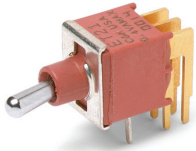


ET Series Sealed Subminiature Toggle Switches

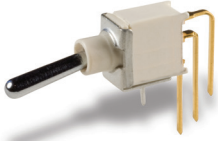


Features/Benefits

- Sealed against solder and cleaning process contaminants
- ESD protection available
- Thru-hole and surface mount models
- Compact size and small footprint save PCB space
- RoHS compliant models available

Typical Applications

- Hand-held telecommunications
- Instrumentation
- Medical equipment



Specifications

CONTACT RATING: B contact material: 0.4 VA max. @ 20 V AC or DC max. See page F-35 for additional ratings.

ELECTRICAL LIFE: ETX1 models: 60,000 make-and-break cycles at full load. All other models: 30,000 cycles.

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

INSULATION RESISTANCE: 10⁹ Ω min.

ELECTROSTATIC DISCHARGE (ESD) RESISTANT OPTION: M3 & S3 insulating actuator only: 9,000 V DC min. @ sea level, actuator to terminals. F1 conductive bushing only: Dissipates up to 20,000 V DC from actuator to ground. M3 & S3 actuator and F1 bushing options are not recommended for use together.

DIELECTRIC STRENGTH: 1000 Vrms min. @ sea level.

OPERATING TEMPERATURE: -30°C to 85°C.

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

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

PACKAGING: Surface mount switches are shipped in tape and reel packaging, see page F-36 for drawings and reel information.

Materials

CASE & BUSHING: Glass filled nylon 6/6, flame retardant, heat stabilized (UL 94V-0) or glass filled 4/6 nylon, flame retardant, heat stabilized (UL 94V-0). F1 conductive bushing option is impregnated with carbon fibers.

ACTUATOR: M3 & S3 anti-static actuator: Nylon 4/6, black standard (UL 94V-0). All other actuators: Brass, chrome plated. Internal o-ring seal standard with all actuators.

SWITCH SUPPORT: Brass, tin plated.

CONTACTS & TERMINALS: B contact material: Copper alloy, with gold plate over nickel plate. Q contact material: Copper alloy, silver plated. See F-35 for additional contact materials.

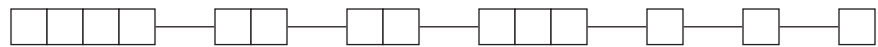
TERMINAL SEAL: Epoxy.

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

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

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages F-31 thru F-36. For additional options not shown in catalog, consult our Customer Service Center. All models are process sealed to withstand machine soldering temperatures and pressure wash cleaning methods.



Switch Function

- ET01** SP, On-None-On
- ET02** SPST, Off-None-On
- ET03** SP, On-Off-On
- ET05** SP, Mom.-Off-Mom.
- ET07** SP, On-Off-Mom.
- ET08** SP, On-None-Mom.
- ET21** DP, On-None-On
- ET23** DP, On-Off-On
- ET24** DP, On-On-On
- ET25** DP, Mom.-Off-Mom.
- ET27** DP, On-Off-Mom.
- ET28** DP, On-None-Mom.

Actuator

- M** .240" high
- M3** Plastic, anti-static, .240" high
- S** .400" high
- L** .320" high
- S1** .550" high

Bushing

- D1** .177" High, Unthreaded
- F1** .177" high, unthreaded, ESD conductive

Terminations

- A** Right angle, PC thru-hole
- AV** Vertical right angle, PC thru-hole
- C** PC Thru-hole
- SA** Right angle, surface mount
- SA1** Right angle, surface mount rear-facing
- V3** Vertical mount, V-bracket
- AV3** Vertical right angle, snap-in, PC thru-hole
- V31** Vertical mount, V-bracket, snap-in
- W** Wire wrap

Contact Material

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

Seal

- E** Epoxy

Plastic Actuator Color

- NONE** No actuator color
- 2** Black
- 1** White



F

Toggle



15 Jan 21

ET Series Sealed Subminiature Toggle Switches

SWITCH FUNCTION

| NO. POLES | MODEL NO. | SWITCH FUNCTION | | | CONNECTED TERMINALS | | | SCHEMATIC | |
|--|---------------|-----------------|--------|--------|---------------------|---------|---------|-----------|------------------------------|
| | | POS. 1 | POS. 2 | POS. 3 | POS. 1 | POS. 2 | POS. 3 | | |
| | | | | | | | | | C&K marking on opposite side |
| SP | ET01 | ON | NONE | ON | 2-3 | N/A | 2-1 | | |
| | ET03 | ON | OFF | ON | 2-3 | OPEN | 2-1 | | |
| | ET05 | MOM. | OFF | MOM. | | | | | |
| | ET07 | ON | OFF | MOM. | | | | | |
| | ET08 | ON | NONE | MOM. | 2-3 | N/A | 2-1 | | SPDT |
| | ET02 | OFF | NONE | ON | OPEN | N/A | 3-1 | | SPST |
| <p>SPDT</p> <div style="display: flex; justify-content: space-around;"> </div> <p>Part number shown: ET01MD1CBE ET02 Models: Omit terminal 2</p> | | | | | | | | | |
| DP | ET21 | ON | NONE | ON | 2-3,5-6 | N/A | 2-1,5-4 | | |
| | ET23 | ON | OFF | ON | 2-3,5-6 | OPEN | 2-1,5-4 | | |
| | ET25 | MOM. | OFF | MOM. | | | | | |
| | ET27 | ON | OFF | MOM. | | | | | |
| | ET28 | ON | NONE | MOM. | 2-3,5-6 | N/A | 2-1,5-4 | | DPDT |
| | ET24** | ON | ON | ON | 2-3,5-6 | 2-3,5-4 | 2-1,5-4 | | |
| <p>DPDT</p> <div style="display: flex; justify-content: space-around;"> </div> <p>Part number shown: ET21MD1CBE</p> | | | | | | | | | |

MOM. = Momentary

** [Wiring for 3-way switch](#)

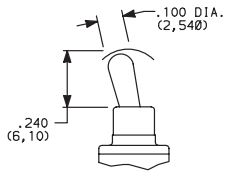
All models with all options (except M3 actuator) when ordered with G, L, R or Q contact material except with F1 conductive bushing.



ET Series Sealed Subminiature Toggle Switches

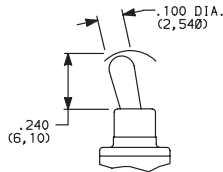
ACTUATOR

M .240" HIGH



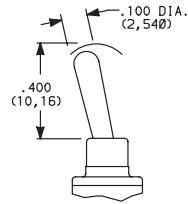
Standard with A, AV, V3 & V31 terminations.

M3 PLASTIC, ANTISTATIC,
.240" HIGH



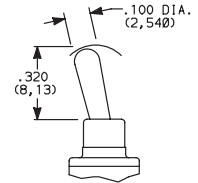
Material: Nylon 4/6 (UL 94V-0), black standard. Static resistance: 9,000 V DC min. @ sea level, actuator to terminals. Not available with F1 conductive bushing option. Not UL approved.

S .400" HIGH

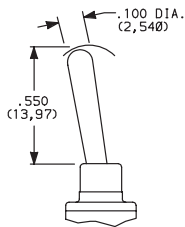


Standard with C or W terminations.

L .320" HIGH



S1 .550" HIGH



| OPTION CODE | PLASTIC ACTUATOR COLOR |
|-------------|------------------------|
| (NONE) | BLACK (M3 & S3 only) |
| 1 | WHITE (M3 & S3 only) |

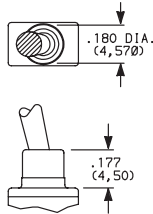
NOTE: All actuators have chrome finish (except M3 & S3).

BUSHING

D1 .177" HIGH, UNTHREADED

F1 ESD, CONDUCTIVE BUSHING
UNTHREADED, .177" HIGH

F1 bushing is not UL approved



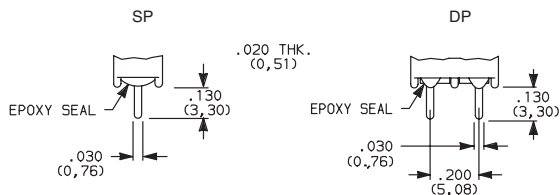
NOTE: ESD protection depends on proper grounding of switch support bracket. F1 conductive bushing option is impregnated with carbon fibers; dissipates electrostatic discharge (ESD) up to 20,000 V from actuator to ground.

Available with all metal actuator options and A, AV, AV3, V3 and V31 termination options only.

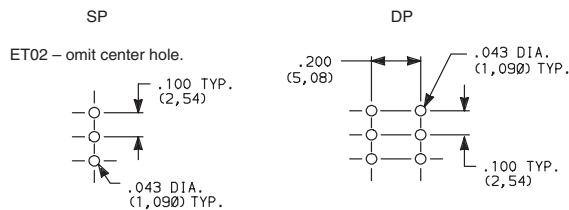
Internal actuator o-ring seal standard.

TERMINATIONS

C PC THRU-HOLE



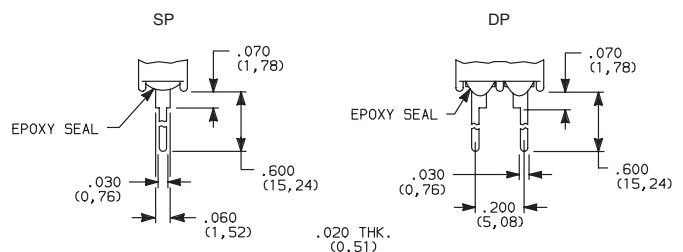
PC MOUNTING



SP and DP

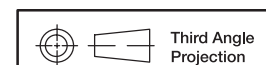
Not available with F1 conductive bushing.

W WIRE WRAP



SP and DP

Not available with F1 conductive bushing.



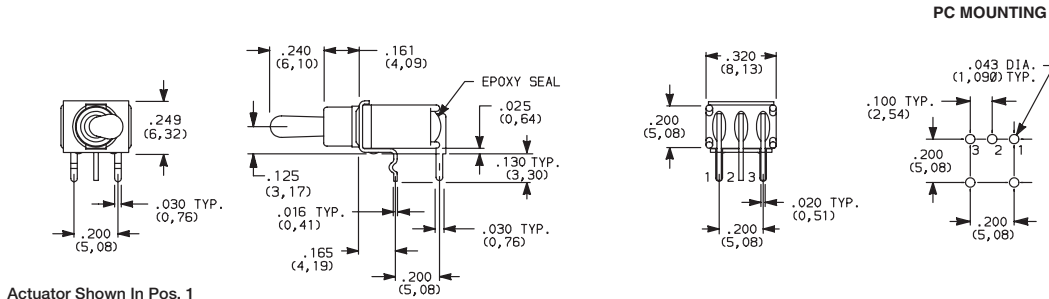
Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

ET Series Sealed Subminiature Toggle Switches

TERMINATIONS

A RIGHT ANGLE, PC THRU-HOLE

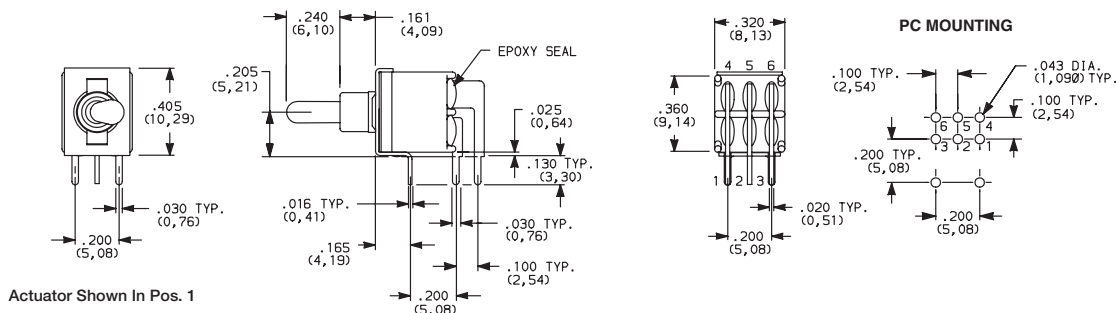
ET01MD1ABE
Horizontal Actuation
SPDT



Not available with ET02 model.

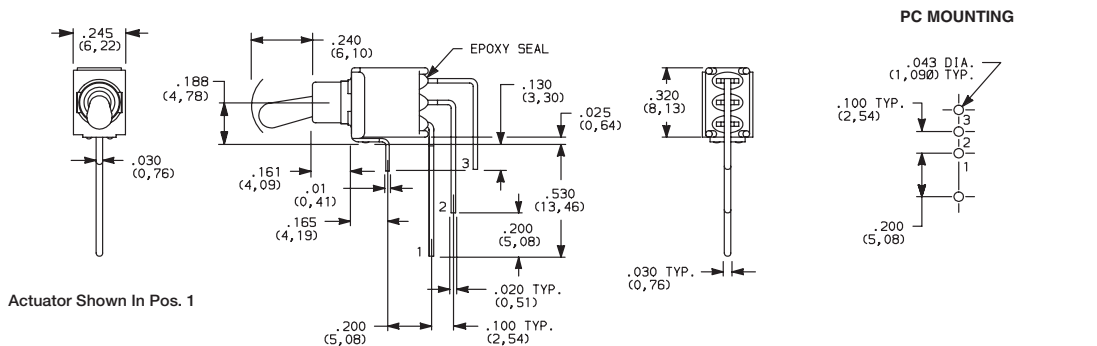
A RIGHT ANGLE, PC THRU-HOLE

ET21MD1ABE
Horizontal Actuation
DPDT



AV VERTICAL RIGHT ANGLE, PC THRU-HOLE

ET01MD1AVBE
Vertical Actuation
SPDT

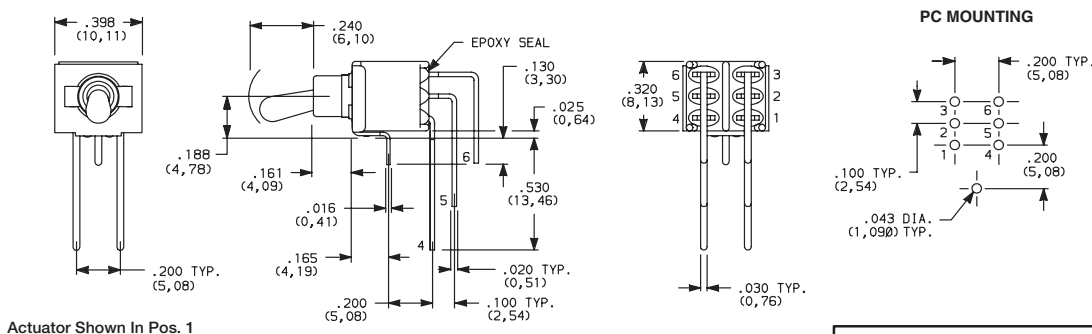


ET02 - omit terminal 2.

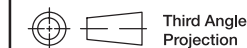
NOTE: Terminal bend radii and lead-in manufacturing option.

AV VERTICAL RIGHT ANGLE, PC THRU-HOLE

ET21MD1AVBE
Vertical Actuation
DPDT



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



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



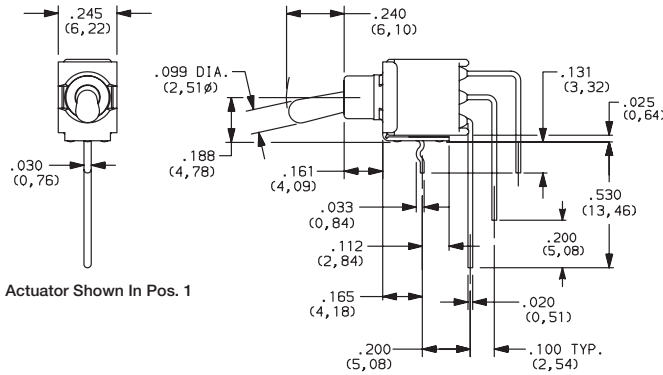
F

Toggle

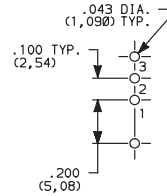
ET Series Sealed Subminiature Toggle Switches

TERMINATIONS

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

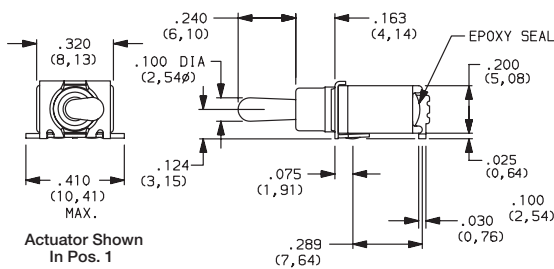


PC MOUNTING

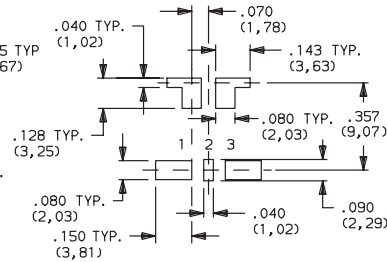


ET01SD1AV2BE
Vertical Actuation
SPDT

SA RIGHT ANGLE, SURFACE MOUNT



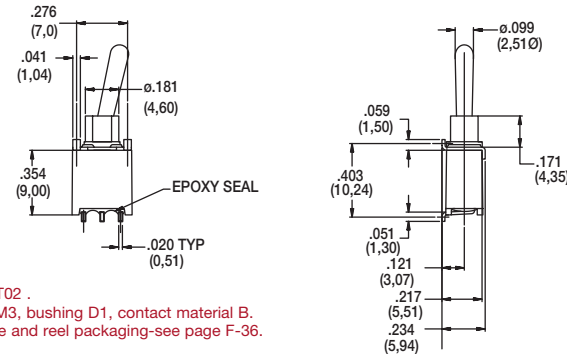
PC MOUNTING



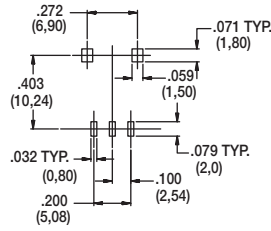
ET01M3D1SAPE
Horizontal Actuation
SPDT Only

Not available with S and S1 actuators. Standard with tape & reel packaging. See page F-36.

SA1 RIGHT ANGLE, SURFACE MOUNT



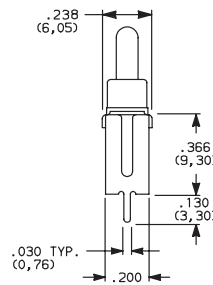
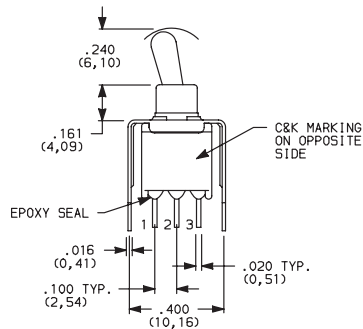
Not available in ET02.
Actuators M and M3, bushing D1, contact material B.
Standard with tape and reel packaging-see page F-36.



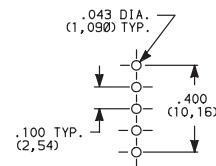
ET01M3D1SA1BE
Horizontal Actuation
SPDT Only

V3 VERTICAL MOUNT, V-BRACKET

V31 VERTICAL MOUNT, V-BRACKET, SNAP-IN



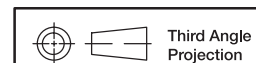
PC MOUNTING



ET02 Models: Omit center hole

ET01MD1V3BE
SPDT

Toggle



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

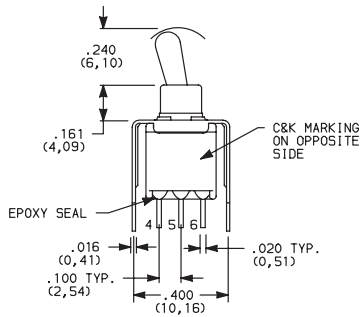


15 Jan 21

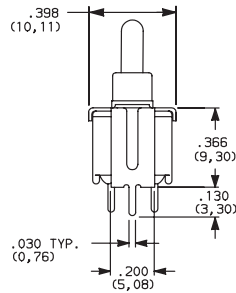
ET Series Sealed Subminiature Toggle Switches

TERMINATIONS

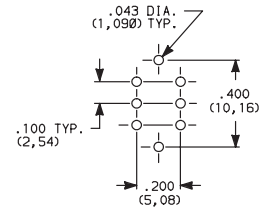
V3 VERTICAL MOUNT, V-BRACKET



Actuator Shown In Pos. 1



PC MOUNTING



ET21MD1V3BE
DPDT


CONTACT MATERIAL

| OPTION CODE | CONTACT MATERIAL | TERMINAL PLATING | RATINGS | |
|-------------|----------------------|------------------|--------------------------------|---|
| B | GOLD 1 | GOLD 1 | LOW LEVEL/DRY CIRCUIT | 0.4 VA MAX. @ 20 V AC OR DC MAX. |
| P | | MATTE-TIN 6 | | |
| Q | SILVER 4,5 | SILVER 5 | POWER | ETX1 MODELS: 3 AMPS @ 120 V AC OR 28 V DC ALL OTHER MODELS: 2 AMPS @ 120 V AC OR 28 V DC |
| S | | MATTE-TIN 6 | | |
| G | GOLD OVER SILVER 2,3 | GOLD 3 | LOW LEVEL/DRY CIRCUIT OR POWER | ETX1 MODELS: 0.4 VA MAX. @ 20 V AC OR DC MAX. OR 3 AMPS @ 120 V AC OR 28 V DC ALL OTHER MODELS: 0.4 VA MAX. @ 20 V AC OR DC MAX. OR 2 AMPS @ 120 V AC OR 28 V DC |
| R | | MATTE-TIN 6 | | |

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

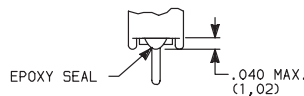
- CONTACTS & TERMINALS: Copper alloy, with gold plate over nickel plate.
- END CONTACTS: Coin silver, with gold plate over nickel plate.
- CENTER CONTACTS & ALL TERMINALS: Copper alloy, with gold plate over nickel plate.
- END CONTACTS: Coin silver, silver plated.
- CENTER CONTACT & ALL TERMINALS: Copper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

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

All models  with all options (except M3 actuator) when ordered with G, L, R or Q contact material except with F1 conductive bushing.

SEAL

E EPOXY SEAL

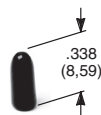


AVAILABLE HARDWARE

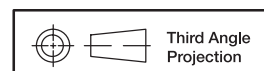
Cap

PART NO.
706201000 WHITE
706202000 BLACK
706203000 RED

Material: Vinyl
 Finish: Matte



NOTE: Other colors available, consult Customer Service Center.

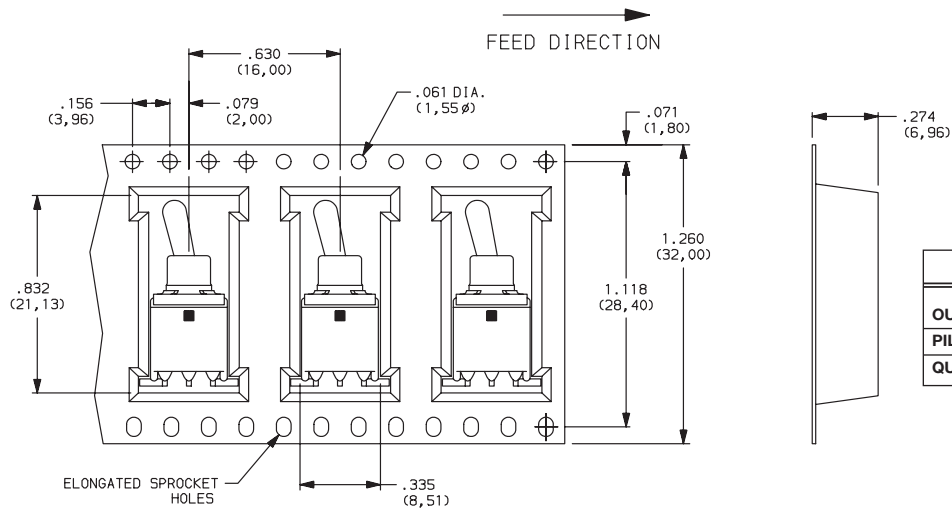


Dimensions are shown: Inches (mm)
 Specifications and dimensions subject to change

ET Series Sealed Subminiature Toggle Switches

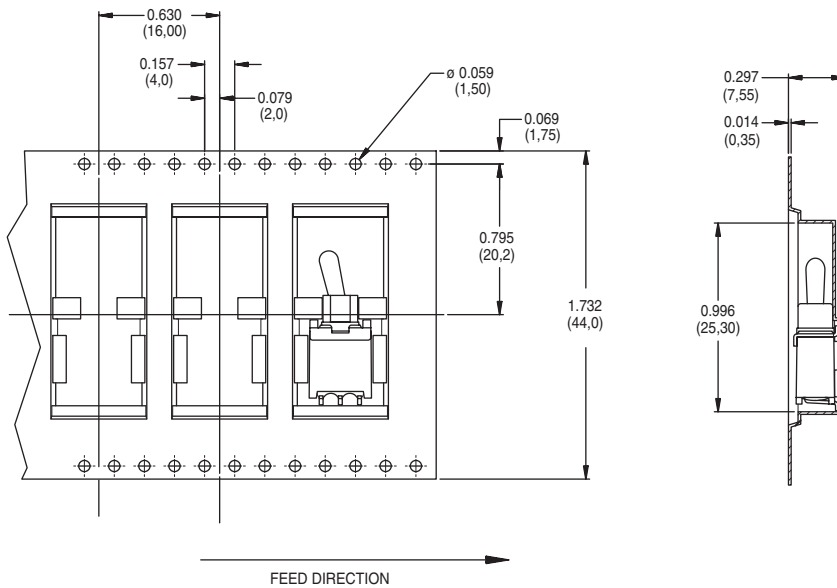
TAPE & REEL

For part number ET01M3D1SAPE



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

For part number ET01M3D1SA1BE



| REEL INFORMATION | |
|-------------------|---------------|
| OUTSIDE DIAMETER | 13.00 (330,0) |
| PILOT HOLE | .795 (20,20) |
| QUANTITY PER REEL | 500 |



T

Toggle



15 Jan 21



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

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