








# Toggles

## Product Selection Guide

<b>Toggles</b>							
<b>Series</b>	<b>7000</b>	<b>Military</b>	<b>E</b>	<b>ET</b>	<b>T</b>	<b>GT</b>	<b>9000</b>
<b>Switch Type</b>	Miniature	Miniature	Miniature	Subminiature	Subminiature	Ultraminiature	Power
<b>Poles/Throws</b>	SPDT, DPDT, 3PDT, 4PDT	SPDT, DPDT,	SPDT, DPDT, 3PDT	SPST, SPDT, DPDT	SPST, SPDT, DPDT	SPST, SPDT, DPST, DPDT	DPDT
<b>Maximum Current Silver/Gold</b>	5 Amps	5 Amps	7.5 Amps/ 5 Amps	3 Amps/ 2 Amps	3 Amps/ 2 Amps	0.4 VA	10 Amps
<b>Process Sealed</b>			•	•		•	
<b>PCB Mount Options</b>							
Vertical	•	•	•	•	•	•	•
Right Angle	•	•	•	•	•	•	
Vertical Right Angle	•	•	•	•	•	•	•
<b>Surface Mount Options</b>							
Vertical						•	
Right Angle				•		•	
<b>Panel Mount Options</b>							
Rear Mount	•	•	•		•		•
<b>Termination Options</b>							
PCB Thru-hole	•	•	•	•	•	•	•
Wire Wrap	•		•	•	•		
Solder Lug	•	•	•		•		•
Quick Connect	•		•				•
<b>Other Available Options</b>							
Support Brackets	•	•	•	•	•	•	•
Snap-in Retention	•		•	•			
ESD Protection	•		•	•	•		
Tape & Reel				•		•	
<b>Bushing Options</b>							
10-48					•		
1/4-40	•	•	•		•		•
15/32	•						•
M6P 0.75 (Metric)	•						
<b>Page No.</b>	G-3	G-17	G-22	G-30	G-37	G-43	G-48



Toggle



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

# 7000 Series Miniature Toggle Switches

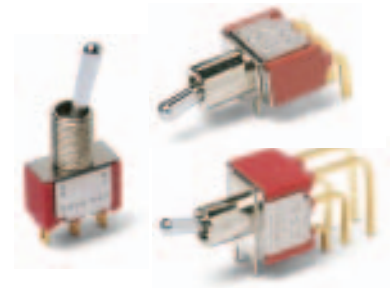
## Features/Benefits

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

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

DIELECTRIC STRENGTH: 1000 Vrms min. @ sea level.

OPERATING TEMPERATURE: -30°C to 85°C.

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

For materials see page G-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 G-4 thru G-16. For additional options not shown in catalog, consult our Customer Service Center.

<p><b>Switch Function</b></p> <p><b>7101</b> SP On-None-On  <b>7103</b> SP On-Off-On  <b>7105</b> SP Mom.-Off-Mom.  <b>7107</b> SP On-Off-Mom.  <b>7108</b> SP On-None-Mom.  <b>7109</b> SP None-On-Mom.  <b>7201</b> DP On-None-On  <b>7203</b> DP On-Off-On  <b>7205</b> DP Mom.-Off-Mom.  <b>7207</b> DP On-Off-Mom.  <b>7208</b> DP On-None-Mom.  <b>7211</b> DP On-On-On  <b>7213</b> DP On-On-Mom.  <b>7215</b> DP Mom.-On-Mom.  <b>7301</b> 3P On-None-On  <b>7303</b> 3P On-Off-On  <b>7305</b> 3P Mom.-Off-Mom.  <b>7308</b> 3P On-None-Mom.  <b>7401</b> 4P On-None-On  <b>7403</b> 4P On-Off-On  <b>7405</b> 4P Mom.-Off-Mom.  <b>7408</b> 4P On-None-Mom.  <b>7411</b> 4P On-On-On  <b>7413</b> 4P On-On-Mom.  <b>7415</b> 4P Mom.-On-Mom.</p> <p><b>Note:</b> UL/CSA models available, see pages G-4 &amp; G-5.</p>	<p><b>Actuator</b></p> <p><b>M</b> .200" high  <b>P3</b> Flatted, anti-rotation, .450" high  <b>S</b> .420" high  <b>T</b> .687" high, 15/32 bushing  <b>K2</b> Locking lever, .704" high  <b>K9</b> Locking lever, .704" high  <b>K12</b> Locking lever, .732" high  <b>K19</b> Locking lever, .732" high  <b>L</b> .840" high  <b>L1</b> .640" high  <b>L1P</b> Anti-rotation, .640" high  <b>L2</b> .550" high  <b>L2P</b> Anti-rotation, .550" high  <b>L3</b> Plastic .940" inch  <b>L40</b> Lever handle without cap  <b>L41</b> .531" high lever handle with cap  <b>L42</b> .838" high lever handle with cap  <b>MP</b> Anti-rotation, .200" high  <b>P1</b> Flatted, anti-rotation, .840" high  <b>P4</b> Flatted, anti-rotation, .250" high  <b>SP</b> Anti-rotation, .420" high  <b>T1</b> .487" high, 15/32 bushing  <b>T1P</b> Anti-rotation, .487" high, 15/32 bushing  <b>T2P</b> Flatted, anti-rotation, .610" high, 15/32 bushing,  <b>TP</b> Anti-rotation, .687" high, 15/32 bushing</p>	<p><b>Bushing</b></p> <p><b>D</b> .280 high, keyway  <b>H</b> .296 high, flat  <b>Y</b> .350 high, keyway  <b>NONE</b> No bushing choice required  <b>CW</b> Splashproof  <b>D8</b> .280" high, flat  <b>D9</b> .280" high, keyway  <b>H3</b> .315" high, keyway  <b>H4</b> 8mm high, keyway  <b>Y1</b> .378" high, keyway  <b>Y3</b> 8.9mm high, keyway  <b>Y4</b> .378" high, flat  <b>Y9</b> .350" high, keyway</p> <p><b>Terminations</b></p> <p><b>A</b> Right angle, PC thru-hole  <b>AV2</b> Vert. right angle, PC thru-hole  <b>C</b> PC Thru-hole  <b>V3</b> .460 high, V-bracket  <b>Z</b> Solder lug  <b>A2</b> Right angle, PC thru-hole  <b>A3</b> Right angle, PC thru-hole  <b>A4</b> Right angle, PC thru-hole  <b>AW1</b> Right angle, extended, PC thru-hole  <b>AW4</b> Right angle, extended, PC thru-hole  <b>V2</b> .555" high, V-bracket  <b>V4</b> .630" high, V-bracket  <b>V6</b> .460" high, V-bracket  <b>V7</b> .630" high, V-bracket  <b>V8</b> .953" high, V-bracket  <b>V9</b> 1.150" high, V-bracket  <b>V21</b> .555" high, snap-in V-bracket  <b>V31</b> .460" high, snap-in V-bracket  <b>V41</b> .630" high, snap-in V-bracket  <b>V71</b> .630" high, snap-in V-bracket  <b>V81</b> .953" high, snap-in V-bracket</p>	<p><b>Contact Material</b></p> <p><b>B</b> Gold  <b>P</b> Gold, matte-tin  <b>Q</b> Silver  <b>S</b> Silver, matte-tin  <b>G</b> Gold over silver  <b>R</b> Gold over silver, matte-tin</p> <p><b>Seal</b></p> <p><b>E</b> Epoxy  <b>I</b> Epoxy potted base</p> <p><b>Actuator Color/Finish</b></p> <p><b>NONE</b> Bright chrome  <b>2</b> Black  <b>3</b> Red  <b>S</b> Satin chrome</p> <p><b>KXX Actuator Color/Finish</b></p> <p><b>NONE</b> Natural aluminum  <b>2</b> Black anodized aluminum  <b>3</b> Red anodized aluminum  <b>7</b> Blue anodized aluminum</p> <p><b>Bushing Finish</b></p> <p><b>NONE</b> Nickel on all bushings (except D8, satin chrome)  <b>2</b> Black</p> <p><b>W</b> .750" long, wire wrap  <b>W1</b> .964" long, wire wrap  <b>W3</b> .425" long, wire wrap  <b>W4</b> 1.062" long, wire wrap  <b>W5</b> 1.305" long, wire wrap  <b>Z3</b> Quick connect</p>
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Dimensions are shown: Inch (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 G-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.

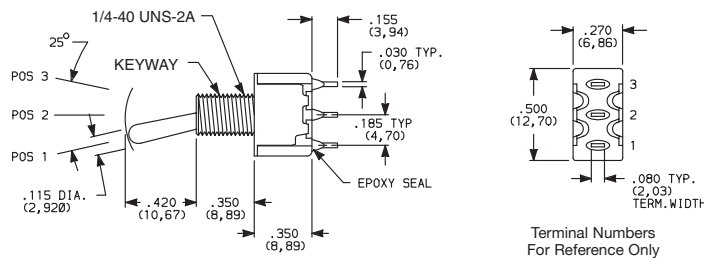
**NOTE:** Materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## 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.	2-3	N/A	2-1	
	7109	U19	NONE	ON	MOM.	N/A	2-3	2-1	

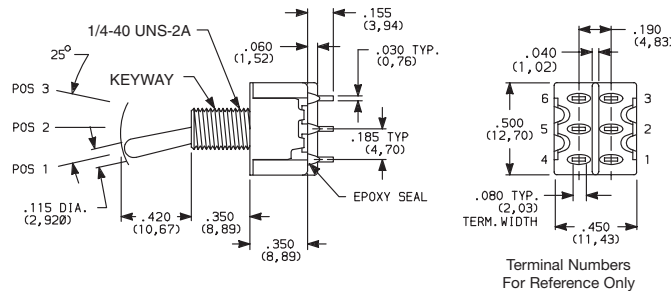
### SPDT



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.	2-3,5-6	N/A	2-1,5-4	
	7211*	U211*	ON	ON	ON				
	7213*	U213*	ON	ON	MOM.	2-3,5-6	2-3,5-4	2-1,5-4	
	7215*	U215*	MOM.	ON	MOM.				

### DPDT



Part number shown: 7201SYZQE

MOM. = Momentary

\*\* U11-U415 model nos. with all options when ordered with G, L, R, M, Q or S contact material.

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



Toggle



Third Angle  
Projection



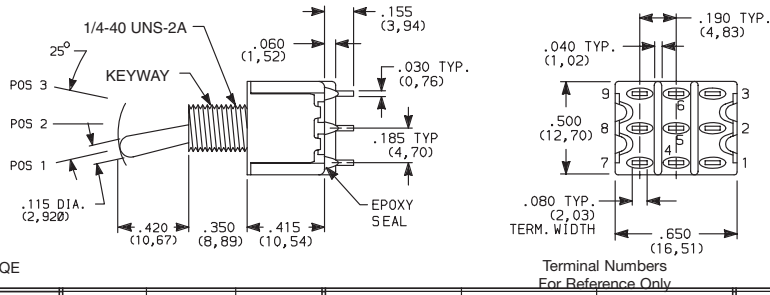
Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

# 7000 Series Miniature Toggle Switches

## SWITCH FUNCTION

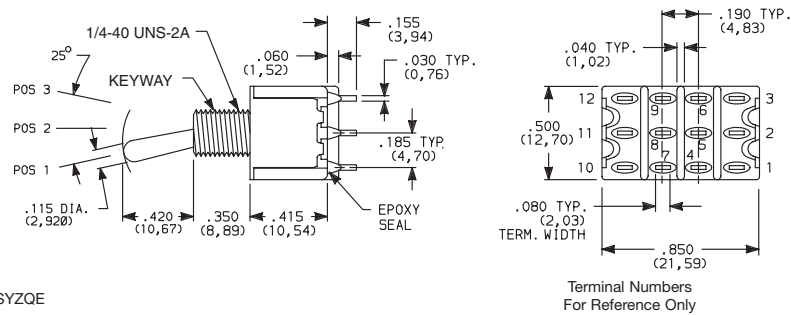
NO. POLES	MODEL NO.	UL/CSA** MODEL NO.	SWITCH FUNCTION			CONNECTED TERMINALS			SCHEMATIC
			POS. 1	POS. 2	POS. 3	POS. 1	POS. 2	POS. 3	
			KEYWAY	KEYWAY	KEYWAY	KEYWAY	KEYWAY	KEYWAY	
3P	7301	U31	ON	NONE	ON	2-3,5-6,8-9	N/A	2-1,5-4,8-7	
	7303	U33	ON	OFF	ON	2-3,5-6,8-9	OPEN	2-1,5-4,8-7	
	7305	U35	MOM.	OFF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



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

### 4PDT

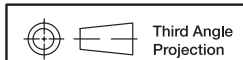


MOM. = Momentary

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

\*\* U11-U415 model nos.

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



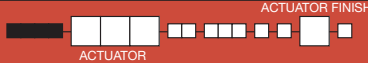
Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change



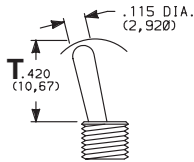
Toggle

# 7000 Series Miniature Toggle Switches

## ACTUATOR

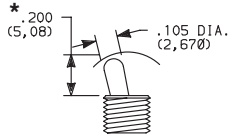


**S** .420" HIGH <sup>1</sup>  
**SP** ANTIROTATION, .420" HIGH <sup>2,3</sup>



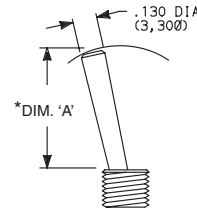
S actuator standard when ordered with C, W-W5, Z & Z3 terminations. Caps are available separately, see page G-16.

**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 G-16.

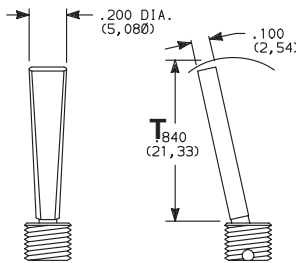
**L, L1, L2** .840", .640", .550" HIGH <sup>1</sup>  
**L1P, L2P** ANTIROTATION, .840", .640", .550" HIGH <sup>2,3</sup>



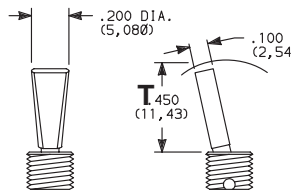
OPTION CODE	DIM 'A'
L	.840 (21,34)
L1, L1P	.640 (16,26)
L2, L2P	.550 (13,97)

Caps are available separately, see page G-16.

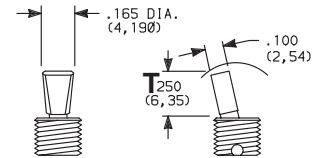
**P1** FLATTED WITH ANTIROTATION, .840" HIGH <sup>2,3</sup>



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

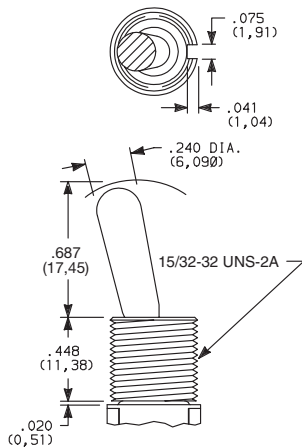


**P4** FLATTED WITH ANTIROTATION, .250" HIGH <sup>2,3</sup>

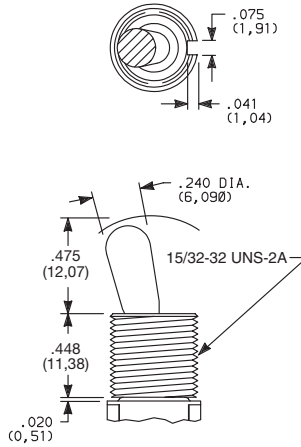


Dress nut part number 709901201 supplied standard with threaded bushing. (Part number 709903201 with metric threaded bushings.)

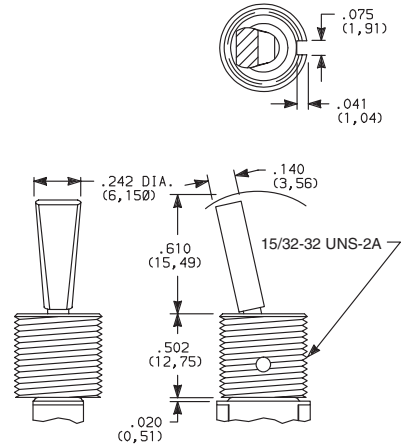
**T** .675 (17,15) HIGH <sup>1,2</sup>  
**TP** ANTIROTATION, .675 (17,15) HIGH, 15/32 BUSHING <sup>1,2,3</sup>



**T1** .475 (12,07) HIGH <sup>1,2</sup>  
**T1P** ANTIROTATION, .475 (12,07) HIGH, 15/32 BUSHING <sup>1,2,3</sup>



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



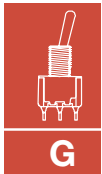
Bushing option code not required unless CW splashproof bushing ordered. TP & T1P actuators not available with CW splashproof bushing. All TXX actuators not available on single pole models with A-A4, AW1-AW4 terminations.

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
NONE	BRIGHT CHROME-With Nickel Plated Bushing
2	BLACK
S	SATIN CHROME

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



Toggle



Third Angle Projection

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



# 7000 Series Miniature Toggle Switches

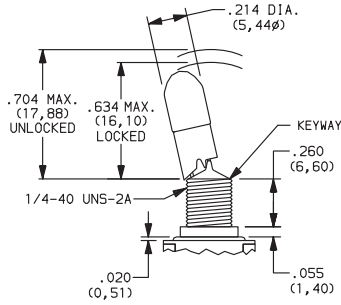
## ACTUATOR

ACTUATOR FINISH/COLOR

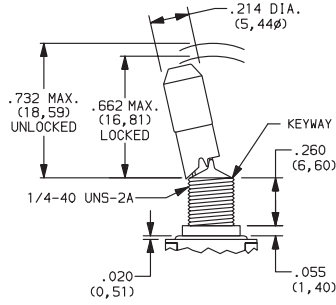
ACTUATOR

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

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



Replaces K, K8



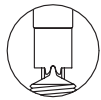
Replaces K1, K18

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

### Locking Positions



-01 Models  
2 Position lock



-03 & -11 Models  
3 Position lock



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



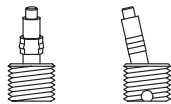
-07 & -13 Models  
2 Position lock



-08 Models  
1 Position lock

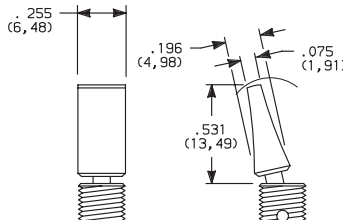
**NOTE:** To prevent accidental actuation, toggle must be lifted before being actuated. When released, toggle will lock in place. Overtightening mounting nut may cause actuator to bind. Locking levers supplied with bushing shown. Bushing option code not required unless CW splashproof bushing ordered.

- L40** LEVER HANDLE WITHOUT CAP



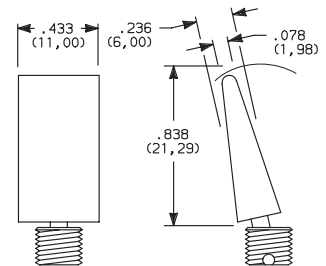
No color choice required

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

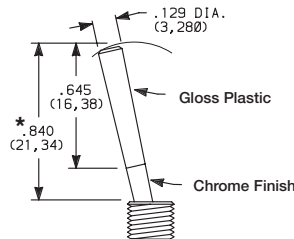


Finish: Matte (L41 & L42).

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



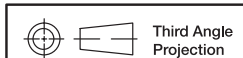
- L3** PLASTIC .940" HIGH



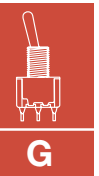
OPTION CODE	PLASTIC ACTUATOR COLORS
<b>NONE</b>	No Actuator Color (L40 option)
<b>2</b>	BLACK
<b>3</b>	RED

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

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



Third Angle Projection  
Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

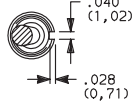


# 7000 Series Miniature Toggle Switches

## BUSHING

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

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



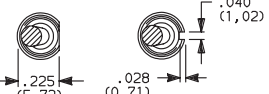
**NONE** NO BUSHING

No bushing choice required with KXX, TXX actuators. (exception: Specify CW if splashproof bushing desired).

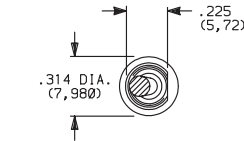
**D** .280" HIGH, THREADED, KEYWAY

**D8** .280" HIGH, UNTHREADED, FLAT<sup>3</sup>

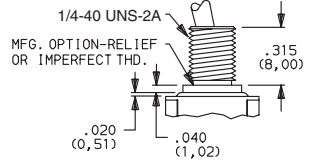
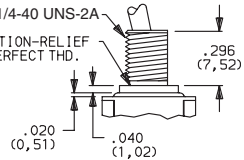
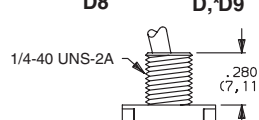
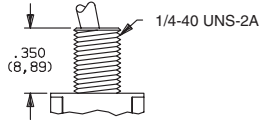
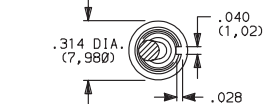
**D9** .280" HIGH, UNTHREADED, KEYWAY



**H** .296" HIGH, FLAT THREADED, HIGH TORQUE 1,2



**H3** .315" HIGH, KEYWAY THREADED, HIGH TORQUE 1,2

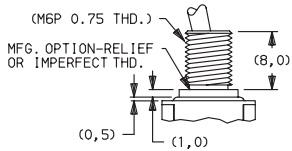
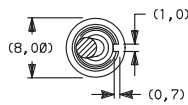


Y bushing standard with C, W-W5, Z or Z3 terminations.

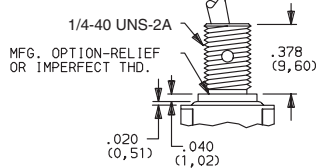
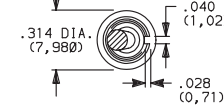
D9 bushing standard with all terminations except C, W-W5, Z or Z3. Add .070 (1,78) to all actuators lengths with D, D8 & D9 bushings.

Subtract .020 (0,51) from all actuator lengths for H3 bushing.

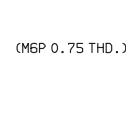
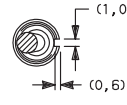
**H4** 8mm HIGH, KEYWAY, THREADED, METRIC HIGH TORQUE 1,2,3



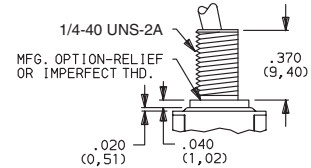
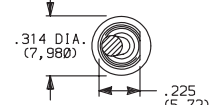
**Y1** .378" HIGH, KEYWAY, THREADED, HIGH TORQUE 1,2,4



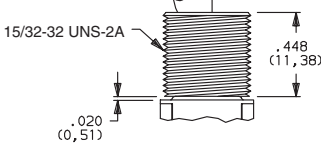
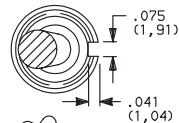
**Y3** 8.9mm HIGH, KEYWAY, THREADED, METRIC



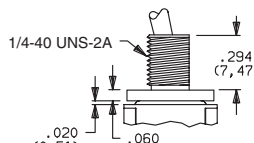
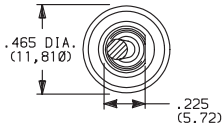
**Y4** .378" HIGH, FLAT, THREADED, HIGH TORQUE 1,2,5



**CW** THREADED, SPLASHPROOF 1,2  
For T & T1 actuators.



For actuators other than T & T1.



IP67 Degree of protection, totally protected against dust, full-scale voltage protection, temporary immersion. Internal actuator seal standard. External bushing seal washer available separately, order from: APM Hexseal Englewood, N. J. Part Number: 60225

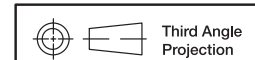
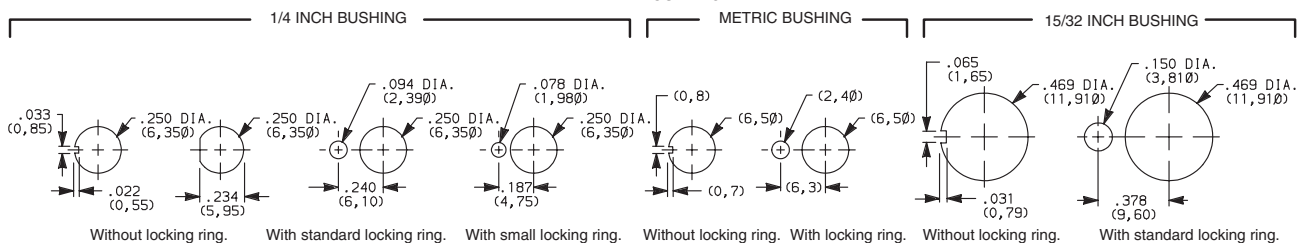
IP67 Degree of protection, totally protected against dust, full-scale voltage protection, temporary immersion. Internal actuator seal and external bushing seal washer standard.

OPTION CODE	BUSHING FINISH
<b>NONE</b>	NICKEL on all bushings except 'D8' satin chrome.
<b>2</b>	BLACK

- 1 Will withstand 12 in.-lbs. of torque with no distortion.
- 2 CW, H, H3, H4, Y1 & Y4 bushings not available on single pole models with A4 terminations.
- 3 D8 & H4 bushings available only with L, L1, L2, M & S actuators.
- 4 Y1 bushing available only with LXP, MP, PX & SP actuators.
- 5 Y4 bushing not available with L4X actuators.

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

### PANEL MOUNTING

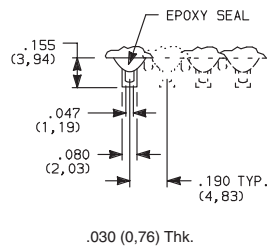


Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

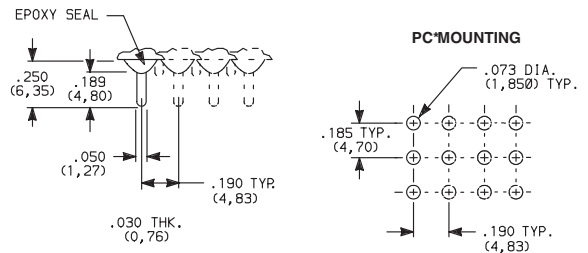
# 7000 Series Miniature Toggle Switches

## TERMINATIONS

### Z SOLDER LUG



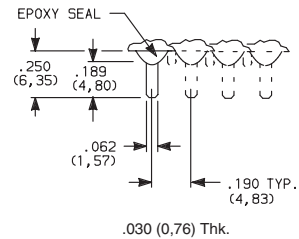
### C PC THRU-HOLE



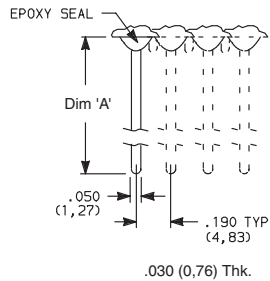
SPDT thru 4PDT Not available with P, R or S contact materials.

SPDT thru 4PDT

### Z3 QUICK CONNECT



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

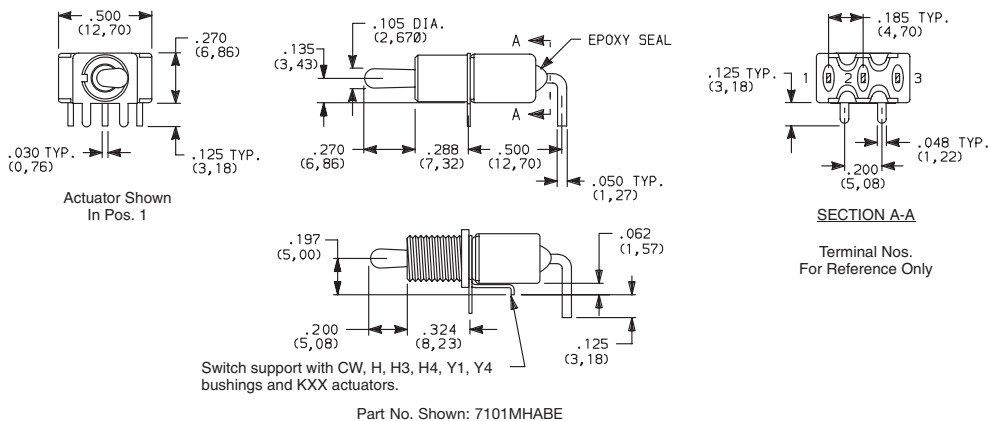


OPTION CODE	DIM 'A'
W	.750 (19,05)
W1	.964 (24,48)
W3	.425 (10,80)
W4	1.062 (26,97)
W5	1.305 (33,15)

SPDT thru 4PDT Not available with P, R or S contact materials. Mating quick connector available, order part number 530100000, page G-16.

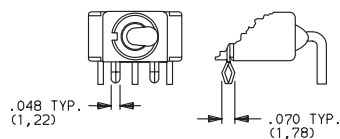
SPDT thru 4PDT

### A RIGHT ANGLE, PC THRU-HOLE

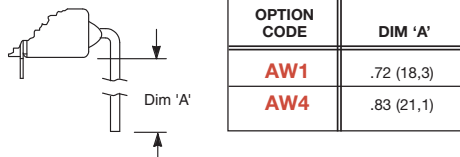


7101MD9ABE  
Horizontal Actuation  
SPDT

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

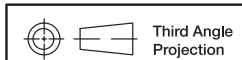
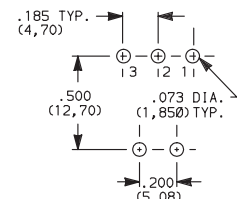


### AW1, AW4 RIGHT ANGLE, EXTENDED, PC THRU-HOLE

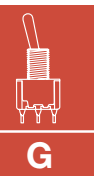


Not available with I seal option.  
Terminal bend radii and lead-in manufacturing option.

### PC MOUNTING



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



Toggle



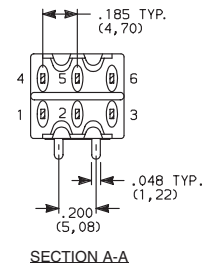
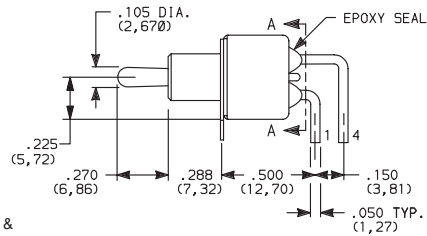
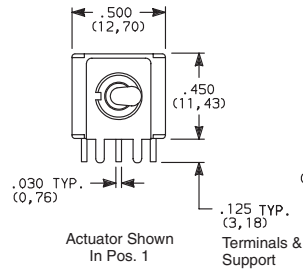
# 7000 Series Miniature Toggle Switches

## TERMINATIONS

### A RIGHT ANGLE, PC THRU-HOLE

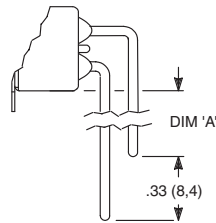
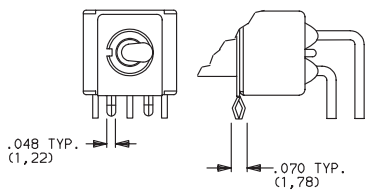


**7201MD9ABE**  
Horizontal Actuation  
**DPDT**



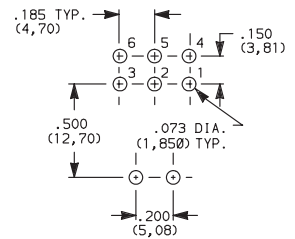
### A3 RIGHT ANGLE, SNAP-IN, PC THRU-HOLE

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



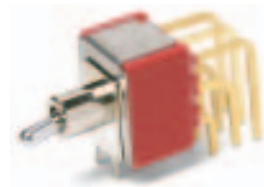
OPTION CODE	DIM 'A'
<b>AW1</b>	.40 (10,2)
<b>AW4</b>	.50 (12,7)

### PC MOUNTING

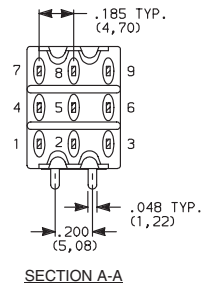
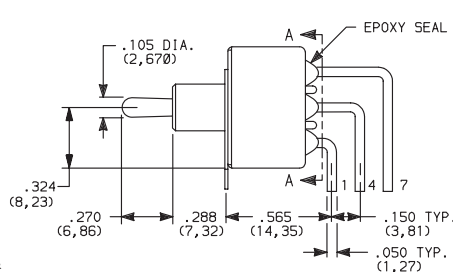
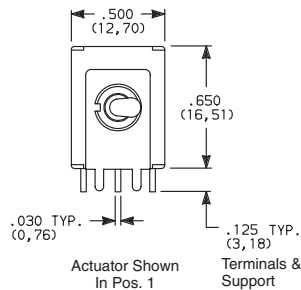


Not available with I seal option.  
Terminal bend radii and lead-in manufacturing option.

### A RIGHT ANGLE, PC THRU-HOLE

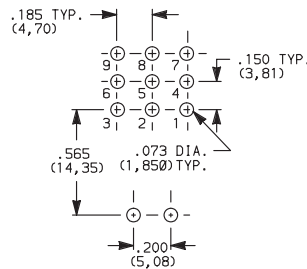
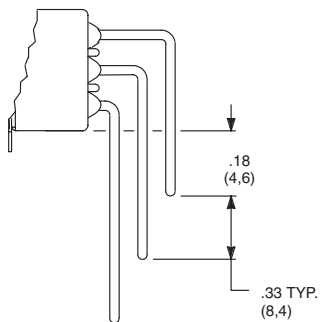


**7301MD9ABE**  
Horizontal Actuation  
**3PDT**



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

### PC MOUNTING



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

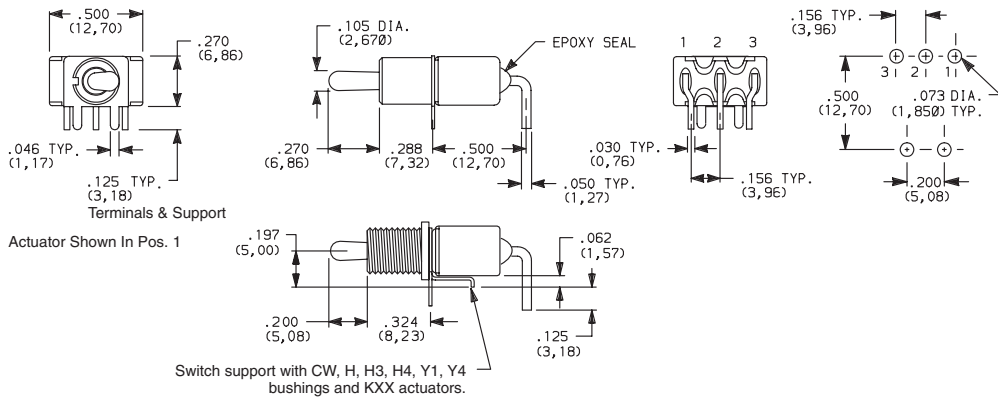


Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

# 7000 Series Miniature Toggle Switches

## TERMINATIONS

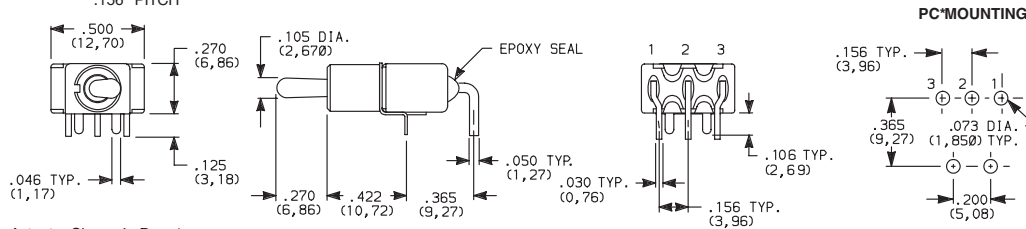
**A2** RIGHT ANGLE, PC THRU-HOLE,  
.156" PITCH



**7101MHA2BE**  
Horizontal Actuation  
**SPDT**

Not available with TXX actuators and I seal. Part No. Shown: 7101MHA2BE  
Terminal bend radii and lead-in manufacturing option.

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

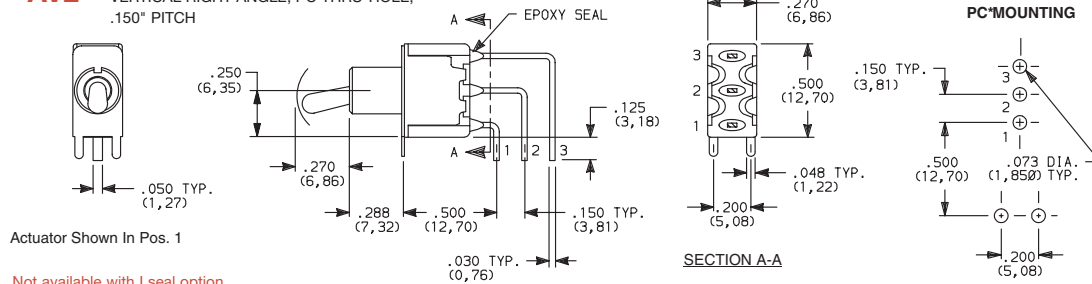


**7101MD9A4BE**  
Horizontal Actuation  
**SPDT**

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.

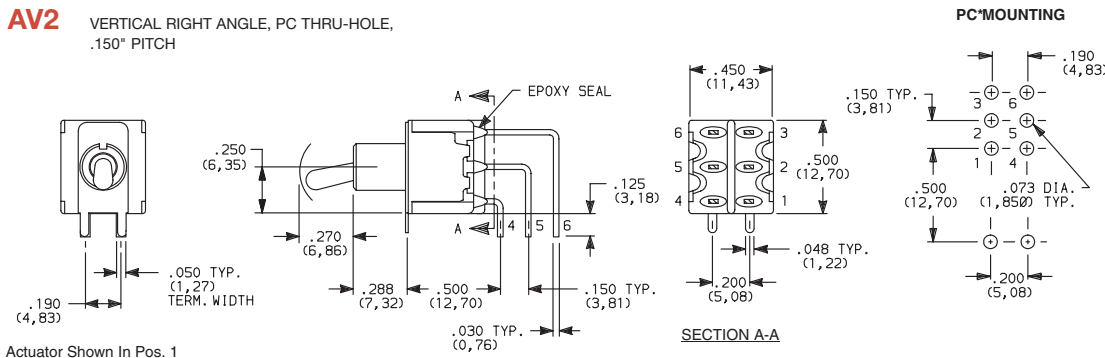
**AV2** VERTICAL RIGHT ANGLE, PC THRU-HOLE,  
.150" PITCH



**7101MD9AV2BE**  
Horizontal Actuation  
**SPDT**

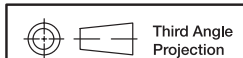
Not available with I seal option. Terminal bend radii and lead-in manufacturing option.

**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: Inch (mm)  
Specifications and dimensions subject to change



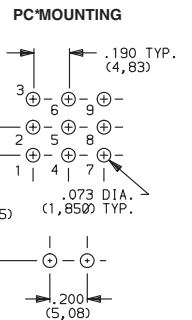
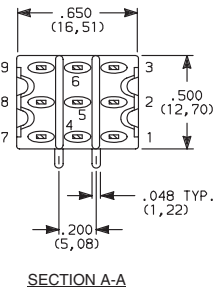
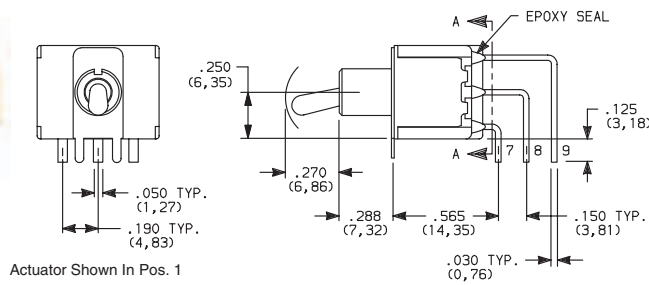
# 7000 Series Miniature Toggle Switches

## TERMINATIONS

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



**7301MD9AV2BE**  
Vertical Actuation  
**3PDT**

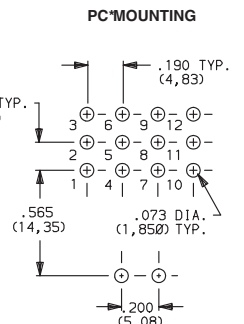
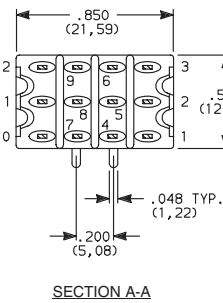
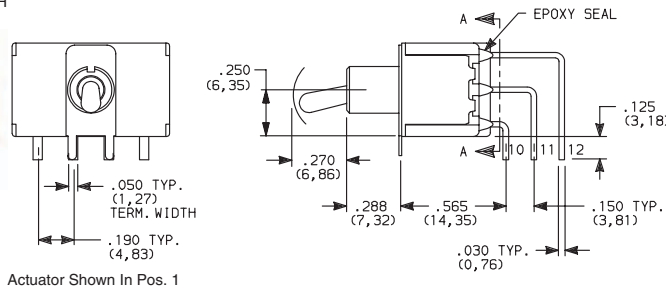


Not available with I seal option.  
Terminal bend radii and lead-in manufacturing option.

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



**7401MD9AV2BE**  
Vertical Actuation  
**4PDT**



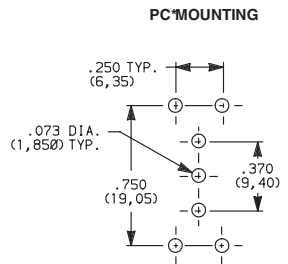
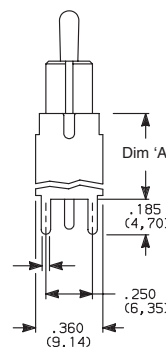
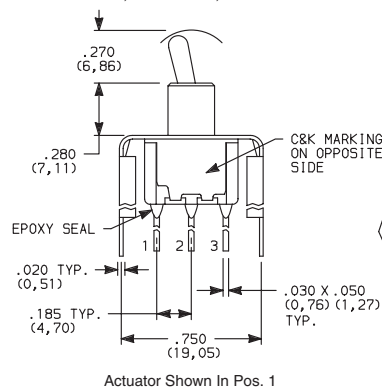
Not available with I seal option.  
Terminal bend radii and lead-in manufacturing option.

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

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



**7101MD9\_BE**  
**SPDT**



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

Not available with I seal option.



Toggle



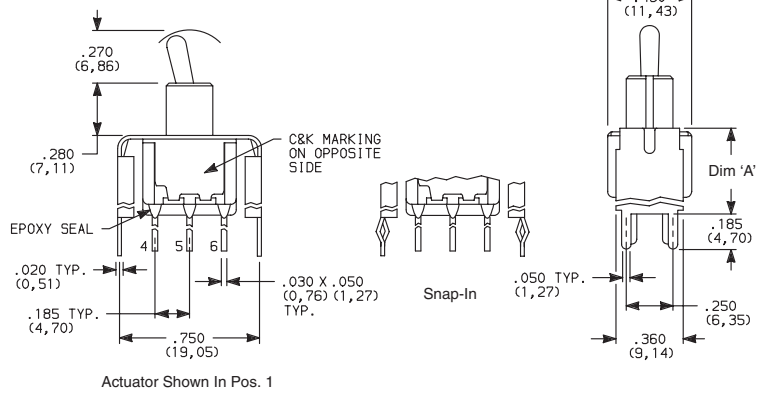
Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

# 7000 Series Miniature Toggle Switches

## TERMINATIONS

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

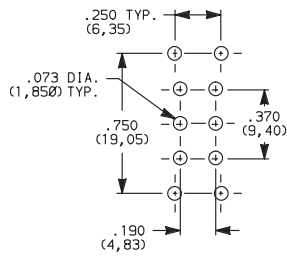
**V21, V61, V71, V81** VERTICAL MOUNT, V-BRACKET, SNAP-IN



Actuator Shown In Pos. 1

Not available with I seal option.

### PC MOUNTING



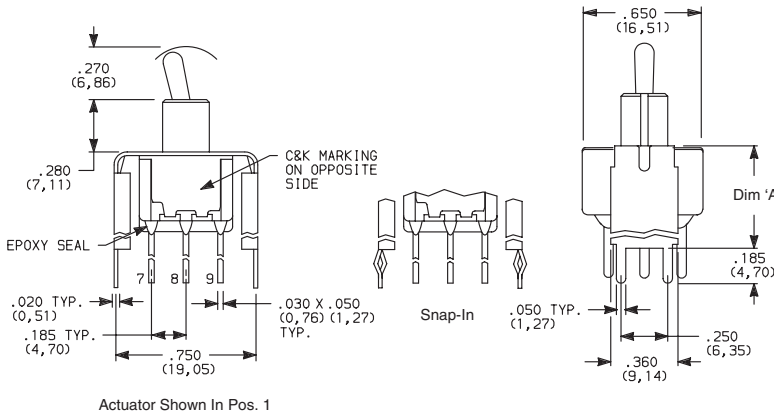
OPTION CODE	DIM 'A'
<b>V2, V21</b>	.555 (14,10)
<b>V6, V61</b>	.460 (11,68)
<b>V7, V71</b>	.630 (16,00)
<b>V8, V81</b>	.953 (24,21)



7201MD9\_BE  
DPDT

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

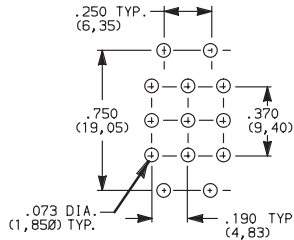
**V21, V71, V81** VERTICAL MOUNT, V-BRACKET, SNAP-IN



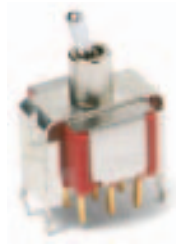
Actuator Shown In Pos. 1

Not available with I seal option.

### PC MOUNTING



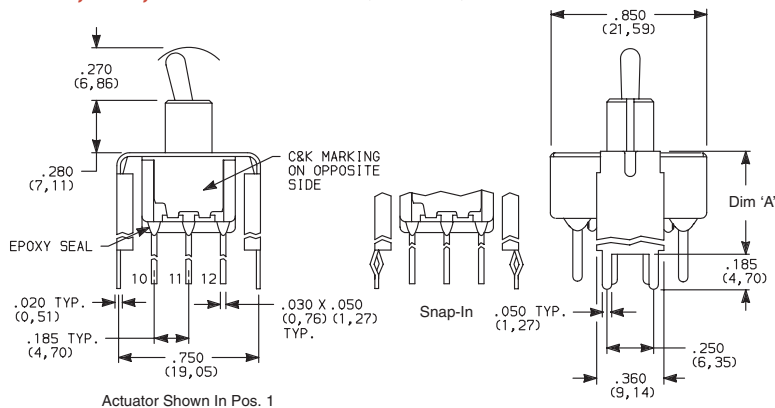
OPTION CODE	DIM 'A'
<b>V2, V21</b>	.555 (14,10)
<b>V7, V71</b>	.630 (16,00)
<b>V8, V81</b>	.953 (24,21)



7301MD9\_BE  
3PDT

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

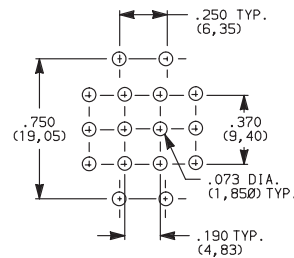
**V21, V71, V81** VERTICAL MOUNT, V-BRACKET, SNAP-IN



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: Inch (mm)  
Specifications and dimensions subject to change

**C&K**

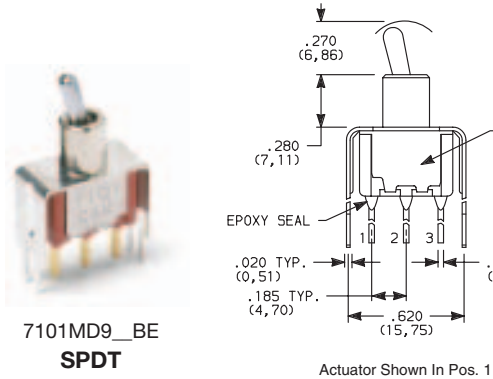


# 7000 Series Miniature Toggle Switches

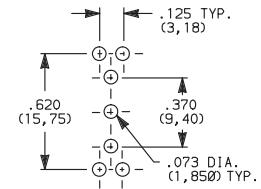
## TERMINATIONS

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

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



### PC MOUNTING

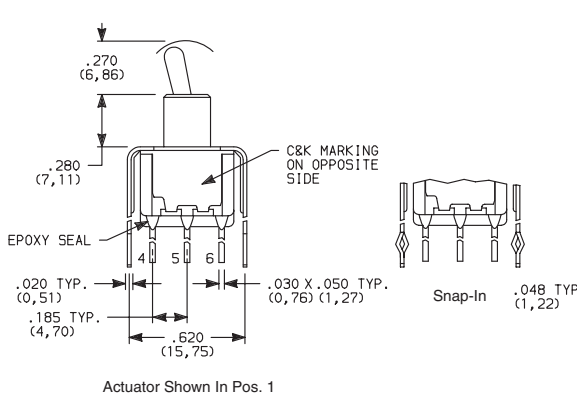


OPTION CODE	DIM 'A'
V3, V31	.460 (11,68)
V4, V41	.630 (16,00)
V9	1.150 (29,21)

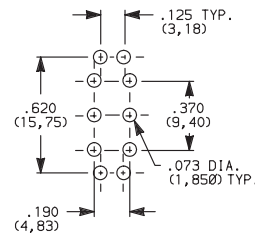
Not available with I seal option.

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

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



### PC MOUNTING

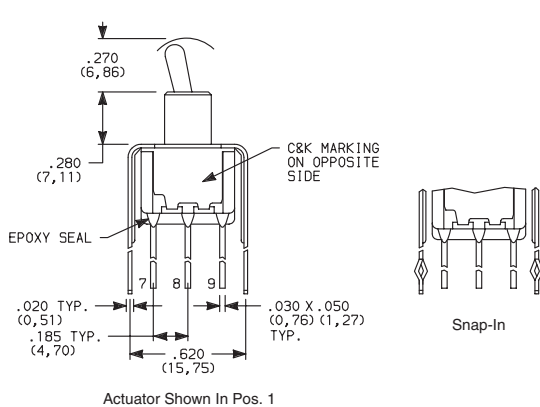


OPTION CODE	DIM 'A'
V3, V31	.460 (11,68)
V4, V41	.630 (16,00)
V9	1.150 (29,21)

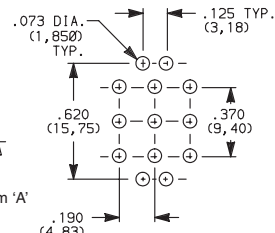
Not available with I seal option.

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

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

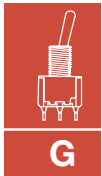


### PC MOUNTING



OPTION CODE	DIM 'A'
V4, V41	.630 (16,00)
V9	1.150 (29,21)

Not available with I seal option.



Toggle



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

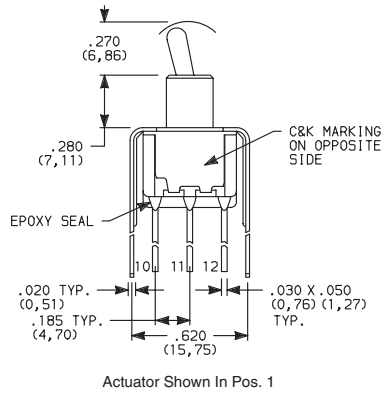


# 7000 Series Miniature Toggle Switches

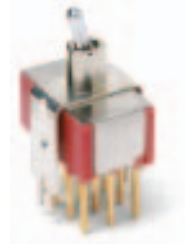
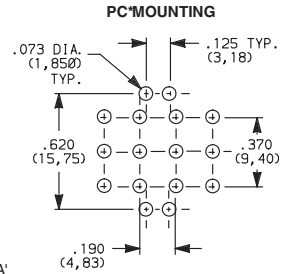
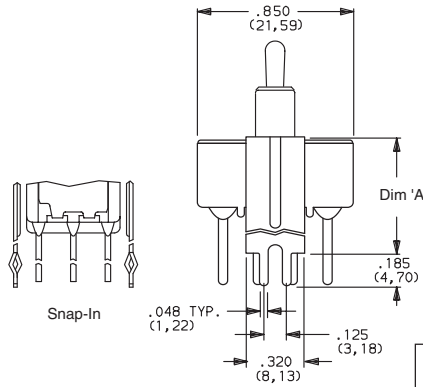
## TERMINATIONS

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

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



Not available with I seal option.



7401MD9\_BE  
4PDT

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

## CONTACT MATERIAL

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

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

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

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

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

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

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

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

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

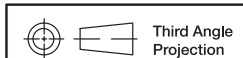
U11-U415 model numbers   with all options when ordered with G, L, S, R, M or Q contact material.

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

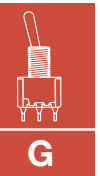
Q contact material standard with C, Z & Z3 terminations.

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

K, L and M options represent Non RoHS tin lead product and are not recommended for new designs. For additional information please contact Customer Service.



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



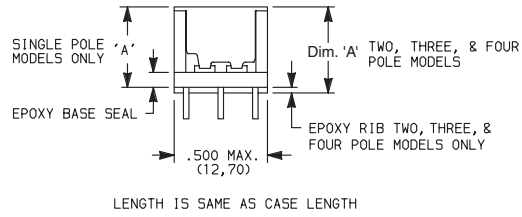
# 7000 Series Miniature Toggle Switches

## SEAL

**E** EPOXY SEAL



**I** EPOXY POTTED BASE



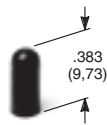
NO. POLES	DIM 'A'
SP	.410 (10,41)
DP	.440 (11,18)
3P	.505 (12,83)
4P	.505 (12,83)

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

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

## AVAILABLE HARDWARE

Cap

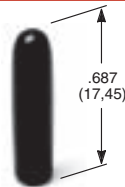


PART NO.

**896801000** WHITE  
**896802000** BLACK  
**896803000** RED

Material: Polyethylene  
Finish: Matte

Cap

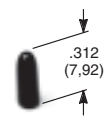


PART NO.

**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

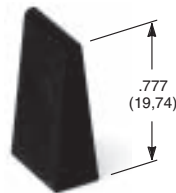


PART NO.

**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



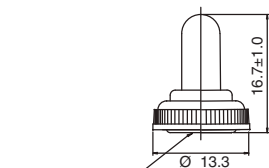
PART NO.  
**530100000**

Available in loose pieces.

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

Other colors available, consult Customer Service Center.

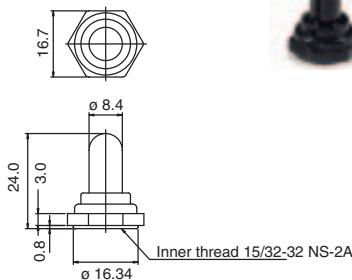
759D02000 Sealing Boot



1/4-40 uns-2A nut

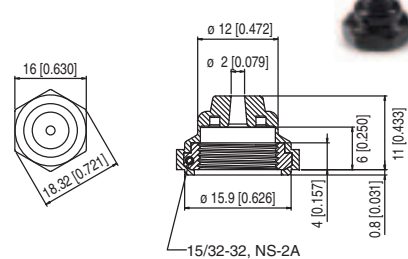
NOTE: For use with S actuator style when combined with H, H3, and Y4 bushings

703D02000 Sealing Boot



NOTE: For use with T and TP style actuators

704D02000 Sealing Boot

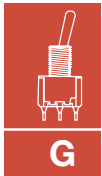


NOTE: For use with T, TP and T2P style actuators



Third Angle  
Projection

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



Toggle



# Military/Aerospace/HI-REL MIL-S-83731 Toggle Switches

## Features/Benefits

- Qualified to MIL-S-83731
- 50  $\mu$  inch selective gold contact plating
- Epoxy sealed terminals for process compatibility
- Rated for logic level to 5 amp resistive loads and 2 amp inductive loads
- Flame retardant housing material
- RoHS compliant and compatible

Test Requirement	MIL-S-83731/9, 10, 13, 14, 15, 16
1. Strength of Terminal	1 lb. – solder lug
2. Strength of Actuating Lever Pivot and Stop	10 lbs. & 8 lbs. throughout range
3. Strength of Mounting Means	15 lbs. in. torque on bushing
4. Dielectric (Sea Level) Indication	1000 VAC Group B, 750 VAC after electrical endurance. 500 $\mu$ A max. leakage
5. Contact Voltage Drop	2.5 millivolt initial, 5.0 millivolt after mechanical endurance @ 2-6 VDC 0.1 amp
6. Temperature Rise	50° C rise max. @ rated resistive load after endurance test
7. Short Circuit	10 operations carry 100 amps resistive load @ lowest DC volts
8. Mechanical Life	20K operations at specified high and low temperatures
9. Electrical Endurance	10K operations at specified high and low temperatures
10. Overload	50 operations @ 150% of rated resistive load
11. Electrical Endurance at Sea Level	10K operations resistive load @ room temperature 10K operations inductive load @ room temperature 10K operations lamp load @ room temperature Performed on different test samples
12. Vibration	Method 204 of MIL-STD-202, test condition A .06 D. A. or 10 G's 10-500 Hz, 10 usec. max. chatter
13. Shock	Fuse-method 213 or MIL-STD-202, 10 usec. max. chatter
14. Salt Spray Test Upon Completion	48 hours – method 101 of MIL-STD-202, test condition B 10 operations resistive load (toggle sealed switches only)
15. Moisture Resistance Test Upon Completion	Method 106 of MIL-STD-202 100 VDC potential between current carrying parts and panel
16. Sand & Dust	Method 110 of MIL-STD-202, test condition B 6 hours @ 23°C 2.5K operations mechanical life (toggle sealed switches only)
17. Explosion	MIL-STD-202 method 109, maximum rated DC inductive load (toggle sealed switches only)
18. Sealing	Toggle seal – 5 operations under 0.5 inches of H <sub>2</sub> O above top of bushing
19. A.) Toggle Seal B.) Bushing Seal	(Toggle sealed switches only) (Panel sealed switches only)
20. Temperature Operation	Mechanical life, –25°C to +71°C
21. Life Low Cur. Level	No requirement
22. Fungus	No requirement
23. Intermediate Current	20K operations, 35/40 milliamps @ 5 VDC resistive load @ +71°C
24. Thermal Shock	Method 107 of MIL-STD-202 test condition A; 5 cycles @ –55°C/+85°C

## RATINGS

### CURRENT RATINGS – HIGH LEVEL

Current Capacity in Amperes – Per Pole		
28V dc	115V ac, 400 Hz	125V ac, 60 Hz
Lamp Load		
1	1	1
Resistive Load		
5	5	5
Inductive Load		
2	2	2

### CURRENT RATINGS – LOGIC LEVEL

0.5 Volt – Amp (VA) Max. @ 28 V Max. (AC or DC)
---

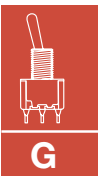
## MATERIALS

CASE: Diallyl phthalate (DAP) (UL 94 V-0).  
 BUSHING: Brass, nickel plated.  
 HOUSING: Stainless steel.  
 ACTUATOR: Brass, chrome plated.  
 SWITCH SUPPORT: Brass, tin plated.  
 TERMINALS: Gold over nickel over copper alloy.  
 TERMINAL SEAL: Epoxy.  
 CONTACTS: Gold over nickel over silver over brass.  
 PANEL SEAL: Silicone rubber.  
 MOUNTING HARDWARE: One hexagon nut, brass with nickel plating; one lockwasher, steel with nickel plating; one locking ring, brass with nickel plating.

**HOW TO ORDER:** Complete part numbers for MIL-S-83731 TOGGLE SWITCHES are shown on pages G–18 through G–21.



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



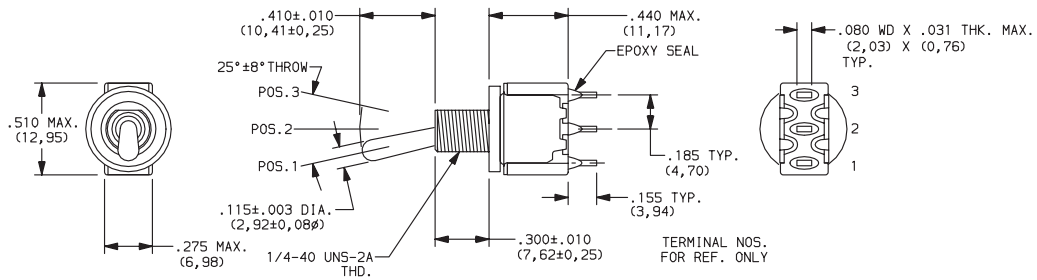


# Military/Aerospace/Hi-REL MIL-S-83731 Toggle Switches



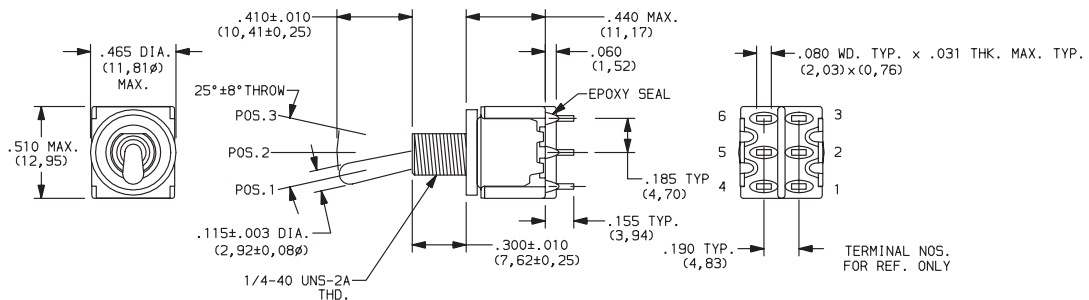
NO. POLES	MODEL NO.	SWITCH FUNCTION			CONNECTED TERMINALS			SCHEMATIC
		POS. 1	POS. 2	POS. 3	POS. 1	POS. 2	POS. 3	
SP	M83731/9-211	ON	OFF	ON	2-3	OPEN	2-1	 SPDT
	M83731/9-231	ON	NONE	ON				
	M83731/9-261	ON	NONE	MOM.				
	M83731/9-271	MOM.	OFF	MOM.				
	M83731/9-311	ON	OFF	MOM.				
M83731/9-341	NONE	ON	MOM.	N/A	2-3	2-1		

SPDT

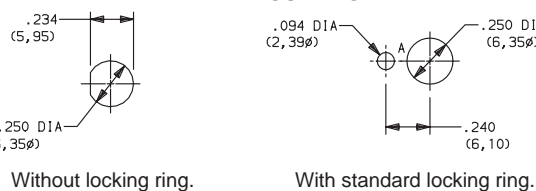


NO. POLES	MODEL NO.	SWITCH FUNCTION			CONNECTED TERMINALS			SCHEMATIC
		POS. 1	POS. 2	POS. 3	POS. 1	POS. 2	POS. 3	
DP	M83731/10-211	ON	OFF	ON	2-3,5-6	OPEN	2-1,5-4	 DPDT
	M83731/10-231	ON	NONE	ON				
	M83731/10-261	ON	NONE	MOM.				
	M83731/10-271	MOM.	OFF	MOM.				
	M83731/10-311	ON	OFF	MOM.				
	M83731/10-321	ON	ON	ON				
	M83731/10-331	ON	ON	MOM.				
	M83731/10-341	NONE	ON	MOM.				
M83731/10-351	MOM.	ON	MOM.	2-3,5-6	2-3,5-4	2-1,5-4		

DPDT



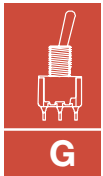
### PANEL MOUNTING



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



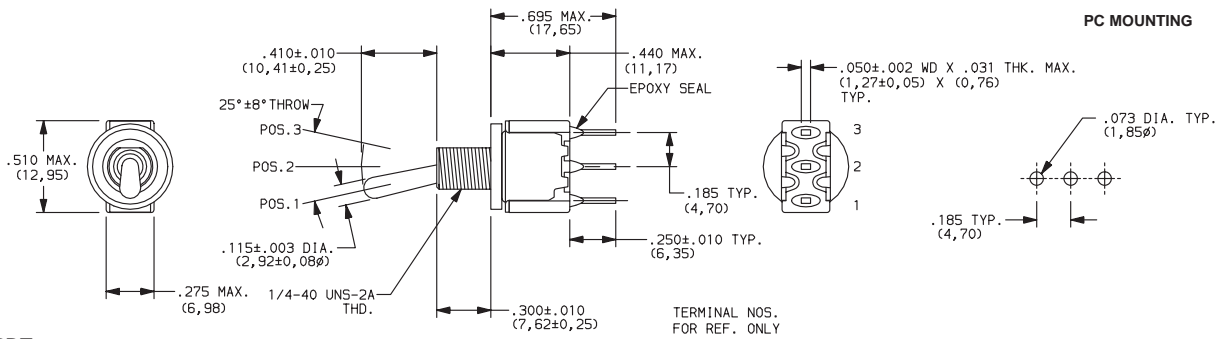
Toggle



# Military/Aerospace/Hi-REL MIL-S-83731 Toggle Switches



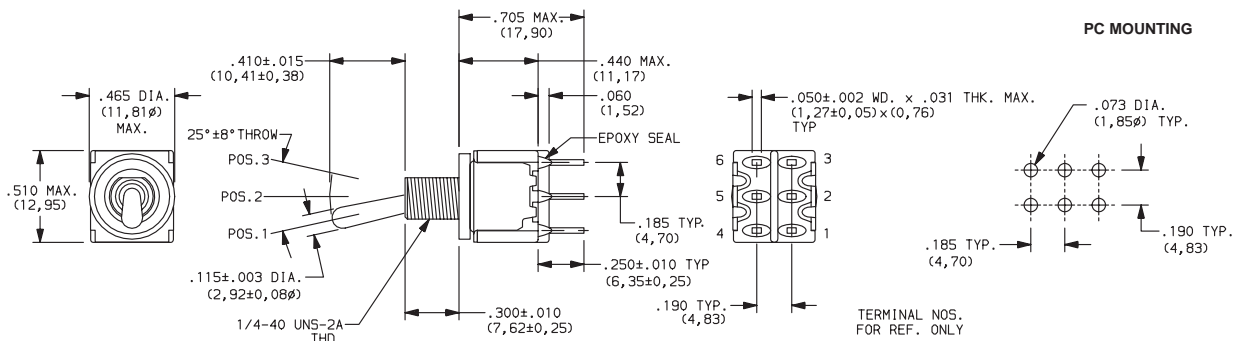
NO. POLES	MODEL NO.	SWITCH FUNCTION			CONNECTED TERMINALS			SCHEMATIC
		POS. 1	POS. 2	POS. 3	POS. 1	POS. 2	POS. 3	
SP	M83731/9-212	ON	OFF	ON	2-3	OPEN	2-1	 SPDT
	M83731/9-232	ON	NONE	ON				
	M83731/9-262	ON	NONE	MOM.				
	M83731/9-272	MOM.	OFF	MOM.				
	M83731/9-312	ON	OFF	MOM.				
M83731/9-342	NONE	ON	MOM.	N/A	2-3	2-1		



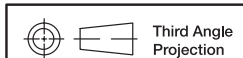
SPDT



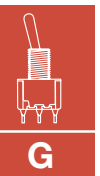
NO. POLES	MODEL NO.	SWITCH FUNCTION			CONNECTED TERMINALS			SCHEMATIC
		POS. 1	POS. 2	POS. 3	POS. 1	POS. 2	POS. 3	
DP	M83731/10-212	ON	OFF	ON	2-3,5-6	OPEN	2-1,5-4	 DPDT
	M83731/10-232	ON	NONE	ON				
	M83731/10-262	ON	NONE	MOM.				
	M83731/10-272	MOM.	OFF	MOM.				
	M83731/10-312	ON	OFF	MOM.	2-3,5-6	2-3,5-4	2-1,5-4	
	M83731/10-322	ON	ON	ON				
	M83731/10-332	ON	ON	MOM.				
	M83731/10-342	NONE	ON	MOM.				
M83731/10-352	MOM.	ON	MOM.	2-3,5-6	2-3,5-4	2-1,5-4		



DPDT



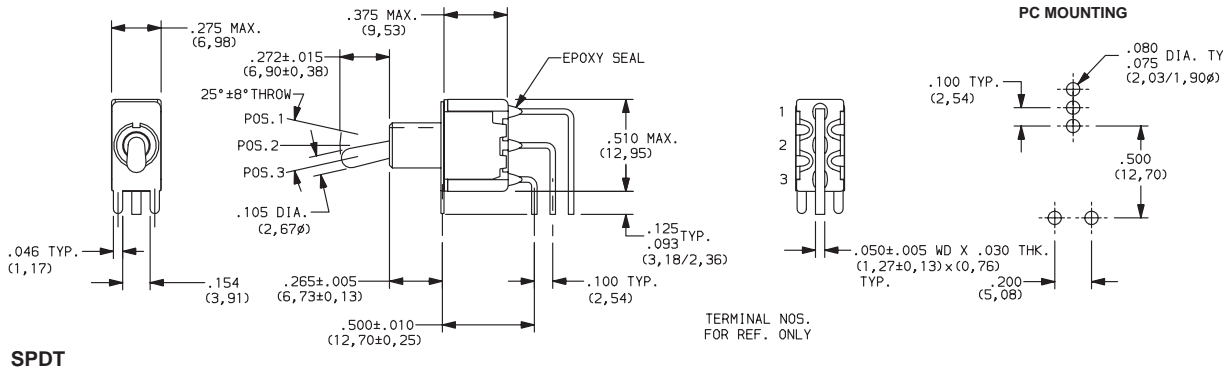
Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change



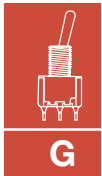
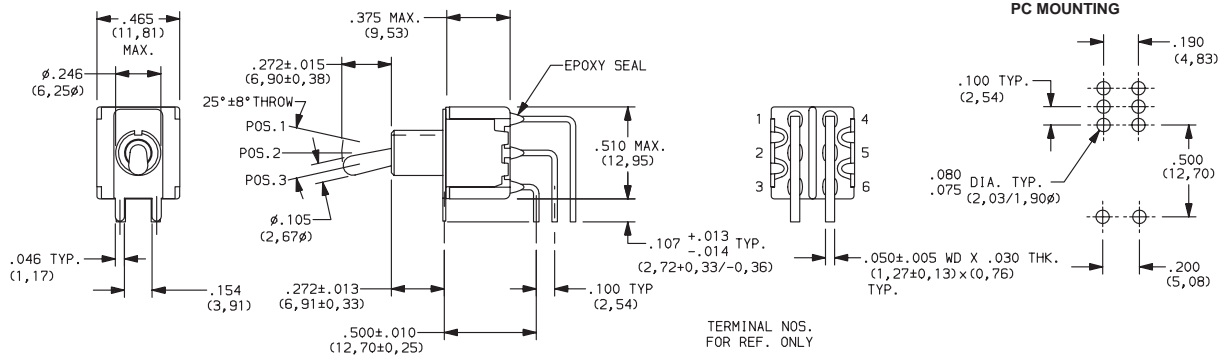
# Military/Aerospace/Hi-REL MIL-S-83731 Toggle Switches



NO. POLES	MODEL NO.	SWITCH FUNCTION			CONNECTED TERMINALS			SCHEMATIC
		POS. 1	POS. 2	POS. 3	POS. 1	POS. 2	POS. 3	
SP	M83731/13-211	ON	OFF	ON	2-3	OPEN	2-1	 SPDT
	M83731/13-231	ON	NONE	ON				
	M83731/13-261	ON	NONE	MOM.				
	M83731/13-271	MOM.	OFF	MOM.				
	M83731/13-311	ON	OFF	MOM.				
M83731/13-341	NONE	ON	MOM.	N/A	2-3	2-1		



NO. POLES	MODEL NO.	SWITCH FUNCTION			CONNECTED TERMINALS			SCHEMATIC
		POS. 1	POS. 2	POS. 3	POS. 1	POS. 2	POS. 3	
DP	M83731/14-211	ON	OFF	ON	2-3,5-6	OPEN	2-1,5-4	 DPDT
	M83731/14-231	ON	NONE	ON				
	M83731/14-261	ON	NONE	MOM.				
	M83731/14-271	MOM.	OFF	MOM.				
	M83731/14-311	ON	OFF	MOM.				
	M83731/14-321	ON	ON	ON				
	M83731/14-331	ON	ON	MOM.				
	M83731/14-341	NONE	ON	MOM.				
M83731/14-351	MOM.	ON	MOM.	N/A	2-3,5-6	2-1,5-4		



Toggle



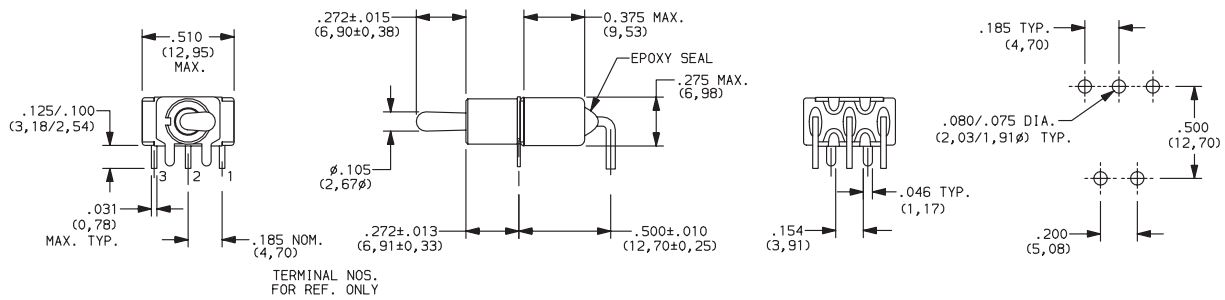
Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

# Military/Aerospace/Hi-REL MIL-S-83731 Toggle Switches



NO. POLES	MODEL NO.	SWITCH FUNCTION			CONNECTED TERMINALS			SCHEMATIC
		POS. 1	POS. 2	POS. 3	POS. 1	POS. 2	POS. 3	
SP	M83731/15-211	ON	OFF	ON	2-3	OPEN	2-1	 SPDT
	M83731/15-231	ON	NONE	ON				
	M83731/15-261	ON	NONE	MOM.				
	M83731/15-271	MOM.	OFF	MOM.				
	M83731/15-311	ON	OFF	MOM.				
	M83731/15-341	NONE	ON	MOM.				

PC MOUNTING

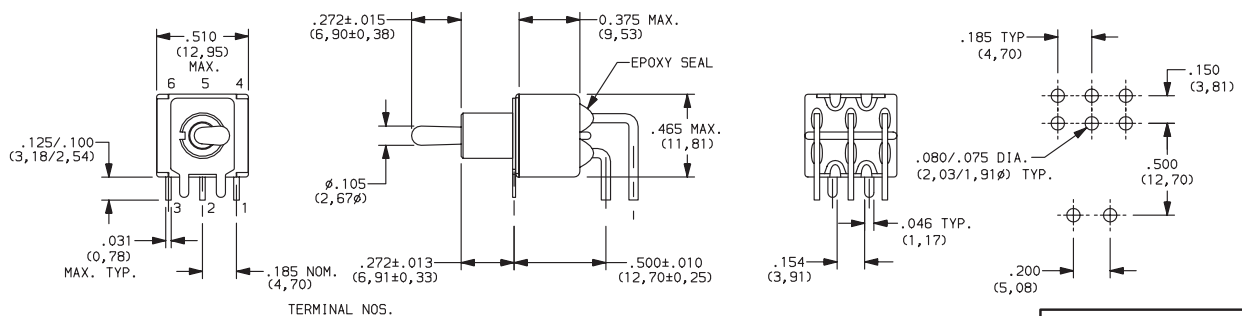


SPDT

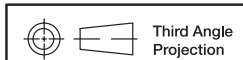


NO. POLES	MODEL NO.	SWITCH FUNCTION			CONNECTED TERMINALS			SCHEMATIC			
		POS. 1	POS. 2	POS. 3	POS. 1	POS. 2	POS. 3				
DP	M83731/16-211	ON	OFF	ON	2-3,5-6	OPEN	2-1,5-4	 DPDT			
	M83731/16-231	ON	NONE	ON							
	M83731/16-261	ON	NONE	MOM.							
	M83731/16-271	MOM.	OFF	MOM.							
	M83731/16-311	ON	OFF	MOM.							
	M83731/16-321	ON	ON	ON							
	M83731/16-331	ON	ON	MOM.					2-3,5-6	2-3,5-4	2-1,5-4
	M83731/16-341	NONE	ON	MOM.					N/A	2-3,5-6	2-1,5-4
M83731/16-351	MOM.	ON	MOM.	2-3,5-6	2-3,5-4	2-1,5-4					

PC MOUNTING



DPDT

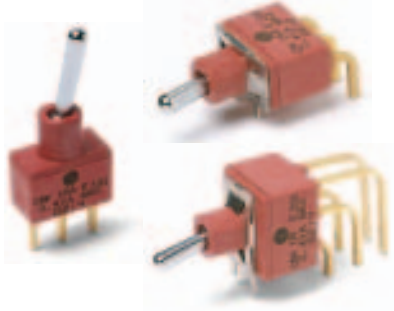


Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change



Toggle

# 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 G-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<sup>9</sup> Ω min.

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

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

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

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

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

## Materials

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

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

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

**SWITCH SUPPORT RETAINER:** Stainless steel.

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

**TERMINAL SEAL:** Epoxy.

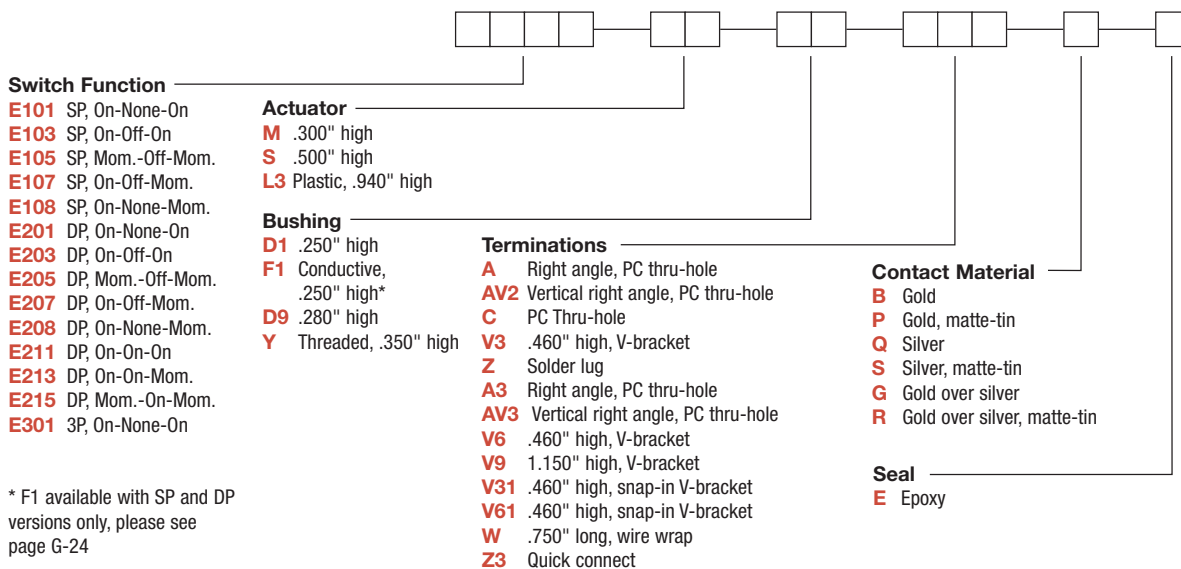
**HARDWARE:** Nut & Locking ring: Brass, nickel plated. Lockwasher: Steel, nickel plated.

**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 G-23 thru G-29. For additional options not shown in catalog, consult our Customer Service Center. All models are process sealed to withstand machine soldering temperatures and pressure wash cleaning methods.



\* F1 available with SP and DP versions only, please see page G-24



Toggle



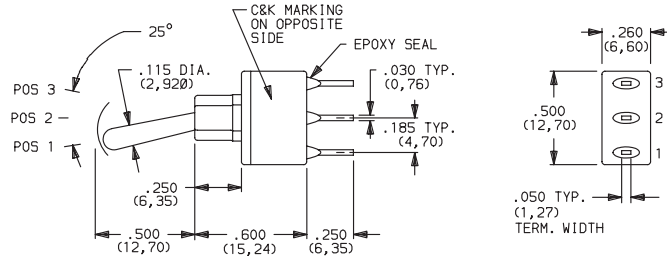
Dimensions are shown: Inch (mm)  
 Specifications and dimensions subject to change

# E Series Sealed Miniature Toggle Switches

## SWITCH FUNCTION

NO. POLES	MODEL NO.	SWITCH FUNCTION			CONNECTED TERMINALS			SCHEMATIC
		POS. 1	POS. 2	POS. 3	POS. 1	POS. 2	POS. 3	
SP	<b>E101</b>	ON	NONE	ON	2-3	N/A	2-1	
	<b>E103</b>	ON	OFF	ON	2-3	OPEN	2-1	
	<b>E105</b>	MOM.	OFF	MOM.				
	<b>E107</b>	ON	OFF	MOM.				
	<b>E108</b>	ON	NONE	MOM.				

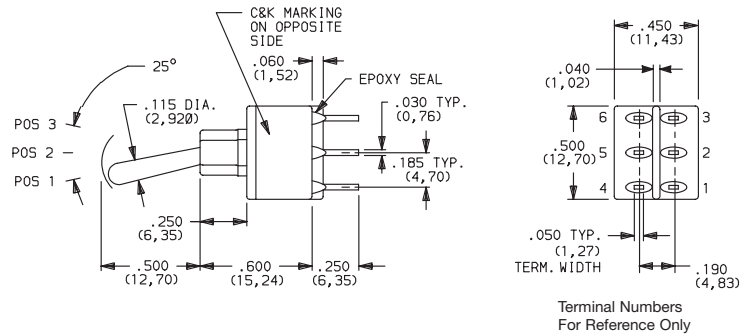
### SPDT



Part number shown: E101SD1CBE

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

### DPDT

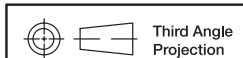


Part number shown: E201SD1CBE

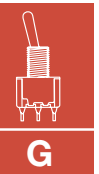
MOM. = Momentary

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

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



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



Toggle

# E Series Sealed Miniature Toggle Switches

## SWITCH FUNCTION

NO. POLES	MODEL NO.	SWITCH FUNCTION			CONNECTED TERMINALS			SCHEMATIC
		POS. 1	POS. 2	POS. 3	POS. 1	POS. 2	POS. 3	
3P	<b>E301</b>	ON	NONE	ON	2-3,5-6,8-9	N/A	2-1,5-4,8-7	
<b>3PDT</b>								

Part number shown: E301SD1CBE

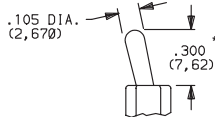
MOM. = Momentary

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

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

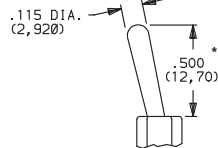
## ACTUATOR

**M** .300" HIGH



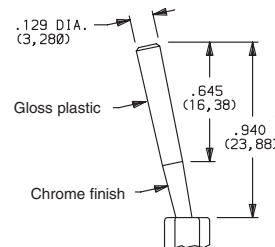
Standard when ordered with A, A3, AV2, AV3, V2-V61 terminations. Finish: Chrome.

**S** .500" HIGH



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

**L3** PLASTIC, .940" HIGH



OPTION CODE	L3 ACTUATOR COLOR
<b>2</b>	BLACK

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

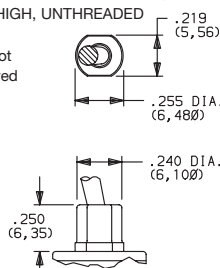
\* Actuators shown with standard D1 bushing. Subtract .030 (0,76) for D9 bushing. Subtract .100 (2,54) for Y bushing.

## BUSHING

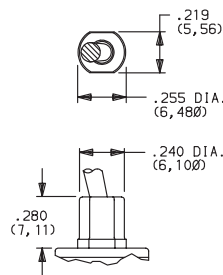
**D1** .250" HIGH, UNTHREADED

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

F1 bushing is not UL/CSA approved



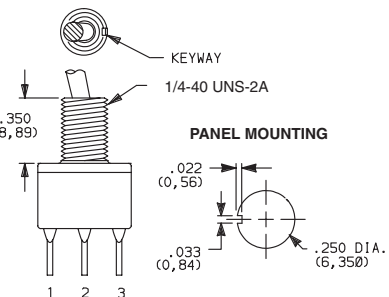
**D9** .280" HIGH, UNTHREADED



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.**



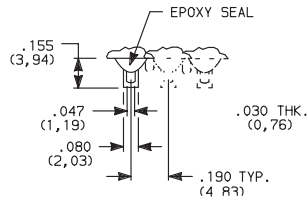
Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

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

# E Series Sealed Miniature Toggle Switches

## TERMINATIONS

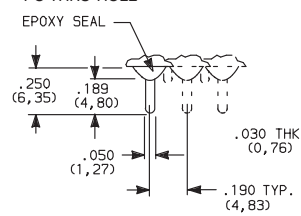
### Z SOLDER LUG



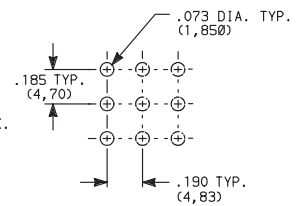
Not available with F1 conductive bushing or P, R or S contact material.

SPDT thru 3PDT

### C PC THRU-HOLE



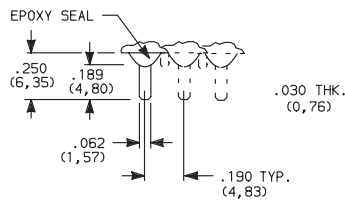
### PC MOUNTING



SPDT thru 3PDT

Not available with F1 conductive bushing.

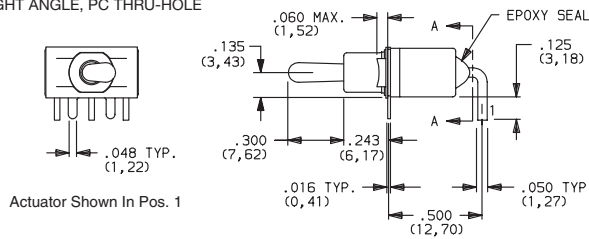
### Z3 QUICK CONNECT



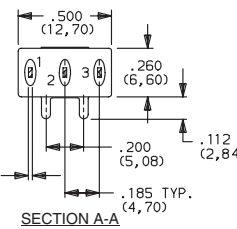
Not available with F1 conductive bushing or P, R or S contact material. Mating quick connector available; order part number 530100000, page G-26.

SPDT thru 3PDT

### A RIGHT ANGLE, PC THRU-HOLE



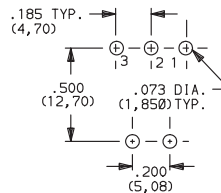
Actuator Shown In Pos. 1



SECTION A-A

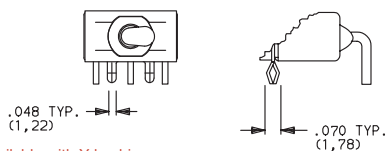
Terminal Nos. For Reference Only

PC MOUNTING



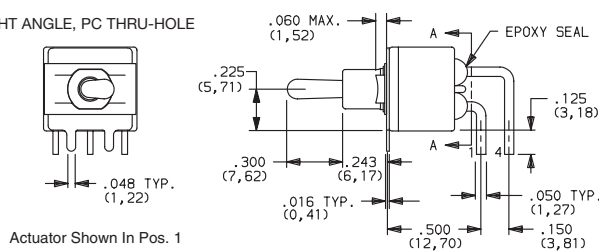
E101MD1ABE  
Horizontal Actuation  
SPDT

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

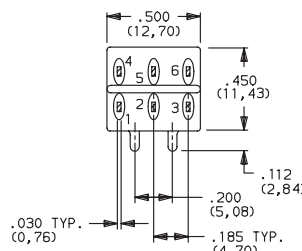


Not available with Y bushing.  
Terminal bend radii and lead-in manufacturing option.

### A RIGHT ANGLE, PC THRU-HOLE



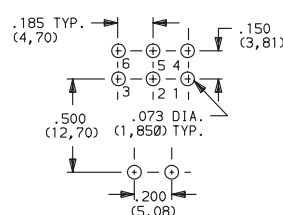
Actuator Shown In Pos. 1



SECTION A-A

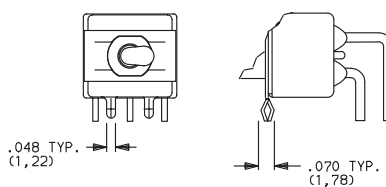
Terminal Nos. For Reference Only

PC MOUNTING

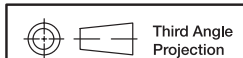


E201MD1ABE  
Horizontal Actuation  
DPDT

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



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



Third Angle  
Projection

**C&K**



**G**

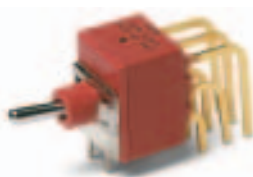
**Toggle**



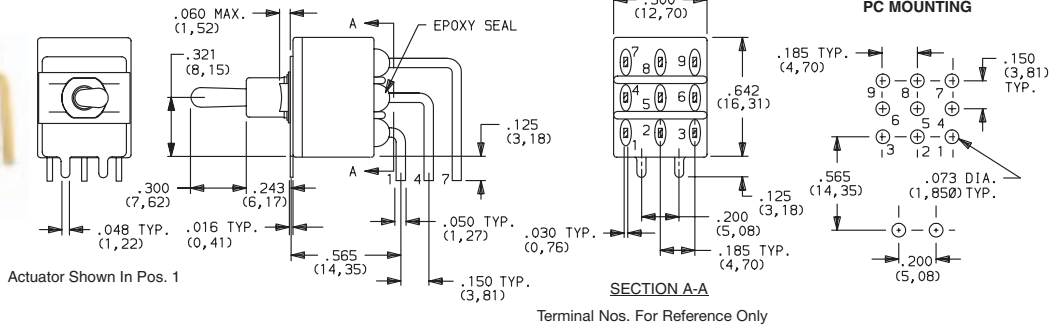
# E Series Sealed Miniature Toggle Switches

## TERMINATIONS

### A RIGHT ANGLE, PC THRU-HOLE



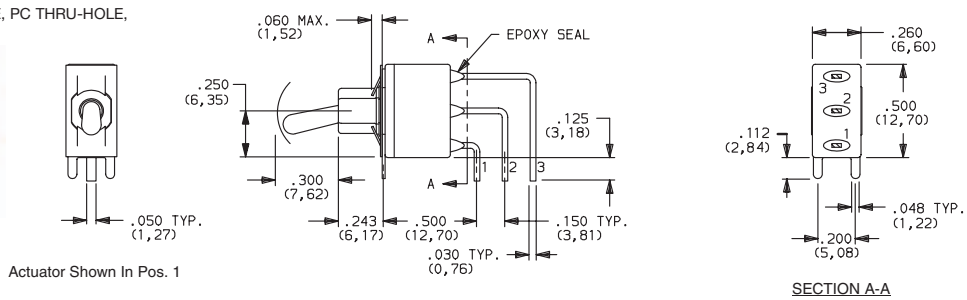
**E301MD1ABE**  
Horizontal Actuation  
**3PDT**



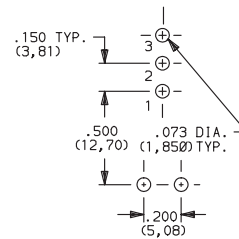
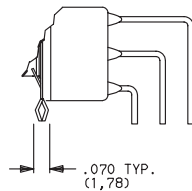
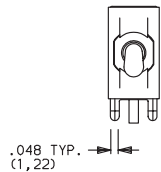
### AV2 VERTICAL RIGHT ANGLE, PC THRU-HOLE, .150" PITCH



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



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

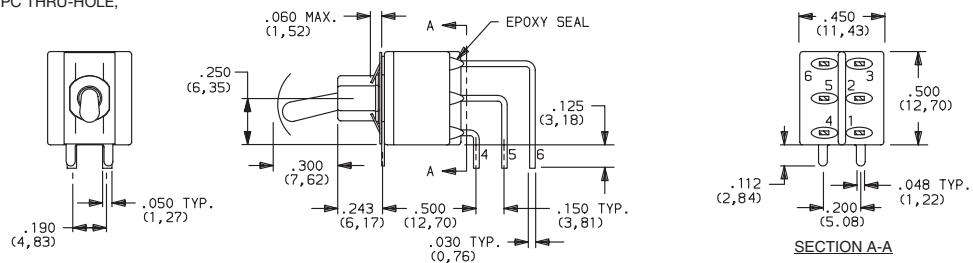


Not available with Y bushing.  
Terminal bend radii and lead-in manufacturing option.

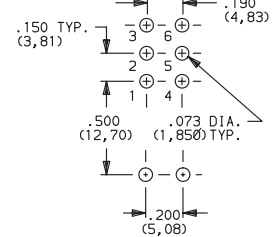
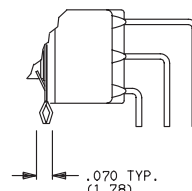
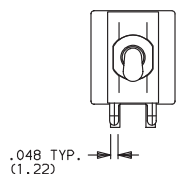
### AV2 VERTICAL RIGHT ANGLE, PC THRU-HOLE, .150" PITCH



**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: Inch (mm)  
Specifications and dimensions subject to change

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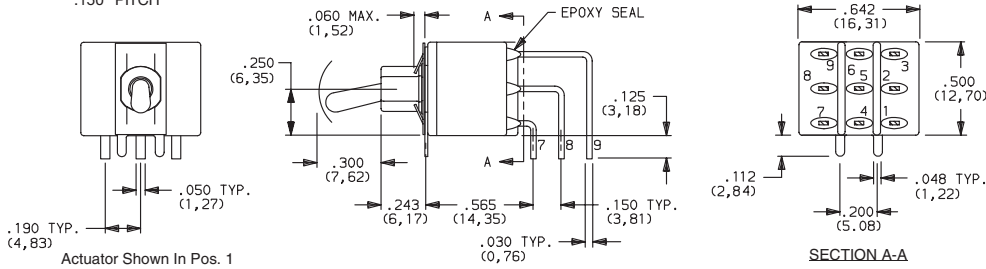
Toggle



# E Series Sealed Miniature Toggle Switches

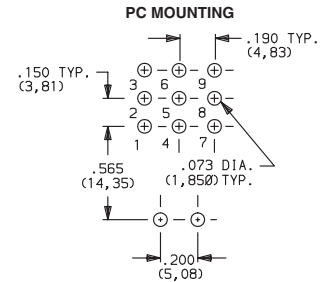
## TERMINATIONS

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



**E301MD1AV2BE**  
Vertical Actuation  
**3PDT**

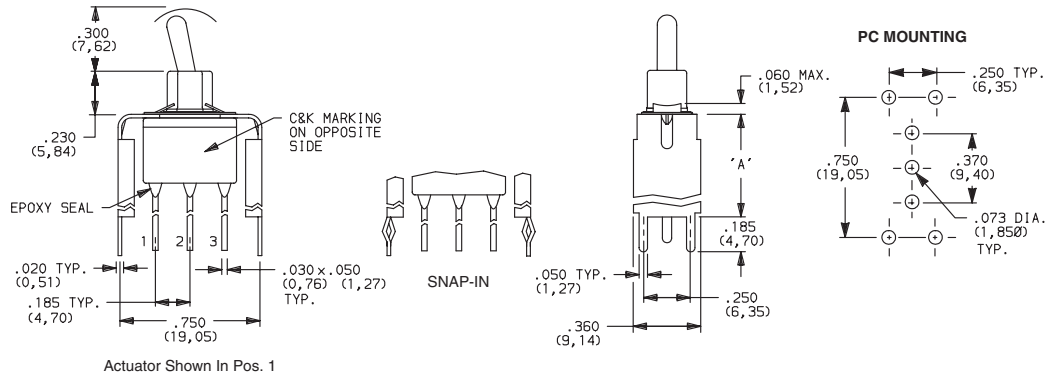
**AV3** VERTICAL RIGHT ANGLE, SNAP-IN, PC THRU-HOLE  
.150" PITCH



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



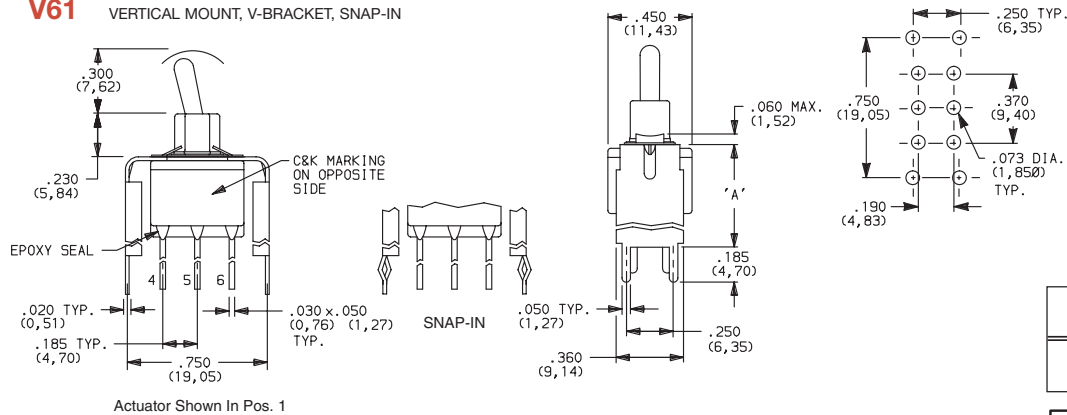
**E101MD1\_BE**  
**SPDT**

OPTION CODE	DIM 'A'
<b>V6, V61</b>	.460 (11,68)

Not available with Y bushing.

**V6** VERTICAL MOUNT, V-BRACKET

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



**E201MD1\_BE**  
**DPDT**

OPTION CODE	DIM 'A'
<b>V6, V61</b>	.460 (11,68)

Not available with Y bushing.



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

www.ck-components.com



# E Series Sealed Miniature Toggle Switches

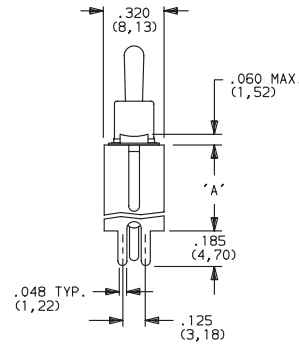
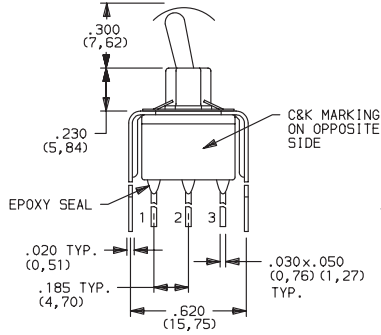
## TERMINATIONS

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

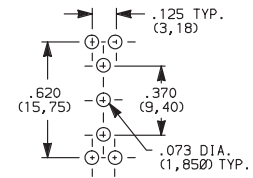
**V31** VERTICAL MOUNT, V-BRACKET, SNAP-IN



**E101MD1\_BE**  
**SPDT**



### PC MOUNTING



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

Actuator Shown In Pos. 1

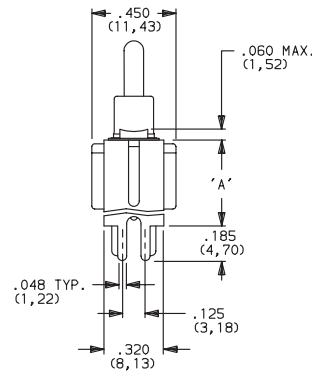
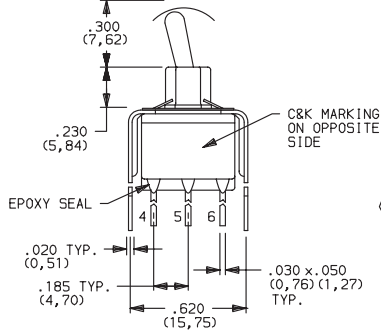
Not available with Y bushing.

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

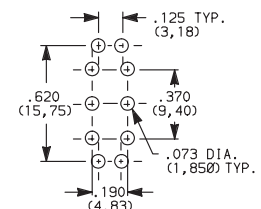
**V31** VERTICAL MOUNT, V-BRACKET, SNAP-IN



**E201MD1\_BE**  
**DPDT**



### PC MOUNTING



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

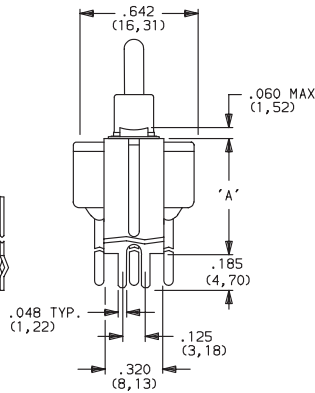
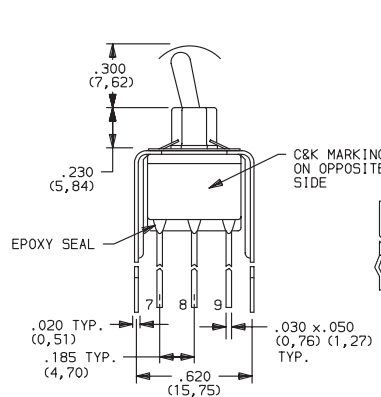
Actuator Shown In Pos. 1

Not available with Y bushing.

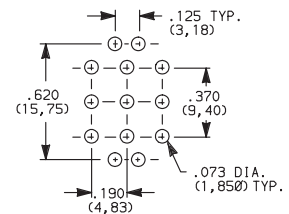
**V9** VERTICAL MOUNT, V-BRACKET



**E301MD1\_BE**  
**3PDT**



### PC MOUNTING



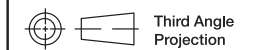
OPTION CODE	DIM 'A'
<b>V9</b>	1.150 (29,21)

Actuator Shown In Pos. 1

Not available with D9 & Y bushings.



Toggle



Third Angle Projection

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



# E Series Sealed Miniature Toggle Switches

## CONTACT MATERIAL

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

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

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

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


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

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

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

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

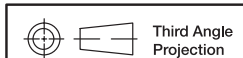
**NOTE:** Any models supplied with P, S, R, Q, B or G contact material are RoHS compliant.

All models  with all options when ordered with S, R, G, L, M 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.

K, L and M options represent Non RoHS tin lead product and are not recommended for new designs. For additional information please contact Customer Service.



Third Angle  
Projection

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

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Toggle

# ET Series Sealed Subminiature Toggle Switches

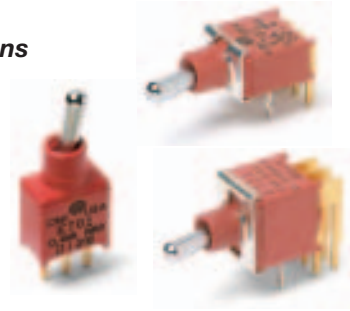
## Features/Benefits

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



## Typical Applications

- Hand-held telecommunications
- Instrumentation
- Medical equipment



## Specifications

**CONTACT RATING:** B contact material: 0.4 VA max. @ 20 V AC or DC max. See page G-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 mΩ typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

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

**ELECTROSTATIC DISCHARGE (ESD) 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 G-36 for drawings and reel information.

## Materials

**CASE & BUSHING:** Glass filled nylon 6/6, flame retardant, heat stabilized (UL 94V-0). SA surface mount: High temperature material, 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 G-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 G-31 thru G-35. 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.



Toggle

### 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



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

# ET Series Sealed Subminiature Toggle Switches

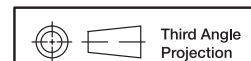
## SWITCH FUNCTION

NO. POLES	MODEL NO.	SWITCH FUNCTION			CONNECTED TERMINALS			SCHEMATIC
		POS. 1	POS. 2	POS. 3	POS. 1	POS. 2	POS. 3	
SP	<b>ET01</b>	ON	NONE	ON	2-3	N/A	2-1	
	<b>ET03</b>	ON	OFF	ON	2-3	OPEN	2-1	
	<b>ET05</b>	MOM.	OFF	MOM.				
	<b>ET07</b>	ON	OFF	MOM.	2-3	N/A	2-1	
	<b>ET08</b>	ON	NONE	MOM.				
	<b>ET02</b>	OFF	NONE	ON				
<b>SPDT</b> 								
Part number shown: ET01MD1CBE				ET02 Models: Omit terminal 2				
DP	<b>ET21</b>	ON	NONE	ON	2-3,5-6	N/A	2-1,5-4	
	<b>ET23</b>	ON	OFF	ON	2-3,5-6	OPEN	2-1,5-4	
	<b>ET25</b>	MOM.	OFF	MOM.				
	<b>ET27</b>	ON	OFF	MOM.	2-3,5-6	N/A	2-1,5-4	
	<b>ET28</b>	ON	NONE	MOM.				
	<b>ET24**</b>	ON	ON	ON				
<b>DPDT</b> 								
Part number shown: ET21MD1CBE				Terminal Nos. For Reference Only				

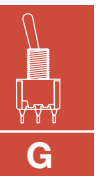
MOM. = Momentary

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

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



Third Angle Projection  
Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

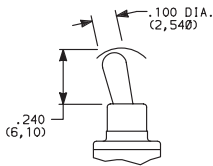


Toggle

# ET Series Sealed Subminiature Toggle Switches

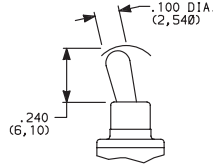
## ACTUATOR

**M** .240" HIGH



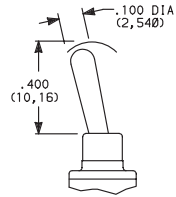
Standard with A, AV, V3 & V31 terminations.

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



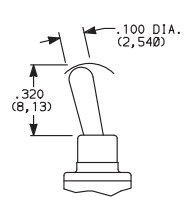
Material: Nylon 4/6 (UL 94V-0), black standard.  
Static resistance: 9,000 V DC min. @ sea level,  
actuator to terminals. Not available with F1  
conductive bushing option. Not UL approved.

**S** .400" HIGH

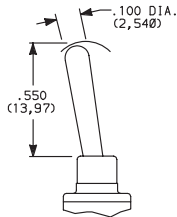


Standard with C or W terminations.

**L** .320" HIGH



**S1** .540" HIGH



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

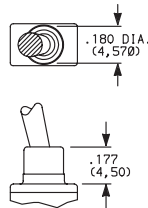
**NOTE:** All actuators have chrome finish (except M3 & S3).

## BUSHING

**D1** .177" HIGH, UNTHREADED

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

F1 bushing is not UL/CSA approved



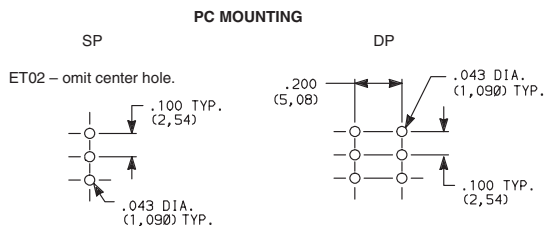
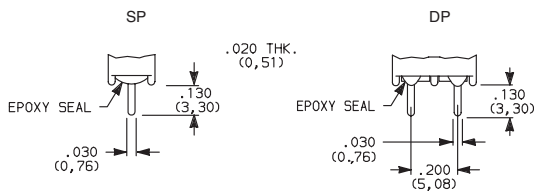
**NOTE:** ESD protection depends on proper grounding of switch support bracket. F1 conductive bushing option is impregnated with carbon fibers; dissipates electrostatic discharge (ESD) up to 20,000 V from actuator to ground.

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

Internal actuator o-ring seal standard.

## TERMINATIONS

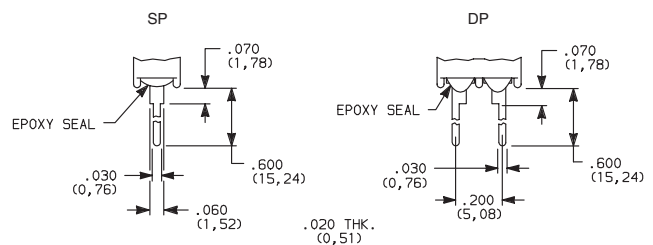
**C** PC THRU-HOLE



SP and DP

Not available with F1 conductive bushing.

**W** WIRE WRAP



SP and DP

Not available with F1 conductive bushing.



Third Angle  
Projection

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

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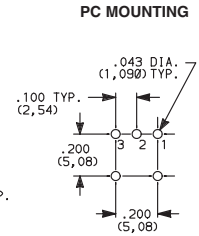
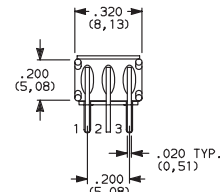
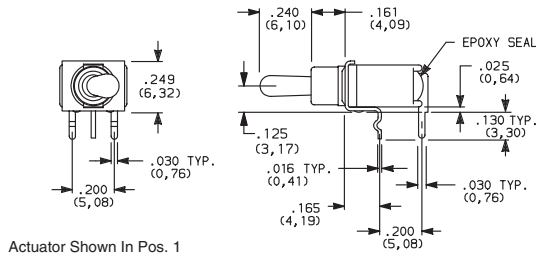
Toggle

**C&K**

# ET Series Sealed Subminiature Toggle Switches

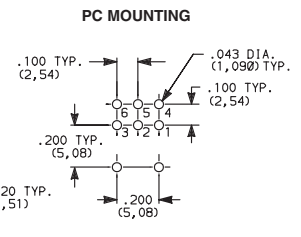
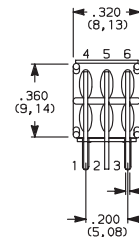
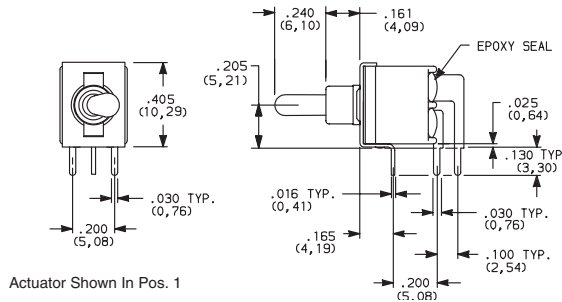
## TERMINATIONS

### A RIGHT ANGLE, PC THRU-HOLE

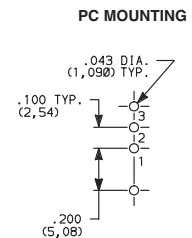
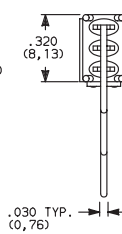
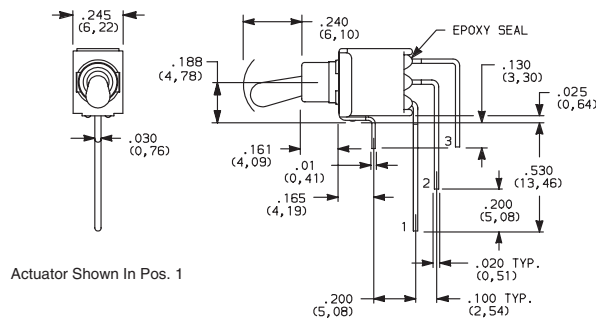


Not available with ET02 model.

### A RIGHT ANGLE, PC THRU-HOLE



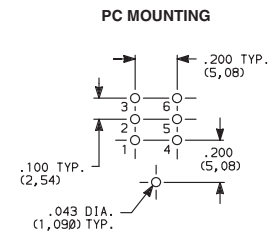
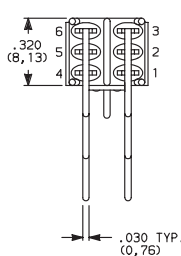
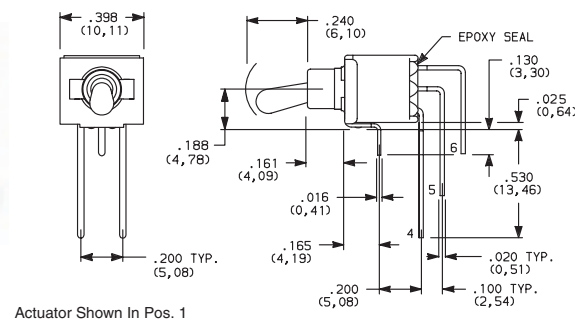
### AV VERTICAL RIGHT ANGLE, PC THRU-HOLE



ET02 - omit terminal 2.

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

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



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



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

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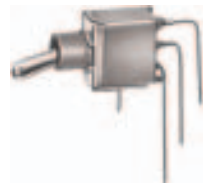
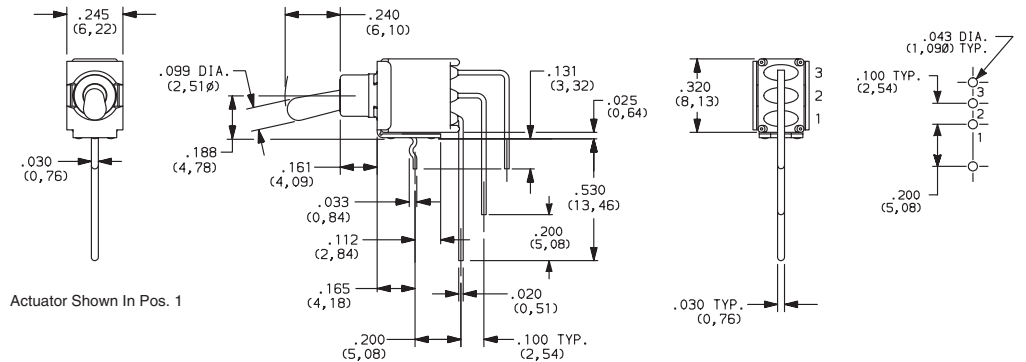




# ET Series Sealed Subminiature Toggle Switches

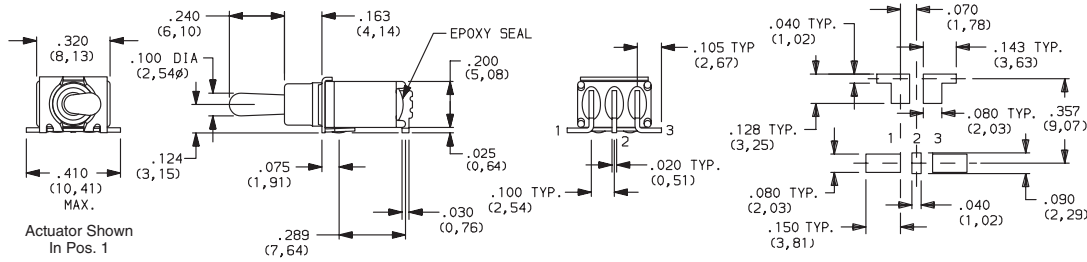
## TERMINATIONS

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



ET01SD1AV2BE  
Vertical Actuation  
SPDT

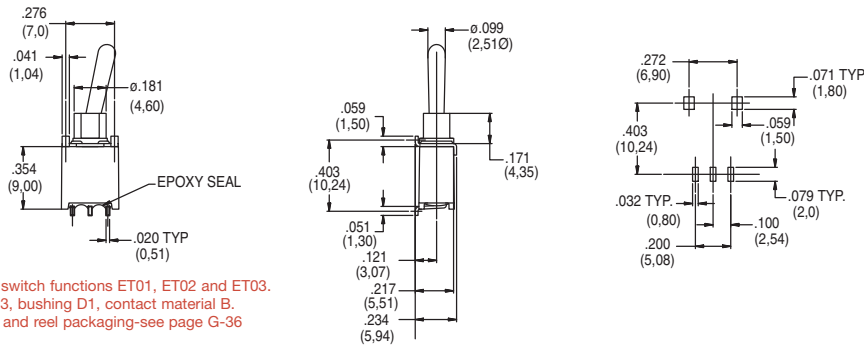
### SA RIGHT ANGLE, SURFACE MOUNT



ET01M3D1SAPE  
Horizontal Actuation  
SPDT Only

Not available with S and S1 actuators. Standard with tape & reel packaging. See page G-35.

### SA1 RIGHT ANGLE, SURFACE MOUNT

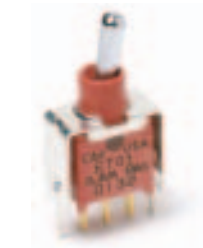
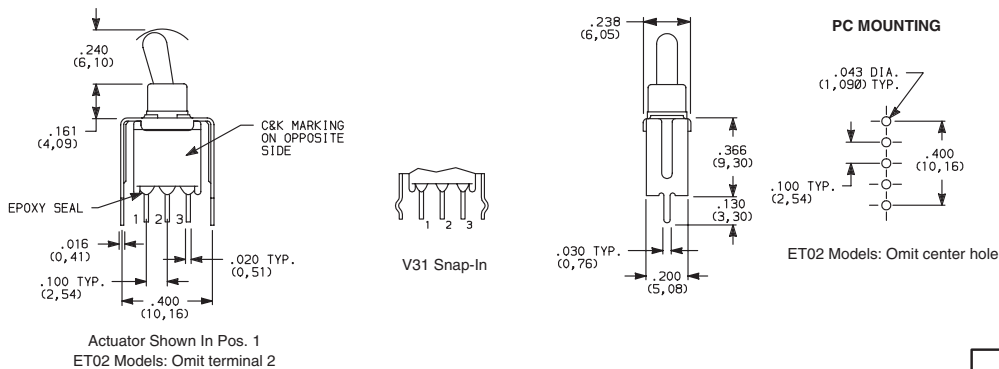


ET01M3D1SA1BE  
Horizontal Actuation  
SPDT Only

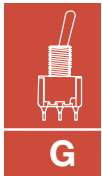
Only available with switch functions ET01, ET02 and ET03.  
Actuators M and M3, bushing D1, contact material B.  
Standard with tape and reel packaging-see page G-36

### V3 VERTICAL MOUNT, V-BRACKET

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



ET01MD1V3BE  
SPDT



Toggle



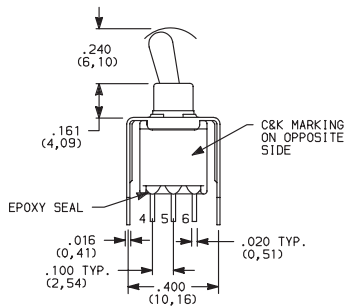
Third Angle Projection

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

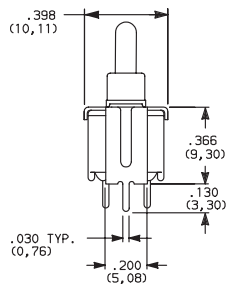
# ET Series Sealed Subminiature Toggle Switches

## TERMINATIONS

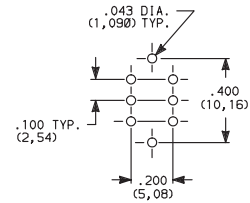
### V3 VERTICAL MOUNT, V-BRACKET



Actuator Shown In Pos. 1



### PC MOUNTING



ET21MD1V3BE  
DPDT

## CONTACT MATERIAL

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

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

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

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

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

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

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

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

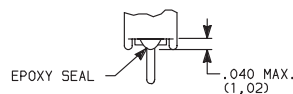
**NOTE:** Any models supplied with Q, B, G, P or R contact material are RoHS compliant.

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

K, L and M options represent Non RoHS tin lead product and are not recommended for new designs. For additional information please contact Customer Service.

## SEAL

### E EPOXY SEAL



## AVAILABLE HARDWARE

### Cap

#### PART NO.

706201000 WHITE  
706202000 BLACK  
706203000 RED

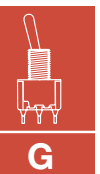
Material: Vinyl  
Finish: Matte



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



Third Angle Projection  
Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

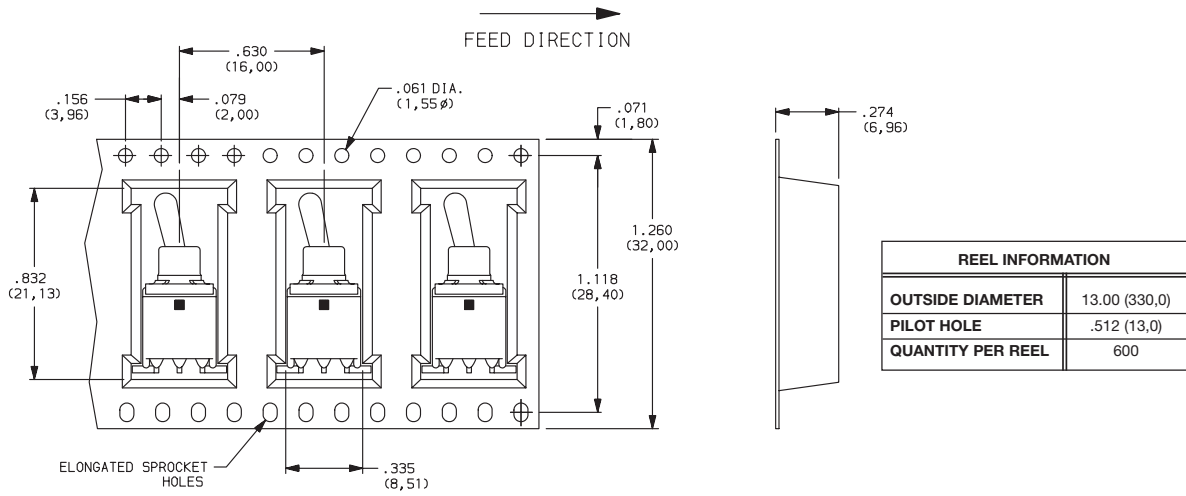


Toggle

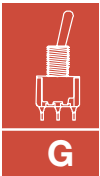
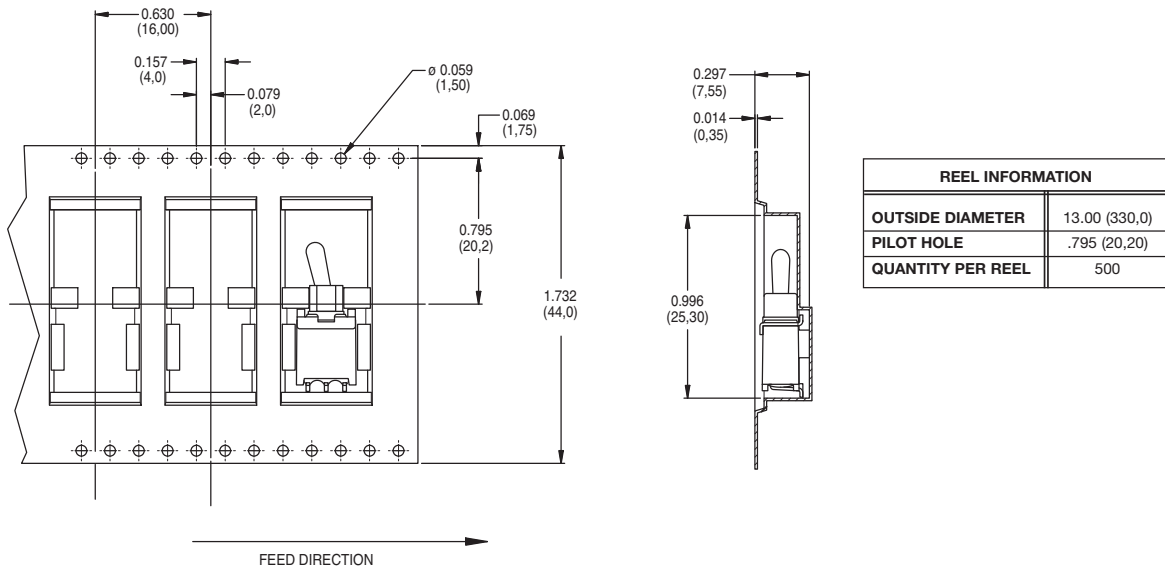
# ET Series Sealed Subminiature Toggle Switches

## TAPE & REEL

For part number ET01M3D1SAKE



For part number ET01M3D1SA1BE



Toggle



Third Angle  
Projection

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

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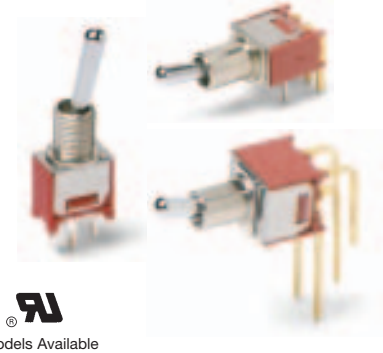
# T Series Subminiature Toggle Switches

## 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



Models Available

## 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 G-42 for additional ratings.

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

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

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

DIELECTRIC STRENGTH: 1000 Vrms min. @ sea level.

OPERATING TEMPERATURE: -30°C to 85°C.

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

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

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

## Materials

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

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 G-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 O.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages G-38 thru G-42. For additional options not shown in catalog, consult Customer Service Center. All models have epoxy terminal seal and are compatible with all "bottom-wash" PCB cleaning methods.

### 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
- T205** DPDT Mom.-Off-Mom.
- T203** DPDT On-Off-On
- 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



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

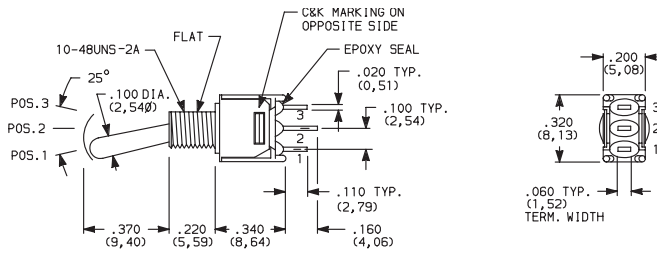


# T Series Subminiature Toggle Switches

## SWITCH FUNCTION

NO. POLES	MODEL NO.	SWITCH FUNCTION			CONNECTED TERMINALS			SCHEMATIC
		POS. 1	POS. 2	POS. 3	POS. 1	POS. 2	POS. 3	
SP	<b>T101</b>	ON	NONE	ON	2-3	N/A	2-1	
	<b>T103</b>	ON	OFF	ON	2-3	OPEN	2-1	
	<b>T105</b>	MOM.	OFF	MOM.				
	<b>T107</b>	ON	OFF	MOM.				
	<b>T108</b>	ON	NONE	MOM.	2-3	N/A	2-1	
	<b>T102</b>	OFF	NONE	ON	OPEN	N/A	3-1	

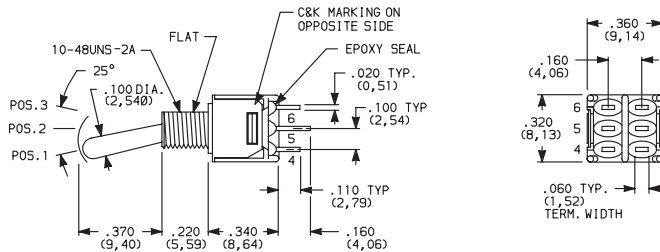
### SPDT



Part number shown: T101SHZQE

NO. POLES	MODEL NO.	SWITCH FUNCTION			CONNECTED TERMINALS			SCHEMATIC
		POS. 1	POS. 2	POS. 3	POS. 1	POS. 2	POS. 3	
DP	<b>T201</b>	ON	NONE	ON	2-3,5-6	N/A	2-1,5-4	
	<b>T203</b>	ON	OFF	ON	2-3,5-6	OPEN	2-1,5-4	
	<b>T205</b>	MOM.	OFF	MOM.				
	<b>T208</b>	ON	NONE	MOM.	2-3,5-6	N/A	2-1,5-4	
	<b>T211*</b>	ON	ON	ON	2-3,5-6	2-3,5-4	2-1,5-4	

### DPDT

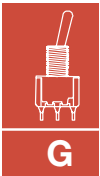


Terminal Nos.  
For Reference Only

Part number shown: T201SHZQE

MOM. = Momentary

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



Toggle

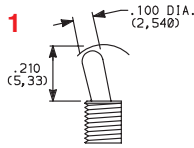


Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

# T Series Subminiature Toggle Switches

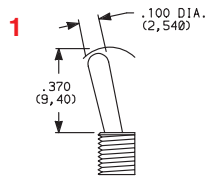
## ACTUATOR

**M** .210" HIGH



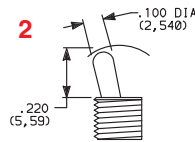
Standard with A, AV or V3 terminations.

**S** .370" HIGH

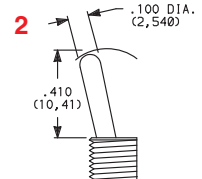


Standard with Z, C or W terminations.

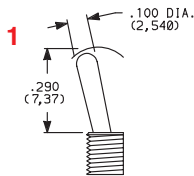
**M1** .220" HIGH  
(with "T" bushing)



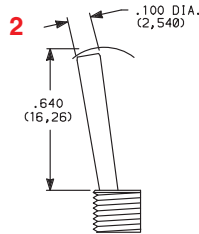
**S1** .410" HIGH  
(with "T" bushing)



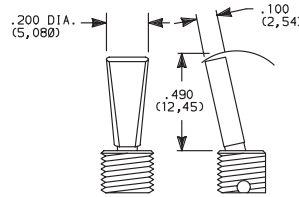
**L** .290" HIGH



**L1** .620" HIGH



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

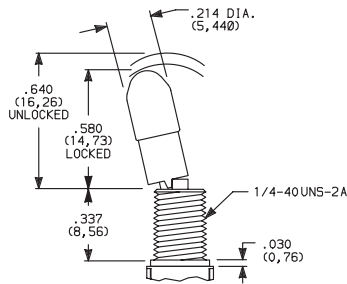


Available with T & T9 bushings only.  
Dress nut part number 709901201  
supplied standard with threaded bushing.

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



### 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.

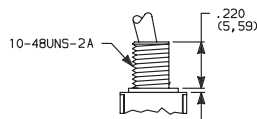
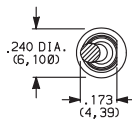
Keyway on right side. To prevent accidental actuation, toggles must be lifted before being actuated. When released, toggles again lock in place. Overtightening mounting nut may cause actuator to bind.

Not available with CF bushing option.

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

## BUSHING

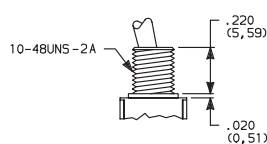
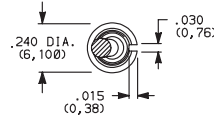
**H** .220" HIGH THREADED, FLAT



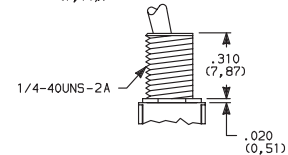
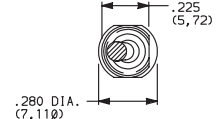
H standard with C, W & Z terminations.

H9 standard with A, AV & V3 terminations.

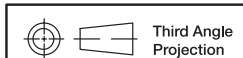
**Y** .220" HIGH THREADED, KEYWAY



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



**C&K**

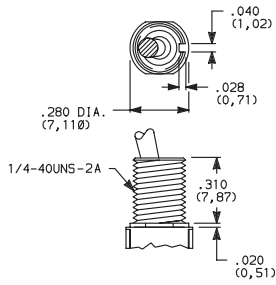


Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

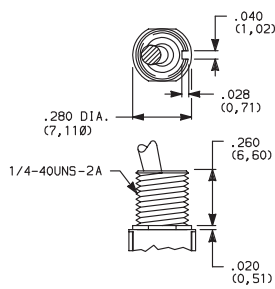
# T Series Subminiature Toggle Switches

## BUSHING

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

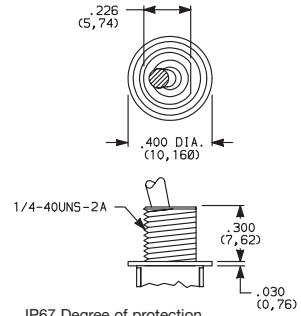


**TD** .260" HIGH THREADED, KEYWAY



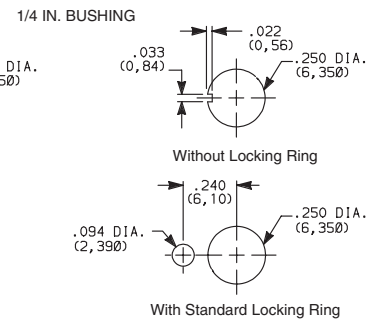
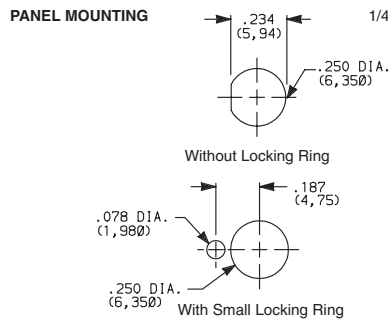
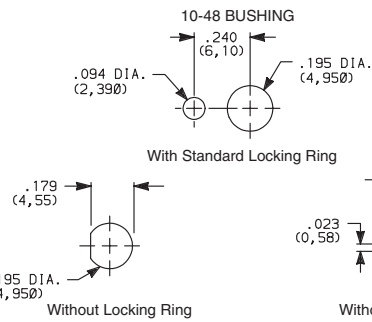
**D9** .260" HIGH UNTHREADED, KEYWAY

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



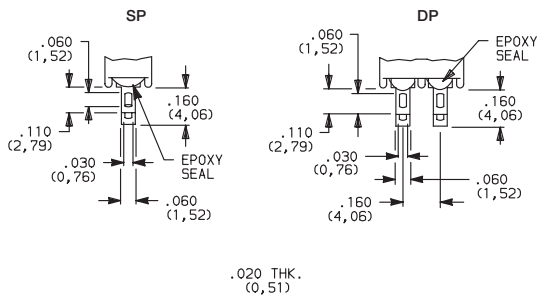
IP67 Degree of protection.  
Internal o-ring actuator seal and  
external bushing seal washer standard.

Not available with K locking lever option.



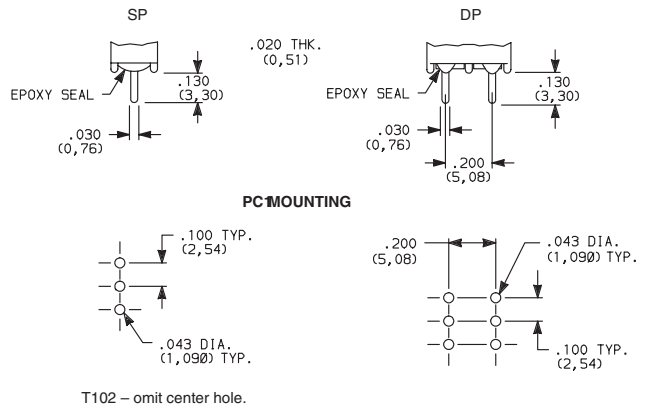
## TERMINATIONS

**Z** SOLDER LUG

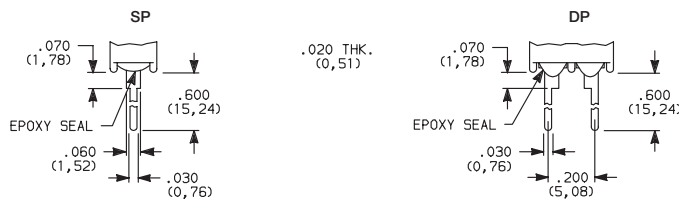


Not available with P or R contact materials.

**C** PC THRU-HOLE



**W** WIRE WRAP



Toggle



Third Angle  
Projection

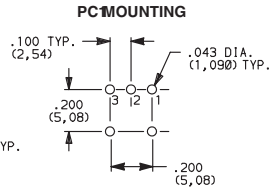
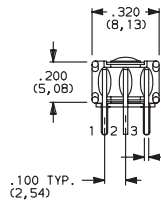
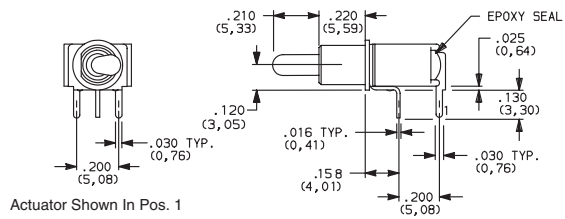
Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

**C&K**

# T Series Subminiature Toggle Switches

## TERMINATIONS

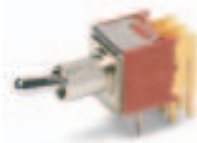
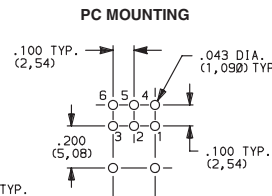
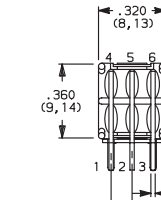
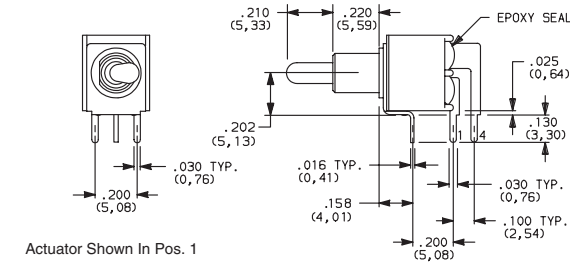
### A RIGHT ANGLE, PC THRU-HOLE



T101MH9ABE  
Horizontal Actuation  
SPDT

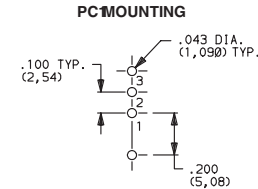
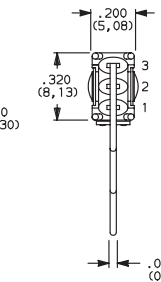
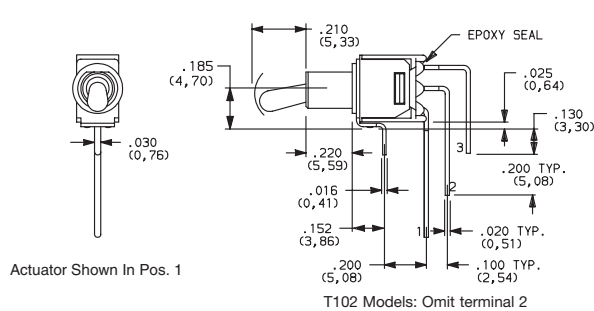
Not available with T102 model.

### A RIGHT ANGLE, PC THRU-HOLE



T201MH9ABE  
Horizontal Actuation  
DPDT

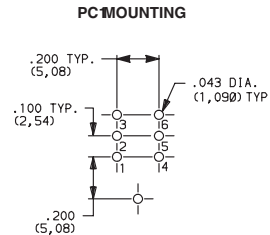
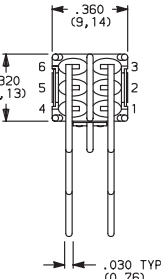
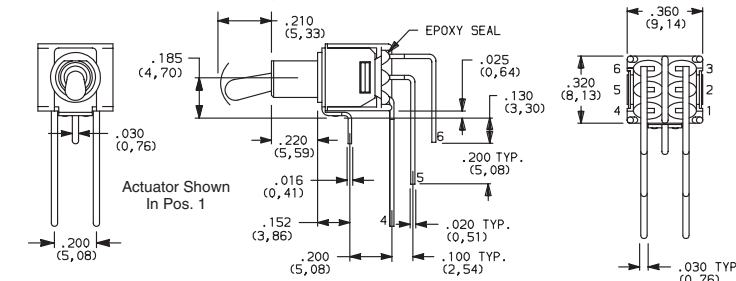
### AV VERTICAL RIGHT ANGLE, PC THRU-HOLE



T101MH9AVBE  
Vertical Actuation  
SPDT

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

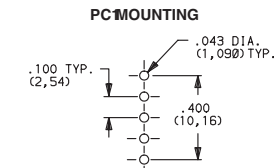
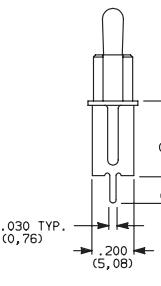
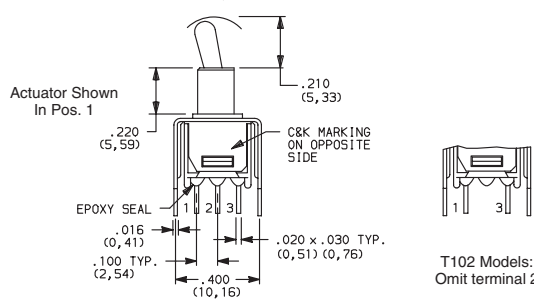
### AV VERTICAL RIGHT ANGLE, PC THRU-HOLE



T201MH9AVBE  
Vertical Actuation  
DPDT

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

### V3 VERTICAL MOUNT, V-BRACKET



T101MH9V3BE  
SPDT



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

www.ck-components.com



G

Toggle



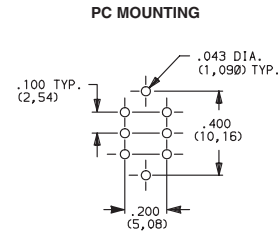
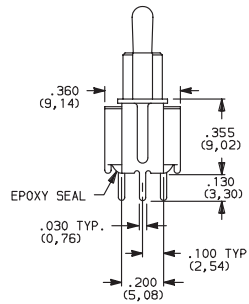
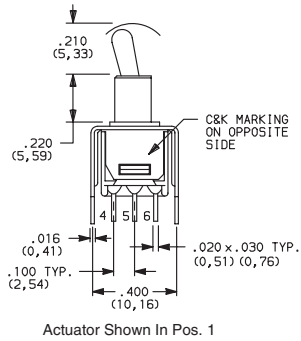
# T Series Subminiature Toggle Switches

## TERMINATIONS

**V3** VERTICAL MOUNT, V-BRACKET



T201MH9V3BE  
DPDT



## CONTACT MATERIAL

OPTION CODE	CONTACT MATERIAL	TERMINAL PLATING	RATINGS	
<b>B</b>	GOLD <sup>1</sup>	GOLD <sup>1</sup>	LOW LEVEL/ DRY CIRCUIT	0.4 VA MAX. @ 20 V AC OR DC MAX.
<b>P</b>		MATTE-TIN <sup>6</sup>		
<b>Q</b>	SILVER <sup>4,5</sup>	SILVER <sup>5</sup>	POWER	TX01 MODELS: 3 AMPS @ 120 V AC OR 28 V DC. ALL OTHER MODELS: 2 AMPS @ 120 V AC OR 28 V DC.
<b>G</b>	GOLD OVER SILVER <sup>2,3</sup>	GOLD <sup>3</sup>	LOW LEVEL/DRY CIRCUIT OR POWER	TX01 MODELS: 0.4 VA MAX @ 20 V AC OR DC MAX. OR 3 AMPS @ 120 V AC OR 28 V DC. ALL OTHER MODELS: 0.4 VA MAX @ 20 V AC OR DC MAX. OR 2 AMPS @ 120 V AC OR 28 V DC.
<b>R</b>		MATTE-TIN <sup>6</sup>		

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

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

**NOTE:** Any models supplied with P, R, Q, B or G contact material are RoHS compliant. For the latest information regarding RoHS compliance, please go to: [www.itccannon.com/rohs](http://www.itccannon.com/rohs).

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

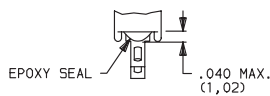
B contact material standard with A, AV, V3 & W terminations.

Q contact material standard with C & Z terminations.

K, L and M options represent Non RoHS tin lead product and are not recommended for new designs. For additional information please contact Customer Service.

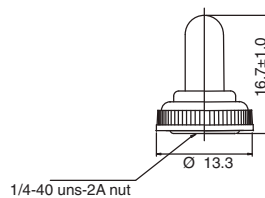
## SEAL

**E** EPOXY SEAL



## AVAILABLE HARDWARE

**759D02000** SEALING BOOT



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



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

**C&K**

# GT Series Sealed Ultraminiature Toggle Switches

## Features/Benefits

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

## Typical Applications

- Hand-held telecommunications
- Small instrumentation



## Specifications

CONTACT RATING: 0.4 VA max. @ 20 V AC or DC max.  
 MECHANICAL & ELECTRICAL LIFE: 40,000 make-and-break cycles at full load.  
 CONTACT RESISTANCE: Below 50 m Ω typ. initial @ 2-4 V DC, 100 mA.  
 INSULATION RESISTANCE: 10<sup>9</sup> Ω min.  
 DIELECTRIC STRENGTH: 500 Vrms min. @ sea level.  
 OPERATING TEMPERATURE: -30°C to 85°C.  
 SOLDERABILITY: Per MIL-STD-202F method 208D, or EIA RS-186E method 9 (1 hour steam aging).  
 PACKAGING: Surface mount switches shipped in anti-static tape and reel packaging per EIA 481-3, see page G-47 for drawings and reel information. Tape and cover strip are conductive for use near statically sensitive components, consult Customer Service Center.

## Materials

HOUSING AND BASE: Glass filled nylon 4/6, flame retardant, heat stabilized (UL 94V-0).  
 ACTUATOR: Glass filled nylon 4/6, flame retardant, heat stabilized (UL 94V-0), with standard internal o-ring seal.  
 SWITCH SUPPORT: Brass, tin plated.  
 MOVABLE CONTACTS: Copper alloy, with gold plate over nickel plate.  
 STATIONARY CONTACTS: Copper alloy, with gold plate over nickel plate.  
 TERMINALS: Gold.  
 TERMINAL SEAL: Epoxy. All terminals insert molded.

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

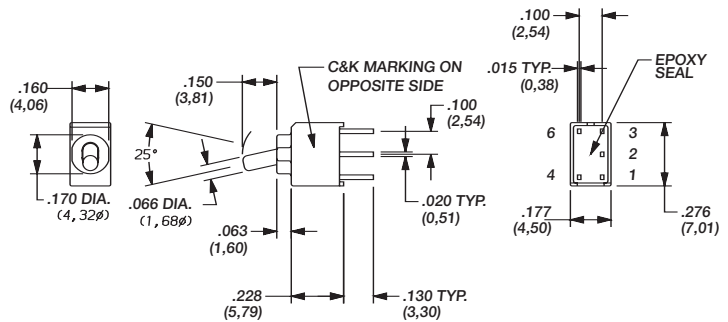
## How To Order

Complete part numbers for GT Series Sealed Ultraminiature Toggle Switches are shown on pages G-43 thru G-47.

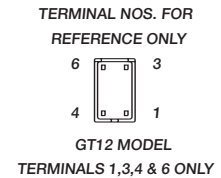
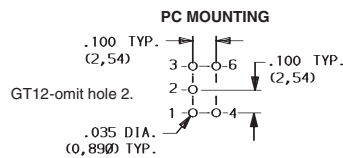


GT11MCBE  
SPDT

PART NUMBER	SWITCH FUNCTION		
	POS. 1	POS. 2	POS. 3
<b>GT11MCBE</b>	ON	NONE	ON
<b>GT13MCBE</b>	ON	OFF	ON
Conn. Terms.	2-3	OPEN	2-1
Schematic			
SPDT	Note: Pins 4 and 6 not connected		
<b>GT12MCBE</b>	OFF	NONE	ON
Conn. Terms.	OPEN	N/A	3-1
Schematic			
SPST	Note: Pins 4 and 6 not connected		



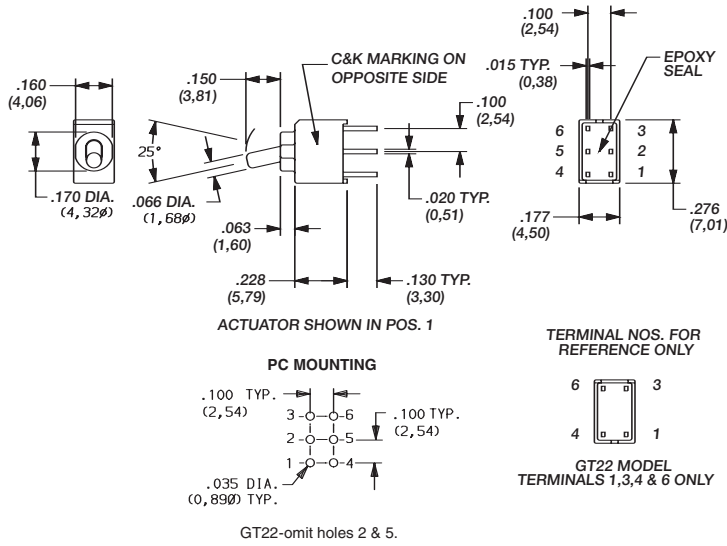
ACTUATOR SHOWN IN POS. 1



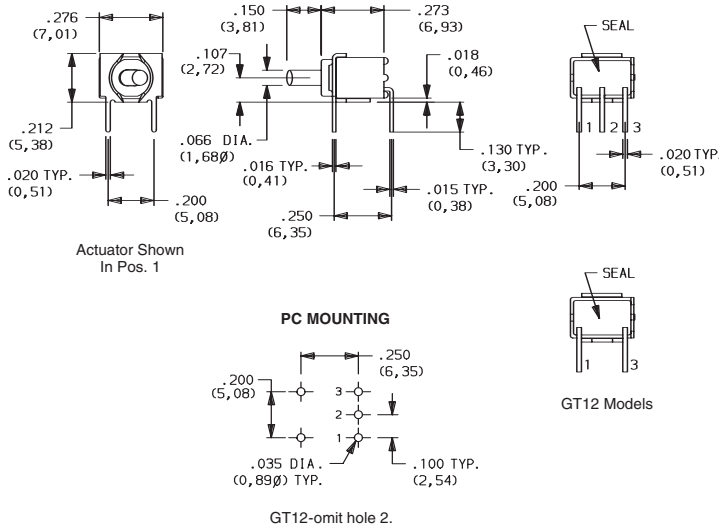
Toggle

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

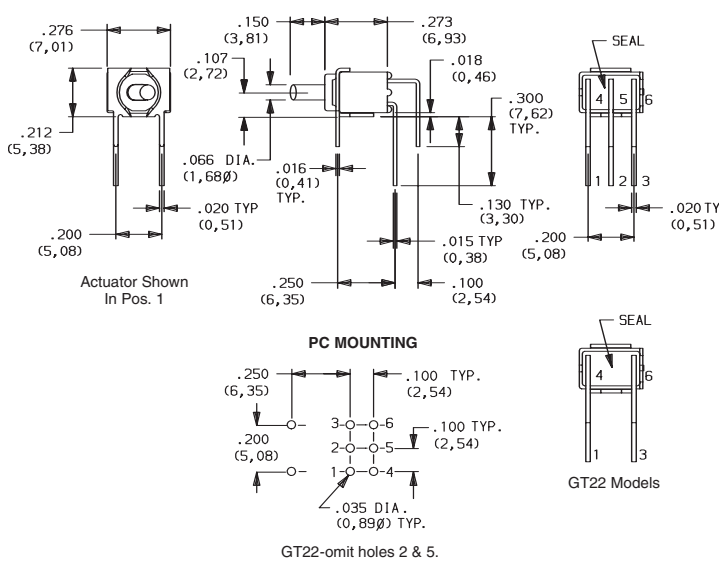
# GT Series Sealed Ultraminiature Toggle Switches



PART NUMBER	SWITCH FUNCTION		
	POS.1	POS. 2	POS. 3
<b>GT21MCBE</b>	ON	NONE	ON
<b>GT23MCBE</b>	ON	OFF	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>	ON	NONE	ON
<b>GT23MABE</b>	ON	OFF	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: Inch (mm)  
Specifications and dimensions subject to change

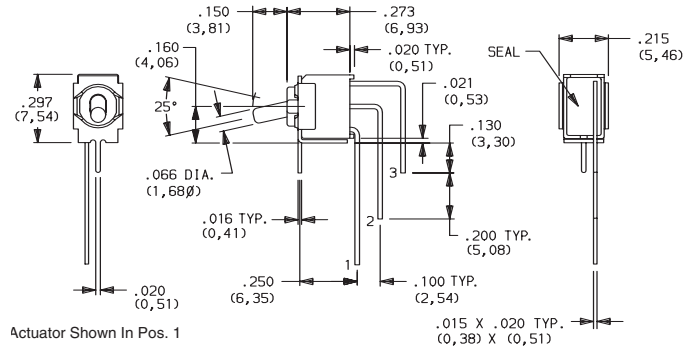
[www.ck-components.com](http://www.ck-components.com)

# GT Series Sealed Ultraminiature Toggle Switches



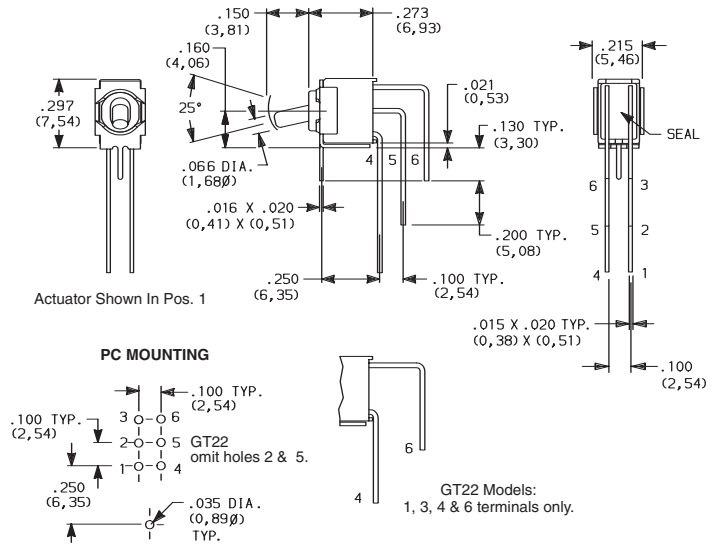
GT11MAVBE  
Vertical  
Actuation  
SPDT

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



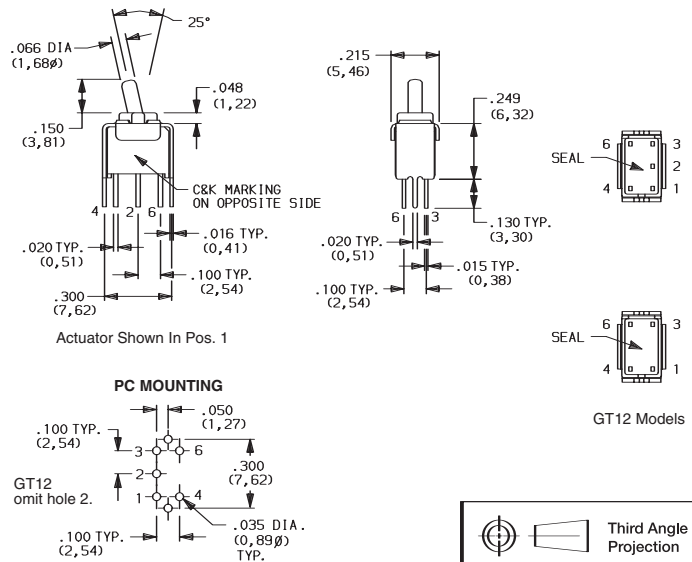
GT21MAVBE  
Vertical  
Actuation  
DPDT

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



GT11MV3BE  
SPDT

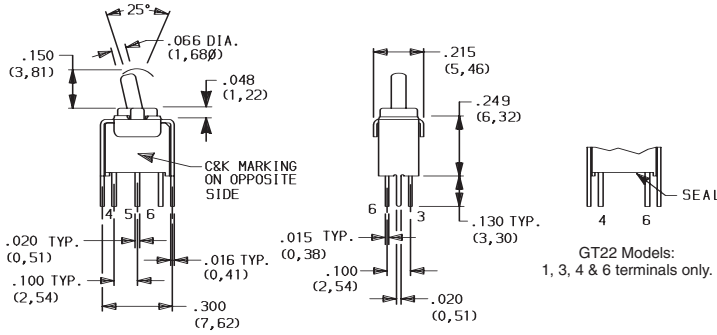
PART NUMBER	SWITCH FUNCTION		
	POS.1	POS. 2	POS. 3
<b>GT11MV3BE</b>	ON	NONE	ON
<b>GT13MV3BE</b>	ON	OFF	ON
Conn. Terms.	2-3	OPEN	2-1
Schematic			
SPDT	Note: Pins 4 and 6 not connected		
<b>GT12MV3BE</b>	OFF	NONE	ON
Conn. Terms.	OPEN	N/A	3-1
Schematic			
SPST	Note: Pins 4 and 6 not connected		



# GT Series Sealed Ultraminiature Toggle Switches



GT21MV3BE  
DPDT

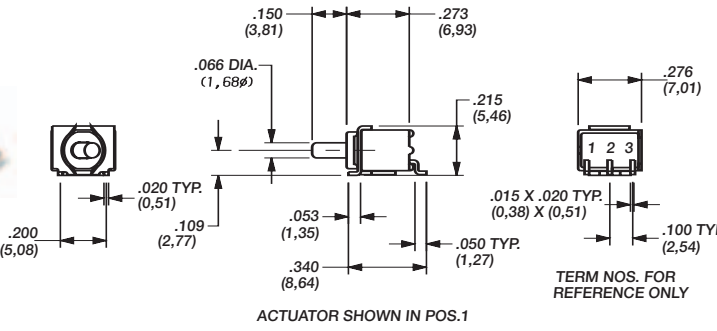


PART NUMBER	SWITCH FUNCTION		
	POS.1	POS. 2	POS. 3
GT21MV3BE	ON	NONE	ON
GT23MV3BE	ON	OFF	ON
Conn. Terms.	2-3, 5-6	OPEN	2-1, 5-4
Schematic			
DPDT			
GT22MV3BE	OFF	NONE	ON
Conn. Terms.	OPEN	N/A	3-1, 6-4
Schematic			
DPST			

SMT



GT11MSABE  
Horizontal  
Actuation  
SPDT



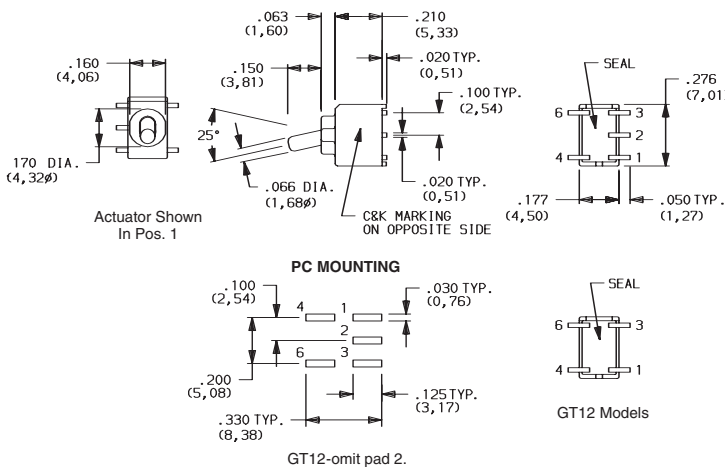
PART NUMBER	SWITCH FUNCTION		
	POS.1	POS. 2	POS. 3
GT11MSABETR	ON	NONE	ON
GT13MSABETR	ON	OFF	ON
Conn. Terms.	2-3	OPEN	2-1
Schematic			
SPDT			
GT12MSABETR	OFF	NONE	ON
Conn. Terms.	OPEN	N/A	3-1
Schematic			
SPST			

Standard with tape & reel packaging, see page G-47.

SMT



GT11MSCBE  
SPDT



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

Standard with tape & reel packaging, see page G-47.



Toggle



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

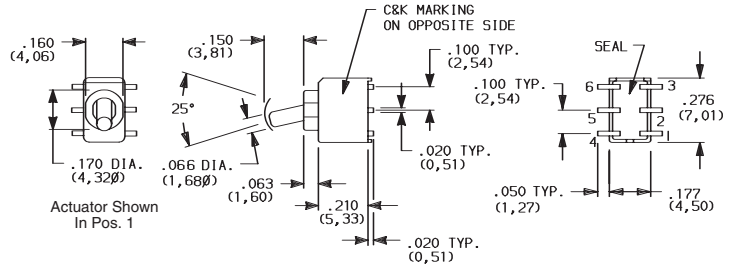
# GT Series Sealed Ultraminiature Toggle Switches

SMT

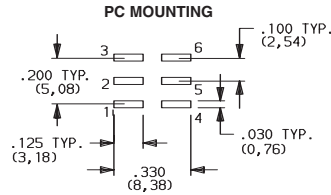


GT21MSCBE  
DPDT

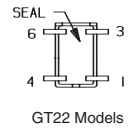
PART NUMBER	SWITCH FUNCTION		
	POS. 1	POS. 2	POS. 3
<b>GT21MSCBETR</b>	ON	NONE	ON
<b>GT23MSCBETR</b>	ON	OFF	ON
Conn. Terms.	2-3, 5-6	OPEN	2-1, 5-4
Schematic			
DPDT			
<b>GT22MSCBETR</b>	OFF	NONE	ON
Conn. Terms.	OPEN	N/A	3-1, 6-4
Schematic			
DPST			



Actuator Shown  
In Pos. 1



PC MOUNTING



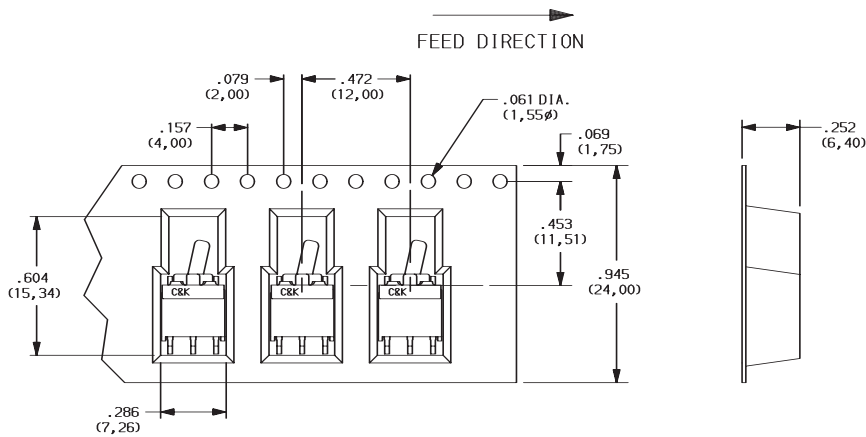
GT22 Models

GT22-omit pads 2 & 5.

Standard with tape & reel packaging, see page G-47.

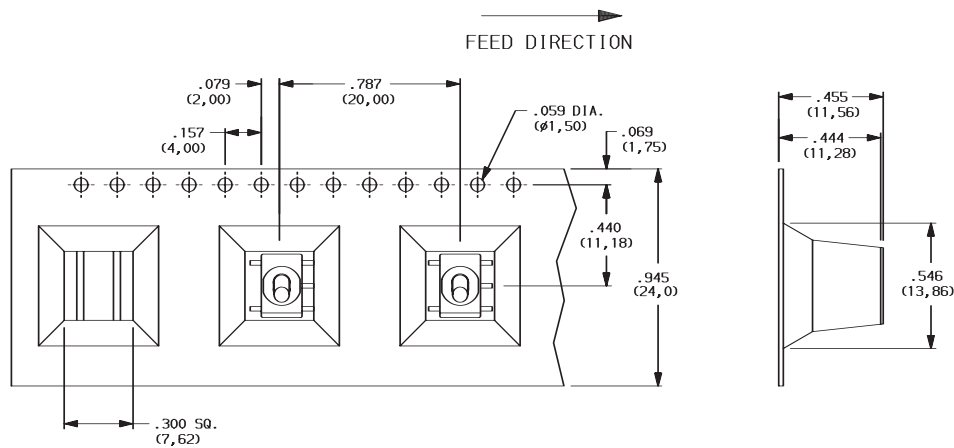
## TAPE & REEL

For part numbers GT11MSABE, GT12MSABE, GT13MSABE



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

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



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



Third Angle  
Projection  
Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change



Toggle

# 9000 Series Power Toggle Switches

## Features/Benefits

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

## Typical Applications

- Shut-off switch
- Small equipment



## 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 Ω typ. initial @ 2-4 V DC, 100 mA.

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

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

OPERATING TEMPERATURE: -30°C to 85°C.

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

**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 G-49 thru G-53. For additional options not shown in catalog, consult Customer Service Center.



### Switch Function

- 9201 DPDT, On-On, 6 Amps
- 9221 DPDT, On-On, 10 Amps

### Actuator

- S Antirotation, .410" high
- K Locking lever, .650" high
- K1 Locking lever, .680" high
- L43 Lever handle with cap
- P3 Flatted, anti-rotation, .450" high
- T .687" high, 15/32 bushing
- T1 .460" high, 15/32 bushing

### Bushing

- H3 .296" high, keyway
- CW Splashproof
- H .296" high, flat

### Terminations

- Z Solder lug
- Z4 Quick connect (9221 only)
- AV2 Vert. right angle, PC thru-hole (9201 only)
- C PC Thru-hole

### Contact Material

- Q Silver

### Seal

- E Epoxy
- D No epoxy

### Actuator Color/Finish

- NONE Bright chrome
- 2 Black

### Bushing Finish

- NONE Nickel
- 2 Black

### KXX Actuator Color/Finish

- NONE Natural aluminum
- 2 Black anodized aluminum



Toggle



Dimensions are shown: Inch (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

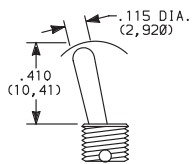
\* See CONTACT MATERIAL, page G-52, for complete ratings.

All 9000 Series models meet international dimensional and electrical requirements.

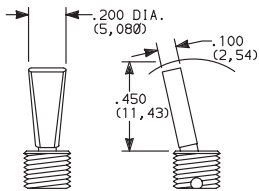
9221 model must be ordered with Z4 terminations and D seal option.

## ACTUATOR

**S** ANTIROTATION, .410" HIGH



**P3** FLATTED, ANTIROTATION, .450" HIGH



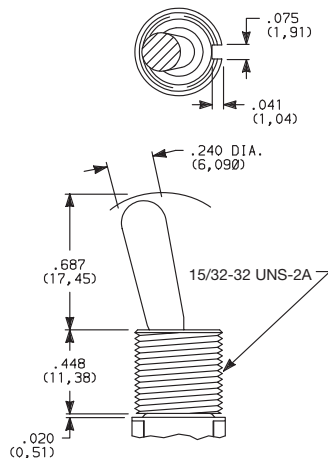
OPTION CODE	ACTUATOR FINISH
NONE	NATURAL ALUMINUM—With Nickel Plated Bushing
2	BLACK

**NOTE:** Black hardware is supplied when either black actuators or bushings are specified. All hardware is available separately, see Section O.

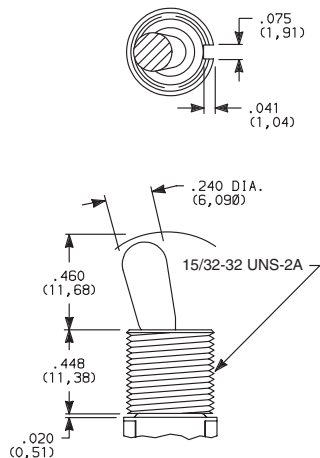
Antirotation is standard on all actuators, provides 'anti-push-in' feature on actuator.

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 O.

Antirotation is standard on all actuators except T & T1, provides 'anti-push-in' feature on actuator.



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

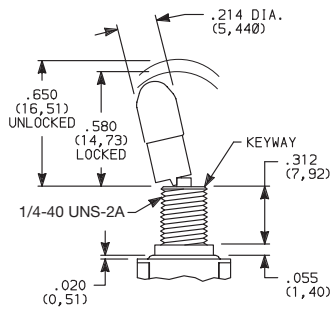




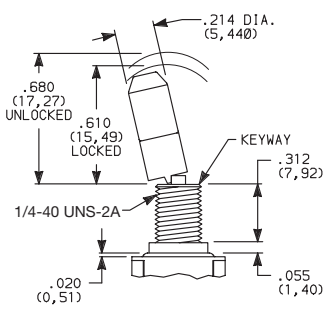
# 9000 Series Power Toggle Switches

## ACTUATOR

**K** LOCKING LEVER, .650" HIGH, THREADED



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



Locking Positions

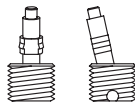


2 Position Lock

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

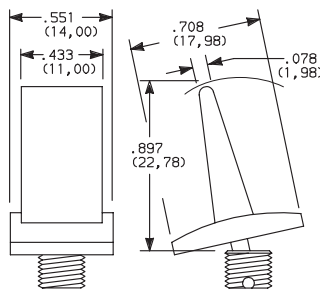
OPTION CODE	ACTUATOR CAP FINISH
<b>NONE</b>	NATURAL ALUMINUM—With Nickel Plated Bushing
<b>2</b>	BLACK ANODIZED ALUMINUM

**L40** LEVER HANDLE WITHOUT CAP



No color choice required.

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



Finish: Matte

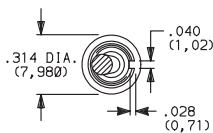
OPTION CODE	ACTUATOR CAP COLOR
<b>2</b>	BLACK
<b>NONE</b>	No Actuator Color (L40 option)

Other colors available, consult Customer Service Center.

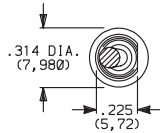
**NOTE:** Lever handle actuator L43 supplied, but not installed. For interchangeability, order L40 actuator option and order lever handles separately, see page G-53. Antirotation is standard on all actuators, provides 'anti-push-in' feature.

## BUSHING

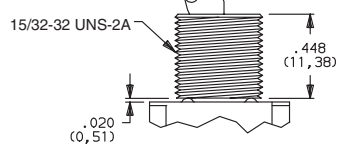
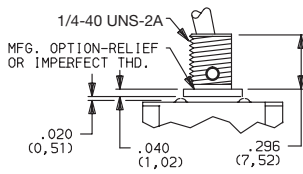
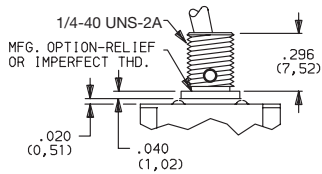
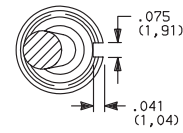
**H3** .296" HIGH, THREADED, KEYWAY



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



**CW** SPLASHPROOF, 15/32 BUSHING



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

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

For T & T1 actuators only.

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

Internal actuator seal standard. External bushing seal washer available separately, order from: Multi-Flex Seals, Inc., Hackensack, NJ. Part number: MFS-60064.



Third Angle Projection

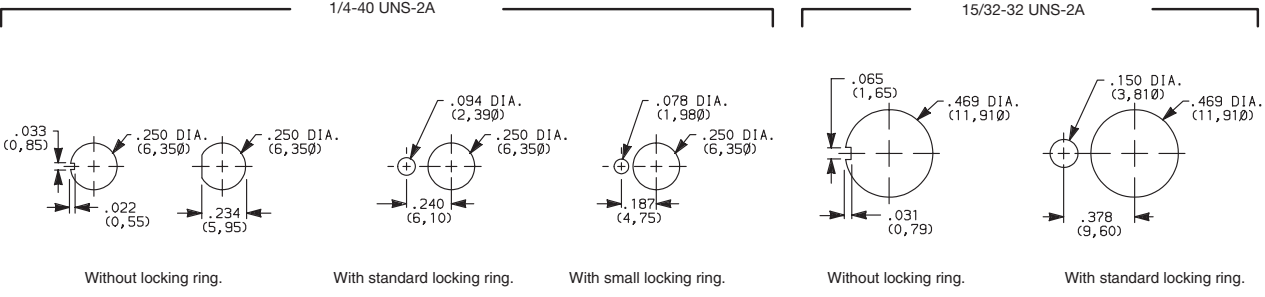
Dimensions are shown: Inch (mm)  
Specifications and dimensions subject to change

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

# 9000 Series Power Toggle Switches

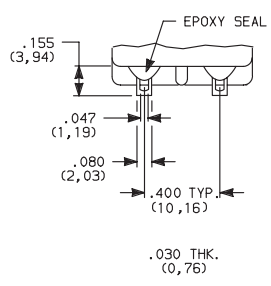
## BUSHING

### PANEL MOUNTING



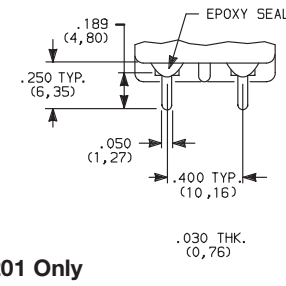
## TERMINATIONS

### Z SOLDER LUG



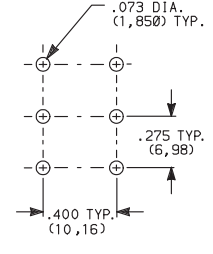
9201 Only

### C PC THRU-HOLE



9201 Only

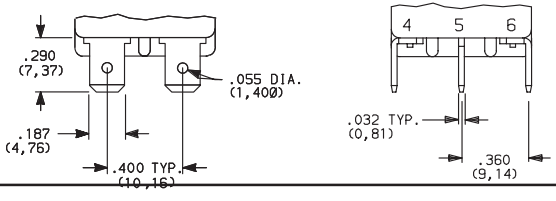
### PC MOUNTING



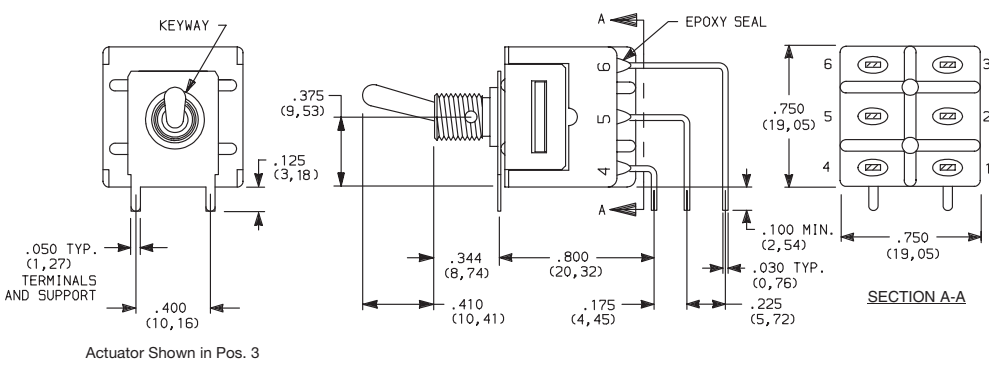
### Z4 .187" QUICK CONNECT

9221 Only

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

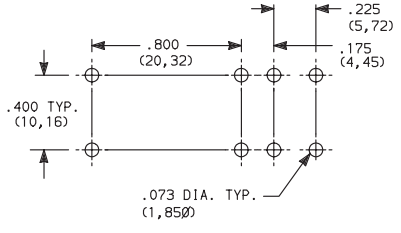


### AV2 VERTICAL RIGHT ANGLE, PC THRU-HOLE



9201SH3AV2QE  
Vertical Actuation  
DPDT

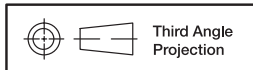
### PC MOUNTING



Terminal Nos. For Reference Only

9201 Only

NOTE: Terminal bend radii and lead-in manufacturing option. Terminal spacing greater than 3mm at all points.



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



# 9000 Series Power Toggle Switches

## CONTACT MATERIAL

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

1 END CONTACTS: Coin silver, silver plated.

2 CENTER CONTACTS & ALL TERMINALS: Copper alloy, silver plated.

3 END CONTACTS: Silver cadmium oxide.

4 CENTER CONTACTS: Copper alloy, silver plated.

5 Z4 TERMINALS ONLY: Copper alloy, matte-tin plated.

6 Cadmium in electrical switch contacts is exempt from RoHS.

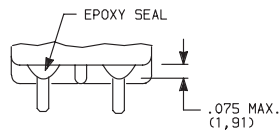
**NOTE:** Any models supplied with Q contact material are RoHS compliant.

All 9000 Series models meet international dimensional and electrical requirements. 

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

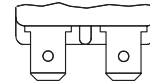
## SEAL

**E** EPOXY SEAL



Not available with 9221 model or Z4 terminations.

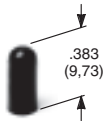
**D** NO EPOXY SEAL



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

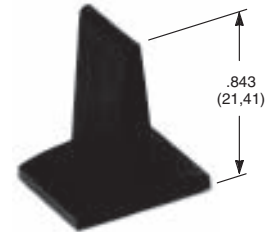
**Cap**  
Compatible with S actuator



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

Material: Vinyl  
Finish: Matte

**L43 Actuator**



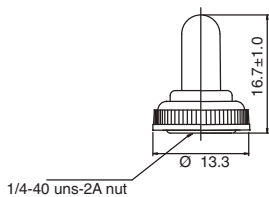
**PART NO.**  
481202000 BLACK  
481203000 RED

Material: Nylon  
Finish: Matte

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

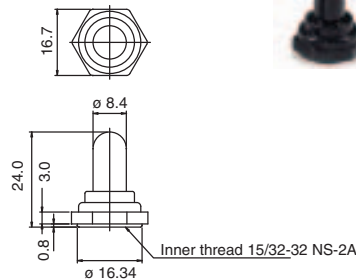
Other colors available, consult Customer Service Center.

**759D02000 Sealing Boot**



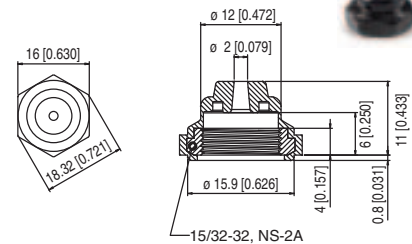
**NOTE:** For use with S actuator style when combined with H3 and H bushings

**703D02000 Sealing Boot**



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

**704D02000 Sealing Boot**

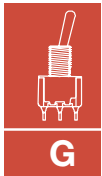


**NOTE:** For use with T style actuator



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

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Toggle

