

Toggles

Product Selection Guide

Toggles						
Series	7000	E	ET	T	GT	9000
Switch Type	Miniature	Miniature	Subminiature	Subminiature	Ultraminiature	Power
Poles/Throws	SPDT, DPDT, 3PDT, 4PDT	SPDT, DPDT, 3PDT	SPST, SPDT, DPDT	SPST, SPDT, DPDT	SPST, SPDT, DPST, DPDT	DPDT
Maximum Current Silver/Gold	5 Amps	7.5 Amps/ 5 Amps	3 Amps/ 2 Amps	3 Amps/ 2 Amps	0.4 VA	10 Amps
Process Sealed		•	•		•	
PCB Mount Options						
Vertical	•	•	•	•	•	•
Right Angle	•	•	•	•	•	
Vertical Right Angle	•	•	•	•	•	•
Surface Mount Options						
Vertical					•	
Right Angle			•		•	
Panel Mount Options						
Rear Mount	•	•		•		•
Termination Options						
PCB Thru-hole	•	•	•	•	•	•
Wire Wrap	•	•	•	•		
Solder Lug	•	•		•		•
Quick Connect	•	•				•
Other Available Options						
Support Brackets	•	•	•	•	•	•
Snap-in Retention	•	•	•			
ESD Protection	•	•	•	•		
Tape & Reel			•		•	
Bushing Options						
10-48				•		
1/4-40	•	•		•		•
15/32	•					•
M6P 0.75 (Metric)	•					
Page No.	F-3	F-17	F-25	F-32	F-38	F-43



F

Toggle



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

7000 Series Miniature Toggle Switches

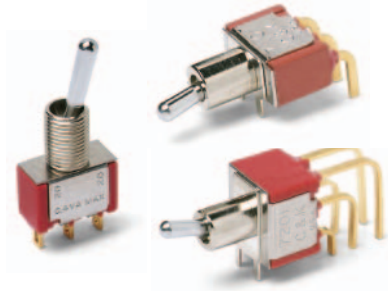
Features/Benefits

- Multi-pole and multi-position
- Wide variety of actuator and termination options
- Epoxy terminal-seal compatible with bottom wash cleaning
- RoHS complaint models available



Typical Applications

- Telecommunications
- Instrumentation
- Medical equipment



Specifications

CONTACT RATING: B contact material: 0.4 VA max. @ 20 V AC or DC max. Q contact material: 5 AMPS @ 120 V AC or 28 V DC; 2 AMPS @ 250 V AC. See page G-16 for additional ratings.

ELECTRICAL LIFE: 7X01 and UX1 models: 100,000 make-and-break cycles at full load. All other models: 40,000 cycles.

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

INSULATION RESISTANCE: 10⁹ Ω min.

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).

For materials see page F-4.

NOTE: Any models supplied with P, S R, Q, B or G contact material are RoHS compliant and compatible.

NOTE: Specifications 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-4 thru F-16. For additional options not shown in catalog, consult our Customer Service Center.

Switch Function	Actuator	Bushing	Terminations	Contact Material	Seal	Actuator Color/Finish	KXX Actuator Color/Finish	Bushing Finish
7101 SP On-None-On	M .200" high	D .280 high, keyway	A Right angle, PC thru-hole	B Gold	E Epoxy	NONE Bright chrome	NONE Natural aluminum	NONE Nickel on all bushings (except D8, satin chrome)
7103 SP On-Off-On	P3 Flatted, anti-rotation, .450" high	H .296 high, flat	AV2 Vert. right angle, PC thru-hole	P Gold, matte-tin	I Epoxy potted base	2 Black	2 Black anodized aluminum	2 Black
7105 SP Mom.-Off-Mom.	S .420" high	Y .350 high, keyway	C PC Thru-hole	Q Silver		3 Red	3 Red anodized aluminum	
7107 SP On-Off-Mom.	T .687" high, 15/32 bushing	NONE No bushing choice required	V3 .460 high, V-bracket	S Silver, matte-tin		S Satin chrome	7 Blue anodized aluminum	
7108 SP On-None-Mom.	K2 Locking lever, .704" high	CW Splashproof	Z Solder lug	G Gold over silver				
7109 SP None-On-Mom.	D8 .280" high, flat	D8 .280" high, flat	A2 Right angle, PC thru-hole	R Gold over silver, matte-tin				
7201 DP On-None-On	D9 .280" high, keyway	H3 .315" high, keyway	A3 Right angle, PC thru-hole					
7203 DP On-Off-On	K9 Locking lever, .704" high	H4 8mm high, keyway	A4 Right angle, PC thru-hole					
7205 DP Mom.-Off-Mom.	K12 Locking lever, .732" high	Y1 .378" high, keyway	AW1 Right angle, extended, PC thru-hole					
7207 DP On-Off-Mom.	K19 Locking lever, .732" high	Y3 8.9mm high, keyway	AW4 Right angle, extended, PC thru-hole					
7208 DP On-None-Mom.	L .840" high	Y4 .378" high, flat	V2 .555" high, V-bracket					
7211 DP On-On-On	L1 .640" high	Y9 .350" high, keyway	V4 .630" high, V-bracket					
7213 DP On-On-Mom.	L1P Anti-rotation, .640" high		V6 .460" high, V-bracket					
7215 DP Mom.-On-Mom.	L2 .550" high		V7 .630" high, V-bracket					
7301 3P On-None-On	L2P Anti-rotation, .550" high		V8 .953" high, V-bracket					
7303 3P On-Off-On	L3 Plastic .940" inch		V9 1.150" high, V-bracket					
7305 3P Mom.-Off-Mom.	L40 Lever handle without cap		V21 .555" high, snap-in V-bracket					
7308 3P On-None-Mom.	L41 .531" high lever handle with cap		V31 .460" high, snap-in V-bracket					
7401 4P On-None-On	L42 .838" high lever handle with cap		V41 .630" high, snap-in V-bracket					
7403 4P On-Off-On	MP Anti-rotation, .200" high		V71 .630" high, snap-in V-bracket					
7405 4P Mom.-Off-Mom.	P1 Flatted, anti-rotation, .840" high		V81 .953" high, snap-in V-bracket					
7408 4P On-None-Mom.	P4 Flatted, anti-rotation, .250" high							
7411 4P On-On-On	SP Anti-rotation, .420" high							
7413 4P On-On-Mom.	T1 .487" high, 15/32 bushing							
7415 4P Mom.-On-Mom.	T1P Anti-rotation, .487" high, 15/32 bushing							
	T2P Flatted, anti-rotation, .610" high, 15/32 bushing							
	TP Anti-rotation, .687" high, 15/32 bushing							

Note: UL/CSA models available, see pages F-4 & F-5.



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



7000 Series
Miniature Toggle Switches

Materials

CASE: Glass filled nylon 6/6, flame retardant, heat stabilized, or diallyl phthalate (DAP) (UL 94V-0).
ACTUATOR: Brass, chrome plated.
BUSHING: Brass or zinc, nickel plated.
HOUSING: Stainless steel.
SWITCH SUPPORT: Brass or steel, tin plated.
END CONTACTS: B contact material: Copper alloy, with gold plate over nickel plate. Q contact material: Coin silver, silver plated.
See page F-15 for additional contact materials.

CENTER CONTACTS & ALL TERMINALS: B contact material: Copper alloy, with gold plate over nickel plate. Q contact material: Copper alloy, silver plated. See above for additional contact materials.
TERMINAL SEAL: Epoxy.
HARDWARE: Nut & Locking Ring: Brass, nickel plated.
Lockwasher: Steel, nickel plated.

NOTE: Materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

SWITCH FUNCTION

Table with 9 columns: NO. POLES, MODEL NO., UL/CSA** MODEL NO., SWITCH FUNCTION (POS. 1, POS. 2, POS. 3), CONNECTED TERMINALS (POS. 1, POS. 2, POS. 3), and SCHEMATIC. It lists various switch models (7101-7109) and their configurations (SP, SPDT).

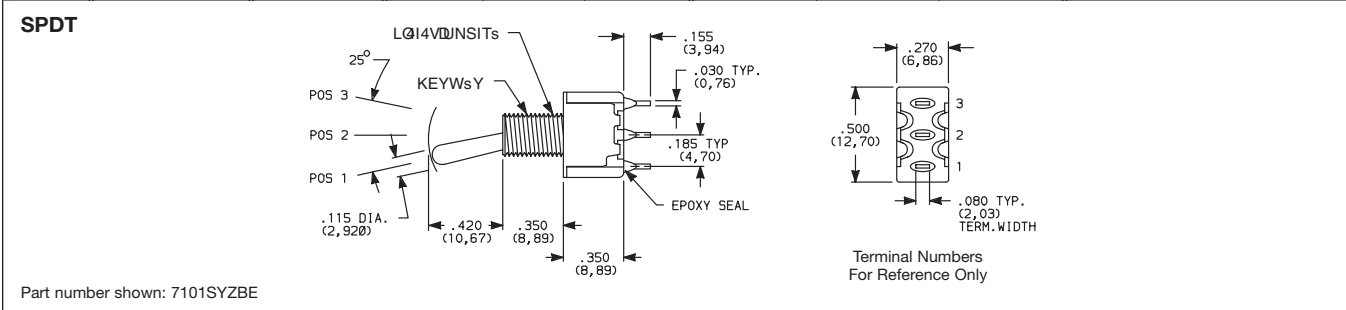
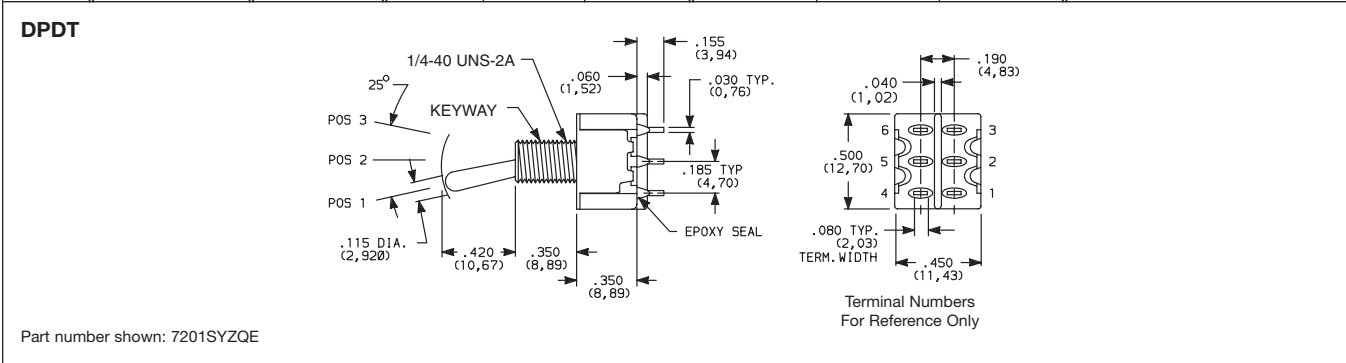


Table with 9 columns: NO. POLES, MODEL NO., UL/CSA** MODEL NO., SWITCH FUNCTION (POS. 1, POS. 2, POS. 3), CONNECTED TERMINALS (POS. 1, POS. 2, POS. 3), and SCHEMATIC. It lists various switch models (7201-7215) and their configurations (DP, DPDT).



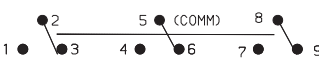
MOM. = Momentary
** U11-U415 model nos. with all options when ordered with G, R, Q or S contact material.
* Wiring for 3-way switch, see Section N.



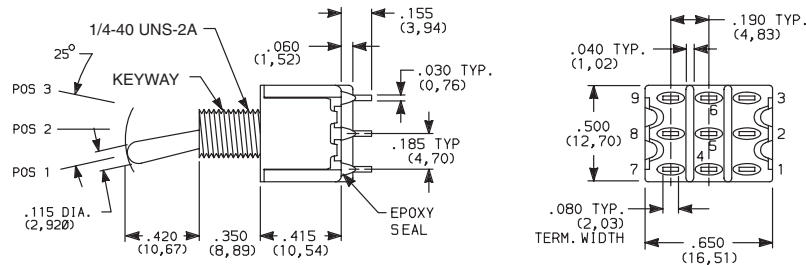
Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

7000 Series Miniature Toggle Switches

SWITCH FUNCTION

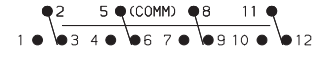
NO. POLES	MODEL NO.	UL/CSA** MODEL NO.	SWITCH FUNCTION			CONNECTED TERMINALS			SCHEMATIC
			POS. 1 	POS. 2 	POS. 3 	POS. 1 	POS. 2 	POS. 3 	
3P	7301	U31	ON	NONE	ON	2-3,5-6,8-9	N/A	2-1,5-4,8-7	
	7303	U33	ON	OFF	ON	2-3,5-6,8-9	N/A	2-1,5-4,8-7	
	7305	U35	MOM.	OFF	MOM.	2-3,5-6,8-9	OPEN	2-1,5-4,8-7	
	7307	U37	ON	OFF	MOM.	2-3,5-6,8-9	N/A	2-1,5-4,8-7	
	7308	U38	ON	NONE	MOM.	2-3,5-6,8-9	N/A	2-1,5-4,8-7	

3PDT

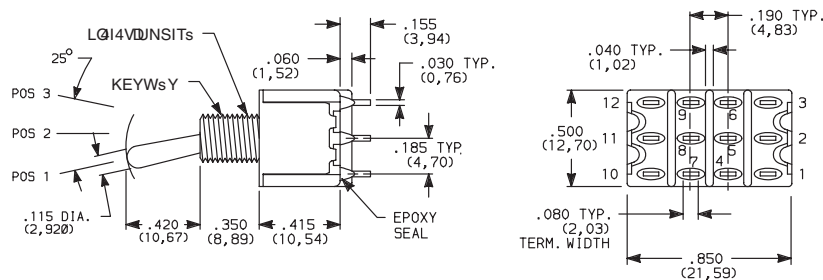


Part number shown: 7301SYZQE

Terminal Numbers
For Reference Only

4P	7401	U41	ON	NONE	ON	2-3,5-6,8-9,11-12	N/A	2-1,5-4,8-7,11-10	
	7403	U43	ON	OFF	ON	2-3,5-6,8-9,11-12	N/A	2-1,5-4,8-7,11-10	
	7405	U45	MOM.	OFF	MOM.	2-3,5-6,8-9,11-12	OPEN	2-1,5-4,8-7,11-10	
	7408	U48	ON	NONE	MOM.	2-3,5-6,8-9,11-12	N/A	2-1,5-4,8-7,11-10	
	7411*	U411*	ON	ON	ON	2-3,5-6,8-9,11-12	2-3,5-4,8-9,11-10	2-1,5-4,8-7,11-10	
	7413*	U413*	ON	ON	MOM.	2-3,5-6,8-9,11-12	2-3,5-4,8-9,11-10	2-1,5-4,8-7,11-10	
	7415*	U415*	MOM.	ON	MOM.	2-3,5-6,8-9,11-12	2-3,5-4,8-9,11-10	2-1,5-4,8-7,11-10	

4PDT



Part number shown: 7401SYZQE

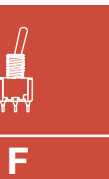
Terminal Numbers
For Reference Only

MOM. = Momentary

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

** U11-U415 model nos.

  all options when ordered with G, Q, R or S contact material.

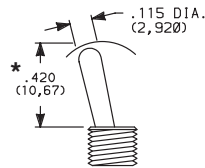


7000 Series Miniature Toggle Switches

ACTUATOR

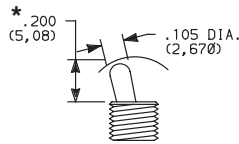
ACTUATOR FINISH

S .420" HIGH ¹
SP ANTIROTATION, .420" HIGH ^{2,3}



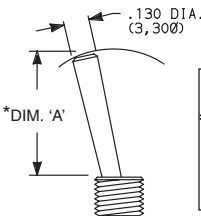
S actuator standard when ordered with C, W-W5, Z & Z3 terminations.
 Caps are available separately, see page F-16.

M .200" HIGH ¹
MP ANTIROTATION, .200" HIGH ^{2,3}



M actuator standard when ordered with all terminations except C, W-W5, Z & Z3.
 Caps are available separately, see page F-16.

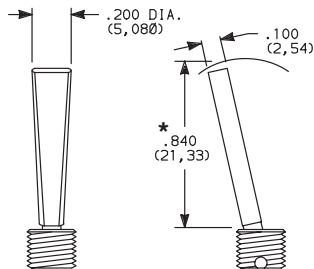
L, L1, L2 .840", .640", .550" HIGH ¹
L1P, L2P ANTIROTATION, .840", .640", .550" HIGH ^{2,3}



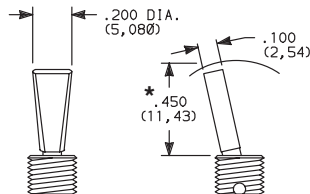
OPTION CODE	DIM 'A'
L	.840 (21,34)
L1, L1P	.640 (16,26)
L2, L2P	.550 (13,97)

Caps are available separately, see page F-16.

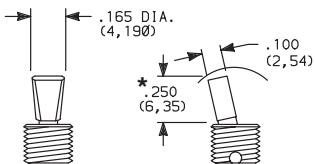
P1 FLATTED WITH ANTIROTATION, .840" HIGH ^{2,3}



P3 FLATTED WITH ANTIROTATION, .450" HIGH ^{2,3}

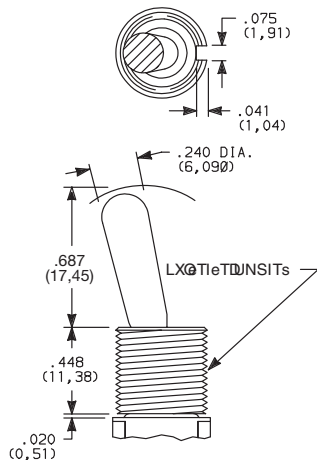


P4 FLATTED WITH ANTIROTATION, .250" HIGH ^{2,3}

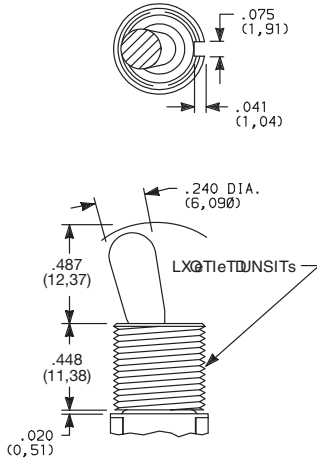


Dress nut part number 709901201 supplied standard with threaded bushing. (Part number 709903201 with metric threaded bushings.)

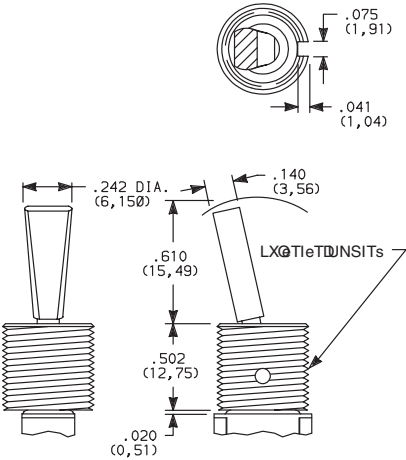
T .687 (17,45) HIGH ^{1,2}
TP ANTIROTATION, .687 (17,45) HIGH, 15/32 BUSHING ^{1,2,3}



T1 .487 (12,37) HIGH ^{1,2}
T1P ANTIROTATION, .487 (12,37) HIGH, 15/32 BUSHING ^{1,2,3}



T2P FLATTED, ANTIROTATION, .610" HIGH, 15/32 BUSHING ^{1,2,3}



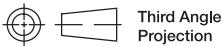
Bushing option code not required unless CW splashproof bushing ordered. TP & T1P actuators not available with CW splashproof bushing. All TXX actuators not available on single pole models with A-A4, AW1-AW4 terminations.

Bushing option code not required. T2P actuator not available with CW splashproof bushing or single pole models with A-A4, AW1-AW4 terminations.

¹ L, L1, L2, M, S & TXX actuators not available with Y1 bushing.
² L1P, L2P, MP, P1, P3, P4, SP & TXX actuators not available with D8 & H4 bushing.
³ Antirotation: Provides anti-"push-in" feature on actuator.
 * Add .070 (1,78) for D, D8 & D9 bushings, subtract .020 (0,51) for H3 bushing.

OPTION CODE	ACTUATOR FINISH
NONE	BRIGHT CHROME-With Nickel Plated Bushing
2	BLACK
S	SATIN CHROME

NOTE: Black hardware is supplied when either black actuators or bushings are specified. For additional hardware, see Section N.

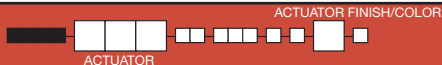


Third Angle Projection

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

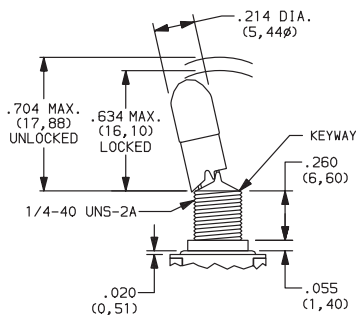
7000 Series Miniature Toggle Switches

ACTUATOR

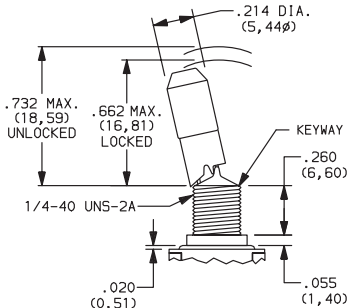


K2 LOCKING LEVER, .704" HIGH
(threaded)
K9 LOCKING LEVER, .704" HIGH
(unthreaded)

K12 LOCKING LEVER, .732" HIGH
(threaded)
K19 LOCKING LEVER, .732" HIGH
(unthreaded)



Replaces K, K8



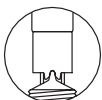
Replaces K1, K18

OPTION CODE	ACTUATOR CAP FINISH
NONE	NATURAL ALUMINUM—With Nickle Plated Bushing
2	BLACK ANODIZED ALUMINUM
3	RED ANODIZED ALUMINUM
7	BLUE ANODIZED ALUMINUM

Locking Positions



-01 Models
2 Position lock



-03 & -11 Models
3 Position lock



-05, -09 & -15 Models
1 Position lock



-07 & -13 Models
2 Position lock



-08 Models
1 Position lock

NOTE: To prevent accidental actuation, toggle must be lifted before being actuated. When released, toggle will lock in place. Overtightening mounting nut may cause actuator to bind.

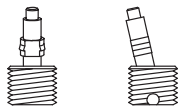
Locking levers supplied with bushing shown.

Bushing option code not required unless CW splashproof bushing ordered.

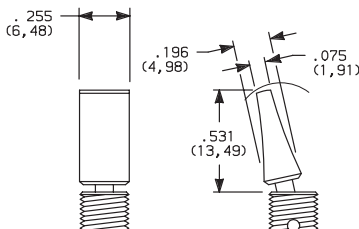
L40 LEVER HANDLE WITHOUT CAP

L41 PLASTIC LEVER HANDLE WITH ANTIROTATION AND CAP, P/N 4810

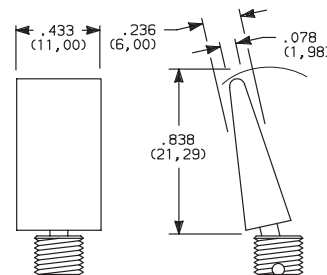
L42 PLASTIC LEVER HANDLE WITH ANTIROTATION AND CAP, P/N 4811



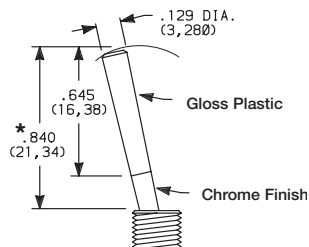
No color choice required



Finish: Matte (L41 & L42).



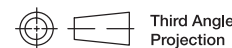
L3 PLASTIC .940" HIGH



OPTION CODE	PLASTIC ACTUATOR COLORS
NONE	No Actuator Color (L40 option)
2	BLACK
3	RED

* Add .070 (1,78) for D, D8 & D9 bushings, subtract .020 (0,51) for H3 bushing.

NOTE: Lever handle for L41 & L42 actuators supplied, but not installed. For interchangeability, order L40 actuator option and lever handles separately, see page F-16. L4X actuators not available with H4, Y1, Y4 bushings. Antirotation: Provides anti-'push-in' feature on actuator.



Third Angle
Projection

Dimensions are shown: Inches (mm)
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C&K



Toggle

7000 Series Miniature Toggle Switches

BUSHING



Y .350" HIGH, THREADED, KEYWAY
Y9 .350" HIGH, UNTHREADED, KEYWAY

No bushing choice required with KXX, TXX actuators. (exception: Specify CW if splashproof bushing desired).

NONE NO BUSHING

D .280" HIGH, THREADED, KEYWAY
D8 .280" HIGH, UNTHREADED, FLAT ³
D9 .280" HIGH, UNTHREADED, KEYWAY

D9 bushing standard with all terminations except C, W-W5, Z or Z3. Add .070 (1,78) to all actuators lengths with D, D8 & D9 bushings.

H .296" HIGH, FLAT THREADED, HIGH TORQUE ^{1,2}

MFG. OPTION-RELIEF OR IMPERFECT THD.

H3 .315" HIGH, KEYWAY THREADED, HIGH TORQUE ^{1,2}

MFG. OPTION-RELIEF OR IMPERFECT THD.

Subtract .020 (0,51) from all actuator lengths for H3 bushing.

Y bushing standard with C, W-W5, Z or Z3 terminations.

H4 8mm HIGH, KEYWAY, THREADED, METRIC HIGH TORQUE ^{1,2,3}

MFG. OPTION-RELIEF OR IMPERFECT THD.

Y1 .378" HIGH, KEYWAY, THREADED, HIGH TORQUE ^{1,2,4}

MFG. OPTION-RELIEF OR IMPERFECT THD.

Y3 8.9mm HIGH, KEYWAY, THREADED, METRIC

MFG. OPTION-RELIEF OR IMPERFECT THD.

Y4 .378" HIGH, FLAT, THREADED, HIGH TORQUE ^{1,2,5}

MFG. OPTION-RELIEF OR IMPERFECT THD.

CW THREADED, SPLASHPROOF ^{1,2}

For $\frac{1}{16}$ to $\frac{1}{4}$ Actuators M

IP67 Degree of protection, totally protected against dust, full-scale voltage protection, temporary immersion. Internal actuator seal standard. External bushing seal available separately from APM Hexseal, part # MFS-60064.

For Actuators Other than $\frac{1}{16}$ to $\frac{1}{4}$ M

IP67 Degree of protection, totally protected against dust, full-scale voltage protection, temporary immersion. Internal actuator seal and external bushing seal washer standard.

OPTION CODE	BUSHING FINISH
NONE	NICKEL on all bushings except 'D8' satin chrome.
2	BLACK

- ¹ Will withstand 12 in.-lbs. of torque with no distortion.
- ² CW, H, H3, H4, Y1 & Y4 bushings not available on single pole models with A4 terminations.
- ³ D8 & H4 bushings available only with L, L1, L2, M & S actuators.
- ⁴ Y1 bushing available only with LXP, MP, PX & SP actuators.
- ⁵ Y4 bushing not available with L4X actuators.
- NOTE:** Two mounting nuts, locking ring and lockwasher supplied standard with threaded bushings. Black hardware is supplied when either black bushings or actuators are specified. Optional mounting nut and locking ring styles and finishes available, see Section N.

PANEL MOUNTING

LQ14VWNSIT

Without Docking Ring M With Standard Docking Ring M With Small Docking Ring M

METRUM

Without Docking Ring M With Docking Ring M

LX14T1WNSIT

Without Docking Ring M With Standard Docking Ring M



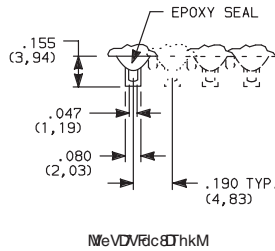
Third Angle
Projection

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

7000 Series Miniature Toggle Switches

TERMINATIONS

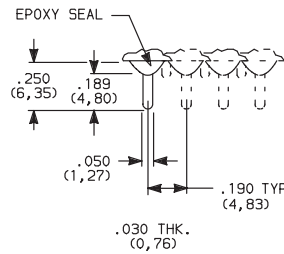
Z SOLDER LUG



SPDT thru 4PDT

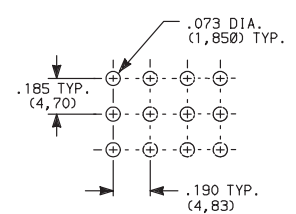
Not available with P, R or S contact materials.

C PC THRU-HOLE

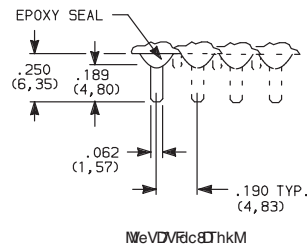


SPDT thru 4PDT

PC MOUNTING



Z3 QUICK CONNECT

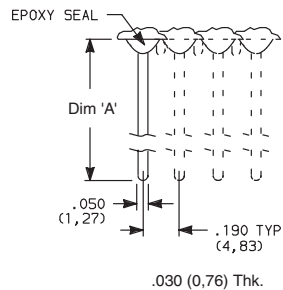


SPDT thru 4PDT

Not available with P, R or S contact materials.
Mating quick connector available, order part number 530100000, page F-16.

W, W1, W3, W4, W5 WIRE WRAP

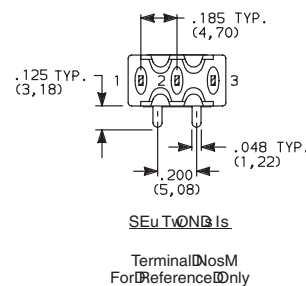
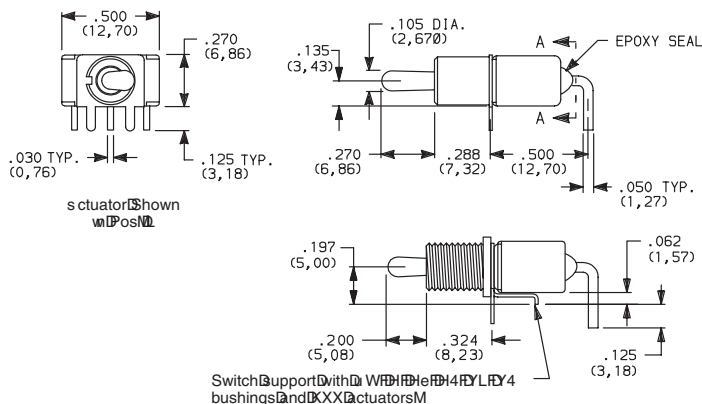
WIRE WRAP



SPDT thru 4PDT

OPTION CODE	DIM 'A'
W	.750 (19,05)
W1	.964 (24,48)
W3	.425 (10,80)
W4	1.062 (26,97)
W5	1.305 (33,15)

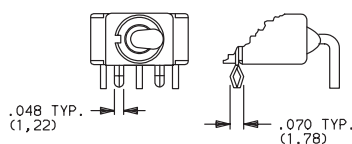
A RIGHT ANGLE, PC THRU-HOLE



7101MD9ABE
Horizontal Actuation
SPDT

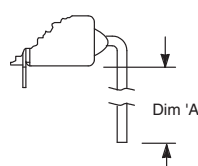
Part No. Shown: 7101MHABE

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



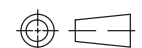
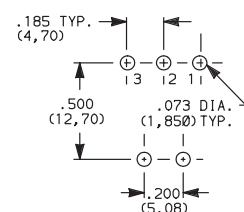
Not available with I seal option.
Terminal bend radii and lead-in manufacturing option.

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



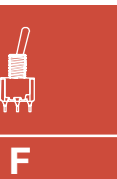
OPTION CODE	DIM 'A'
AW1	.72 (18,3)
AW4	.83 (21,1)

PC MOUNTING



Third Angle
Projection

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



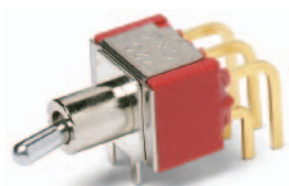
Toggle

7000 Series Miniature Toggle Switches

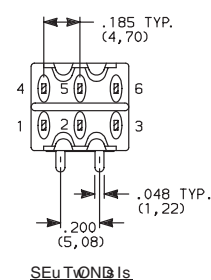
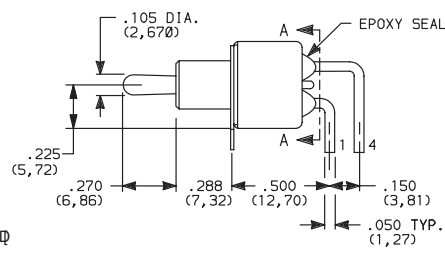
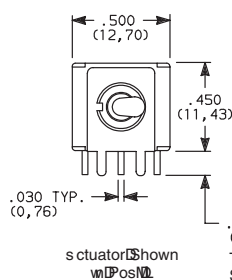
TERMINATIONS



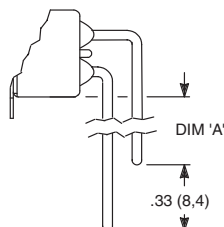
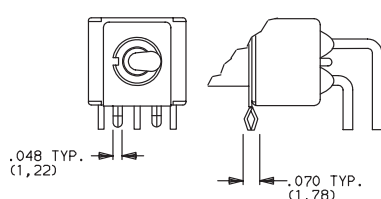
A RIGHT ANGLE, PC THRU-HOLE



7201MD9ABE
Horizontal Actuation
DPDT



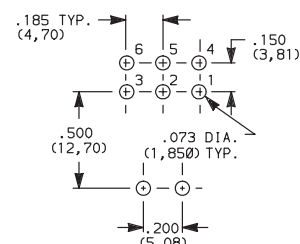
A3 RIGHT ANGLE, SNAP-IN, PC THRU-HOLE



OPTION CODE	DIM 'A'
AW1	.40 (10,2)
AW4	.50 (12,7)

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

PC MOUNTING

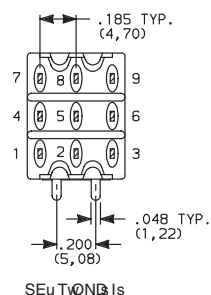
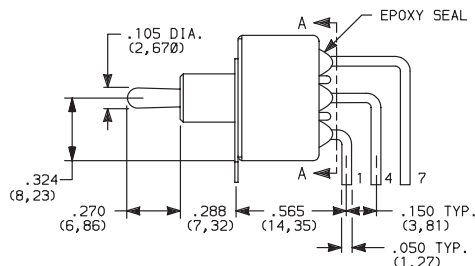
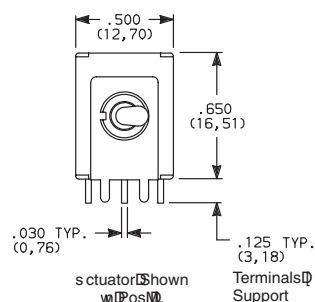


Not available with I seal option.
Terminal bend radii and lead-in manufacturing option.

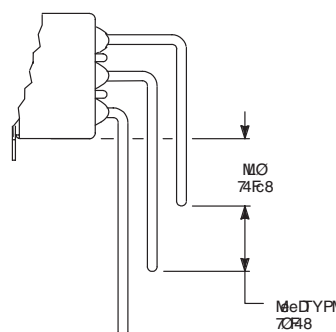
A RIGHT ANGLE, PC THRU-HOLE



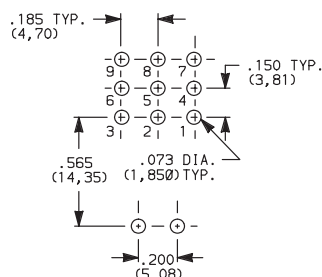
7301MD9ABE
Horizontal Actuation
3PDT



AW4 RIGHT ANGLE, EXTENDED, PC THRU-HOLE



PC MOUNTING

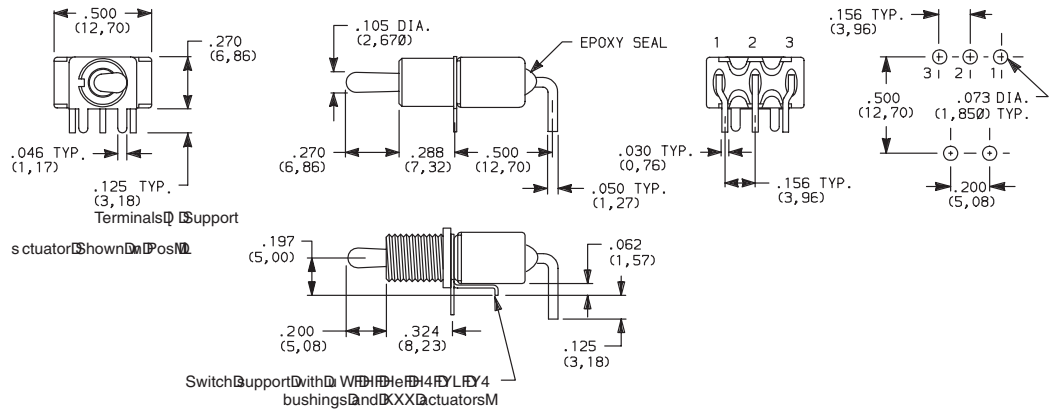


Not available with I seal option.
Terminal bend radii and lead-in manufacturing option.

7000 Series Miniature Toggle Switches

TERMINATIONS

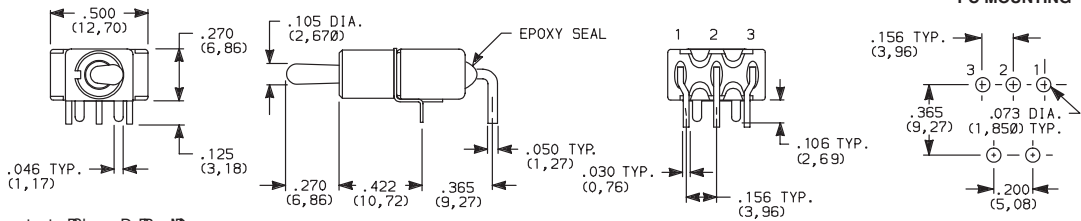
A2 RIGHT ANGLE, PC THRU-HOLE, .156" PITCH



7101MHA2BE
Horizontal Actuation
SPDT

Not available with TXX actuators and I seal.
Terminal bend radii and lead-in manufacturing option.

A4 RIGHT ANGLE, PC THRU-HOLE .156" PITCH

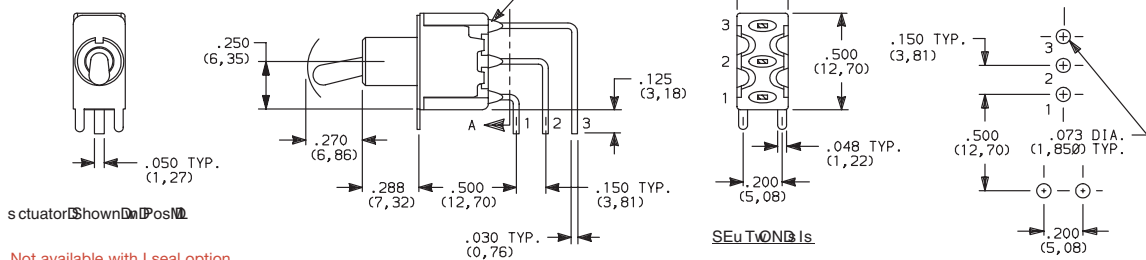


7101MD9A4BE
Horizontal Actuation
SPDT

Not available with KXX & TXX actuators, CW, H, H3, H4, Y1 & Y4 bushings, and I seal. Terminal bend radii and lead-in manufacturing option.

NOTE: The A4 option is available with any contact material and can be UL recognized and CSA certified. The PC pattern must clear switch support legs.

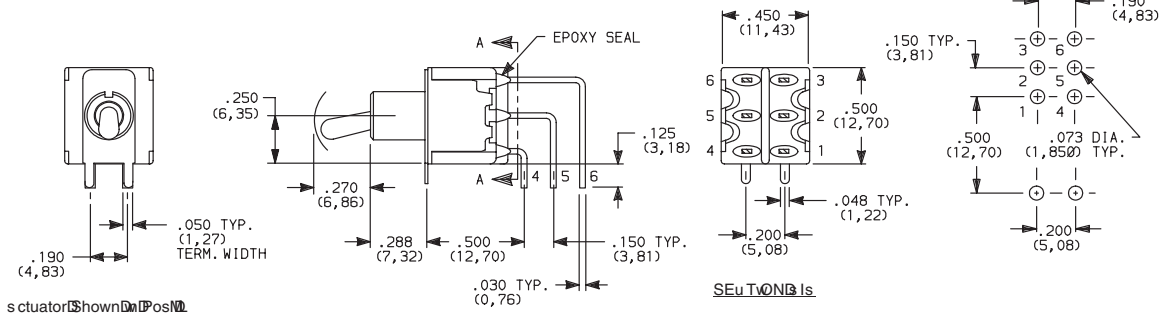
AV2 VERTICAL RIGHT ANGLE, PC THRU-HOLE, .150" PITCH



7101MD9AV2BE
Horizontal Actuation
SPDT

Not available with I seal option.
Terminal bend radii and lead-in manufacturing option.

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



7201MD9AV2BE
Vertical Actuation
DPDT

Not available with I seal option.
Terminal bend radii and lead-in manufacturing option.



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

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F

Toggle

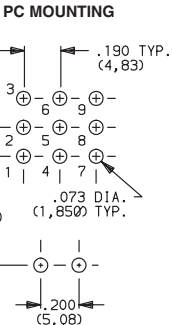
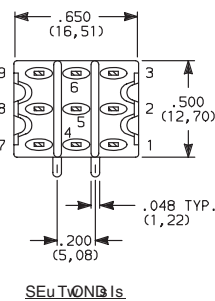
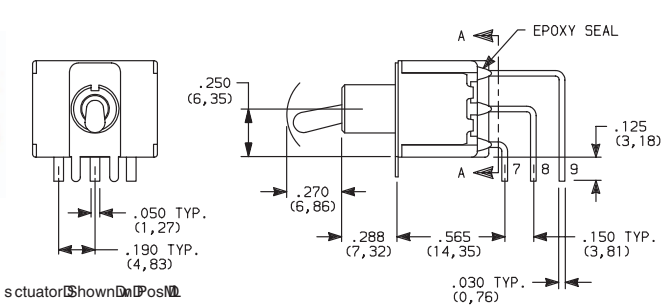
7000 Series Miniature Toggle Switches

TERMINATIONS

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



7301MD9AV2BE
Vertical Actuation
3PDT

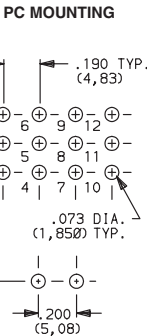
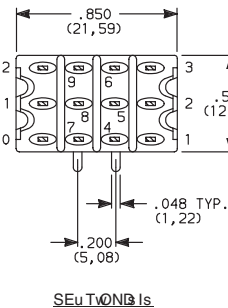
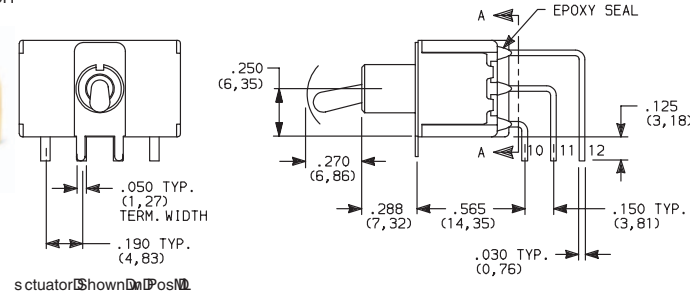


Not available with I seal option.
Terminal bend radii and lead-in manufacturing option.

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



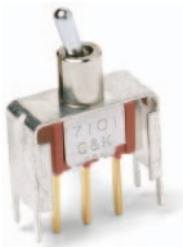
7401MD9AV2BE
Vertical Actuation
4PDT



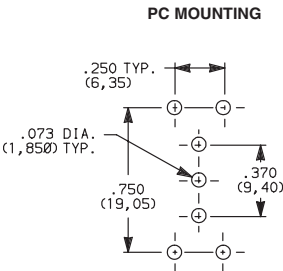
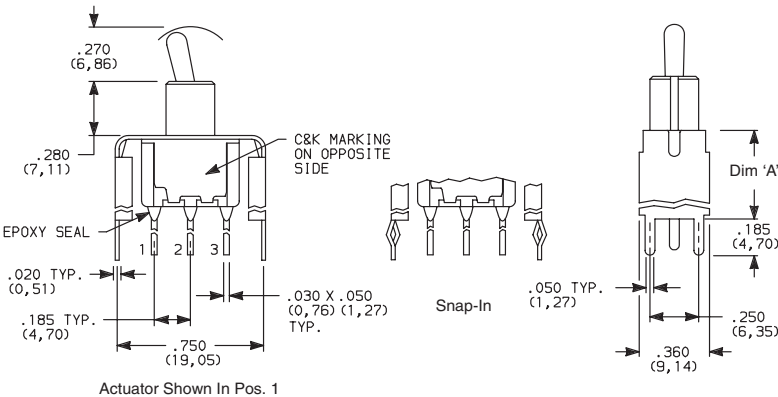
Not available with I seal option.
Terminal bend radii and lead-in manufacturing option.

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

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



7101MD9_BE
SPDT



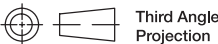
OPTION CODE	DIM 'A'
V2, V21	.555 (14,10)
V6	.460 (11,68)
V7, V71	.630 (16,00)
V8, V81	.953 (24,21)

Not available with I seal option.



F

Toggle



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

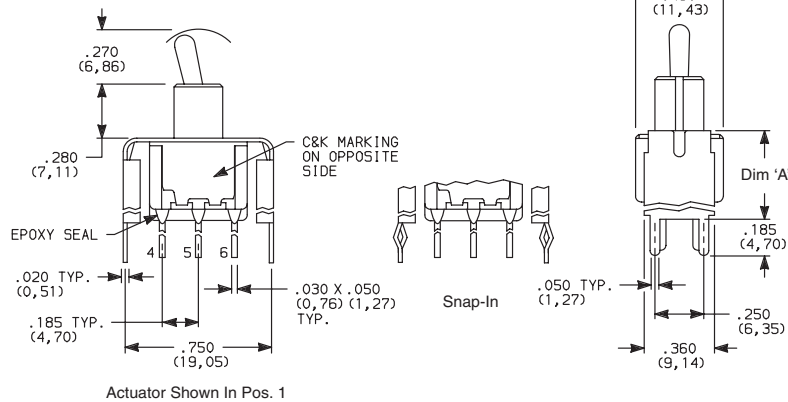
7000 Series Miniature Toggle Switches

TERMINATIONS



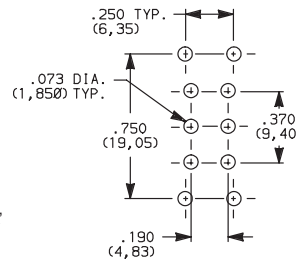
V2, V6, V7, V8 VERTICAL MOUNT, V-BRACKET

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



Not available with I seal option.

PC MOUNTING



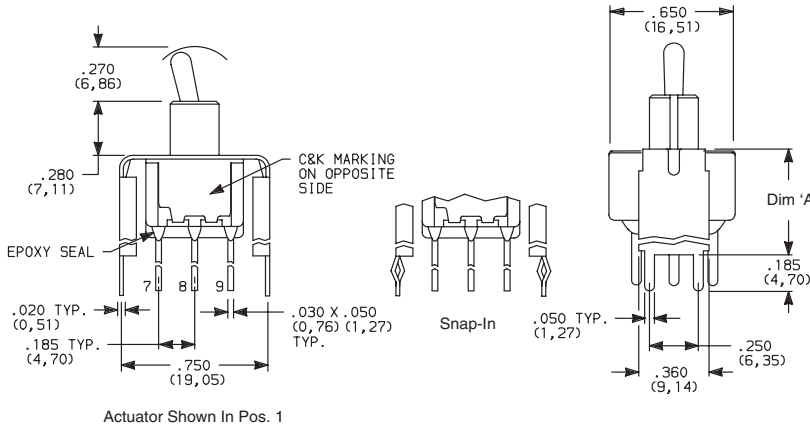
OPTION CODE	DIM 'A'
V2, V21	.555 (14,10)
V6, V61	.460 (11,68)
V7, V71	.630 (16,00)
V8, V81	.953 (24,21)



7201MD9_BE
DPDT

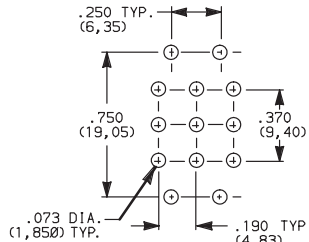
V2, V7, V8 VERTICAL MOUNT, V-BRACKET

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



Not available with I seal option.

PC MOUNTING



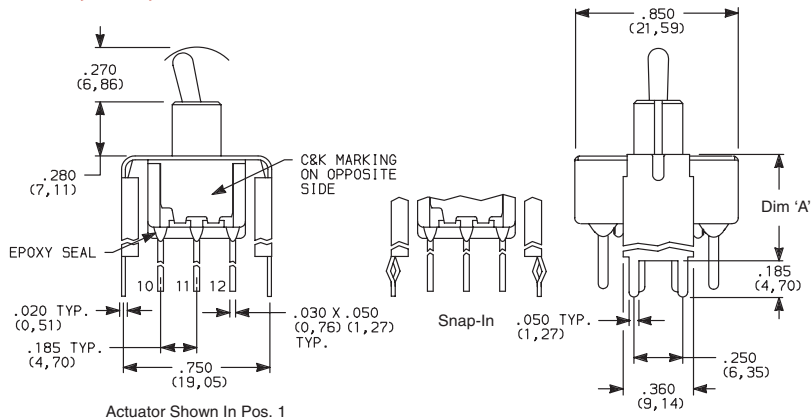
OPTION CODE	DIM 'A'
V2, V21	.555 (14,10)
V7, V71	.630 (16,00)
V8, V81	.953 (24,21)



7301MD9_BE
3PDT

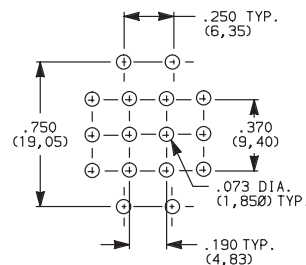
V2, V7, V8 VERTICAL MOUNT, V-BRACKET

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



Not available with I seal option.

PC MOUNTING



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



7401MD9_BE
4PDT



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

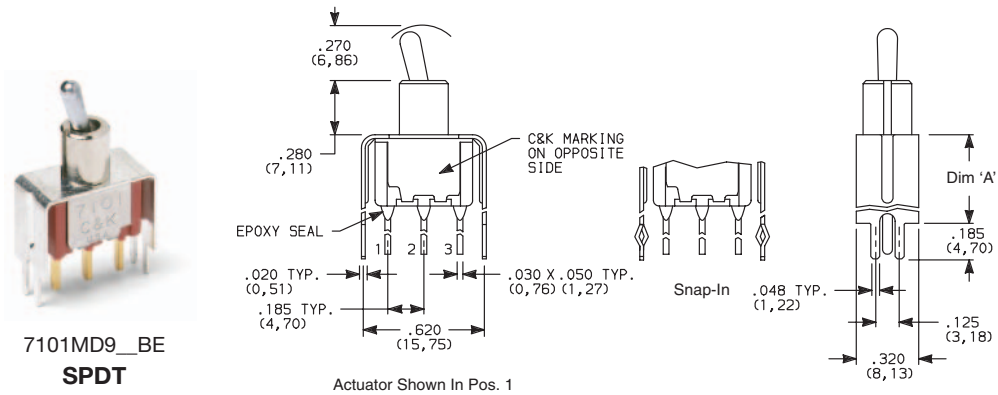


7000 Series Miniature Toggle Switches

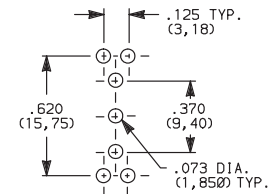
TERMINATIONS

V3, V4, V9 VERTICAL MOUNT, V-BRACKET

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



PC MOUNTING

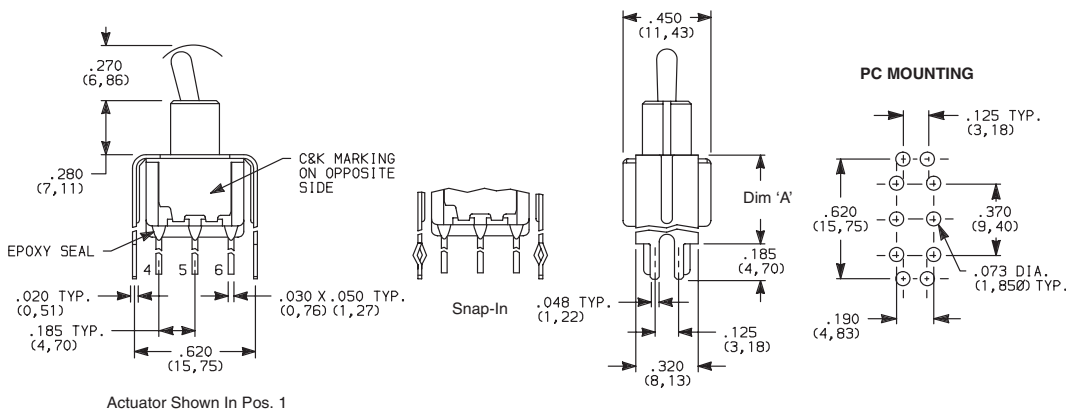


OPTION CODE	DIM 'A'
V3, V31	.460 (11,68)
V4, V41	.630 (16,00)
V9	1.150 (29,21)

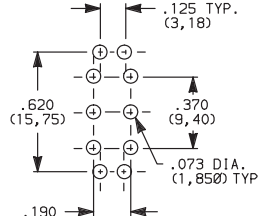
Not available with I seal option.

V3, V4, V9 VERTICAL MOUNT, V-BRACKET

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



PC MOUNTING

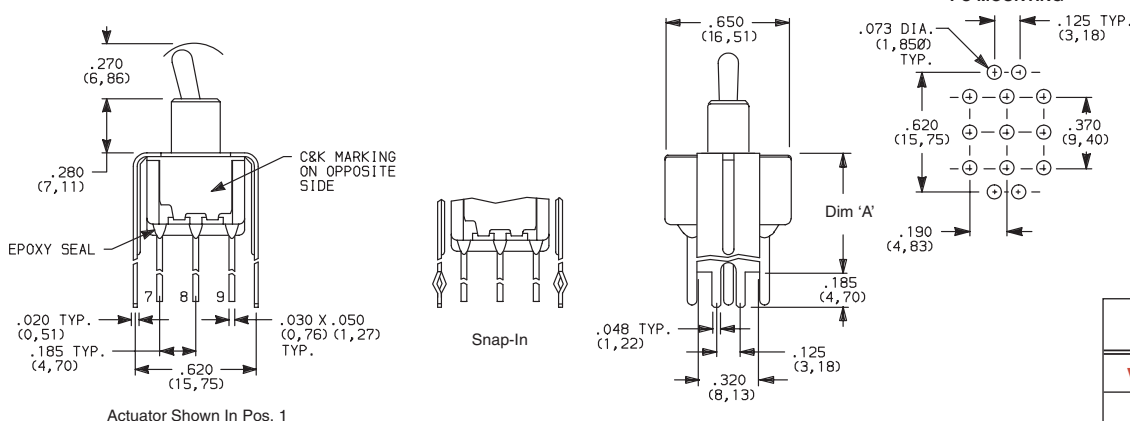


OPTION CODE	DIM 'A'
V3, V31	.460 (11,68)
V4, V41	.630 (16,00)
V9	1.150 (29,21)

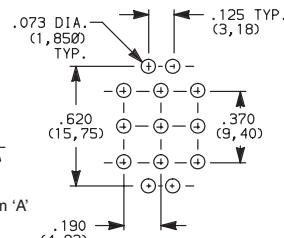
Not available with I seal option.

V4, V9 VERTICAL MOUNT, V-BRACKET

V41 VERTICAL MOUNT, V-BRACKET, SNAP-IN



PC MOUNTING



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

Not available with I seal option.



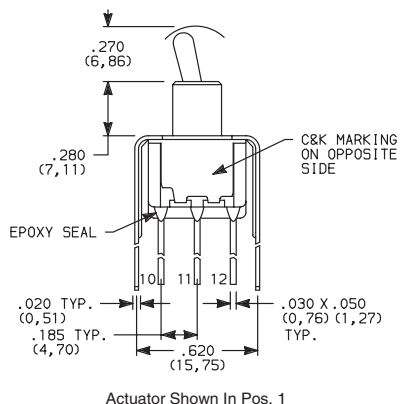
Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

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7000 Series Miniature Toggle Switches

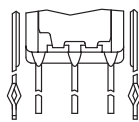
TERMINATIONS

V4, V9 VERTICAL MOUNT, V-BRACKET
V41 VERTICAL MOUNT, V-BRACKET, SNAP-IN

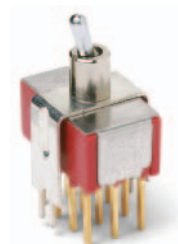
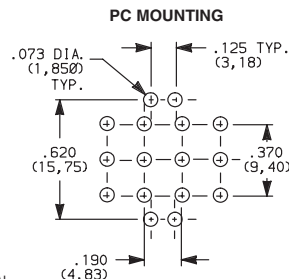
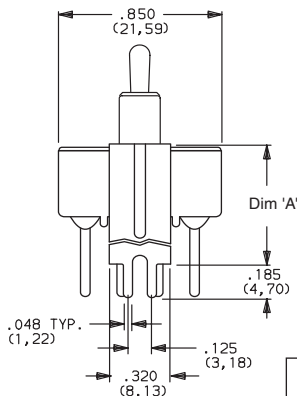


Actuator Shown In Pos. 1

Not available with I seal option.



Snap-In



7401MD9_BE
4PDT

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

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.
P		MATTE-TIN ⁶		
Q	SILVER ^{4,5}	SILVER ⁵	POWER	5 AMPS @ 120 V AC OR 28 V DC; 2 AMPS @ 250 V AC.
S		MATTE-TIN ⁶		
G	GOLD OVER SILVER ^{2,3}	GOLD ³	LOW LEVEL/DRY CIRCUIT OR POWER	0.4 VA MAX @ 20 V AC OR DC MAX. OR 5 AMPS @ 120 V AC OR 28 V DC; 2 AMPS @ 250 V AC.
R		MATTE-TIN ⁶		

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

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

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

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

⁴ END CONTACTS: Coin silver, silver plated.

⁵ CENTER CONTACT & ALL TERMINALS: Copper alloy, silver plated.

⁶ TERMINALS: Copper alloy, with matte tin alloy nickel plate.

NOTE: Any models supplied with P, S, R, Q, B or G contact material are RoHS compliant.

U11-U415 model numbers   with all options when ordered with G, S, R, or Q contact material.

B contact material standard with all terminations except C, Z & Z3.

Q contact material standard with C, Z & Z3 terminations.

P, S & R contact materials not available with Z & Z3 terminations.



Third Angle
Projection

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

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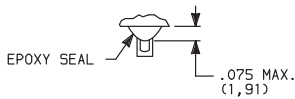


Toggle

7000 Series Miniature Toggle Switches

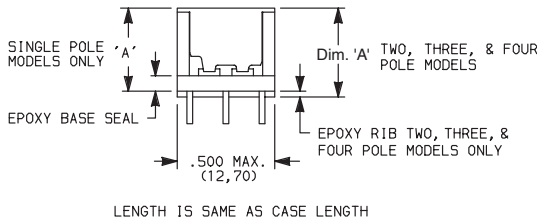
SEAL

E EPOXY SEAL



Compatible with "bottom-wash" PC board cleaning methods.

I EPOXY POTTED BASE



NO. POLES	DIM 'A'
SP	.410 (10,41)
DP	.440 (11,18)
3P	.505 (12,83)
4P	.505 (12,83)

Available with C, W-W5, Z & Z3 terminations only.

AVAILABLE HARDWARE

Cap

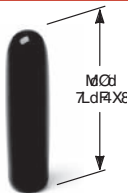


PART NO.

896801000 WHITE
896802000 BLACK
896803000 RED

Material: Polyethylene
Finish: Matte

Cap



PART NO.

763701000 WHITE
763702000 BLACK
763703000 RED

Material: Vinyl
Finish: Matte

Cap



PART NO.

706201000 WHITE
706202000 BLACK
706203000 RED

Material: Vinyl
Finish: Matte

L41 Lever handle

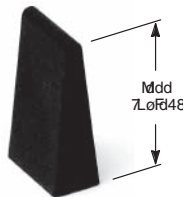


PART NO.

481001000 WHITE
481002263 BLACK
481003000 RED

Material: Nylon
Finish: Matte

L42 Lever handle



PART NO.

481101000 WHITE
481102263 BLACK
481103000 RED

Material: Nylon
Finish: Matte

Fits Z3 Termination female connector



PART NO.

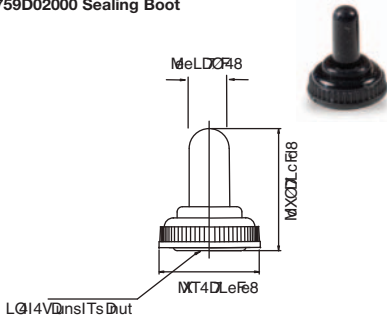
530100000

Available in loose pieces.

NOTE: Additional nuts, locking rings and lockwashers available separately, see Section N.

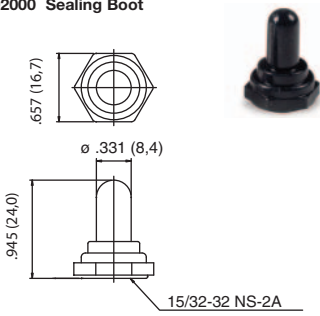
Other colors available, consult Customer Service Center.

759D02000 Sealing Boot



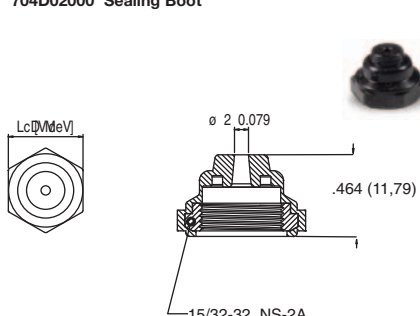
NOTE: For use with S actuator style when combined with D, H, H3, Y, and Y4 bushings

703D02000 Sealing Boot



NOTE: For use with T and TP style actuators. **Can not be used for Switch Functions: 7103, 7203, 7303, 7403, 7107, 7207, 7307, 7407.**

704D02000 Sealing Boot



NOTE: For use with T, TP and T2P style actuators. Can not be used for Switch Functions: 7103, 7203, 7303, 7403, 7107, 7207, 7307, and 7407.

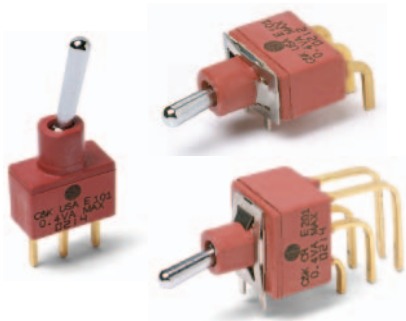


Third Angle Projection

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

www.ck-components.com

E Series Sealed Miniature Toggle Switches



Features/Benefits

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

Typical Applications

- **Telecommunications**
- **Instrumentation**
- **Medical equipment**



Specifications

CONTACT RATING: B contact material: 0.4 VA max. @
20 V AC or DC max. Q contact material: E1XX & E2XX
MODELS: 7.5 AMPS @ 125 V AC or 28 V DC;
3 AMPS @ 250 V AC. E3XX MODELS: 5 AMPS @
125 V AC or 28 V DC; 2 AMPS @ 250 V AC. See page
E-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: $10^9 \Omega \text{ min.}$

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

DIELECTRIC STRENGTH: 1000 Vrms min. @ sea level.

OPERATING TEMPERATURE: -30°C to 85°C.

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

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

Materials

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

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

SWITCH SUPPORT: Brass or steel, matte-tin plated.

SWITCH SUPPORT RETAINER: Stainless steel

CONTACTS & TERMINALS: B contact material: Copper alloy, with gold plate over nickel plate. Q contact material: Copper alloy, silver plated. See page F-29 for additional contact materials.

TERMINAL SEAL: Epoxy.

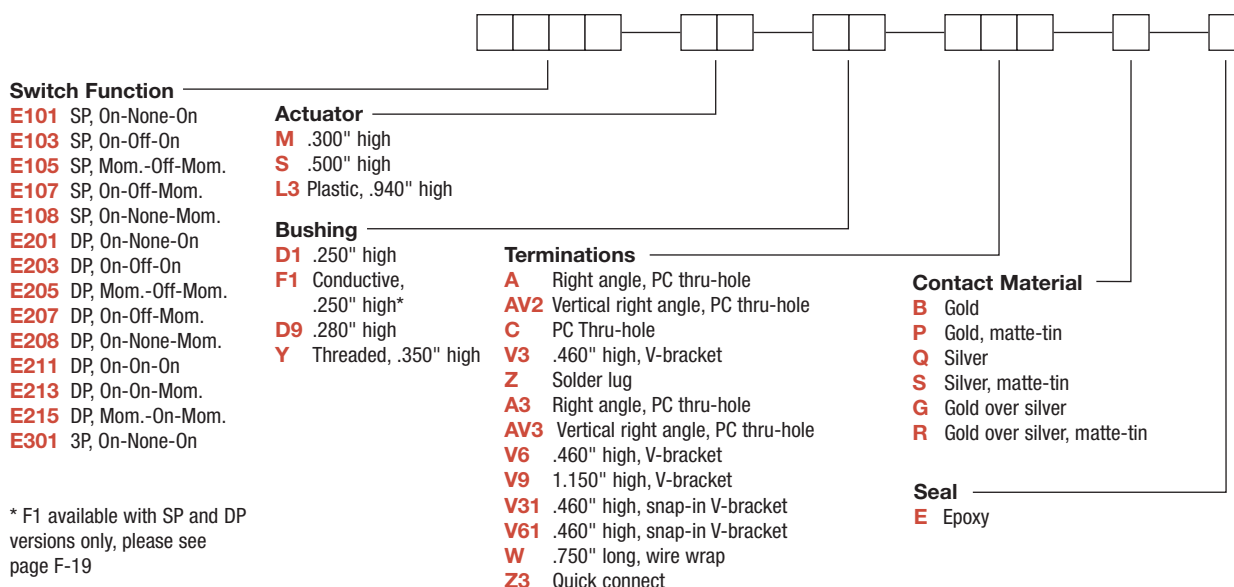
HARDWARE: Nut & Locking ring: Brass, nickel plated.
Lockwasher: Steel, nickel plated.

NOTE: Any models supplied with P, S, R, Q, B or G contact material are RoHS compliant and compatible.

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages F-18 thru F-24. 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.



Toggle

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	ON	NONE	ON	2-3	N/A	2-1	
	E103	ON	OFF	ON	2-3	OPEN	2-1	
	E105	MOM.	OFF	MOM.				
	E107	ON	OFF	MOM.				
	E108	ON	NONE	MOM.	2-3	N/A	2-1	

SPDT

Part number shown: E101SD1CBE

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

DPDT

Part number shown: E201SD1CBE

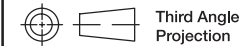
MOM. = Momentary

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

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



F
Toggle



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

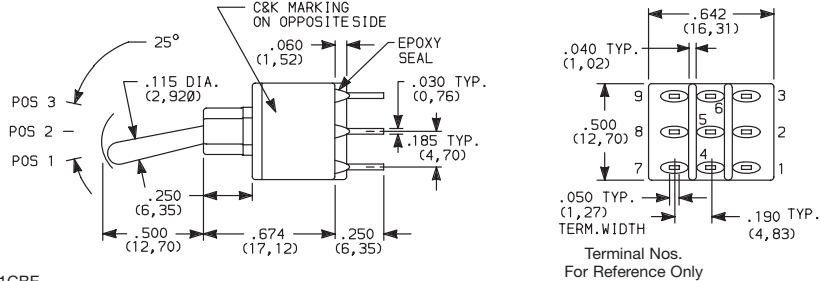
E Series Sealed Miniature Toggle Switches

SWITCH FUNCTION



NO. POLES	MODEL NO.	SWITCH FUNCTION			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	ON	NONE	ON	2-3,5-6,8-9	N/A	2-1,5-4,8-7	3PDT

3PDT



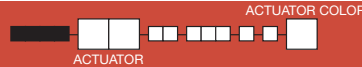
Part number shown: E301SD1CBE

MOM. = Momentary

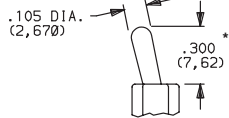
** Wiring for 3-way switch, see Section N.

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

ACTUATOR

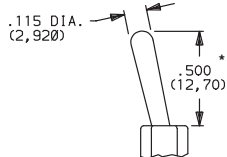


M .300" HIGH



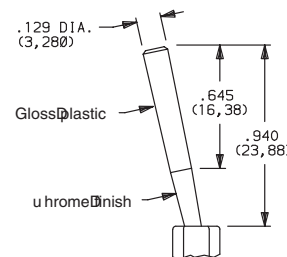
Standard when ordered with A, A3, AV2, AV3, V2-V61 terminations. Finish: Chrome.

S .500" HIGH



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

L3 PLASTIC, .940" HIGH

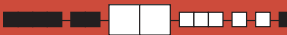


OPTION CODE	L3 ACTUATOR COLOR
2	BLACK

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

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

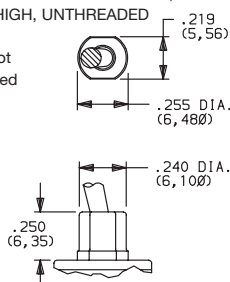
BUSHING



D1 .250" HIGH, UNTHREADED

F1 ESD CONDUCTIVE BUSHING, .250" HIGH, UNTHREADED

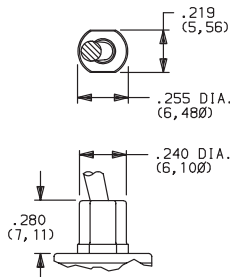
F1 bushing is not UL/CSA approved



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

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

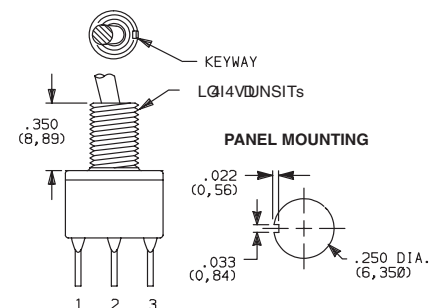
D9 .280" HIGH, UNTHREADED



E3XX models not available with D9 bushing.

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

Y THREADED, INSULATED, .350" HIGH WITH KEYWAY



Available only with C, Z, Z3, & W terminations.

Available for 1&2 pole only.

Hardware: One dress nut part number 299D01201, one hex nut part number 540400201 and lockwasher part number 700303202 supplied standard.

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



Third Angle Projection

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



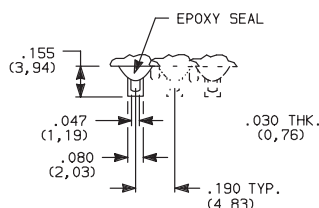
F

Toggle

E Series Sealed Miniature Toggle Switches

TERMINATIONS

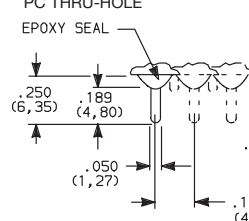
Z SOLDER LUG



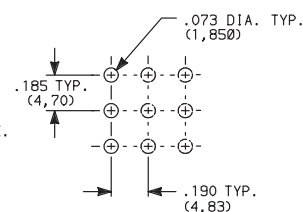
Not available with F1 conductive bushing or P, R or S contact material.

SPDT thru 3PDT

C PC THRU-HOLE



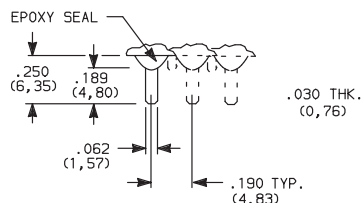
PC MOUNTING



SPDT thru 3PDT

Not available with F1 conductive bushing.

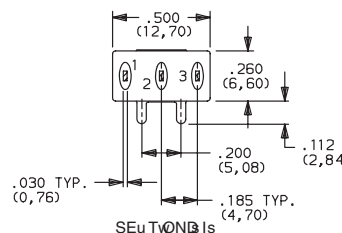
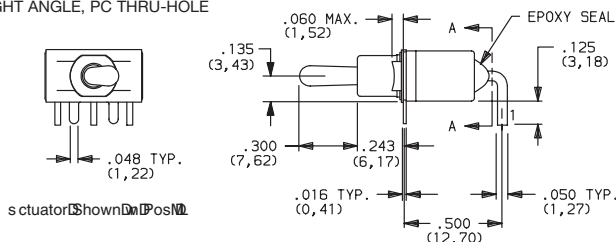
Z3 QUICK CONNECT



Not available with F1 conductive bushing or P, R or S contact material. Mating quick connector available; order part number 530100000, page F-26.

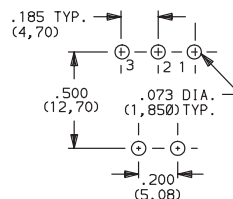
SPDT thru 3PDT

A RIGHT ANGLE, PC THRU-HOLE



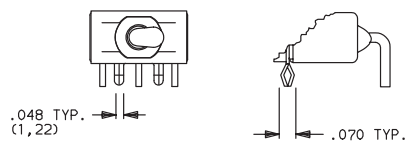
Terminal Nos. For Reference Only

PC MOUNTING



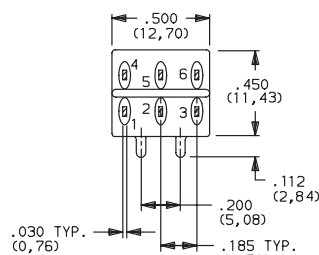
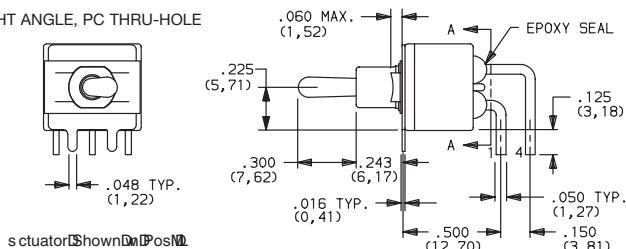
E101MD1ABE
Horizontal Actuation
SPDT

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



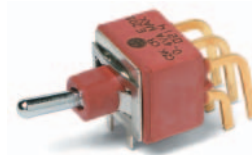
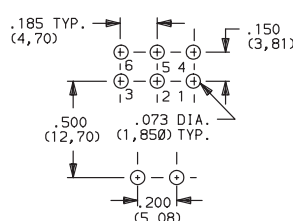
Not available with Y bushing.
Terminal bend radii and lead-in manufacturing option.

A RIGHT ANGLE, PC THRU-HOLE



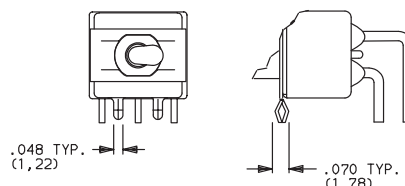
Terminal Nos. For Reference Only

PC MOUNTING



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.



Third Angle
Projection

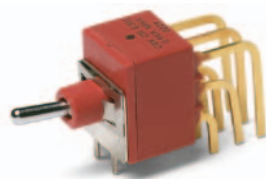
Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

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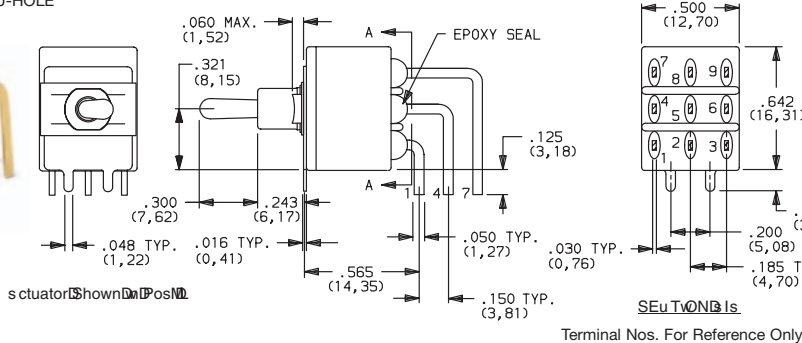
E Series Sealed Miniature Toggle Switches

TERMINATIONS

A RIGHT ANGLE, PC THRU-HOLE



E301MD1ABE
Horizontal Actuation
3PDT

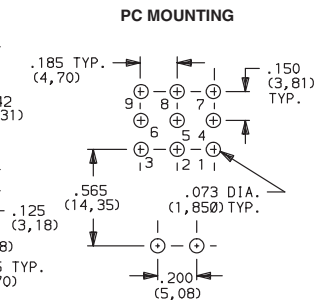
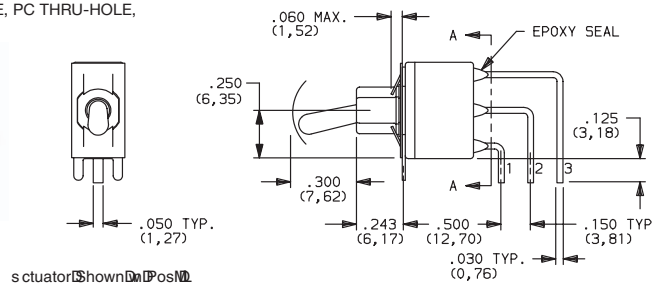


Not available with D9 & Y bushings.
Terminal bend radii and lead-in manufacturing option.

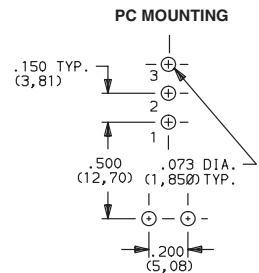
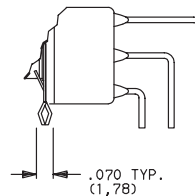
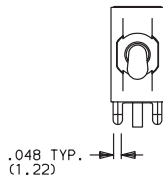
AV2 VERTICAL RIGHT ANGLE, PC THRU-HOLE, .150" PITCH



E101MD1AV2BE
Vertical Actuation
SPDT



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

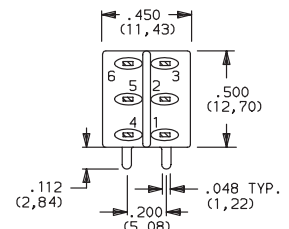
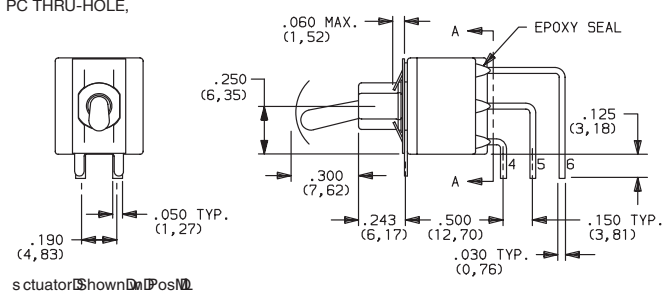


Not available with Y bushing.
Terminal bend radii and lead-in manufacturing option.

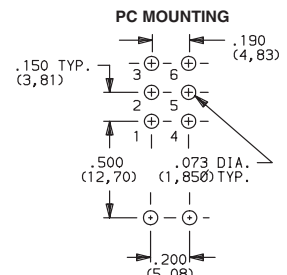
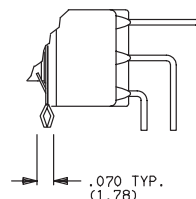
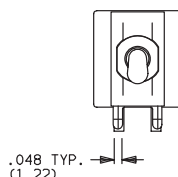
AV2 VERTICAL RIGHT ANGLE, PC THRU-HOLE, .150" PITCH



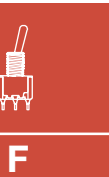
E201MD1AV2BE
Vertical Actuation
DPDT



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



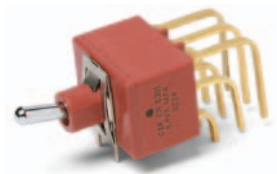
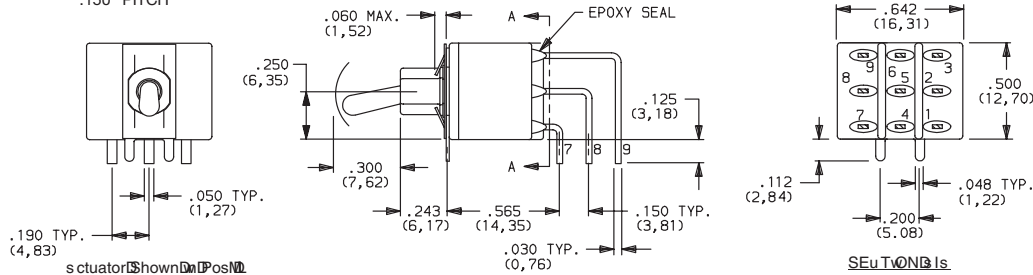
Not available with Y bushing.
Terminal bend radii and lead-in manufacturing option.



E Series Sealed Miniature Toggle Switches

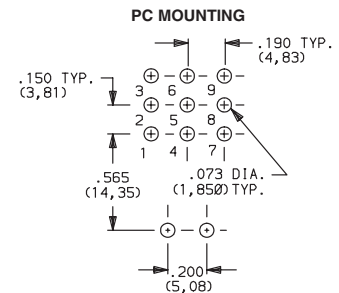
TERMINATIONS

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



E301MD1AV2BE
Vertical Actuation
3PDT

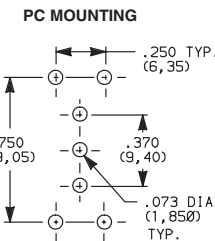
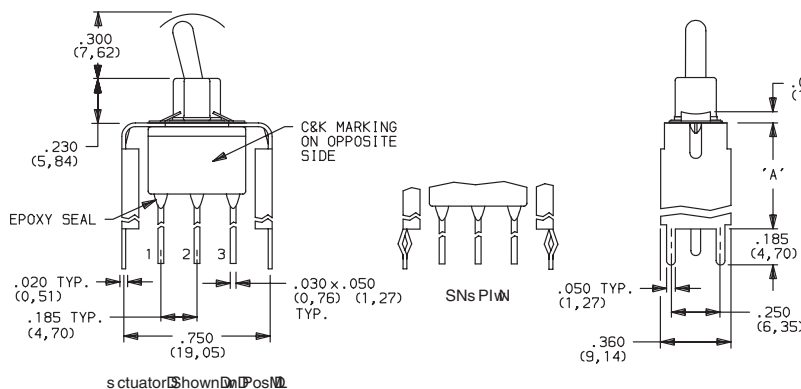
AV3 VERTICAL RIGHT ANGLE, SNAP-IN, PC THRU-HOLE .150" PITCH



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

V6 VERTICAL MOUNT, V-BRACKET

V61 VERTICAL MOUNT, V-BRACKET, SNAP-IN



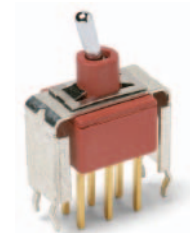
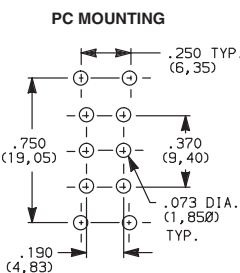
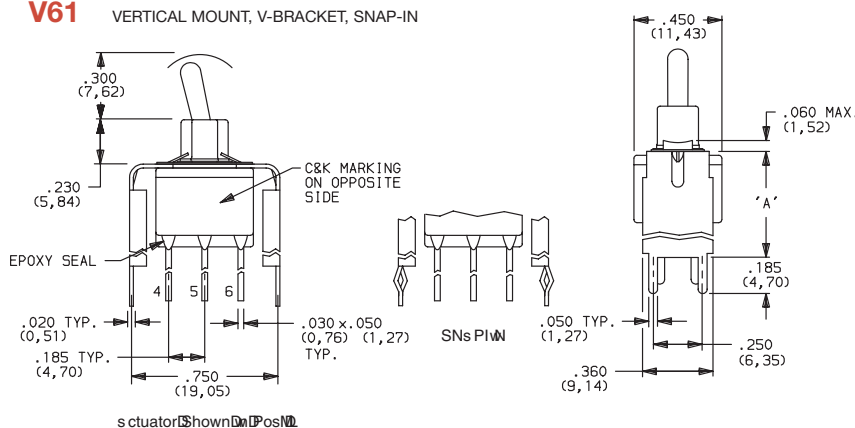
E101MD1_BE
SPDT

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

Not available with Y bushing.

V6 VERTICAL MOUNT, V-BRACKET

V61 VERTICAL MOUNT, V-BRACKET, SNAP-IN



E201MD1_BE
DPDT

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



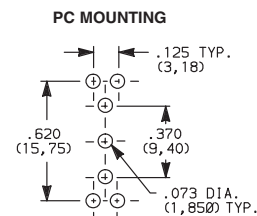
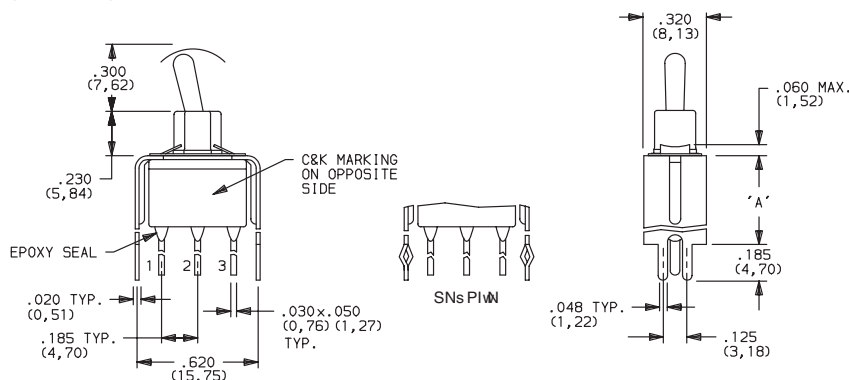
Third Angle
Projection

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

www.ck-components.com

TERMINATIONS

V31 VERTICAL MOUNT, V-BRACKET, SNAP-IN

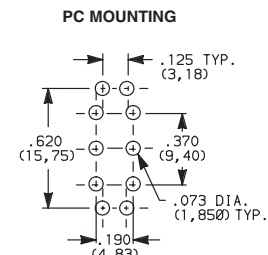
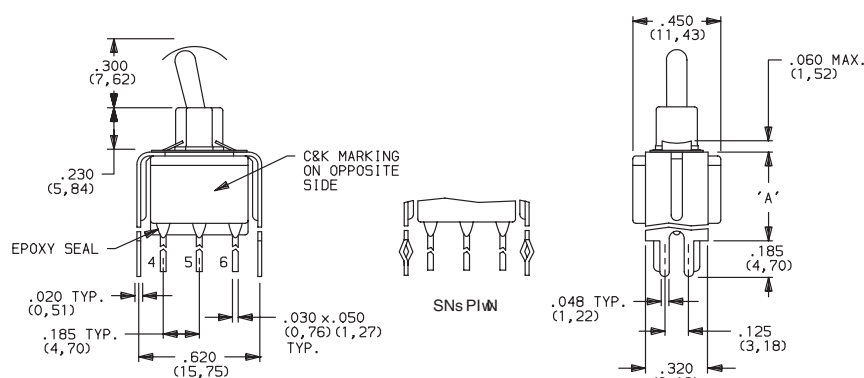


OPTION CODE	DIM 'A'
V3, V31	.460 (11,68)
V9	1.150 (29,21)

s ctuator[Shown In PosN]

Not available with Y bushing.

V31 VERTICAL MOUNT, V-BRACKET, SNAP-IN

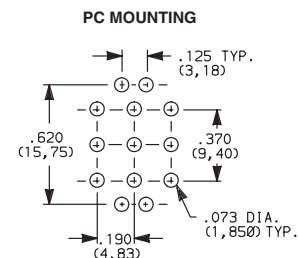
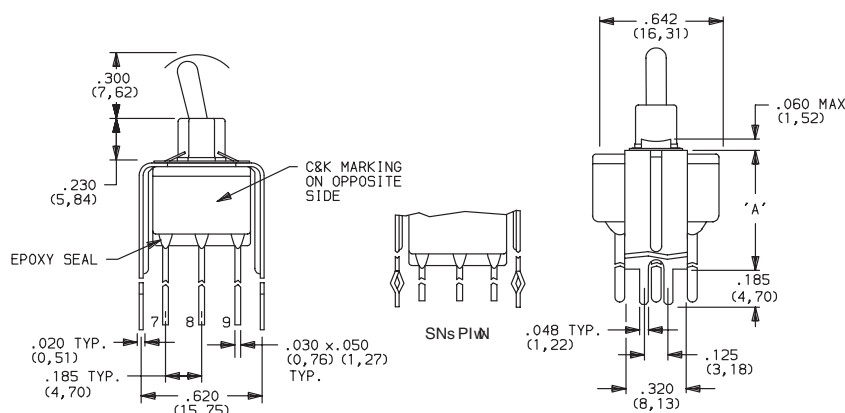


OPTION CODE	DIM 'A'
V3, V31	.460 (11,68)
V9	1.150 (29,21)

s ctuator[Shown In PosN]

Not available with Y bushing.

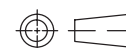
V9 VERTICAL MOUNT, V-BRACKET



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

s ctuator[Shown In PosN]

Not available with D9 & Y bushings.



Third Angle Projection

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

F

Toggle



E Series

Sealed Miniature Toggle Switches

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.
P		MATTE-TIN 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.
S		MATTE-TIN 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.
R		MATTE-TIN ⁶		

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

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

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

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

⁴ END CONTACTS: Coin silver, silver plated.

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

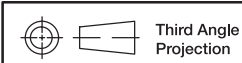
⁶ TERMINALS: Copper alloy, with matte-tin over nickel plate.

NOTE: Any models supplied with P, S, R, Q, B or G contact material are RoHS compliant.

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

B contact material standard with all terminations.

P, S & R contact materials not available with Z & Z3 terminations.



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

ET Series Sealed Subminiature Toggle Switches

Features/Benefits

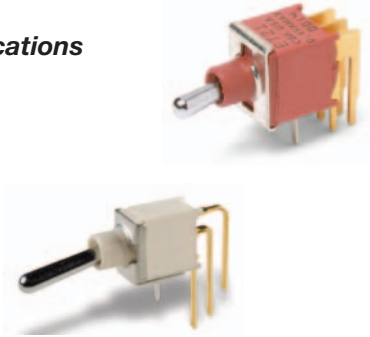
- Sealed against solder and cleaning process contaminants
- ESD protection available
- Thru-hole and surface mount models
- Compact size and small footprint save PCB space
- RoHS compliant models available



Models Available

Typical Applications

- Hand-held telecommunications
- Instrumentation
- Medical equipment



Specifications

CONTACT RATING: B contact material: 0.4 VA max. @ 20 V AC or DC max. See page F-35 for additional ratings.

ELECTRICAL LIFE: ETX1 models: 60,000 make-and-break cycles at full load. All other models: 30,000 cycles.

CONTACT RESISTANCE: Below 20 m Ω typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

INSULATION RESISTANCE: 10⁹ Ω min.

ELECTROSTATIC DISCHARGE (ESD) RESISTANT OPTION:
M3 & S3 insulating actuator only: 9,000 V DC min. @ sea level, actuator to terminals. F1 conductive bushing only: Dissipates up to 20,000 V DC from actuator to ground. M3 & S3 actuator and F1 bushing options are not recommended for use together.

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.

PACKAGING: Surface mount switches are shipped in tape and reel packaging, see page F-31 for drawings and reel information.

Materials

CASE & BUSHING: Glass filled nylon 6/6, flame retardant, heat stabilized (UL 94V-0) or glass filled 4/6 nylon, flame retardant, heat stabilized (UL 94V-0). F1 conductive bushing option is impregnated with carbon fibers.

ACTUATOR: M3 & S3 anti-static actuator: Nylon 4/6, black standard (UL 94V-0). All other actuators: Brass, chrome plated. Internal o-ring seal standard with all actuators.

SWITCH SUPPORT: Brass, tin plated.

CONTACTS & TERMINALS: B contact material: Copper alloy, with gold plate over nickel plate. Q contact material: Copper alloy, silver plated. See F-35 for additional contact materials.

TERMINAL SEAL: Epoxy.

NOTE: Any models supplied with Q, B, G, P or R contact material are RoHS compliant and compatible.

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages F-26 thru F-31. 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

ET01 SP, On-None-On
ET02 SPST, Off-None-On
ET03 SP, On-Off-On
ET05 SP, Mom.-Off-Mom.
ET07 SP, On-Off-Mom.
ET08 SP, On-None-Mom.
ET21 DP, On-None-On
ET23 DP, On-Off-On
ET24 DP, On-On-On
ET25 DP, Mom.-Off-Mom.
ET27 DP, On-Off-Mom.
ET28 DP, On-None-Mom.

Actuator

M .240" high
M3 Plastic, anti-static, .240" high
S .400" high
L .320" high
S1 .540" high

Bushing

D1 .177" High, Unthreaded
F1 .177" high, unthreaded, ESD conductive

Terminations

A Right angle, PC thru-hole
AV Vertical right angle, PC thru-hole
C PC Thru-hole
SA Right angle, surface mount
SA1 Right angle, surface mount rear-facing
V3 Vertical mount, V-bracket
AV3 Vertical right angle, snap-in, PC thru-hole
V31 Vertical mount, V-bracket, snap-in
W Wire wrap

Contact Material

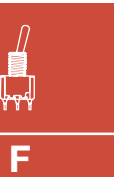
B Gold
P Gold, matte tin
Q Silver
S Silver/matte-tin
G Gold over silver
R Gold over silver, matte-tin

Seal

E Epoxy

Plastic Actuator Color

NONE No actuator color
2 Black
1 White



Toggle



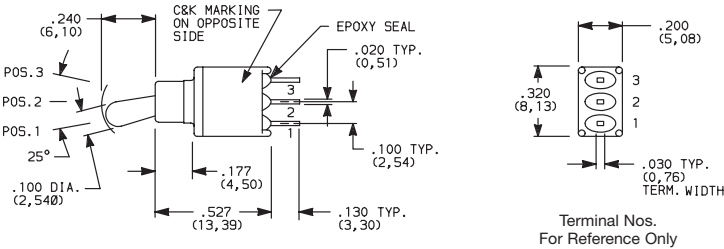
Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

ET Series
Sealed Subminiature 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	ET01	ON	NONE	ON	2-3	N/A	2-1	
	ET03	ON	OFF	ON	2-3	OPEN	2-1	
	ET05	MOM.	OFF	MOM.				
	ET07	ON	OFF	MOM.				
	ET08	ON	NONE	MOM.	2-3	N/A	2-1	
	ET02	OFF	NONE	ON	OPEN	N/A	3-1	SPST 

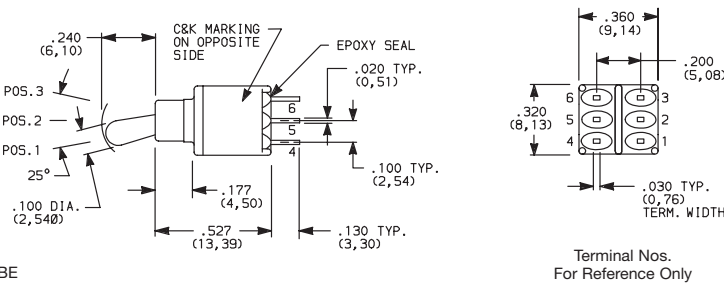
SPDT



Part number shown: ET01MD1CBE ET02 Models: Omit terminal 2

DP	ET21	ON	NONE	ON	2-3,5-6	N/A	2-1,5-4	
	ET23	ON	OFF	ON	2-3,5-6	OPEN	2-1,5-4	
	ET25	MOM.	OFF	MOM.				
	ET27	ON	OFF	MOM.				
	ET28	ON	NONE	MOM.	2-3,5-6	N/A	2-1,5-4	
	ET24**	ON	ON	ON	2-3,5-6	2-3,5-4	2-1,5-4	DPDT

DPDT



Part number shown: ET21MD1CBE

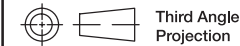
MOM. = Momentary

All models with all options (except M3 actuator) when ordered with G, L, R or Q contact material except with F1 conductive bushing.

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



Toggle

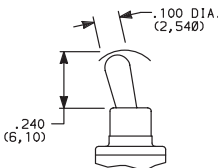


Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

ET Series Sealed Subminiature Toggle Switches

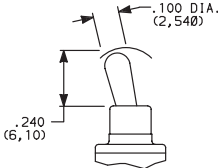
ACTUATOR ACTUATOR COLOR

M .240" HIGH



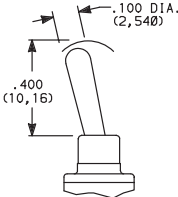
Standard with A, AV, V3 & V31 terminations.

M3 PLASTIC, ANTISTATIC,
.240" HIGH



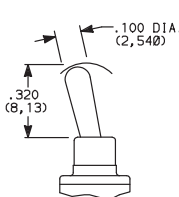
Material: Nylon 4/6 (UL 94V-0), black standard.
Static resistance: 9,000 V DC min. @ sea level,
actuator to terminals. Not available with F1
conductive bushing option. Not UL approved.

S .400" HIGH

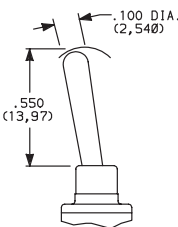


Standard with C or W terminations.

L .320" HIGH



S1 .540" HIGH



OPTION CODE	PLASTIC ACTUATOR COLOR
(NONE)	BLACK (M3 & S3 only)
1	WHITE (M3 & S3 only)

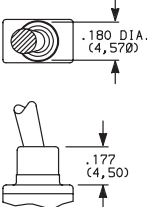
NOTE: All actuators have chrome finish (except M3 & S3).

BUSHING

D1 .177" HIGH, UNTHREADED

F1 ESD, CONDUCTIVE BUSHING
UNTHREADED, .177" HIGH

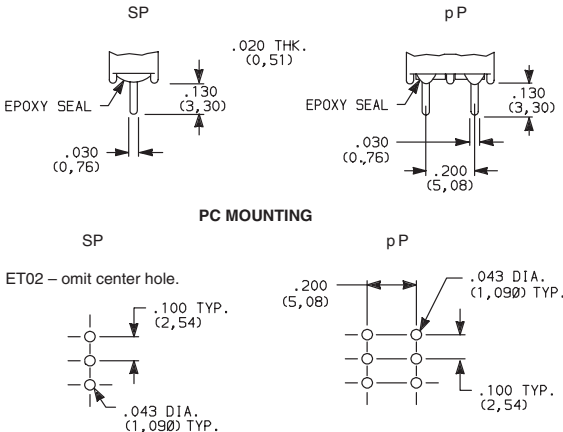
F1 bushing is not UL/CSA approved



NOTE: 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 all metal actuator options and A, AV, AV3, V3 and V31 termination options only. Internal actuator o-ring seal standard.

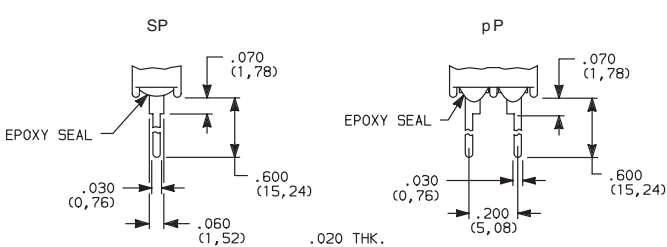
TERMINATIONS

C PC THRU-HOLE



SP and DP

W WIRE WRAP



SP and DP

Not available with F1 conductive bushing.



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



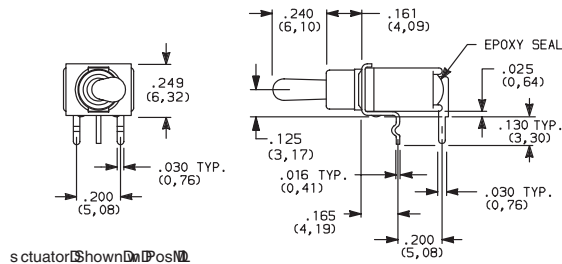
ET Series Sealed Subminiature Toggle Switches

TERMINATIONS

A RIGHT ANGLE, PC THRU-HOLE

PC MOUNTING

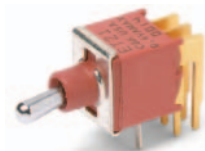
ET01MD1ABE
Horizontal Actuation
SPDT



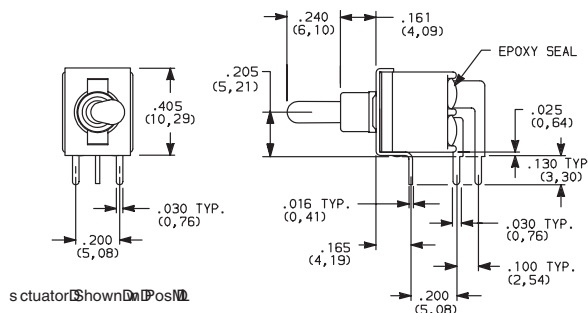
Not available with ET02 model.

A RIGHT ANGLE, PC THRU-HOLE

PC MOUNTING



ET21MD1ABE
Horizontal Actuation
DPDT

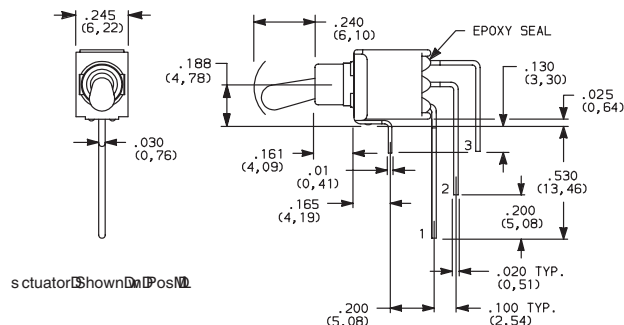


AV VERTICAL RIGHT ANGLE, PC THRU-HOLE

PC MOUNTING



ET01MD1AVBE
Vertical Actuation
SPDT

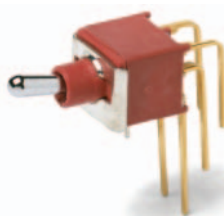


ET02 - omit terminal 2.

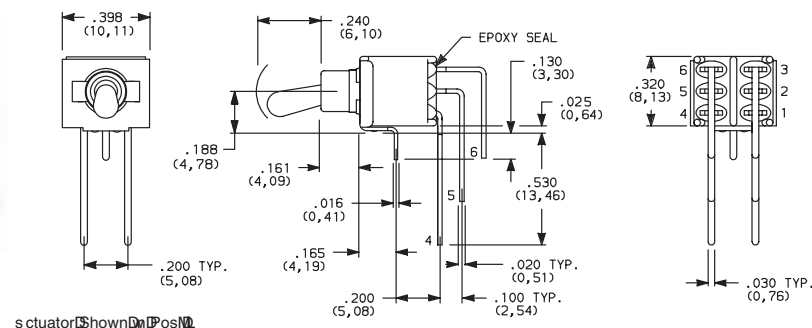
NOTE: Terminal bend radii and lead-in manufacturing option.

AV VERTICAL RIGHT ANGLE, PC THRU-HOLE

PC MOUNTING



ET21MD1AVBE
Vertical Actuation
DPDT



NOTE: Terminal bend radii and lead-in manufacturing option.



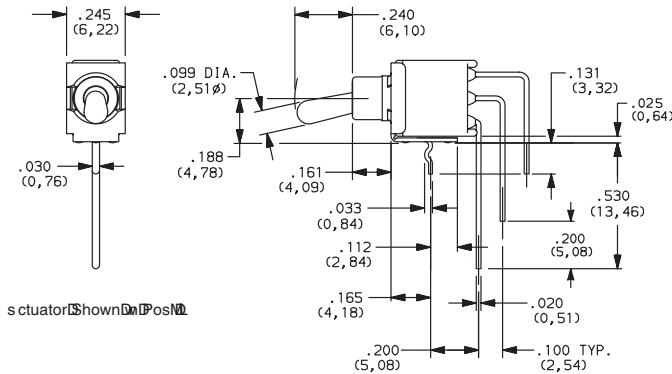
Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

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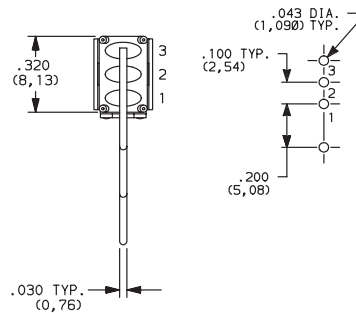
ET Series Sealed Subminiature Toggle Switches

TERMINATIONS

AV3 VERTICAL RIGHT ANGLE, SNAP-IN, PC THRU-HOLE

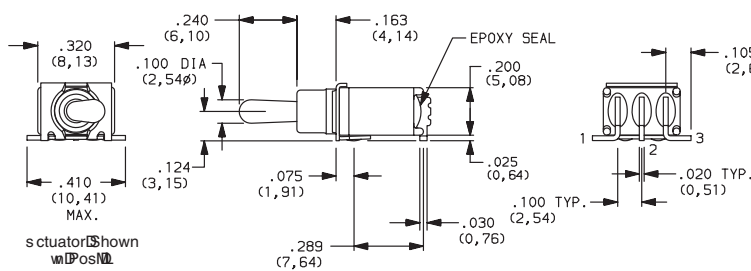


PC MOUNTING

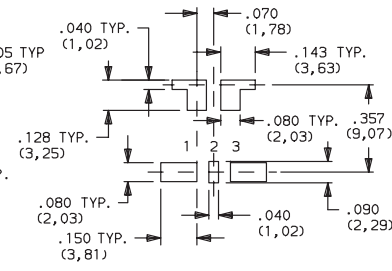


ET01SD1AV2BE
Vertical Actuation
SPDT

SA RIGHT ANGLE, SURFACE MOUNT



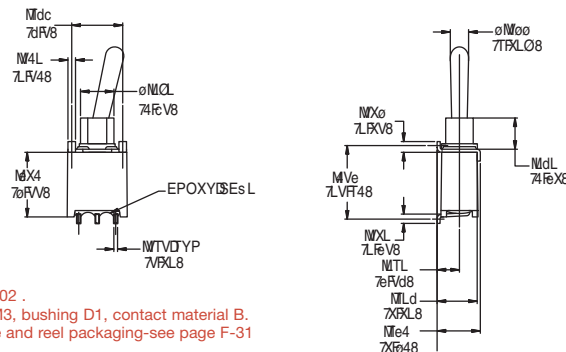
PC MOUNTING



ET01M3D1SAPE
Horizontal Actuation
SPDT Only

Not available with S and S1 actuators. Standard with tape & reel packaging. See page F-31.

SA1 RIGHT ANGLE, SURFACE MOUNT

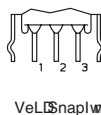
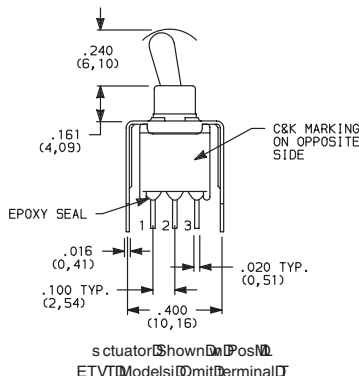


ET01M3D1SA1BE
Horizontal Actuation
SPDT Only

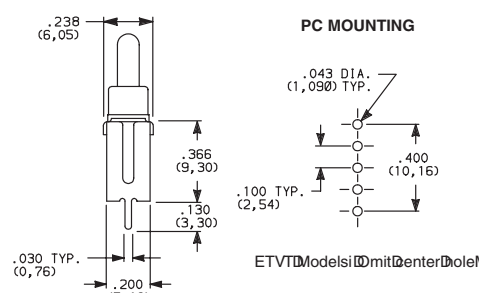
Not available in ET02.
Actuators M and M3, bushing D1, contact material B.
Standard with tape and reel packaging-see page F-31

V3 VERTICAL MOUNT, V-BRACKET

V31 VERTICAL MOUNT, V-BRACKET, SNAP-IN



PC MOUNTING



ET01MD1V3BE
SPDT



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

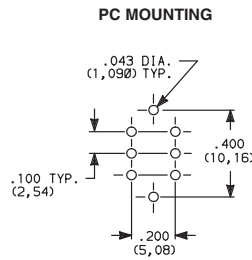
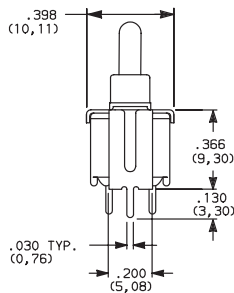
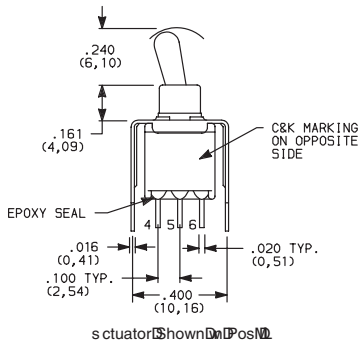


ET Series

Sealed Subminiature Toggle Switches

TERMINATIONS

V3 VERTICAL MOUNT, V-BRACKET



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.
P		MATTE-TIN ⁶		
Q	SILVER ^{4,5}	SILVER ⁵	POWER	ETX1 MODELS: 3 AMPS @ 120 V AC OR 28 V DC ALL OTHER MODELS: 2 AMPS @ 120 V AC OR 28 V DC
S		MATTE-TIN ⁶		
G	GOLD OVER SILVER ^{2,3}	GOLD ³	LOW LEVEL/DRY CIRCUIT OR POWER	ETX1 MODELS: 0.4 VA MAX. @ 20 V AC OR DC MAX. OR 3 AMPS @ 120 V AC OR 28 V DC ALL OTHER MODELS: 0.4 VA MAX. @ 20 V AC OR DC MAX. OR 2 AMPS @ 120 V AC OR 28 V DC
R		MATTE-TIN ⁶		

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

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

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

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

⁴ END CONTACTS: Coin silver, silver plated.

⁵ CENTER CONTACT & ALL TERMINALS: Copper alloy, silver plated.

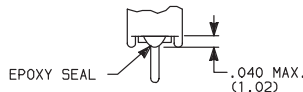
⁶ TERMINALS: Copper alloy, with matte tin over nickel plate.

NOTE: Any models supplied with Q, B, G, P or R contact material are RoHS compliant.

All models   with all options (except M3 actuator) when ordered with G, L, R or Q contact material except with F1 conductive bushing.

SEAL

E EPOXY SEAL



AVAILABLE HARDWARE

Cap

PART NO.

706201000 WHITE

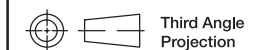
706202000 BLACK

706203000 RED

Material: Vinyl
Finish: Matte



NOTE: Other colors available, consult Customer Service Center.



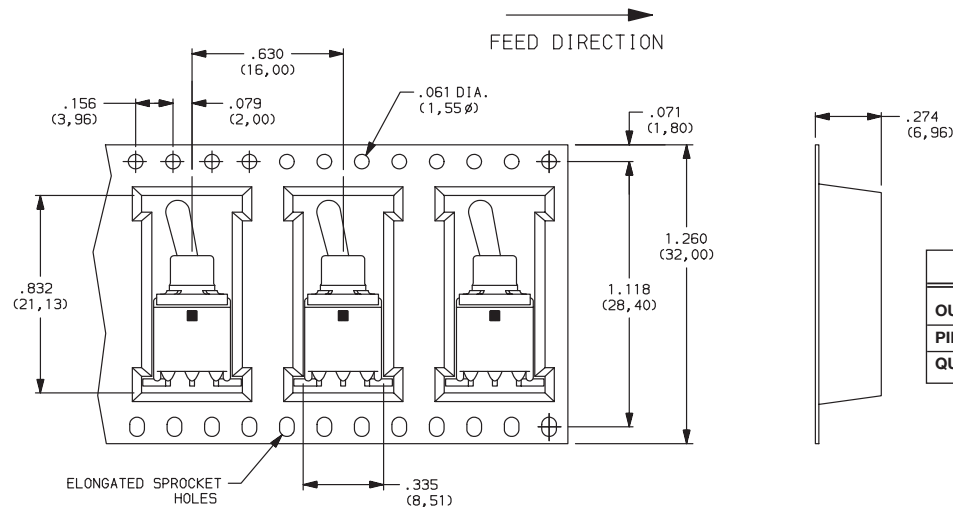
Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

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ET Series Sealed Subminiature Toggle Switches

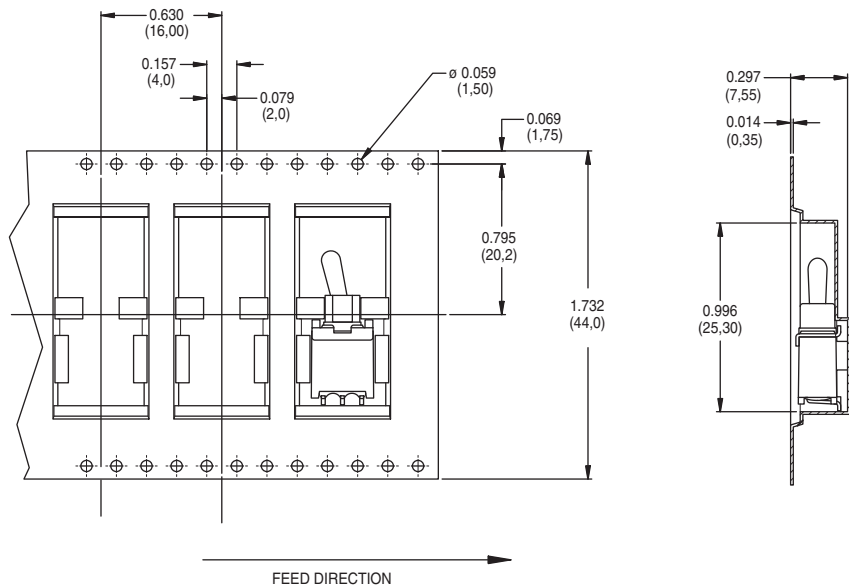
TAPE & REEL

For part number ET01M3D1SAKE

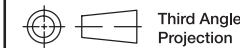


REEL INFORMATION	
OUTSIDE DIAMETER	13.00 (330,0)
PILOT HOLE	.512 (13,0)
QUANTITY PER REEL	600

For part number ET01M3D1SA1BE

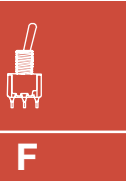


REEL INFORMATION	
OUTSIDE DIAMETER	13.00 (330,0)
PILOT HOLE	.795 (20,20)
QUANTITY PER REEL	500



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

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Toggle

T Series

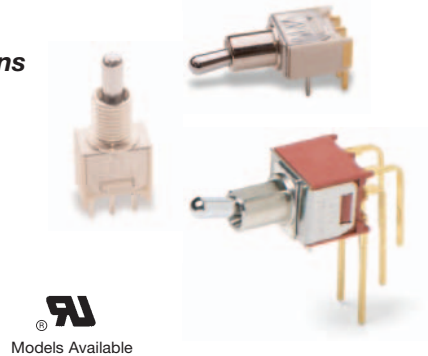
Subminiature Toggle Switches

Features/Benefits

- **Compact size—small footprint**
- **Single and double pole models**
- **PC and panel mount options available**
- **RoHS compliant models available**

Typical Applications

- **Hand-held telecommunications**
- **Instrumentation**
- **Medical equipment**



Models Available

Specifications

CONTACT RATING: B contact material: 0.4 VA max. @ 20 V AC or DC max. Q contact material (TX01 models): 3 AMPS @ 120 V AC or 28 V DC. All other models: 2 AMPS @ 120 V AC or 28 V DC. See page F-42 for additional ratings.

ELECTRICAL LIFE: TX01 models: 60,000 make-and-break cycles at full load. All other models: 30,000 cycles.

CONTACT RESISTANCE: Below 20 m Ω typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

INSULATION RESISTANCE: $10^9 \Omega$ min.

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).

NOTE: Any models supplied with P, R, Q, B or G contact material are RoHS compliant and compatible.

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

Materials

CASE: Glass filled nylon 6/6, flame retardant, heat stabilized or diallyl phthalate (DAP), (UL 94V-0) or glass filled nylon 4/6, flame retardant, heat stabilized.

ACTUATOR: Brass, chrome plated.

BUSHING: Brass, nickel plated.

HOUSING: Stainless steel.

SWITCH SUPPORT: Brass, matte-tin plated.

END CONTACTS: B contact material: Copper alloy, with gold plate over nickel plate. Q contact material: Coin silver, silver plated. See above for additional contact materials.

CENTER CONTACTS & TERMINALS: B contact material: Copper alloy, with gold plate over nickel plate. Q contact material: Copper alloy, silver plated. See page F-42 for additional contact materials.

TERMINAL SEAL: Epoxy.

HARDWARE: Nut & Locking Ring: Brass, nickel plated.

Lockwasher: Steel, nickel plated. Additional hardware available separately, see Section N.

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-33 thru F-37. For additional options not shown in catalog, consult Customer Service Center. All models have epoxy terminal seal and are compatible with all "bottom-wash" PCB cleaning methods.

Switch Function

- T101** SPDT On-None-On
- T102** SPDT Off-None-On
- T103** SPDT On-Off-On
- T105** SPDT Mom.-Off-Mom.
- T107** SPDT On-Off-Mom.
- T108** SPDT On-None-Mom.
- T201** DPDT On-None-On
- T203** DPDT On-Off-On
- T205** DPDT Mom.-Off-Mom.
- T207** DPDT On-Off-Mom.
- T208** DPDT On-None-Mom.
- T211** DPDT On-On-On

Actuator

- P3** Flatted, anti-rotation, .490" high
- S** .370" high
- K** Locking lever, round tip
- L1** .620" high
- M1** .220" high
- S1** .410" high
- M** .210" high
- L** .290" high

Bushing

- H** .220" high, threaded, flat
- H9** .220" high, unthreaded, flat
- CF** Splashproof, .310" high, threaded, flat
- D9** .260" high, unthreaded, keyway
- T** .310" high, threaded, flat
- T9** .310" high, unthreaded, flat
- TD** .260" high, threaded, keyway
- TK** .310" high, threaded, keyway
- Y** .220" high, threaded, keyway
- Y9** .220" high, unthreaded, keyway

Terminations

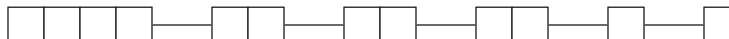
- A** Right angle, PC thru-hole
- AV** Vertical right angle, PC thru-hole
- C** PC Thru-hole
- V3** Vertical mount V-bracket
- Z** Solder lug
- W** Wire wrap

Contact Material

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

Seal

- E** Epoxy



F

Toggle



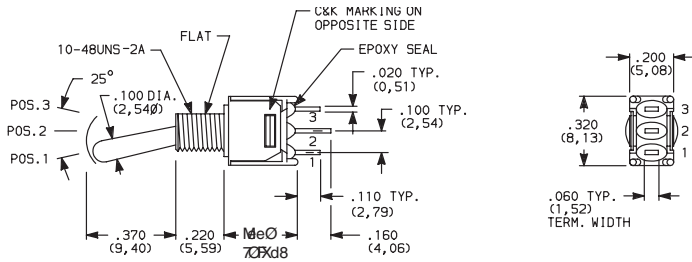
Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

T Series
Subminiature Toggle Switches

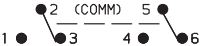
SWITCH FUNCTION

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	T101	ON	NONE	ON	2-3	N/A	2-1	
	T103	ON	OFF	ON	2-3	OPEN	2-1	
	T105	MOM.	OFF	MOM.				
	T107	ON	OFF	MOM.	2-3	NA	2-1	SPDT
	T108	ON	NONE	MOM.	OPEN	N/A	3-1	SPST 
	T102	OFF	NONE	ON				

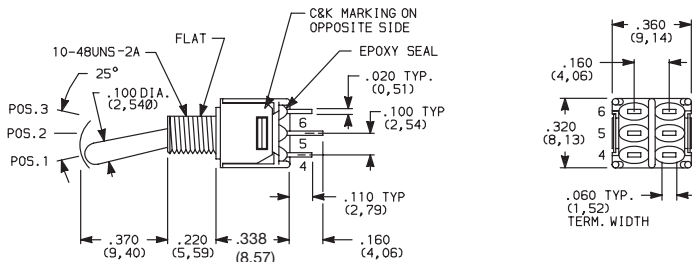
SPDT



Part number shown: T101SHZQE

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			
DP	T201	ON	NONE	ON	2-3,5-6	N/A	2-1,5-4	
	T203	ON	OFF	ON	2-3,5-6	OPEN	2-1,5-4	
	T205	MOM.	OFF	MOM.				
	T208	ON	NONE	MOM.				
	T211*	ON	ON	ON.	2-3,5-6	2-3,5-4	2-1,5-4	

DPDT

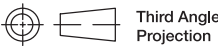


Part number shown: T201SHZQE

Terminal Nos.
For Reference Only

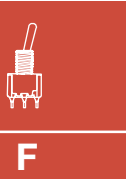
MOM. = Momentary

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



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

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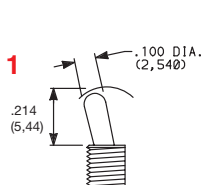
Toggle

T Series Subminiature Toggle Switches

ACTUATOR

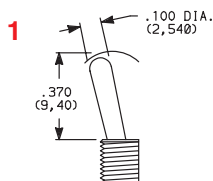


M .210" HIGH



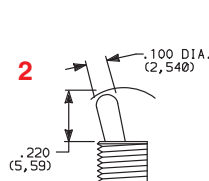
Standard with A, AV or V3 terminations.

S .370" HIGH

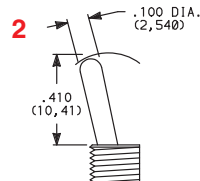


Standard with Z, C or W terminations.

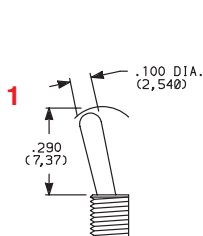
M1 .220" HIGH
(with "T" bushing)



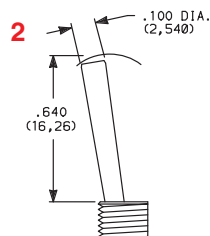
S1 .410" HIGH
(with "T" bushing)



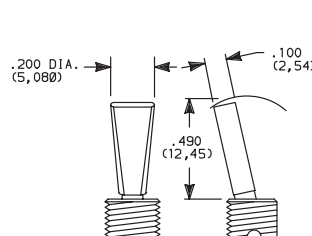
L .290" HIGH



L1 .620" HIGH



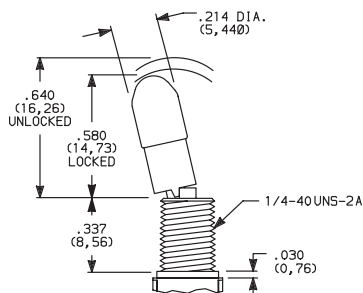
P3 ANTI-ROTATION, FLATTED,
.450" HIGH



Available with T & T9 bushings only.
Dress nut part number 709901201
supplied standard with threaded bushing.

1 Actuator shown with standard H bushing.
Subtract .040 (1,02) for TD and D9 bushings,
subtract .090 (2,29) for T, T9, TK, K9 &
CF bushings.
2 Actuators shown with T, T9, TK & CF bushings,
add .050 (1,27) for TD and D9 bushings,
add .090 (2,29) for H, H9, Y & Y9 bushings.
All actuators have chrome finish (except K).

K LOCKING LEVER



Not available with CF bushing option.

Bushing option code not required. Not available with TX05 & TX07 models.

Locking Positions



-01 & -02 Models
2 Position lock



-03 & -11 Models
3 Position lock



-08 Models
1 Position lock

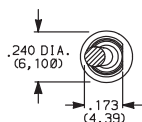
K actuators have natural aluminum finish.

Keyway on right side. To prevent accidental actuation, toggles
must be lifted before being actuated. When released, toggles
again lock in place. Overtightening mounting nut may cause
actuator to bind.

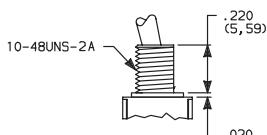
BUSHING



H .220" HIGH THREADED, FLAT



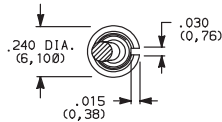
H9 .220" HIGH UNTHREADED, FLAT



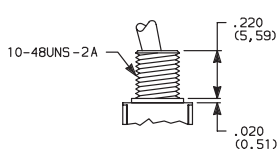
H standard with C, W & Z terminations.

H9 standard with A, AV & V3 terminations.

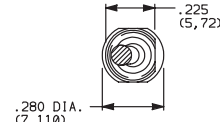
Y .220" HIGH THREADED, KEYWAY



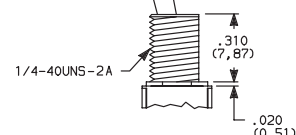
Y9 .220" HIGH UNTHREADED, KEYWAY



T .310" HIGH THREADED, FLAT



T9 .310" HIGH UNTHREADED, FLAT



Third Angle
Projection

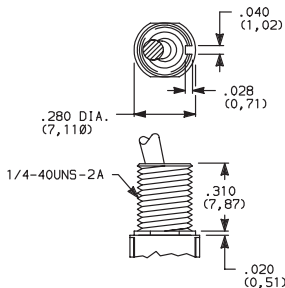
Dimensions are shown: Inches (mm)

Specifications and dimensions subject to change

T Series Subminiature Toggle Switches

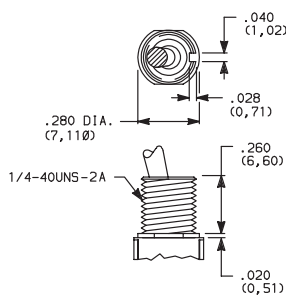
BUSHING

TK .310" HIGH THREADED, KEYWAY

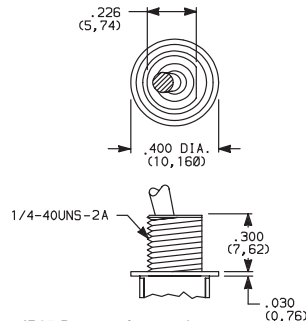


TD .260" HIGH THREADED, KEYWAY

D9 .260" HIGH UNTHREADED, KEYWAY

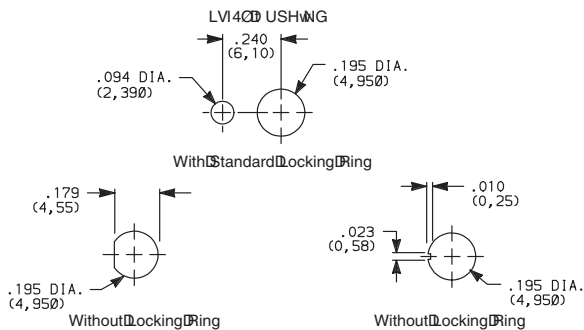


CF SPLASHPROOF, .310" HIGH THREADED, FLAT

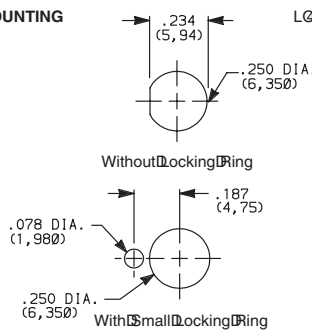


IP67 Degree of protection.
Internal o-ring actuator seal and
external bushing seal washer standard.

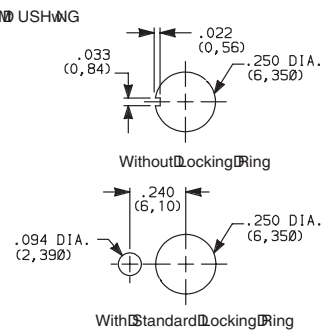
Not available with K locking lever option.



PANEL MOUNTING

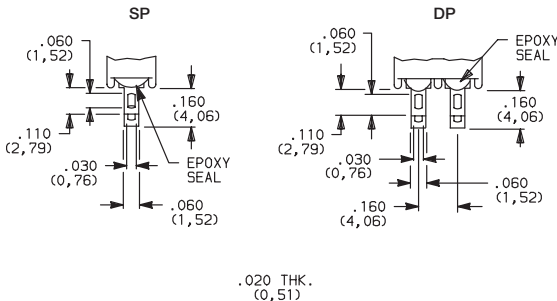


LV1400 USHWING

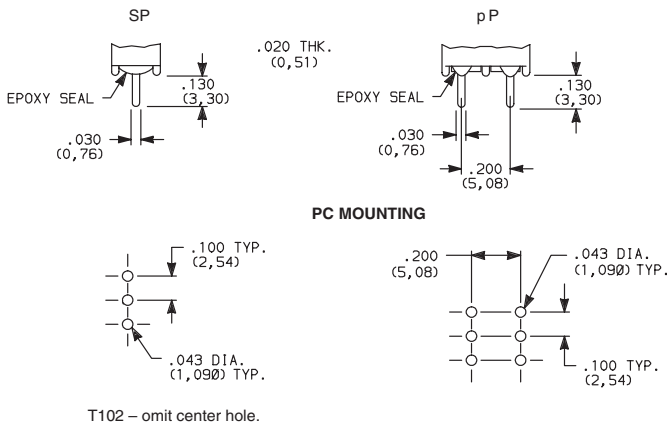


TERMINATIONS

Z SOLDER LUG

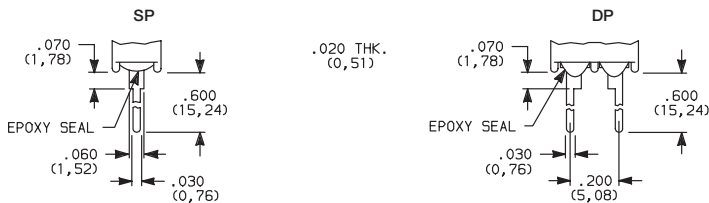


C PC THRU-HOLE



Not available with P or R contact materials.

W WIRE WRAP

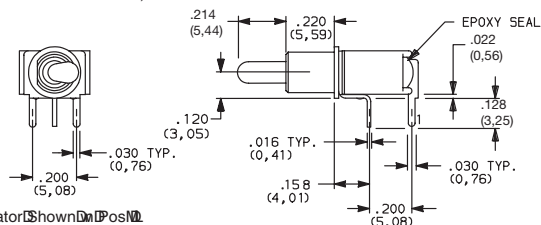


T Series Subminiature Toggle Switches

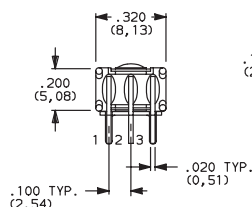
TERMINATIONS



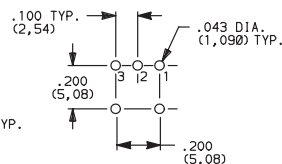
A RIGHT ANGLE, PC THRU-HOLE



Not available with T102 model.

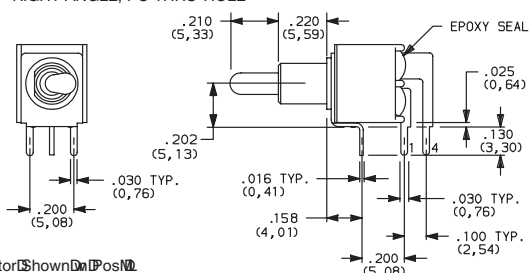


PC MOUNTING

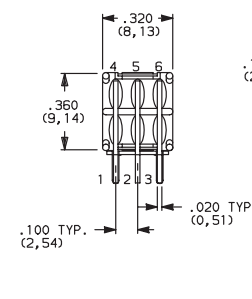


T101MH9ABE
Horizontal Actuation
SPDT

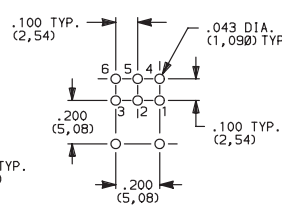
A RIGHT ANGLE, PC THRU-HOLE



Not available with T102 model.

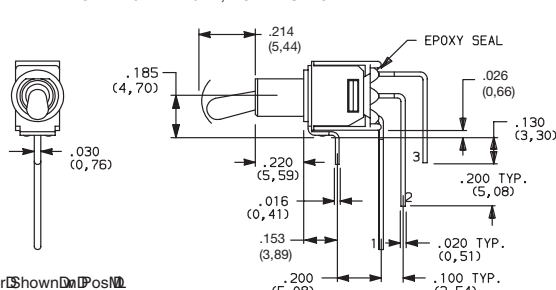


PC MOUNTING



T201MH9ABE
Horizontal Actuation
DPDT

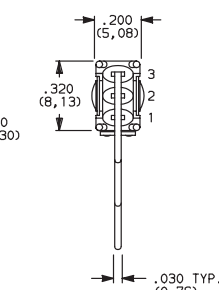
AV VERTICAL RIGHT ANGLE, PC THRU-HOLE



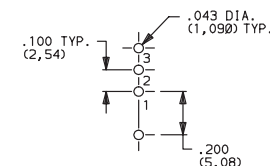
Not available with T102 model.

T102 Models: Omit terminal 2

NOTE: Terminal bend radii and lead-in manufacturing option.

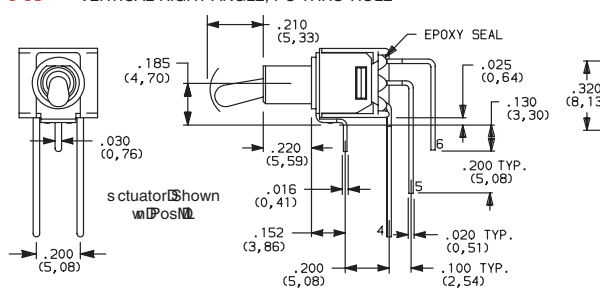


PC MOUNTING

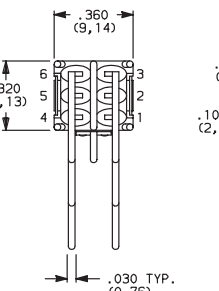


T101MH9AVBE
Vertical Actuation
SPDT

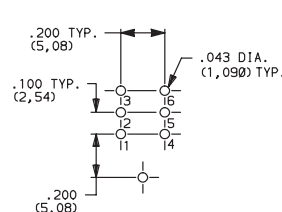
AV VERTICAL RIGHT ANGLE, PC THRU-HOLE



NOTE: Terminal bend radii and lead-in manufacturing option.

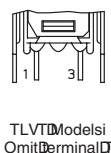
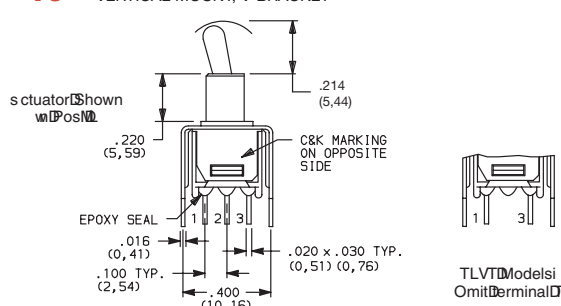


PC MOUNTING

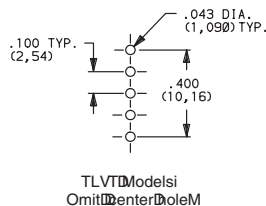


T201MH9AVBE
Vertical Actuation
DPDT

V3 VERTICAL MOUNT, V-BRACKET



PC MOUNTING



T101MH9V3BE
SPDT

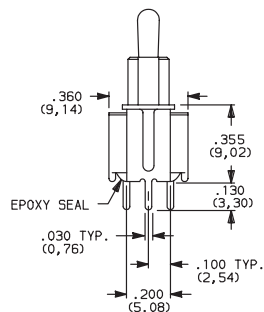


Third Angle
Projection

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

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Technical drawing of a C&K marking tool. The drawing shows a cross-section of the tool with various dimensions and labels. Dimensions include: .210 (5, 33) for the top section, .220 (5, 59) for the middle section, .016 (0, 41) for the side width, .100 TYP. (2, 54) for the bottom width, .400 (10, 16) for the total width, and .020 x .030 TYP. (0, 51) (0, 76) for the bottom width. Labels include 'C&K MARKING ON OPPOSITE SIDE' and 's.uator Shown in Pos. 1'.



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

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

All models  with all options when ordered with R, G, or Q contact material.
B contact material standard with A, AV, V3 & W terminations.
Q contact material standard with C & Z terminations.

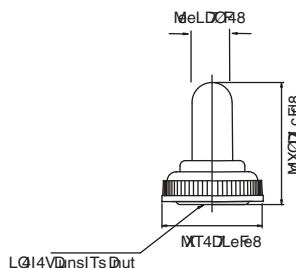
```

graph LR
    A[ ] --> B[ ]
    B --> C[ ]
    C --> D[ ]
    D --> E[ ]
    E --> F[ ]
  
```

EPOXY SEAL

.040 MAX.
(1.02)

759D02000 SEALING BOOT



* Note: For use with S1 actuator style when combined with T, TK, and CF bushings.



Toggle



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

GT Series Sealed Ultraminiature Toggle Switches

Features/Benefits

- ***Sealed against solder and cleaning process contaminants***
- ***Ultraminiature size, smallest footprint available***
- ***Thru-hole and surface mount models***
- ***High temperature materials (UL 94V-0)***
- ***RoHS compliant and compatible***

Typical Applications

- **Hand-held telecommunications**
- **Small instrumentation**



Specifications

CONTACT RATING: 0.4 VA max. @ 20 V AC or DC max.
MECHANICAL & ELECTRICAL LIFE: 40,000 make-and-break
cycles at full load.

CONTACT RESISTANCE: Below 50 m Ω typ. initial @
2-4 V DC, 100 mA.

INSULATION RESISTANCE: $10^9 \Omega \text{ min.}$

DIELECTRIC STRENGTH: 500 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).

PACKAGING: Surface mount switches shipped in anti-static tape and reel packaging per EIA 481-3, see page F-42 for drawings and reel information. Tape and cover strip are conductive for use near statically sensitive components, consult Customer Service Center.

Materials

HOUSING AND BASE: Glass filled nylon 4/6, flame retardant, heat stabilized (UL 94V-0).

ACTUATOR: Glass filled nylon 4/6, flame retardant, heat stabilized (UL 94V-0), with standard internal o-ring seal.

SWITCH SUPPORT: Brass, tin plated.

MOVABLE CONTACTS: Copper alloy, with gold plate over nickel plate.

STATIONARY CONTACTS: Copper alloy, with gold plate over nickel plate.

TERMINAL S: Gold.

TERMINAL SEAL: Epoxy. All terminals insert molded.

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

How To Order

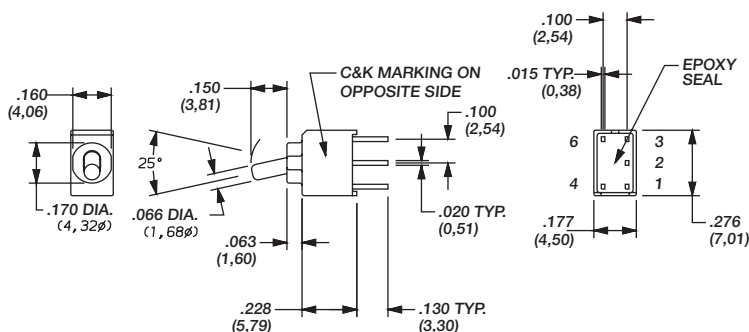
Complete part numbers for GT Series Sealed Ultraminiature Toggle Switches are shown on pages F-38 thru F-42.



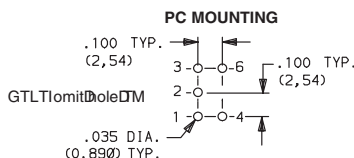
GT11MCBE
SPDT

PART NUMBER	SWITCH FUNCTION		
	POS.1	POS. 2	POS. 3
			
GT11MCBE	ON	NONE	ON
GT13MCBE	ON	OFF	ON
Conn. Terms.	2-3	OPEN	2-1

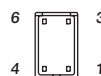
Schematic			
SPDT	Note: Pins 4 and 6 not connected		
GT12MCBE	OFF	NONE	ON
Conn. Terms.	OPEN	N/A	3-1
Schematic			
SPST	Note: Pins 4 and 6 not connected		



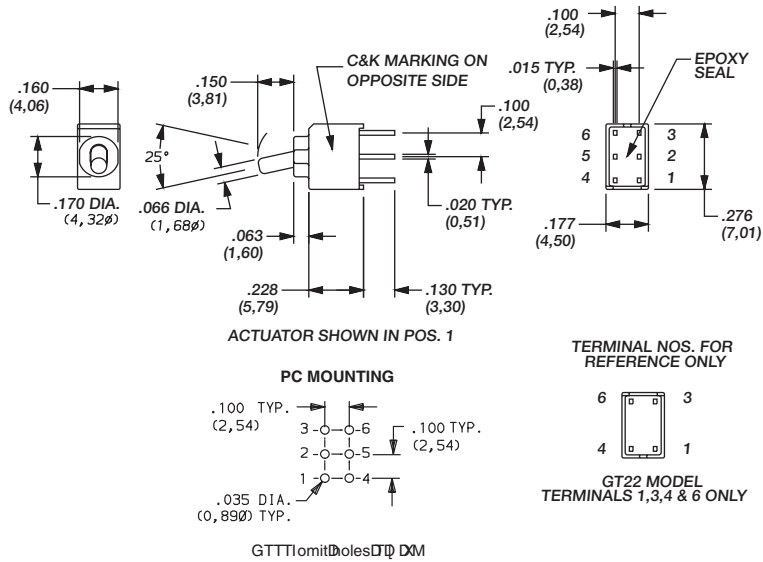
ACTUATOR SHOWN IN POS. 1



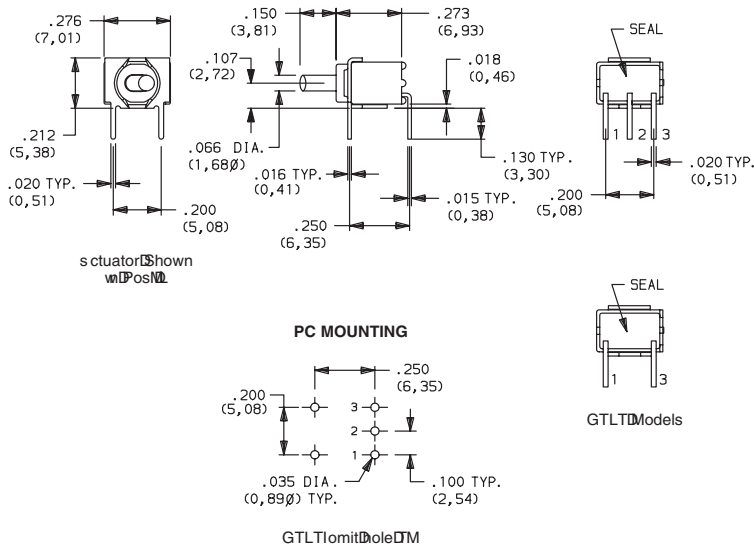
TERMINAL NOS. FOR
REFERENCE ONLY

GT12 MODEL
TERMINALS 1.3.4 & 6 ONLY

Sealed Ultraminiature Toggle Switches



PART NUMBER	SWITCH FUNCTION		
	POS.1	POS. 2	POS. 3
GT21MCBE GT23MCBE	ON ON	NONE OFF	ON ON
Conn. Terms.	2-3, 5-6	OPEN	2-1, 5-4
Schematic			
DPDT			
GT22MCBE	OFF	NONE	ON
Conn. Terms.	OPEN	N/A	3-1
Schematic			
DPST			



PART NUMBER	SWITCH FUNCTION		
	POS. 1	POS. 2	POS. 3
GT11MABE	ON	NONE	ON
GT13MABE	ON	OFF	ON
Conn. Terms.	2-3	OPEN	2-1

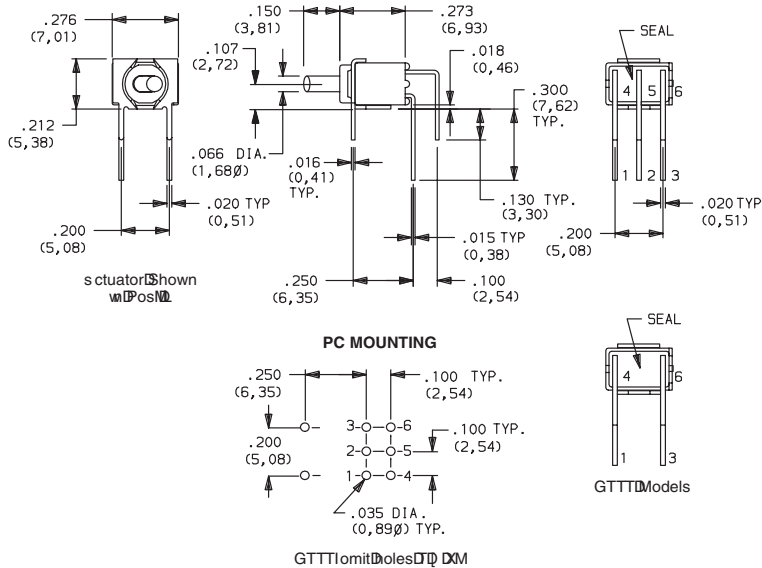
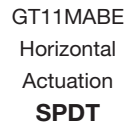
Schematic

SPDT

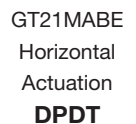
PART NUMBER	POS. 1	POS. 2	POS. 3
GT12MABE	OFF	NONE	ON
Conn. Terms.	OPEN	N/A	3-1

Schematic

SPST



PART NUMBER	SWITCH FUNCTION		
	POS.1	POS. 2	POS. 3
GT21MABE GT23MABE	ON ON	NONE OFF	ON ON
Conn. Terms.	2-3, 5-6	OPEN	2-1, 5-4
Schematic 			
GT22MABE	OFF	NONE	ON
Conn. Terms.	OPEN	N/A	3-1, 6-4
Schematic 			



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

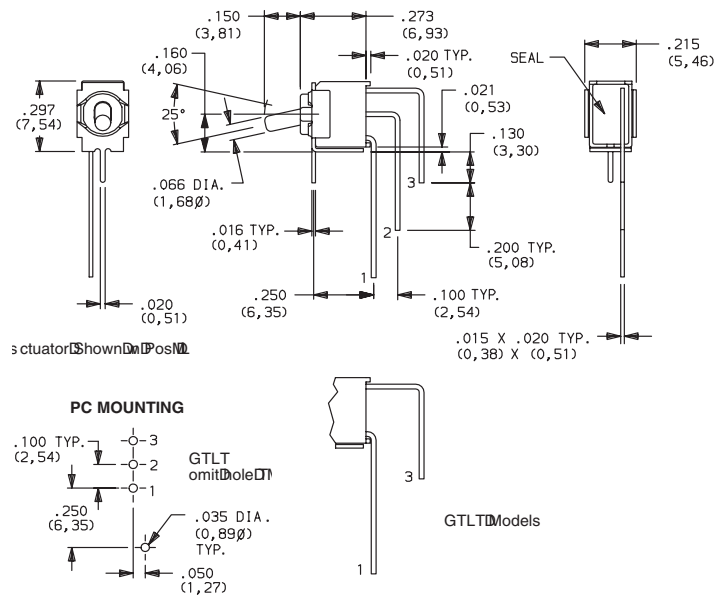
GT Series

Sealed Ultraminiature Toggle Switches



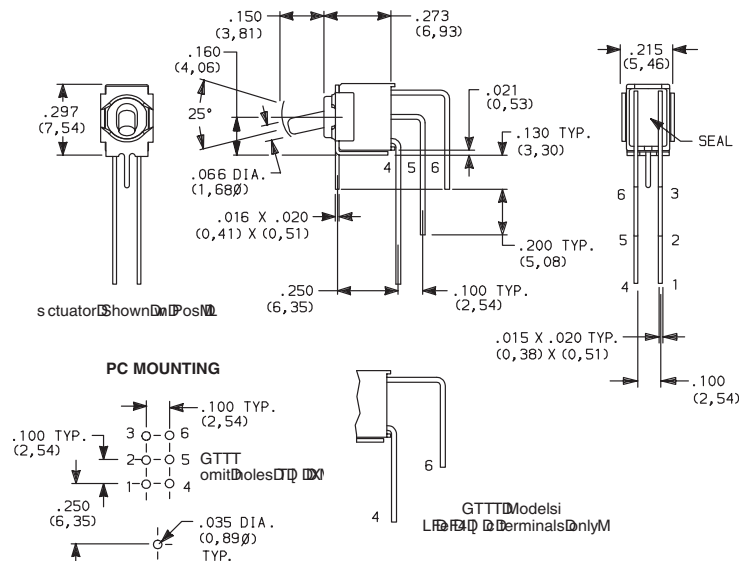
GT11MAVBE
Vertical
Actuation
SPDT

PART NUMBER	SWITCH FUNCTION		
	POS.1	POS. 2	POS. 3
GT11MAVBE	ON	NONE	ON
GT13MAVBE	ON	OFF	ON
Conn. Terms.	2-3	OPEN	2-1
Schematic			
SPDT			
GT12MAVBE	OFF	NONE	ON
Conn. Terms.	OPEN	N/A	3-1
Schematic			
SPST			



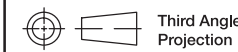
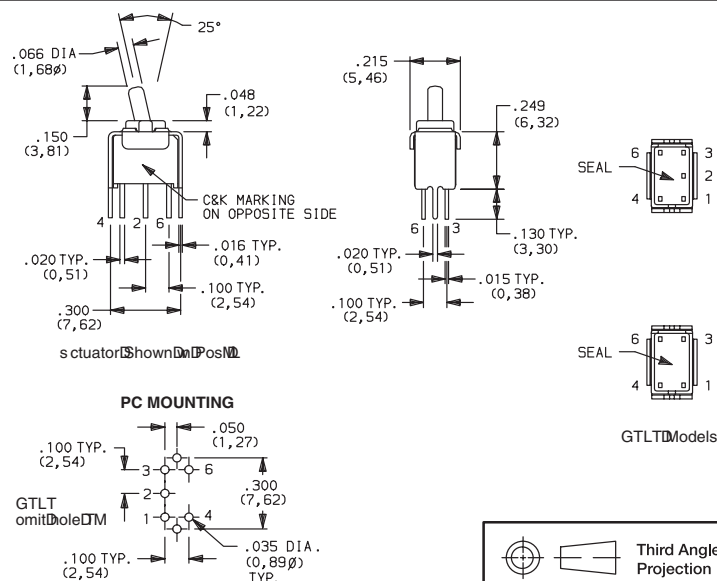
GT21MAVBE
Vertical
Actuation
DPDT

PART NUMBER	SWITCH FUNCTION		
	POS.1	POS. 2	POS. 3
GT21MAVBE	ON	NONE	ON
GT23MAVBE	ON	OFF	ON
Conn. Terms.	2-3, 5-6	OPEN	2-1, 5-4
Schematic			
DPDT			
GT22MAVBE	OFF	NONE	ON
Conn. Terms.	OPEN	N/A	3-1, 6-4
Schematic			
DPST			



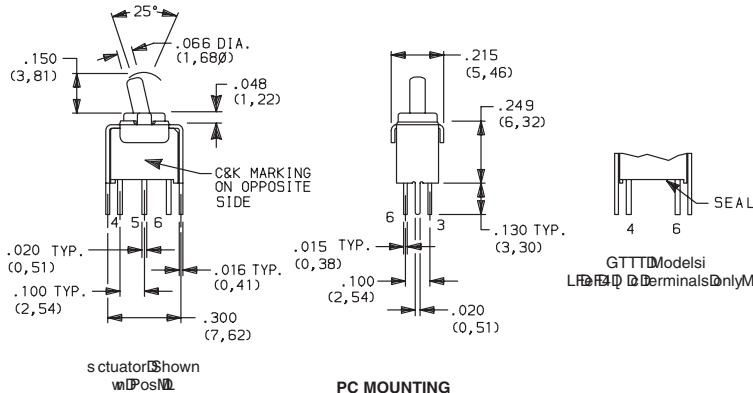
GT11MV3BE
SPDT

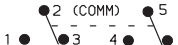
PART NUMBER	SWITCH FUNCTION		
	POS.1	POS. 2	POS. 3
GT11MV3BE	ON	NONE	ON
GT13MV3BE	ON	OFF	ON
Conn. Terms.	2-3	OPEN	2-1
Schematic			
SPDT	Note: Pins 4 and 6 not connected		
GT12MV3BE	OFF	NONE	ON
Conn. Terms.	OPEN	N/A	3-1
Schematic			
SPST	Note: Pins 4 and 6 not connected		

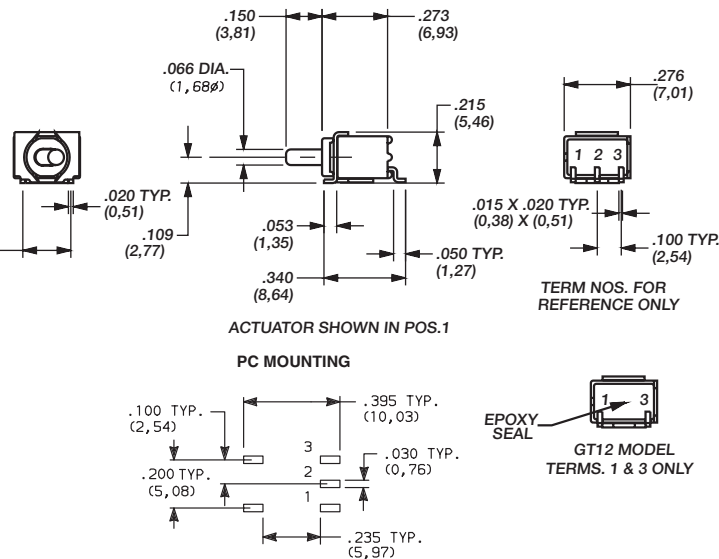
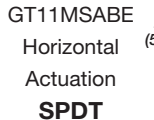


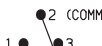
Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

GT Series e Switches

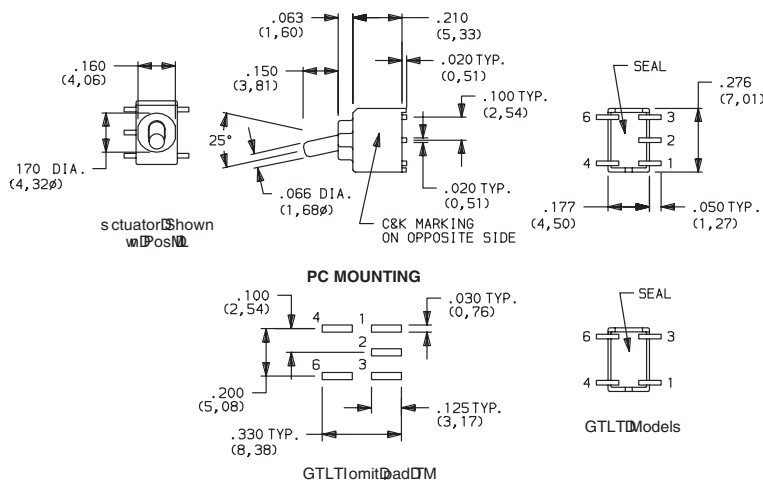


PART NUMBER	SWITCH FUNCTION		
	POS.1	POS. 2	POS. 3
			
GT21MV3BE	ON	NONE	ON
GT23MV3BE	ON	OFF	ON
Conn. Terms.	2-3, 5-6	OPEN	2-1, 5-4
Schematic 			
DPDT			
GT22MV3BE	OFF	NONE	ON
Conn. Terms.	OPEN	N/A	3-1, 6-4
Schematic 			
DPST			



PART NUMBER	SWITCH FUNCTION		
	POS. 1	POS. 2	POS. 3
			
GT11MSABETR GT13MSABETR	ON ON	NONE OFF	ON ON
Conn. Terms.	2-3	OPEN	2-1
Schematic 			
SPDT			
GT12MSABETR	OFF	NONE	ON
Conn. Terms.	OPEN	N/A	3-1
Schematic 			
SPST			

Standard with tape & reel packaging, see page F-42.



PART NUMBER	SWITCH FUNCTION		
	POS. 1	POS. 2	POS. 3
			
GT11MSCBTR GT13MSCBTR	ON ON	NONE OFF	ON ON
Conn. Terms.	2-3	OPEN	2-1
Schematic  SPDT Note: Pins 4 and 6 not connected			
GT12MSCBTR	OFF	NONE	ON
Conn. Terms.	OPEN	N/A	3-1
Schematic  SPST Note: Pins 4 and 6 not connected			

Standard with tape & reel packaging, see page F-42.



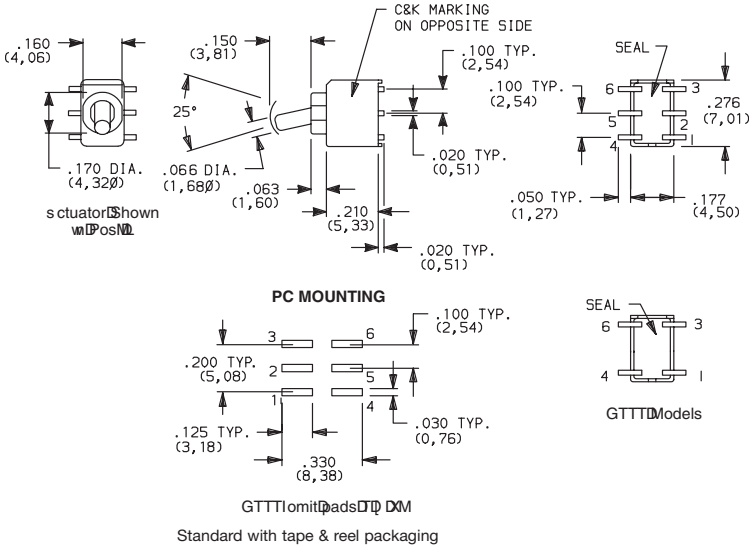
Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

GT Series

Sealed Ultraminiature Toggle Switches

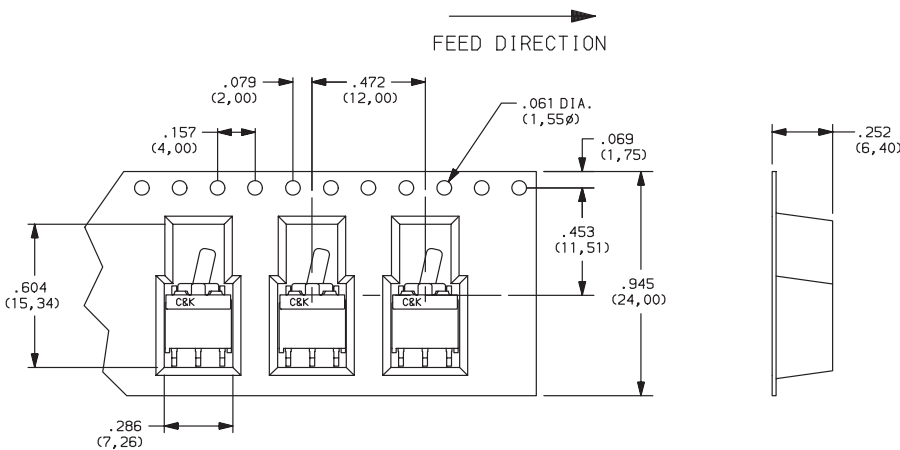


PART NUMBER	SWITCH FUNCTION		
	POS. 1	POS. 2	POS. 3
GT21MSCBETR	ON	NONE	ON
GT23MSCBETR	ON	OFF	ON
Conn. Terms.	2-3, 5-6	OPEN	2-1, 5-4
Schematic			
DPDT			
GT22MSCBETR	OFF	NONE	ON
Conn. Terms.	OPEN	N/A	3-1, 6-4
Schematic			
DPST			



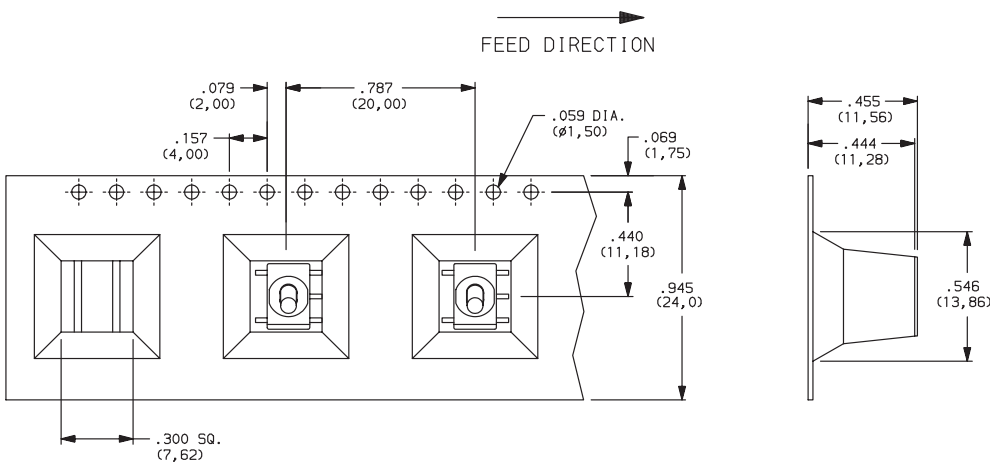
TAPE & REEL

For part numbers GT11MSABE, GT12MSABE, GT13MSABE



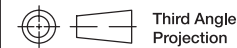
REEL INFORMATION	
OUTSIDE DIAMETER	13.00 (330,0)
PILOT HOLE	.512 (13,0)
QUANTITY PER REEL	600

For part numbers GT11MSCBE, GT12MSCBE, GT13MSCBE, GT21MSCBE, GT22MSCBE, GT23MSCBE,



REEL INFORMATION	
OUTSIDE DIAMETER	13.00 (330,0)
PILOT HOLE	.512 (13,0)
QUANTITY PER REEL	200

Toggle



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

9000 Series Power Toggle Switches

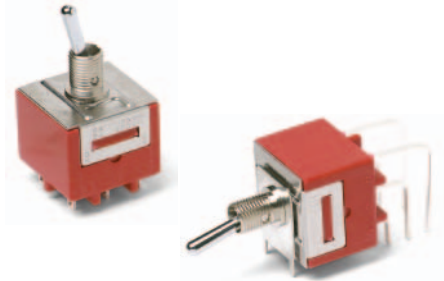
Features/Benefits

- Power ratings up to 10 AMPS
- Double pole models
- Locking lever options available
- Wide variety of actuator styles
- RoHS compliant and compatible



Typical Applications

- Shut-off switch
- Small equipment



Specifications

CONTACT RATING: 9201 Model: 6 AMPS @ 120 V AC or 28 V DC; 3 AMPS @ 250 V AC. 9221 Model: 10 AMPS @ 125 V AC or 28 V DC; 5 AMPS @ 250 V AC.

ELECTRICAL LIFE: 25,000 make-and-break cycles at full load.

CONTACT RESISTANCE: Below 10 m Ω typ. initial @ 2-4 V DC, 100 mA.

INSULATION RESISTANCE: 10⁹ Ω min.

DIELECTRIC STRENGTH: 2,500 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).

NOTE: Any models supplied with Q contact material are RoHS compliant and compatible.

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

Materials

CASE: Diallyl phthalate (DAP) (UL 94V-0).

ACTUATOR: Brass, chrome plated.

BUSHING: Brass or zinc, nickel plated.

HOUSING: Stainless steel.

SWITCH SUPPORT: Brass or steel, matte-tin plated.

END CONTACTS: 9201 Model: Coin silver, silver plated.
9221 Model: Silver cadmium oxide.

CENTER CONTACTS: Copper alloy, silver plated

ALL TERMINALS: 9201 Model: Copper alloy, silver plated.
9221 Model: Copper alloy, matte-tin plated.

TERMINAL SEAL: Epoxy.

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

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-43 thru F-47. For additional options not shown in catalog, consult Customer Service Center.

Switch Function 9201 DPDT, On-On, 6 Amps 9221 DPDT, On-On, 10 Amps



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



9000 Series
Power Toggle Switches

SWITCH FUNCTION

NO. POLES	MODEL NO.	RATING*	SWITCH FUNCTION		CONNECTED TERMINALS		SCHEMATIC
			POS. 1	POS. 2	POS. 1	POS. 2	
			KEYWAY	KEYWAY	KEYWAY	KEYWAY	
DP	9201	6 AMPS	ON	ON	2-3,5-6	2-1,5-4	
	9221	10 AMPS	ON	ON			

DPDT

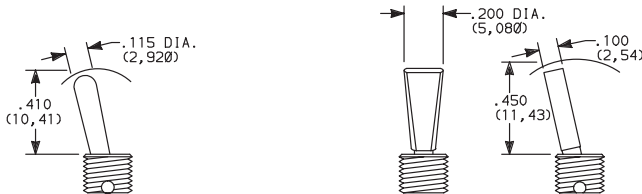
Part number shown: 9201SH3ZQE

Terminal Nos.
Molded On Side Of Case

* See CONTACT MATERIAL, page F-47, for complete ratings.
All 9000 Series models meet international dimensional and electrical requirements.
9221 model must be ordered with Z4 terminations and D seal option.

ACTUATOR

- S ANTIROTATION, .410" HIGH
- P3 FLATTED, ANTIROTATION, .450" HIGH

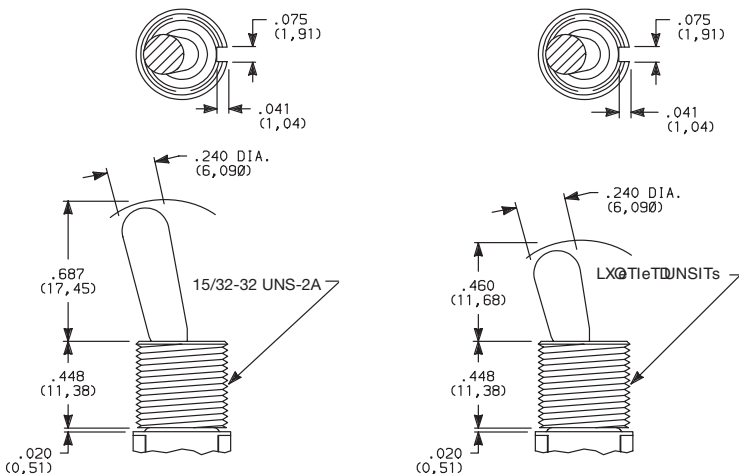


OPTION CODE	ACTUATOR FINISH
NONE	NATURAL ALUMINUM—With Nickel Plated Bushing
2	BLACK

NOTE: Black hardware is supplied when either black actuators or bushings are specified. All hardware is available separately, see Section N.
Antirotation is standard on all actuators, provides 'anti-push-in' feature on actuator.

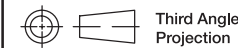
Dress nut part number: 709901201 supplied standard with P3 actuator.

- T .687" HIGH, 15/32 BUSHING
- T1 .460" HIGH, 15/32 BUSHING



OPTION CODE	ACTUATOR FINISH
NONE	BRIGHT CHROME—With Nickel Plated Bushing
2	BLACK

NOTE: Bushing option code not required for T & T1 actuators unless CW splashproof bushing ordered.
Black hardware is supplied when either black actuators or bushings are specified. All hardware is available separately, see Section N.
Antirotation is standard on all actuators except T & T1, provides 'anti-push-in' feature on actuator.



Third Angle
Projection

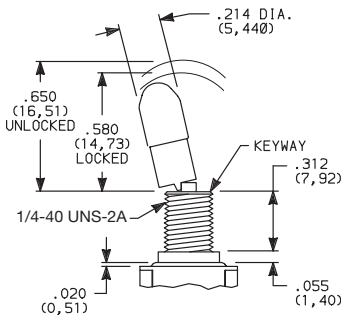
Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

9000 Series Power Toggle Switches

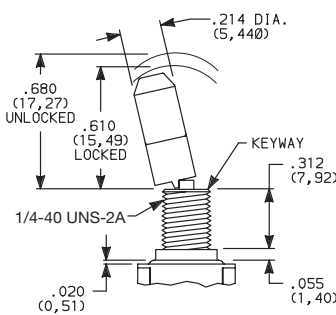
ACTUATOR



K LOCKING LEVER, .650" HIGH, THREADED



K1 LOCKING LEVER, .680" HIGH, THREADED



Locking Positions

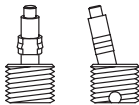


T1 Position Lock

NOTE: To prevent accidental actuation, toggles must be lifted before being actuated. When released, toggles again lock in place. Bushing option code not required. Overtightening mounting nut may cause actuator to bind.

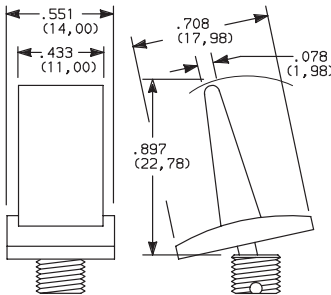
OPTION CODE	ACTUATOR CAP FINISH
NONE	NATURAL ALUMINUM—With Nickel Plated Bushing
2	BLACK ANODIZED ALUMINUM

L40 LEVER HANDLE WITHOUT CAP



No color choice required.

L43 PLASTIC LEVER HANDLE WITH ANTIROTATION AND CAP, P/N 4812



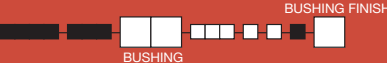
Finish: Matte

OPTION CODE	ACTUATOR CAP COLOR
2	BLACK
NONE	No Actuator Color (L40 option)

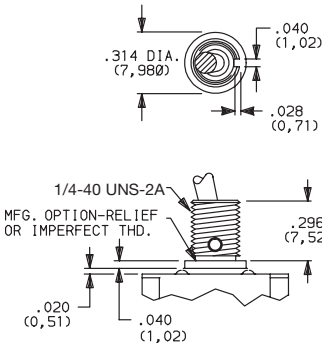
Other colors available, consult Customer Service Center.

NOTE: Lever handle actuator L43 supplied, but not installed. For interchangeability, order L40 actuator option and order lever handles separately, see page F-47. Antirotation is standard on all actuators, provides 'anti-push-in' feature.

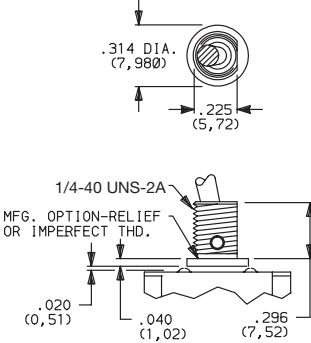
BUSHING



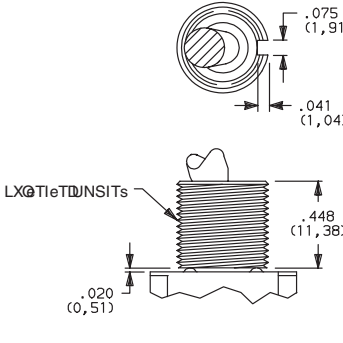
H3 .296" HIGH, THREADED, KEYWAY



H .296" HIGH, THREADED, FLAT



CW SPLASHPROOF, 15/32 BUSHING



Will withstand 12 in./lbs. of torque with no distortion.

For T & T1 actuators only.

NOTE: Two mounting nuts, locking ring and lockwasher supplied standard with threaded bushings. Black hardware is supplied when either black bushings or actuators are specified. Optional mounting nut and locking ring styles and finishes available, see Section N.

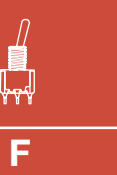
Internal actuator seal standard. External bushing seal available separately from APM Hexseal, part # MFS-60064.

OPTION CODE	BUSHING FINISH
NONE	NICKEL
2	BLACK



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

C&K

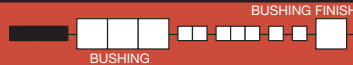


F

Toggle

9000 Series Power Toggle Switches

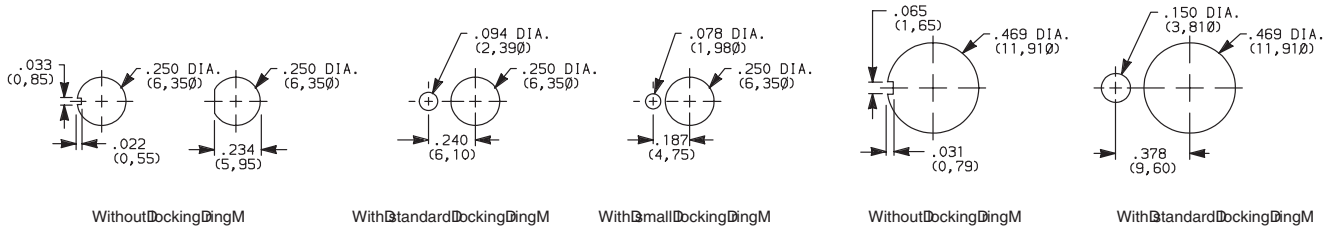
BUSHING



PANEL MOUNTING

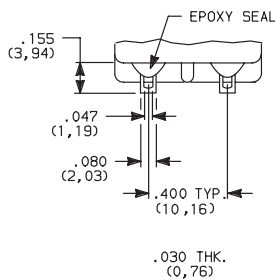
1/4-40 UNS-2A

15/32-32 UNS-2A



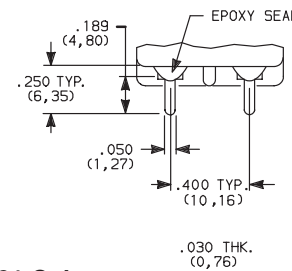
TERMINATIONS

Z SOLDER LUG



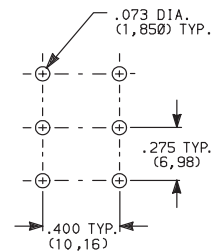
9201 Only

C PC THRU-HOLE



9201 Only

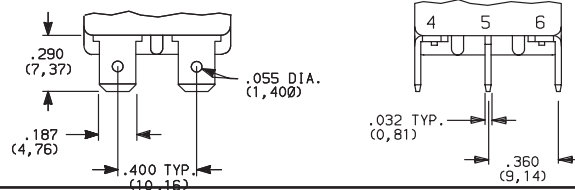
PC MOUNTING



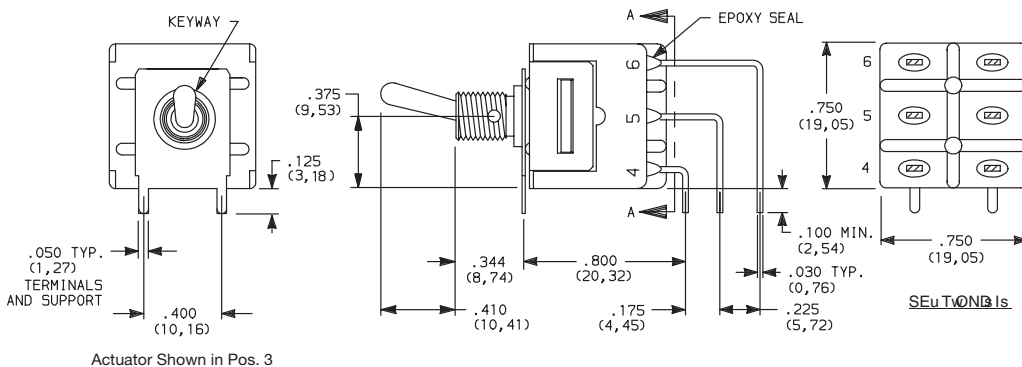
Z4 .187" QUICK CONNECT

9221 Only

NOTE: Only termination available with 9221 model. Must be ordered with D seal option. Mates with standard .187 Nema female connector.

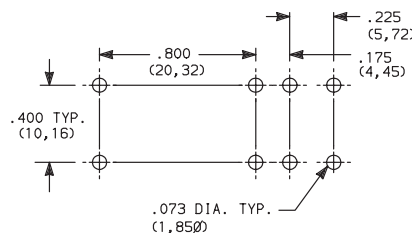


AV2 VERTICAL RIGHT ANGLE, PC THRU-HOLE



9201SH3AV2QE
Vertical Actuation
DPDT

PC MOUNTING



Terminal Nos.
For Reference Only



Third Angle
Projection

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

www.ck-components.com

9000 Series Power Toggle Switches

CONTACT MATERIAL

OPTION CODE	MODEL	CONTACT MATERIAL	TERMINAL PLATING	RATINGS	
Q	9201	SILVER ^{1,2}	SILVER OR TIN ^{2,5}	POWER	6 AMPS @120 V AC OR 28 V DC; 3 AMPS @ 250 V AC.
	9221	SILVER CADMIUM OXIDE ^{3,4,6}	TIN ⁵		10 AMPS @125 V AC OR 28 V DC; 5 AMPS @ 250 V AC.

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

¹ END CONTACTS: Coin silver, silver plated.

² CENTER CONTACTS & ALL TERMINALS: Copper alloy, silver plated.

³ END CONTACTS: Silver cadmium oxide.

⁴ CENTER CONTACTS: Copper alloy, silver plated.

⁵ Z4 TERMINALS ONLY: Copper alloy, matte-tin plated.

⁶ Cadmium in electrical switch contacts is exempt from RoHS.

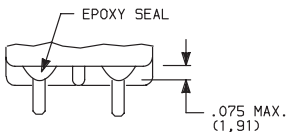
NOTE: Any models supplied with Q contact material are RoHS compliant.

All 9000 Series models meet international dimensional and electrical requirements.   

9221 model must be ordered with Z4 terminations and D seal option.

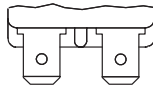
SEAL

E EPOXY SEAL



Not available with 9221 model or Z4 terminations.

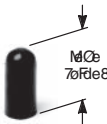
D NO EPOXY SEAL



Must be ordered with 9221 model and Z4 termination.

AVAILABLE HARDWARE

Cap
Compatible with S actuator



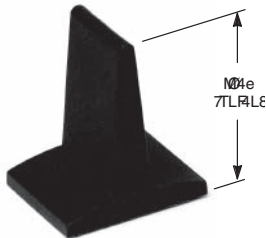
PART NO.
896801000 WHITE
896802000 BLACK
896803000 RED
 Material: Polyethylene
 Finish: Matte

Cap
Compatible with S actuator



PART NO.
706201000 WHITE
706202000 BLACK
706203000 RED
 Material: Vinyl
 Finish: Matte

L43 Actuator

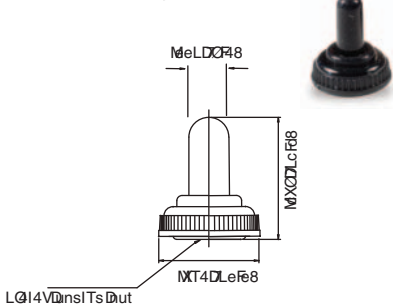


PART NO.
481202000 BLACK
481203000 RED
 Material: Nylon
 Finish: Matte

NOTE: Additional nuts, locking rings and lockwashers available separately, see Section N.

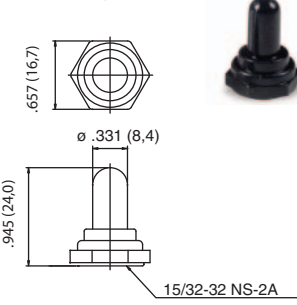
Other colors available, consult Customer Service Center.

759D02000 Sealing Boot



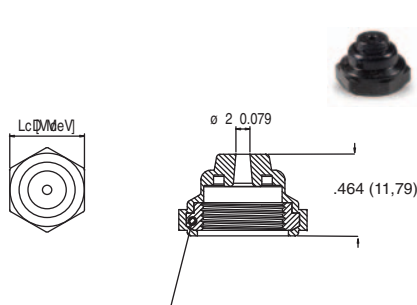
NOTE: For use with S actuator style when combined with H3 and H bushings

703D02000 Sealing Boot



NOTE: For use with T style actuator

704D02000 Sealing Boot



NOTE: For use with T style actuator



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





Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

Телефон: 8 (812) 309 58 32 (многоканальный)

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