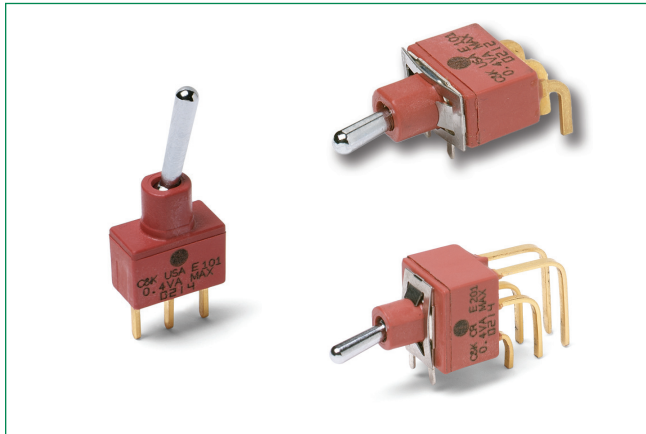


# E Series

## Sealed Miniature Toggle Switches



### Agency Approvals

Agency	Agency File Number
	E42363

### Specifications

<b>Contact Rating</b>	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.
<b>Electrical Life</b>	E1XX and E2XX models: 40,000 make-and-break cycles at full load. E3XX models: 30,000 cycles.
<b>Contact Resistance</b>	Below 10 m Ω typ. Initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.
<b>Insulation Resistance</b>	10 <sup>9</sup> Ω min.
<b>Electrostatic Discharge ESD Option</b>	F1 conductive bushing only. Dissipates up to 20,000 V DC from actuator to ground.
<b>Dielectric Strength</b>	1000 Vrms min. @ sea level.
<b>Operating Temperature</b>	-30°C to 85°C
<b>Solderability</b>	Per MIL-STD-202F method 208D, or EIA RS-186E method 9 (1 hour steam aging).
<b>Degree of Protection</b>	IP57; Protection against harmful dust deposit, full-scale voltage protection, temporary immersion.

### Description

Designers in the medical equipment, instrumentation and telecommunications industries need high-quality, long-lasting switches that can withstand any environment. The E series miniature toggle switches are sealed against solder and cleaning process contaminants – and come with a UL 94V-0 nylon case and bushing, helping to ensure that the products last. ESD protection is available in the E series as well.

### 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

### Applications

- Telecommunications
- Instrumentation
- Medical equipment

### Materials

<b>Case &amp; Bushing</b>	Glass filled nylon 6/6, flame retardant, heat stabilized (UL 94V-0). F1 conductive bushing option is impregnated with carbon fibers.
<b>Actuator</b>	Brass, chrome plated with internal o-ring seal standard.
<b>Switch Support</b>	Brass or steel, matte-tin plated.
<b>Switch Support Retainer</b>	Stainless steel
<b>Contact &amp; Terminals</b>	B contact material: Copper alloy, with gold plate over nickel plate. Q contact material: Copper alloy, silver plated.
<b>Terminal Seal</b>	Epoxy
<b>Hardware</b>	Nut & Locking ring: Brass, nickel plated. Lockwasher: Steel, nickel plated.

#### Notes:

Any models supplied with P, S, R, Q, B or G contact material are RoHS compliant and compatible. Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

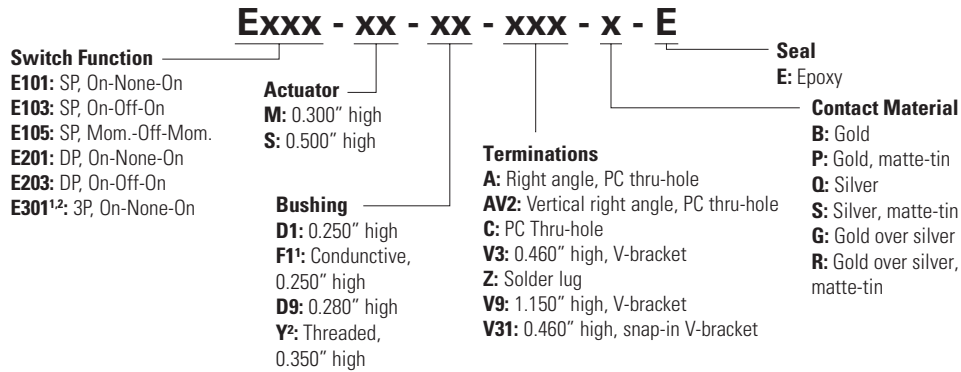
# E Series

## Sealed Miniature Toggle Switches



### Ordering Number

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages through 3-9. 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.



**Notes:**

1. F1 available with SP and DP versions only.
2. Y threaded bushing available for SP and DP versions only.

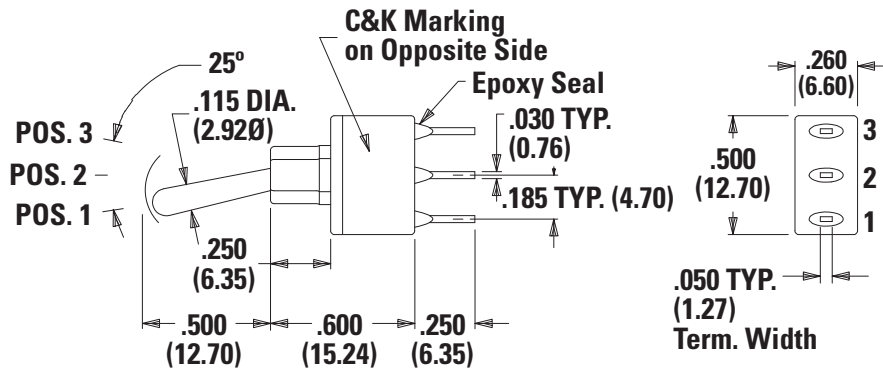
# E Series

## Sealed Miniature Toggle Switches



Switch Function  
SPDT

No. Poles	Model No.	Switch Function			Connected Terminals			Schematic
		POS. 1	POS. 2	POS. 3	POS. 1	POS. 2	POS. 3	
SP	E101	ON	NONE	ON	2-3	OPEN	2-1	SPDT 
	E103	ON	OFF	ON		N/A		
	E105	MOM.	OFF	MOM.		N/A		



Note: Part number shown: E101SD1CBE

Terminal Numbers For Reference Only

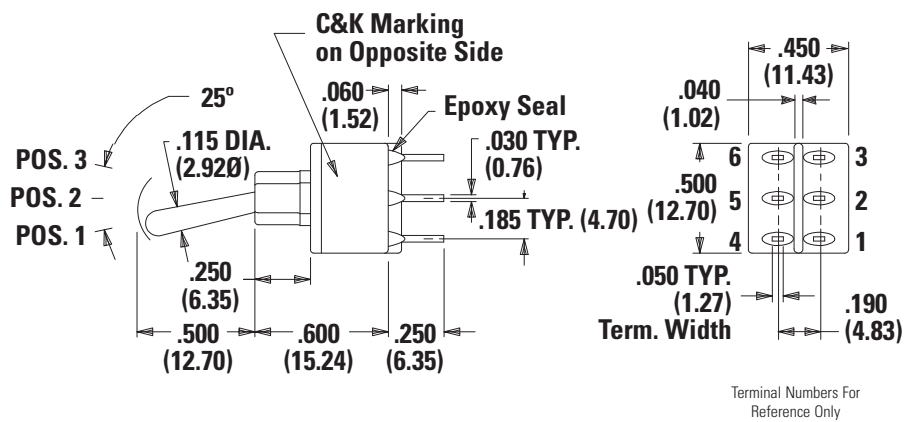
# E Series

## Sealed Miniature Toggle Switches



### DPDT

No. Poles	Model No.	Switch Function			Connected Terminals			Schematic
		POS. 1	POS. 2	POS. 3	POS. 1	POS. 2	POS. 3	
		C&K Marking on Opposite Side						
DP	E201	ON	NONE	ON	2-3,5-6	N/A	2-1,5-4	
	E203	ON	OFF			OPEN		



**Notes:** Part number shown: E201SD1CBE  
 MOM. = Momentary All models with all options when ordered with G, R, Q or S contact material.  
 Wiring for 3-way switch

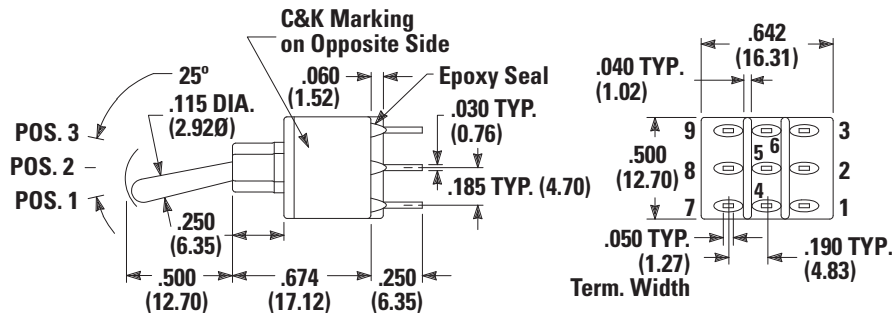
# E Series

## Sealed Miniature Toggle Switches



### 3PDT

No. Poles	Model No.	Switch Function			Connected Terminals			Schematic
		POS. 1	POS. 2	POS. 3	POS. 1	POS. 2	POS. 3	
		C&K Marking on Opposite Side						
3P	E301	ON	NONE	ON	2-3,5-6,8-9	N/A	2-1,5-4,8-7	

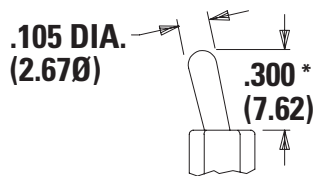


**Notes:** Part number shown: E301SD1CBE  
 MOM. = Momentary All models available with all options when ordered with G, R, Q or S contact material.  
 Wiring for 3-way switch

Terminal Numbers For Reference Only

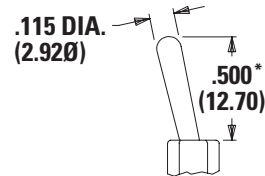
### Actuator

#### M 0.300" High



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

#### S 0.500" High



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

**Notes:** Actuators shown with standard D1 bushing. Subtract 0.030 (0.76) for D9 bushing. Subtract 0.100 (2.54) for Y bushing.

Option Code	L3 Actuator Color
2	Black

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

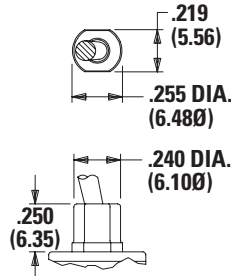
# E Series

## Sealed Miniature Toggle Switches



### Bushing

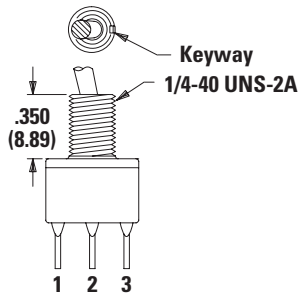
#### D1 0.250" High, Unthreaded F1 ESD Conductive Bushing, 0.250" High, Unthreaded



F1 bushing is not UL approved

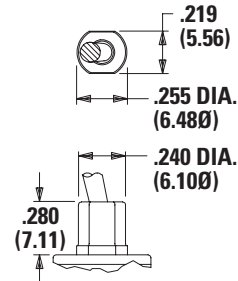
**Notes:** ESD protection depends on proper grounding of switch support bracket. F1 conductive bushing option is impregnated with carbon fibers; dissipates electrostatic discharge (ESD) up to 20,000 V from actuator to ground. Available with M & S actuator options and A, A3, AV2, AV3, V3-V61 termination options.

#### Y Threaded, Insulated, 0.350" High with Keyway

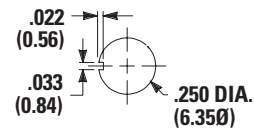


**Notes:** Available only with C, Z, Z3, & W terminations. Available for 1&2 pole only.  
Hardware: One dress nut part number 299D01201, one hex nut part number 540400201 and lockwasher part number 700303202 supplied standard. Will withstand 4 in.-lbs. of torque with no distortion.

#### D9 0.280" High, Unthreaded



#### Panel Mounting



**Notes:** E3XX models not available with D9 bushing. Internal o-ring actuator seal standard for all bushing options.

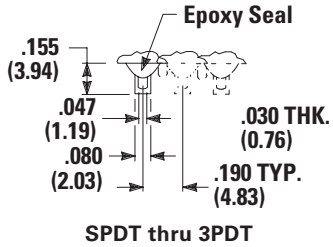
# E Series

## Sealed Miniature Toggle Switches



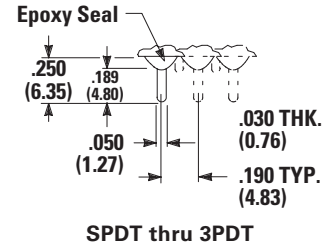
### Terminations

#### Z Solder Lug



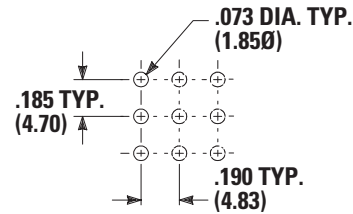
Notes: Not available with F1 conductive bushing or P, R or S contact material.

#### C PC Thru-hole



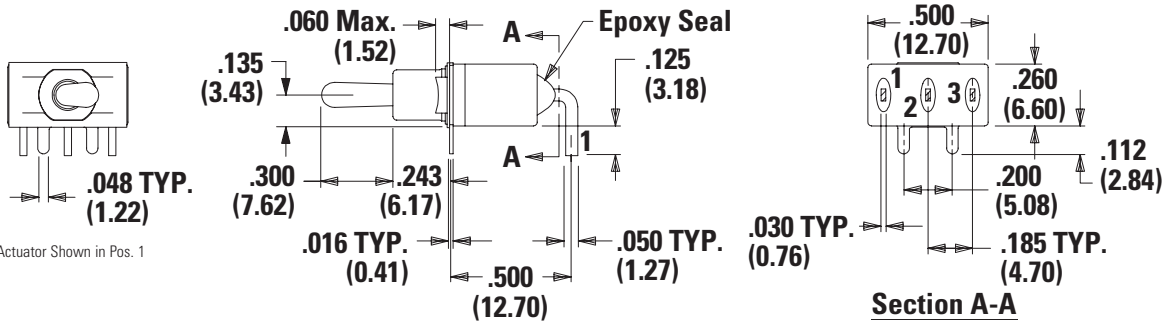
Notes: Not available with F1 conductive bushing.

#### PC Mounting



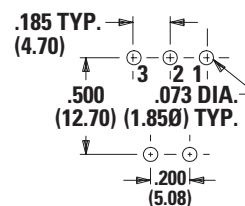
#### A Right Angle, PC Thru-hole

#### E101MD1ABE Horizontal Actuation SPDT



Terminal Numbers For Reference Only

#### PC Mounting

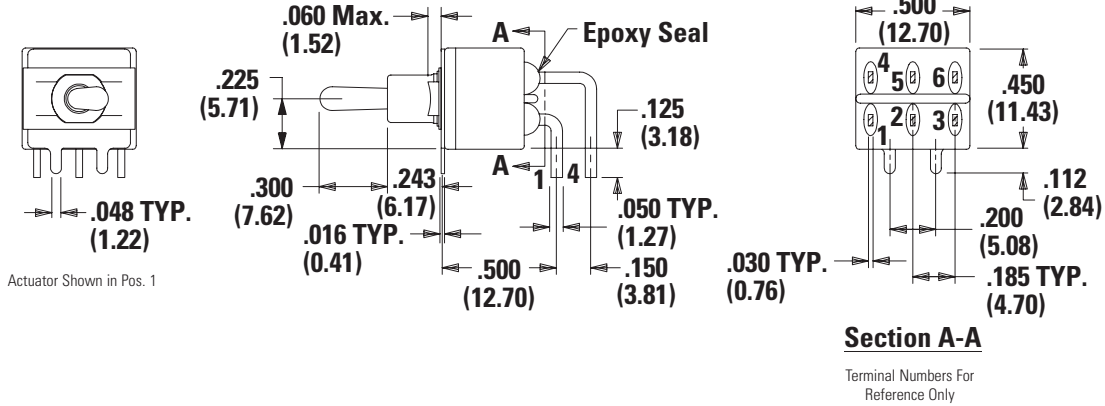


# E Series

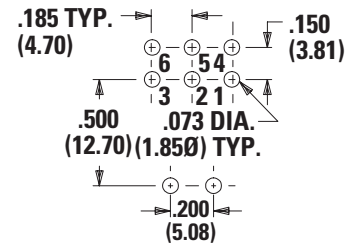
## Sealed Miniature Toggle Switches



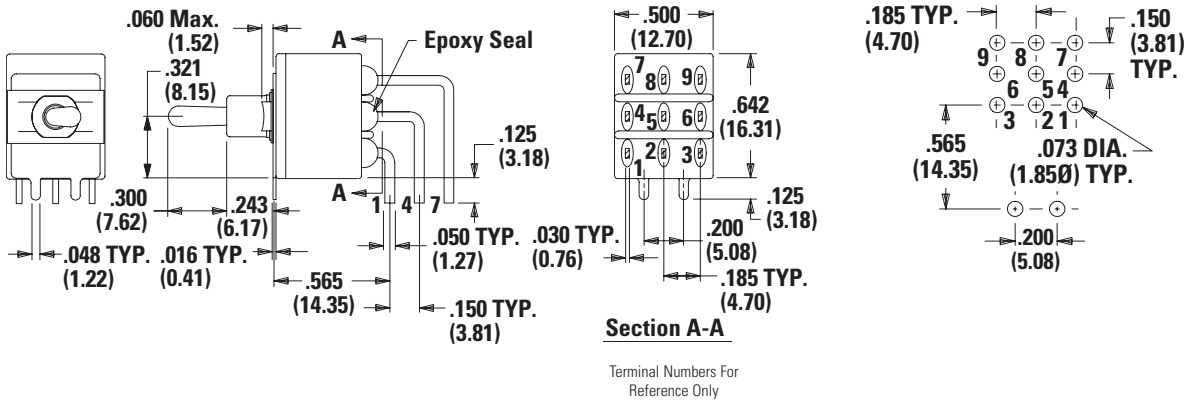
### A Right Angle, PC Thru-hole E201MD1ABE Horizontal Actuation DPDT



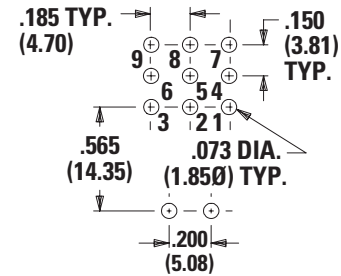
#### PC Mounting



### A Right Angle, PC Thru-hole E301MD1ABE Horizontal Actuation 3PDT



#### PC Mounting



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



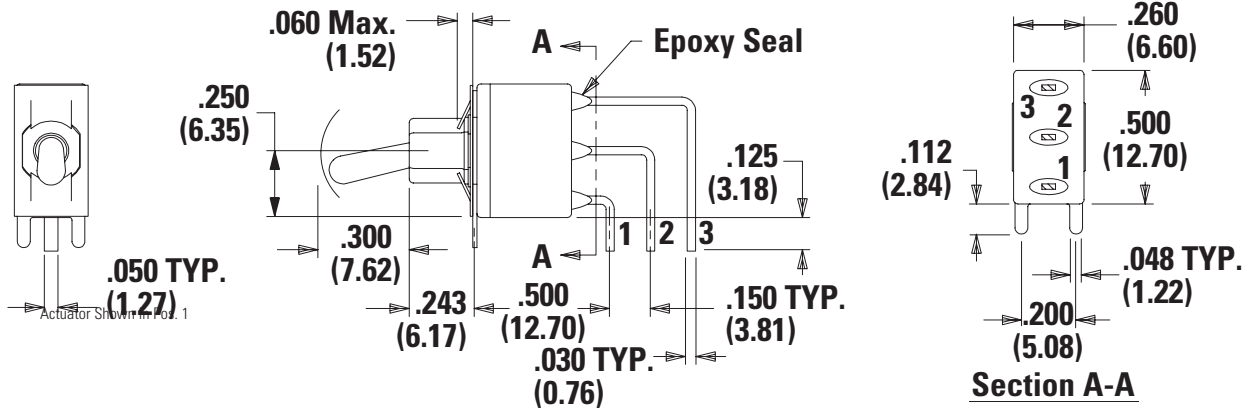
# E Series

## Sealed Miniature Toggle Switches

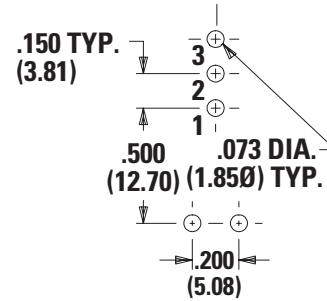


### AV2 Vertical Right Angle, PC Thru-hole, 0.150" Pitch

#### E101MD1AV2BE Vertical Actuation SPDT

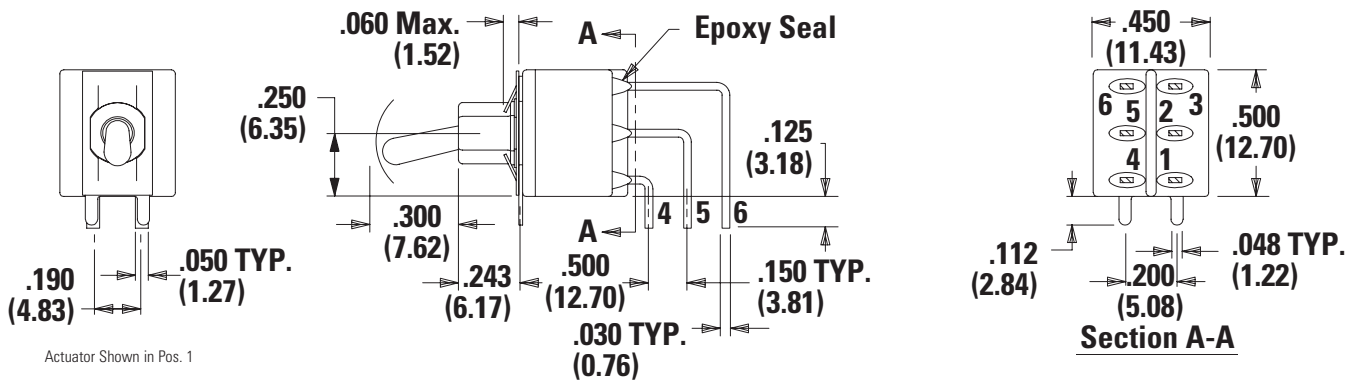


#### PC Mounting



### AV2 Vertical Right Angle, PC Thru-hole, 0.150" Pitch

#### E201MD1AV2BE Vertical Actuation DPDT

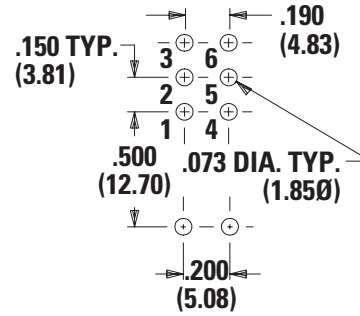


# E Series

## Sealed Miniature Toggle Switches

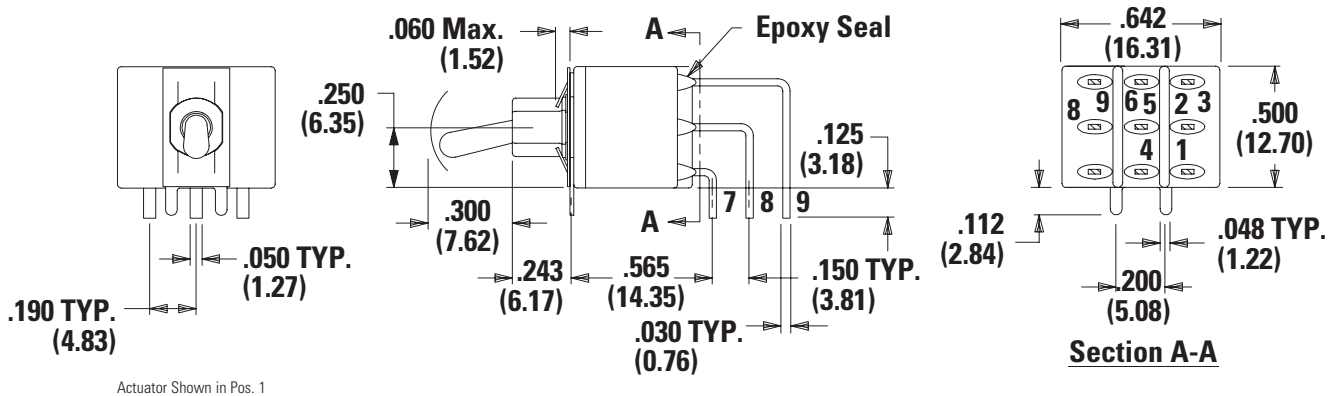


### PC Mounting



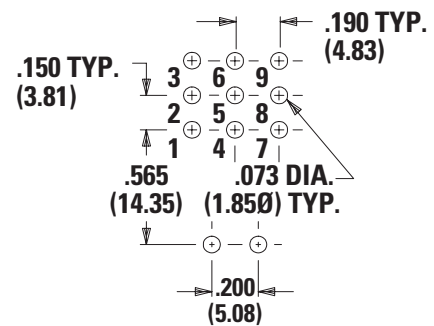
### AV2 Vertical Right Angle, PC Thru-hole, .0150" Pitch

#### E301MD1AV2BE Vertical Actuation 3PDT



Actuator Shown in Pos. 1

### PC Mounting

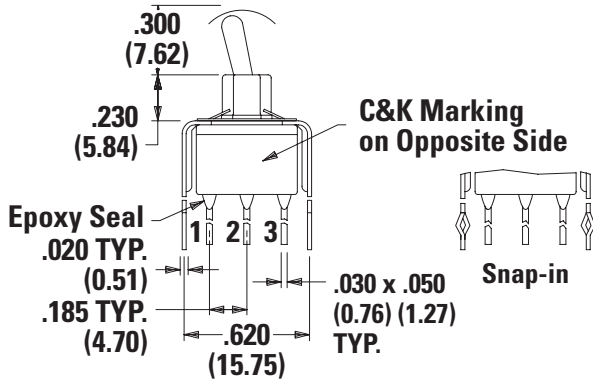


# E Series

## Sealed Miniature Toggle Switches

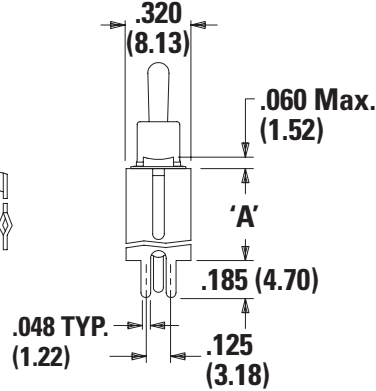


**V3, V9 Vertical Mount, V-Bracket**  
**V31 Vertical Mount, V-Bracket, Snap-in**  
**E101MD1\_BE SPDT**

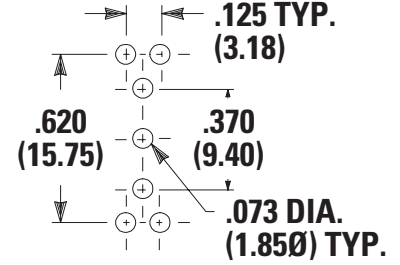


Actuator Shown in POS. 1

Notes: Not available with Y bushings.

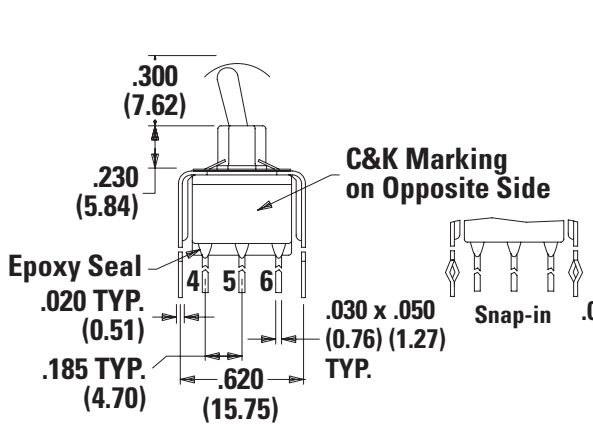


**PC Mounting**



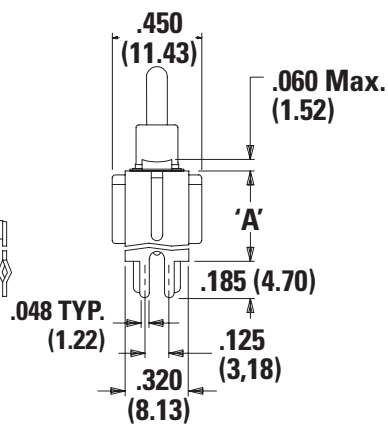
Option Code	DIM 'A'
V3, V31	0.460 (11.68)
V9	1.150 (29.21)

**V3, V9 Vertical Mount, V-Bracket**  
**V31 Vertical Mount, V-Bracket, Snap-in**  
**E201MD1\_BE DPDT**

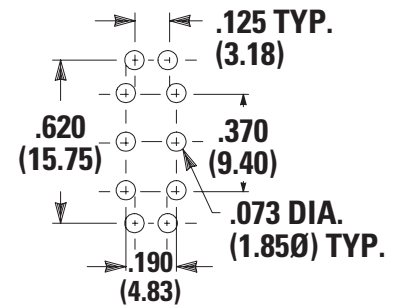


Actuator Shown in POS. 1

Notes: Not available with Y bushings.



**PC Mounting**



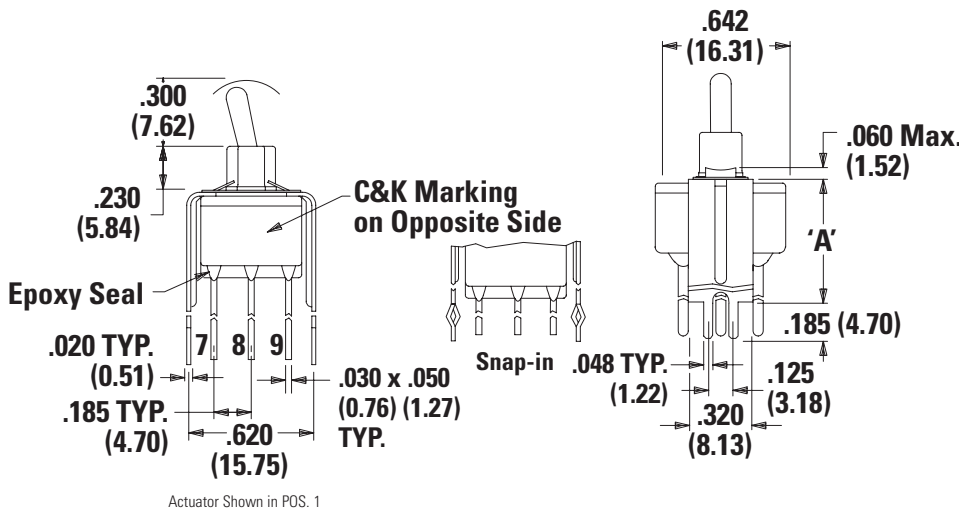
Option Code	DIM 'A'
V3, V31	0.460 (11.68)
V9	1.150 (29.21)

# E Series

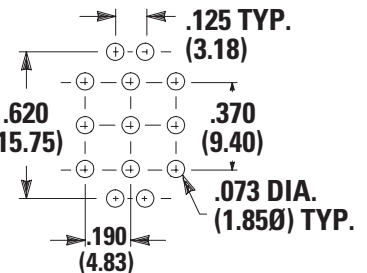
## Sealed Miniature Toggle Switches



### V9 Vertical Mount, V-Bracket E301MD1\_BE 3PDT



### PC Mounting



Notes: Not available with D9 & Y bushings.

Option Code	DIM 'A'
V9	1.150 (29.21)

### Contact Material

Option Code	Contact Material	Terminal Plating		Ratings
B	Gold <sup>1</sup>	Gold <sup>1</sup>	Low Level / Dry Circuit	0.4 VA max. @ 20 V AC or DC Max.
P		Matte-Tin <sup>6</sup>		
Q	Silver <sup>4,5</sup>	Silver <sup>5</sup>	Power	E1XX & E2XX models: 7.5 amps @ 125 V AC or 28 V DC; 3 amps @ 250 V AC. E3XX models: 5 amps @ 125 V AC or 28 V DC; 2 amps @ 250 V AC.
S		Matte-Tin <sup>6</sup>		
G	Gold over Silver <sup>2,3</sup>	Gold <sup>3</sup>	Low Level / Dry Level 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.
R		Matte-Tin <sup>6</sup>		

Notes: 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 Contacts & All Terminals:** Copper alloy, with gold flash over silver plate. Or copper alloy, silver plated.
- Terminals:** Copper alloy, with matte tin alloy nickel plate.

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

- All models **C&K** us with all options when ordered with G, S, R, or Q contact material except with F1 conductive bushings.  
 B contact material standard with all terminations.  
 P, S & R contact materials not available with Z terminations.

**Disclaimer Notice** - Information furnished is believed to be accurate and reliable. However, users should independently evaluate the suitability of and test each product selected for their own applications. Littelfuse products are not designed for, and may not be used in, all applications. Read complete Disclaimer Notice at <http://www.littelfuse.com/disclaimer-electronics>.