

C&K E Series Sealed Miniature Toggle Switches

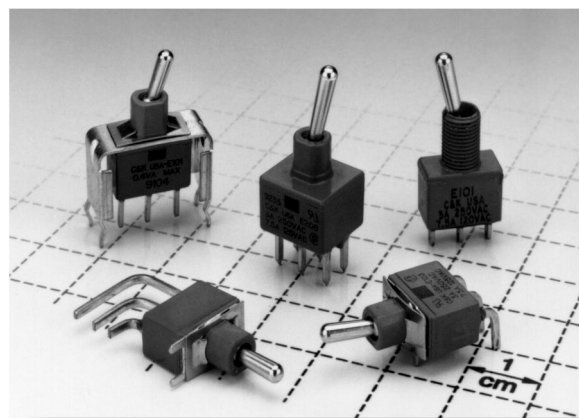


Features/Benefits

- Sealed against solder and cleaning process contaminants
- UL 94V-0 Nylon case and bushing
- Multi-positions
- ESD protection available

Typical Applications

- Telecommunications
- Instrumentation
- Medical equipment



A

Toggle

Build-A-Switch

Our easy Build-A-Switch concept allows you to mix and match options to create the switch you need. Below is a complete listing of options shown in catalog. To order, simply select desired option from each category and place in the appropriate box. Switches with standard options are shown on pages A-20 thru A-22. Available options are shown and described on pages A-22 thru A-30. 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.

Typical Example: E 1 0 1 — S — D 1 — C — B — E —

Switch Function

- E101** (STD.) SP, On-None-On
- E103** (STD.) SP, On-Off-On
- E201** (STD.) DP, On-None-On
- E203** (STD.) DP, On-Off-On
- E211** (STD.) DP, On-On-On
- E301** (STD.) 3P, On-None-On
- E105** SP, Mom.-Off-Mom.
- E107** SP, On-Off-Mom.
- E108** SP, On-None-Mom.
- E205** DP, Mom.-Off-Mom.
- E207** DP, On-Off-Mom.
- E208** DP, On-None-Mom.
- E213** DP, On-On-Mom.
- E215** DP, Mom.-On-Mom.
- E303** 3P, On-Off-On
- E305** 3P, Mom.-Off-Mom.
- E307** 3P, On-Off-Mom.
- E308** 3P, On-None-Mom.

Actuator

- M** (STD.) .300" high
- S** (STD.) .500" high
- L3** Plastic, .940" high

Bushing

- D1** (STD.) .250" high
- F1** (STD.) Conductive, .250" high
- D9** .280" high
- Y** Threaded, .350" high

Terminations

- A** (STD.) Right angle, PC thru-hole
- AV2** (STD.) Vertical right angle, PC thru-hole
- C** (STD.) PC Thru-hole
- V3** (STD.) .460" high, V-bracket
- Z** (STD.) Solder lug
- A3** Right angle, PC thru-hole
- AV3** Vertical right angle, PC thru-hole
- AW** Right angle, extended, PC thru-hole
- AW1** Right angle, extended, PC thru-hole
- AW3** Right angle, extended, PC thru-hole
- AW4** Right angle, extended, PC thru-hole
- AW5** Right angle, extended, PC thru-hole
- R** Right angle with PCB
- R2** Right angle with PCB
- V2** .555" high, V-bracket
- V4** .630" high, V-bracket
- V6** .460" high, V-bracket
- V7** .630" high, V-bracket
- V8** .953" high, V-bracket
- V9** 1.150" high, V-bracket
- V21** .555" high, snap-in V-bracket
- V31** .460" high, snap-in V-bracket
- V41** .630" high, snap-in V-bracket
- V61** .460" high, snap-in V-bracket
- V71** .630" high, snap-in V-bracket

Contact Material

- B** (STD.) Gold
- K** Gold
- Q** Silver
- M** Silver
- G** Gold over silver
- L** Gold over silver

Seal

- E** (STD.) Epoxy

Plastic Actuator Color

- 2** (STD.) Black
- 1** White
- 3** Red

- V81** .953" high, snap-in V-bracket
- V91** 1.150" high, snap-in V-bracket
- W** .750" long, wire wrap
- W1** .964" long, wire wrap
- W3** .425" long, wire wrap
- W4** 1.062" long, wire wrap
- W5** 1.305" long, wire wrap
- Z3** Quick connect

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Specifications

- CONTACT RATING: B contact material: 0.4 VA max. @ 20 V AC or DC max. See page A-30 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 milliohms typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.
- INSULATION RESISTANCE: 10^9 ohms min.
- ELECTROSTATIC DISCHARGE (ESD) 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).
- DEGREE OF PROTECTION: IP57; Protection against harmful dust deposit, full-scale voltage protection, temporary immersion.

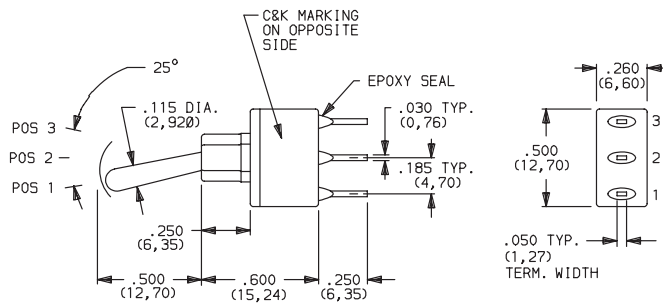
Materials

- 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, tin plated.
- SWITCH SUPPORT RETAINER: Stainless steel.
- CONTACTS & TERMINALS: B contact material: Copper alloy, with gold plate over nickel plate. See page A-30 for additional contact materials.
- TERMINAL SEAL: Epoxy.
- HARDWARE: Nut & Locking ring: Brass, nickel plated.
Lockwasher: Steel, nickel plated.
- NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

SWITCHES WITH STANDARD OPTIONS



E101SD1CBE
SPDT



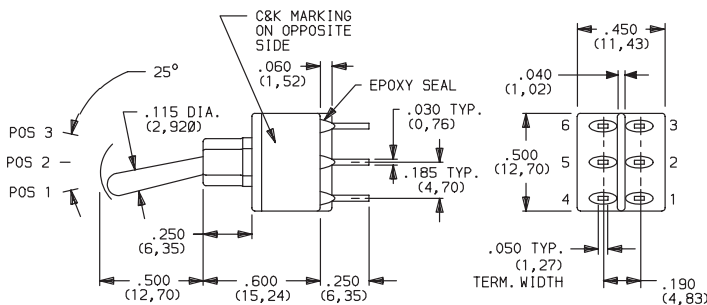
PART NUMBER	NO. POLES	POS. 1	POS. 2	POS. 3
E101SD1CBE	SPDT	ON	NONE	ON
E103SD1CBE		ON	OFF	ON
E105SD1CBE		MOM.	OFF	MOM.

MOM. = Momentary

NOTE: For PC mounting information, see page A-24.



E201SD1CBE
DPDT



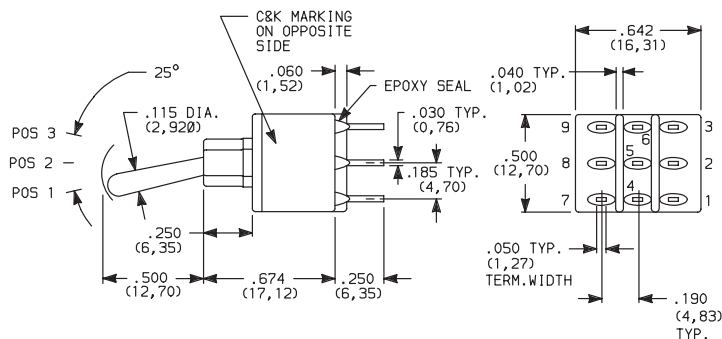
PART NUMBER	NO. POLES	POS. 1	POS. 2	POS. 3
E201SD1CBE	DPDT	ON	NONE	ON
E203SD1CBE		ON	OFF	ON
E205SD1CBE		MOM.	OFF	MOM.

MOM. = Momentary

NOTE: For PC mounting information, see page A-24.



E301SD1CBE
3PDT



PART NUMBER	NO. POLES	POS. 1	POS. 2	POS. 3
E301SD1CBE	3PDT	ON	NONE	ON
E303SD1CBE		ON	OFF	ON
E305SD1CBE		MOM.	OFF	MOM.

MOM. = Momentary

NOTE: For PC mounting information, see page A-24.

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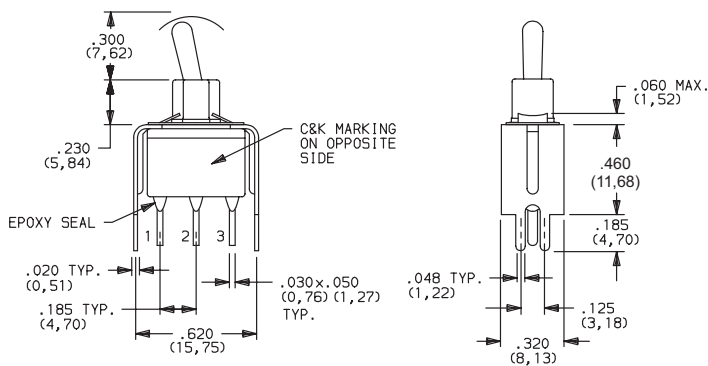
SWITCHES WITH STANDARD OPTIONS



PART NUMBER	NO. POLES	POS. 1	POS. 2	POS. 3
E101MD1V3BE	SPDT	ON	NONE	ON
E103MD1V3BE		ON	OFF	ON
E105MD1V3BE		MOM.	OFF	MOM.

MOM. = Momentary

NOTE: For PC mounting information, see page A-29.

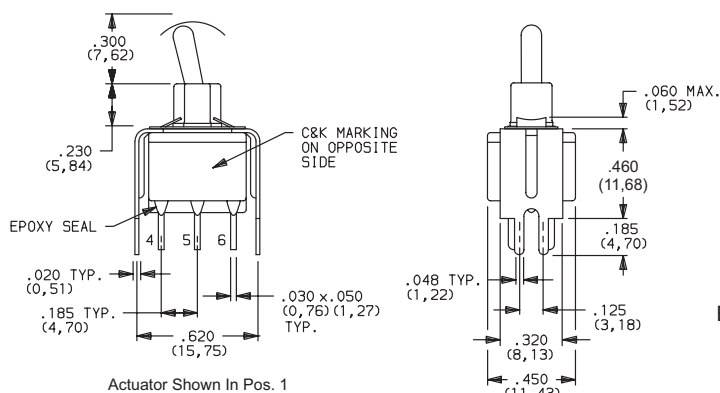


**E101MD1V3BE
SPDT**

PART NUMBER	NO. POLES	POS. 1	POS. 2	POS. 3
E201MD1V3BE	DPDT	ON	NONE	ON
E203MD1V3BE		ON	OFF	ON
E205MD1V3BE		MOM.	OFF	MOM.

MOM. = Momentary

NOTE: For PC mounting information, see page A-29.

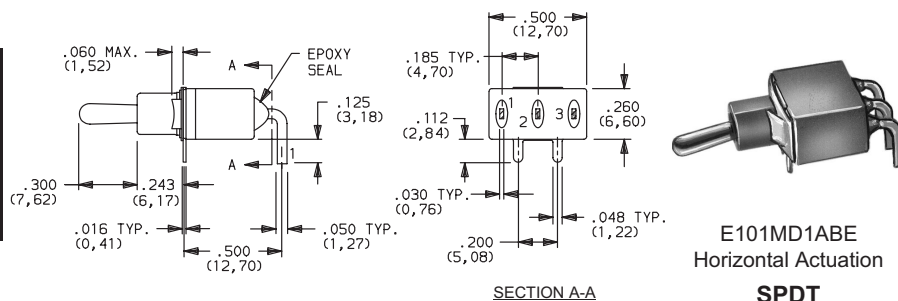


**E201MD1V3BE
DPDT**

PART NUMBER	NO. POLES	POS. 1	POS. 2	POS. 3
E101MD1ABE	SPDT	ON	NONE	ON
E103MD1ABE		ON	OFF	ON
E105MD1ABE		MOM.	OFF	MOM.

MOM. = Momentary

NOTE: For PC mounting information, see page A-24.

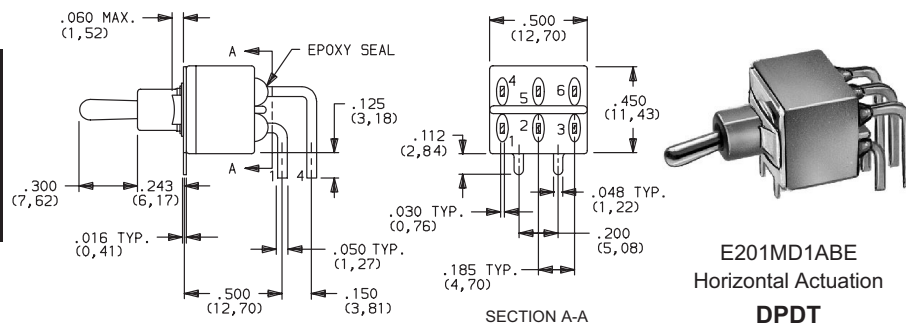


**E101MD1ABE
Horizontal Actuation
SPDT**

PART NUMBER	NO. POLES	POS. 1	POS. 2	POS. 3
E201MD1ABE	DPDT	ON	NONE	ON
E203MD1ABE		ON	OFF	ON
E205MD1ABE		MOM.	OFF	MOM.

MOM. = Momentary

NOTE: For PC mounting information, see page A-25.

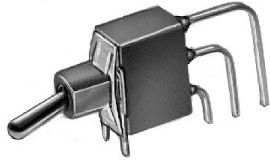


**E201MD1ABE
Horizontal Actuation
DPDT**

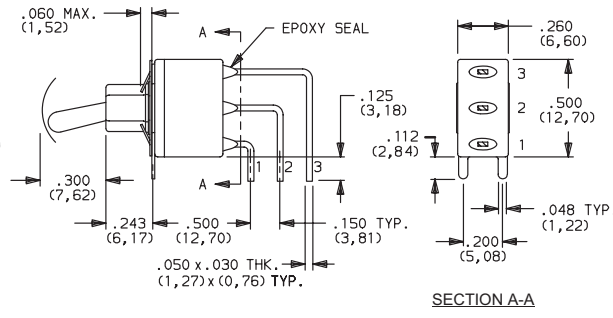
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SWITCHES WITH STANDARD OPTIONS

Toggle

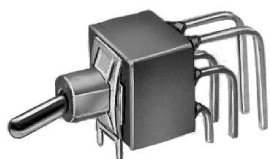


E101MD1AV2BE
Vertical Actuation
SPDT

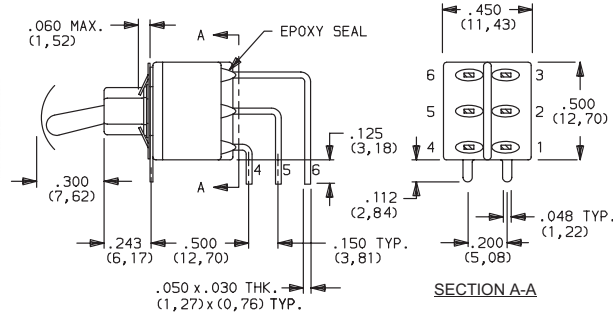


PART NUMBER	NO. POLES	POS. 1	POS. 2	POS. 3
E101MD1AV2BE	SPDT	ON	NONE	ON
E103MD1AV2BE		ON	OFF	ON
E105MD1AV2BE		MOM.	OFF	MOM.

MOM. = Momentary
NOTE: For PC mounting information, see page A-26.



E201MD1AV2BE
Vertical Actuation
DPDT



PART NUMBER	NO. POLES	POS. 1	POS. 2	POS. 3
E201MD1AV2BE	DPDT	ON	NONE	ON
E203MD1AV2BE		ON	OFF	ON
E205MD1AV2BE		MOM.	OFF	MOM.

MOM. = Momentary
NOTE: For PC mounting information, see page A-26.

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 (STD.)	ON	NONE	ON	2-3	OPEN	2-1	
	E103 (STD.)	ON	OFF	ON				
	E105	MOM.	OFF	MOM.				
	E107	ON	OFF	MOM.				
	E108	ON	NONE	MOM.				
DP	E201 (STD.)	ON	NONE	ON	2-3,5-6	OPEN	2-1,5-4	
	E203 (STD.)	ON	OFF	ON				
	E205	MOM.	OFF	MOM.				
	E207	ON	OFF	MOM.				
	E208	ON	NONE	MOM.				
	E211 (STD.)**	ON	ON	ON				
	E213**	ON	ON	MOM.				
E215**	MOM.	ON	MOM.					

MOM. = Momentary

** Wiring for 3-way switch, see page L-29.

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

C&K 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 (STD.)	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 L-29.

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

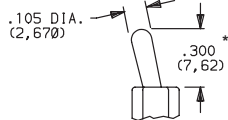


ACTUATOR

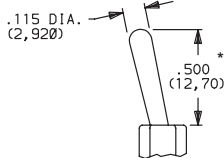
M (STD.) .300" HIGH

S (STD.) .500" HIGH

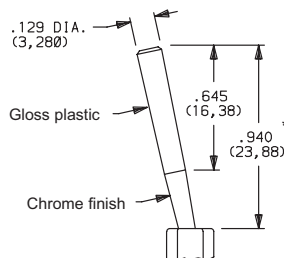
L3 PLASTIC, .940" HIGH



Standard when ordered with A, A3, AV2, AV3, AW-AW5, R, R2, V2-V91 terminations.
Finish: Chrome.



Standard when ordered with C, Z, Z3, W-W5 terminations.
Finish: Chrome



OPTION CODE	L3 ACTUATOR COLOR
2	(STD.) BLACK
1	WHITE
3	RED

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.

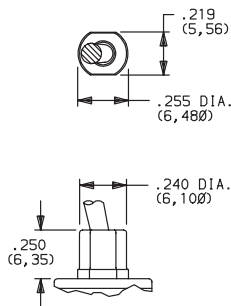
BUSHING

D1 (STD.) .250" HIGH, UNTHREADED

D9 .280" HIGH, UNTHREADED

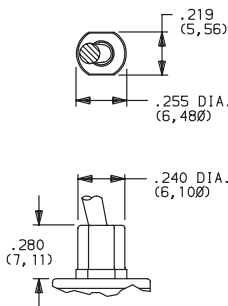
Y THREADED, INSULATED, .350" HIGH WITH KEYWAY

F1 (STD.) ESD CONDUCTIVE BUSHING, .250" HIGH, UNTHREADED



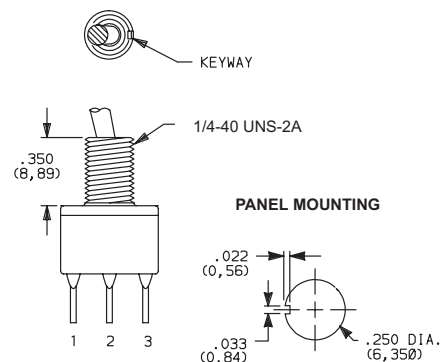
ESD protection depends on proper grounding of switch support bracket. F1 conductive bushing option is impregnated with carbon fibers; dissipates electrostatic discharge (ESD) up to 20,000 V from actuator to ground.

Available with M & S actuator options and A, A3, AW-AW5, AV2, AV3, R, R2, V2-V91 termination options.



E3XX models not available with D9 bushing.

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



Available only with C, Z, Z3, W-W5 terminations. Hardware: One dress nut part number 780701201, one hex nut part number 540400201 and lockwasher part number 700303202 supplied standard.

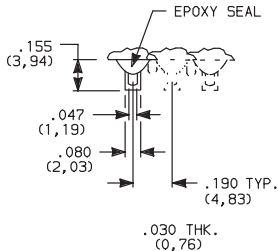
C&K E Series Sealed Miniature Toggle Switches

Toggle
A

TERMINATIONS



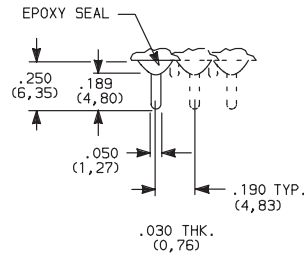
Z (STD.) SOLDER LUG



SPDT thru 3PDT

Not available with F1 conductive bushing or K, L or M contact material.

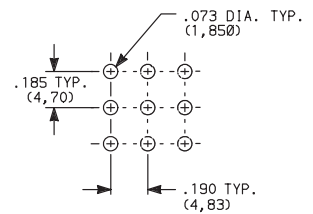
C (STD.) PC THRU-HOLE



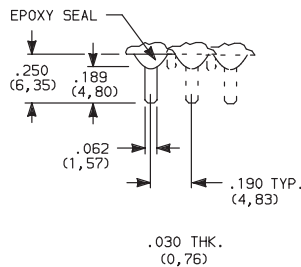
SPDT thru 3PDT

Not available with F1 conductive bushing.

PC MOUNTING



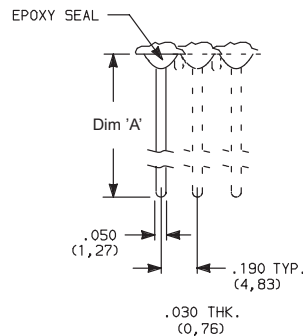
Z3 QUICK CONNECT



SPDT thru 3PDT

Not available with F1 conductive bushing or K, L or M contact material. Mating quick connector available, see section L, part number 530100000.

W, W1, W3, W4, W5 WIRE WRAP



SPDT thru 3PDT

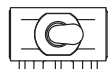
Not available with F1 conductive bushing.

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)

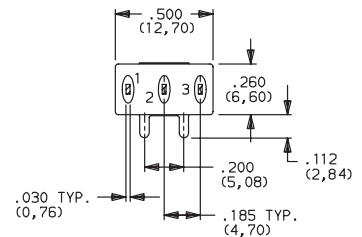
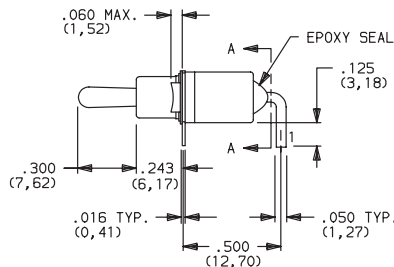
A (STD.) RIGHT ANGLE, PC THRU-HOLE



E101MD1ABE
Horizontal Actuation
SPDT



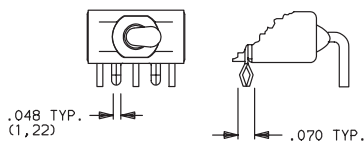
Actuator Shown In Pos. 1



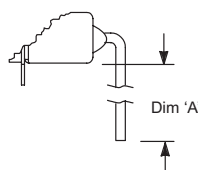
SECTION A-A

Terminal Nos. For Reference Only

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

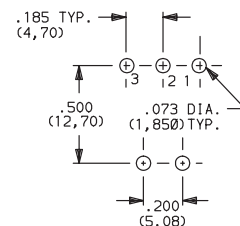


AW, AW1, AW3, AW4 RIGHT ANGLE, EXTENDED, PC THRU-HOLE



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

PC MOUNTING

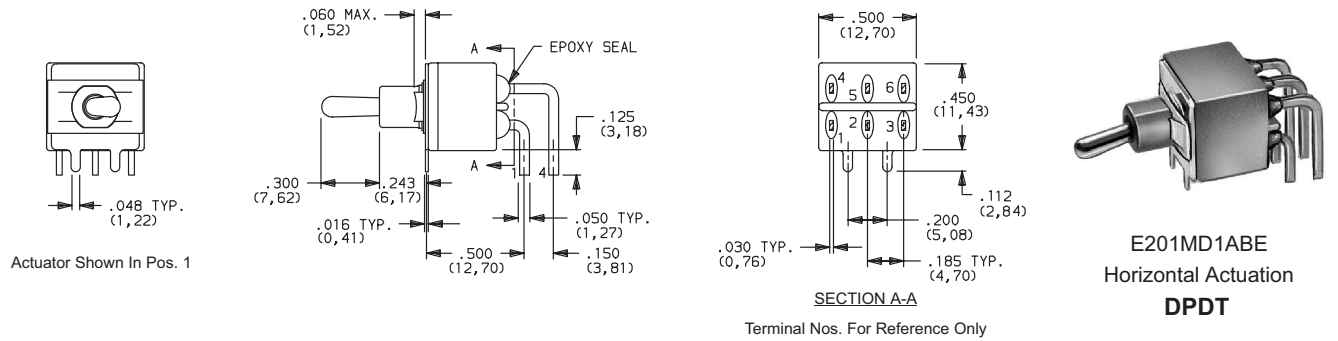


Not available with Y bushing.
Terminal bend radii and lead-in manufacturing option.

C&K E Series Sealed Miniature Toggle Switches

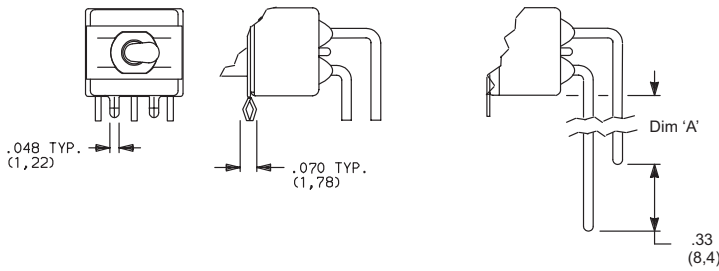
TERMINATIONS

A (STD.) RIGHT ANGLE, PC THRU-HOLE

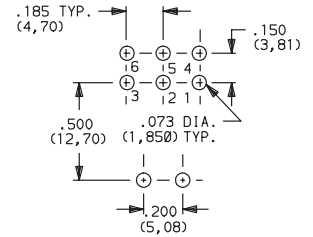


A3 RIGHT ANGLE, SNAP-IN, PC THRU-HOLE

AW, AW1, AW4 RIGHT ANGLE, EXTENDED

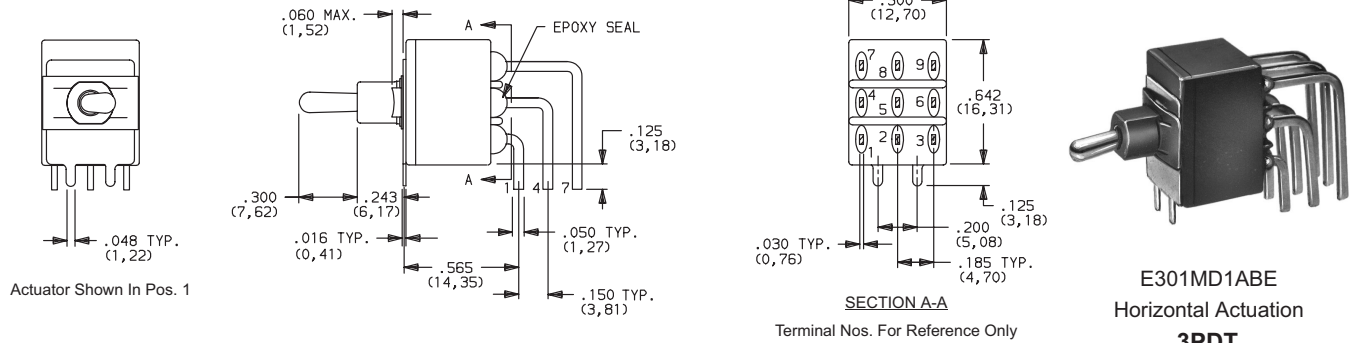


PC MOUNTING

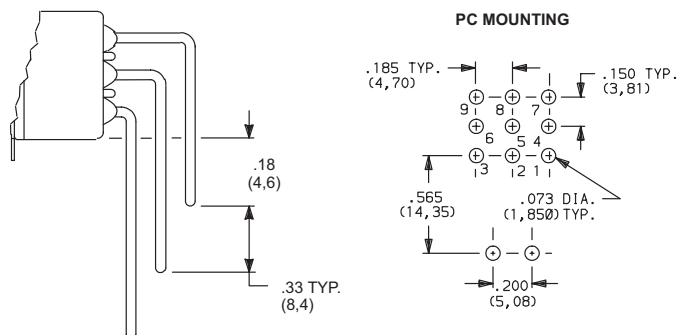


Not available with Y bushing.
Terminal bend radii and lead-in manufacturing option.

A (STD.) RIGHT ANGLE, PC THRU-HOLE



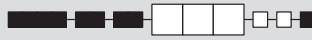
AW4 RIGHT ANGLE, EXTENDED, PC THRU-HOLE



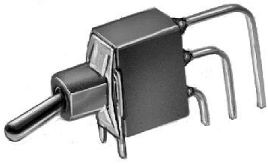
Not available with D9 & Y bushings.
Terminal bend radii and lead-in manufacturing option.

C&K E Series Sealed Miniature Toggle Switches

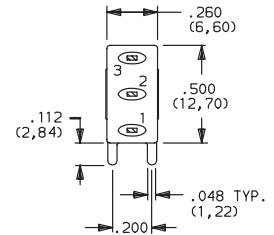
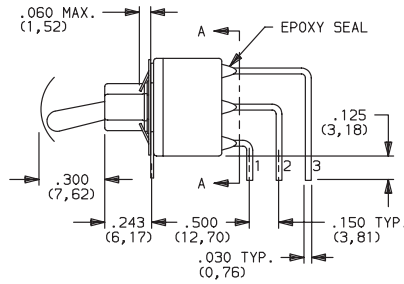
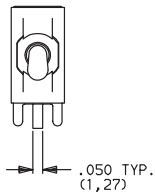
TERMINATIONS



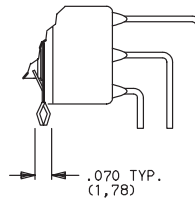
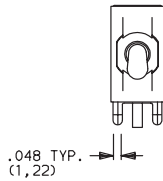
AV2 (STD.) VERTICAL RIGHT ANGLE, PC THRU-HOLE,
.150" PITCH



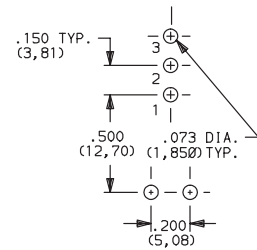
E101MD1AV2BE
Vertical Actuation
SPDT



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

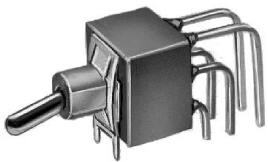


PC MOUNTING

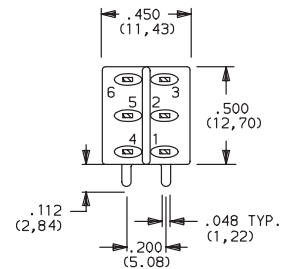
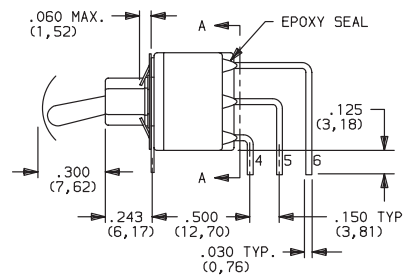
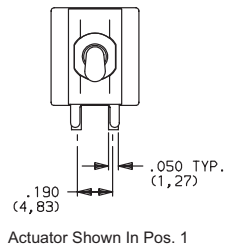


Not available with Y bushing.
Terminal bend radii and lead-in manufacturing option.

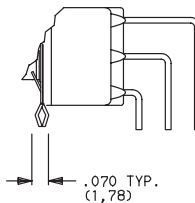
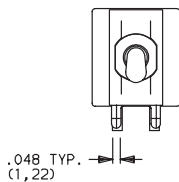
AV2 (STD.) VERTICAL RIGHT ANGLE, PC THRU-HOLE,
.150" PITCH



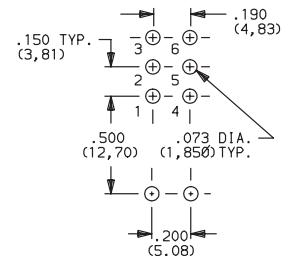
E201MD1AV2BE
Vertical Actuation
DPDT



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



PC MOUNTING

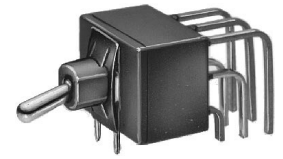
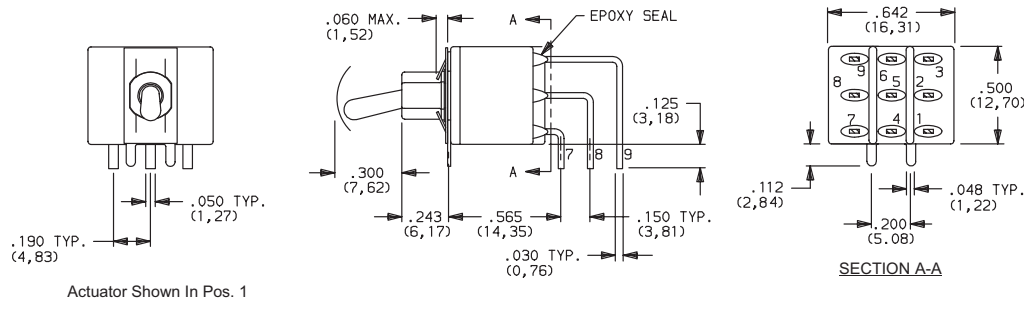


Not available with Y bushing.
Terminal bend radii and lead-in manufacturing option.

C&K E Series Sealed Miniature Toggle Switches

TERMINATIONS

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

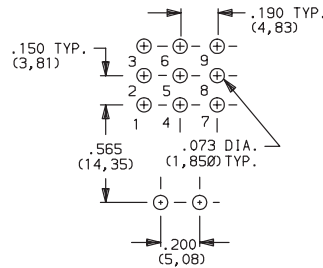


E301MD1AV2BE
Vertical Actuation
3PDT

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

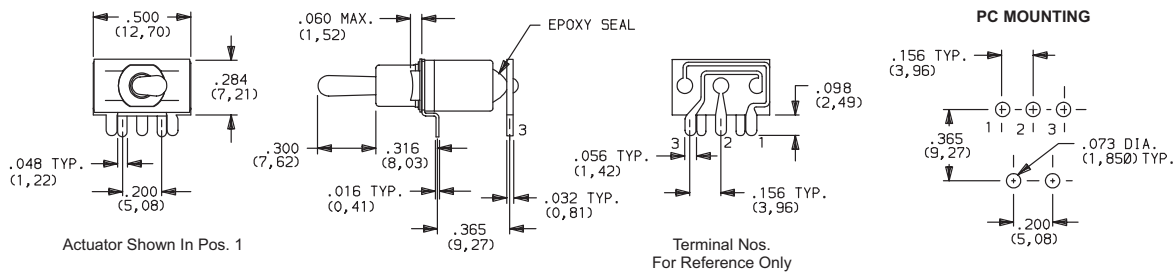


PC MOUNTING



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

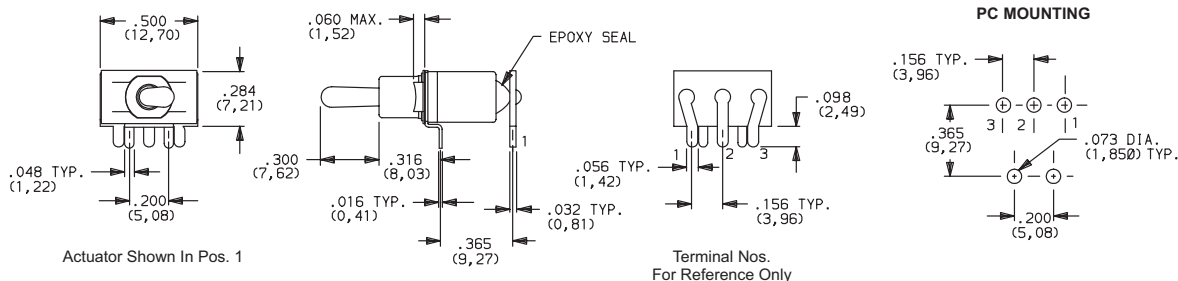
R RIGHT ANGLE WITH PCB



E101MD1RBE
Horizontal Actuation
SPDT

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

R2 RIGHT ANGLE WITH PCB



E101MD1R2BE
Horizontal Actuation
SPDT

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



A

Toggle

C&K E Series Sealed Miniature Toggle Switches

TERMINATIONS

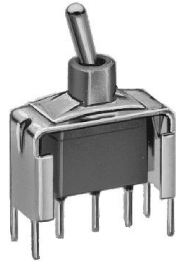


Toggle

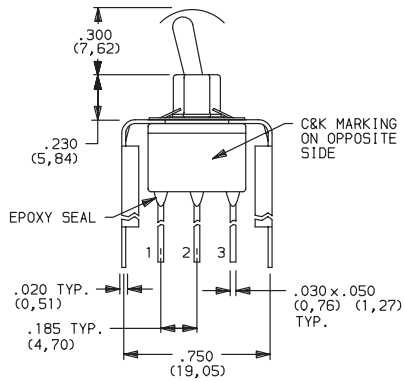
A

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

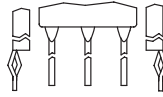
V21, V61, V71, V81 VERTICAL MOUNT, V-BRACKET, SNAP-IN



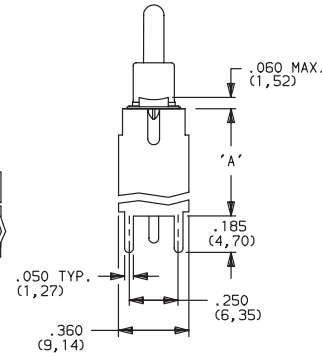
E101MD1_BE
SPDT



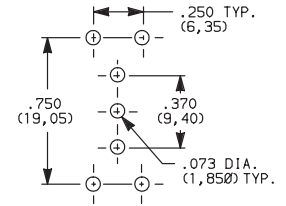
Actuator Shown In Pos. 1



SNAP-IN



PC MOUNTING

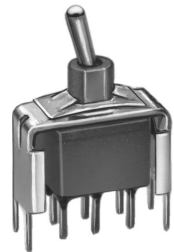


OPTION CODE	DIM 'A'
V2, V21	.555 (14,10)
V6, V61	.460 (11,68)
V7, V71	.630 (16,00)
V8, V81	.953 (24,21)

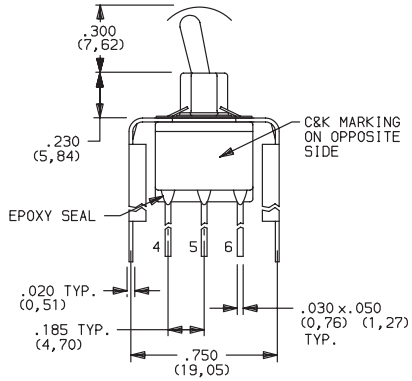
Not available with Y bushing.

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

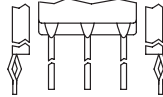
V21, V61, V71, V81 VERTICAL MOUNT, V-BRACKET, SNAP-IN



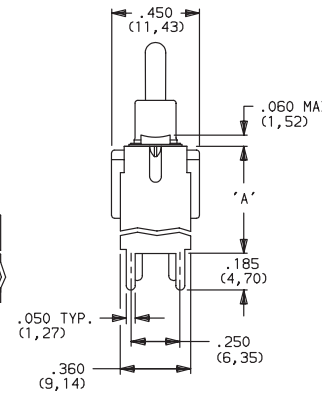
E201MD1_BE
DPDT



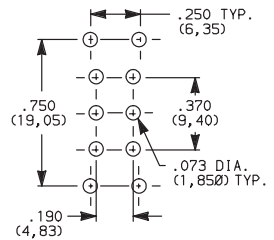
Actuator Shown In Pos. 1



SNAP-IN



PC MOUNTING



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

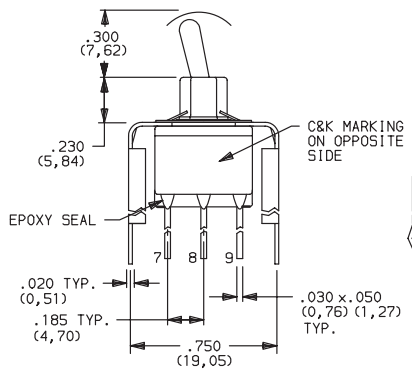
Not available with Y bushing.

V2, V7, V8 VERTICAL MOUNT, V-BRACKET

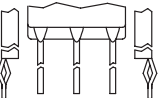
V21, V71, V81 VERTICAL MOUNT, V-BRACKET, SNAP-IN



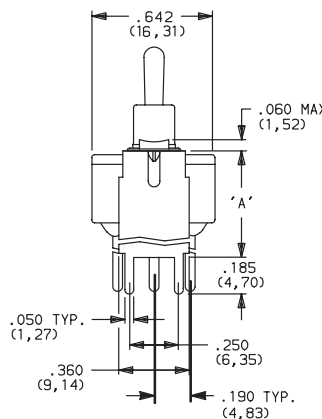
E301MD1_BE
3PDT



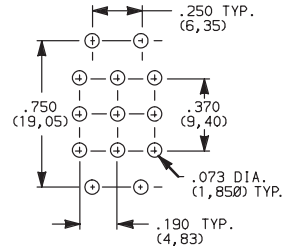
Actuator Shown In Pos. 1



SNAP-IN



PC MOUNTING



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

Not available with D9 & Y bushings.

TERMINATIONS

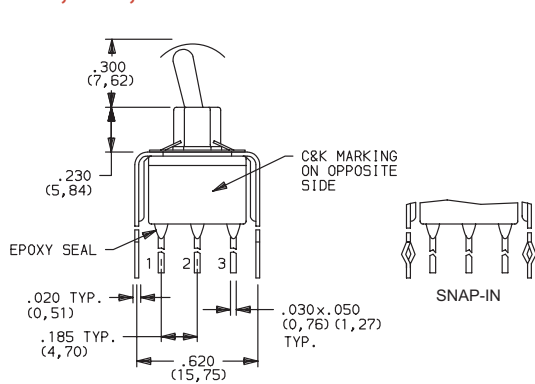


A

Toggle

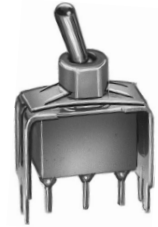
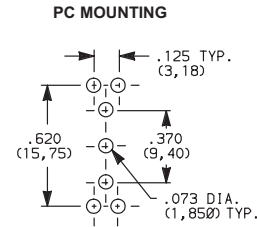
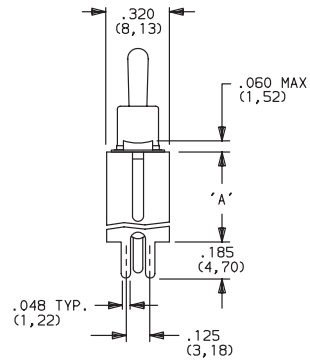
V3 (STD.), V4, V9 VERTICAL MOUNT, V-BRACKET

V31, V41, V91 VERTICAL MOUNT, V-BRACKET, SNAP-IN



Actuator Shown In Pos. 1

Not available with Y bushing.

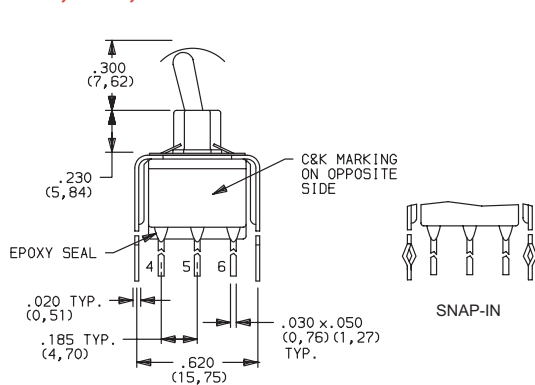


E101MD1_BE
SPDT

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

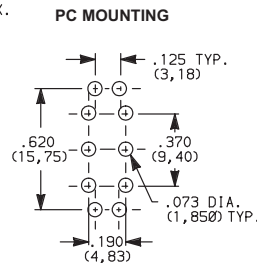
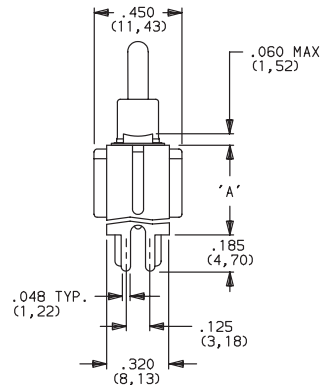
V3 (STD.), V4, V9 VERTICAL MOUNT, V-BRACKET

V31, V41, V91 VERTICAL MOUNT, V-BRACKET, SNAP-IN



Actuator Shown In Pos. 1

Not available with Y bushing.

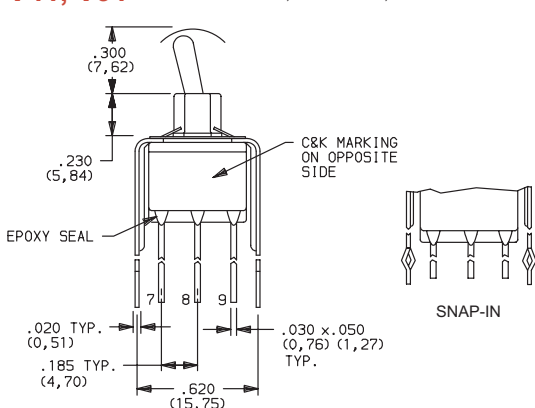


E201MD1_BE
DPDT

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

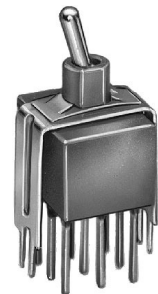
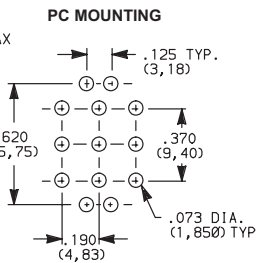
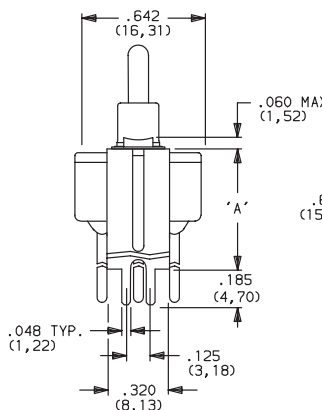
V4, V9 VERTICAL MOUNT, V-BRACKET

V41, V91 VERTICAL MOUNT, V-BRACKET, SNAP-IN



Actuator Shown In Pos. 1

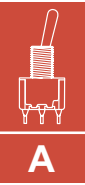
Not available with D9 & Y bushings.



E301MD1_BE
3PDT

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

C&K E Series Sealed Miniature Toggle Switches





Toggle
A

CONTACT MATERIAL

OPTION CODE	CONTACT MATERIAL	TERMINAL PLATING	RATINGS	
B (STD.)	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 L-31.

- 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.

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.

SEAL

E (STD.) EPOXY SEAL

