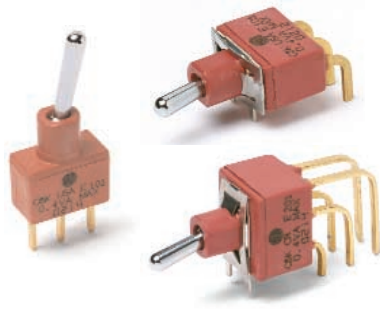


# C&K E Series Sealed Miniature Toggle Switches



## 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: 10<sup>9</sup> Ω min.

ELECTROSTATIC DISCHARGE (ESD) OPTION: F1 conductive bushing only. Dissipates up to 20,000 V DC from actuator to ground.

DIELECTRIC STRENGTH: 1000 Vrms min. @ sea level.

OPERATING TEMPERATURE: -30°C to 85°C.

SOLDERABILITY: Per MIL-STD-202F method 208D, or EIA RS-186E method 9 (1 hour steam aging).

DEGREE OF PROTECTION: IP57; Protection against harmful dust deposit, full-scale voltage protection, temporary immersion.

## Materials

CASE & BUSHING: Glass filled nylon 6/6, flame retardant, heat stabilized (UL 94V-0). F1 conductive bushing option is impregnated with carbon fibers.

ACTUATOR: Brass, chrome plated with internal o-ring seal standard.

SWITCH SUPPORT: Brass or steel, 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.

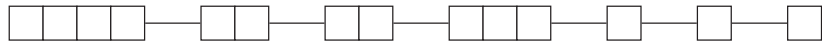
TERMINAL SEAL: Epoxy.

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



F

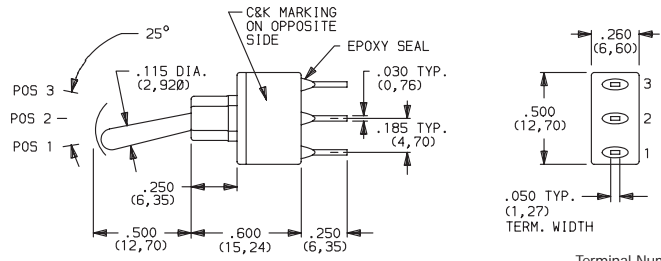
Toggle

# 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	
SP	E101 (STD.)	ON	NONE	ON	2-3	N/A	2-1	
	E103 (STD.)	ON	OFF	ON	2-3	OPEN	2-1	
	E105	MOM.	OFF	MOM.				
	E107	ON	OFF	MOM.				
	E108	ON	NONE	MOM.				

### SPDT

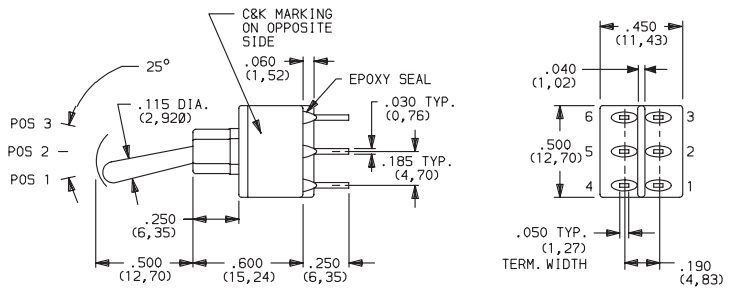


Part number shown: E101SD1CBE

Terminal Numbers For Reference Only

DP	E201 (STD.)	ON	NONE	ON	2-3,5-6	N/A	2-1,5-4	
	E203 (STD.)	ON	OFF	ON	2-3,5-6	OPEN	2-1,5-4	
	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.	2-3,5-6	2-3,5-4	2-1,5-4		

### DPDT



Part number shown: E201SD1CBE

Terminal Numbers For Reference Only

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.



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	
3P	E301 (STD.)	ON	NONE	ON	2-3,5-6,8-9	N/A	2-1,5-4,8-7	
<b>3PDT</b> Part number shown: E301SD1CBE								

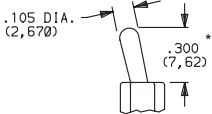
MOM. = Momentary

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

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

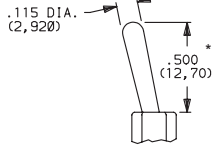
## ACTUATOR

**M** (STD.) .300" HIGH



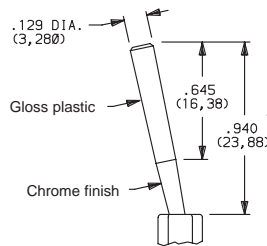
Standard when ordered with A, A3, AV2, AV3, V2-V61 terminations. Finish: Chrome.

**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

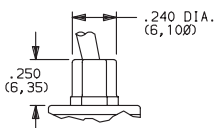
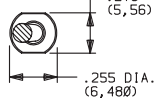
Other colors available, consult Customer Service Center. No color choice required for S & M actuators.

\* 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

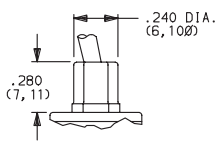
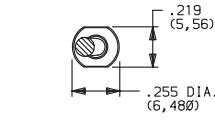
**F1** (STD.) ESD CONDUCTIVE BUSHING, .250" HIGH, UNTHREADED



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.

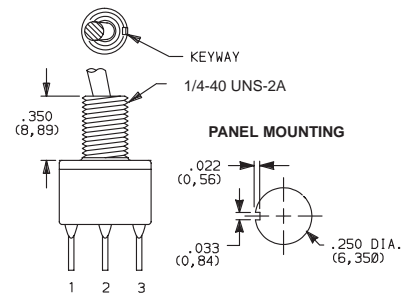
**D9** .280" HIGH, UNTHREADED



E3XX models not available with D9 bushing.

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 & 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.

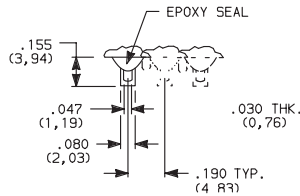


Dimensions are shown: IN (mm)  
Dimensions subject to change

# C&K E Series Sealed Miniature Toggle Switches

## TERMINATIONS

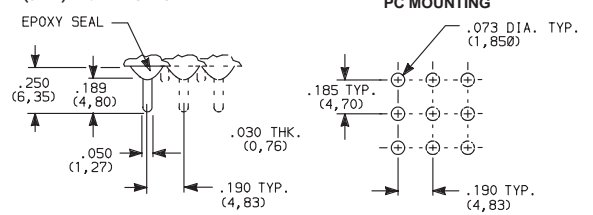
### Z (STD.) SOLDER LUG



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

SPDT thru 3PDT

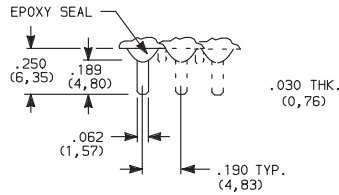
### C (STD.) PC THRU-HOLE



Not available with F1 conductive bushing.

SPDT thru 3PDT

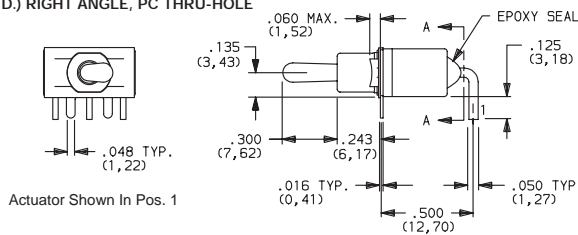
### Z3 QUICK CONNECT



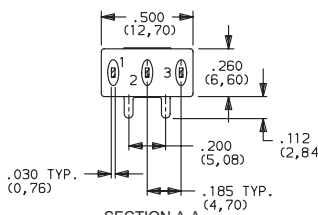
Not available with F1 conductive bushing or K, L or M contact material. Mating quick connector available; order part number 530100000, page F-26.

SPDT thru 3PDT

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



Actuator Shown In Pos. 1

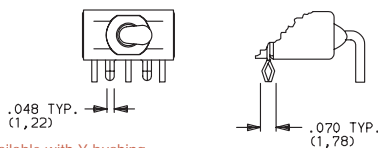


SECTION A-A  
Terminal Nos. For Reference Only



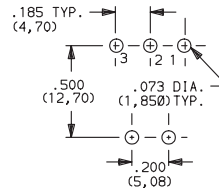
E101MD1ABE  
Horizontal Actuation  
SPDT

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

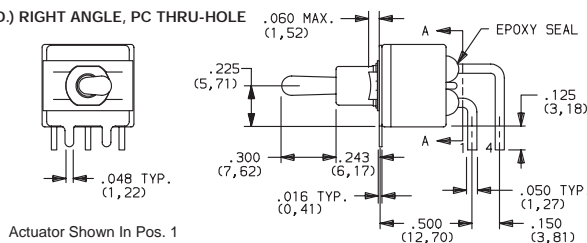


Not available with Y bushing.  
Terminal bend radii and lead-in manufacturing option.

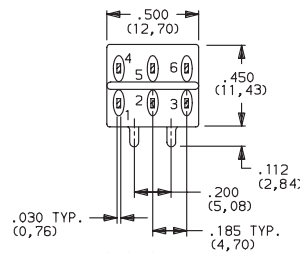
### PC MOUNTING



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



Actuator Shown In Pos. 1

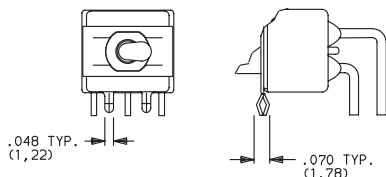


SECTION A-A  
Terminal Nos. For Reference Only

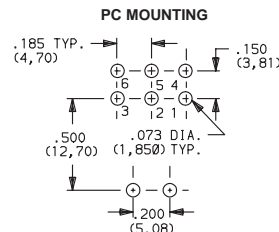


E201MD1ABE  
Horizontal Actuation  
DPDT

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



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



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



F

Toggle

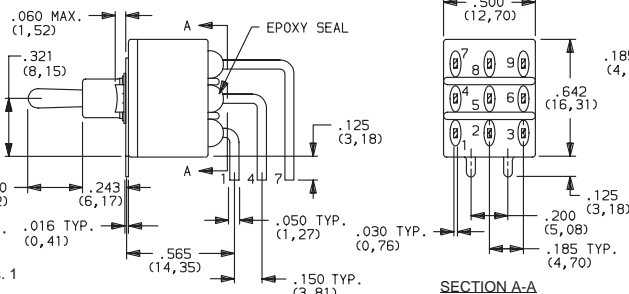
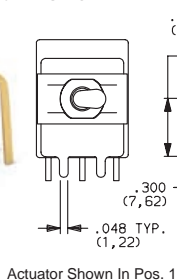
# C&K E Series Sealed Miniature Toggle Switches

## TERMINATIONS

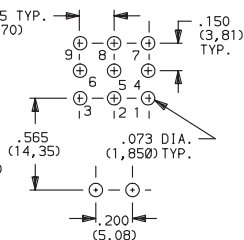
### A (STD.) RIGHT ANGLE, PC THRU-HOLE



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



#### PC MOUNTING

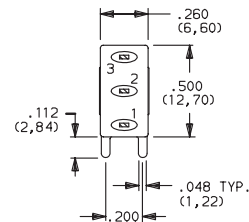
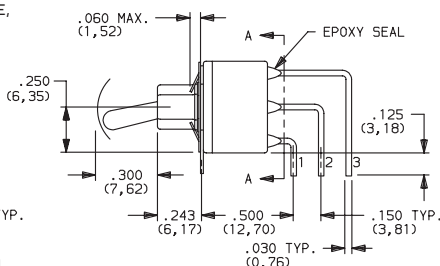
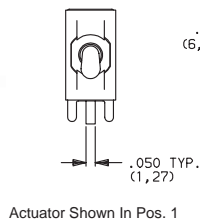


Not available with D9 & Y bushings.  
Terminal bend radii and lead-in manufacturing option.

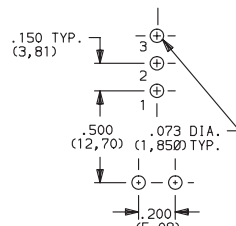
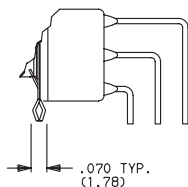
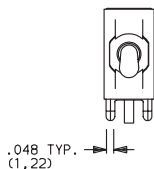
### AV2 (STD.) VERTICAL RIGHT ANGLE, PC THRU-HOLE, .150" PITCH



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



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

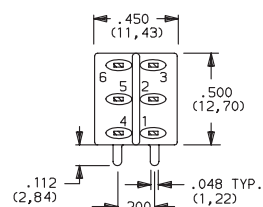
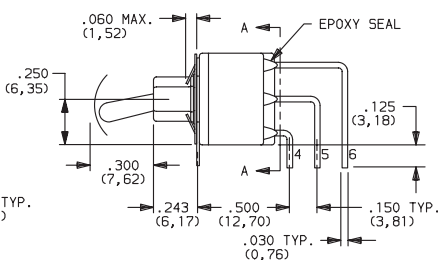
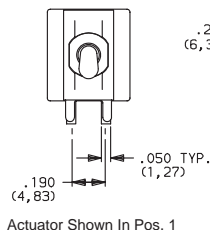


Not available with Y bushing.  
Terminal bend radii and lead-in manufacturing option.

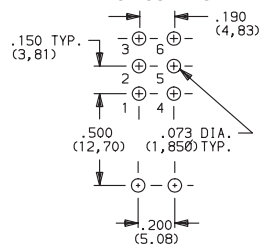
### AV2 (STD.) VERTICAL RIGHT ANGLE, PC THRU-HOLE, .150" PITCH



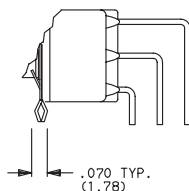
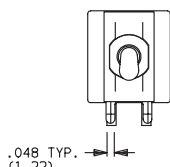
**E201MD1AV2BE**  
Vertical Actuation  
**DPDT**



#### PC MOUNTING



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



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

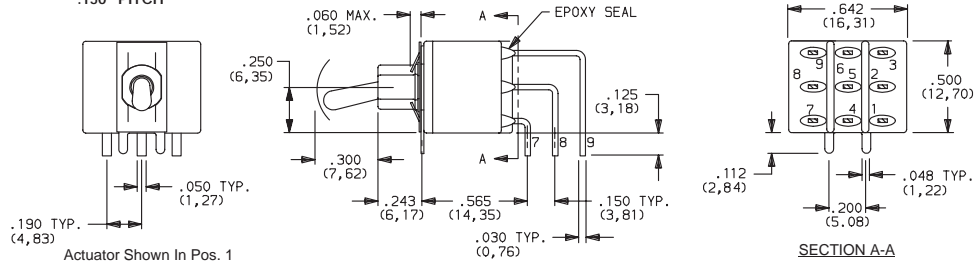


Dimensions are shown: IN (mm)  
Dimensions subject to change

# C&K E Series Sealed Miniature Toggle Switches

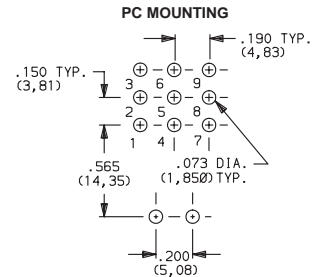
## TERMINATIONS

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



E301MD1AV2BE  
Vertical Actuation  
3PDT

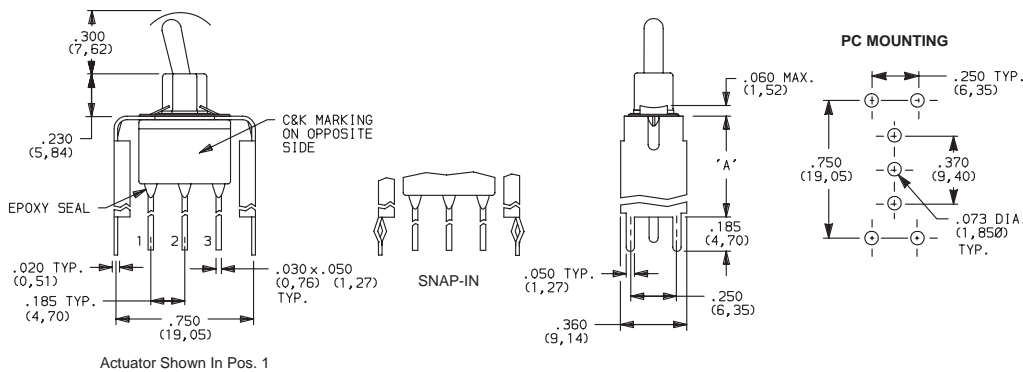
### AV3 VERTICAL RIGHT ANGLE, SNAP-IN, PC THRU-HOLE .150" PITCH



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



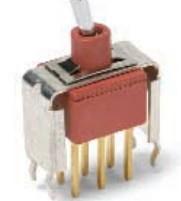
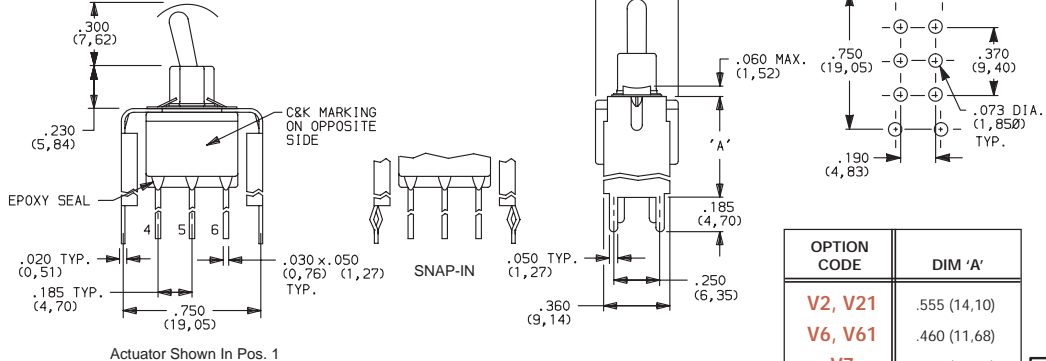
E101MD1\_BE  
SPDT

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.



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



Cannon



F

Toggle

# C&K E Series Sealed Miniature Toggle Switches

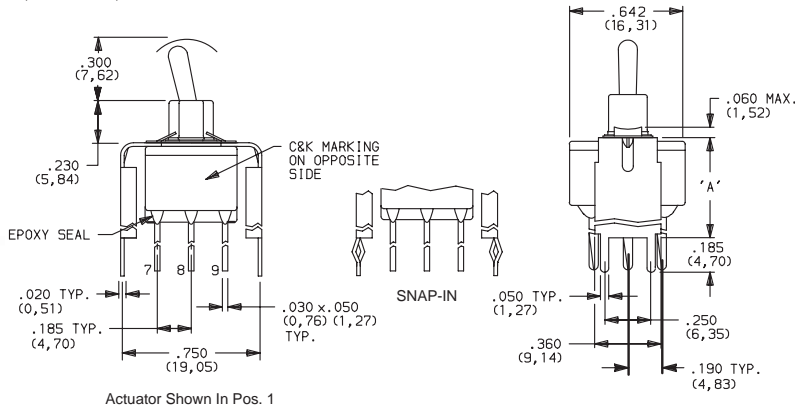
## TERMINATIONS

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

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

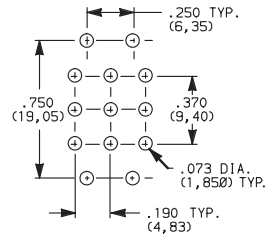


E301MD1\_BE  
3PDT



Actuator Shown In Pos. 1

### PC MOUNTING



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

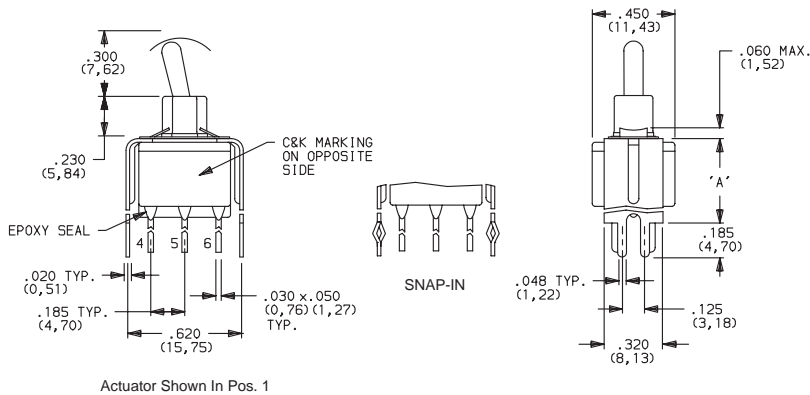
Not available with D9 & Y bushings.

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

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

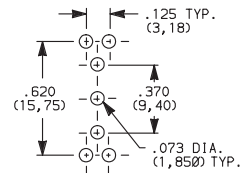


E101MD1\_BE  
SPDT



Actuator Shown In Pos. 1

### PC MOUNTING



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

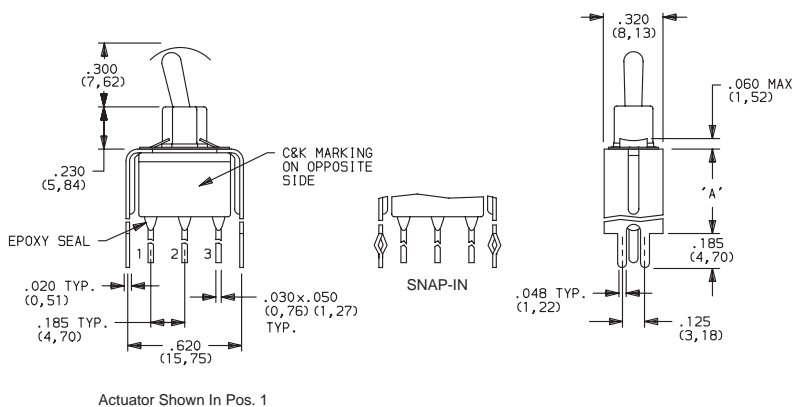
Not available with Y bushing.

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

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

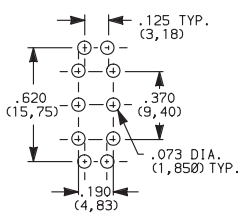


E201MD1\_BE  
DPDT



Actuator Shown In Pos. 1

### PC MOUNTING



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



Third Angle  
Projection

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

Not available with Y bushing.



Cannon

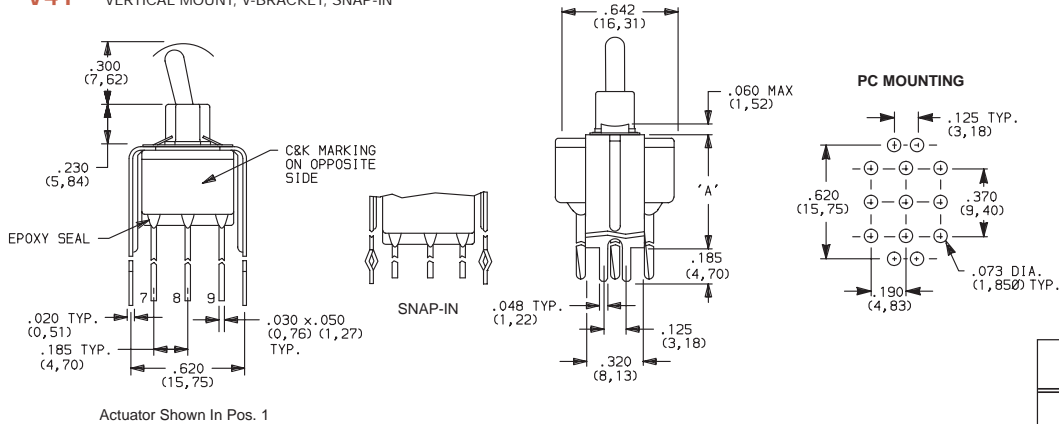
Toggle  
F

# C&K E Series Sealed Miniature Toggle Switches

## TERMINATIONS

**V4, V9** VERTICAL MOUNT, V-BRACKET

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



E301MD1\_BE  
3PDT

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

Not available with D9 & Y bushings.

## CONTACT MATERIAL

OPTION CODE	CONTACT MATERIAL	TERMINAL PLATING	RATINGS	
<b>B (STD.)</b>	GOLD <sup>1</sup>	GOLD <sup>1</sup>	LOW LEVEL/DRY CIRCUIT	0.4 VA MAX. @ 20 V AC OR DC MAX.
<b>K</b>		TIN-LEAD <sup>6</sup>		
<b>Q</b>	SILVER <sup>4,5</sup>	SILVER <sup>5</sup>	POWER	E1XX & E2XX MODELS: 7.5 AMPS @ 125 V AC OR 28 V DC; 3 AMPS @ 250 V AC. E3XX MODELS: 5 AMPS @ 125 V AC OR 28 V DC; 2 AMPS @ 250 V AC.
<b>M</b>		TIN-LEAD <sup>6</sup>		
<b>G</b>	GOLD OVER SILVER <sup>2,3</sup>	GOLD <sup>3</sup>	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.
<b>L</b>		TIN-LEAD <sup>6</sup>		

CONTACT MATERIAL/APPLICATION RECOMMENDATIONS—SEE SECTION N.

<sup>1</sup> CONTACTS & TERMINALS: Copper alloy, with gold plate over nickel plate.

<sup>2</sup> END CONTACTS: Coin silver, with gold plate over nickel plate.

<sup>3</sup> CENTER CONTACTS & ALL TERMINALS: Copper alloy, with gold plate over nickel plate.

<sup>4</sup> END CONTACTS: Coin silver, silver plated.

<sup>5</sup> CENTER CONTACT & ALL TERMINALS: Copper alloy, silver plated.

<sup>6</sup> 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



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