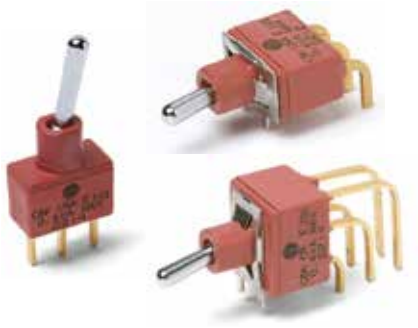
E Series
Sealed Miniature Toggle Switches



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-29 for additional ratings.

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

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

INSULATION RESISTANCE: 10^9 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.

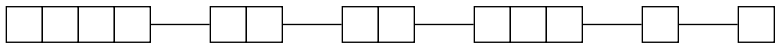
HARDWARE: Nut & Locking ring: Brass, nickel plated. Lockwasher: Steel, nickel plated.

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–23 thru F–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.



Switch Function
- **E101** SP, On-None-On
- **E103** SP, On-Off-On
- **E105** SP, Mom.-Off-Mom.
- **E107** SP, On-Off-Mom.
- **E108** SP, On-None-Mom.
- **E201** DP, On-None-On
- **E203** DP, On-Off-On
- **E205** DP, Mom.-Off-Mom.
- **E207** DP, On-Off-Mom.
- **E208** DP, On-None-Mom.
- **E211** DP, On-On-On
- **E213** DP, On-On-Mom.
- **E215** DP, Mom.-On-Mom.
- ****E301** 3P, On-None-On

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

** Y threaded bushing available for 1 & 2 pole only

Actuator
- **M** .300" high
- **S** .500" high
- **L3** Plastic, .940" high

Bushing
- **D1** .250" high
- ***F1** Conductive, .250" high
- **D9** .280" high
- ****Y** Threaded, .350" high

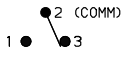
Terminations
- **A** Right angle, PC thru-hole
- **AV2** Vertical right angle, PC thru-hole
- **C** PC Thru-hole
- **V3** .460" high, V-bracket
- **Z** Solder lug
- **A3** Right angle, PC thru-hole
- **AV3** Vertical right angle, PC thru-hole
- **V6** .460" high, V-bracket
- **V9** 1.150" high, V-bracket
- **V31** .460" high, snap-in V-bracket
- **V61** .460" high, snap-in V-bracket
- **W** .750" long, wire wrap
- **Z3** Quick connect

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

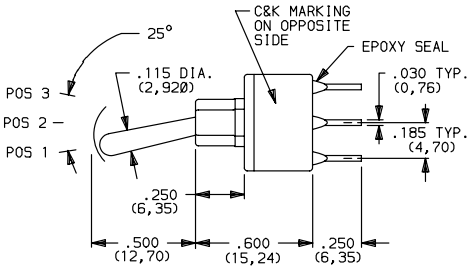
Seal
- **E** Epoxy

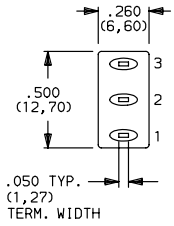
SWITCH FUNCTION

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



SPDT

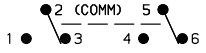




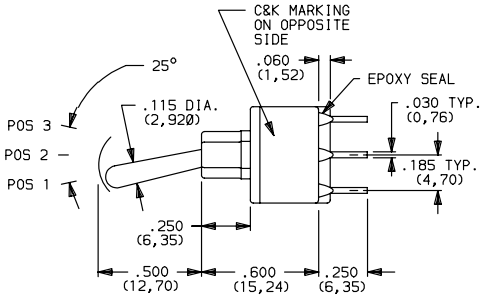
Terminal Numbers
For Reference Only

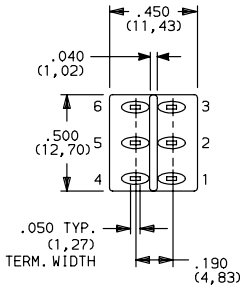
Part number shown: E101SD1CBE

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



DPDT





Terminal Numbers
For Reference Only

Part number shown: E201SD1CBE

MOM. = Momentary

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

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

F Toggle

Third Angle Projection

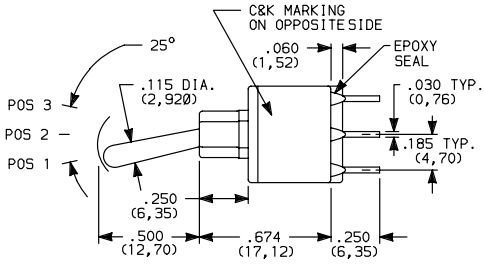
Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

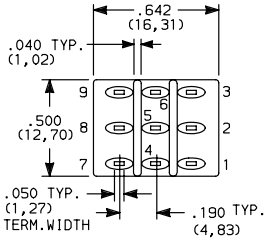
E Series
Sealed Miniature Toggle Switches

SWITCH FUNCTION

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

3PDT





Part number shown: E301SD1CBE

MOM. = Momentary

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

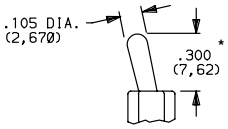
All models cULus with all options when ordered with G, R, Q or S contact material except with F1 conductive bushing.

ACTUATOR

ACTUATOR COLOR

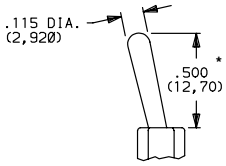
ACTUATOR

M .300" HIGH



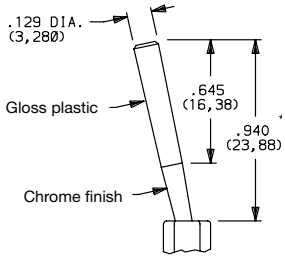
Standard when ordered with A, A3, AV2, AV3, V2-V61 terminations. Finish: Chrome.

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.

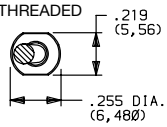
* Actuators shown with standard D1 bushing. Subtract .030 (0,76) for D9 bushing. Subtract .100 (2,54) for Y bushing.

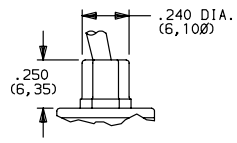
BUSHING

D1 .250" HIGH, UNTHREADED

F1 ESD CONDUCTIVE BUSHING, .250" HIGH, UNTHREADED

F1 bushing is not UL approved

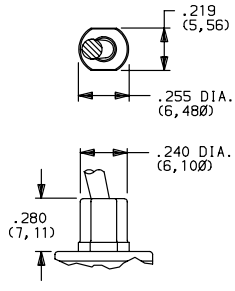




ESD protection depends on proper grounding of switch support bracket. F1 conductive bushing option is impregnated with carbon fibers; dissipates electrostatic discharge (ESD) up to 20,000 V from actuator to ground.

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

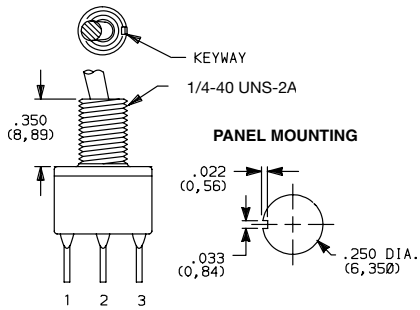
D9 .280" HIGH, UNTHREADED



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



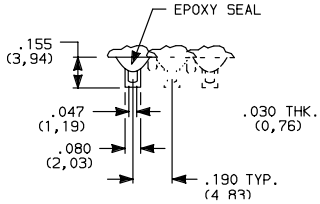
Available only with C, Z, Z3, & W terminations.
Available for 1&2 pole only.
Hardware: One dress nut part number 299D01201, one hex nut part number 540400201 and lockwasher part number 700303202 supplied standard.
Will withstand 4 in.-lbs. of torque with no distortion.

Third Angle Projection

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

TERMINATIONS

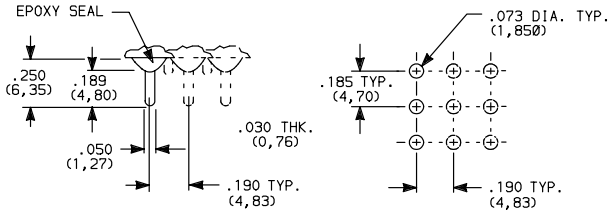
Z SOLDER LUG



SPDT thru 3PDT

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

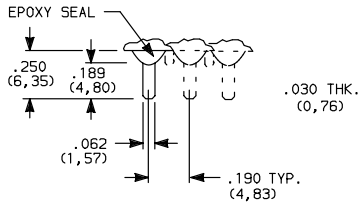
C PC THRU-HOLE



SPDT thru 3PDT

Not available with F1 conductive bushing.

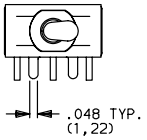
Z3 QUICK CONNECT



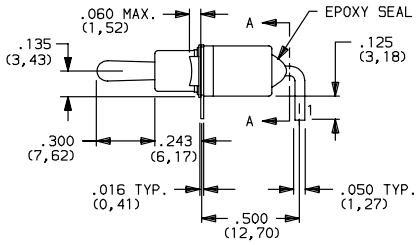
SPDT thru 3PDT

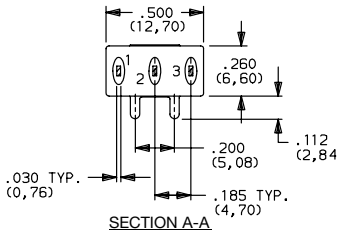
Not available with F1 conductive bushing or P, R or S contact material. Mating quick connector available; order part number 530100000, page F-16.

A RIGHT ANGLE, PC THRU-HOLE



Actuator Shown In Pos. 1





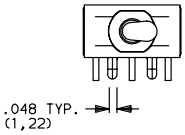
SECTION A-A

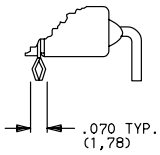
Terminal Nos. For Reference Only



E101MD1ABE
Horizontal Actuation
SPDT

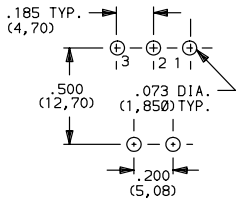
A3 RIGHT ANGLE, SNAP-IN, PC THRU-HOLE



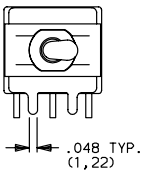


Not available with Y bushing.
Terminal bend radii and lead-in manufacturing option.

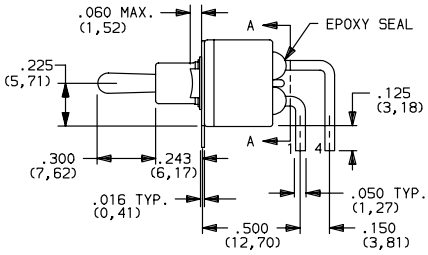
PC MOUNTING

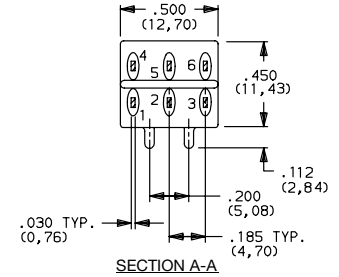


A RIGHT ANGLE, PC THRU-HOLE



Actuator Shown In Pos. 1





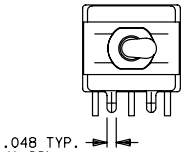
SECTION A-A

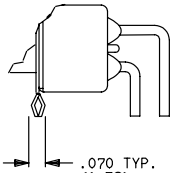
Terminal Nos. For Reference Only



E201MD1ABE
Horizontal Actuation
DPDT

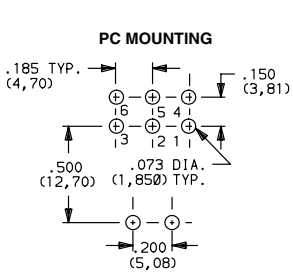
A3 RIGHT ANGLE, SNAP-IN, PC THRU-HOLE





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

PC MOUNTING



Third Angle Projection

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

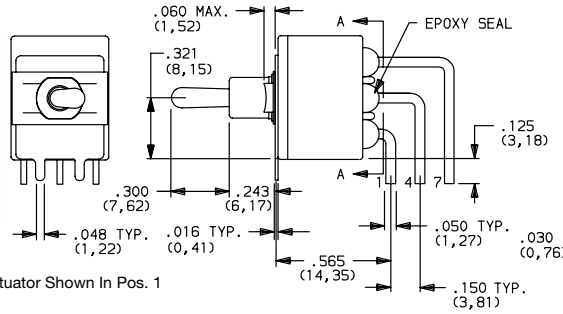
E Series
Sealed Miniature Toggle Switches

TERMINATIONS

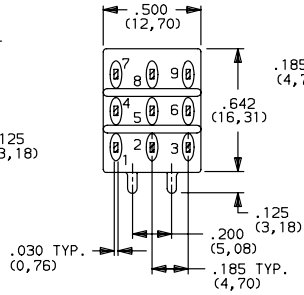
A RIGHT ANGLE, PC THRU-HOLE



E301MD1ABE
Horizontal Actuation
3PDT

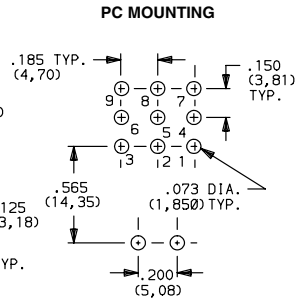


Actuator Shown In Pos. 1



SECTION A-A

Terminal Nos. For Reference Only

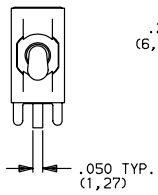


Not available with D9 & Y bushings.
Terminal bend radii and lead-in manufacturing option.

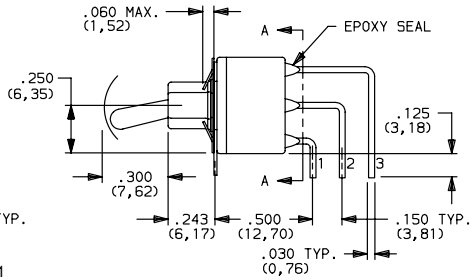
AV2 VERTICAL RIGHT ANGLE, PC THRU-HOLE, .150" PITCH

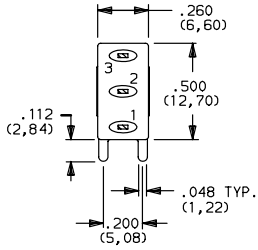


E101MD1AV2BE
Vertical Actuation
SPDT



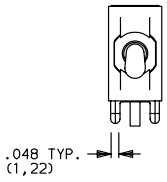
Actuator Shown In Pos. 1

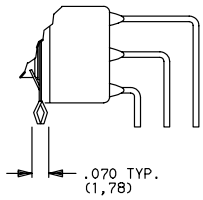


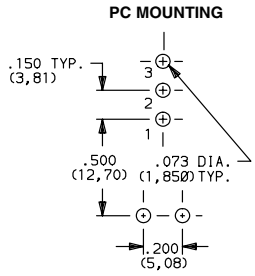


SECTION A-A

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





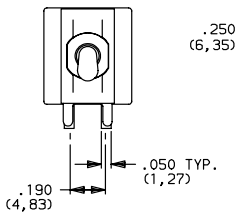


Not available with Y bushing.
Terminal bend radii and lead-in manufacturing option.

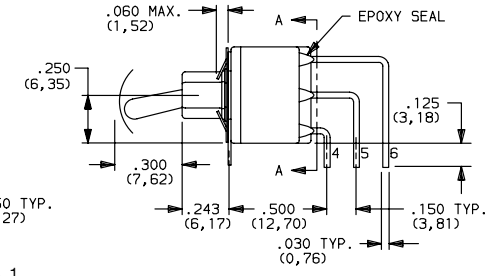
AV2 VERTICAL RIGHT ANGLE, PC THRU-HOLE, .150" PITCH

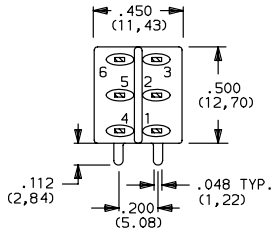


E201MD1AV2BE
Vertical Actuation
DPDT

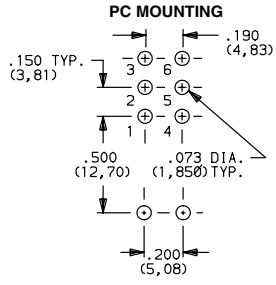


Actuator Shown In Pos. 1

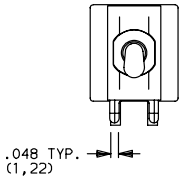


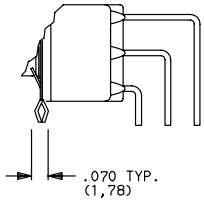


SECTION A-A



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





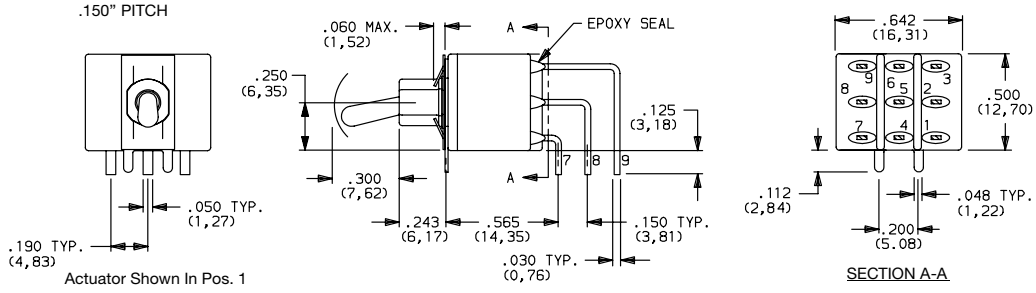
Not available with Y bushing.
Terminal bend radii and lead-in manufacturing option.

Third Angle Projection

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

TERMINATIONS

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



Actuator Shown In Pos. 1



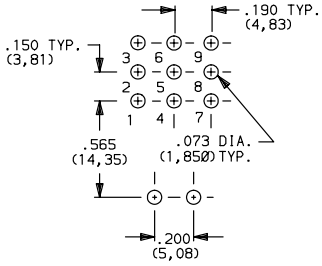
E301MD1AV2BE
Vertical Actuation
3PDT

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

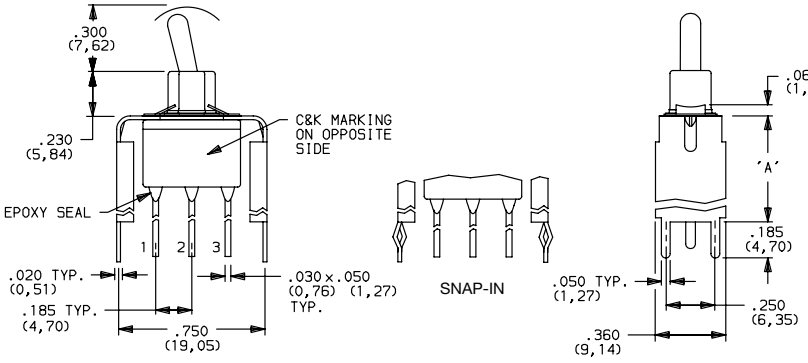


Not available with D9 & Y bushings.
Terminal bend radii and lead-in manufacturing option.

PC MOUNTING

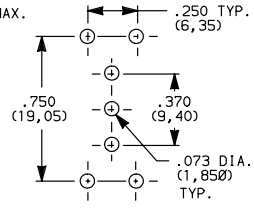


V6 VERTICAL MOUNT, V-BRACKET
V61 VERTICAL MOUNT, V-BRACKET, SNAP-IN



Actuator Shown In Pos. 1

PC MOUNTING



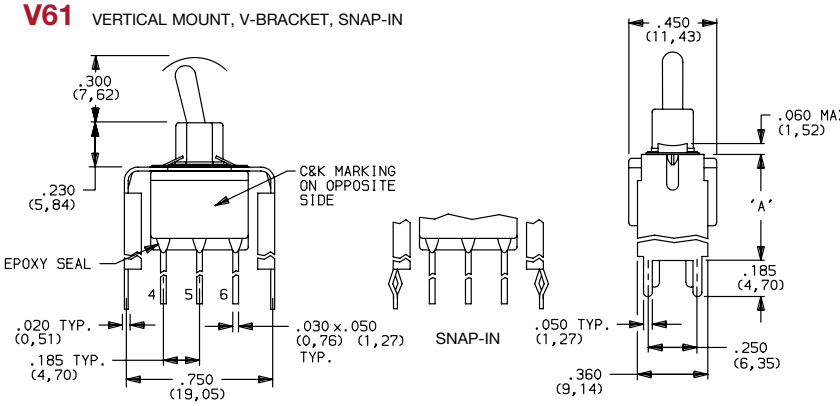


E101MD1__BE
SPDT

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

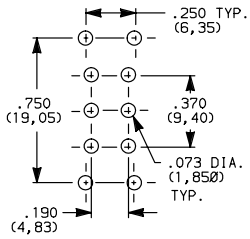
Not available with Y bushing.

V6 VERTICAL MOUNT, V-BRACKET
V61 VERTICAL MOUNT, V-BRACKET, SNAP-IN



Actuator Shown In Pos. 1

PC MOUNTING





E201MD1__BE
DPDT

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

Not available with Y bushing.

Third Angle Projection

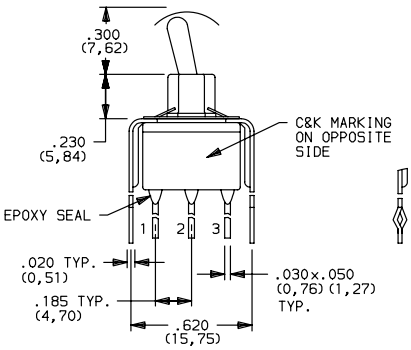
Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

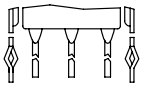
TERMINATIONS

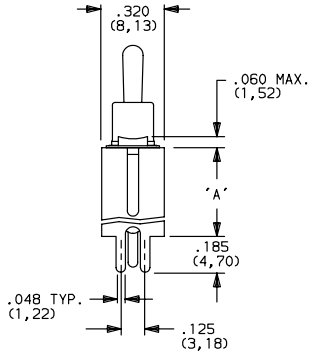
V3, V9 VERTICAL MOUNT, V-BRACKET
V31 VERTICAL MOUNT, V-BRACKET, SNAP-IN



E101MD1__BE
SPDT

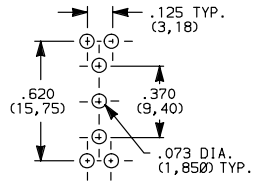






Actuator Shown In Pos. 1

PC MOUNTING



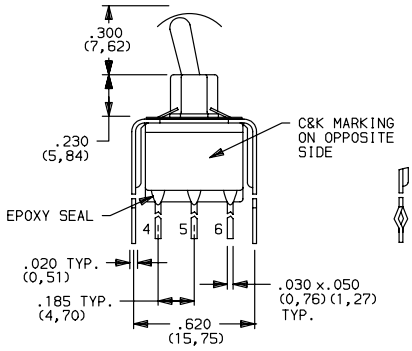
OPTION CODE	DIM 'A'
V3, V31	.460 (11,68)
V9	1.150 (29,21)

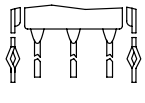
Not available with Y bushing.

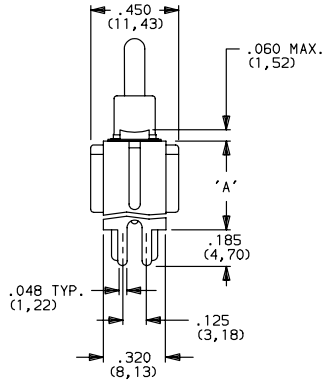
V3, V9 VERTICAL MOUNT, V-BRACKET
V31 VERTICAL MOUNT, V-BRACKET, SNAP-IN



E201MD1__BE
DPDT

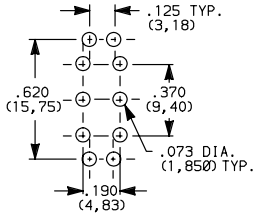






Actuator Shown In Pos. 1

PC MOUNTING



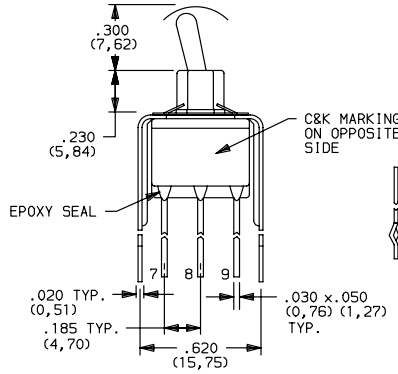
OPTION CODE	DIM 'A'
V3, V31	.460 (11,68)
V9	1.150 (29,21)

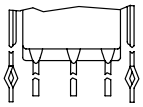
Not available with Y bushing.

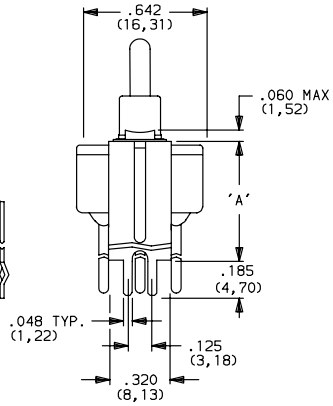
V9 VERTICAL MOUNT, V-BRACKET



E301MD1__BE
3PDT

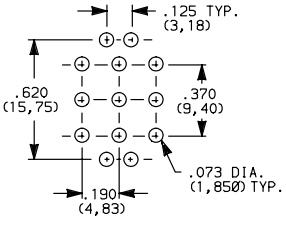






Actuator Shown In Pos. 1

PC MOUNTING



OPTION CODE	DIM 'A'
V9	1.150 (29,21)

Not available with D9 & Y bushings.

Third Angle Projection

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

CONTACT MATERIAL

OPTION CODE	CONTACT MATERIAL	TERMINAL PLATING	RATINGS	
B P	GOLD [1]	GOLD [1] MATTE-TIN [6]	LOW LEVEL/ DRY CIRCUIT	0.4 VA MAX. @ 20 V AC OR DC MAX.
Q S	SILVER [4,5]	SILVER [5] MATTE-TIN [6]	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.
G R	GOLD OVER SILVER [2,3]	GOLD [3] MATTE-TIN [6]	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.

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

[1] CONTACTS & TERMINALS: Copper alloy, with gold plate over nickel plate.

[2] END CONTACTS: Coin silver, with gold plate over nickel plate.

[3] CENTER CONTACTS & ALL TERMINALS: Copper alloy, with gold plate over nickel plate.

[4] END CONTACTS: Coin silver, silver plated.

[5] CENTER CONTACT & ALL TERMINALS: Copper alloy, with gold flash over silver plate. Or copper alloy, silver plated.

[6] 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 c UL us 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.

Third Angle Projection

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