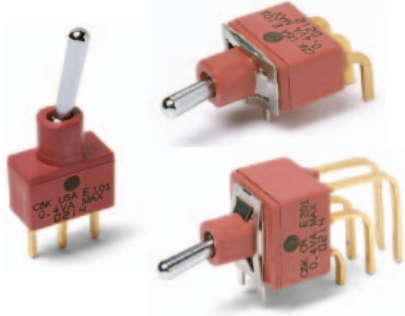


# E Series Sealed Miniature Toggle Switches



## 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 F-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 F-29 for additional contact materials.

**TERMINAL SEAL:** Epoxy.

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

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

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

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages F-18 thru F-24. For additional options not shown in catalog, consult our Customer Service Center. All models are process sealed to withstand machine soldering temperatures and pressure wash cleaning methods.

|   |   |  |  |
|---|---|--|--|
| <p><b>Switch Function</b></p> <p><b>E101</b> SP, On-None-On<br/> <b>E103</b> SP, On-Off-On<br/> <b>E105</b> SP, Mom.-Off-Mom.<br/> <b>E107</b> SP, On-Off-Mom.<br/> <b>E108</b> SP, On-None-Mom.<br/> <b>E201</b> DP, On-None-On<br/> <b>E203</b> DP, On-Off-On<br/> <b>E205</b> DP, Mom.-Off-Mom.<br/> <b>E207</b> DP, On-Off-Mom.<br/> <b>E208</b> DP, On-None-Mom.<br/> <b>E211</b> DP, On-On-On<br/> <b>E213</b> DP, On-On-Mom.<br/> <b>E215</b> DP, Mom.-On-Mom.<br/> <b>E301</b> 3P, On-None-On</p> | <p><b>Actuator</b></p> <p><b>M</b> .300" high<br/> <b>S</b> .500" high<br/> <b>L3</b> Plastic, .940" high</p> <p><b>Bushing</b></p> <p><b>D1</b> .250" high<br/> <b>F1</b> Conductive, .250" high*<br/> <b>D9</b> .280" high<br/> <b>Y</b> Threaded, .350" high</p> | <p><b>Terminations</b></p> <p><b>A</b> Right angle, PC thru-hole<br/> <b>AV2</b> Vertical right angle, PC thru-hole<br/> <b>C</b> PC Thru-hole<br/> <b>V3</b> .460" high, V-bracket<br/> <b>Z</b> Solder lug<br/> <b>A3</b> Right angle, PC thru-hole<br/> <b>AV3</b> Vertical right angle, PC thru-hole<br/> <b>V6</b> .460" high, V-bracket<br/> <b>V9</b> 1.150" high, V-bracket<br/> <b>V31</b> .460" high, snap-in V-bracket<br/> <b>V61</b> .460" high, snap-in V-bracket<br/> <b>W</b> .750" long, wire wrap<br/> <b>Z3</b> Quick connect</p> | <p><b>Contact Material</b></p> <p><b>B</b> Gold<br/> <b>P</b> Gold, matte-tin<br/> <b>Q</b> Silver<br/> <b>S</b> Silver, matte-tin<br/> <b>G</b> Gold over silver<br/> <b>R</b> Gold over silver, matte-tin</p> <p><b>Seal</b></p> <p><b>E</b> Epoxy</p> |
|---|---|--|--|

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



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

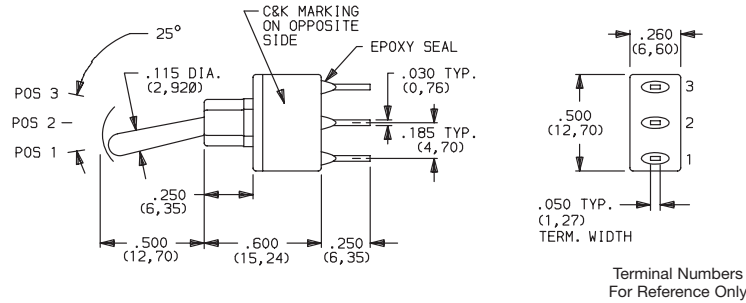


# E Series Sealed Miniature Toggle Switches

## SWITCH FUNCTION

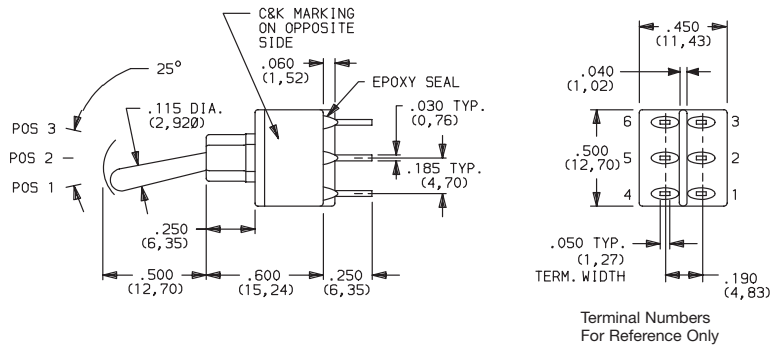
| NO. POLES | MODEL NO.   | SWITCH FUNCTION |        |        | CONNECTED TERMINALS |        |        | SCHEMATIC |
|-----------|-------------|-----------------|--------|--------|---------------------|--------|--------|-----------|
|           |             | POS. 1          | POS. 2 | POS. 3 | POS. 1              | POS. 2 | POS. 3 |           |
| 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



|               |               |      |      |      |         |         |         |  |
|---------------|---------------|------|------|------|---------|---------|---------|--|
| 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. |         |         |         |  |
|               | <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



MOM. = Momentary

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

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



F

Toggle

**C&K**

Third Angle Projection

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

# E Series Sealed Miniature Toggle Switches

## SWITCH FUNCTION

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

**3PDT**

Part number shown: E301SD1CBE

Terminal Nos. For Reference Only

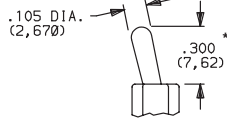
MOM. = Momentary

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

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

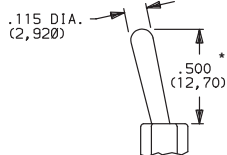
## ACTUATOR

**M** .300" HIGH



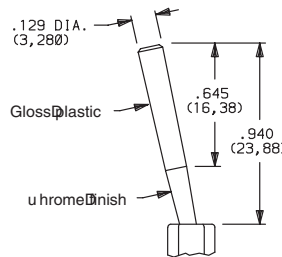
Standard when ordered with A, A3, AV2, AV3, V2-V61 terminations. Finish: Chrome.

**S** .500" HIGH



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

**L3** PLASTIC, .940" HIGH



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

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

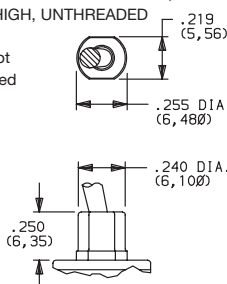
\* Actuators shown with standard D1 bushing. Subtract .030 (0,76) for D9 bushing. Subtract .100 (2,54) for Y bushing.

## BUSHING

**D1** .250" HIGH, UNTHREADED

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

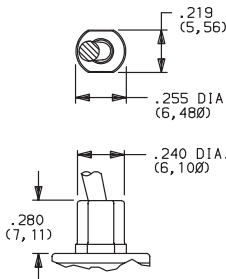
F1 bushing is not UL/CSA approved



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

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

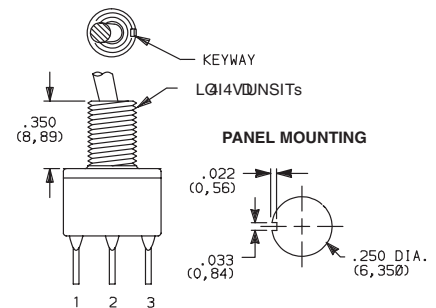
**D9** .280" HIGH, UNTHREADED



E3XX models not available with D9 bushing.

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

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



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

Available for 1&2 pole only.

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

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



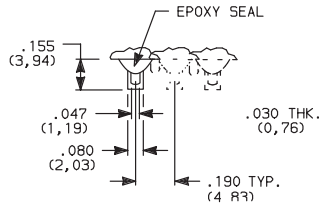
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



# E Series Sealed Miniature Toggle Switches

## TERMINATIONS

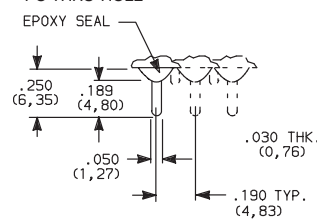
### Z SOLDER LUG



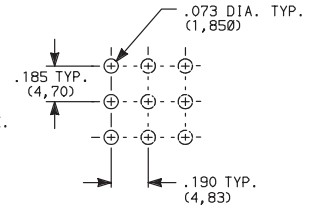
Not available with F1 conductive bushing or P, R or S contact material.

### SPDT thru 3PDT

### C PC THRU-HOLE



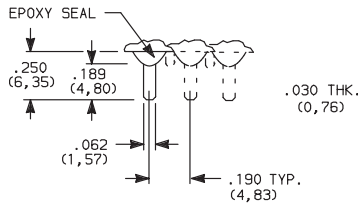
### PC MOUNTING



### SPDT thru 3PDT

Not available with F1 conductive bushing.

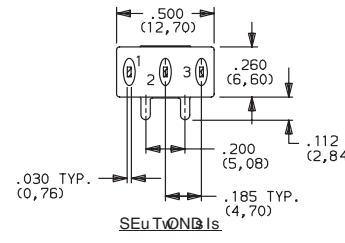
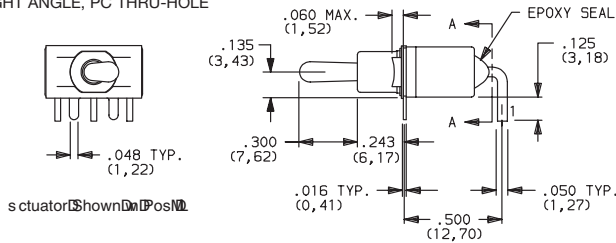
### Z3 QUICK CONNECT



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

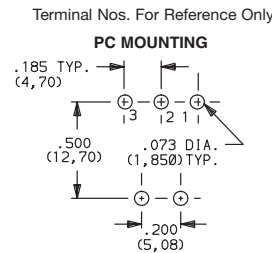
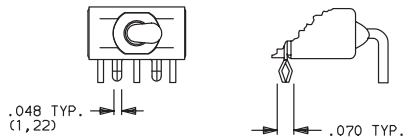
### SPDT thru 3PDT

### A RIGHT ANGLE, PC THRU-HOLE



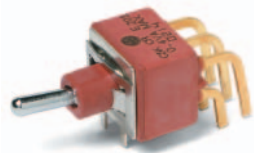
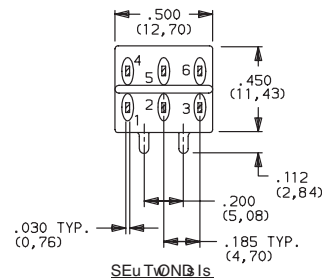
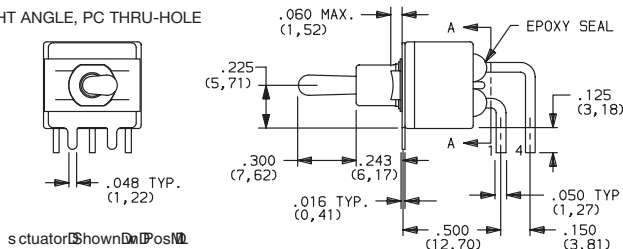
E101MD1ABE  
Horizontal Actuation  
SPDT

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



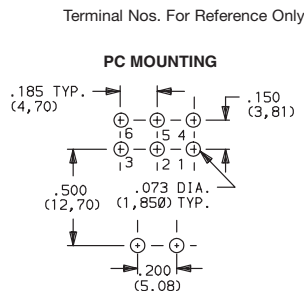
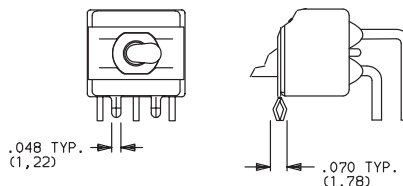
Not available with Y bushing.  
Terminal bend radii and lead-in manufacturing option.

### A RIGHT ANGLE, PC THRU-HOLE



E201MD1ABE  
Horizontal Actuation  
DPDT

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



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



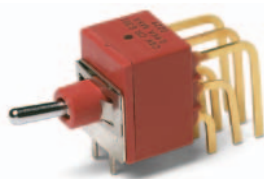
Third Angle  
Projection

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

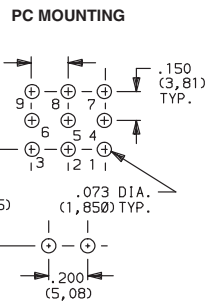
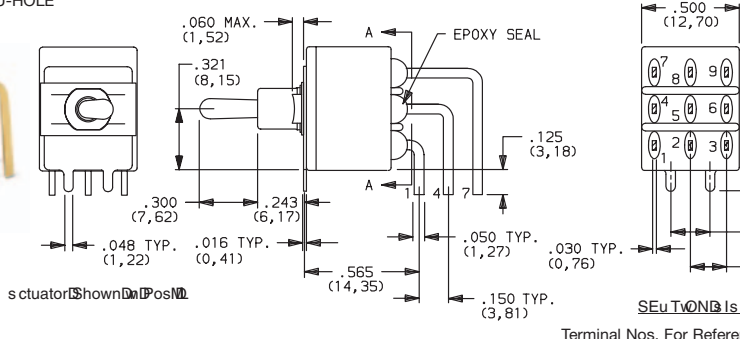
# E Series Sealed Miniature Toggle Switches

## TERMINATIONS

### A RIGHT ANGLE, PC THRU-HOLE



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

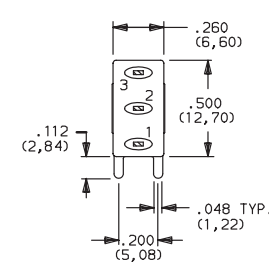
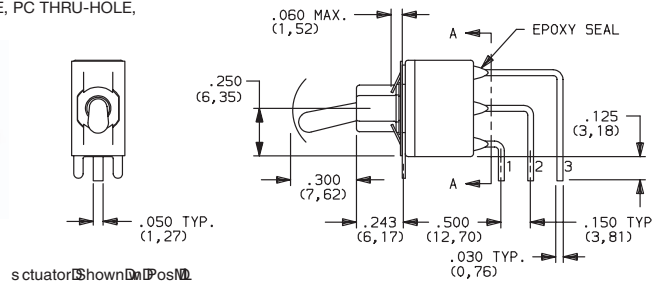


Not available with D9 & Y bushings.  
Terminal bend radii and lead-in manufacturing option.

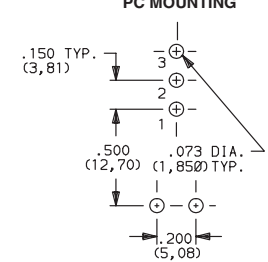
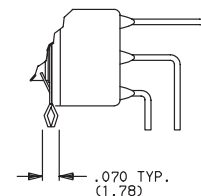
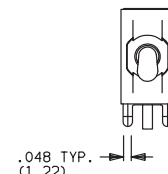
### AV2 VERTICAL RIGHT ANGLE, PC THRU-HOLE, .150" PITCH



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



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

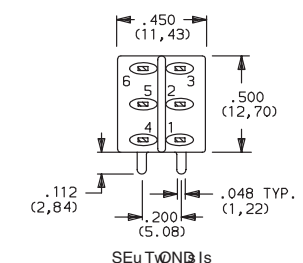
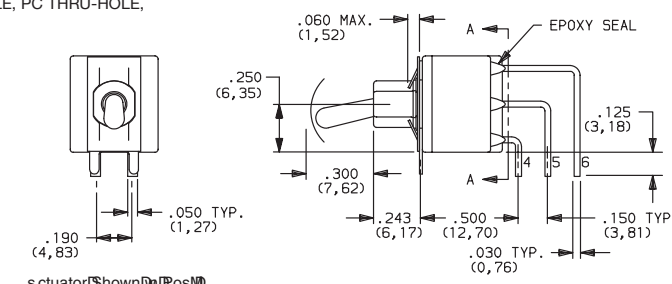


Not available with Y bushing.  
Terminal bend radii and lead-in manufacturing option.

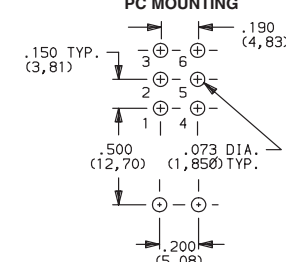
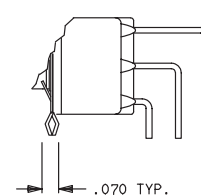
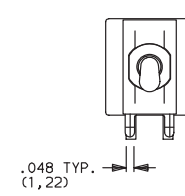
### AV2 VERTICAL RIGHT ANGLE, PC THRU-HOLE, .150" PITCH



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



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



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



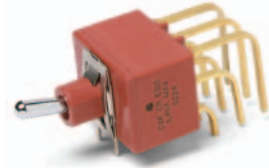
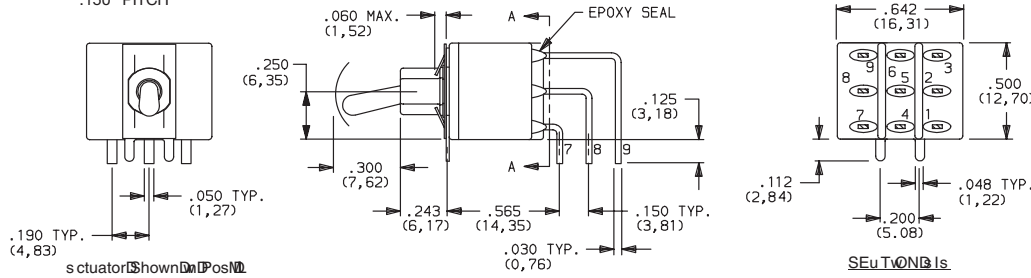
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



# E Series Sealed Miniature Toggle Switches

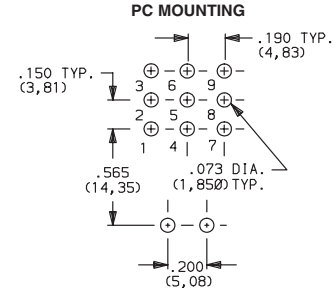
## TERMINATIONS

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



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

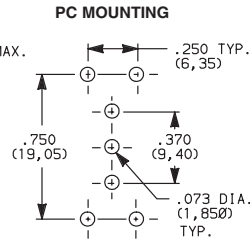
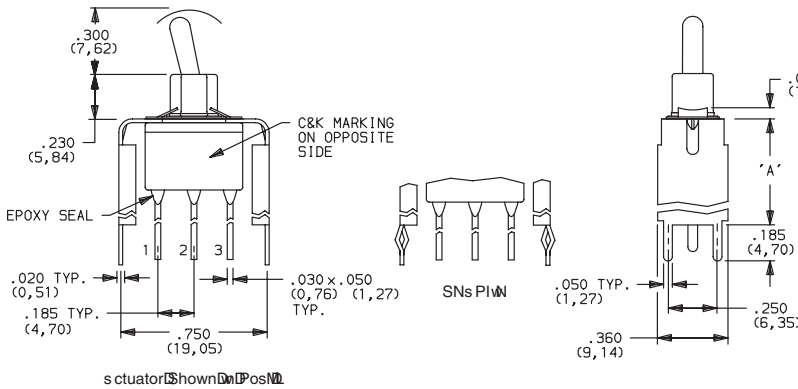
**AV3** VERTICAL RIGHT ANGLE, SNAP-IN, PC THRU-HOLE, .150" PITCH



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



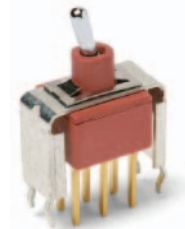
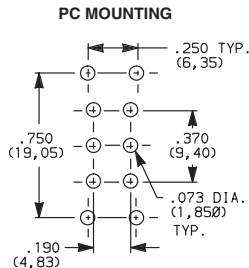
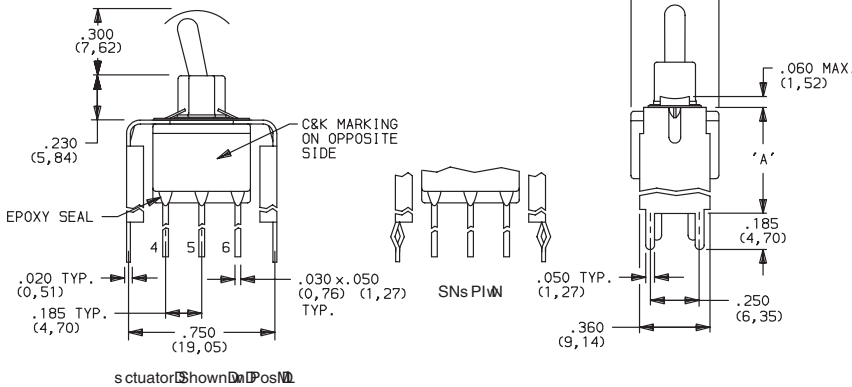
**E101MD1\_BE**  
**SPDT**

| 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) |



Third Angle Projection

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

www.ck-components.com

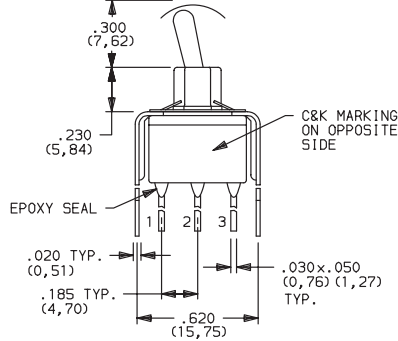


# E Series Sealed Miniature Toggle Switches

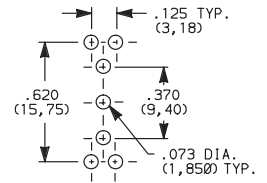
## TERMINATIONS

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

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



### PC MOUNTING



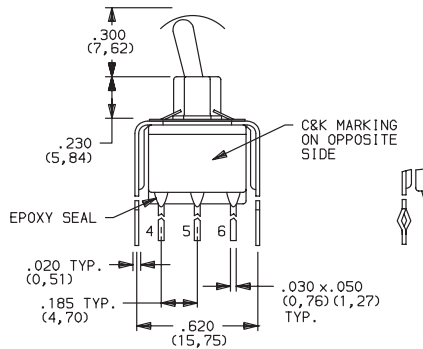
| OPTION CODE    | DIM 'A'       |
|----------------|---------------|
| <b>V3, V31</b> | .460 (11,68)  |
| <b>V9</b>      | 1.150 (29,21) |

actuator shown in position

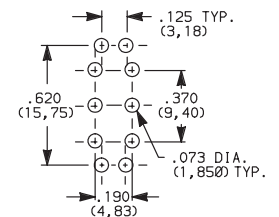
Not available with Y bushing.

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

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



### PC MOUNTING

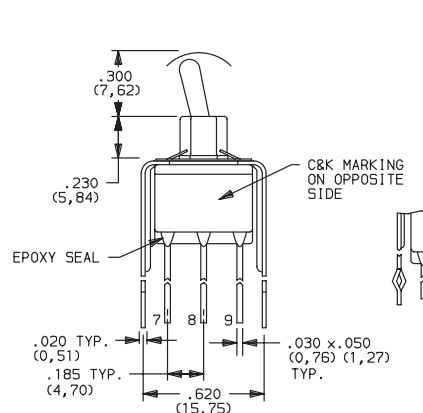
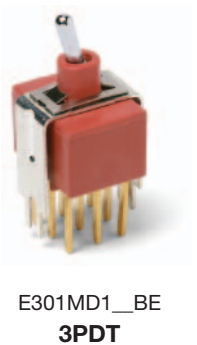


| OPTION CODE    | DIM 'A'       |
|----------------|---------------|
| <b>V3, V31</b> | .460 (11,68)  |
| <b>V9</b>      | 1.150 (29,21) |

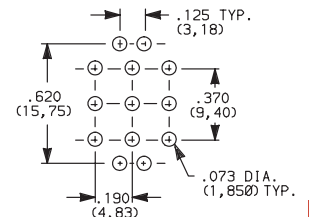
actuator shown in position

Not available with Y bushing.

**V9** VERTICAL MOUNT, V-BRACKET



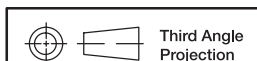
### PC MOUNTING



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

actuator shown in position

Not available with D9 & Y bushings.



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

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F

Toggle

# 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/<br>DRY CIRCUIT         | 0.4 VA MAX. @ 20 V AC OR DC MAX.  |
| <b>P</b>    |                                    | MATTE-TIN <sup>6</sup> |                                   |   |
| <b>Q</b>    | SILVER <sup>4,5</sup>              | SILVER <sup>5</sup>    | POWER                             | E1XX & E2XX MODELS: 7.5 AMPS @ 125 V AC OR 28 V DC;<br>3 AMPS @ 250 V AC.<br>E3XX MODELS: 5 AMPS @ 125 V AC OR 28 V DC; 2 AMPS @ 250 V AC.  |
| <b>S</b>    |                                    | MATTE-TIN <sup>6</sup> |                                   |   |
| <b>G</b>    | GOLD OVER<br>SILVER <sup>2,3</sup> | GOLD <sup>3</sup>      | LOW LEVEL/DRY<br>CIRCUIT OR POWER | E1XX AND E2XX MODELS: 0.4 VA MAX @20 V AC OR DC MAX. OR<br>7.5 AMPS @125 V AC OR 28 V DC; 3 AMPS @ 250 V AC.<br>DC E3XX MODELS: 0.4 VA MAX. @ 20 V AC OR DC MAX. OR 5 AMPS @<br>125 V AC OR 28 V DC; 2 AMPS @ 250 V AC. |
| <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, or Q contact material except with F1 conductive bushing.

B contact material standard with all terminations.

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



F

Toggle

**C&K**



Third Angle  
Projection

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