

# Toggles

## Product Selection Guide

|                                    |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
|------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <b>Toggles</b>                     |  |  |  |  |  |  |
| <b>Series</b>                      | <b>7000</b>                                                                       | <b>E</b>                                                                          | <b>ET</b>                                                                         | <b>T</b>                                                                           | <b>GT</b>                                                                           | <b>9000</b>                                                                         |
| <b>Switch Type</b>                 | Miniature                                                                         | Miniature                                                                         | Subminiature                                                                      | Subminiature                                                                       | Ultraminiature                                                                      | Power                                                                               |
| <b>Poles/Throws</b>                | SPDT, DPDT, 3PDT, 4PDT                                                            | SPDT, DPDT, 3PDT                                                                  | SPST, SPDT, DPDT                                                                  | SPST, SPDT, DPDT                                                                   | SPST, SPDT, DPST, DPDT                                                              | DPDT                                                                                |
| <b>Maximum Current Silver/Gold</b> | 5 Amps                                                                            | 7.5 Amps/ 5 Amps                                                                  | 3 Amps/ 2 Amps                                                                    | 3 Amps/ 2 Amps                                                                     | 0.4 VA                                                                              | 10 Amps                                                                             |
| <b>Process Sealed</b>              |                                                                                   | •                                                                                 | •                                                                                 |                                                                                    | •                                                                                   |                                                                                     |
| <b>PCB Mount Options</b>           |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| Vertical                           | •                                                                                 | •                                                                                 | •                                                                                 | •                                                                                  | •                                                                                   | •                                                                                   |
| Right Angle                        | •                                                                                 | •                                                                                 | •                                                                                 | •                                                                                  | •                                                                                   |                                                                                     |
| Vertical Right Angle               | •                                                                                 | •                                                                                 | •                                                                                 | •                                                                                  | •                                                                                   | •                                                                                   |
| <b>Surface Mount Options</b>       |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| Vertical                           |                                                                                   |                                                                                   |                                                                                   |                                                                                    | •                                                                                   |                                                                                     |
| Right Angle                        |                                                                                   |                                                                                   | •                                                                                 |                                                                                    | •                                                                                   |                                                                                     |
| <b>Panel Mount Options</b>         |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| Rear Mount                         | •                                                                                 | •                                                                                 |                                                                                   | •                                                                                  |                                                                                     | •                                                                                   |
| <b>Termination Options</b>         |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| PCB Thru-hole                      | •                                                                                 | •                                                                                 | •                                                                                 | •                                                                                  | •                                                                                   | •                                                                                   |
| Wire Wrap                          | •                                                                                 | •                                                                                 | •                                                                                 | •                                                                                  |                                                                                     |                                                                                     |
| Solder Lug                         | •                                                                                 | •                                                                                 |                                                                                   | •                                                                                  |                                                                                     | •                                                                                   |
| Quick Connect                      | •                                                                                 | •                                                                                 |                                                                                   |                                                                                    |                                                                                     | •                                                                                   |
| <b>Other Available Options</b>     |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| Support Brackets                   | •                                                                                 | •                                                                                 | •                                                                                 | •                                                                                  | •                                                                                   | •                                                                                   |
| Snap-in Retention                  | •                                                                                 | •                                                                                 | •                                                                                 |                                                                                    |                                                                                     |                                                                                     |
| ESD Protection                     | •                                                                                 | •                                                                                 | •                                                                                 | •                                                                                  |                                                                                     |                                                                                     |
| Tape & Reel                        |                                                                                   |                                                                                   | •                                                                                 |                                                                                    | •                                                                                   |                                                                                     |
| <b>Bushing Options</b>             |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| 10-48                              |                                                                                   |                                                                                   |                                                                                   | •                                                                                  |                                                                                     |                                                                                     |
| 1/4-40                             | •                                                                                 | •                                                                                 |                                                                                   | •                                                                                  |                                                                                     | •                                                                                   |
| 15/32                              | •                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     | •                                                                                   |
| M6P 0.75 (Metric)                  | •                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| <b>Page No.</b>                    | F-3                                                                               | F-17                                                                              | F-25                                                                              | F-32                                                                               | F-38                                                                                | F-43                                                                                |



F

Toggle



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

# 7000 Series Miniature Toggle Switches

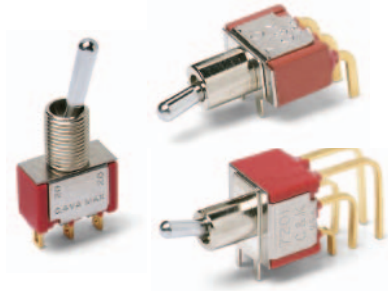
## Features/Benefits

- Multi-pole and multi-position
- Wide variety of actuator and termination options
- Epoxy terminal-seal compatible with bottom wash cleaning
- RoHS complaint models available



## Typical Applications

- Telecommunications
- Instrumentation
- Medical equipment



## Specifications

CONTACT RATING: B contact material: 0.4 VA max. @ 20 V AC or DC max. Q contact material: 5 AMPS @ 120 V AC or 28 V DC; 2 AMPS @ 250 V AC. See page G-16 for additional ratings.

ELECTRICAL LIFE: 7X01 and UX1 models: 100,000 make-and-break cycles at full load. All other models: 40,000 cycles.

CONTACT RESISTANCE: Below 10 m  $\Omega$  typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

INSULATION RESISTANCE: 10<sup>9</sup>  $\Omega$  min.

DIELECTRIC STRENGTH: 1000 Vrms min. @ sea level.

OPERATING TEMPERATURE: -30°C to 85°C.

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

For materials see page F-4.

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

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

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages F-4 thru F-16. For additional options not shown in catalog, consult our Customer Service Center.

| Switch Function              | Actuator                                     | Bushing                                | Contact Material                     | Seal                       | Actuator Color/Finish     | KXX Actuator Color/Finish        | Bushing Finish                                               |
|------------------------------|----------------------------------------------|----------------------------------------|--------------------------------------|----------------------------|---------------------------|----------------------------------|--------------------------------------------------------------|
| <b>7101</b> SP On-None-On    | <b>M</b> .200" high                          | <b>D</b> .280 high, keyway             | <b>B</b> Gold                        | <b>E</b> Epoxy             | <b>NONE</b> Bright chrome | <b>NONE</b> Natural aluminum     | <b>NONE</b> Nickel on all bushings (except D8, satin chrome) |
| <b>7103</b> SP On-Off-On     | <b>P3</b> Flatted, anti-rotation, .450" high | <b>H</b> .296 high, flat               | <b>P</b> Gold, matte-tin             | <b>I</b> Epoxy potted base | <b>2</b> Black            | <b>2</b> Black anodized aluminum | <b>2</b> Black                                               |
| <b>7105</b> SP Mom.-Off-Mom. | <b>S</b> .420" high                          | <b>Y</b> .350 high, keyway             | <b>Q</b> Silver                      |                            | <b>3</b> Red              | <b>3</b> Red anodized aluminum   |                                                              |
| <b>7107</b> SP On-Off-Mom.   | <b>T</b> .687" high, 15/32 bushing           | <b>NONE</b> No bushing choice required | <b>S</b> Silver, matte-tin           |                            | <b>S</b> Satin chrome     | <b>7</b> Blue anodized aluminum  |                                                              |
| <b>7108</b> SP On-None-Mom.  | <b>K2</b> Locking lever, .704" high          | <b>CW</b> Splashproof                  | <b>G</b> Gold over silver            |                            |                           |                                  |                                                              |
| <b>7109</b> SP None-On-Mom.  | <b>D8</b> .280" high, flat                   | <b>D8</b> .280" high, flat             | <b>R</b> Gold over silver, matte-tin |                            |                           |                                  |                                                              |
| <b>7201</b> DP On-None-On    | <b>D9</b> .280" high, keyway                 | <b>H3</b> .315" high, keyway           |                                      |                            |                           |                                  |                                                              |
| <b>7203</b> DP On-Off-On     | <b>H4</b> 8mm high, keyway                   | <b>H4</b> 8mm high, keyway             |                                      |                            |                           |                                  |                                                              |
| <b>7205</b> DP Mom.-Off-Mom. | <b>Y1</b> .378" high, keyway                 | <b>Y1</b> .378" high, keyway           |                                      |                            |                           |                                  |                                                              |
| <b>7207</b> DP On-Off-Mom.   | <b>Y3</b> 8.9mm high, keyway                 | <b>Y3</b> 8.9mm high, keyway           |                                      |                            |                           |                                  |                                                              |
| <b>7208</b> DP On-None-Mom.  | <b>Y4</b> .378" high, flat                   | <b>Y4</b> .378" high, flat             |                                      |                            |                           |                                  |                                                              |
| <b>7211</b> DP On-On-On      | <b>Y9</b> .350" high, keyway                 | <b>Y9</b> .350" high, keyway           |                                      |                            |                           |                                  |                                                              |
| <b>7213</b> DP On-On-Mom.    |                                              |                                        |                                      |                            |                           |                                  |                                                              |
| <b>7215</b> DP Mom.-On-Mom.  |                                              |                                        |                                      |                            |                           |                                  |                                                              |
| <b>7301</b> 3P On-None-On    |                                              |                                        |                                      |                            |                           |                                  |                                                              |
| <b>7303</b> 3P On-Off-On     |                                              |                                        |                                      |                            |                           |                                  |                                                              |
| <b>7305</b> 3P Mom.-Off-Mom. |                                              |                                        |                                      |                            |                           |                                  |                                                              |
| <b>7308</b> 3P On-None-Mom.  |                                              |                                        |                                      |                            |                           |                                  |                                                              |
| <b>7401</b> 4P On-None-On    |                                              |                                        |                                      |                            |                           |                                  |                                                              |
| <b>7403</b> 4P On-Off-On     |                                              |                                        |                                      |                            |                           |                                  |                                                              |
| <b>7405</b> 4P Mom.-Off-Mom. |                                              |                                        |                                      |                            |                           |                                  |                                                              |
| <b>7408</b> 4P On-None-Mom.  |                                              |                                        |                                      |                            |                           |                                  |                                                              |
| <b>7411</b> 4P On-On-On      |                                              |                                        |                                      |                            |                           |                                  |                                                              |
| <b>7413</b> 4P On-On-Mom.    |                                              |                                        |                                      |                            |                           |                                  |                                                              |
| <b>7415</b> 4P Mom.-On-Mom.  |                                              |                                        |                                      |                            |                           |                                  |                                                              |

**Note:** UL/CSA models available, see pages F-4 & F-5.

**Terminations**

- A** Right angle, PC thru-hole
- AV2** Vert. right angle, PC thru-hole
- C** PC Thru-hole
- V3** .460 high, V-bracket
- Z** Solder lug
- A2** Right angle, PC thru-hole
- A3** Right angle, PC thru-hole
- A4** Right angle, PC thru-hole
- AW1** Right angle, extended, PC thru-hole
- AW4** Right angle, extended, PC thru-hole
- V2** .555" high, V-bracket
- V4** .630" high, V-bracket
- V6** .460" high, V-bracket
- V7** .630" high, V-bracket
- V8** .953" high, V-bracket
- V9** 1.150" high, V-bracket
- V21** .555" high, snap-in V-bracket
- V31** .460" high, snap-in V-bracket
- V41** .630" high, snap-in V-bracket
- V71** .630" high, snap-in V-bracket
- V81** .953" high, snap-in V-bracket

**W** .750" long, wire wrap

**W1** .964" long, wire wrap

**W3** .425" long, wire wrap

**W4** 1.062" long, wire wrap

**W5** 1.305" long, wire wrap

**Z3** Quick connect



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



7000 Series
Miniature Toggle Switches

Materials

CASE: Glass filled nylon 6/6, flame retardant, heat stabilized, or diallyl phthalate (DAP) (UL 94V-0).
ACTUATOR: Brass, chrome plated.
BUSHING: Brass or zinc, nickel plated.
HOUSING: Stainless steel.
SWITCH SUPPORT: Brass or steel, tin plated.
END CONTACTS: B contact material: Copper alloy, with gold plate over nickel plate. Q contact material: Coin silver, silver plated.
See page F-15 for additional contact materials.

CENTER CONTACTS & ALL TERMINALS: B contact material: Copper alloy, with gold plate over nickel plate. Q contact material: Copper alloy, silver plated. See above for additional contact materials.
TERMINAL SEAL: Epoxy.
HARDWARE: Nut & Locking Ring: Brass, nickel plated.
Lockwasher: Steel, nickel plated.

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

SWITCH FUNCTION

| NO. POLES | MODEL NO. | UL/CSA** MODEL NO. | SWITCH FUNCTION |        |        | CONNECTED TERMINALS |        |        | SCHEMATIC |
|-----------|-----------|--------------------|-----------------|--------|--------|---------------------|--------|--------|-----------|
|           |           |                    | POS. 1          | POS. 2 | POS. 3 | POS. 1              | POS. 2 | POS. 3 |           |
|           |           |                    | KEYWAY          | KEYWAY | KEYWAY | KEYWAY              | KEYWAY | KEYWAY |           |
| SP        | 7101      | U11                | ON              | NONE   | ON     | 2-3                 | N/A    | 2-1    |           |
|           | 7103      | U13                | ON              | OFF    | ON     | 2-3                 | OPEN   | 2-1    |           |
|           | 7105      | U15                | MOM.            | OFF    | MOM.   |                     |        |        |           |
|           | 7107      | U17                | ON              | OFF    | MOM.   |                     |        |        |           |
|           | 7108      | U18                | ON              | NONE   | MOM.   |                     |        |        |           |
|           | 7109      | U19                | NONE            | ON     | MOM.   | N/A                 | 2-3    | 2-1    |           |

SPDT

Part number shown: 7101SYZBE

|    |        |       |      |      |      |         |         |         |  |
|----|--------|-------|------|------|------|---------|---------|---------|--|
| DP | 7201   | U21   | ON   | NONE | ON   | 2-3,5-6 | N/A     | 2-1,5-4 |  |
|    | 7203   | U23   | ON   | OFF  | ON   | 2-3,5-6 | OPEN    | 2-1,5-4 |  |
|    | 7205   | U25   | MOM. | OFF  | MOM. |         |         |         |  |
|    | 7207   | U27   | ON   | OFF  | MOM. |         |         |         |  |
|    | 7208   | U28   | ON   | NONE | MOM. |         |         |         |  |
|    | 7211 * | U211* | ON   | ON   | ON   | 2-3,5-6 | 2-3,5-4 | 2-1,5-4 |  |
|    | 7213*  | U213* | ON   | ON   | MOM. |         |         |         |  |
|    | 7215*  | U215* | MOM. | ON   | MOM. |         |         |         |  |

DPDT

Part number shown: 7201SYZQE

MOM. = Momentary  
\* Wiring for 3-way switch, see Section N.  
\*\* U11-U415 model nos. with all options when ordered with G, R, Q or S contact material.

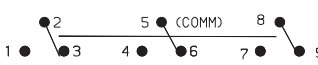


Third Angle Projection

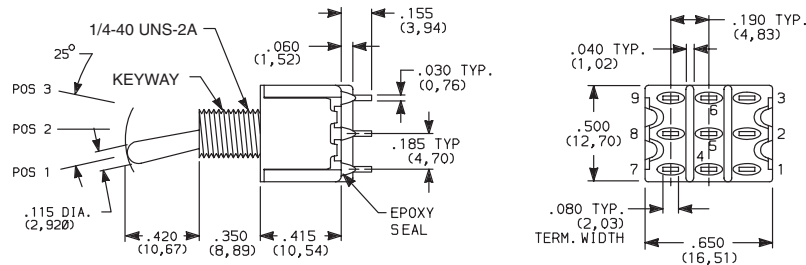
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

# 7000 Series Miniature Toggle Switches

## SWITCH FUNCTION

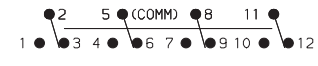
| NO. POLES | MODEL NO. | UL/CSA** MODEL NO. | SWITCH FUNCTION                                                                   |                                                                                   |                                                                                   | CONNECTED TERMINALS                                                               |                                                                                    |                                                                                     | SCHEMATIC                                                                           |
|-----------|-----------|--------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|           |           |                    | POS. 1                                                                            | POS. 2                                                                            | POS. 3                                                                            | POS. 1                                                                            | POS. 2                                                                             | POS. 3                                                                              |                                                                                     |
|           |           |                    |  |  |  |  |  |  |                                                                                     |
| 3P        | 7301      | U31                | ON                                                                                | NONE                                                                              | ON                                                                                | 2-3,5-6,8-9                                                                       | N/A                                                                                | 2-1,5-4,8-7                                                                         |  |
|           | 7303      | U33                | ON                                                                                | OFF                                                                               | ON                                                                                | 2-3,5-6,8-9                                                                       | OPEN                                                                               | 2-1,5-4,8-7                                                                         |                                                                                     |
|           | 7305      | U35                | MOM.                                                                              | OFF                                                                               | MOM.                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
|           | 7307      | U37                | ON                                                                                | OFF                                                                               | MOM.                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
|           | 7308      | U38                | ON                                                                                | NONE                                                                              | MOM.                                                                              | 2-3,5-6,8-9                                                                       | N/A                                                                                | 2-1,5-4,8-7                                                                         |                                                                                     |

### 3PDT

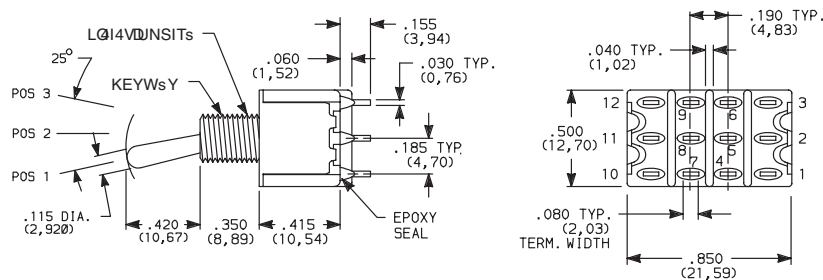


Part number shown: 7301SYZQE

Terminal Numbers  
For Reference Only

|    |       |       |      |      |      |                   |                   |                   |                                                                                       |
|----|-------|-------|------|------|------|-------------------|-------------------|-------------------|---------------------------------------------------------------------------------------|
| 4P | 7401  | U41   | ON   | NONE | ON   | 2-3,5-6,8-9,11-12 | N/A               | 2-1,5-4,8-7,11-10 |  |
|    | 7403  | U43   | ON   | OFF  | ON   |                   |                   |                   |                                                                                       |
|    | 7405  | U45   | MOM. | OFF  | MOM. | 2-3,5-6,8-9,11-12 | OPEN              | 2-1,5-4,8-7,11-10 |                                                                                       |
|    | 7408  | U48   | ON   | NONE | MOM. |                   |                   |                   |                                                                                       |
|    | 7411* | U411* | ON   | ON   | ON   |                   |                   |                   |                                                                                       |
|    | 7413* | U413* | ON   | ON   | MOM. | 2-3,5-6,8-9,11-12 | 2-3,5-4,8-9,11-10 | 2-1,5-4,8-7,11-10 |                                                                                       |
|    | 7415* | U415* | MOM. | ON   | MOM. |                   |                   |                   |                                                                                       |

### 4PDT



Part number shown: 7401SYZQE

Terminal Numbers  
For Reference Only

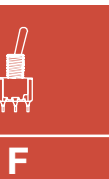
MOM. = Momentary

\* Wiring for 3-way switch, see Section N.

\*\* U11-U415 model nos.



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

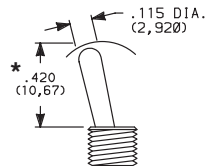


# 7000 Series Miniature Toggle Switches

ACTUATOR

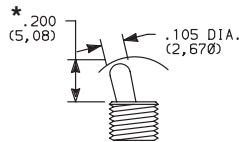
ACTUATOR FINISH

**S** .420" HIGH <sup>1</sup>  
**SP** ANTIROTATION, .420" HIGH <sup>2,3</sup>



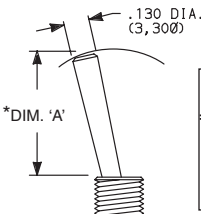
S actuator standard when ordered with C, W-W5, Z & Z3 terminations.  
 Caps are available separately, see page F-16.

**M** .200" HIGH <sup>1</sup>  
**MP** ANTIROTATION, .200" HIGH <sup>2,3</sup>



M actuator standard when ordered with all terminations except C, W-W5, Z & Z3.  
 Caps are available separately, see page F-16.

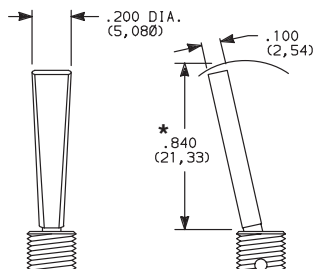
**L, L1, L2** .840", .640", .550" HIGH <sup>1</sup>  
**L1P, L2P** ANTIROTATION, .840", .640", .550" HIGH <sup>2,3</sup>



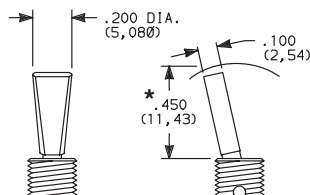
| OPTION CODE | DIM 'A'      |
|-------------|--------------|
| L           | .840 (21,34) |
| L1, L1P     | .640 (16,26) |
| L2, L2P     | .550 (13,97) |

Caps are available separately, see page F-16.

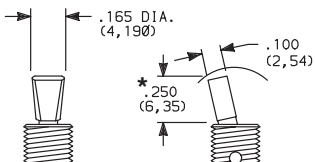
**P1** FLATTED WITH ANTIROTATION, .840" HIGH <sup>2,3</sup>



**P3** FLATTED WITH ANTIROTATION, .450" HIGH <sup>2,3</sup>

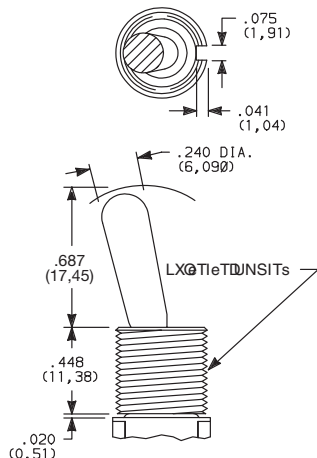


**P4** FLATTED WITH ANTIROTATION, .250" HIGH <sup>2,3</sup>

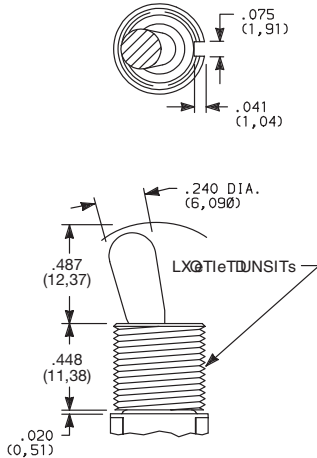


Dress nut part number 709901201 supplied standard with threaded bushing. (Part number 709903201 with metric threaded bushings.)

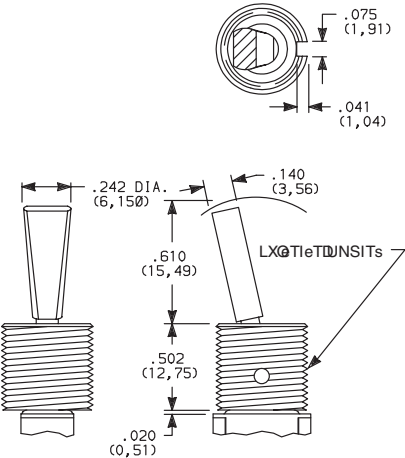
**T** .687 (17,45) HIGH <sup>1,2</sup>  
**TP** ANTIROTATION, .687 (17,45) HIGH, 15/32 BUSHING <sup>1,2,3</sup>



**T1** .487 (12,37) HIGH <sup>1,2</sup>  
**T1P** ANTIROTATION, .487 (12,37) HIGH, 15/32 BUSHING <sup>1,2,3</sup>



**T2P** FLATTED, ANTIROTATION, .610" HIGH, 15/32 BUSHING <sup>1,2,3</sup>



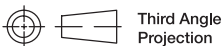
Bushing option code not required unless CW splashproof bushing ordered. TP & T1P actuators not available with CW splashproof bushing. All TXX actuators not available on single pole models with A-A4, AW1-AW4 terminations.

Bushing option code not required. T2P actuator not available with CW splashproof bushing or single pole models with A-A4, AW1-AW4 terminations.

<sup>1</sup> L, L1, L2, M, S & TXX actuators not available with Y1 bushing.  
<sup>2</sup> L1P, L2P, MP, P1, P3, P4, SP & TXX actuators not available with D8 & H4 bushing.  
<sup>3</sup> Antirotation: Provides anti-"push-in" feature on actuator.  
 \* Add .070 (1,78) for D, D8 & D9 bushings, subtract .020 (0,51) for H3 bushing.

| OPTION CODE | ACTUATOR FINISH                          |
|-------------|------------------------------------------|
| <b>NONE</b> | BRIGHT CHROME-With Nickel Plated Bushing |
| <b>2</b>    | BLACK                                    |
| <b>S</b>    | SATIN CHROME                             |

**NOTE:** Black hardware is supplied when either black actuators or bushings are specified. For additional hardware, see Section N.

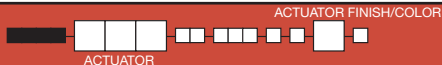


Third Angle Projection

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

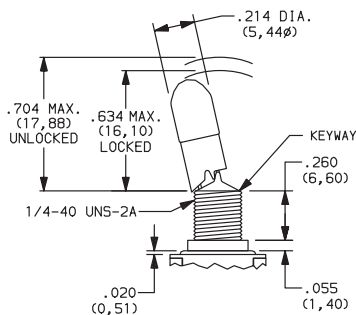
# 7000 Series Miniature Toggle Switches

## ACTUATOR

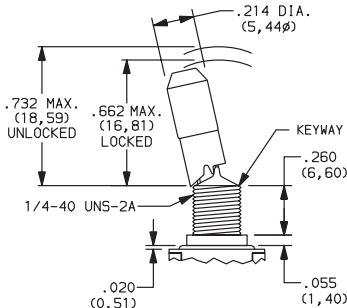


**K2** LOCKING LEVER, .704" HIGH  
(threaded)  
**K9** LOCKING LEVER, .704" HIGH  
(unthreaded)

**K12** LOCKING LEVER, .732" HIGH  
(threaded)  
**K19** LOCKING LEVER, .732" HIGH  
(unthreaded)



Replaces K, K8



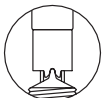
Replaces K1, K18

| OPTION CODE | ACTUATOR CAP FINISH                         |
|-------------|---------------------------------------------|
| <b>NONE</b> | NATURAL ALUMINUM—With Nickle Plated Bushing |
| <b>2</b>    | BLACK ANODIZED ALUMINUM                     |
| <b>3</b>    | RED ANODIZED ALUMINUM                       |
| <b>7</b>    | BLUE ANODIZED ALUMINUM                      |

### Locking Positions



-01 Models  
2 Position lock



-03 & -11 Models  
3 Position lock



-05, -09 & -15 Models  
1 Position lock



-07 & -13 Models  
2 Position lock



-08 Models  
1 Position lock

**NOTE:** To prevent accidental actuation, toggle must be lifted before being actuated. When released, toggle will lock in place. Overtightening mounting nut may cause actuator to bind.

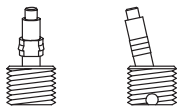
Locking levers supplied with bushing shown.

Bushing option code not required unless CW splashproof bushing ordered.

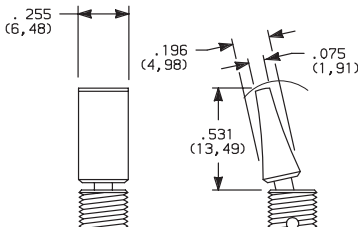
**L40** LEVER HANDLE WITHOUT CAP

**L41** PLASTIC LEVER HANDLE WITH ANTIROTATION AND CAP, P/N 4810

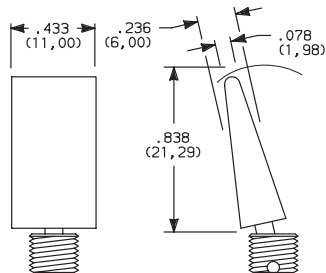
**L42** PLASTIC LEVER HANDLE WITH ANTIROTATION AND CAP, P/N 4811



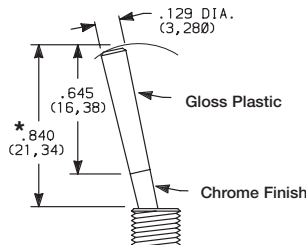
No color choice required



Finish: Matte (L41 & L42).



**L3** PLASTIC .940" HIGH



| OPTION CODE | PLASTIC ACTUATOR COLORS        |
|-------------|--------------------------------|
| <b>NONE</b> | No Actuator Color (L40 option) |
| <b>2</b>    | BLACK                          |
| <b>3</b>    | RED                            |

\* Add .070 (1,78) for D, D8 & D9 bushings, subtract .020 (0,51) for H3 bushing.

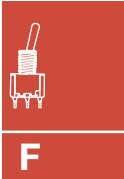
**NOTE:** Lever handle for L41 & L42 actuators supplied, but not installed. For interchangeability, order L40 actuator option and lever handles separately, see page F-16. L4X actuators not available with H4, Y1, Y4 bushings. Antirotation: Provides anti-'push-in' feature on actuator.



Third Angle  
Projection

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

**C&K**



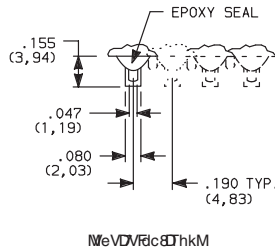
Toggle



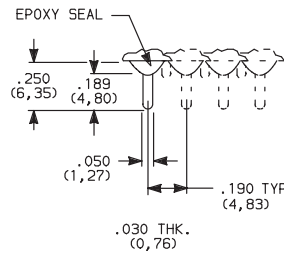
# 7000 Series Miniature Toggle Switches

## TERMINATIONS

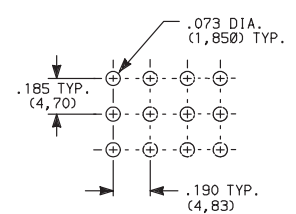
### Z SOLDER LUG



### C PC THRU-HOLE



#### PC MOUNTING

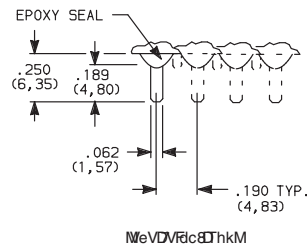


### SPDT thru 4PDT

Not available with P, R or S contact materials.

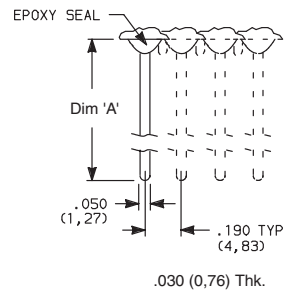
### SPDT thru 4PDT

### Z3 QUICK CONNECT



### W, W1, W3, W4, W5 WIRE WRAP

WIRE WRAP



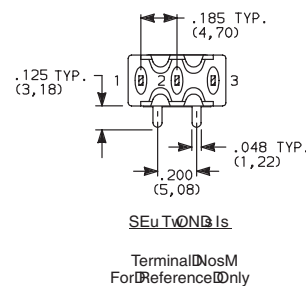
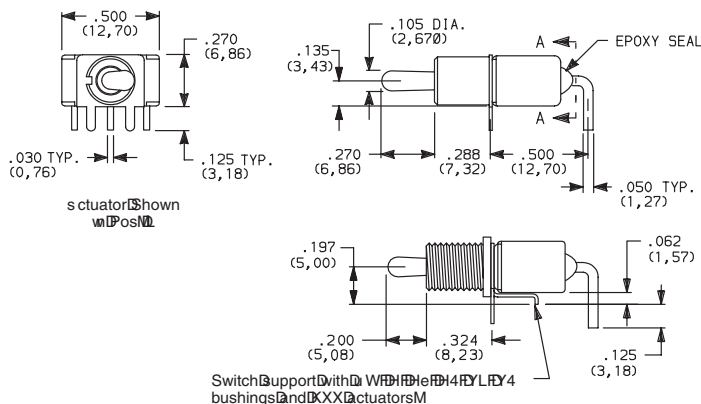
| OPTION CODE | DIM 'A'       |
|-------------|---------------|
| <b>W</b>    | .750 (19,05)  |
| <b>W1</b>   | .964 (24,48)  |
| <b>W3</b>   | .425 (10,80)  |
| <b>W4</b>   | 1.062 (26,97) |
| <b>W5</b>   | 1.305 (33,15) |

### SPDT thru 4PDT

Not available with P, R or S contact materials.  
Mating quick connector available, order part number 530100000, page F-16.

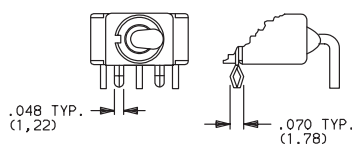
### SPDT thru 4PDT

### A RIGHT ANGLE, PC THRU-HOLE

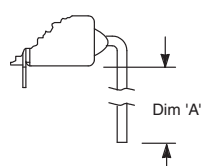


7101MD9ABE  
Horizontal Actuation  
SPDT

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

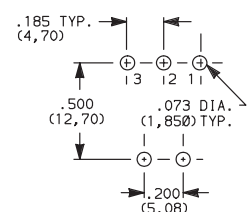


### AW1, AW4 RIGHT ANGLE, EXTENDED, PC THRU-HOLE



| OPTION CODE | DIM 'A'    |
|-------------|------------|
| <b>AW1</b>  | .72 (18,3) |
| <b>AW4</b>  | .83 (21,1) |

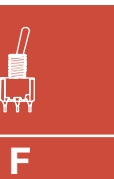
#### PC MOUNTING



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



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

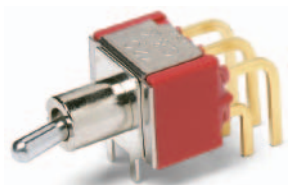


Toggle

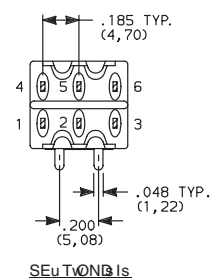
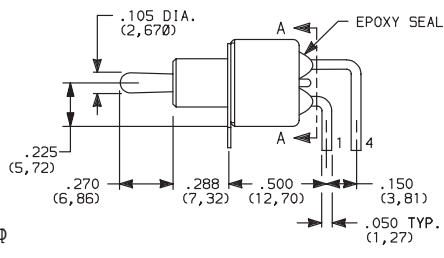
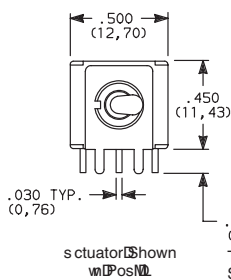
# 7000 Series Miniature Toggle Switches

**TERMINATIONS** 

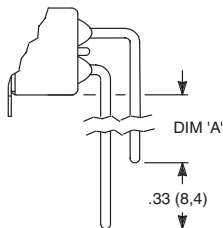
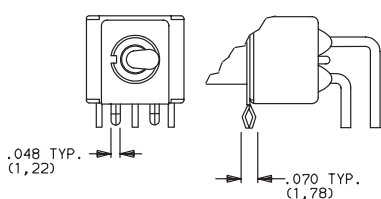
**A** RIGHT ANGLE, PC THRU-HOLE



7201MD9ABE  
Horizontal Actuation  
**DPDT**

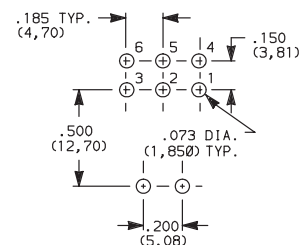


### A3 RIGHT ANGLE, SNAP-IN, PC THRU-HOLE



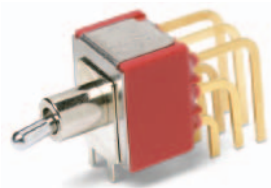
| OPTION CODE | DIM 'A'    |
|-------------|------------|
| <b>AW1</b>  | .40 (10,2) |
| <b>AW4</b>  | .50 (12,7) |

## PC MOUNTING

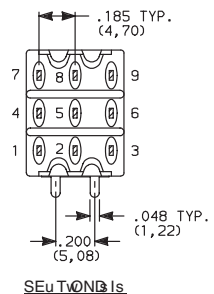
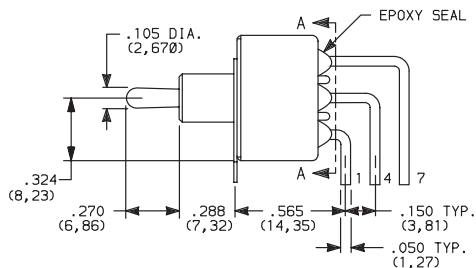
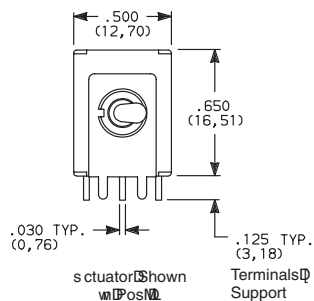


Not available with I seal option.  
Terminal bend radii and lead-in manufacturing option.

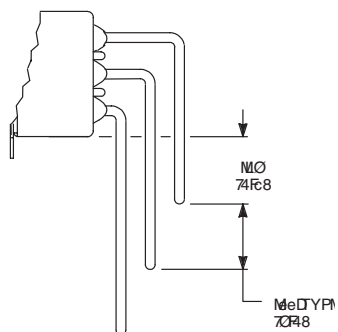
**A** RIGHT ANGLE, PC THRU-HOLE



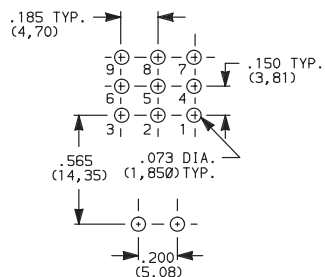
7301MD9ABE  
Horizontal Actuation  
**3PDT**



**AW4** RIGHT ANGLE, EXTENDED, PC THRU-HOLE



## PC MOUNTING



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

F-10

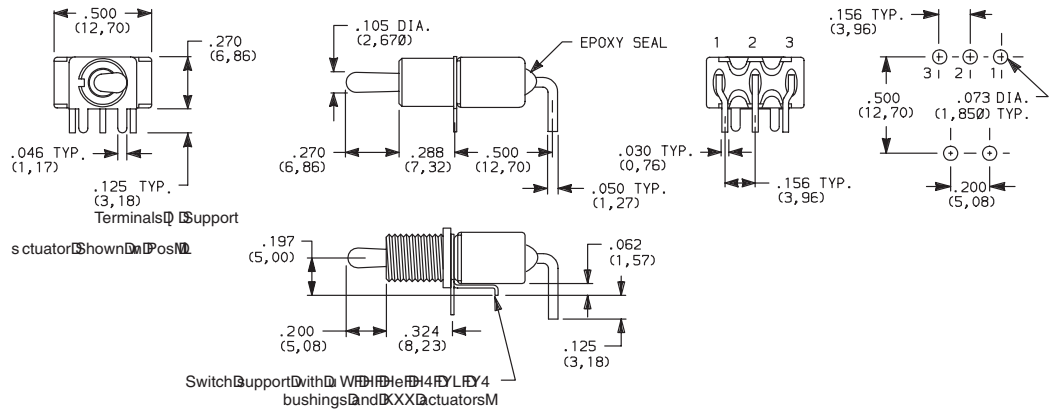
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

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

# 7000 Series Miniature Toggle Switches

## TERMINATIONS

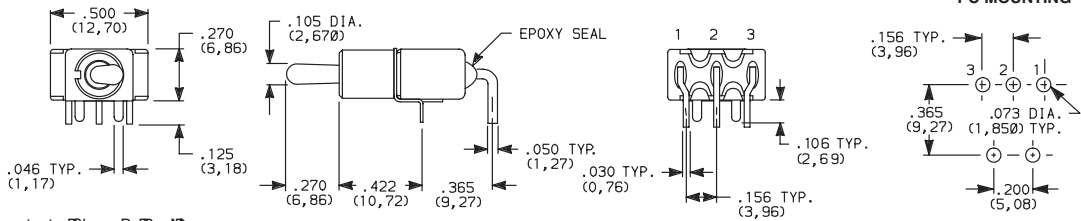
### A2 RIGHT ANGLE, PC THRU-HOLE, .156" PITCH



7101MHA2BE  
Horizontal Actuation  
SPDT

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

### A4 RIGHT ANGLE, PC THRU-HOLE .156" PITCH

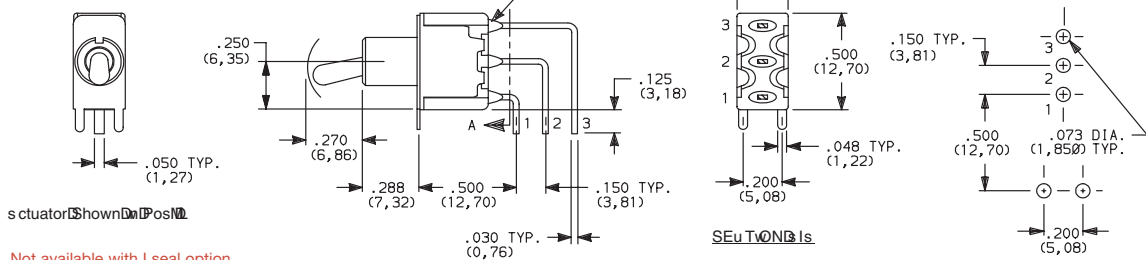


7101MD9A4BE  
Horizontal Actuation  
SPDT

Not available with KXX & TXX actuators, CW, H, H3, H4, Y1 & Y4 bushings, and I seal. Terminal bend radii and lead-in manufacturing option.

**NOTE:** The A4 option is available with any contact material and can be UL recognized and CSA certified. The PC pattern must clear switch support legs.

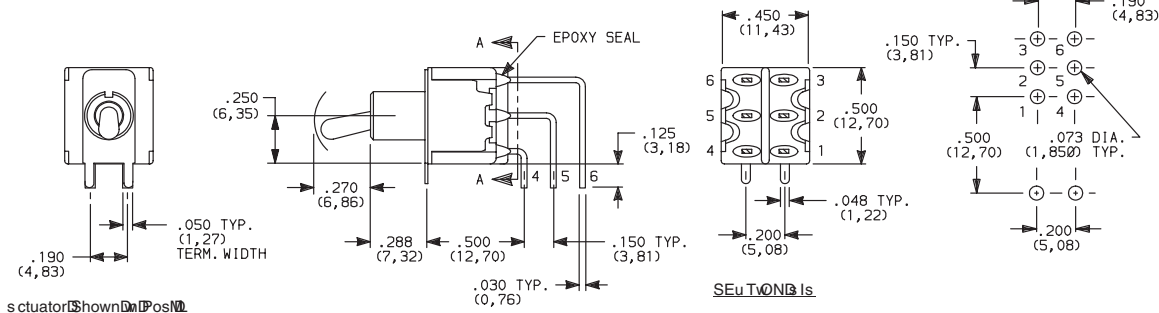
### AV2 VERTICAL RIGHT ANGLE, PC THRU-HOLE, .150" PITCH



7101MD9AV2BE  
Horizontal Actuation  
SPDT

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

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



7201MD9AV2BE  
Vertical Actuation  
DPDT

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



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



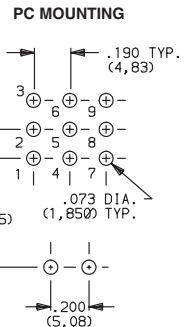
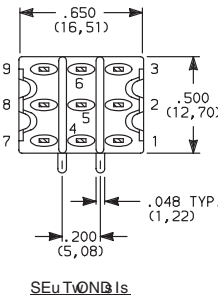
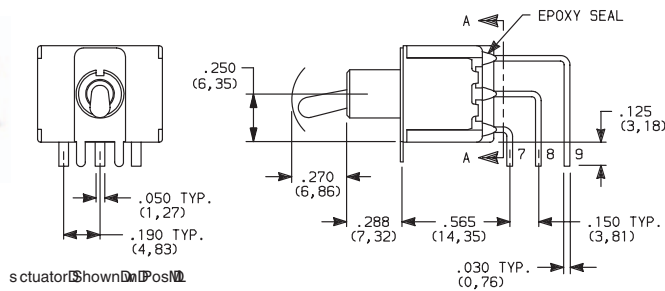
# 7000 Series Miniature Toggle Switches

## TERMINATIONS

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



7301MD9AV2BE  
Vertical Actuation  
**3PDT**

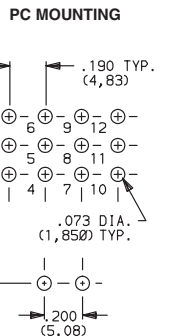
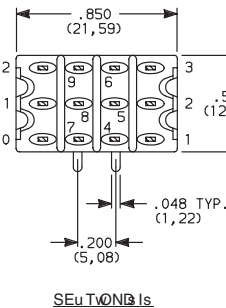
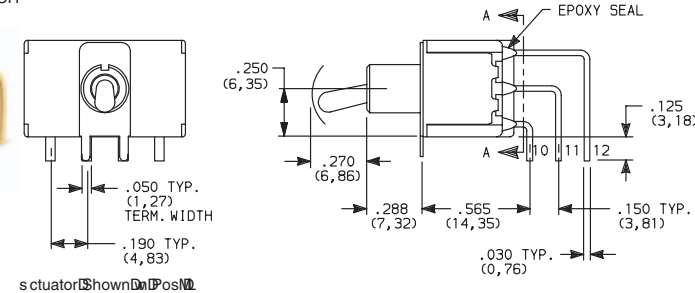


Not available with I seal option.  
Terminal bend radii and lead-in manufacturing option.

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



7401MD9AV2BE  
Vertical Actuation  
**4PDT**



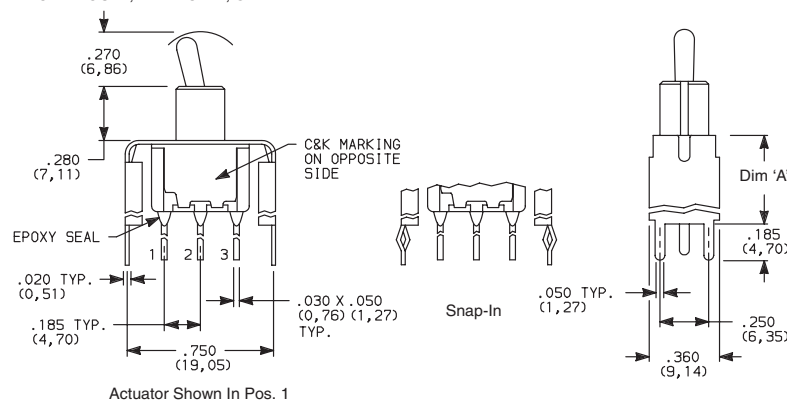
Not available with I seal option.  
Terminal bend radii and lead-in manufacturing option.

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

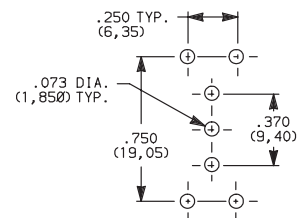
**V21, V71, V81** VERTICAL MOUNT, V-BRACKET, SNAP-IN



7101MD9\_BE  
**SPDT**



PC MOUNTING



| OPTION CODE | DIM 'A'      |
|-------------|--------------|
| V2, V21     | .555 (14,10) |
| V6          | .460 (11,68) |
| V7, V71     | .630 (16,00) |
| V8, V81     | .953 (24,21) |

Not available with I seal option.



F

Toggle



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

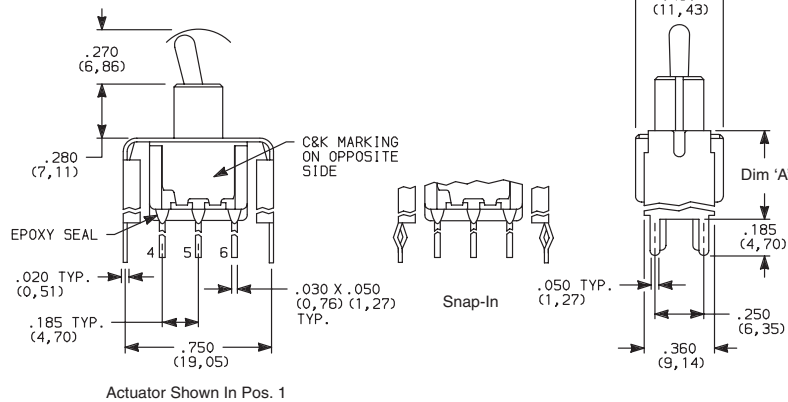
# 7000 Series Miniature Toggle Switches

## TERMINATIONS



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

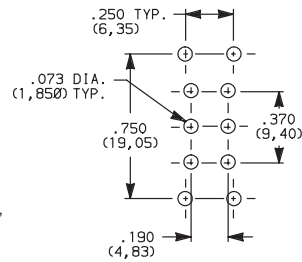
**V21, V61, V71, V81** VERTICAL MOUNT, V-BRACKET, SNAP-IN



Actuator Shown In Pos. 1

Not available with I seal option.

PC MOUNTING



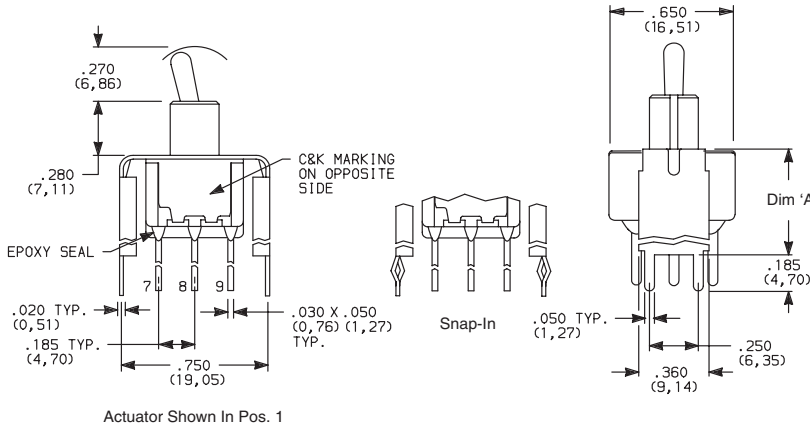
| OPTION CODE    | DIM 'A'      |
|----------------|--------------|
| <b>V2, V21</b> | .555 (14,10) |
| <b>V6, V61</b> | .460 (11,68) |
| <b>V7, V71</b> | .630 (16,00) |
| <b>V8, V81</b> | .953 (24,21) |



7201MD9\_BE  
DPDT

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

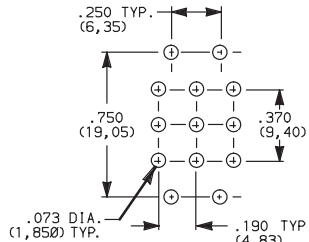
**V21, V71, V81** VERTICAL MOUNT, V-BRACKET, SNAP-IN



Actuator Shown In Pos. 1

Not available with I seal option.

PC MOUNTING



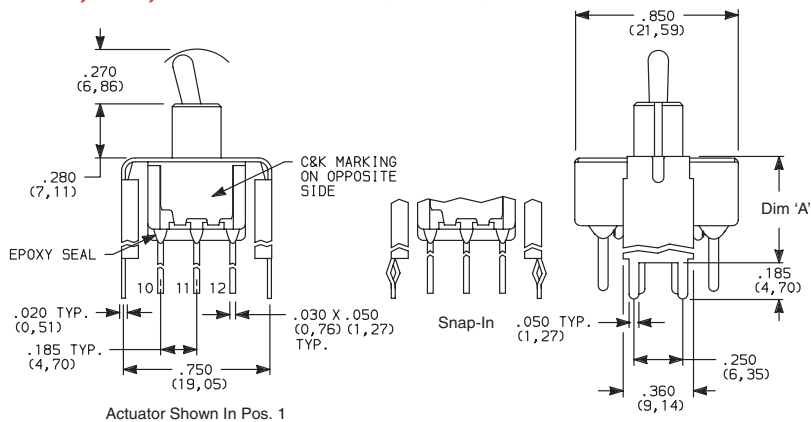
| OPTION CODE    | DIM 'A'      |
|----------------|--------------|
| <b>V2, V21</b> | .555 (14,10) |
| <b>V7, V71</b> | .630 (16,00) |
| <b>V8, V81</b> | .953 (24,21) |



7301MD9\_BE  
3PDT

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

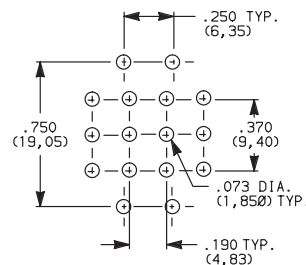
**V21, V71, V81** VERTICAL MOUNT, V-BRACKET, SNAP-IN



Actuator Shown In Pos. 1

Not available with I seal option.

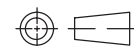
PC MOUNTING



| OPTION CODE    | DIM 'A'      |
|----------------|--------------|
| <b>V2, V21</b> | .555 (14,10) |
| <b>V7, V71</b> | .630 (16,00) |
| <b>V8, V81</b> | .953 (24,21) |



7401MD9\_BE  
4PDT



Third Angle  
Projection

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

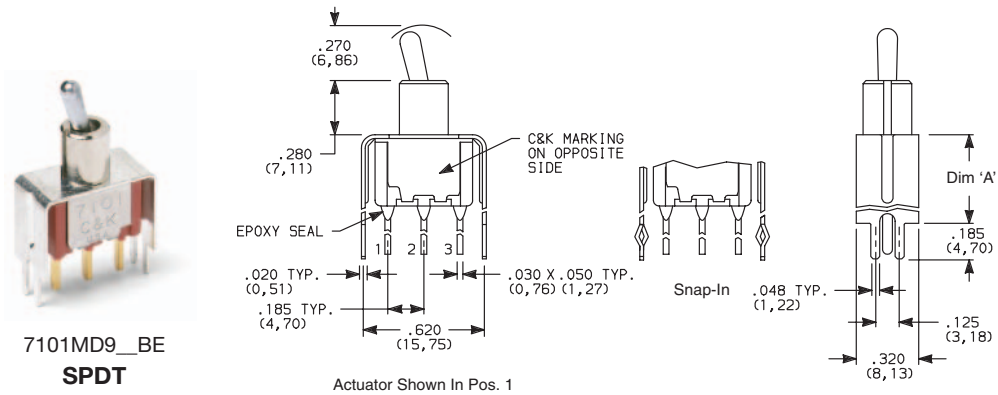


# 7000 Series Miniature Toggle Switches

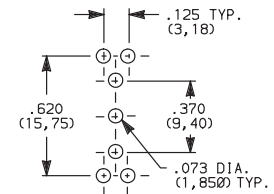
## TERMINATIONS

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

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



### PC MOUNTING

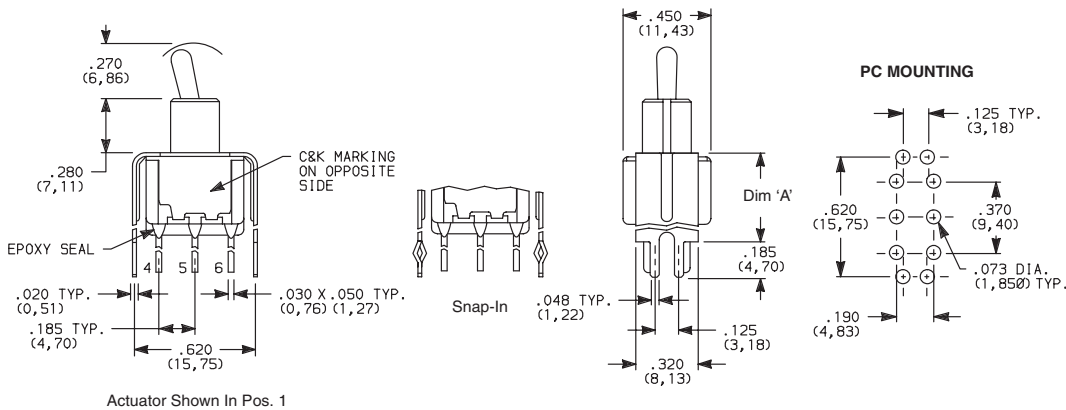


| OPTION CODE    | DIM 'A'       |
|----------------|---------------|
| <b>V3, V31</b> | .460 (11,68)  |
| <b>V4, V41</b> | .630 (16,00)  |
| <b>V9</b>      | 1.150 (29,21) |

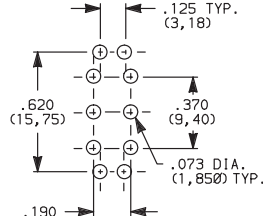
Not available with I seal option.

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

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



### PC MOUNTING

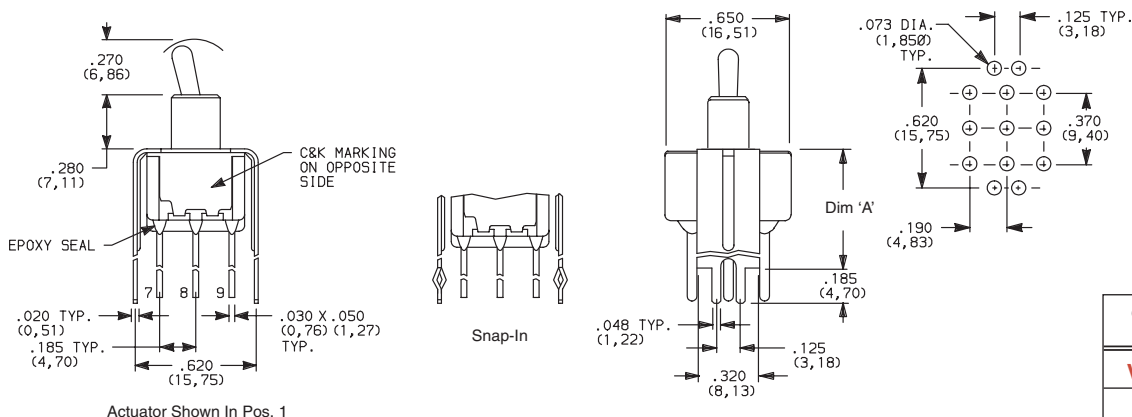


| OPTION CODE    | DIM 'A'       |
|----------------|---------------|
| <b>V3, V31</b> | .460 (11,68)  |
| <b>V4, V41</b> | .630 (16,00)  |
| <b>V9</b>      | 1.150 (29,21) |

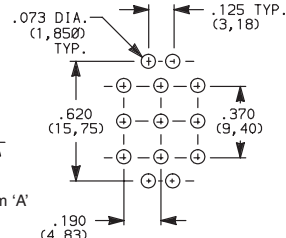
Not available with I seal option.

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

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



### PC MOUNTING



| OPTION CODE    | DIM 'A'       |
|----------------|---------------|
| <b>V4, V41</b> | .630 (16,00)  |
| <b>V9</b>      | 1.150 (29,21) |

Not available with I seal option.



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

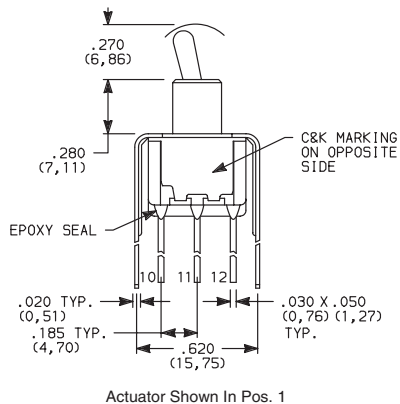
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# 7000 Series Miniature Toggle Switches

## TERMINATIONS

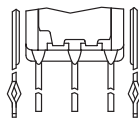
**V4, V9** VERTICAL MOUNT, V-BRACKET

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

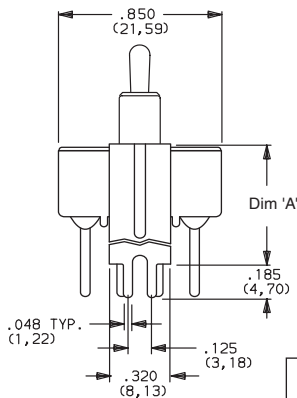


Actuator Shown In Pos. 1

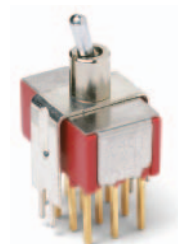
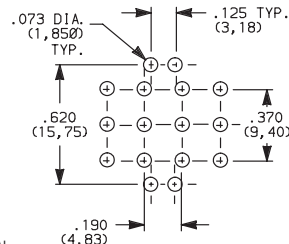
Not available with I seal option.



Snap-In



### PC MOUNTING



7401MD9\_BE  
4PDT

| OPTION CODE    | DIM 'A'       |
|----------------|---------------|
| <b>V4, V41</b> | .630 (16,00)  |
| <b>V9</b>      | 1.150 (29,21) |

## CONTACT MATERIAL

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

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

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

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

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

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

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

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

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

U11-U415 model numbers   with all options when ordered with G, S, R, or Q contact material.

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

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

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

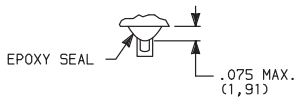


Toggle

7000 Series  
Miniature Toggle Switches

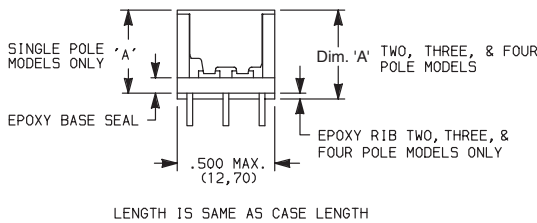
SEAL

E EPOXY SEAL



Compatible with "bottom-wash" PC board cleaning methods.

I EPOXY POTTED BASE



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

Available with C, W-W5, Z & Z3 terminations only.

AVAILABLE HARDWARE

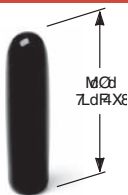
Cap



PART NO.  
896801000 WHITE  
896802000 BLACK  
896803000 RED

Material: Polyethylene  
Finish: Matte

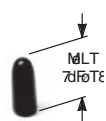
Cap



PART NO.  
763701000 WHITE  
763702000 BLACK  
763703000 RED

Material: Vinyl  
Finish: Matte

Cap



PART NO.  
706201000 WHITE  
706202000 BLACK  
706203000 RED

Material: Vinyl  
Finish: Matte

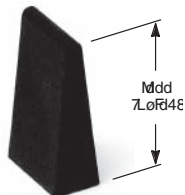
L41 Lever handle



PART NO.  
481001000 WHITE  
481002263 BLACK  
481003000 RED

Material: Nylon  
Finish: Matte

L42 Lever handle



PART NO.  
481101000 WHITE  
481102263 BLACK  
481103000 RED

Material: Nylon  
Finish: Matte

Fits Z3 Termination  
female connector



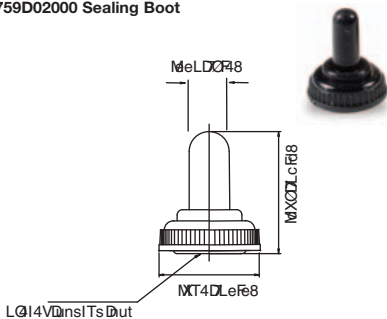
PART NO.  
530100000

Available in loose pieces.

NOTE: Additional nuts, locking rings and lockwashers available separately, see Section N.

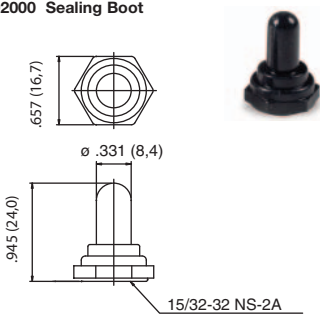
Other colors available, consult Customer Service Center.

759D02000 Sealing Boot



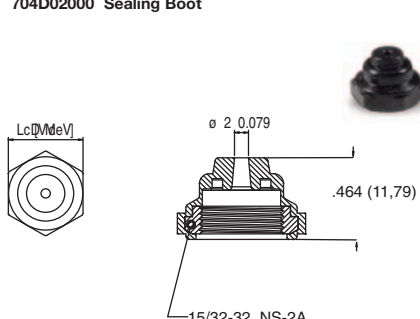
NOTE: For use with S actuator style when combined with D, H, H3, Y, and Y4 bushings

703D02000 Sealing Boot



NOTE: For use with T and TP style actuators. Can not be used for Switch Functions: 7103, 7203, 7303, 7403, 7107, 7207, 7307, 7407.

704D02000 Sealing Boot



NOTE: For use with T, TP and T2P style actuators. Can not be used for Switch Functions: 7103, 7203, 7303, 7403, 7107, 7207, 7307, and 7407.

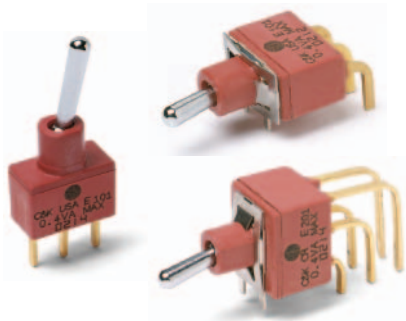


Third Angle  
Projection

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

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# E Series Sealed Miniature Toggle Switches



## Features/Benefits

- ***Sealed against solder and cleaning process contaminants***
- ***UL 94V-0 Nylon case and bushing***
- ***Multi-positions***
- ***ESD protection available***
- ***RoHS compliant models available***

## Typical Applications

- **Telecommunications**
- **Instrumentation**
- **Medical equipment**



## Specifications

CONTACT RATING: B contact material: 0.4 VA max. @  
20 V AC or DC max. Q contact material: E1XX & E2XX  
MODELS: 7.5 AMPS @ 125 V AC or 28 V DC;  
3 AMPS @ 250 V AC. E3XX MODELS: 5 AMPS @  
125 V AC or 28 V DC; 2 AMPS @ 250 V AC. See page  
E-25 for additional ratings.

ELECTRICAL LIFE: E1XX and E2XX models: 40,000 make-and-break cycles at full load. E3XX models: 30,000 cycles.

CONTACT RESISTANCE: Below 10 mΩ typ. initial @  
2-4 V DC, 100 mA, for both silver and gold plated contacts.

INSULATION RESISTANCE:  $10^9 \Omega \text{ min.}$

ELECTROSTATIC DISCHARGE (ESD) OPTION: F1 conductive bushing only. Dissipates up to 20,000 V DC from actuator to ground.

DIELECTRIC STRENGTH: 1000 Vrms min. @ sea level.

OPERATING TEMPERATURE: -30°C to 85°C.

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

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

## Materials

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

ACTUATOR: Brass, chrome plated with internal o-ring seal standard.

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

SWITCH SUPPORT RETAINER: Stainless steel

**CONTACTS & TERMINALS:** B contact material: Copper alloy, with gold plate over nickel plate. Q contact material: Copper alloy, silver plated. See page F-29 for additional contact materials.

TERMINAL SEAL: Epoxy.

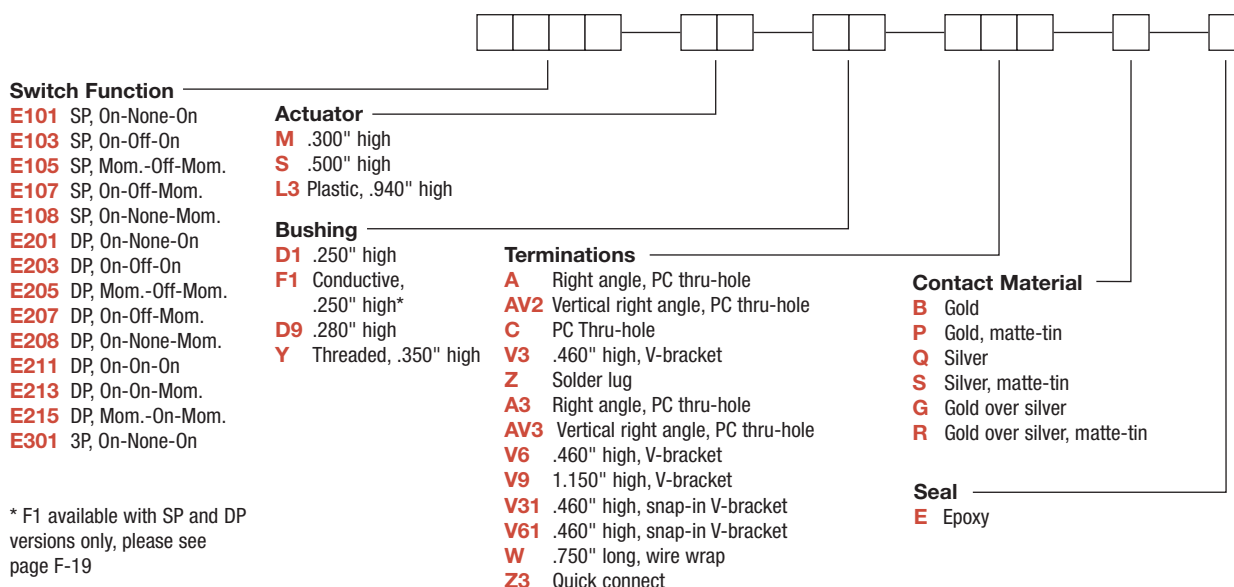
HARDWARE: Nut & Locking ring: Brass, nickel plated.  
Lockwasher: Steel, nickel plated.

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

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

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages F-18 thru F-24. 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.



\* F1 available with SP and DP versions only, please see page F-19



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

E Series  
Sealed Miniature Toggle Switches

SWITCH FUNCTION

| NO. POLES | MODEL NO. | SWITCH FUNCTION              |        |        | CONNECTED TERMINALS          |        |        | SCHEMATIC |
|-----------|-----------|------------------------------|--------|--------|------------------------------|--------|--------|-----------|
|           |           | POS. 1                       | POS. 2 | POS. 3 | POS. 1                       | POS. 2 | POS. 3 |           |
|           |           |                              |        |        |                              |        |        |           |
|           |           | C&K marking on opposite side |        |        | C&K marking on opposite side |        |        |           |
| SP        | E101      | ON                           | NONE   | ON     | 2-3                          | N/A    | 2-1    |           |
|           | E103      | ON                           | OFF    | ON     | 2-3                          | OPEN   | 2-1    |           |
|           | E105      | MOM.                         | OFF    | MOM.   |                              |        |        |           |
|           | E107      | ON                           | OFF    | MOM.   |                              |        |        |           |
|           | E108      | ON                           | NONE   | MOM.   | 2-3                          | N/A    | 2-1    |           |

### SPDT

Part number shown: E101SD1CBE

|    |         |      |      |      |         |         |         |  |
|----|---------|------|------|------|---------|---------|---------|--|
| DP | E201    | ON   | NONE | ON   | 2-3,5-6 | N/A     | 2-1,5-4 |  |
|    | E203    | ON   | OFF  | ON   | 2-3,5-6 | OPEN    | 2-1,5-4 |  |
|    | E205    | MOM. | OFF  | MOM. |         |         |         |  |
|    | E207    | ON   | OFF  | MOM. |         |         |         |  |
|    | E208    | ON   | NONE | MOM. | 2-3,5-6 | N/A     | 2-1,5-4 |  |
|    | E211 ** | ON   | ON   | ON   | 2-3,5-6 | 2-3,5-4 | 2-1,5-4 |  |
|    | E213**  | ON   | ON   | MOM. |         |         |         |  |
|    | E215**  | MOM. | ON   | MOM. |         |         |         |  |

### DPDT

Part number shown: E201SD1CBE

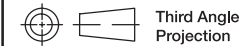
MOM. = Momentary

\*\* Wiring for 3-way switch, see Section N.

All models with all options when ordered with G,R, Q or S contact material except with F1 conductive bushing.



F  
Toggle



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

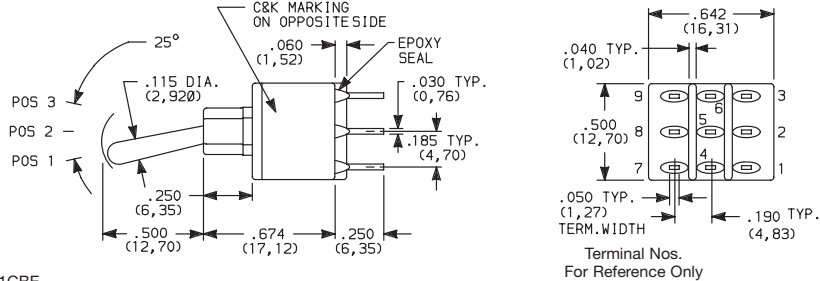
# E Series Sealed Miniature Toggle Switches

## SWITCH FUNCTION



| NO. POLES | MODEL NO. | SWITCH FUNCTION              |        |        | CONNECTED TERMINALS          |        |             | SCHEMATIC   |
|-----------|-----------|------------------------------|--------|--------|------------------------------|--------|-------------|-------------|
|           |           | POS. 1                       | POS. 2 | POS. 3 | POS. 1                       | POS. 2 | POS. 3      |             |
|           |           |                              |        |        |                              |        |             |             |
|           |           | C&K marking on opposite side |        |        | C&K marking on opposite side |        |             |             |
| 3P        | E301      | ON                           | NONE   | ON     | 2-3,5-6,8-9                  | N/A    | 2-1,5-4,8-7 | <p>3PDT</p> |

### 3PDT



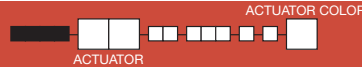
Part number shown: E301SD1CBE

MOM. = Momentary

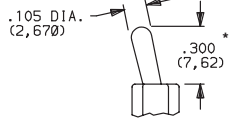
\*\* Wiring for 3-way switch, see Section N.

All models with all options when ordered with G, R, Q or S contact material except with F1 conductive bushing.

## ACTUATOR

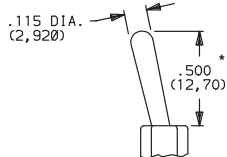


**M** .300" HIGH



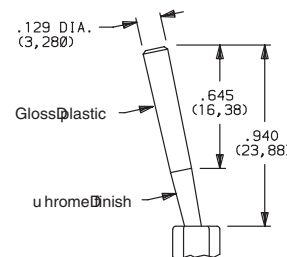
Standard when ordered with A, A3, AV2, AV3, V2-V61 terminations. Finish: Chrome.

**S** .500" HIGH



Standard when ordered with C, Z, Z3, W & W4 terminations. Finish: Chrome

**L3** PLASTIC, .940" HIGH

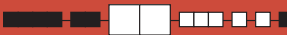


| OPTION CODE | L3 ACTUATOR COLOR |
|-------------|-------------------|
| 2           | BLACK             |

Other colors available, consult Customer Service Center. No color choice required for S & M actuators.

\* Actuators shown with standard D1 bushing. Subtract .030 (0,76) for D9 bushing. Subtract .100 (2,54) for Y bushing.

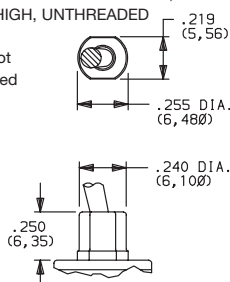
## BUSHING



**D1** .250" HIGH, UNTHREADED

**F1** ESD CONDUCTIVE BUSHING, .250" HIGH, UNTHREADED

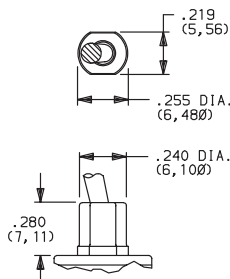
F1 bushing is not UL/CSA approved



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

Available with M & S actuator options and A, A3, AV2, AV3, V3-V61 termination options.

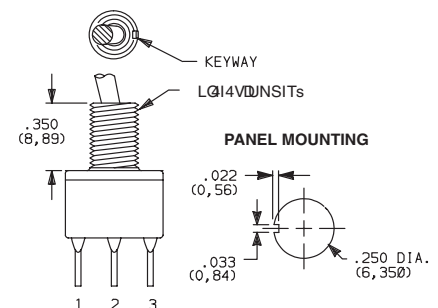
**D9** .280" HIGH, UNTHREADED



E3XX models not available with D9 bushing.

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

**Y** THREADED, INSULATED, .350" HIGH WITH KEYWAY



Available only with C, Z, Z3, & W terminations.

Available for 1&2 pole only.

Hardware: One dress nut part number 299D01201, one hex nut part number 540400201 and lockwasher part number 700303202 supplied standard.

**Will withstand 4 in.-lbs. of torque with no distortion.**



Dimensions are shown: Inches (mm)

Specifications and dimensions subject to change



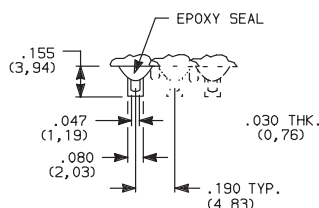
F

Toggle

# E Series Sealed Miniature Toggle Switches

## TERMINATIONS

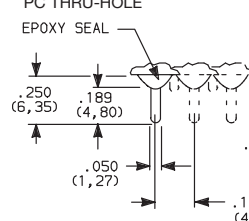
### Z SOLDER LUG



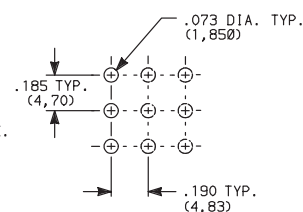
Not available with F1 conductive bushing or P, R or S contact material.

### SPDT thru 3PDT

### C PC THRU-HOLE



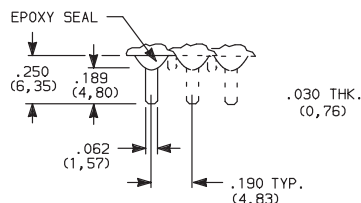
### PC MOUNTING



### SPDT thru 3PDT

Not available with F1 conductive bushing.

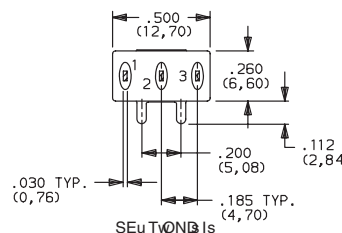
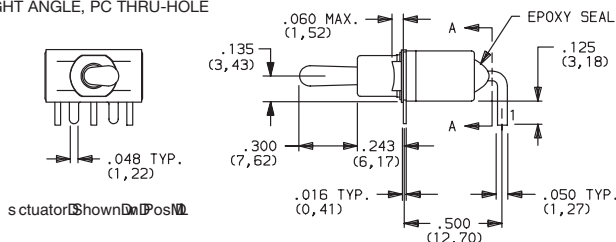
### Z3 QUICK CONNECT



Not available with F1 conductive bushing or P, R or S contact material. Mating quick connector available; order part number 530100000, page F-26.

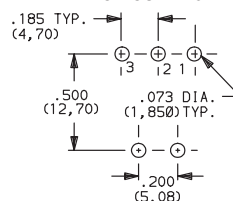
### SPDT thru 3PDT

### A RIGHT ANGLE, PC THRU-HOLE



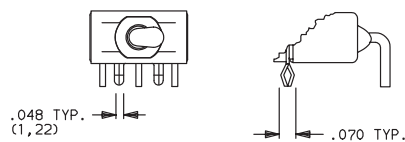
Terminal Nos. For Reference Only

### PC MOUNTING



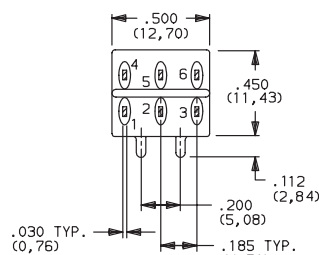
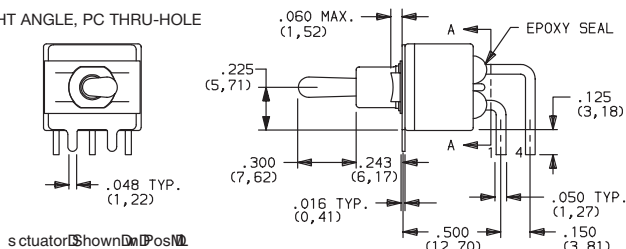
E101MD1ABE  
Horizontal Actuation  
SPDT

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



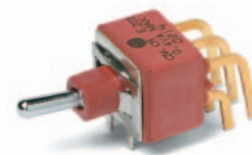
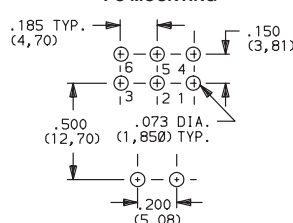
Not available with Y bushing.  
Terminal bend radii and lead-in manufacturing option.

### A RIGHT ANGLE, PC THRU-HOLE



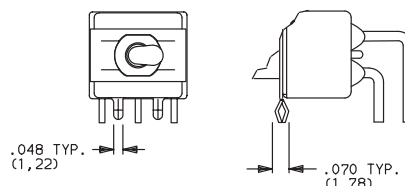
Terminal Nos. For Reference Only

### PC MOUNTING



E201MD1ABE  
Horizontal Actuation  
DPDT

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



Not available with Y bushing.  
Terminal bend radii and lead-in manufacturing option.



Third Angle  
Projection

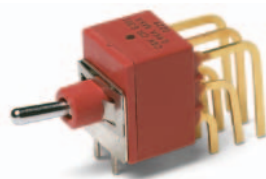
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

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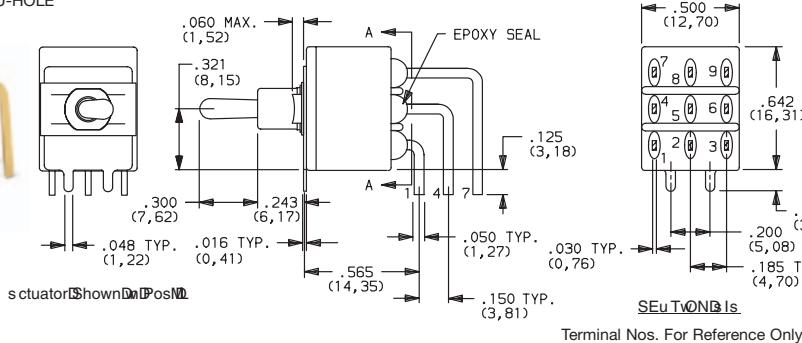
# E Series Sealed Miniature Toggle Switches

## TERMINATIONS

### A RIGHT ANGLE, PC THRU-HOLE



**E301MD1ABE**  
Horizontal Actuation  
**3PDT**

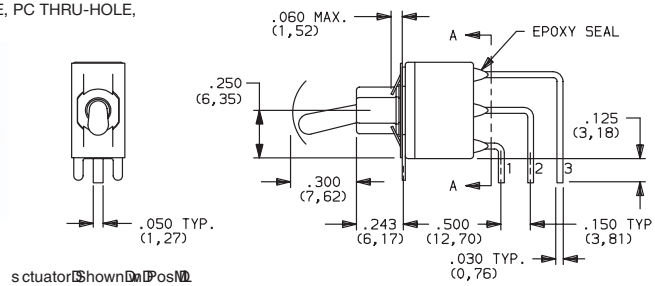


Not available with D9 & Y bushings.  
Terminal bend radii and lead-in manufacturing option.

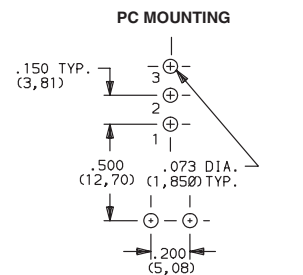
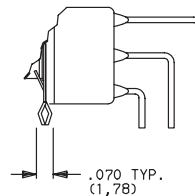
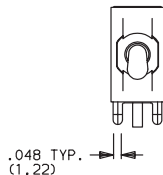
### AV2 VERTICAL RIGHT ANGLE, PC THRU-HOLE, .150" PITCH



**E101MD1AV2BE**  
Vertical Actuation  
**SPDT**



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

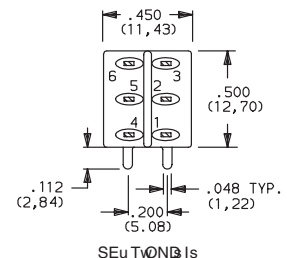
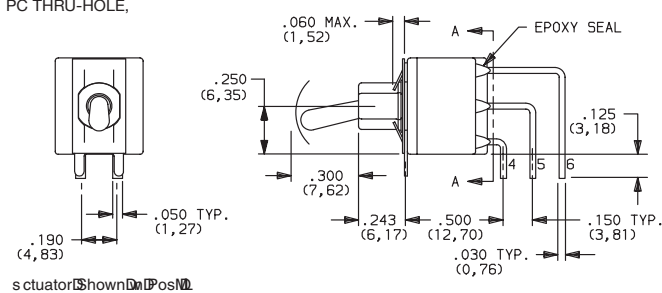


Not available with Y bushing.  
Terminal bend radii and lead-in manufacturing option.

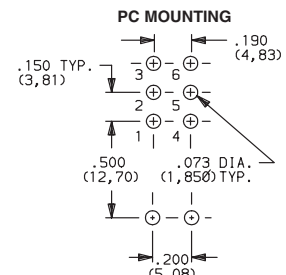
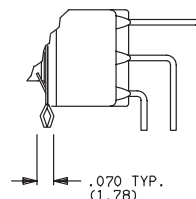
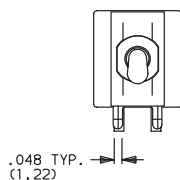
### AV2 VERTICAL RIGHT ANGLE, PC THRU-HOLE, .150" PITCH



**E201MD1AV2BE**  
Vertical Actuation  
**DPDT**



### A3 VERTICAL RIGHT ANGLE, SNAP-IN, PC THRU-HOLE, .150" PITCH

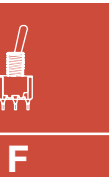


Not available with Y bushing.  
Terminal bend radii and lead-in manufacturing option.



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

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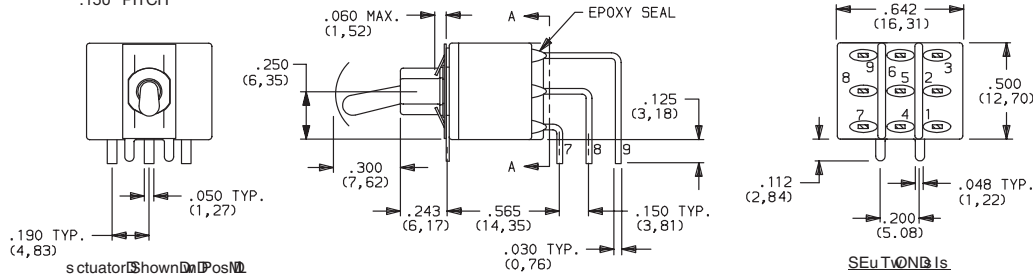


**F**  
Toggle

# E Series Sealed Miniature Toggle Switches

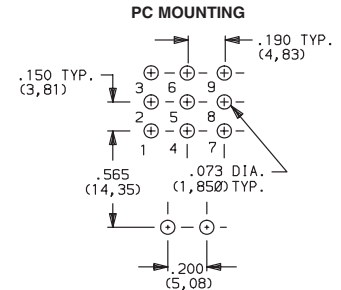
## TERMINATIONS

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



E301MD1AV2BE  
Vertical Actuation  
3PDT

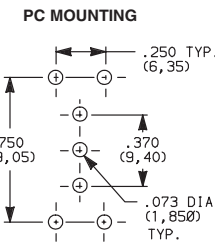
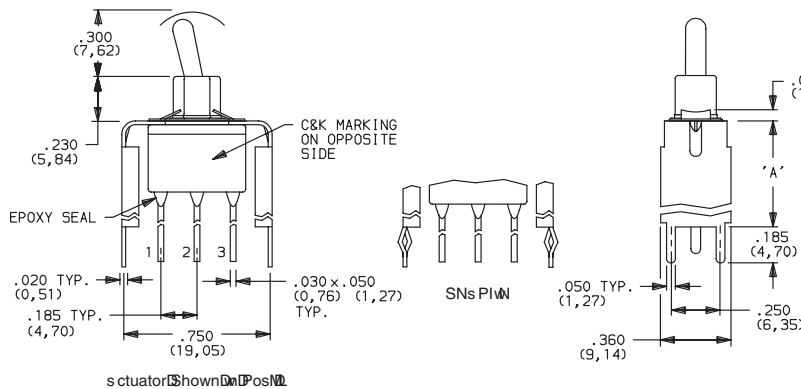
### AV3 VERTICAL RIGHT ANGLE, SNAP-IN, PC THRU-HOLE .150" PITCH



Not available with D9 & Y bushings.  
Terminal bend radii and lead-in manufacturing option.

### V6 VERTICAL MOUNT, V-BRACKET

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



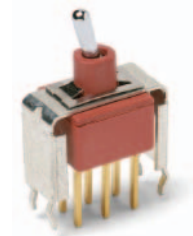
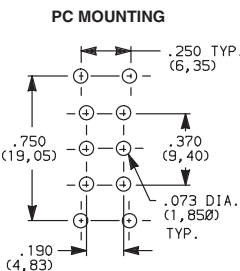
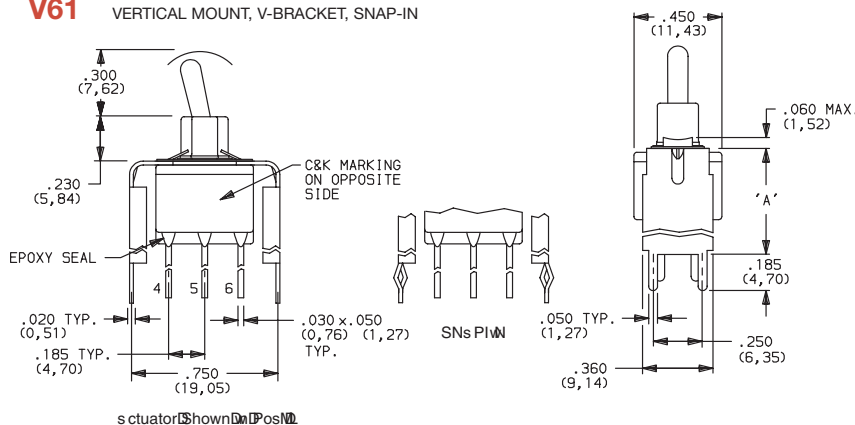
E101MD1\_BE  
SPDT

| OPTION CODE | DIM 'A'      |
|-------------|--------------|
| V6, V61     | .460 (11,68) |

Not available with Y bushing.

### V6 VERTICAL MOUNT, V-BRACKET

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



E201MD1\_BE  
DPDT

| OPTION CODE | DIM 'A'      |
|-------------|--------------|
| V6, V61     | .460 (11,68) |



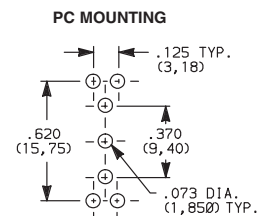
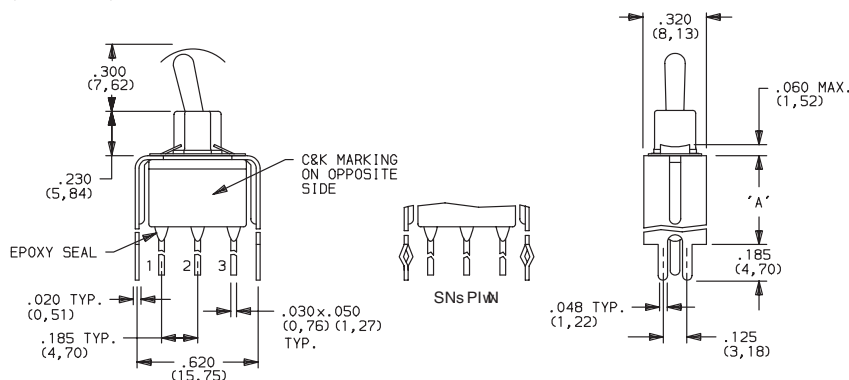
Third Angle  
Projection

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

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## TERMINATIONS

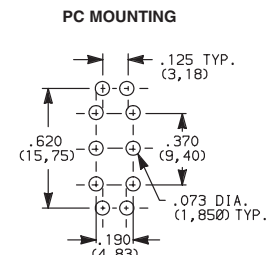
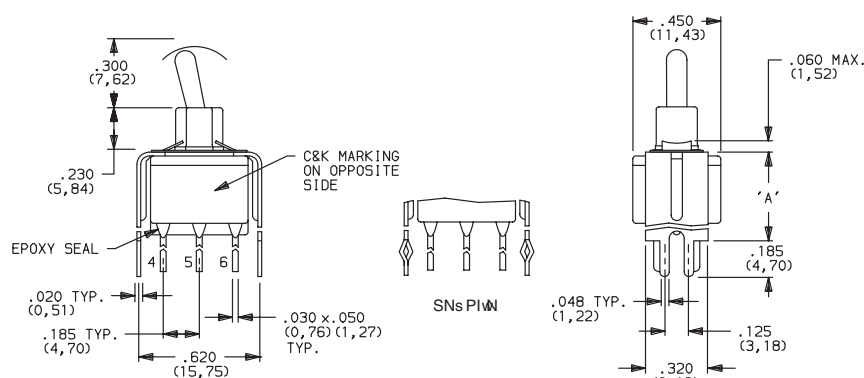
**V31** VERTICAL MOUNT. V-BRACKET. SNAP-IN



| OPTION CODE    | DIM 'A'       |
|----------------|---------------|
| <b>V3, V31</b> | .460 (11,68)  |
| <b>V9</b>      | 1.150 (29,21) |

Not available with Y bushing.

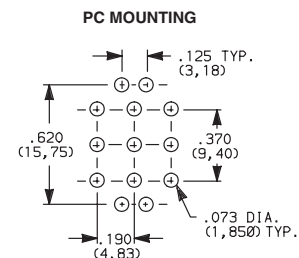
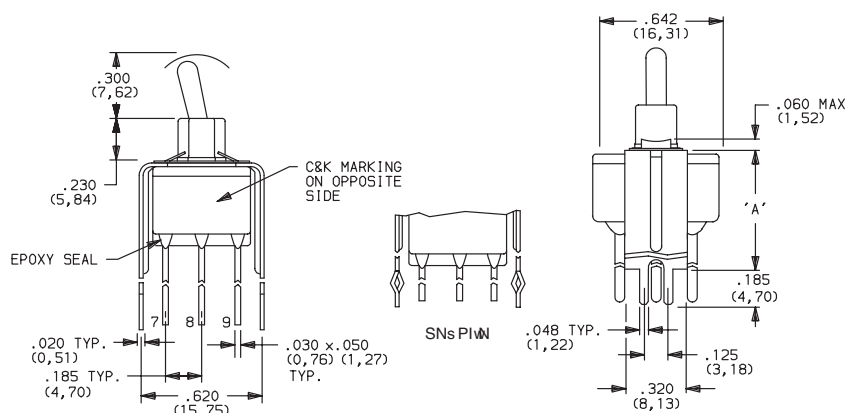
**V31** VERTICAL MOUNT. V-BRACKET. SNAP-IN



| OPTION CODE    | DIM 'A'       |
|----------------|---------------|
| <b>V3, V31</b> | .460 (11,68)  |
| <b>V9</b>      | 1.150 (29,21) |

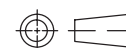
Not available with Y bushing.

**V9** VERTICAL MOUNT, V-BRACKET



| OPTION CODE | DIM 'A'       |
|-------------|---------------|
| <b>V9</b>   | 1.150 (29,21) |

Not available with D9 & Y bushings.



### Third Angle Projection

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

# E Series

## Sealed Miniature Toggle Switches

### CONTACT MATERIAL

| OPTION CODE | CONTACT MATERIAL                   | TERMINAL PLATING       | RATINGS                           |                                                                                                                                                                                                                         |
|-------------|------------------------------------|------------------------|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| B           | GOLD <sup>1</sup>                  | GOLD <sup>1</sup>      | LOW LEVEL/<br>DRY CIRCUIT         | 0.4 VA MAX. @ 20 V AC OR DC MAX.                                                                                                                                                                                        |
| P           |                                    | MATTE-TIN <sup>6</sup> |                                   |                                                                                                                                                                                                                         |
| Q           | SILVER <sup>4,5</sup>              | SILVER <sup>5</sup>    | POWER                             | E1XX & E2XX MODELS: 7.5 AMPS @ 125 V AC OR 28 V DC;<br>3 AMPS @ 250 V AC.<br>E3XX MODELS: 5 AMPS @ 125 V AC OR 28 V DC; 2 AMPS @ 250 V AC.                                                                              |
| S           |                                    | MATTE-TIN <sup>6</sup> |                                   |                                                                                                                                                                                                                         |
| G           | GOLD OVER<br>SILVER <sup>2,3</sup> | GOLD <sup>3</sup>      | LOW LEVEL/DRY<br>CIRCUIT OR POWER | E1XX AND E2XX MODELS: 0.4 VA MAX @20 V AC OR DC MAX. OR<br>7.5 AMPS @125 V AC OR 28 V DC; 3 AMPS @ 250 V AC.<br>DC E3XX MODELS: 0.4 VA MAX. @ 20 V AC OR DC MAX. OR 5 AMPS @<br>125 V AC OR 28 V DC; 2 AMPS @ 250 V AC. |
| R           |                                    | MATTE-TIN <sup>6</sup> |                                   |                                                                                                                                                                                                                         |

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

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

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

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

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

<sup>5</sup> CENTER CONTACT & ALL TERMINALS: Copper alloy, with gold flash over silver plate. Or copper alloy, silver plated.

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

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

All models  with all options when ordered with S, R, G, or Q contact material except with F1 conductive bushing.

B contact material standard with all terminations.

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



F

Toggle



Third Angle  
Projection

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

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# ET Series Sealed Subminiature Toggle Switches

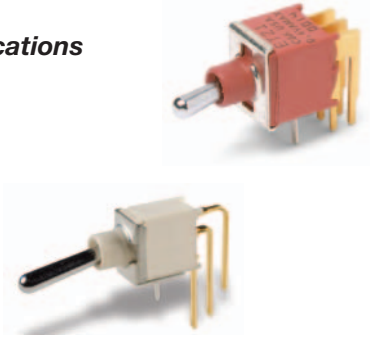
## Features/Benefits

- 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  $\Omega$  typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

INSULATION RESISTANCE: 10<sup>9</sup>  $\Omega$  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-31 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-26 thru F-31. For additional options not shown in catalog, consult our Customer Service Center. All models are process sealed to withstand machine soldering temperatures and pressure wash cleaning methods.

### Switch Function

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

### Actuator

**M** .240" high  
**M3** Plastic, anti-static, .240" high  
**S** .400" high  
**L** .320" high  
**S1** .540" high

### Bushing

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

### Terminations

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

### Contact Material

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

### Seal

**E** Epoxy

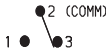
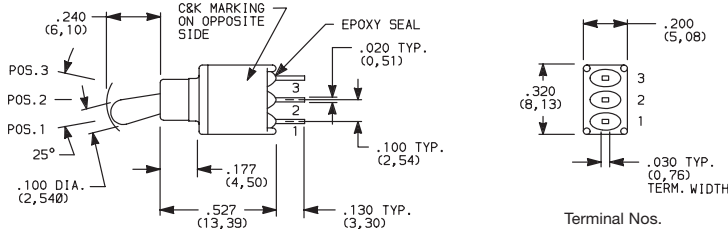
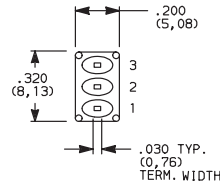
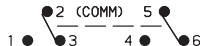
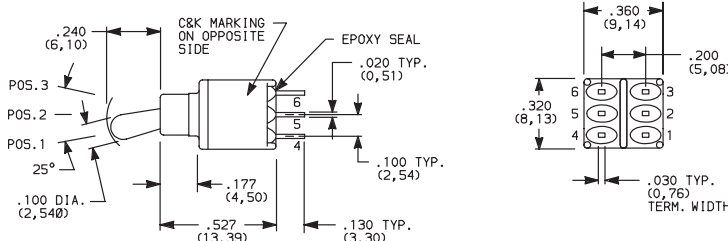
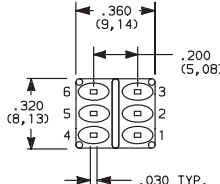
### Plastic Actuator Color

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



ET Series  
Sealed Subminiature Toggle Switches

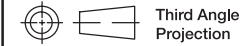
SWITCH FUNCTION

| 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                                                      |                                                                                   |                                                                                   | 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                                                                                 |                                                                                          |
|                                                                                                                                                                                                                                                                                                                                     | ET02      | OFF                                                                               | NONE                                                                              | ON                                                                                | OPEN                                                                              | N/A                                                                               | 3-1                                                                                 | SPST  |
| <div><div><p><b>SPDT</b></p><p>Part number shown: ET01MD1CBE ET02 Models: Omit terminal 2</p></div><div><p>Terminal Nos.<br/>For Reference Only</p></div></div> |           |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                          |
| 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                                                                             |                                                                                          |
|                                                                                                                                                                                                                                                                                                                                     | ET24**    | ON                                                                                | ON                                                                                | ON                                                                                | 2-3,5-6                                                                           | 2-3,5-4                                                                           | 2-1,5-4                                                                             |                                                                                          |
| <div><div><p><b>DPDT</b></p><p>Part number shown: ET21MD1CBE</p></div><div><p>Terminal Nos.<br/>For Reference Only</p></div></div>                          |           |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                          |

MOM. = Momentary \*\* Wiring for 3-way switch, see Section N.

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

Toggle  
F

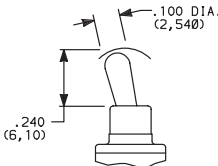


Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

# ET Series Sealed Subminiature Toggle Switches

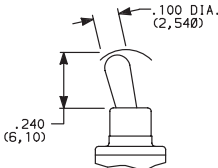
## ACTUATOR ACTUATOR COLOR

**M** .240" HIGH



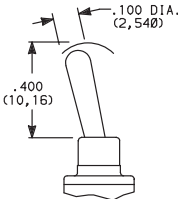
Standard with A, AV, V3 & V31 terminations.

**M3** PLASTIC, ANTISTATIC,  
.240" HIGH



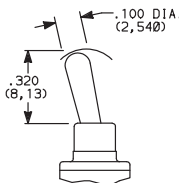
Material: Nylon 4/6 (UL 94V-0), black standard.  
Static resistance: 9,000 V DC min. @ sea level,  
actuator to terminals. Not available with F1  
conductive bushing option. Not UL approved.

**S** .400" HIGH

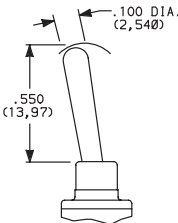


Standard with C or W terminations.

**L** .320" HIGH



**S1** .540" HIGH



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

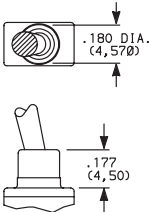
**NOTE:** All actuators have chrome finish (except M3 & S3 ).

## BUSHING

**D1** .177" HIGH, UNTHREADED

**F1** ESD, CONDUCTIVE BUSHING  
UNTHREADED, .177" HIGH

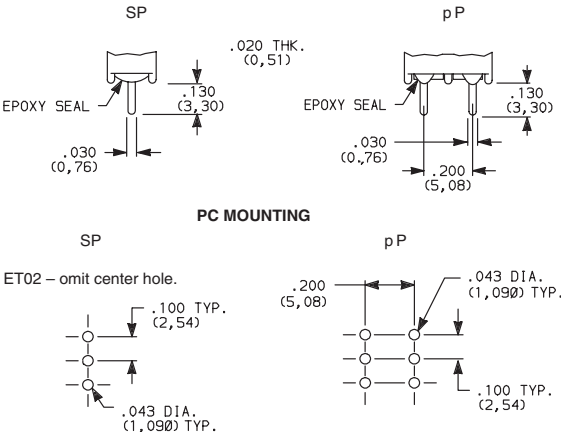
F1 bushing is not UL/CSA approved



**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.

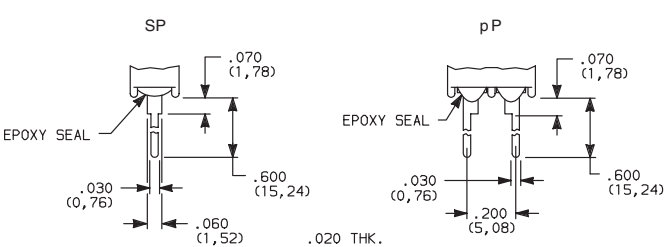
## TERMINATIONS

**C** PC THRU-HOLE



SP and DP

**W** WIRE WRAP



SP and DP



Third Angle  
Projection

Not available with F1 conductive bushing.



F

Toggle

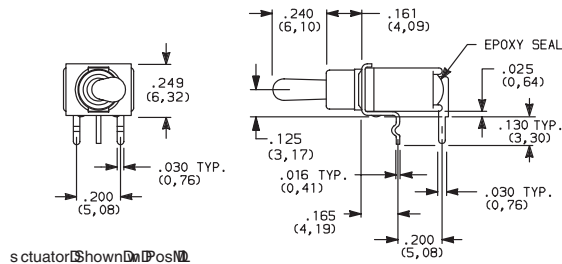
# ET Series Sealed Subminiature Toggle Switches

## TERMINATIONS

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

### PC MOUNTING

ET01MD1ABE  
Horizontal Actuation  
SPDT



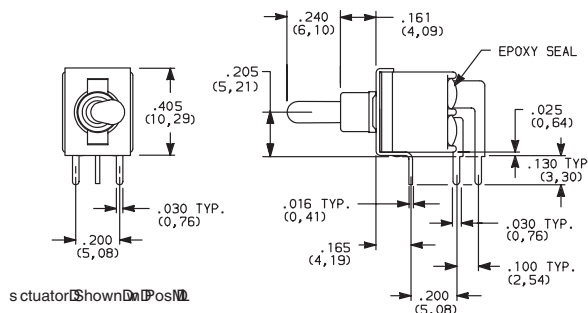
Not available with ET02 model.

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

### PC MOUNTING

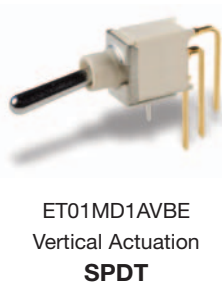


ET21MD1ABE  
Horizontal Actuation  
DPDT

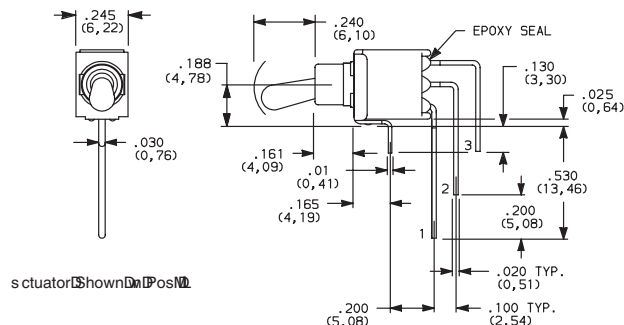


**AV** VERTICAL RIGHT ANGLE, PC THRU-HOLE

### PC MOUNTING



ET01MD1AVBE  
Vertical Actuation  
SPDT



ET02 - omit terminal 2.

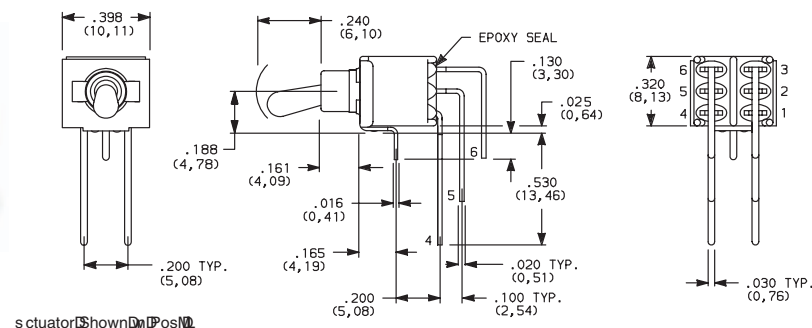
**NOTE:** Terminal bend radii and lead-in manufacturing option.

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

### PC MOUNTING



ET21MD1AVBE  
Vertical Actuation  
DPDT



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



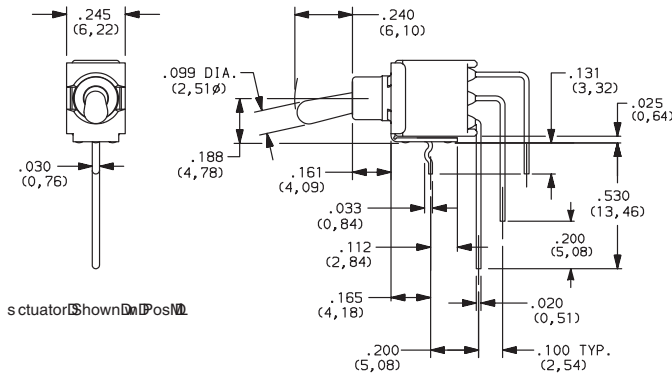
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

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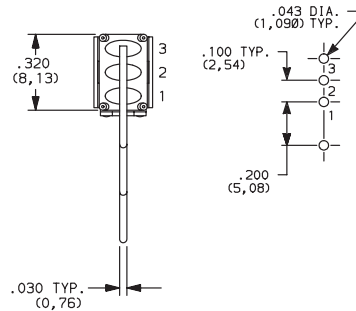
# ET Series Sealed Subminiature Toggle Switches

## TERMINATIONS

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

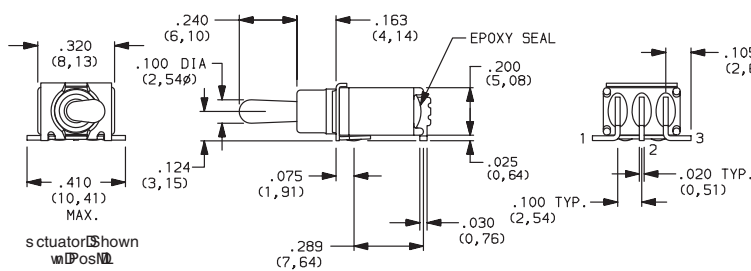


### PC MOUNTING

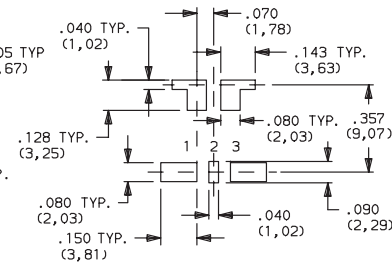


ET01SD1AV2BE  
Vertical Actuation  
SPDT

### SA RIGHT ANGLE, SURFACE MOUNT



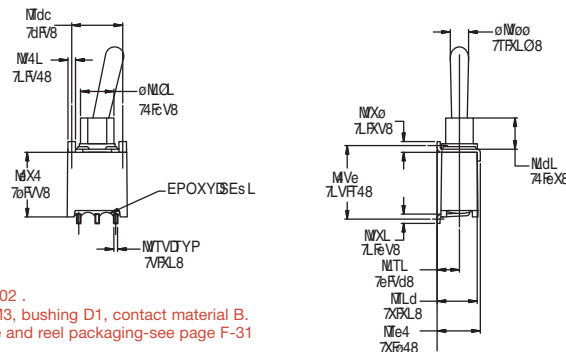
### PC MOUNTING



ET01M3D1SAPE  
Horizontal Actuation  
SPDT Only

Not available with S and S1 actuators. Standard with tape & reel packaging. See page F-31.

### SA1 RIGHT ANGLE, SURFACE MOUNT



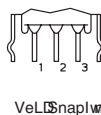
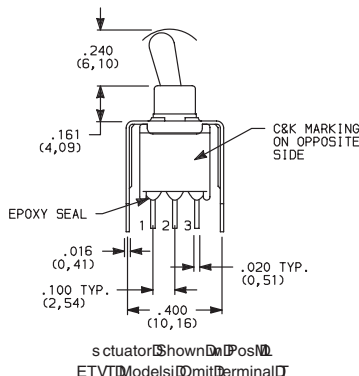
Not available in ET02 .  
Actuators M and M3, bushing D1, contact material B.  
Standard with tape and reel packaging-see page F-31



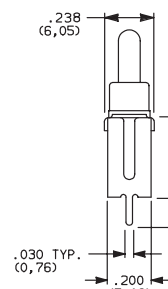
ET01M3D1SA1BE  
Horizontal Actuation  
SPDT Only

### V3 VERTICAL MOUNT, V-BRACKET

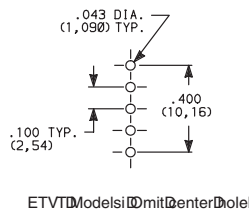
### V31 VERTICAL MOUNT, V-BRACKET, SNAP-IN



V3



### PC MOUNTING



ET01MD1V3BE  
SPDT



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



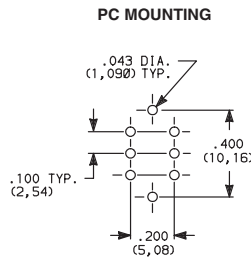
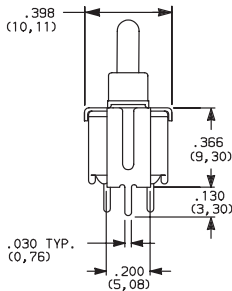
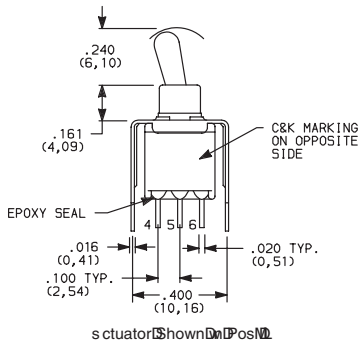
F  
Toggle

# ET Series

## Sealed Subminiature Toggle Switches

### TERMINATIONS

**V3** VERTICAL MOUNT, V-BRACKET



### CONTACT MATERIAL

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

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

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

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

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

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

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

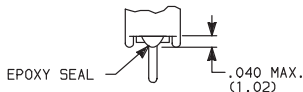
<sup>6</sup> TERMINALS: Copper alloy, with matte tin over nickel plate.

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

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

### SEAL

**E** EPOXY SEAL

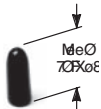


### AVAILABLE HARDWARE

Cap

PART NO.  
**706201000** WHITE  
**706202000** BLACK  
**706203000** RED

Material: Vinyl  
Finish: Matte



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



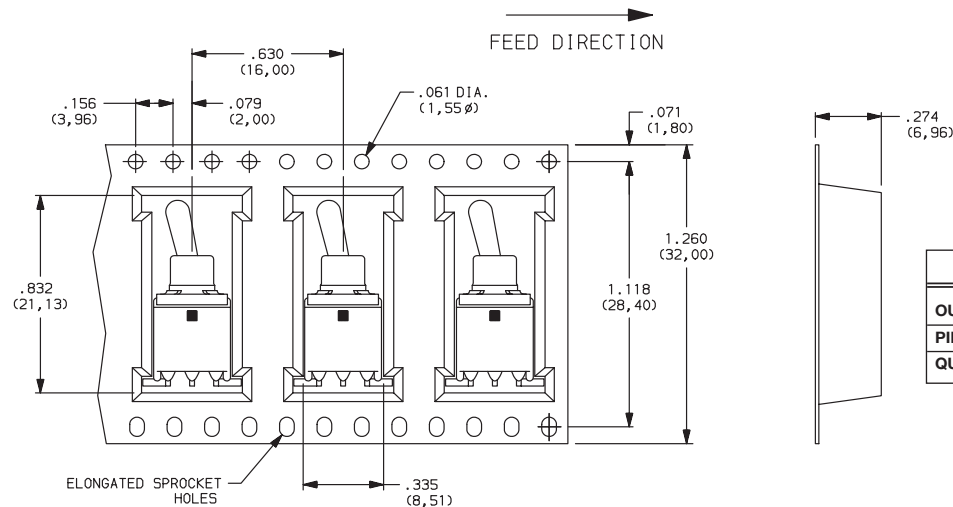
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

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# ET Series Sealed Subminiature Toggle Switches

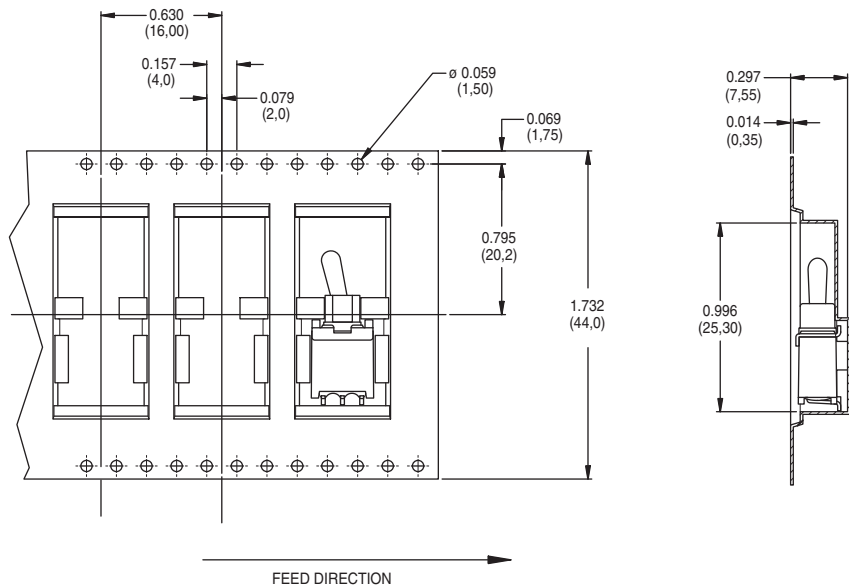
## TAPE & REEL

For part number ET01M3D1SAKE

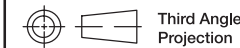


| REEL INFORMATION  |               |
|-------------------|---------------|
| OUTSIDE DIAMETER  | 13.00 (330,0) |
| PILOT HOLE        | .512 (13,0)   |
| QUANTITY PER REEL | 600           |

For part number ET01M3D1SA1BE

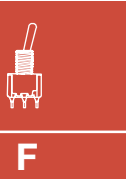


| REEL INFORMATION  |               |
|-------------------|---------------|
| OUTSIDE DIAMETER  | 13.00 (330,0) |
| PILOT HOLE        | .795 (20,20)  |
| QUANTITY PER REEL | 500           |



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

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Toggle

# T Series

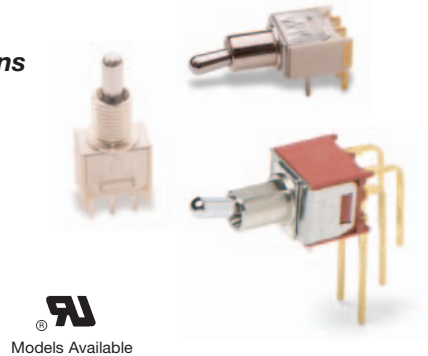
## Subminiature Toggle Switches

### Features/Benefits

- **Compact size—small footprint**
- **Single and double pole models**
- **PC and panel mount options available**
- **RoHS compliant models available**

### Typical Applications

- **Hand-held telecommunications**
- **Instrumentation**
- **Medical equipment**



### Specifications

CONTACT RATING: B contact material: 0.4 VA max. @ 20 V AC or DC max. Q contact material (TX01 models): 3 AMPS @ 120 V AC or 28 V DC. All other models: 2 AMPS @ 120 V AC or 28 V DC. See page F-42 for additional ratings.

ELECTRICAL LIFE: TX01 models: 60,000 make-and-break cycles at full load. All other models: 30,000 cycles.

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

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

DIELECTRIC STRENGTH: 1000 Vrms min. @ sea level.

OPERATING TEMPERATURE: -30°C to 85°C.

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

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

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

### Materials

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

ACTUATOR: Brass, chrome plated.

BUSHING: Brass, nickel plated.

HOUSING: Stainless steel.

SWITCH SUPPORT: Brass, matte-tin plated.

END CONTACTS: B contact material: Copper alloy, with gold plate over nickel plate. Q contact material: Coin silver, silver plated. See above for additional contact materials.

CENTER CONTACTS & TERMINALS: B contact material: Copper alloy, with gold plate over nickel plate. Q contact material: Copper alloy, silver plated. See page F-42 for additional contact materials.

TERMINAL SEAL: Epoxy.

HARDWARE: Nut & Locking Ring: Brass, nickel plated.

Lockwasher: Steel, nickel plated. Additional hardware available separately, see Section N.

### Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages F-33 thru F-37. For additional options not shown in catalog, consult Customer Service Center. All models have epoxy terminal seal and are compatible with all "bottom-wash" PCB cleaning methods.

#### Switch Function

- T101** SPDT On-None-On
- T102** SPDT Off-None-On
- T103** SPDT On-Off-On
- T105** SPDT Mom.-Off-Mom.
- T107** SPDT On-Off-Mom.
- T108** SPDT On-None-Mom.
- T201** DPDT On-None-On
- T203** DPDT On-Off-On
- T205** DPDT Mom.-Off-Mom.
- T207** DPDT On-Off-Mom.
- T208** DPDT On-None-Mom.
- T211** DPDT On-On-On

#### Actuator

- P3** Flatted, anti-rotation, .490" high
- S** .370" high
- K** Locking lever, round tip
- L1** .620" high
- M1** .220" high
- S1** .410" high
- M** .210" high
- L** .290" high

#### Bushing

- H** .220" high, threaded, flat
- H9** .220" high, unthreaded, flat
- CF** Splashproof, .310" high, threaded, flat
- D9** .260" high, unthreaded, keyway
- T** .310" high, threaded, flat
- T9** .310" high, unthreaded, flat
- TD** .260" high, threaded, keyway
- TK** .310" high, threaded, keyway
- Y** .220" high, threaded, keyway
- Y9** .220" high, unthreaded, keyway

#### Terminations

- A** Right angle, PC thru-hole
- AV** Vertical right angle, PC thru-hole
- C** PC Thru-hole
- V3** Vertical mount V-bracket
- Z** Solder lug
- W** Wire wrap

#### Contact Material

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

#### Seal

- E** Epoxy



F

Toggle



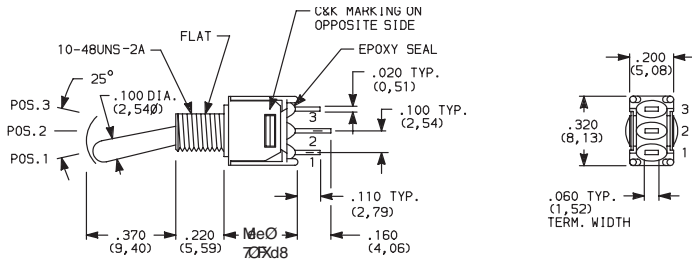
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

T Series  
Subminiature Toggle Switches

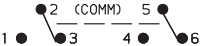
SWITCH FUNCTION

| NO. POLES | MODEL NO. | SWITCH FUNCTION                                                                   |                                                                                   |                                                                                   | CONNECTED TERMINALS                                                               |                                                                                   |                                                                                   | SCHEMATIC                                                                                |
|-----------|-----------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|           |           | POS. 1                                                                            | POS. 2                                                                            | POS. 3                                                                            | POS. 1                                                                            | POS. 2                                                                            | POS. 3                                                                            |                                                                                          |
|           |           |  |  |  |  |  |  |                                                                                          |
|           |           | C&K marking on opposite side                                                      |                                                                                   |                                                                                   | C&K marking on opposite side                                                      |                                                                                   |                                                                                   |                                                                                          |
| SP        | T101      | ON                                                                                | NONE                                                                              | ON                                                                                | 2-3                                                                               | N/A                                                                               | 2-1                                                                               |       |
|           | T103      | ON                                                                                | OFF                                                                               | ON                                                                                | 2-3                                                                               | OPEN                                                                              | 2-1                                                                               |                                                                                          |
|           | T105      | MOM.                                                                              | OFF                                                                               | MOM.                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                          |
|           | T107      | ON                                                                                | OFF                                                                               | MOM.                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                          |
|           | T108      | ON                                                                                | NONE                                                                              | MOM.                                                                              | 2-3                                                                               | NA                                                                                | 2-1                                                                               |                                                                                          |
|           | T102      | OFF                                                                               | NONE                                                                              | ON                                                                                | OPEN                                                                              | N/A                                                                               | 3-1                                                                               | SPST  |

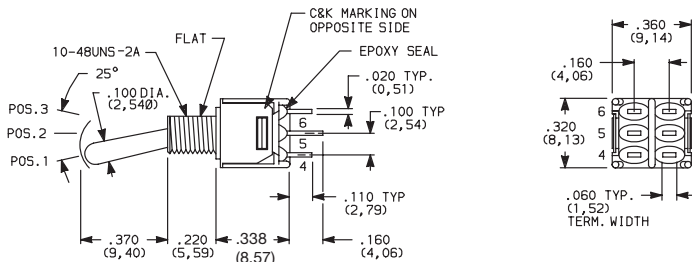
SPDT



Part number shown: T101SHZQE

| NO. POLES | MODEL NO. | SWITCH FUNCTION                                                                     |                                                                                     |                                                                                     | CONNECTED TERMINALS                                                                 |                                                                                     |                                                                                       | SCHEMATIC                                                                             |
|-----------|-----------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|           |           | POS. 1                                                                              | POS. 2                                                                              | POS. 3                                                                              | POS. 1                                                                              | POS. 2                                                                              | POS. 3                                                                                |                                                                                       |
|           |           |  |  |  |  |  |  |                                                                                       |
|           |           | C&K marking on opposite side                                                        |                                                                                     |                                                                                     | C&K marking on opposite side                                                        |                                                                                     |                                                                                       |                                                                                       |
| DP        | T201      | ON                                                                                  | NONE                                                                                | ON                                                                                  | 2-3,5-6                                                                             | N/A                                                                                 | 2-1,5-4                                                                               |  |
|           | T203      | ON                                                                                  | OFF                                                                                 | ON                                                                                  | 2-3,5-6                                                                             | OPEN                                                                                | 2-1,5-4                                                                               |                                                                                       |
|           | T205      | MOM.                                                                                | OFF                                                                                 | MOM.                                                                                |                                                                                     |                                                                                     |                                                                                       |                                                                                       |
|           | T208      | ON                                                                                  | NONE                                                                                | MOM.                                                                                |                                                                                     |                                                                                     |                                                                                       |                                                                                       |
|           | T211*     | ON                                                                                  | ON                                                                                  | ON.                                                                                 | 2-3,5-6                                                                             | 2-3,5-4                                                                             | 2-1,5-4                                                                               |                                                                                       |

DPDT

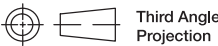


Part number shown: T201SHZQE

Terminal Nos.  
For Reference Only

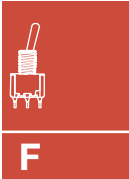
MOM. = Momentary

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



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

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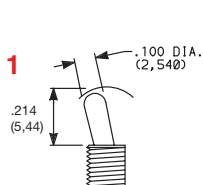
Toggle

# T Series Subminiature Toggle Switches

## ACTUATOR

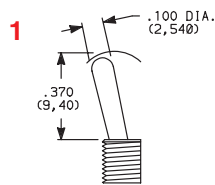


**M** .210" HIGH



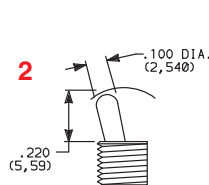
Standard with A, AV or V3 terminations.

**S** .370" HIGH

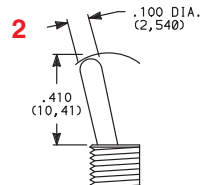


Standard with Z, C or W terminations.

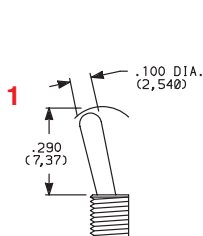
**M1** .220" HIGH  
(with "T" bushing)



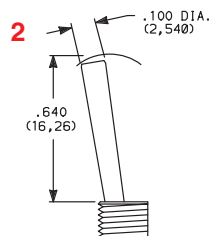
**S1** .410" HIGH  
(with "T" bushing)



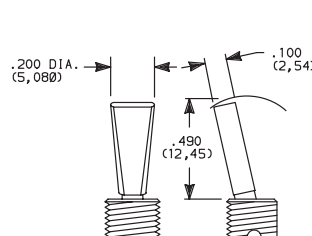
**L** .290" HIGH



**L1** .620" HIGH



**P3** ANTI-ROTATION, FLATTED,  
.450" HIGH



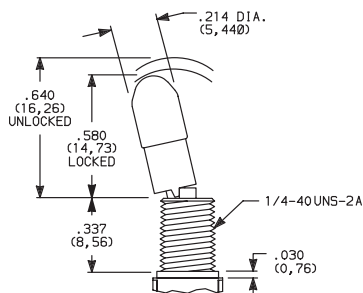
Available with T & T9 bushings only.  
Dress nut part number 709901201  
supplied standard with threaded bushing.

1 Actuator shown with standard H bushing.  
Subtract .040 (1,02) for TD and D9 bushings,  
subtract .090 (2,29) for T, T9, TK, K9 &  
CF bushings.

2 Actuators shown with T, T9, TK & CF bushings,  
add .050 (1,27) for TD and D9 bushings,  
add .090 (2,29) for H, H9, Y & Y9 bushings.

All actuators have chrome finish (except K).

**K** LOCKING LEVER



Not available with CF bushing option.

Bushing option code not required. Not available with TX05 & TX07 models.

### Locking Positions



-01 & -02 Models  
2 Position lock



-03 & -11 Models  
3 Position lock



-08 Models  
1 Position lock

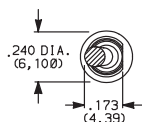
K actuators have natural aluminum finish.

Keyway on right side. To prevent accidental actuation, toggles  
must be lifted before being actuated. When released, toggles  
again lock in place. Overtightening mounting nut may cause  
actuator to bind.

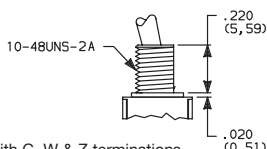
## BUSHING



**H** .220" HIGH THREADED, FLAT



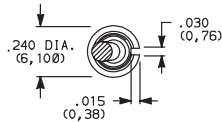
**H9** .220" HIGH UNTHREADED, FLAT



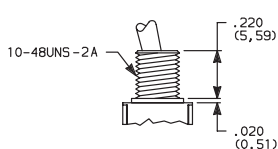
H standard with C, W & Z terminations.

H9 standard with A, AV & V3 terminations.

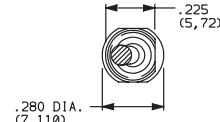
**Y** .220" HIGH THREADED, KEYWAY



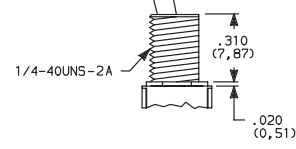
**Y9** .220" HIGH UNTHREADED, KEYWAY



**T** .310" HIGH THREADED, FLAT



**T9** .310" HIGH UNTHREADED, FLAT



Third Angle  
Projection

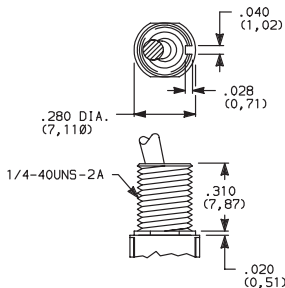
Dimensions are shown: Inches (mm)

Specifications and dimensions subject to change

# T Series Subminiature Toggle Switches

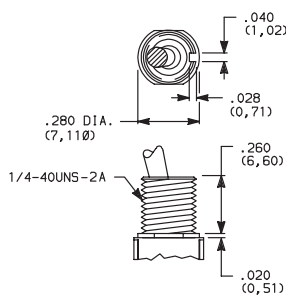
## BUSHING

**TK** .310" HIGH THREADED, KEYWAY

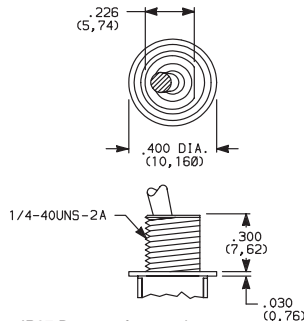


**TD** .260" HIGH THREADED, KEYWAY

**D9** .260" HIGH UNTHREADED, KEYWAY

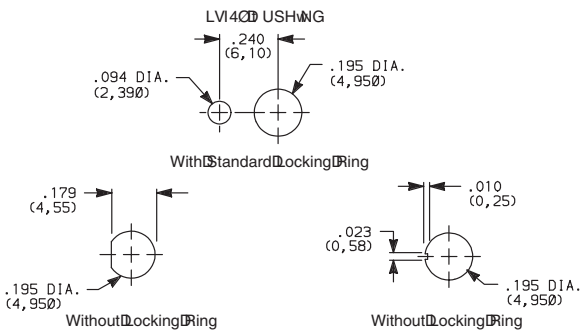


**CF** SPLASHPROOF, .310" HIGH THREADED, FLAT

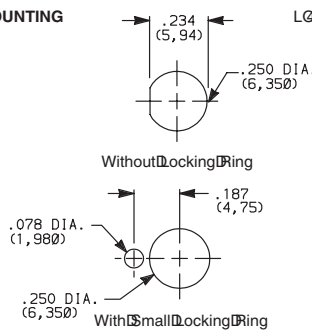


IP67 Degree of protection.  
Internal o-ring actuator seal and  
external bushing seal washer standard.

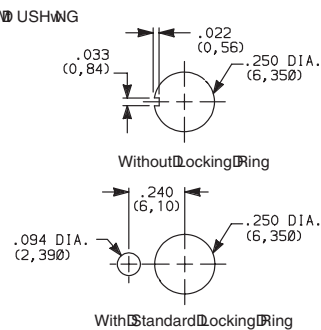
Not available with K locking lever option.



### PANEL MOUNTING

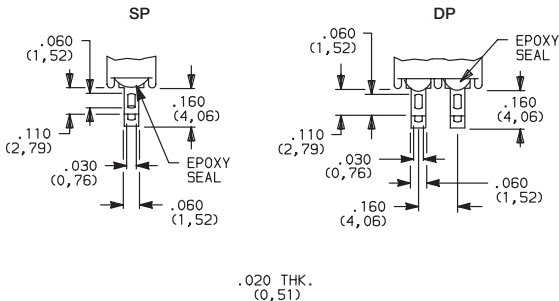


### LV1400 USHWING

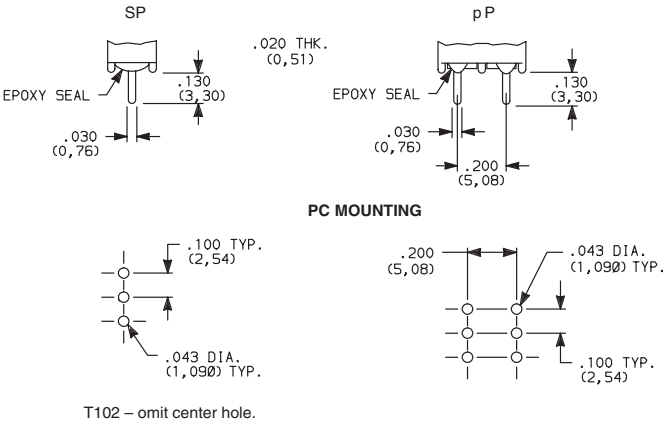


## TERMINATIONS

**Z** SOLDER LUG

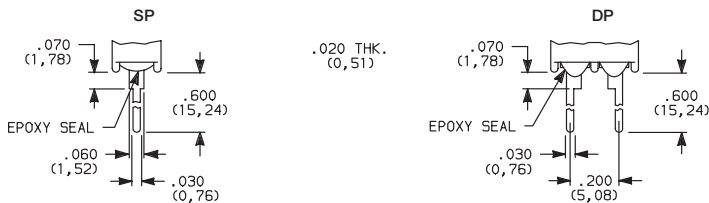


**C** PC THRU-HOLE



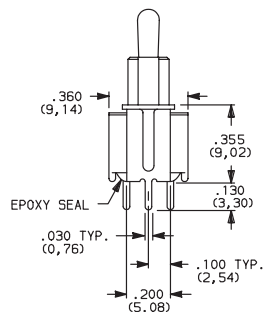
Not available with P or R contact materials.

**W** WIRE WRAP





Technical drawing of a C&K marking tool. The drawing shows a cross-section of the tool with various dimensions and labels. Dimensions include: .210 (5, 33) for the top section, .220 (5, 59) for the middle section, .016 (0, 41) for the side width, .100 TYP. (2, 54) for the bottom width, .400 (10, 16) for the total width, and .020 x .030 TYP. (0, 51) (0, 76) for the bottom width. Labels include 'C&K MARKING ON OPPOSITE SIDE' and 's.uator Shown in Pos. 1'.



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

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

All models  with all options when ordered with R, G, or Q contact material.  
B contact material standard with A, AV, V3 & W terminations.  
Q contact material standard with C & Z terminations.

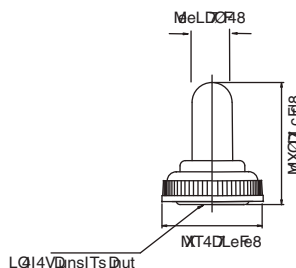
```

graph LR
    A[ ] --> B[ ]
    B --> C[ ]
    C --> D[ ]
    D --> E[ ]
    E --> F[ ]
  
```

EPOXY SEAL

.040 MAX.  
(1.02)

**759D02000** SEALING BOOT



\* Note: For use with S1 actuator style when combined with T, TK, and CF bushings.



## Toggle



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

## GT Series Sealed Ultraminiature Toggle Switches

## Features/Benefits

- ***Sealed against solder and cleaning process contaminants***
- ***Ultraminiature size, smallest footprint available***
- ***Thru-hole and surface mount models***
- ***High temperature materials (UL 94V-0)***
- ***RoHS compliant and compatible***

## Typical Applications

- **Hand-held telecommunications**
- **Small instrumentation**



## Specifications

CONTACT RATING: 0.4 VA max. @ 20 V AC or DC max.  
MECHANICAL & ELECTRICAL LIFE: 40,000 make-and-break cycles at full load.  
CONTACT RESISTANCE: Below 50 m  $\Omega$  typ. initial @ 2-4 V DC, 100 mA.  
INSULATION RESISTANCE:  $10^9 \Omega$  min.  
DIELECTRIC STRENGTH: 500 Vrms min. @ sea level.  
OPERATING TEMPERATURE: -30°C to 85°C.  
SOLDERABILITY: Per MIL-STD-202F method 208D, or EIA RS-186E method 9 (1 hour steam aging).  
PACKAGING: Surface mount switches shipped in anti-static tape and reel packaging per EIA 481-3, see page F-42 for drawings and reel information. Tape and cover strip are conductive for use near statically sensitive components, consult Customer Service Center.

## Materials

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

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

SWITCH SUPPORT: Brass, tin plated.

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

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

TERMINALS: Gold.

TERMINAL SEAL: Epoxy. All terminals insert molded.

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

## How To Order

Complete part numbers for GT Series Sealed Ultraminiature Toggle Switches are shown on pages F-38 thru F-42.



GT11MCBE  
**SPDT**

| PART NUMBER     | SWITCH FUNCTION                                                                     |                                                                                     |                                                                                     |
|-----------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                 | POS.1                                                                               | POS. 2                                                                              | POS. 3                                                                              |
|                 |  |  |  |
| <b>GT11MCBE</b> | ON                                                                                  | NONE                                                                                | ON                                                                                  |
| <b>GT13MCBE</b> | ON                                                                                  | OFF                                                                                 | ON                                                                                  |
| Conn. Terms.    | 2-3                                                                                 | OPEN                                                                                | 2-1                                                                                 |

Schematic



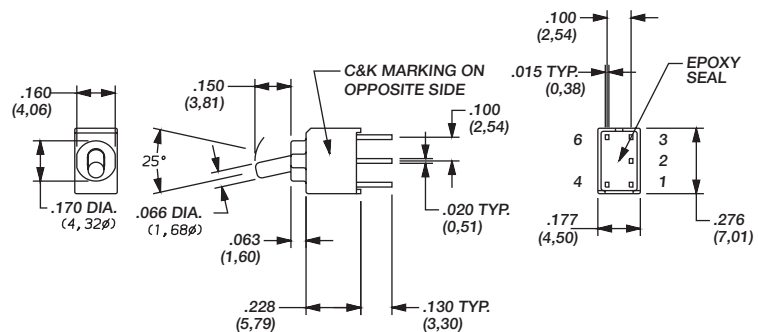
SPDT      Note: Pins 4 and 6 not connected

|                 | OFF  | NONE | ON  |
|-----------------|------|------|-----|
| <b>GT12MCBE</b> | OFF  | NONE | ON  |
| Conn. Terms.    | OPEN | N/A  | 3-1 |

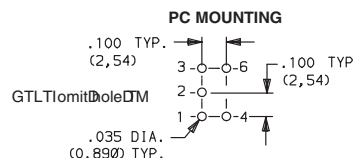
Schematic



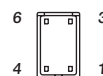
SPST      Note: Pins 4 and 6 not connected



ACTUATOR SHOWN IN POS. 1

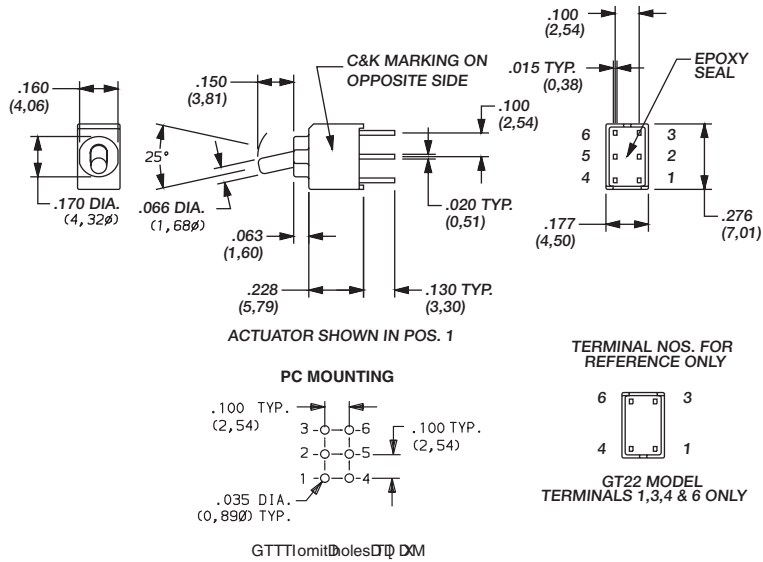


TERMINAL NOS. FOR  
REFERENCE ONLY

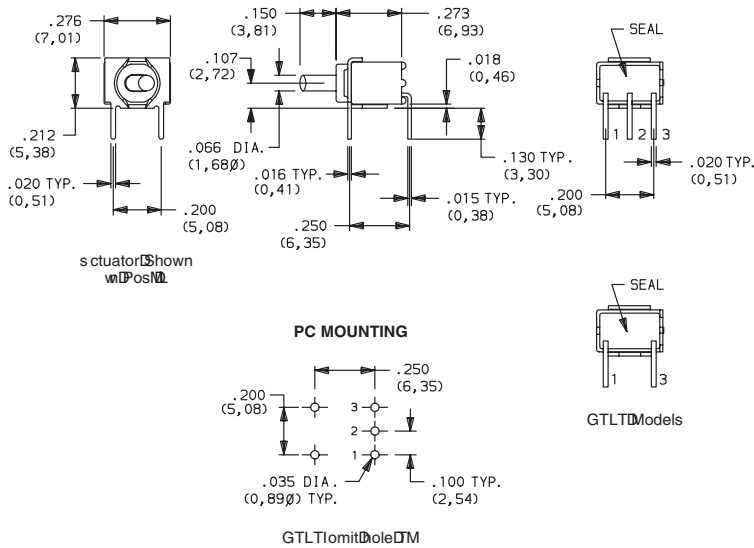


GT12 MODEL  
TERMINALS 1,3,4 & 6 ONLY

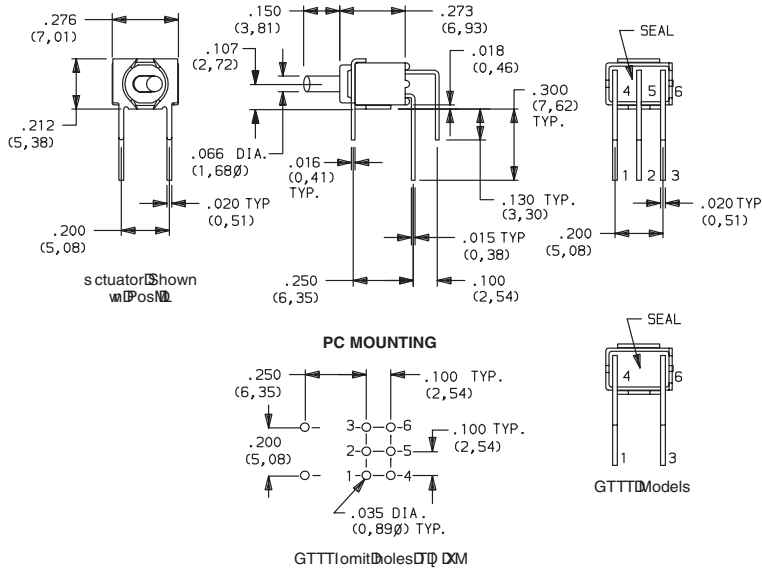
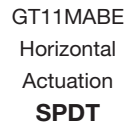
## Sealed Ultraminiature Toggle Switches



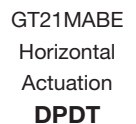
| PART NUMBER                        | SWITCH FUNCTION |             |          |
|------------------------------------|-----------------|-------------|----------|
|                                    | POS.1           | POS. 2      | POS. 3   |
| <b>GT21MCBE</b><br><b>GT23MCBE</b> | ON<br>ON        | NONE<br>OFF | ON<br>ON |
| Conn. Terms.                       | 2-3, 5-6        | OPEN        | 2-1, 5-4 |
| Schematic                          |                 |             |          |
| DPDT                               |                 |             |          |
| <b>GT22MCBE</b>                    | OFF             | NONE        | ON       |
| Conn. Terms.                       | OPEN            | N/A         | 3-1      |
| Schematic                          |                 |             |          |
| DPST                               |                 |             |          |



| PART NUMBER                                                                                     | SWITCH FUNCTION |        |        |
|-------------------------------------------------------------------------------------------------|-----------------|--------|--------|
|                                                                                                 | POS. 1          | POS. 2 | POS. 3 |
| <b>GT11MABE</b>                                                                                 | ON              | NONE   | ON     |
| <b>GT13MABE</b>                                                                                 | ON              | OFF    | ON     |
| Conn. Terms.                                                                                    | 2-3             | OPEN   | 2-1    |
| Schematic  |                 |        |        |
| SPDT                                                                                            |                 |        |        |
| <b>GT12MABE</b>                                                                                 | OFF             | NONE   | ON     |
| Conn. Terms.                                                                                    | OPEN            | N/A    | 3-1    |
| Schematic  |                 |        |        |
| SPST                                                                                            |                 |        |        |

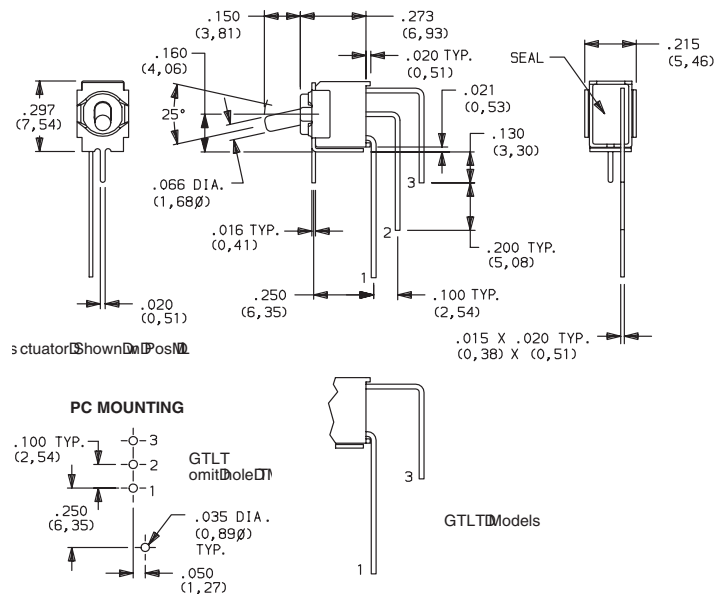


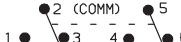
| PART NUMBER                                                                                     | SWITCH FUNCTION |             |          |
|-------------------------------------------------------------------------------------------------|-----------------|-------------|----------|
|                                                                                                 | POS.1           | POS. 2      | POS. 3   |
| <b>GT21MABE</b><br><b>GT23MABE</b>                                                              | ON<br>ON        | NONE<br>OFF | ON<br>ON |
| Conn. Terms.                                                                                    | 2-3, 5-6        | OPEN        | 2-1, 5-4 |
| Schematic  |                 |             |          |
| DPDT                                                                                            |                 |             |          |
| <b>GT22MABE</b>                                                                                 | OFF             | NONE        | ON       |
| Conn. Terms.                                                                                    | OPEN            | N/A         | 3-1, 6-4 |
| Schematic  |                 |             |          |
| DPST                                                                                            |                 |             |          |

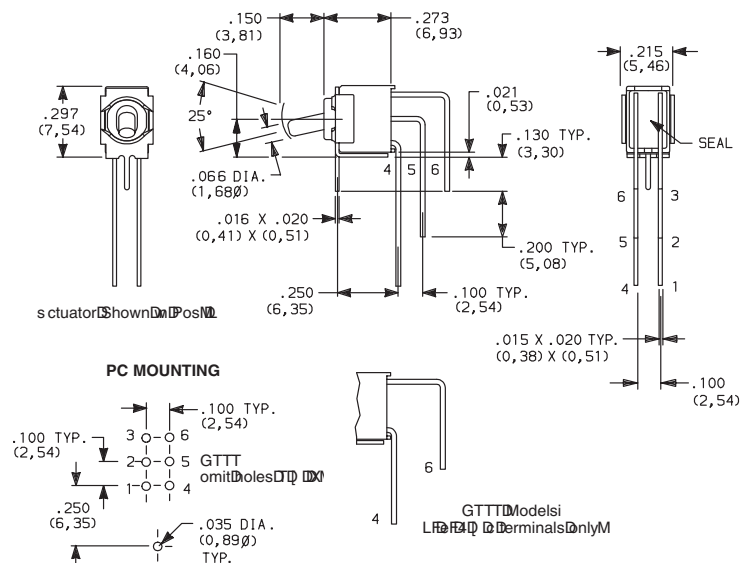


Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

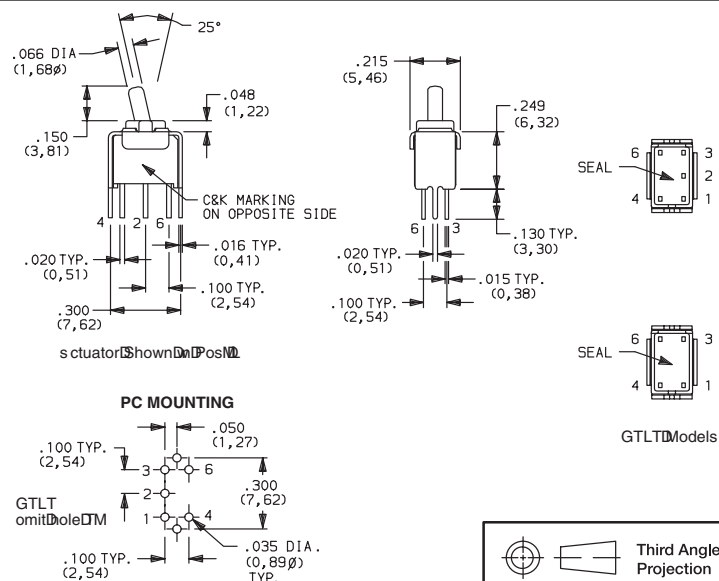
| PART NUMBER                                                                                    | SWITCH FUNCTION                                                                   |                                                                                   |                                                                                   |
|------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                                                                                                | POS.1                                                                             | POS. 2                                                                            | POS. 3                                                                            |
|                                                                                                |  |  |  |
| <b>GT11MAVBE</b><br><b>GT13MAVBE</b>                                                           | ON<br>ON                                                                          | NONE<br>OFF                                                                       | ON<br>ON                                                                          |
| Conn. Terms.                                                                                   | 2-3                                                                               | OPEN                                                                              | 2-1                                                                               |
| Schematic<br> |                                                                                   |                                                                                   |                                                                                   |
| SPDT                                                                                           |                                                                                   |                                                                                   |                                                                                   |
| <b>GT12MAVBE</b>                                                                               | OFF                                                                               | NONE                                                                              | ON                                                                                |
| Conn. Terms.                                                                                   | OPEN                                                                              | N/A                                                                               | 3-1                                                                               |
| Schematic<br> |                                                                                   |                                                                                   |                                                                                   |
| SPST                                                                                           |                                                                                   |                                                                                   |                                                                                   |



| PART NUMBER                                                                                                      | SWITCH FUNCTION                                                                   |                                                                                   |                                                                                   |
|------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                                                                                                                  | POS.1                                                                             | POS. 2                                                                            | POS. 3                                                                            |
|                                                                                                                  |  |  |  |
| <b>GT21MAVBE</b><br><b>GT23MAVBE</b>                                                                             | ON<br>ON                                                                          | NONE<br>OFF                                                                       | ON<br>ON                                                                          |
| Conn. Terms.                                                                                                     | 2-3, 5-6                                                                          | OPEN                                                                              | 2-1, 5-4                                                                          |
| <p>Schematic</p>  <p>DPDT</p> |                                                                                   |                                                                                   |                                                                                   |
| <b>GT22MAVBE</b>                                                                                                 | OFF                                                                               | NONE                                                                              | ON                                                                                |
| Conn. Terms.                                                                                                     | OPEN                                                                              | N/A                                                                               | 3-1, 6-4                                                                          |
| <p>Schematic</p>  <p>DPST</p> |                                                                                   |                                                                                   |                                                                                   |



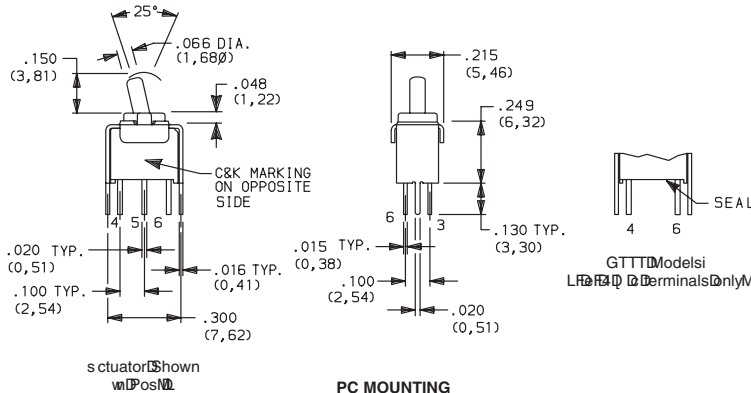
| PART NUMBER                                                                                      | SWITCH FUNCTION                                                                     |                                                                                     |                                                                                     |
|--------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                                                                                                  | POS.1                                                                               | POS. 2                                                                              | POS. 3                                                                              |
|                                                                                                  |  |  |  |
| <b>GT11MV3BE</b><br><b>GT13MV3BE</b>                                                             | ON<br>ON                                                                            | NONE<br>OFF                                                                         | ON<br>ON                                                                            |
| Conn. Terms.                                                                                     | 2-3                                                                                 | OPEN                                                                                | 2-1                                                                                 |
| Schematic<br> |                                                                                     |                                                                                     |                                                                                     |
| SPDT Note: Pins 4 and 6 not connected                                                            |                                                                                     |                                                                                     |                                                                                     |
| <b>GT12MV3BE</b>                                                                                 | OFF                                                                                 | NONE                                                                                | ON                                                                                  |
| Conn. Terms.                                                                                     | OPEN                                                                                | N/A                                                                                 | 3-1                                                                                 |
| Schematic<br> |                                                                                     |                                                                                     |                                                                                     |
| SPST Note: Pins 4 and 6 not connected                                                            |                                                                                     |                                                                                     |                                                                                     |



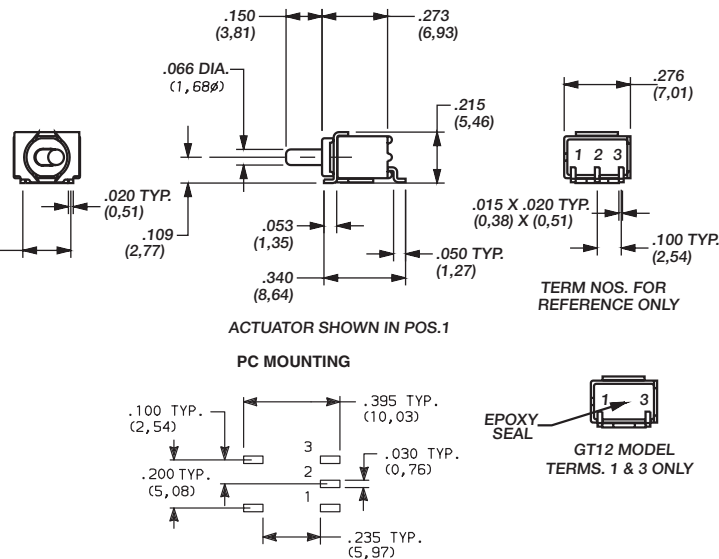
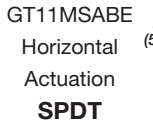
Third Angle Projection

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## GT Series e Switches

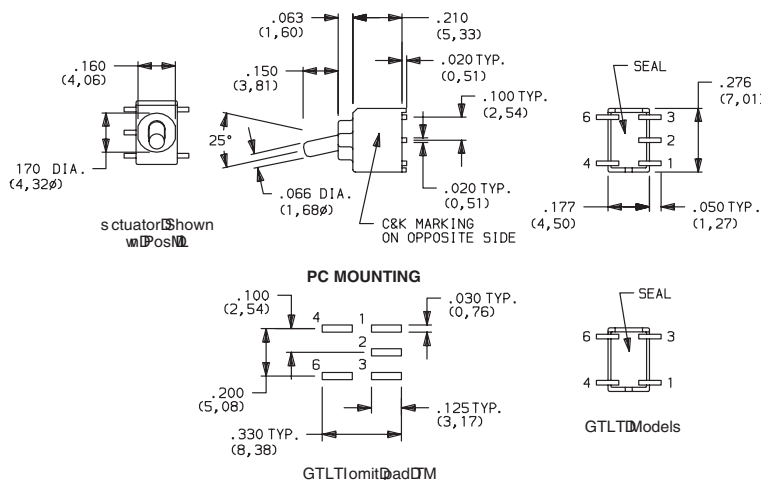


| PART NUMBER      | SWITCH FUNCTION |        |          |
|------------------|-----------------|--------|----------|
|                  | POS.1           | POS. 2 | POS. 3   |
| <b>GT21MV3BE</b> | ON              | NONE   | ON       |
| <b>GT23MV3BE</b> | ON              | OFF    | ON       |
| Conn. Terms.     | 2-3, 5-6        | OPEN   | 2-1, 5-4 |
| Schematic<br>    |                 |        |          |
| DPDT             |                 |        |          |
| <b>GT22MV3BE</b> | OFF             | NONE   | ON       |
| Conn. Terms.     | OPEN            | N/A    | 3-1, 6-4 |
| Schematic<br>    |                 |        |          |
| DPST             |                 |        |          |



| PART NUMBER                                                                                        | SWITCH FUNCTION |             |          |
|----------------------------------------------------------------------------------------------------|-----------------|-------------|----------|
|                                                                                                    | POS. 1          | POS. 2      | POS. 3   |
| <b>GT11MSABETR</b><br><b>GT13MSABETR</b>                                                           | ON<br>ON        | NONE<br>OFF | ON<br>ON |
| Conn. Terms.                                                                                       | 2-3             | OPEN        | 2-1      |
| Schematic<br> |                 |             |          |
| SPDT                                                                                               |                 |             |          |
| <b>GT12MSABETR</b>                                                                                 | OFF             | NONE        | ON       |
| Conn. Terms.                                                                                       | OPEN            | N/A         | 3-1      |
| Schematic<br> |                 |             |          |
| SPST                                                                                               |                 |             |          |

Standard with tape & reel packaging, see page F-42.



| PART NUMBER                                                                                                                                 | SWITCH FUNCTION                                                                       |                                                                                       |                                                                                       |
|---------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|                                                                                                                                             | POS. 1                                                                                | POS. 2                                                                                | POS. 3                                                                                |
|                                                                                                                                             |  |  |  |
| <b>GT11MSCBETR</b><br><b>GT13MSCBETR</b>                                                                                                    | ON<br>ON                                                                              | NONE<br>OFF                                                                           | ON<br>ON                                                                              |
| Conn. Terms.                                                                                                                                | 2-3                                                                                   | OPEN                                                                                  | 2-1                                                                                   |
| Schematic<br><br>SPDT Note: Pins 4 and 6 not connected |                                                                                       |                                                                                       |                                                                                       |
| <b>GT12MSCBETR</b>                                                                                                                          | OFF                                                                                   | NONE                                                                                  | ON                                                                                    |
| Conn. Terms.                                                                                                                                | OPEN                                                                                  | N/A                                                                                   | 3-1                                                                                   |
| Schematic<br><br>SPST Note: Pins 4 and 6 not connected |                                                                                       |                                                                                       |                                                                                       |

Standard with tape & reel packaging, see page F-42.



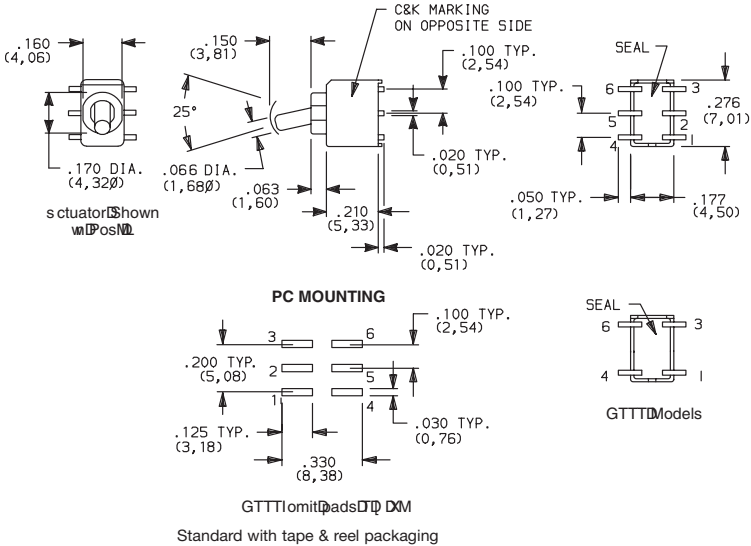
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

# GT Series

## Sealed Ultraminiature Toggle Switches

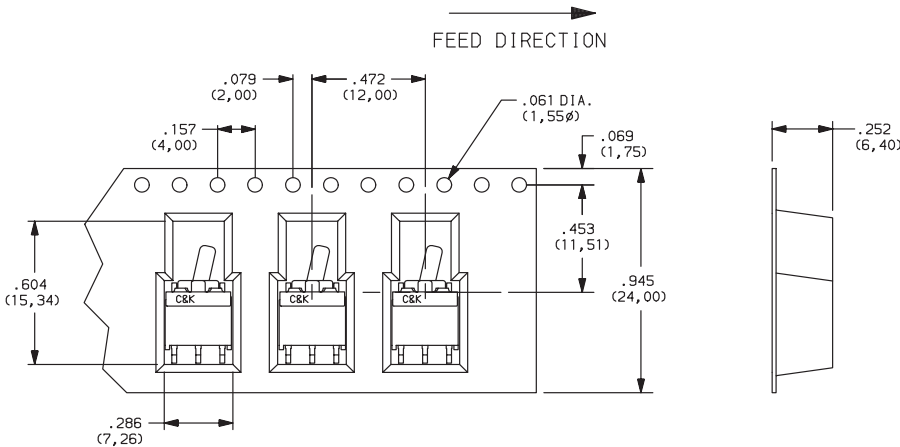


| PART NUMBER  | SWITCH FUNCTION |        |          |
|--------------|-----------------|--------|----------|
|              | POS. 1          | POS. 2 | POS. 3   |
| GT21MSCBETR  | ON              | NONE   | ON       |
| GT23MSCBETR  | ON              | OFF    | ON       |
| Conn. Terms. | 2-3, 5-6        | OPEN   | 2-1, 5-4 |
| Schematic    |                 |        |          |
| DPDT         |                 |        |          |
| GT22MSCBETR  | OFF             | NONE   | ON       |
| Conn. Terms. | OPEN            | N/A    | 3-1, 6-4 |
| Schematic    |                 |        |          |
| DPST         |                 |        |          |



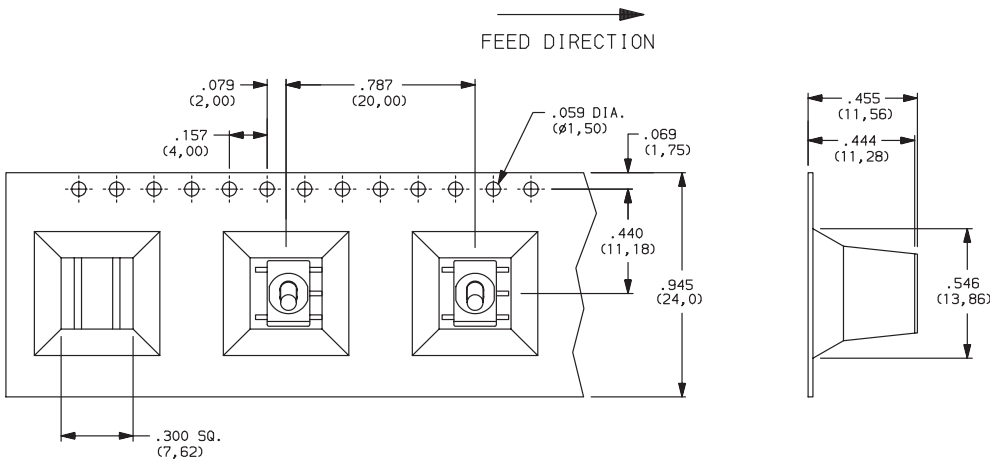
### TAPE & REEL

For part numbers GT11MSABE, GT12MSABE, GT13MSABE

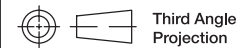


| REEL INFORMATION  |               |
|-------------------|---------------|
| OUTSIDE DIAMETER  | 13.00 (330,0) |
| PILOT HOLE        | .512 (13,0)   |
| QUANTITY PER REEL | 600           |

For part numbers GT11MSCBE, GT12MSCBE, GT13MSCBE, GT21MSCBE, GT22MSCBE, GT23MSCBE,



| REEL INFORMATION  |               |
|-------------------|---------------|
| OUTSIDE DIAMETER  | 13.00 (330,0) |
| PILOT HOLE        | .512 (13,0)   |
| QUANTITY PER REEL | 200           |



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

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# 9000 Series Power Toggle Switches

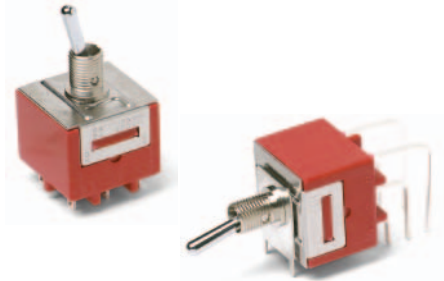
## Features/Benefits

- Power ratings up to 10 AMPS
- Double pole models
- Locking lever options available
- Wide variety of actuator styles
- RoHS compliant and compatible



## Typical Applications

- Shut-off switch
- Small equipment



## Specifications

CONTACT RATING: 9201 Model: 6 AMPS @ 120 V AC or 28 V DC; 3 AMPS @ 250 V AC. 9221 Model: 10 AMPS @ 125 V AC or 28 V DC; 5 AMPS @ 250 V AC.

ELECTRICAL LIFE: 25,000 make-and-break cycles at full load.

CONTACT RESISTANCE: Below 10 m  $\Omega$  typ. initial @ 2-4 V DC, 100 mA.

INSULATION RESISTANCE: 10<sup>9</sup>  $\Omega$  min.

DIELECTRIC STRENGTH: 2,500 Vrms min. @ sea level.

OPERATING TEMPERATURE: -30°C to 85°C.

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

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

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

## Materials

CASE: Diallyl phthalate (DAP) (UL 94V-0).

ACTUATOR: Brass, chrome plated.

BUSHING: Brass or zinc, nickel plated.

HOUSING: Stainless steel.

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

END CONTACTS: 9201 Model: Coin silver, silver plated.  
9221 Model: Silver cadmium oxide.

CENTER CONTACTS: Copper alloy, silver plated

ALL TERMINALS: 9201 Model: Copper alloy, silver plated.  
9221 Model: Copper alloy, matte-tin plated.

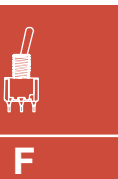
TERMINAL SEAL: Epoxy.

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

## 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-43 thru F-47. For additional options not shown in catalog, consult Customer Service Center.

|                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                          |                                                                                                                                                                                                                                      |                                                                                   |                                                                                            |                                                                                                                                |                                                                                                       |                                                                                                                                              |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| <div>Switch Function</div> <div><div></div><div></div><div></div><div></div></div> <div>9201 DPDT, On-On, 6 Amps</div> <div>9221 DPDT, On-On, 10 Amps</div> | <div>Actuator</div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div>S Antirotation, .410" high</div> <div>K Locking lever, .650" high</div> <div>K1 Locking lever, .680" high</div> <div>L43 Lever handle with cap</div> <div>P3 Flatted, anti-rotation, .450" high</div> <div>T .687" high, 15/32 bushing</div> <div>T1 .460" high, 15/32 bushing</div> | <div>Bushing</div> <div><div></div><div></div><div></div></div> <div>H3 .296" high, keyway</div> <div>CW Splashproof</div> <div>H .296" high, flat</div> | <div>Terminations</div> <div><div></div><div></div><div></div><div></div></div> <div>Z Solder lug</div> <div>Z4 Quick connect (9221 only)</div> <div>AV2 Vert. right angle, PC thru-hole (9201 only)</div> <div>C PC Thru-hole</div> | <div>Contact Material</div> <div><div></div><div></div></div> <div>Q Silver</div> | <div>Seal</div> <div><div></div><div></div></div> <div>E Epoxy</div> <div>D No epoxy</div> | <div>Actuator Color/Finish</div> <div><div></div><div></div><div></div></div> <div>NONE Bright chrome</div> <div>2 Black</div> | <div>Bushing Finish</div> <div><div></div><div></div></div> <div>NONE Nickel</div> <div>2 Black</div> | <div>KXX Actuator Color/Finish</div> <div><div></div><div></div></div> <div>NONE Natural aluminum</div> <div>2 Black anodized aluminum</div> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|



Toggle



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

9000 Series  
Power Toggle Switches

SWITCH FUNCTION

| NO. POLES | MODEL NO. | RATING* | SWITCH FUNCTION |        | CONNECTED TERMINALS |         | SCHEMATIC |
|-----------|-----------|---------|-----------------|--------|---------------------|---------|-----------|
|           |           |         | POS. 1          | POS. 2 | POS. 1              | POS. 2  |           |
|           |           |         | KEYWAY          | KEYWAY | KEYWAY              | KEYWAY  |           |
| DP        | 9201      | 6 AMPS  | ON              | ON     | 2-3,5-6             | 2-1,5-4 |           |
|           | 9221      | 10 AMPS | ON              | ON     |                     |         |           |

**DPDT**

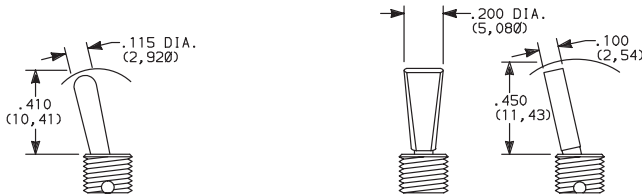
Part number shown: 9201SH3ZQE

Terminal Nos.  
Molded On Side Of Case

\* See CONTACT MATERIAL, page F-47, for complete ratings.  
All 9000 Series models meet international dimensional and electrical requirements.   
9221 model must be ordered with Z4 terminations and D seal option.

ACTUATOR

- S** ANTIROTATION, .410" HIGH      **P3** FLATTED, ANTIROTATION, .450" HIGH

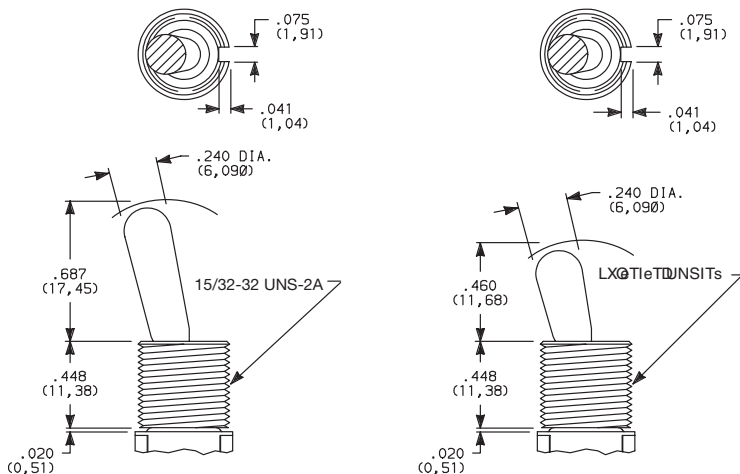


| OPTION CODE | ACTUATOR FINISH                             |
|-------------|---------------------------------------------|
| NONE        | NATURAL ALUMINUM—With Nickel Plated Bushing |
| 2           | BLACK                                       |

**NOTE:** Black hardware is supplied when either black actuators or bushings are specified. All hardware is available separately, see Section N.  
Antirotation is standard on all actuators, provides 'anti-push-in' feature on actuator.

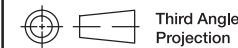
Dress nut part number: 709901201 supplied standard with P3 actuator.

- T** .687" HIGH, 15/32 BUSHING      **T1** .460" HIGH, 15/32 BUSHING



| OPTION CODE | ACTUATOR FINISH                          |
|-------------|------------------------------------------|
| NONE        | BRIGHT CHROME—With Nickel Plated Bushing |
| 2           | BLACK                                    |

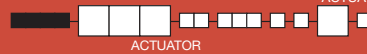
**NOTE:** Bushing option code not required for T & T1 actuators unless CW splashproof bushing ordered.  
Black hardware is supplied when either black actuators or bushings are specified. All hardware is available separately, see Section N.  
Antirotation is standard on all actuators except T & T1, provides 'anti-push-in' feature on actuator.



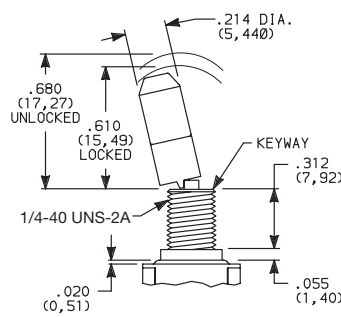
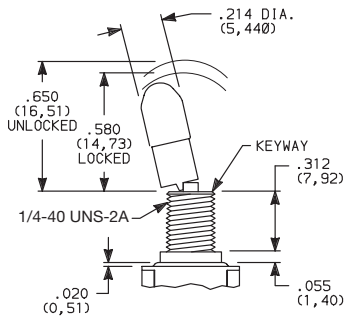
Third Angle  
Projection

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

www.ck-components.com



**K1** LOCKING LEVER, .680" HIGH, THREADED



## Locking Positions

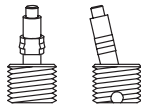


TDPositionLock

**NOTE:** To prevent accidental actuation, toggles must be lifted before being actuated. When released, toggles again lock in place. Bushing option code not required. Overtightening mounting nut may cause actuator to bind.

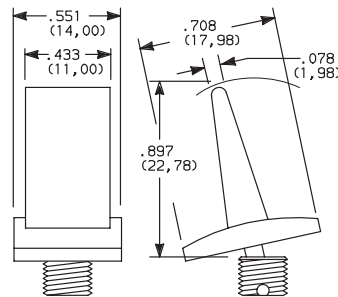
| OPTION CODE | ACTUATOR CAP FINISH                          |
|-------------|----------------------------------------------|
| NONE        | NATURAL ALUMINUM--With Nickle Plated Bushing |
| 2           | BLACK ANODIZED ALUMINUM                      |

**L40** LEVER HANDLE  
WITHOUT CAP



No color choice required.

**L43** PLASTIC LEVER HANDLE WITH ANTIROTATION AND CAP, P/N 4812



Finish: Matte

| OPTION CODE | ACTUATOR CAP COLOR             |
|-------------|--------------------------------|
| <b>2</b>    | BLACK                          |
| <b>NONE</b> | No Actuator Color (L40 option) |

Other colors available, consult Customer Service Center.

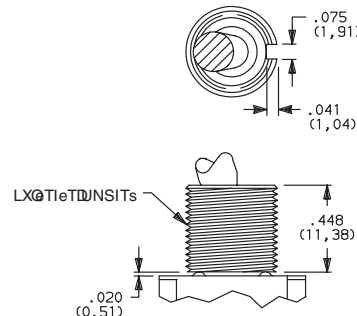
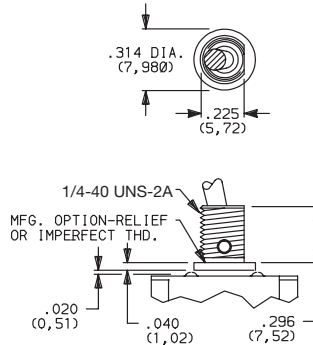
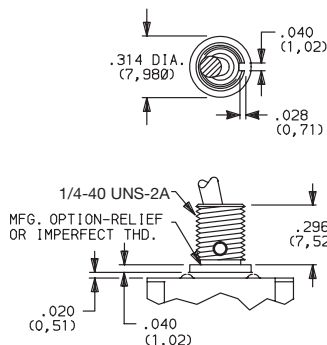
**NOTE:** Lever handle actuator L43 supplied, but not installed. For interchangeability, order L40 actuator option and order lever handles separately, see page F-47. Antirotation is standard on all actuators, provides 'anti-push-in' feature.



**H3** .296" HIGH, THREADED, KEYWAY

**H** .296" HIGH, THREADED, FLAT

**CW** SPLASHPROOF, 15/32 BUSHING



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

For T & T1 actuators only.

| OPTION CODE | BUSHING FINISH |
|-------------|----------------|
| <b>NONE</b> | NICKEL         |
| <b>2</b>    | BLACK          |

**NOTE:** Two mounting nuts, locking ring and lockwasher supplied standard with threaded bushings. Black hardware is supplied when either black bushings or actuators are specified. Optional mounting nut and locking ring styles and finishes available, see Section N.

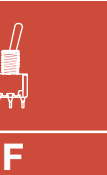
Internal actuator seal standard. External bushing seal available separately from APM Hexseal, part # MFS-60064.



### Third Angle Projection

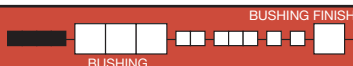
Dimensions are shown: Inches (mm)

Specifications and dimensions subject to change



# 9000 Series Power Toggle Switches

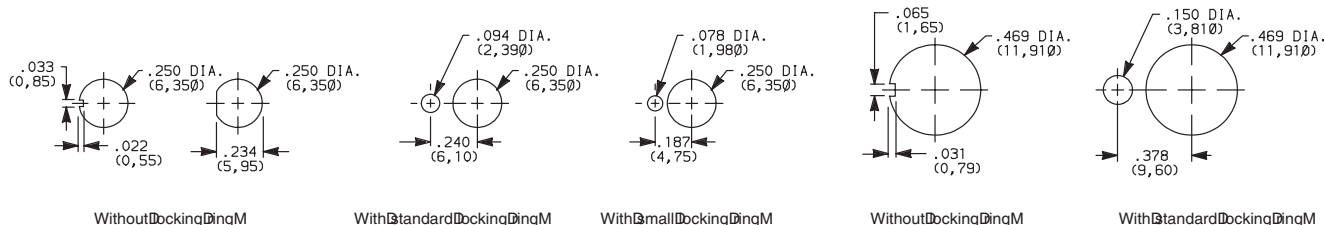
## BUSHING



## PANEL MOUNTING

1/4-40 UNS-2A

15/32-32 UNS-2A



Without Docking Ring M

With Standard Docking Ring M

With Small Docking Ring M

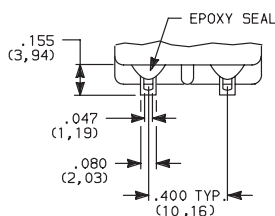
Without Docking Ring M

With Standard Docking Ring M

## TERMINATIONS

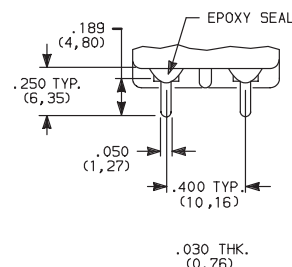


### Z SOLDER LUG



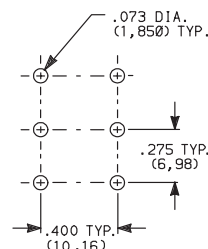
9201 Only

### C PC THRU-HOLE



9201 Only

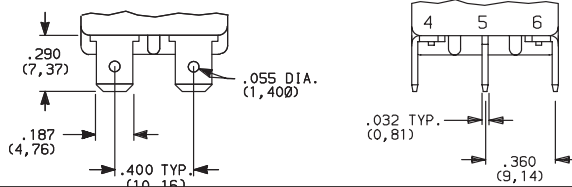
### PC MOUNTING



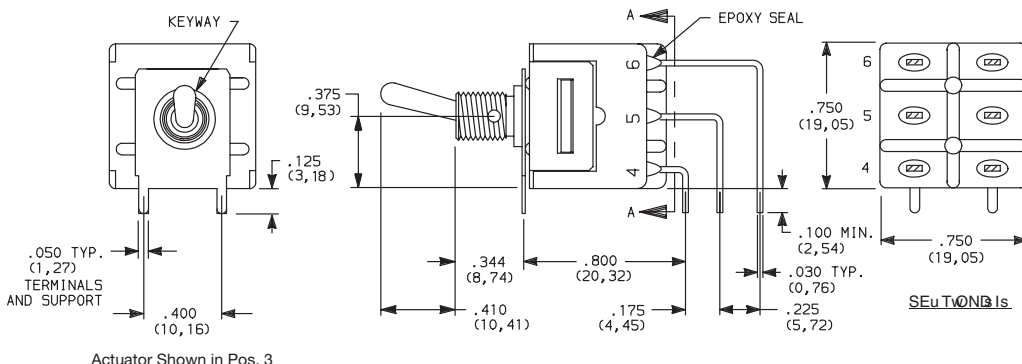
### Z4 .187" QUICK CONNECT

9221 Only

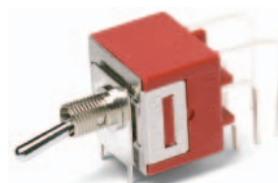
**NOTE:** Only termination available with 9221 model. Must be ordered with D seal option. Mates with standard .187 Nema female connector.



### AV2 VERTICAL RIGHT ANGLE, PC THRU-HOLE

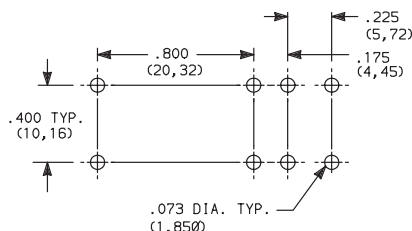


Actuator Shown in Pos. 3



9201SH3AV2QE  
Vertical Actuation  
DPDT

### PC MOUNTING



Terminal Nos.  
For Reference Only



Dimensions are shown: Inches (mm)

Specifications and dimensions subject to change

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# 9000 Series Power Toggle Switches

## CONTACT MATERIAL

| OPTION CODE | MODEL | CONTACT MATERIAL                      | TERMINAL PLATING             | RATINGS |                                                  |
|-------------|-------|---------------------------------------|------------------------------|---------|--------------------------------------------------|
| Q           | 9201  | SILVER <sup>1,2</sup>                 | SILVER OR TIN <sup>2,5</sup> | POWER   | 6 AMPS @120 V AC OR 28 V DC; 3 AMPS @ 250 V AC.  |
|             | 9221  | SILVER CADMIUM OXIDE <sup>3,4,6</sup> | TIN <sup>5</sup>             |         | 10 AMPS @125 V AC OR 28 V DC; 5 AMPS @ 250 V AC. |

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

<sup>1</sup> END CONTACTS: Coin silver, silver plated.

<sup>2</sup> CENTER CONTACTS & ALL TERMINALS: Copper alloy, silver plated.

<sup>3</sup> END CONTACTS: Silver cadmium oxide.

<sup>4</sup> CENTER CONTACTS: Copper alloy, silver plated.

<sup>5</sup> Z4 TERMINALS ONLY: Copper alloy, matte-tin plated.

<sup>6</sup> Cadmium in electrical switch contacts is exempt from RoHS.

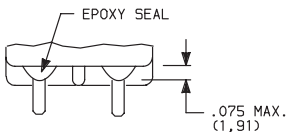
**NOTE:** Any models supplied with Q contact material are RoHS compliant.

All 9000 Series models meet international dimensional and electrical requirements.   

9221 model must be ordered with Z4 terminations and D seal option.

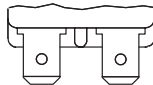
## SEAL

**E** EPOXY SEAL



Not available with 9221 model or Z4 terminations.

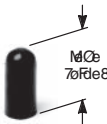
**D** NO EPOXY SEAL



Must be ordered with 9221 model and Z4 termination.

## AVAILABLE HARDWARE

Cap  
Compatible with S actuator



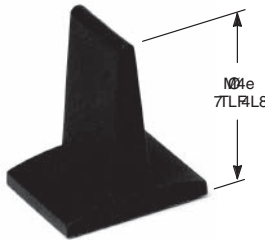
**PART NO.**  
**896801000** WHITE  
**896802000** BLACK  
**896803000** RED  
 Material: Polyethylene  
 Finish: Matte

Cap  
Compatible with S actuator



**PART NO.**  
**706201000** WHITE  
**706202000** BLACK  
**706203000** RED  
 Material: Vinyl  
 Finish: Matte

L43 Actuator

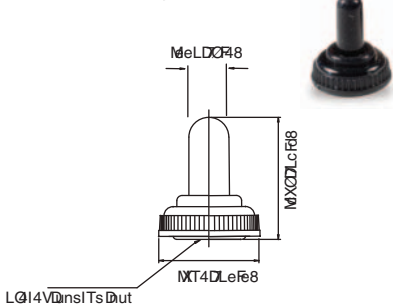


**PART NO.**  
**481202000** BLACK  
**481203000** RED  
 Material: Nylon  
 Finish: Matte

**NOTE:** Additional nuts, locking rings and lockwashers available separately, see Section N.

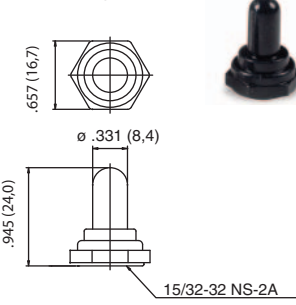
Other colors available, consult Customer Service Center.

759D02000 Sealing Boot



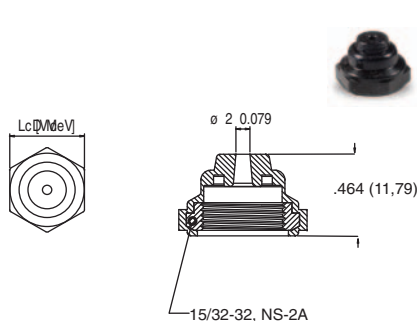
**NOTE:** For use with S actuator style when combined with H3 and H bushings

703D02000 Sealing Boot



**NOTE:** For use with T style actuator

704D02000 Sealing Boot



**NOTE:** For use with T style actuator



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



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