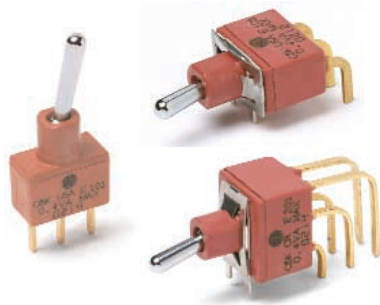


C&K E Series Sealed Miniature Toggle Switches



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



Specifications

CONTACT RATING: B contact material: 0.4 VA max. @ 20 V AC or DC max. Q contact material: E1XX & E2XX MODELS: 7.5 AMPS @ 125 V AC or 28 V DC; 3 AMPS @ 250 V AC. E3XX MODELS: 5 AMPS @ 125 V AC or 28 V DC; 2 AMPS @ 250 V AC. See page F-25 for additional ratings.

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

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

INSULATION RESISTANCE: 10⁹ 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, 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-25 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.

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-19 thru F-25. 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** (STD.) SP, On-None-On
- E103** (STD.) SP, On-Off-On
- E105** SP, Mom.-Off-Mom.
- E107** SP, On-Off-Mom.
- E108** SP, On-None-Mom.
- E201** (STD.) DP, On-None-On
- E203** (STD.) DP, On-Off-On
- E205** DP, Mom.-Off-Mom.
- E207** DP, On-Off-Mom.
- E208** DP, On-None-Mom.
- E211** (STD.) DP, On-On-On
- E213** DP, On-On-Mom.
- E215** DP, Mom.-On-Mom.
- E301** (STD.) 3P, On-None-On

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
- 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
- W** .750" long, wire wrap
- W4** 1.062" long, wire wrap
- Z3** Quick connect

Contact Material

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

Seal

- E** (STD.) Epoxy

Plastic Actuator Color

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



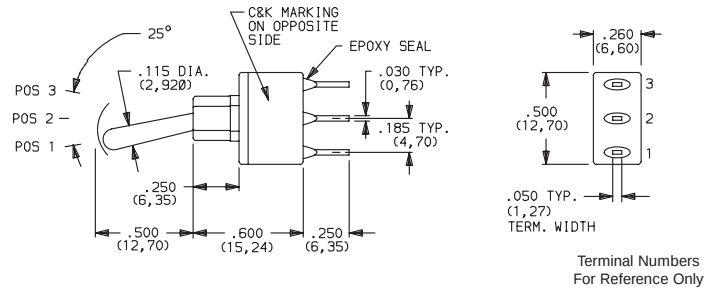
Toggle

C&K E Series Sealed Miniature Toggle Switches

SWITCH FUNCTION

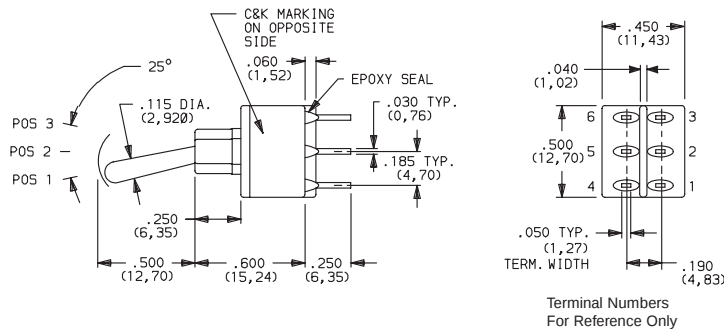
NO. POLES	MODEL NO.	SWITCH FUNCTION			CONNECTED TERMINALS			SCHEMATIC
		POS. 1	POS. 2	POS. 3	POS. 1	POS. 2	POS. 3	
		C&K marking on opposite side			C&K marking on opposite side			
SP	E101 (STD.)	ON	NONE	ON	2-3	N/A	2-1	
	E103 (STD.)	ON	OFF	ON				
	E105	MOM.	OFF	MOM.	2-3	OPEN	2-1	
	E107	ON	OFF	MOM.			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

SPDT



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

DPDT



MOM. = Momentary

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

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



F

Toggle

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	
		C&K marking on opposite side			C&K marking on opposite side			
3P	E301 (STD.)	ON	NONE	ON	2-3,5-6,8-9	N/A	2-1,5-4,8-7	 3PDT

Part number shown: E301SD1CBE

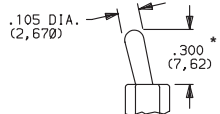
MOM. = Momentary

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

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

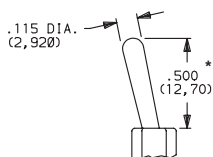
ACTUATOR

M (STD.) .300" HIGH



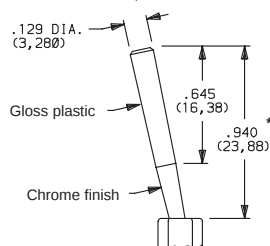
Standard when ordered with A, A3, AV2, AV3, V2-V61 terminations.
Finish: Chrome.

S (STD.) .500" HIGH



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

L3 PLASTIC, .940" HIGH



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

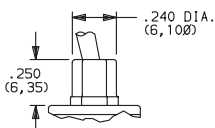
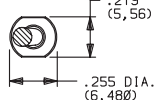
Other colors available, consult Customer Service Center. No color choice required for S & M actuators.

* 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

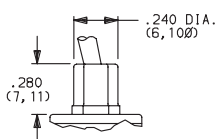
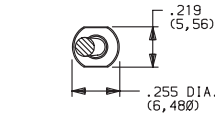
F1 (STD.) ESD CONDUCTIVE BUSHING, .250" HIGH, UNTHREADED



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.

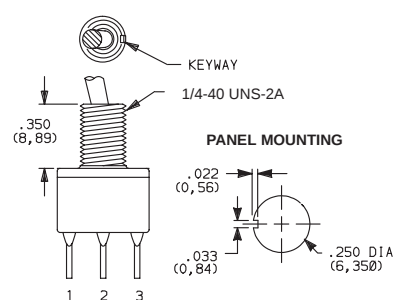
Available with M & S actuator options and A, A3, AV2, AV3, V2-V61 termination options.

D9 .280" HIGH, UNTHREADED



E3XX models not available with D9 bushing.

Y THREADED, INSULATED, .350" HIGH WITH KEYWAY



Available only with C, Z, Z3, W & W4 terminations.
Hardware: One dress nut part number 780701201, one hex nut part number 540400201 and lockwasher part number 700303202 supplied standard.

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

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

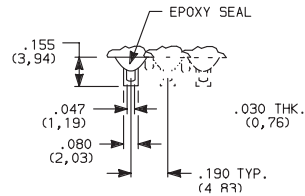


Dimensions are shown: IN (mm)
Dimensions subject to change

C&K E Series Sealed Miniature Toggle Switches

TERMINATIONS

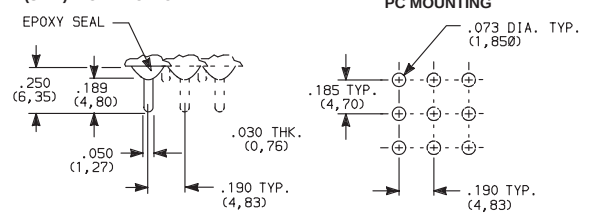
Z (STD.) SOLDER LUG



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

SPDT thru 3PDT

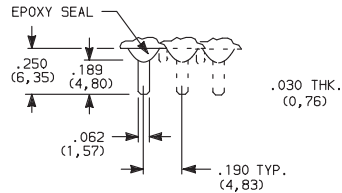
C (STD.) PC THRU-HOLE



Not available with F1 conductive bushing.

SPDT thru 3PDT

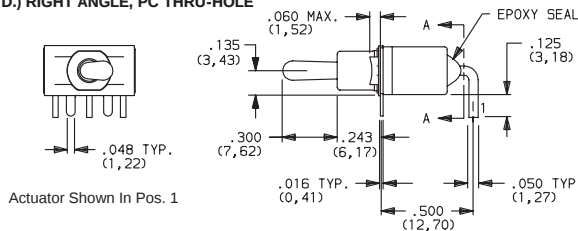
Z3 QUICK CONNECT



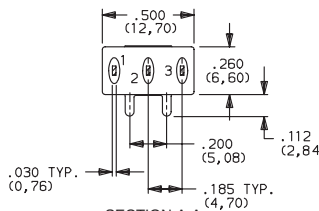
Not available with F1 conductive bushing or K, L or M contact material. Mating quick connector available; order part number 530100000, page F-26.

SPDT thru 3PDT

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



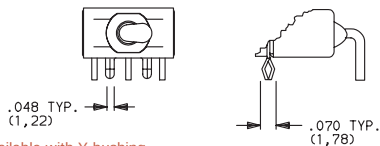
Actuator Shown In Pos. 1



SECTION A-A

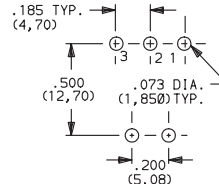
Terminal Nos. For Reference Only

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



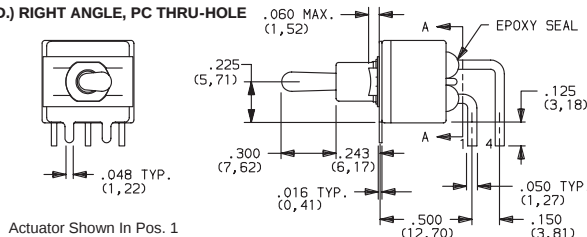
Not available with Y bushing.
Terminal bend radii and lead-in manufacturing option.

PC MOUNTING

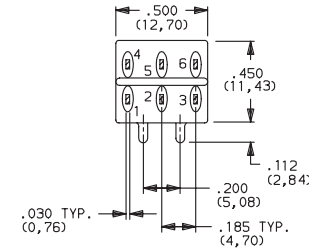


E101MD1ABE
Horizontal Actuation
SPDT

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



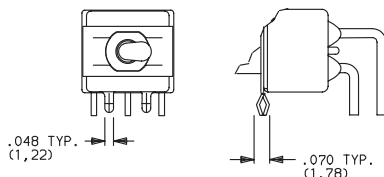
Actuator Shown In Pos. 1



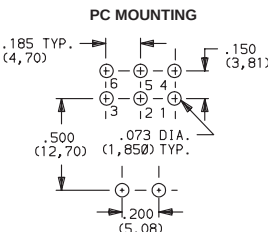
SECTION A-A

Terminal Nos. For Reference Only

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



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



E201MD1ABE
Horizontal Actuation
DPDT



F

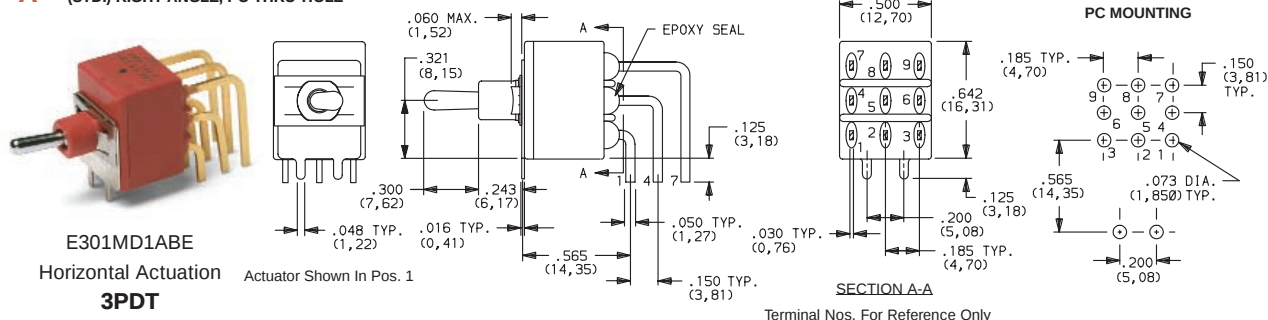
Toggle

Third Angle Projection
Dimensions are shown: IN (mm)
Dimensions subject to change

C&K E Series Sealed Miniature Toggle Switches

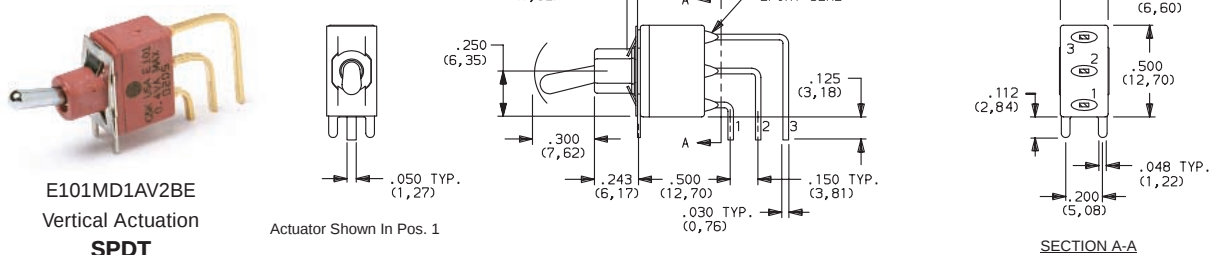
TERMINATIONS

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

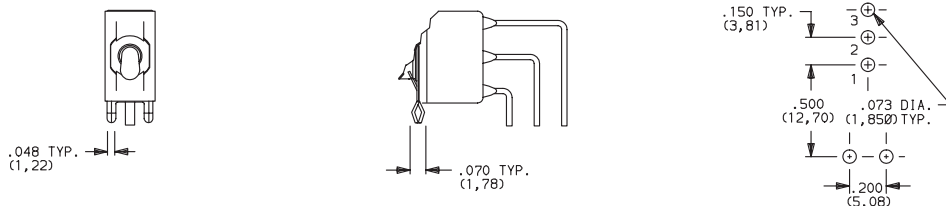


Not available with D9 & Y bushings.
Terminal bend radii and lead-in manufacturing option.

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

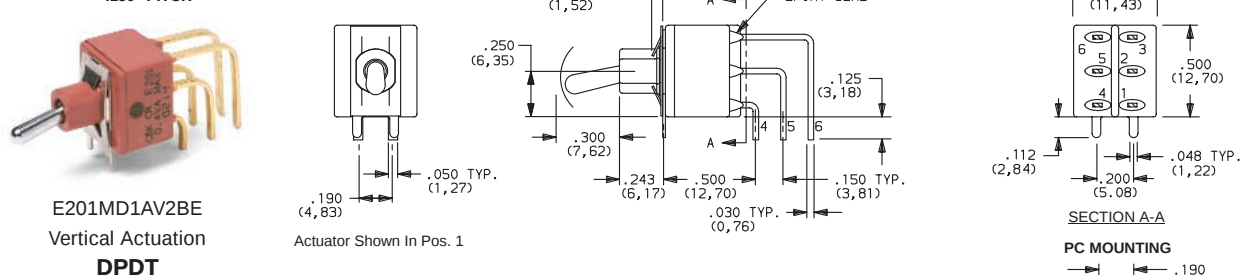


AV3 VERTICAL RIGHT ANGLE, SNAP-IN, PC THRU-HOLE, .150" PITCH

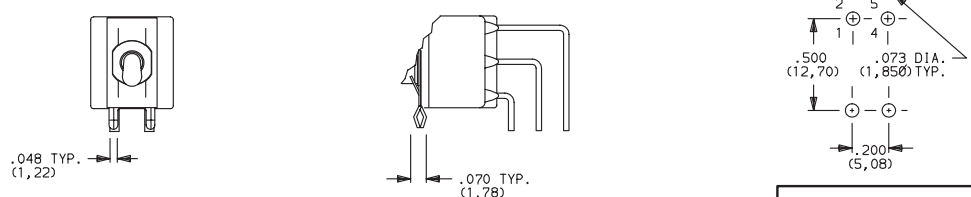


Not available with Y bushing.
Terminal bend radii and lead-in manufacturing option.

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



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



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

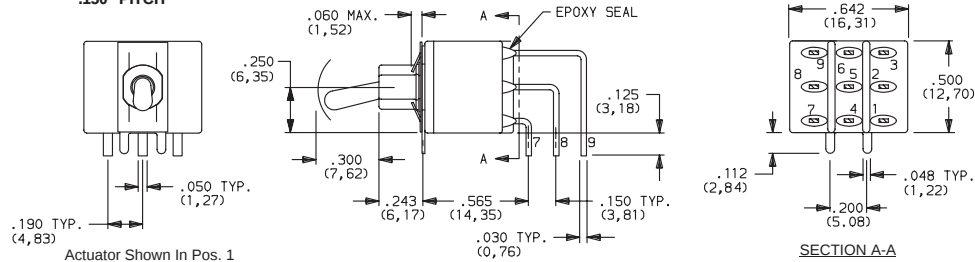


Dimensions are shown: IN (mm)
Dimensions subject to change

C&K E Series Sealed Miniature Toggle Switches

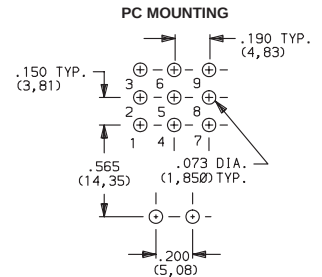
TERMINATIONS

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



E301MD1AV2BE
Vertical Actuation
3PDT

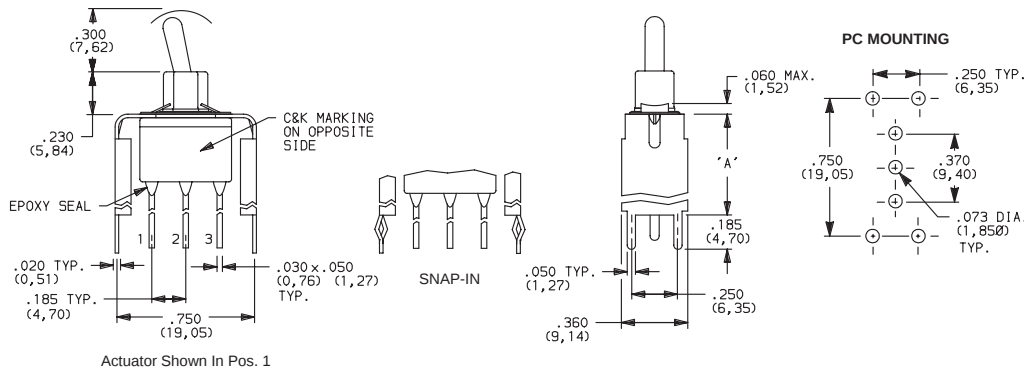
AV3 VERTICAL RIGHT ANGLE, SNAP-IN, PC THRU-HOLE .150" PITCH



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

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

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



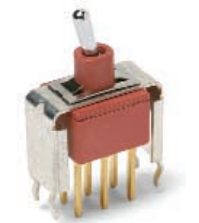
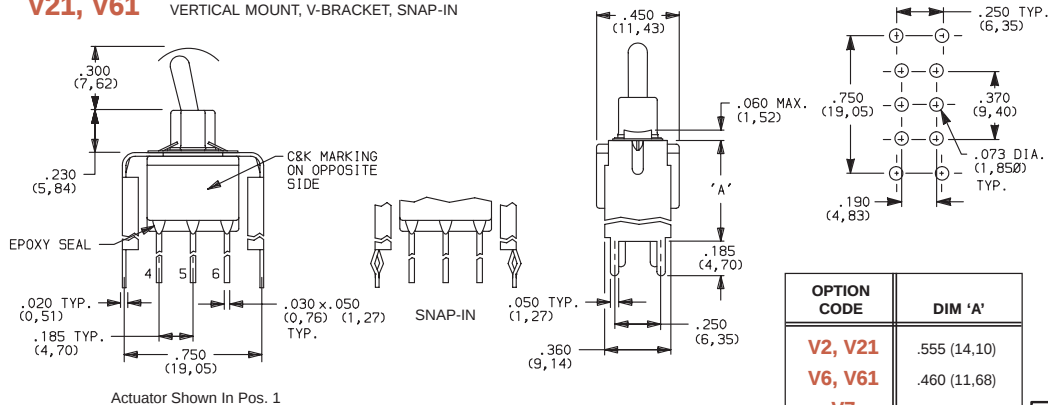
E101MD1_BE
SPDT

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

Not available with Y bushing.

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

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



E201MD1_BE
DPDT

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

Not available with Y bushing.



Cannon



F

Toggle

C&K E Series Sealed Miniature Toggle Switches

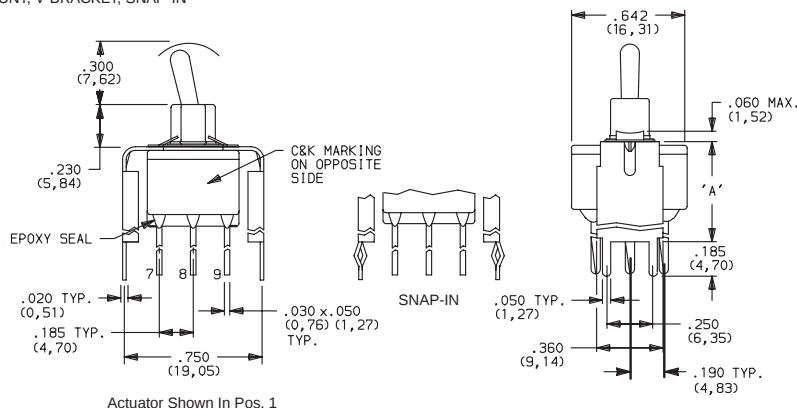
TERMINATIONS

V2, V7, V8 VERTICAL MOUNT, V-BRACKET

V21 VERTICAL MOUNT, V-BRACKET, SNAP-IN

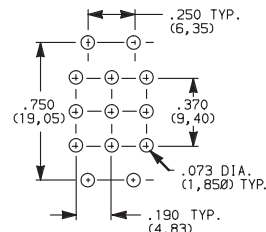


E301MD1_BE
3PDT



Actuator Shown In Pos. 1

PC MOUNTING



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

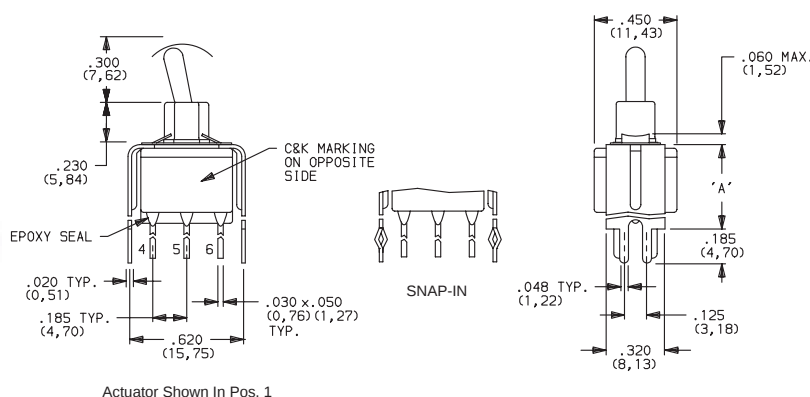
Not available with D9 & Y bushings.

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

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

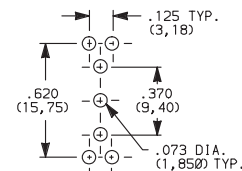


E101MD1_BE
SPDT



Actuator Shown In Pos. 1

PC MOUNTING



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

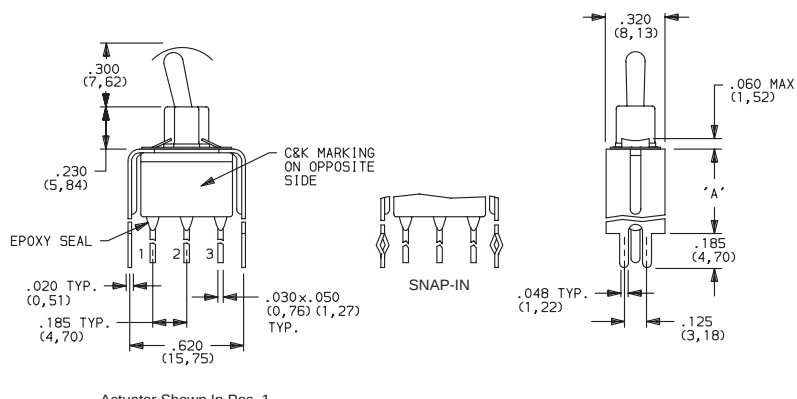
Not available with Y bushing.

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

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

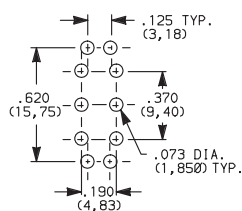


E201MD1_BE
DPDT



Actuator Shown In Pos. 1

PC MOUNTING



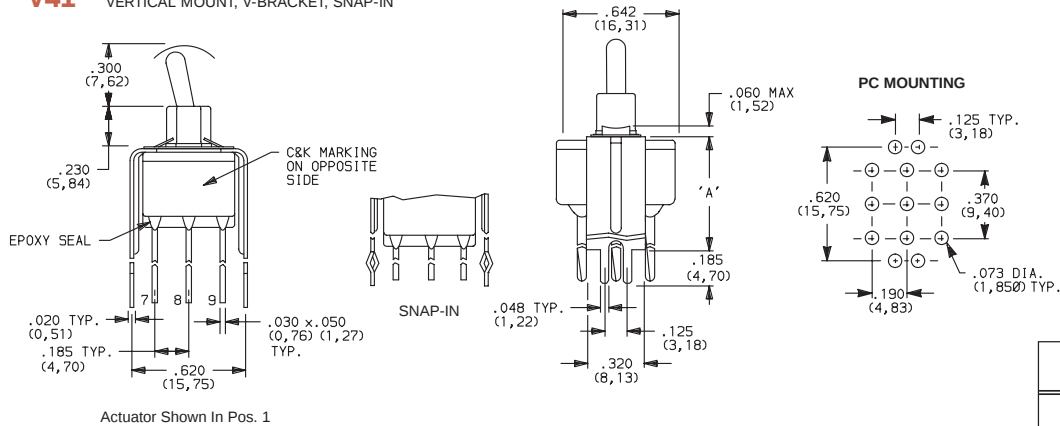
OPTION CODE	DIM 'A'
V3, V31	.460 (11,68)
V4, V41	.630 (16,00)
V9	1.150 (29,21)

Not available with Y bushing.

TERMINATIONS

V4, V9 VERTICAL MOUNT, V-BRACKET

V41 VERTICAL MOUNT, V-BRACKET, SNAP-IN



Not available with D9 & Y bushings.



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

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. 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.
L		TIN-LEAD ⁶		

CONTACT MATERIAL/APPLICATION RECOMMENDATIONS—SEE SECTION N.

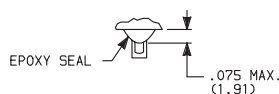
- 1 CONTACTS & TERMINALS: Copper alloy, with gold plate over nickel plate.
- 2 END CONTACTS: Coin silver, with gold plate over nickel plate.
- 3 CENTER CONTACTS & ALL TERMINALS: Copper alloy, with gold plate over nickel plate.
- 4 END CONTACTS: Coin silver, silver plated.
- 5 CENTER CONTACT & ALL TERMINALS: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

K, L & M contact materials not available with Z & Z3 terminations.

SEAL

E (STD.) EPOXY SEAL



F

Toggle