

*Process sealed—withstands soldering and cleaning processes.

A



E101SD1CBE



E101MD1A3BE



E201MD1V31BE



E301MD1AW4BE

models available, see page A-28.

Easy Build-A-Switch

Below is a complete listing of available options for E SERIES SEALED TOGGLE SWITCHES. Build-A-Switch allows you to mix and match options to create the switch you need—simply select desired option from each category. Switches with standard options are shown on page A-27; all available options are shown and described on pages A-28 thru A-37. When building a part number, some ordering format boxes may not be filled. Dashes, hyphens or spaces in the part number are not significant and are shown for clarity only. Complete HOW TO ORDER information is at the end of this section, page A-37. Hardware and accessories are available separately, see section K. All models are process sealed to withstand machine soldering temperatures and pressure wash cleaning methods.

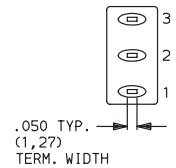
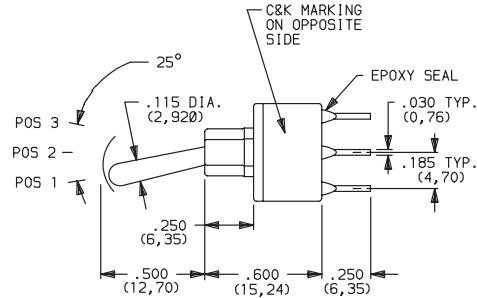
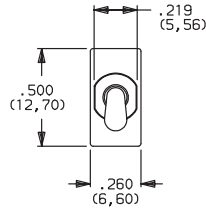
SWITCH FUNCTION	ACTUATOR	BUSHING	TERMINATIONS	CONTACT MATERIAL	SEAL	ACTUATOR COLOR
				Gold	Epoxy	Chrome
[] [] [] []	[] []	[] []	[] [] [] []	[]	[]	[]
E101 E103 E105 E107 E108 E201 E203 E205 E207 E208 E211 E213 E215 E301 E303 E305 E307 E308	L3 M S	D1 D9 F1 Y	A V61 A3 V71 AV1 V81 AV2 V91 AV3 W AV4 W1 AV5 W3 AW W4 AW1 W5 AW3 Z AW4 Z3 AW5 C R R2 V2 V3 V4 V6 V7 V8 V9 V21 V31 V41	B G K L M Q	E	(NONE) 1 2 3



*Process sealed-withstands soldering and cleaning processes.

SWITCHES WITH STANDARD OPTIONS

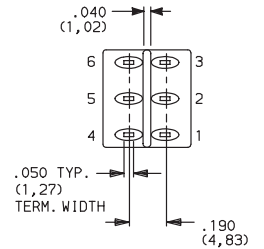
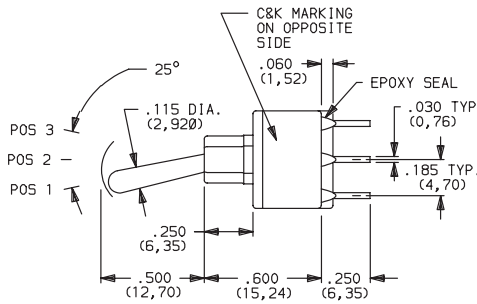
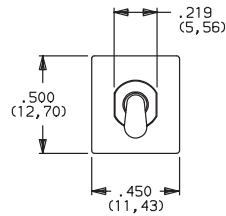
A



Terminal Nos.
For Reference Only

SPDT Model

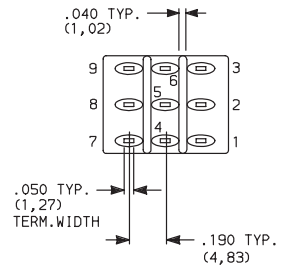
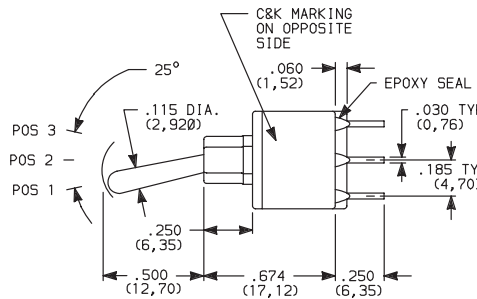
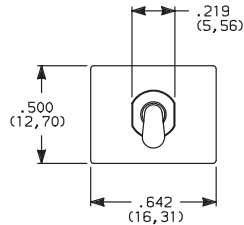
Part No. Shown: E101SD1CBE



Terminal Nos.
For Reference Only

DPDT Model

Part No. Shown: E201SD1CBE



Terminal Nos.
For Reference Only

3PDT Model

Part No. Shown: E301SD1CBE



*Process sealed—withstands soldering and cleaning processes.

A

SWITCH FUNCTION

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	
	E103	ON	OFF	ON				
	E105	MOM.	OFF	MOM.				
	E107	ON	OFF	MOM.				
	E108	ON	NONE	MOM.				
DP	E201	ON	NONE	ON	2-3,5-6	OPEN	2-1,5-4	
	E203	ON	OFF	ON				
	E205	MOM.	OFF	MOM.				
	E207	ON	OFF	MOM.				
	E208	ON	NONE	MOM.				
	E211**	ON	ON	ON				
	E213**	ON	ON	MOM.				
E215**	MOM.	ON	MOM.					
3P	E301	ON	NONE	ON	2-3,5-6,8-9	OPEN	2-1,5-4,8-7	
	E303	ON	OFF	ON				
	E305	MOM.	OFF	MOM.				
	E307	ON	OFF	MOM.				
	E308	ON	NONE	MOM.				

MOM. = Momentary

** Wiring for 3-way switch, see page X.

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

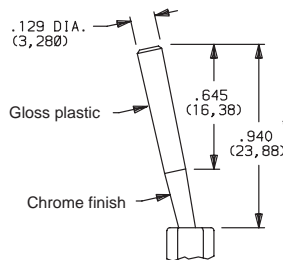
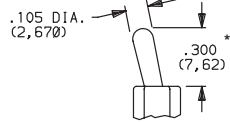
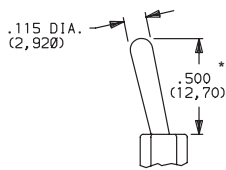
See AGENCY APPROVALS, page VIII.

ACTUATOR ACTUATOR COLOR

S

M

L3 PLASTIC



L3 ACTUATOR COLORS

OPTION CODE	COLOR
1	WHITE
2	BLACK (Std.)
3	RED

Other colors available, consult factory. 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.

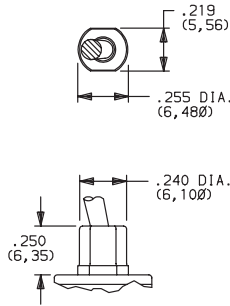




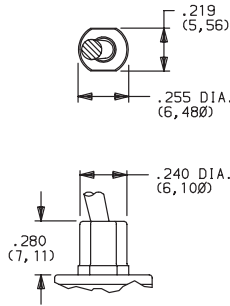
BUSHING

D1 (STD.)

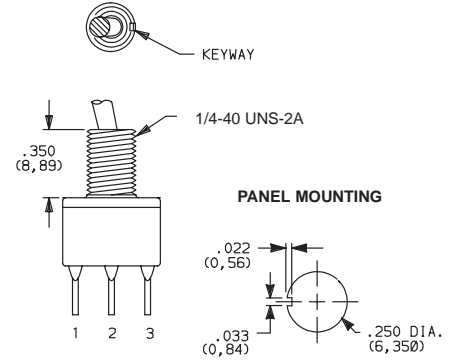
F1 ESD RESISTANT CONDUCTIVE BUSHING



D9



Y



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.

E3XX models not available with D9 bushing.

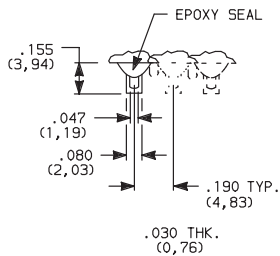
Available only with C, Z, Z3, W-W5 terminations. Hardware: One dress nut P/N 780701201, one hex nut and lockwasher supplied standard.

Available with M & S actuator options and A, A3, AW-AW5, AV1-AV5, R, R2, V2-V91 termination options.

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

TERMINATIONS

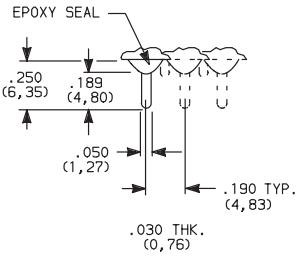
Z (STD.)



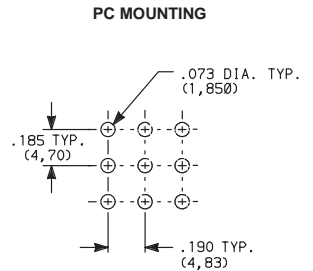
SPDT thru 3PDT Models

NOTE: B contact material standard. Not available with F1 conductive bushing or K, L or M contact material.

C

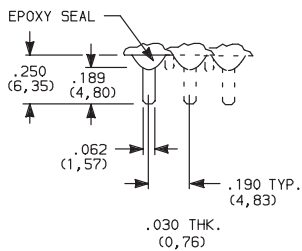


SPDT thru 3PDT MODELS



NOTE: B contact material standard. Not available with F1 conductive bushing.

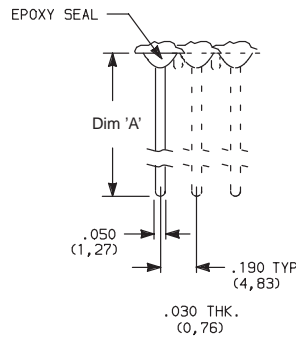
Z3 QUICK CONNECT



SPDT thru 3PDT Models

NOTE: B contact material standard. Not available with F1 conductive bushing or K, L or M contact material. Mating quick connector available; order P/N: 530100000.

W, W1, W3, W4, W5 WIRE WRAP



SPDT thru 3PDT Models

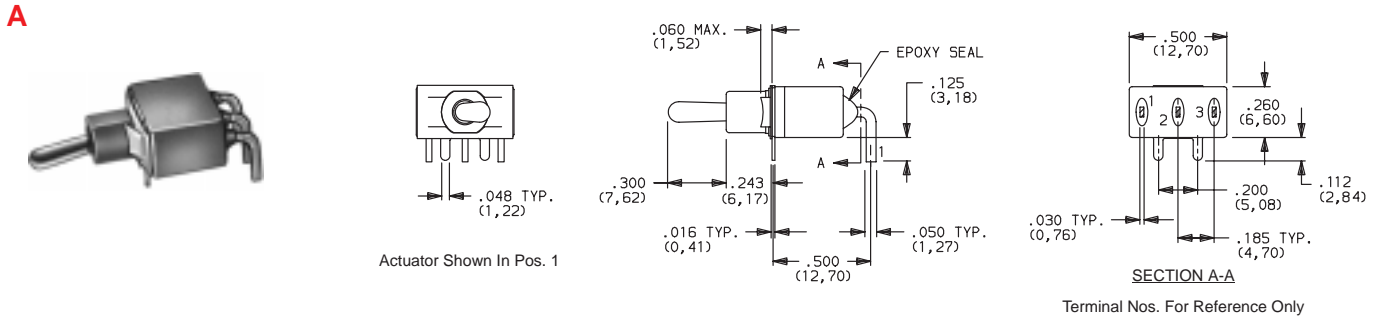
OPTION CODE	DIM 'A'
W	.750 (19,05)
W1	.964 (24,49)
W3	.425 (10,80)
W4	1.062 (26,97)
W5	1.305 (33,15)

NOTE: B contact material standard. Not available with F1 conductive bushing.

*Process sealed—withstands soldering and cleaning processes.

A

TERMINATIONS

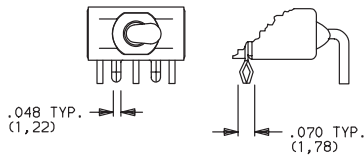


SPDT Model

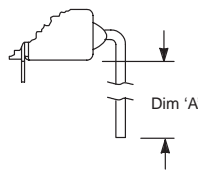
Part No. Shown: E101MD1ABE

NOTE: Terminal bend radii and lead-in manufacturing option. B contact material standard. Not available with Y bushing.

A3 SNAP-IN

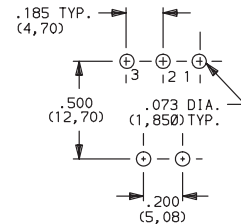


AW, AW1, AW3, AW4, AW5 EXTENDED

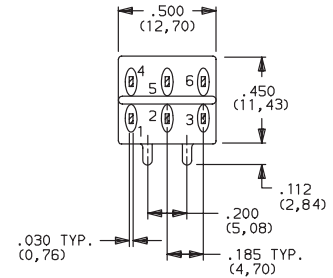
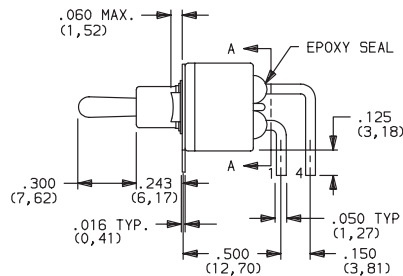
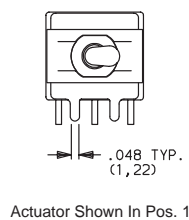


OPTION CODE	DIM 'A'
AW	.50 (12,7)
AW1	.72 (18,3)
AW3	.20 (5,1)
AW4	.83 (21,1)
AW5	1.08 (27,4)

PC MOUNTING



A



SECTION A-A

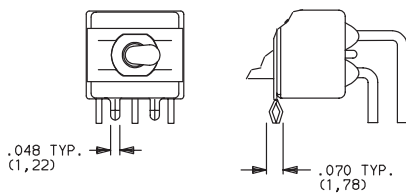
Terminal Nos. For Reference Only

DPDT Model

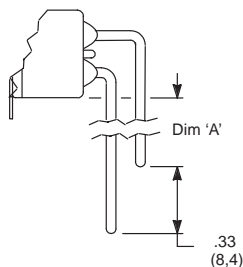
Part No. Shown: E201MD1ABE

NOTE: Terminal bend radii and lead-in manufacturing option. B contact material standard. Not available with Y bushing.

A3 SNAP-IN

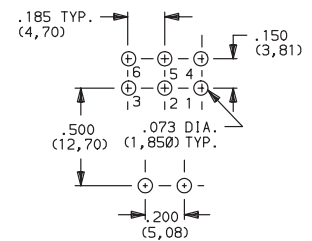


AW, AW1, AW4, AW5 EXTENDED



OPTION CODE	DIM 'A'
AW	.21 (5,3)
AW1	.42 (10,7)
AW4	.52 (13,2)
AW5	.76 (19,3)

PC MOUNTING



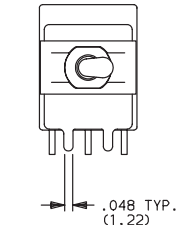


*Process sealed-withstands soldering and cleaning processes.

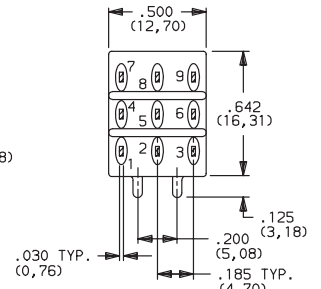
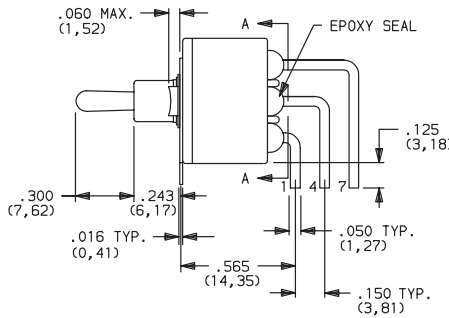
TERMINATIONS

A

A



Actuator Shown In Pos. 1



SECTION A-A

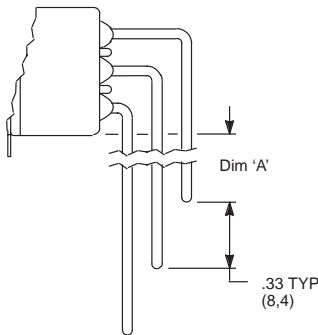
Terminal Nos. For Reference Only

3PDT Model

Part No. Shown: E301MD1ABE

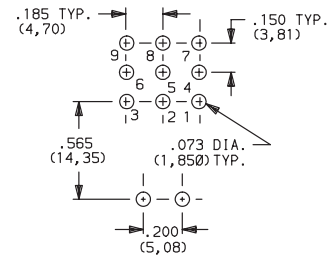
NOTE: Terminal bend radii and lead-in manufacturing option. B contact material standard. Not available with D9 & Y bushings.

AW4, AW5 EXTENDED

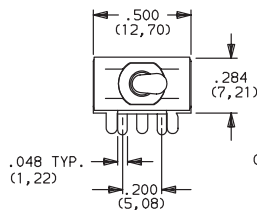


OPTION CODE	DIM 'A'
AW4	.18 (4,6)
AW5	.42 (10,7)

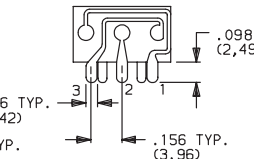
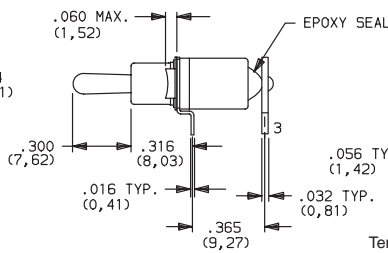
PC MOUNTING



R

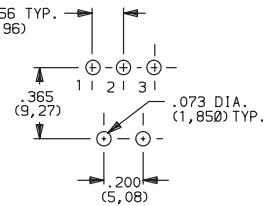


Actuator Shown In Pos. 1



Terminal Nos. For Reference Only

PC MOUNTING

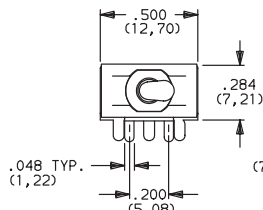


SPDT Model

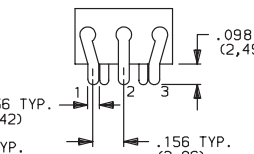
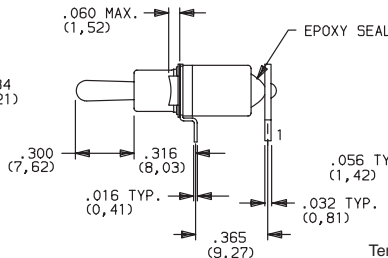
Part No. Shown: E101MD1RBE

NOTE: Contact makes on same side actuator thrown. Available with B contact material only. Not available with Y bushing.

R2

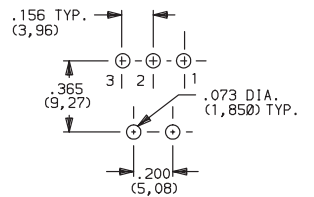


Actuator Shown In Pos. 1



Terminal Nos. For Reference Only

PC MOUNTING



SPDT Model

Part No. Shown: E101MD1R2BE

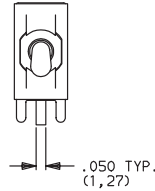
NOTE: Contact makes on opposite side actuator thrown. Available with B contact material only. Not available with Y bushing.

*Process sealed—withstands soldering and cleaning processes.

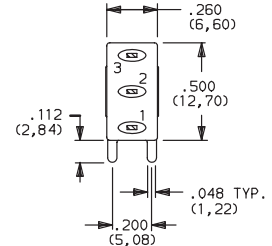
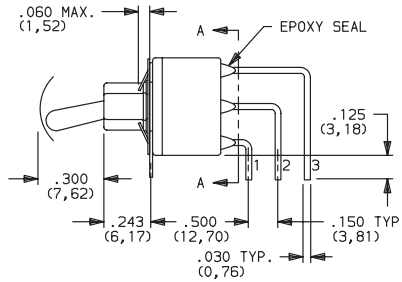
A

TERMINATIONS

AV2



Actuator Shown In Pos. 1



SECTION A-A

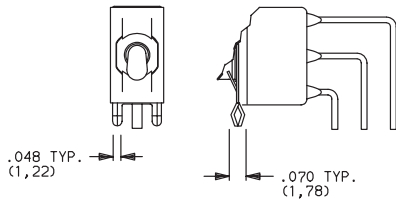
Terminal Nos. For Reference Only

SPDT Model

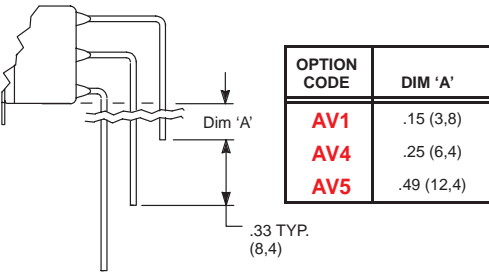
Part No. Shown: E101MD1AV2BE

NOTE: Terminal bend radii and lead-in manufacturing option. B contact material standard. Not available with Y bushing.

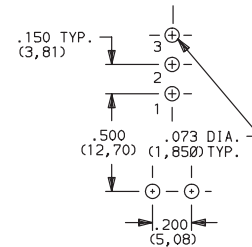
AV3 SNAP-IN



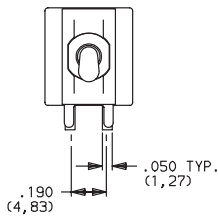
AV1, AV4, AV5 EXTENDED



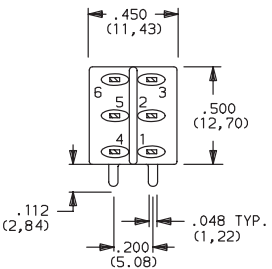
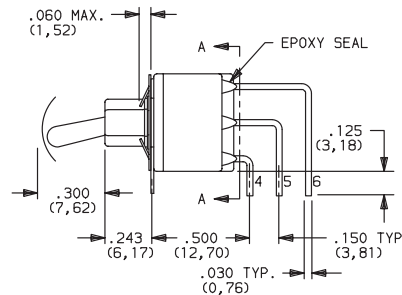
PC MOUNTING



AV2



Actuator Shown In Pos. 1



SECTION A-A

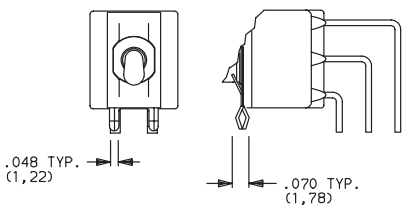
Terminal Nos. For Reference Only

DPDT Model

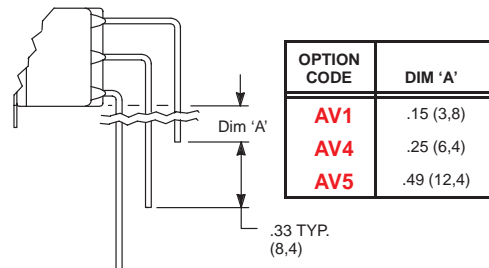
Part No. Shown: E201MD1AV2BE

NOTE: Terminal bend radii and lead-in manufacturing option. B contact material standard. Not available with Y bushing.

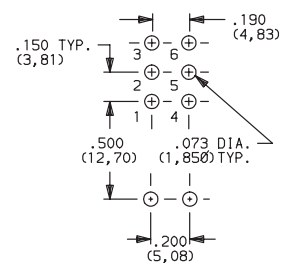
AV3 SNAP-IN



AV1, AV4, AV5 EXTENDED



PC MOUNTING



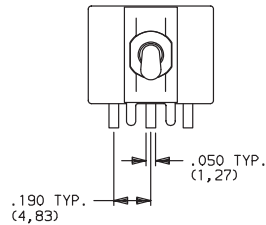


*Process sealed—withstands soldering and cleaning processes.

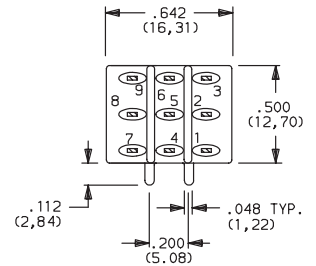
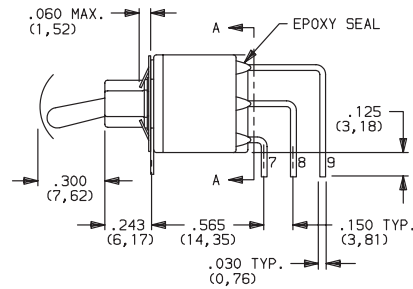
TERMINATIONS

A

AV2



Actuator Shown In Pos. 1



SECTION A-A

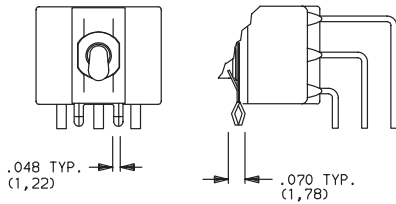
Terminal Nos. For Reference Only

3PDT Model

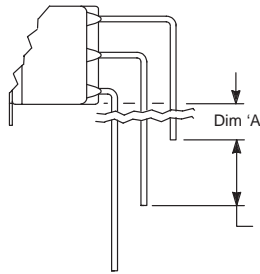
Part No. Shown: E301MD1AV2BE

NOTE: Terminal bend radii and lead-in manufacturing option. B contact material standard. Not available with D9 & Y bushings.

AV3 SNAP-IN

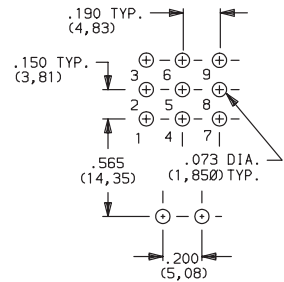


AV1, AV4, AV5 EXTENDED

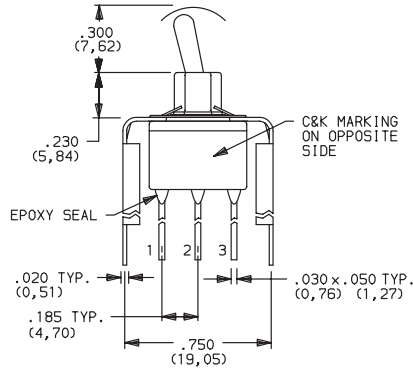


OPTION CODE	DIM 'A'
AV1	.15 (3,8)
AV4	.25 (6,4)
AV5	.49 (12,4)

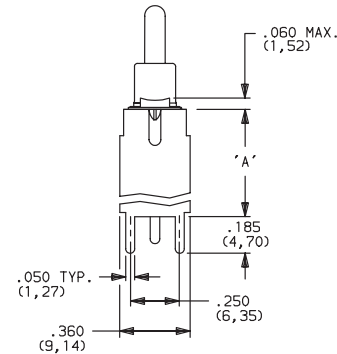
PC MOUNTING



V2, V6, V7, V8 REPLACES V20, V60, V70, V80

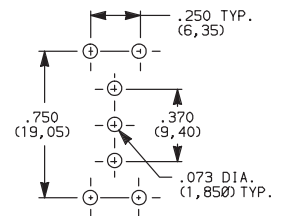


Actuator Shown In Pos. 1
Terminal Nos. For Reference Only



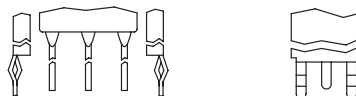
Part No. Shown: E101MD1__BE

PC MOUNTING



NOTE: B contact material standard. Not available with Y bushing.

V21, V61, V71, V81 SNAP-IN



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

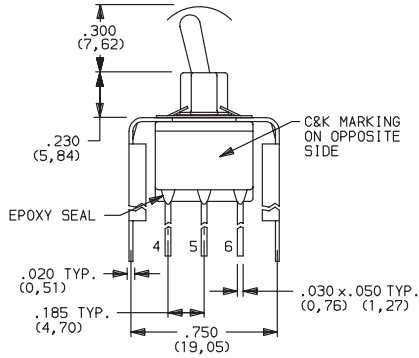
SPDT Model

*Process sealed—withstands soldering and cleaning processes.

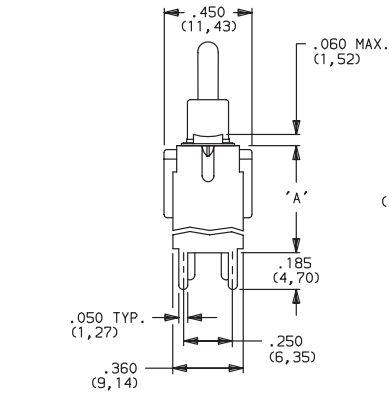
A

TERMINATIONS

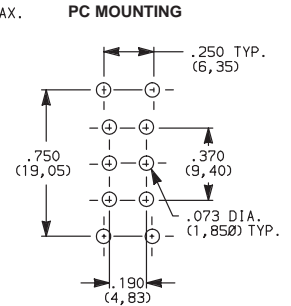
V2, V6, V7, V8 REPLACES V20, V60, V70, V80



Actuator Shown In Pos. 1
Terminal Nos. For Reference Only

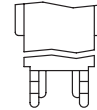
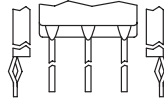


Part No. Shown: E201MD1__BE



NOTE: B contact material standard.
Not available with Y bushing.

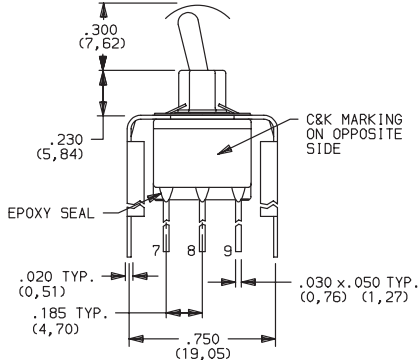
V21, V61, V71, V81 SNAP-IN



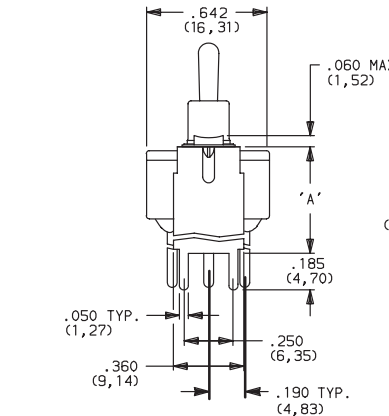
OPTION CODE	DIM 'A'
V2, V21	.555 (14,10)
V6, V61	.460 (11,68)
V7, V71	.630 (16,00)
V8, V81	.953 (24,21)

DPDT Model

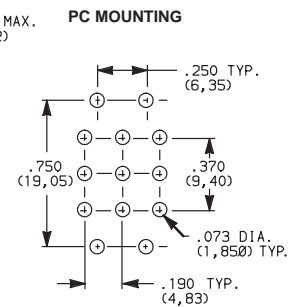
V2, V7, V8 REPLACES V20, V70, V80



Actuator Shown In Pos. 1
Terminal Nos. For Reference Only

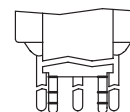
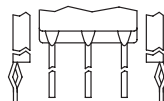


Part No. Shown: E301MD1__BE



NOTE: B contact material standard.
Not available with D9 & Y bushings.

V21, V71, V81 SNAP-IN



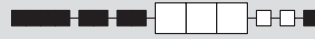
OPTION CODE	DIM 'A'
V2, V21	.555 (14,10)
V7, V71	.630 (16,00)
V8, V81	.953 (24,21)

3PDT Model



*Process sealed—withstands soldering and cleaning processes.

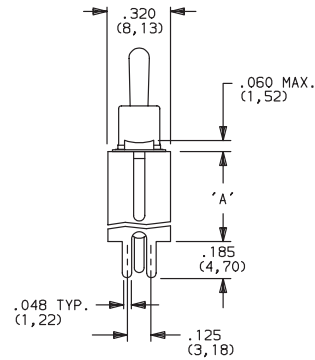
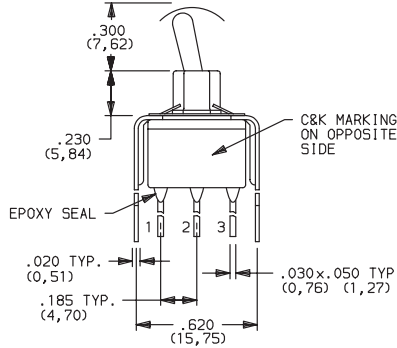
TERMINATIONS



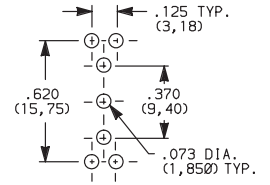
A



V3, V4, V9 REPLACES V30, V40, V90



PC MOUNTING

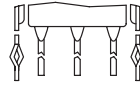


Actuator Shown In Pos. 1
Terminal Nos. For Reference Only

Part No. Shown: E101MD1__BE

NOTE: B contact material standard.
Not available with Y bushing.

V31, V41, V91 SNAP-IN

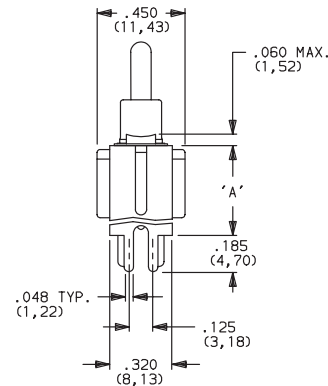
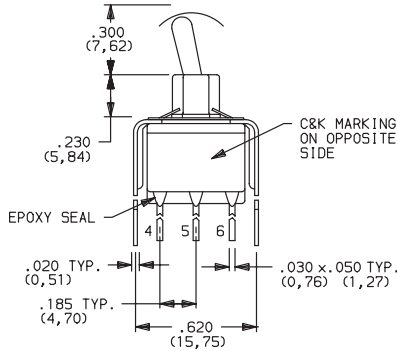


OPTION CODE	DIM 'A'
V3, V31	.460 (11,68)
V4, V41	.630 (16,00)
V9, V91	1.150 (29,21)

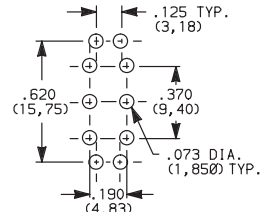
SPDT Model



V3, V4, V9 REPLACES V30, V40, V90



PC MOUNTING

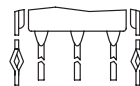


Actuator Shown In Pos. 1
Terminal Nos. For Reference Only

Part No. Shown: E201MD1__BE

NOTE: B contact material standard.
Not available with Y bushing.

V31, V41, V91 SNAP-IN



OPTION CODE	DIM 'A'
V3, V31	.460 (11,68)
V4, V41	.630 (16,00)
V9, V91	1.150 (29,21)

DPDT Model



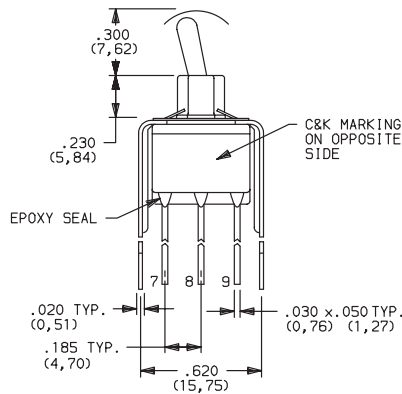
*Process sealed—withstands soldering and cleaning processes.

A

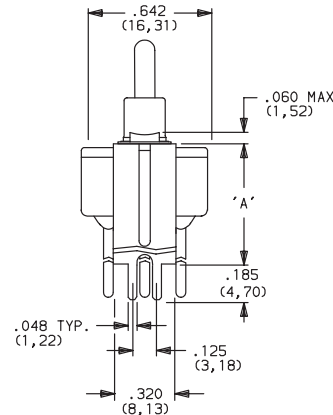
TERMINATIONS



V4, V9 REPLACES V40, V90

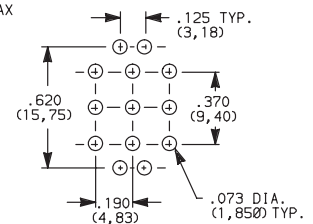


Actuator Shown In Pos. 1
Terminal Nos. For Reference Only



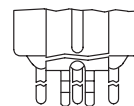
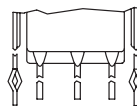
Part No. Shown: E301MD1_BE

PC MOUNTING



NOTE: B contact material standard.
Not available with D9 & Y bushings.

V41, V91 SNAP-IN



OPTION CODE	DIM 'A'
V4, V41	.630 (16,00)
V9, V91	1.150 (29,21)

3PDT Model

CONTACT MATERIAL

OPTION CODE	CONTACT MATERIAL	TERMINAL PLATING	RATINGS	
B	GOLD ¹	GOLD ¹	LOW LEVEL / DRY CIRCUIT	0.4 VA MAX. @ 20 V AC OR DC MAX.
K		TIN-LEAD ⁶		
Q	SILVER ^{4,5}	SILVER ⁵	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.
M		TIN-LEAD ⁶		
G	GOLD OVER SILVER ^{2,3}	GOLD ³	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. 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.
L		TIN-LEAD ⁶		

CONTACT MATERIAL / APPLICATION RECOMMENDATIONS—SEE CHART, PAGE X.

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

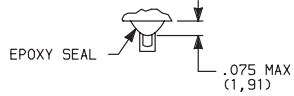
All models with all options when ordered with G, L, M or Q contact material.
See AGENCY APPROVALS, page VIII.

B contact material standard with all terminations.
B contact material must be ordered with R & R2 terminations.
K, L & M contact materials not available with Z & Z3 terminations.





E (STD.)



HOW TO ORDER

All available E SERIES SEALED TOGGLE SWITCH options are listed on page A-26 and are described on pages A-28 thru A-37. Switches with standard options are shown on page A-27. When selecting options and building a part number, some ordering format boxes may not be filled. Dashes, hyphens or spaces in the part number are not significant, and are shown for clarity only. All models are process sealed to withstand machine soldering temperatures and pressure wash cleaning methods. Hardware and accessories are available separately, see section K.

SPECIFICATIONS

- CONTACT RATING: 0.4 VA max. @ 20 V AC or DC max. (B contact material).
- ELECTRICAL LIFE: E1XX and E2XX models: 40,000 make-and-break cycles at full load. E3XX models: 30,000 cycles.
- CONTACT RESISTANCE: Below 10 milliohms typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.
- INSULATION RESISTANCE: 10⁹ ohms min.
- ELECTROSTATIC DISCHARGE (ESD) RESISTANT OPTION: F1 conductive bushing only. Dissipates up to 20,000 V DC from actuator to ground.
- DIELECTRIC STRENGTH: 1000 V RMS 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).

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, tin plated.
- SWITCH SUPPORT RETAINER: Stainless steel.
- CONTACTS & TERMINALS: Copper alloy, with gold plate over nickel plate (B contact material).
- TERMINAL SEAL: Epoxy.
- HARDWARE: Nut & Locking ring: Brass, nickel plated. Lockwasher: Steel, nickel plated.

NOTE: Specifications and materials listed above are general specifications for switches with standard options. For information on specific and custom switches, consult factory.