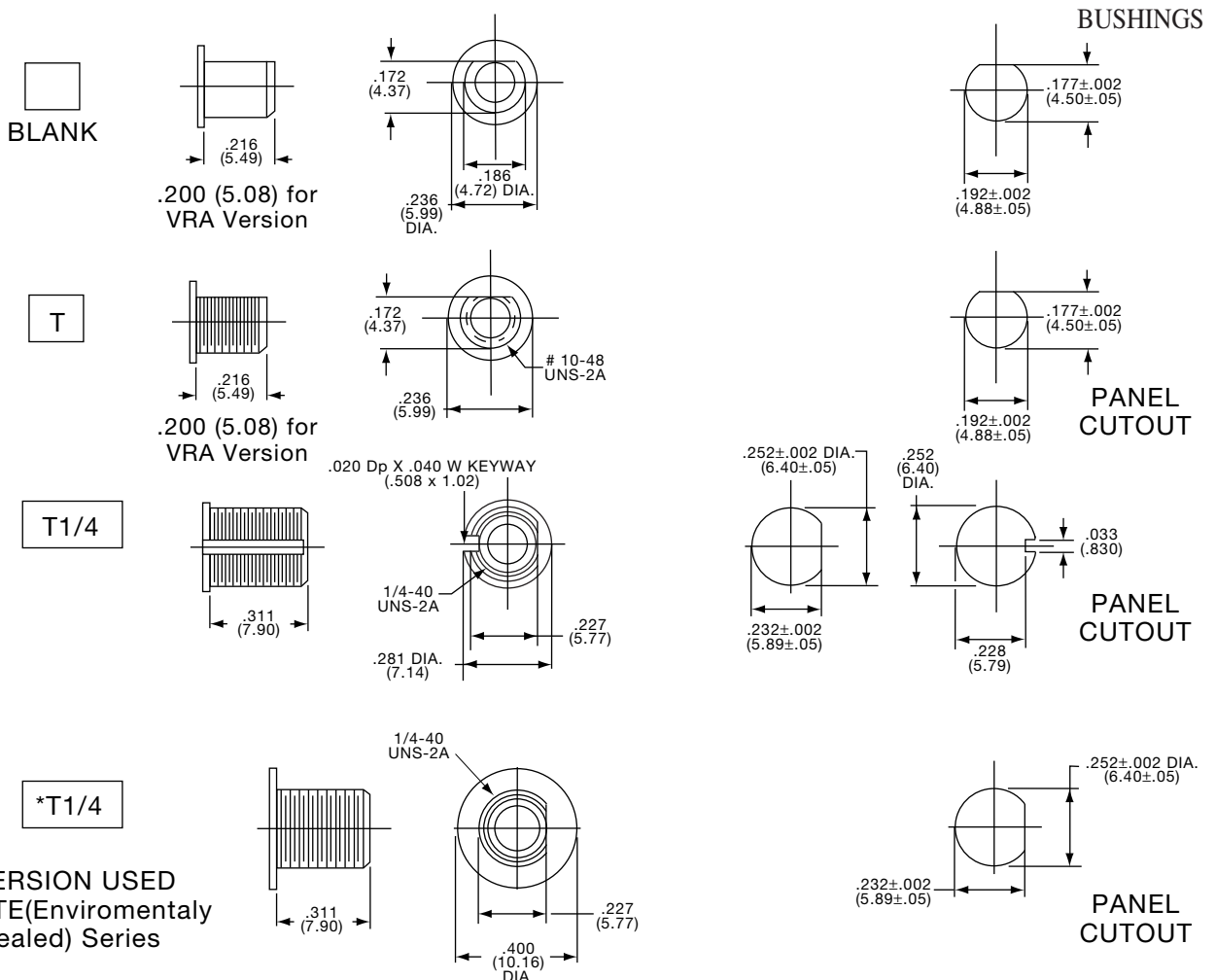


**Toggle Switches, Tiny, Actuator and Bushing Options**

Toggle Cap  
Series C-11\*  
Available

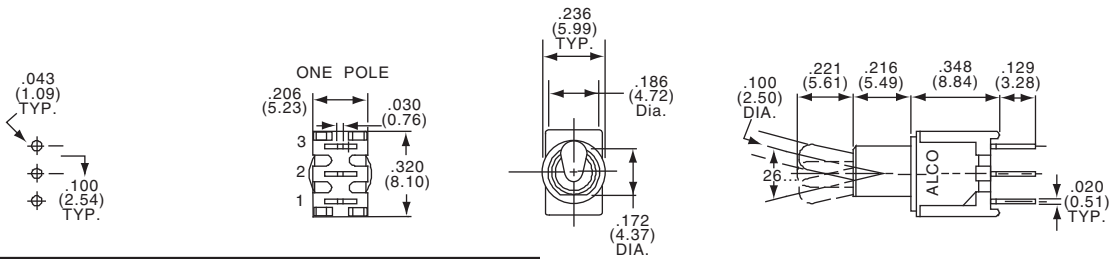


TT Series



\*VERSION USED ON TTE(Enviromental Sealed) Series

**Toggle Switches, Tiny, Vertical, PC Mount**



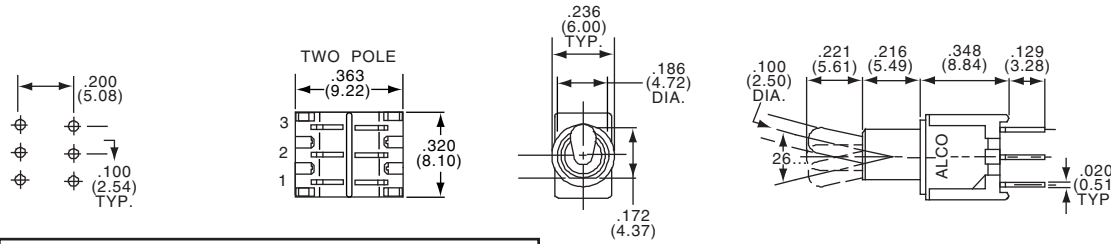
**1 POLE**  
For Terminal Connections refer to Code Chart (see page M5-6)



TT11DGPC1

Tyco Electronics	Alcoswitch	Type	Act. Code	P.	M5	↘	↓	↙
2-1437561-3	TT11AGPC1	SPST	A	On	None	Off		
2-1437561-6	TT11DGPC1	SPDT	D	On	None	On		
5-1437561-1	TT11EGPC1	SPDT	E	On	Off	On		

Note: No center terminal on "A" switches



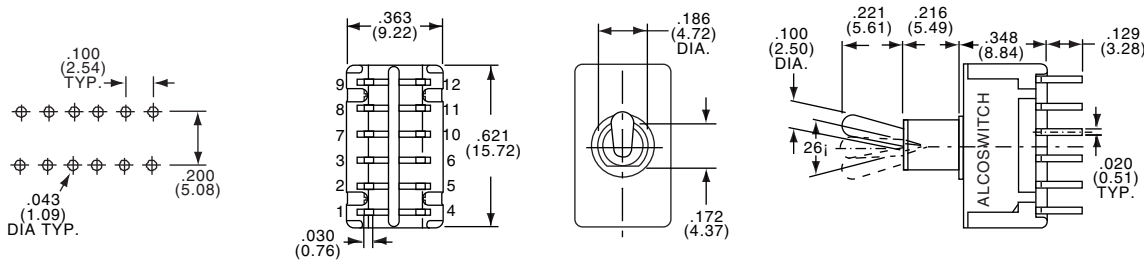
**2 POLE**  
For Terminal Connections refer to Code Chart (see page M5-6)



TT21NGPC1

Tyco Electronics	Alcoswitch	Type	Act. Code	P.	M5	↘	↓	↙
9-1437561-9	TT21KGPC1	DPST	K	On	None	Off		
1437562-3	TT21NGPC1	DPDT	N	On	None	On		
3-1437562-4	TT21PGPC1	DPDT	P	On	Off	On		

Note: No center terminal on "K" switches



**4 POLE**



TT41NGPC1

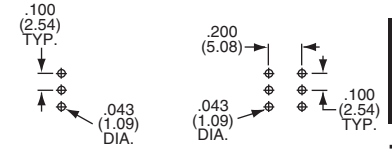
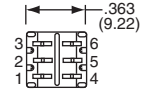
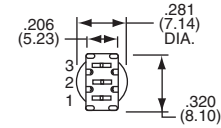
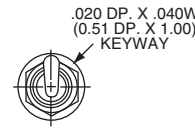
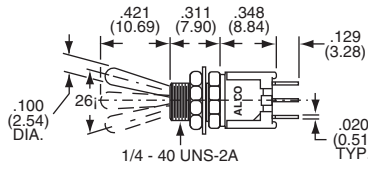
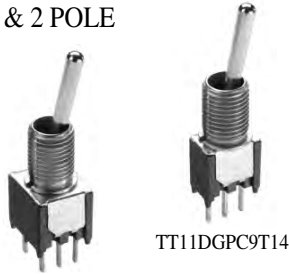
Tyco Electronics	Alcoswitch	Type	Act. Code	P.	M5	↘	↓	↙
6-1437562-6	TT41NGPC1	4PDT	N	On	None	On		

**Toggle Switches, Tiny, Vertical and Vertical Right Angle, PC Mount**

SEE PAGE C8 FOR PRODUCT SPECIFICATIONS

For terminal connections refer to Code Chart on page M5-6

1 & 2 POLE



TT21NGPC9T1/4

TT1DGPC9T14

4 POLE



TT41NGPC9T1/4

Tyco Electronics	Alcoswitch	Type	Act.	Code	P.	M5	Tyco Electronics	Alcoswitch	Type	Act.	Code	P.	M5
2-1437561-5	TT11AGPC9T1/4	SPST	A	On	None	Off	1-1437562-1	TT21NGPC9T1/4	DPDT	N	On	None	On
3-1437561-5	TT11DGPC9T1/4	SPDT	D	On	None	On	3-1437562-8	TT21PGPC9T1/4	DPDT	P	On	Off	On
5-1437561-9	TT11EGPC9T1/4	SPDT	E	On	Off	On	4-1437562-6	TT21RGPC9T1/4	DPDT	R	On	None	(On)
7-1437561-3	TT11FGPC9T1/4	SPDT	F	On	None	On	6-1437562-8	TT41NGPC9T1/4	4PDT	N	On	None	On
1437562-1	TT21KGPC9T1/4	DPST	K	On	None	Off	7-1437562-5	TT41PGPC9T1/4	4PDT	P	On	Off	On

Note: No center terminal on "A" or "K" switches.  
(On) indicates momentary position.

Note: Hardware Included

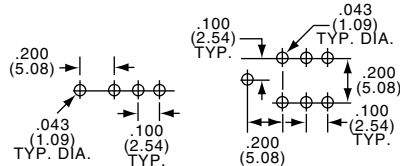
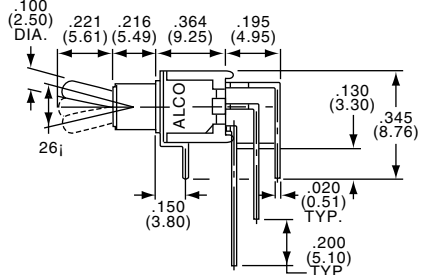
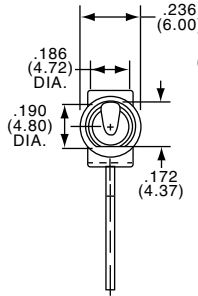
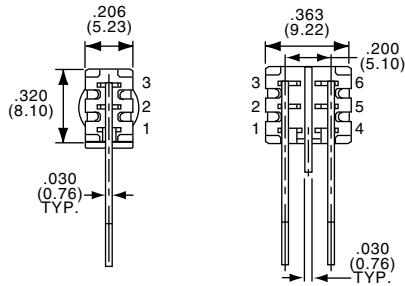
1 & 2 POLE



TT1DGVRA1  
Vertical Actuation



TT21NGVRA1  
Vertical Actuation



Tyco Electronics	Alcoswitch	Type	Act.	Code	P.	M5
4-1437561-8	TT11DGVRA1	SPDT	D	On	None	On
6-1437561-9	TT11EGVRA1	SPDT	E	On	Off	On
2-1437562-2	TT21NGVRA1	DPDT	N	On	None	On
4-1437562-3	TT21PGVRA1	DPDT	P	On	Off	On

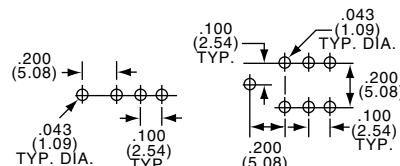
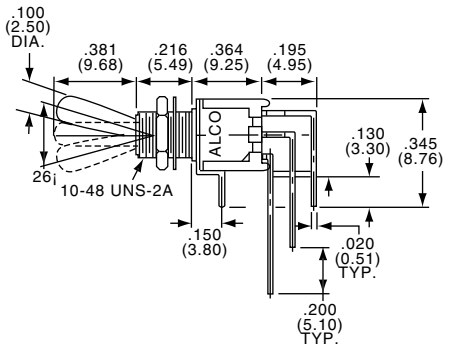
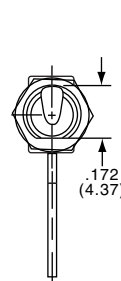
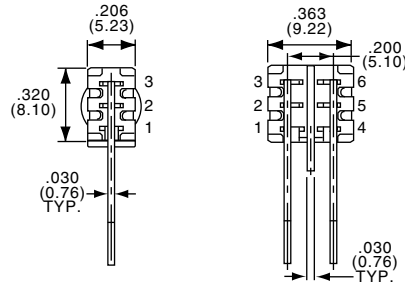
1 & 2 POLE



TT1DGVRA3T  
Vertical Actuation



TT21NGVRA3T  
Vertical Actuation



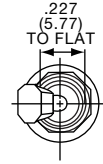
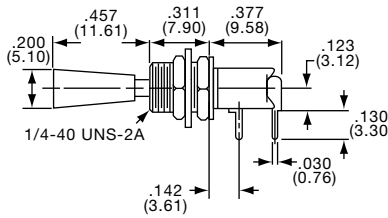
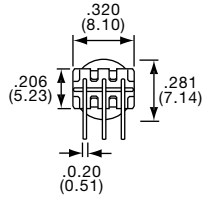
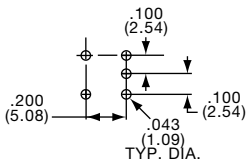
Tyco Electronics	Alcoswitch	Type	Act.	Code	P.	M5
4-1437561-9	TT11DGVRA3T	SPDT	D	On	None	On
7-1437561-0	TT11EGVRA3T	SPDT	E	On	Off	On
2-1437562-3	TT21NGVRA3T	DPDT	N	On	None	On

**Toggle Switches, Tiny, Right Angle, Flat Actuator**

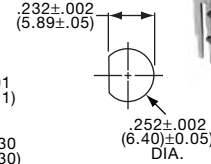
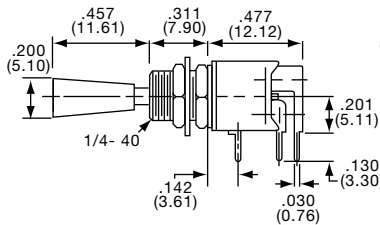
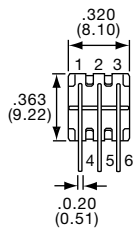
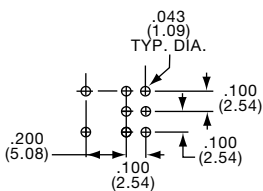
SEE PAGE C8 FOR PRODUCT SPECIFICATIONS

\* Refer to Page C8 for Other Options \*

1 & 2 POLE FLAT



TT11DGRA7T1/4  
Horizontal Actuation



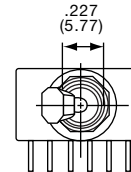
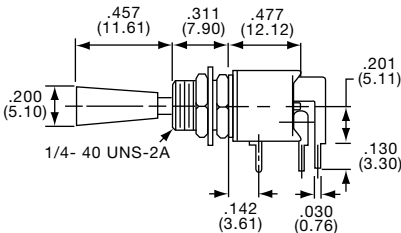
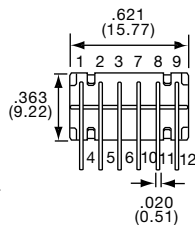
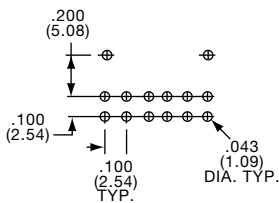
TT21NGRA7T1/4  
Horizontal Actuation

Tyco Electronics	Alcoswitch	Type	Act. Code	P. M5	On	None	On
4-1437561-5	TT11DGRA7T1/4	SPDT	D		On	None	On
6-1437561-7	TT11EGRA7T1/4	SPDT	E		On	Off	On
7-1437561-4	TT11FGRA7T1/4	SPDT	F		On	None	(On)
1-1437562-9	TT21NGRA7T1/4	DPDT	N		On	None	On
4-1437562-0	TT21PGRA7T1/4	DPDT	P		On	Off	On

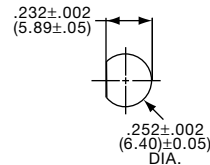
(On) indicates momentary position

Pinned for Anti-Rotation

4 POLE FLAT



TT41NGRA7T14  
Horizontal Actuation



Tyco Electronics	Alcoswitch	Type	Act. Code	P. M5	On	None	On
7-1437562-2	TT41NGRA7T1/4	4PDT	N		On	None	On

Pinned for Anti-Rotation



**Toggle Switches, Tiny, Wire Wrap Termination**

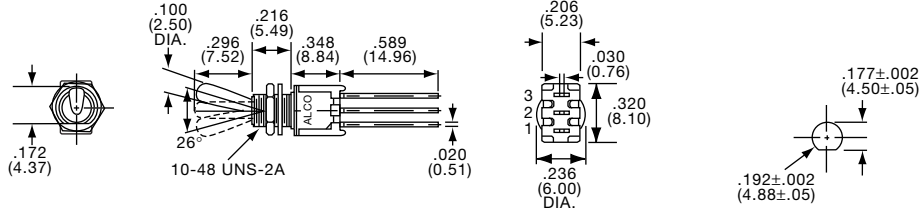
SEE PAGE C8 FOR PRODUCT SPECIFICATIONS

For terminal connections refer to Code Chart on page M5-6

1 POLE



TT11DGWW2T

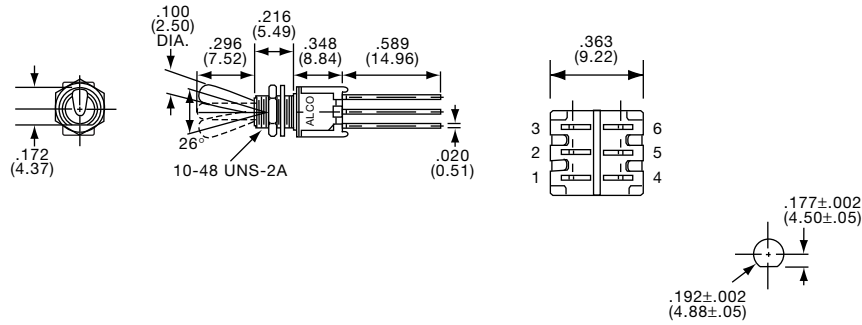


Tyco Electronics	Alcoswitch	Type	Act. Code P. M5		
5-1437561-0	TT11DGWW2T	SPDT	D	On	None On
7-1437561-1	TT11EGWW2T	SPDT	E	On	Off On

2 POLE



TT21NGWW2T

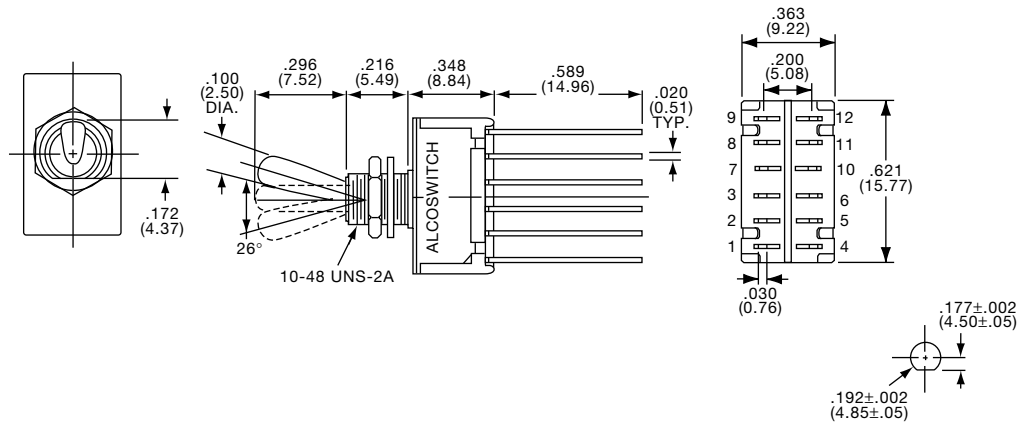


Tyco Electronics	Alcoswitch	Type	Act. Code P. M5		
2-1437562-4	TT21NGWW2T	DPDT	N	On	None On
4-1437562-4	TT21PGWW2T	DPDT	P	On	Off On

4 POLE



TT41NGWW2T



Tyco Electronics	Alcoswitch	Type	Act. Code P. M5		
7-1437562-4	TT41NGWW2T	4PDT	N	On	None On

**Toggle Switches, Tiny, Wire Lug, Round or Flat Actuators**

SEE PAGE C8 FOR PRODUCT SPECIFICATIONS

For terminal connections refer to Code Chart on page M5-6

NOTICE: Wire lug terminals accept two No. 20 AWG wires.



1 & 2 POLE



TT13D2T



TT23N2T

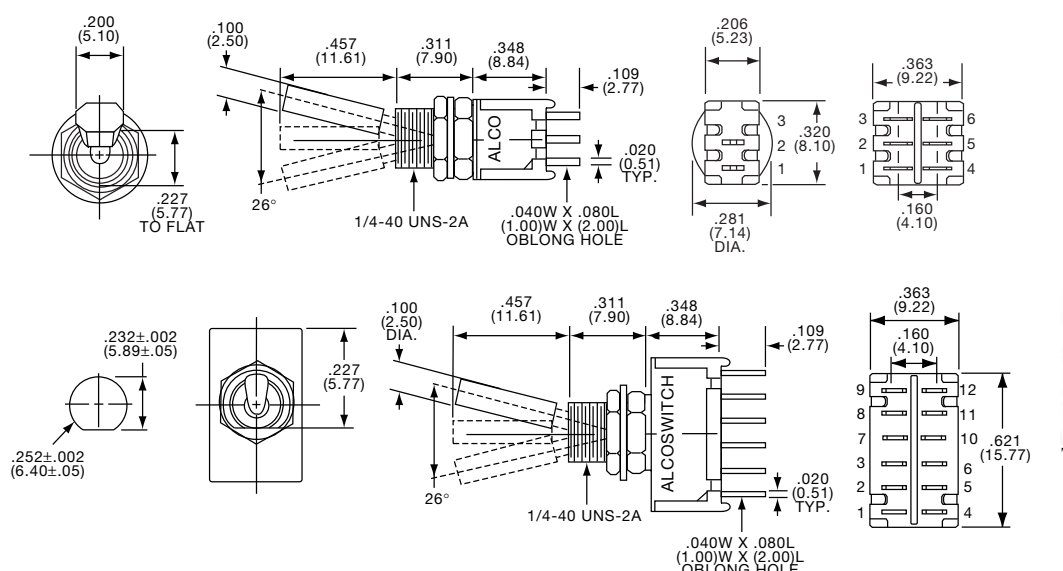
4 POLE



TT43N2T

Tyco Electronics	Alcoswitch	Type	Act. Code P. M5	On	None	Off	Tyco Electronics	Alcoswitch	Type	Act. Code P. M5	On	None	Off
7-1437561-8	TT13A2T	SPST	A	On	None	Off	5-1437562-1	TT23N2T	DPDT	N	On	None	On
8-1437561-5	TT13D2T	SPDT	D	On	None	On	5-1437562-7	TT23P2T	DPDT	P	On	Off	On
9-1437561-5	TT13E2T	SPDT	E	On	Off	On	7-1437562-6	TT43N2T	4PDT	N	On	None	On
4-1437562-7	TT23K2T	DPST	K	On	None	Off							

Note: No center terminal "A" or "K" action switches.



1 & 2 POLE



TT13D7T1/4



TT23N7T1/4

4 POLE



TT43N7T1/4

Pinned for Anti-Rotation

Tyco Electronics	Alcoswitch	Type	Act. Code P. M5	On	None	Off	Tyco Electronics	Alcoswitch	Type	Act. Code P. M5	On	None	Off
9-1437561-1	TT13D7T1/4	SPDT	D	On	None	On	6-1437562-0	TT23P7T1/4	DPDT	P	On	Off	On
9-1437561-7	TT13E7T1/4	SPDT	E	On	Off	On	7-1437562-8	TT43N7T1/4	4PDT	N	On	None	On
5-1437562-5	TT23N7T1/4	DPST	N	On	None	On		TT43P7T1/4	4PDT	P	On	Off	On

**Toggle Switches, Tiny, Wire Lug, Long Actuators**

SEE PAGE C8 FOR PRODUCT SPECIFICATIONS

For terminal connections refer to Code Chart on page M5-6

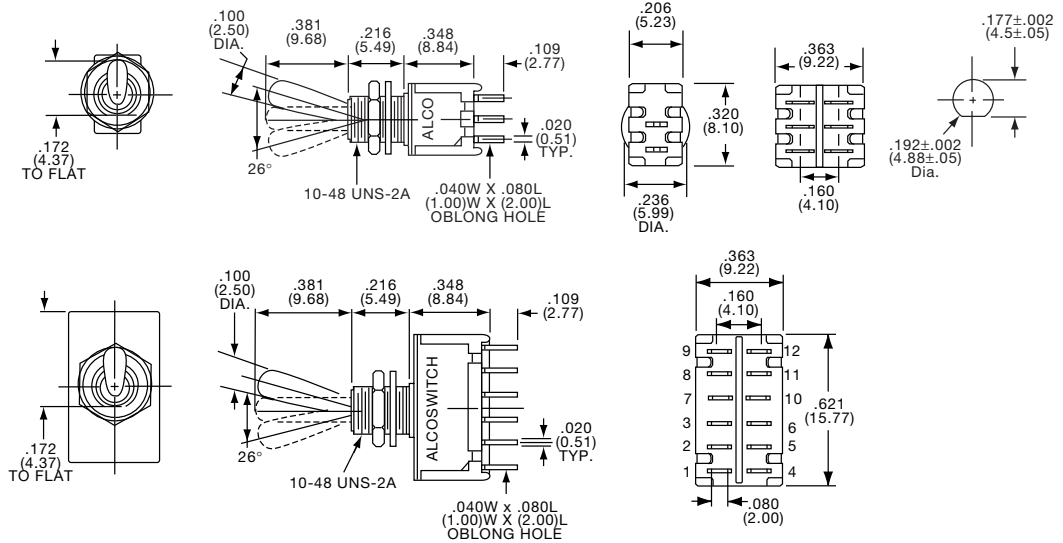
1 & 2 POLE



TT13D3T



TT23N3T



Tyco Electronics	Alcoswitch	Type	Act. Code	P. M5	On	None	Off	Tyco Electronics	Alcoswitch	Type	Act. Code	P. M5	On	None	Off
8-1437561-0	TT13A3T	SPST	A		On	None	Off	5-1437562-8	TT23P3T	DPDT	P		On	Off	On
8-1437561-8	TT13D3T	SPDT	D		On	None	On	7-1437562-7	TT43N3T	4PDT	N		On	None	On
9-1437561-6	TT13E3T	SPDT	E		On	Off	On	8-1437562-0	TT43P3T	4PDT	P		On	Off	On
4-1437562-8	TT23K3T	DPST	K		On	None	Off								
5-1437562-2	TT23N3T	DPDT	N		On	None	On								

Note: No center terminal on "A" or "K" action switches.

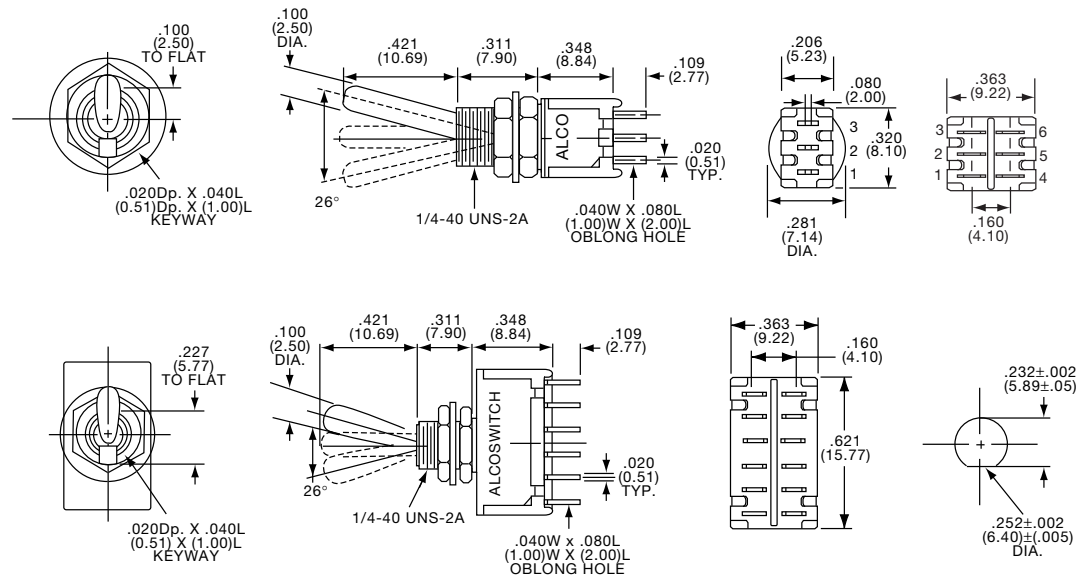
1 & 2 POLE



TT13A9T1/4



TT23N9T1/4



Tyco Electronics	Alcoswitch	Type	Act. Code	P. M5	On	None	Off	Tyco Electronics	Alcoswitch	Type	Act. Code	P. M5	On	None	Off
8-1437561-4	TT13A9T1/4	SPST	A		On	None	Off	6-1437562-2	TT23P9T1/4	DPDT	P		On	Off	On
9-1437561-2	TT13D9T1/4	SPDT	D		On	None	On	7-1437562-9	TT43N9T1/4	4PDT	N		On	None	On
9-1437561-8	TT13E9T1/4	SPDT	E		On	Off	On	8-1437562-1	TT43P9T1/4	4PDT	P		On	Off	On
4-1437562-9	TT23K9T1/4	DPST	K		On	None	Off								
5-1437562-6	TT23N9T1/4	DPDT	N		On	None	On								

Note: No center terminal on "A" or "K" action switches.

4 POLE



TT43N9T1/4

**Toggle Switches, Process Sealed, Vertical**

**MATERIAL SPECIFICATIONS:**

Contacts .....Gold over nickel  
 Inner Case Material .....High temperature polyester  
 Outer Case Material .....Polyamide  
 Terminals/Fixed Contacts .....Tin lead plate  
 Terminal Seal .....Epoxy  
 Process Seal .....Disposable boot, epoxied double case

**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....0.4VA Max. @ 20 VDC or peak AC  
 Initial Contact Resistance.....20 Milliohms max.  
 Contact Timing.....Break-before-make  
 Insulation Resistance .....1,000 Megohms min. 500 VDC  
 Dielectric Strength .....1,000 Volts RMS @ sea level  
 Plunger/Actuator Travel.....26°  
 Life Expectancy .....See page C8

**ENVIRONMENTAL SPECIFICATIONS**

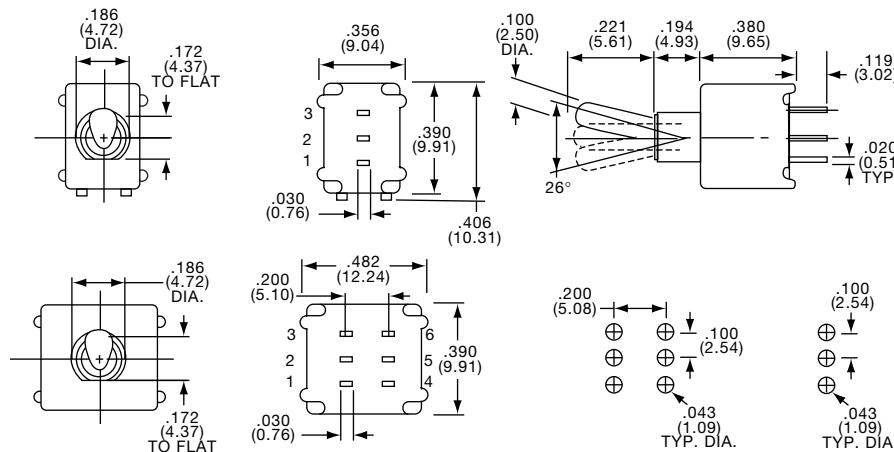
Operating Temperature .....-22°F to +185°F (-30°C to +85°C)  
 Storage Temperature .....-67°F to +185°F (-55°C to +85°C)  
 Solder Heat Resistance.....See page M3-4

**APPLICATION NOTE: Each switch is provided with a disposable boot used only during cleaning operation.**

\* Refer to Page C8 for Other Options \*

Note: Hardware included with switch

TT-ES Series



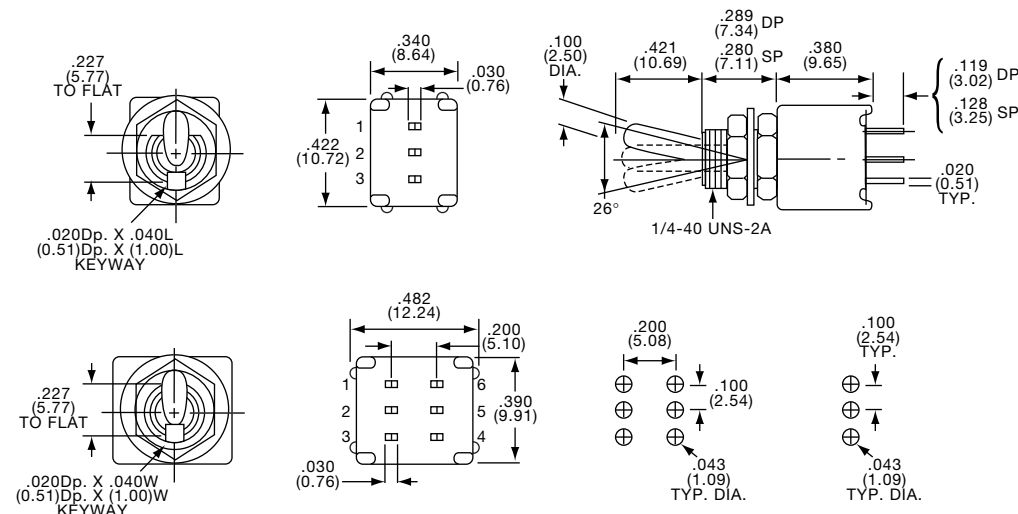
1 & 2 POLE  
UNTHREADED BUSHING



TT11DGPC1ES

Tyco Electronics	Alcoswitch	Type	Act. Code P. M5	On	None	Off	Tyco Electronics	Alcoswitch	Type	Act. Code P. M5	On	None	On
2-1437561-4	TT11AGPC1ES	SPST	A	On	None	Off	1437562-4	TT21NGPC1ES	DPDT	N	On	None	On
2-1437561-7	TT11DGPC1ES	SPDT	D	On	None	On							

Note: No center terminal "A".



1 & 2 POLE  
THREADED BUSHING

TT11DGPC9T1/4ES

TT21NGPC9T1/4ES

Tyco Electronics	Alcoswitch	Type	Act. Code P. M5	On	None	Off	Tyco Electronics	Alcoswitch	Type	Act. Code P. M5	On	None	On
	TT11AGPC9T1/4ES	SPST	A	On	None	Off	1-1437562-2	TT21NGPC9T1/4ES	DPDT	N	On	None	On
6-1437830-2	TT11DGPC9T1/4ES	SPDT	D	On	None	On		TT21PGPC9T1/4ES	DPDT	P	On	Off	On
	TT11EGPC9T1/4ES	SPDT	E	On	Off	(On)							
	TT21KGPC9T1/4ES	DPST	K	On	None	Off							

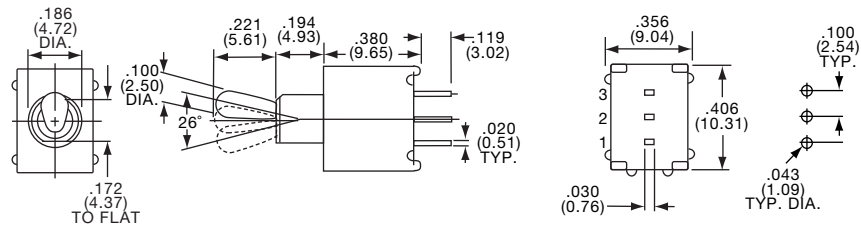
Note: No center terminal "A" or "K" action switches.  
 (On) indicates momentary position.

**Toggle Switches, Tiny, Enviromental and Process Sealed**

SEE PAGE C16 FOR PRODUCT SPECIFICATIONS

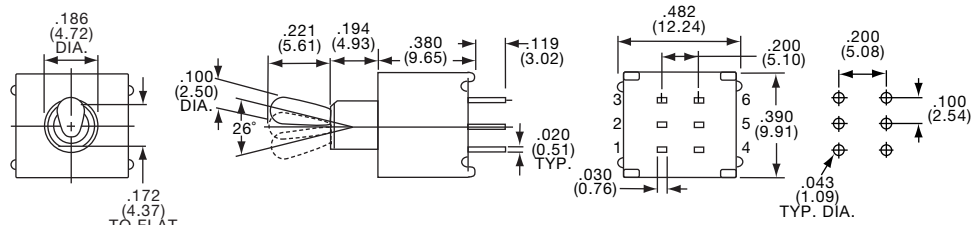
For terminal connections refer to Code Chart on page M5-6

**1 POLE-PC VERTICAL MOUNT**



Tyco Electronics	Alcoswitch	Type	Act. Code P. M5			
8-1437562-6	TTE11DGPC1ES	SPDT	D	On	None	On
	TTE11EGPC1ES	SPDT	E	On	Off	On

**2 POLE-PC VERTICAL MOUNT**

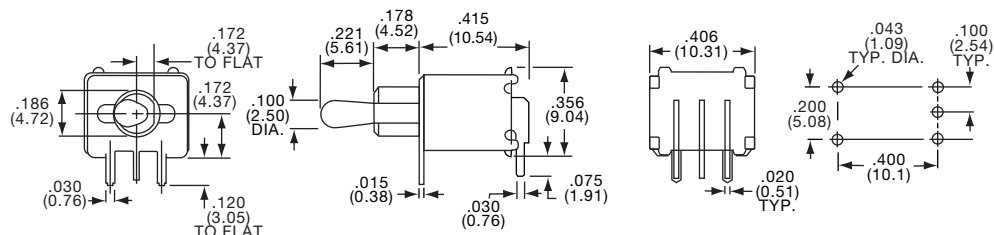


Tyco Electronics	Alcoswitch	Type	Act. Code P. M5			
1437563-1	TTE21NGPC1ES	DPDT	N	On	None	On
	TTE21PGPC1ES	DPDT	P	On	Off	On

**1 POLE-PC RIGHT ANGLE**



TTE11DGRA1ES  
Horizontal Actuation

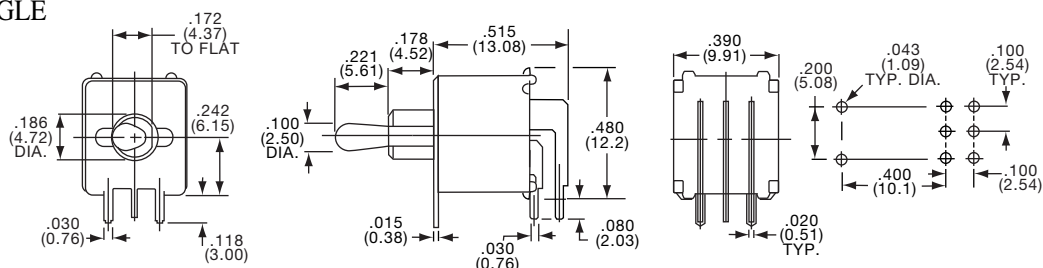


Tyco Electronics	Alcoswitch	Type	Act. Code P. M5			
8-1437562-9	TTE11DGRA1ES	SPDT	D	On	None	On
9-1437562-2	TTE11EGRA1ES	SPDT	E	On	Off	On

**2 POLE-PC RIGHT ANGLE**



TTE21NGRA1ES  
Horizontal Actuation



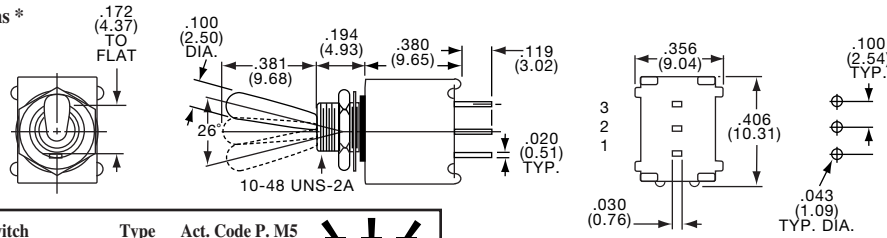
Tyco Electronics	Alcoswitch	Type	Act. Code P. M5			
1437563-4	TTE21NGRA1ES	DPDT	N	On	None	On
	TTE21PGRA1ES	DPDT	P	On	Off	On

**Toggle Switches, Tiny, Enviromental and Process Sealed**

For terminal connections refer to Code Chart on page M5-6.

SEE PAGE C16 FOR PRODUCT SPECIFICATIONS

\* Refer to Page C8 for Other Options \*



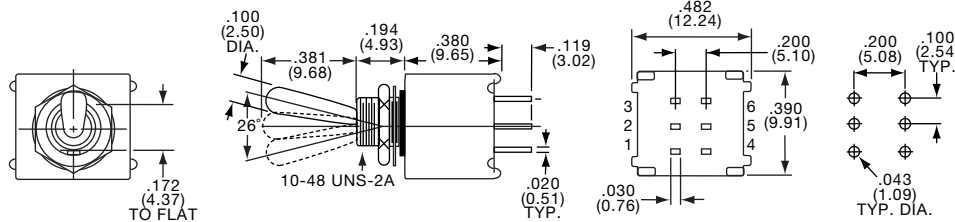
1 POLE



TTE11DGPC3TES

Tyco Electronics	Alcoswitch	Type	Act. Code	P. M5	On	None	Off
8-1437562-5	TTE11AGPC3TES	SPST	A		On	None	Off
8-1437562-7	TTE11DGPC3TES	SPDT	D		On	None	On
9-1437562-0	TTE11EGPC3TES	SPDT	E		On	Off	On

Note: No center terminal on "A" action switches.

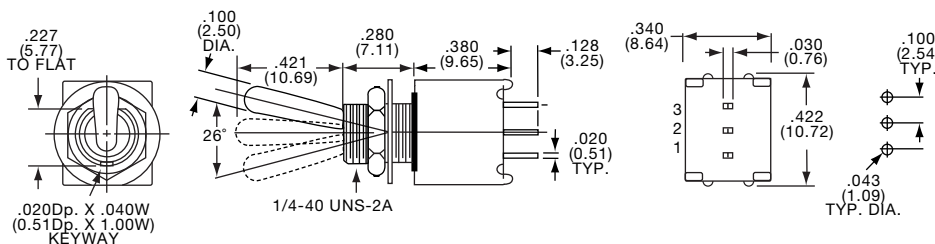


2 POLE



TTE21NGPC3TES

Tyco Electronics	Alcoswitch	Type	Act. Code	P. M5	On	None	On
1437563-2	TTE21NGPC3TES	DPDT	N		On	None	On
	TTE21PGPC3TES	DPDT	P		On	Off	On



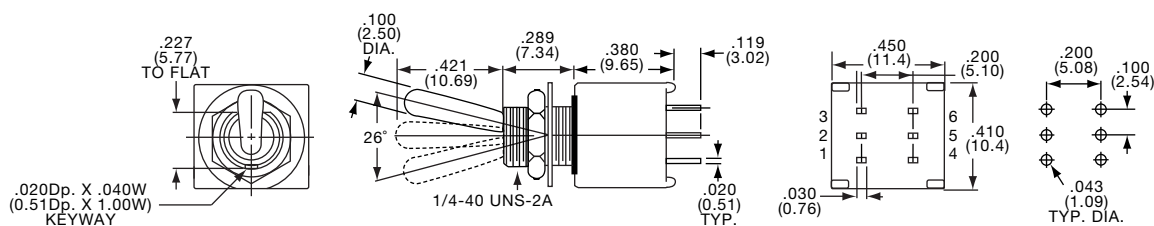
1 POLE



TTE11DGPC9T4ES

Tyco Electronics	Alcoswitch	Type	Act. Code	P. M5	On	None	Off
	TTE11AGPC9T1/4ES	SPST	A		On	None	Off
8-1437562-8	TTE11DGPC9T1/4ES	SPDT	D		On	None	On
9-1437562-1	TTE11EGPC9T1/4ES	SPDT	E		On	Off	On

Note: No center terminal on "A" action switches.



2 POLE



TTE21NGPC9T4ES

Tyco Electronics	Alcoswitch	Type	Act. Code	P. M5	On	None	Off
1437563-3	TTE21KGPC9T1/4ES	DPST	K		On	None	Off
	TTE21NGPC9T1/4ES	DPDT	N		On	None	On
	TTE21PGPC9T1/4ES	DPDT	P		On	Off	On

Note: No center terminal on "K" action switches.

**Toggle Switches, Process Sealed, Vertical and Right Angle, Round Actuator**

**MATERIAL SPECIFICATIONS:**

Contacts .....Gold over nickel plate  
 Case Material .....Polyester 94V-0  
 Actuator Material .....Nickel plated copper alloy  
 Terminals .....Phosphor bronze  
 Terminal Seal .....Epoxy  
 Process Seal .....Tested to MIL-STD-202, method 112  
 (Internal O-Ring) test condition A and D, 85°C

**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....0.4 VA Max. @ 20 VDC  
 Initial Contact Resistance .....100 Milliohms max.  
 Contact Timing .....Break-before-make  
 Insulation Resistance .....500 Megohms @ 250 VDC min.  
 Dielectric Strength .....500 Volts RMS @ sea level  
 Actuation Force .....400 Grams  
 Life Expectancy .....Up to 10,000 Cycles

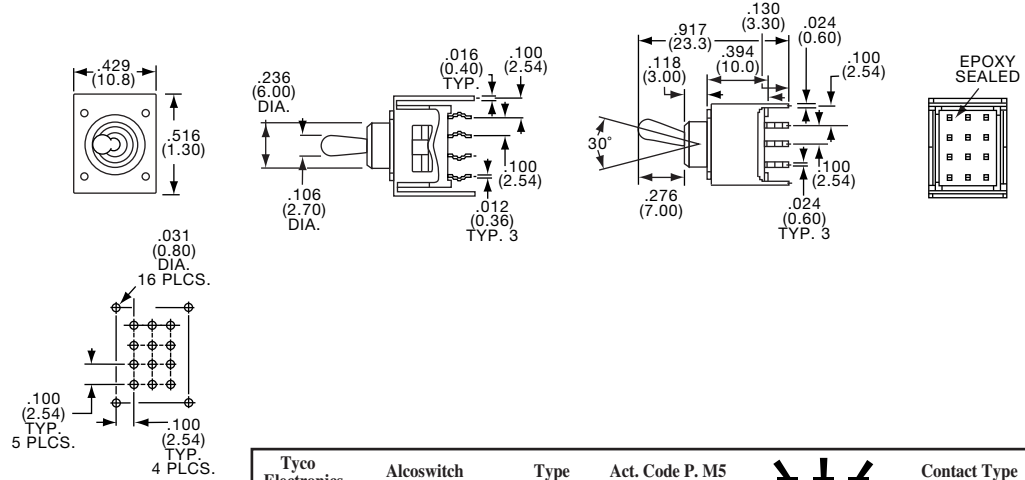
**ENVIRONMENTAL SPECIFICATIONS**

Operating Temperature.....-4°F to +176°F (-20°C to +80°C)  
 Storage Temperature.....-40°F to +176°F (-40°C to +80°C)

**4PDT**



ATE4DGPC2

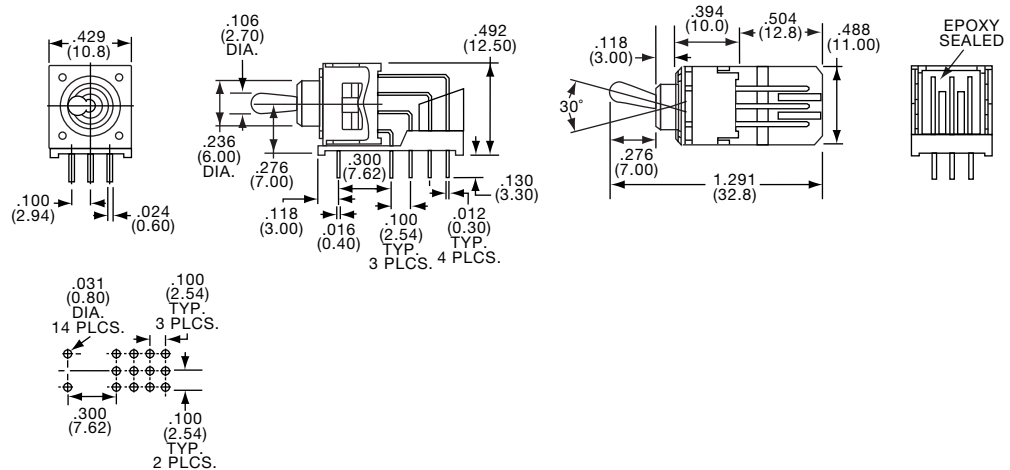


Tyco Electronics	Alcoswitch	Type	Act. Code P. M5	Contact Type
2-1437557-1	ATE4DGPC2	4PDT	8	On None On Gold

**4PDT**



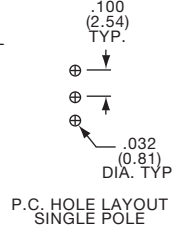
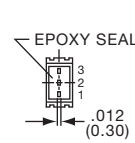
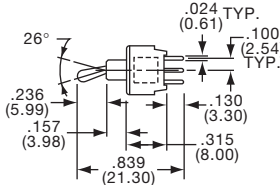
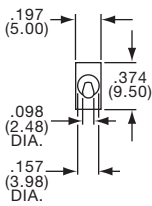
ATE4DGRA2



Tyco Electronics	Alcoswitch	Type	Act. Code P. M5	Contact Type
2-1437557-2	ATE4DGRA2	4PDT	8	On None On Gold

**Toggle Switches, Process Sealed, Vertical, Round or Flat Actuators**

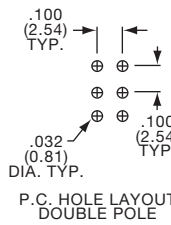
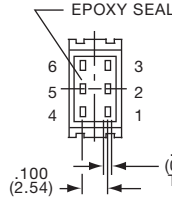
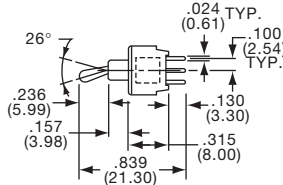
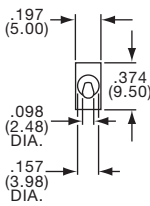
SEE PAGE C19 FOR PRODUCT SPECIFICATIONS



SPDT/DPDT



ATE1DGPC1



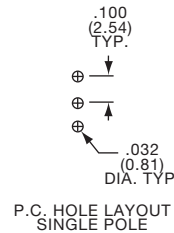
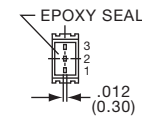
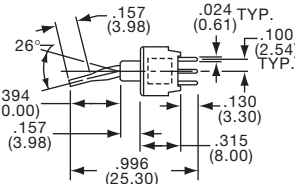
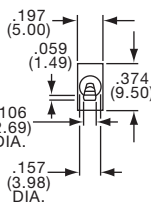
Extra compact double pole saves PCB real estate.



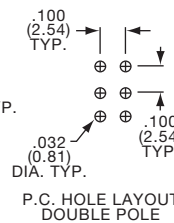
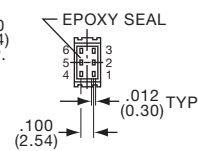
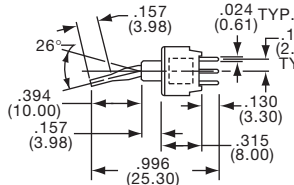
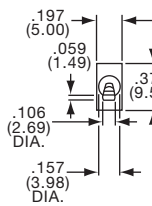
ATE2DGPC1

Tyco Electronics	Alcoswitch	Type				Contact Type	Tyco Electronics	Alcoswitch	Type				Contact Type
1437557-2	ATE1DGPC1	SPDT	On	None	On	Gold	1-1437557-5	ATE2DGPC1	DPDT	On	None	On	Gold
1437557-6	ATE1EGPC1	SPDT	On	Off	On	Gold	1-1437557-9	ATE2EGPC1	DPDT	On	Off	On	Gold
1-1437557-2	ATE1GGPC1	SPDT	On (On)	None (On)	On (On)	Gold	Terminals Connected:						
Terminals Connected:						2-3	2-3	2-1	5-6	5-4			
(On) indicates momentary position.													

SPDT/DPDT



ATE1DGPC7



Extra compact double pole saves PCB real estate.



ATE2DGPC7

Tyco Electronics	Alcoswitch	Type				Contact Type	Tyco Electronics	Alcoswitch	Type				Contact Type
1437557-3	ATE1DGPC7	SPDT	On	None	On	Gold	1-1437557-6	ATE2DGPC7	DPDT	On	None	On	Gold
1-1437557-3	ATE1GGPC7	SPDT	On (On)	None (On)	On (On)	Gold	Terminals Connected:						
Terminals Connected:						2-3	2-3	2-1	5-6	5-4			
(On) indicates momentary position.													



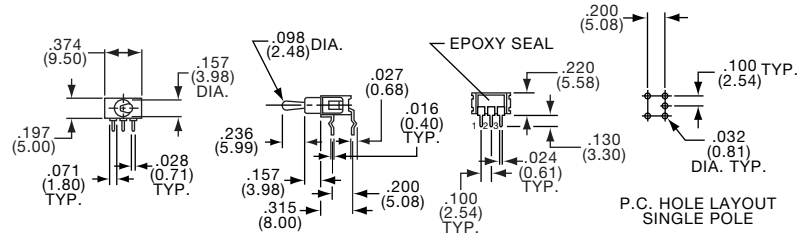
**Toggle Switches, Process Sealed, Right Angle, Retention Feature**

SEE PAGE C19 FOR PRODUCT SPECIFICATIONS

**SPDT/DPDT**



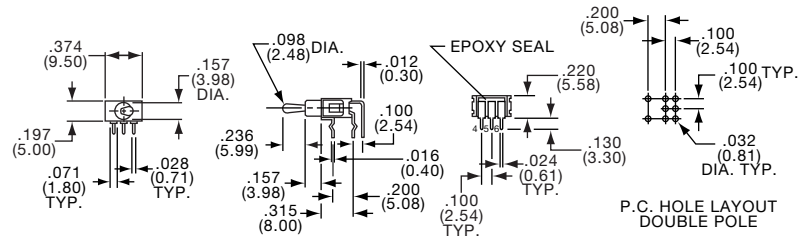
ATE1DGRA1  
Horizontal Actuation



Extra compact double pole saves PCB real estate.



ATE2DGRA1  
Horizontal Actuation

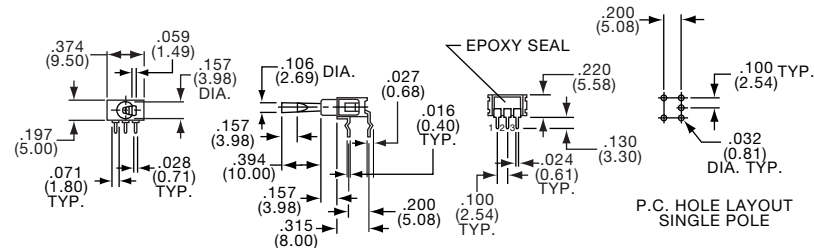


Tyco Electronics	Alcoswitch	Type	On	None	On	Contact Type	Tyco Electronics	Alcoswitch	Type	On	None	On	Contact Type
1437557-4	ATE1DGRA1	SPDT	On	None	On	Gold	1-1437557-7	ATE2DGRA1	DPDT	On	None	On	Gold
1437557-8	ATE1EGRA1	SPDT	On	Off	On	Gold	3-1437592-7	ATE2EGRA1	DPDT	On	Off	On	Gold
1-1437557-0	ATE1FGRA1	SPDT	On	None (On)		Gold		ATE2GGRA1	DPDT	(On)	Off	(On)	Gold
1-1437557-4	ATE1GGRA1	SPDT	(On)	Off	(On)	Gold	Terminals Connected:			2-3		2-1	
Terminals Connected: (On) indicates momentary position.								Terminals Connected: (On) indicates momentary position.					

**SPDT/DPD**



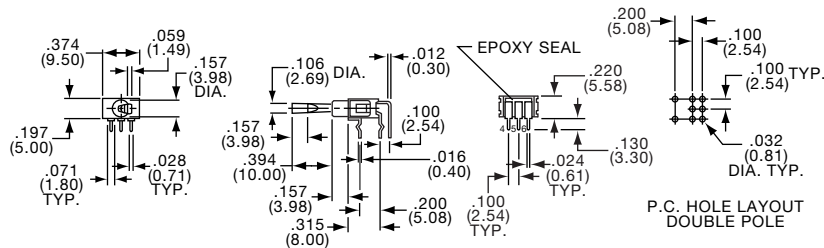
ATE1DGRA7  
Horizontal Actuation



Extra compact double pole saves PCB real estate.



ATE2DGRA7  
Horizontal Actuation



Tyco Electronics	Alcoswitch	Type	On	None	On	Contact Type	Tyco Electronics	Alcoswitch	Type	On	None	On	Contact Type
1437557-5	ATE1DGRA7	SPDT	On	None	On	Gold	1-1437557-8	ATE2DGRA7	DPDT	On	None	On	Gold
1437557-9	ATE1EGRA7	SPDT	On	Off	On	Gold	Terminals Connected:						
1-1437557-1	ATE1FGRA7	SPDT	On	None (On)		Gold				5-6		5-4	
Terminals Connected: (On) indicates momentary position.							Terminals Connected: (On) indicates momentary position.						

ATE Series



**Toggle Switches, A Series, Options**

**FUNCTIONS**

The following functions available in SP or DP.

<b>01</b>	2 Positions	None indicates no mechanical position		On	None	On
<b>03</b>	3 Positions	Off indicates a mechanical position with no electrical connection.		On	Off	On
<b>05</b>	3 Positions	(On) indicates momentary action.		(On)	Off	(On)
<b>07</b>	3 Positions			(On)	Off	On
<b>08</b>	2 Positions			(On)	None	On
SPDT, connect terminals:				1—2	—	2—3
DPDT, connect terminals:				1—2 4—5	— —	2—3 5—6

<b>11</b>	3 Positions			On	On	On
<b>13</b>	3 Positions			(On)	On	On
<b>15</b>	3 Positions			(On)	On	(On)

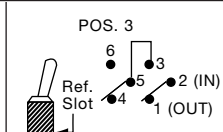
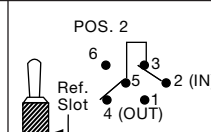
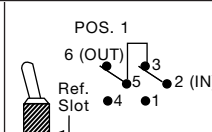
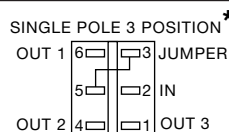
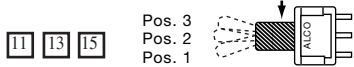
Functions available in DP case only

Connect terminals:

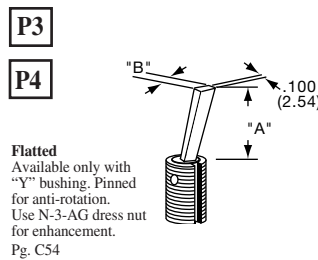
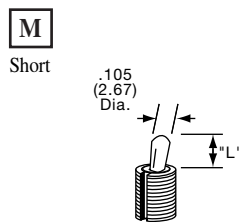
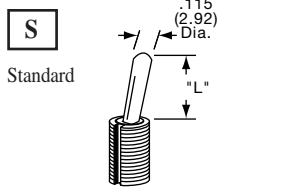
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\* SP3T functions achieved with external jumper installed by customer

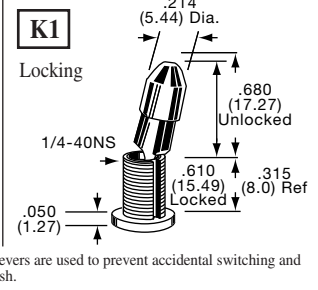
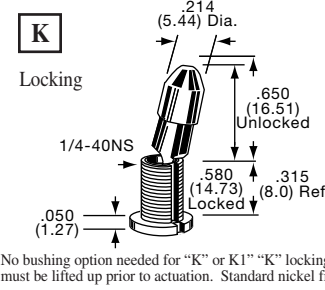
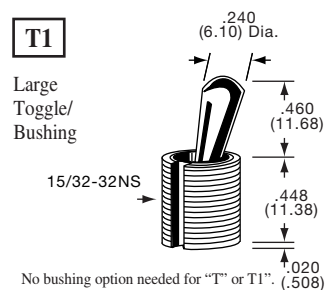
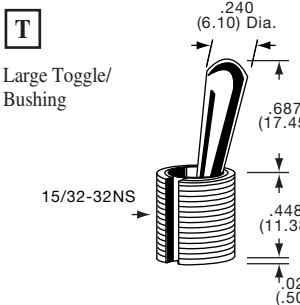
**WIRING DIAGRAM FOR FUNCTIONS**



**TOGGLES**



Dimension "L"	Bushing	Dimension "L"	Bushing Type	Actuator	"Dimension" "B"	
.410 (10.41)	"Y", "H", "CW"	.200 (5.08)	"Y", "H", "CW"	P3	.450 (11.43)	.200 (5.08)
.480 (12.19)	"D", "D9"	.270 (6.86)	"D", "D9"	P4	.250 (6.35)	.165 (4.19)



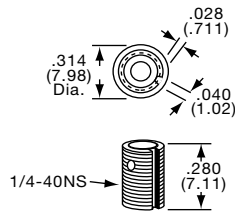
No bushing option needed for "K" or "K1" "K" locking levers are used to prevent accidental switching and must be lifted up prior to actuation. Standard nickel finish.

**Toggle Switches, A Series, Options**

**BUSHINGS**

**Y**

1/4-40 Thread  
.35" long, slotted  
(Standard)



**D9**

Unthreaded  
.28" long



Used with  
**Z, C & W**  
terminations

**H**

1/4-40 Thread  
Flanged, .30" long



**D**

1/4-40 Thread  
.28" long, slotted



Used with  
**A, AV2, V30**  
**V80 & V90**  
terminations

**CW**

Threaded  
Splashproof



For S & M Toggles

**TERMINALS**

**Z**

Wire Lug



**Z3**

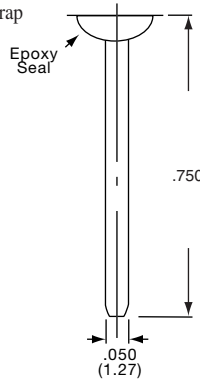
Quick Connect



Mates with Tyco  
61454 or 60900.

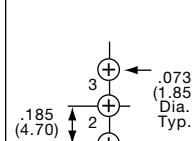
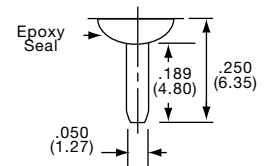
**W**

Wire Wrap

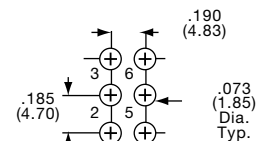


**C**

Printed Circuit



Single pole



Double pole

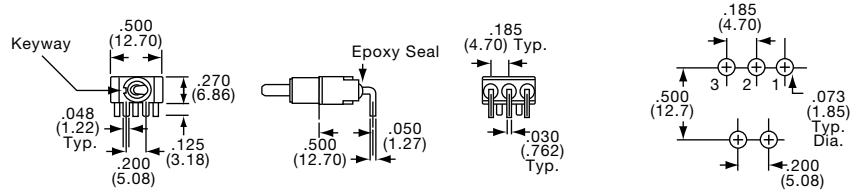
Gemini Series

**Toggle Switches, A Series, Options**

TERMINALS

**A**

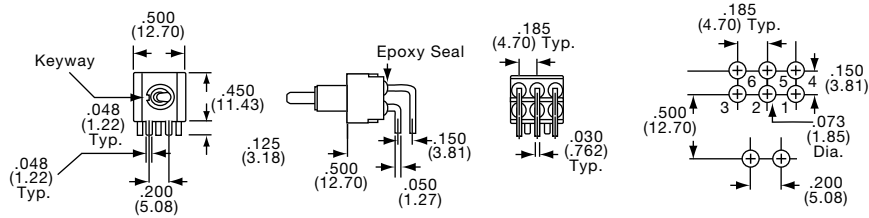
**Right Angle**  
Single Pole



Note: Terminal numbers viewed from top of P.C. boards.

**A**

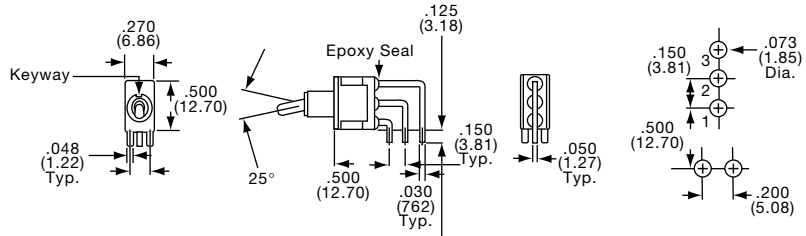
**Right Angle**  
Double Pole



Note: Terminal numbers viewed from top of P.C. boards.

**AV2**

**Vertical Right Angle**  
Single Pole



Note: Terminal numbers viewed from top of P.C. boards.

**AV2**

**Vertical Right Angle**  
Double Pole



Note: Terminal numbers viewed from top of P.C. boards.

**Gemini Series**

**Toggle Switches, A Series, Options**

TERMINALS NOTE: Terminal numbers viewed from top of P.C. board

**V30 V40 V90**

Vertical Support Bracket  
Single Pole



Option Code	Dim."A"
V30	.460 (11.68)
V40	.630 (16.00)
V90	1.150 (29.21)

Vertical Support Bracket  
Double Pole



Option Code	Dim."A"
V30	.460 (11.68)
V40	.630 (16.00)
V90	1.150 (29.21)

**CONTACTS**

**B** CONTACTS: Copper alloy with gold plate, welded button.

TERMINALS: Brass with gold plate.

ELECTRICAL RATING: 0.4 VA @ 20 VAC/DC.

**Q** CONTACTS: Copper alloy with silver, welded button.

TERMINALS: Brass with tin/lead plate.

ELECTRICAL RATING: 5 A @ 125 VAC, 2 A @ 250 VAC, 2 A @ 30 VDC.

UL/CSA RATING: 5A @ 125 VAC, 3A @ 250 VAC. (Specify "UL" option code)

**G** CONTACTS: Copper alloy with gold plate over silver, welded button.

TERMINALS: Brass alloy, with gold plate.

Note: This contact option can be used for low-level or power switching. If level is above 0.4 VA @ 20 VAC/DC, the switch is rendered usable only for power switching due to arc-removal of gold plate.

UL/CSA RATING: 5A @ 125 VAC, 3A @ 250 VAC (Specify "UL" option code)

ELECTRICAL RATING: 0.4 VA @ 20 VAC/DC or 5 A @ 125 VAC, 2 A @ 250 VAC, 2 A @ 30 VDC.

Gemini Series

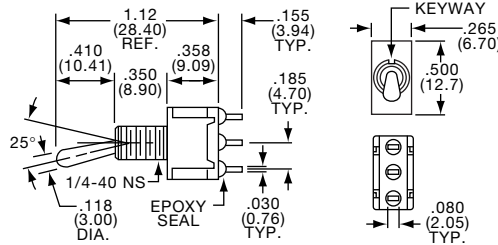
**Toggle Switches, A Series, Vertical, Wire Lug, Long Bat Actuator**

\* Refer to Pages C22-C26 for Additional Options \*

SEE PAGE C22 FOR PRODUCT SPECIFICATIONS

SPDT

Tyco Electronics	Alcoswitch	Type	Act. Code	P.M5			
<b>Silver Contacts</b>							
5-1437554-0	A101SYZQ	SPDT	1		On	None	On
7-1437554-7	A103SYZQ	SPDT	5		On	Off	On
9-1437554-6	A105SYZQ	SPDT	5		(On)	Off	(On)
1437555-9	A107SYZQ	SPDT	5		On	Off	(On)
2-1437555-0	A108SYZQ	SPDT	1		On	None	(On)
<b>Gold Contacts</b>							
4-1437554-9	A101SYZB	SPDT	1		On	None	On
7-1437554-6	A103SYZB	SPDT	5		On	Off	On
9-1437554-5	A105SYZB	SPDT	5		(On)	Off	(On)
	A107SYZB	SPDT	5		On	Off	(On)

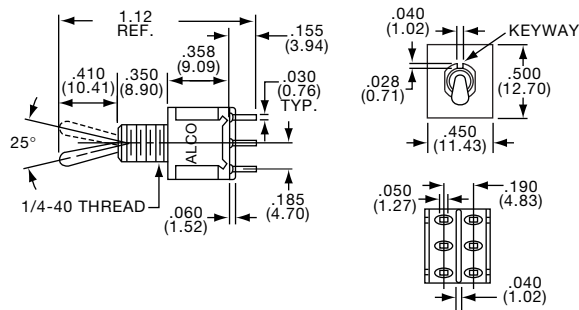


A101SYZQ

**G**  
Gemini Series

DPDT

Tyco Electronics	Alcoswitch	Type	Act. Code	P.M5			
<b>Silver Contacts</b>							
4-1437555-9	A201SYZQ	DPDT	2		On	None	On
6-1437555-2	A203SYZQ	DPDT	6		On	Off	On
7-1437555-0	A205SYZQ	DPDT	6		(On)	Off	(On)
7-1437555-6	A207SYZQ	DPDT	6		On	Off	(On)
8-1437555-5	A208SYZQ	DPDT	2		On	None	(On)
1437556-1	A211SYZQ	SP3T	11		On	On	On
1437556-4	A213SYZQ	SP3T	11		On	On	(On)
1437556-7	A215SYZQ	SP3T	11		(On)	On	(On)



A201SYZQ

**Toggle Switches, A Series, PC Terminals, Long Bat Actuators**

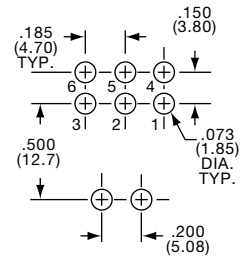
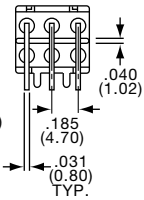
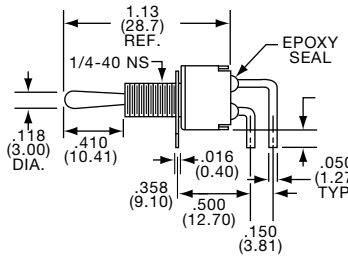
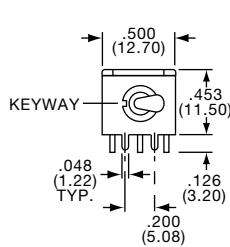
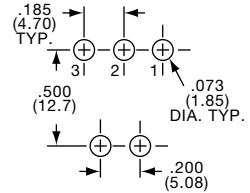
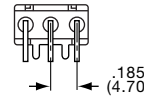
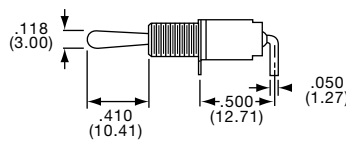
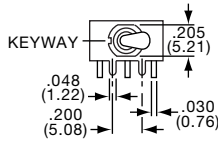
\* Refer to Pages C22-C26 for Additional Options \*

SEE PAGE C22 FOR PRODUCT SPECIFICATIONS

SPDT/DPDT



A101SYAB  
Horizontal Actuation

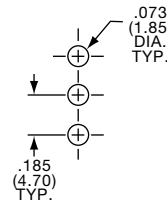
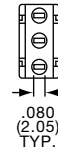
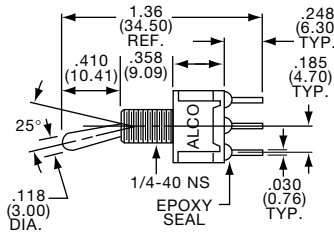
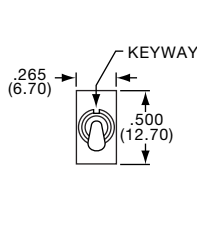


Tyco Electronics	Alcoswitch	Type	Act. Code	P.M5	↘	↓	↙
<b>Gold Contacts</b>							
4-1437554-3	A101SYAB	SPDT	1		On	None	On
	A103SYAB	SPDT	5		On	Off	On
4-1437555-3	A201SYAB	DPDT	2		On	None	On
	A208SYAB	DPDT	2		On	None	(On)

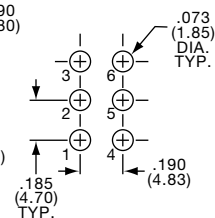
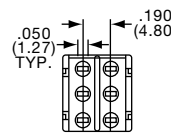
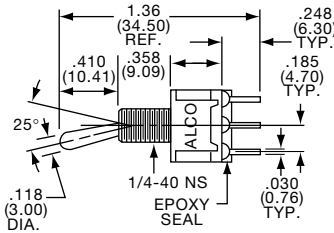
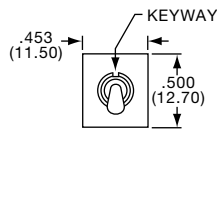
SPDT/DPDT



A101SYCB



A201SYCB



Tyco Electronics	Alcoswitch	Type	Act. Code	P.M5	↘	↓	↙
<b>Gold Contacts</b>							
4-1437554-5	A101SYCB	SPDT	1		On	None	On
7-1437554-2	A103SYCB	SPDT	5		On	Off	On
1-1437555-8	A108SYCB	SPDT	1		On	None	(On)
4-1437555-5	A201SYCB	DPDT	2		On	None	On
6-1437555-0	A203SYCB	DPDT	6		On	Off	On
8-1437555-3	A208SYCB	DPDT	2		On	None	(On)



**Toggle Switches, A Series, Wire Wrap or Wire Lug, Long Bat Actuators**

\* Refer to Pages C22-C26 for Additional Options \*

SEE PAGE C22 FOR PRODUCT SPECIFICATIONS



SPDT/DPDT

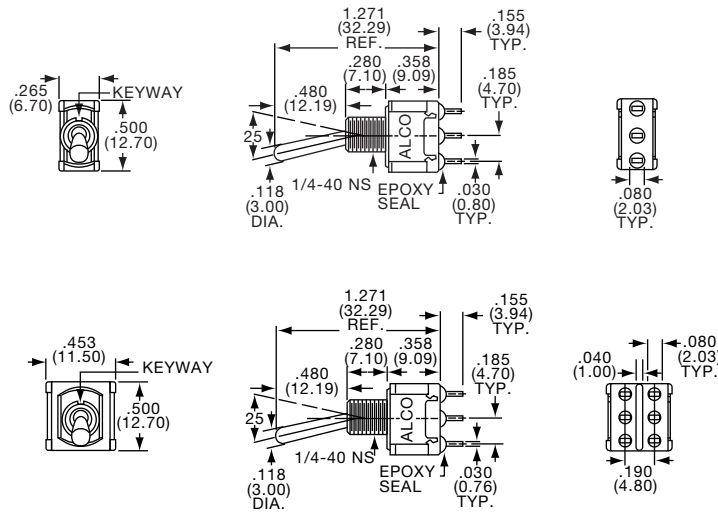


A101SYWQ



A201SYWQ

Tyco Electronics	Alcoswitch	Type	Act. Code	P.M5			
<b>Silver Contacts</b>							
4-1437554-8	A101SYWQ	SPDT	1	On	None	On	
7-1437554-5	A103SYWQ	SPDT	5	On	Off	On	
4-1437555-7	A201SYWQ	DPDT	2	On	None	On	
	A203SYWQ	DPDT	6	On	Off	On	



SPDT/DPDT



A101SDZQ



A201SDZQ

Tyco Electronics	Alcoswitch	Type	Act. Code	P.M5			
<b>Silver Contacts</b>							
4-1437554-0	A101SDZQ	SPDT	1	On	None	On	
6-1437554-9	A103SDZQ	SPDT	5	On	Off	On	
4-1437555-1	A201SDZQ	DPDT	2	On	None	On	
5-1437555-9	A203SDZQ	DPDT	6	On	Off	On	

**Toggle Switches, A Series, PC Tail, Straight or Right Angle, Long Bat Actuator**

\* Refer to Pages C22-C26 for Additional Options \*

SEE PAGE C22 FOR PRODUCT SPECIFICATIONS

SPDT

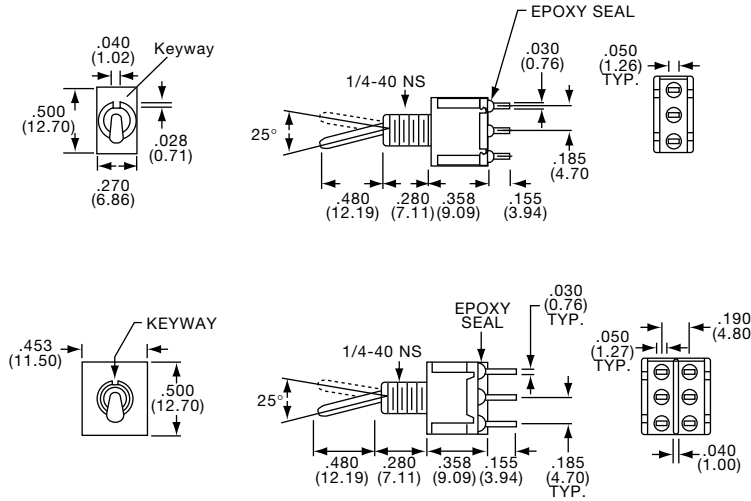


A101SDCQ

DPDT



A201SDCQ



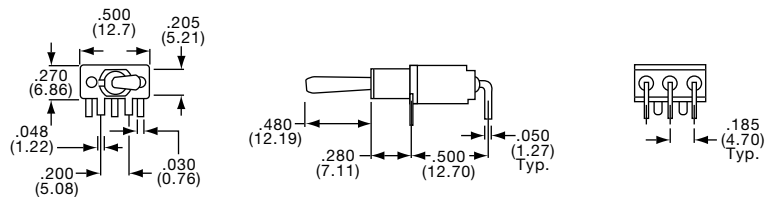
Tyco Electronics	Alcoswitch	Type	Act. Code	P.M5				
<b>Silver Contacts</b>								
3-1437554-9	A101SDCQ	SPDT	1		On	None	On	
6-1437554-8	A103SDCQ	SPDT	5		On	Off	On	
1571670-1	A201SDCQ	DPDT	2		On	None	On	
	A203SDCQ	DPDT	6		On	Off	On	
	A208SDCQ	DPDT	2		On	None	(On)	

SPDT/DPDT



A101SD9AQ

Horizontal Actuation



A201SD9AQ

Horizontal Actuation

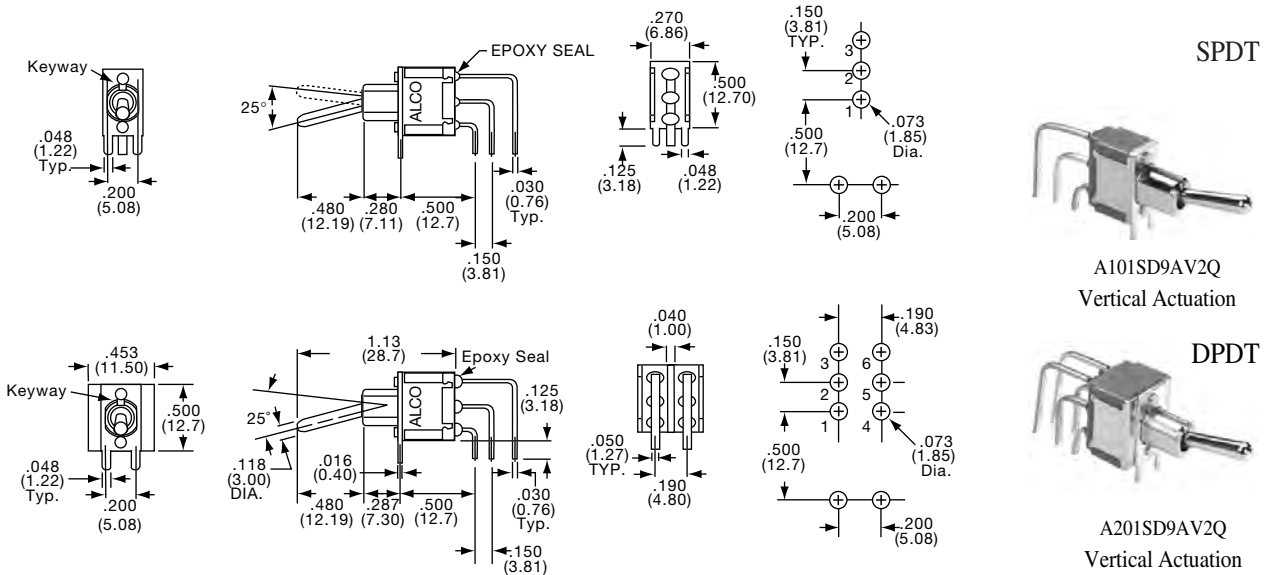


Tyco Electronics	Alcoswitch	Tyco Electronics	Alcoswitch	Type	Act. Code	P. M5				
<b>Silver Contacts</b>										
3-1437554-4	A101SD9AQ	<b>Gold Contacts</b>		3-1437554-3	A101SD9AB	SPDT	1	On	None	On
6-1437554-4	A103SD9AQ		A103SD9AB	SPDT	5		On	Off	On	
1-1437555-6	A108SD9AQ		A108SD9AB	SPDT	1		On	None	(On)	
3-1437555-8	A201SD9AQ		A201SD9AB	DPDT	2		On	None	On	
8-1437555-1	A208SD9AQ		A208SD9AB	DPDT	2		On	None	(On)	

**Toggle Switches, A Series, Vertical, Right Angle, Long Bat Actuator**

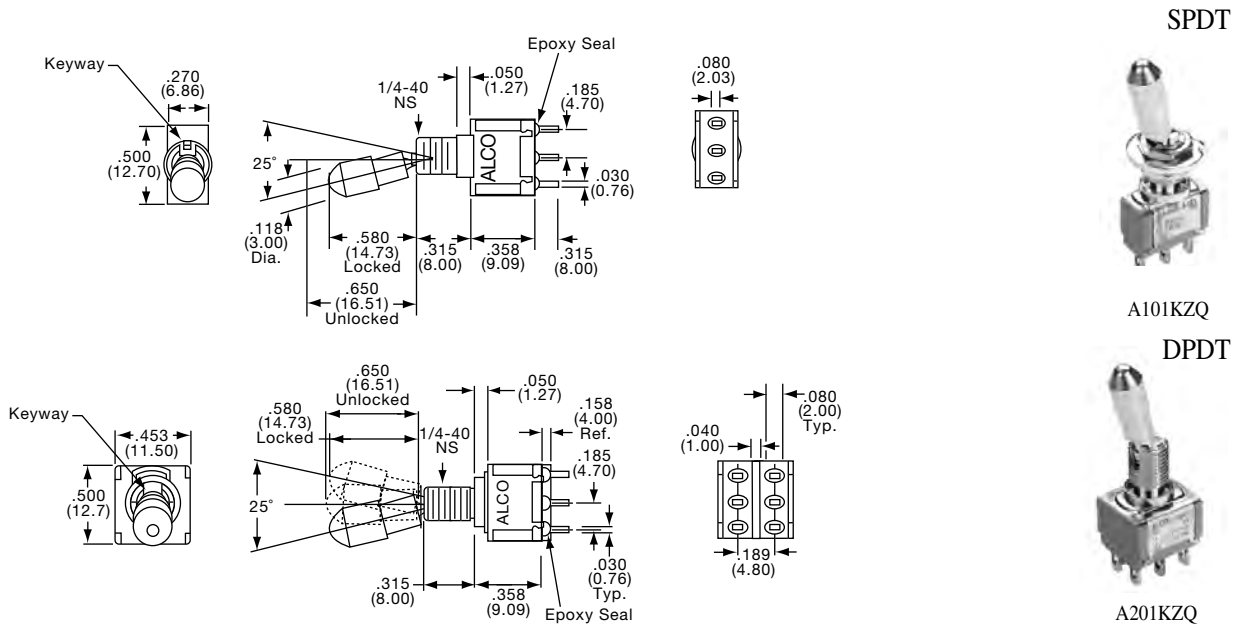
\* Refer to Pages C22-C26 for Additional Options \*

SEE PAGE C22 FOR PRODUCT SPECIFICATIONS



Tyco Electronics	Alcoswitch	Type	Act. Code P.M5				Tyco Electronics	Alcoswitch	Type	Act. Code P.M5			
<b>Silver Contacts</b>							<b>Silver Contacts</b>						
3-1437554-6	A101SD9AV2Q	SPDT	1	On	None	On	3-1437555-9	A201SD9AV2Q	DPDT	2	On	None	On
6-1437554-6	A103SD9AV2Q	SPDT	5	On	Off	On	5-1437555-8	A203SD9AV2Q	DPDT	6	On	Off	On
							8-1437555-2	A208SD9AV2Q	DPDT	2	On	None	(On)

**Toggle Switches, A Series, Wire Lug, Locking Toggle**



Tyco Electronics	Alcoswitch	Type	Act. Code P. M5				Tyco Electronics	Alcoswitch	Tyco Electronics	Alcoswitch	Type	Act. Code P. M5			
<b>Silver Contacts</b>							<b>Gold Contacts</b>								
1437554-9	A101KZQ	SPDT	1	On	None	On	A201KZB	2-1437555-5	A201KZQ	DPDT	2	On	None	On	
5-1437554-8	A103KZQ	SPDT	5	On	Off	On	A203KZB	5-1437555-3	A203KZQ	DPDT	6	On	Off	On	
							6-1437555-5	A205KZB	A205KZQ	DPDT	6	(On)	Off	(On)	
							8-1437555-8	A211KZB	A211KZQ	SP3T	11	On	On	On	

\* Refer to Pages C22-C26 for Additional Options \*

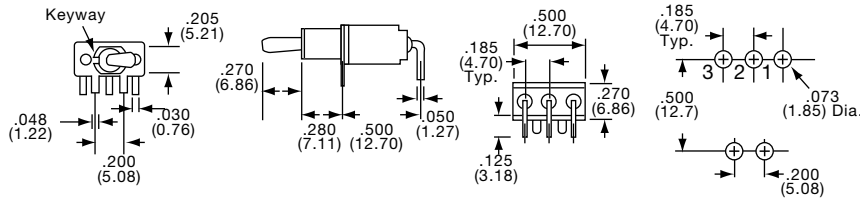
**Toggle Switches, A Series, Right Angle, Short Bat Actuators**

SEE PAGE C22 FOR PRODUCT SPECIFICATIONS

**SPDT**



**A101MD9AQ**  
Horizontal Actuation

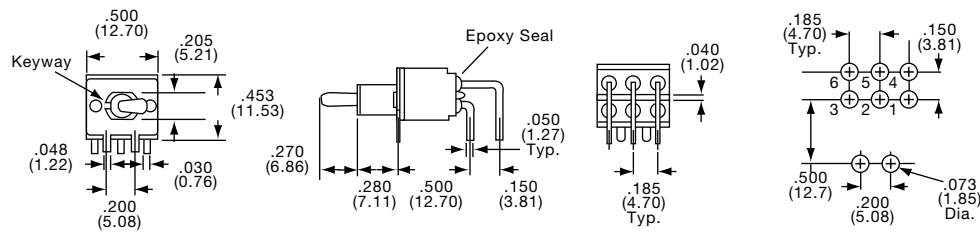


Tyco Electronics	Alcoswitch	Tyco Electronics	Alcoswitch	Type	Act. Code	P. M5			
<b>Silver Contacts</b>		<b>Gold Contacts</b>							
1-1437554-6	A101MD9AQ	1-1437554-4	A101MD9AB	SPDT	1		On	None	On
6-1437554-1	A103MD9AQ	5-1437554-9	A103MD9AB	SPDT	5		On	Off	On
	A108MD9AQ	1-1437555-2	A108MD9AB	SPDT	1		On	None	(On)

**DPDT**



**A201MD9AQ**  
Horizontal Actuation

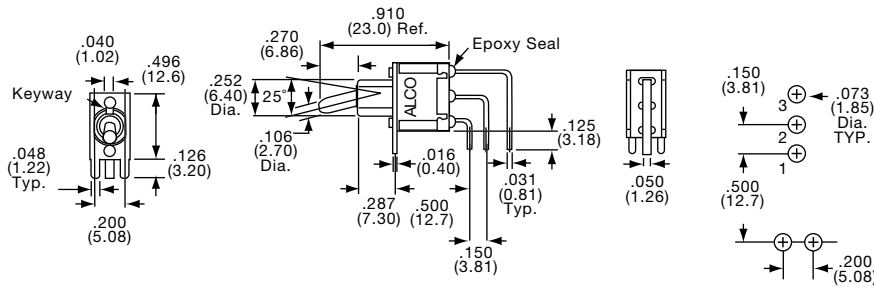


Tyco Electronics	Alcoswitch	Tyco Electronics	Alcoswitch	Type	Act. Code	P. M5			
<b>Silver Contacts</b>		<b>Gold Contacts</b>							
2-1437555-8	A201MD9AQ	2-1437555-7	A201MD9AB	DPDT	2		On	None	On
		5-1437555-4	A203MD9AB	DPDT	6		On	Off	On

**SPDT**



**A101MD9AV2Q**  
Vertical Actuation

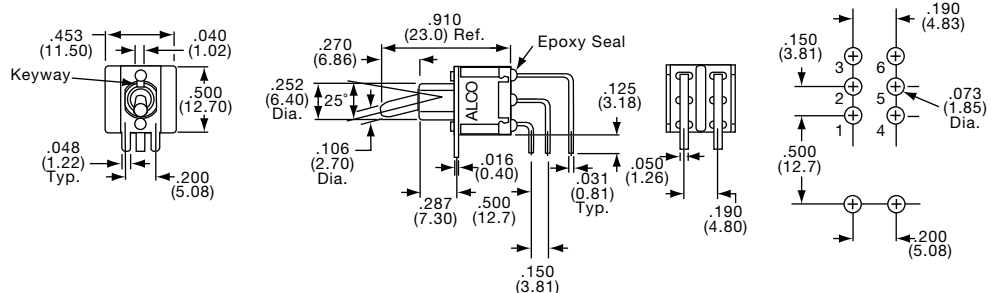


Tyco Electronics	Alcoswitch	Tyco Electronics	Alcoswitch	Type	Act. Code	P. M5			
<b>Silver Contacts</b>		<b>Gold Contacts</b>							
1-1437554-9	A101MD9AV2Q	1-1437554-7	A101MD9AV2B	SPDT	1		On	None	On
	A103MD9AV2Q	6-1437554-2	A103MD9AV2B	SPDT	5		On	Off	On
	A108MD9AV2Q			SPDT	1		On	None	(On)

**DPDT**



**A201MD9AV2AQ**  
Vertical Actuation

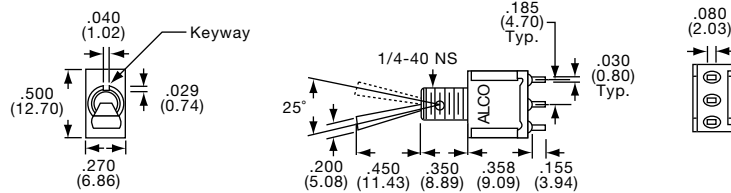


Tyco Electronics	Alcoswitch	Tyco Electronics	Alcoswitch	Type	Act. Code	P. M5			
<b>Silver Contacts</b>		<b>Gold Contacts</b>							
3-1437555-0	A201MD9AV2Q	2-1437555-9	A201MD9AV2B	DPDT	2		On	None	On
	A203MD9AV2Q		A203MD9AV2B	DPDT	6		On	Off	On
	A208MD9AV2Q		A208MD9AV2B	DPDT	2		On	None	(On)

**Toggle Switches, A Series, Vertical, Wire Lug, Flat or Long Bat Actuator**

\* Refer to Pages C22-C26 for Additional Options \*

SEE PAGE C22 FOR PRODUCT SPECIFICATIONS



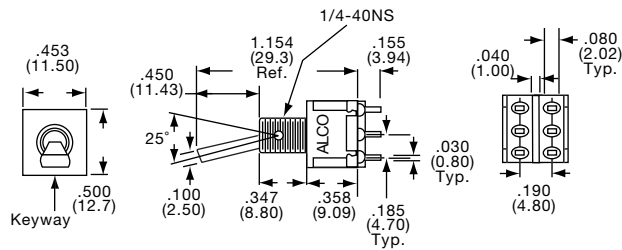
SPDT



A101P3YZQ

Tyco Electronics	Alcoswitch	Type	Act. Code	P.M5	↖	↓	↗
<b>Silver Contacts</b>							
2-1437554-9	A101P3YZQ	SPDT	1		On	None	On
6-1437554-3	A103P3YZQ	SPDT	5		On	Off	On
8-1437554-7	A105P3YZQ	SPDT	5		(On)	Off	(On)
1437555-5	A107P3YZQ	SPDT	5		On	Off	(On)
1-1437555-5	A108P3YZQ	SPDT	1		On	None	(On)

Tyco Electronics	Alcoswitch	Type	Act. Code	P.M5	↖	↓	↗
<b>Silver Contacts</b>							
3-1437555-6	A201P3YZQ	DPDT	2		On	None	On
5-1437555-6	A203P3YZQ	DPDT	6		On	Off	On
6-1437555-6	A205P3YZQ	DPDT	6		(On)	Off	(On)
7-1437555-3	A207P3YZQ	DPDT	6		On	Off	(On)
8-1437555-0	A208P3YZQ	DPDT	2		On	None	(On)
9-1436555-3	A211P3YZQ	SP3T	11		On	On	On
	A215P3YZQ	SP3T	11		(On)	On	(On)

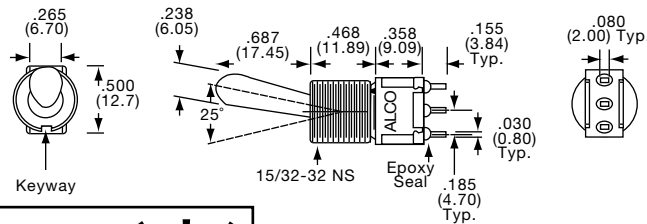


DPDT



A201P3YZQ

Tyco Electronics	Alcoswitch	Type	Act. Code	P.M5	↖	↓	↗
<b>Silver Contacts</b>							
5-1437554-6	A101TZQ	SPDT	1		On	None	On
8-1437554-0	A103TZQ	SPDT	5		On	Off	On

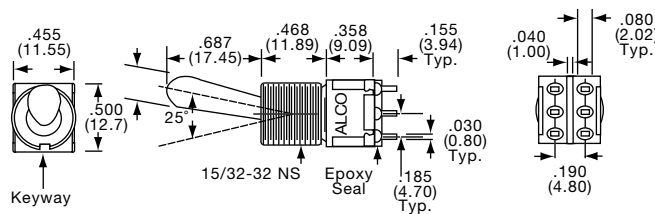


SPDT



A101TZQ

Tyco Electronics	Alcoswitch	Type	Act. Code	P.M5	↖	↓	↗
<b>Silver Contacts</b>							
5-1437555-2	A201TZQ	DPDT	2		On	None	On
6-1437555-4	A203TZQ	DPDT	6		On	Off	On
	A211TZQ	SP3T	11		On	On	On



DPDT



A201TZQ

**Toggle Switches, A Series, Wire Lug, 15/32 Bushing, Short Bat Actuator**

\* Refer to Pages C22-C26 for Additional Options \*

SEE PAGE C22 FOR PRODUCT SPECIFICATIONS

SPDT



A103T1ZQ

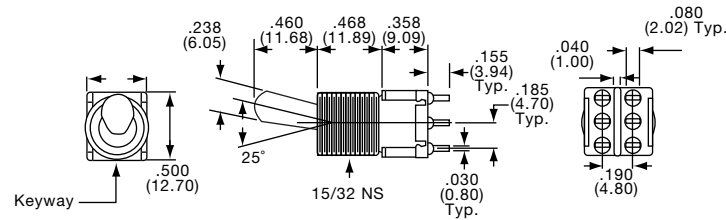


Tyco Electronics	Alcoswitch	Type	Act. Code	P.M5	↘	↓	↙
<b>Silver Contacts</b>							
5-1437554-4	A101T1ZQ	SPDT	1		On	None	On
7-1437554-9	A103T1ZQ	SPDT	5		On	Off	On
9-1437554-8	A105T1ZQ	SPDT	5		(On)	Off	(On)
	A108T1ZQ	SPDT	1		On	None	(On)

DPDT



A201T1ZQ



Tyco Electronics	Alcoswitch	Type	Act. Code	P.M5	↘	↓	↙
<b>Silver Contacts</b>							
5-1437555-0	A201T1ZQ	DPDT	2		On	None	On
6-1437555-3	A203T1ZQ	DPDT	6		On	Off	On
7-1437555-1	A205T1ZQ	DPDT	6		(On)	Off	(On)
7-1437555-7	A207T1ZQ	DPDT	6		On	Off	(On)
8-1437555-6	A208T1ZQ	DPDT	2		On	None	(On)
1437556-2	A211T1ZQ	SP3T	11		On	On	On

**Toggle Switches, AE Series, Process Sealed, Part Number Matrix**

**"AE" SERIES DESIGN FEATURES**

- MIL-STD-202 Method 112C Leak Test
- Toggle – Machined brass, heavy nickel plated.
- Bushing & Cover - Nylon, ultrasonically welded to case, with integral "O-ring", UL94VO.
- Fixed Contact – Welded construction.
- Terminal Seal – Epoxy sealing of terminals is standard.
- Termination – Precious metal (gold or silver)/brass or copper strip with welded contact area.

**MATERIAL SPECIFICATIONS:**

Process Sealing ..... "O-ring" seals will withstand wave soldering and various subsequent cleaning operations. Meets MIL-STD-202, Method 112C, Test Condition A & D, 85°C.

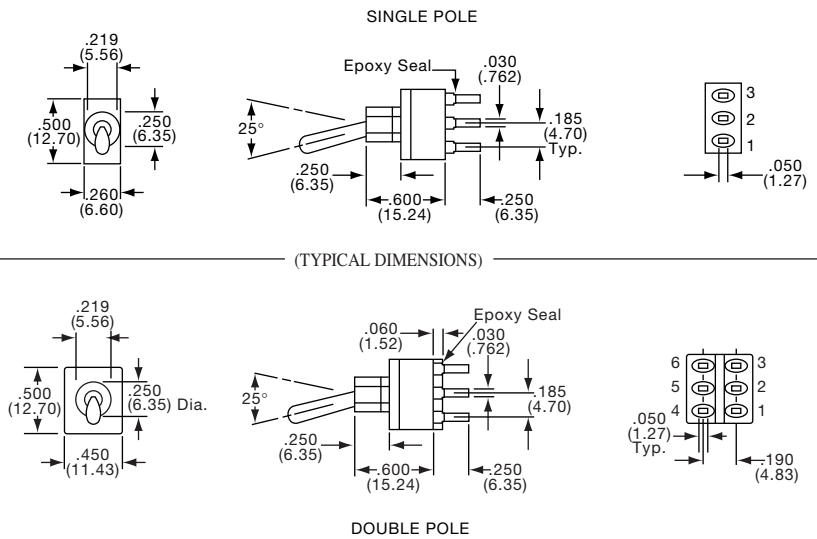
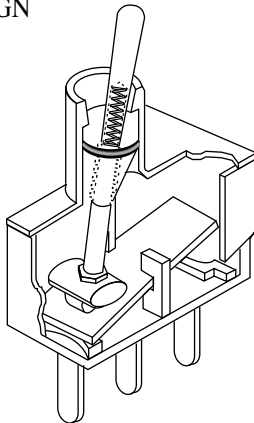
**ENVIRONMENTAL SPECIFICATIONS**

Operating Temperature.....-4°F to + 185°F (-20°C to + 85°C)  
 Storage Temperature.....-49°F to + 212°F (-45°C to + 100°C)  
 Solder Heat Resistance .....See page M3-4

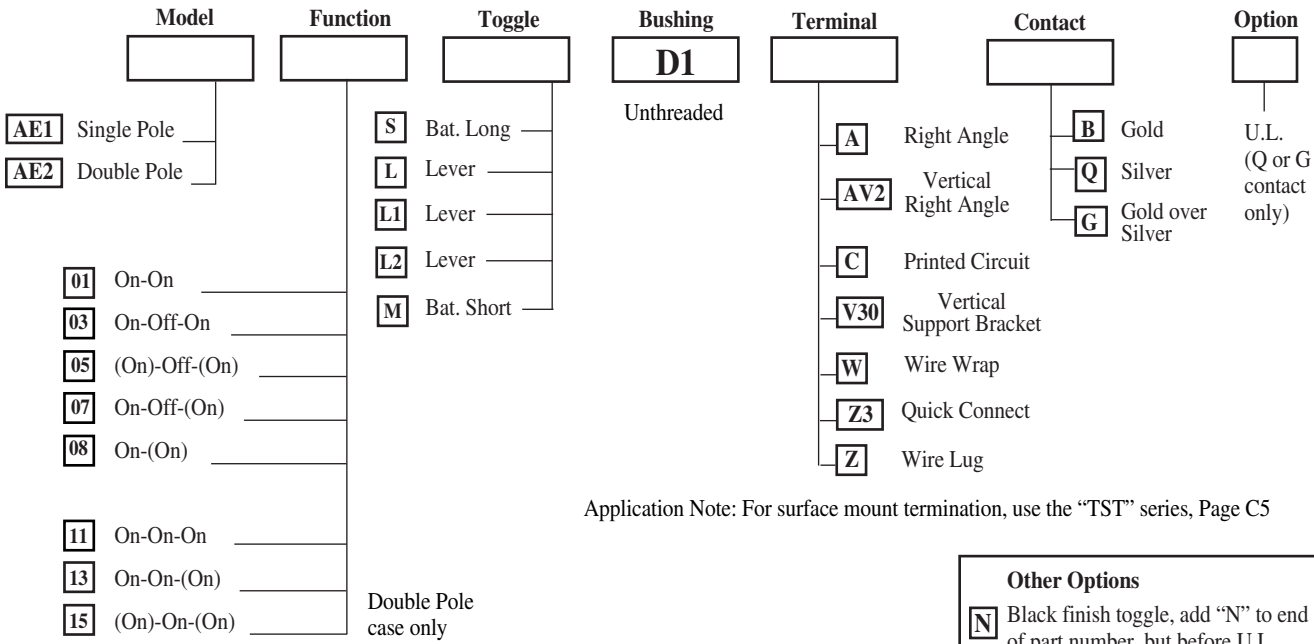
**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....Silver: 2 A @ 250 VAC or 5 A @ 125 VAC  
 Silver: 2 A @ 30 VDC  
 Gold: 0.4 VA @ 20 VAC/DC  
 Contact Resistance .....30 Milliohms max. initial  
 Insulation Resistance .....1,000 Megohms min. @ 500 VDC.  
 Dielectric Strength .....1,000 Volts RMS @ sea level initial  
 Static Withstanding.....15 KV per IEC 801-2  
 Electrical Life .....Up to 30,000 Cycles

**"O-RING" DESIGN**



**PART NUMBERING**



See page C36 for SP3T wiring diagram.

**Pushbutton Switches, Panel Mount, Wire Lug or PC Tails, 6 Amp**

**MATERIAL SPECIFICATIONS:**

Contacts .....Silver clad copper with gold flash  
Case Material.....Thermoset  
Actuator Material .....Nickel plated copper alloy  
Terminals.....Copper with gold flash  
Terminal Seal .....Molded in

**ENVIRONMENTAL SPECIFICATIONS:**

Operating Temperature .....-4°F to +176°F (-20°C to +80°C)  
Storage Temperature .....-40°F to +176°F (-40°C to +80°C)  
Solder Heat Resistance .....See page M3-4

Note: Hardware included with switches

**TYPICAL PERFORMANCE CHARACTERISTICS:**

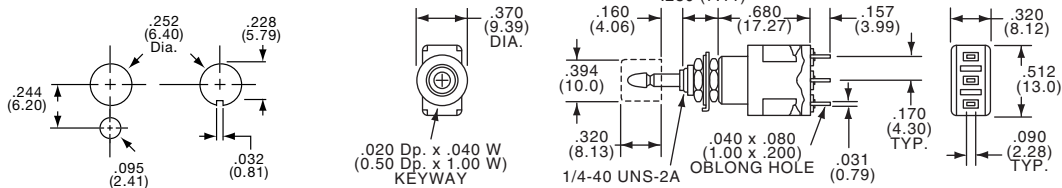
Contact Rating.....6 A @ 125 VAC, 3 A @ 250 VAC  
Initial Contact Resistance .....10 Milliohms max.  
Contact Timing .....Break-before-make  
Insulation Resistance.....1,000 Megohms min.  
Dielectric Strength.....1,500 Volts RMS @ sea level  
Actuation Force .....1.3 to 2.7 lbs.  
Actuator Travel ......140" (3.56)

Life Expectancy.....Up to 50,000 Actuations  
**Cap not supplied, order separately**  
**(See Cap Model C22 and C23 on page D32.)**

**SPDT**



MPA106D

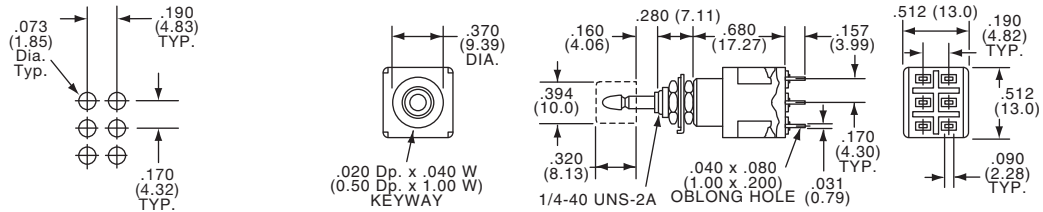


Part Number					
Tyco Electronics	Alcoswitch	Type	Act. Code	P. M6	Action
2-1437567-8	MPA106D	SPDT	23		Push-on/Push-off
2-1437567-9	MPA106F	SPDT	19		Momentary

**DPDT**



MPA206N



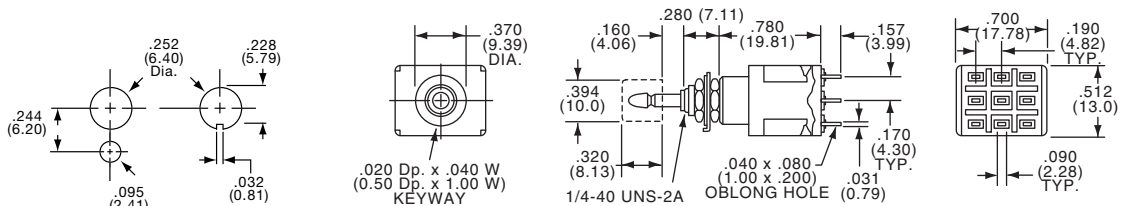
Part Number					
Tyco Electronics	Alcoswitch	Type	Act. Code	P. M6	Action
Wirelug Terminals					
3-1437567-1	MPA206N	DPDT	24		Push-on/Push-off
3-1437567-3	MPA206R	DPDT	20		Momentary

Part Number					
Tyco Electronics	Alcoswitch	Type	Act. Code	P. M6	Action
PC Terminals					
3-1437567-2	MPA206NPC	DPDT	24		Push-on/Push-off
3-1437567-4	MPA206RPC	DPDT	20		Momentary

**3PDT**



MPA306D

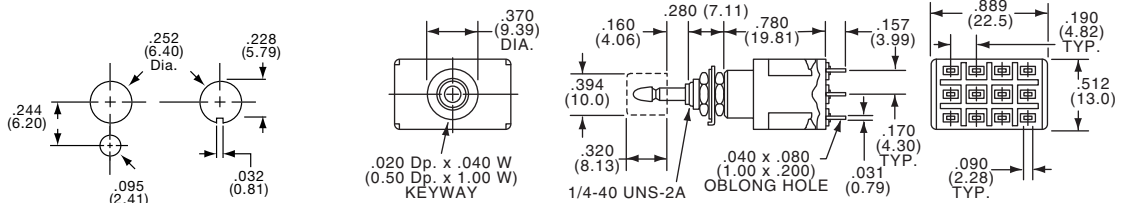


Part Number					
Tyco Electronics	Alcoswitch	Type	Act. Code	P. M6	Action
3-1437567-5	MPA306D	3PDT	25		Push-on/Push-off
3-1437567-6	MPA306F	3PDT	21		Momentary

**4PDT**



MPA406N



Part Number					
Tyco Electronics	Alcoswitch	Type	Act. Code	P. M6	Action
3-1437567-7	MPA406N	4PDT	26		Push-on/Push-off
3-1437567-8	MPA406R	4PDT	22		Momentary



**Pushbutton Switches, Splashproof, Panel Mount, Wire Lug, 6 Amp**

**MATERIAL SPECIFICATIONS:**

Contacts .....Silver clad copper with gold flash  
 Case Material .....Thermoset  
 Actuator Material .....Nickel plated copper alloy  
 Terminals .....Copper with gold flash  
 Terminal Seal .....Molded in

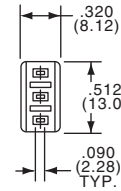
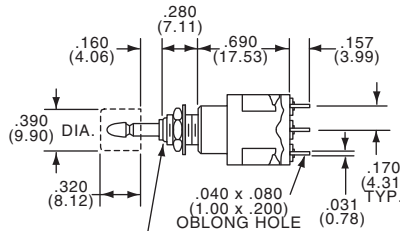
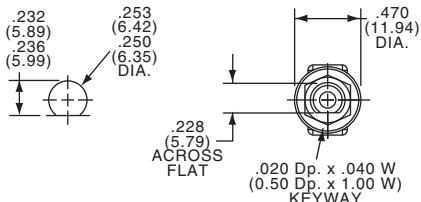
**ENVIRONMENTAL SPECIFICATIONS:**

Operating Temperature .....-4°F to +176°F (-20°C to +80°C)  
 Storage Temperature .....-40°F to +176°F (-40°C to +80°C)  
 Note: Hardware included with switches

**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....6 A @ 125 VAC, 3 A @ 250 VAC  
 Initial Contact Resistance .....10 Milliohms max.  
 Contact Timing .....Break-before-make  
 Insulation Resistance .....1,000 Megohms min.  
 Dielectric Strength .....1,500 Volts RMS @ sea level  
 Actuation Force .....1.3 to 2.7 lbs.  
 Actuator Travel ......140" (3.56)  
 Life Expectancy .....Up to 50,000 Actuations

**Notice: O-ring on shoulder and inside moveable shaft provides splashproof seal. Meets IP65**



SPDT

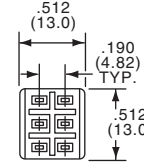
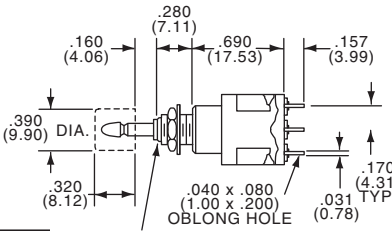
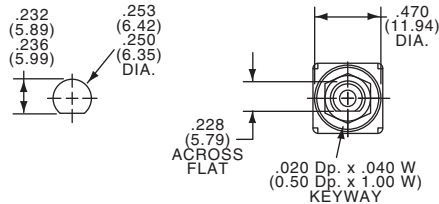


MPE106D

Part Number		Act. Code		
Tyco Electronics	Alcoswitch	Type	P. M6	Action
4-1437567-2	MPE106D	SPDT	23	Push on/Push off
4-1437567-3	MPE106F	SPDT	19	Momentary

1/4-40 UNS-2A

Cap not supplied, order separately (See Cap Model C22 and C23 on page D32.)



DPDT

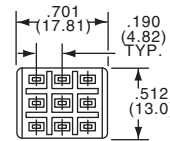
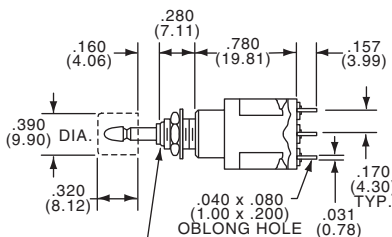
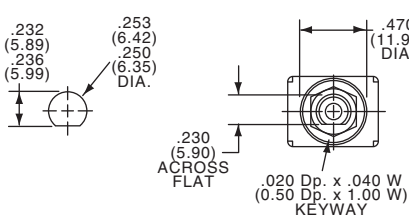


MPE206N

Part Number		Act. Code		
Tyco Electronics	Alcoswitch	Type	P. M6	Action
4-1437567-4	MPE206N	DPDT	24	Push on/Push off
4-1437567-5	MPE206R	DPDT	20	Momentary

1/4-40 UNS-2A

Cap not supplied, order separately (See Cap Model C22 and C23 on page D32.)



3PDT

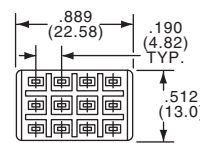
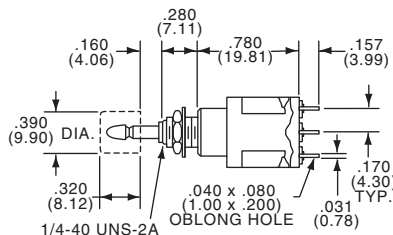
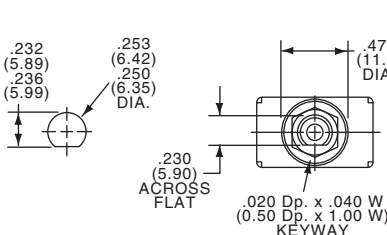


MPE306F

Part Number		Act. Code		
Tyco Electronics	Alcoswitch	Type	P. M6	Action
—	MPE306D	3PDT	25	Push on/Push off
4-1437567-6	MPE306F	3PDT	21	Momentary

1/4-40 UNS-2A

Cap not supplied, order separately (See Cap Model C22 and C23 on page D32.)



4PDT



MPE406N

Part Number		Act. Code		
Tyco Electronics	Alcoswitch	Type	P. M6	Action
4-1437567-7	MPE406N	4PDT	26	Push on/Push off
4-1437567-8	MPE406R	4PDT	22	Momentary

Cap not supplied, order separately (See Cap Model C22 and C23 on page D32.)

**Pushbutton Switches, 15/32 Bushing, Mustang, Wire Lug or PC Tails, 6 Amp**

**MATERIAL SPECIFICATIONS:**

Contacts .....Silver clad copper with gold flash  
 Case Material .....Thermoset  
 Terminals .....Copper with gold flash finish  
 Terminal Seal .....Molded in

**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....6 A @ 125 VAC, 3 A @ 250 VAC  
 Initial Contact Resistance .....10 Milliohms max.  
 Contact Timing .....Break-before-make  
 Insulation Resistance .....1,000 Megohms min.  
 Dielectric Strength .....1,500 Volts RMS @ sea level  
 Actuation Force .....1.3 to 2.7 lbs.  
 Actuator Travel ......138" (3.51)  
 Life Expectancy .....Up to 50,000 Actuations  
 Note: Hardware included with switches

**ENVIRONMENTAL SPECIFICATIONS:**

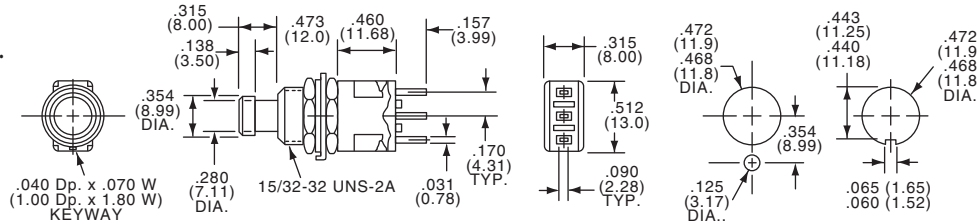
Operating Temperature.....-4°F to +176°F (-20°C to +80°C)  
 Storage Temperature.....-40F to +176°F (-40°C to +80°C)  
 Solder Heat Resistance .....See page M3-4

**SPDT**

Black Cap supplied.



MPG106D



Other Caps Available, order separately  
 (See Cap Model C9 on page D32.)

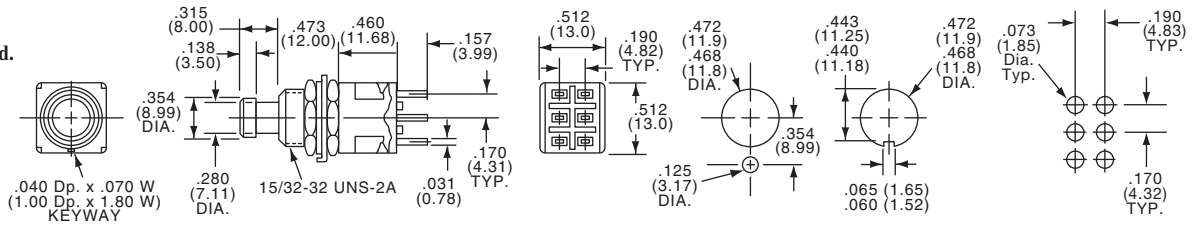
Part Number		Type	Act. Code	P. M6	Action	Terminals
Tyco Electronics	Alcoswitch					
4-1437567-9	MPG106D	SPDT	23		Push on/Push off	Wire Lug
5-1437567-0	MPG106F	SPDT	19		Momentary	Wire Lug

**DPDT**

Black Cap supplied.



MPG206NPC



Other Caps Available, order separately  
 (See Cap Model C9 on page D32.)

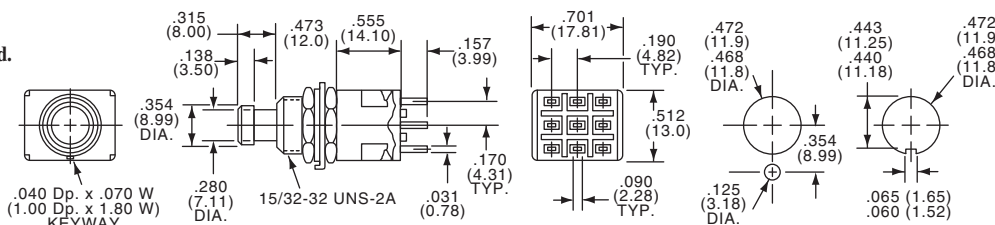
Part Number		Type	Act. Code	P. M6	Action	Terminals
Tyco Electronics	Alcoswitch					
5-1437567-1	MPG206N	DPDT	24		Push on/Push off	Wire Lug
5-1437567-3	MPG206R	DPDT	20		Momentary	Wire Lug
5-1437567-2	MPG206NPC	DPDT	24		Push on/Push off	PC
5-1437567-4	MPG206RPC	DPDT	20		Momentary	PC

**3PDT**

Black Cap supplied.



MPG306D



Other Caps Available, order separately  
 (See Cap Model C9 on page D32.)

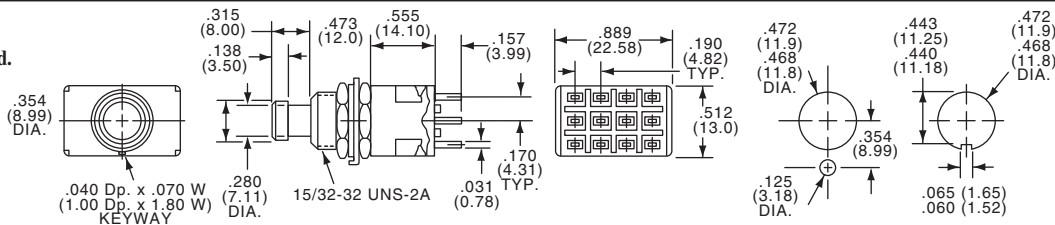
Part Number		Type	Act. Code	P. M6	Action	Terminals
Tyco Electronics	Alcoswitch					
5-1437567-5	MPG306D	3PDT	25		Push on/Push off	Wire Lug
5-1437567-6	MPG306F	3PDT	21		Momentary	Wire Lug

**4PDT**

Black Cap supplied.



MPG406N



Other Caps Available, order separately  
 (See Cap Model C9 on page D32.)

Part Number		Type	Act. Code	P. M6	Action	Terminals
Tyco Electronics	Alcoswitch					
5-1437567-7	MPG406N	4PDT	25		Push on/Push off	Wire Lug
5-1437567-8	MPG406R	4PDT	21		Momentary	Wire Lug

**Pushbutton Switches, Snap Action, Wire Lug, 3 Amp**

**MATERIAL SPECIFICATIONS:**

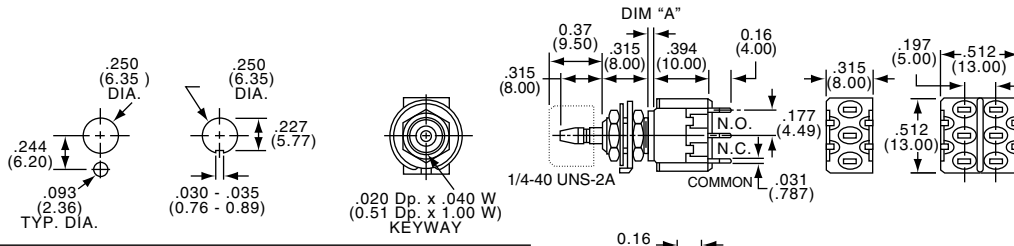
Contacts .....Silver  
 Case Material .....Epoxy resin  
 Actuator Material .....Copper alloy, nickel plate  
 Terminals .....Silver  
 Terminal Seal .....Epoxy

**ENVIRONMENTAL SPECIFICATIONS:**

Operating Temperature.....+5°F to +158°F (-15°C to +70°C)  
 Storage Temperature.....+5°F to +158°F (-15°C to +70°C)  
 Solder Heat Resistance .....See page M3-4

**TYPICAL PERFORMANCE CHARACTERISTICS:**

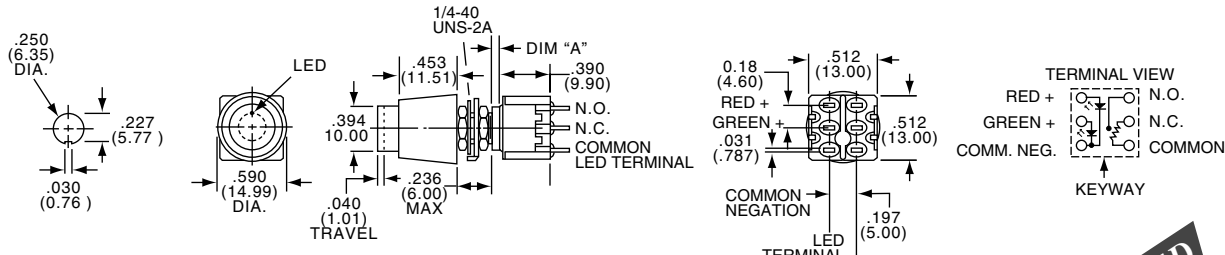
Contact Rating .....3 A @ 115 VAC or 28 VDC  
 Initial Contact Resistance.....10 Milliohms max.  
 Contact Timing .....Break-before-make  
 Insulation Resistance .....1,000 Megohms @ 500 VDC min.  
 Dielectric Strength .....1,000 Volts RMS @ sea level  
 Actuation Force .....Single pole - 7 to 14 oz. (200 to 400 grams)  
   Double pole - 14 to 25 oz. (400 to 700 grams)  
 Actuator Travel.....Momentary .040" (1.02)  
   Push on/off .098" (2.49)  
 Life Expectancy .....Up to 50,000 Actuations



Part Number					
Tyco Electronics	Alcoswitch	Type	Action	Dim."A"	Terminals
5-1437567-9	MPS103D	SPDT	Push-on/Off	.100	Wire Lug
6-1437567-3	MPS103F	SPDT	Momentary	.040	Wire Lug
6-1437567-8	MPS203N	DPDT	Push-on/Off	.100	Wire Lug
7-1437567-2	MPS203R	DPDT	Momentary	.040	Wire Lug



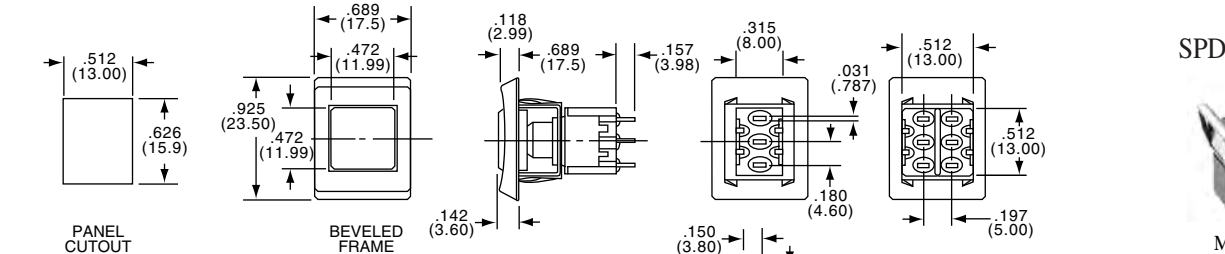
**Note: Hardware included with switches**  
 Caps not supplied, order separately. (See Cap Model C22 and C23 on Page D32.)



Part Number					
Tyco Electronics	Alcoswitch	Type	Action	Dim."A"	Terminals
8-1437567-0	MPSN103F	SPDT	Momentary	.040	Wire Lug

Note: LEDs are red and green.

**LED Specifications:**  
 Max. Vfwd. @ 20 mAdc : 3 Vdc.  
 Max. V rev. : 5 Vdc.  
 Max. I fws. : 30 mAdc.  
 Recommended series resistance: R = 120 ohm @ 5 Vdc.  
 (add 50 ohms/volt above 5 volts)



Part Number					
Tyco Electronics	Alcoswitch	Type	Action	Terminals	
8-1437567-1	MPSR103F	SPDT	Momentary	Wire Lug	
8-1437567-2	MPSR203R	DPDT	Momentary	Wire Lug	
Model		Description	Color		
2-1437628-2	SDR0	Plastic beveled frame	Black		
5-1437627-5	C330	Square button for MPSR	Black		
5-1437627-6	C332	Square button "	Red		
5-1437627-8	C339	Square button "	White		

**C-33(\*) Button not supplied, Plastic (black) beveled edged frame Model SDR0, not supplied. ORDER SEPARATELY**



**Pushbutton Switches, Snap Action, PC or Wire Wrap Tails, 3 Amp**

SPDT/DPDT

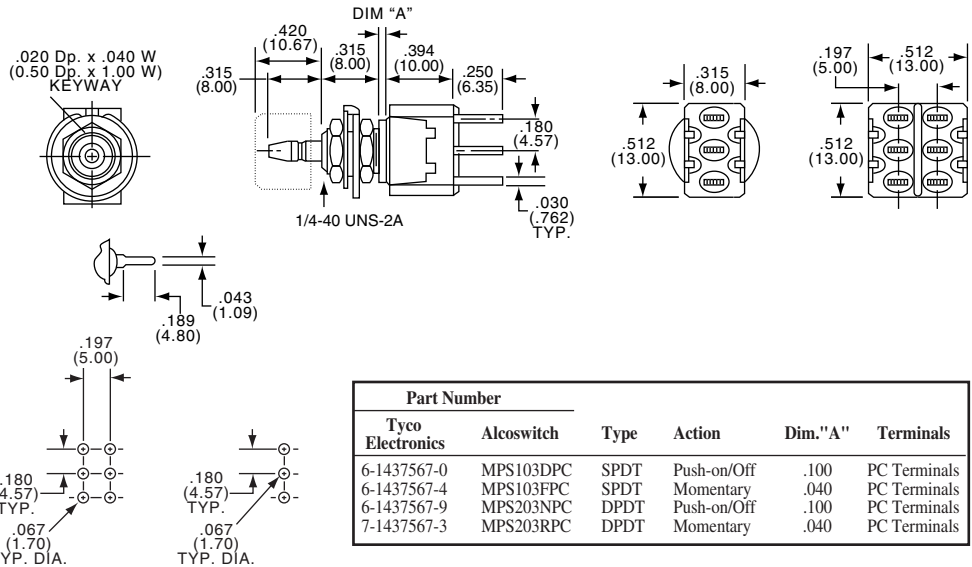
SEE PAGE D25 FOR PRODUCT SPECIFICATIONS



MPS103FPC



MPS203RPC



Part Number					
Tyco Electronics	Alcoswitch	Type	Action	Dim."A"	Terminals
6-1437567-0	MPS103DPC	SPDT	Push-on/Off	.100	PC Terminals
6-1437567-4	MPS103FPC	SPDT	Momentary	.040	PC Terminals
6-1437567-9	MPS203NPC	DPDT	Push-on/Off	.100	PC Terminals
7-1437567-3	MPS203RPC	DPDT	Momentary	.040	PC Terminals

Caps not supplied, order separately. (See Cap Model C22 and C23 on Page D32.)

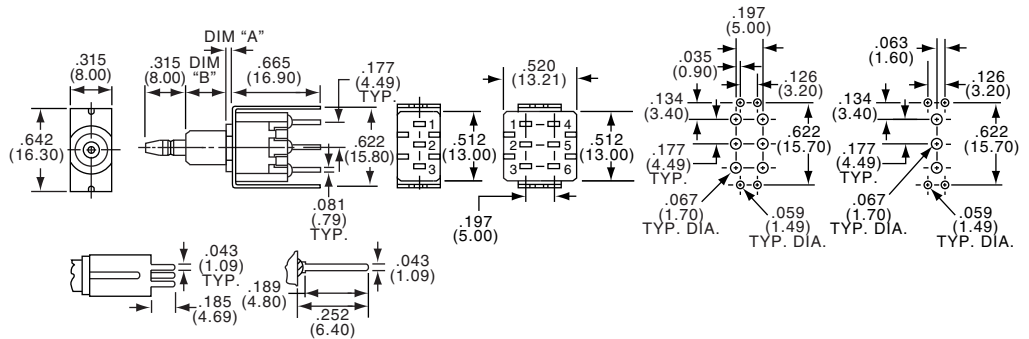
SPDT/DPDT



MPS103FPCV



MPS203RPCV



Part Number						
Tyco Electronics	Alcoswitch	Type	Action	Dim."A"	Dim."B"	Terminals
6-1437567-1	MPS103DPCV	SPDT	Push-on/Off	.080(2.03)	.315(8.00)	PC w/support
6-1437567-5	MPS103FPCV	SPDT	Momentary	.040(1.01)	.295(7.49)	PC w/support
7-1437567-4	MPS203RPCV	DPDT	Momentary	.040(1.01)	.295(7.49)	PC w/support

Caps not supplied, order separately. (See Cap Model C22 and C23 on Page D32.)

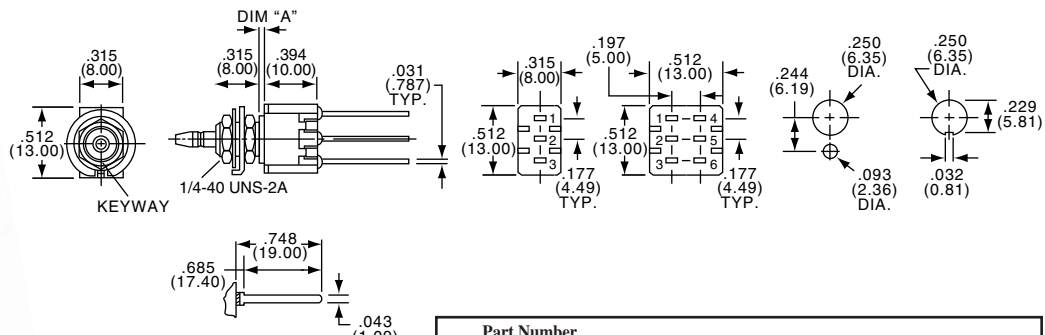
SPDT/DPDT



MPS103FWW



MPS203RWW



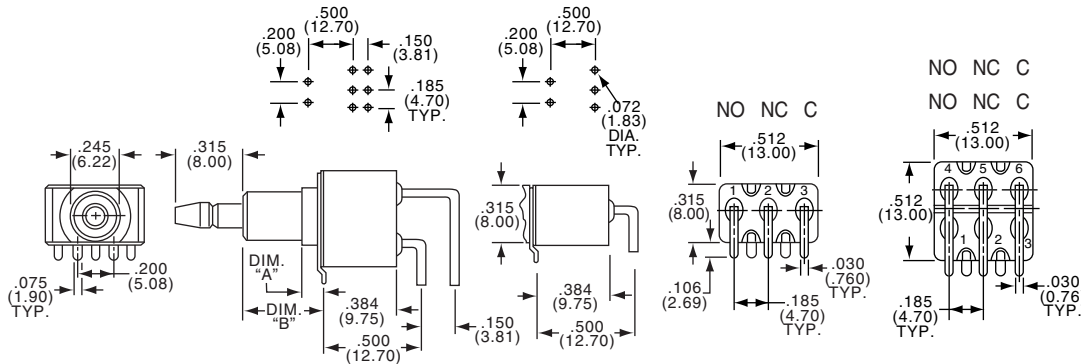
Part Number					
Tyco Electronics	Alcoswitch	Type	Action	Dim."A"	Terminals
6-1437567-7	MPS103FWW	SPDT	Momentary	.040(1.01)	Extended PC
-	MPS203NWW	DPDT	Push-on/Off	.100(2.54)	Extended PC
7-1437567-6	MPS203RWW	DPDT	Momentary	.040(1.01)	Extended PC

Caps not supplied, order separately. (See Cap Model C22 and C23 on Page D32.)

D  
MPS Series

**Pushbutton Switches, Snap Action, Right Angle, 3 Amp**

SEE PAGE D25 FOR PRODUCT SPECIFICATIONS



SPDT/DPDT



MPS103DRA



MPS203NRA

Part Number						
Tyco Electronics	Alcoswitch	Type	Action	Dim."A"	Dim."B"	Terminals
6-1437567-2	MPS103DRA	SPDT	Push-on/Off	.100(2.54)	.423(10.7)	Right Angle PC
6-1437567-6	MPS103FRA	SPDT	Momentary	.060(1.52)	.364(9.24)	Right Angle PC
7-1437567-1	MPS203NRA	DPDT	Push-on/Off	.100(2.54)	.423(10.7)	Right Angle PC
7-1437567-5	MPS203RRA	DPDT	Momentary	.060(1.52)	.364(9.24)	Right Angle PC

Caps not supplied, order separately.  
(See Cap Model C22 and C23 on Page D32.)

MSP3/MSPS

**Pushbutton Switches, 2.5mm Travel, Panel Mount**

**MATERIAL SPECIFICATIONS:**

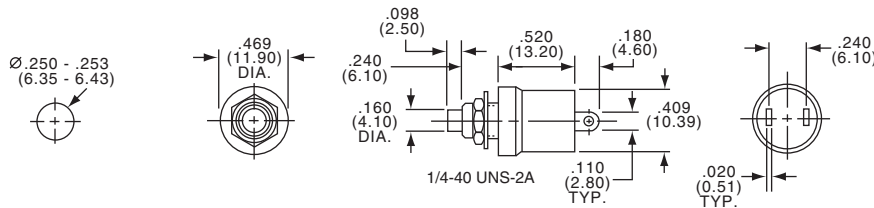
Contacts .....Silver plate over copper alloy  
Case Material .....Thermoplastic  
Actuator Material .....Thermoplastic  
Terminals .....Silver plate

**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....MSP103 - 3 Amps @ 125 VAC  
(with over travel) .059" (1.5mm)  
MSPS103 - 0.5 Amps @ 125 VAC  
(Butt contact)  
Initial Contact Resistance .....100 Milliohms  
Contact Timing .....Break-before-make  
Insulation Resistance .....1,000 Megohms min.  
Dielectric Strength .....1,000 Volts RMS @ sea level  
Life Expectancy .....Up to 10,000 Cycles  
Travel .....2.5 mm

**ENVIRONMENTAL SPECIFICATIONS:**

Operating Temperature.....-4°F to +176°F (-20°C to +80°C)  
Storage Temperature.....+5°F to +153°F (-15°C to +75°C)  
Solder Heat Resistance .....See page M3-4  
Note: Hardware included with switches



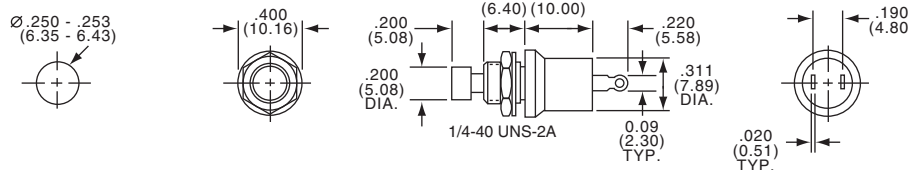
SPST



MSP103B

3 AMPS

Part Number						
Tyco Electronics	Alcoswitch	Type	Act. Code P. M6	Momentary Action	Bushing Length	Actuator Color
8-1437567-3	MSP103B	SPST	14	Normally Closed	.236	Black
8-1437567-4	MSP103C	SPST	13	Normally Open	.236	Red
8-1437567-5	MSP103C0	SPST	13	Normally Open	.236	Black
8-1437567-6	MSP103C2	SPST	13	Normally Open	.374	Red



MSPS103B



0.5 AMPS

Part Number						
Tyco Electronics	Alcoswitch	Type	Act. Code P. M6	Momentary Action	Bushing Length	Actuator Color
1437568-5	MSPS103B	SPST	14	Normally Closed	.245	Black
1437568-6	MSPS103C2	SPST	13	Normally Open	.245	Red
1437568-7	MSPS103C0	SPST	13	Normally Open	.245	Black

**Pushbutton Switches, Front or Rear Entry Mount, 15/32 Bushing**

**MATERIAL SPECIFICATIONS:**

Contacts .....Silver plate  
 Case Material .....Thermoset  
 Actuator Material .....Thermoplastic  
 Terminals .....Silver plate  
 Terminal Seal .....Epoxy

**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....0.5 A @ 125 VAC  
 Initial Contact Resistance .....100 Milliohms  
 Contact Timing .....Break-before-make  
 Insulation Resistance .....1,000 Megohms min.  
 Dielectric Strength .....1,000 Volts RMS @ sea level  
 Actuator Travel......098" (2.49)  
 Life Expectancy .....Up to 10,000 Cycles

**ENVIRONMENTAL SPECIFICATIONS:**

Operating Temperature.....-4°F to +176°F (-20°C to +80°C)  
 Storage Temperature.....-4F to +176°F (-20°C to +80°C)

Application Note: Illustration shows versatile front or rear entry usage, with hardware supplied.



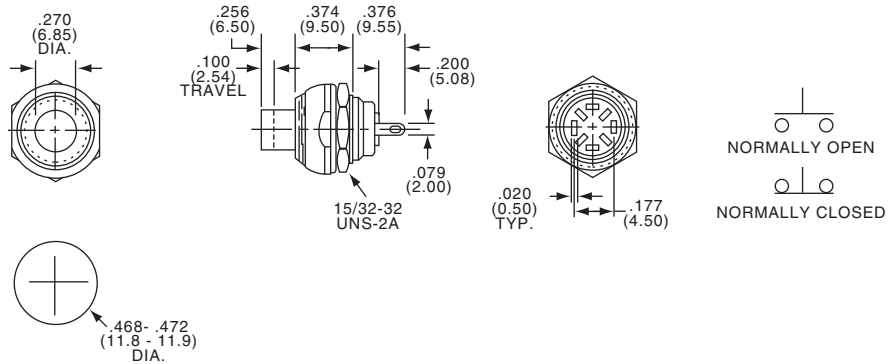
**D**

**MSPF Series**

**SPST**



MSPF101B

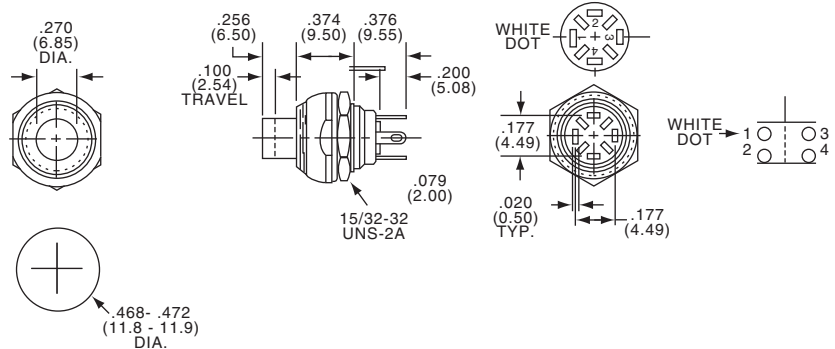


Part Number				
Tyco Electronics	Alcoswitch	Type	Action	Actuator Color
8-1437567-8	MSPF101B	SPST	Normally Closed	Black
9-1437567-3	MSPF101C	SPST	Normally Open	Red

**2 CIRCUIT**



MSPF101BC



Part Number				
Tyco Electronics	Alcoswitch	Type	Action	Actuator Color
8-1437567-9	MSPF101BC0	2 Circuit	Normally open-normally closed	Black
9-1437567-0	MSPF101BC2	2 Circuit	Normally open-normally closed	Red
9-1437567-1	MSPF101BC6	2 Circuit	Normally open-normally closed	Blue
9-1437567-2	MSPF101BC9	2 Circuit	Normally open-normally closed	White

**Pushbutton Switches, Magnetic Reed, Long Life, Hermetically Sealed**

**MATERIAL SPECIFICATIONS:**

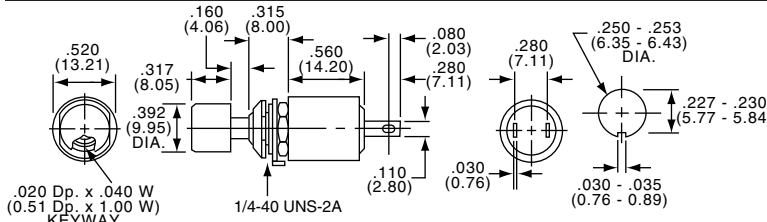
Contacts .....Gold  
 Case Material .....Steel  
 Actuator Material .....Polyamide  
 Terminals/Fixed Contacts.....Wire Lug  
 Pin useable for PC applications

**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....1.0 VA optimum (100 mA max., 100 VDC max.)  
 Initial Contact Resistance .....100 Milliohms max.  
 Actuation Force .....Tactile "keyboard feel" 4 to 7 oz.  
 "breakaway" reducing immediately to 1.5 oz.  
 "follow-through"  
 Actuator Travel ......078" nominal  
 Life Expectancy.....Up to 5,000,000 Cycles @ .1 VA; 50,000 cycles @ 5VA  
 Solder Heat Resistance .....See page M3-4  
 Note: Hardware included with switches

**ENVIRONMENTAL SPECIFICATIONS:**

Operating Temperature.....+14°F to +176°F (-10°C to +80°C)  
 Storage Temperature.....+14°F to +176°F (-10°C to +80°C)

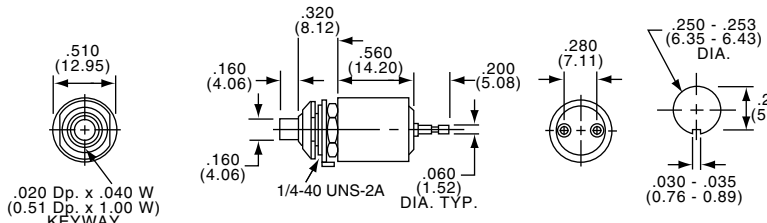


N.C. OR N.O.  
SOFT DETENT



Part Number						
Tyco Electronics	Alcoswitch	Type	Act. Code	P. M6	Action	Terminals
9-1437567-4	MSPM101B0	SPST	14		Normally Closed	Pin
1437568-1	MSPM101C2	SPST	13		Normally Open	Pin
9-1437567-5	MSPM101B1	SPST	14		Normally Closed	Lug
9-1437567-9	MSPM101C1	SPST	13		Normally Open	Lug

Cap Model C22 supplied with unit.



N.C. OR N.O.  
AUDIBLE DETENT



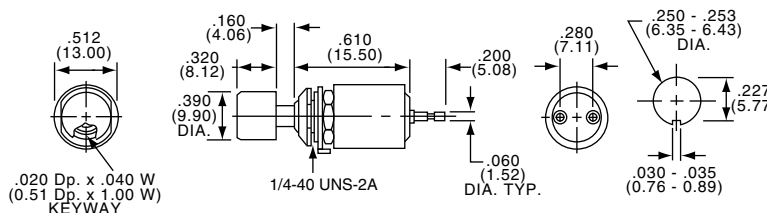
Part Number						
Tyco Electronics	Alcoswitch	Type	Act. Code	P. M6	Action	Terminals
9-1437567-7	MSPM101BS	SPST	14		Normally Closed	Pin
1437568-3	MSPM101CS	SPST	13		Normally Open	Pin
9-1437567-8	MSPM101BS1	SPST	14		Normally Closed	Lug
1437568-4	MSPM101CS1	SPST	13		Normally Open	Lug

**Pushbutton Switches, Push-Pull, Magnetic Reed, Long Life, Hermetically Sealed**

**SPECIFICATIONS (Same as above except):**

Travel ..... .125" (3.18) nominal

Actuation Force .....Tactile feel 5 to 8 oz. "breakaway" with magnetically accelerated "follow-through"



N.C. OR N.O.



Part Number						
Tyco Electronics	Alcoswitch	Type	Act. Code	P. M6	Push Pull	Terminals
9-1437567-6	MSPM101BP	SPST	18		Open Closed	Pin
1437568-2	MSPM101CP	SPST	17		Closed Open	Pin

Cap Model C22 supplied with unit.  
 Model C23 available, order separately. (See Page D32.)

**Push Switch, JLS Series**

**MATERIAL SPECIFICATIONS:**

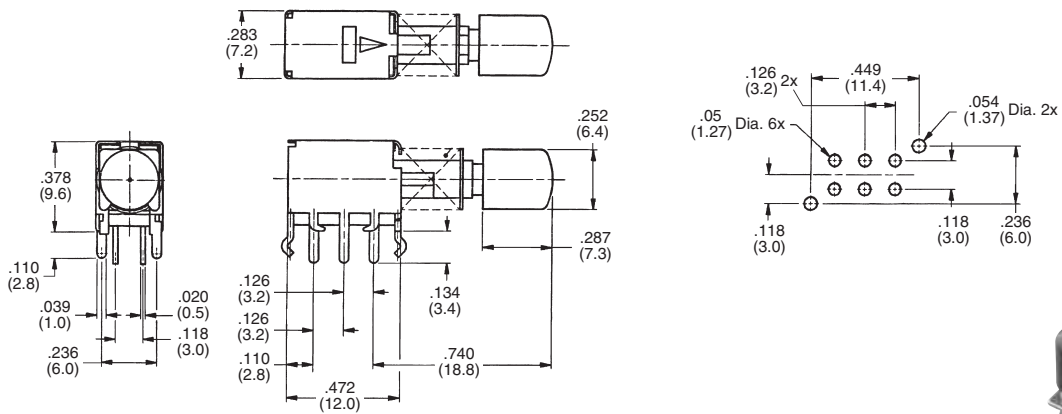
Contacts .....Silver clad copper  
 Frame .....Steel  
 Actuator Material .....Acetal  
 Terminals/Fixed Contacts.....Brass, silver plate  
 Insulator .....Phenol

**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....1 Amp @25 VDC  
 Initial Contact Resistance .....100 Milliohms  
 Actuation Force .....300±150 gms  
 Actuator Travel .....0.091 (2.3)  
 Life Expectancy.....Up to 10,000 cycles

**ENVIRONMENTAL SPECIFICATIONS:**

Operating Temperature.....+14°F to +140°F (-10°C to +60°C)



Part Number			
Tyco Electronics	Alcoswitch	Act. Code P. M6	Actuator Type
1437566-8	JLS91439FKBC	N	Black Cap
1437566-7	JLS91439FK	N	Gray Cap
1437566-9	JLS91439FWC	N	White Cap

**D**  
MSPM, JLS Series



**Pushbutton Switches, Splashproof Boot Seals**

A wide selection of stock boot seals for pushbuttons are available in a variety of styles and thread sizes. ALCOSWITCH seals replace standard mounting hardware to provide environmental seal. Fabricated of Neoprene in black and optional red or gray. Custom colors and thread sizes are also available on special order.

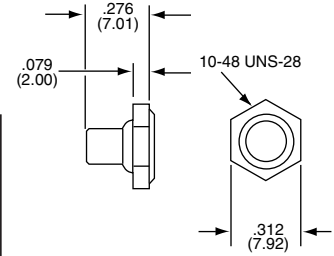


BP10480

**10-48 PUSHBUTTON BOOT SEALS**

Splashproof seal designed for "TINY" pushbutton switches having a 10-48 bushing and .14" long button actuators. The hex nut is molded-in to the Neoprene seal. No O-Ring is required. Custom colors are available on special order.

Part Number					
Tyco Electronics	Alcoswitch	Mount Color	Boot Color	Thread Size	Use with Switch Types
1-1437626-4	BP10480	Black	Black	10-48	TP Series
1-1437626-5	BP10482	Red	Red	10-48	TP Series
1-1437626-6	BP10488	Gray	Gray	10-48	TP Series



BPA14400



BP14400

**1/4-40 PUSHBUTTON BOOT SEALS**

Splashproof seals for miniature pushbuttons having a 1/4-40 bushing. The two models allow use with buttons that extend up to .17" (BPA) or up to .33" (BP). The hex nut is molded-in and no O-Ring is required.

Part Number					
Tyco Electronics	Alcoswitch	Mount Color	Boot Color	Thread Size	Use with Switch Types
1-1437626-7	BP14400	Black	Black	1/4-40	MSPM, MPA3, MPS and TP Series
1-1437626-8	BP14402	Red	Red	1/4-40	MSPM, MPA3, MPS and TP Series
1-1437626-9	BP14408	Gray	Gray	1/4-40	MSPM, MPA3, MPS and TP Series
2-1437626-7	BPA14400	Black	Black	1/4-40	MSPMBS, MSPMCS, MSP3, MPA3, TP Series
2-1437626-8	BPA14402	Red	Red	1/4-40	MSPMBS, MSPMCS, MSP3, MPA3, TP Series
2-1437626-9	BPA14408	Gray	Gray	1/4-40	MSPMBS, MSPMCS, MSP3, MPA3, TP Series



BP20100

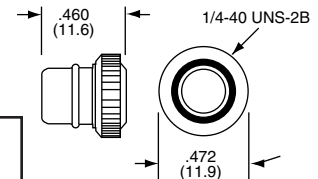


BP1900

**1/4-40 PUSHBUTTON BOOT SEALS**

Splashproof seals having 1/4-40 blind nuts integrally mounted to the black Neoprene seal. Supplied with a captive O-Ring to complete the panel seal. Used with actuators up to .37" long. Choice of two-tone with nickel finish knurled ring or all black.

Part Number					
Tyco Electronics	Alcoswitch	Mount Color	Boot Color	Thread Size	Use with Switch Types
2-1437626-3	BP1900	Nickel	Black	1/4-40	MSPM, MSP3, MPA3 and TP Series
2-1437626-4	BP2010	Black	Black	1/4-40	MSPM, MSP3, MPA3 and TP Series



BP15320

**15/32-32 PUSHBUTTON BOOT SEALS**

Splashproof seals incorporating a molded-in hex nut for water tight and dust tight protection. Replaces standard hardware usually supplied. Recommended for large size pushbutton switches with actuators extending up to .31" long.

Part Number					
Tyco Electronics	Alcoswitch	Mount Color	Boot Color	Thread Size	Use with Switch Types
2-1437626-0	BP15320	Black	Black	15/32-32	MSPF and MPG Series
2-1437626-1	BP15322	Red	Red	15/32-32	MSPF and MPG Series
2-1437626-2	BP15328	Gray	Gray	15/32-32	MSPF and MPG Series



BP5900



BP5890

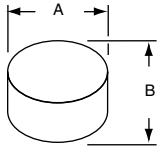
**15/32-32 PUSHBUTTON BOOT SEALS**

Splashproof seals having 15/32-32 hex shape mounts integrally bonded onto the black Neoprene seal. Supplied with a captive O-Ring for use against the panel. Readily accepts actuators up to .38" in length. Available in two tone with nickel finish hex-mount, or all black.

Part Number					
Tyco Electronics	Alcoswitch	Mount Color	Boot Color	Thread Size	Use with Switch Types
2-1437626-5	BP5890	Nickel	Black	15/32-32	MSPF and MPG Series
2-1437626-6	BP5900	Black	Black	15/32-32	MSPF and MPG Series



**Pushbutton Switches, Accessories**



**CAPS**



C5



C22

Model	ID.	Description	Use Guard	Color	"A" Diameter	B Height
C5(*)	Snapfit	Small plastic cap for MPA3 Series	-	(0), (2), (5), (9)	.195	.120
C8(*)	Snapfit	Large plastic cap for MPA3 Series	-	(0), (2), (5), (9)	.310	.160
C9(*)	Snapfit	Spare color cap for MPG Series	-	(0), (2), (6), (9)	.354	.138
C22(*)	Snapfit	MPS/MSPM/MPE/MPA6	G12	(0), (2), (3), (4), (5), (6), (9)	.394	.315
C23(*)	Snapfit	MPS/MSPM/MPE/MPA6	G13	(0), (2), (3), (4), (5), (6), (9)	.590	.394
C33(*)	Snapfit	Square button for MSPR	-	(0), (2), (6), (9)	.378SQ.	.201

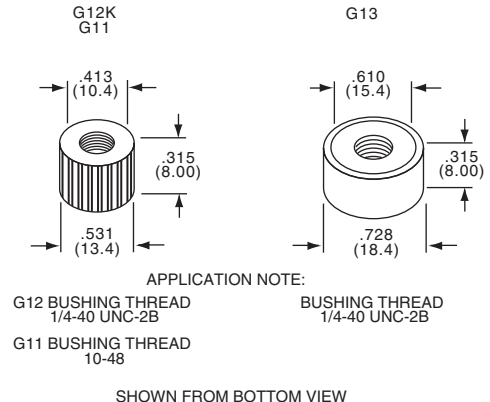
(\*) Specify color by adding suffix number: (0) Black, (2) Red, (3) Orange, (4) Yellow, (5) Green, (6) Blue, (9) White.

D

Accessories

Part Number		Type	Color	Finish	Can be Used with Cap
Tyco Electronics	Alcoswitch				
7-1437627-6	G11A	10-48	Clear aluminum	Plain	C22 —
7-1437627-7	G11B	10-48	Black aluminum	Plain	C22 —
7-1437627-8	G11C	10-48	Chromed Brass	Plain	C22 —
8-1437627-1	G12A	1/4-40	Clear aluminum	Plain	C12 C22
8-1437627-2	G12B	1/4-40	Black aluminum	Plain	C12 C22
8-1437627-3	G12C	1/4-40	Chromed brass	Plain	C12 C22
8-1437627-4	G12KA	1/4-40	Clear aluminum	Knurled	C12 C22
8-1437627-5	G12KB	1/4-40	Black aluminum	Knurled	C12 C22
8-1437627-6	G12KC	1/4-40	Chromed brass	Knurled	C12 C22
8-1437627-7	G13A	1/4-40	Clear aluminum	Plain	C13 C23
8-1437627-8	G13B	1/4-40	Black aluminum	Plain	C13 C23
8-1437627-9	G13C	1/4-40	Chromed brass	Plain	C13 C23
9-1437627-0	G13KA	1/4-40	Clear aluminum	Knurled	C13 C23
9-1437627-1	G13KB	1/4-40	Black aluminum	Knurled	C13 C23
9-1437627-2	G13KC	1/4-40	Chromed brass	Knurled	C13 C23
9-1437627-3	G15*	15/32"	Chromed brass	Plain	C13 C23

\*G15 Model used on the MSPF Series



**GUARDS**



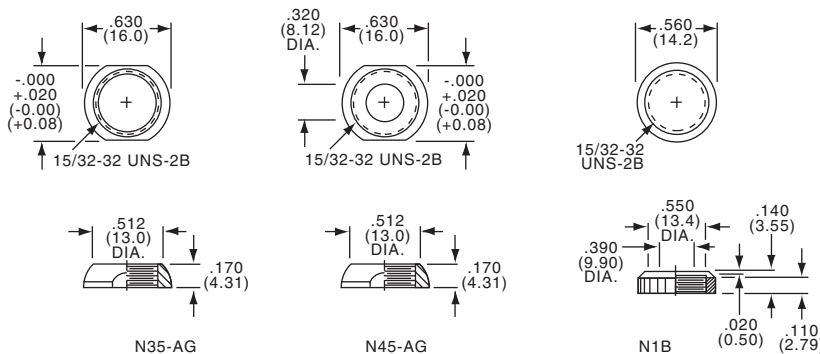
G12K



G13

SHOWN FROM BOTTOM VIEW

**DECORATIVE HARDWARE**



N35-AG



N1B



N45-AG

Part Number		Type	Description
Tyco Electronics	Alcoswitch		
1-1437628-0	N1B	15/32"	"Perfect Fit" knurled nut
1-1437628-4	N35-AG	15/32"	Decorative nut (supplied on switch)
1-1437628-7	N45-AG	15/32"	"Perfect Fit" decorative nut

D32

**Pushbutton Switches, Panel Seal**

**FEATURES**

The BP Series offers a unique means of sealing pushbutton switches, using a standard 1/4-40 threading bushing, to almost any thickness panel. Simply install the BP adaptor into a 15/32" dia. or 1/2" dia. panel opening and secure with its hex nut. The switch is then threaded into the previously mounted adaptor and tightened into place. A complete and decorative panel seal is the result of the simple process.

**MATERIALS**

The flexible panel seal is custom molded of Neoprene rubber for long life, flexibility and chemical resistance. The threaded plastic adaptor is molded of ABS thermoplastic, is impact resistant and designed for ease of mounting.

**BPM**

**For use with Miniature Pushbutton**

The BPM seal adaptor accommodates all AUGAT/ALCOSWITCH MPA Series of pushbutton switches utilizing the 1/4-40 threaded bushing.



BPM15320



Part Number		
Tyco Electronics	Alcoswitch	Color* of Seal
3-1437626-0	BPM15320	Black
3-1437626-1	BPM15322	Red
3-1437626-2	BPM15328	Gray

(\* Custom seal colors are available upon special request.

**BPT**

**For use with Tiny Series TPF Pushbutton**

The BPT seal adaptor accommodates all AUGAT/ALCOSWITCH TPF Series Tiny Pushbutton switches utilizing the 1/4-40 threading bushing.



BPT15328



Part Number		
Tyco Electronics	Alcoswitch	Color* of Seal
3-1437626-3	BPT15320	Black
3-1437626-4	BPT15322	Red
3-1437626-5	BPT15328	Grey

(\* Custom seal colors are available upon special request.

**Engineering Notes**



**D**  
Engineering Notes



*TSP Series - Page D3*



*TP Series - Page D6*



*TP-ES Series - Page D13*



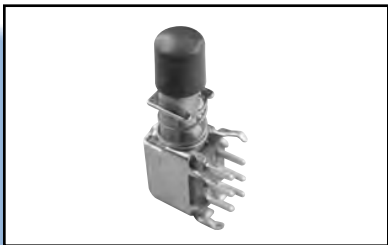
*APA Series - Page D16*



*MPA Series - Page D22*



*MSPM Series - Page D29*



*JLS Series - Page D29*



*BP Series - Page D31*

# PUSHBUTTON

**D**

Pushbutton Switches

Pushbutton Switches Part Number Index

Table listing part numbers and quantities for the first column of the index, including models like APA1BGPC, APA1BGR, etc.

Table listing part numbers and quantities for the second column of the index, including models like MPA406R, MPB103B, etc.

Table listing part numbers and quantities for the third column of the index, including models like TPB11CGPCES, TPB11CGRA, etc.

Table listing part numbers and quantities for the fourth column of the index, including models like TPCF11CGRA0, TPCF11CGRA2, etc.

D Pushbutton Switches

### Pushbutton Switches, Tiny, Process Sealed

**FEATURES:**

- High temperature plastics — liquid crystal polymer (LCP)
- Specifically designed for thru-hole and surface mount
- Tin-lead plated terminals
- Washable process sealed construction — internal actuator O-ring

**MATERIAL SPECIFICATIONS:**

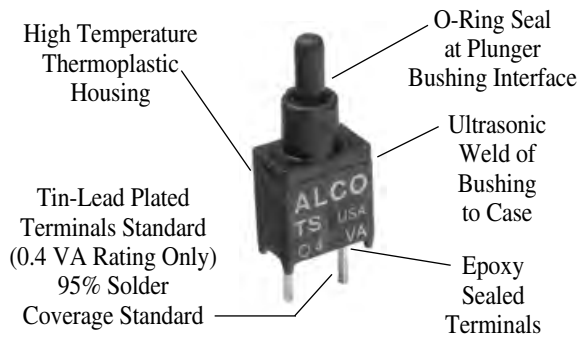
Contacts .....Copper Alloy with gold over nickel plating-  
 Case & Bushing .....Thermoplastic (LCP)  
 Actuator .....Glass reinforced nylon  
 Nickel Plating Inside .....Tin plating outside  
 Support Bracket .....Tin plated steel  
 Terminals .....Copper alloy with gold over nickel plating

**ENVIRONMENTAL SPECIFICATIONS:**

Operating Temperature.....-22°F to +185°F (-30°C to +85°C)  
 Storage Temperature.....-67°F to +185°F (-55°C to +85°C)

**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....0.4 VA @ 20 VAC/DC  
 Initial Contact Resistance .....20 Milliohms max.  
 Insulation Resistance .....1,000 Megohms @ 500 VDC min.  
 Terminal Seal .....Epoxy  
 Actuator Travel......035" (0,89)  
 Actuator Seal .....O-Ring  
 Dielectric Strength .....C - 1000 VDC RMS @ sea level  
   F - 500 VDC RMS @ sea level  
 Life Expectancy .....C - Up to 80,000 Cycles  
   F - Up to 60,000 Cycles

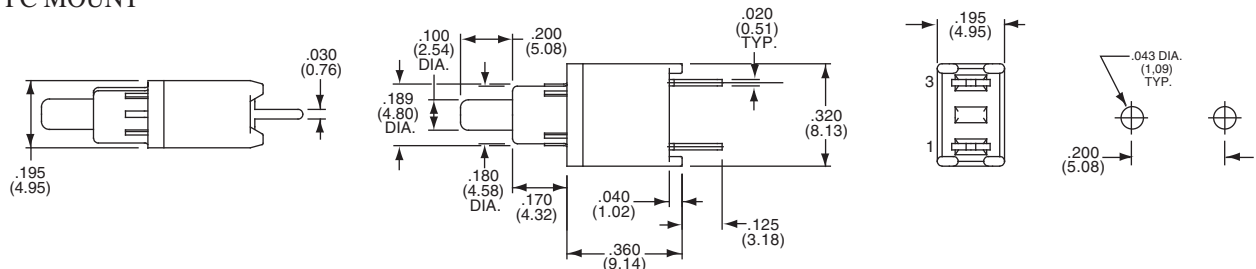


FUNCTION CHART				
The following functions available in single pole.				
<input type="checkbox"/> C	Function	2 Positions	Off	(On)
SPST	Terminals Connected			<input type="checkbox"/> 1-3
Omit center terminal for function <input type="checkbox"/> C				
<input type="checkbox"/> F	Function	2 positions	On	(On)
SPDT	Terminal Connected		<input type="checkbox"/> 1-2	<input type="checkbox"/> 2-3
Off Indicates a mechanical position with no electrical connection. (ON) INDICATES MOMENTARY ACTION				

**PART NUMBERING MATRIX**

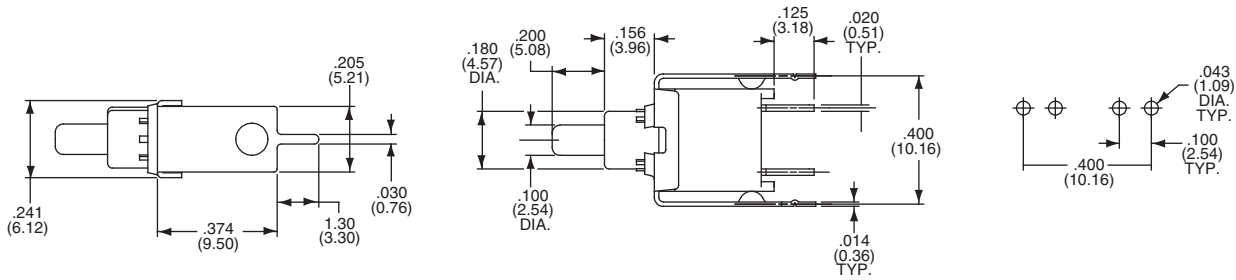
Model	Bushing (Plain)	Actuator	Poles	Rating	Function	Plating	Terminations	Colors
<input type="checkbox"/> TSP	<input type="checkbox"/> D	<input type="checkbox"/>	<input type="checkbox"/> 1	<input type="checkbox"/> 1	<input type="checkbox"/>	<input type="checkbox"/> G	<input type="checkbox"/>	<input type="checkbox"/>
		Std. .200" long F = Flush			C = Off (On) F = On (On)	PC = P.C. PCV = P.C. w/bracket RA = Right Angle VRA = Vertical Right Angle SPC = SurfaceMount SRA = Surface Mount R.A. SRAB = SurfaceMount R.A. Butt		0=Black 2=Red

**PC MOUNT**

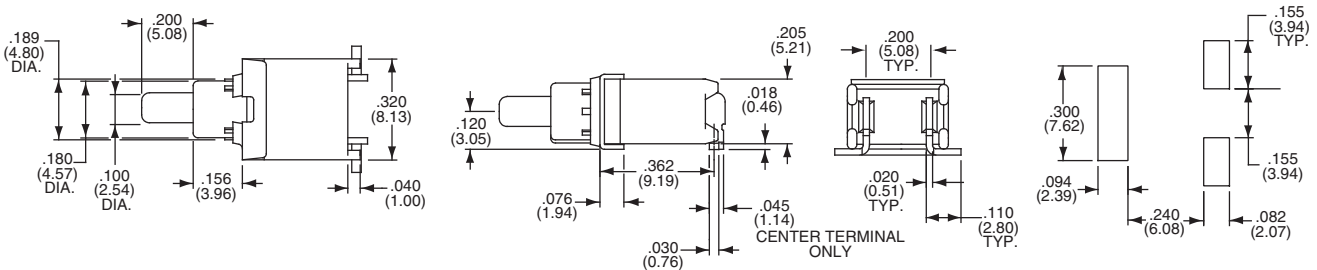


**Pushbutton Switches, Tiny, Process Sealed, Mounting Options**

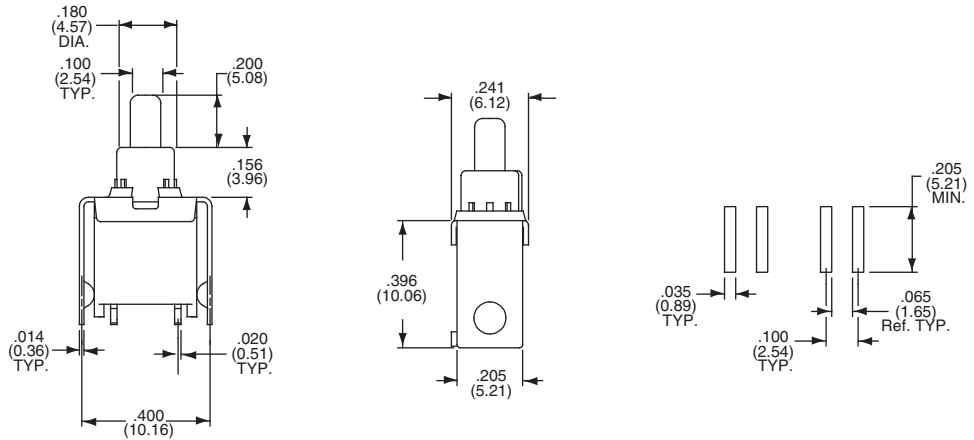
**PCV** PC WITH VERTICAL SUPPORT BRACKET



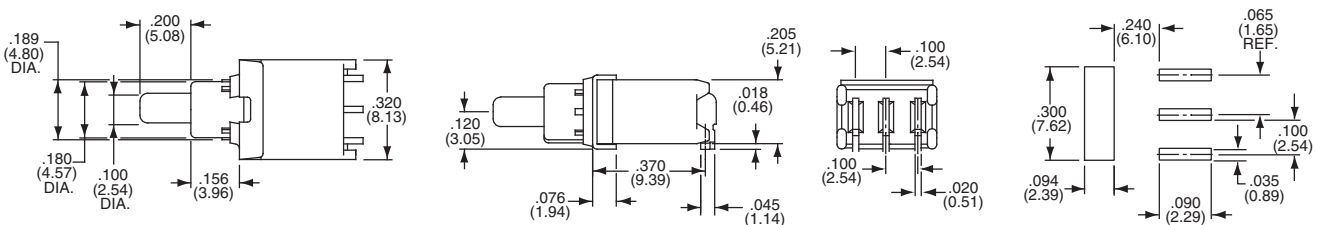
**SRA** SURFACE MOUNT RIGHT ANGLE "L" BEND



**SPC** SURFACE MOUNT WITH SUPPORT BRACKET



**SRAB** SURFACE MOUNT RIGHT ANGLE BUTT



D

TSP Series

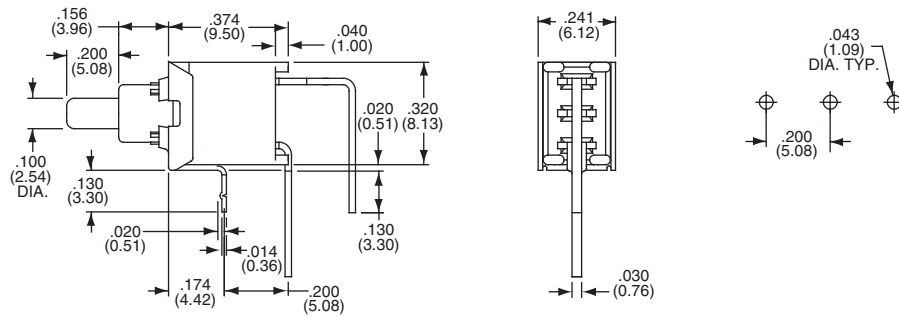


**Pushbutton Switches, Tiny, Process Sealed Options**

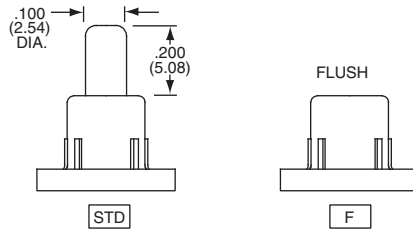
**RIGHT ANGLE RA**



**PC WITH VERTICAL SUPPORT BRACKET VRA**



**ACTUATORS**



**Pushbutton Switches, Tiny, Part Number Matrix**

**MATERIAL SPECIFICATIONS:**

Contacts .....Gold - gold plate, silver - silver plate  
 Case Material .....High temperature polyester  
 Actuator Material.....Polyamide  
 Terminals/Fixed Contacts .....Tin lead plate  
 Terminal Seal.....SP epoxy, DP epoxy optional

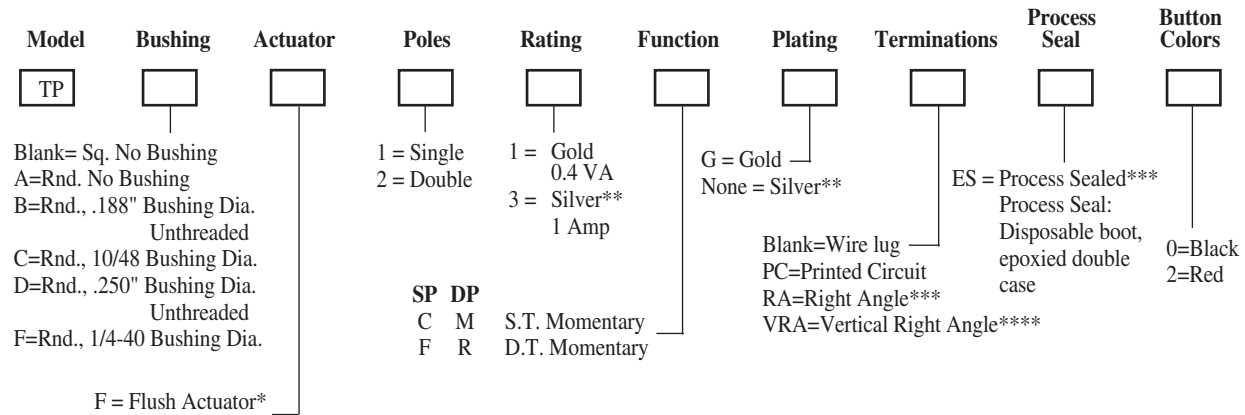
**ENVIRONMENTAL SPECIFICATIONS:**

Operating Temperature .....-22°F to +149°F (-30°C to +65°C)  
 Storage Temperature .....-22°F to +149°F (-30°C to +65°C)  
 Solder Heat Resistance .....See page M3-4

**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....Gold: 0.4 VA Max. @ 20 VDC or peak AC  
 Silver: 1A @ 125 VAC or 28 VDC resistive  
 Initial Contact Resistance .....20 Milliohms max.  
 Contact Timing .....Break-before-make  
 Insulation Resistance .....1,000 Megohms @ 500VDC min.  
 Dielectric Strength.....1,000 Volts @ sea level  
 Actuation Force .....50 to 400 Grams  
 Plunger/Actuator Travel ......030" (.762)  
 Life Expectancy .....See below  
 Note: Hardware included with switches

**PART NUMBERING MATRIX**



- \* Available with "B" and "C" bushing only
- \*\* Silver - available only in wire lug and PC termination
- \*\*\* Right angle, ES available with "B" and "C" bushing only
- \*\*\*\* Available only in single pole

ES switches provided with disposable boot used only during cleaning operation.

**Application Note:**

For 3 pole and 4 pole, refer to pages D22 and D24 . . . "MP Series"  
 For Surface Mount termination, refer to pages D3-D5 . . . "TSP Series"

Pushbuttons	1 Pole	2 Pole
0.4 (Gold Plate)	100,000	80,000
1A (Silver Plate)	60,000	50,000

**PROCESS SEAL VERSION NOT**



TP



TPA

**PROCESS SEAL VERSION AVAILABLE**



TPB



TPC



TPD

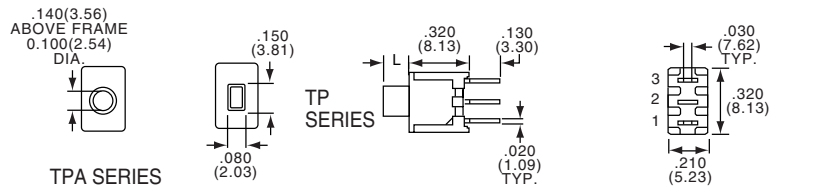


TPF

**SERIES (TP)**

**Pushbutton Switches, Tiny, Straight or Right Angle, Single or Dual Actuators**

SEE PAGE D6 FOR PRODUCT SPECIFICATIONS



SPST/SPDT



TP11CGPC0

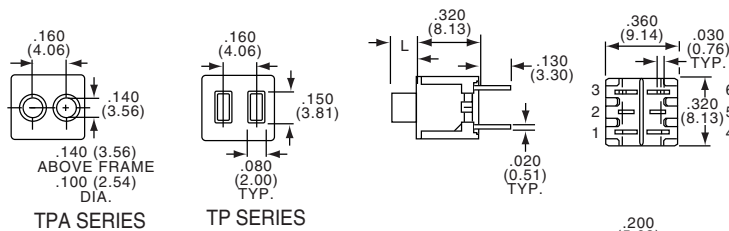


TPA11CGPC0

Model	Actuator Type	Dim.L	Type	Act. Code	P. M6	Action	Contact Type
TP11CGPC(*)	SQ.	.125	SPST	C		N.O. Momentary	Gold
TP11FGPC(*)	SQ.	.125	SPDT	F		Momentary	Gold
TPA11CGPC(*)	RND.	.150	SPST	C		N.O. Momentary	Gold
TPA11FGPC(*)	RND.	.150	SPDT	F		Momentary	Gold

(\*) Specify button color by adding suffix number: (0) Black, (2) Red.  
Note: No center terminal on "C" action switch.

D  
TP/TPA Series



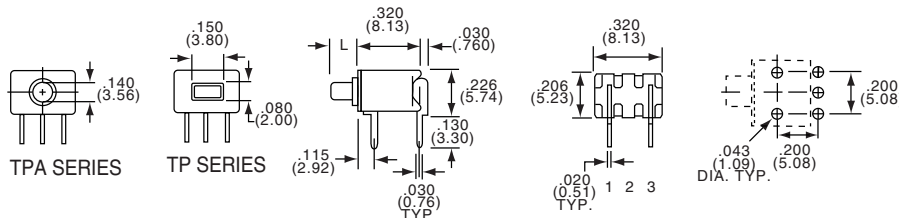
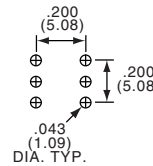
SPST/SPDT (DUAL)



TP21CCGPC0

Model	Actuator Type	Dim.L	Type	Act. Code	P. M6	Action	Contact Type
TP21CCGPC(*)	SQ.	.125	2xSPST	C		N.O. Momentary	Gold
TPA21CCGPC(*)	RND.	.150	2xSPST	C		N.O. Momentary	Gold
TPA21FFGPC(*)	RND.	.150	2xSPDT	F		Momentary	Gold

(\*) Specify button color by adding suffix number: (0) Black, (2) Red.  
Note: No center terminal on "C" action switch.



SPST/SPDT



TPA11CGRA



TP11CGRA

Model	Actuator Type	Dim.L	Type	Act. Code	P. M6	Action	Contact Type
TP11CGRA(*)	SQ.	.125	SPST	C		N.O. Momentary	Gold
TP11FGRA(*)	SQ.	.125	SPDT	F		Momentary	Gold
TPA11CGRA(*)	RND.	.150	SPST	C		N.O. Momentary	Gold
TPA11FGRA(*)	RND.	.150	SPDT	F		Momentary	Gold

(\*) Specify button color by adding suffix number: (0) Black, (2) Red.  
Note: No center terminal on "C" action switch.



**Pushbutton Switches, Tiny, Right Angle, Single or Dual Actuators**

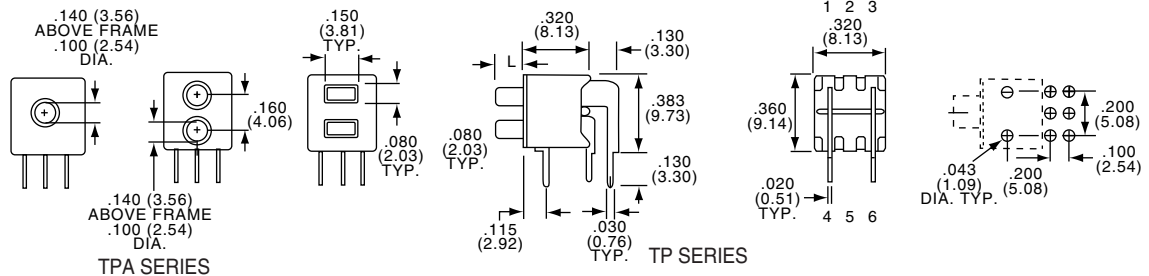
SEE PAGE D6 FOR PRODUCT SPECIFICATIONS

\* Refer to Page D6 for Additional Options\*  
TP/TPA Series



TP21CCGRA0

SPST/SPDT (DUAL)  
DPST



Model	Actuator Type	Dim.L	Type	Act. Code P. M6	Action	Contact Type
TP21CCGRA(*)	SQ.	.125	2xSPST	C	N.O. Momentary	Gold
TP21FFGRA(*)	SQ.	.125	2xSPDT	F	Momentary	Gold
TPA21MGRA(*)	RND.	.150	DPST	M	N.O. Momentary	Gold
TPA21CCGRA(*)	RND.	.150	2xSPST	C	N.O. Momentary	Gold
TPA21FFGRA(*)	RND.	.150	2xSPDT	F	Momentary	Gold

(\*) Specify button color by adding suffix number: (0) Black, (2) Red.  
Note: No center terminal on "C" or "M" action switch.

**Pushbutton Switches, Tiny, Straight or Right Angle, Unthreaded or 10-48 Bushing**

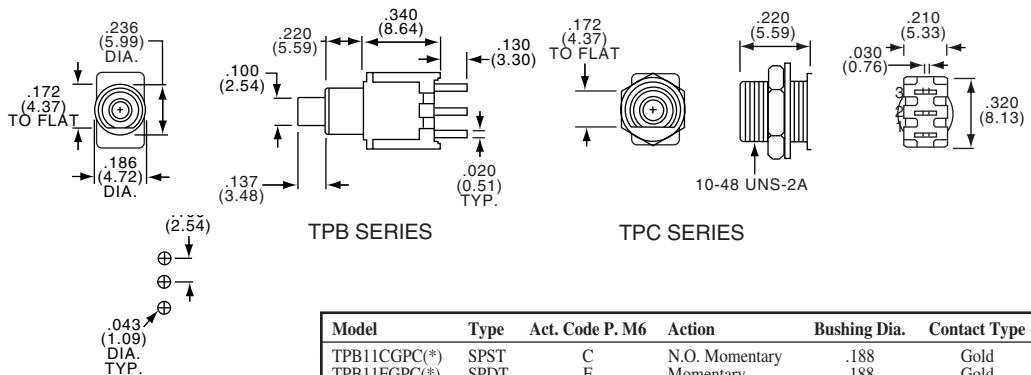
SPST/SPDT



TPB11CGPC



TPC11FGPC



Model	Type	Act. Code P. M6	Action	Bushing Dia.	Contact Type
TPB11CGPC(*)	SPST	C	N.O. Momentary	.188	Gold
TPB11FGPC(*)	SPDT	F	Momentary	.188	Gold
TPC11CGPC(*)	SPST	C	N.O. Momentary	10-48	Gold
TPC11FGPC(*)	SPDT	F	Momentary	10-48	Gold

(\*) Specify button color by adding suffix number: (0) Black, (2) Red.  
Note: No center terminal on "C" action switch.

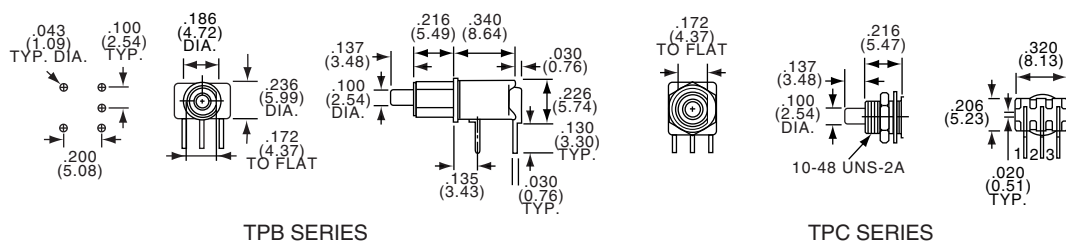
DPST/DPDT



TPB11CGRA



TPC11CGRA

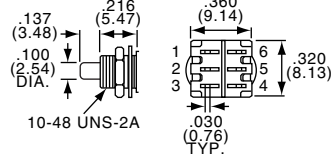
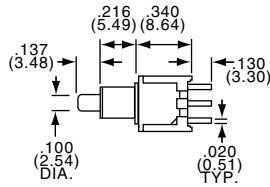
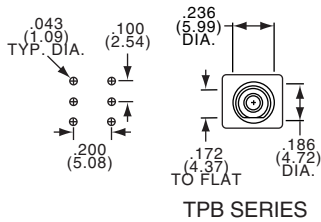


Model	Type	Act. Code P. M6	Action	Bushing Dia.	Contact Type
TPB11CGRA(*)	SPST	C	N.O. Momentary	.188	Gold
TPB11FGRA(*)	SPDT	F	Momentary	.188	Gold
TPC11CGRA(*)	SPST	C	N.O. Momentary	10-48	Gold
TPC11FGRA(*)	SPDT	F	Momentary	10-48	Gold

(\*) Specify button color by adding suffix number: (0) Black, (2) Red.  
Note: No center terminal on "C" action switch.

**Pushbutton Switches, Tiny, Straight or Right Angle, Unthreaded or 10-48 Bushing**

SEE PAGE D6 FOR PRODUCT SPECIFICATIONS  
DPST/DPDT



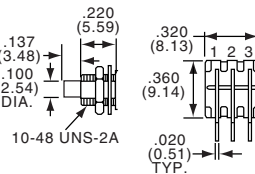
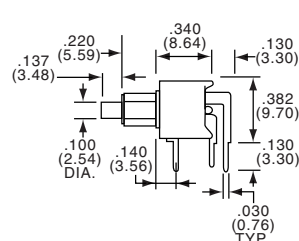
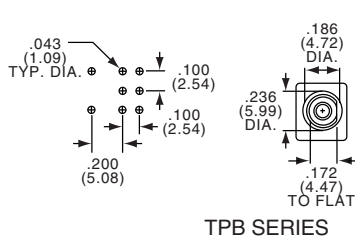
TPB21MGPC



TPC21RGPC

Model	Type	Act. Code P. M6	Action	Bushing Dia.	Contact Type
TPB21MGPC(*)	DPST	M	N.O. Momentary	.188	Gold
TPB21RGPC(*)	DPDT	R	Momentary	.188	Gold
TPC21MGPC(*)	DPST	M	N.O. Momentary	10-48	Gold
TPC21RGPC(*)	DPDT	R	Momentary	10-48	Gold

(\*) Specify button color by adding suffix number: (0) Black, (2) Red.  
Note: No center terminal on "M" action switch.



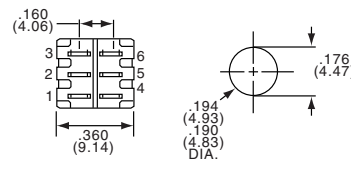
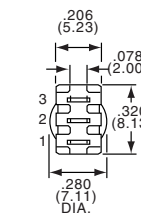
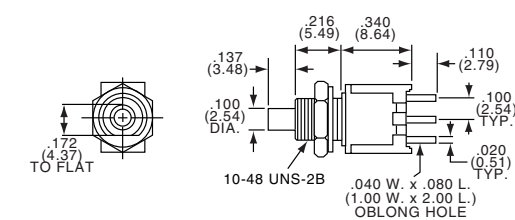
DPST/DPDT



TPC21MGRA

Model	Type	Act. Code P. M6	Action	Bushing Dia.	Contact Type
TPB21MGRA(*)	DPST	M	N.O. Momentary	.188	Gold
TPB21RGRA(*)	DPDT	R	Momentary	.188	Gold
TPC21MGRA(*)	DPST	M	N.O. Momentary	10-48	Gold
TPC21RGRA(*)	DPDT	R	Momentary	10-48	Gold

(\*) Specify button color by adding suffix number: (0) Black, (2) Red.  
Note: No center terminal on "M" action switch.



1 & 2 POLE



TPC23M



TPC13C

Model	Type	Act. Code P. M6	Action	Contact Type
TPC13C(*)	SPST	C	N.O. Momentary	Silver
TPC13F(*)	SPDT	F	Momentary	Silver
TPC23M(*)	DPST	M	N.O. Momentary	Silver
TPC23R(*)	DPDT	R	Momentary	Silver

(\*) Specify button color by adding suffix number: (0) Black, (2) Red.  
Note: No center terminal on "C" or "M" action switches.

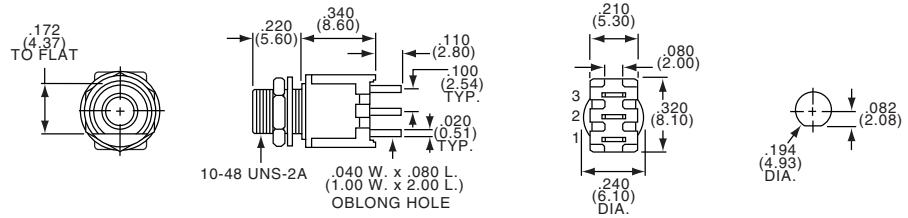
**Pushbutton Switches, Tiny, Straight or Right Angle, Flush Actuator**

SEE PAGE D6 FOR PRODUCT SPECIFICATIONS

SPST/SPDT  
Wire Lugs 10-48 Bushing



TPCF13C



Model	Silver Contacts	Type	Act. Code P. M6	Action	Bushing Type
TPCF13C(*)		SPST	C	N.O. Momentary	Threaded
TPCF13F(*)		SPDT	F	Momentary	Threaded

(\*) Specify button color by adding suffix numbers: (0) Black, (2) Red.  
Note: No center terminal on "C" action switch.

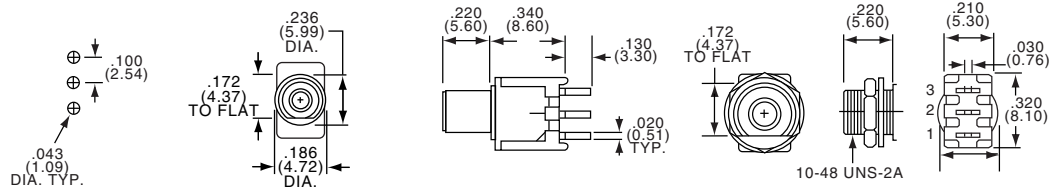
SPST/SPDT  
PC 10-48 Bushing



TPBF11FGPC



TPCF11CGPC



TPB SERIES

TPC SERIES

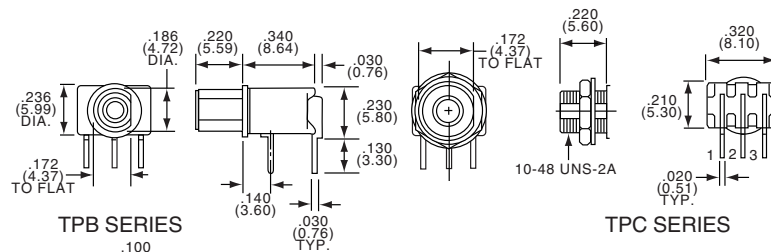
Model	Gold Contacts	Type	Act. Code P. M6	Action	Bushing Type
TPBF11CGPC(*)		SPST	C	N.O. Momentary	Unthreaded
TPBF11FGPC(*)		SPDT	F	Momentary	Unthreaded
TPCF11CGPC(*)		SPST	C	N.O. Momentary	Threaded
TPCF11FGPC(*)		SPDT	F	Momentary	Threaded

(\*) Specify button color by adding suffix numbers: (0) Black, (2) Red.  
Note: No center terminal on "C" action switch.

SPST/SPDT  
RA 10-48 Bushing



TPBF11CGRA



TPB SERIES

TPC SERIES

Model	Gold Contacts	Type	Act. Code P. M6	Action	Bushing Type
TPBF11CGRA(*)		SPST	C	N.O. Momentary	Unthreaded
TPBF11FGRA(*)		SPDT	F	Momentary	Unthreaded
TPCF11CGRA(*)		SPST	C	N.O. Momentary	Threaded
TPCF11FGRA(*)		SPDT	F	Momentary	Threaded

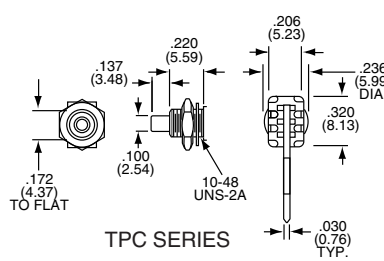
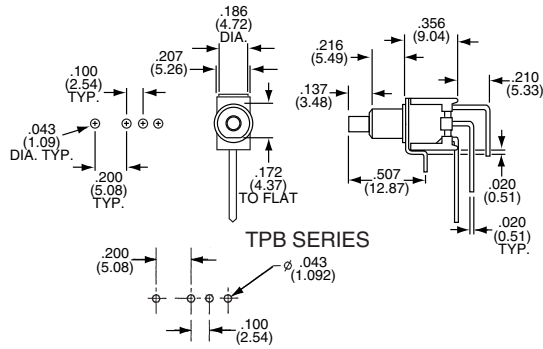
(\*) Specify button color by adding suffix numbers: (0) Black, (2) Red.  
Note: No center terminal on "C" action switch.

D

TPB/TPC and TP Series

**Pushbutton Switches, Tiny, Vertical Right Angle, Unthreaded or 10-48 Bushing**

SEE PAGE D6 FOR PRODUCT SPECIFICATIONS

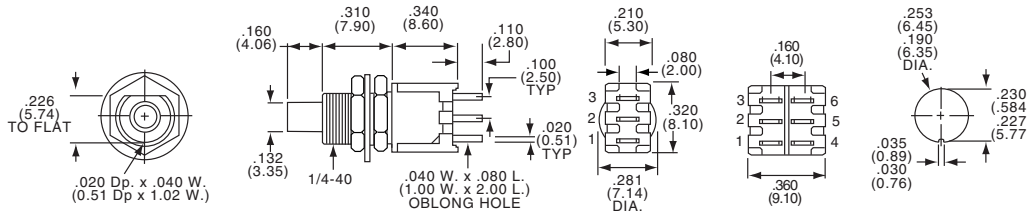


TPB11FGVRA

Model	Type	Act. Code	P. M6	Action	Contact Type
TPB11CGVRA(*)	SPST	C		N.O. Momentary	Gold
TPB11FGVRA(*)	SPDT	F		Momentary	Gold
TPC11CGVRA(*)	SPST	C		N.O. Momentary	Gold
TPC11FGVRA(*)	SPDT	F		Momentary	Gold

(\*) Specify button color by adding suffix number: (0) Black, (2) Red.  
 Note: No center terminal on "C" action switches.

**Pushbutton Switches, Tiny, Vertical, Unthreaded or 1/4-40 Bushing**

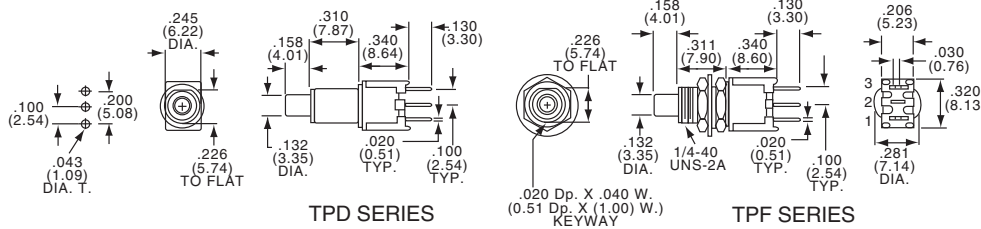


TPF23M

TPF13C

Model	Type	Act. Code	P. M6	Action	Contact Type
TPF13C(*)	SPST	C		N.O. Momentary	Silver
TPF13F(*)	SPDT	F		Momentary	Silver
TPF23M(*)	DPST	M		N.O. Momentary	Silver
TPF23R(*)	DPDT	R		Momentary	Silver

(\*) Specify button color by adding suffix number: (0) Black, (2) Red.  
 Note: No center terminal on "C" or "M" action switches.



SPST/SPDT



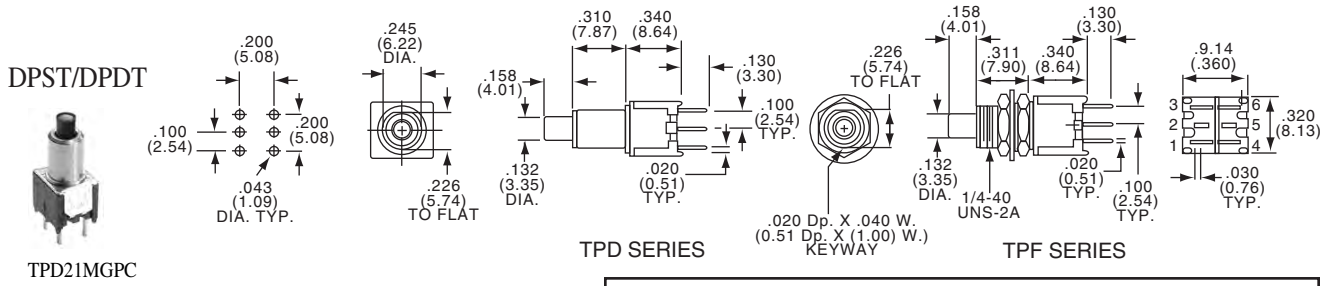
TPD11CGPC

Model	Type	Act. Code	P. M6	Action	Bushing Dia.	Contact Type
TPD11CGPC(*)	SPST	C		N.O. Momentary	.250	Gold
TPD11FGPC(*)	SPDT	F		Momentary	.250	Gold
TPF11CGPC(*)	SPST	C		N.O. Momentary	1/4-40	Gold
TPF11FGPC(*)	SPDT	F		Momentary	1/4-40	Gold

(\*) Specify button color by adding suffix number: (0) Black, (2) Red.  
 NOTE: No center terminal on "C" action switch.

**Pushbutton Switches, Tiny, Vertical or Right Angle, Unthreaded or 1/4-40 Bushing**

SEE PAGE D6 FOR PRODUCT SPECIFICATIONS



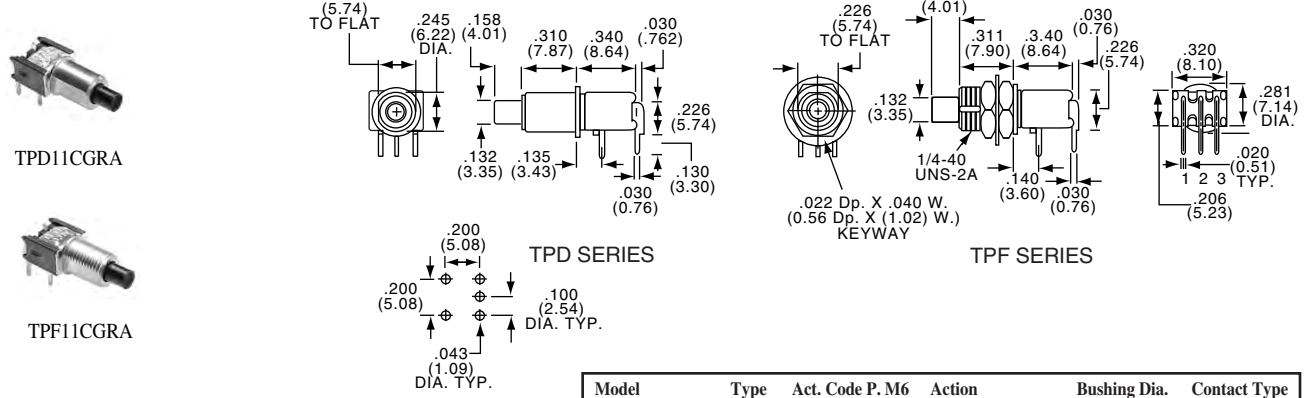
Model	Type	Act. Code	P. M6	Action	Bushing Dia.	Contact Type
TPD21MGPC(*)	DPST	M		N.O. Momentary	.250	Gold
TPD21RGPC(*)	DPDT	R		Momentary	.250	Gold
TPF21MGPC(*)	DPST	M		N.O. Momentary	1/4-40	Gold
TPF21RGPC(*)	DPDT	R		Momentary	1/4-40	Gold

(\*) Specify button color by adding suffix number: (0) Black, (2) Red.  
Note: No center terminals on "M" Action switches.

**D**

TPD/TPF Series

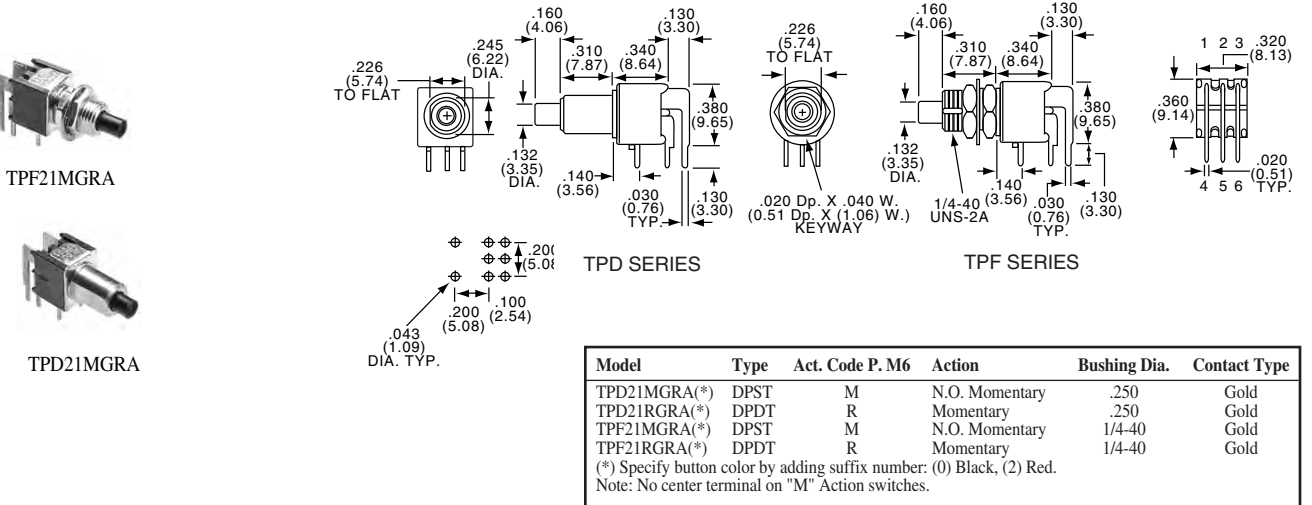
**SPST/SPDT**



Model	Type	Act. Code	P. M6	Action	Bushing Dia.	Contact Type
TPD11CGRA(*)	SPST	C		N.O. Momentary	.250	Gold
TPD11FGRA(*)	SPDT	F		Momentary	.250	Gold
TPF11CGRA(*)	SPDT	C		N.O. Momentary	1/4-40	Gold
TPF11FGRA(*)	SPDT	F		Momentary	1/4-40	Gold

(\*) Specify button color by adding suffix number: (0) Black, (2) Red.  
Note: No center terminal on "C" action switch.

**DPST/DPDT**



Model	Type	Act. Code	P. M6	Action	Bushing Dia.	Contact Type
TPD21MGRA(*)	DPST	M		N.O. Momentary	.250	Gold
TPD21RGRA(*)	DPDT	R		Momentary	.250	Gold
TPF21MGRA(*)	DPST	M		N.O. Momentary	1/4-40	Gold
TPF21RGRA(*)	DPDT	R		Momentary	1/4-40	Gold

(\*) Specify button color by adding suffix number: (0) Black, (2) Red.  
Note: No center terminal on "M" Action switches.



**Pushbutton Switches, Tiny, Process Sealed, Straight**

SEE PAGE D6 FOR PRODUCT SPECIFICATIONS

\* Refer to Page D6 for Additional Options \*

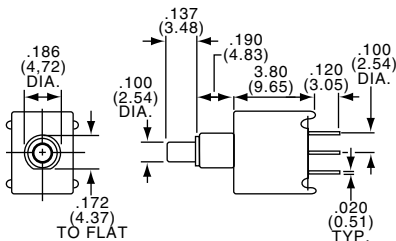
**SPST/SPDT**



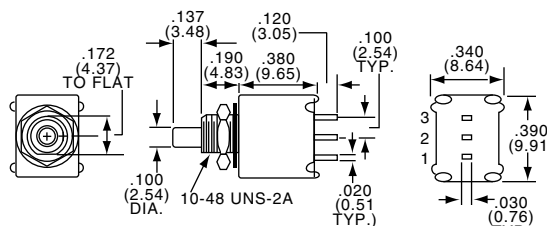
TPB11CGPCES



TPC11CGPCES



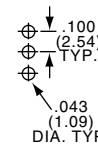
TPB SERIES



TPC SERIES

Model	Type	Act. Code	P. M6	Action	Bushing Dia.	Contact Type
TPB11CGPCES(*)	SPST	C		N.O. Momentary	.188	Gold
TPB11FGPCES(*)	SPDT	F		Momentary	.188	Gold
TPC11CGPCES(*)	SPST	C		N.O. Momentary	10-48	Gold
TPC11FGPCES(*)	SPDT	F		Momentary	10-48	Gold

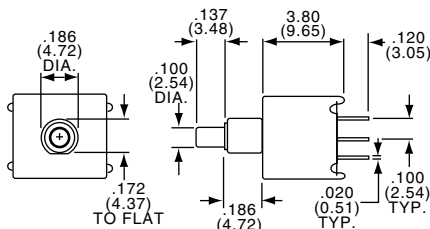
(\*) Specify button color by adding suffix number: (0) Black, (2) Red.  
Note: No center terminal on "C" action switch.



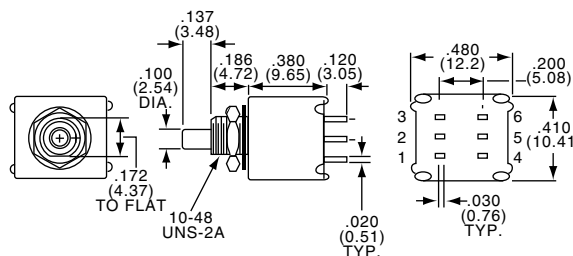
**DPST/DPDT**



TPB21RGPCEs



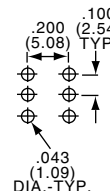
TPB SERIES



TPC SERIES

Model	Type	Act. Code	P. M6	Action	Bushing Dia.	Contact Type
TPB21MGPCEs(*)	DPST	M		N.O. Momentary	.188	Gold
TPB21RGPCEs(*)	DPDT	R		Momentary	.188	Gold
TPC21MGPCEs(*)	DPST	M		N.O. Momentary	10-48	Gold
TPC21RGPCEs(*)	DPDT	R		Momentary	10-48	Gold

(\*) Specify button color by adding suffix number: (0) Black, (2) Red.  
Note: No center terminal on "M" action switch.



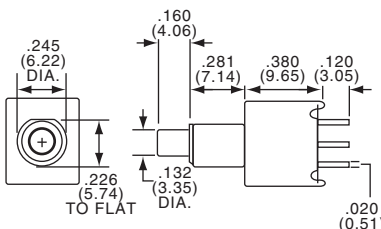
**SPST/SPDT**



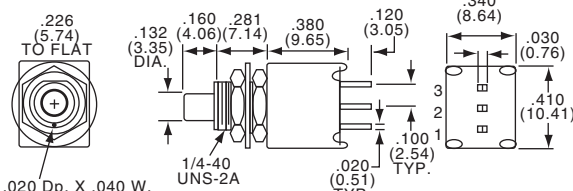
TPD11CGPCES



TPF11CGPCES



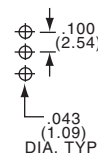
TPD SERIES



TPF SERIES

Model	Type	Act. Code	P. M6	Action	Bushing Dia.	Contact Type
TPD11CGPCES(*)	SPST	C		N.O. Momentary	.250	Gold
TPD11FGPCES(*)	SPDT	D		Momentary	.250	Gold
TPF11CGPCES(*)	SPST	C		N.O. Momentary	.250	Gold
TPF11FGPCES(*)	SPDT	F		Momentary	.250	Gold

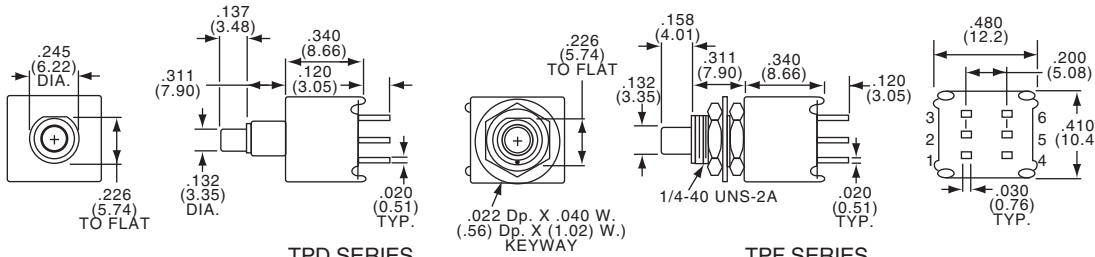
(\*) Specify button color by adding suffix number: (0) Black, (2) Red.  
Note: No center terminal on "C" action switch.



**Pushbutton Switches, Tiny, Process Sealed, Straight or Right Angle**

SEE PAGE D6 FOR PRODUCT SPECIFICATIONS

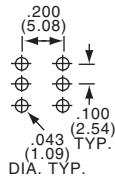
DPST/DPDT



TPD21MGPCES

TPD SERIES

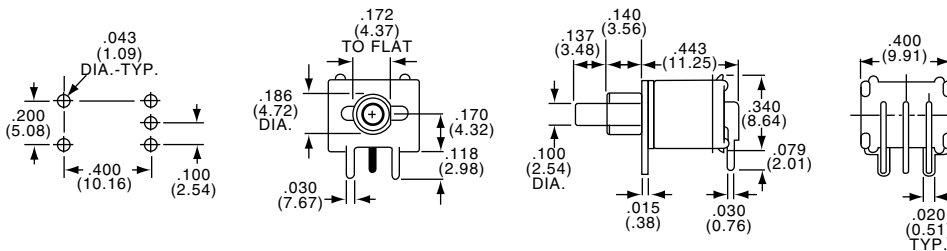
TPF SERIES



Model	Type	Act. Code	P. M6	Action	Bushing Dia.	Contact Type
TPD21MGPCES(*)	DPST	M		N.O. Momentary	.250	Gold
TPD21RGPCES(*)	DPDT	R		Momentary	.250	Gold
TPF21MGPCES(*)	DPST	M		N.O. Momentary	1/4-40	Gold
TPF21RGPCES(*)	DPDT	R		Momentary	1/4-40	Gold

(\*) Specify button color by adding suffix number: (0) Black, (2) Red.  
Note: No center terminal on "M" action switch.

SPST/SPDT

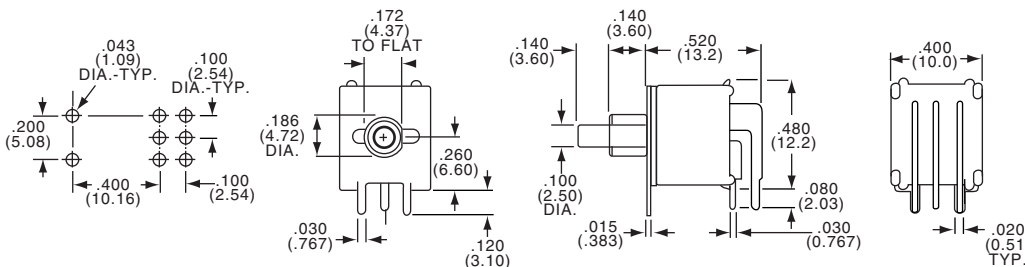


TPB11CGRAES

Model	Type	Act. Code	P. M6	Action	Bushing Dia.	Contact Type
TPB11CGRAES(*)	SPST	C		N.O. Momentary	.188	Gold
TPB11FGRAES(*)	SPDT	F		Momentary	.188	Gold

(\*) Specify button color by adding suffix number: (0) Black, (2) Red.  
Note: No center terminal on "C" action switch.

DPST/DPDT

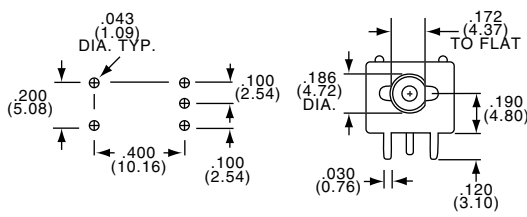


Model	Type	Act. Code	P. M6	Action	Bushing Dia.	Contact Type
TPB21MGRRAES(*)	DPST	M		N.O. Momentary	.188	Gold
TPB21RGRRAES(*)	DPDT	R		Momentary	.188	Gold

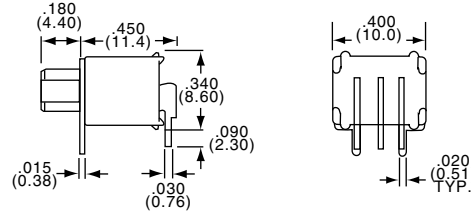
(\*) Specify button color by adding suffix number: (0) Black, (2) Red.  
Note: No center terminal on "M" action switch.

**Pushbutton Switches, Tiny, Process Sealed, Flush Actuator, Straight or Right Angle**

SEE PAGE D6 FOR PRODUCT SPECIFICATIONS



TPBF Series



SPST/SPDT

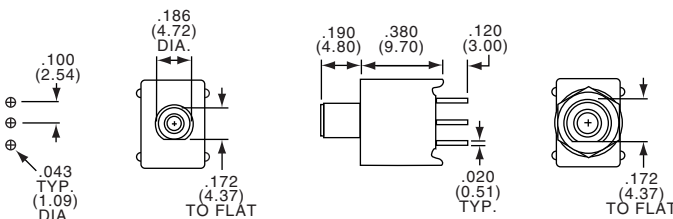


TPBF11CGRAES0

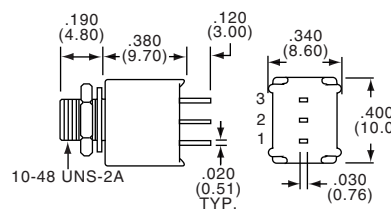
Model	Type	Act. Code P. M6	Action
TPBF11CGRAES(*)	SPST	C	N.O. Momentary
TPBF11FGRAES(*)	SPDT	F	Momentary

(\*) Specify button color by adding suffix numbers: (0) Black, (2) Red.

Note: No center terminal on "C" Action switches.



TPBF Series



TPCF Series

SPST/SPDT



TPBF11CGPCES

Model	Type	Act. Code P. M6	Action
TPBF11CGPCES(*)	SPST	C	N.O. Momentary
TPBF11FGPCES(*)	SPDT	F	Momentary
TPCF11FGPCES(*)	SPDT	F	Momentary

(\*) Specify button color by adding suffix numbers: (0) Black, (2) Red.  
Note: No center terminal on "C" action switch.

**Pushbutton Switches, .120 Actuator, Straight**

**MATERIAL SPECIFICATIONS:**

Contacts .....Gold plate  
 Case Material .....Polyester  
 Actuator Material .....Polyester, black  
 Terminal Seal .....Epoxy

**ENVIRONMENTAL SPECIFICATIONS:**

Operating Temperature.....-4°F to +176°F (-20°C to +80°C)  
 Storage Temperature.....-40°F to +176°F (-40°C to +80°C)

**TYPICAL PERFORMANCE CHARACTERISTICS:**

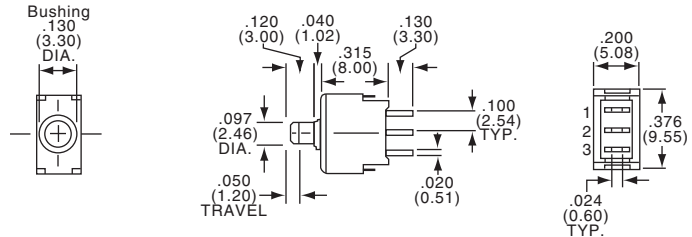
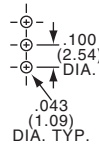
Contact Rating .....0.4 VA Max. @ 20 VDC or peak AC  
 Initial Contact Resistance .....50 Milliohms max.  
 Contact Timing .....Break-before-make  
 Insulation Resistance .....1,000 Megohms @ 500 VDC min.  
 Dielectric Strength .....500 Volts RMS @ sea level  
 Actuator Travel......050" (1.27)  
 Life Expectancy .....Up to 10,000 Cycles

FOR SEALED VERSIONS SEE PAGES D19 AND D20

**SPST/SPDT**



APA1BGPC



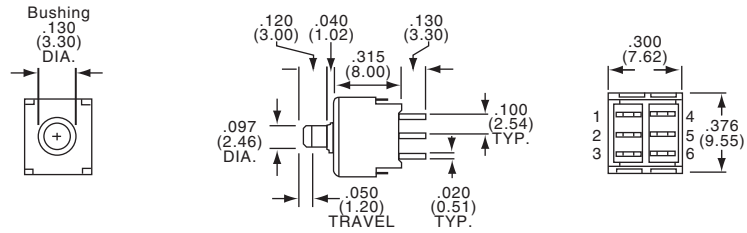
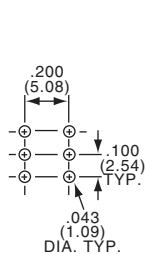
Part Number					
Tyco Electronics	Alcoswitch	Type	Action		
1437567-2	APA1BGPC	SPST	N.C. Momentary	1-3	(—)
1437567-3	APA1CGPC	SPST	N.O. Momentary	—	(1-3)
1437567-5	APA1FGPC	SPDT	Momentary	2-3	(2-1)

Note: No center terminals on "B" or "C" action switches.

**DPST/DPDT**



APA2MGPC

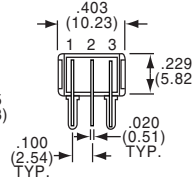
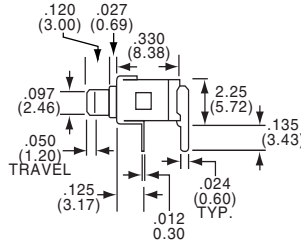
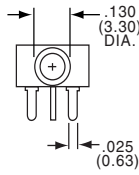
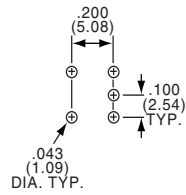


Part Number					
Tyco Electronics	Alcoswitch	Type	Action		
—	APA2LGPC	DPST	N.C. Momentary	1-3, 4-6	(—)
1437567-7	APA2MGPC	DPST	N.O. Momentary	—	(1-3, 4-6)
1437567-9	APA2RGPC	DPDT	Momentary	2-3, 5-6	(2-1, 5-4)

Note: No center terminals on "L" or "M" action switches.

**Pushbutton Switches, .120 Actuator, Right Angle**

SPST/SPDT



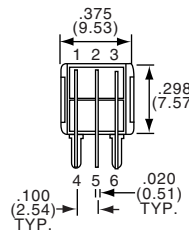
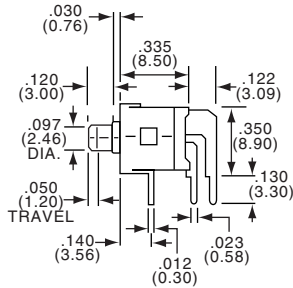
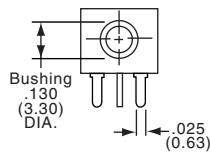
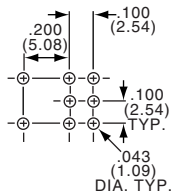
APA1FGRA

Part Number					
Tyco Electronics	Alcoswitch	Type	Action		
—	APA1BGRA	SPST	N.C. Momentary	1-3	(—)
1437567-4	APA1CGRA	SPST	N.O. Momentary	—	(1-3)
1437567-6	APA1FGRA	SPDT	Momentary	2-3	(2-1)

Note: No center terminals on "B" or "C" action switches.

**D**  
APA Series

DPST/DPDT



APA2RGRA

Part Number					
Tyco Electronics	Alcoswitch	Type	Action		
1437567-8	APA2MGRA	DPST	N.O. Momentary	—	(1-3, 4-6)
1-1437567-0	APA2RGRA	DPDT	Momentary	2-3, 5-6	(2-1, 5-4)

Note: No center terminals on "M" action switches.

**Pushbutton Switches, .157 Actuator, Vertical or Right Angle**

**MATERIAL SPECIFICATIONS:**

Contacts .....Gold plate  
 Case Material .....Polyester  
 Actuator Material .....Polyester, black  
 Terminal Seal .....Epoxy

**ENVIRONMENTAL SPECIFICATIONS:**

Operating Temperature.....-4°F to +176°F (-20°C to +80°C)  
 Storage Temperature.....-40°F to +176°F (-40°C to +80°C)

**TYPICAL PERFORMANCE CHARACTERISTICS:**

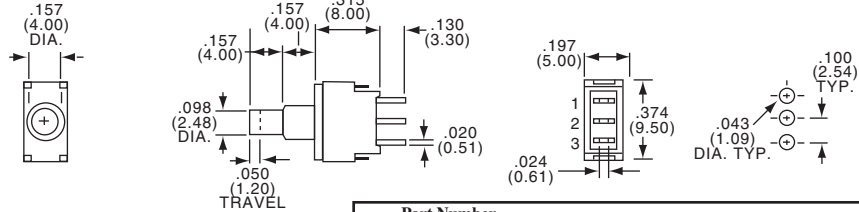
Contact Rating .....0.4 VA Max. @ 20 VDC or peak AC  
 Initial Contact Resistance .....50 Milliohms max.  
 Contact Timing .....Break-before-make  
 Insulation Resistance .....1,000 Megohms @ 500 VDC min.  
 Dielectric Strength .....500 Volts RMS @ sea level  
 Actuator Travel.....0.050" (1.27)  
 Life Expectancy .....Up to 10,000 Cycles

FOR SEALED VERSIONS SEE PAGES D19 AND D20

**SPST/SPDT**



APB1BGPC



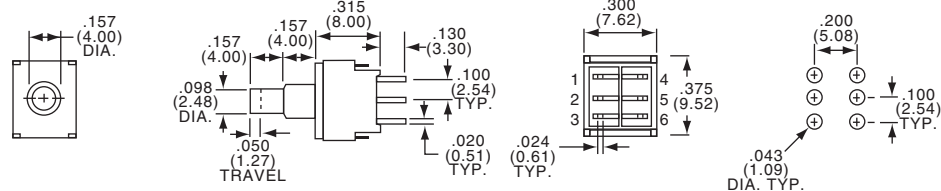
Part Number		Type	Action		
Tyco Electronics	Alcoswitch				
1-1437567-1	APB1BGPC	SPST	N.C. Momentary	1-3	(—)
1-1437567-2	APB1CGPC	SPST	N.O. Momentary	—	(1-3)
1-1437567-4	APB1FGPC	SPDT	Momentary	2-3	(2-1)

Note: No center terminal on "B" and "C" action switches.

**DPST/DPDT**



APB2RGPC



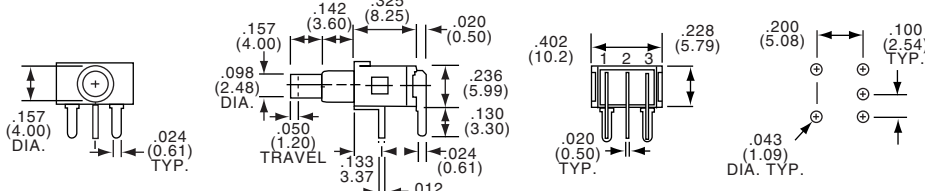
Part Number		Type	Action		
Tyco Electronics	Alcoswitch				
—	APB2LGPC	DPST	N.C. Momentary	1-3, 4-6	(—)
1-1437567-7	APB2RGPC	DPDT	Momentary	2-3, 5-6	(2-1, 5-4)

Note: No center terminal on "L" action switches.

**SPST/SPDT**



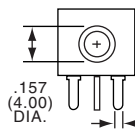
APB1FGRA



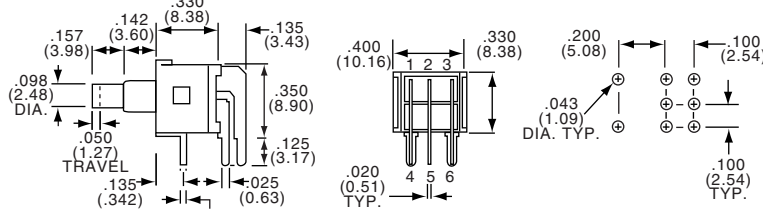
Part Number		Type	Action		
Tyco Electronics	Alcoswitch				
—	APB1BGRA	SPST	N.C. Momentary	1-3	(—)
1-1437567-3	APB1CGRA	SPST	N.O. Momentary	—	(1-3)
1-1437567-5	APB1FGRA	SPDT	Momentary	2-3	(2-1)

Note: No center terminal on "B" and "C" action switches.

**DPST/DPDT**



APB2MGRA



Part Number		Type	Action		
Tyco Electronics	Alcoswitch				
1-1437567-6	APB2MGRA	DPST	N.O. Momentary	—	(1-3, 4-6)
	APB2RGRA	DPDT	Momentary	2-3, 5-6	(2-1, 5-4)

Note: No center terminal on "M" action switches.

D  
APB Series

**Pushbutton Switches, Process Sealed, .157 Actuator, Straight, Retention Terminal**

**MATERIAL SPECIFICATIONS:**

Contacts .....Gold plated  
 Case Material .....Polyester  
 Actuator Material .....Polyester, black  
 Terminals/Fixed Contacts.....Copper alloy  
 Terminal Seal .....Epoxy

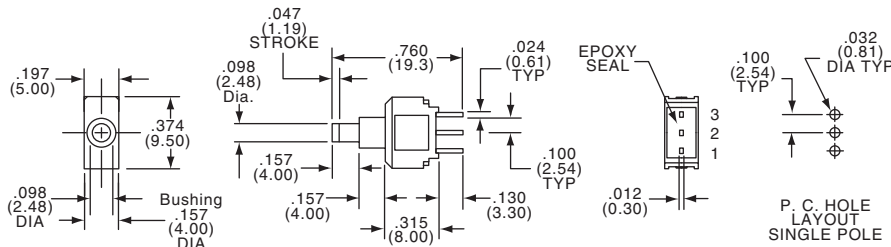
**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....0.4 VA Max. @ 20 VDC or peak AC  
 Initial Contact Resistance .....50 Milliohms max.  
 Insulation Resistance .....500 Megohms @ 250 VDC min.  
 Dielectric Strength .....500 Volts RMS @ sea level  
 Actuator Travel.....0.047" (1.19)  
 Life Expectancy .....Up to 10,000 Cycles

**ENVIRONMENTAL SPECIFICATIONS:**

Operating Temperature.....-4°F to +176°F (-20°C to +80°C)  
 Storage Temperature.....-40°F to +176°F (-40°C to +80°C)

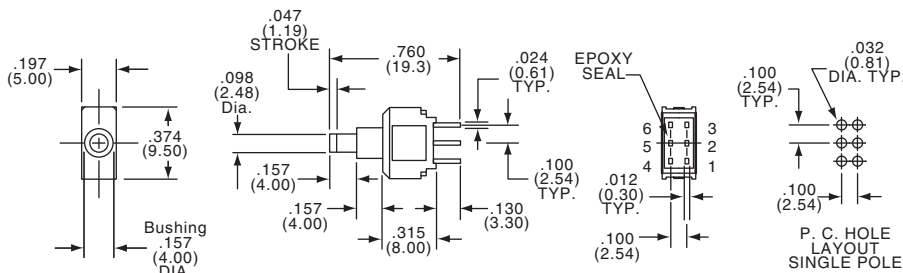
SPDT



Part Number					
Tyco Electronics	Alcoswitch	Type			Contact Type
1-1437567-8	APBE1FGPC	SPDT	On	(On)	Gold
Terminals Connected:			2-3	(2-1)	
(On) indicates momentary position.					

DPDT

Extra compact double pole saves PCB real estate.



Part Number					
Tyco Electronics	Alcoswitch	Type			Contact Type
2-1437567-0	APBE2RGPC	DPDT	On	(On)	Gold
Terminals Connected:			2-3 & 5-6	(2-1 & 5-4)	
(On) indicates momentary position.					

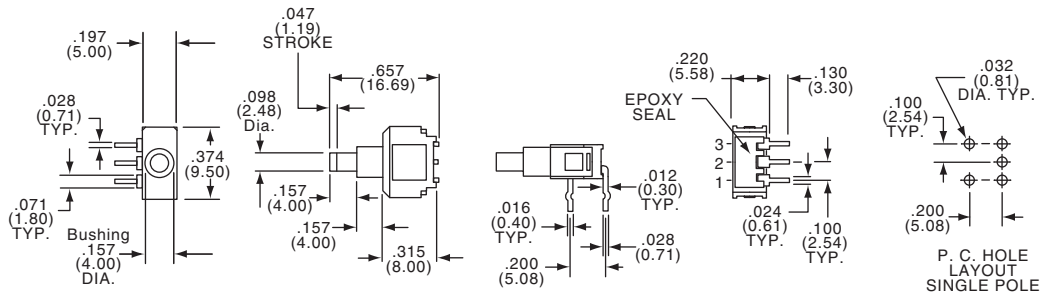
**Pushbutton Switches, Process Sealed, .157 Actuator, Retention Terminal, Right Angle**

SEE PAGE D19 FOR PRODUCT SPECIFICATIONS.

SPDT



APBE1FGRA



Part Number					
Tyco Electronics	Alcoswitch	Type			Contact Type
1-1437567-9	APBE1FGRA	SPDT	On	(On)	Gold
Terminals Connected:			2-3	(2-1)	
(On) indicates momentary position.					

DPDT

Extra compact double pole saves PCB real estate.



APBE2RGRA



Part Number					
Tyco Electronics	Alcoswitch	Type			Contact Type
2-1437567-1	APBE2RGRA	DPDT	On	(On)	Gold
Terminals Connected:			2-3 & 5-6	(2-1 & 5-4)	
(On) indicates momentary position.					



**Pushbutton Switches, Sub-Miniature, Panel Mount**

**MPA3 Series**

**MATERIAL SPECIFICATIONS:**

Contacts .....Silver clad  
 Case Material .....Thermoset  
 Actuator Material .....Polyamide  
 Terminals .....Silver plate

**ENVIRONMENTAL SPECIFICATIONS:**

Operating Temperature.....-4°F to +158°F (-20°C to +70°C)  
 Storage Temperature.....-40°F to +176°F (-40°C to +80°C)  
 Solder Heat Resistance .....See page M3-4

**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....3 A @ 125 VAC  
 Initial Contact Resistance .....20 Milliohms max.  
 Contact Timing .....Break-before-make  
 Insulation Resistance .....1,000 Megohms min.  
 Dielectric Strength .....1,000 Volts RMS @ sea level  
 Actuation Force .....10 oz. SPST, 16 oz. SPDT average  
 Actuator Travel.....100" (2.54)  
 Life Expectancy .....Up to 10,000 Cycles  
 Note: Hardware included with switches



SPST/SPDT



MPA103C

Part Number					
Tyco Electronics	Alcoswitch	Type	Act. Code P. M6	Action	Contact Rating
2-1437567-4	MPA103B	SPST	14	N. C. Momentary	3 Amps
2-1437567-5	MPA103C	SPST	13	N. O. Momentary	3 Amps
2-1437567-6	MPA103D	SPDT	16	Push on/push off- (tactile)	3 Amps
2-1437567-7	MPA103F	SPDT	15	Momentary - (tactile)	3 Amps

Black Cap supplied. Other colors available, order separately.  
 (See Cap C5 and C8 on Page D32.)

**MPB Series**

**Pushbutton Switches, Miniature, Over-Travel**

**MATERIAL SPECIFICATIONS:**

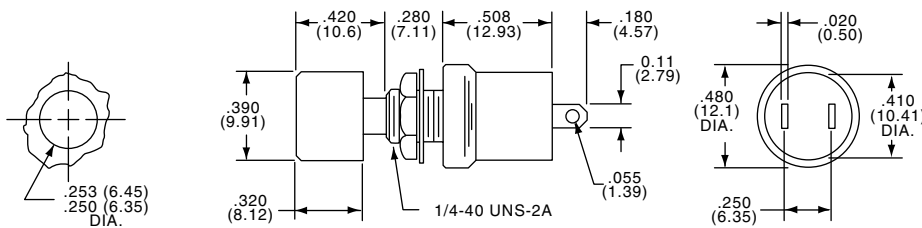
Contacts .....Silver plate  
 Case Material .....Thermoset  
 Actuator Material .....Polyamide  
 Terminals .....Silver plate

**ENVIRONMENTAL SPECIFICATIONS:**

Operating Temperature.....+14°F to +140°F (-10°C to +60°C)  
 Storage Temperature.....+5°F to +158°F (-15°C to +70°C)  
 Solder Heat Resistance .....See page M3-4

**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....3 A @ 125 VAC  
 Initial Contact Resistance .....20 Milliohms max.  
 Insulation Resistance .....1,000 Megohms min.  
 Dielectric Strength .....1,000 Volts RMS @ sea level  
 Actuator Travel.....100" (2.54) Overtravel .059" (1.5mm)  
 Life Expectancy .....20,000 Cycles  
 Note: Hardware included with switches



SPST

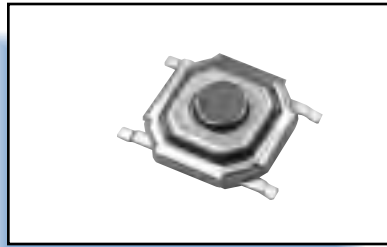


MPB103B

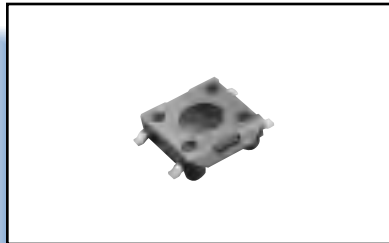
Part Number					
Tyco Electronics	Alcoswitch	Type	Act. Code P. M6	Action	Actuator Color
3-1437567-9	MPB103B	SPST	14	N.C. Momentary	Black
4-1437567-0	MPB103C	SPST	13	N.O. Momentary	Red



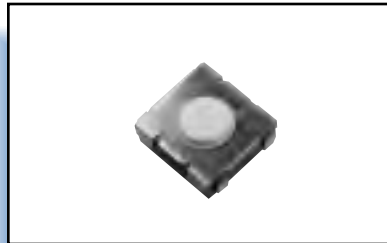
*FSM Series - Page E3*



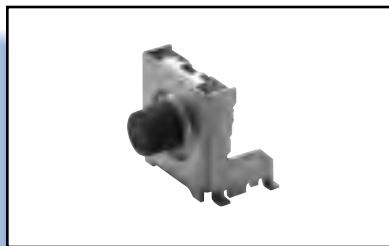
*4.9mm Series - Page E11*



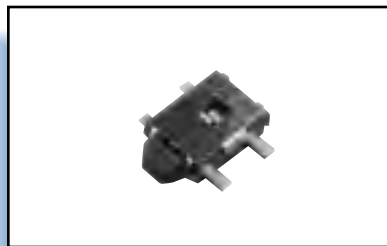
*Low Profile Series - Page E12*



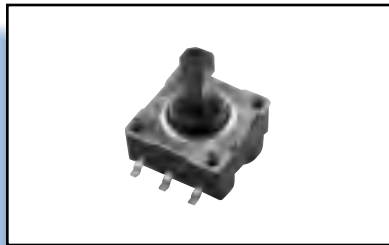
*High Life Tactile - Page E12*



*Sealed Series - Page E27*



*Side Actuated - Page E29*



*Multi-Directional Actuation - Page E30*

# Tactile

E

Tactile Switches

**Tactile Switches Part Number Index**

FSM .....E3  
 FSM100 .....E16  
 FSM100A .....E16  
 FSM101 .....E16  
 FSM102 .....E17  
 FSM102A .....E17  
 FSM103 .....E17  
 FSM104 .....E17  
 FSM10J .....E5  
 FSM10JA .....E5  
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 FSM11JL .....E5  
 FSM12J .....E5  
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 FSM12JAA .....E5  
 FSM12JL .....E5  
 FSM13J .....E5  
 FSM13JA .....E5  
 FSM13JAA .....E5  
 FSM13JL .....E5  
 FSM14J .....E5  
 FSM14JA .....E5  
 FSM14JAA .....E5  
 FSM14JL .....E5  
 FSM14JRT .....E6  
 FSM15J .....E5  
 FSM15JA .....E5  
 FSM15JAA .....E5  
 FSM15JL .....E5  
 FSM16J .....E5  
 FSM16JA .....E5  
 FSM16JAA .....E5  
 FSM16JL .....E5  
 FSM17J .....E5  
 FSM17JA .....E5  
 FSM17JAA .....E5  
 FSM17JL .....E5  
 FSM18J .....E5  
 FSM18JA .....E5  
 FSM18JAA .....E5  
 FSM18JL .....E5  
 FSM1J .....E4,E5  
 FSM1JA .....E5  
 FSM1JAA .....E5  
 FSM1JL .....E5  
 FSM1LP .....E15  
 FSM1LPA .....E15  
 FSM1LPATR .....E15  
 FSM1LPTR .....E15  
 FSM201A .....E16  
 FSM2J .....E4,E5  
 FSM2JA .....E5  
 FSM2JAA .....E5  
 FSM2JART .....E6  
 FSM2JL .....E5  
 FSM2JRT .....E6  
 FSM2JSMA .....E10  
 FSM2JSMAA .....E10  
 FSM2JSMAATR .....E10  
 FSM2JSMATR .....E10  
 FSM3J .....E5  
 FSM3JA .....E5  
 FSM3JAA .....E5  
 FSM3JL .....E5  
 FSM4J .....E5

FSM4JA .....E5  
 FSM4JAA .....E5  
 FSM4JART .....E6  
 FSM4JL .....E5  
 FSM4JRT .....E6  
 FSM4JSMA .....E10  
 FSM4JSMAA .....E10  
 FSM4JSMAATR .....E10  
 FSM4JSMATR .....E10  
 FSM4LP .....E15  
 FSM4LPTR .....E15  
 FSM5J .....E5  
 FSM5JA .....E5  
 FSM5JAA .....E5  
 FSM5JL .....E5  
 FSM6J .....E5  
 FSM6JA .....E5  
 FSM6JAA .....E5  
 FSM6JART .....E6  
 FSM6JL .....E5  
 FSM6JRT .....E6  
 FSM6JSMA .....E10  
 FSM6JSMAA .....E10  
 FSM6JSMAATR .....E10  
 FSM6JSMATR .....E10  
 FSM7J .....E5  
 FSM7JA .....E5  
 FSM7JAA .....E5  
 FSM7JL .....E5  
 FSM8J .....E5  
 FSM8JA .....E5  
 FSM8JAA .....E5  
 FSM8JART .....E6  
 FSM8JL .....E5  
 FSM8JRT .....E6  
 FSM8JSMA .....E10  
 FSM8JSMATR .....E10  
 FSM9J .....E5  
 FSM9JA .....E5  
 FSM9JAA .....E5  
 FSM9JL .....E5  
 FSMC .....E3  
 FSMCD .....E8  
 FSMCDA .....E8  
 FSMCTATR .....E11  
 FSMCTTR .....E11  
 FSMJM3.5ATR .....E9  
 FSMJM4.3 .....E9  
 FSMJM4.3ATR .....E9  
 FSMJM4.3TR .....E9  
 FSMJM5.0ATR .....E9  
 FSMRA 1J .....E7  
 FSMRA 1JL .....E7  
 FSMRA 2J .....E7  
 FSMRA 2JA .....E7  
 FSMRA 2JH .....E7  
 FSMRA 2JL .....E7  
 FSMRA 3J .....E7  
 FSMRA 3JL .....E7  
 FSMRA 4J .....E7  
 FSMRA 4JA .....E7  
 FSMRA 4JL .....E7  
 FSMRA 5J .....E7  
 FSMRA 5JL .....E7  
 FSMRA 6J .....E7  
 FSMRA 6JL .....E7  
 FSMRA 7J .....E7  
 FSMRA 7JL .....E7  
 FSMRA 8J .....E7

FSMRA 8JL .....E7  
 FSMRACD .....E8  
 FSMRACDA .....E8  
 FSMMSM .....E9  
 FSMMSMTR .....E9  
 1571217 .....E18  
 1571218 .....E19  
 1571219 .....E20  
 1571220 .....E21  
 1571262 .....E29  
 1571294 .....E22  
 1571295 .....E24  
 1571296 .....E23  
 1571297 .....E26  
 1571298 .....E25  
 1571300 .....E27  
 1571407 .....E28  
 1571514 .....E30  
 1571515 .....E30  
 1571625 .....E12  
 1571626 .....E13  
 1571636 .....E14

**E**  
Tactile Switches

**Tactile Switches, .138 [3.5] x .236 [6], Through Hole**

**MATERIAL SPECIFICATIONS:**

Contacts .....Stainless/Silver clad plate  
 Case Material .....Nylon  
 Actuator Material .....PBT  
 Terminals/Fixed Contacts.....Copper alloy, Silver/Nickel

**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....50 mA @ 12 VDC  
 Initial Contact Resistance .....100 Milliohms max.  
 Insulation Resistance .....100 Megohms min. @ 500 VDC  
 Dielectric Strength .....500 VAC for 1 minute  
 Actuation Force .....130±50 Grams  
 Actuator Travel......010"(.254)  
 Life Expectancy .....Up to 20,000 Cycles

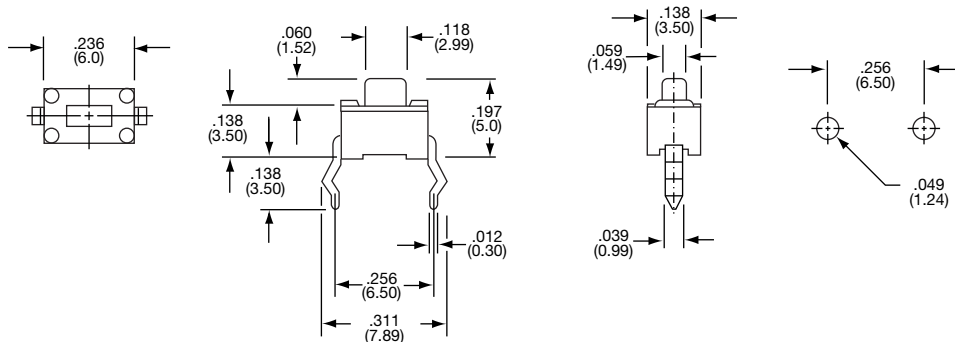
**ENVIRONMENTAL SPECIFICATIONS:**



Operating Temperature.....-40°F to +185°F (-40°C to + 85°C)  
 Storage Temperature.....-40°F to +185°F (-40°C to + 85°C)  
 Solder Heat Resistance .....See Page M3-4

3.5 x 6mm



FSM

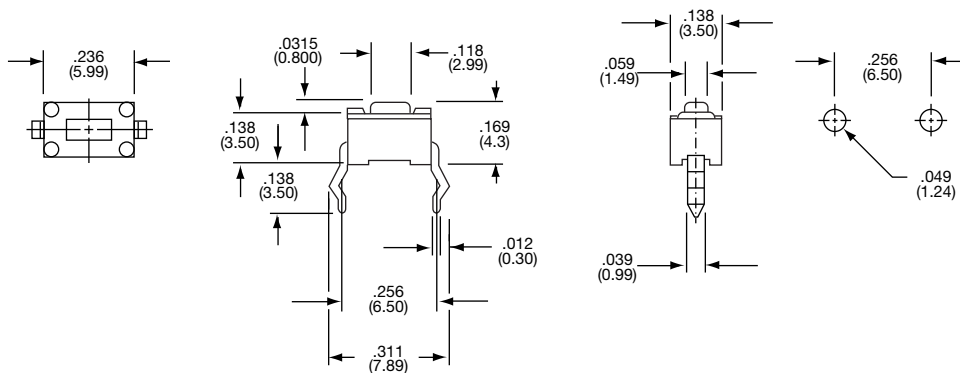




Tyco Electronics	Alcoswitch	Type		
1437565-1	FSM	SPST	Off	(On) (On) indicates momentary position.

3.5 x 6mm



FSMC



Tyco Electronics	Alcoswitch	Type		
7-1437565-6	FSMC	SPST	Off	(On) (On) indicates momentary position.

**Tactile Switches, .236 [6] x .236 [6], Through Hole**

**MATERIAL SPECIFICATIONS:**

Contacts .....Copper alloy, silver plate  
 Case.....Polyamide  
 Actuator Button .....Polyacetal Resin  
 Frame .....Steel, tin plate  
 Terminals .....Copper alloy, silver plate

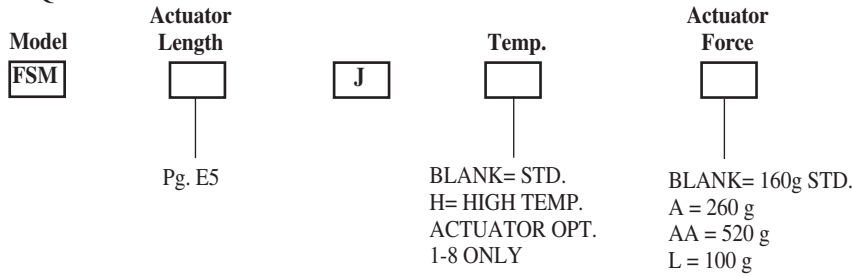
**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....50 mA @ 12 VDC  
 Initial Contact Resistance .....100 Milliohms max.  
 Insulation Resistance .....100 Megohms min. @ 100 VDC  
 Dielectric Strength .....500 VAC  
 Actuation Force .....See page E5  
 Actuator Travel......012" (0,3)  
 Electrostatic Discharge  
 w/ESD Ground Terminal .....5Kv w/no discharge  
 Life Expectancy .....Up to 100,000 Cycles

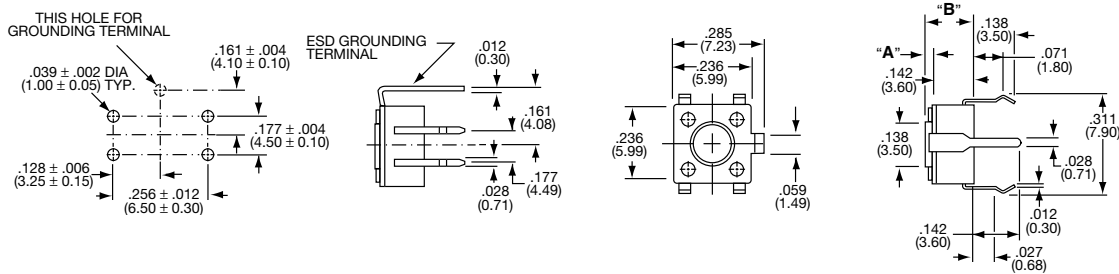
**ENVIRONMENTAL SPECIFICATIONS**

Operating Temperature.....-40°F to +221°F (-40°C to +105°C)  
 Storage Temperature.....-40°F to +221°F (-40°C to +105°C)  
 Solder Heat Resistance .....See Page M3-4

**PART NUMBERING SEQUENCE**



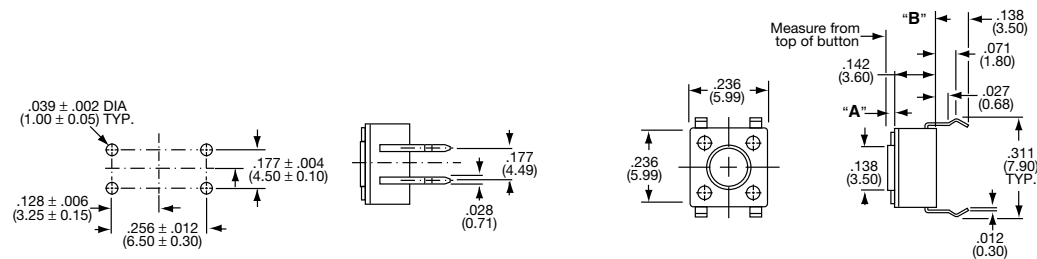
**E**  
FSMJ Series



6 x 6 mm



FSM1J WITH ESD TERMINAL



6 x 6 mm



FSM2J WITHOUT ESD TERMINAL

**Tactile Switches, .236 [6] x .236 [6], Through Hole (Continued)**

TYCO Electronics Part Number	ALCO Part Number	DIMENSIONS		Actuation Force	Actuator Material	Life Cycles
		A	B			
<b>With Ground Terminal</b>						
1-1437565-5	FSM1J	0.028 (0.70)	0.169 (4.30)	160±50gf	PBT	100,000
—	FSM1JAA	0.028 (0.70)	0.169 (4.30)	260±50gf	PBT	100,000
—	FSM1JAA	0.028 (0.70)	0.169 (4.30)	520±100gf	PBT	100,000
—	FSM1JL	0.028 (0.70)	0.169 (4.30)	100±50gf	PBT	100,000
3-1437565-3	FSM3J	0.055 (1.40)	0.196 (5.00)	160±50gf	PBT	100,000
—	FSM3JA	0.055 (1.40)	0.196 (5.00)	260±50gf	PBT	100,000
—	FSM3JAA	0.055 (1.40)	0.196 (5.00)	520±100gf	PBT	100,000
—	FSM3JL	0.055 (1.40)	0.196 (5.00)	100±50gf	PBT	100,000
4-1437565-4	FSM5J	0.134 (3.40)	0.276 (7.00)	160±50gf	ACETAL	100,000
—	FSM5JA	0.134 (3.40)	0.276 (7.00)	260±50gf	ACETAL	100,000
—	FSM5JAA	0.134 (3.40)	0.276 (7.00)	520±100gf	ACETAL	100,000
—	FSM5JL	0.134 (3.40)	0.276 (7.00)	100±50gf	ACETAL	100,000
5-1437565-1	FSM7J	0.232 (5.90)	0.374 (9.50)	160±50gf	PBT	100,000
—	FSM7JA	0.232 (5.90)	0.374 (9.50)	260±50gf	PBT	100,000
—	FSM7JAA	0.232 (5.90)	0.374 (9.50)	520±100gf	PBT	100,000
—	FSM7JL	0.232 (5.90)	0.374 (9.50)	100±50gf	PBT	100,000
7-1437565-5	FSM9J	0.146 (3.70)	0.287 (7.30)	160±50gf	ACETAL	100,000
—	FSM9JA	0.146 (3.70)	0.287 (7.30)	260±50gf	ACETAL	100,000
—	FSM9JAA	0.146 (3.70)	0.287 (7.30)	520±100gf	ACETAL	100,000
—	FSM9JL	0.146 (3.70)	0.287 (7.30)	100±50gf	ACETAL	100,000
1437565-8	FSM11J	0.173 (4.40)	0.315 (8.00)	160±50gf	ACETAL	100,000
—	FSM11JA	0.173 (4.40)	0.315 (8.00)	260±50gf	ACETAL	100,000
—	FSM11JAA	0.173 (4.40)	0.315 (8.00)	520±100gf	ACETAL	100,000
—	FSM11JL	0.173 (4.40)	0.315 (8.00)	100±50gf	ACETAL	100,000
1-1437565-0	FSM13J	0.370 (9.40)	0.512 (13.00)	160±50gf	ACETAL	100,000
1-1437565-1	FSM13JA	0.370 (9.40)	0.512 (13.00)	260±50gf	ACETAL	100,000
—	FSM13JAA	0.370 (9.40)	0.512 (13.00)	520±100gf	ACETAL	100,000
—	FSM13JL	0.370 (9.40)	0.512 (13.00)	100±50gf	ACETAL	100,000
—	FSM15J	0.527 (13.40)	0.669 (17.00)	160±50gf	ACETAL	100,000
147916-1	FSM15JA	0.527 (13.40)	0.669 (17.00)	260±50gf	ACETAL	100,000
—	FSM15JAA	0.527 (13.40)	0.669 (17.00)	520±100gf	ACETAL	100,000
—	FSM15JL	0.527 (13.40)	0.669 (17.00)	100±50gf	ACETAL	100,000
—	FSM17J	0.193 (4.90)	0.335 (8.51)	160±50gf	ACETAL	100,000
—	FSM17JA	0.193 (4.90)	0.335 (8.51)	260±50gf	ACETAL	100,000
—	FSM17JAA	0.193 (4.90)	0.335 (8.51)	520±100gf	ACETAL	100,000
—	FSM17JL	0.193 (4.90)	0.335 (8.51)	100±50gf	ACETAL	100,000
<b>Without Ground Terminal</b>						
2-1437565-0	FSM2J	0.028 (0.70)	0.169 (4.30)	160±50gf	PBT	100,000
2-1437565-1	FSM2JA	0.028 (0.70)	0.169 (4.30)	260±50gf	PBT	100,000
—	FSM2JAA	0.028 (0.70)	0.169 (4.30)	520±100gf	PBT	100,000
—	FSM2JL	0.028 (0.70)	0.169 (4.30)	100±50gf	PBT	100,000
2-1437565-4	FSM4J	0.055 (1.40)	0.196 (5.00)	160±50gf	PBT	100,000
3-1437565-6	FSM4JA	0.055 (1.40)	0.196 (5.00)	260±50gf	PBT	100,000
3-1437565-7	FSM4JAA	0.055 (1.40)	0.196 (5.00)	520±100gf	PBT	100,000
3-1437565-8	FSM4JL	0.055 (1.40)	0.196 (5.00)	100±50gf	PBT	100,000
4-1437565-5	FSM6J	0.134 (3.40)	0.276 (7.00)	160±50gf	ACETAL	100,000
4-1437565-6	FSM6JA	0.134 (3.40)	0.276 (7.00)	260±50gf	ACETAL	100,000
—	FSM6JAA	0.134 (3.40)	0.276 (7.00)	520±100gf	ACETAL	100,000
—	FSM6JL	0.134 (3.40)	0.276 (7.00)	100±50gf	ACETAL	100,000
5-1437565-2	FSM8J	0.232 (5.90)	0.374 (9.50)	160±50gf	PBT	100,000
5-1437565-3	FSM8JA	0.232 (5.90)	0.374 (9.50)	260±50gf	PBT	100,000
5-1437565-4	FSM8JAA	0.232 (5.90)	0.374 (9.50)	520±100gf	PBT	100,000
1571376-1	FSM8JL	0.232 (5.90)	0.374 (9.50)	100±50gf	PBT	100,000
1437565-7	FSM10J	0.146 (3.70)	0.287 (7.30)	160±50gf	ACETAL	100,000
—	FSM10JA	0.146 (3.70)	0.287 (7.30)	260±50gf	ACETAL	100,000
—	FSM10JAA	0.146 (3.70)	0.287 (7.30)	520±100gf	ACETAL	100,000
—	FSM10JL	0.146 (3.70)	0.287 (7.30)	100±50gf	ACETAL	100,000
1437565-9	FSM12J	0.173 (4.40)	0.315 (8.00)	160±50gf	ACETAL	100,000
—	FSM12JA	0.173 (4.40)	0.315 (8.00)	260±50gf	ACETAL	100,000
—	FSM12JAA	0.173 (4.40)	0.315 (8.00)	520±100gf	ACETAL	100,000
—	FSM12JL	0.173 (4.40)	0.315 (8.00)	100±50gf	ACETAL	100,000
1-1437565-2	FSM14J	0.370 (9.40)	0.512 (13.00)	160±50gf	ACETAL	100,000
—	FSM14JA	0.370 (9.40)	0.512 (13.00)	260±50gf	ACETAL	100,000
—	FSM14JAA	0.370 (9.40)	0.512 (13.00)	520±100gf	ACETAL	100,000
—	FSM14JL	0.370 (9.40)	0.512 (13.00)	100±50gf	ACETAL	100,000
1-1437565-3	FSM16J	0.527 (13.40)	0.669 (17.00)	160±50gf	ACETAL	100,000
—	FSM16JA	0.527 (13.40)	0.669 (17.00)	260±50gf	ACETAL	100,000
—	FSM16JAA	0.527 (13.40)	0.669 (17.00)	520±100gf	ACETAL	100,000
—	FSM16JL	0.527 (13.40)	0.669 (17.00)	100±50gf	ACETAL	100,000
1-1437565-4	FSM18J	0.193 (4.90)	0.335 (8.51)	160±50gf	ACETAL	100,000
—	FSM18JA	0.193 (4.90)	0.335 (8.51)	260±50gf	ACETAL	100,000
—	FSM18JAA	0.193 (4.90)	0.335 (8.51)	520±100gf	ACETAL	100,000
—	FSM18JL	0.193 (4.90)	0.335 (8.51)	100±50gf	ACETAL	100,000

**FSMJ Series**

**Tactile Switches, .236 [6] x .236 [6], Radial Tape**

**MATERIAL SPECIFICATIONS:**

Contacts .....Copper alloy, silver clad plate  
 Case.....Nylon  
 Actuator Button .....PBT  
 Cover.....Steel, tin plate  
 Terminals .....Copper alloy, silver clad plate

**TYPICAL PERFORMANCE CHARACTERISTICS:**

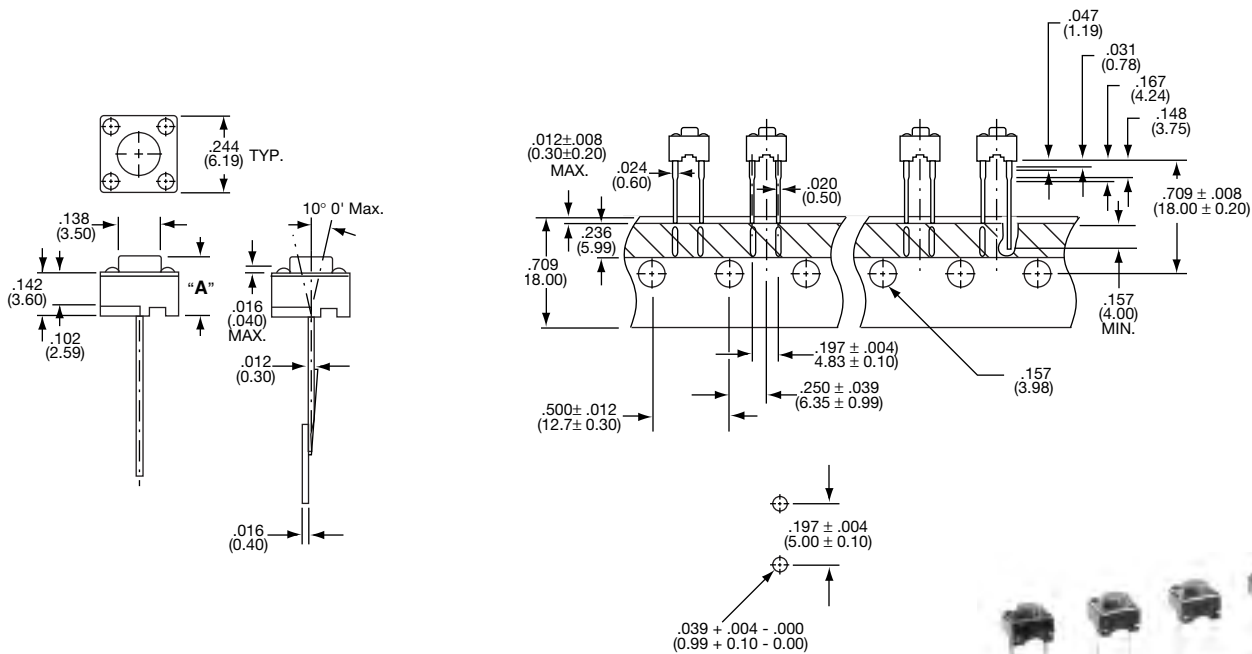
Contact Rating .....50 mA @ 12 VDC  
 Initial Contact Resistance .....100 Milliohms max.  
 Insulation Resistance .....100 Megohms min. @ 100 VDC  
 Dielectric Strength .....500 VAC for 1 minute  
 Actuation Force .....See Below  
 Actuator Travel......010" (.254)  
 Life Expectancy .....Up to 100,000 Cycles

**ENVIRONMENTAL SPECIFICATIONS**

Operating Temperature..... -40°F to +221°F (-40°C to +105°C)  
 Storage Temperature.....-40°F to +221°F (-40°C to +105°C)  
 Solder Heat Resistance .....See Page M3-4

E

FSMJRT Series



Tyco Electronics	Alcoswitch	Dimension A	Actuation Force
2-1437565-6	FSM2JRT	4.3 (.169)	160 +/-50 gm
2-1437565-2	FSM2JART	4.3 (.169)	260 +/-75 gm
4-1437565-0	FSM4JRT	5.0 (.197)	160 +/-50 gm
147997-1	FSM4JART	5.0 (.197)	260 +/-75 gm
4-1437565-8	FSM6JRT	7.0 (.276)	160 +/-50 gm
1571402-1	FSM6JART	7.0 (.276)	260 +/-75 gm
147694-1	FSM8JRT	9.5 (.374)	160 +/-50 gm
147871-1	FSM8JART	9.5 (.374)	260 +/-75 gm
1571010-1	FSM14JRT	13.0 (.512)	160 +/-50 gm

FSM4JRT

**Tactile Switches, .236 [6] x .236 [6], Right Angle**

**MATERIAL SPECIFICATIONS:**

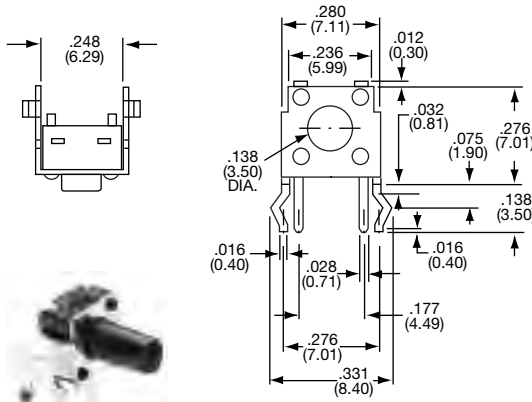
Contacts .....Copper alloy, silver clad plate  
 Case.....PBT  
 Actuator Button .....Nylon/acetal  
 Frame .....Steel, tin plate  
 Terminals .....Copper alloy, silver plate

**TYPICAL PERFORMANCE CHARACTERISTICS:**

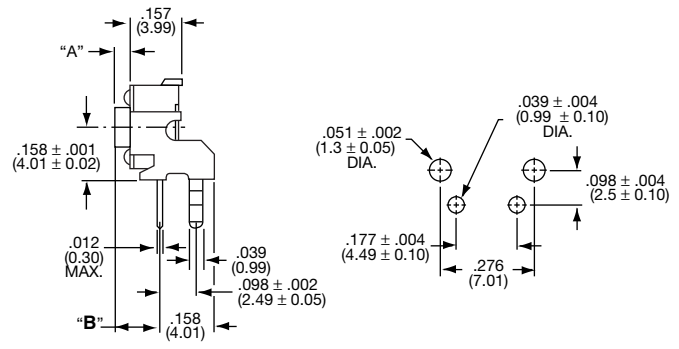
Contact Rating .....50 mA @ 12 VDC  
 Initial Contact Resistance .....100 Milliohms max.  
 Insulation Resistance .....100 Megohms min. @ 100 VDC  
 Dielectric Strength .....500 VAC for 1 minute  
 Actuation Force .....See Below  
 Actuator Travel......012" (0,3)  
 Life Expectancy .....Up to 100,000 Cycles  
 Up to 50,000 Cycles 520 GF (AA option)

**ENVIRONMENTAL SPECIFICATIONS**

Operating Temperature.....-4°F to +185°F (-20°C to +85°C)  
 Storage Temperature.....-22°F to +185°F (-30°C to +85°C)  
 Solder Heat Resistance.....See Page M3-4



FSMRA7J



Type		
SPST	Off	(On)

(On) indicates momentary position.

Tyco Electronics	Alcoswitch	Dim. A	Dim B
8-1437565-4	FSMRA 1J	.022" (0,55)	.124" (3,15)
1571386-2	FSMRA 1JL	.022" (0,55)	.124" (3,15)
8-1437565-5	FSMRA 2J	.049" (1,25)	.152" (3,86)
1571386-1	FSMRA 2JL	.049" (1,25)	.152" (3,86)
8-1437565-8	FSMRA 2JA	.049" (1,25)	.152" (3,86)
8-1437565-9	FSMRA 2JH	.049" (1,25)	.152" (3,86)
9-1437565-0	FSMRA 3J	.128" (3,25)	.230" (5,84)
1571386-3	FSMRA 3JL	.128" (3,25)	.230" (5,84)
9-1437565-1	FSMRA 4J	.226" (5,74)	.329" (8,36)
1571819-1	FSMRA 4JA	.226" (5,74)	.329" (8,36)
1571386-4	FSMRA 4JL	.226" (5,74)	.329" (8,36)
9-1437565-2	FSMRA 5J	.140" (3,55)	.242" (6,15)
1571386-5	FSMRA 5JL	.140" (3,55)	.242" (6,15)
9-1437565-3	FSMRA 6J	.167" (4,25)	.269" (6,85)
1571386-6	FSMRA 6JL	.167" (4,25)	.269" (6,85)
9-1437565-5	FSMRA 7J	.364" (9,25)	.467" (11,86)
1571386-7	FSMRA 7JL	.364" (9,25)	.467" (11,86)
1571419-1	FSMRA 8J	.522" (13,26)	.624" (15,85)
1571386-8	FSMRA 8JL	.522" (13,26)	.624" (15,85)

**PART NUMBERING SEQUENCE**

<b>Model</b>	<b>Actuator Length</b>	<b>Temperature</b>	<b>Actuation Force</b>
FSMRA		J	
ACTUATOR LENGTH DIM "A"	SWITCH HEIGHT DIM "B"	BLANK = STD. TEMP. H = HIGH TEMP.	BLANK = 160 g (STD.) A = 260 g (OPT.) AA = 520 g (OPT.) L = 100 g (OPT.)
.022" (0,56)	1		
.049" (1,24)	2		
.128" (3,25)	3		
.226" (5,74)	4		
.140" (3,55)	5		
.167" (4,24)	6		
.364" (9,24)	7		
.522" (13,26)	8		

MATERIAL: CASE, PPS  
ACTUATOR, PPS  
(ACTUATOR OPTIONS 1 - 2)

CONSULT FACTORY FOR OTHER OPTIONS



**Tactile Switches, .236 [6] x .236 [6], Square Button, Straight or Right Angle**

**MATERIAL SPECIFICATIONS:**

Contacts .....Copper alloy, silver clad plate  
 Case.....Nylon  
 Actuator Button .....Polyacetal Resin  
 Cover.....Pet film  
 Terminals .....Copper alloy, silver plate  
 Frame (R/A) .....Steel, tin plate

**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....50 mA @ 12 VDC  
 Initial Contact Resistance .....100 Milliohms Max.  
 Insulation Resistance .....100 Megohms min. @ 100 VDC  
 Dielectric Strength .....500 VAC for 1 minute  
 Actuation Force .....100 and 160 ±50 Grams  
 Actuator Travel......010"(.254)  
 Life Expectancy .....Up to 100,000 Cycles

**ENVIRONMENTAL SPECIFICATIONS**

Operating Temperature..... -4°F to +185°F (-20°C to +85°C)  
 Storage Temperature.....-22°F to +185°F (-30°C to +85°C)  
 Solder Heat Resistance .....See Page M3-4

6 x 6 mm



FSMCDA



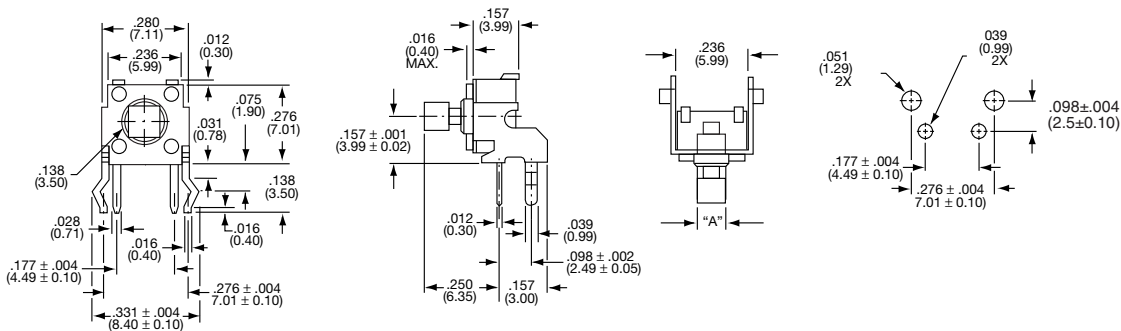
Tyco Electronics	Alcoswitch	Dim. A	Type			Force
7-1437565-8	FSMCD	.095 (2,42)	SPST	Off	(On)	100±50g
7-1437565-9	FSMCDA	.110 (2,80)	SPST	Off	(On)	160±50g

(On) indicates momentary position.

6 x 6 mm



FSMRACDA



Tyco Electronics	Alcoswitch	Dim. A	Force
9-1437565-9	FSMRACD	.095 (2,42)	100±50g
1437566-1	FSMRACDA	.110 (2,80)	160±50g

E  
FSMCD & FSMRACD Series



**Tactile Switches, .236 [6] x .236 [6], Surface Mount**

**MATERIAL SPECIFICATIONS:**

Contacts .....Copper alloy, silver plate  
 Case.....PPS  
 Actuator Button .....PPS  
 Cover.....Steel, tin plate  
 Terminals .....Copper alloy, silver plate

**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....50 mA @ 12 VDC  
 Initial Contact Resistance .....100 Milliohms max.  
 Insulation Resistance .....100 Megohms min. @ 100 VDC  
 Dielectric Strength .....500 VAC for 1 minute  
 Actuation Force .....See Below  
 Actuator Travel......010"(.254)  
 Life Expectancy .....Up to 100,000 Cycles

**ENVIRONMENTAL SPECIFICATIONS**

Operating Temperature..... -4°F to +185°F (-20°C to + 85°C)  
 Storage Temperature.....-22°F to +185°F (-30°C to +85°C)  
 Solder Heat Resistance .....IR Soldering EIA-364-56  
 Procedure 5 Level 3, 500°F (260°C)

6 x 6 mm



FSMJ SMA



Bulk Pack Part Number		Tape & Reel Part Number		Actuator Length	Switch Height	Actuation Force
Tyco Electronics	Alcoswitch	Tyco Electronics	Alcoswitch	Dimension A	Dimension B	
2-1437565-7	FSM2JSMA	3-1437565-0	FSM2JSMATR	.028 (0.70)	.169 (4.30)	160 ± 50 grams
4-1437565-1	FSM4JSMA	4-1437565-2	FSM4JSMATR	.055 (1.40)	.196 (5.00)	160 ± 50 grams
4-1437565-9	FSM6JSMA	5-1437565-0	FSM6JSMATR	.134 (3.40)	.276 (7.00)	160 ± 50 grams
2-1437565-8	FSM2JSMAA	2-1437565-9	FSM2JSMATR	.028 (0.70)	.169 (4.30)	260 ± 50 grams
1571563-1	FSM4JSMML	1571563-2	FSM4JSMMLTR	.055 (1.40)	.196 (5.00)	100 ± 50 grams
1571563-3	FSM4JSMMAA	1571563-4	FSM4JSMMAATR	.055 (1.40)	.196 (5.00)	260 ± 50 grams
—	FSM6JSMMAA	—	FSM6JSMMAATR	.134 (3.40)	.276 (7.00)	260 ± 50 grams
3-1437566-8	FSM8JSMA	—	FSM8JSMATR	.232 (5.90)	.374 (9.50)	260 ± 50 grams
1571527-1	FSM2JSML	1571527-2	FSM2JSMLTR	.028 (0.70)	.169 (4.30)	100 ± 50 grams

E  
FSMJ SMA Series

**Low Profile Series FSMCT Tactile Switches, .196 [5.0] x .196 [5.0], Surface Mount**

**MATERIAL SPECIFICATIONS:**

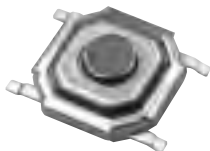
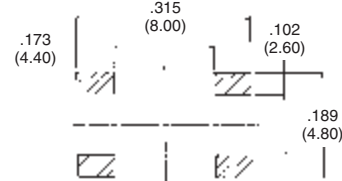
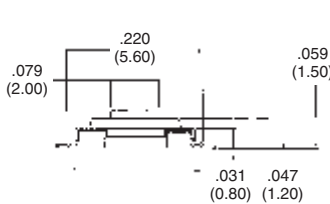
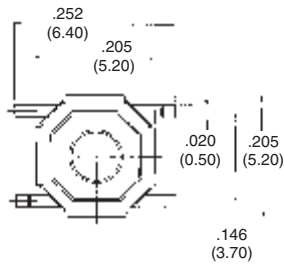
Cover .....Nickel Silver  
 Stem/Actuator .....Brass-"J" Lead  
                                   Brass nickel plate-gullwing  
 Contacts:  
   Moving .....Stainless Steel, Silver Clad-Plate  
   Fixed/Terminal .....Copper Alloy, Silver-Plate  
 Case .....Nylon, UL94V-0

**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....20mA @ 15VDC  
 Initial Contact Resistance .....100MilliOhms Max  
 Insulation Resistance .....100Megaohms @ 100VDC Min.  
 Dielectric Strength .....500 VAC for 1 minute  
 Actuation Travel .....0.25 +0.1/-0.2  
 Life Expectancy .....Up to 500,000 and 1,000,000 Cycles

**ENVIRONMENTAL SPECIFICATIONS:**

Operating Temperature .....-4 to +185°F (-20 to +85°C)  
 Storage Temperature .....-22 to +185°F (-30 to +85°C)  
 Resistance to solder heat .....Per EIA-364-56A, Procedure 4 & 5,  
                                   Level 3  
 Solderability .....Per EIA-364-52, Class 2, Category 1,  
                                   Temp. 473°F (245°C) max., Time 2.5  
                                   seconds max., 95% minimum coverage.



Tyco Electronics	Alcoswitch	Type	Force	Life Cycle
8-1437565-0	FSMCTTR	SPST	160±50	1,000,000
8-1437565-1	FSMCTATR	SPST	260±50	500,000

"J" lead option in development. Contact factory for additional information.

**Low Profile, 6 x 6 SMT J-Lead, Extended Life**

**MATERIAL SPECIFICATIONS:**

Cover .....Stainless Steel  
 Stem/Actuator .....Nylon UL94V-0  
 Contacts:  
   Moving .....Stainless Steel, Silver Clad-Plate  
   Fixed/Terminal .....Copper Alloy, Silver-Plate  
 Case .....Thermoplastic, UL94V-0, Black

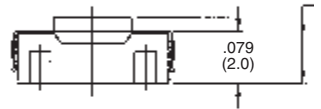
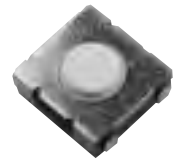
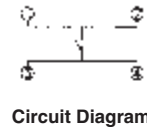
**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....50mA @ 12 V DC  
 Initial Contact Resistance .....100MilliOhms Max  
 Insulation Resistance .....100Megaohms @ 100VDC Min.  
 Dielectric Strength .....500 VAC for 1 minute  
 Actuation Travel.....0.008 +/-0.004 (.2 +/- .10)

**ENVIRONMENTAL SPECIFICATIONS:**

Operating Temperature .....-4 to +185°F (-20 to +85°C)  
 Storage Temperature .....-22 to +185°F (-30 to +85°C)  
 Resistance to solder heat .....Per EIA-364-56A, Procedure 4 & 5, Level 3  
 Solderability .....Per EIA-364-52, Class 2, Category 1, Temp 473°F (245°C), 95% minimum coverage.

**E**  
Extended Life Series



Tyco Electronics	Dim L	Force	Life	Packaging
1571625-1	.098 (2.5)	50gf	2,000,000	Bulk
1571625-2	.098 (2.5)	50gf	2,000,000	T&R
1571625-3	.098 (2.5)	100gf	1,000,000	Bulk
1571625-4	.098 (2.5)	100gf	1,000,000	T&R
1571625-5	.098 (2.5)	160gf	1,000,000	Bulk
1571625-6	.098 (2.5)	160gf	1,000,000	T&R
1571625-7	.098 (2.5)	260gf	100,000	Bulk
1571625-8	.098 (2.5)	260gf	100,000	T&R

**Low Profile, 6 x 6 SMT, Gull Wing, Extended Life**

**MATERIAL SPECIFICATIONS:**

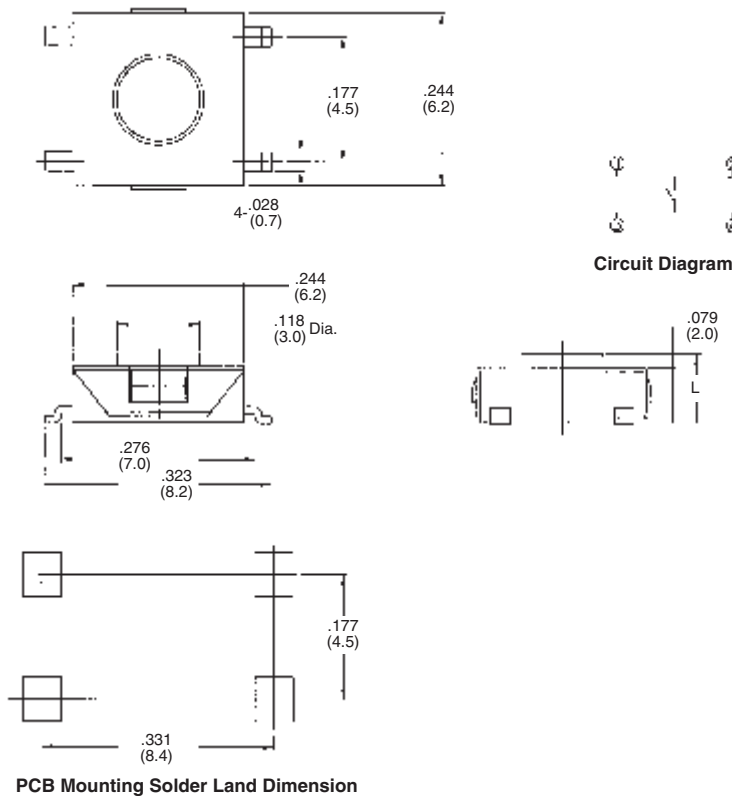
Cover .....Copper Alloy, Tin Lead Plate  
 Stem/Actuator .....Nylon UL94V-0  
 Contacts:  
     Moving .....Stainless Steel, Silver Clad-Plate  
     Fixed/Terminal .....Copper Alloy, Silver-Plate  
 Case .....Thermoplastic, UL94V-0, Black

**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....50mA @ 12 V DC  
 Initial Contact Resistance .....100MilliOhms Max  
 Insulation Resistance .....100Megaohms @ 100VDC Min.  
 Dielectric Strength .....500 VAC for 1 minute  
 Actuation Travel.....0.010 +/-0.004 (.25 +/- .10)

**ENVIRONMENTAL SPECIFICATIONS:**

Operating Temperature .....-4 to +185°F (-20 to +85°C)  
 Storage Temperature .....-22 to +185°F (-30 to +85°C)  
 Resistance to solder heat .....Per EIA-364-56A, Procedure 4 & 5, Level 3  
 Solderability .....Per EIA-364-52, Class 2, Category 1, Temp 473°F (245°C) max., time 2.5 seconds max., 95% minimum coverage.



Tyco Electronics	Dim L	Force	Life	Packaging
1571626-1	.098 (2.5)	50gf	1,000,000	Bulk
1571626-2	.098 (2.5)	50gf	1,000,000	T&R
1571626-3	.098 (2.5)	100gf	1,000,000	Bulk
1571626-4	.098 (2.5)	100gf	1,000,000	T&R
1571626-5	.098 (2.5)	160gf	1,000,000	Bulk
1571626-6	.098 (2.5)	160gf	1,000,000	T&R
1571626-7	.079 (2.0)	160gf	1,000,000	Bulk
1571626-8	.079 (2.0)	160gf	1,000,000	T&R
1571626-9	.098 (2.5)	260gf	100,000	Bulk
1-1571626-0	.098 (2.5)	260gf	100,000	T&R

**Low Profile, 6 x 6 SMT, Gull Wing w/ESD Terminal, Extended Life**

**MATERIAL SPECIFICATIONS:**

Cover .....Copper Alloy, Tin Lead Plate  
 Stem/Actuator .....Nylon UL94V-0  
 Contacts:  
     Moving .....Stainless Steel, Silver Clad-Plate  
     Fixed/Terminal .....Copper Alloy, Silver-Plate  
 Case .....Thermoplastic, UL94V-0, Black

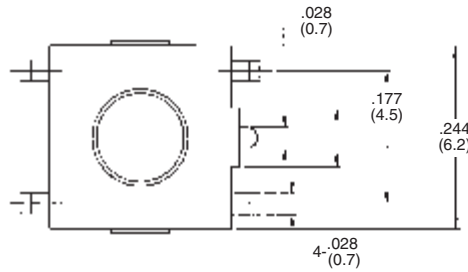
**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....50mA @ 12 V DC  
 Initial Contact Resistance .....100Milliohms Max  
 Insulation Resistance .....100Megaohms @ 100V DC Min.  
 Dielectric Strength .....500 VAC for 1 minute  
 Actuation Travel.....0.010 +/- .004 (.25 +/- .10)

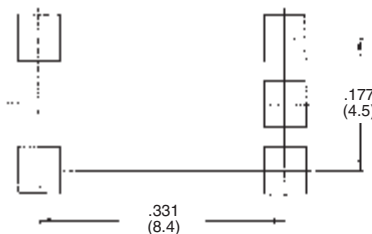
**ENVIRONMENTAL SPECIFICATIONS:**

Operating Temperature .....-4 to +185°F (-20 to +85°C)  
 Storage Temperature .....-22 to +185°F (-30 to +85°C)  
 Resistance to solder heat .....Per EIA-364-56A, Procedure 4 & 5, Level 3  
 Solderability .....Per EIA-364-52, Class 2, Category 1, Temp 473°F (245°C) max., time 2.5 seconds max., 95% minimum coverage.

**E**  
Extended Life Series



**Circuit Diagram**



**PCB Mounting Solder Land Dimension**

Tyco Electronics	Dim L	Force	Life	Packaging
1571636-1	.098 (2.5)	50gf	1,000,000	Bulk
1571636-2	.098 (2.5)	50gf	1,000,000	T&R
1571636-3	.098 (2.5)	100gf	1,000,000	Bulk
1571636-4	.098 (2.5)	100gf	1,000,000	T&R
1571636-5	.098 (2.5)	160gf	1,000,000	Bulk
1571636-6	.098 (2.5)	160gf	1,000,000	T&R
1571636-7	.079 (2.0)	160gf	1,000,000	Bulk
1571636-8	.079 (2.0)	160gf	1,000,000	T&R
1571636-9	.098 (2.5)	260gf	100,000	Bulk
1-1571636-0	.098 (2.5)	260gf	100,000	T&R

**Tactile Switches, .236 [6] x .236 [6], Low Profile, Surface Mount**

**MATERIAL SPECIFICATIONS:**

Contacts .....Copper Alloy, silver clad plated  
 Case Material .....PPS  
 Stem .....PPS  
 Cover.....Steel, tin-plate  
 Terminals .....Copper alloy, silver plated

**TYPICAL PERFORMANCE CHARACTERISTICS:**

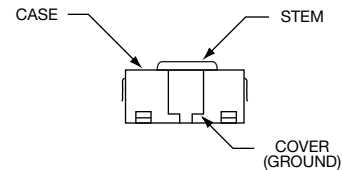
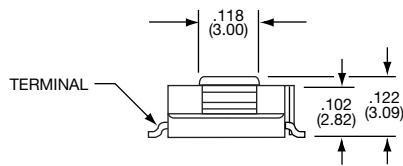
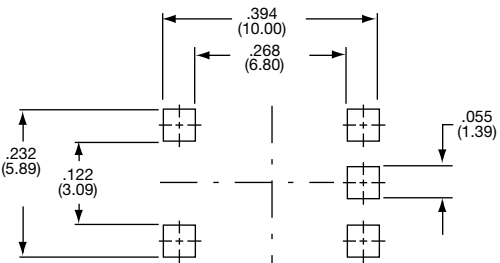
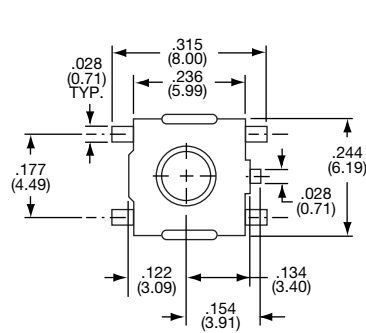
Contact Rating .....50mA @ 12 VDC  
 Initial Contact Resistance .....100 Milliohms max.  
 Insulation Resistance .....100 Megohms min. @ 100 VDC  
 Dielectric Strength .....500 VAC, 1 minute  
 Actuation Force .....See Below.  
 Life Expectancy .....Up to 100,000 Cycles

**ENVIRONMENTAL SPECIFICATIONS:**

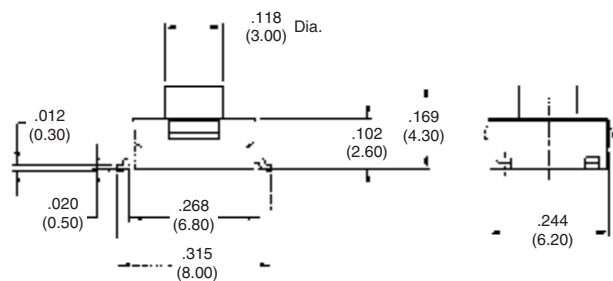
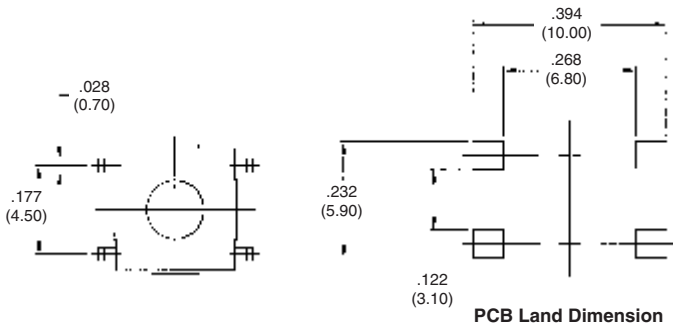
Operating Temperature.....-4°F to +185°F (-20°C to +85°C)  
 Storage Temperature.....-22°F to +185°F (-30°C to +85°C)  
 Solder Heat Resistance .....IR Soldering EIA-364-56  
 Procedure 5 Level 2, 464°F (240°C)



FSM1LP



FSM4LP



Tyco Electronics	Alcoswitch	Force	Actuator Packaging
1-1437565-6	FSM1LP	160	Bulk
1-1437565-7	FSM1LPA	260	Bulk
1-1437565-9	FSM1LPTR	160	Tape & Reel
1-1437565-8	FSM1LPATR	260	Tape & Reel
1571621-1	FSM4LP	260	Bulk
4-1437565-3	FSM4LPTR	260	Tape & Reel

**E**  
FSM1LP Series



**Tactile Switches, .472 [12] x .472 [12], Flush or Extended Actuators**

**MATERIAL SPECIFICATIONS:**

Contacts .....Copper alloy, silver clad plate  
 Case.....PBT  
 Actuator Button .....Polyacetal Resin  
 Cover.....PET film  
 Terminals .....Copper alloy, silver plate  
 Frame (R/A) .....Nylon

**TYPICAL PERFORMANCE CHARACTERISTICS:**

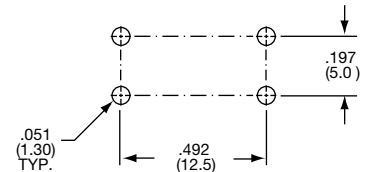
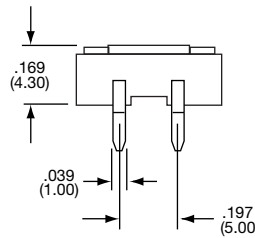
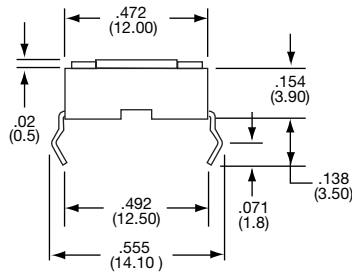
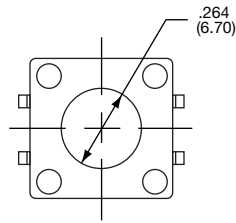
Contact Rating .....50 mA @ 12 VDC  
 Initial Contact Resistance .....100 Milliohms max.  
 Insulation Resistance .....100 Megohms min. @100 VDC  
 Dielectric Strength .....500 VAC for 1 minute  
 Actuation Force .....See below  
 Actuator Travel.....0.012"(0.3)  
 Life Expectancy .....Up to 100,000 cycles

**ENVIRONMENTAL SPECIFICATIONS**

Operating Temperature.....4°F to +185°F (-20°C to +85°C)  
 Storage Temperature.....-22°F to +185°F (-30°C to +85°C)  
 Solder Heat Resistance .....See Page M3-4



FSM100

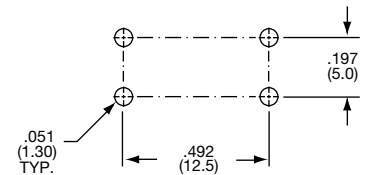
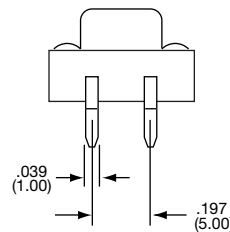
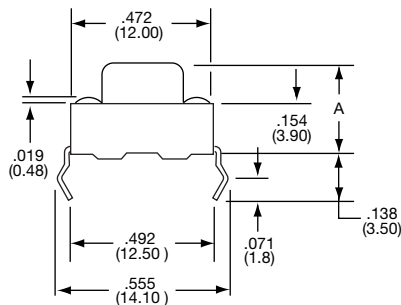
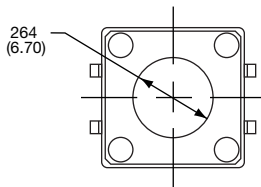


Tyco Electronics	Alcoswitch	Type			Force
1437565-2	FSM100	SPST	Off	(On)	160±50gf
1571139-1	FSM100A	SPST	Off	(On)	260±50gf

(On) indicates momentary position.



FSM101

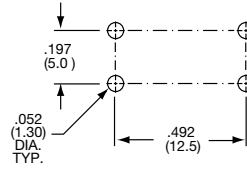
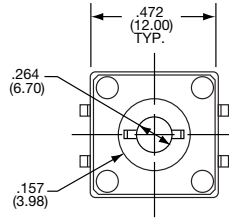
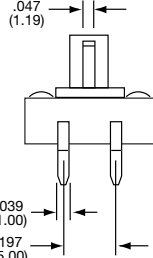
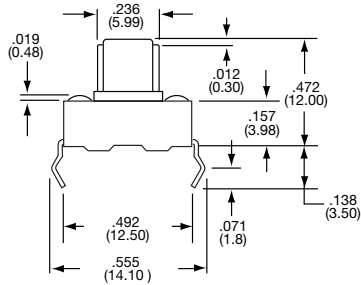


Tyco Electronics	Alcoswitch	Type			Force	Dim A
1437565-3	FSM101	SPST	Off	(On)	160±50gf	.295 [7.5mm]
1571140-1	FSM201A	SPST	Off	(On)	260±50gf	.335 [8.5mm]

(On) indicates momentary position.

E  
FSM100-104 Series

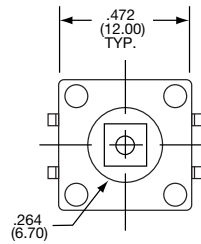
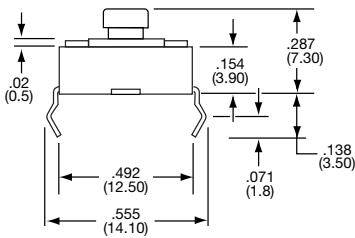
**Tactile Switches, .472 [12] x .472 [12], Vertical or Right Angle**



FSM102

Tyco Electronics	Alcoswitch	Type			Force
1437565-4	FSM102	SPST	Off	(On)	160±50gf
1571061-1	FSM102A	SPST	Off	(On)	260±50gf

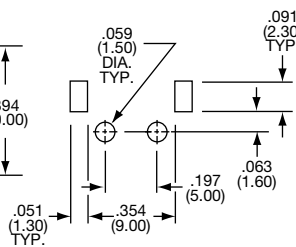
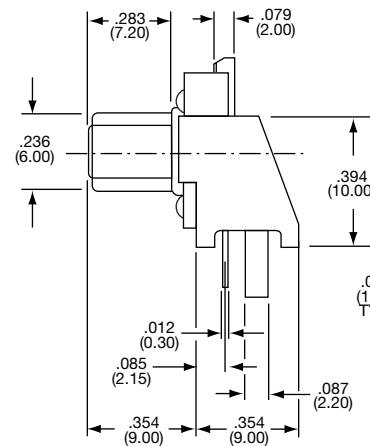
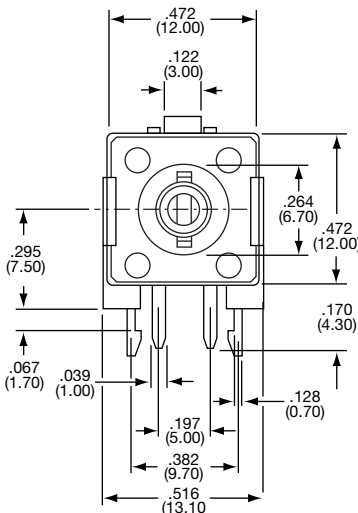
(On) indicates momentary position.



FSM103

Tyco Electronics	Alcoswitch	Type			Force
1437565-5	FSM103	SPST	Off	(On)	160±50gf

(On) indicates momentary position.



Tyco Electronics	Alcoswitch	Type			Force
1437565-6	FSM104	SPST	Off	(On)	160±50gf

(On) indicates momentary position.

FSM100-104 Series

**Tactile Switches, Sealed .472 [12] x .472 [12], Surface Mount, Projected Actuator**

**MATERIAL SPECIFICATIONS:**

Case .....Thermoplastic, UL94V-0, Black  
 Stem/Actuator .....Thermoplastic, UL94V-0, Black  
 Cover .....Stainless Steel  
 Seal .....Silicone Rubber, Black  
 Contact.....Stainless Steel, Plating—Silver  
 Terminal .....Copper Alloy, Plating—Silver/Nickel

**TYPICAL PERFORMANCE CHARACTERISTICS:**

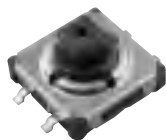
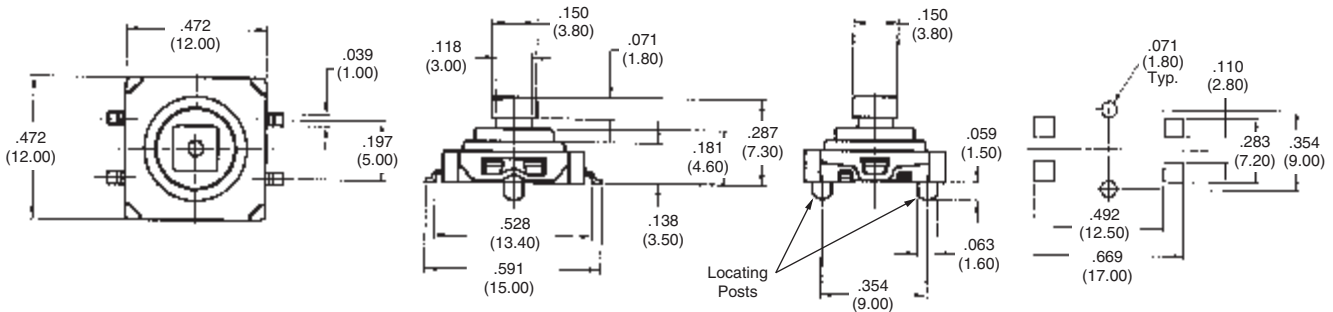
Contact Rating .....50mA @ 12 V DC  
 Initial Contact Resistance .....100MilliOhms Max  
 Insulation Resistance .....100Megaohms @ 100VDC Min.  
 Dielectric Strength .....500 VAC  
 Actuation Travel.....0.014 +/- .008 (.35 +/- .20)  
 Life .....Up to 1,000,000 Cycles

**ENVIRONMENTAL SPECIFICATIONS:**

Operating Temperature .....-4 to +185°F (-20 to +70°C)  
 Storage Temperature .....-4 to +185°F (-20 to +70°C)  
 Resistance to solder heat .....Per EIA-364-56, Procedure 4 & 5, Level 3  
 Solderability .....Per EIA RS-186-9E  
 Seal .....Per IP67

**E**

Sealed Tactile Switches



Tyco Electronics	Locating Post	Packaging	Actuator Height	Force
1571217-1	No	Bulk	.287 (7.30)	160±70gf
1571217-2	Yes	Bulk	.287 (7.30)	160±70gf
1571217-3	No	T&R	.287 (7.30)	160±70gf
1571217-4	Yes	T&R	.287 (7.30)	160±70gf

**Tactile Switches, Sealed .472 [12] x .472 [12], Surface Mount, Flush, Actuator**

**MATERIAL SPECIFICATIONS:**

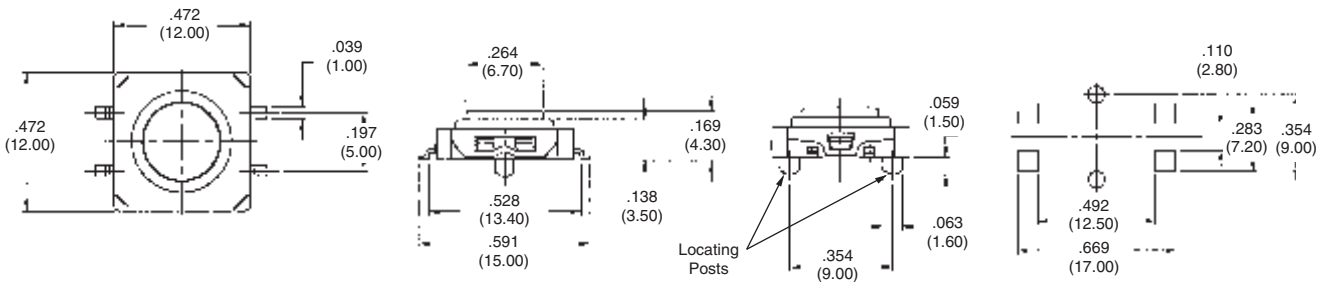
Case .....Thermoplastic, UL94V-0, Black  
 Stem/Actuator .....Thermoplastic, UL94V-0, Black  
 Cover .....Stainless Steel  
 Seal .....Silicone Rubber, Black  
 Contact.....Stainless Steel, Plating—Silver  
 Terminal .....Copper Alloy, Plating—Silver/Nickel

**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....50mA @ 12 V DC  
 Initial Contact Resistance .....100MilliOhms Max  
 Insulation Resistance .....100Megaohms @ 100VDC Min.  
 Dielectric Strength .....500 VAC  
 Actuation Travel.....0.014 +/-0.008 (.35 +/- .20)  
 Life .....Up to 1,000,000 Cycles

**ENVIRONMENTAL SPECIFICATIONS:**

Operating Temperature .....-4 to +185°F (-20 to +85°C)  
 Storage Temperature .....-4 to +185°F (-20 to +85°C)  
 Resistance to solder heat .....Per EIA-364-56, Procedure 4 & 5, Level 3  
 Solderability .....Per EIA RS-186-9E  
 Seal .....Per IP67



Tyco Electronics	Locating Post	Packaging	Actuator Height	Force
1571218-1	No	Bulk	.169 (4.30)	160±70gf
1571218-2	Yes	Bulk	.169 (4.30)	160±70gf
1571218-3	No	T&R	.169 (4.30)	160±70gf
1571218-4	Yes	T&R	.169 (4.30)	160±70gf

**E**  
Sealed Tactile Switches

**Tactile Switches, Sealed .472 [12] x .472 [12], Thru-Hole, Projected Actuator**

**MATERIAL SPECIFICATIONS:**

Case .....Thermoplastic, UL94V-0, Black  
 Stem/Actuator .....Thermoplastic, UL94V-0, Black  
 Cover .....Stainless Steel  
 Seal .....Silicone Rubber, Black  
 Contact.....Stainless Steel, Plating—Silver  
 Terminal .....Copper Alloy, Plating—Silver/Nickel

**TYPICAL PERFORMANCE CHARACTERISTICS:**

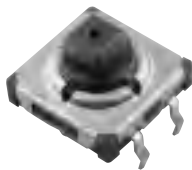
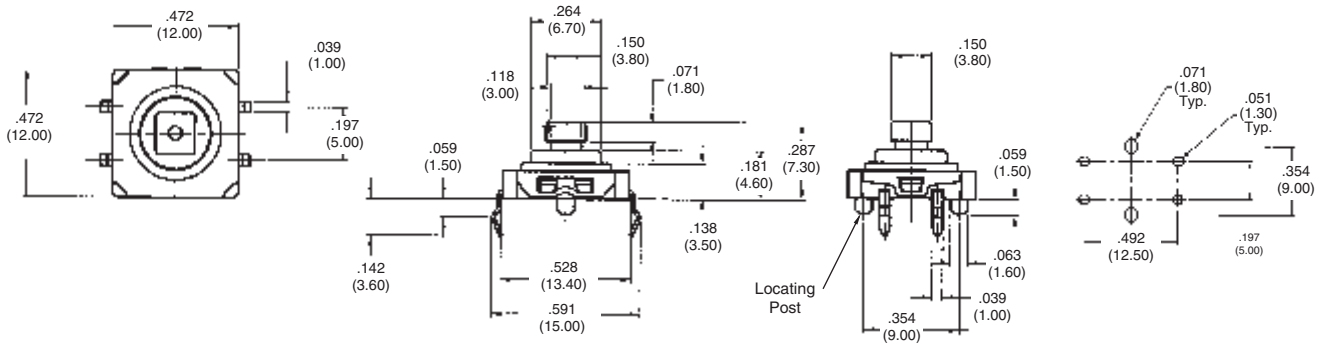
Contact Rating .....50mA @ 12 V DC  
 Initial Contact Resistance .....100MilliOhms Max  
 Insulation Resistance .....100Megaohms @ 100VDC Min.  
 Dielectric Strength .....500 VAC  
 Actuation Travel.....0.014 +/-0.008 (.35 +/- .20)  
 Life .....1,000,000 Cycles

**ENVIRONMENTAL SPECIFICATIONS:**

Operating Temperature .....-4 to +185°F (-20 to +85°C)  
 Storage Temperature .....-4 to +185°F (-20 to +85°C)  
 Resistance to solder heat .....Per EIA-364-56, Procedure 3, Test Cond. B  
 Solderability .....Per EIA RS-186-9E  
 Seal .....Per IP67

**E**

Sealed Tactile Switches



Tyco Electronics	Locating Post	Packaging	Actuator Height	Force
1571219-1	No	Bulk	.287 (7.30)	160±70gf
1571219-2	Yes	Bulk	.287 (7.30)	160±70gf

**Tactile Switches, Sealed .472 [12] x .472 [12], Thru-Hole, Flush Actuator**

**MATERIAL SPECIFICATIONS:**

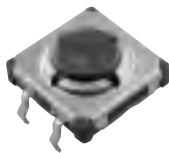
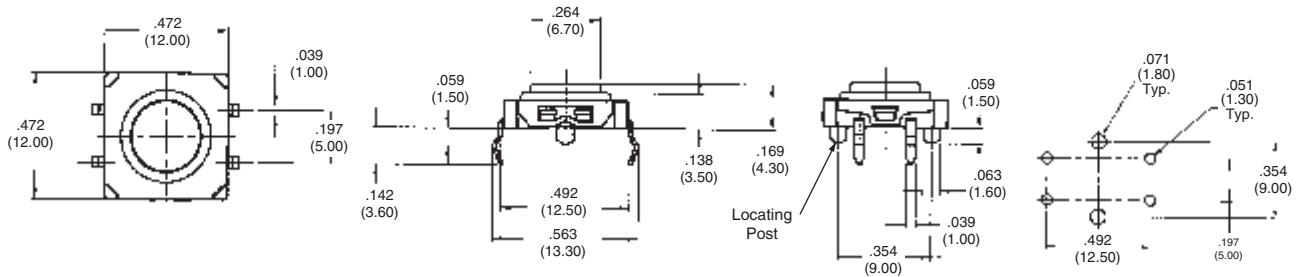
Case .....Thermoplastic, UL94V-0, Black  
 Stem/Actuator .....Thermoplastic, UL94V-0, Black  
 Cover .....Stainless Steel  
 Seal .....Silicone Rubber, Black  
 Contact.....Stainless Steel, Plating—Silver  
 Terminal .....Copper Alloy, Plating—Silver/Nickel

**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....50mA @ 12 V DC  
 Initial Contact Resistance .....100MilliOhms Max  
 Insulation Resistance .....100Megaohms @ 100VDC Min.  
 Dielectric Strength .....500 VAC  
 Actuation Travel.....0.014 +/-0.008 (.35 +/- .20)  
 Life .....1,000,000 Cycles

**ENVIRONMENTAL SPECIFICATIONS:**

Operating Temperature .....-4 to +185°F (-20 to +85°C)  
 Storage Temperature .....-4 to +185°F (-20 to +85°C)  
 Resistance to solder heat .....Per EIA-364-56, Procedure 3, Test Cond. B  
 Solderability .....Per EIA RS-186-9E  
 Seal .....Per IP67



Tyco Electronics	Locating Post	Packaging	Actuator Height	Force
1571220-1	No	Bulk	.169 (4.30)	160±70gf
1571220-2	Yes	Bulk	.169 (4.30)	160±70gf

**E**  
Sealed Tactile Switches

**Tactile Switches, Sealed .299 [7.6] x .287 [7.3], Surface Mount, Extended Actuator**

**MATERIAL SPECIFICATIONS:**

Case .....Thermoplastic, UL94V-0, Black  
 Stem/Actuator .....Thermoplastic, UL94V-0, Black  
 Cover .....Stainless Steel  
 Seal .....Silicone Rubber, Black  
 Contact.....Stainless Steel, Plating—Silver  
 Terminal .....Copper Alloy, Plating—Silver

**TYPICAL PERFORMANCE CHARACTERISTICS:**

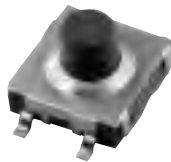
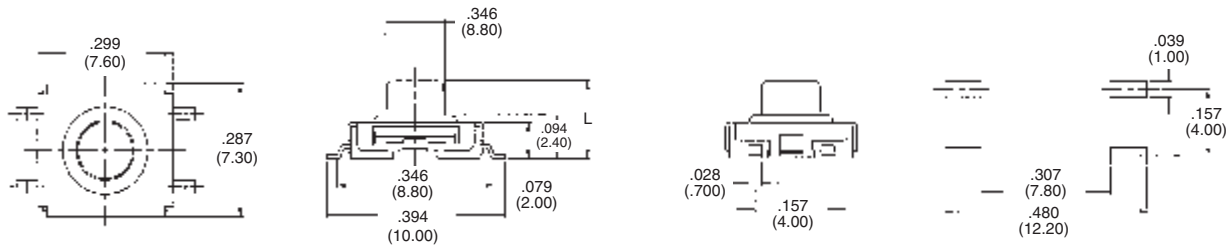
Contact Rating .....50mA @ 12 V DC  
 Initial Contact Resistance .....100MilliOhms Max  
 Insulation Resistance .....100Megaohms @ 100VDC Min.  
 Dielectric Strength .....500 VAC  
 Actuation Travel.....0.014 +/- .008 (.35 +/- .20)  
 Life .....Up to 1,000,000 Cycles

**ENVIRONMENTAL SPECIFICATIONS:**

Operating Temperature .....-4 to +185°F (-20 to +85°C)  
 Storage Temperature .....-4 to +185°F (-20 to +85°C)  
 Resistance to solder heat .....Per EIA-364-56, Procedure 4 & 5, Level 3  
 Solderability .....Per EIA RS-186-9E  
 Seal .....Per IP67

E

Sealed Tactile Switches



Tyco Electronics	Packaging	L	Force
1571294-1	Bulk	.169 (4.30)	160±50gf
1571294-2	T&R	.169 (4.30)	160±50gf
1571294-3	Bulk	.197 (5.00)	160±50gf
1571294-4	T&R	.197 (5.00)	160±50gf

**Tactile Switches, Sealed .299 [7.6] x .287 [7.3], Surface Mount, Flush Actuator**

**MATERIAL SPECIFICATIONS:**

Case .....Thermoplastic, UL94V-0, Black  
 Stem/Actuator .....Thermoplastic, UL94V-0, Black  
 Cover .....Stainless Steel  
 Seal .....Silicone Rubber, Black  
 Contact.....Stainless Steel, Plating—Silver  
 Terminal .....Copper Alloy, Plating—Silver/Nickel

**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....50mA @ 12 V DC  
 Initial Contact Resistance .....100MilliOhms Max  
 Insulation Resistance .....100Megaohms @ 100VDC Min.  
 Dielectric Strength .....500 VAC  
 Actuation Travel.....0.014 +/- .008 (.35 +/- .20)  
 Life .....Up to 1,000,000 Cycles

**ENVIRONMENTAL SPECIFICATIONS:**

Operating Temperature .....-4 to +185°F (-20 to +85°C)  
 Storage Temperature .....-4 to +185°F (-20 to +85°C)  
 Resistance to solder heat .....Per EIA-364-56, Procedure 4 & 5, Level 3  
 Solderability .....Per EIA RS-186-9E  
 Seal .....Per IP67



Tyco Electronics	Packaging	Actuator Height	Force
1571296-1	Bulk	.130 (3.30)	160±50gf
1571296-2	T&R	.130 (3.30)	160±50gf

**E**  
Sealed Tactile Switches



**Tactile Switches, Sealed .299 [7.6] x .287 [7.3], Thru-Hole, Extended Actuator**

**MATERIAL SPECIFICATIONS:**

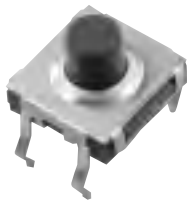
Case .....Thermoplastic, UL94V-0, Black  
 Actuator .....Thermoplastic, UL94V-0, Black  
 Cover .....Stainless Steel  
 Seal .....Silicone Rubber, Black  
 Contact.....Stainless Steel, Plating—Silver  
 Terminal .....Copper Alloy, Plating—Silver/Nickel

**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....50mA @ 12 V DC  
 Initial Contact Resistance .....100MilliOhms Max  
 Insulation Resistance .....100Megaohms @ 100VDC Min.  
 Dielectric Strength .....500 VAC  
 Actuation Travel .....0.014 +/-0.008 (.35 +/- .20)  
 Life .....Up to 1,000,000 Cycles

**ENVIRONMENTAL SPECIFICATIONS:**

Operating Temperature .....-4 to +185°F (-20 to +85°C)  
 Storage Temperature .....-4 to +185°F (-20 to +85°C)  
 Resistance to solder heat .....Per EIA-364-56, Procedure 3, Test Cond.B  
 Solderability .....Per EIA RS-186-9E  
 Seal .....Per IP67



Tyco Electronics	Packaging	L	Force
1571295-1	Bulk	.169 (4.30)	160±50gf
1571295-2	Bulk	.197 (5.00)	160±50gf

**E**

Sealed Tactile Switches

**Tactile Switches, Sealed .185 [4.7] x .268 [6.8], Surface Mount**

**MATERIAL SPECIFICATIONS:**

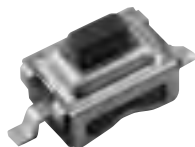
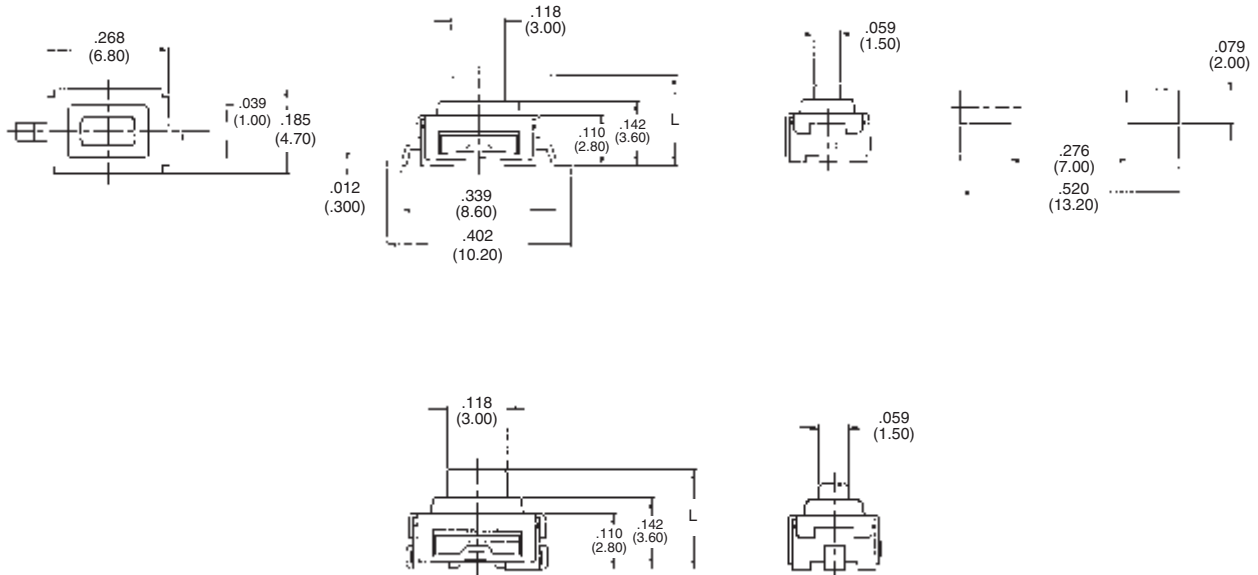
Case .....Thermoplastic, UL94V-0, Black  
 Stem/Actuator .....Thermoplastic, UL94V-0, Black  
 Cover .....Stainless Steel  
 Seal .....Silicone Rubber, Black  
 Contact.....Stainless Steel, Plating—Silver  
 Terminal .....Copper Alloy, Plating—Silver/Nickel

**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....50mA @ 12 V DC  
 Initial Contact Resistance .....100MilliOhms Max  
 Insulation Resistance .....100Megaohms @ 100VDC Min.  
 Dielectric Strength .....500 VAC  
 Actuation Travel.....0.014 +/-0.008 (.35 +/- .20)  
 Life .....Up to 50,000 Cycles

**ENVIRONMENTAL SPECIFICATIONS:**

Operating Temperature .....-4 to +185°F (-20 to +85°C)  
 Storage Temperature .....-4 to +185°F (-20 to +85°C)  
 Resistance to solder heat .....Per EIA-364-56, Procedure 4 & 5, Level 3  
 Solderability .....Per EIA RS-186-9E  
 Seal .....Per IP67



Tyco Electronics	Packaging	L	Operating Force	Lead Style
1571298-1	Bulk	.197 (5.00)	130 ± 50gf	Gull Wing
1571298-2	T&R	.197 (5.00)	130 ± 50gf	Gull Wing
1571299-1	Bulk	.169 (4.30)	130 ± 50gf	J Lead
1571299-2	T&R	.169 (4.30)	130 ± 50gf	J Lead
1571299-3	Bulk	.197 (5.00)	130 ± 50gf	J Lead
1571299-4	T&R	.197 (5.00)	130 ± 50gf	J Lead

**E**  
Sealed Tactile Switches

**Tactile Switches, Sealed .185 [4.7] x .268 [6.8], Thru-Hole**

**MATERIAL SPECIFICATIONS:**

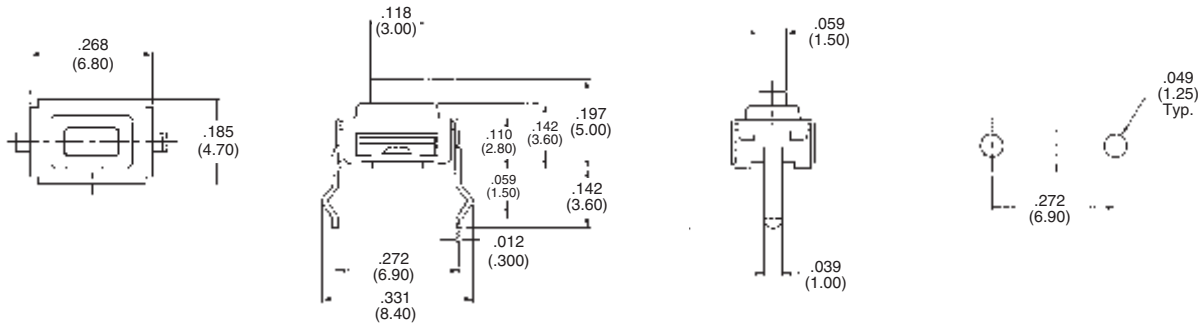
Case .....Thermoplastic, UL94V-0, Black  
 Stem/Actuator .....Thermoplastic, UL94V-0, Black  
 Cover .....Stainless Steel  
 Seal .....Silicone Rubber, Black  
 Contact.....Stainless Steel, Plating—Silver  
 Terminal .....Copper Alloy, Plating—Silver/Nickel

**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....50mA @ 12 V DC  
 Initial Contact Resistance .....100MilliOhms Max  
 Insulation Resistance .....100Megaohms @ 100VDC Min.  
 Dielectric Strength .....500 VAC  
 Actuation Travel.....0.014 +/- .008 (.35 +/- .20)  
 Life .....Up to 50,000 Cycles

**ENVIRONMENTAL SPECIFICATIONS:**

Operating Temperature .....-4 to +185°F (-20 to +85°C)  
 Storage Temperature .....-4 to +185°F (-20 to +85°C)  
 Resistance to solder heat .....Per EIA-364-56, Procedure 3, Test Cond. B  
 Solderability .....Per EIA RS-186-9E  
 Seal .....Per IP67



Tyco Electronics	Packaging	Actuator Height	Operating Force
1571297-1	Bulk	.197 (5.00)	130 ± 50gf

E

Sealed Tactile Switches

**Tactile Switches, Sealed Right Angle, Surface Mount**

**MATERIAL SPECIFICATIONS:**

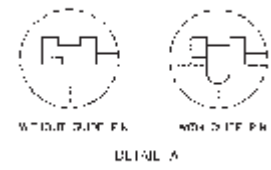
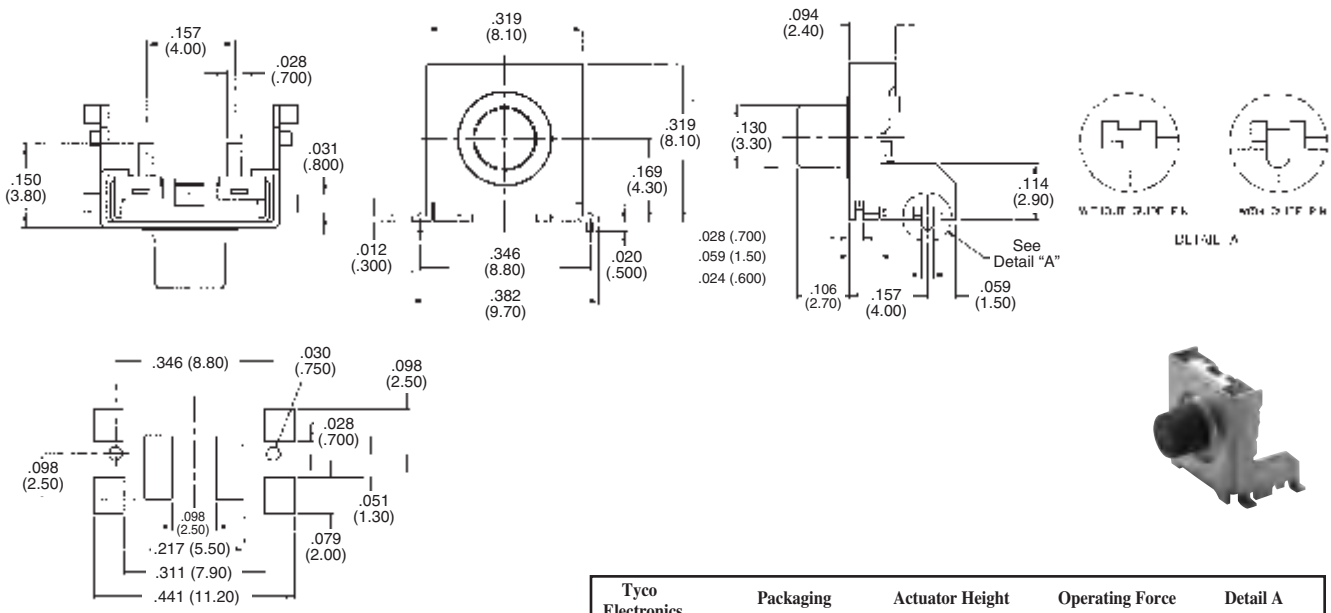
Case .....Thermoplastic, UL94V-0, Black  
 Stem/Actuator .....Thermoplastic, UL94V-0, Black  
 Cover .....Stainless Steel  
 Seal .....Silicone Rubber, Black  
 Contact.....Stainless Steel, Plating—Silver  
 Terminal .....Copper Alloy, Plating—Silver/Nickel

**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....50mA @ 12 V DC  
 Initial Contact Resistance .....100MilliOhms Max  
 Insulation Resistance .....100Megaohms @ 100VDC Min.  
 Dielectric Strength .....500 VAC  
 Actuation Travel.....0.014 +/- .008 (.35 +/- .20)  
 Life .....Up to 1,000,000 Cycles

**ENVIRONMENTAL SPECIFICATIONS:**

Operating Temperature .....-4° to +185°F (-20°to +85°C)  
 Storage Temperature .....-4° to +185°F (-20°to +85°C)  
 Resistance to solder heat .....Per EIA-364-56, Procedure 4 & 5, Level 3  
 Solderability .....Per EIA RS-186-9E  
 Seal .....Per IP67



Tyco Electronics	Packaging	Actuator Height	Operating Force	Detail A
1571300-1	Bulk	.106 (2.70)	130 ± 50gf	Without Pin
1571300-2	Bulk	.106 (2.70)	130 ± 50gf	With Pin

**E**  
Sealed Tactile Switches

**Tactile Switches, Sealed Right Angle, Surface Mount**

**MATERIAL SPECIFICATIONS:**

Case .....Thermoplastic, UL94V-0, Black  
 Stem/Actuator .....Thermoplastic, UL94V-0, Black  
 Cover .....Stainless Steel  
 Seal .....Silicone Rubber, Black  
 Contact.....Stainless Steel, Plating—Silver  
 Terminal .....Copper Alloy, Plating—Silver

**TYPICAL PERFORMANCE CHARACTERISTICS:**

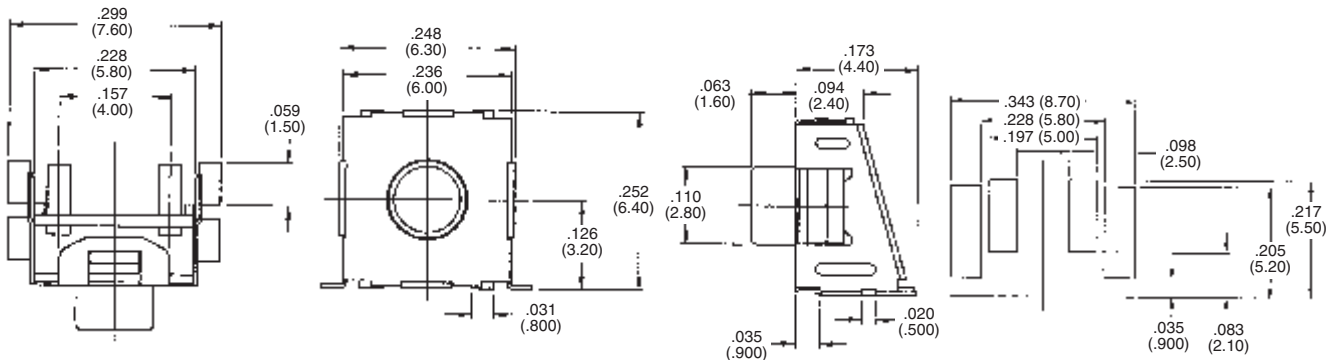
Contact Rating .....50mA @ 12 V DC  
 Initial Contact Resistance .....100MilliOhms Max  
 Insulation Resistance .....100Megaohms @ 100VDC Min.  
 Dielectric Strength .....500 VAC  
 Actuation Travel.....0.014 +/- .008 (.35 +/- .20)  
 Life .....Up to 1,000,000 Cycles

**ENVIRONMENTAL SPECIFICATIONS:**

Operating Temperature .....-4° to +185°F (-20°to +85°C)  
 Storage Temperature .....-4° to +185°F (-20°to +85°C)  
 Resistance to solder heat .....Per EIA-364-56, Procedure 4 & 5, Level 3  
 Solderability .....Per EIA RS-186-9E  
 Seal .....Per IP67

**E**

**Sealed Tactile Switches**



Tyco Electronics	Packaging	Actuator Height	Operating Force
1571407-1	Bulk	.063 (1.60)	260 ± 100gf
1571407-2	T&R	.063 (1.60)	260 ± 100gf



**Multi-Directional Actuation**

**MATERIAL SPECIFICATIONS:**

Contact .....Copper alloy - silver clad/nickel  
 Case Material .....Nylon - UL 94-HB, Black  
 Actuator Material .....Nylon - UL 94-HB, Black  
 Terminals/Fixed Contact .....Copper alloy - plate silver clad/nickel

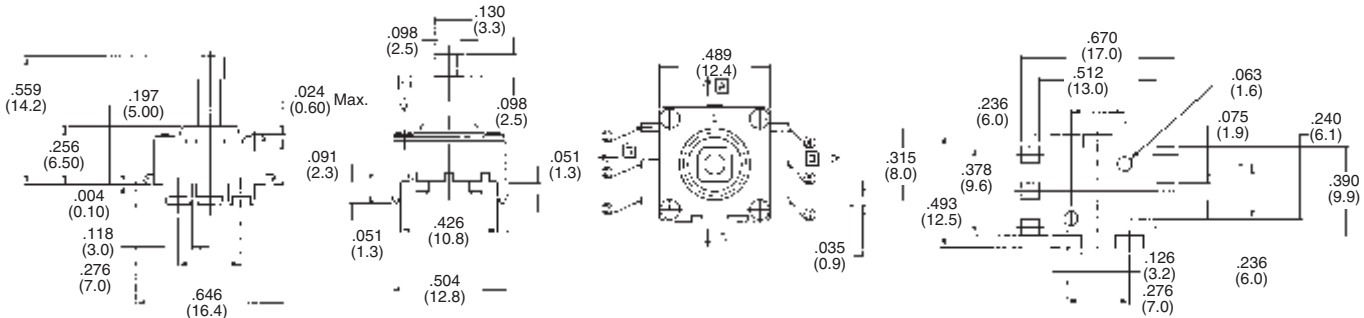
**ENVIRONMENTAL SPECIFICATIONS**

Operating Temperature .....-13° to 158°F (-25° to +70°C)  
 Storage Temperature .....-40° to 185°F (-40° to +85°C)  
 Solder Heat Resistance.....Per EIA-364-56A, Procedure 4 and 5, Level 3  
 Solderability .....Per EIA-364-52, Class 2 Cat. 1, temp. 255° max., time 5 seconds max. 95% min. coverage

**TYPICAL PERFORMANCE CHARACTERISTICS**

Contact Rating .....20mA @15VDC  
 Initial Contact Resistance.....100 Milliohms max.  
 Insulation Resistance .....100 Megohm min.  
 Dielectric Strength .....100 VAC for 1 min.  
 Life Expectancy .....Up to 50,000 Cycles  
 Actuation Force .....500±150 gf (center push),  
 200±100 gf (4-directional)  
 Actuation Travel.....0.039 (1.0) ±.012 (.3) (4-directional),  
 0.315 (8.0) ±2° (4-directional)

**E**  
Multi-Directional Switches



Tyco Electronics	Dimension L
1571514-1	.559 (14.2)
1571514-2	.480 (12.2)
1571514-3	.413 (10.5)

**MATERIAL SPECIFICATIONS:**

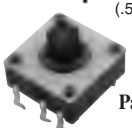
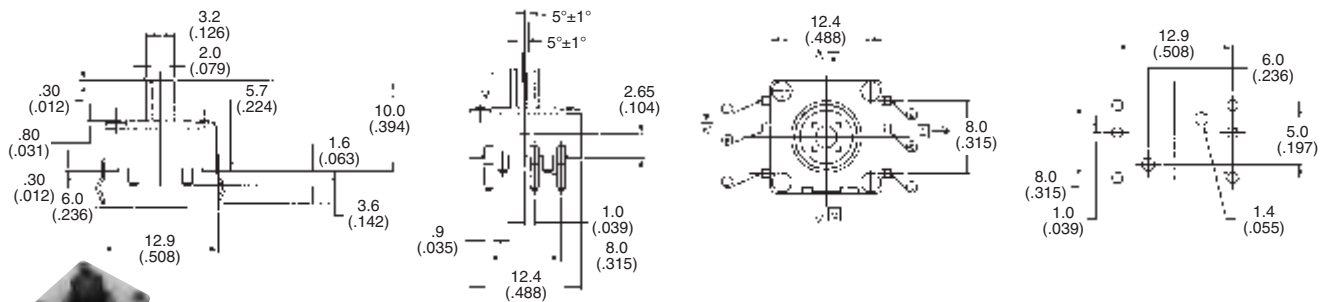
Contacts.....Stainless steel, plate silver clad/nickel  
 Case Material .....Nylon - UL 94-HB, Black  
 Actuator Material .....PBT, UL 94-HB  
 Terminals/Fixed Contacts .....Copper alloy - plate silver/nickel

**Environmental Specifications**

Operating Temperature .....-13° to 158°F (-25° to +70°C)  
 Storage Temperature.....-40° to 185°F (-40° to +85°C)  
 Solder Heat Resistance .....Per EIA-364-56A, Procedure 3, Condition B  
 Solderability .....Per EIA-364-52, Class 2 Cat. 1, temp. 255° max., time 5 seconds max. 95% min. coverage

**TYPICAL PERFORMANCE CHARACTERISTICS**

Contact Rating .....20mA @15VDC  
 Initial Contact Resistance .....100 Milliohms max.  
 Insulation Resistance .....100 Megohm min.  
 Dielectric Strength .....100 VAC for 1 min.  
 Life Expectancy .....Up to 50,000 Cycles  
 Actuation Force .....350±100 gf (center push),  
 200±70/-50 gf (4-directional)  
 Actuation Travel.....0.010 (.25) ±.008 (.2) (center push),  
 0.197 (5.0) ±1° (4-directional)



Part Number 1571515-1

E30



*TRD Series - Page F3*



*Gemini Series - Page F7*



*Power Rocker Switches - Page F21*

# Rocker/Paddle

F  
Rocker/Paddle Switches



Rocker/Paddle Switches Part Number Index

Table listing part numbers and quantities for Rocker/Paddle Switches, including models like A101J15ZQ0, A101J16WQ00, A101J16Z3G00UL, etc.

Table listing part numbers and quantities for Rocker/Paddle Switches, including models like A205J51ZQ00, A205J61ZQ00, A207J1ZQ0, etc.

Table listing part numbers and quantities for Rocker/Paddle Switches, including models like PRBDS3-16F-BW000, PRDDA1-16F-BB000, PRDDA1-16F-BB0BW, etc.

F

Rocker/Paddle Switches

**Rocker/Paddle Switches, TRD Series Part Number Matrix**

**MATERIAL SPECIFICATIONS:**

Movable Contacts .....Copper alloy w/silver inlay contact or gold plate  
 Terminals/Fixed Contacts.....Copper alloy w/silver inlay contact or gold plate  
 Terminal Seal .....Epoxy  
 Housing/Beveled Frame .....Polyamide, black matte finish

**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....Silver: 3A max. @ 125 VAC, option 3  
 Gold: 0.4VA max. @ 20 VDC, option 1  
 Initial Contact Resistance .....20 Milliohms max.  
 Static Withstanding.....15KV, per IEC 801-2  
 Insulation Resistance .....1,000 Megohms min. @ 500 VDC  
 Dielectric Strength .....500 Volts RMS @ sea level  
 Electrical Life .....2 Pos. 20K cycles @ full rated 3A load, 80K @ 0.4VA, 3 pos. 10K cycles @ full rated 3A load, 60K @ 0.4VA

**ENVIRONMENTAL SPECIFICATIONS:**

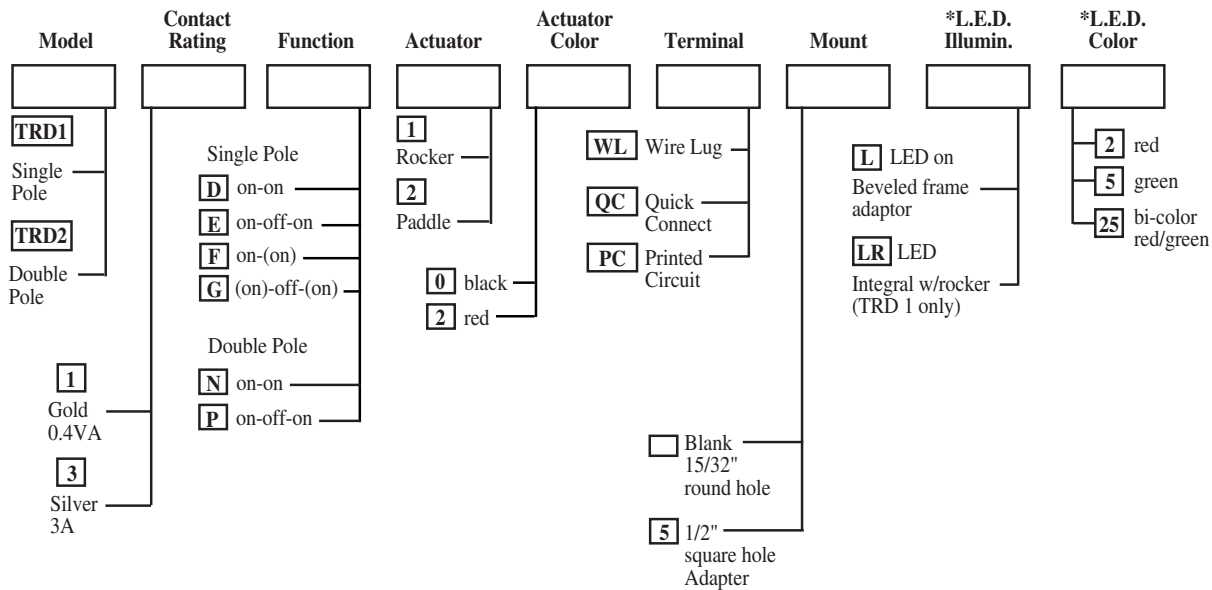
Operating Temperature.....-4°F to +176°F (-20°C to +80°C)  
 Storage Temperature.....-49°F to +199°F (-45°C to +93°C)  
 Solder Heat Resistance .....Meets MIL-STD-202, method 210

**\*NOTICE: Caution should be used when hand-soldering. Solder heat Resistance -550°-600°F for less than 5 seconds. Solder with the switch in the closed position.**

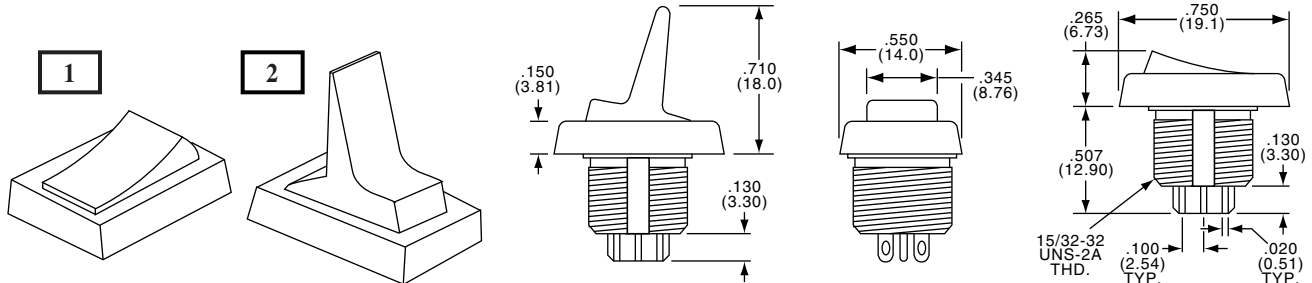
UL options available, consult Tyco Electronics Product Information Center

**HOW TO ORDER**

\* Leave blank if LED not required.

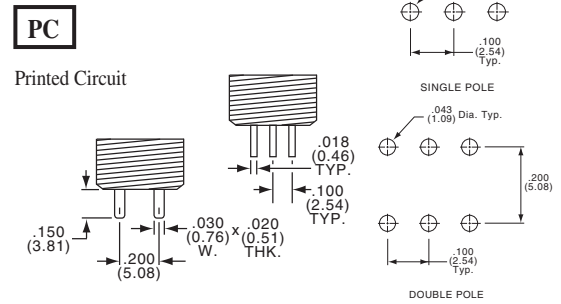
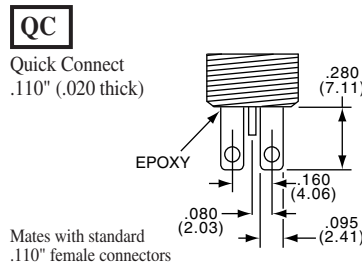
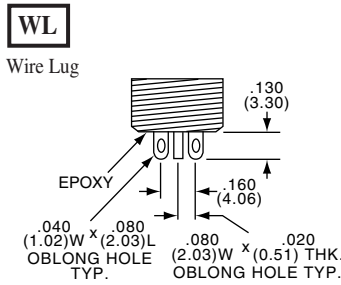


**ACTUATORS**



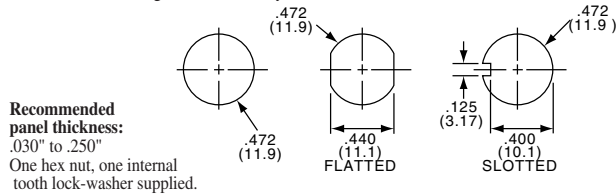
**Rocker/Paddle Switches, TRD Series Options**

**TERMINATIONS**  
(Epoxy seal standard)



**15/32" HOLE STANDARD**

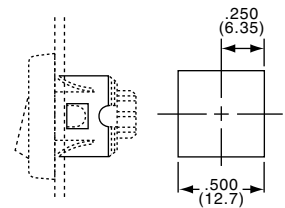
Standard TRD bushing will mount in any hole shown below.



**5** 1/2" SQUARE CUTOUT SNAP-IN ADAPTOR

**Recommended panel thickness:**  
.030" to .125"

**Material:** bright stainless steel  
To specify adaptor separately, use P/N **TRD10793**



**CONTACT/RATING/UL RECOGNITION**

**1** 0.4VA Max. @ 20 VDC

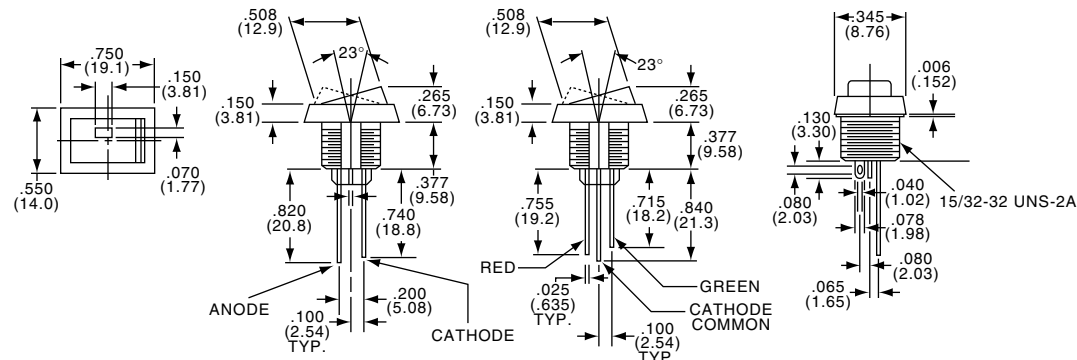
Movable Contact: Copper alloy, gold plate  
Fixed Contact/Terminal: Copper alloy, gold plate

**3** 3A Max. @ 125 VAC

Movable Contact: Copper alloy, silver inlay  
Fixed Contact/Terminal: Copper alloy, silver inlay

**L.E.D. ILLUMINATION - SINGLE AND BI-COLOR**

**LR** L.E.D. Integral (Rocker Actuator)  
All SPDT functions (TRD1 Model)



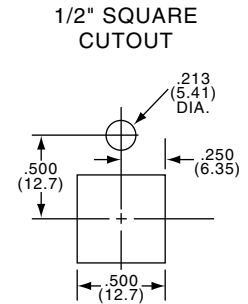
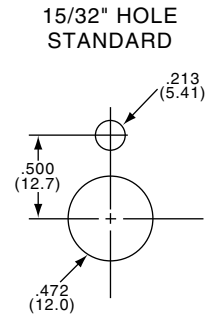
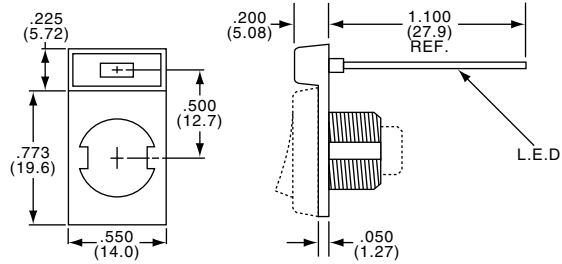
Standard mounting dimensions apply, L.E.D. supplied in **2** red, **5** green, or **25** red/green.  
**L.E.D. Specifications: Max Voltage:** 2.8 VDC  
**Max. Forward Current:** red-20mA, green-25 mA, red/green-40 mA.

F4

**Rocker/Paddle Switches, TRD Series Options**

**L** L.E.D. BEVELED FRAME ADAPTOR  
(Accepts rectangular L.E.D.)

**MOUNTING**






**Material:** Nylon 6/6  
**Color/Finish:** Black, matte

**Recommended Panel Thickness:** .030 to .220:

**Recommended Panel Thickness:** .030 to .095"

**FUNCTIONS**

				
Single Pole	Double Pole	123 456	123 456	123 456
<input type="checkbox"/> D	<input type="checkbox"/> N	On	None	On
<input type="checkbox"/> E	<input type="checkbox"/> P	On	Off	On
<input type="checkbox"/> F		On	None	(On)
<input type="checkbox"/> G		(On)	Off	(On)
SPDT Terminals Connected		2-3	---	1-2
DPDT Terminals Connected		2-3 5-6	---	1-2 4-5

**None** No mechanical position

**Off** Mechanical position, no electrical connection

**(On)** Momentary mechanical position, and electrical connection

\* Refer to Pages F3-F5 for Other Options \*

**Rocker Switches, TRD Series Illuminated or Non-Illuminated, Wire Lug**

**MATERIAL SPECIFICATIONS:**

Contacts .....Gold over nickel or silver plate  
 Case Material .....Polyamide, black matte finish  
 Actuator Material .....Polyamide  
 Terminals/Fixed Contacts.....Copper alloy with gold or silver plate  
 Terminal Seal .....Epoxy

**ENVIRONMENTAL SPECIFICATIONS:**

Operating Temperature.....-4°F to +176°F (-20°C to +80°C)  
 Storage Temperature.....-49°F to +199°F (-45°C to +93°C)

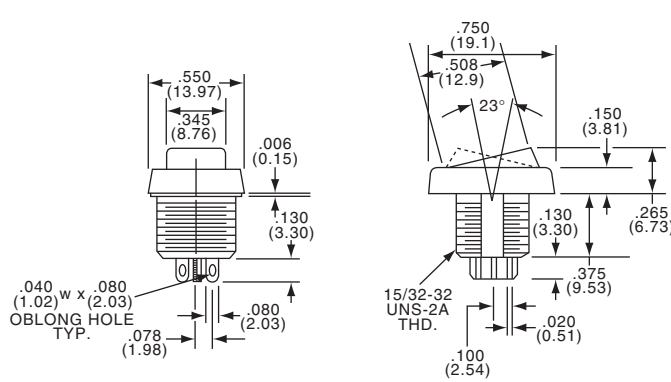
**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....0.4 VA Max. @ 20 VDC or peak AC  
 3 A @ 125 VAC or 28 VDC (2 pos.) 2A  
 Initial Contact Resistance .....20 Milliohms max.  
 Contact Timing .....Break-before-make  
 Insulation Resistance .....1,000 Megohms min.  
 Dielectric Strength .....500 Volts RMS @ sea level  
 Actuator Travel.....23°  
 Life Expectancy .....2 Pos. - Up to 100,000 actuations  
 3 Pos. - Up to 50,000 actuations

**NOTE: Part numbering matrix page F3**

**NOTE: When hand soldering, solder with switch in closed position. Solder temperature 550-600°F less than 5 seconds.**

**F**  
TRD Series

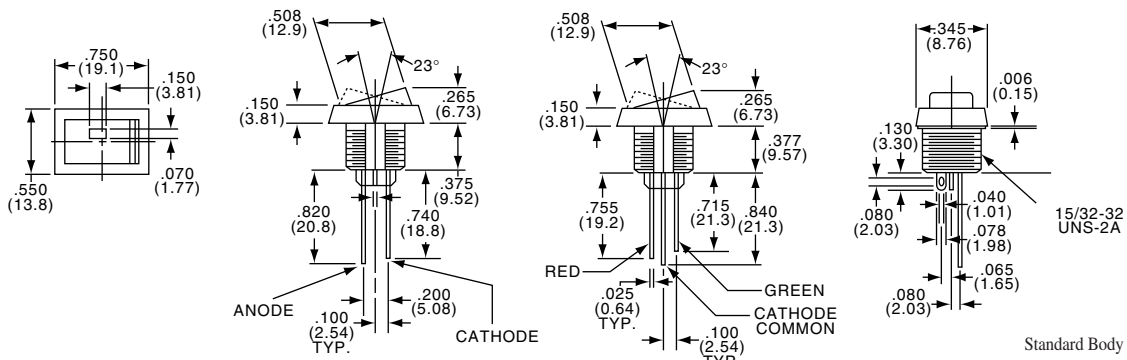


TRD21N10WL

Standard Body Color - (Black)

Model	Type	Function	Act. Code Pg. M5	Contact	Terminal	Model	Type	Function	Act. Code Pg. M5	Contact	Terminal
TRD11D1(*)WL	SPDT	On None On	1	Gold	Wire Lug	TRD13D1(*)WL	SPDT	On None On	1	Silver	Wire Lug
TRD11E1(*)WL	SPDT	On Off On	5	Gold	Wire Lug	TRD13E1(*)WL	SPDT	On Off On	5	Silver	Wire Lug
TRD11F1(*)WL	SPDT	On None (On)	1	Gold	Wire Lug	TRD13F1(*)WL	SPDT	On None (On)	1	Silver	Wire Lug
TRD21N1(*)WL	DPDT	On None On	2	Gold	Wire Lug	TRD23N1(*)WL	DPDT	On None On	2	Silver	Wire Lug
TRD21P1(*)WL	DPDT	On Off On	6	Gold	Wire Lug	TRD23P1(*)WL	DPDT	On Off On	6	Silver	Wire Lug

(\*) Specify rocker color by adding suffix number: (0) Black (2) Red, (On) indicates momentary position.



TRD11D10WLLR

Standard Body and Rocker Color - (Black)

**ILLUMINATED**

**ILLUMINATED**

Model	Type	Function	Act. Code Pg. M5	Contact	Terminal	Model	Type	Function	Act. Code Pg. M5	Contact	Terminal
TRD11D10WLLR(*)	SPDT	On None On	1	Gold	Wire Lug	TRD13D10WLLR(*)	SPDT	On None On	1	Silver	Wire Lug
TRD11E10WLLR(*)	SPDT	On Off On	5	Gold	Wire Lug	TRD13E10WLLR(*)	SPDT	On Off On	5	Silver	Wire Lug
TRD11F10WLLR(*)	SPDT	On None (On)	1	Gold	Wire Lug	TRD13F10WLLR(*)	SPDT	On None (On)	1	Silver	Wire Lug

(\*) Specify LED color by adding suffix number: (2) Red, (5) Green, (25) Red/Green - Bi-color (On) indicates momentary position.

**Rocker/Paddle Switches, A Series, Part Number Matrix**

**MATERIAL SPECIFICATIONS:**

Contacts/Terminals.....Gold/gold flash  
 Silver/tin lead  
 Case Material .....Thermoset 94V-0  
 Actuator Material .....Polyamide  
 Terminal Seal .....Epoxy

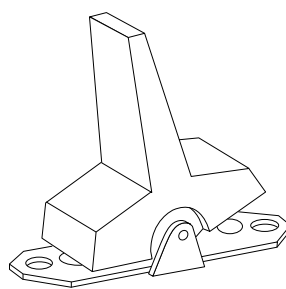
**ENVIRONMENTAL SPECIFICATIONS:**

Operating Temperature.....-4°F to +185°F (-20°C to +85°C)  
 Storage Temperature.....-49°F to +212°F (-45°C to +100°C)

**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....Gold: 0.4 VA @ 20 AC/DC  
 Silver: 2 A @ 250 VAC: 5 A @ 125 VAC  
 Silver: 2 A @ 30 VDC  
 Initial Contact Resistance .....30 Milliohms max.  
 Contact Timing .....Break-before-make  
 Insulation Resistance .....1,000 Megohms @ 500 VDC  
 Dielectric Strength .....1,000 Volts RMS @ sea level  
 Actuator Travel.....25°  
 Life Expectancy .....Up to 30,000 Cycles

**DESIGN**



**PART NUMBERING**

Model	Function	Actuator	Terminal	Contact	Actuator Color	Beveled Frame Color	Option
<b>A1</b>	Single Pole	<b>J1</b> Small	<b>Z</b> Wire Lug	<b>Q</b> Silver	<b>0</b> Black (Std.)	<b>0</b> Black (Std.)	UL (Q or G) contacts only
<b>A2</b>	Double Pole	<b>J3</b> Large	<b>A</b> Right Angle	<b>B</b> Gold	<b>2</b> Red		
<b>01</b>	On-On	<b>J15</b> Snap-in	<b>AV2</b> Vert. Right Angle	<b>G</b> Gold over Silver			
<b>03</b>	On-Off-On	<b>J16</b> Snap-in w/beveled frame	<b>C</b> Printed Circuit				
<b>05</b>	(On)-Off-(On)	<b>J50</b> Snap-in	<b>V5</b> Vertical Right Angle				
		<b>J51</b> Snap-in w/beveled frame	<b>V3</b> <b>V4</b> Vertical Support Bracket				
		<b>J52</b> Snap-in w/beveled frame LED	<b>W</b> Wire Wrap				
		<b>J2</b> Small	<b>Z3</b> Quick Connect				
		<b>J4</b> Large					
		<b>J5</b> Large					
		<b>J60</b> Snap-in					
		<b>J61</b> Snap-in w/beveled frame					
		<b>J62</b> Snap-in w/beveled frame & LED					

**OPTIONAL:**  
 UL recognized under the Component Program of Underwriters Laboratories Inc. File # E46765  
 CSA Certified File #LR65901

**F**

Gemini Series Rocker/Paddle Switches

**Rocker/Paddle Switches, A Series, Options**

**FUNCTIONS**

The following functions available in SP or DP.

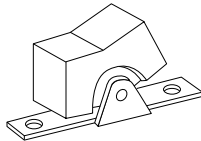
- 01** 2 Positions None indicates no mechanical position
  - 03** 3 Positions Off indicates a mechanical position with no electrical connection.
  - 05** 3 Positions (On) indicates momentary operation.
- SPDT, connect terminals:  
DPDT, connect terminals:



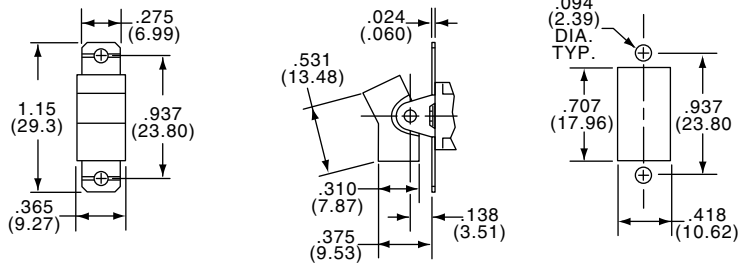
**ACTUATORS**

**J1** Rockers

Small



Mounting Type Standard with C or Z Terminal Type

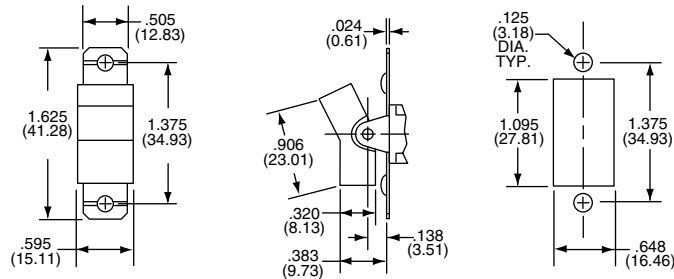


**J3**

Large



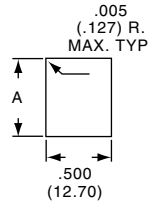
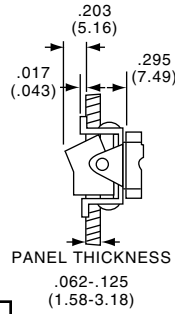
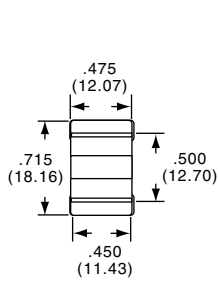
Mounting Type Standard with C or Z Terminal Type



F

Gemini Series Rocker/Paddle Switches

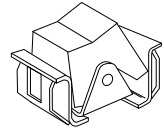
**Rocker/Paddle Switches, A Series, Options**



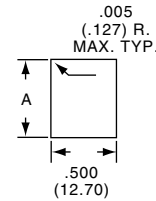
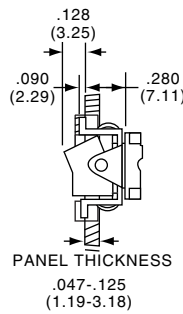
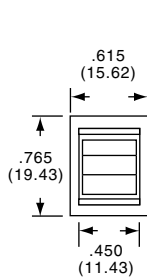
**ROCKER**



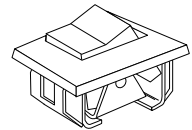
Snap-in



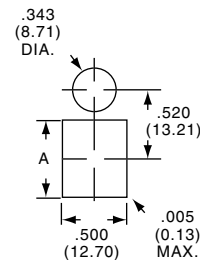
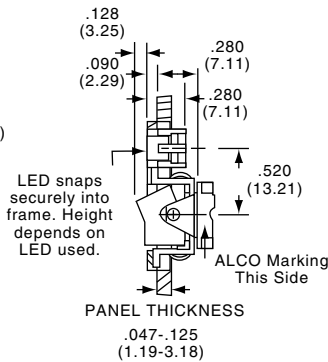
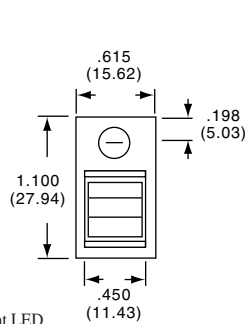
	Panel Opening		
Panel Thickness	.062	.093	.125
"A"	.600-.605	.610-.615	.620-.625



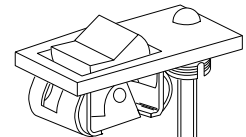
**Snap-in with beveled frame**



	Panel Opening		
Panel Thickness	.062	.093	.125
"A"	.600-.605	.610-.615	.620-.625



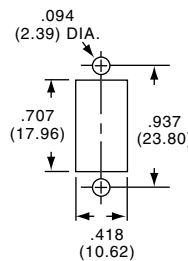
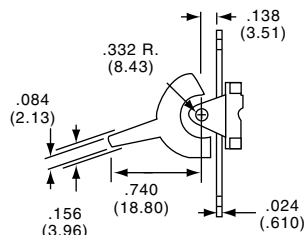
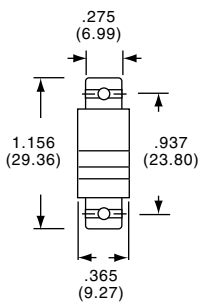
**Snap-in with beveled frame/L.E.D.**



L.E.D. Not supplied.

Accepts BL-17 or equivalent LED

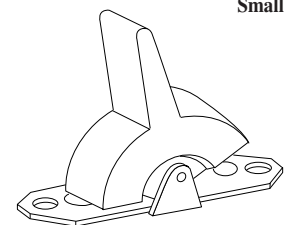
	Panel Opening		
Panel Thickness	.062	.093	.125
"A"	.600-.605	.610-.615	.620-.625



**PADDLE**



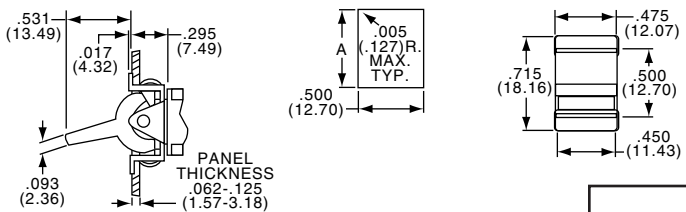
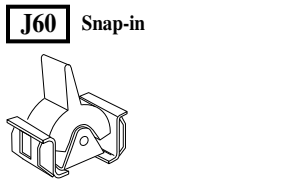
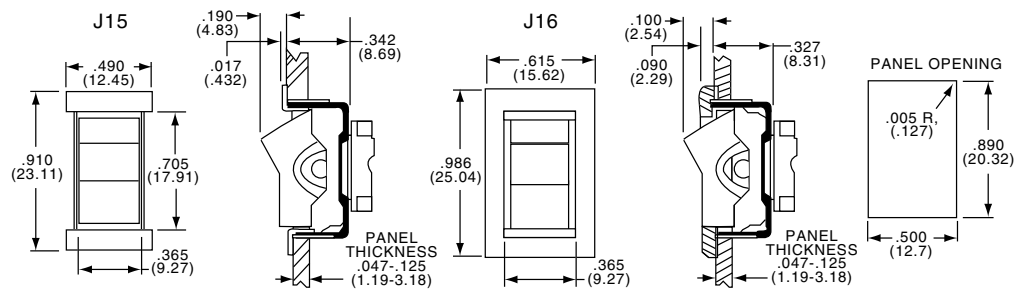
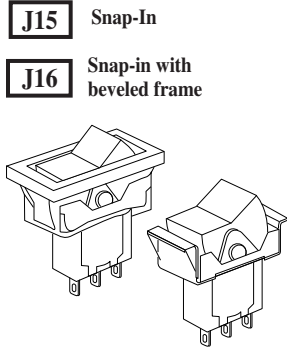
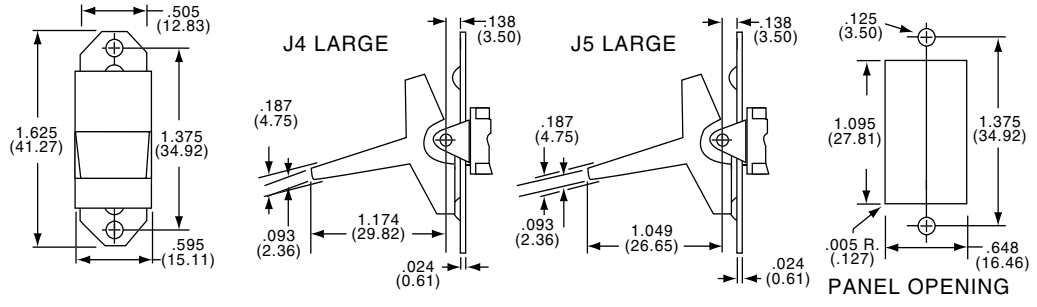
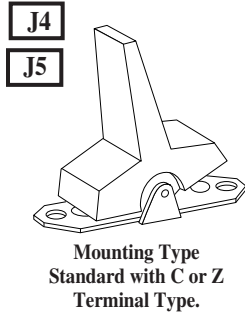
Small



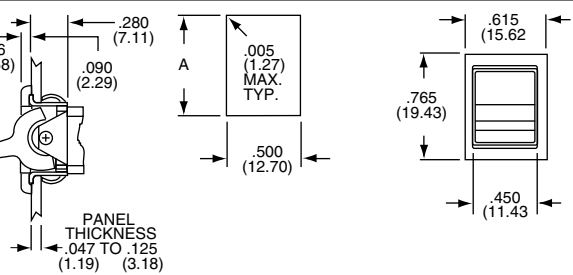
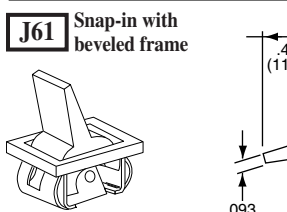
Mounting Type Standard with C or Z Terminal Type.



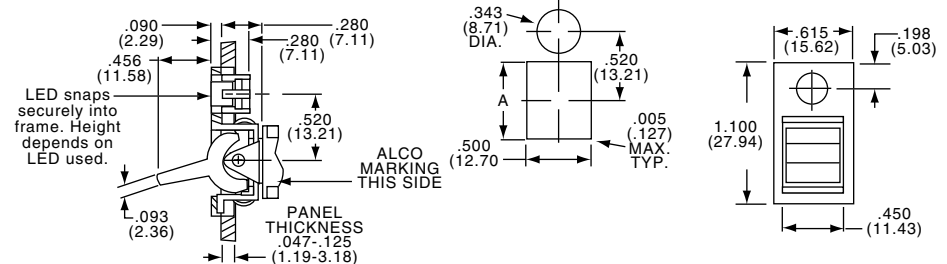
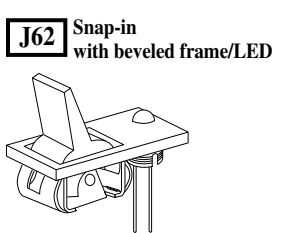
**Rocker/Paddle Switches, A Series, Options**



Panel Opening			
Panel Thickness	.062	.093	.125
"A"	.600-.605	.610-.615	.620-.625



Panel Opening			
Panel Thickness	.062	.093	.125
"A"	.600-.605	.610-.615	.620-.625



Panel Opening			
Panel Thickness	.062	.093	.125
"A"	.600-.605	.610-.615	.620-.625

Accepts BL-17 or equivalent LED  
L.E.D. not supplied

F

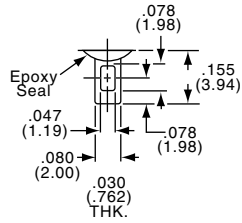
Gemini Series Rocker/Paddle Switches

**Rocker/Paddle Switches, A Series, Termination Options**

TERMINALS

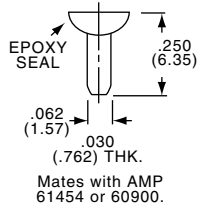
**Z**

Wire Lug Standard



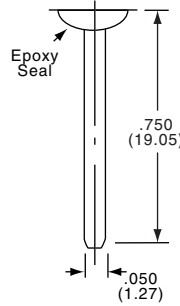
**Q**

Quick Connect



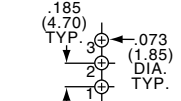
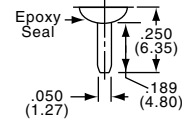
**W**

Wire Wrap

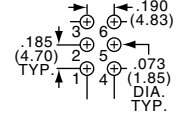


**C**

Printed Circuit



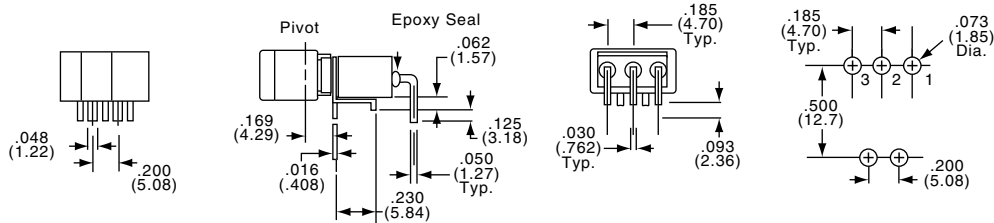
SINGLE POLE



DOUBLE POLE

**A**

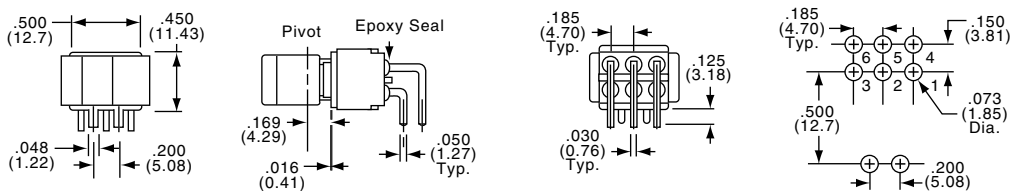
Right Angle Single Pole



NOTE: Terminal numbers viewed from top of P.C. board.

**A**

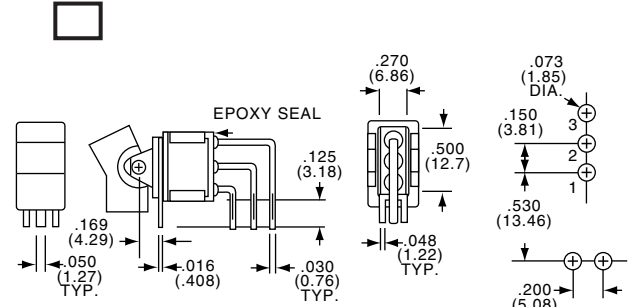
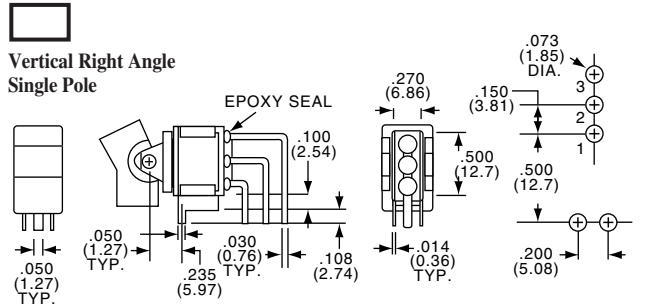
Right Angle Double Pole



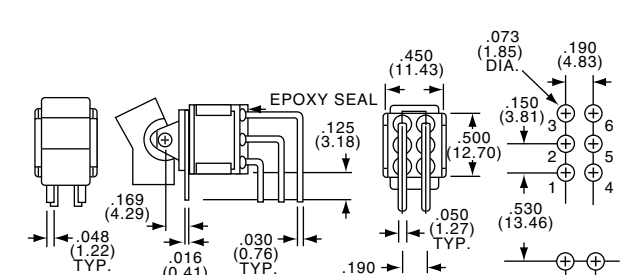
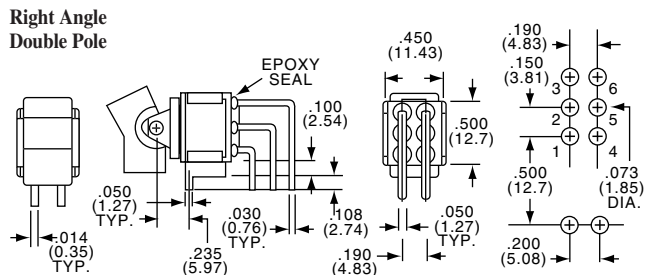
NOTE: Terminal numbers viewed from top of P.C. board.

**F**  
Gemini Series Rocker/Paddle Switches

**Rocker/Paddle Switches, A Series, Options**

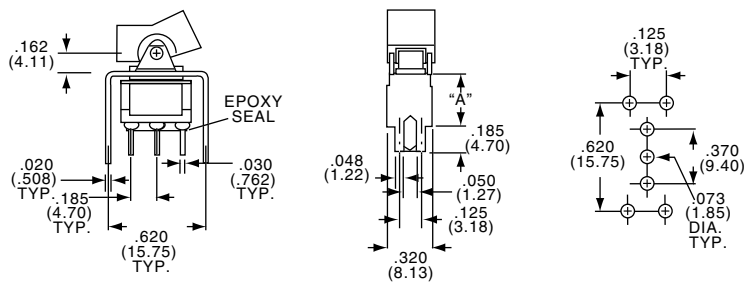


NOTE: Terminal numbers viewed from top of P.C. board.



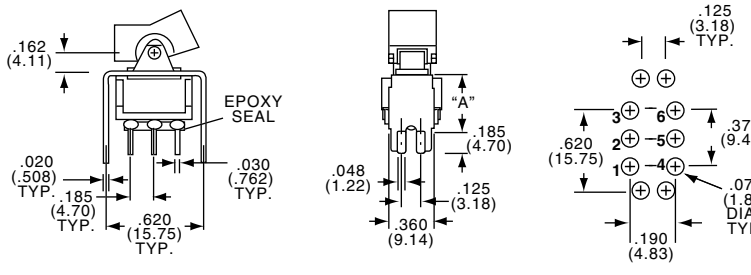
NOTE: Terminal numbers viewed from top of P.C. board.

**V3 V4**  
**Vertical Support Bracket Single Pole**



Option Code	Dim. "A"
V3	.460 (11.68)
V4	.630 (16.00)

**Vertical Support Bracket Double Pole**



Option Code	Dim. "A"
V3	.460 (11.68)
V4	.630 (16.00)

**CONTACTS**

**B** CONTACTS: Copper alloy with gold plate, welded button.

TERMINALS: Copper alloy with gold plate.

ELECTRICAL RATING: 0.4VA @ 20 VAC/DC.

**Q** CONTACTS: Copper alloy with silver, welded button.

TERMINALS: Copper alloy with tin/lead plate.

ELECTRICAL RATING: 5 A @ 125 VAC, 2 A @ 250 VAC, 2 A @ 30 VDC. UL/CSA RATING: 5A @ 125 VAC, 3 @ 250 VAC (Specify "UL" option code)

**G** CONTACTS: Copper alloy with gold plate over silver, welded button.

TERMINALS: Copper alloy with gold plate.

ELECTRICAL RATING: 0.4 VA @ 20 VAC/DC or 5 A @ 125 VAC, 2 A @ 250 VAC, 2 A @ 30 VDC.

Note: This contact option can be used for low-level or power switching. If level is above 0.4 VA @ 20 VAC/DC, the switch is rendered usable only for power switching due to arc-removal of gold plate.

UL/CSA RATING: 5A @ 125 VAC, 3 @ 250 VAC (Specify "UL" option code)

F

Gemini Series Rocker/Paddle Switches

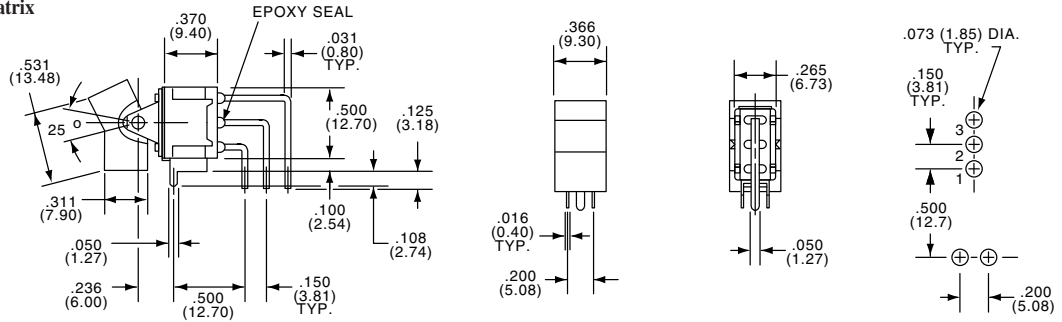
**Rocker Switches, A Series, PC Tail, Straight or Vertical Right Angle**

\* Refer to Pages F7 for Product Specifications and Part Matrix

SPDT



A101J1AV2Q0

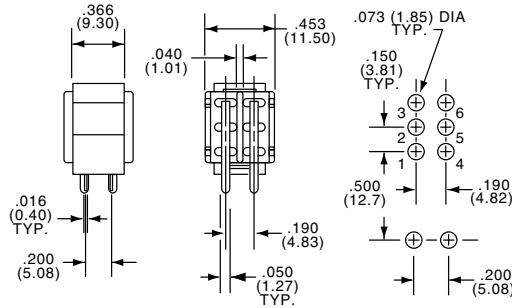


DPDT



A205J1AV2Q0

Standard Rocker Color - (Black)

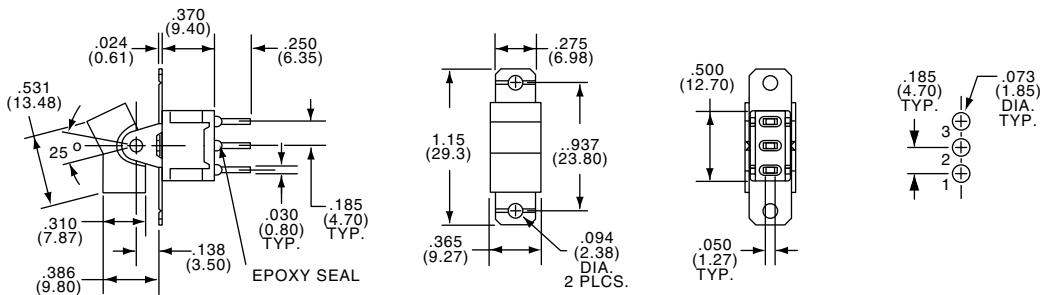


Silver Contacts							
Tyco Electronics	Alcoswitch	Type	Act. Code.	P. M5			
1-1437591-1	A101J1AV2Q0	SPDT	1		On	None	On
4-1437591-7	A105J1AV2Q0	SPDT	5		(On)	Off	(On)
7-1437591-1	A201J1AV2Q0	DPDT	2		On	None	On
9-1437591-6	A205J1AV2Q0	DPDT	6		(On)	Off	(On)

SPDT



A101J1CQ0

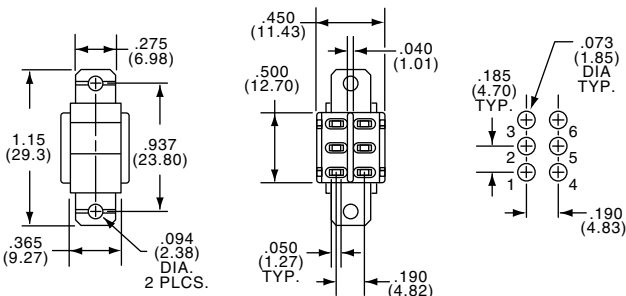


DPDT



A201J1CQ0

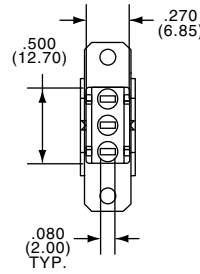
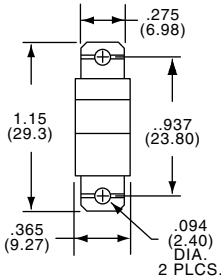
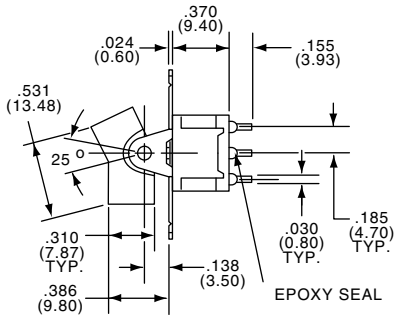
Standard Rocker Color - (Black)



Silver Contacts							
Tyco Electronics	Alcoswitch	Type	Act. Code.	P. M5			
1-1437591-3	A101J1CQ0	SPDT	1		On	None	On
4-1437591-8	A105J1CQ0	SPDT	5		(On)	Off	(On)
7-1437591-2	A201J1CQ0	DPDT	2		On	None	On
—	A203J1CQ0	DPDT	6		On	Off	On
—	A205J1CQ0	DPDT	6		(On)	Off	(On)

**Rocker Switches, A Series, Wire Lug or Right Angle**

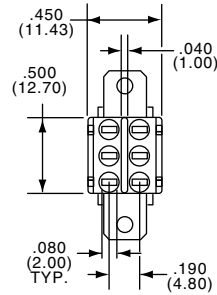
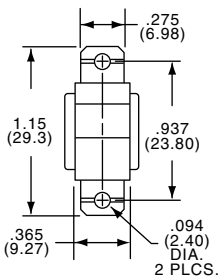
SEE PAGE F7 FOR PRODUCT SPECIFICATIONS AND PART MATRIX



SPDT



A101J1ZQ0



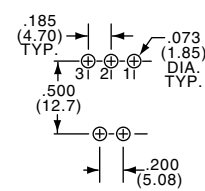
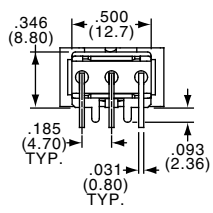
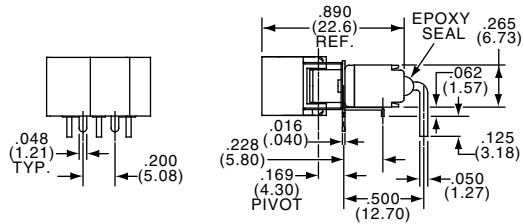
DPDT



A201J1ZQ0

Standard Rocker Color - (Black)

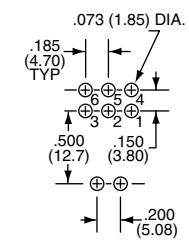
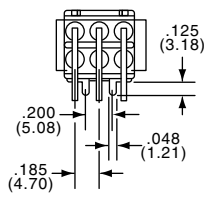
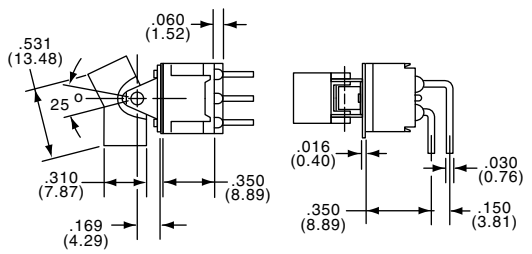
Silver Contacts							Silver Contacts								
Tyco Electronics	Alcoswitch	Type	Act. Code.	P. M5				Tyco Electronics	Alcoswitch	Type	Act. Code.	P. M5			
1-1437591-7	A101J1ZQ0	SPDT	1		On	None	On	7-1437591-4	A201J1ZQ0	DPDT	2		On	None	On
3-1437591-8	A103J1ZQ0	SPDT	5		On	Off	On	9-1437591-1	A203J1ZQ0	DPDT	6		On	Off	On
5-1437591-0	A105J1ZQ0	SPDT	5		(On)	Off	(On)	9-1437591-7	A205J1ZQ0	DPDT	6		(On)	Off	(On)



SPDT



A101J1AQ0



DPDT



A201J1AQ0

Standard Rocker Color - (Black)

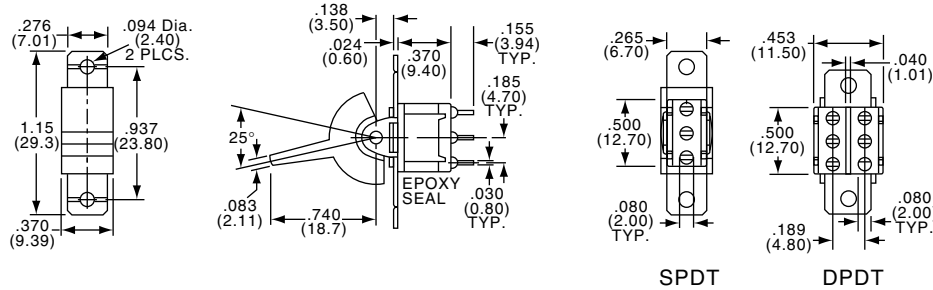
Silver Contacts							Silver Contacts								
Tyco Electronics	Alcoswitch	Type	Act. Code.	P. M5				Tyco Electronics	Alcoswitch	Type	Act. Code.	P. M5			
1-1437591-8	A101J1AQ0	SPDT	1		On	None	On	6-1437591-9	A201J1AQ0	DPDT	2		On	None	On
4-1437591-6	A105J1AQ0	SPDT	5		(On)	Off	(On)	8-1437591-7	A203J1AQ0	DPDT	6		On	Off	On
								—	A205J1AQ0	DPDT	6		(On)	Off	(On)

F

Gemini Series Rocker/Paddle Switches

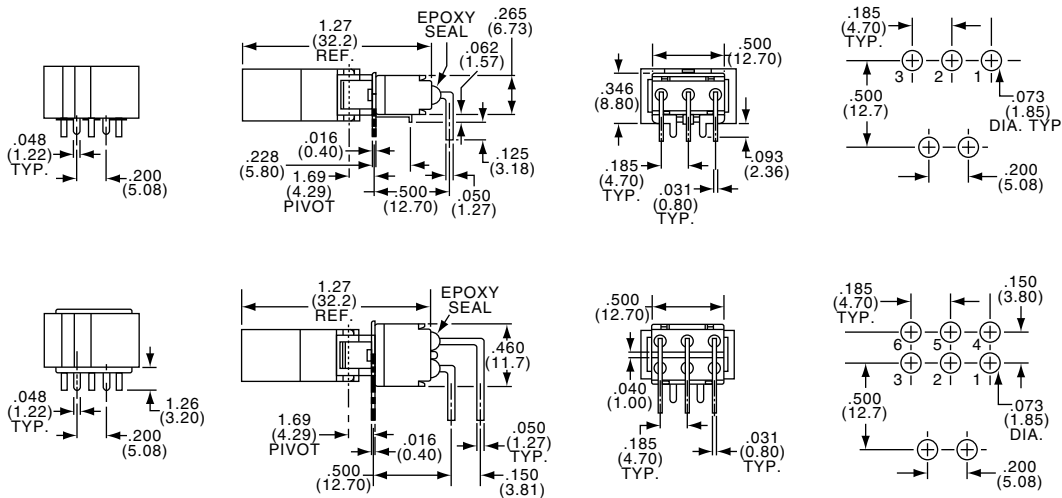
\* Refer to Pages F7 for Product Specifications and Part Matrix

**Paddle Switches, A Series, Wire Lug or Right Angle**



Standard Paddle Color - (Black)

Silver Contacts Tyco Electronics	Alcoswitch	Type	Act.	Code	P. M5	On	None	Off	Silver Contacts Tyco Electronics	Alcoswitch	Type	Act.	Code	P. M5	On	None	Off
1-1437591-9	A101J2ZQ0	SPDT	1			On	None	On	7-1437591-6	A201J2ZQ0	DPDT	2			On	None	On
4-1437591-0	A103J2ZQ0	SPDT	5			On	Off	On	—	A203J2ZQ0	DPDT	6			On	Off	On
5-1437591-3	A105J2ZQ0	SPDT	5			(On)	Off	(On)	9-1437591-9	A205J2ZQ0	DPDT	6			(On)	Off	(On)



Standard Paddle Color - (Black)

Silver Contacts Tyco Electronics	Alcoswitch	Type	Act.	Code	P. M5	On	None	Off	Silver Contacts Tyco Electronics	Alcoswitch	Type	Act.	Code	P. M5	On	None	Off
—	A101J2AQ0	SPDT	1			On	None	On	—	A201J2AQ0	DPDT	2			On	None	On
—	A103J2AQ0	SPDT	5			On	Off	On	—	A203J2AQ0	DPDT	6			On	Off	On
5-1437591-1	A105J2AQ0	SPDT	5			(On)	Off	(On)	—	A205J2AQ0	DPDT	6			(On)	Off	(On)

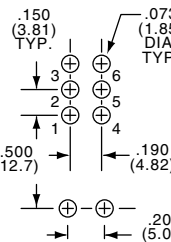
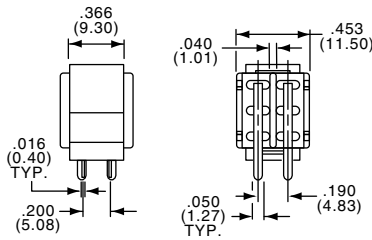
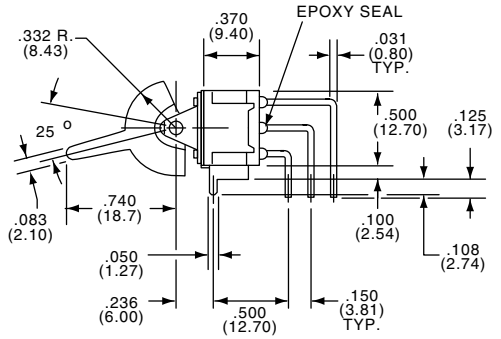
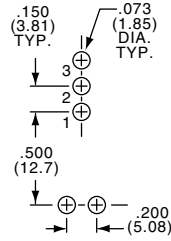
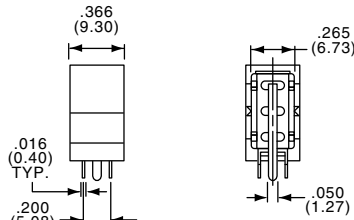
**Paddle Switches, A Series, PC Tail, Straight or Vertical Right Angle**

SEE PAGE F7 FOR PRODUCT SPECIFICATIONS AND PART MATRIX

SPDT / DPDT



A105J2AV2Q0



F

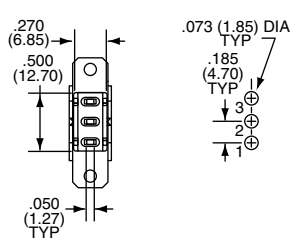
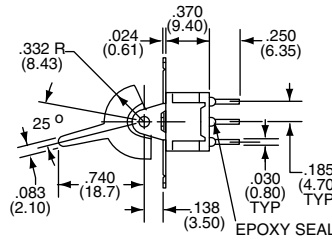
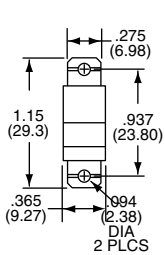
Standard Paddle Color - (Black)

Silver Contacts							Silver Contacts								
Tyco Electronics	Alcoswitch	Type	Act. Code	P. M5	On	None	On	Tyco Electronics	Alcoswitch	Type	Act. Code	P. M5	On	None	On
1-1437591-8	A101J2AV2Q0	SPDT	1		On	None	On	—	A201J2AV2Q0	DPDT	2		On	None	On
5-1437591-2	A105J2AV2Q0	SPDT	5		(On)	Off	(On)								

SPDT



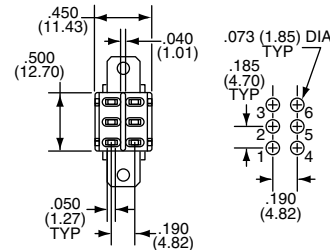
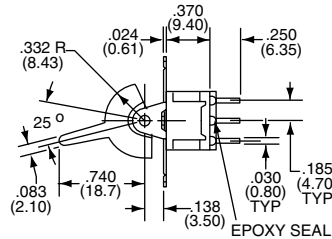
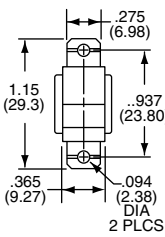
A105J2CQ0



DPDT



A205J2CQ0



Silver Contacts							Silver Contacts								
Tyco Electronics	Alcoswitch	Type	Act. Code	P. M5	On	None	On	Tyco Electronics	Alcoswitch	Type	Act. Code	P. M5	On	None	On
—	A103J2CQ0	SPDT	5		(On)	Off	(On)	7-1437591-5	A201J2CQ0	DPDT	2		On	None	On
—	A105J2CQ0	SPDT	5		(On)	Off	(On)	9-1437591-8	A205J2CQ0	DPDT	6		(On)	Off	(On)



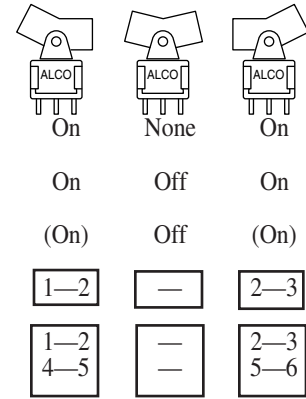


**Rocker/Paddle Switches, AE Series, Process Sealed, Options**

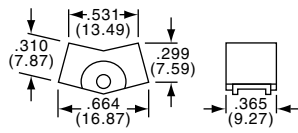
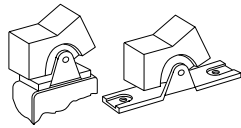
**FUNCTIONS**

The following functions available in SP or DP.

- 01** 2 Positions None indicates no mechanical position
  - 03** 3 Positions Off indicates a mechanical position with no electrical connection.
  - 05** 3 Positions (On) indicates momentary operation
- SPDT, connect terminals:  
 DPDT, connect terminals:



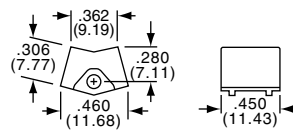
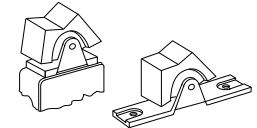
**J1**  
Rocker



Mounting Provided with C or Z Terminal Type.

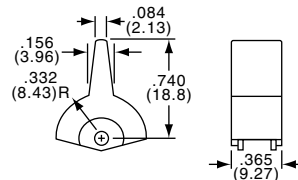
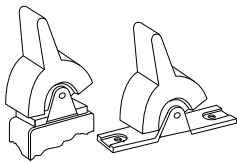
**ACTUATORS**

**J50**  
Rocker



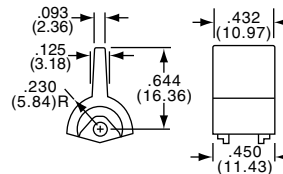
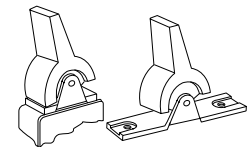
Mounting Provided with C or Z Terminal Type.

**J2**  
Paddle



Mounting Provided with C or Z Terminal Type.

**J60**  
Paddle



Mounting Provided with C or Z Terminal Type.

F

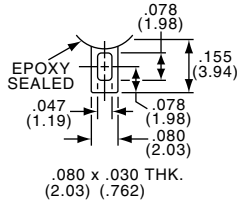
Gemini Series Rocker/Paddle Switches

**Rocker/Paddle Switches, AE Series, Process Sealed, Termination Options**

**TERMINALS**

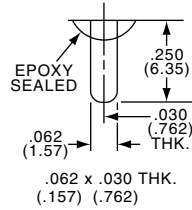
**Z**

Wire Lug



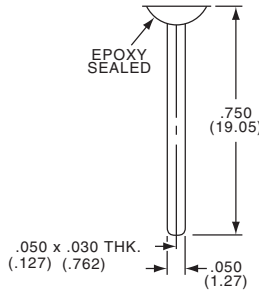
**Q**

Quick Connect



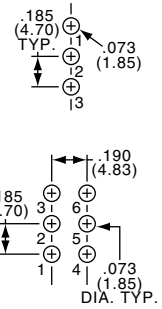
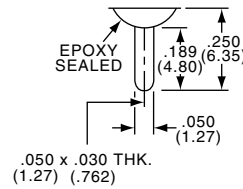
**W**

Wire Wrap



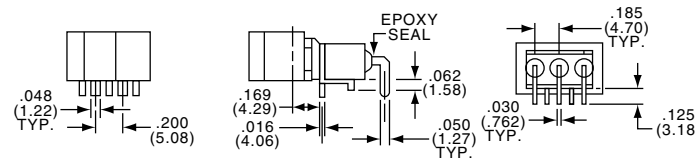
**C**

Printed Circuit

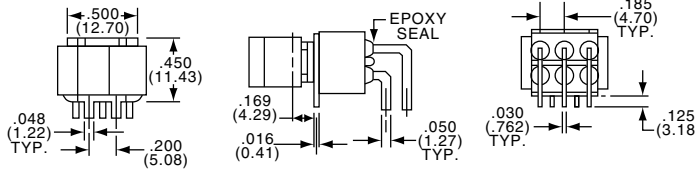


**A**

Right Angle Single Pole

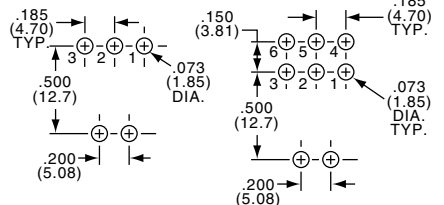


Right Angle Double Pole



SINGLE POLE

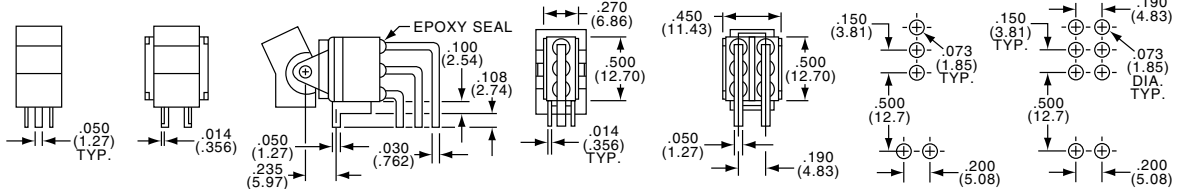
DOUBLE POLE



NOTE: Terminal numbers viewed from top of P.C. board.

**V**

Vertical Right Angle



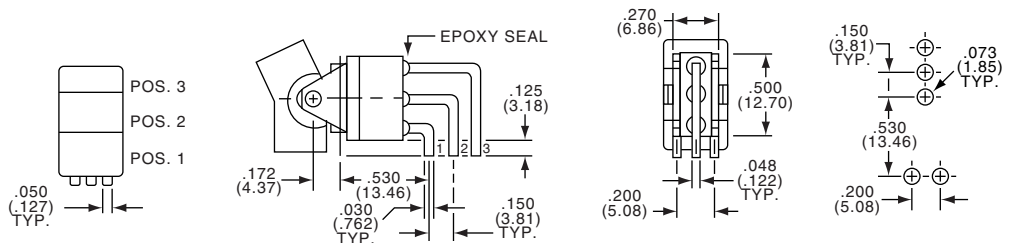
SINGLE POLE

DOUBLE POLE

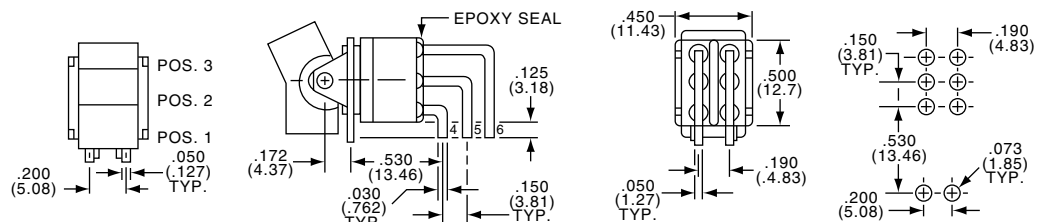
NOTE: Terminal numbers viewed from top of P.C. board.

**V**

Vertical Right Angle Single Pole



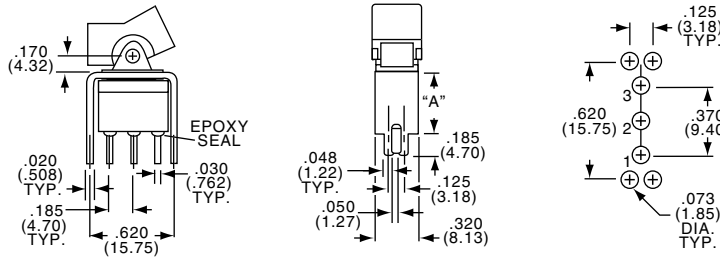
Vertical Right Angle Double Pole



**Rocker/Paddle Switches, AE Series, Process Sealed, Options**

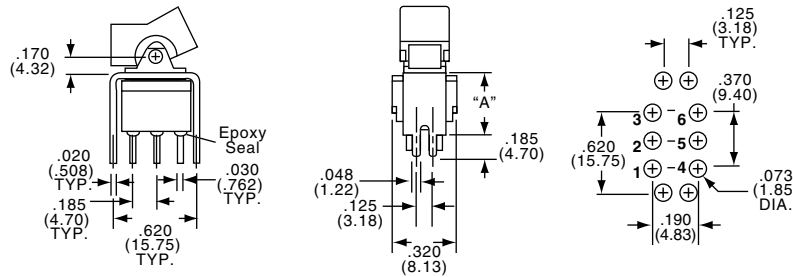


Vertical Support Bracket  
Single Pole



Option Code	Dim."A"
V3	.460 (11.68)
V4	.630 (16.00)

Vertical Support Bracket  
Double Pole



Option Code	Dim."A"
V3	.460 (11.68)
V4	.630 (16.00)

**CONTACTS**

**B** CONTACTS: Copper alloy with gold plate, welded button.  
TERMINALS: Copper alloy with gold plate.  
ELECTRICAL RATING: 0.4VA @ 20 VAC/DC.

**Q** CONTACTS: Copper alloy with silver, welded button.  
TERMINALS: Copper alloy with tin/lead plate.  
ELECTRICAL RATING: 5 amps @ 125 VAC, 2 amps @ 250 VAC, 2 amps @ 30 VDC.  
UL/CSA RATING: 5A @ 125 VAC, 3 @ 250 VAC (Specify "UL" option code)

**G** CONTACTS: Copper alloy with gold plate over silver, welded button.  
TERMINALS: Copper alloy with gold plate.  
ELECTRICAL RATING: 0.4 VA @ 20 VAC/DC or 5 amps @ 125 VAC, 2 amps @ 250 VAC, 2 amps @ 30 VDC.  
Note: This contact option can be used for low-level or power switching. If level is above 0.4 VA @ 20 VAC/DC, the switch is rendered usable only for power switching due to arc-removal of gold plate.  
UL/CSA RATING: 5A @ 125 VAC, 3 @ 250 VAC (Specify "UL" option code)

F

Gemini Series Rocker/Paddle Switches

**Series PRA, PRB and PRD**

**Product Facts**

- Full line of single or double-pole power rocker switches for three different industry compatible panel cut-out sizes
- Easy to install snap-in mounting
- Dust resistant
- Dual color rocker option
- Full-illuminated rocker option
- LED or neon window illuminated option
- Wide range of marking options and functions available
- Solder lugs or .187 & .250 FASTON Tab terminals
- Cost competitive



**Electrical Characteristics**

**Current:** 16A@125 VAC 1/3 HP  
10A@250 VAC 1/2 HP  
**PRA Series Double Pole:**  
7A@125 VAC  
6A@250 VAC  
**PRA Series Single Pole:**  
6 (3)A 250V ~ 10A 125V ~  
μ 25T85  
**Inrush Current:** 50A/3msec  
(capacitive load)  
**Contact Resistance (initial):** <50m Ohms  
**Dielectric Strength (initial):** >1000 VAC, 1 min.  
**Insulation Resistance (initial):** >100Mohms min.  
**Electrical Life Endurance:**  
>6000 operations  
Voltage drop <100 mV

**Mechanical Characteristics**

**Operating Life Endurance:** up to >100,000 operations  
**Actuating Force:**  
Series PRA 150g min., 650g max.  
Series PRB 300g min., 700g max.  
Series PRD 850g min., 1250g max.

**Materials and Finish**

**Housing:** Nylon 6/6 UL 94V-2  
**Rocker:** Nylon 6/6 UL 94V-2 or Polycarbonate UL 94V-2  
**Contact:** Silver-tin Oxide  
**Terminals, Active Contactor:** Silver plated copper alloy  
**Plunger:** Nickel plated copper alloy  
**Spring:** Steel Wire  
**Standards & Specs**  
UL Approved - File No. E46765  
ENEC/VDE approval - File No. 40006757 (PRA Single Pole Series only)

**.51 [13.0] x .76 [19.2] Panel Cutout**



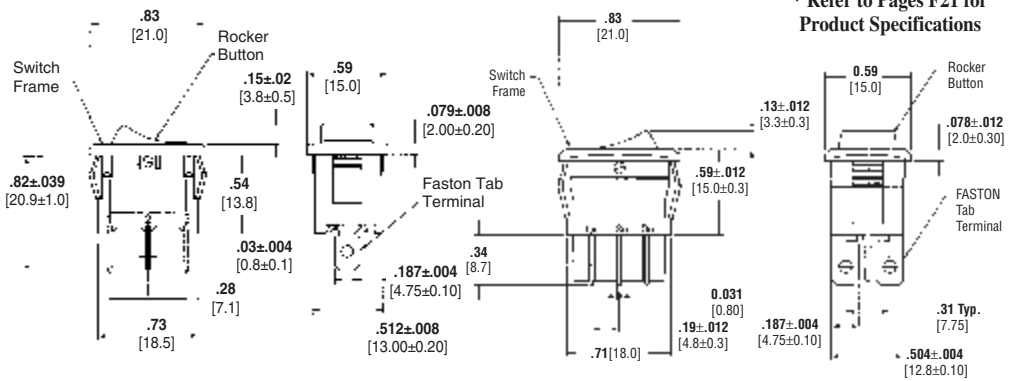
**Product Facts**

- Easy to install snap-in mounting
- Dust resistant
- Dual color rocker option
- Full-illuminated rocker option
- LED or neon window illuminated option
- Wide range of marking options and functions available
- Solder lugs or .187 FASTON Tab terminals
- Cost competitive

**Single-Pole, Lamp Illuminated or Non-Illuminated**

**Double-Pole, Non-Illuminated**

\* Refer to Pages F21 for Product Specifications



**Alcoswitch Part Number**

**Switch Type**  
PR Power Rockers

**Panel Cut-out Size**  
A .51 [13.0] x .76 [19.2]

**Number of Poles**  
S Single Pole  
D Double Pole

**Switch Functions**  
A1 ON-OFF; opaque, single-color rocker button  
A2 ON-OFF; opaque, dual-color rocker button  
A3 (ON)-OFF; opaque, single-color rocker button  
B1 ON-OFF; transparent, lamp-illuminated rocker button (100-125 V lamp voltage)  
B2 ON-OFF; opaque, with lamp window, lamp-illuminated rocker button (100-125 V lamp voltage)  
B3 ON-OFF; transparent, lamp-illuminated rocker button (200-250 V lamp voltage)  
B4 ON-OFF; opaque, with lamp window, lamp-illuminated rocker button (200-250 V lamp voltage)  
C1 ON-OFF; opaque, with LED window, LED-illuminated rocker button  
D1 ON-ON; opaque, single-color rocker button  
D2 ON-(ON); opaque, single-color rocker button  
D3 ON-OFF-ON; opaque, single-color rocker button  
D4 ON-OFF-(ON); opaque, single-color rocker button

**Power Rating**  
07 7A @ 125 VAC; 6A @ 250 VAC (Double-pole only)  
16 16A, 1/3 Hp @ 125 VAC (Single-pole only)  
10A, 1/2 Hp @ 250 VAC  
10A 125V- 6 (3)A 250V-  
μ 25T85

**Legend Text Color**  
0 Not Applicable R Red  
B Black W White  
G Green

**Legend Text Pattern**  
0 Not Applicable E |||  
A Dot F -- o =  
B o - G | o ||  
C o | H ON OFF  
D = J ⊕

**Secondary Rocker Color, Window Color, or LED Color**  
0 Not Applicable C Clear  
A Amber G Green  
B Black R Red  
W White

**Rocker Color**  
A Amber G Green  
B Black R Red  
C Clear W White

**Frame Color**  
B Black  
W White

**Terminal Type**  
F FASTON Tab  
L Solder Lug

**Part No.**

Tyco Electronics	Alcoswitch	Tyco Electronics	Alcoswitch	Tyco Electronics	Alcoswitch
1571076-9	PRASA1-16F-BB000	1571079-7	PRASD3-16F-BB000	1571084-5	PRADA1-07F-BR0BW
1-1571076-0	PRASA1-16F-BB0BW	1571079-8	PRASD3-16F-BB0FW	1571086-1	PRADD1-07F-BB000
1-1571076-1	PRASA1-16F-BB0CW	1571079-9	PRASD3-16F-BB0GW	1571086-2	PRADD1-07F-BB0DW
1-1571076-2	PRASA1-16L-BB000	1-1571079-0	PRASD2-16F-BB000	1571086-3	PRADD1-07F-BB0EW
1-1571076-3	PRASA1-16L-BB0BW	1-1571079-1	PRASD2-16F-BB0DW	1571086-4	PRADD3-07F-BB000
1-1571076-4	PRASA1-16L-BB0CW	1-1571079-2	PRASD2-16F-BB0EW	1571086-5	PRADD3-07F-BB0FW
1-1571076-5	PRASA1-16F-BR000	1-1571079-3	PRASD4-16F-BB000	1571086-6	PRADD3-07F-BB0GW
1-1571076-6	PRASA1-16L-BR000	1-1571079-4	PRASD4-16F-BB0FW	1571086-7	PRADD2-07F-BB000
1-1571076-7	PRASA2-16F-BBRBR	1-1571079-5	PRASD4-16F-BB0GW	1571086-8	PRADD2-07F-BB0DW
2-1571076-0	PRASA1-16F-BB0HW	1571083-2	PRASC1-16F-BBR00	1571086-9	PRADD2-07F-BB0EW
2-1571076-1	PRASA3-16F-BB0JW	1571084-1	PRADA1-07F-BB000	1-1571086-0	PRADD4-07F-BB000
1571078-2	PRASB1-16F-BR000	1571084-2	PRADA1-07F-BB0BW	1-1571086-1	PRADD4-07F-BB0FW
1571078-4	PRASB2-16F-BBR00	1571084-3	PRADA1-07F-BB0CW	1-1571086-2	PRADD4-07F-BB0GW
1571079-4	PRASD1-16F-BB000	1571084-4	PRADA1-07F-BR000		
1571079-5	PRASD1-16F-BB0DW				
1571079-6	PRASD1-16F-BB0EW				

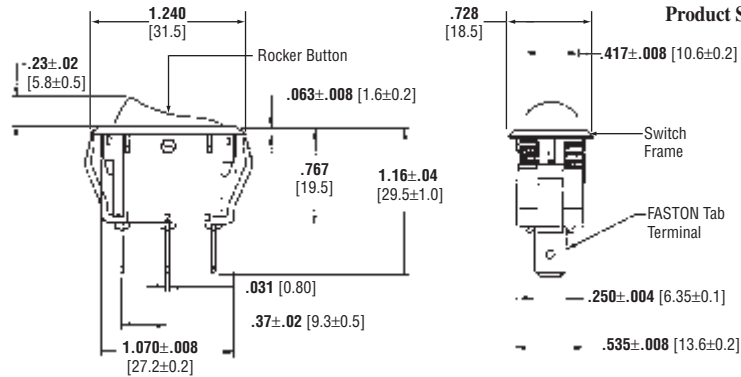
**PVC Waterproof Cover: 1571786-1**

**.54 [13.8] x 1.09 [27.6] Panel Cutout**



**Product Facts**

- Easy to install snap-in mounting
- Dual color rocker option
- Full-illuminated rocker option
- Lamp window illuminated option
- Wide range of marking options and functions available
- Solder lugs or .250 FASTON Tab terminals
- Cost competitive



\* Refer to Pages F21 for Product Specifications

**Alcoswitch Part Number**

PR B S XX - XX X - X X X X X X

**Switch Type**  
 PR Power Rockers

**Panel Cut-out Size**  
 B .54 [13.8] x 1.09 [27.6]

**Number of Poles**  
 S Single Pole

**Switch Functions**  
 A1 ON-OFF; opaque, single-color rocker button  
 A2 ON-OFF; opaque, dual-color rocker button  
 B1 ON-OFF; transparent, lamp-illuminated rocker button (100-125 V lamp voltage)  
 B3 ON-OFF; transparent, lamp-illuminated rocker button (200-250 V lamp voltage)  
 C1 ON-OFF; opaque, with LED window, LED-illuminated rocker button  
 D1 ON-ON; opaque, single-color rocker button  
 D3 ON-OFF-ON; opaque, single-color rocker button

**Power Rating**  
 16 16A, 1/3 Hp @ 125 VAC  
 10A, 1/2 Hp @ 250 VAC

**Terminal Type**  
 F FASTON Tab  
 L Solder Lug

**Legend Text Color**  
 0 Not Applicable R Red  
 B Black W White  
 G Green

**Legend Text Pattern**  
 0 Not Applicable E |||  
 A Dot F -- o =  
 B o -- G | o ||  
 C o | H ON OFF  
 D -- =

**Secondary Rocker Color, Window Color, or LED Color**  
 0 Not Applicable C Clear  
 A Amber G Green  
 B Black R Red  
 W White

**Rocker Color**  
 A Amber G Green  
 B Black R Red  
 C Clear W White

**Frame Color**  
 B Black  
 W White

**Part No.**

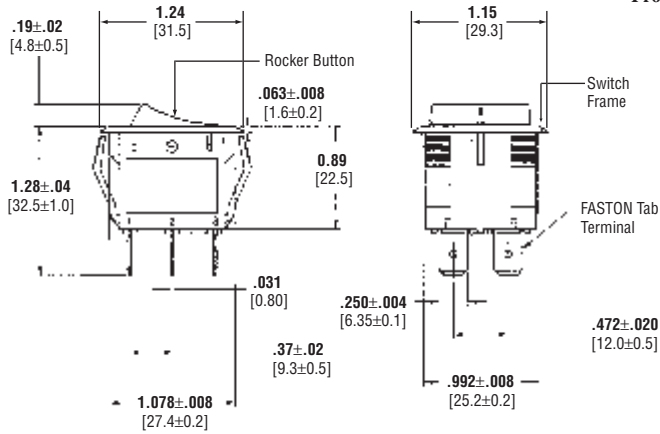
Tyco Electronics	Alcoswitch	Tyco Electronics	Alcoswitch
1571087-1	PRBSC1-16F-BBR00	1571092-1	PRBSB1-16F-BR000
1571087-2	PRBSC1-16L-BBR00	1571092-2	PRBSB1-16F-BR0BW
1571091-1	PRBSA1-16F-BB000	1571092-3	PRBSB1-16F-BA000
1571091-2	PRBSA1-16F-BB0BW	1571092-4	PRBSB1-16F-BC000
1571091-3	PRBSA1-16F-BB0CW	1571094-1	PRBSD1-16F-BB000
1571091-4	PRBSA1-16L-BB000	1571094-2	PRBSD1-16F-BB0DW
1571091-5	PRBSA1-16L-BB0BW	1571094-3	PRBSD1-16F-BB0EW
1571091-6	PRBSA1-16L-BB0CW	1571094-4	PRBSD3-16F-BB000
1571091-7	PRBSA1-16F-BR000	1571094-5	PRBSD3-16F-BB0FW
1571091-8	PRBSA1-16L-BR000	1571094-6	PRBSD3-16F-BB0GW
1571091-9	PRBSA1-16F-BB0HW	1571094-7	PRBSD3-16F-BW000
1-1571091-0	PRBSA1-16F-BR0HW		
1-1571091-1	PRBSA1-16F-BW000		
1-1571091-2	PRBSA1-16F-BW0HB		

**1.00 [25.4] x 1.09 [27.6] Panel Cutout**



**Product Facts**

- Easy to install snap-in mounting
- Full illuminated rocker option
- Wide range of marking options and functions available
- FASTON .250 Tab terminals
- Cost competitive



\* Refer to Pages F21 for Product Specifications

**Alcoswitch Part Number**

<p><b>Switch Type</b> PR Power Rockers</p> <p><b>Panel Cut-out Size</b> B 1.00 [25.4] x 1.09 [27.6]</p> <p><b>Number of Poles</b> S Double Pole</p> <p><b>Switch Functions</b> A1 ON-OFF; opaque, single-color rocker button B1 ON-OFF; transparent, lamp-illuminated rocker button (100-125 V lamp voltage) B3 ON-OFF; transparent, lamp-illuminated rocker button (200-250 V lamp voltage) D1 ON-ON; opaque, single-color rocker button D3 ON-OFF-ON; opaque, single-color rocker button</p> <p><b>Power Rating</b> 16 16A, 1/3 Hp @ 125 VAC 10A, 1/2 Hp @ 250 VAC</p> <p><b>Terminal Type</b> F FASTON Tab</p>	<p>PR D D XX - XX X - X X X X X X</p>	<p><b>Legend Text Color</b> 0 Not Applicable R Red B Black W White G Green</p> <p><b>Legend Text Pattern</b> 0 Not Applicable E I ll A Dot F - o = B o -- G l o ll C o l H ON OFF D - =</p> <p><b>Secondary Rocker Color, Window Color, or LED Color</b> 0 Not Applicable</p> <p><b>Rocker Color</b> A Amber G Green B Black R Red C Clear W White</p> <p><b>Frame Color</b> B Black W White</p>
---	---------------------------------------	--

**Part No.**

Tyco Electronics	Alcoswitch	Tyco Electronics	Alcoswitch
1571103-1	PRDDA1-16F-BB000	1571112-1	PRddb1-16F-BR000
1571103-2	PRDDA1-16F-BB0BW	1571112-2	PRddb1-16F-BA000
1571103-3	PRDDA1-16F-BB0CW	1571113-1	PRddd1-16F-BB000
1571103-4	PRDDA1-16F-BR000	1571113-2	PRddd1-16F-BB0DW
1571103-5	PRDDA1-16F-BB0HW	1571113-3	PRddd1-16F-BB0EW
1571103-6	PRDDA1-16F-BR0HW	1571113-4	PRddd3-16F-BB000
1571113-7	PRddd3-16F-BR000	1571113-5	PRddd3-16F-BB0FW
		1571113-6	PRddd3-16F-BB0GW

F Power Rocker Switches Series PRD



*MRC Series - Page G3*



*MRJ Series - Page G4*



*MRJE Series - Page G4*



*MRJB Series - Page G4*



*6000 Series - Page G5*



*3100 Series - page G9*

# FORSTEN

**G**  
Rotary Switches



**Rotary Switches Part Number Index**

MRC110 .....	G3
MRC110S .....	G3
MRC25 .....	G3
MRC25S .....	G3
MRC33 .....	G3
MRC33S .....	G3
MRC42 .....	G3
MRC42S .....	G3
MRJ112.....	G4
MRJ26 .....	G4
MRJ34 .....	G4
MRJ43 .....	G4
MRJB112 .....	G4
MRJB26 .....	G4
MRJB34 .....	G4
MRJB43 .....	G4
MRJE112 .....	G4
MRJE26 .....	G4
MRJE34 .....	G4
MRJE43 .....	G4
435005 .....	G6
435123 .....	G6
435128 .....	G6
435167 .....	G7
435174 .....	G6
435697 .....	G7
435984 .....	G10
435986 .....	G10
435987 .....	G10
436022 .....	G10
436024 .....	G10
436028 .....	G10
436037 .....	G10
436287 .....	G11

**G**

Rotary Switches

**Rotary Switches, 500m Amp, Adjustable Stop, 36° Throw**

**MATERIAL SPECIFICATIONS:**

Contacts .....Silver  
 Case Material .....Aluminum  
 Actuator Material .....Brass  
 Terminals/Fixed Contacts.....Silver plated brass  
 Terminal Seal .....Insert molded, DAP bas

**ENVIRONMENTAL SPECIFICATIONS:**

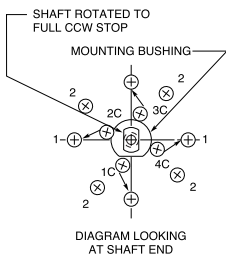
Operating Temperature.....-4°F to +176°F (-20°C to +80°C)  
 Storage Temperature .....-4°F to +212°F (-20°C to +100°C)  
 Solder Heat Resistance.....Manual: 270°C for 3 seconds  
 Wave: 245°C for 3 seconds

**TYPICAL PERFORMANCE CHARACTERISTICS:**

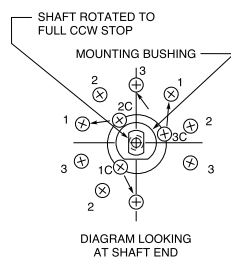
Contact Rating .....500 Milliamps @ 125 VAC or  
 28 VDC resistive  
 Initial Contact Resistance.....50 Milliohms max.  
 Contact Timing.....Non-shorting  
 Insulation Resistance .....100 Megohms min.  
 Dielectric Strength .....1,000 Volts RMS @ sea level  
 Rotation Torque .....14 Inch ounce max.  
 High Torque Bushing Shoulder ....Nickle plated brass  
 Plunger/Actuator Travel.....36°  
 Life Expectancy .....Up to 10,000 Cycles @ full contact  
 rating  
 Up to 25,000 Cycles @ 150 mA @  
 125 VAC or 250 mA @ 28 VDC

**NOTICE: Set stop positions by presetting external pin plate provided.**

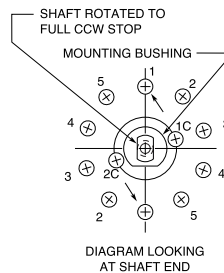
4 Pole, 2 Positions



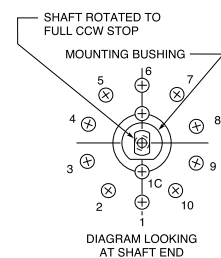
3 Pole, 2-3 Positions, Adjustable



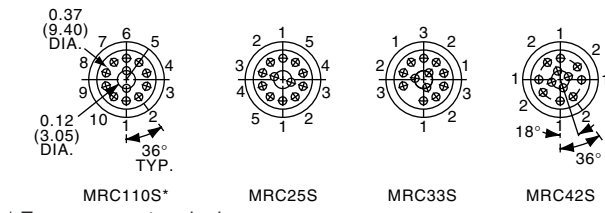
2 Pole, 2-5 Positions, Adjustable



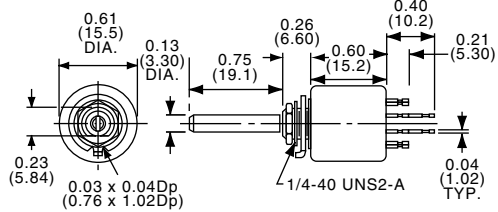
1 Pole, 2-10 Positions, Adjustable



**36° ANGLE OF THROW**



\* Two common terminals are internally shorted. Use either one.



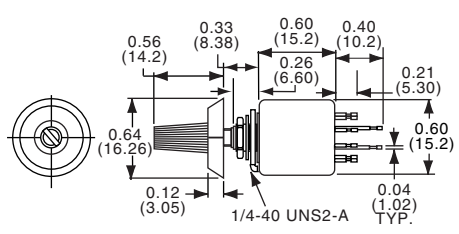
MRC33S

Part Number		No. Poles	Adjustable Positions
Tyco Electronics	Alcoswitch		
1437629-2	MRC110S	1 Pole	2 to 10 Positions
1437629-4	MRC25S	2 Poles	2 to 5 Positions
1437629-6	MRC33S	3 Poles	2 to 3 Positions
1437629-8	MRC42S	4 Poles	2 Positions (fixed)

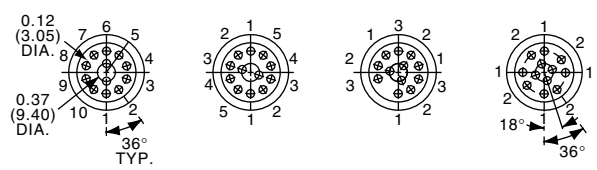


\* Two common terminals are internally shorted. Use either one.

**36° ANGLE OF THROW**



KNOB NOT SOLD SEPARATELY



MRC25

Part Number		No. Poles	Adjustable Positions
Tyco Electronics	Alcoswitch		
1437629-1	MRC110	1 Pole	2 to 10 Positions
1437629-3	MRC25	2 Poles	2 to 5 Positions
1437629-5	MRC33	3 Poles	2 to 3 Positions
1437629-7	MRC42	4 Poles	2 Positions (fixed)



**Rotary Switches, 6000 Series**

Alcoswitch 6000 Series Rotary Switches are used in programming electrical and mechanical circuits in machine tools, test equipment, and input data terminals. These manually operated switches are specifically designed to be mounted on a pc board and offer output capabilities which include: 8-position binary-coded octal (BC), 10-position binary-coded decimal (BCD), 16-position hexadecimal plus 10- and 16-position single pole decimal. All switches feature a small diameter and very low profile.

In addition to varied output capabilities, these versatile Alcoswitch switches can also be supplied in three different styles, allowing you to select the operation method best suited to your specific application. One version incorporates a slot which accepts a screwdriver, coin or other similar device. This particular style permits operation of the switch without sacrificing overall height. Its height of .220 [5.59] above the pc board is no greater than the usual board-mounted discrete components. The other two versions have either a bar-type knob or thumbwheel for their operation. All three styles can be rotated bidirectionally.

Rugged construction, positive detent action contacts plus large, readable characters are additional features of the Alcoswitch 6000 Series PC Board Rotary Switches. All these features, coupled with a fully enclosed design for better environmental protection, provide excellent electrical and mechanical performance.

**PERFORMANCE CHARACTERISTICS**

- Current/Voltage Rating**— Signal application only.
- Dielectric Breakdown Voltage**— 500 VDC min.
- Insulation Resistance**— 1 x 10<sup>8</sup> ohms
- Initial Contact Resistance**— 25 milliohms (at 50 millivolts, 100 milliamperes) closed circuit
- Circuit Capacitance**— 5 picofarads (at 100 KHz)
- Durability**— 1000 cycles
- Operating Torque**— 2 - 12 inch-ounces initial and after durability
- Temperature Rating**—
- Operating** — -18°C to +88°C
- Storage** — -45°C to +88°C
- Humidity**— Withstands an environment of +40°C and 95% RH for 96 hours

**MATERIALS**

- Contacts**— Phosphor bronze, gold over nickel plated
- Solder Tabs and Pins**—
- Coded Switches** — Beryllium copper, tin plated
- Single Pole Switches** — Brass, tin plated
- Structural Parts** — Thermoplastic

Technical Documents

- Product Specification**— 108-7514
- Instruction Sheet**— 408-07523
- Application Specification**— 114-7005

**Product Facts**

- n **Compact design** — small diameter, low profile switches are ideal for pc board mounting
- n **Wide choice of outputs:** 8-position binary-coded octal, 10-position binary-coded decimal and 10- and 16-position single pole
- n **Versatile application** — styles include slotted, bar-type and thumbwheel versions for hand rotation
- n **Positive switching** — contacts have positive detent action
- n **All positions are easily identified** by large readable characters or dots
- n **Optimum reliability** — fully enclosed design protects contacts against contamination

**Rotary Switches, PC Mount, 8 or 10 Positions**

Switch Position	Common to:		
	1	2	3
0			
1	•		
2		•	
3	•	•	
4			•
5	•		•
6		•	•
7	•	•	•

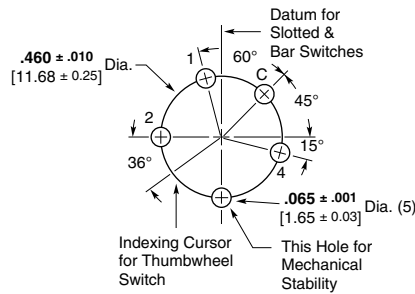


Screwdriver/Coin Actuated  
Part No. 435174-1

**8-POSITION  
BINARY CODED OCTAL (BCO)**

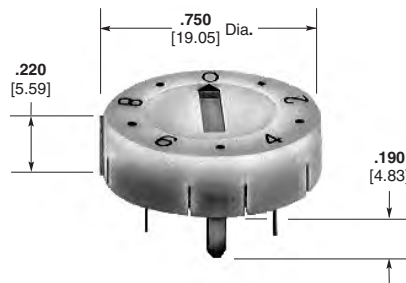


Bar-Type Knob  
Part No. 1- 435174-1 (Shown)



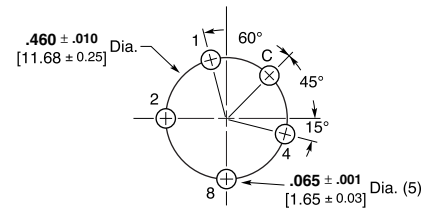
Recommended PC Board Hole Pattern  
(Switch Side)

Switch Position	Common to:			
	1	2	4	8
0				
1	•			
2		•		
3	•	•		
4			•	
5	•		•	
6		•	•	
7	•	•	•	
8				•
9	•			•

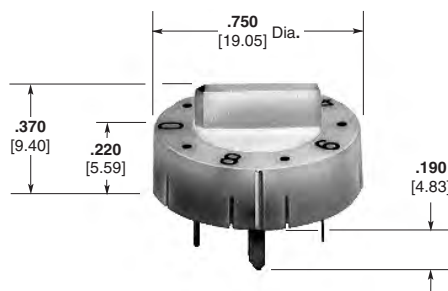


Screwdriver/Coin Actuated  
Part No. 435005-1

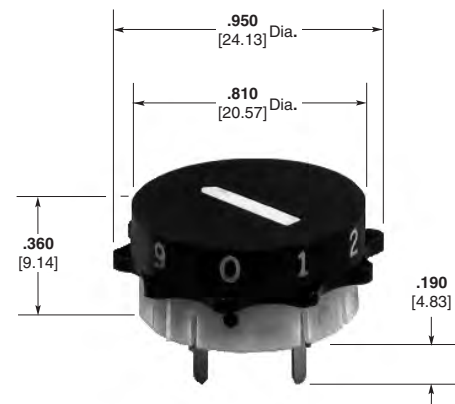
**10-POSITION  
BINARY CODED DECIMAL (BCD)**



Recommended PC Board Hole Pattern  
(Switch Side)



Bar-Type Knob  
Part No. 435123-1



Thumbwheel  
Part No. 435128-1

G

6000 Series

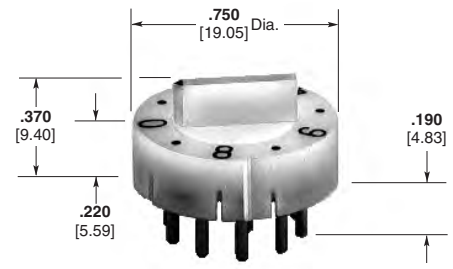
**Rotary Switches, PC Mount, 10 or 16 Position**

**10-POSITION SINGLE POLE**

Switch Position	Common to:
	0 1 2 3 4 5 6 7 8 9
0	•
1	•
2	•
3	•
4	•
5	•
6	•
7	•
8	•
9	•



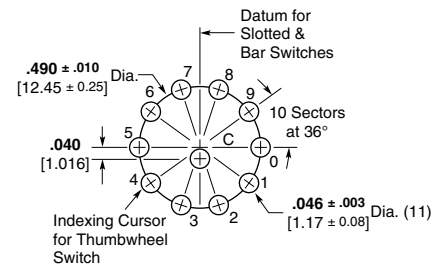
Screwdriver/Coin Actuated  
Part No. 1-435097-1



Bar-Type Knob  
Part No. 2-435097-1



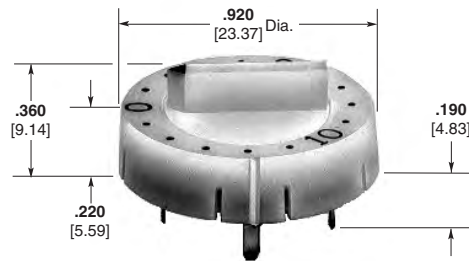
Thumbwheel  
Part No. 435097-1 (Shown)  
Part No. 435097-2 (With Numbers 1 - 10)



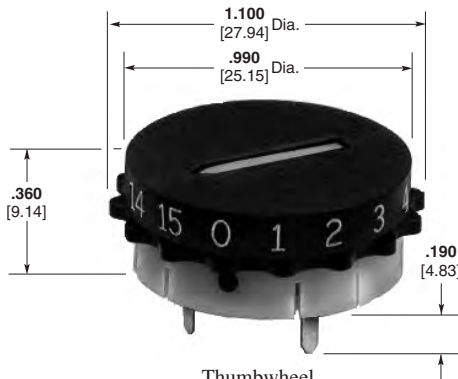
Recommended PC Board Hole Pattern  
(Switch Side)

**16-POSITION HEXADECIMAL**

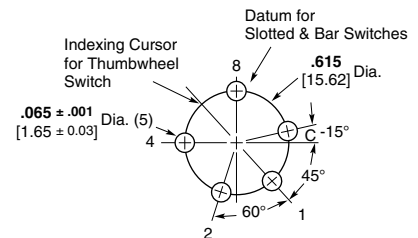
Switch Position	Common to:
	1 2 4 8
0	
1	•
2	•
3	•
4	•
5	•
6	•
7	•
8	•
9	•
10	•
11	•
12	•
13	•
14	•
15	•



Bar-Type Knob  
Part No. 1-435167-1



Thumbwheel  
Part No. 2-435167-1 (Shown)



Recommended PC Board Hole Pattern  
(Switch Side)

G

6000 Series

**3100 Series Rotary Switches**

Alcoswitch Rotary Switches provide a highly reliable means of manually programming various types of electronic equipment. They are specifically designed for logic level circuitry, but are capable of controlling electrical circuits that operate at current ratings of 2 amperes, 115 VAC (nonswitching) and up to 125 milliamperes, 115 VAC (switching).

Positive detent action, with a quick make/break operation, is provided by durable stainless steel balls and springs as well as the detents which form an integral part of the housing. All contact surfaces are fully enclosed within the housing, thus greatly reducing operational failures due to dirty contacts. The contacts are made of phosphor bronze with gold-over-nickel plating.

Alcoswitch Rotary Switches can be supplied with a variety of options to afford complete application versatility and adaptability. Output codes include decimal, BCD and BCD complement with 10, 12, 16, 24 and 32 switching positions.

Interconnection of switches may be achieved by the use of AMPMODU receptacles. Stops supplied with the switches may be customer installed when it is desired to limit rotation to less than 360°.

**PERFORMANCE CHARACTERISTICS**

- Circuit Current Rating—**
- Nonswitching** — 2.0 amperes at 115 VAC max.
- Switching (Resistive Load)** — 125 milliamperes at 115 VAC max.
- Dielectric Withstanding Voltage—**
- 500 VDC
- Insulation Resistance—**
- 1 x 10<sup>8</sup> ohms min. at 100 VDC
- Initial Contact Resistance—**
- 150 milliohms (input terminal to output terminal)
- Initial Operating Force—**
- 1/2 to 2 in.-lbs.
- Contact Life Expectancy—**
- 25,000 rotations at rated load
- Operating Temperature—**
- 18°C to +88°C

**MATERIALS**

- Housing—**
- Polyester, black
- Detent Ball and Spring—**
- Stainless steel
- Operating Shaft and Detent—**
- Thermoplastic, 94V-0 rated, black
- Printed Circuit Board—**
- Flame retardant, glass epoxy laminate, copper clad
- Contacts—**
- Phosphor bronze, gold-over-nickel plated
- Hardware—**
- Brass or corrosion resistant steel

**TECHNICAL DOCUMENTS**

- Product Specification—**
- 108-7518
- Instruction Sheet—**
- 408-07936

**Product Facts**

- ▢ **Code flexibility — switch output capabilities include decimal, BCD and BCD complement, and various other codes**
- ▢ **Positive switching — positive detent action of stainless steel detent balls and springs assures error-free operation**
- ▢ **Enclosed contacts — contact surfaces are better protected against dirt, dust and other environmental hazards**

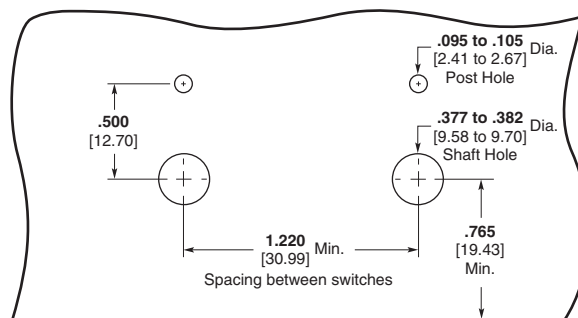
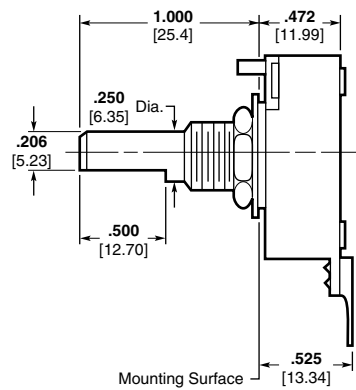
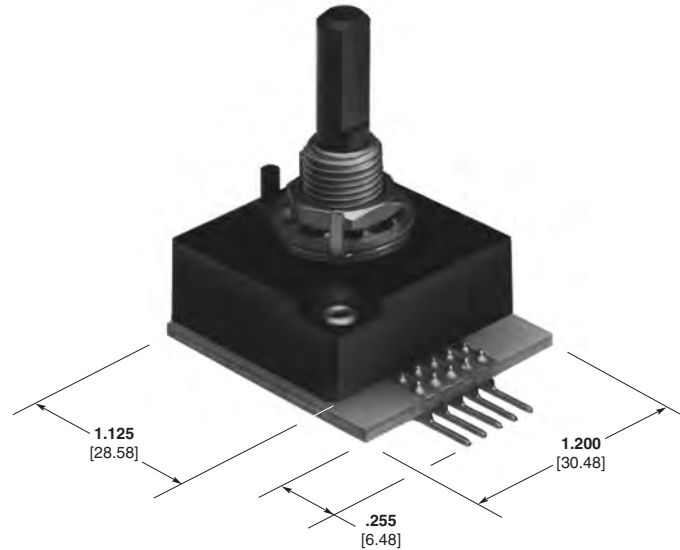


G

3100 Series

**Rotary Switches, PC Mount, 10, 12 or 16 Position**

10-, 12- AND 16-POSITION SWITCHES



Panel Cutout

Note: See Section K for knob selection.



**Rotary Switches, PC Mount, 10, 12 or 16 Position**

**CODING**



Part No.

2	1	C	8	4	435984-1,7
8	2	4	1	C	436037-1
1	2	C	8	4	435986-1
2	C	1	8	4	436022-1
C	4	8	1	2	436024-1
8	2	4	C	1	435987-1

10-Position  
36° Throw  
BCD

Part No. 435984-1 (Shown)  
Part No. 435984-7 (Right Angle)

Switch Position	Common to:			
	1	2	4	8
0				
1	●			
2		●		
3	●	●		
4			●	
5	●		●	
6		●	●	
7	●	●	●	
8				●
9	●			●

12-Position  
30° Throw  
BCD

Part No. 436037-1

Switch Position	Common to:			
	1	2	4	8
0				
1	●			
2		●		
3	●	●		
4			●	
5	●		●	
6		●	●	
7	●	●	●	
8				●
9	●			●
10		●		●
11	●	●		●

16-Position  
22½° Throw  
Hexadecimal

Part No. 435986-1

Switch Position	Common to:			
	1	2	4	8
0				
1	●			
2		●		
3	●	●		
4			●	
5	●		●	
6		●	●	
7	●	●	●	
8				●
9	●			●
10		●		●
11	●	●		●
12			●	●
13	●	●	●	
14		●	●	●
15	●	●	●	●



C 16 2 4 1 8

10-Position  
36° Throw  
BCD Complement  
Part No. 436022-1

Switch Position	Common to:			
	1	2	4	8
0	●	●	●	●
1		●	●	●
2	●		●	●
3			●	●
4	●	●		●
5		●		●
6	●			●
7				●
8	●	●	●	
9		●	●	

12-Position  
30° Throw  
BCD Complement  
Part No. 436024-1

Switch Position	Common to:			
	1	2	4	8
0	●	●	●	●
1		●	●	●
2	●		●	●
3			●	●
4	●	●		●
5		●		●
6	●			●
7				●
8	●	●	●	
9		●	●	
10	●		●	
11				●

16-Position  
22½° Throw  
HEX Complement  
Part No. 435987-1

Switch Position	Common to:			
	1	2	4	8
0	●	●	●	●
1		●	●	●
2	●		●	●
3			●	●
4	●	●		●
5		●		●
6	●			●
7				●
8	●	●	●	
9		●	●	
10	●		●	
11				●
12	●	●		
13			●	
14	●			
15				

24-Position  
15° Throw BCD  
Part No. 436028-1

Switch Position	Common to:			
	1	2	4	8 16
0				
1	●			
2		●		
3	●	●		
4			●	
5	●		●	
6		●	●	
7	●	●	●	
8				●
9	●			●
10		●		●
11	●	●		●
12			●	●
13	●	●	●	
14		●	●	●
15	●	●	●	●
16				●
17	●			●
18		●		●
19	●	●		●
20			●	●
21	●	●	●	●
22		●	●	●
23	●	●	●	●

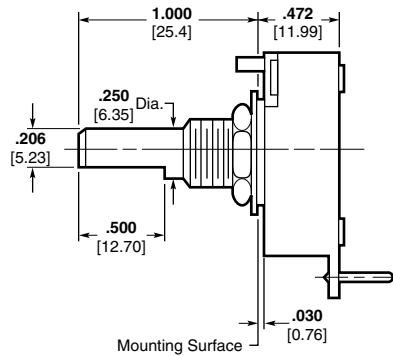
Note: See Section K for knob selection.

**Rotary Switches, PC Mount, 32 Position**

32-POSITION  
11¼° THROW BCD  
PART NO. 436287-1



Switch Position	Common to:				
	1	2	4	8	16
0					
1	•				
2		•			
3	•	•			
4			•		
5	•		•		
6		•	•		
7	•	•	•		
8				•	
9	•			•	
10		•		•	
11	•	•		•	
12			•	•	
13	•	•	•		
14		•	•	•	
15	•	•	•	•	
16					•
17	•				•
18		•			•
19	•	•			•
20			•		•
21	•		•		•
22		•	•		•
23	•	•	•		•
24				•	•
25	•			•	•
26		•		•	•
27	•	•	•		•
28			•	•	•
29	•		•	•	•
30		•	•	•	•
31	•	•	•	•	•



Note: See Section K for knob selection.

Panel Cutout

**Engineering Notes**



**G**

Engineering Notes



2SWK Series - Page H2



SKF Series - Page H4



SKT Series - Page H3



SWK Series - Page H5

# KEYLOCK

Keylock Part Number Index

2SKF131AEL01 .....H4	SKT132AEL01 .....H3
2SKF132AEL01 .....H4	SKT132GAEL01 .....H3
2SKF133AEL01 .....H4	SKT331AEL01 .....H3
2SKF231AEL01 .....H4	SKT331GAEL01 .....H3
2SWK131AL101 .....H2	SKT332AEL01 .....H3
2SWK132AL101 .....H2	SKT332GAEL01 .....H3
2SWK231AL101 .....H2	SWK12 .....H5
SKF1323AEL01 .....H4	SWK121F315 .....H5
SKT13.....H3	SWK123F315 .....H5
SKT131AEL01 .....H3	SWK12F315 .....H5
SKT131GAEL01 .....H3	SWK12KF315 .....H5
SKT1323AEL01 .....H3	SWK1323AL101 .....H2

**Key Switches, Medium Security**

**MATERIAL SPECIFICATIONS**

Contacts .....Silver  
 Cylinder Material.....Zinc alloy  
 Lock Body .....Zinc alloy  
 Key Material .....Brass  
 Terminals/Fixed Contacts ....Screw type  
 Beveled Frame Finish .....302 Stainless steel

**TYPICAL PERFORMANCE CHARACTERISTICS**

Contact Rating .....1A at 120 VAC resistive  
 Initial Contact Resistance .....50 Milliohms max.  
 Contact Timing.....Non-shorting  
 Plunger/Actuator Travel .....90°  
 Key Changes .....25 Standard  
 Life Expectancy .....Up to 10,000 Cycles

**ENVIRONMENTAL SPECIFICATIONS**

Solder Heat Resistance .....See page M3-4

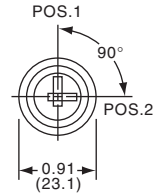
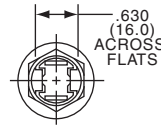
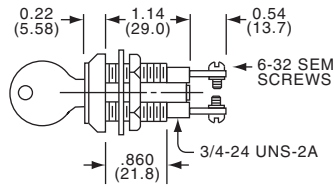
**NOTE: All Keylocks are supplied with 2 brass keys on a ring.**

**SPST**

**5 Disc Tumblers**



2SWK131



Part Number						Part Number					
Tyco Electronics	Alcoswitch	Type	Pos. 1	Pos. 2	Remove Key	Tyco Electronics	Alcoswitch	Type	Pos. 1	Pos. 2	Remove Key
1-1437597-7	2SWK131AL101	SPST	Off	On	Position 1	2-1437597-7	2SWK231AL101	SPST	Off	(On)	Position 1
2-1437597-3	2SWK132AL101	SPST	Off	On	Position 1 or 2	4-1437597-3	SWK1323AL101	Spare Key for SWK Series (On) indicates momentary position.			

H

2SWK 13/23 Series



**Medium Security Key Switch**

**MATERIAL SPECIFICATIONS**

Contacts .....Silver  
 Cylinder Material .....Zinc alloy  
 Lock Body .....Zinc alloy  
 Key Material .....Brass  
 Terminals/Fixed Contacts ...Screw type  
 Beveled Frame Finish .....Brushed chrome

**TYPICAL PERFORMANCE CHARACTERISTICS**

Contact Rating .....1 A @ 120 VAC resistive  
 Initial Contact Resistance ...50 Milliohms max.  
 Contact Timing .....Non-shorting  
 Actuator Travel .....90°  
 Key Changes .....10 Standard  
 Life Expectancy .....Up to 10,000 Cycles

**ENVIRONMENTAL SPECIFICATIONS**

Operating Temperature .....-22°F + 185° F (-30°C to +85°C)  
 Storage Temperature .....-22°F + 185° F (-30°C to +85°C)  
 Solder Heat Resistance .....See page M3-4

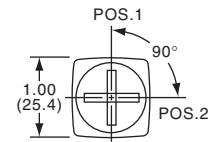
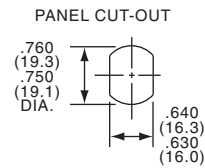
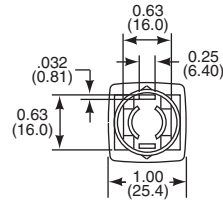
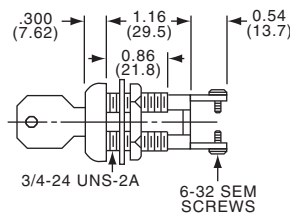
**NOTE: All Keylocks are supplied with 2 brass keys on a ring.**

**SPST**

**4 Disc Tumblers**



SKF131



Tyco Electronics	Alcoswitch	Type	Pos. 1	Pos. 2	Remove Key	Tyco Electronics	Alcoswitch	Type	Pos. 1	Pos. 2	Remove Key
1437597-1	2SKF131AEL01	SPST	Off	On	Position 1	1-1437597-1	2SKF231AEL01	SPST	Off	(On)	Position 1
1437597-7	2SKF132AEL01	SPST	Off	On	Position 1 or 2	3-1437597-4	SK1323AEL01	Spare key for SK Series			
1-1437597-0	2SKF133AEL01	SPST	On	Off	Position 1			(On) indicates momentary position.			

H

SKF Series

**High Security Key Switch**

**MATERIAL SPECIFICATIONS**

Contacts .....Silver  
 Cylinder Material .....Zinc alloy  
 Lock Body .....Zinc alloy  
 Actuator Material .....Brass key  
 Terminals/Fixed Contacts.....Screw type  
 Beveled Frame Finish .....Polished chrome

**ENVIRONMENTAL SPECIFICATIONS**

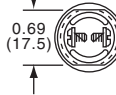
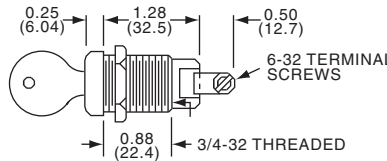
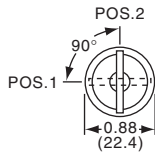
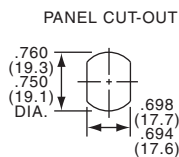
Operating Temperature.....-22°F to +185° (-30°C to +85°C)  
 Storage Temperature .....-22°F to +185° (-30°C to +85°C)  
 Solder Heat Resistance.....See page M3-4

**TYPICAL PERFORMANCE CHARACTERISTICS**

Contact Rating .....5A @ 115 VAC, 15A @ 24 VDC  
 ..... resistive  
 Initial Contact Resistance ...50 Milliohms max.  
 Contact Timing .....Non-shorting  
 Dielectric Strength .....1,000 VAC @ sea level  
 Actuator Travel .....90°  
 Key Changes .....25 Standard  
 Life Expectancy .....Up to 20,000 Cycles

**NOTE: All Keylocks are supplied with 2 brass keys on a ring.**

**SPST**  
**8 Disc Tumblers**



SWK12

Tyco Electronics	Alcoswitch	Type	Pos. 1	Pos. 2	Remove Key
4-1437597-0	SWK12F315	SPST	On	Off	Position 1 or 2
3-1437597-6	SWK121F315	SPST	On	Off	Position 2
3-1437597-8	SWK123F315	SPST	On	Off	Position 1
4-1437597-2	SWK12KF315	Spare key for SWK12 Series			

**H**  
**SWK 12 Series**



**Engineering Notes**



H

Engineering Notes

H6

Catalog 1308390  
Issued 9-04

[www.tycoelectronics.com](http://www.tycoelectronics.com)

Dimensions are in inches and millimeters unless otherwise specified. Values in parentheses or brackets are metric equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752  
Canada: 1-905-470-4425  
Mexico: 01-800-733-8926  
C. America: 52-55-5-729-0425

South America: 55-11-3611-1514  
Hong Kong: 852-2735-1628  
Japan: 81-44-844-8013  
UK: 44-141-810-8967



*RT Series - Page I3  
22mm Mounting*



*QT Series - Page I4  
22mm Mounting*



*RM Series - Page I5  
22mm Mounting*



*Block Assemblies - Page I8*



*6000 Series - Page I11  
30mm Mounting*



*164/165 Command Series - Page I16  
16mm Mounting*

# Industrial Controls

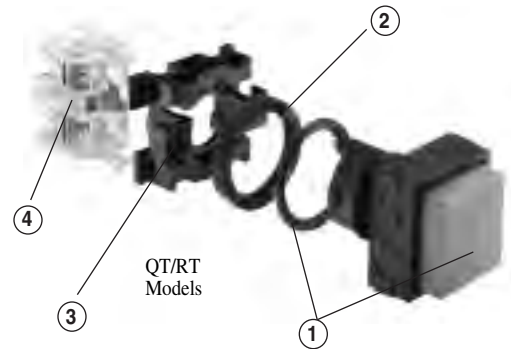
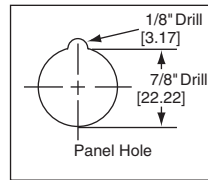
**Industrial Controls Part Number Index**

385 .....I20	165J3C33 .....I17	M6653(*)406 .....I14	V50 .....I8,I9,I14
387 .....I20	165J3E22.....I17	M6655 .....I15	VA0 .....I8,I9,I14
570 .....I6,I7,I15	165J3E33.....I17	QM010 .....I5	VR0 .....I8,I9,I14
616 .....I19	165J7A22 .....I17	QM020 .....I5	
668 .....I19	165P2B11 .....I17	QM120 .....I7,I15	
669 .....I19	165P2B22 .....I17	QM122 .....I7,I15	
755 .....I15	165P2B33 .....I17	QM600 .....I6,I15	
757 .....I15	165P3B22 .....I17	QT010 .....I5	
7333 .....I20	165P3B33 .....I17	QT01201 .....I4	
164EL11 .....I16	165SL11 .....I16	QT012STSTH .....I4	
164EL22 .....I16	165SL22 .....I16	QT020 .....I5	
164EL33 .....I16	165SL33 .....I16	RM010 .....I3	
164EL511 .....I16	165SL511 .....I16	RM015 .....I3	
164EL522 .....I16	165SL522 .....I16	RM020 .....I3	
164EL533 .....I16	165SL533 .....I16	RM030 .....I4	
164EZ .....I18	165SZ .....I18	RM0450 .....I4	
164J0A11 .....I17	165TL11 .....I16	RM0452 .....I4	
164J0A22 .....I17	165TL22 .....I16	RM0500 .....I4	
164J0A33 .....I17	165TL33 .....I16	RM0502 .....I4	
164J2A11 .....I17	165TL511 .....I16	RM0532 .....I4	
164J2A22 .....I17	165TL522 .....I16	RM0552 .....I4	
164J2A33 .....I17	165TL533 .....I16	RM0652 .....I4	
164J2B11 .....I17	165TZ .....I18	RM120 .....I6	
164J2B22 .....I17	327-AG .....I20	RM122 .....I6	
164J2B33 .....I17	381-AG .....I20	RM130 .....I6	
164J3A22 .....I17	382-AG .....I20	RM145 .....I6	
164J3A33 .....I17	5B0 .....I6,I7,I15	RM150 .....I6	
164J3C22 .....I17	601-AG .....I19	RM1652 .....I6	
164J3C33 .....I17	618-AG .....I19	RM200 .....I5	
164J3E22.....I17	64E .....I18	RM201 .....I5	
164J3E33.....I17	64S .....I18	RM204 .....I5	
164J7A22 .....I17	64T .....I18	RM205 .....I5	
164KA .....I17	671-AG .....I19	RM210 .....I6	
164P0B22 .....I17	697-PL .....I20	RM220 .....I6	
164P0B33 .....I17	815-AG .....I20	RM222 .....I6	
164P2B11 .....I17	E1 .....I5,I6	RM230 .....I6	
164P2B22 .....I17	F40 .....I8,I9,I14	RM232 .....I6	
164P2B33 .....I17	F50 .....I8,I9,I14	RM233 .....I6	
164P3B22 .....I17	FA0 .....I8,I9,I14	RM240 .....I6	
164P3B33 .....I17	FR0 .....I8,I9,I14	RM243 .....I6	
164SL11 .....I16	G001 .....I13	RM250 .....I5	
164SL22 .....I16	M25310 .....I10	RM270 .....I6	
164SL33 .....I16	M25500 .....I10	RM272 .....I6,I9	
164SL511 .....I16	M25510 .....I10	RM273 .....I6	
164SL522 .....I16	M6010 .....I11	RM280 .....I6	
164SL533 .....I16	M6020 .....I11	RM3040 .....I5	
164SZ .....I18	M60532 .....I11	RM3100 .....I5	
164TL11 .....I16	M6057 .....I11	RM3120 .....I5	
164TL22 .....I16	M60582 .....I11	RM3130 .....I5	
164TL33 .....I16	M60652 .....I11	RM3700 .....I5	
164TL511 .....I16	M6080 .....I11	RM3800 .....I5	
164TL522 .....I16	M6120(*)406 .....I13	RM3830 .....I5	
164TL533 .....I16	M6150(*)406 .....I13	RM4040 .....I5	
164TZ .....I18	M6153(*)406 .....I13	RM4100 .....I5	
165EL11 .....I16	M6200 .....I13	RM4120 .....I5	
165EL22 .....I16	M6201 .....I13	RM4130 .....I5	
165EL33 .....I16	M6210 .....I13	RM4700 .....I5	
165EL511 .....I16	M6250 .....I13	RM4800 .....I5	
165EL522 .....I16	M6270 .....I13	RM600 .....I6,I15	
165EL533 .....I16	M6280 .....I13	RM650 .....I6	
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165J2A11 .....I17	M6410 .....I12	RT010 .....I3	
165J2A22 .....I17	M6412 .....I12	RT020 .....I3	
165J2A33 .....I17	M6470 .....I12	RT050 .....I4	
165J2B11 .....I17	M6480 .....I12	RT0500 .....I4	
165J2B22 .....I17	M65310 .....I12	RT0502 .....I4	
165J2B33 .....I17	M65500 .....I12	RT120 .....I7	
165J3A22 .....I17	M65510 .....I12	SR601 .....I6	
165J3A33 .....I17	M65810 .....I12	T6632 .....I15	
165J3C22 .....I17	M6650 .....I14	V40 .....I8,I9,I14	

**Pushbutton Switches, 22mm, Oil-Tight, Round**

**FEATURES**

- Fits 7/8" (22mm) diameter holes
- Full size buttons
- Meets NEMA 1, 12 and 13
- Rugged heavy-duty metal bushing, or thermoplastic bushings for full installation
- Matte black beveled frame finish
- IP65 protection level
- Snap-block contacts
- 6A @ 600VAC, 6A @ 125VDC V40, V50, F40, F50  
6A @ 600VAC, 4A @ 125VDC VAO, VRO, FAO, FRO
- Easy "no tool" mounting
- Choice of screw terminals or dual .110/.250 quick connects
- Double-break silver contacts standard, gold plated optional
- Stackable



**INSTALLATION & ASSEMBLY**

- Engage the operator (1) into the 22.5mm dia. mounting hole.
- Engage metal ring (2) with operator (bayonet lock). Tighten set screws against back of panel.
- Snap the contact blocks (4) on the support(3).
- Snap the support (3) complete with contact blocks (4) on the metal ring (2).

- Engage the operator and seal (1) into the 22.5mm dia. mounting hole.
- Mount back-up nut (2) on bushing and then tighten against panel.
- Snap the contact blocks (4) on the support (3).
- Snap the support (3) complete the contact blocks (4) onto operator (1).

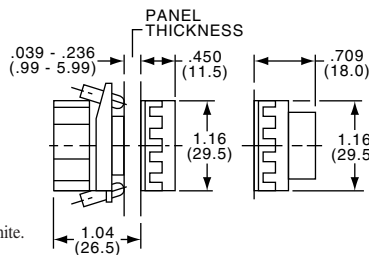
**MOMENTARY**

**Metal Bushings**

Contact blocks not supplied, order separately.  
(See page I8.)

Model	Type
RM010(*)	Flush Button
RM020(*)	Extended Button
RM015(*)	Extended Guard

(\*) Specify color by adding suffix number:  
(0) Black, (2) Red, (4) Yellow, (5) Green, (6) Blue, (8) Grey, (9) White.  
**Note: Front beveled frame is black.**

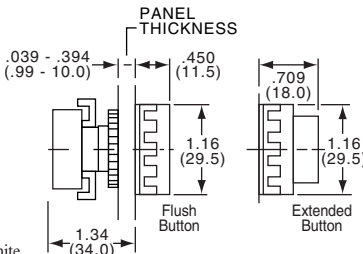


**Thermoplastic Bushings (Threaded)**

Contact blocks not supplied, order separately.  
(See page I8.)

Model	Type
RT010(*)	Flush Button
RT020(*)	Extended Button

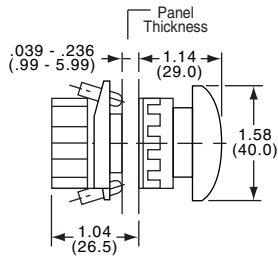
(\*) Specify color by adding suffix number:  
(0) Black, (2) Red, (4) Yellow, (5) Green, (6) Blue, (8) Grey, (9) White.  
**Note: Front beveled frame is black.**



**Pushbutton Switches, 22mm, Oil-Tight, Round or Mushroom or Dual Button**



RM0502



**MOMENTARY**

**Mushroom**

Contact blocks not supplied, order separately. (See page I8.)

Tyco Electronics	Alcoswitch	Type	Bushing
3-1437614-7	RM0502	Mushroom, Red	Metal, Bayonet
1437615-2	RT0502	Mushroom, Red	Thermoplastic, Threaded Bushing
3-1437614-6	RM0500	Mushroom, Black	Metal, Bayonet
1437615-1	RT0500	Mushroom, Black	Thermoplastic, Threaded Bushing
3-1437614-9	RM0552	Mushroom, Red	Metal, Bayonet (Wobble)
	RT050(*)	Mushroom	

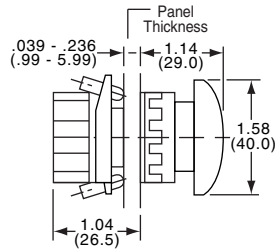
(\*) Specify color by adding suffix number:

(0) Black, (2) Red, (4) Yellow, (5) Green, (6) Blue.

**Note: Front beveled frame is black.**



RM0652



**PUSH-TO-LOCK, TWIST-RELEASE**

**Metal Bushings**

Contact blocks not supplied, order separately. (See page I8.)

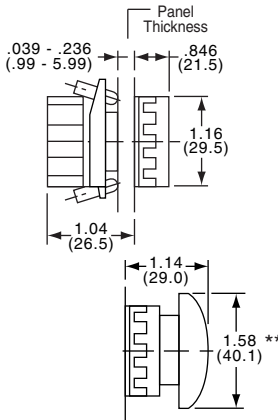
Note: Use F40/V40 for N.C. contacts, and FAO/VAO for N.O. contacts.

Tyco Electronics	Alcoswitch	Type	Arrow
4-1437614-0	RM0652	Mushroom, Red	White

**Note: Front beveled frame is black.**



RM030(\*)



**MAINTAINED**

Contact blocks not supplied, order separately. (See page I8.)

Note: Use F40/V40 for N.C. contacts and FAO/VAO for N.O. contacts.

Tyco Electronics	Alcoswitch	Type
—	RM030(*)	Flush Button
3-1437614-4	RM0450	Mushroom, Black
3-1437614-5	RM0452	Mushroom, Red
3-1437614-8	RM0532	Push-Pull, Mushroom, Red

(\*) Specify color by adding suffix number:

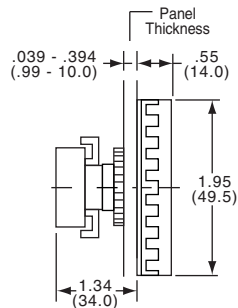
(0) Black, (2) Red, (4) Yellow, (5) Green, (6) Blue, (8) Grey, (9) White.

**Note: Front beveled frame is black.**

**\*\* Note: RM0532 mushroom 35mm Dia. (1.38)**



QT01201



**MOMENTARY DUAL OPERATOR\***

**Threaded Thermoplastic bushing**

Contact blocks not supplied, order separately. (See page I8.)

Black buttons available.

Tyco Electronics	Alcoswitch	Color	Legend
1437614-9	QT01201	Green, Red	As Shown
—	QT012STSTH	Green, Red	Start & Stop Horizontal

\*Not oil tight construction, not sealed; meets NEMA 1 only.

**Note: Front beveled frame is black.**

**Pushbutton or Keylock or Selector Switches, 22mm, Oil-Tight**

**MOMENTARY**

**Metal Bushings**

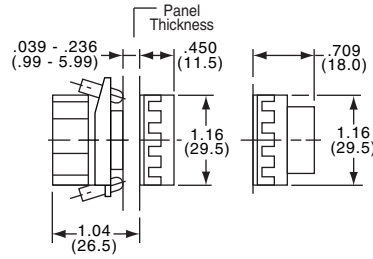
Contact blocks not supplied, order separately. (See page I8.)

Model	Type
QM010(*)	Flush Button
QM020(*)	Extended Button

(\*) Specify color by adding suffix number:

(0) Black, (2) Red, (4) Yellow, (5) Green, (6) Blue, (8) Grey, (9) White.

**Note: Front beveled frame is black.**



QM010(\*)

**Thermoplastic Bushings (Threaded)**

Contact blocks not supplied, order separately. (See page I8.)

Model	Type
QT010(*)	Flush Button
QT020(*)	Extended Button

(\*) Specify color by adding suffix number:

(0) Black, (2) Red, (4) Yellow, (5) Green, (6) Blue, (8) Grey, (9) White.

**Note: Front beveled frame is black.**



QT010(\*)

**2 POSITION SELECTORS/KEYLOCK MAINTAINED**

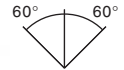
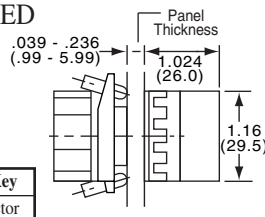
**Metal Bushings**

Contact blocks not supplied, order separately.

(See page I8.)

Tyco Electronics	Alcoswitch	Action	Throw	CAM	Remove Key
7-1437614-7	RM4040	Maintained, Black	120°	1	Long Selector
7-1437614-0	RM3040	Maintained, Black	120°	1	Selector
5-1437614-4	RM200	Maintained	60°	1	⊕
5-1437614-5	RM201	Maintained	60°	1	⊗
6-1437614-5	RM250	Momentary, Right	60°	1	⊕
5-1437614-6	RM204	Maintained	120°	1	⊗
5-1437614-7	RM205	Maintained	120°	1	⊗
1437614-1	E1	Spare Key			⊗

**Note: Front beveled frame is black.**



RM3040

RM200/201 with/2 keys

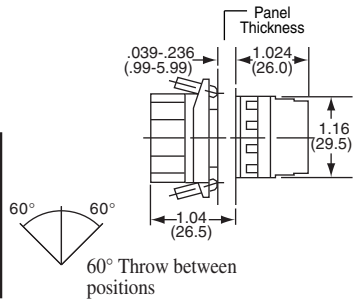
**3 POSITION SELECTORS**

**Short Handle, Metal Bushings**

Contact blocks not supplied, order separately. (See page I8.)

Tyco Electronics	Alcoswitch	Action	CAM	Tyco Electronics	Alcoswitch	Action	CAM
7-1437614-1	RM3100	Maintained, Black	2	7-1437614-4	RM3700	Momentary, Right Side, Black	2
7-1437614-2	RM3120	Maintained, Black	3	7-1437614-5	RM3800	Double Momentary, Black	2
7-1437614-3	RM3130	Maintained, Black	4	7-1437614-6	RM3830	Double Momentary, Black	4

**Note: Front beveled frame is black.**



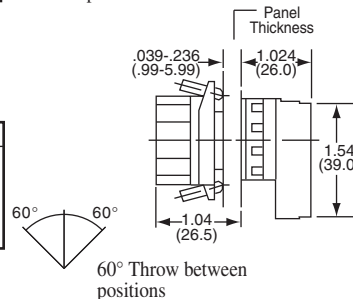
RM3100

**Long Handle, Metal Bushings**

Contact blocks not supplied, order separately. (See page I8.)

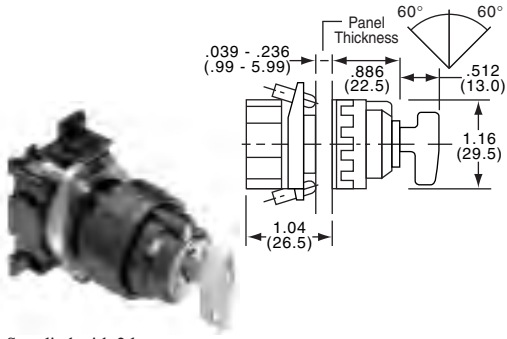
Tyco Electronics	Alcoswitch	Action	CAM	Tyco Electronics	Alcoswitch	Action	CAM
7-1437614-8	RM4100	Maintained	2	—	RM4700	Momentary, Right Side	2
—	RM4120	Maintained	3	7-1437614-9	RM4800	Double Momentary	2
—	RM4130	Maintained	4				

**Note: Front beveled frame is black.**



RM4100

**Keylock or Pushbutton Switches, 22mm, Oil-Tight or Pilot Lights**



Supplied with 2 keys

**3 POSITION KEYLOCK SELECTOR  
MAINTAINED OR MOMENTARY**

**Metal Bushings**

Contact blocks not supplied, order separately. (See page I8.)

Tyco Electronics	Alcoswitch	Action	CAM	Remove Key	Tyco Electronics	Alcoswitch	Action	CAM	Remove Key
5-1437614-8	RM210	Maintained	2	⊙	6-1437614-4	RM243	Maintained	4	⊙
5-1437614-9	RM220	Maintained	2	⊙	6-1437614-6	RM270	Mom. Right Side	2	⊙
6-1437614-0	RM222	Maintained	3	⊙	6-1437614-7	RM272	Mom. Right Side	3	⊙
6-1437614-1	RM230	Maintained	2	⊙	6-1437614-8	RM273	Mom. Right Side	4	⊙
6-1437614-2	RM232	Maintained	3	⊙	6-1437614-9	RM280	Mom. Both Sides	2	⊙
6-1437614-3	RM233	Maintained	4	⊙	1437614-1	E1	Spare Key		⊙
—	RM240	Maintained	2	⊙					

Note: Front beveled frame is black.

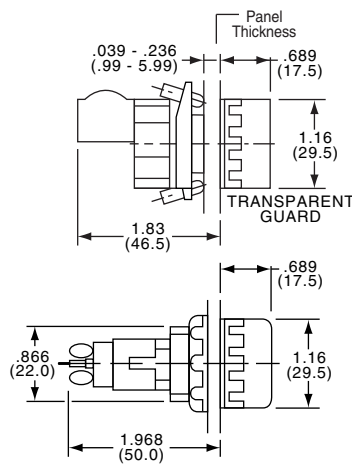


QM600 (RM600)

Metal Bushing



SR601 Threaded Thermoplastic Bushing Front lamp



**PILOT LIGHTS (FULL VOLTAGE TYPE)**

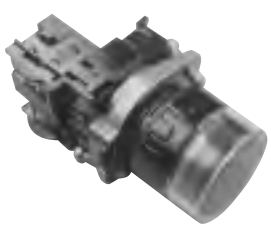
Lamps: order separately, miniature bayonet base. (See page I15.)

Lamps: use G3 1/2 on QM600(\*), use T3 1/4 on SR601(\*), RM600(\*). Custom legends available.

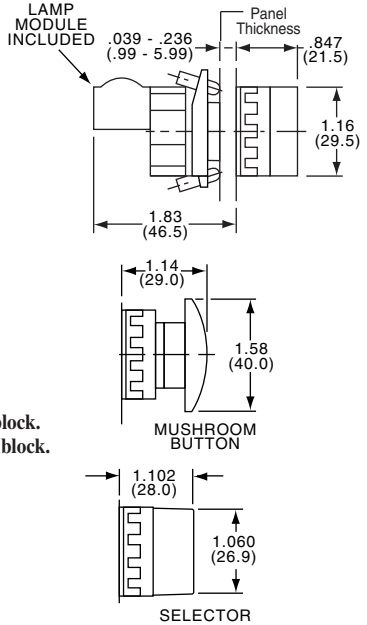
Model	Type
QM600(*)	Square pilot light, metal bushing
SR601(*)	Round pilot light, plastic bushing screw turn
RM600(*)	Round pilot light, metal bushing

(\*) Specify color by adding suffix number: (2) Red, (3) Orange, (4) Yellow, (5) Green, (6) Blue, (9) White.

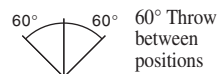
Reliant'22



RM120(\*)



**Application Note:**  
+V40/F40 used for N.C contact block.  
+VA0/FA0 used for N.O. contact block.



**ILLUMINATED/ROUND MOMENTARY/MAINTAINED**

**Metal Bushing**

Contact blocks not supplied, order separately. (See page I8.)

Lamp circuit isolated. Order lamp separately. (See page I15.)

Lamps: Use T-3 1/4 or G3 1/2 incandescent or neon lamps.

Tyco Electronics	Alcoswitch	Action	Type	Cam Type
—	RM120(*)	Momentary	Extended Button	
—	RM122(*)	Momentary	Guarded Button	
—	+RM130(*)	Maintained	Flush Button	} Push-On - Push-Off See Application Note
—	+RM145(*)	Maintained	Mushroom	
—	RM150(*)	Momentary	Mushroom	
5-1437614-3	RM1652	Twist Release	Mushroom, Red	
<b>Illuminated Selectors</b>				
—	RM650(*)	Maintained	2-Pos. Selector**1	
—	RM653(*)	Maintained	3-Pos. Selector**2	

When operating from line voltage use step down transformers 5B0 or 570. (See page I15.)  
(\*) Specify color by adding suffix number: (2) Red, (4) Yellow, (5) Green, (6) Blue, (9) White.

Note: RM145 and RM150 available only in red, yellow, green.

\*\*Use G3 1/2 lamps only.

Note: Front beveled frame is black.

**Pushbutton Switches, 22mm, Oil-Tight, Round or Square Buttons**

**SQUARE, MOMENTARY ILLUMINATED**

Metal Bushing

Contact blocks not supplied, order separately. (See page I8.)

Lamp circuit isolated. Order lamps separately.

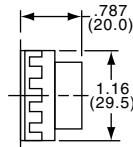
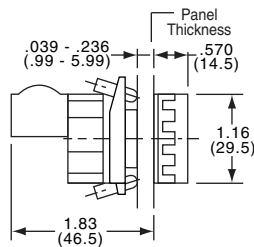
Lamps: Use G3 1/2. (See page I15.)

Custom legends available.

Model	Type
QM122(*)	Flush Button
QM120(*)	Extended Button

When operating from line voltage use step down transformers 5B0 or 570. (See page I15.)  
 (\*) Specify color by adding suffix number: (2) Red, (4) Yellow, (5) Green, (6) Blue, (9) White.

Note: Front beveled frame is black.



QM122(\*)



QM120(\*)

**ROUND, MOMENTARY ILLUMINATED**

Thermoplastic

Contact blocks not supplied, order separately. (See page I8.)

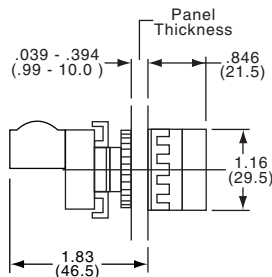
Lamp circuit isolated. Order lamps separately. (See page I15.)

Lamps: use T-3 1/4 or G3 1/2 incandescent or neon lamps.

Model	Action	Type
RT120(*)	Momentary	Extended Button

When operating from line voltage use step down transformers 5B0 or 570. (See page I15.)  
 (\*) Specify color by adding suffix number: (2) Red, (4) Yellow, (5) Green, (6) Blue, (9) White.

Note: Front beveled frame is black.



RT120(\*)

Reliant'22



**Standard Contact Blocks**

An almost unlimited number of circuit control options are possible using various combinations of contact blocks. 8 different "V" or "F" family modular blocks may be used with any operator in the Reliant 22, 2200 or 6000 series, depending on circuit requirements and operator design. The exclusive SNAP-BLOC design permits assembly without the use of tools – no screws or hardware to get lost. Choose either screw terminals or dual

male .110"/.250" quick connect terminals. Plunger color indicates closure mode. The double break silver contacts are enclosed in a tough transparent polycarbonate housing, permitting visual inspection of contacts. Designed-in rocking action for long, reliable life; over several million operations in normal use. Operating temperature range: -25°C to +60°C. Storage temp. -40°C to +80°C.

**Application Notes**

1. A total of 4 (2 upper and 2 lower) contact blocks may be stacked and snap-mounted in either the upper and/or lower position on the back on any Reliant 22, Series 4000 or 6000 operator.
2. In order to maintain optimum insulating distances when contact blocks are stacked, wiring connections should be in same polarity for operation above 300VAC.
3. Blocks may be prewired and snapped into place for easier assembly.
4. Remove blocks by simply prying tabs. Small screwdriver is all that is necessary.

F&V Contact blocks are UL recognized. File Number E-60363  
CSA LR-20785-19 CE MARK

**ELECTRICAL CONTACT RATINGS**

Condition	Function	Standard Series (600 VAC Max.)		
		120V	300V	600V
AC Operation				
Inductive Loads	Make	30A	12A	6A
	Continuous	6A	6A	6A
	Break	.350 P.F. min.	3A	1.2A
Resistive Loads	Make, Continuous	6A	6A	6A
	Carry & Break	.750 P.F. min.		
DC Operation				
Inductive & Resistive Loads	Make	1.1A		
	Continuous Carry	6A	6A	6A
	Break	1.1A		



F Series



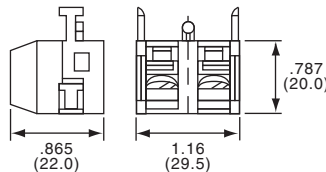
**QUICK CONNECT**

Tyco Electronics	Alcoswitch	Contacts	Plunger Color
1437612-9	F40	Normally Closed	Red
1-1437612-0	F50	Normally Open	Green
1-1437612-1	FA0	N.O. Early Make	Yellow
1-1437612-2	FR0	N.C. Late Break	Black

Note: FA0 and FR0 contacts "overlap."



V Series



**SCREW TERMINAL**

Tyco Electronics	Alcoswitch	Contacts	Plunger Color
1-1437612-3	V40	Normally Closed	Red
1-1437612-5	V50	Normally Open	Green
1-1437612-8	VA0	N.O. Early Make	Yellow
1-1437612-9	VR0	N.C. Late Break	Black

Note: "V" Series is available with gold plated contacts; order V40G, V50G, VA0G, VR0G. Note: VAO and VRO contacts "overlap."

**Series 6000 and Reliant'22 Contact Selection**

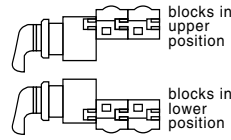
- Determine how many contacts are required for the application, and what contact closure sequence is needed for each contact.
  - 2-Position Operators: There are only two practical possibilities for contact closure sequence. Using "O" to indicate an open and "X" to indicate a closed contact, the options are shown in the table to the right. All Reliant 22 and Series 6000 2-position selection selector and keylock operators provide these options.
  - 3-Position Operators: There are six practical possibilities for contact closure sequence. Using "O" to indicate an open contact, and "X" to indicate a closed contact, the options are shown in the table to the right. Four different cam types are available to provide various combinations of contact closure sequence. Cam Type 2 (see table below) provides the most popular closure sequence, and Cam Type 3 provides all six possibilities, depending on the contact block models chosen. Note that each operator has an upper and lower contact block location, and that the cam profiles are different for upper and lower locations, except for Cam Type 2.
- Make a truth table similar to that shown in the example at the bottom of the page, in which each contact required by the circuit of the application is represented. Up to 12 contacts may be used for each operator, depending on the sequences required and the types of contact blocks chosen.
- Refer to the contact sequence table (below). Find the cam type that will provide all of the required contact closure sequences, and note which contact block model will be needed for each circuit contact.
- Now refer to the tables on pages I5-I6 for 22mm and pages I12-I13 for 30mm to find the operator model that has the cam type needed in the application and that provides the desired features with respect to action (maintained or momentary) type of actuator (lever or key), etc.

0	1
left	right
O	X
X	O

2	0	1
left	center	right
O	O	X
X	O	O
O	X	X
X	X	O
O	X	O
X	O	X

**SELECTOR & KEYLOCK OPERATORS**

ALCOSWITCH selector and keylock operators, in combination with the contact blocks listed on page I8, are designed to fulfill the circuit requirements of almost any 2- or 3-position control application. Each operator has two locations (upper and lower) into which contact blocks may be snap-mounted. Up to four contact blocks may be stacked in each location, the maximum number depending on the contact block models chosen and the contact closure sequences required. (Note: only one logic level block may be used in each location.)



**CONTACT CLOSURE SEQUENCE CHART**

Contact Blocks	2-Position Operators		3-Position Operators												
	CAM Type 1		CAM Type 2		CAM Type 3		CAM Type 4								
	upper & lower locations		upper location	lower location	upper location	lower location	upper location	lower location							
	0	1	2	0	1	2	0	1	2	0	1	2	0	1	
V40 or F40 Red	X	0	X	0	0	X	0	0	0	X	0	0	X	X	0
V50 or F50 Green	0	X	0	0	X	0	0	X	0	0	X	X	0	0	X
VA0 or FA0 Yellow	0	X*	0	X	X	0	X	X	X	0	X	X	0	0	X
VR0 or FR0 Black	X	0*	X	X	0	X	X	0	X	X	0	0	X	X	0

X = Closed    0 = Open    \*VA0 and FA0 contacts overlap with VR0 and FR0 contacts between position of 2 position operators providing "Make Before Break" action.

Example: An "Off-On-Reset" circuit control requires a 3-position keylock switch. The key is to be removable in the "OFF" and "ON" position and the "Reset" position must be momentary (spring return from right to center). All contacts are open in the "Off" position, and two contacts are closed in the "On" position. In the "Reset" position a third contact must close and one of the contacts

in the "on" position must open. This contact closure sequence is shown by the following truth table:

Contact Number	Off (2)	On (0)	Reset (1)
1	O	X	X
2	O	X	O
3	O	O	X

Referring to the Contact Closure Sequence Table, it is seen that cam Type 3 provides these sequences. In addition, the contact block models that should be used are given; model VA0 (or FA0) for contact No. 1, to be installed in the upper contact block location; model V40 (or F40) for contact No. 2, to be installed in the lower

contact block location; and model V50 (or F50) for contact No. 3, which may be used in either the upper or lower contact block location, behind one of the other two blocks. Reference to the operator model listings shows that model RM272 provides cam Type 3 and has desired momentary action and key removability.

**Joystick, 22mm**



M25310

**5 POSITION JOYSTICK (4 Action + Center-Off)**

**Metal Bushing**

Maintained or momentary models, inherent design requires use of N.O. and N.C. contact blocks. Supplied with legend plate, and black knob. Contact blocks not supplied, order separately. (See page I8.)

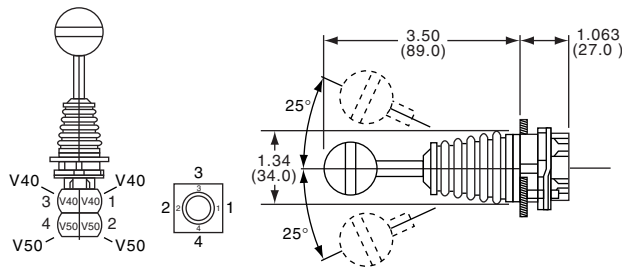
Tyco Electronics	Alcoswitch	Description					
1437609-2	M25310	Momentary, 3 Position	—	(ON)	OFF	(ON)	—
1437609-3	M25500	Maintained, 5 Position	ON	ON	OFF	ON	ON
1437609-4	M25510	Momentary, 5 Position	(ON)	(ON)	OFF	(ON)	(ON)

(ON) indicates momentary position

**Note:** All positions are mutually exclusive and action must pass through neutral for all changes of operator level.

**CONTACT ARRANGEMENT**

Contact blocks should be placed as shown. All contacts are held open in neutral position. Each numbered contact closed when activated. M25310 operators require one N.O. and one N.C. contact block, and M25500 and M25510 require two N.O. and two N.C. blocks.



**Pushbutton Switches, 30mm, Round or Mushroom Buttons**

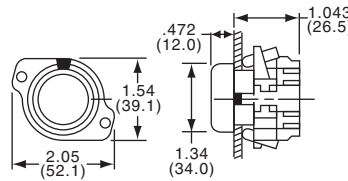
**FLUSH GUARD MOMENTARY**

Metal Bushing

Contact blocks not supplied, order separately. (See page I8.)

Model	Special Details
M6010(*)	Momentary

(\*) Specify color by adding suffix number:  
(0) Black, (2) Red, (4) Yellow, (5) Green, (6) Blue, (9) White.



M6010(\*)

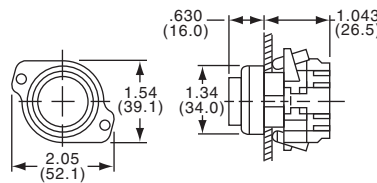
**EXTENDED BUTTON MOMENTARY**

Metal Bushing

Contact blocks not supplied, order separately. (See page I8.)

Model	Special Details
M6020(*)	Momentary

(\*) Specify color by adding suffix number:  
(0) Black, (2) Red, (4) Yellow, (5) Green, (6) Blue, (9) White.



M6020(\*)

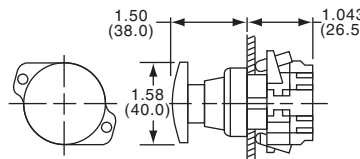
**MUSHROOM HEAD MOMENTARY PUSH MAINTAINED**

Metal Bushing

Contact blocks not supplied, order separately. (See page I8.)

Tyco Electronics	Alcoswitch	Special Details	Color
—	M6057(*)	Momentary	(*)
1437610-6	M60532	Push-Pull	Red
1-1437610-3	M60652	Push-Lock/Twist To Release	Red

(\*) Specify color by adding suffix number:  
(0) Black, (2) Red, (3) Orange, (4) Yellow, (5) Green, (6) Blue, (9) White.



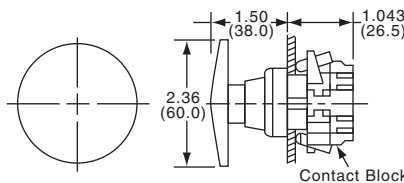
M6057(\*)

**LARGE MUSHROOM HEAD MOMENTARY PUSH**

Metal Bushing

Contact blocks not supplied, order separately. (See page I8.)

Tyco Electronics	Alcoswitch	Special Details	Color
1-1437610-2	M60582	Momentary	Red



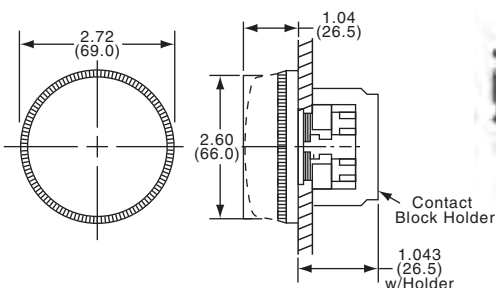
M60582

**LARGE GUARDED MUSHROOM HEAD MOMENTARY PUSH**

Metal Bushing. Heavy duty metal bushing and guard.  
Contact blocks not supplied, order separately. (See page I8.)

Model	Special Details
M6080(*)	Momentary

(\*) Specify color by adding suffix number: (0) Black, (2) Red, (5) Green.

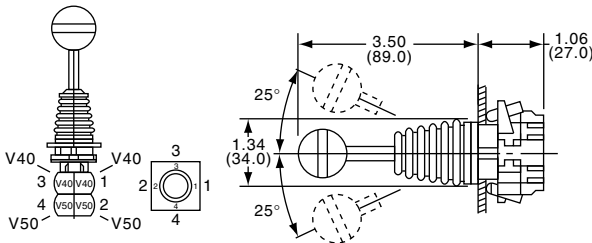


M6080(\*)

**Selector Switches or Joysticks, 30mm**



M65510



**5-POSITION JOYSTICK (4 Active & Center-Off)**

**Metal Bushing**

Maintained or momentary model with or without mechanical latch. Inherent design requires use of N.O. and N.C. Contact blocks not supplied, order separately. (See page I8.) Supplied with legend plate (1-2-3-4), black knob.

**CONTACT ARRANGEMENT**

Contact blocks should be placed as shown. All contacts are held open in neutral position. Each number contact closed when activated. Model M65310 has only two active positions, requires one N.O. and one N.C. contact block.

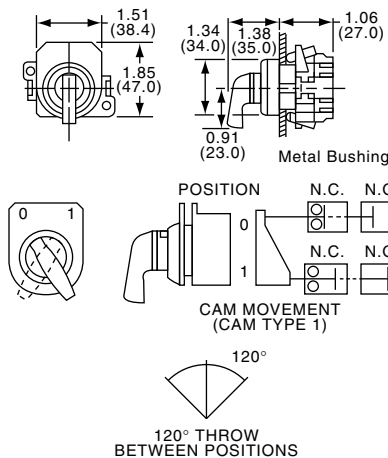
Note: All positions are mutually exclusive and action must pass through neutral for all changes of operator level.

Tyco Electronics	Alcoswitch	Action					
3-1437610-5	M65310	Momentary, No Latch	(On)	Off	(On)		
—	M65500	Maintained, No Latch	On	On	Off	On	On
3-1437610-6	M65510	Momentary, No Latch	(On)	(On)	Off	(On)	(On)
3-1437610-7	M65810	Momentary w/Latch	(On)	(On)	Off	(On)	(On)

(On) indicates momentary position.



M6402(\*)



**2-POSITION SELECTOR MAINTAINED**

**Metal Bushing**

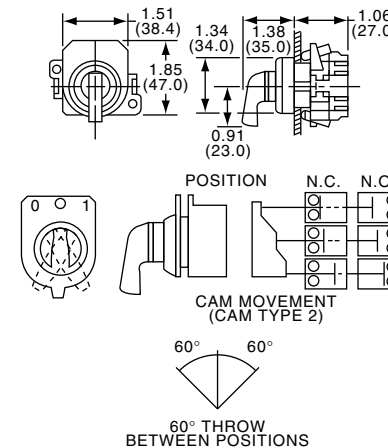
Contact blocks not supplied, order separately. (See page I8.) Legend plant included.

Model	Action	Lever	Position Number
M6402(*)	Maintained	Long	0 1

(\*) Specify color by adding suffix number: (0) Black, (2) Red.



M6412(\*)



**3-POSITION SELECTOR MAINTAINED OR MOMENTARY**

**Metal Bushing**

Contact blocks not supplied, order separately. (See page I8.) Legend plate included.

Model	Action	Lever	Cam	Position Number
M6410(*)	Maintained	Long	2	2 0 1
M6412(*)	Maintained	Long	3	2 0 1
M6470(*)	Mom. 1 Side	Long	2	2 0 ← 1
M6480(*)	Mom. 2 Sides	Long	2	2 → 0 ← 1

Indicates momentary return position

(\*) Specify color by adding suffix number: (0) Black, (2) Red.

Series 6000

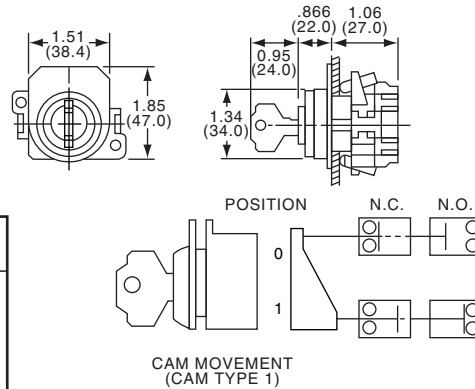
**Keylock or Pushbutton Switches, 30mm**

**2 POSITION KEY SELECTOR  
MAINTAINED OR MOMENTARY**

Metal Bushing  
Supplied with two keys and legend plate.  
Contact blocks not supplied, order separately.  
(See page I8)

Tyco Electronics	Alcoswitch	Action	Cam	Position Number	Throw	Remove Key	
2-1437610-2	M6200	Maintained	1	0 1	60°	⊙	
2-1437610-3	M6201	Maintained	1	0 1	60°	⊗	
2-1437610-6	M6250	Momentary	1	0 ← 1	60°	⊙	
1437617-1	G001	Additional Keys					

← Indicates momentary return position

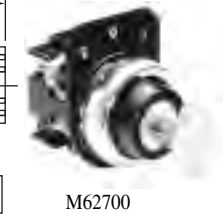
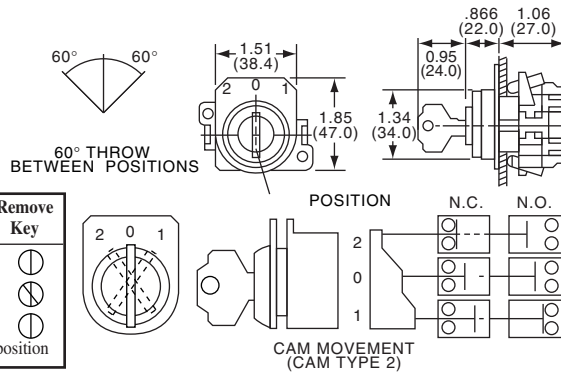


**3 POSITION KEY SELECTOR  
MAINTAINED OR MOMENTARY**

Metal Bushing  
Supplied with two keys and legend plate.  
Contact blocks not supplied, order separately.  
(See page I8.)

Tyco Electronics	Alcoswitch	Action	Cam	Position Number	Remove Key	
2-1437610-5	M6210	Maintained	2	2 0 1	⊙	
2-1437610-7	M6270	Mom. 1 Side	2	2 0 ← 1	⊗	
2-1437610-8	M6280	Mom. 2 Sides	2	2 → 0 ← 1	⊙	
1437617-1	G001	Additional Keys				

← Indicates momentary return position

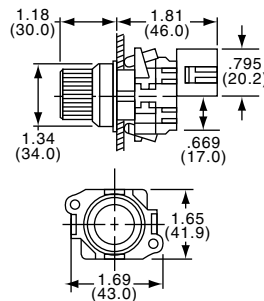


**ILLUMINATED EXTENDED BUTTON MOMENTARY**

Metal Bushing  
Lamp not supplied, order separately. (See page I15.) Uses T31/4 miniature bayonet base lamps. Lamp circuit is isolated. Contact blocks not supplied, order separately. (See page I8)

Model	Special Details
M6120(*)406	Momentary

(\*) Specify color by adding suffix number: (2) Red, (4) Yellow, (5) Green, (9) White.

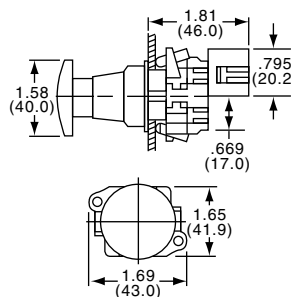


**ILLUMINATED MUSHROOM  
MAINTAINED OR MOMENTARY**

Metal Bushing  
Lamp not supplied, order separately. (See page I15.)  
Uses miniature bayonet base lamps. Lamp circuit is isolated.  
Contact block not supplied, order separately. (See page I8.)

Model	Special Details
M6150(*)406	Momentary
M6153(*)406	Maintained, Push-Pull

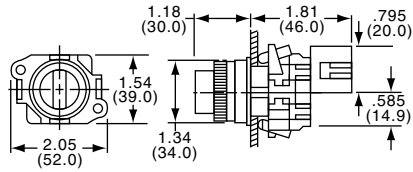
(\*) Specify color by adding suffix number: (2) Red, (4) Yellow, (5) Green, (9) White.



**Selector Switches, 30mm, Illuminated**



M6650(\*)06



**ILLUMINATED MAINTAINED  
SELECTOR**

Metal Bushing

Lamp not supplied, order separately. (See page I15.)

G31/2 lamps. Lamp circuit is isolated. Contact blocks not supplied, order separately. (See page I8.)

Model	Number Position	Action	Position Number
M6653(*)406	3	Maintained	2 0 1
M6650(*)406	2	Maintained	0 1

(\*) Specify color by adding suffix number: (2) Red, (4) Yellow, (5) Green.

Model	Action	2-Position Operator		3-Position Operator		
V40 or F40	N.C.	O	1	1	O	2
V50 or F50	N.O.	X	O	X	O	O
VA0 or FA0	N.O. Early	O	X	O	X	X
VR0 or FR0	N.C. Make Break	X	O	X	X	0

O=Open  
X = Closed

**KEY TO SELECTION OF CONTACT BLOCKS**  
Contact closure variations depend on the contact block models chosen. For these operators listed use this table for guidance in selecting blocks.

**Lamps/Transformers**

**LAMPS**

The lamps with G31/2 bulbs fit all Reliant 22, Series 6000 illuminated operators and pilot lights. Lamps with T31/4 Bayonet Base fit all Reliant 22 and Series 6000 illuminated models (except QM120, QM122, and M6650, and M6655).

Tyco Electronics	Alcoswitch	Bulb	Rated Volts	Design Amps	MSCP	Average Rated Hours
1-1437620-5	755	T31/4	6.3	.15	.33	20,000
1-1437620-6	757	T31/4	28	.08	.62	7,500

\*Not recommended for use with green or blue lenses.



NE51HR

755

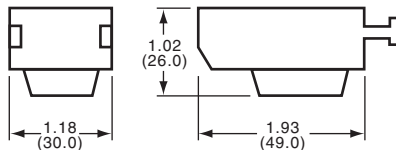
Application Note: For additional specifications, see page K10

**STEP-DOWN TRANSFORMERS**

**AC LINE TO 6V/6.3V**

Snap mount on lighted operators and QM600, T6632 and RM600 pilot lights. Spade tipped leads connect to lamp terminals on operator. Screw terminals on primary. Use 6-6.3V lamps. 0-9 to 1.35 watts. Secondary winding is energy-limited.

Tyco Electronics	Alcoswitch	Primary Voltage
1437612-8	5B0	110-120 VAC
1437612-7	570	220-240 VAC



U.L. Recognized

5B0

**Panel Layouts**

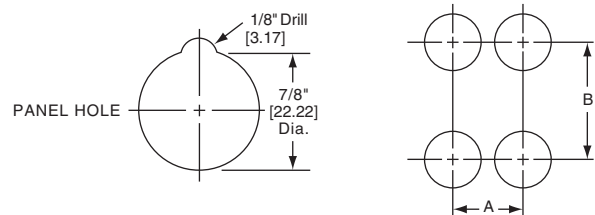
**RELIANT'22 MINIATURE MODELS**

Recommended hole mounting dimensions\*

Minimum Center-To-Center Spacing  
Inches/(mm)

Operator Type	A	B
Pushbuttons, Pilots	1.19/30.2	1.66/42.2
Mushroom, Selector	1.50/37.8	1.66/42.2
Others	1.94/49.3	1.94/49.3

\*Check dimensions for layouts using legend plates.



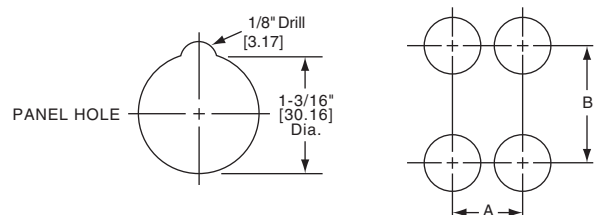
**SERIES 6000 STANDARD MODELS**

Recommended hole mounting dimensions\*

Minimum Center-To-Center Spacing  
Inches/(mm)

Operator Type	A	B
Pushbuttons, Pilots	1.88/47.8	1.97/50.0
Mushroom, Selector	2.25/57.2	2.25/57.2
Large Mushroom	3.00/76.2	3.00/76.2

\*Check dimensions for layouts using legend plates.



Series 6000



**Pushbutton Switches, 16mm, Illuminated**

**FEATURES:**

Command Series Illuminated Pushbuttons are instrument-grade switches having snap-acting double break contacts, silver clad and gold plated to satisfy the requirements of logic level and power switching. **Contacts are electrically independent of one another and are isolated from the lamp circuit.** Tactile feel is excellent and maintained models have latching feature for visible indication of status. Uses T1-3/4 midget flanged base lamp, relampable from front of panel. Legends may be provided using printed transparent tape affixed to inner button. UL Recognized, File E-51302, CSA LR-20479

Note: Recommended panel thickness 4mm max.

**MATERIAL SPECIFICATIONS:**

Contacts .....Gold plate over silver clad

**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....0.4 VA @ 20 VDC or Peak AC  
 5 A @ 250 VAC or 24 VDC (Resistive)  
 Initial Contact Resistance .....20 Milliohms max.  
 Insulation Resistance .....100 Megohms min.  
 Dielectric Strength .....1,500 VAC  
 Life Expectancy .....100,000 Operations @ rated current

**ENVIRONMENTAL SPECIFICATIONS:**

Operating Temperature.....-4°F to +122°F (-20°C to +50°C)  
 Oiltight .....IP65, NEMA 1, 12 & 13  
 Non-oiltight.....IP40

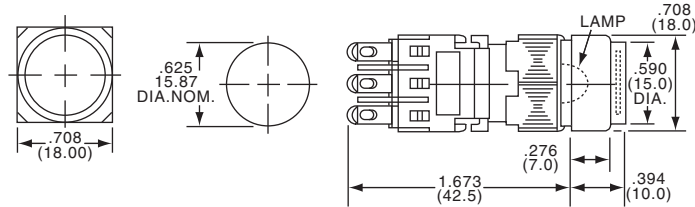
**ROUND**

Lens set and lamps not supplied.



164EL11

Application Note: For lens sets, accessories and lamps, see page I18 to I20



Non-Oiltight		Oiltight		Contact	Action
Tyco Electronics	Alcoswitch	Tyco Electronics	Alcoswitch		
1437569-2	164EL11	4-1437569-2	165EL11	1 N.O. & N.C.	Momentary
1437569-3	164EL22	4-1437569-3	165EL22	2 N.O. & N.C.	Momentary
—	164EL33	—	165EL33	3 N.O. & N.C.	Momentary
1437569-5	164EL511	4-1437569-4	165EL511	1 N.O. & N.C.	Push on/Push off
1437569-6	164EL522	4-1437569-5	165EL522	2 N.O. & N.C.	Push on/Push off
1437569-7	164EL533	—	165EL533	3 N.O. & N.C.	Push on/Push off

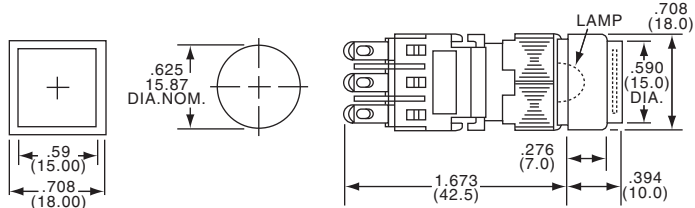
**SQUARE**

Lens set and lamps not supplied.



164SL11

Application Note: For lens sets, accessories and lamps, see page I18 to I20



Non-Oiltight		Oiltight		Contact	Action
Tyco Electronics	Alcoswitch	Tyco Electronics	Alcoswitch		
2-1437569-5	164SL11	4-1437569-9	165SL11	1 N.O. & N.C.	Momentary
2-1437569-6	164SL22	5-1437569-0	165SL22	2 N.O. & N.C.	Momentary
2-1437569-7	164SL33	—	165SL33	3 N.O. & N.C.	Momentary
2-1437569-9	164SL511	5-1437569-1	165SL511	1 N.O. & N.C.	Push on/Push off
3-1437569-0	164SL522	5-1437569-2	165SL522	2 N.O. & N.C.	Push on/Push off
3-1437569-1	164SL533	—	165SL533	3 N.O. & N.C.	Push on/Push off

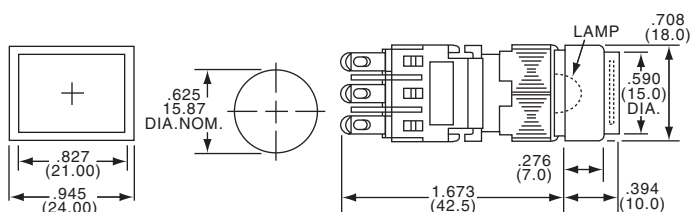
**RECTANGULAR**

Lens set and lamps not supplied.



164TL11

Application Note: For lens sets, accessories and lamps, see page I18 to I20



Non-Oiltight		Oiltight		Contact	Action
Tyco Electronics	Alcoswitch	Tyco Electronics	Alcoswitch		
3-1437569-4	164TL11	5-1437569-4	165TL11	1 N.O. & N.C.	Momentary
3-1437569-5	164TL22	5-1437569-5	165TL22	2 N.O. & N.C.	Momentary
3-1437569-6	164TL33	—	165TL33	3 N.O. & N.C.	Momentary
3-1437569-8	164TL511	5-1437569-6	165TL511	1 N.O. & N.C.	Push on/Push off
3-1437569-9	164TL522	5-1437569-7	165TL522	2 N.O. & N.C.	Push on/Push off
4-1437569-0	164TL533	5-1437569-8	165TL533	3 N.O. & N.C.	Push on/Push off

**Selector or Keylock Switches, 16mm**

**FEATURES:**

Command Series Selector & Keylock Switches are 2 & 3-position rotary types with snap-acting double break contacts. All models have 90° throw. Contacts are silver-clad and gold-plated to provide reliable operation at logic levels as well as for power switching applications. Contacts are electrically isolated from one another. Keylock types are supplied with two keys. Oiltight models meet NEMA 1, 12 & 13 requirements.

UL Recognized File E-51302

CSA LR-20479

**MATERIAL SPECIFICATIONS:**

Contacts .....Gold plate over silver clad

**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....0.4 VA @ 20 VDC or Peak AC  
 5 A @ 250 VAC or 24 VDC (Resistive)  
 Initial Contact Resistance .....20 Milliohms max.  
 Insulation Resistance .....100 Megohms min.  
 Dielectric Strength .....1,500 VAC  
 Life Expectancy .....100,000 Operations at rated current

**ENVIRONMENTAL SPECIFICATIONS:**

Operating Temperature.....-4°F to +158°F (-20°C to +70°C)

**SELECTORS**



164P2B11

Non-Oiltight		Oiltight		Contact	Action
Tyco Electronics	Alcoswitch	Tyco Electronics	Alcoswitch		
2-1437569-0	164P2B11	4-1437569-8	165P2B11	1N.O. & N.C.	2 Pos. Maintained
2-1437569-1	164P2B22	—	165P2B22	2N.O. & N.C.	2 Pos. Maintained
—	164P2B33	—	165P2B33	3N.O. & N.C.	2 Pos. Maintained
1-1437569-9	164P0B22	—	—	2N.O. & N.C.	2 Pos. Momentary Right
—	164P0B33	—	—	3N.O. & N.C.	2 Pos. Momentary Right
2-1437569-2	164P3B22	—	165P3B22	2N.O. & N.C.	3 Pos. Center Off/Maintained
2-1437569-3	164P3B33	—	165P3B33	3N.O. & N.C.	3 Pos. Center Off

**KEYLOCKS**



164J2A11

2 Position Keylocks						3 Position Keylocks					
Non-Oiltight		Oiltight		Contact	Action	Non-Oiltight		Oiltight		Contact	Action
Tyco Electronics	Alcoswitch	Tyco Electronics	Alcoswitch			Tyco Electronics	Alcoswitch	Tyco Electronics	Alcoswitch		
1-1437569-1	164J2A11	4-1437569-7	165J2A11	1N.O. & N.C.	Maintained, key pull left	—	164J3A22	—	165J3A22	2N.O. & N.C.	Maintained, key pull left
1-1437569-2	164J2A22	—	165J2A22	2N.O. & N.C.	Maintained, key pull left	1-1437569-5	164J3A33	—	165J3A33	3N.O. & N.C.	Maintained, key pull left
—	164J2A33	—	165J2A33	3N.O. & N.C.	Maintained, key pull left	—	164J3E22	—	165J3E22	2N.O. & N.C.	Maintained, key pull center
1-1437569-3	164J2B11	—	165J2B11	1N.O. & N.C.	Maintained, key pull both	—	164J3E33	—	165J3E33	3N.O. & N.C.	Maintained, key pull center
1-1437569-4	164J2B22	—	165J2B22	2N.O. & N.C.	Maintained, key pull both	1-1437569-6	164J3C22	—	165J3C22	2N.O. & N.C.	Maintained, key pull all
—	164J2B33	—	165J2B33	3N.O. & N.C.	Maintained, key pull both	—	164J3C33	—	165J3C33	3N.O. & N.C.	Maintained, key pull all
1437569-9	164J0A11	—	—	1N.O. & N.C.	Momentary right, key pull left	—	164J7A22	—	165J7A22	2N.O. & N.C.	Momentary right, key pull left
1-1437569-0	164J0A22	—	—	2N.O. & N.C.	Momentary right, key pull left	1-1437569-8	164KA	—	—	—	Spare Keys
—	164J0A33	—	—	3N.O. & N.C.	Momentary right, key pull left	—	—	—	—	—	—

**Pilot Light Indicators or Lens Sets, 16mm**

**FEATURES**

Command Series Pilot Light Indicators match the appearance of both lighted and unlighted Command Series pushbuttons. The same lens buttons are snapped into place and legends may be easily inserted. Illumination is from T - 1 3/4 midget flange based lamps, which are installed from the front panel. Lenses and lamps are ordered separately. Oiltight models meet NEMA 1, 12 & 13 requirements. UL File No. E-51302  
CSA LR-20479

**TYPICAL PERFORMANCE CHARACTERISTICS:**

LAMP DISSIPATION 1.2W MAX.  
Insulation Resistance .....100 Megohms min.  
Dielectric Strength .....1,500 VAC

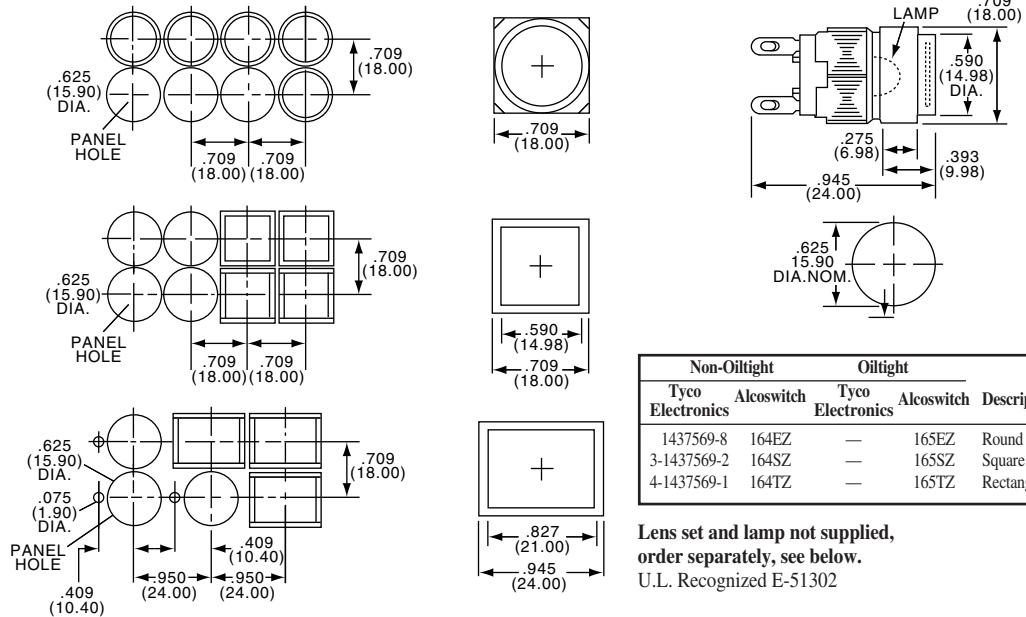
**ENVIRONMENTAL SPECIFICATIONS:**

Operating Temperature.....-4°F to +122°F (-20°C to +50°C)

**PILOT LIGHT INDICATORS**



164EZ

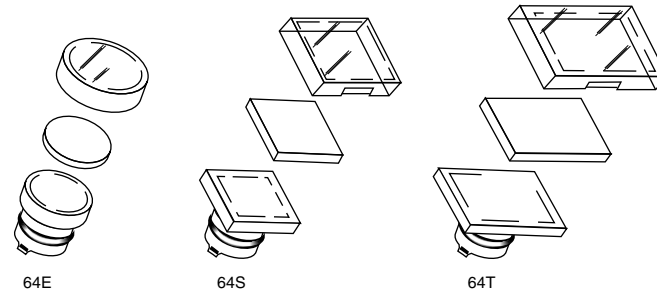


Lens set and lamp not supplied, order separately, see below.  
U.L. Recognized E-51302

**LENS SET**



64E



Model	Description
64E(*)	Round lens set
64S(*)	Square lens set
64T(*)	Rectangular lens set

All fit oiltight and non-oiltight indicators.  
(\*) Specify color by adding suffix number: (2) Red, (3) Orange, (4) Yellow, (5) Green, (6) Blue, (9) White/Clear.

**Application Note:**  
Lens sets include, button, diffuser and cap.

**Accessories and Tools, 16mm**

**FEATURES:**

Standard Legends on Transparent Adhesive Tape are available for Illuminated Command Series switches and pilot lights. Legends are easily affixed to the translucent white button and are protected by the lens cap. The black lettering is back-lit by the lamp and the inscription is visible through the lens cap. This method of providing legends is also suitable in some applications using non-illuminated white (clear), yellow or orange lens caps.

Standard legends, listed below, are intended to be used with round, square or rectangular pushbuttons and pilot lights. Sold only in sheets of 10 identical legends.

**LEGEND MODEL NUMBERS**



Tyco Electronics	Alcoswitch	
6-1437569-3	616	On
6-1437569-2	616	Off

Note: Model numbers must include complete legend nomenclature.



Legend (film)

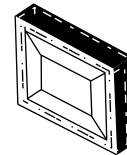
**Accessories**

**MOUNTING WRENCH**

Sturdy tubular brass wrench fits mounting nuts on all Command Series switches.



Tyco Electronics    Alcoswitch  
6-1437569-0        601-AG

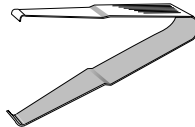


**SPLASH PROOF SEAL**  
Flexible clear seal fits all rectangular pushbuttons and pilot lights.

Tyco Electronics    Alcoswitch  
9-1437569-2        668

**LENS REMOVER**

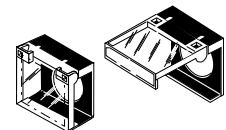
Dual purpose metal tool facilitates removal of lenses, buttons.



Tyco Electronics    Alcoswitch  
6-1437569-9        618-AG

**FLIP COVER SWITCH GUARD**

669 used with rectangular series pushbutton switches.  
671 used with square and round series pushbutton switches.



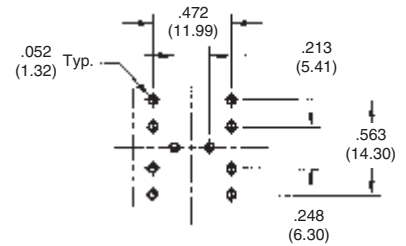
Tyco Electronics    Alcoswitch  
9-1437569-4        669 Rectangular  
9-1437569-3        671-AG        Square and Round

**Socket for 16mm Command Series Switches**

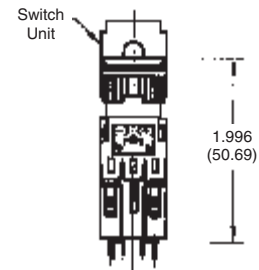
697-PL



9-1437569-5



**Recommended PCB Footprint**



**T1 3/4 Series Midget Incandescent Lamps**

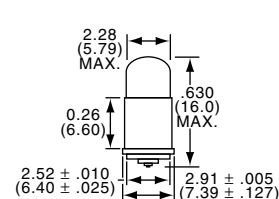
Average Life ratings indicate the lamp life obtained in controlled laboratory conditions while operating lamps at the design voltage (AC) (DC will shorten life by 50%). The life of a subminiature lamp is inversely proportional to the 12th power of the applied voltage.

ALCOSWITCH subminiature lamps are a "T" class, meaning that the envelopes are made of glass tubing, the "T" number indicating the diameter of the tubing in eighths of an inch.

Command Series

Tyco Electronics	Alcoswitch	Rated Volts	Design Amps	Rated MSCP	Average Rated Hours
9-1437620-6	7333	5.0	.060	.05	40,000
1-1437620-8	815-AG	—	.115	.147	40,000
1437620-7	381-AG	6.3	.20	.40	50,000
1437620-8	382-AG	14.0	.08	.30	50,000
1437620-9	385	28.0	.04	.20	50,000
1-1437620-1	387	28.0	.04	.30	25,000
1437620-5	327-AG	28.0	.04	.34	7,000

FLANGE BASE- T1 3/4





*SH6 Series - Page J3*



*PICOD Series - Page J4*

# Pushwheel



Pushwheel Switches

**Pushwheel Switches Part Number Index**

B11LS .....J9,J10	SMCADP .....J9
B12L .....J11	SMCD .....J4,J6,J8
B12LS .....J11	SMCD111AK .....J9
B5L .....J7	SMCD131AK .....J9
B5LS .....J7,J8	SMCD131AKLS .....J9
B9L .....J9,J10	SMCD131ALD .....J9
B9LS .....J9,J10	SMCD137AK .....J9
B9LS5PIN .....J9	SMCD301AK .....J9
DPS .....J6	SMCL .....J9
DPS10 .....J5,J11	SMCPK .....J9
DPS10111AK .....J11	SP1.2 .....J9, J10
DPS10131AK .....J11	SP1.5 .....J11
DPS10131ALD .....J11	
DPS10137AK .....J11	
DPS10141AK .....J11	
DPS10301AK .....J11	
DPS10L .....J11	
DPS8 .....J5,J10	
DPS8111AK .....J10	
DPS8131AK .....J10	
DPS8131AKLS .....J10	
DPS8131AKULS .....J10	
DPS8131ALD .....J10	
DPS8137AK .....J10	
DPS8137AKLS .....J10	
DPS8137AKU .....J10	
DPS8137AKULS .....J10	
DPS8301AK .....J10	
DPS8301AKULS .....J10	
DPS8A .....J10	
DPS8L .....J10	
DPS8P .....J10	
DPS8PW .....J10	
DPS9 .....J5,J11	
DPS910A .....J11	
DPS910P .....J11	
DPS9111AK .....J11	
DPS9131AK .....J11	
DPS9131AL .....J11	
DPS9131ALD .....J11	
DPS9137AK .....J11	
DPS9301AK .....J11	
DPS9307AK .....J11	
DPS9L .....J11	
PICOA .....J7	
PICOADP .....J7	
PICOBG .....J7	
PICOD .....J4,J6,J8	
PICOD111AL .....J7	
PICOD131AK .....J7	
PICOD131ALD .....J7	
PICOD131ALULS .....J7,J8	
PICOD137AK .....J7	
PICOD137ALULS .....J7,J8	
PICOD301AK .....J7	
PICOD301ALD .....J7	
PICOD301ALULS .....J7,J8	
PICOP .....J7	
SH131AK .....J6	
SH6 .....J4,J6	
SH6131AK .....J6	
SH6131AKK2 .....J6	
SMCA .....J9	



Pushwheel Switches

**Order Description and Code Tables (Wiring Diagram)**

**DPS10 - 131 - AK**

Series/types	Codes	Connections
SH6	111 = Decimal	AK = pcb short
PICOD	131 = BCD	AL = pcb long
SMCD	137 = BCD Complement	LS = solder pin
DPS8	141 = BCD + Complement	AL/D = pcb long, interrupted
DPS9	301 = Hexadecimal	AKU = pcb long downward
DPS10	307 = Hexa. Complement	ALU = pcb long downward
	400 = Switch-over	

**FACTORY ASSEMBLED GROUP**

Special type numbers will be assigned for customers requiring delivery of assembled groups of code switches. These will be pre-tested, identified and individually packaged. Consult factory for details.

**CUSTOM SWITCHES**

Contact factory for information concerning the feasibility, pricing and delivery of special switches, including non-standard codes, limit stopping, special markings, PC terminals and optional colors.

**Code tables (wiring diagram)**

**Code 131**

BCD					
	C	1	2	4	8
0	●				
1	●	●			
2	●		●		
3	●	●	●		
4	●			●	
5	●	●		●	
6	●		●	●	
7	●	●	●	●	
8	●				●
9	●				●

**Code 137**

BCD Complement					
	C	1	2	4	8
0	●	●	●	●	●
1	●	●	●	●	●
2	●	●	●	●	●
3	●			●	●
4	●	●	●	●	●
5	●	●	●	●	●
6	●	●	●	●	●
7	●			●	●
8	●	●	●	●	●
9	●	●	●	●	●

**Code 141**

BCD + Compl.									
	C	1	2	4	8	1	2	4	8
0	●					●	●	●	●
1	●	●				●	●	●	●
2	●		●			●	●	●	●
3	●	●	●			●	●	●	●
4	●			●		●	●	●	●
5	●	●	●	●		●	●	●	●
6	●	●	●	●	●	●	●	●	●
7	●	●	●	●	●	●	●	●	●
8	●				●	●	●	●	●
9	●				●	●	●	●	●

**Code 400**

change-over switch			
	C	A+	A-
+	●	●	
1	●	●	●
2	●	●	●
+	●	●	
-	●		●
4	●	●	●
+	●	●	
-	●		●
7	●	●	●
+	●	●	
-	●		●

**Code 301**

Hexadecimal					
	1	2	4	8	C
0					●
1	●				●
2	●	●			●
3	●	●			●
4	●		●		●
5	●	●	●		●
6	●	●	●	●	●
7	●	●	●	●	●
8	●			●	●
9	●			●	●
A	●	●	●	●	●
B	●	●	●	●	●
C	●	●	●	●	●
D	●	●	●	●	●
E	●	●	●	●	●
F	●	●	●	●	●

**Code 307**

Hexadecimal Compl.					
	C	1	2	4	8
0	●	●	●	●	●
1	●	●	●	●	●
2	●	●	●	●	●
3	●			●	●
4	●	●	●	●	●
5	●	●	●	●	●
6	●	●	●	●	●
7	●			●	●
8	●	●	●	●	●
9	●	●	●	●	●
A	●	●	●	●	●
B	●			●	●
C	●	●	●	●	●
D	●	●	●	●	●
E	●	●	●	●	●
F	●	●	●	●	●

**Code 111**

Decimal											
	C	0	1	2	3	4	5	6	7	8	9
0	●	●									
1	●		●								
2	●			●							
3	●				●						
4	●					●					
5	●						●				
6	●							●			
7	●								●		
8	●									●	
9	●										●



**Specifications**

Series/Types Catalog Page	SH6 J6	PICOD J7-8	SMC-D J9
<b>Dimensions/type of mounting</b>			
panel / height x width	15x6 mm	15x7.62 mm	24x7.62mm
installed depth width PCB, short/long	23.5/30.8 mm	24/34.5 mm	32/42mm
insertion from the front	x	x	x
insertion from the rear	x		
<b>Codes</b>			
Code	switching position	printing	
111 decimal	10	0-9	x
131 BCD	10	0-9	x
137 BCD complement	10	0-9	x
141 BCD + complement	10	0-9	x
301 hexadecimal	16	0-9-A-F (0-15)	x
307 hexadecimal compl.	16	0-9-A-F (0-15)	
400 change-over switch	10	+, -, +-, etc.	x
<b>Electrical data</b>			
operating voltage max.	40V	40V	40V
contact load, static max.	0.5A	0.5A	1A
contact load, dynamic (resistive) max.	100mA	100mA	100mA
contact resistance type AK (measured from the supply line to the output)	< 100 mOhm	< 100 mOhm	< 100 mOhm
<b>Technical data</b>			
permissible ambient temperature	-20...+80°C	-20...+60°C	-20...+80°C
expected life (switching cycles)	> 10 <sup>5</sup>	> 10 <sup>5</sup>	> 10 <sup>6</sup>
actuating force approx.	4 N	3 N	4 N
weight approx.	1.5 g	2 g	4 g
digit height 10-/16-digit	3.1mm	3.1/2.4mm	4.9/3.4mm
click action (working point)	x	x	x
vibration DIN EN 60068-2-6	x	x	x
shock DIN EN 60068-2-27	x	x	x
<b>Material</b>			
housing: PPO UL94V-0	x	x	x
pc board: base material FR 4 respectively CEM3 DIN IEC 249-2, contact surface Au over Ni on Cu	x	x	x
<b>Connections</b>			
AK: short	x	x	x
AL: long	x	x	x
LS: solder point	x	x	x
AL/D: long/interrupted		x	
ALU: long downward		x	x

J

Specifications

**Specifications**

Series/Types Catalog Page			DPS8 J10	DPS9 J11	DPS10 J11
<b>Dimensions/type of mounting</b>					
panel / height x width			18x8mm	33x8mm	33x10mm
installed depth width PCB, short/long			32/41mm	39/50mm	39/50mm
insertion from the front			x	x	
insertion from the rear				x	
<b>Codes</b>					
Code	switching position	printing			
111 decimal	10	0-9	x	x	x
131 BCD	10	0-9	x	x	x
137 BCD complement	10	0-9	x	x	x
141 BCD + complement	10	0-9	x		
301 hexadecimal	16	0-9-A-F (0-15)	x	x	x
307 hexadecimal compl.	16	0-9-A-F (0-15)			
400 change-over switch	10	+, -, +-, etc.			
<b>Electrical data</b>					
operating voltage max.			40V	40V	40V
contact load, static max.			1A	1A	1A
contact load, dynamic (resistive) max.			100mA	100mA	100mA
contact resistance type AK (measured from the supply line to the output)			< 100 mOhm	< 100 mOhm	< 100 mOhm
<b>Technical data</b>					
permissible ambient temperature			-20...+80°C	-20...+80°C	-20...+80°C
expected life (switching cycles)			> 10 <sup>6</sup>	> 10 <sup>6</sup>	> 10 <sup>6</sup>
actuating force approx.			4 N	4 N	4 N
weight approx.			4 g	6.5 g	7.5 g
digit height 10-/16-digit			4.9/3.4mm	6.8/4.3mm	7.0/4.3mm
click action (working point)			x	x	x
vibration DIN EN 60068-2-6			x	x	x
shock DIN EN 60068-2-27			x	x	x
<b>Material</b>					
housing: PPO UL94V-0			x	x	x
pc board: base material FR 4 respectively CEM3 DIN IEC 249-2, contact surface Au over Ni on Cu			x	x	x
<b>Connections</b>					
AK: short			x	x	x
AL: long			x	x	x
LS: solder point			x	x	x
AKU: short downward					x
ALU: long downward			x		

**Pushwheel Switches, Subminiature, Panel Mount, Dual Button**

SH6 Series pushwheel switches are the smallest panel mounted dual pushbutton code switches available. They have a snap-action detent with an audible click. The dual-purpose finger terminals may be used for direct mounting on printed circuit boards, or wire may be soldered directly to the gold-plated conductors. The SH6 is designed for several means of panel mounting: groups of any number of switches may be snapped into panel holes of proper size and retained by the integral clips (front mounting), or groups may be held in place in a panel hole by being supported from rear when the switches are PC mounted. These reliable switches are made to the same exacting requirements as the SMCD, PICOD and DPS Series.

**MATERIAL SPECIFICATIONS**

Moving Contacts .....Gold-clad Ni over copper alloy  
 Fixed Contacts .....AU over Ni  
 PC Board .....FR4 Glass Epoxy  
 Molded Parts .....Noryl-SE1, black matte finish  
 Window .....Thermoplastic resin

**TYPICAL PERFORMANCE CHARACTERISTICS**

Contact Rating .....0.4 VA @ 20 VDC (max.)  
 Contact Circuit Resistance .....0.12 ohm max.

**PERFORMANCE CHARACTERISTICS**

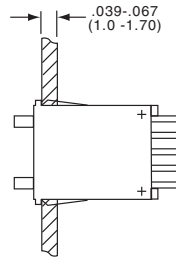
Operating Force .....Approx. 11 oz.  
 PC Terminal Spacing .....0.100"  
 Character Height/Color.....0.118" White  
 Life Expectancy .....More than 10<sup>5</sup> operations  
 Operating Temperature .....-20°C to +80°C

**SH6 SERIES**

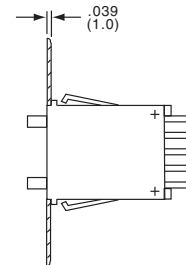


SH6131AK

**FRONT MOUNTING**  
(See note below)



**REAR MOUNTING**



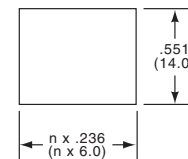
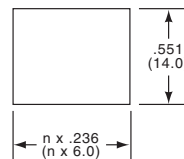
**SH6 - 131 - AK**

**Codes**

131 = BCD  
 137 = BCD Complement

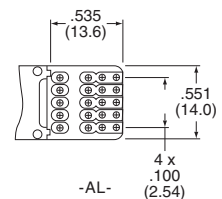
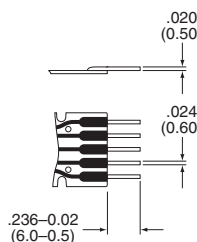
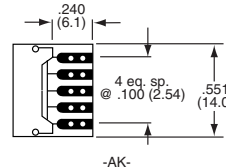
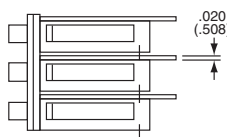
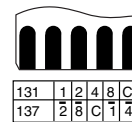
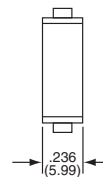
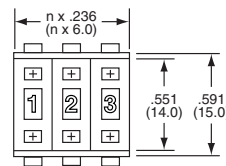
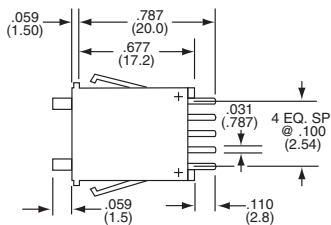
**Connections**

AK = pcb short  
 AL = pcb long  
 LS = solder pin



See Code Tables on Page J3

n = Number of switches



Note: Remove locating lugs from side of last switch to enable mounting from the front panel.

Note: Use Card Edge Connector B5LS or B5L with AK type.

**Pushwheel Switches, Subminiature, Panel Mount, Dual Button**

The PICOD family offers small panel-mounted pushwheel code switches, ideally suited for high density applications. They are used for the controlling and programming of frequency synthesizers, counters and timers, data comparators, security encoders, weighing machines, etc. The dependable pushbutton action allows narrow 0.3 inch width on panel. Changes to higher or lower settings are accomplished rapidly by successive operation of the appropriate buttons. The featherweight PICOD is less than 0.6 inch high, yet rugged enough for hand-held and portable instruments that may be subjected to field abuse. Heavy gold plating on wiping contacts affords low contact resistance for reliable operation over long periods of service. Easy-to-read characters are viewed through dust-sealed window. Installation costs are minimized by snap-together design – no inconvenient hardware.

**MATERIAL SPECIFICATIONS:**

Fixed Contacts .....1 microns AU over Ni over Cu  
 Moving Contacts .....Gold-clad Ni over copper alloy  
 PC Board .....FR4 Glass epoxy  
 Molded Parts .....Noryl-SE1, Black matte finish  
 Window .....Thermoplastic resin

**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....0.4 VA @ 20 VDC max.  
 Contact Circuit Resistance .....0.15 Ohm max.  
 Operating Force .....Approx. 11 oz.  
 PC Terminal Spacing .....0.100"  
 Character Height/Color .....122" White (.094" for hex codes)  
 Life Expectancy .....More than 10<sup>5</sup> operations  
 Operating temperature .....-10° C to + 60° C

**PICOD - 131 - AK**

Codes	Connections
111 = Decimal	AK = pcb short
131 = BCD	AL = pcb long
137 = BCD Complement	LS = solder pin
301 = Hexadecimal	AL/D = pcb long, interrupted
307 = Hexa. Complement	ALU = pcb long downward
400 = Switch-over	

See Code Tables on Page J3



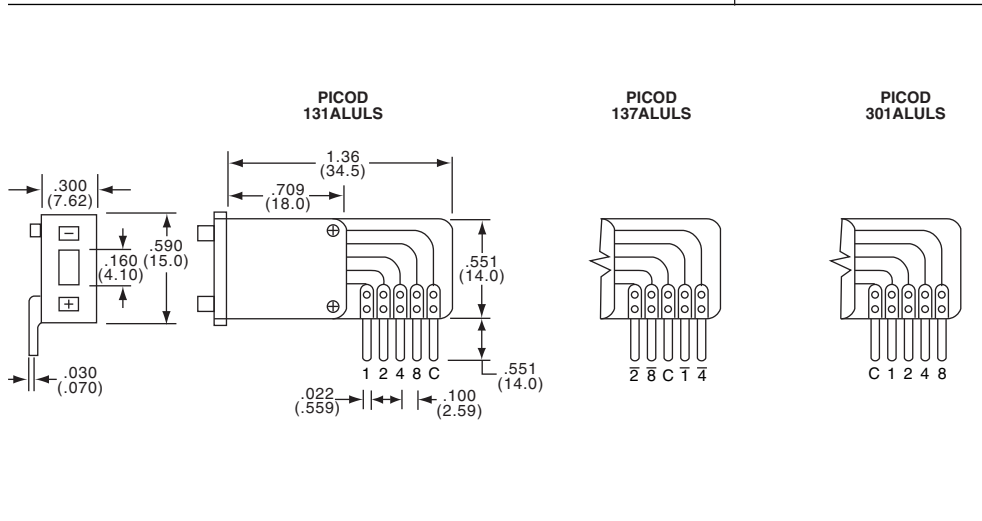
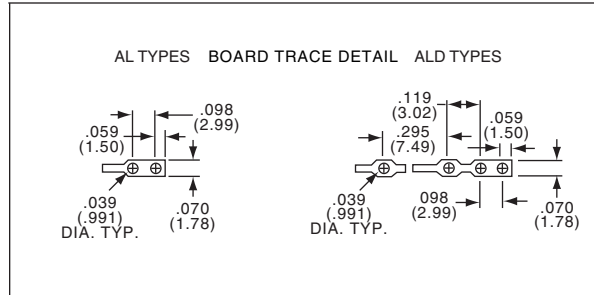
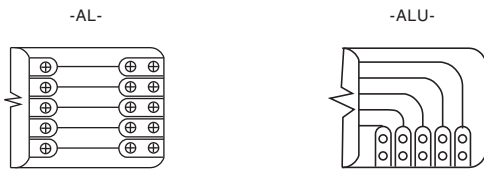
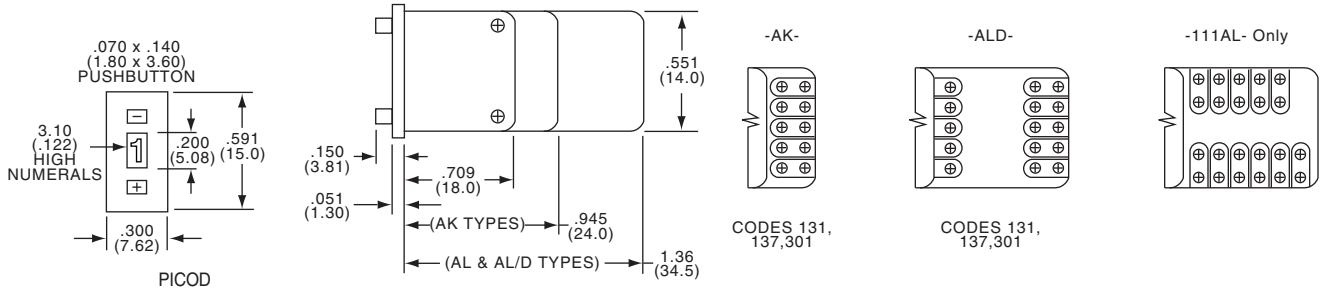
PICOD111AL

**ACCESSORIES**

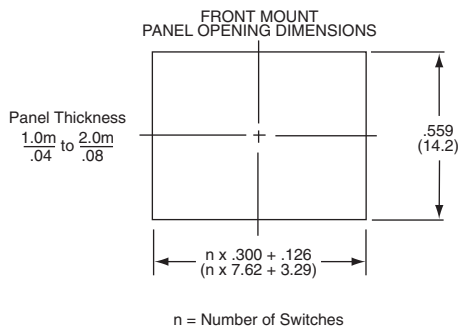
Front Mount Snap Detent	Description	Wheel Marks
PICOA	Spacer, 0.1" wide	
PICOADP	Spacer, 0.1" wide, with decimal point	
PICOBG	Spacer, 0.3" wide (same size as switch)	
PICOP	End-plate pair	
B5LS	5 pin connector with PC pins for AK types	
B5L	5 pin connector with wire lug termination for AK types	

**Pushwheel Switches, Options**

PICOD



PICOD



J  
PICOD Series

**Pushwheel Switches, Mini, Front Mount**

SMCD Series have large visible readout characters despite it's small size. This popular family is used in measurement and test instrumentation for range setting, data programming and count controlling; and in communications equipment for digital tuning. The simple, reliable bi-direction pushbutton mechanism permits rapid changes to either higher or lower numerical settings. Instrument-grade performance and long service life are enhanced by the heavy gold wiping contacts. Large readout characters are protected by dust-sealed windows. Snap-together grouping and snap-in panel mounting minimize installation time and cost. SMCD models have snap detent with slight audible click.

SMCD bi-directional code switches may be easily assembled into groups of any number. The tabs or pins of one decade section press fit into the holes in the adjacent section. Spacers and end mounting plates may be included in the same manner as desired.

Groups of SMCD switches with end plates snap into panel holes of the recommended size and are retained by plastic clips. Again, tools and additional hardware items are not required.

**MATERIAL SPECIFICATIONS:**

PC Board .....Glass epoxy type, FR4  
 PC Terminals .....Gold over Ni on Cu  
 Character Height/Color.....White on black background  
     SMC .197/.134; SMCD .193/.134  
     Except 301 & SG558: .140 and  
     SG557 .120  
 Molded parts .....Noryl-SE1, Black matte finish  
 Housing .....Black matte finish

**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....0.4 VA @ 20 VDC or Peak AC  
 Contact Circuit Resistance .....0.12 Ohm max. (Total internal ckt. res.)  
 Mechanical Life .....More than 10<sup>6</sup> operations  
 Operational Force .....Approx. 14 oz.

**ENVIRONMENTAL SPECIFICATIONS**

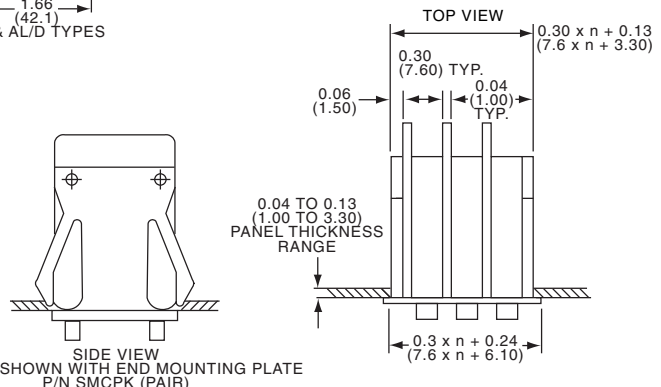
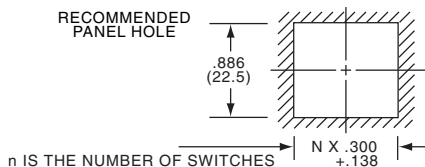
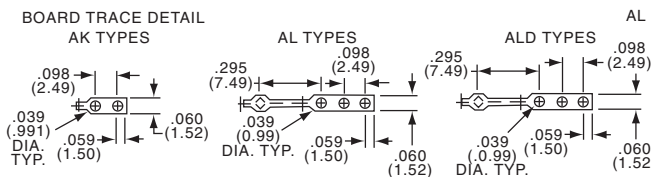
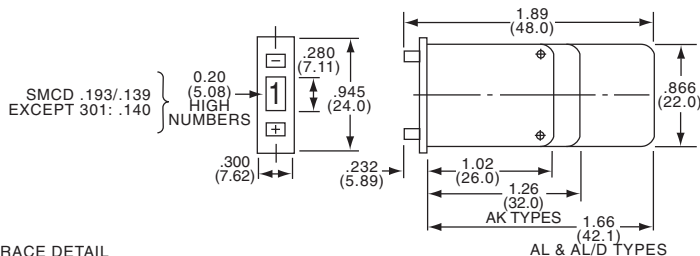
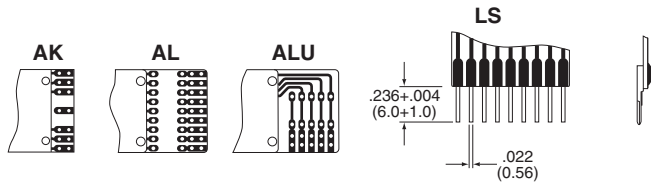
Operating Temperature.....(-20°C to +80°C)

Model	Description
SMCPK	End mounting plates (pair)
SMCL	300" spacer section
SMCA	.100" spacer (with mounting clips)
SMCADP	.100" spacer, decimal point (with mounting clips)
B9L	Connector, 9 contacts, solder lug terminals
B9LS	Connector, 9 contacts, PC pins
B9LS5PIN	Connector, 5 contacts, PC pins
B11LS	Connectors, 11 contacts, PC pins (for 111)
SP1.2	Limit stop pin for SMD 10 position only

**SMCD - 131 - AK**

Codes	Connections
111 = Decimal	AK = pcb short
131 = BCD	AL = pcb long
137 = BCD Complement	LS = solder pin
141 = BCD + Complement	ALU = pcb long downward
301 = Hexadecimal	

See Code Tables on Page J3



**Pushwheel Switches, Mini, Rear Mount**

The DPS8 Series is a compact, lower cost family of instrument grade, pushbutton code switches for numerical input applications. DPS8 models are similar in size to those of the SMCD Series and also feature a fast-snap-together assembly with conventional behind-the-panel mounting. A simple reliable bidirectional pushbutton mechanism allows rapid changes to either higher or lower numerical setting. Reliable performance in logic level circuits and long service life are provided by gold clad wiping contacts. A dust-sealed window protects the readout characters, which are larger than those of comparable thumbwheel switches. DPS8 switches have snap-action detent.

**MATERIAL SPECIFICATIONS**

PC Board .....Glass epoxy type, FR4  
 PC Terminal Spacing .....DSP811: .079", 131,137, 141: .100"  
 Character Height/Color .....0.193" White on black background  
 Housing .....Noryl-SE1, Black, matte finish  
 Operating Force .....Approx. 14 oz.

**TYPICAL PERFORMANCE CHARACTERISTICS**

Contact Rating .....0.4 VA @ 20 VDC or Peak AC  
 Contact Circuit Resistance ...0.15 ohms max.  
 Mechanical Life .....More than 10<sup>6</sup> operations

**ENVIRONMENTAL SPECIFICATIONS**

Operating Temperature .....(-20°C to +80°C)

**MODULE ASSEMBLY METHOD**

DPS bi-directional code switches may be easily assembled into groups of any number. Each switch, spacer or end-plate pair has appropriate snap-together assembly. No tools are required, little time consumed.

Groups of DPS8 switches, with end-plates mount into panel holes of the recommended size using four screws plus nuts and washers.

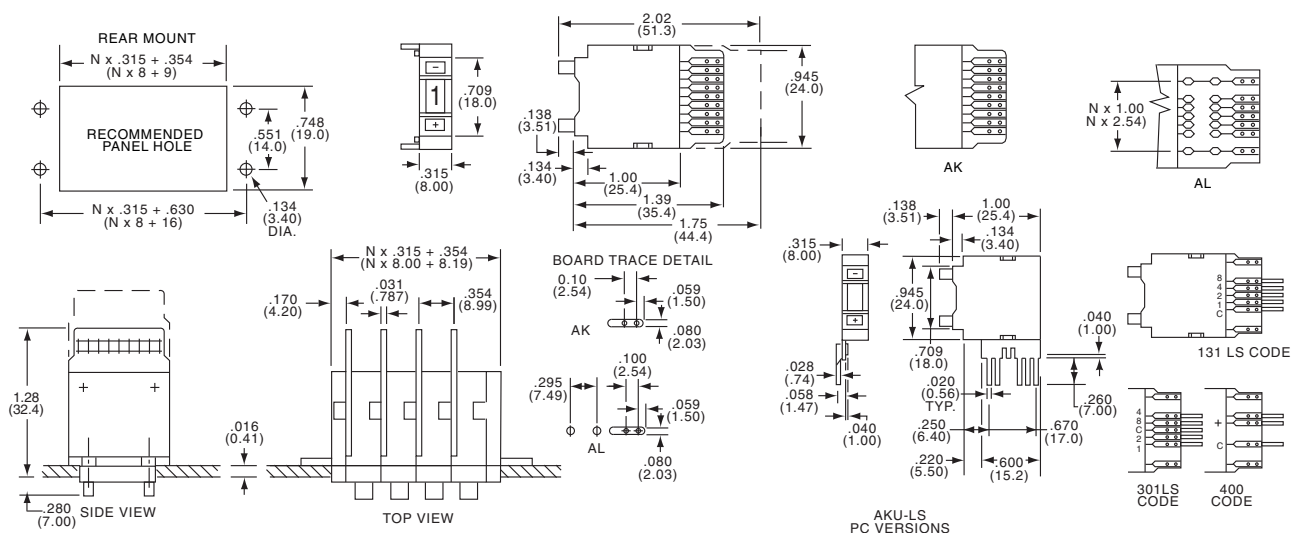
**ACCESSORIES**

Model	Description
DPS8A	Spacer .157" (4mm)
DPS8L	.315" spacer section
DPS8P	End mounting plates, decorative only (pair)
DPS8PW	End mounting plates, flanged with mounting holes (pair)
B9L	Connector, 9 contacts, solder lug terminals
B9LS	Connector, 9 contacts, pc terminals
B11LS	Connector, 11 contacts, PC terminals (for Code III Switch)
SP1.2	Limit stop pin for 10 position only.

**DPS8 - 131 - AK**

Codes	Connections
111 = Decimal	AK = pcb short
131 = BCD	AL = pcb long
137 = BCD Complement	LS = solder pin
141 = BCD + Complement	AKU = pcb short downward
301 = Hexadecimal	ALU = pcb long downward

See Code Tables on Page J3



DPS8 Series

**Pushwheel Switches, Front Mount**

DPS9 and DPS10 dual pushbutton code switches have identical heights but differ in width. These switches provide silent, reliable state-of-the-art bi-directional operation and can directly retrofit common thumbwheel switches. The readout characters are up to 60% larger than those of comparable thumbwheels. DPS9 models have the popular .315" per section width, and DPS10 types are .395" wide.

A simple reliable dual pushbutton mechanism permits rapid change to a higher or a lower numerical setting. Gold clad wiping contacts provide dependable low-level operation and extended life expectancy. Snap-together modular design enables fast assembly hardware. Wheel markings are protected by a dust-sealed window.

**MATERIAL SPECIFICATIONS:**

PC Board .....Glass epoxy type, FR4  
 PC Terminal Spacing .....100" Centers on integral multiples  
 Character Height/Color .....See below  
 Housing .....Noryl-SE1, Black, matte finish

**TYPICAL PERFORMANCE CHARACTERISTICS:**

Contact Rating .....0.4 VA @ 20 VDC or Peak AC  
 Contact Circuit Resistance ...0.20 Ohm max.  
 Mechanical Life .....More than 10<sup>6</sup> operations  
 Operating Force .....Approx. 16 oz.

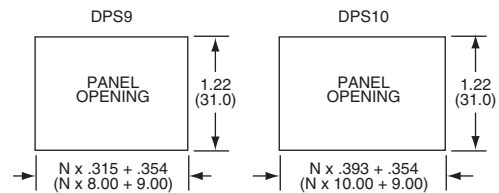
**ENVIRONMENTAL SPECIFICATIONS**

Operating Temperature .....(-20°C to +80°C)

**ACCESSORIES**

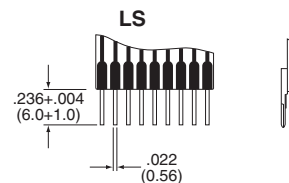
DPS9 Model	DPS10 Model	Description
DPS910A	DPS910A	Spacer, 0.1 inch
	DPS10	*Dummy switch (no electrical function)
DPS9L	DPS10L	Spacer, same width as switch
**DPS910P	**DPS910P	End mounting plate pair
B12L	B12L	Connector, 12 contacts, solder lugs
B12LS	B12LS	Connector, 12 contacts, PC terminals
SP1.5	SP1.5	Limit stop pin for 10 position switch

\* Indicates switch mechanically operable, optionally available with wheel in fixed position.; \*\* Indicates sold in pairs only.

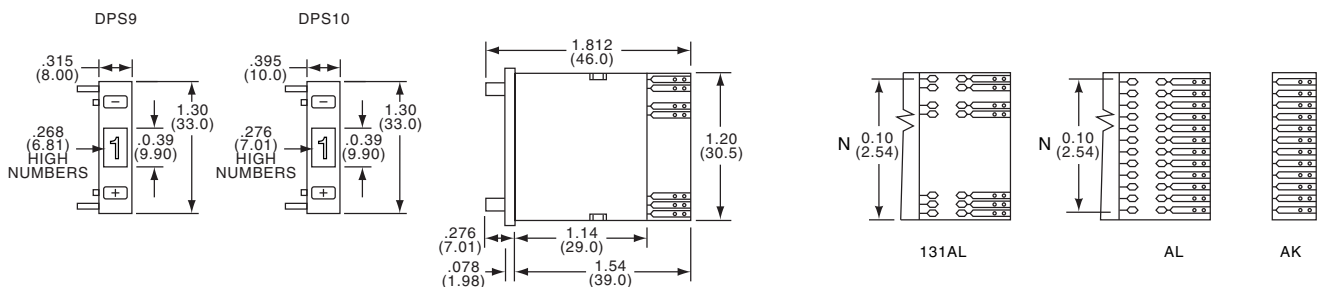


**DPS9 - 131 - AK**

Series/types	Codes	Connections
DPS9	111 = Decimal	AK = pcb short
DPS10	131 = BCD	AL = pcb long
	137 = BCD Complement	LS = solder pin
	301 = Hexadecimal	



See Code Tables on Page J3



Character height . . .	Model DPS9	Model DPS10
10 digit	.268	.276
16 digit	.169	.169



**Engineering Notes**



Engineering Notes



*K Series - Page K4*



*KCB Series - Page K5*



*KE Series - Page K6*



*KLNS Series - Page K8*



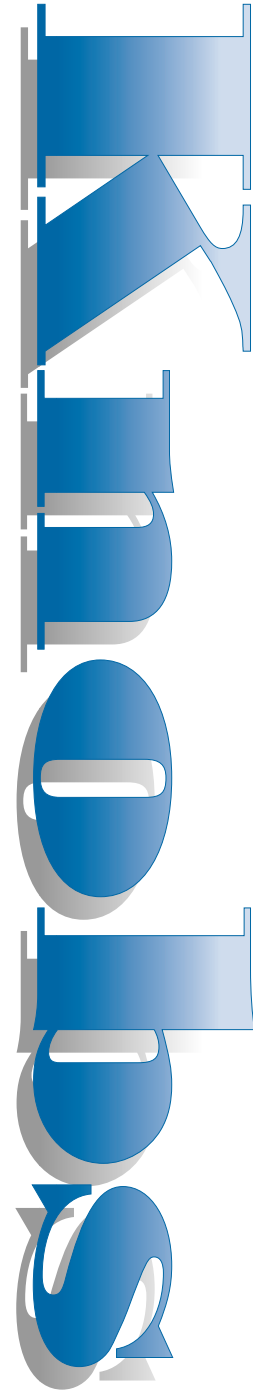
*KN Series - Page K8*



*PK Series - Page K13*



*PKD Series - Page K14*



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 K1250B1/4 .....K4  
 K1251B1/4 .....K4  
 K1255AS1/4 .....K4  
 K1255BS1/4 .....K4  
 K500A1/4 .....K4  
 K500A1/8 .....K4  
 K500B1/4 .....K4  
 K500B1/8 .....K4  
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 PKX60B1/8 .....K20

**K**  
Alcoknob

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**General Knob Information**

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**SPECIFICATIONS****A. STANDARD KNOB TYPES**

1. **INSPECTION CRITERIA** - Normal inspection is performed without magnification while holding knob at a distance of 12 to 14 inches for a period of 5 seconds, under normal light. The following imperfections are not acceptable:
  - Finish: visible marks or scratches, runs, or non-uniform coverage.
  - Artwork: voids, specks, bleeding or other inconsistencies
2. **MATERIALS** -
  - K Series: Machined aluminum alloy stock  
Finish: gloss anodize  
Setscrews: Stainless steel, type 303, hex head, cup point
  - P Series: General purpose phenolic (thermoset) (Max. Temp. 120-125°C continuous)  
Finish: Gloss (except PKX, matte)  
Insert: Brass  
Setscrews: Stainless steel, hex head, cup point  
Inlays: Skirts: Aluminum alloy, spun finish

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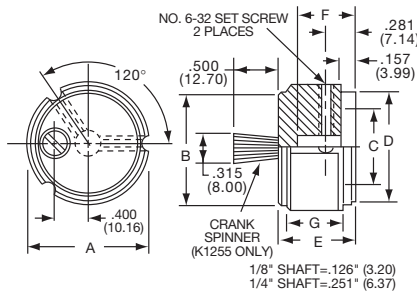
**B. CUSTOM TYPES**

1. **ALUMINUM**
  - Configuration - most semi-standard or custom designs can be machined. A drawing is required to provide a quotation. Non-standard shaft hole diameters are available also.
  - Finish - Anodizing or paint of various colors can be provided. A color chip is required to ensure proper color shade.
  - Artwork - alpha-numeric lettering, indicator lines, markings, etc. can be provided. Silkscreening and other processes are available.
2. **PHENOLIC**
  - Configuration - most custom styles can be molded.
  - Colors - various custom colored standard knobs can be provided. Color chip is required.
  - Artwork - lettering, markings, etc. can be provided.

**Knobs, Machined Aluminum**

**K SERIES**

K700B1/4



Tyco 3 Flute Design with and without Indicator Line									
Electronics	Alcoswitch	Color	A	B	C	D	E	F	G
1437621-7	K500A1/8	Natural	.500(12.7)	.430(10.9)	.374(9.50)	.430(10.9)	.625(15.9)	.429(10.9)	.512(13.0)
1437621-6	K500A1/4	Natural	.500(12.7)	.430(10.9)	.374(9.50)	.430(10.9)	.625(15.9)	.429(10.9)	.512(13.0)
1437621-9	K500B1/8	Black	.500(12.7)	.430(10.9)	.374(9.50)	.430(10.9)	.625(15.9)	.429(10.9)	.512(13.0)
1437621-8	K500B1/4	Black	.500(12.7)	.430(10.9)	.374(9.50)	.430(10.9)	.625(15.9)	.429(10.9)	.512(13.0)
1-1437621-0	K700A1/4	Natural	.740(18.8)	.655(16.6)	.591(15.0)	.655(16.6)	.625(15.9)	.429(10.9)	.512(13.0)
1-1437621-1	K700B1/4	Black	.740(18.8)	.655(16.6)	.591(15.0)	.655(16.6)	.625(15.9)	.429(10.9)	.512(13.0)
1-1437621-3	K900A1/4	Natural	.937(23.8)	.817(20.8)	.709(18.0)	.817(20.8)	.625(15.9)	.429(10.9)	.512(13.0)
1-1437621-4	K900B1/4	Black	.937(23.8)	.817(20.8)	.709(18.0)	.817(20.8)	.625(15.9)	.429(10.9)	.512(13.0)
1437621-2	K1250A1/4	Natural	1.25(31.8)	1.11(28.2)	.984(25.0)	1.11(28.2)	.750(19.1)	.554(14.1)	.630(16.0)
1437621-3	K1250B1/4	Black	1.25(31.8)	1.11(28.2)	.984(25.0)	1.11(28.2)	.750(19.1)	.554(14.1)	.630(16.0)
Less Indicator									
1437621-4	K1251B1/4	Black	1.25(31.8)	1.11(28.2)	.984(25.0)	1.11(28.2)	.750(19.1)	.554(14.1)	.630(16.0)
With Crank Spinner + Less Indicator									
	K1255A1/4	Natural	1.25(31.8)	1.11(28.2)	.984(25.0)	1.11(28.2)	.750(19.1)	.554(14.1)	.630(16.0)
1437621-5	K1255B1/4	Black	1.25(31.8)	1.11(28.2)	.984(25.0)	1.11(28.2)	.750(19.1)	.554(14.1)	.630(16.0)

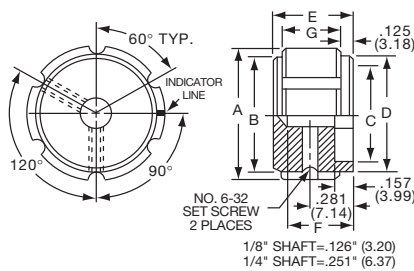
**KA SERIES**



KA500A1/4

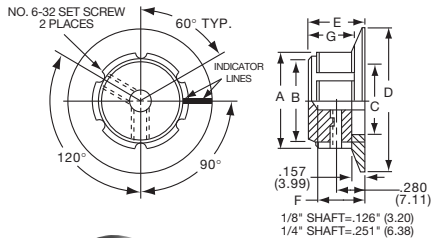


KA700B1/4



Tyco 6 Flute Design with Indicator Line									
Electronics	Alcoswitch	Color	A	B	C	D	E	F	G
2-1437621-0	KA500A1/8	Natural	.500(12.7)	.430(10.9)	.375(9.53)	.430(10.9)	.625(15.9)	.512(13.0)	.430(10.9)
1-1437621-9	KA500A1/4	Natural	.500(12.7)	.430(10.9)	.375(9.53)	.430(10.9)	.625(15.9)	.512(13.0)	.430(10.9)
2-1437621-2	KA500B1/8	Black	.500(12.7)	.430(10.9)	.375(9.53)	.430(10.9)	.625(15.9)	.512(13.0)	.430(10.9)
2-1437621-1	KA500B1/4	Black	.500(12.7)	.430(10.9)	.375(9.53)	.430(10.9)	.625(15.9)	.512(13.0)	.430(10.9)
2-1437621-3	KA700A1/4	Natural	.750(19.1)	.655(16.6)	.590(15.0)	.655(16.6)	.625(15.9)	.512(13.0)	.430(10.9)
2-1437621-4	KA700B1/4	Black	.750(19.1)	.655(16.6)	.590(15.0)	.655(16.6)	.625(15.9)	.512(13.0)	.430(10.9)
2-1437621-5	KA900A1/4	Natural	.937(23.8)	.817(20.8)	.700(17.8)	.817(20.8)	.625(15.9)	.512(13.0)	.430(10.9)
2-1437621-6	KA900B1/4	Black	.937(23.8)	.817(20.8)	.700(17.8)	.817(20.8)	.625(15.9)	.512(13.0)	.430(10.9)
	KA1250A1/4	Natural	1.25(31.8)	1.11(28.2)	.985(25.0)	1.11(28.2)	.750(19.1)	.630(16.0)	.554(14.1)
1-1437621-8	KA1250B1/4	Black	1.25(31.8)	1.11(28.2)	.985(25.0)	1.11(28.2)	.750(19.1)	.630(16.0)	.554(14.1)

**KAS SERIES**



Tyco 6 Flute Design with Aluminum Skirt and Indicator Lines									
Electronics	Alcoswitch	Color	A	B	C	D	E	F	G
2-1437621-8	KAS500A1/8	Natural	.500(12.7)	.430(10.9)	.380(9.65)	.740(18.8)	.630(16.0)	.510(13.0)	.430(10.9)
2-1437621-7	KAS500A1/4	Natural	.500(12.7)	.430(10.9)	.380(9.65)	.740(18.8)	.630(16.0)	.510(13.0)	.430(10.9)
3-1437621-0	KAS500B1/8	Black	.500(12.7)	.430(10.9)	.380(9.65)	.740(18.8)	.630(16.0)	.510(13.0)	.430(10.9)
2-1437621-9	KAS500B1/4	Black	.500(12.7)	.430(10.9)	.380(9.65)	.740(18.8)	.630(16.0)	.510(13.0)	.430(10.9)
3-1437621-1	KAS700A1/4	Natural	.750(19.1)	.650(16.5)	.590(15.0)	1.14(29.0)	.630(16.0)	.510(13.0)	.430(10.9)
3-1437621-2	KAS700B1/4	Black	.750(19.1)	.650(16.5)	.590(15.0)	1.14(29.0)	.630(16.0)	.510(13.0)	.430(10.9)
3-1437621-3	KAS900A1/4	Natural	.940(23.9)	.820(20.8)	.710(18.0)	1.40(35.6)	.630(16.0)	.510(13.0)	.430(10.9)
3-1437621-4	KAS900B1/4	Black	.940(23.9)	.820(20.8)	.710(18.0)	1.40(35.6)	.630(16.0)	.510(13.0)	.430(10.9)

**Knobs, Machined Aluminum**



**KB SERIES**

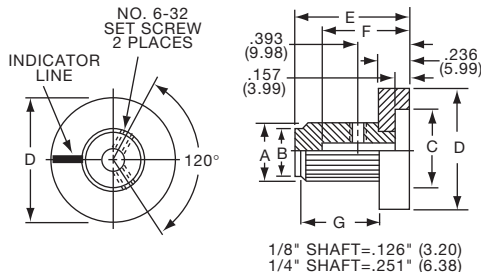


KB500A1/4



KB900B1/4

Tyco		Control Knob with Straight Knurl and Top Line Indicator							
Electronics	Alcoswitch	Color	A	B	C	D	E	F	G
3-1437621-6	KB500A1/8	Natural	.500(12.7)	.433(11.0)	.394(10.0)	.472(12.0)	.787(20.0)	.630(16.0)	.610(15.5)
3-1437621-5	KB500A1/4	Natural	.500(12.7)	.433(11.0)	.394(10.0)	.472(12.0)	.787(20.0)	.630(16.0)	.610(15.5)
3-1437621-9	KB500B1/8	Black	.500(12.7)	.433(11.0)	.394(10.0)	.472(12.0)	.787(20.0)	.630(16.0)	.610(15.5)
3-1437621-8	KB500B1/4	Black	.500(12.7)	.433(11.0)	.394(10.0)	.472(12.0)	.787(20.0)	.630(16.0)	.610(15.5)
4-1437621-0	KB700A1/4	Natural	.750(19.0)	.673(17.1)	.581(15.0)	.705(17.9)	.787(20.0)	.630(16.0)	.610(15.5)
4-1437621-2	KB700B1/4	Black	.750(19.0)	.673(17.1)	.581(15.0)	.705(17.9)	.787(20.0)	.630(16.0)	.610(15.5)
4-1437621-4	KB900A1/4	Natural	.930(23.6)	.866(22.0)	.710(18.0)	.902(22.9)	.787(20.0)	.630(16.0)	.610(15.5)
4-1437621-5	KB900B1/4	Black	.930(23.6)	.866(22.0)	.710(18.0)	.902(22.9)	.787(20.0)	.630(16.0)	.610(15.5)

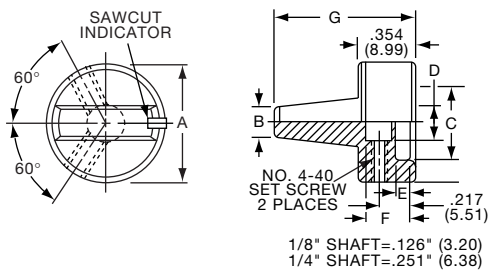


**KBS SERIES**



KBS500A101/4

Tyco		Control Knob with Straight Knurl and Skirt							
Electronics	Alcoswitch	Color	A	B	C	D	E	F	G
<b>With 0-9 Numerals (36°)</b>									
4-1437621-9	KBS500A101/8	Natural	.500(12.7)	.433(11.0)	.708(18.0)	1.00(25.4)	.950(24.1)	.826(21.0)	.655(16.7)
	KBS500A101/4	Natural	.500(12.7)	.433(11.0)	.708(18.0)	1.00(25.4)	.950(24.1)	.826(21.0)	.655(16.7)
5-1437621-3	KBS500B101/8	Black	.500(12.7)	.433(11.0)	.708(18.0)	1.00(25.4)	.950(24.1)	.826(21.0)	.655(16.7)
5-1437621-2	KBS500B101/4	Black	.500(12.7)	.433(11.0)	.708(18.0)	1.00(25.4)	.950(24.1)	.826(21.0)	.655(16.7)
<b>With Indicator Line</b>									
4-1437621-8	KBS500A1/8	Natural	.500(12.7)	.433(11.0)	.708(18.0)	1.00(25.4)	.950(24.1)	.826(21.0)	.655(16.7)
4-1437621-7	KBS500A1/4	Natural	.500(12.7)	.433(11.0)	.708(18.0)	1.00(25.4)	.950(24.1)	.826(21.0)	.655(16.7)
5-1437621-1	KBS500B1/8	Black	.500(12.7)	.433(11.0)	.708(18.0)	1.00(25.4)	.950(24.1)	.826(21.0)	.655(16.7)
5-1437621-0	KBS500B1/4	Black	.500(12.7)	.433(11.0)	.708(18.0)	1.00(25.4)	.950(24.1)	.826(21.0)	.655(16.7)



**KCB SERIES**



KCB500A1/4



KCB700B1/4

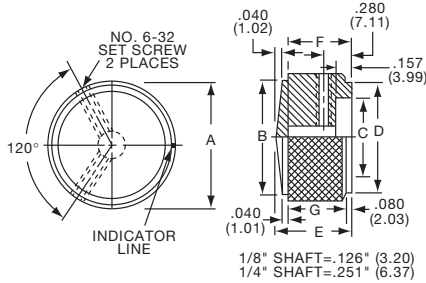
Tyco		Control Knob with Sawcut Indicator							
Electronics	Alcoswitch	Color	A	B	C	D	E	F	G
5-1437621-7	KCB500A1/8	Natural	.500(12.7)	.197(5.08)	.374(9.50)	.126(3.20)	.118(3.00)	.335(8.51)	.750(19.1)
5-1437621-6	KCB500A1/4	Natural	.500(12.7)	.197(5.08)	.374(9.50)	.126(3.20)	.118(3.00)	.335(8.51)	.750(19.1)
5-1437621-9	KCB500B1/8	Black	.500(12.7)	.197(5.08)	.374(9.50)	.126(3.20)	.118(3.00)	.335(8.51)	.750(19.1)
5-1437621-8	KCB500B1/4	Black	.500(12.7)	.197(5.08)	.374(9.50)	.126(3.20)	.118(3.00)	.335(8.51)	.750(19.1)
6-1437621-0	KCB600A1/8	Natural	.618(15.7)	.197(5.08)	.394(10.0)	.126(3.20)	.118(3.00)	.335(8.51)	.750(19.1)
	KCB600A1/4	Natural	.618(15.7)	.197(5.08)	.394(10.0)	.126(3.20)	.118(3.00)	.335(8.51)	.750(19.1)
6-1437621-2	KCB600B1/8	Black	.618(15.7)	.197(5.08)	.394(10.0)	.126(3.20)	.118(3.00)	.335(8.51)	.750(19.1)
6-1437621-1	KCB600B1/4	Black	.618(15.7)	.197(5.08)	.394(10.0)	.126(3.20)	.118(3.00)	.335(8.51)	.750(19.1)
6-1437621-3	KCB700A1/4	Natural	.746(18.8)	.197(5.08)	.512(13.0)	.250(6.35)	.118(3.00)	.335(8.51)	.898(22.8)
6-1437621-4	KCB700B1/4	Black	.746(18.8)	.197(5.08)	.512(13.0)	.250(6.35)	.118(3.00)	.335(8.51)	.898(22.8)
6-1437621-5	KCB900A1/4	Natural	.937(23.8)	.197(5.08)	.709(18.0)	.250(6.35)	.118(3.00)	.335(8.51)	.898(22.8)
6-1437621-7	KCB900B1/4	Black	.937(23.8)	.197(5.08)	.709(18.0)	.250(6.35)	.118(3.00)	.335(8.51)	.898(22.8)

**Knobs, Machined Aluminum**

**KD SERIES**



KD1250B1/4

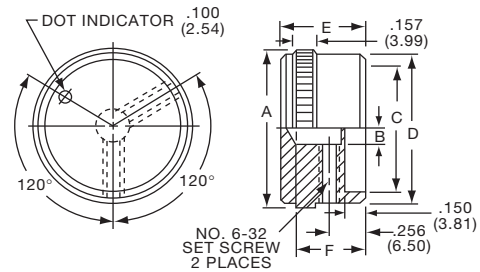


Tyco Diamond Knurl with Indicator Line									
Electronics	Alcoswitch	Color	A	B	C	D	E	F	G
7-1437621-1	KD500A1/8	Natural	.500(12.7)	.430(10.9)	.380(9.65)	.430(10.9)	.630(16.0)	.510(13.0)	.470(11.9)
7-1437621-0	KD500A1/4	Natural	.500(12.7)	.430(10.9)	.380(9.65)	.430(10.9)	.630(16.0)	.510(13.0)	.470(11.9)
7-1437621-3	KD500B1/8	Black	.500(12.7)	.430(10.9)	.380(9.65)	.430(10.9)	.630(16.0)	.510(13.0)	.470(11.9)
7-1437621-2	KD500B1/4	Black	.500(12.7)	.430(10.9)	.380(9.65)	.430(10.9)	.630(16.0)	.510(13.0)	.470(11.9)
7-1437621-4	KD700A1/4	Natural	.750(19.1)	.660(16.8)	.590(15.0)	.660(16.8)	.630(16.0)	.510(13.0)	.470(11.9)
7-1437621-5	KD700B1/4	Black	.750(19.1)	.660(16.8)	.590(15.0)	.660(16.8)	.630(16.0)	.510(13.0)	.470(11.9)
7-1437621-6	KD900A1/4	Natural	.940(23.9)	.820(20.8)	.710(18.0)	.820(20.8)	.630(16.0)	.510(13.0)	.470(11.9)
7-1437621-7	KD900B1/4	Black	.940(23.9)	.820(20.8)	.710(18.0)	.820(20.8)	.630(16.0)	.510(13.0)	.470(11.9)
6-1437621-8	KD1250A1/4	Natural	1.25(31.8)	1.11(28.2)	.980(24.9)	1.11(28.2)	.750(19.1)	.630(16.0)	.590(15.0)
6-1437621-9	KD1250B1/4	Black	1.25(31.8)	1.11(28.2)	.980(24.9)	1.11(28.2)	.750(19.1)	.630(16.0)	.590(15.0)

**KE SERIES**



KE900AB1/4



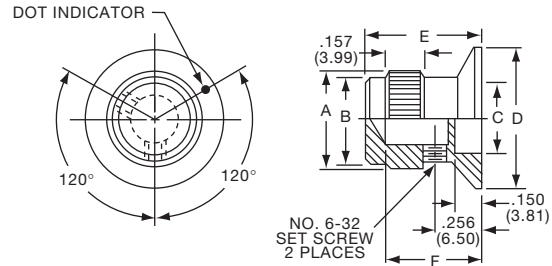
KE500AB1/4

Tyco Knurl Grip with Top Dot Indicator									
Electronics	Alcoswitch	Color	A	B	C	D	E	F	
8-1437621-0	KE500AB1/8	Ntl. - Blk.	.500(12.7)	.126(3.20)	.382(9.70)	.460(11.7)	.625(15.9)	.512(13.0)	
7-1437621-9	KE500AB1/4	Ntl. - Blk.	.500(12.7)	.126(3.20)	.382(9.70)	.460(11.7)	.625(15.9)	.512(13.0)	
8-1437621-1	KE700AB1/4	Ntl. - Blk.	.740(18.8)	.251(6.38)	.630(16.0)	.708(18.0)	.625(15.9)	.512(13.0)	
8-1437621-2	KE900AB1/4	Ntl. - Blk.	.93(23.8)	.251(6.38)	.787(20.0)	.900(22.9)	.625(15.9)	.512(13.0)	
7-1437621-8	KE1250AB1/4	Ntl. - Blk.	1.25(31.8)	.251(6.38)	1.06(26.9)	1.17(29.7)	.625(15.9)	.512(13.0)	

**KES SERIES**



KES500AB1/4



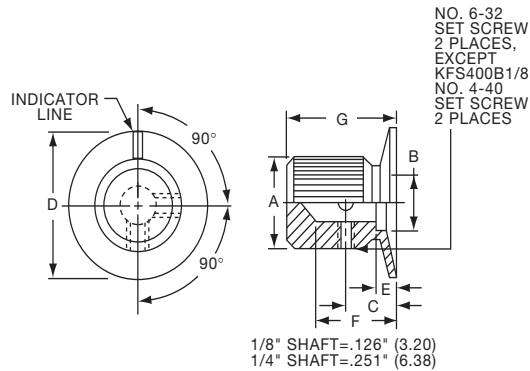
Tyco Knurl Grip with Dot Indicator on Skirt									
Electronics	Alcoswitch	Color	A	B	C	D	E	F	
8-1437621-4	KES500AB1/8	Ntl. - Blk.	.500(12.7)	.460(11.7)	.382(9.70)	.750(19.1)	.625(15.9)	.512(13.0)	
8-1437621-3	KES500AB1/4	Ntl. - Blk.	.500(12.7)	.460(11.7)	.382(9.70)	.750(19.1)	.625(15.9)	.512(13.0)	
8-1437621-5	KES700AB1/4	Ntl. - Blk.	.750(19.1)	.710(18.1)	.630(16.0)	1.13(28.7)	.625(15.9)	.512(13.0)	
	KES900AB1/4	Ntl. - Blk.	.937(23.8)	.897(22.8)	.787(20.0)	1.44(36.6)	.625(15.9)	.512(13.0)	

K

K Series

**Knobs, Machined Aluminum**

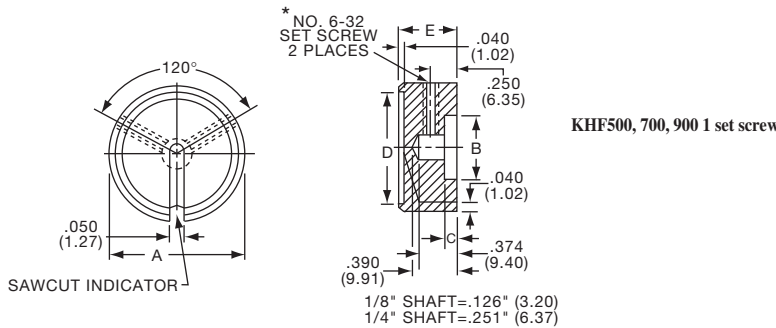
**KFS SERIES**



KFS400B1/8

Tyco			Straight Knurl with Indicator on Skirt						
Electronics	Alcoswitch	Color	A	B	C	D	E	F	G
8-1437621-6	KFS400B1/8	Black Matte	.380(9.65)	.382(9.70)	.256(6.50)	.500(12.7)	.098(2.49)	.469(11.9)	.591(15.0)
8-1437621-8	KFS500B1/8	Black Matte	.500(12.7)	.382(9.70)	.252(6.48)	.630(16.0)	.161(4.09)	.469(11.9)	.630(16.0)
8-1437621-7	KFS500B1/4	Black Matte	.618(15.7)	.280(7.11)	.382(9.70)	1.00(25.4)	.161(4.09)	.630(16.0)	0.811(20.6)
8-1437621-9	KFS600B1/4	Black Matte	.618(15.7)	.280(7.11)	.382(9.70)	1.00(25.4)	.161(4.09)	.630(16.0)	0.811(20.6)

**KHF SERIES**



KHF500A1/4

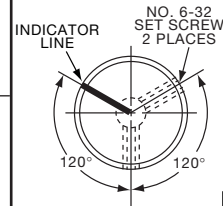


KHF900A1/4

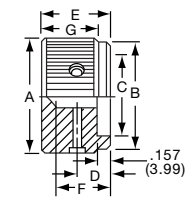
Tyco			Plain Body with Top and Side Sawcut Indicator				
Electronics	Alcoswitch	Color	A	B	C	D	E
9-1437621-1	KHF500A1/4	Natural	.500(12.7)	.374(9.50)	.118(3.00)	.342(8.69)	.563(14.3)
9-1437621-2	KHF700A1/4	Natural	.740(18.8)	.590(15.0)	.118(3.00)	.592(15.0)	.563(14.3)
9-1437621-3	KHF900A1/4	Natural	.937(23.8)	.708(18.0)	.118(3.00)	.779(19.8)	.563(14.3)
*9-1437621-0	KHF1250A1/4	Natural	1.23(31.8)	.984(25.0)	.118(3.00)	1.08(27.5)	.563(14.3)

**KLN SERIES**

Tyco			Straight Knurl with Top and Side Indicator						
Electronics	Alcoswitch	Color	A	B	C	D	E	F	G
9-1437621-7	KLN500A1/8	Natural	.500(12.7)	0.445(11.3)	.374(9.50)	.281(7.14)	.625(15.9)	.512(13.0)	.527(13.4)
9-1437621-6	KLN500A1/4	Natural	.500(12.7)	0.445(11.3)	.374(9.50)	.281(7.14)	.625(15.9)	.512(13.0)	.527(13.4)
9-1437621-9	KLN500B1/8	Black	.500(12.7)	0.445(11.3)	.374(9.50)	.281(7.14)	.625(15.9)	.512(13.0)	.527(13.4)
9-1437621-8	KLN500B1/4	Black	.500(12.7)	0.445(11.3)	.374(9.50)	.281(7.14)	.625(15.9)	.512(13.0)	.527(13.4)
1437622-1	KLN500S1/4	Smoke	.500(12.7)	0.445(11.3)	.374(9.50)	.281(7.14)	.625(15.9)	.512(13.0)	.527(13.4)
1437622-2	KLN700A1/4	Natural	.740(18.8)	.685(17.4)	.591(15.0)	.281(7.14)	.625(15.9)	.512(13.0)	.527(13.4)
1437622-3	KLN700B1/4	Black	.740(18.8)	.685(17.4)	.591(15.0)	.281(7.14)	.625(15.9)	.512(13.0)	.527(13.4)
1437622-4	KLN700B1/8	Black	.740(18.8)	.685(17.4)	.591(15.0)	.281(7.14)	.625(15.9)	.512(13.0)	.527(13.4)
1437622-5	KLN700S1/4	Smoke	.740(18.8)	.685(17.4)	.591(15.0)	.281(7.14)	.625(15.9)	.512(13.0)	.527(13.4)
1437622-6	KLN900A1/4	Natural	.937(23.8)	.882(22.4)	0.709(18.0)	.281(7.14)	.625(15.9)	.512(13.0)	.527(13.4)
1437622-7	KLN900B1/4	Black	.937(23.8)	.882(22.4)	0.709(18.0)	.281(7.14)	.625(15.9)	.512(13.0)	.527(13.4)
1437622-8	KLN900S1/4	Smoke	.937(23.8)	.882(22.4)	0.709(18.0)	.281(7.14)	.625(15.9)	.512(13.0)	.527(13.4)
9-1437621-4	KLN1250A1/4	Natural	1.252(31.80)	1.195(30.35)	.984(25.0)	.281(7.14)	.625(15.9)	.512(13.0)	.527(13.4)
9-1437621-5	KLN1250B1/4	Black	1.252(31.80)	1.195(30.35)	.984(25.0)	.281(7.14)	.625(15.9)	.512(13.0)	.527(13.4)



KLN500A1/4





**Knobs, Machined Aluminum**

**KLNS SERIES**



KLNS500B1/8



KLNS900B1/4

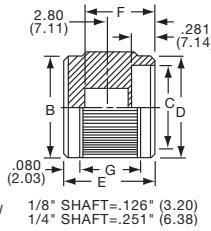


Tyco Straight Knurl with Indicator Line on Top, Side and Skirt								
Electronics	Alcoswitch	Color	A	B	C	D	E	G
1-1437622-6	KLNS500A1/8	Natural	.500(12.7)	.280(7.11)	.380(9.65)	.750(19.0)	.160(4.07)	.630(16.0)
1-1437622-5	KLNS500A1/4	Natural	.500(12.7)	.280(7.11)	.380(9.65)	.750(19.0)	.160(4.07)	.630(16.0)
1-1437622-8	KLNS500B1/8	Black	.500(12.7)	.280(7.11)	.380(9.65)	.750(19.0)	.160(4.07)	.630(16.0)
1-1437622-7	KLNS500B1/4	Black	.500(12.7)	.280(7.11)	.380(9.65)	.750(19.0)	.160(4.07)	.630(16.0)
2-1437622-0	KLNS700A1/4	Natural	.750(19.0)	.280(7.11)	.590(14.9)	1.13(28.7)	.160(4.07)	.630(16.0)
2-1437622-1	KLNS700B1/4	Black	.750(19.0)	.280(7.11)	.590(14.9)	1.13(28.7)	.160(4.07)	.630(16.0)
2-1437622-2	KLNS900A1/4	Natural	.940(23.9)	.280(7.11)	.710(18.0)	1.40(35.5)	.160(4.07)	.630(16.0)
2-1437622-3	KLNS900B1/4	Black	.940(23.9)	.280(7.11)	.710(18.0)	1.40(35.5)	.160(4.07)	.630(16.0)

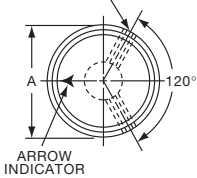
**KN SERIES**



KN501A1/4



NO. 6-32 SET SCREW 2 PLACES  
1/8" SHAFT=.126" (3.20)  
1/4" SHAFT=.251" (6.38)



ARROW INDICATOR

Tyco Straight Knurl with Arrowhead Indicator								
Electronics	Alcoswitch	Color	A	B	C	D	E	G
5-1437622-1	KN501A1/8	Natural	.500(12.7)	.445(11.3)	.374(9.50)	.445(11.3)	.625(15.9)	.512(13.0)
5-1437622-0	KN501A1/4	Natural	.500(12.7)	.445(11.3)	.374(9.50)	.445(11.3)	.625(15.9)	.512(13.0)
5-1437622-3	KN501B1/8	Black	.500(12.7)	.445(11.3)	.374(9.50)	.445(11.3)	.625(15.9)	.512(13.0)
5-1437622-2	KN501B1/4	Black	.500(12.7)	.445(11.3)	.374(9.50)	.445(11.3)	.625(15.9)	.512(13.0)
6-1437622-2	KN701A1/4	Natural	.750(19.1)	.695(17.7)	.590(15.0)	.695(17.7)	.625(15.9)	.512(13.0)
6-1437622-3	KN701B1/4	Black	.750(19.1)	.695(17.7)	.590(15.0)	.695(17.7)	.625(15.9)	.512(13.0)
<b>Two Toned</b>			<b>Body-Top</b>					
5-1437622-5	KN501BA1/8	Blk. - Ntl.	.500(12.7)	.445(11.3)	.374(9.50)	.445(11.3)	.625(15.9)	.512(13.0)
5-1437622-4	KN501BA1/4	Blk. - Ntl.	.500(12.7)	.445(11.3)	.374(9.50)	.445(11.3)	.625(15.9)	.512(13.0)
6-1437622-5	KN701BA1/8	Blk. - Ntl.	.750(19.1)	.695(17.7)	.590(15.0)	.695(17.7)	.625(15.9)	.512(13.0)
6-1437622-4	KN701BA1/4	Blk. - Ntl.	.750(19.1)	.695(17.7)	.590(15.0)	.695(17.7)	.625(15.9)	.512(13.0)

**KN SERIES**



KN1751AS1/4



KN1751B1/4



1/4" SHAFT=.251" (6.38)

Tyco Straight Knurl with & without "Fingertip" Spinner								
Electronics	Alcoswitch	Color	A	B	C	D	E	G
<b>Less Indicator</b>								
3-1437622-2	KN1751A1/4	Natural	1.75(44.5)	1.55(39.4)	1.38(35.1)	1.65(41.9)	.620(15.0)	.508(12.9)
3-1437622-6	KN1751B1/4	Black	1.75(44.5)	1.55(39.4)	1.38(35.1)	1.65(41.9)	.620(15.8)	.508(12.9)
<b>Two Toned</b>								
3-1437622-3	KN1751AB1/4	Ntl. - Blk.	1.75(44.5)	1.55(39.4)	1.38(35.1)	1.65(41.9)	.620(15.8)	.508(12.9)
3-1437622-7	KN1751BA1/4	Blk. - Natural	1.75(44.5)	1.55(39.4)	1.38(35.1)	1.65(41.9)	.620(15.8)	.508(12.9)
<b>With Indicator</b>								
3-1437622-5	KN1750A1/4	Natural	1.75(44.5)	1.55(39.4)	1.38(35.1)	1.65(41.9)	.620(15.8)	.508(12.9)
3-1437622-1	KN1750B1/4	Black	1.75(44.5)	1.55(39.4)	1.38(35.1)	1.65(41.9)	.620(15.8)	.508(12.9)
<b>With Spinner/Less Indicator</b>								
3-1437622-5	KN1751AS1/4	Natural	1.75(44.5)	1.55(39.4)	1.38(35.1)	1.65(41.9)	.620(15.8)	.508(12.9)
3-1437622-8	KN1751BS1/4	Black	1.75(44.5)	1.55(39.4)	1.38(35.1)	1.65(41.9)	.620(15.8)	.508(12.9)

**K**

**K Series**

K8

**Knobs, Machined Aluminum**



KN SERIES



KN5700B1/4

Concentric Set with Straight Knurl with Indicator Lines									
Tyco Electronics	Alcoswitch	Color	A	B	C	D	E	F	G
5-1437622-6	KN5700A1/4	Natural	.750(19.1)	.500(12.7)	.590(15.0)	.700(17.8)	.625(15.9)	1.16(29.5)	.281(7.14)
5-1437622-7	KN5700B1/4	Black	.750(19.1)	.500(12.7)	.590(15.0)	.700(17.8)	.625(15.9)	1.16(29.5)	.281(7.14)

Straight Knurl with & without Indicator Line Diameter Dimensions									
Tyco Electronics	Alcoswitch	Color Body-Top	A	B	C	D	E	F	G
4-1437622-3	KN500A1/8	Natural	.500(12.7)	.445(11.3)	.374(9.50)	.445(11.5)	.625(15.9)	.512(13.0)	.456(11.6)
4-1437622-2	KN500A1/4	Natural	.500(12.7)	.445(11.3)	.374(9.50)	.445(11.5)	.625(15.9)	.512(13.0)	.456(11.6)
4-1437622-7	KN500B1/8	Black	.500(12.7)	.445(11.3)	.374(9.50)	.445(11.5)	.625(15.9)	.512(13.0)	.456(11.6)
4-1437622-6	KN500B1/4	Black	.500(12.7)	.445(11.3)	.374(9.50)	.445(11.5)	.625(15.9)	.512(13.0)	.456(11.6)
5-1437622-8	KN700A1/4	Natural	.750(19.1)	.695(17.7)	.590(15.0)	.695(17.7)	.625(15.9)	.512(13.0)	.456(11.6)
6-1437622-0	KN700B1/4	Black	.750(19.1)	.695(17.7)	.590(15.0)	.695(17.7)	.625(15.9)	.512(13.0)	.456(11.6)
6-1437622-6	KN900A1/4	Natural	.949(24.1)	.894(22.7)	.696(17.7)	.894(22.7)	.625(15.9)	.512(13.0)	.456(11.6)
6-1437622-8	KN900B1/4	Black	.949(24.1)	.894(22.7)	.696(17.7)	.894(22.7)	.625(15.9)	.512(13.0)	.456(11.7)
2-1437622-5	KN1250A1/4	Natural	1.25(31.8)	1.20(30.5)	.984(25.0)	1.20(30.5)	.625(15.9)	.512(13.0)	.456(11.6)
2-1437622-7	KN1250B1/4	Black	1.25(31.8)	1.20(30.5)	.984(25.0)	1.20(30.5)	.625(15.9)	.512(13.0)	.456(11.6)
<b>Two-Toned</b>									
4-1437622-5	KN500AB1/8	Ntl - Blk.	.500(12.7)	.445(11.3)	.374(9.50)	.445(11.5)	.625(15.9)	.512(13.0)	.456(11.6)
4-1437622-4	KN500AB1/4	Ntl - Blk.	.500(12.7)	.445(11.3)	.374(9.50)	.445(11.5)	.625(15.9)	.512(13.0)	.456(11.6)
4-1437622-9	KN500BA1/8	Blk - Ntl.	.500(12.7)	.445(11.3)	.374(9.50)	.445(11.5)	.625(15.9)	.512(13.0)	.456(11.6)
4-1437622-8	KN500BA1/4	Blk - Ntl.	.500(12.7)	.445(11.3)	.374(9.50)	.445(11.5)	.625(15.9)	.512(13.0)	.456(11.6)
5-1437622-9	KN700AB1/4	Ntl - Blk.	.750(19.1)	.695(17.7)	.445(11.5)	.695(17.7)	.625(15.9)	.512(13.0)	.456(11.6)
6-1437622-1	KN700BA1/4	Blk - Ntl.	.750(19.1)	.695(17.7)	.445(11.5)	.695(17.7)	.625(15.9)	.512(13.0)	.456(11.6)
6-1437622-7	KN900AB1/4	Ntl - Blk.	.949(24.1)	.894(22.7)	.695(17.7)	.894(22.7)	.625(15.9)	.512(13.0)	.456(11.6)
6-1437622-9	KN900BA1/4	Blk - Ntl.	.949(24.1)	.894(22.7)	.695(17.7)	.894(22.7)	.625(15.9)	.512(13.0)	.456(11.7)
2-1437622-6	KN1250AB1/4	Ntl - Blk.	1.25(31.8)	1.20(30.5)	.984(25.0)	1.20(30.5)	.625(15.9)	.512(13.0)	.456(11.6)
2-1437622-8	KN1250BA1/4	Blk - Ntl.	1.25(31.8)	1.20(30.5)	.984(25.0)	1.20(30.5)	.625(15.9)	.512(13.0)	.456(11.6)
<b>Less Indicator</b>									
2-1437622-9	KN1251A1/4	Natural	1.25(31.8)	1.20(30.5)	.984(25.0)	1.25(31.7)	.625(15.9)	.512(13.0)	.456(11.7)
3-1437622-0	KN1251B1/4	Black	1.25(31.8)	1.20(30.5)	.984(25.0)	1.25(31.7)	.625(15.9)	.512(13.0)	.456(11.7)

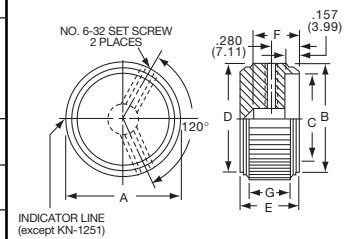
KN SERIES



KN500A1/4



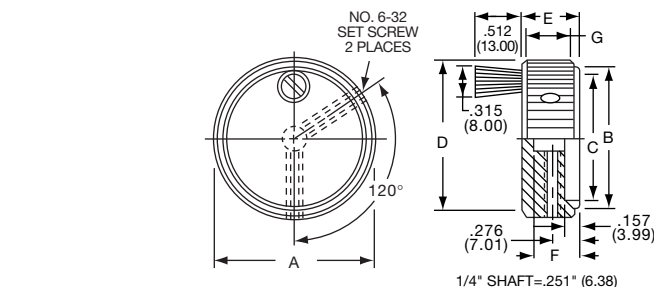
KN900BA1/4



KN SERIES



KN1755BS1/4



Straight Knurl with "Crank" Spinner									
Tyco Electronics	Alcoswitch	Color Body-Top/Spin	A	B	C	D	E	F	G
4-1437622-1	KN1755AS1/4	Natural	1.76(44.7)	1.56(39.5)	.138(35.0)	1.65(41.8)	.630(16.0)	.512(13.0)	.492(12.5)
	KN1755BS1/4	Black	1.76(44.7)	1.56(39.5)	.138(35.0)	1.65(41.8)	.630(16.0)	.512(13.0)	.492(12.5)
3-1437622-9	KN1755ABS1/4	Ntl.-Blk./Blk.	1.76(44.7)	1.56(39.5)	1.38(35.0)	1.65(41.8)	.630(16.0)	.512(13.0)	.492(12.5)
4-1437622-0	KN1755BAS1/4	Blk.-Ntl. Blk.	1.76(44.7)	1.56(39.5)	1.38(35.0)	1.65(41.8)	.630(16.0)	.512(13.0)	.492(12.5)

**Knobs, Machined Aluminum**

**KNS SERIES**



KNS501A1/4



KNS701B1/4

KNS701BA1/4

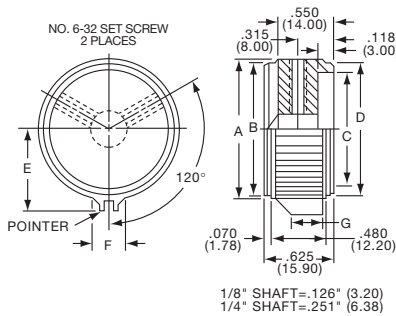


Tyco		Straight Knurl with Arrowhead Indicator on Skirt							
Electronics	Alcoswitch	Color	A	B	C	D	E	F	G
7-1437622-3	KNS501A1/8	Natural	.500(12.7)	.445(11.3)	.370(9.40)	.750(19.1)	.625(15.9)	.512(13.0)	.428(10.9)
7-1437622-2	KNS501A1/4	Natural	.500(12.7)	.445(11.3)	.370(9.40)	.750(19.1)	.625(15.9)	.512(13.0)	.428(10.9)
7-1437622-5	KNS501B1/8	Black	.500(12.7)	.445(11.3)	.370(9.40)	.750(19.1)	.625(15.9)	.512(13.0)	.428(10.9)
7-1437622-4	KNS501B1/4	Black	.500(12.7)	.445(11.3)	.370(9.40)	.750(19.1)	.625(15.9)	.512(13.0)	.428(10.9)
7-1437622-8	KNS701A1/4	Natural	.750(19.1)	.695(17.7)	.590(15.0)	1.12(28.5)	.625(15.9)	.512(13.0)	.428(10.9)
7-1437622-9	KNS701B1/4	Black	.750(19.1)	.695(17.7)	.590(15.0)	1.12(28.5)	.625(15.9)	.512(13.0)	.428(10.9)
<b>Two-Toned Body-Top/Skirt</b>									
7-1437622-7	KNS501BA1/8	Blk.- Ntl.	.500(12.7)	.695(17.7)	.370(9.40)	.750(19.1)	.625(15.9)	.512(13.0)	.428(10.9)
7-1437622-6	KNS501BA1/4	Blk.- Ntl.	.500(12.7)	.695(17.7)	.370(9.40)	.750(19.1)	.625(15.9)	.512(13.0)	.428(10.9)
8-1437622-1	KNS701BA1/8	Blk.- Ntl.	.750(19.1)	.695(17.7)	.590(15.0)	1.12(28.5)	.625(15.9)	.512(13.0)	.428(10.9)
8-1437622-0	KNS701BA1/4	Blk.- Ntl.	.750(19.1)	.695(17.7)	.590(15.0)	1.12(28.5)	.625(15.9)	.512(13.0)	.428(10.9)

**KPN SERIES**



KPN500B1/8

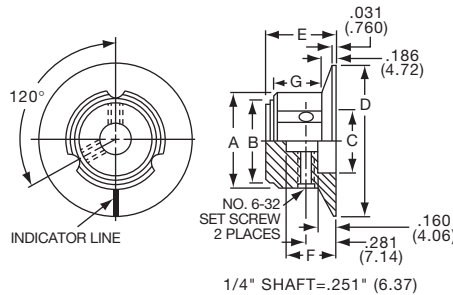


Tyco		Straight Knurl with Pointer and Indicator Line							
Electronics	Alcoswitch	Color	A	B	C	D	E	F	G
9-1437622-1	KPN500A1/8	Natural	.500(12.7)	.445(11.3)	.372(9.45)	.445(11.3)	.368(9.35)	.195(4.95)	.354(8.99)
9-1437622-0	KPN500A1/4	Natural	.500(12.7)	.445(11.3)	.372(9.45)	.445(11.3)	.368(9.35)	.195(4.95)	.354(8.99)
9-1437622-3	KPN500B1/8	Black	.500(12.7)	.445(11.3)	.372(9.45)	.445(11.3)	.368(9.35)	.195(4.95)	.354(8.99)
9-1437622-2	KPN500B1/4	Black	.500(12.7)	.445(11.3)	.372(9.45)	.445(11.3)	.368(9.35)	.195(4.95)	.354(8.99)
9-1437622-5	KPN700A1/4	Natural	.750(19.1)	.695(17.65)	.590(15.0)	.695(17.7)	.515(13.1)	.234(5.94)	.394(10.0)
9-1437622-6	KPN700B1/4	Black	.750(19.1)	.695(17.65)	.590(15.0)	.695(17.7)	.515(13.1)	.234(5.94)	.394(10.0)
9-1437622-7	KPN900A1/4	Natural	.937(23.8)	.882(22.40)	.692(17.6)	.882(22.4)	.630(16.0)	.276(7.01)	.350(8.90)
9-1437622-9	KPN900B1/4	Black	.937(23.8)	.882(22.40)	.692(17.6)	.882(22.4)	.630(16.0)	.276(7.01)	.350(8.90)

**KS SERIES**



KS500A1/4



Tyco		3 Flute Design with Aluminum Skirt and Indicator Line							
Electronics	Alcoswitch	Color	A	B	C	D	E	F	G
1437623-3	KS500A1/8	Natural	.500(12.7)	.430(10.9)	.360(9.14)	.750(19.1)	.620(15.8)	.510(13.0)	.430(10.9)
1437623-2	KS500A1/4	Natural	.500(12.7)	.430(10.9)	.360(9.14)	.750(19.1)	.620(15.8)	.510(13.0)	.430(10.9)
1437623-5	KS500B1/8	Black	.500(12.7)	.430(10.9)	.360(9.14)	.750(19.1)	.620(15.8)	.510(13.0)	.430(10.9)
1437623-4	KS500B1/4	Black	.500(12.7)	.430(10.9)	.360(9.14)	.750(19.1)	.620(15.8)	.510(13.0)	.430(10.9)
1437623-6	KS700A1/4	Natural	.750(19.0)	.650(16.5)	.590(14.9)	1.12(28.4)	.620(15.8)	.510(13.0)	.430(10.9)
1437623-7	KS700B1/4	Black	.750(19.0)	.650(16.5)	.590(14.9)	1.12(28.4)	.620(15.8)	.510(13.0)	.430(10.9)
1437623-8	KS900A1/4	Natural	.940(23.9)	.820(20.8)	.710(18.0)	1.40(35.6)	.620(15.8)	.510(13.0)	.430(10.9)
1437623-9	KS900B1/4	Black	.940(23.9)	.820(20.8)	.710(18.0)	1.40(35.6)	.620(15.8)	.510(13.0)	.430(10.9)



KS900B1/4

**K**

**K Series**

K10

**Knobs, Machined Aluminum**



**KT SERIES**



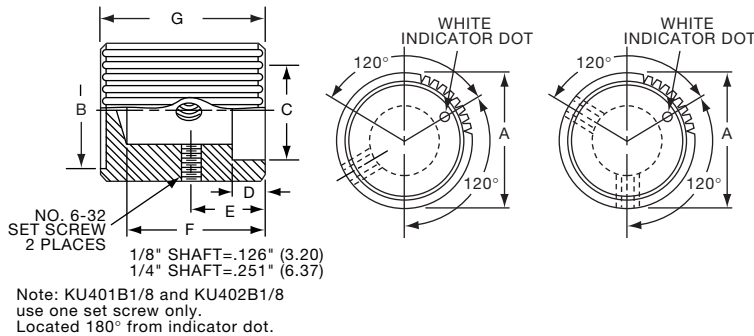
KT500A1/4



KT700A1/4

Tyco		Square Serration with Indicator Line							
Electronics	Alcoswitch	Color	A	B	C	D	E	F	G
1-1437623-2	KT500A1/4	Natural	.500(12.7)	.430(10.9)	.375(9.53)	.430(10.9)	.280(7.11)	.510(13.0)	.630(16.0)
1-1437623-4	KT500B1/8	Black	.500(12.7)	.430(10.9)	.375(9.53)	.430(10.9)	.280(7.11)	.510(13.0)	.630(16.0)
1-1437623-3	KT500B1/4	Black	.500(12.7)	.430(10.9)	.375(9.53)	.430(10.9)	.280(7.11)	.510(13.0)	.630(16.0)
1-1437623-6	KT700A1/4	Natural	.740(18.8)	.650(16.5)	.590(15.0)	.650(16.5)	.280(7.11)	.510(13.0)	.630(16.0)
1-1437623-7	KT700B1/4	Black	.740(18.8)	.650(16.5)	.590(15.0)	.650(16.5)	.280(7.11)	.510(13.0)	.630(16.0)
1-1437623-8	KT900A1/4	Natural	.940(23.9)	.816(20.7)	.710(18.0)	.816(20.7)	.280(7.11)	.510(13.0)	.630(16.0)
1-1437623-9	KT900B1/4	Black	.940(23.9)	.816(20.7)	.710(18.0)	.816(20.7)	.280(7.11)	.510(13.0)	.630(16.0)

**KU SERIES**



KU402B1/8

Tyco		Serrated Diamond Trim Cut with Dot Indicator							
Electronics	Alcoswitch	Color	A	B	C	D	E	F	G
2-1437623-1	KU401B1/8	Black	.374(9.50)	.283(7.19)	.276(7.01)	.098(2.49)	.177(4.50)	.236(5.99)	.299(7.60)
2-1437623-2	KU402B1/8	Black	.374(9.50)	.283(7.19)	.276(7.01)	.098(2.49)	.197(5.00)	.354(8.99)	.449(11.40)
2-1437623-3	KU500B1/8	Black	.500(12.7)	.409(10.4)	.374(9.50)	.118(3.00)	.276(7.01)	.512(13.0)	.598(15.2)
	KU500B1/4	Black	.500(12.7)	.409(10.4)	.374(9.50)	.118(3.00)	.276(7.01)	.512(13.0)	.598(15.2)
2-1437623-4	KU700B1/4	Black	.740(18.8)	.650(16.5)	.591(15.0)	.118(3.00)	.276(7.01)	.512(13.0)	.598(15.2)



**KUS SERIES**



KUS402B1/8



KUS700B1/4

Tyco		Serrated Diamond Trim Cut with Dot Indicator							
Electronics	Alcoswitch	Color	A	B	C	D	E	F	G
2-1437623-9	KUS402B1/8	Black	.374(9.50)	.197(5.00)	.276(7.01)	.520(13.2)	.098(2.49)	.450(11.4)	.354(8.99)
3-1437623-0	KUS500B1/8	Black	.500(12.7)	.276(7.01)	.374(9.50)	.700(17.8)	.118(3.00)	.600(15.2)	.512(13.0)
	KUS500B1/4	Black	.500(12.7)	.276(7.01)	.374(9.50)	.700(17.8)	.118(3.00)	.600(15.2)	.512(13.0)
3-1437623-1	KUS700B1/4	Black	.740(18.8)	.276(7.01)	.591(15.0)	1.03(26.2)	.118(3.00)	.600(15.2)	.512(13.0)

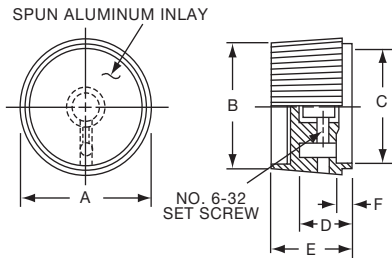
Note: KUS402B1/8 has #4.40 setscrew

**Knobs, Molded Phenolic**

**PH SERIES**



PH15181/4



Tyco		Straight Knurl Less Indicator Line					
Electronics	Alcoswitch	A	B	C	D	E	F
1437624-2	PH15181/4	.996(25.3)	.972(24.7)	.799(20.3)	.472(12.0)	.669(17.0)	.157(3.99)

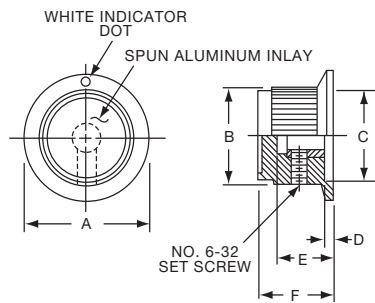
**PK SERIES**



PK50B1/8



PK701/4

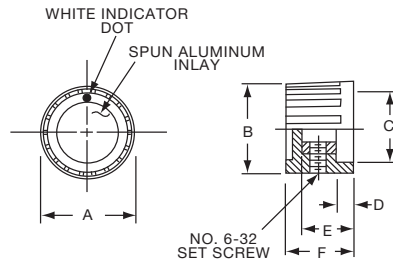


Tyco		Straight Knurl with Dot Indicator on Skirt					
Electronics	Alcoswitch	A	B	C	D	E	F
1437624-7	PK50B1/8	.748(19.0)	.570(14.5)	.500(12.70)	.055(1.40)	.460(11.7)	.550(13.97)
1437624-6	PK50B1/4	.748(19.0)	.570(14.5)	.500(12.70)	.055(1.40)	.460(11.7)	.550(13.97)
1437624-8	PK70B1/4	.984(25.0)	.728(18.5)	.710(18.03)	.079(2.01)	.500(12.7)	.590(14.99)
1437624-9	PK90B1/4	1.25(31.8)	.985(25.0)	.870(22.01)	.098(2.49)	.470(11.9)	.595(15.10)

**PK SERIES**



PK1100B1/4

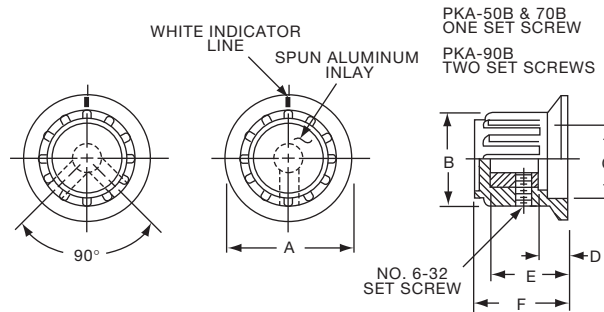


Tyco		Serrated with Dot Indicator on Top					
Electronics	Alcoswitch	A	B	C	D	E	F
1437624-4	PK1100B1/8	.700(17.8)	.643(16.3)	.565(14.35)	.125(3.18)	.453(11.51)	.530(13.5)

**K**

P Series

**Knobs, Molded Phenolic**



**PKA SERIES**

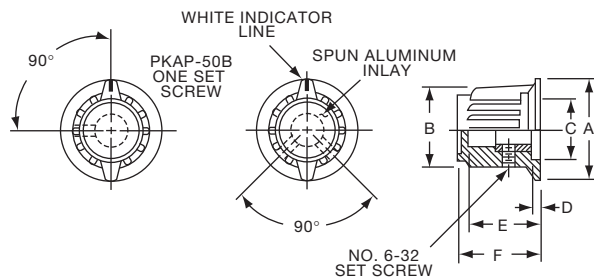


PKA50B1/4



PKA90B1/4

Tyco		Ribbed with Line Indicator on Skirt					
Electronics	Alcoswitch	A	B	C	D	E	F
1-1437624-1	PKA50B1/8	.795(20.2)	.580(14.7)	.540(13.7)	.080(2.03)	.450(11.4)	.590(15.0)
1-1437624-0	PKA50B1/4	.795(20.2)	.580(14.7)	.540(13.7)	.080(2.03)	.450(11.4)	.590(15.0)
1-1437624-4	PKA55B1/8	.780(19.8)	.580(14.7)	.475(12.1)	.135(3.43)	.585(14.9)	.675(17.2)
1-1437624-3	PKA55B1/4	.780(19.8)	.580(14.7)	.475(12.1)	.135(3.43)	.585(14.9)	.675(17.2)
1-1437624-5	PKA70B1/4	.980(24.9)	.740(18.8)	.680(17.3)	.118(3.00)	.650(16.5)	.750(19.1)
1-1437624-7	PKA90B1/4	1.375(34.9)	.970(24.6)	.670(17.0)	.195(4.95)	.750(19.1)	.840(21.3)



**PKAP SERIES**



PKAP50B1/8



PKAP90B1/4

Tyco		Ribbed with Skirt and Pointer with Indicator Line					
Electronics	Alcoswitch	A	B	C	D	E	F
1-1437624-8	PKAP50B1/4	.787(20.0)	.693(17.6)	.508(12.9)	.082(2.08)	.579(14.7)	.689(17.5)
1-1437624-9	PKAP50B1/8	.787(20.0)	.693(17.6)	.508(12.9)	.082(2.08)	.579(14.7)	.689(17.5)
2-1437624-0	PKAP70B1/4	.976(24.8)	.874(22.1)	.668(17.0)	.158(4.01)	.634(16.1)	.737(18.72)

**Knobs, Molded Phenolic**

**PKB SERIES**



PKB90B1/4



		Fluted with Indicator Line On Skirt					
Tyco Electronics	Alcoswitch	A	B	C	D	E	F
2-1437624-3	PKB70B1/4	1.12(28.3)	.750(19.1)	.670(17.0)	.118(3.0)	.490(12.5)	.600(15.2)
2-1437624-4	PKB90B1/4	1.50(38.1)	1.02(25.8)	.800(20.3)	.118(3.0)	.705(17.9)	.820(20.8)

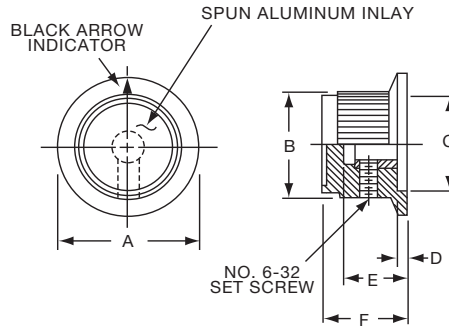
**PKD SERIES**



PKD60B1/4



PKD100B1/4



		Straight Knurl Aluminum Skirt w/Arrow Indicator					
Tyco Electronics	Alcoswitch	A	B	C	D	E	F
2-1437624-8	PKD60B1/8	.780(19.8)	.566(14.4)	.487(12.4)	.059(1.5)	.492(12.5)	.563(14.3)
2-1437624-7	PKD60B1/4	.780(19.8)	.566(14.4)	.487(12.4)	.059(1.5)	.492(12.5)	.563(14.3)
3-1437624-1	PKD70B1/4	1.02(25.9)	.750(19.1)	.700(17.8)	.080(2.0)	.490(12.5)	.610(15.5)
2-1437624-5	PKD100B1/4	1.29(32.8)	1.00(25.4)	.865(22.0)	.050(1.3)	.500(12.7)	.590(15.0)

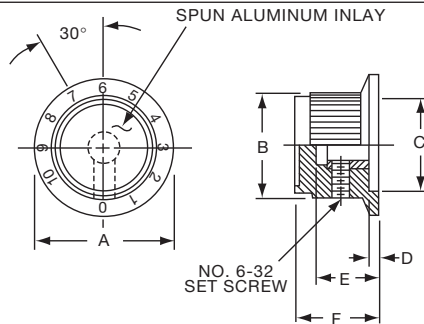
**PKD SERIES**



PKD60B101/8



PKD100B101/4



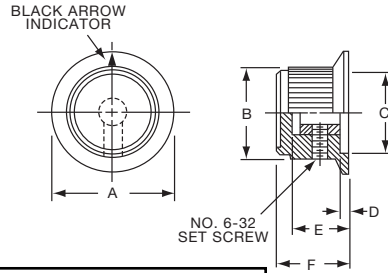
		Straight Knurl Skirt w/0-10 Numerals					
Tyco Electronics	Alcoswitch	A	B	C	D	E	F
3-1437624-0	PKD60B101/8	.780(19.8)	.566(14.4)	.487(12.4)	.059(1.5)	.492(12.5)	.563(14.3)
2-1437624-9	PKD60B101/4	.780(19.8)	.566(14.4)	.487(12.4)	.059(1.5)	.492(12.5)	.563(14.3)
3-1437624-2	PKD70B101/4	1.02(25.9)	.750(19.1)	.700(17.8)	.080(2.0)	.490(12.5)	.610(15.5)
2-1437624-6	PKD100B101/4	1.29(32.8)	1.00(25.4)	.865(22.0)	.050(1.3)	.500(12.7)	.590(15.0)

**K**

**P Series**

K14

**Knobs, Molded Phenolic**

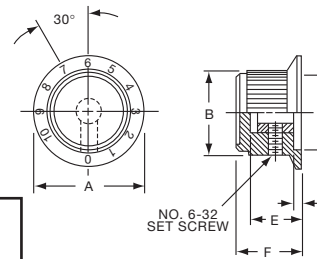


**PKDT SERIES**



PKDT100B1/4

Tyco Black Spin Cap with "Diamond Cut" and Arrow Indicator							
Electronics	Alcoswitch	A	B	C	D	E	F
3-1437624-9	PKDT70B1/4	1.03(26.0)	.738(18.8)	.720(18.3)	.098(2.49)	.500(12.7)	.635(16.1)
3-1437624-3	PKDT100B1/4	1.29(32.8)	1.02(25.9)	.860(21.8)	.042(1.07)	.500(12.7)	.638(16.2)

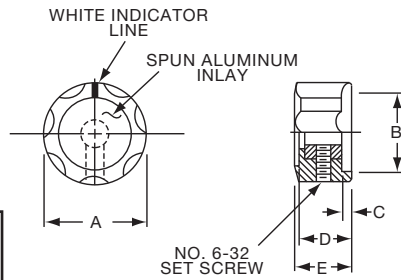


**PKDT SERIES**



PKDT100B101/4

Tyco Black Spin Cap with "Diamond Cut" & 0-10 Numerals							
Electronics	Alcoswitch	A	B	C	D	E	F
3-1437624-8	PKDT60B101/8	.778(19.8)	.605(15.4)	.560(12.5)	.060(1.53)	.392(9.96)	.562(14.3)
4-1437624-0	PKDT70B101/4	1.03(26.0)	.738(18.8)	.720(18.3)	.098(2.49)	.500(12.7)	.635(16.1)
3-1437624-4	PKDT100B101/4	1.29(32.8)	1.02(25.9)	.860(21.8)	.042(1.07)	.500(12.7)	.638(16.2)

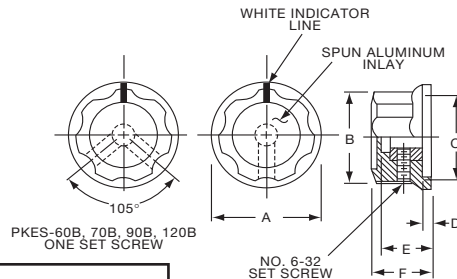


**PKE SERIES**

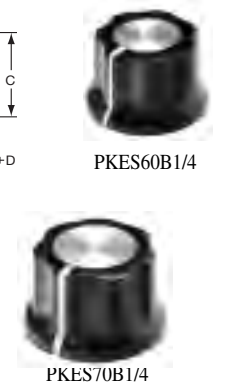


PKE90B1/4

Tyco Fluted with Indicator Line					
Electronics	Alcoswitch	A	B	C	E
4-1437624-4	PKE60B1/8	.626(15.9)	.472(12.0)	.091(2.31)	.394(10.0)
4-1437624-3	PKE60B1/4	.626(15.9)	.472(12.0)	.091(2.31)	.394(10.0)
4-1437624-5	PKE90B1/4	.890(22.6)	.724(18.4)	.098(2.49)	.480(12.2)



**PKES SERIES**



PKES60B1/4

PKES70B1/4

Tyco Fluted with Skirt and Indicator Line							
Electronics	Alcoswitch	A	B	C	D	E	F
5-1437624-1	PKES60B1/8	.748(19.0)	.618(15.7)	.460(11.7)	.090(2.29)	.370(9.40)	.470(11.9)
5-1437624-0	PKES60B1/4	.748(19.0)	.618(15.7)	.460(11.7)	.090(2.29)	.370(9.40)	.470(11.9)
5-1437624-2	PKES70B1/4	.855(21.7)	.744(18.9)	.705(17.9)	.080(2.03)	.421(10.7)	.526(13.4)
5-1437624-3	PKES90B1/4	1.01(25.7)	.889(22.6)	.846(21.5)	.079(2.01)	.421(10.7)	.570(14.5)
4-1437624-6	PKES120B1/4	1.30(32.9)	1.16(29.5)	1.02(25.9)	.118(3.00)	.500(12.7)	.628(16.0)
4-1437624-7	PKES140B1/4	1.50(38.1)	1.37(34.9)	1.22(30.9)	.118(3.00)	.540(13.7)	.693(17.6)
4-1437624-8	PKES150B1/4	1.77(44.9)	1.55(39.4)	1.41(35.9)	.118(3.00)	.733(18.6)	.831(21.1)

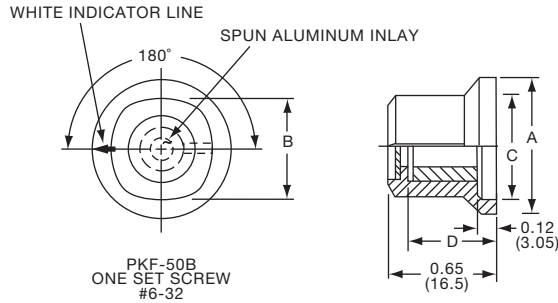


**Knobs, Molded Phenolic**

**PKF SERIES**



PKF50B1/8



Tyco Plain Quadrate with Indicator Line & Arrow						
Electronics	Alcoswitch	A	B	C	D	
5-1437624-5	PKF50B1/8	.670(17.0)	.454(11.53)	.570(14.48)	.520(13.2)	

**PKG SERIES**



PKG40B1/8



Tyco Ribbed with Indicator Line							
Electronics	Alcoswitch	A	B	C	D	E	F
5-1437624-9	*PKG40B1/8	.437(11.1)	.410(10.4)	.304(7.72)	.079(2.00)	.385(9.78)	.472(12.0)
6-1437624-1	PKG50B1/8	.551(14.0)	.500(12.7)	.442(10.7)	.056(1.42)	.395(10.03)	.512(13.0)
6-1437624-0	PKG50B1/4	.551(14.0)	.500(12.7)	.442(10.7)	.056(1.42)	.395(10.03)	.512(13.0)

\*Note: Knob uses #4-40 set screw

**Knobs, Molded Phenolic**

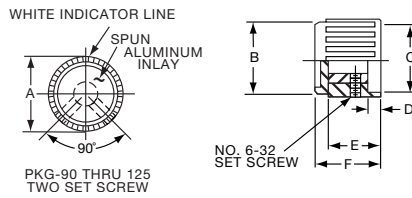
**PKG SERIES**



PKG70B1/8

Tyco		Ribbed with Indicator Line					
Electronics	Alcoswitch	A	B	C	D	E	F
6-1437624-6	PKG60B1/8	.660(16.8)	.615(15.6)	.551(14.0)	.080(2.03)	.430(10.9)	.551(14.0)
6-1437624-5	PKG60B1/4	.660(16.8)	.615(15.6)	.551(14.0)	.080(2.03)	.430(10.9)	.551(14.0)
6-1437624-8	PKG70B1/8	.740(18.8)	.698(17.7)	.591(15.0)	.080(2.03)	.453(11.5)	.559(14.2)
6-1437624-7	PKG70B1/4	.740(18.8)	.698(17.7)	.591(15.0)	.080(2.03)	.453(11.5)	.559(14.2)

**PKG SERIES**



PKG90B1/4

Tyco		Ribbed with Indicator Line					
Electronics	Alcoswitch	A	B	C	D	E	F
7-1437624-0	PKG90B1/8	.862(21.9)	.811(20.6)	.710(18.0)	.080(2.03)	.450(11.4)	.550(13.97)
6-1437624-9	PKG90B1/4	.862(21.9)	.811(20.6)	.710(18.0)	.080(2.03)	.450(11.4)	.550(13.97)
5-1437624-7	PKG100B1/4	1.055(26.80)	1.01(25.5)	.920(23.4)	.080(2.03)	.430(10.9)	.555(14.1)
5-1437624-8	PKG125B1/4	1.248(31.70)	1.20(30.4)	.690(17.5)	.080(2.03)	.430(10.9)	.565(14.4)

**PKGP SERIES**



PKGP70B1/4

Tyco		Ribbed with Bar Pointers and Indicator Line					
Electronics	Alcoswitch	A	B	C	D	E	F
7-1437624-2	PKGP70B1/4	.740(18.8)	.700(17.8)	.590(15.0)	.990(25.2)	.080(2.03)	.460(11.7)
7-1437624-3	PKGP90B1/4	.860(21.8)	.810(20.6)	.700(17.8)	1.28(32.5)	.080(2.03)	.460(11.7)
7-1437624-1	PKGP100B1/4	1.05(26.2)	1.00(25.4)	.900(22.9)	1.62(41.2)	.080(2.03)	.480(12.2)

**PKJ SERIES**



PKJ50B1/8

Tyco		Straight Knurl with Bar Pointers and Indicator Line					
Electronics	Alcoswitch	A	B	C	D	E	F
7-1437624-5	PKJ50B1/8	.500(12.7)	.512(13.0)	.420(10.7)	.577(14.7)	.429(10.9)	.113(2.9)
7-1437624-4	*PKJ50B1/4	.500(12.7)	.512(13.0)	.420(10.7)	.577(14.7)	.429(10.9)	.113(2.9)
7-1437624-6	PKJ60B1/4	.630(16.0)	.530(13.5)	.468(11.9)	.758(19.3)	.440(11.2)	.110(2.8)
7-1437624-7	PKJ70B1/4	.760(19.3)	.555(14.1)	.545(13.8)	.915(23.2)	.450(11.4)	.118(3.0)

\*Note: Knob uses #4-40 set screw



PKJ70B1/4

**Knobs, Molded Phenolic**

**PKJT SERIES**



PKJT50B1/4



PKJT70B1/4



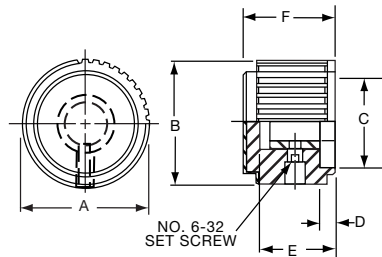
Straight Knurl with Bar Pointer & Indicator Line and Aluminum Spin Cap							
Tyco							
Electronics	Alcoswitch	A	B	C	D	E	F
7-1437624-9	PKJT50B1/8	.515(13.1)	.585(14.9)	.350(8.89)	.595(15.1)	.414(10.5)	.130(3.30)
7-1437624-8	*PKJT50B1/4	.515(13.1)	.585(14.9)	.350(8.89)	.595(15.1)	.414(10.5)	.130(3.30)
8-1437624-0	PKJT60B1/4	.640(16.3)	.605(15.4)	.470(11.9)	.760(19.3)	.445(11.3)	.118(3.00)
8-1437624-1	PKJT70B1/4	.760(19.3)	.625(15.9)	.550(14.0)	.915(23.2)	.445(11.3)	.118(3.00)

\*Knob uses #4-40 set screw.

**PKNT SERIES**



PKNT60B1/4



Black Spin Cap with "Diamond Cut" Less Indicator							
Tyco							
Electronics	Alcoswitch	A	B	C	D	E	F
8-1437624-6	PKNT60B1/8	.591(15.0)	.579(14.7)	.394(10.0)	.079(2.01)	.394(10.0)	.472(11.9)
8-1437624-5	PKNT60B1/4	.591(15.0)	.579(14.7)	.394(10.0)	.079(2.01)	.394(10.0)	.472(11.9)
8-1437624-7	PKNT70B1/4	.787(19.9)	.764(19.4)	.571(14.5)	.098(2.49)	.492(12.5)	.591(14.7)
8-1437624-8	PKNT90B1/4	.984(25.0)	.957(24.3)	.748(19.0)	.098(2.49)	.591(15.0)	.689(17.5)

**PKN SERIES**



PKN60B1/8



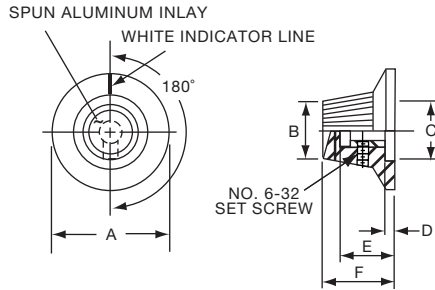
Line Indicator on Natural Aluminum Spin Cap							
Tyco							
Electronics	Alcoswitch	A	B	C	D	E	F
8-1437624-2	PKN60B1/8	.591(15.0)	.579(14.7)	.394(10.0)	.079(2.01)	.394(10.0)	.453(11.5)
	PKN60B1/4	.591(15.0)	.579(14.7)	.394(10.0)	.079(2.01)	.394(10.0)	.453(11.5)
8-1437624-3	PKN70B1/4	.787(20.0)	.764(19.4)	.571(14.5)	.098(2.49)	.492(12.5)	.591(15.0)
8-1437624-4	PKN90B1/4	.984(25.0)	.957(24.3)	.748(19.0)	.098(2.49)	.591(15.0)	.689(17.5)

**K**

P Series

**Knobs, Molded Phenolic**

PKS SERIES



PKS1104B1/4

		Straight Knurl with Indicator Line on Skirt					
Tyco Electronics	Alcoswitch	A	B	C	D	E	F
9-1437624-5	PKS1104B1/4	1.12(28.5)	.567(14.4)	.620(15.8)	.090(2.29)	.510(12.95)	.670(17.0)

PKS SERIES

		Straight Knurl Aluminum Skirt Has Line or 0-9 Numbers						
Tyco Electronics	Alcoswitch	A	B	C	D	E	F	Marking
9-1437624-4	PKS1103B101/4	1.17(29.6)	.571(14.5)	.620(15.7)	.098(2.49)	.516(13.1)	.670(17.0)	Numbers
9-1437624-7	PKS1106B1/4	1.17(29.6)	.571(14.5)	.618(15.7)	.098(2.49)	.516(13.1)	.670(17.0)	Line
9-1437624-6	PKS1105B101/4	1.17(29.6)	.571(14.5)	.618(15.7)	.098(2.49)	.516(13.1)	.670(17.0)	Numbers



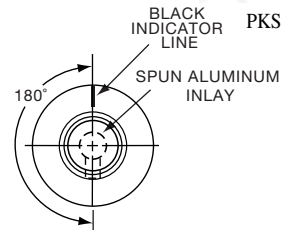
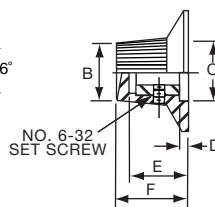
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PKS1103B101/4

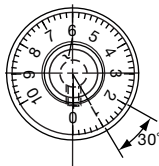


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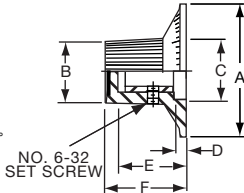


PKS SERIES

SPUN ALUMINUM INLAY



0-10



+5-5



0-9



Indicator Line



PKS1132B51/4

		Choice of Indicator Line or 0-9, 0-10, -5+5 Numerals						
Tyco Electronics	Alcoswitch	A	B	C	D	E	F	Marking
1437625-1	PKS1132B51/4	1.18(30.0)	.551(14.0)	.551(14.0)	.118(30.0)	.615(15.62)	.748(19.0)	+5-0-5
1437625-2	PKS1132B91/4	1.18(30.0)	.551(14.0)	.551(14.0)	.118(30.0)	.615(15.62)	.748(19.0)	0-9
9-1437624-9	PKS1132B101/4	1.18(30.0)	.551(14.0)	.551(14.0)	.118(30.0)	.615(15.62)	.748(19.0)	0-10
9-1437624-8	*PKS1132B1/4	1.18(30.0)	.551(14.0)	.551(14.0)	.118(30.0)	.615(15.62)	.748(19.0)	Indicator Line

\*1 Set screw 180° from indicator line.



PKS1132B91/4

**Knobs, Molded Phenolic**

**PKS SERIES**



PKS90B1/4



PKS90B101/4



Tyco Straight Knurl with Aluminum Skirt Choice of Arrow or 1-10 Numbers									
Electronics	Alcoswitch	A	B	C	D	E	F	Marking	
1437625-5	PKS90B1/4	1.42(36.1)	.917(23.3)	.780(19.8)	.065(1.65)	.490(12.5)	.596(15.1)	Arrow	
1437625-6	PKS90B101/4	1.42(36.1)	.917(23.3)	.780(19.8)	.065(1.65)	.490(12.5)	.596(15.1)	Numbers	

**PKX SERIES**



PKX50B1/8



(1) 6-32 SET SCREW EXCEPT PKX-50B, (1) 4-40

Tyco Ribbed Body, Matte Finish with White Square Indicator on Top							
Electronics	Alcoswitch	A	B	C	D	E	F
1-1437625-5	PKX50B1/8	.590(15.0)	.472(12.0)	.374(9.49)	.059(1.50)	.463(11.76)	.551(14.0)
1-1437625-4	PKX50B1/4	.590(15.0)	.472(12.0)	.374(9.49)	.059(1.50)	.463(11.76)	.551(14.0)
1-1437625-7	PKX60B1/8	.787(20.0)	.625(15.9)	.472(12.0)	.078(1.98)	.510(13.0)	.598(15.2)
1-1437625-6	PKX60B1/4	.787(20.0)	.625(15.9)	.472(12.0)	.078(1.98)	.510(13.0)	.598(15.2)

**PKX SERIES**



PKX110B1/4



(2) 6-32 SET SCREWS

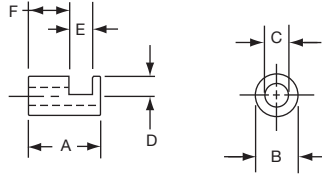
Tyco Ribbed Body, Matte Finish with White Square Indicator on Top							
Electronics	Alcoswitch	A	B	C	D	E	F
1-1437625-1	PKX100B1/4	1.17(29.7)	.970(24.6)	.780(19.81)	.114(2.90)	.570(14.48)	.674(17.12)
1-1437625-2	PKX110B1/4	1.37(34.8)	1.120(28.45)	.940(23.88)	.100(2.54)	.527(13.38)	.705(17.91)
1-1437625-3	PKX130B1/4	1.57(40.0)	1.308(33.22)	1.09(27.6)	.118(3.00)	.623(15.82)	.750(19.05)

K

P Series

**Knob Accessories**

ACCESSORIES



KR1

Tyco		Shaft Hole Size Adaptors					
Electronics	Alcoswitch	A	B	C	D	E	F
9-1437627-6	KR1 (1/4"TO1/8")	.374(9.50)	.250(6.35)	.128(3.25)	.122(3.10)	.217(5.51)	.122(3.10)
9-1437627-7	KR2 (1/4"TO3/16")	.375(9.53)	.250(6.35)	.190(4.83)	.122(3.10)	.216(5.49)	.123(3.12)
9-1437627-8	KR3 (1/4"TO4MM)	.375(9.53)	.248(6.30)	.161(4.09)	.122(3.10)	.216(5.49)	.123(3.12)

**Engineering Notes**

A large grid area for writing engineering notes, consisting of a uniform grid of small squares.

**K**

Engineering Notes

K22

Catalog 1308390  
Issued 9-04

[www.tycoelectronics.com](http://www.tycoelectronics.com)

Dimensions are in inches and millimeters unless otherwise specified. Values in parentheses or brackets are metric equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752  
Canada: 1-905-470-4425  
Mexico: 01-800-733-8926  
C. America: 52-55-5-729-0425

South America: 55-11-3611-1514  
Hong Kong: 852-2735-1628  
Japan: 81-44-844-8013  
UK: 44-141-810-8967



*Miniature Pin Plunger - Page L3*



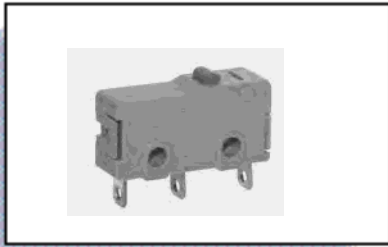
*Miniature Lever - Page L5*



*Miniature Roller - Page L7*



*Miniature Simulator Lever - Page L9*



*Subminiature Pin Plunger - Page L11*



*Subminiature Lever - Page L11*



*Subminiature Roller - Page L12*



*Subminiature Simulator Lever - Page*

# Microswitches



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1478600-4	.....L12	1478610-5	.....L7	1478619-7	.....L9
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**Miniature Microswitch Introduction**

Alcoswitch miniature microswitches are offered with many options to suit most typical applications.

These switches are available in a current range from 16A to .1A. Additional options available throughout the different current ratings include:

- Pin Plunger**
- Short, normal and long lever**
- Short and normal roller**
- Simulated lever**
- SPDT, SPNO and SPNC circuitry**

Within the 16A range, in addition to two different terminal options, there are three different actuation force options.

You can count on this offering of switches to be high reliability and low cost to fulfill your basic microswitch needs. Of course if you need something custom, we can offer that also. Contact your Tyco Electronics sales engineer for details.

**Technical Information**

**Performance Information**

Amp Rating	16	5	0.1
Insulation Resistance	Min. 100M ohm		
Contact Resistance	max 15M ohm		Max 50M ohm
Dielectric Strength	Between Non-consecutive terminals	AC 2,000V	
	Between each terminal & earth	AC 2,000V	
Operating Speed	0.2mm/sec - 1,000mm/sec		1mm/sec - 500mm/sec
Max Allowed Mechanical Open/close Frequencies	600 Cycles/min		300 Cycles/min
Shock Resistance (without lever)	300mm/sec <sup>2</sup> (approx 30G)		
Vibration Resistance (without lever)	1.5mm 10 - 55Hz (2Hr)		1.5mm 10 - 20Hz (2Hr)
Electrical Life	100,000 Operations at rated load (max 20 Operations/min)		1,000,000 Operations
Mechanical Life	10,000,000 operations (Max 200 operations/min)		
Safety Approval	UL / CSA / VDE		
Operating Temperature Range	-20°C to +130°C RH85% Max		-30°C to +130°C RH90% Max

See drawings for DC ratings.

**Materials**

	5 & 16A	.1A
Case and Cover	P.B.T Resin, UL 94 V-0	P.B.T Resin, UL 94 V-0
Movable Contact	Brass, Silver Plated	Phosphor Bronze
Guide Plate	Brass, Silver Plated	Brass, Silver Plated
Plate Spring	Beryllium Copper	Beryllium Copper
Terminal Aid	Brass	Brass
Contact	Silver Alloy	Gold Alloy
Common Terminal	Brass, Silver Plated	Brass, Silver Plated
Terminals	Brass, Silver Plated	Brass
Actuator	Phenolic Resin, UL 94 V-0	Phenolic Resin, UL 94 V-0
Lever	Stainless Steel	Stainless Steel

**Spade/Solder Type Terminal**



**Product Facts**

- n .187 [4.75] tab with solder hole
- n Use .187 [4.75] FASTON receptacles or solder wire directly to terminal



\* Refer to Pages L2 for Product Specifications

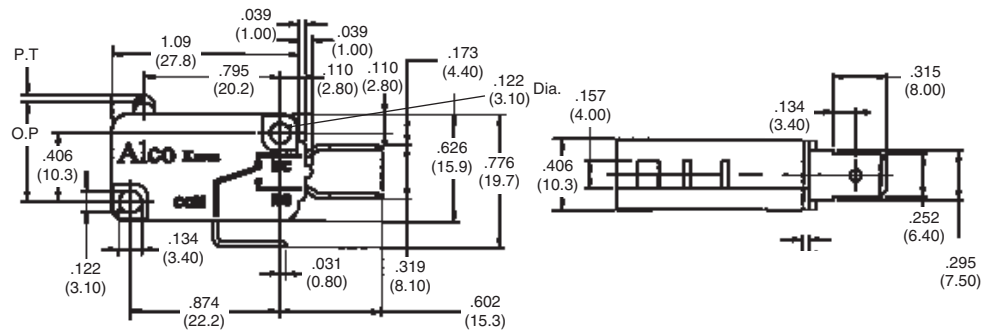
AMP	Switch Position	Operating Force	Releasing Force	Pre Travel (P.T.)	Operating Position	Over Travel	Movement Differential	Part Number
16	SPDT	120g	20g	1.6 m/m [.063]	14.8 ±0.4 [.582±.016]	0.8 m/m [.031]	0.4 m/m [.016]	1478603-1
		200g	50g					1478604-1
		300g	70g					1478605-1
	SPNC	120g	20g	1.6 m/m [.063]	14.8 ±0.4 [.582±.016]	0.8 m/m [.031]	0.4 m/m [.016]	1478609-1
		200g	50g					1478610-1
		300g	70g					1478611-1
SPNO	120g	20g	1.6 m/m [.063]	14.8 ±0.4 [.582±.016]	0.8 m/m [.031]	0.4 m/m [.016]	1478615-1	
	200g	50g					1478616-1	
	300g	70g					1478617-1	
5	SPDT	120g	20g	1.6 m/m [.063]	14.8 ±0.4 [.582±.016]	0.8 m/m [.031]	0.4 m/m [.016]	1478667-1
	SPNC							1478668-1
	SPNO							1478669-1
0.1	SPDT	60g	12g	1.6 m/m [.063]	14.8 ±0.4 [.582±.016]	0.8 m/m [.031]	0.4 m/m [.016]	1478670-1
	SPNC							1478671-1
	SPNO							1478672-1

**Spade Type Terminal**



**Product Facts**

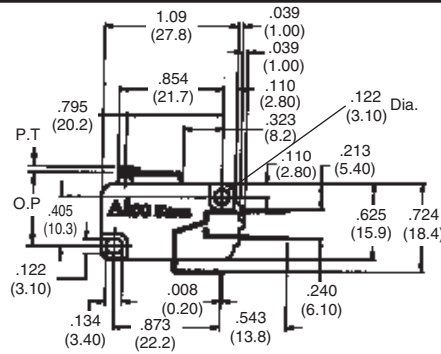
- n .250 [6.35] tab for use with .250 [6.35] FASTON receptacles



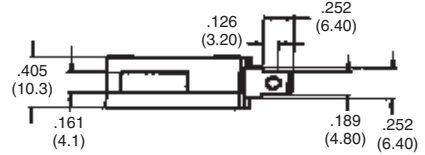
AMP	Switch Position	Operating Force	Releasing Force	Pre Travel (P.T.)	Operating Position	Over Travel	Movement Differential	Part Number
16	SPDT	120g	20g	1.6 m/m [.063]	14.8 ±0.4 [.582±.016]	0.8 m/m [.031]	0.4 m/m [.016]	1478606-1
		200g	50g					1478607-1
		300g	70g					1478608-1
	SPNC	120g	20g	1.6 m/m [.063]	14.8 ±0.4 [.582±.016]	0.8 m/m [.031]	0.4 m/m [.016]	1478612-1
		200g	50g					1478613-1
		300g	70g					1478614-1
SPNO	120g	20g	1.6 m/m [.063]	14.8 ±0.4 [.582±.016]	0.8 m/m [.031]	0.4 m/m [.016]	1478618-1	
	200g	50g					1478619-1	
	300g	70g					1478620-1	

**Miniature Short Lever**

**Spade/Solder Type Terminal**



\* Refer to Pages L2 for Product Specifications

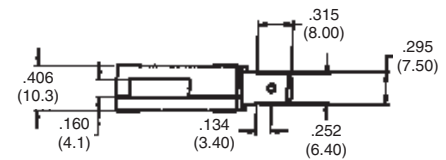
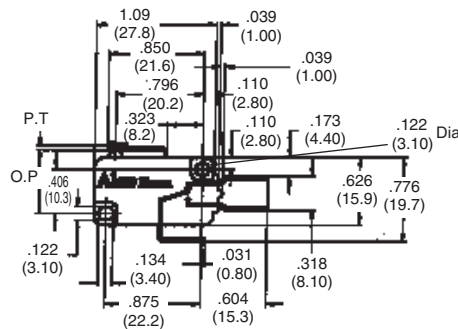


**Product Facts**

- n .187 [4.75] tab with solder hole
- n Use .187 [4.75] FASTON receptacles or solder wire directly to terminal
- n Short lever to increase operating position

AMP	Switch Position	Operating Force	Releasing Force	Pre Travel (P.T.)	Operating Position	Over Travel	Movement Differential	Part Number
16	SPDT	120g	20g	1.6 m/m [.063]	14.8 ±0.4 [.606±.016]	0.8 m/m [.031]	0.4 m/m [.016]	1478603-2
		200g	50g					1478604-2
		330g	70g					1478605-2
	SPNC	120g	20g	1.6 m/m [.063]	14.8 ±0.4 [.606±.016]	0.8 m/m [.031]	0.4 m/m [.016]	1478609-2
		200g	50g					1478610-2
		330g	70g					1478611-2
SPNO	120g	20g	1.6 m/m [.063]	14.8 ±0.4 [.606±.016]	0.8 m/m [.031]	0.4 m/m [.016]	1478615-2	
	200g	50g					1478616-2	
	330g	70g					1478617-2	
5	SPDT	120g	20g	1.6 m/m [.063]	14.8 ±0.4 [.606±.016]	0.8 m/m [.031]	0.4 m/m [.016]	1478667-2
	SPNC							1478668-2
	SPNO							1478669-2
0.1	SPDT	60g	12g	1.6 m/m [.063]	14.8 ±0.4 [.606±.016]	0.8 m/m [.031]	0.4 m/m [.016]	1478670-2
	SPNC							1478671-2
	SPNO							1478672-2

**Spade Type Terminal**



**Product Facts**

- n .250 [6.35] tab for use with .250 [6.35] FASTON receptacles
- n Short lever to increase operating positions

AMP	Switch Position	Operating Force	Releasing Force	Pre Travel (P.T.)	Operating Position	Over Travel	Movement Differential	Part Number
16	SPDT	120g	20g	1.6 m/m [.063]	15.4 ±0.4 [.606±.016]	0.8 m/m [.031]	0.4 m/m [.016]	1478606-2
		200g	50g					1478607-2
		330g	70g					1478608-2
	SPNC	120g	20g	1.6 m/m [.063]	15.4 ±0.4 [.606±.016]	0.8 m/m [.031]	0.4 m/m [.016]	1478612-2
		200g	50g					1478613-2
		330g	70g					1478614-2
SPNO	120g	20g	1.6 m/m [.063]	15.4 ±0.4 [.606±.016]	0.8 m/m [.031]	0.4 m/m [.016]	1478618-2	
	200g	50g					1478619-2	
	330g	70g					1478620-2	

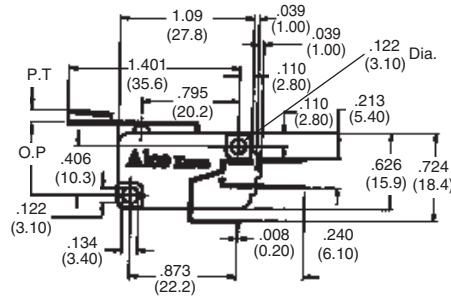
**Miniature Normal Lever**

**Spade/Solder Type Terminal**

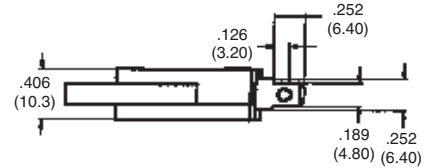


**Product Facts**

- n .187 [4.75] tab with solder hole
- n Use .187 [4.75] FASTON receptacles or solder wire directly to terminal
- n Lever to increase travel and operating position as well as reduce operating force

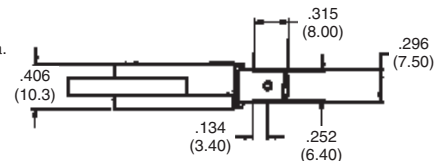
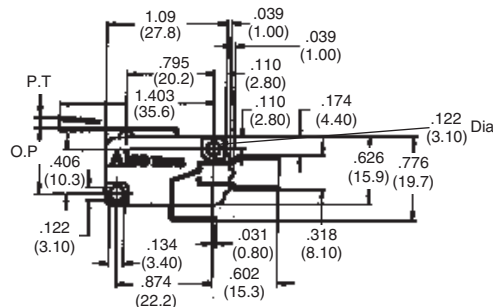


\* Refer to Pages L2 for Product Specifications



AMP	Switch Position	Operating Force	Releasing Force	Pre Travel (P.T.)	Operating Position	Over Travel	Movement Differential	Part Number
16	SPDT	60g	10g	4.0 m/m	15.4 ±1.4	1.3 m/m	1.2 m/m	1478603-3
		120g	20g	[.157]	[.606±.055]	[.051]	[.047]	1478604-3
		180g	30g					1478605-3
	SPNC	60g	10g	4.0 m/m	15.4 ±1.4	1.3 m/m	1.2 m/m	1478609-3
		120g	20g	[.157]	[.606±.055]	[.051]	[.047]	1478610-3
		180g	30g					1478611-3
SPNO	60g	10g	4.0 m/m	15.4 ±1.4	1.3 m/m	1.2 m/m	1478615-3	
	120g	20g	[.157]	[.606±.055]	[.051]	[.047]	1478616-3	
	180g	30g					1478617-3	
5	SPDT							1478667-3
	SPNC	60g	10g	4.0 m/m	15.4 ±1.4	1.3 m/m	1.2 m/m	1478668-3
	SPNO			[.157]	[.606±.055]	[.051]	[.047]	1478669-3
0.1	SPDT							1478670-3
	SPNC	35g	6g	4.0 m/m	15.4 ±1.4	1.3 m/m	1.2 m/m	1478671-3
	SPNO			[.157]	[.606±.055]	[.051]	[.047]	1478672-3

**Spade Type Terminal**



**Product Facts**

- n .250 [6.35] tab for use with .250 [6.35] FASTON receptacles
- n Lever to increase travel and operating position as well as reduce operating force

AMP	Switch Position	Operating Force	Releasing Force	Pre Travel (P.T.)	Operating Position	Over Travel	Movement Differential	Part Number
16	SPDT	60g	10g	4.0 m/m	15.4 ±1.4	1.3 m/m	1.2 m/m	1478606-3
		120g	20g	[.157]	[.606±.055]	[.051]	[.047]	1478607-3
		180g	30g					1478608-3
	SPNC	60g	10g	4.0 m/m	15.4 ±1.4	1.3 m/m	1.2 m/m	1478612-3
		120g	20g	[.157]	[.606±.055]	[.051]	[.047]	1478613-3
		180g	30g					1478614-3
SPNO	60g	10g	4.0 m/m	15.4 ±1.4	1.3 m/m	1.2 m/m	1478618-3	
	120g	20g	[.157]	[.606±.055]	[.051]	[.047]	1478619-3	
	180g	30g					1478620-3	

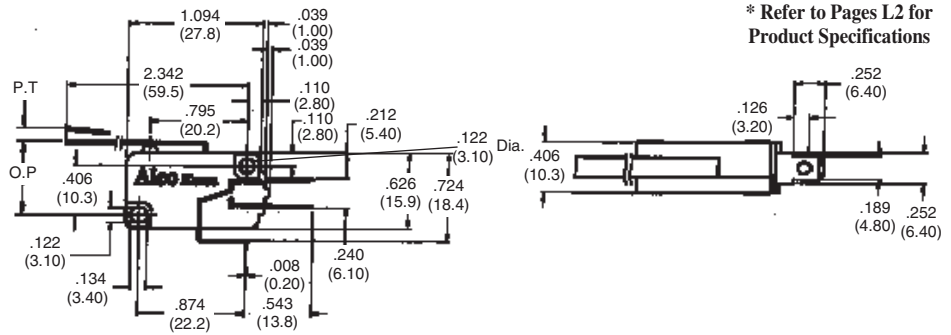
**Miniature Long Lever**

**Spade/Solder Type Terminal**



**Product Facts**

- n .187 [4.75] tab with solder holes
- n Use .187 [4.75] FASTON receptacles or solder wire directly to terminal
- n Long lever to increase travel and reduce operating force



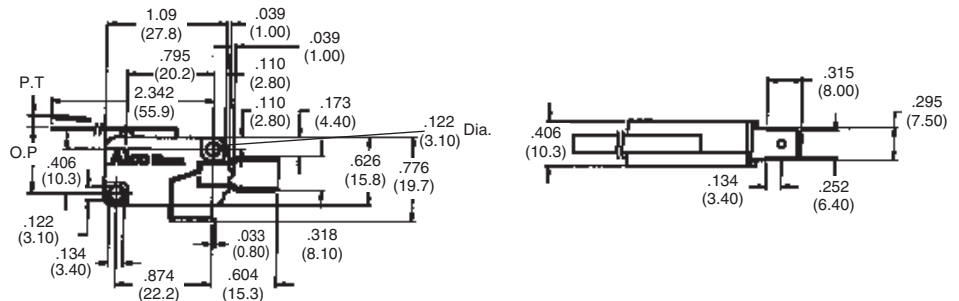
AMP	Switch Position	Operating Force	Releasing Force	Pre Travel (P.T.)	Operating Position	Over Travel	Movement Differential	Part Number
16	SPDT	30g	5g	7.5 m/m [.295]	15.4 ±3.0 [.606±.118]	2.6 m/m [.102]	2.4 m/m [.094]	1478603-4
		60g	10g					1478604-4
		90g	15g					1478605-4
	SPNC	30g	5g	7.5 m/m [.295]	15.4 ±3.0 [.606±.118]	2.6 m/m [.102]	2.4 m/m [.094]	1478609-4
		60g	10g					1478610-4
		90g	15g					1478611-4
SPNO	30g	5g	7.5 m/m [.295]	15.4 ±3.0 [.606±.118]	2.6 m/m [.102]	2.4 m/m [.094]	1478615-4	
	60g	10g					1478616-4	
	90g	15g					1478617-4	
5	SPDT	30g	5g	7.5 m/m [.295]	15.4 ±3.0 [.606±.118]	2.6 m/m [.102]	2.4 m/m [.094]	1478667-4
	SPNC							1478668-4
	SPNO							1478669-4
0.1	SPDT	15g	3g	7.5 m/m [.295]	15.4 ±3.0 [.606±.118]	2.6 m/m [.102]	2.4 m/m [.094]	1478670-4
	SPNC							1478671-4
	SPNO							1478672-4

**Spade Type Terminal**



**Product Facts**

- n .250 [6.35] tab for use with .250 [6.35] FASTON receptacles
- n Long lever to increase travel and reduce operating force



AMP	Switch Position	Operating Force	Releasing Force	Pre Travel (P.T.)	Operating Position	Over Travel	Movement Differential	Part Number
16	SPDT	30g	5g	7.5 m/m [.295]	15.4 ±3.0 [.606±.118]	2.6 m/m [.102]	2.4 m/m [.094]	1478606-4
		60g	10g					1478607-4
		90g	15g					1478608-4
	SPNC	30g	5g	7.5 m/m [.295]	15.4 ±3.0 [.606±.118]	2.6 m/m [.102]	2.4 m/m [.094]	1478612-4
		60g	10g					1478613-4
		90g	15g					1478614-4
SPNO	30g	5g	7.5 m/m [.295]	15.4 ±3.0 [.606±.118]	2.6 m/m [.102]	2.4 m/m [.094]	1478618-4	
	60g	10g					1478619-4	
	90g	15g					1478620-4	

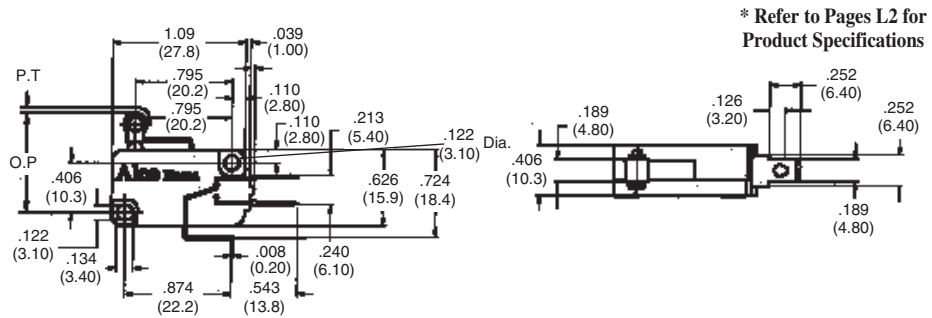
**Miniature Short Roller**

**Spade/Solder Type Terminal**



**Product Facts**

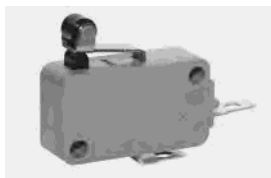
- n .187 [4.75] tab with solder holes
- n Use .187 [4.75] FASTON receptacles or solder wire directly to terminal
- n Short roller to increase operating force and position



\* Refer to Pages L2 for Product Specifications

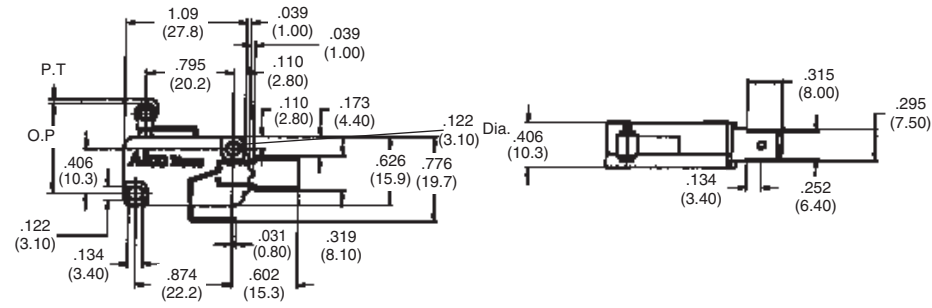
AMP	Switch Position	Operating Force	Releasing Force	Pre Travel (P.T.)	Operating Position	Over Travel	Movement Differential	Part Number
16	SPDT	140g	20g	1.6 m/m	20.7 ±0.8	0.8 m/m	0.4 m/m	1478603-5
		240g	50g	[.063]	[.815±.003]	[.031]	[.016]	1478604-5
		350g	70g					1478605-5
	SPNC	140g	20g	1.6 m/m	20.7 ±0.8	0.8 m/m	0.4 m/m	1478609-5
		240g	50g	[.063]	[.815±.003]	[.031]	[.016]	1478610-5
		350g	70g					1478611-5
SPNO	140g	20g	1.6 m/m	20.7 ±0.8	0.8 m/m	0.4 m/m	1478615-5	
	240g	50g	[.063]	[.815±.003]	[.031]	[.016]	1478616-5	
	350g	70g					1478617-5	
5	SPDT			1.6 m/m	20.7 ±0.8	0.8 m/m	0.4 m/m	1478667-5
	SPNC	140g	20g	[.063]	[.815±.003]	[.031]	[.016]	1478668-5
	SPNO							1478669-5
0.1	SPDT			1.6 m/m	20.7 ±0.8	0.8 m/m	0.4 m/m	1478670-5
	SPNC	60g	12g	[.063]	[.815±.003]	[.031]	[.016]	1478671-5
	SPNO							1478672-5

**Spade Type Terminal**



**Product Facts**

- n .250 [6.35] tab for use with .250 [6.35] FASTON receptacles
- n Short roller to increase operating force and position



AMP	Switch Position	Operating Force	Releasing Force	Pre Travel (P.T.)	Operating Position	Over Travel	Movement Differential	Part Number
16	SPDT	140g	20g	1.6 m/m	20.7 ±0.8	0.8 m/m	0.4 m/m	1478606-5
		240g	50g	[.063]	[.815±.003]	[.031]	[.016]	1478607-5
		350g	70g					1478608-5
	SPNC	140g	20g	1.6 m/m	20.7 ±0.8	0.8 m/m	0.4 m/m	1478612-5
		240g	50g	[.063]	[.815±.003]	[.031]	[.016]	1478613-5
		350g	70g					1478614-5
SPNO	140g	20g	1.6 m/m	20.7 ±0.8	0.8 m/m	0.4 m/m	1478618-5	
	240g	50g	[.063]	[.815±.003]	[.031]	[.016]	1478619-5	
	350g	70g					1478620-5	

Miniature Short Roller

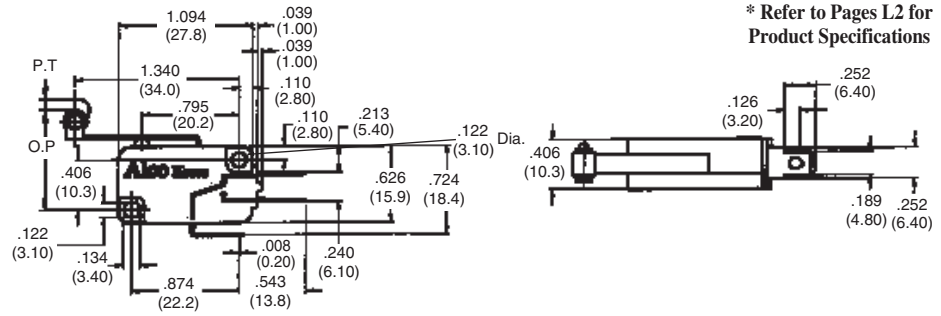
**Miniature Normal Roller**

**Spade/Solder Type Terminal**



**Product Facts**

- n .187 [4.75] tab with solder hole
- n Use with .187 [4.75] FASTON receptacles or solder directly to terminal
- n Roller to increase travel and operating position as well as reduce operating force



\* Refer to Pages L2 for Product Specifications

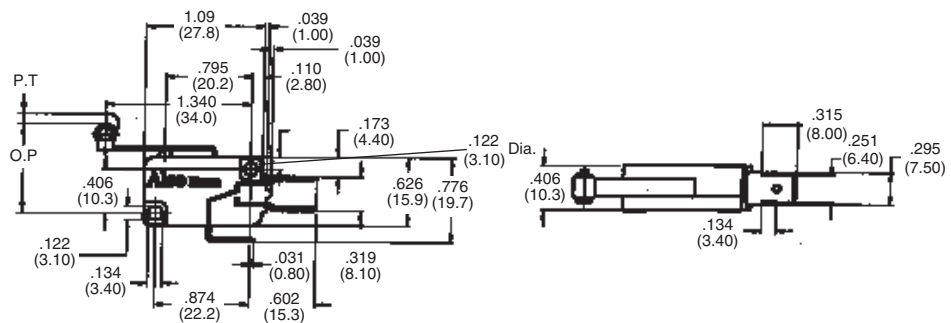
AMP	Switch Position	Operating Force	Releasing Force	Pre Travel (P.T.)	Operating Position	Over Travel	Movement Differential	Part Number
16	SPDT	60g	10g	4.0 m/m	20.7 ±1.6	1.3 m/m	1.2 m/m	1478603-6
		120g	20g	[.157]	[.815±.063]	[.051]	[.047]	1478604-6
		180g	30g					1478605-6
	SPNC	60g	10g	4.0 m/m	20.7 ±1.6	1.3 m/m	1.2 m/m	1478609-6
		120g	20g	[.157]	[.815±.063]	[.051]	[.047]	1478610-6
		180g	30g					1478611-6
SPNO	60g	10g	4.0 m/m	20.7 ±1.6	1.3 m/m	1.2 m/m	1478615-6	
	120g	20g	[.157]	[.815±.063]	[.051]	[.047]	1478616-6	
	180g	30g					1478617-6	
5	SPDT			4.0 m/m	20.7 ±1.6	1.3 m/m	1.2 m/m	1478667-6
	SPNC	60g	10g	[.157]	[.815±.063]	[.051]	[.047]	1478668-6
	SPNO							1478669-6
0.1	SPDT			4.0 m/m	20.7 ±1.6	1.3 m/m	1.2 m/m	1478670-6
	SPNC	35g	6g	[.157]	[.815±.063]	[.051]	[.047]	1478671-6
	SPNO							1478672-6

**Spade Type Terminal**



**Product Facts**

- n .250 [6.35] tab for use with .250 [6.35] FASTON receptacles
- n Roller to increase travel and operating position as well as reduce operating force



AMP	Switch Position	Operating Force	Releasing Force	Pre Travel (P.T.)	Operating Position	Over Travel	Movement Differential	Part Number
16	SPDT	60g	10g	4.0 m/m	20.7 ±1.6	1.3 m/m	1.2 m/m	1478606-6
		120g	20g	[.157]	[.815±.063]	[.051]	[.047]	1478607-6
		180g	30g					1478608-6
	SPNC	60g	10g	4.0 m/m	20.7 ±1.6	1.3 m/m	1.2 m/m	1478612-6
		120g	20g	[.157]	[.815±.063]	[.051]	[.047]	1478613-6
		180g	30g					1478614-6
SPNO	60g	10g	4.0 m/m	20.7 ±1.6	1.3 m/m	1.2 m/m	1478618-6	
	120g	20g	[.157]	[.815±.063]	[.051]	[.047]	1478619-6	
	180g	30g					1478620-6	



**Miniature Simulator Lever**

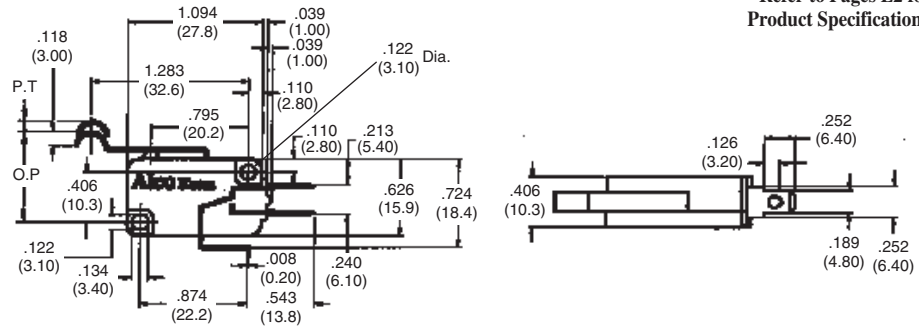
\* Refer to Pages L2 for Product Specifications

**Spade/Solder Type Terminal**



**Product Facts**

- n .187 [4.75] tab with solder hole
- n Use .187 [4.75] FASTON receptacles or solder directly to terminal
- n Simulator lever for operating position between a roller and a lever



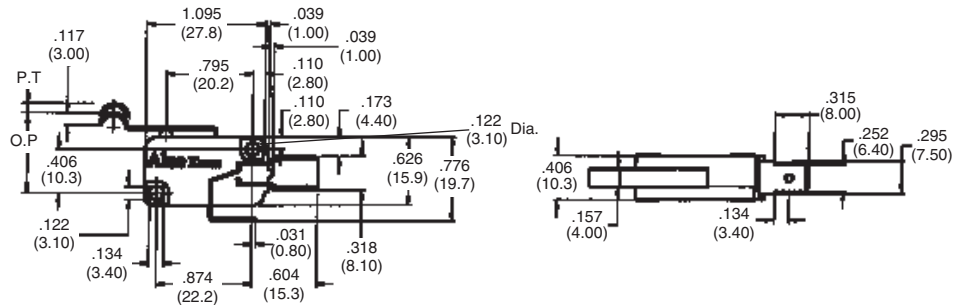
AMP	Switch Position	Operating Force	Releasing Force	Pre Travel (P.T.)	Operating Position	Over Travel	Movement Differential	Part Number
16	SPDT	60g	10g	4.0 m/m	18.6 ±1.5	1.3 m/m	1.2 m/m	1478603-7
		120g	20g	[.157]	[.732±.059]	[.051]	[.047]	1478604-7
		180g	30g					1478605-7
	SPNC	60g	10g	4.0 m/m	18.6 ±1.5	1.3 m/m	1.2 m/m	1478609-7
		120g	20g	[.157]	[.732±.059]	[.051]	[.047]	1478610-7
		180g	30g					1478611-7
SPNO	60g	10g	4.0 m/m	18.6 ±1.5	1.3 m/m	1.2 m/m	1478615-7	
	120g	20g	[.157]	[.732±.059]	[.051]	[.047]	1478616-7	
	180g	30g					1478617-7	
5	SPDT			4.0 m/m	18.6 ±1.5	1.3 m/m	1.2 m/m	1478667-7
	SPNC	60g	10g	[.157]	[.732±.059]	[.051]	[.047]	1478668-7
	SPNO							1478669-7
0.1	SPDT			4.0 m/m	18.6 ±1.5	1.3 m/m	1.2 m/m	1478670-7
	SPNC	35g	6g	[.157]	[.732±.059]	[.051]	[.047]	1478671-7
	SPNO							1478672-7

**Spade Type Terminal**



**Product Facts**

- n .250 [6.35] tab for use with .250 [6.35] FASTON receptacles
- n Simulator lever for operating position between a roller and a lever



AMP	Switch Position	Operating Force	Releasing Force	Pre Travel (P.T.)	Operating Position	Over Travel	Movement Differential	Part Number
16	SPDT	60g	10g	4.0 m/m	18.6 ±1.5	1.3 m/m	1.2 m/m	1478606-7
		120g	20g	[.157]	[.732±.059]	[.051]	[.047]	1478607-7
		180g	30g					1478608-7
	SPNC	60g	10g	4.0 m/m	18.6 ±1.5	1.3 m/m	1.2 m/m	1478612-7
		120g	20g	[.157]	[.732±.059]	[.051]	[.047]	1478613-7
		180g	30g					1478614-7
SPNO	60g	10g	4.0 m/m	18.6 ±1.5	1.3 m/m	1.2 m/m	1478618-7	
	120g	20g	[.157]	[.732±.059]	[.051]	[.047]	1478619-7	
	180g	30g					1478620-7	

**Subminiature Microswitches**

Alcoswitch subminiature micro switches are available with many options to fit applications with limited space and a 5 Amp or less current draw.

With the options of levers, rollers and simulator, a variety of operating forces, operating positions and travel distances are available to fit most applications. In addition to tabs and solder terminals, this line is available with PC terminals to mount directly to your PC board.

If this offering doesn't fit your application needs, contact the product information center or your Tyco sales person to discuss a custom product.

**Technical Information**

Performance Information		
Amp Rating	5	
Insulation Resistance	Min. 100M ohm (at 500V DC)	
Contact Resistance	Max 50M ohm (by voltage drop, 1A 6V-8V DC)	
Dielectric Strength	Between terminals	1000Vrms for 1 min
	Between terminals & other exposed metal parts	1500Vrms for 1 min
	Between terminals and earth	1500Vrms for 1 min
Temperature Rise	30°C Max	
Terminal Strength	6kg pulling and push torque shall be applied for 1min	
Allowable Operating Speed	0.1 to 1,000 mm/sec	
Shock Resistance (without lever)	Min 30G (O.F. 100g. 150g)	Contact opening max 1msec
	Min 15G (O.F. 50g)	—
Vibration Resistance (without lever)	9G, 10 to 55 Hz at double amplitude of 1.5mm (contact opening, max 1msec)	
Electrical Life	50,000 at 20cpm	
Mechanical Life	500,000 at 60cpm	
Mechanical Repeatability	300 cpm	
Safety Approval	UL / CSA	
Ambient Temperature	-25°C to +85°C	

Materials	
Case and Cover	P.B.T Resin, UL94 V-0 PA 66, UL94 V-0
Movable Contactor	Beryllium Copper, with or without silver plating
Button	Phenolic Resin, UL94 HB or UL94V0
Common Terminal	Brass, silver plated
Terminal (NC)	Brass
Terminal (NO)	Brass
Movable Contact	Silver alloy
Fixed Contact	Silver alloy, silver plated
Lever	Stainless Steel



**Subminiature Pin Plunger**

**Pin Plunger**



\* Refer to Pages L10 for Product Specifications

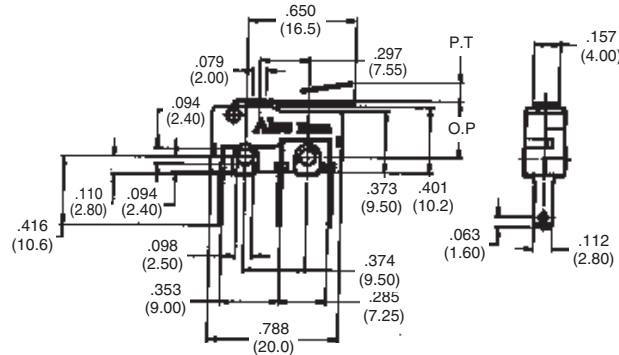
**Product Facts**

- n Available in tab, PCB or solder terminals
- n Versatile pin plunger option

Terminal Style	AMP	Switch Position	Operating Force	Releasing Force	Pre Travel	Operating Position	Over Travel	Movement Differential	Part Number
TAB	5	SPDT	150g	20g	0.6 m/m [.024]	8.4 ±0.4 [.331±.016]	0.3 m/m [.012]	0.2 m/m [.008]	1478600-1
PCB									1478601-1
Solder									1478602-1

**Subminiature Normal Lever**

**Normal Lever**



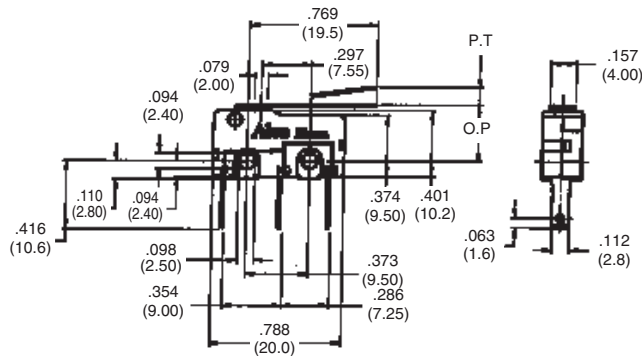
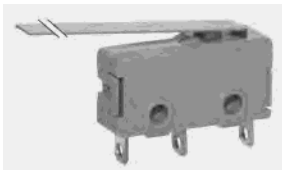
**Product Facts**

- n Available in tab, PCB or solder terminals
- n Lever length to reduce actuation force and increase travel

Terminal Style	AMP	Switch Position	Operating Force	Releasing Force	Pre Travel	Operating Position	Over Travel	Movement Differential	Part Number
TAB	5	SPDT	55g	3.5g	2.8 m/m [.110]	8.8 ±0.8 [.346±.031]	1.2 m/m [.047]	0.8 m/m [.031]	1478600-2
PCB									1478601-2
Solder									1478602-2

**Subminiature Long Lever**

**Long Lever**



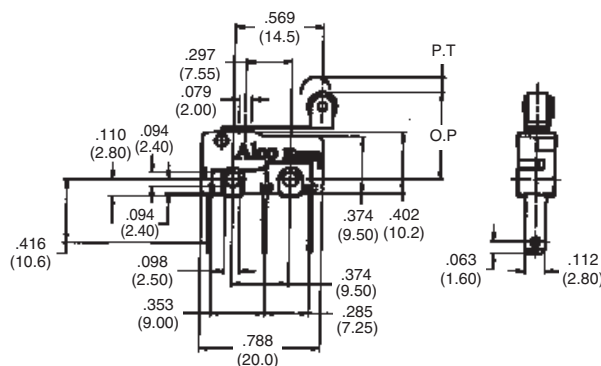
**Product Facts**

- n Available in tab, PCB or solder terminals
- n Long lever for increased travel and reduced force

Terminal Style	AMP	Switch Position	Operating Force	Releasing Force	Pre Travel	Operating Position	Over Travel	Movement Differential	Part Number
TAB	5	SPDT	45g	3.0g	3.5 m/m [.138]	8.8 ±1.2 [.346±.047]	1.6 m/m [.063]	1.0 m/m [.039]	1478600-3
PCB									1478601-3
Solder									1478602-3

## Subminiature Roller Lever

### Roller Lever



\* Refer to Pages L10 for Product Specifications

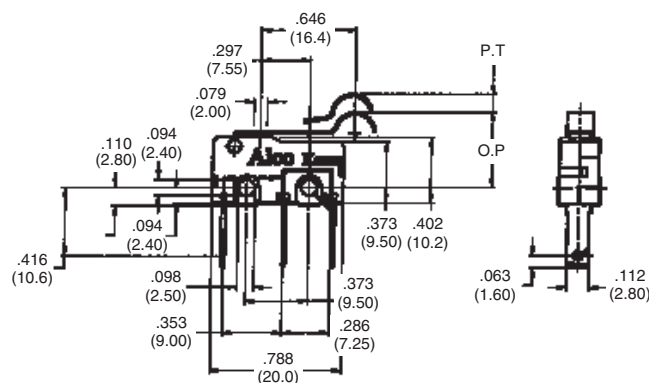
### Product Facts

- n Available in tab, PCB or solder terminals
- n Roller lever for increased operating position

Terminal Style	AMP	Switch Position	Operating Force	Releasing Force	Pre Travel	Operating Position	Over Travel	Movement Differential	Part Number
TAB									1478600-4
PCB	5	SPDT	60g	4.0g	2.5 m/m [.098]	14.5 ±0.8 [.570±.031]	0.8 m/m [.031]	0.5 m/m [.020]	1478601-4
Solder									1478602-4

## Subminiature Simulator Lever

### Simulator Lever



### Product Facts

- n Available in tab, PCB, or solder terminals
- n Simulator lever for operating position between a roller and a lever

Terminal Style	AMP	Switch Position	Operating Force	Releasing Force	Pre Travel	Operating Position	Over Travel	Movement Differential	Part Number
TAB									1478600-5
PCB	5	SPDT	40g	3.0g	3.6 m/m [.142]	11.6 ±0.8 [.457±.031]	0.8 m/m [.031]	0.6 m/m [.024]	1478601-5
Solder									1478602-5

**Engineering Notes**



<b>Solder Process Guide</b>	<b>M2 - M4</b>
<b>Actuator Code Chart</b>	<b>M5 - M6</b>
<b>Glossary</b>	<b>M7 - M9</b>
<b>Worksheet</b>	<b>M10</b>
<b>Alcoswitch to Tyco Electronics Part Number Cross Reference</b>	<b>M11 - M23</b>
<b>Tyco Electronics to Alcoswitch Part Number Cross Reference</b>	<b>M24 - M36</b>

# Index/Matrixes

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## Soldering Process Recommendation Guide

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The majority of customers utilizing miniature or sub-miniature switches in the industry today have a great concern about the switches' capabilities during their soldering and cleaning cycles. This concern centers around the introduction of contaminants into the switch contact area which could cause the switch to experience various failure modes either immediately or during the life of the switch.

These failure modes can show in a number of manners. The following are just a few examples: high contact resistance, open contacts, low dielectric strength, and high actuation forces causing use-related malfunctions. Since most fluxes become active with the introduction of high temperatures used in all soldering techniques, the switch

must either prevent these fluxes from entering into its contact area or allow cleaning techniques to carry flux particles out. It must be understood that switch contamination can occur during any procedure: from hand soldering to Surface Mount systems for solder reflow.

We at Alcoswitch offer a wide range of switches to handle any soldering operations. However, certain soldering conditions will not apply to all switches. The following conditions and charts should help assist you in the soldering of our switches in your application. If you need additional information, please contact the factory.

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### SOLDERING TYPES

#### A. WAVE SOLDERING

Top & Bottom board preheat: 200°F (93°C) for approximately 3 to 4 minutes.

Solder Temperature & Dwell Time: 500°F (260°C) for approximately 3 to 5 seconds.

#### B. HAND SOLDERING

1. 500°F-600°F (260°C-316°C) Utilizing a controlled 40 watt iron for 3 to 5 seconds maximum.

2. 500°F (260°C) Utilizing a controlled 30 watt iron for 10 seconds maximum.

#### C. DIP SOLDERING

1. Solder Temperature & Dwell Time: 500°F (260°C) for 3-5 seconds maximum.

2. Mounted on PCB .060" thick - Solder Temperature & Dwell Time: 500°F (260°C) for 10 seconds maximum.

#### D. SURFACE MOUNT

Tyco Electronics performs testing of their Surface Mount switches in accordance with EIA-364-56, Resistance to Soldering Heat, test procedures 4 (Vapor Phase) and Procedure 5 (Infrared).

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### CLEANING TYPES

A. Solvent Wash (1.1.1 Trichlorethylene, T.M.S., T.M.C.)

B. Vapor Degreasing

C. Solvent Immersion

D. Aqueous Cleaning







**Actuation Code Chart Toggles, Rockers and Paddles**

									A		NONE	
									D		NONE	
									E			
			SINGLE MOMENTARY ON (WHERE APPLICABLE)				SINGLE MOMENTARY ON (WHERE APPLICABLE)		F		NONE	
1		NONE		8					K		NONE	
2		NONE		9	NONE				N		NONE	
3		NONE		10	NONE				P			
4		NONE		11					R		NONE	
5				12					PA*			
6												
7												

**Note:** Three throw function achieved with external jumpers installed by customer.

⊙ In (Common)

⊗ Out

**Actuation Code Chart Pushbuttons and Slides**

The following CODE CHARTS show schematically, the electrical contact closures of a switch relative to the actuator position. All diagrams represent a TOP view of the switch with the ALCO imprint facing and bushing slot, if any, pointing left. Terminal numbers are for reference only and may not appear on switches.

Code numbers are found throughout the catalog alongside part numbers. The same schematic may show either maintained or momentary action in some cases; momentary closures are indicated by the symbol (ON).

**PUSHBUTTONS**

13	N.C. 	MOMENTARY ON 	21		MOMENTARY 
14	N.C. 	MOMENTARY ON 	22		MOM. 
15	DN 	MOMENTARY ON 	23	PUSH-ON 	PUSH-OFF 
16	PUSH-ON 	PUSH-OFF 	24	PUSH-ON 	PUSH-OFF 
17	PUSH-ON 	PUSH-OFF 	25	PUSH-ON 	PUSH-OFF 
18	PUSH-ON 	PUSH-OFF 	26	PUSH-ON 	PUSH-OFF 
19		MOMENTARY 			
20		MOMENTARY 			

**TP SERIES PUSHBUTTONS**

C		NONE	
F FT		NONE	
M		NONE	
R		NONE	

**TSS SERIES SLIDE SWITCHES**

A		NONE	
D		NONE	
E			
K		NONE	
N		NONE	
P			
PA			

M

Index/Matrices

M6

**Glossary**

- **Actuation Force (Operating Force):** The force required to change the actuator of a switch from one position to the other. Unit of Measure: Slides - lbs., oz. or grams. Toggles and pushbuttons - oz. Rotary products-torque.
- **Actuator:** A movable part of a switch which causes a change in the electrical configurations of the switch.  
 Example:      Toggle      Rocker      Slider  
                  Plunger      Paddle      Shaft
- **Alternate Action:** See Push-Push.
- **Angle of Throw:** The angle or arc through which an actuator passes during actuation. Typically used to refer to the movement of toggle or rocker actuators. Unit of Measure: Degree.
- **Antistatic:** An antistatic device will withstand a specified potential without conducting between the actuator and any conducting element, usually the terminals or bushing. Unit of Measure: Typical value 15-20 kilovolts DC.
- **Bifurcated Contact:** A wiping movable contact consisting of two spring fingers that grip fixed contacts. Typically found in slide switches. Self-cleaning action. See Wiping Contact.
- **Bobbin Contact:** A movable contact shaped like a thread bobbin that rolls along the stationary contacts. Found only in slide switches.
- **Bounce:** See Contact Bounce.
- **Break-Before-Make (Non-shorting, Break First):** On actuation, the movable contact breaks contact with one fixed contact before making contact with another fixed contact. Contrast with make-before-break. Typical of toggle and pushbutton switches. (BBM)
- **Break First:** See Break-Before-Make.
- **Butt Contact:** A contact mechanism in which the movable contact makes contact with the fixed (stationary) contact without wiping motion between the surfaces. Typical of toggle and pushbutton switches. See Wiping Contact.
- **Capacitive Load:** A load in which the initial current on making (closing) of the contacts is higher than the steady state current on breaking (opening) of the contacts, the current is less than steady state. Current leads voltage in capacitive loads. See Resistive Load, Inductive Load, Power Factor and Inrush.
- **Carrying Current:** The maximum current that can be passed through the already closed contacts of a switch. Contrast with "Contact Rating."
- **Contact (Contact Area):** The metal surfaces that come into physical contact to complete an electrical circuit. These surfaces are found on moveable contacts (see) and terminals (see).
- **Contact Block:** A switching element which is added singly or in groups to an operator (see) to make a complete switch.
- **Contact Bounce (Bounce):** The time during switching in which electrical instability caused by the rebound of the contacts is observed. Unit of Measure: Millisecond.
- **Contact Gap:** The distance between a stationary contact and a moveable contact in the open position.
- **Contact Rating (Switching Rating):** The capacity to switch (connect or interrupt) an electrical load. Unit of Measure: Volts, amps, load characteristic (resistive, inductive, capacitive, power factor). Contrast with non-switching rating.
- **Contact Resistance:** The total resistance of the switch, comprised of the contact interface and terminals. Unit of Measure: Milliohms.
- **Cycles:** The number of times a switch can be actuated from one extreme position to the opposite extreme position and back to the original position.
- **Detent:** A mechanical stop that holds the contacts in a given position after the actuation force is removed or prevents the changing of contact position at less than a specified actuation force.
- **Detent Angle:** The angle or arc between detent positions in rotary switches. Unit of Measure: Degree.
- **Dielectric Strength (Dielectric Withstanding Voltage, DWV, Leakage Resistance, Breakdown Voltage):** The ability of an insulator to withstand a voltage without arcing across its surface. Most often applies to insulator between switch terminals and metal exposed to operator of switch. Unit of Measure: Volts RMS, Volts AC.
- **Dielectric Withstanding Voltage:** See Dielectric Strength.
- **DIP: Dual-in-Line Package** refers to a component with two rows of PC terminals. The terminals are most commonly on a 0.100" pitch with 0.300" between rows.
- **Double-Break Contacts:** A contact mechanism using two sets of contacts to make or break a given circuit. This provides better power handling capacity and longer switch life. Typical of high power industrial switches. See Single-Break Contacts.
- **Dry Circuit (Low Energy, Logic Level):** An application in which power levels do not cause arcing, melting or softening of contacts. Typically requires gold plated contacts for reliable switch operation. Typical Definition: 0.4VA max. @ 20 VDC or peak AC.
- **DWV:** See Dielectric Strength.
- **Electrical Life:** The number of operations at a given electrical load that does not result in a degradation of any electrical or mechanical parameter beyond the standard set by the applicable end-of-life criteria. Unit of Measure: Cycles (on-off operations) (rotations).

## Glossary

- **End of Life Criteria:** Those specifications that a switch must meet at the end of its specified electrical life. Typically contact resistance and/or heat rise of contacts at full rated load at end of life.
- **Environmental Seal:** A seal that totally encapsulates the switch or relay providing a specified level of protection against intrusion of solids, liquids or gases into the body of the device.
- **Fixed Contact (Stationary or Statis Contact):** The non-moving contact. Typically integral to the end of the terminal inside the switch body.
- **Flux:** A material added during soldering to the metal surfaces which on heating prevents oxidation and aids the flowing of the solder.
- **Gas-Tight Contact:** A contact interface (movable to fixed contacts) in which the forces holding the contacts together are high enough to prevent gases from migrating between the members. This prevents static oxidation of the contact and subsequent intermittencies of high contact resistance. Typical forces are 280,000 PSI and higher.
- **Gold Flash:** A plating of gold typically less than 10 microinches (millionths) thick. Used only as a barrier to oxidation or corrosion of terminals to maintain solderability.
- **Heat Rise:** An indirect measurement of contact resistance used by rating agencies. The temperature rise over ambient of a contact set carrying a prescribed current is measured to determine whether it falls within safe limits.
- **Inductive Load:** A load in which the initial current on making (closing) of the contacts is lower than the steady state. On breaking (opening) of the contacts, the current is greater than the steady state. Current lags voltage in inductive loads. Motors are the most common inductive load. See Resistive Load, Capacitive Load, Power Factor.
- **Inrush:** A transitory high-level of current through a contact set on making (closing). A characteristic of capacitive and some resistive loads. The inrush currents can be large and long enough to cause severe degradation of the contacts. See Resistive Load, Capacitive Load, Power Factor.
- **Insert Molding:** In switches and relays used to refer to terminations that are placed in the mold so that plastic is molded around the terminations. The chief benefit is an inherent seal against the intrusion of flux into the body of the device. Therefore no epoxy terminal seal is required.
- **Insulation Resistance:** The resistance between insulated parts measured at a specified DC voltage. Unit of Measure: Megohm.
- **IP:** An industrial specification used in Europe (and worldwide) to indicate the degree of protection provided by a component against accidental contact, penetration of solids or liquids into or through the component. See NEMA.
- **Leakage Barrier:** A ridge or web molded into a switch housing between terminals or contacts to increase the surface distance between them.
- **Leakage Resistance:** Dielectric Strength.
- **Life:** See Electrical Life: Mechanical Life.
- **Logic Level:** Refers to power levels typical of solid state electronic circuits (TTL, CMOS, etc.). For switch selection see Dry Circuit.
- **Low Energy:** See Dry Circuit.
- **Maintained:** A position (throw) of a switch which remains unchanged when actuation force is removed from switch actuator. Contrast with Momentary.
- **Make-Before-Break (Shorting Contact, Make First):** Movable contact makes the next circuit before breaking the first circuit. Typically found in slide switches. Contrast with Break-Before-Make (MBB).
- **Make First:** See Make-Before-Break.
- **Mechanical Life:** The number of operations of a switch without electrical load that does not result in a degradation of parameters beyond the standard set by the applicable end-of-life criteria.
- **Momentary (Spring Return):** A momentary switch position (throw) is held only for duration of force applied to the switch actuator.
- **Movable Contact (Dynamic Contact):** The contact moved by the switch actuator into and away from contact with a fixed contact thus forming the electrical circuits possible for a given device.
- **N.C.:** See Normally Closed.
- **NEMA:** National Electrical Manufacturers Association. A US Standards setting group for switch products most often applied to switches mounted in various enclosures offering specified degrees of protection against intrusion of liquids, dust, corrosive elements, etc. NEMA ratings are common in industrial or outdoor applications. See IP.
- **NO:** See Normally Open.
- **Non-shorting:** See Break-Before-Make.
- **Non-switching Rating:** The power carrying capacity of a switch after contact closure and end of contact bounce. Typically far higher than the contact rating (switching rating) of a switch. Unit of Measure: Volts and Amps.
- **Normally Closed (NC):** Normally closed contacts are closed when switch actuator is in its unactuated position (e.g., the plunger is in the resting position in the case of a pushbutton switch).
- **Normally Open (NO):** Normally open contacts are open when the switch actuator is in its unactuated or resting position.

## Glossary

- **Oil-tight:** A generic term for a panel seal (see) commonly used in industrial settings. Defined by NEMA (see) and IP (see) standards.
- **Operating Force:** See Actuation Force.
- **Operating Temperature:** The range of temperature within which the device may be used. Unit of Measure: Degrees celsius or fahrenheit (C or F).
- **Operator:** A panel mounted mechanical device (pushbutton, selector, keylock, etc.) without contacts to which one or more contact blocks (see) may be added to make a complete switch.
- **Overtravel:** The distance the actuator may move between initial contact position and the extreme mechanical position of the actuator without damage to the switch. See travel. Pretravel. Unit of Measure: Inch. Degree.
- **Panel Seal:** A panel seal provides a defined level of protection against penetration of liquids through which the switch and switch-to-panel interface to the rear of a panel. Unit of Measure: Inches/ft. of water.
- **Pole:** The number of separate circuits that can be active through a switch at any one time. A single pole switch allows one closed circuit at a time. A double pole switch allows two closed circuits, etc.
- **Power Factor (PF):** A measure of the inductive or capacitive character of an electrical load. Unit of Measure: 0 to 1 (e.g. 0.75)
- **Process Seal:** A seal that prevents damage to or contamination of the switch during the specified mechanical process. See wave solderable. Surface Movable.
- **Push-On/Push-Off:** See Push-Push.
- **Push-Push (Alternative Action, Push-On/Push-Off):** A pushbutton switch style in which the electrical state of the switch is maintained between actuations of the plunger.
- **Quick-Connect Terminals:** Flat tab or blade style terminals designed to accept push-on female wire connectors (instead of soldering). The most popular sizes are: 0.250", 0.110" wide.
- **Resistive load:** A load in which the current and voltage are in phase. See Capacitive Load, Inductive Load, Power Factor, Inrush.
- **Shorting Contact:** See Make-Before-Break.
- **Single Break Contacts:** A contact mechanism using one set of contacts to make or break a given circuit. Typical of electronic or low power switches. See Double-Break Contacts.
- **Splashproof:** See panel Seal.
- **Spring Return:** See Momentary.
- **Storage Temperature:** The range of temperature within which the device may be stored. Typically this is a wider range than operating temperature. Unit of Measure: Degrees celsius or fahrenheit (C or F).
- **Surface Mount Devices:** Components that are compatible with surface mount PC board technology. Holes are not used for component mounting. Component leads are soldered to pads on the surface of the PC boards. For switches typically defined by surface mount terminations (e.g., J-bend, L-bend, butt, etc.) and compatibility with surface mount soldering (e.g., vapor phase reflow, infrared, etc.) and cleaning processes.
- **Tactile Feel (Feedback):** A mechanical signal (typically a "snap" or "click") that indicates contact closure to the operator.
- **Terminal:** The metal portion of the switch, exterior to the body, that is used to connect the switch to an electrical circuit. Examples: PC, wire lug, Turret, quick-connect, wire-wrap, etc.
- **Throws:** Number of circuits that can be controlled by any one pole of a switch. Example: In a single pole — double throw (SPDT) switch, only one circuit may be completed at a time. However, there are two possible circuits (throws) that can be made.
- **Travel:** The total distance the actuator moves to change electrical position. See Pretravel. Overtravel. Unit of Measure: Inches, degrees.
- **Washable:** Applied to PC board mounted devices indicating compatibility with cleaning processes used after soldering. No degradation of electrical or mechanical parameters occurs.
- **Wave Solderable:** Indicates the device is suitable for the wave soldering and cleaning processes as supplied. See Process Seal.
- **Wiping Contact:** A contact mechanism in which the movable contact with the fixed contact with a wiping motion. Typical to slide and rotary switches.

**Alcoswitch & Tyco Electronics Power Tool Switches Application Worksheet****Required Information****Electrical Considerations:**

Voltage of Applications: \_\_\_\_\_ Current of Application: \_\_\_\_\_

Circuitry Configuration: \_\_\_\_\_ Number of Poles: \_\_\_\_\_ Number of Throws: \_\_\_\_\_

Number of Operations anticipated: \_\_\_\_\_

Agency Approvals or Listings Desired: \_\_\_\_\_

**Mechanical Considerations**Type of Switch (Actuator Type):  Toggle  Pushbutton  Rotary  Trigger  Other

Switch Function: (On/Off/On) \_\_\_\_\_ On/Off \_\_\_\_\_ Momentary: \_\_\_\_\_

Termination:  Thru-Hole (PC)  Surface Mount  Wire Lug  Quick Connect  Other

Sealing Contamination Requirements: \_\_\_\_\_

**Product Processing Considerations**Anticipated Soldering Process:  Hand  Wave  SMT  Other**Required Information For Power Tool Switches Only****Output Characteristics:**

Variable Speed, Two Speed, On/Off, etc.: \_\_\_\_\_ Reversing/Non-Reversing: \_\_\_\_\_

Lock-on, Lock-off, or Neither: \_\_\_\_\_

Hook-up wire size and configuration (i.e. stranded/solder tinned, fused, terminated, etc.) and retention force requirements (how many pounds pull force and what directions required): \_\_\_\_\_

**Optional Information****Electrical Considerations:**

Contact Resistance Requirements: Initial: \_\_\_\_\_ After Life Cycles: \_\_\_\_\_

Electrostatic Discharge: (E.S.D.) Requirements: \_\_\_\_\_

Contact Timing:  Shorting (Make-Before-Break)  Non Shorting (Break-Before-Make)

Other Electrical Considerations: \_\_\_\_\_

**Mechanical Considerations**

Actuation Force Requirements: \_\_\_\_\_

Actuator Travel Distance or Degrees of Throw: \_\_\_\_\_

Special Plating Requirements: \_\_\_\_\_ Flammability Rating: \_\_\_\_\_ Oxygen Index: \_\_\_\_\_

Special Material Requirements: \_\_\_\_\_ % Solder Coverage: \_\_\_\_\_

Marking Required: \_\_\_\_\_

Desired Product Color Options: \_\_\_\_\_

Other Mechanical Considerations: \_\_\_\_\_

**Environmental Considerations**

Operating Temperature Range: \_\_\_\_\_

Storage Temperature Range: \_\_\_\_\_

Chemical Resistance Requirements: \_\_\_\_\_

Other Environmental Considerations: \_\_\_\_\_

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