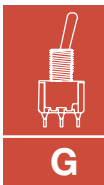


Toggles

Product Selection Guide

| Toggles | | | | | | | |
|------------------------------------|------------------------|-------------|------------------|------------------|------------------|------------------------|---------|
| Series | 7000 | Military | E | ET | T | GT | 9000 |
| Switch Type | Miniature | Miniature | Miniature | Subminiature | Subminiature | Ultraminiature | Power |
| Poles/Throws | SPDT, DPDT, 3PDT, 4PDT | SPDT, DPDT, | SPDT, DPDT, 3PDT | SPST, SPDT, DPDT | SPST, SPDT, DPDT | SPST, SPDT, DPST, DPDT | DPDT |
| Maximum Current Silver/Gold | 5 Amps | 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. | G-3 | G-17 | G-22 | G-30 | G-37 | G-43 | G-48 |



Toggle



*Dimensions are shown: Inch (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



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 G-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.

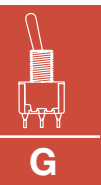
Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages G-4 thru G-16. For additional options not shown in catalog, consult our Customer Service Center.

| | | | |
|---|---|---|---|
| <p>Switch Function</p> <p>7101 SP On-None-On 7103 SP On-Off-On 7105 SP Mom.-Off-Mom. 7107 SP On-Off-Mom. 7108 SP On-None-Mom. 7109 SP None-On-Mom. 7201 DP On-None-On 7203 DP On-Off-On 7205 DP Mom.-Off-Mom. 7207 DP On-Off-Mom. 7208 DP On-None-Mom. 7211 DP On-On-On 7213 DP On-On-Mom. 7215 DP Mom.-On-Mom. 7301 3P On-None-On 7303 3P On-Off-On 7305 3P Mom.-Off-Mom. 7308 3P On-None-Mom. 7401 4P On-None-On 7403 4P On-Off-On 7405 4P Mom.-Off-Mom. 7408 4P On-None-Mom. 7411 4P On-On-On 7413 4P On-On-Mom. 7415 4P Mom.-On-Mom.</p> <p><small>Note: UL/CSA models available, see pages G-4 & G-5.</small></p> | <p>Actuator</p> <p>M .200" high P3 Flatted, anti-rotation, .450" high S .420" high T .687" high, 15/32 bushing K2 Locking lever, .704" high K9 Locking lever, .704" high K12 Locking lever, .732" high K19 Locking lever, .732" high L .840" high L1 .640" high L1P Anti-rotation, .640" high L2 .550" high L2P Anti-rotation, .550" high L40 Lever handle without cap L41 .531" high lever handle with cap L42 .838" high lever handle with cap MP Anti-rotation, .200" high P1 Flatted, anti-rotation, .840" high P4 Flatted, anti-rotation, .250" high SP Anti-rotation, .420" high T1 .487" high, 15/32 bushing 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</p> | <p>Bushing</p> <p>D .280 high, keyway H .296 high, flat Y .350 high, keyway NONE No bushing choice required CW Splashproof D8 .280" high, flat D9 .280" high, keyway H3 .315" high, keyway H4 8mm high, keyway Y1 .378" high, keyway Y3 8.9mm high, keyway Y4 .378" high, flat Y9 .350" high, keyway</p> <p>Terminations</p> <p>A Right angle, PC thru-hole AV2 Vert. right angle, PC thru-hole C PC Thru-hole V3 .460 high, V-bracket Z Solder lug A2 Right angle, PC thru-hole A3 Right angle, PC thru-hole A4 Right angle, PC thru-hole AW1 Right angle, extended, PC thru-hole AW2 Right angle, extended, PC thru-hole V2 .555" high, V-bracket V4 .630" high, V-bracket V6 .460" high, V-bracket V7 .630" high, V-bracket V8 .953" high, V-bracket V9 1.150" high, V-bracket V21 .555" high, snap-in V-bracket V31 .460" high, snap-in V-bracket V41 .630" high, snap-in V-bracket V71 .630" high, snap-in V-bracket V81 .953" high, snap-in V-bracket</p> | <p>Contact Material</p> <p>B Gold P Gold, matte-tin Q Silver S Silver, matte-tin G Gold over silver R Gold over silver, matte-tin</p> <p>Seal</p> <p>E Epoxy I Epoxy potted base</p> <p>Actuator Color/Finish</p> <p>NONE Bright chrome 2 Black 3 Red S Satin chrome</p> <p>KXX Actuator Color/Finish</p> <p>NONE Natural aluminum 2 Black anodized aluminum 3 Red anodized aluminum 7 Blue anodized aluminum</p> <p>Bushing Finish</p> <p>NONE Nickel on all bushings (except D8, satin chrome) 2 Black</p> |
|---|---|---|---|



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



Toggle

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 G-15 for additional contact materials.

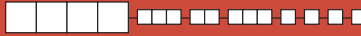
CENTER CONTACTS & ALL TERMINALS: B contact material: Copper alloy, with gold plate over nickel plate. Q contact material: Copper alloy, silver plated. See above for additional contact materials.

TERMINAL SEAL: Epoxy.

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

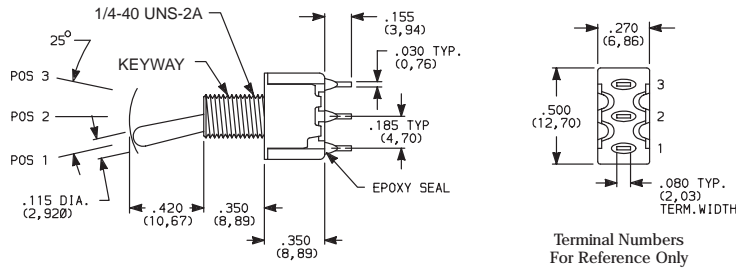
NOTE: Materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

SWITCH FUNCTION



| NO. POLES | MODEL NO. | UL/CSA** MODEL NO. | SWITCH FUNCTION | | | CONNECTED TERMINALS | | | SCHEMATIC |
|-----------|-----------|--------------------|------------------|------------------|------------------|---------------------|------------------|------------------|-----------|
| | | | POS. 1 KEYWAY | POS. 2 KEYWAY | POS. 3 KEYWAY | POS. 1 KEYWAY | POS. 2 KEYWAY | POS. 3 KEYWAY | |
| SP | 7101 | U11 | ON | NONE | ON | 2-3 | N/A | 2-1 | |
| | 7103 | U13 | ON | OFF | ON | 2-3 | OPEN | 2-1 | |
| | 7105 | U15 | MOM. | OFF | MOM. | | | | |
| | 7107 | U17 | ON | OFF | MOM. | | | | |
| | 7108 | U18 | ON | NONE | MOM. | 2-3 | N/A | 2-1 | |
| | 7109 | U19 | NONE | ON | MOM. | N/A | 2-3 | 2-1 | |

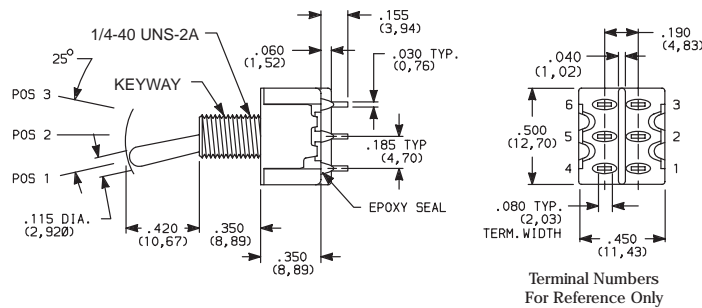
SPDT



Part number shown: 7101SYZBE

| | | | | | | | | | |
|----|-------|-------|------|------|------|---------|---------|---------|--|
| DP | 7201 | U21 | ON | NONE | ON | 2-3-5-6 | N/A | 2-1-5-4 | |
| | 7203 | U23 | ON | OFF | ON | 2-3-5-6 | OPEN | 2-1-5-4 | |
| | 7205 | U25 | MOM. | OFF | MOM. | | | | |
| | 7207 | U27 | ON | OFF | MOM. | | | | |
| | 7208 | U28 | ON | NONE | MOM. | 2-3-5-6 | N/A | 2-1-5-4 | |
| | 7211* | U211* | ON | ON | ON | 2-3-5-6 | 2-3-5-4 | 2-1-5-4 | |
| | 7213* | U213* | ON | ON | MOM. | | | | |
| | 7215* | U215* | MOM. | ON | MOM. | | | | |

DPDT



Part number shown: 7201SYZQE

MOM. = Momentary

** U11-U415 model nos. with all options when ordered with G, L, R, M, Q or S contact material.

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

Toggle



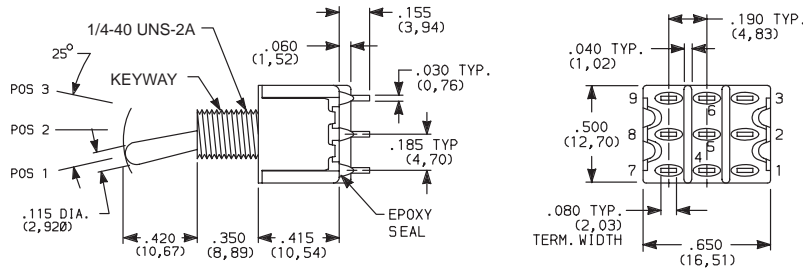
Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change

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 | OPEN | 2-1,5-4,8-7 | |
| | 7305 | U35 | MOM. | OFF | MOM. | | | | |
| | 7307 | U37 | ON | OFF | MOM. | | | | |
| | 7308 | U38 | ON | NONE | MOM. | 2-3,5-6,8-9 | N/A | 2-1,5-4,8-7 | |

3PDT

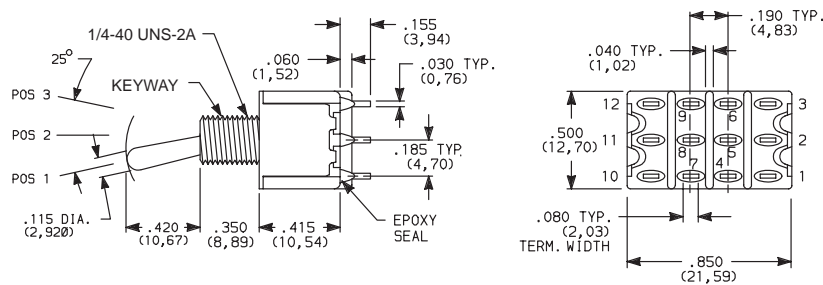


Part number shown: 7301SYZQE

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 | OPEN | 2-1,5-4,8-7,11-10 | |
| | 7405 | U45 | MOM. | OFF | MOM. | | | | |
| | 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. | | | | |
| 7415* | U415* | MOM. | ON | MOM. | | | | | |

4PDT



Part number shown: 7401SYZQE

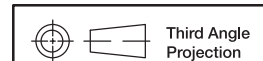
Terminal Numbers
For Reference Only

MOM. = Momentary

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

** U11-U415 model nos.

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



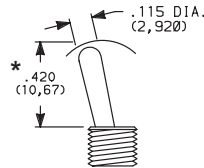
Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change



7000 Series Miniature Toggle Switches

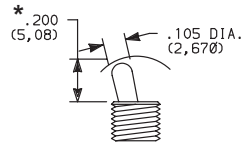
ACTUATOR

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



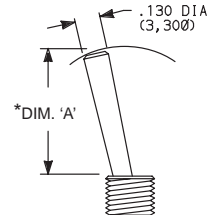
S actuator standard when ordered with C, W-W5, Z & Z3 terminations. Caps are available separately, see page G-16.

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 G-16.

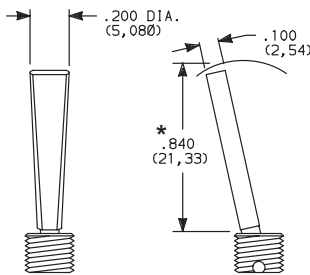
L, L1, L2 .840", .640", .550" HIGH ¹
L1P, L2P ANTIROTATION, .840", .640", .550" HIGH ^{2,3}



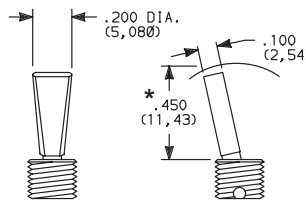
| OPTION CODE | DIM 'A' |
|-------------|--------------|
| L | .840 (21,34) |
| L1, L1P | .640 (16,26) |
| L2, L2P | .550 (13,97) |

Caps are available separately, see page G-16.

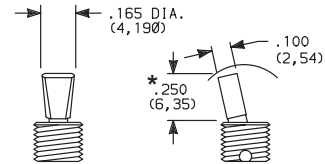
P1 FLATTED WITH ANTIROTATION, .840" HIGH ^{2,3}



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

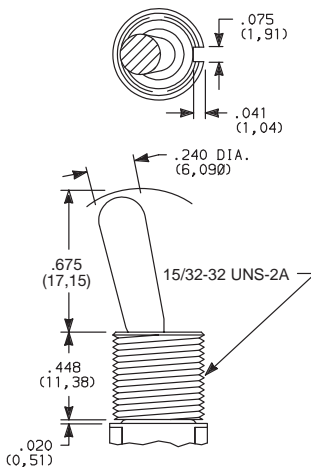


P4 FLATTED WITH ANTIROTATION, .250" HIGH ^{2,3}

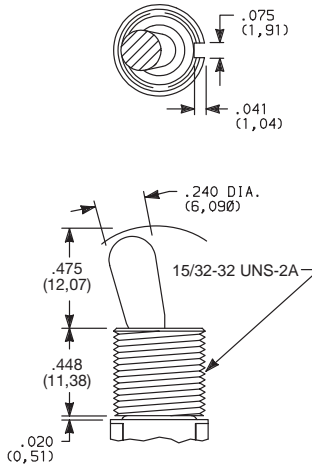


Dress nut part number 709901201 supplied standard with threaded bushing. (Part number 709903201 with metric threaded bushings.)

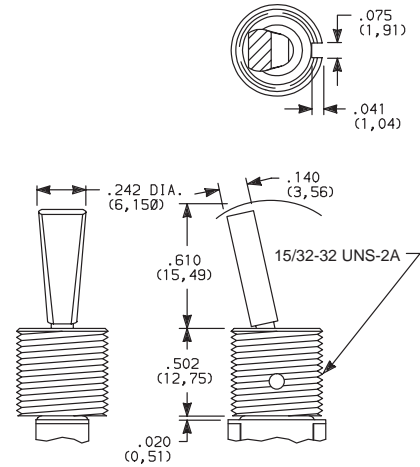
T .675 (17,15) HIGH ^{1,2}
TP ANTIROTATION, .675 (17,15) HIGH, 15/32 BUSHING ^{1,2,3}



T1 .475 (12,07) HIGH ^{1,2}
T1P ANTIROTATION, .475 (12,07) HIGH, 15/32 BUSHING ^{1,2,3}

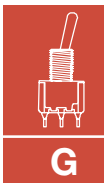


T2P FLATTED, ANTIROTATION, .610" HIGH, 15/32 BUSHING ^{1,2,3}



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.

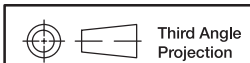


Toggle

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 O.



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



7000 Series Miniature Toggle Switches

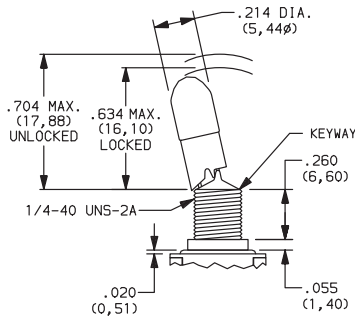
ACTUATOR

ACTUATOR FINISH/COLOR

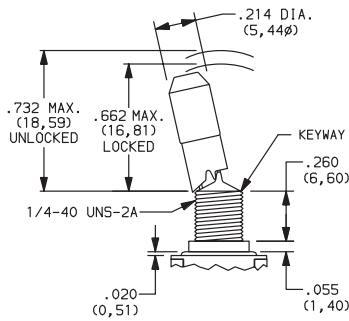
ACTUATOR

- 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



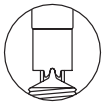
Replaces K1, K18

| OPTION CODE | ACTUATOR CAP FINISH |
|-------------|---|
| NONE | NATURAL ALUMINUM-With Nickel 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



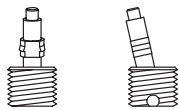
-08 Models
1 Position lock

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.

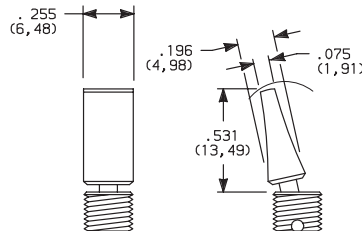
Bushing option code not required unless CW splashproof bushing ordered.

- L40** LEVER HANDLE WITHOUT CAP



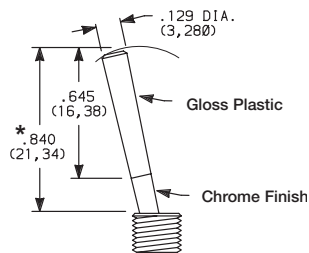
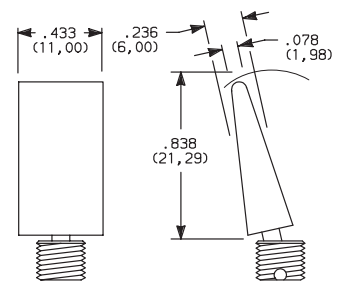
No color choice required

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



Finish: Matte (L41 & L42).

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



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

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

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



Third Angle
Projection



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

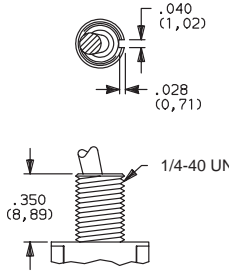


Toggle

7000 Series Miniature Toggle Switches

BUSHING BUSHING FINISH

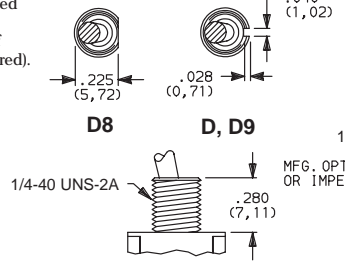
Y .350" HIGH, THREADED, KEYWAY
Y9 .350" HIGH, UNTHREADED, KEYWAY



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

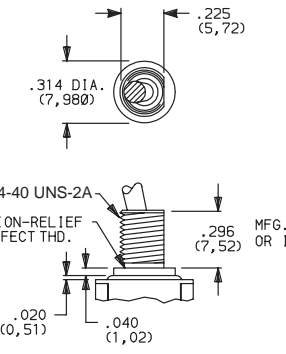
NONE NO BUSHING
No bushing choice required with KXX, TXX actuators. (exception: Specify CW if splashproof bushing desired).

D .280" HIGH, THREADED, KEYWAY
D8 .280" HIGH, UNTHREADED, FLAT³
D9 .280" HIGH, UNTHREADED, KEYWAY

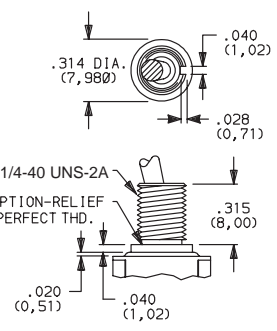


D9 bushing standard with all terminations except C, W-W5, Z or Z3. Add .070 (1,78) to all actuators lengths with D, D8 & D9 bushings.

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

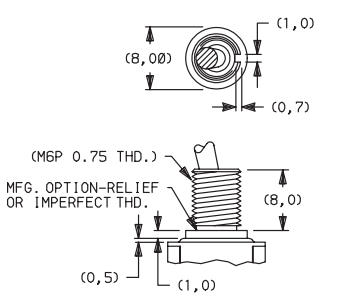


H3 .315" HIGH, KEYWAY THREADED, HIGH TORQUE^{1,2}

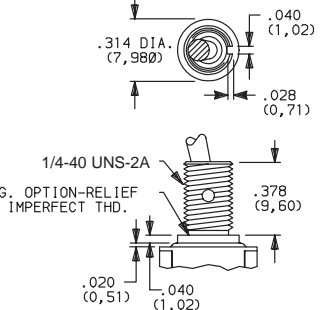


Subtract .020 (0,51) from all actuator lengths for H3 bushing.

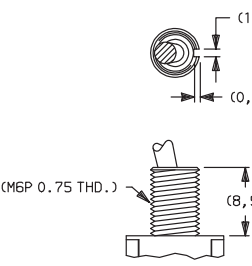
H4 8mm HIGH, KEYWAY, THREADED, METRIC HIGH TORQUE^{1,2,3}



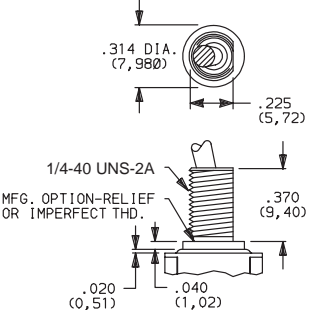
Y1 .378" HIGH, KEYWAY, THREADED, HIGH TORQUE^{1,2,4}



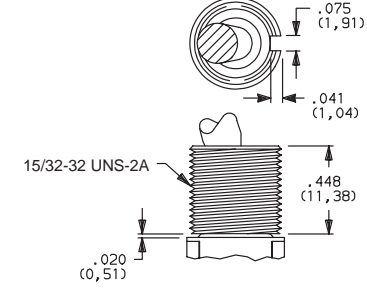
Y3 8.9mm HIGH, KEYWAY, THREADED, METRIC



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

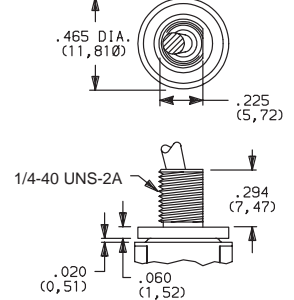


CW THREADED, SPLASHPROOF^{1,2}
For T & T1 actuators.



IP67 Degree of protection, totally protected against dust, full-scale voltage protection, temporary immersion. Internal actuator seal standard. External bushing seal washer available separately, order from: APM Hexseal Englewood, N. J. Part Number: 60225

For actuators other than T & T1.



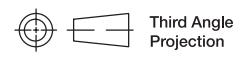
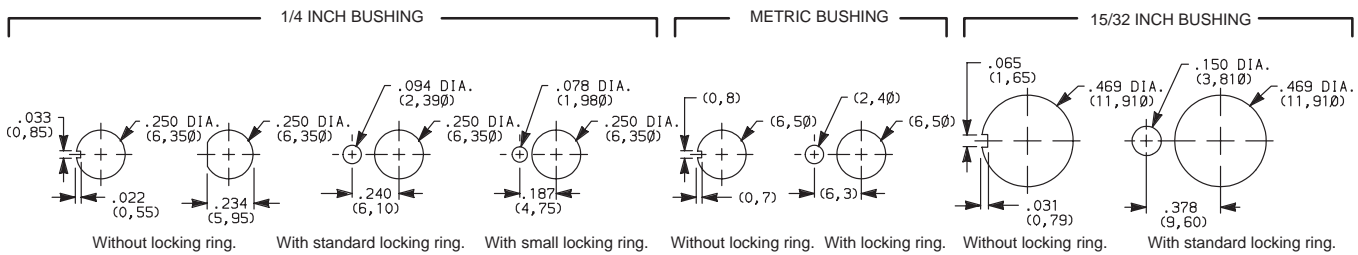
IP67 Degree of protection, totally protected against dust, full-scale voltage protection, temporary immersion. Internal actuator seal and external bushing seal washer standard.

| 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 O.

PANEL MOUNTING



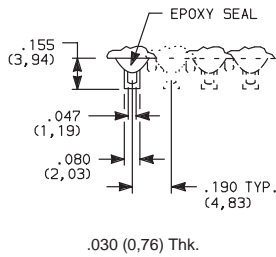
Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change



7000 Series Miniature Toggle Switches

TERMINATIONS

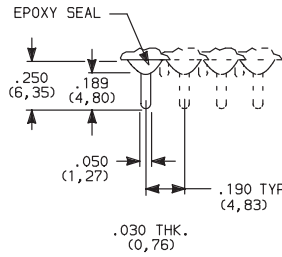
Z SOLDER LUG



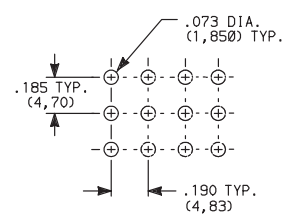
SPDT thru 4PDT

Not available with P, R or S contact materials.

C PC THRU-HOLE

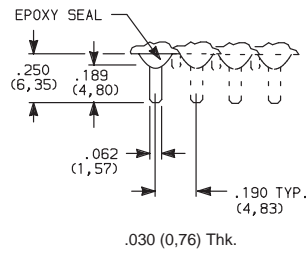


PC MOUNTING



SPDT thru 4PDT

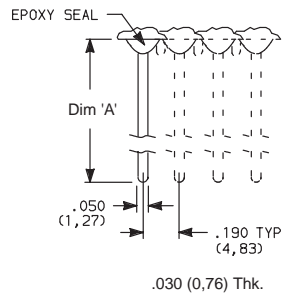
Z3 QUICK CONNECT



SPDT thru 4PDT

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

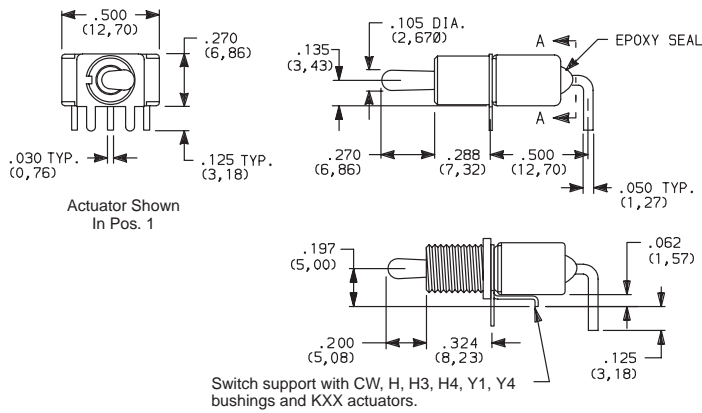
W, W1, W3, W4, W5 WIRE WRAP



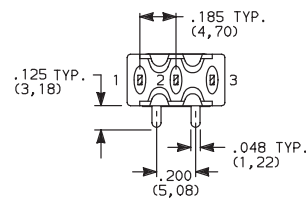
| OPTION CODE | DIM 'A' |
|-------------|---------------|
| W | .750 (19,05) |
| W1 | .964 (24,48) |
| W3 | .425 (10,80) |
| W4 | 1.062 (26,97) |
| W5 | 1.305 (33,15) |

SPDT thru 4PDT

A RIGHT ANGLE, PC THRU-HOLE



Actuator Shown
In Pos. 1



SECTION A-A

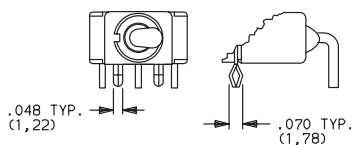
Terminal Nos.
For Reference Only



7101MD9ABE
Horizontal Actuation
SPDT

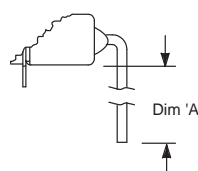
Part No. Shown: 7101MHABE

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



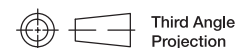
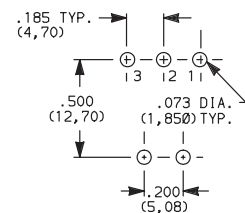
Not available with I seal option.
Terminal bend radii and lead-in manufacturing option.

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: Inch (mm)
Specifications and dimensions subject to change



Toggle

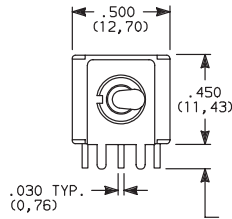
7000 Series Miniature Toggle Switches

TERMINATIONS

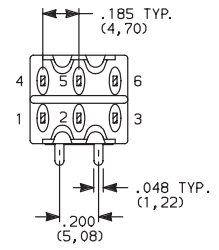
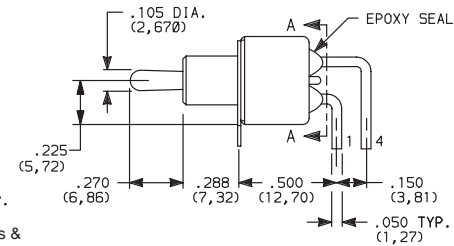
A RIGHT ANGLE, PC THRU-HOLE



7201MD9ABE
Horizontal Actuation
DPDT



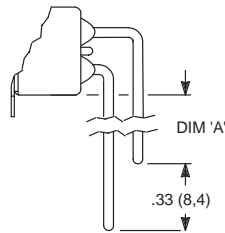
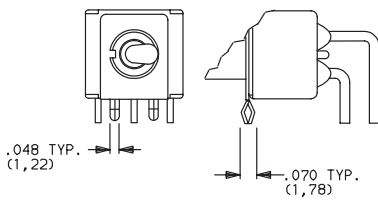
Actuator Shown
In Pos. 1
.125 TYP.
(3,18)
Terminals &
Support



SECTION A-A

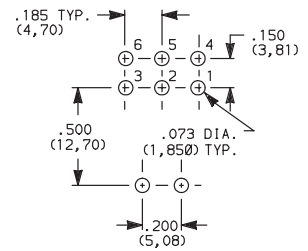
A3 RIGHT ANGLE, SNAP-IN, PC THRU-HOLE

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



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

PC MOUNTING

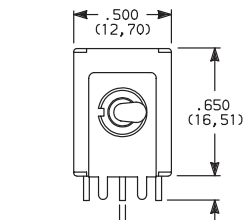


Not available with I seal option.
Terminal bend radii and lead-in manufacturing option.

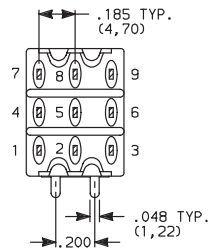
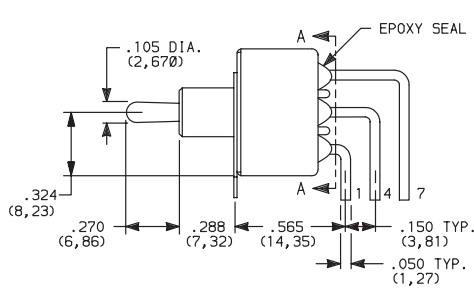
A RIGHT ANGLE, PC THRU-HOLE



7301MD9ABE
Horizontal Actuation
3PDT

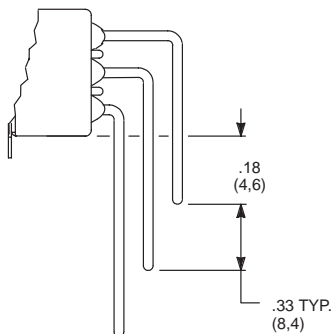


Actuator Shown
In Pos. 1
.125 TYP.
(3,18)
Terminals &
Support

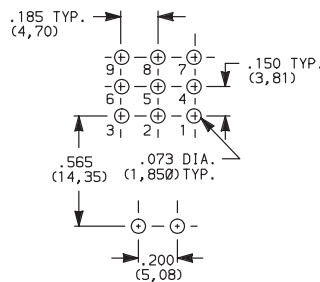


SECTION A-A

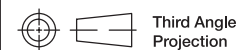
AW4 RIGHT ANGLE, EXTENDED, PC THRU-HOLE



PC MOUNTING

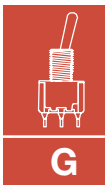


Not available with I seal option.
Terminal bend radii and lead-in manufacturing option.



Third Angle
Projection

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

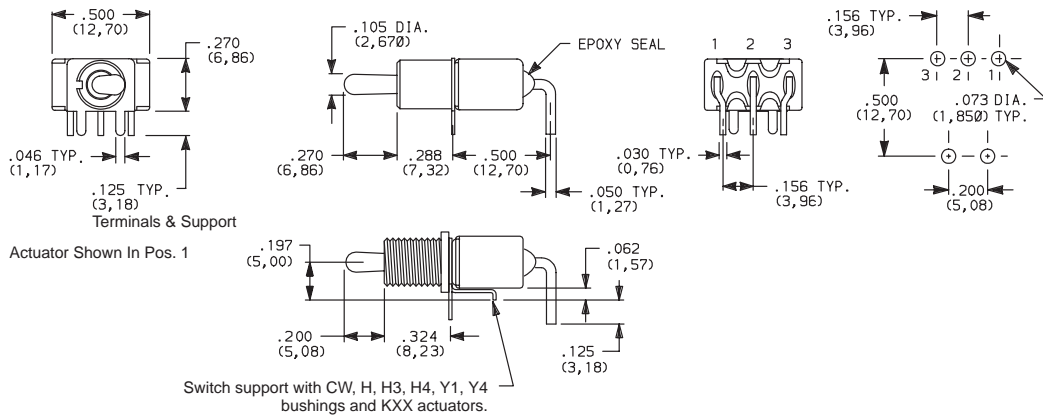


Toggle

7000 Series Miniature Toggle Switches

TERMINATIONS

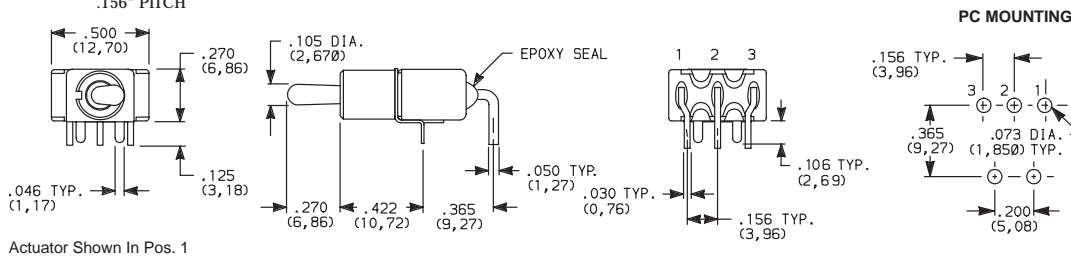
A2 RIGHT ANGLE, PC THRU-HOLE, .156" PITCH



7101MHA2BE
Horizontal Actuation
SPDT

Not available with TXX actuators and I seal. Part No. Shown: 7101MHA2BE
Terminal bend radii and lead-in manufacturing option.

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

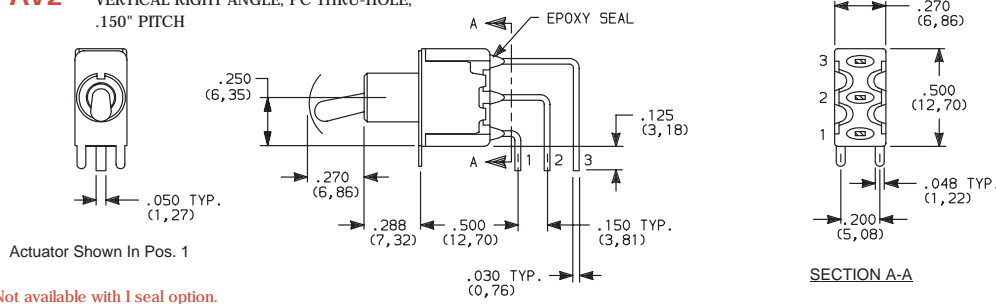


7101MD9A4BE
Horizontal Actuation
SPDT

Actuator Shown In Pos. 1
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.

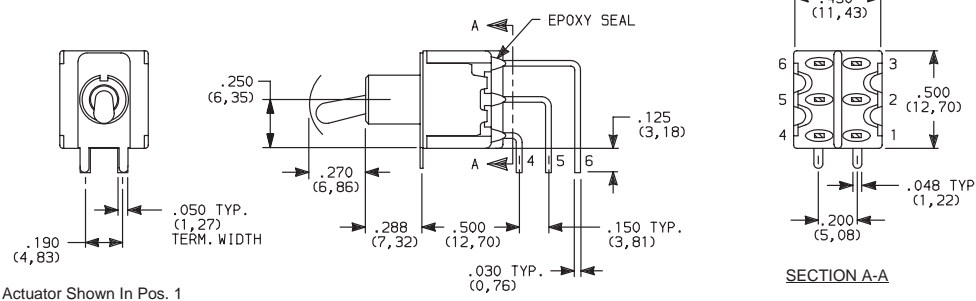
AV2 VERTICAL RIGHT ANGLE, PC THRU-HOLE, .150" PITCH



7101MD9AV2BE
Horizontal Actuation
SPDT

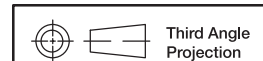
Not available with I seal option.
Terminal bend radii and lead-in manufacturing option.

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: Inch (mm)
Specifications and dimensions subject to change



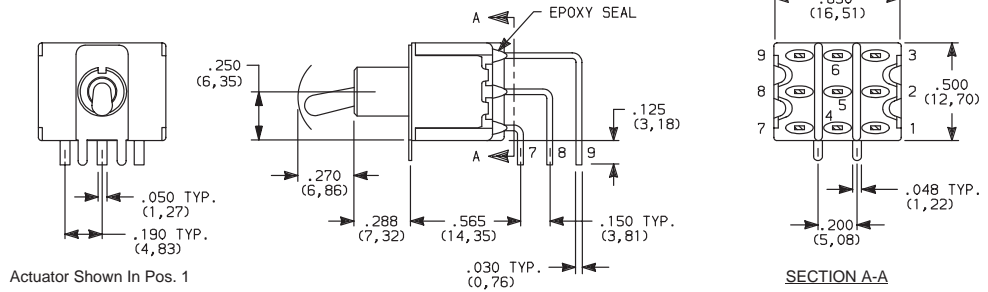
7000 Series Miniature Toggle Switches

TERMINATIONS

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



7301MD9AV2BE
Vertical Actuation
3PDT

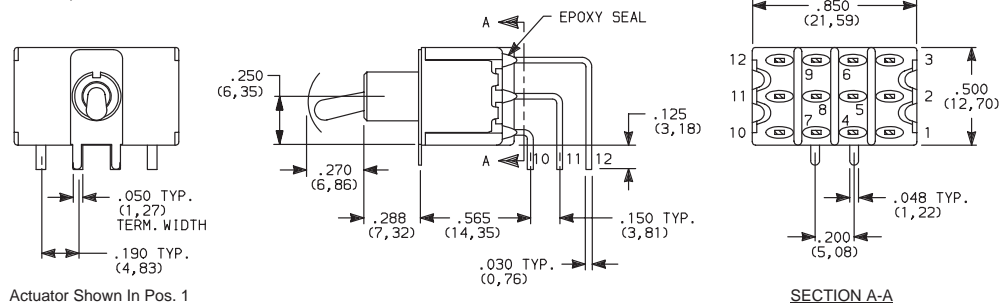


Not available with I seal option.
Terminal bend radii and lead-in manufacturing option.

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



7401MD9AV2BE
Vertical Actuation
4PDT



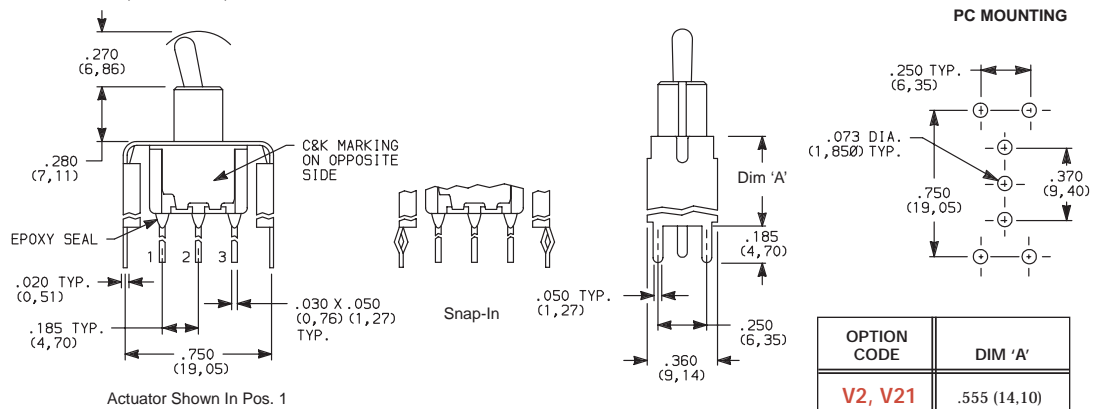
Not available with I seal option.
Terminal bend radii and lead-in manufacturing option.

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.



G

Toggle

C&K



Third Angle
Projection

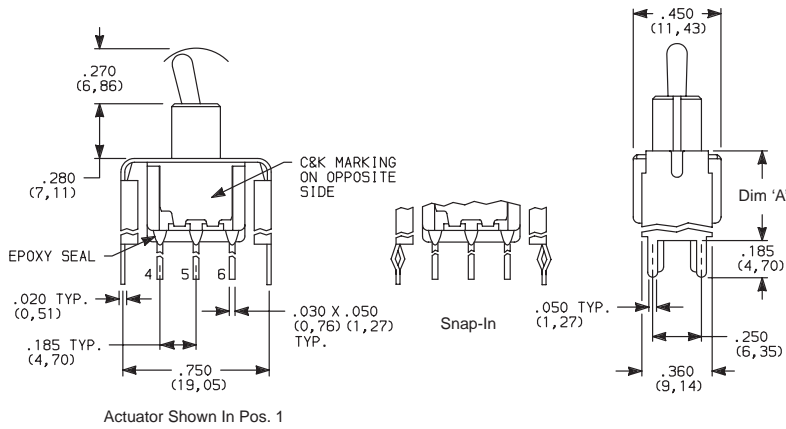
Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change

7000 Series Miniature Toggle Switches

TERMINATIONS

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

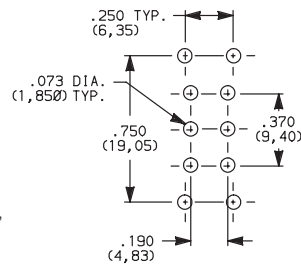
V21, V61, V71, V81 VERTICAL MOUNT, V-BRACKET, SNAP-IN



Actuator Shown In Pos. 1

Not available with I seal option.

PC MOUNTING



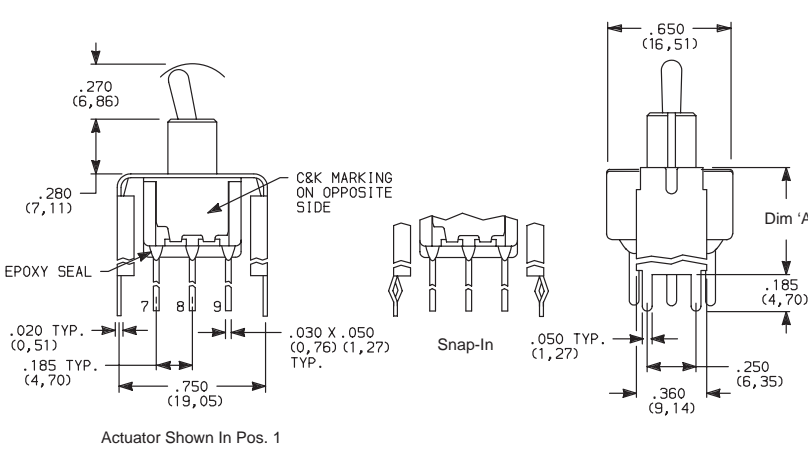
| OPTION CODE | DIM 'A' |
|----------------|--------------|
| V2, V21 | .555 (14,10) |
| V6, V61 | .460 (11,68) |
| V7, V71 | .630 (16,00) |
| V8, V81 | .953 (24,21) |



7201MD9_BE
DPDT

V2, V7, V8 VERTICAL MOUNT, V-BRACKET

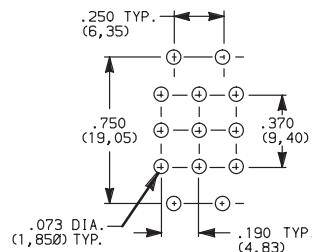
V21, V71, V81 VERTICAL MOUNT, V-BRACKET, SNAP-IN



Actuator Shown In Pos. 1

Not available with I seal option.

PC MOUNTING



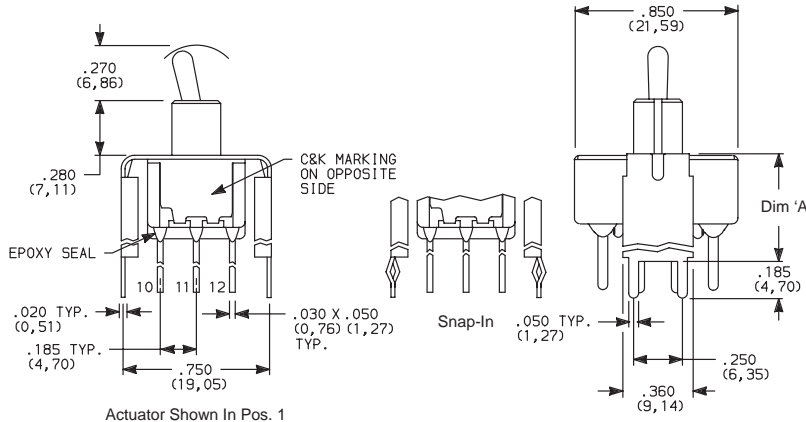
| OPTION CODE | DIM 'A' |
|----------------|--------------|
| V2, V21 | .555 (14,10) |
| V7, V71 | .630 (16,00) |
| V8, V81 | .953 (24,21) |



7301MD9_BE
3PDT

V2, V7, V8 VERTICAL MOUNT, V-BRACKET

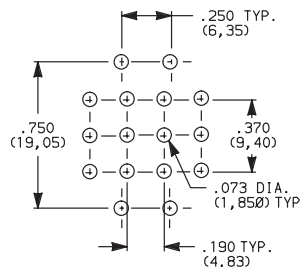
V21, V71, V81 VERTICAL MOUNT, V-BRACKET, SNAP-IN



Actuator Shown In Pos. 1

Not available with I seal option.

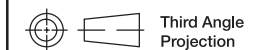
PC MOUNTING



| 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: Inch (mm)
Specifications and dimensions subject to change

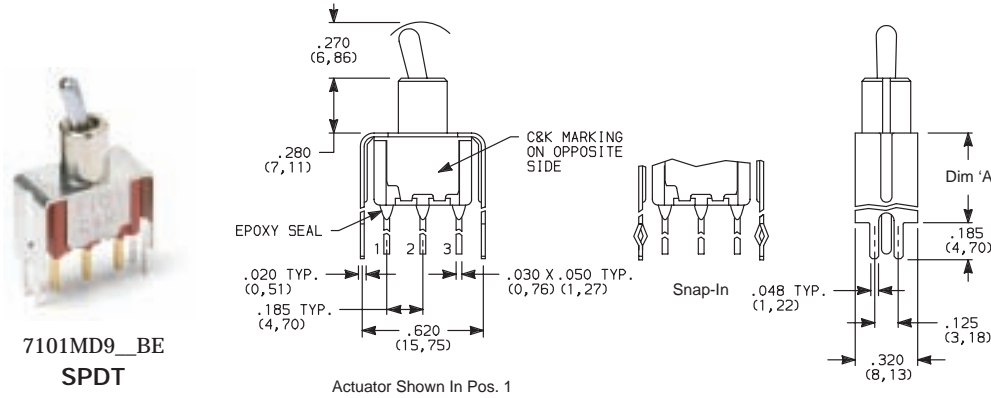


7000 Series Miniature Toggle Switches

TERMINATIONS

V3, V4, V9 VERTICAL MOUNT, V-BRACKET

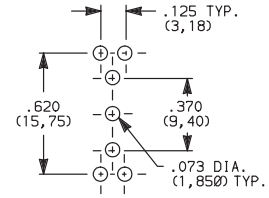
V31, V41 VERTICAL MOUNT, V-BRACKET, SNAP-IN



7101MD9_BE
SPDT

Not available with I seal option.

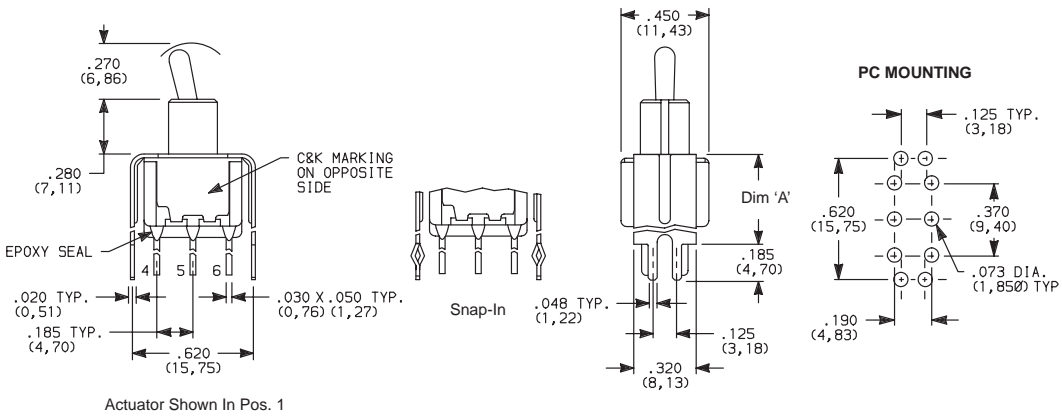
PC MOUNTING



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

V3, V4, V9 VERTICAL MOUNT, V-BRACKET

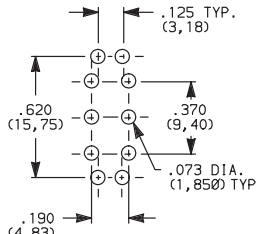
V31, V41 VERTICAL MOUNT, V-BRACKET, SNAP-IN



Actuator Shown In Pos. 1

Not available with I seal option.

PC MOUNTING

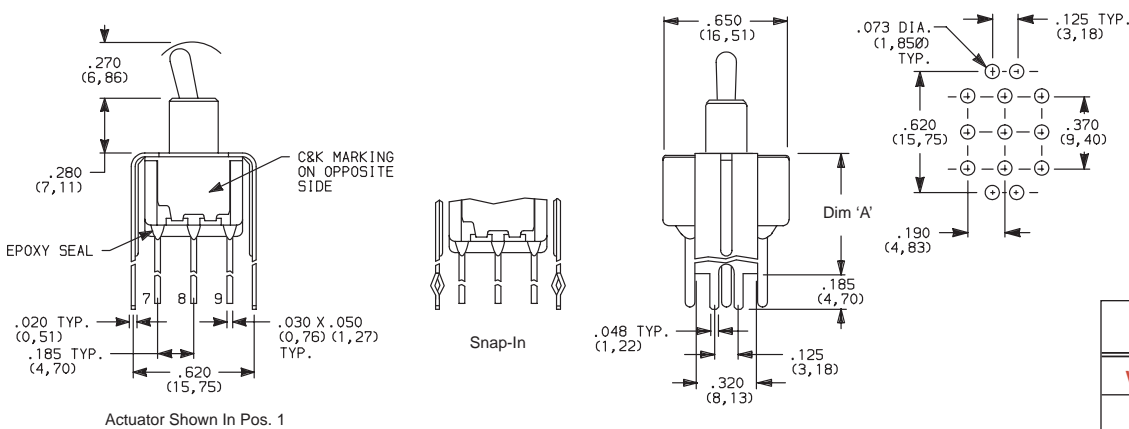


7201MD9_BE
DPDT

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

V4, V9 VERTICAL MOUNT, V-BRACKET

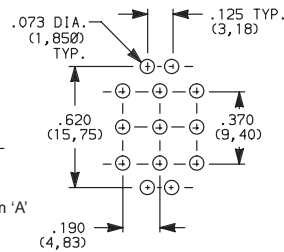
V41 VERTICAL MOUNT, V-BRACKET, SNAP-IN



Actuator Shown In Pos. 1

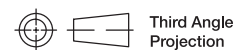
Not available with I seal option.

PC MOUNTING



7301MD9_BE
3PDT

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



Third Angle Projection
Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change



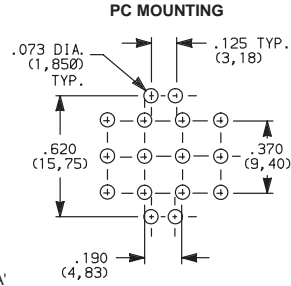
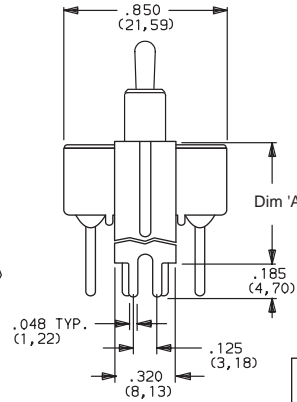
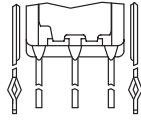
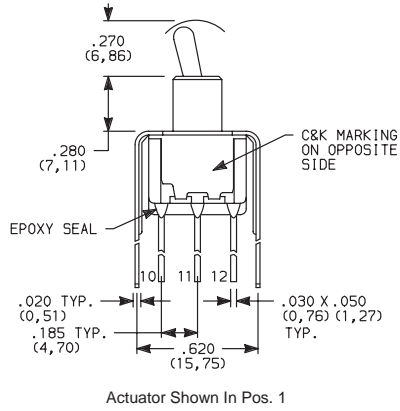
Toggle

7000 Series Miniature Toggle Switches

TERMINATIONS

V4, V9 VERTICAL MOUNT, V-BRACKET

V41 VERTICAL MOUNT, V-BRACKET, SNAP-IN



7401MD9_BE
4PDT

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

Not available with I seal option.

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.

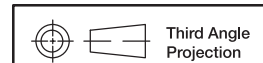
U11-U415 model numbers   with all options when ordered with G, L, S, R, M or Q contact material.

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.

K, L and M options represent Non RoHS tin lead product and are not recommended for new designs. For additional information please contact Customer Service.



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



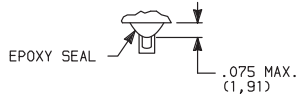
G

Toggle

7000 Series Miniature Toggle Switches

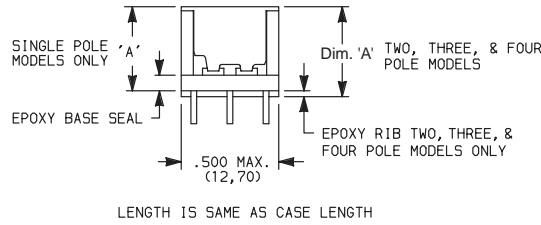
SEAL

E EPOXY SEAL



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

I EPOXY POTTED BASE

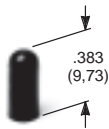


| NO. POLES | DIM 'A' |
|-----------|--------------|
| SP | .410 (10,41) |
| DP | .440 (11,18) |
| 3P | .505 (12,83) |
| 4P | .505 (12,83) |

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

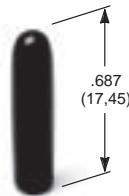
AVAILABLE HARDWARE

Cap



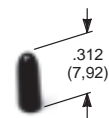
PART NO.
896801000 WHITE
896802000 BLACK
896803000 RED
 Material: Polyethylene
 Finish: Matte

Cap



PART NO.
763701000 WHITE
763702000 BLACK
763703000 RED
 Material: Vinyl
 Finish: Matte

Cap



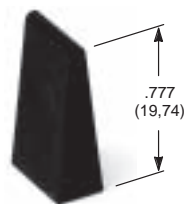
PART NO.
706201000 WHITE
706202000 BLACK
706203000 RED
 Material: Vinyl
 Finish: Matte

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

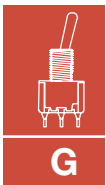
Fits Z3 Termination female connector



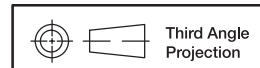
PART NO.
530100000
 Available in loose pieces.

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

Other colors available, consult Customer Service Center.



Toggle



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

Military/Aerospace/Hi-REL MIL-S-83731 Toggle Switches

Features/Benefits

- Qualified to MIL-S-83731
- 50 μ inch selective gold contact plating
- Epoxy sealed terminals for process compatibility
- Rated for logic level to 5 amp resistive loads and 2 amp inductive loads
- Flame retardant housing material
- RoHS compliant and compatible

| Test Requirement | MIL-S-83731/9, 10, 13, 14, 15, 16 |
|---|--|
| 1. Strength of Terminal | 1 lb. – solder lug |
| 2. Strength of Actuating Lever Pivot and Stop | 10 lbs. & 8 lbs. throughout range |
| 3. Strength of Mounting Means | 15 lbs. in. torque on bushing |
| 4. Dielectric (Sea Level) Indication | 1000 VAC Group B, 750 VAC after electrical endurance. 500 μ A max. leakage |
| 5. Contact Voltage Drop | 2.5 millivolt initial, 5.0 millivolt after mechanical endurance @ 2-6 VDC 0.1 amp |
| 6. Temperature Rise | 50° C rise max. @ rated resistive load after endurance test |
| 7. Short Circuit | 10 operations carry 100 amps resistive load @ lowest DC volts |
| 8. Mechanical Life | 20K operations at specified high and low temperatures |
| 9. Electrical Endurance | 10K operations at specified high and low temperatures |
| 10. Overload | 50 operations @ 150% of rated resistive load |
| 11. Electrical Endurance at Sea Level | 10K operations resistive load @ room temperature 10K operations inductive load @ room temperature 10K operations lamp load @ room temperature Performed on different test samples |
| 12. Vibration | Method 204 of MIL-STD-202, test condition A .06 D. A. or 10 G's 10-500 Hz, 10 usec. max. chatter |
| 13. Shock | Fuse-method 213 or MIL-STD-202, 10 usec. max. chatter |
| 14. Salt Spray Test Upon Completion | 48 hours – method 101 of MIL-STD-202, test condition B 10 operations resistive load (toggle sealed switches only) |
| 15. Moisture Resistance Test Upon Completion | Method 106 of MIL-STD-202 100 VDC potential between current carrying parts and panel |
| 16. Sand & Dust | Method 110 of MIL-STD-202, test condition B 6 hours @ 23°C 2.5K operations mechanical life (toggle sealed switches only) |
| 17. Explosion | MIL-STD-202 method 109, maximum rated DC inductive load (toggle sealed switches only) |
| 18. Sealing | Toggle seal – 5 operations under 0.5 inches of H ₂ O above top of bushing |
| 19. A.) Toggle Seal B.) Bushing Seal | (Toggle sealed switches only) (Panel sealed switches only) |
| 20. Temperature Operation | Mechanical life, –25°C to +71°C |
| 21. Life Low Cur. Level | No requirement |
| 22. Fungus | No requirement |
| 23. Intermediate Current | 20K operations, 35/40 milliamps @ 5 VDC resistive load @ +71°C |
| 24. Thermal Shock | Method 107 of MIL-STD-202 test condition A; 5 cycles @ –55°C/+85°C |

RATINGS

CURRENT RATINGS – HIGH LEVEL

| Current Capacity in Amperes – Per Pole | | |
|--|-----------------|----------------|
| 28V dc | 115V ac, 400 Hz | 125V ac, 60 Hz |
| Lamp Load | | |
| 1 | 1 | 1 |
| Resistive Load | | |
| 5 | 5 | 5 |
| Inductive Load | | |
| 2 | 2 | 2 |

CURRENT RATINGS – LOGIC LEVEL

| |
|---|
| 0.5 Volt – Amp (VA) Max. @ 28 V Max. (AC or DC) |
|---|

MATERIALS

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

BUSHING: Brass, nickel plated.

HOUSING: Stainless steel.

ACTUATOR: Brass, chrome plated.

SWITCH SUPPORT: Brass, tin plated.

TERMINALS: Gold over nickel over copper alloy.

TERMINAL SEAL: Epoxy.

CONTACTS: Gold over nickel over silver over brass.

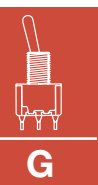
PANEL SEAL: Silicone rubber.

MOUNTING HARDWARE: One hexagon nut, brass with nickel plating; one lockwasher, steel with nickel plating; one locking ring, brass with nickel plating.

HOW TO ORDER: Complete part numbers for MIL-S-83731 TOGGLE SWITCHES are shown on pages G–18 through G–21.



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



G

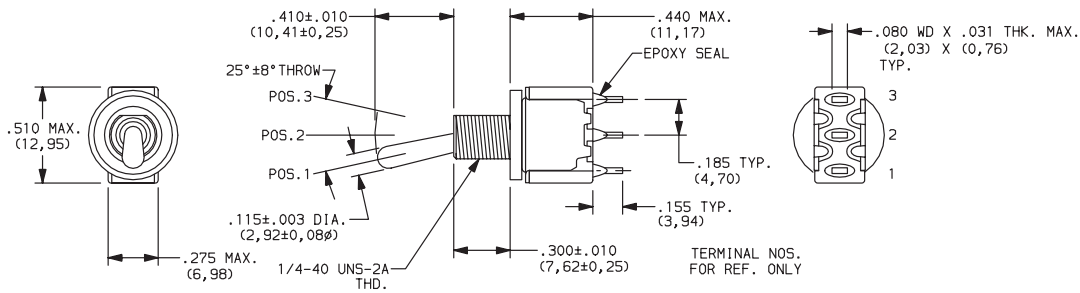
Toggle

Military/Aerospace/Hi-REL MIL-S-83731 Toggle Switches



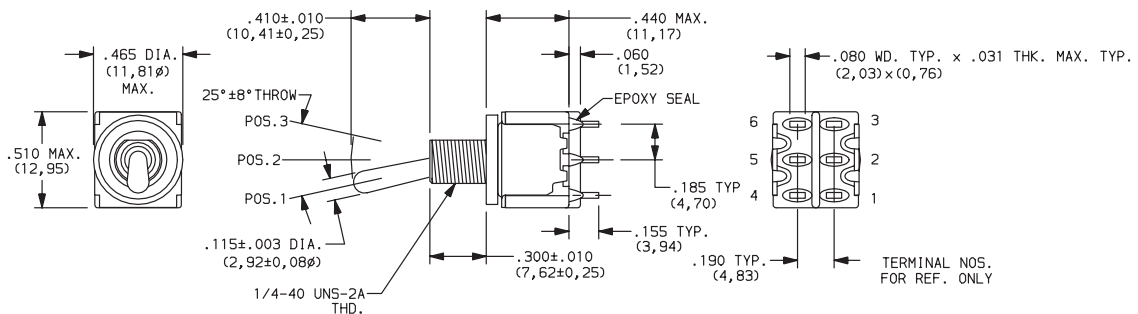
| NO. POLES | MODEL NO. | SWITCH FUNCTION | | | CONNECTED TERMINALS | | | SCHEMATIC |
|-----------|--------------|-----------------|--------|--------|---------------------|--------|--------|-----------|
| | | POS. 1 | POS. 2 | POS. 3 | POS. 1 | POS. 2 | POS. 3 | |
| | | | | | | | | |
| SP | M83731/9-211 | ON | OFF | ON | 2-3 | OPEN | 2-1 | SPDT |
| | M83731/9-231 | ON | NONE | ON | | | | |
| | M83731/9-261 | ON | NONE | MOM. | | | | |
| | M83731/9-271 | MOM. | OFF | MOM. | | | | |
| | M83731/9-311 | ON | OFF | MOM. | | | | |
| | M83731/9-341 | NONE | ON | MOM. | N/A | 2-3 | 2-1 | |

SPDT

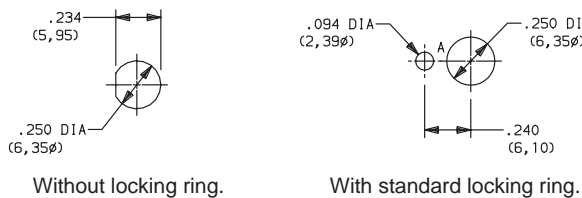


| NO. POLES | MODEL NO. | SWITCH FUNCTION | | | CONNECTED TERMINALS | | | SCHEMATIC |
|-----------|---------------|-----------------|--------|--------|---------------------|---------|---------|-----------|
| | | POS. 1 | POS. 2 | POS. 3 | POS. 1 | POS. 2 | POS. 3 | |
| | | | | | | | | |
| DP | M83731/10-211 | ON | OFF | ON | 2-3,5-6 | OPEN | 2-1,5-4 | DPDT |
| | M83731/10-231 | ON | NONE | ON | | | | |
| | M83731/10-261 | ON | NONE | MOM. | | | | |
| | M83731/10-271 | MOM. | OFF | MOM. | | | | |
| | M83731/10-311 | ON | OFF | MOM. | 2-3,5-6 | 2-3,5-4 | 2-1,5-4 | |
| | M83731/10-321 | ON | ON | ON | | | | |
| | M83731/10-331 | ON | ON | MOM. | | | | |
| | M83731/10-341 | NONE | ON | MOM. | | | | |
| | M83731/10-351 | MOM. | ON | MOM. | 2-3,5-6 | 2-3,5-4 | 2-1,5-4 | |

DPDT



PANEL MOUNTING

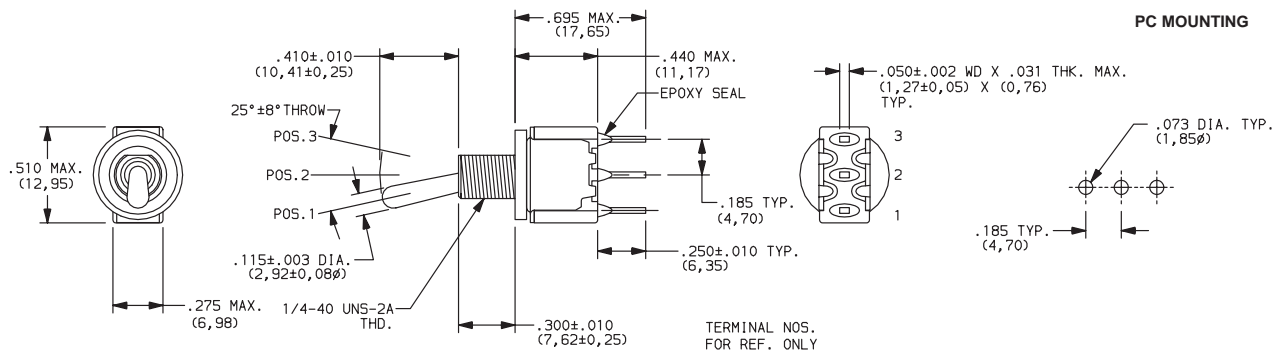


Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change

Military/Aerospace/Hi-REL MIL-S-83731 Toggle Switches



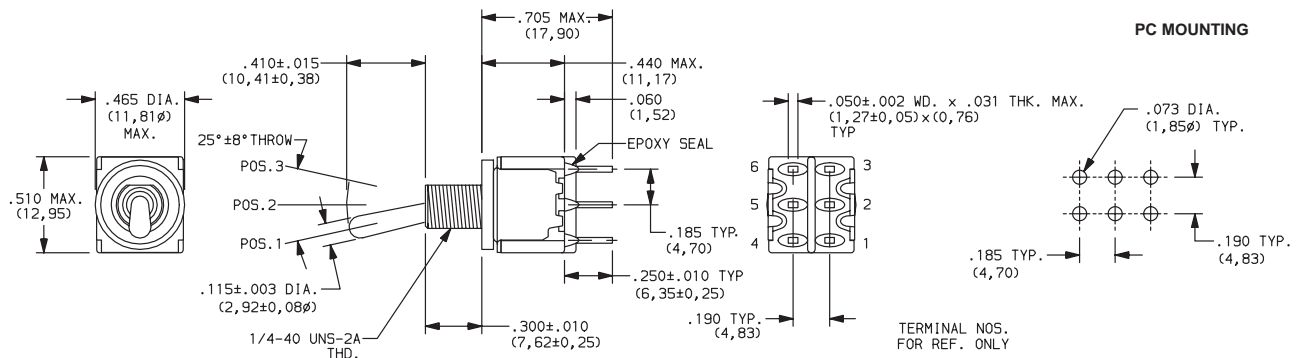
| NO. POLES | MODEL NO. | SWITCH FUNCTION | | | CONNECTED TERMINALS | | | SCHEMATIC |
|-----------|--------------|-----------------|--------|--------|---------------------|--------|--------|-----------|
| | | POS. 1 | POS. 2 | POS. 3 | POS. 1 | POS. 2 | POS. 3 | |
| | | | | | | | | |
| SP | M83731/9-212 | ON | OFF | ON | 2-3 | OPEN | 2-1 | SPDT |
| | M83731/9-232 | ON | NONE | ON | | | | |
| | M83731/9-262 | ON | NONE | MOM. | | | | |
| | M83731/9-272 | MOM. | OFF | MOM. | | | | |
| | M83731/9-312 | ON | OFF | MOM. | | | | |
| | M83731/9-342 | NONE | ON | MOM. | | | | |



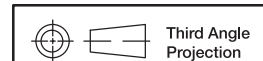
SPDT



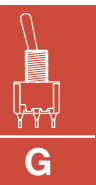
| NO. POLES | MODEL NO. | SWITCH FUNCTION | | | CONNECTED TERMINALS | | | SCHEMATIC | | | |
|-----------|---------------|-----------------|--------|--------|---------------------|--------|---------|-----------|---------|---------|---------|
| | | POS. 1 | POS. 2 | POS. 3 | POS. 1 | POS. 2 | POS. 3 | | | | |
| | | | | | | | | | | | |
| DP | M83731/10-212 | ON | OFF | ON | 2-3,5-6 | OPEN | 2-1,5-4 | DPDT | | | |
| | M83731/10-232 | ON | NONE | ON | | | | | | | |
| | M83731/10-262 | ON | NONE | MOM. | | | | | | | |
| | M83731/10-272 | MOM. | OFF | MOM. | | | | | | | |
| | M83731/10-312 | ON | OFF | MOM. | | | | | | | |
| | M83731/10-322 | ON | ON | ON | | | | | | | |
| | M83731/10-332 | ON | ON | MOM. | | | | | | | |
| | M83731/10-342 | NONE | ON | MOM. | | | | | N/A | 2-3,5-6 | 2-1,5-4 |
| | M83731/10-352 | MOM. | ON | MOM. | | | | | 2-3,5-6 | 2-3,5-4 | 2-1,5-4 |



DPDT



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

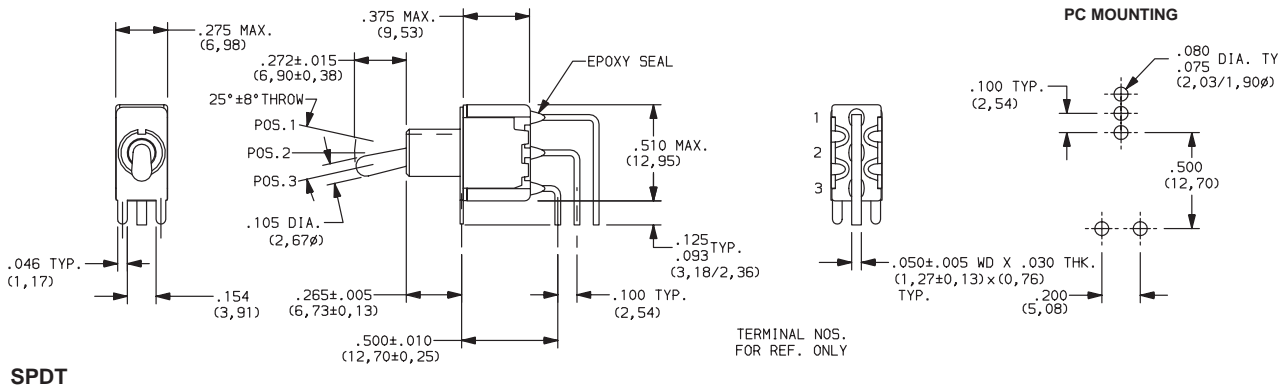


Toggle

Military/Aerospace/Hi-REL MIL-S-83731 Toggle Switches



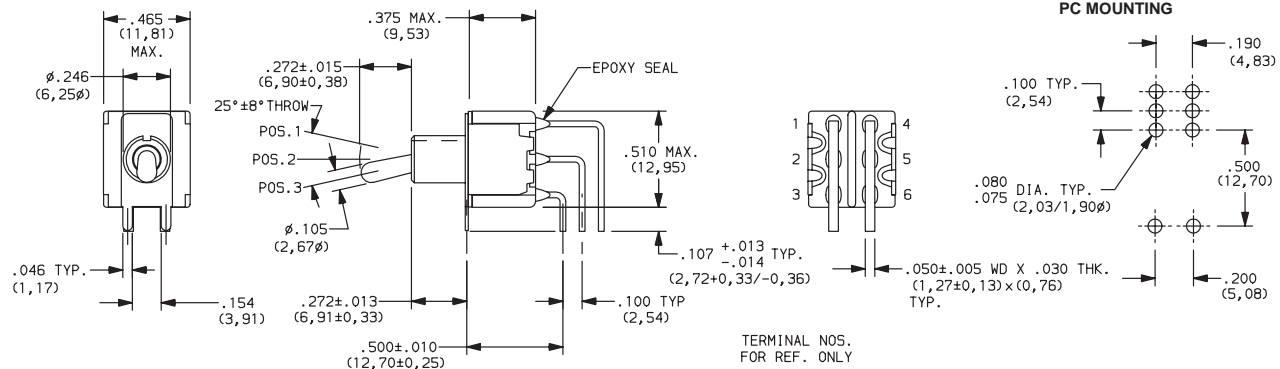
| NO. POLES | MODEL NO. | SWITCH FUNCTION | | | CONNECTED TERMINALS | | | SCHEMATIC |
|-----------|---------------|-----------------|--------|--------|---------------------|--------|--------|-----------|
| | | POS. 1 | POS. 2 | POS. 3 | POS. 1 | POS. 2 | POS. 3 | |
| | | | | | | | | |
| SP | M83731/13-211 | ON | OFF | ON | 2-3 | OPEN | 2-1 | SPDT |
| | M83731/13-231 | ON | NONE | ON | | | | |
| | M83731/13-261 | ON | NONE | MOM. | | | | |
| | M83731/13-271 | MOM. | OFF | MOM. | | | | |
| | M83731/13-311 | ON | OFF | MOM. | | | | |
| | M83731/13-341 | NONE | ON | MOM. | N/A | 2-3 | 2-1 | |



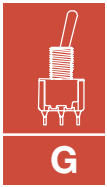
SPDT



| NO. POLES | MODEL NO. | SWITCH FUNCTION | | | CONNECTED TERMINALS | | | SCHEMATIC |
|-----------|---------------|-----------------|--------|--------|---------------------|---------|---------|-----------|
| | | POS. 1 | POS. 2 | POS. 3 | POS. 1 | POS. 2 | POS. 3 | |
| | | | | | | | | |
| DP | M83731/14-211 | ON | OFF | ON | 2-3,5-6 | OPEN | 2-1,5-4 | DPDT |
| | M83731/14-231 | ON | NONE | ON | | | | |
| | M83731/14-261 | ON | NONE | MOM. | | | | |
| | M83731/14-271 | MOM. | OFF | MOM. | | | | |
| | M83731/14-311 | ON | OFF | MOM. | | | | |
| | M83731/14-321 | ON | ON | ON | | | | |
| | M83731/14-331 | ON | ON | MOM. | | | | |
| | M83731/14-341 | NONE | ON | MOM. | | | | |
| | M83731/14-351 | MOM. | ON | MOM. | N/A | 2-3,5-6 | 2-1,5-4 | |



DPDT



Toggle



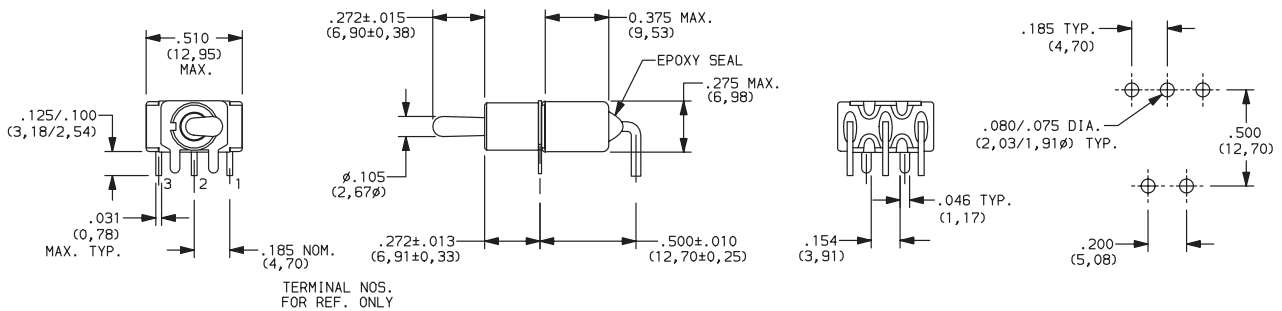
Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change

Military/Aerospace/Hi-REL MIL-S-83731 Toggle Switches



| NO. POLES | MODEL NO. | SWITCH FUNCTION | | | CONNECTED TERMINALS | | | SCHEMATIC |
|-----------|---------------|-----------------|--------|--------|---------------------|--------|--------|------------------------------|
| | | POS. 1 | POS. 2 | POS. 3 | POS. 1 | POS. 2 | POS. 3 | |
| SP | M83731/15-211 | ON | OFF | ON | 2-3 | OPEN | 2-1 | 1 ● 2 (COMM) ● 3 SPDT |
| | M83731/15-231 | ON | NONE | ON | | | | |
| | M83731/15-261 | ON | NONE | MOM. | | | | |
| | M83731/15-271 | MOM. | OFF | MOM. | | | | |
| | M83731/15-311 | ON | OFF | MOM. | | | | |
| | M83731/15-341 | NONE | ON | MOM. | N/A | 2-3 | 2-1 | |

PC MOUNTING

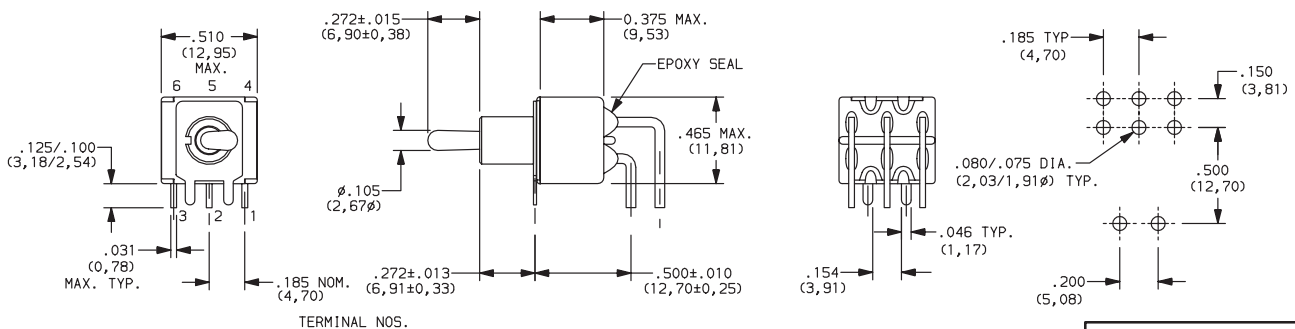


SPDT

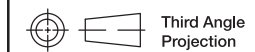


| NO. POLES | MODEL NO. | SWITCH FUNCTION | | | CONNECTED TERMINALS | | | SCHEMATIC |
|-----------|---------------|-----------------|--------|--------|---------------------|---------|---------|------------------------------|
| | | POS. 1 | POS. 2 | POS. 3 | POS. 1 | POS. 2 | POS. 3 | |
| DP | M83731/16-211 | ON | OFF | ON | 2-3,5-6 | OPEN | 2-1,5-4 | 1 ● 2 (COMM) ● 6 DPDT |
| | M83731/16-231 | ON | NONE | ON | | | | |
| | M83731/16-261 | ON | NONE | MOM. | | | | |
| | M83731/16-271 | MOM. | OFF | MOM. | | | | |
| | M83731/16-311 | ON | OFF | MOM. | | | | |
| | M83731/16-321 | ON | ON | ON | | | | |
| | M83731/16-331 | ON | ON | MOM. | | | | |
| | M83731/16-341 | NONE | ON | MOM. | | | | |
| | M83731/16-351 | MOM. | ON | MOM. | 2-3,5-6 | 2-3,5-4 | 2-1,5-4 | |

PC MOUNTING



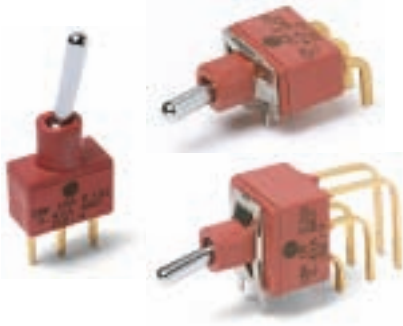
DPDT



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



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 G-25 for additional ratings.

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

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

INSULATION RESISTANCE: 10⁹ Ω min.

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

DIELECTRIC STRENGTH: 1000 Vrms min. @ sea level.

OPERATING TEMPERATURE: -30°C to 85°C.

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

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

Materials

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

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

SWITCH SUPPORT: Brass or steel, 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 G-29 for additional contact materials.

TERMINAL SEAL: Epoxy.

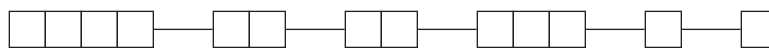
HARDWARE: Nut & Locking ring: Brass, nickel plated.
Lockwasher: Steel, nickel plated.

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 G-23 thru G-29. For additional options not shown in catalog, consult our Customer Service Center. All models are process sealed to withstand machine soldering temperatures and pressure wash cleaning methods.



Switch Function

- E101 SP, On-None-On
- E103 SP, On-Off-On
- E105 SP, Mom.-Off-Mom.
- E107 SP, On-Off-Mom.
- E108 SP, On-None-Mom.
- E201 DP, On-None-On
- E203 DP, On-Off-On
- E205 DP, Mom.-Off-Mom.
- E207 DP, On-Off-Mom.
- E208 DP, On-None-Mom.
- E211 DP, On-On-On
- E213 DP, On-On-Mom.
- E215 DP, Mom.-On-Mom.
- E301 3P, On-None-On

Actuator

- M .300" high
- S .500" high
- L3 Plastic, .940" high

Bushing

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

Terminations

- A Right angle, PC thru-hole
- AV2 Vertical right angle, PC thru-hole
- C PC Thru-hole
- V3 .460" high, V-bracket
- Z Solder lug
- A3 Right angle, PC thru-hole
- AV3 Vertical right angle, PC thru-hole
- V6 .460" high, V-bracket
- V9 1.150" high, V-bracket
- V31 .460" high, snap-in V-bracket
- V61 .460" high, snap-in V-bracket
- W .750" long, wire wrap
- Z3 Quick connect

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

* F1 available with SP and DP versions only, please see page G-24



Toggle



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

E Series Sealed Miniature Toggle Switches

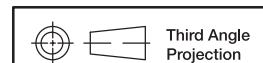
SWITCH FUNCTION

| 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 | | | |
| 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. | | | | |
| SPDT <p>Part number shown: E101SD1CBE</p> <p>Terminal Numbers For Reference Only</p> | | | | | | | | |
| 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. | | | | |
| | E211** | ON | ON | ON | | | | |
| | E213** | ON | ON | MOM. | | | | |
| | E215** | MOM. | ON | MOM. | | | | |
| DPDT <p>Part number shown: E201SD1CBE</p> <p>Terminal Numbers For Reference Only</p> | | | | | | | | |

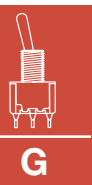
MOM. = Momentary

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

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



Third Angle Projection
Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change



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 | |
| 3P | E301 | ON | NONE | ON | 2-3,5-6,8-9 | N/A | 2-1,5-4,8-7 | |

3PDT

Terminal Nos. For Reference Only

Part number shown: E301SD1CBE

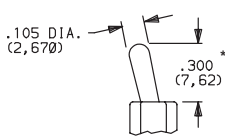
MOM. = Momentary

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

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

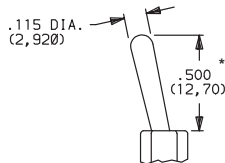
ACTUATOR

M .300" HIGH



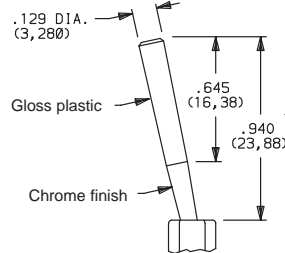
Standard when ordered with A, A3, AV2, AV3, V2-V61 terminations. Finish: Chrome.

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.

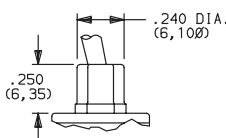
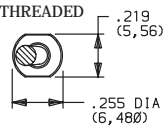
* Actuators shown with standard D1 bushing. Subtract .030 (0,76) for D9 bushing. Subtract .100 (2,54) for Y bushing.

BUSHING

D1 .250" HIGH, UNTHREADED

F1 ESD CONDUCTIVE BUSHING, .250" HIGH, UNTHREADED

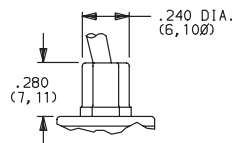
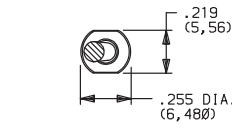
F1 bushing is not UL/CSA approved



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

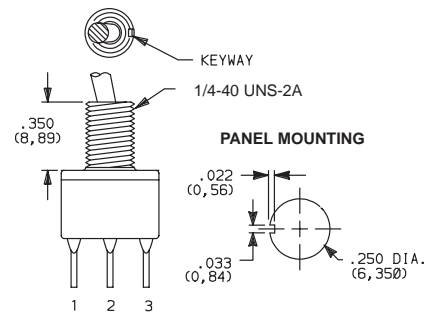
D9 .280" HIGH, UNTHREADED



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 780701201, one hex nut part number 540400201 and lockwasher part number 700303202 supplied standard. Will withstand 4 in.-lbs. of torque with no distortion.



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



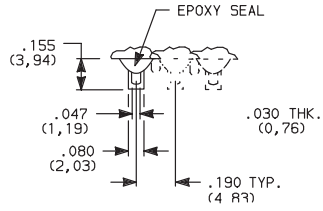
Toggle



E Series Sealed Miniature Toggle Switches

TERMINATIONS

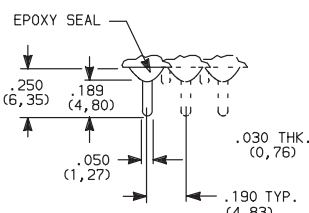
Z SOLDER LUG



SPDT thru 3PDT

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

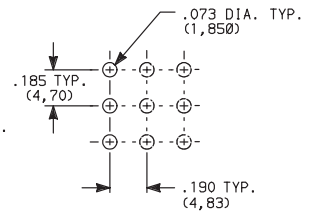
C PC THRU-HOLE



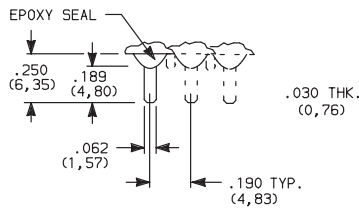
SPDT thru 3PDT

Not available with F1 conductive bushing.

PC MOUNTING



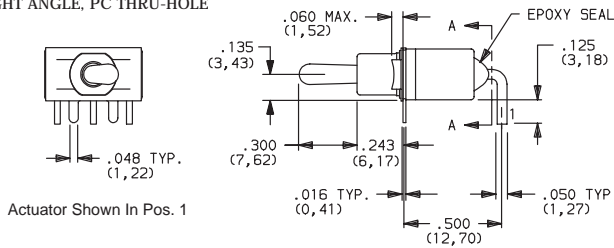
Z3 QUICK CONNECT



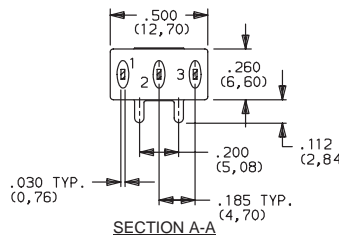
SPDT thru 3PDT

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

A RIGHT ANGLE, PC THRU-HOLE



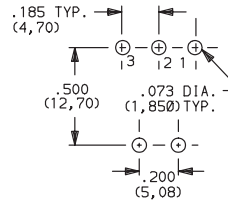
Actuator Shown In Pos. 1



SECTION A-A

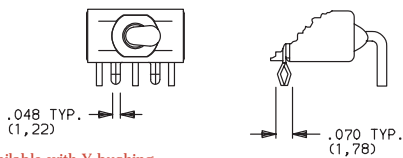
Terminal Nos. For Reference Only

PC MOUNTING



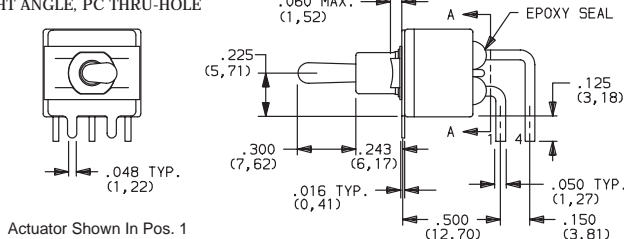
E101MD1ABE
Horizontal Actuation
SPDT

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

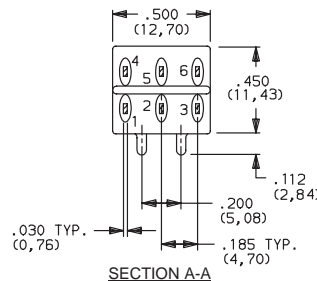


Not available with Y bushing.
Terminal bend radii and lead-in manufacturing option.

A RIGHT ANGLE, PC THRU-HOLE



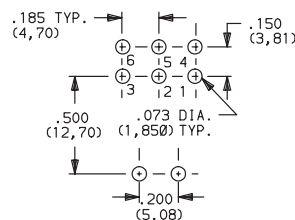
Actuator Shown In Pos. 1



SECTION A-A

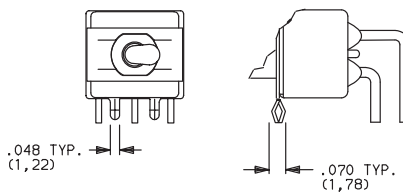
Terminal Nos. For Reference Only

PC MOUNTING

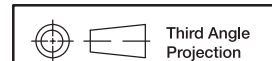


E201MD1ABE
Horizontal Actuation
DPDT

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: Inch (mm)
Specifications and dimensions subject to change



G

Toggle

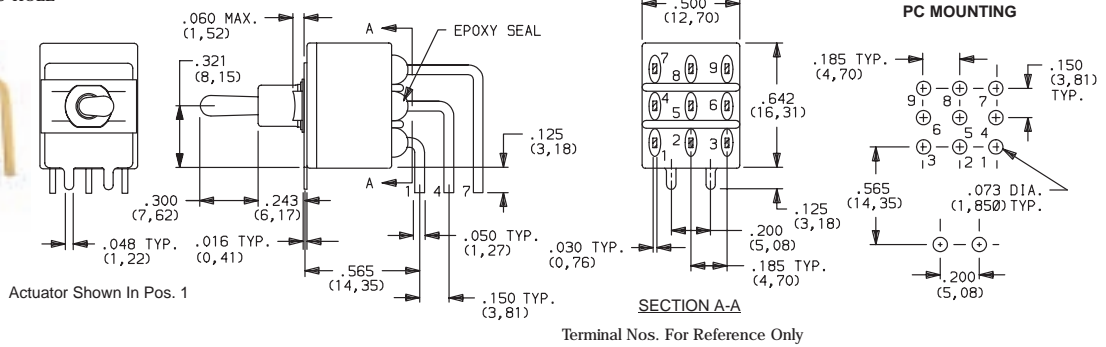
E Series Sealed Miniature Toggle Switches

TERMINATIONS

A RIGHT ANGLE, PC THRU-HOLE



E301MD1ABE
Horizontal Actuation
3PDT

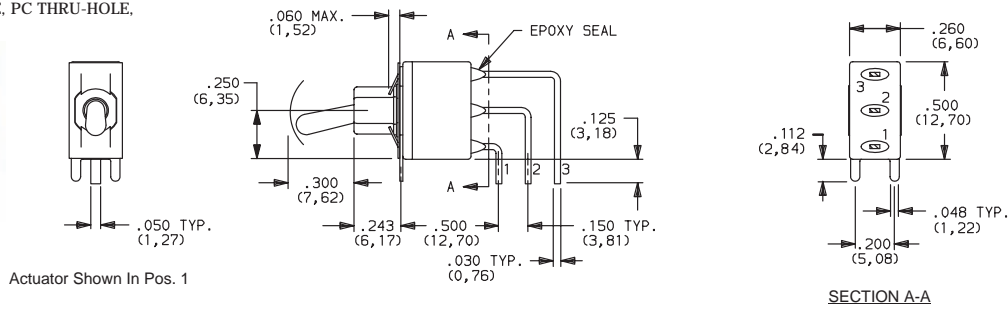


Not available with D9 & Y bushings.
Terminal bend radii and lead-in manufacturing option.

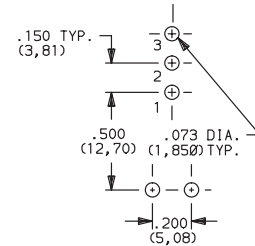
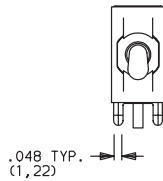
AV2 VERTICAL RIGHT ANGLE, PC THRU-HOLE .150" PITCH



E101MD1AV2BE
Vertical Actuation
SPDT



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

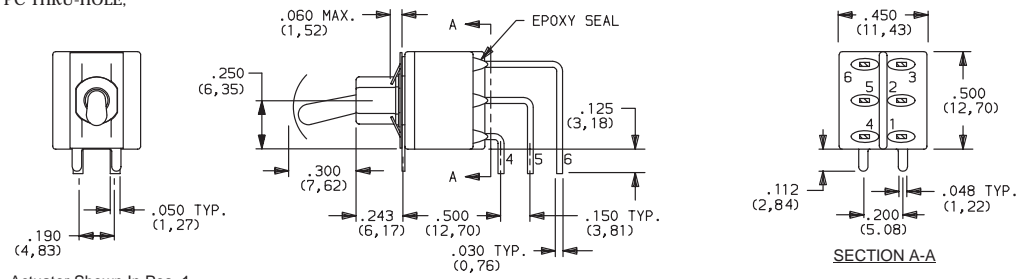


Not available with Y bushing.
Terminal bend radii and lead-in manufacturing option.

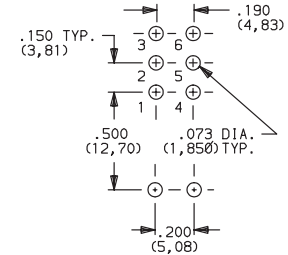
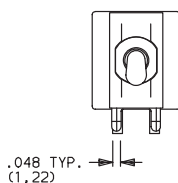
AV2 VERTICAL RIGHT ANGLE, PC THRU-HOLE .150" PITCH



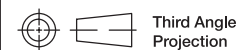
E201MD1AV2BE
Vertical Actuation
DPDT



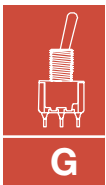
A3 VERTICAL RIGHT ANGLE, SNAP-IN, PC THRU-HOLE .150" PITCH



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



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



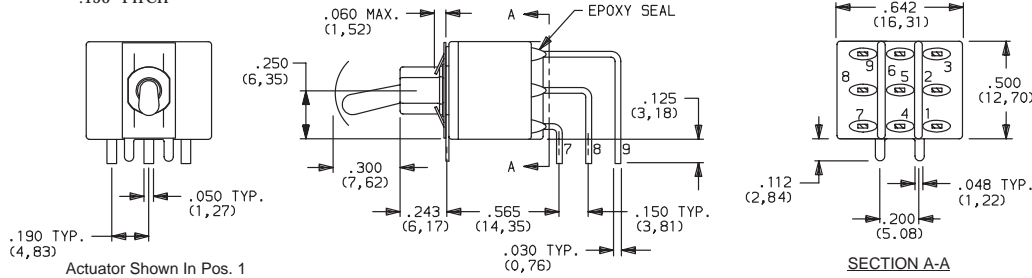
Toggle



E Series Sealed Miniature Toggle Switches

TERMINATIONS

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

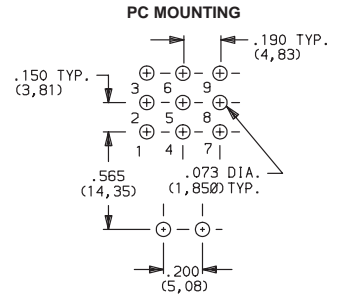


E301MD1AV2BE
Vertical Actuation
3PDT

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

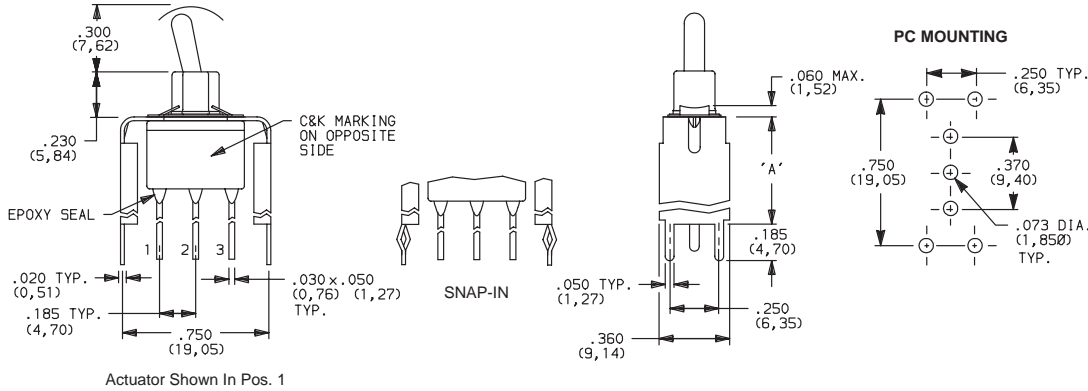


Not available with D9 & Y bushings.
Terminal bend radii and lead-in manufacturing option.



V6 VERTICAL MOUNT, V-BRACKET

V61 VERTICAL MOUNT, V-BRACKET, SNAP-IN



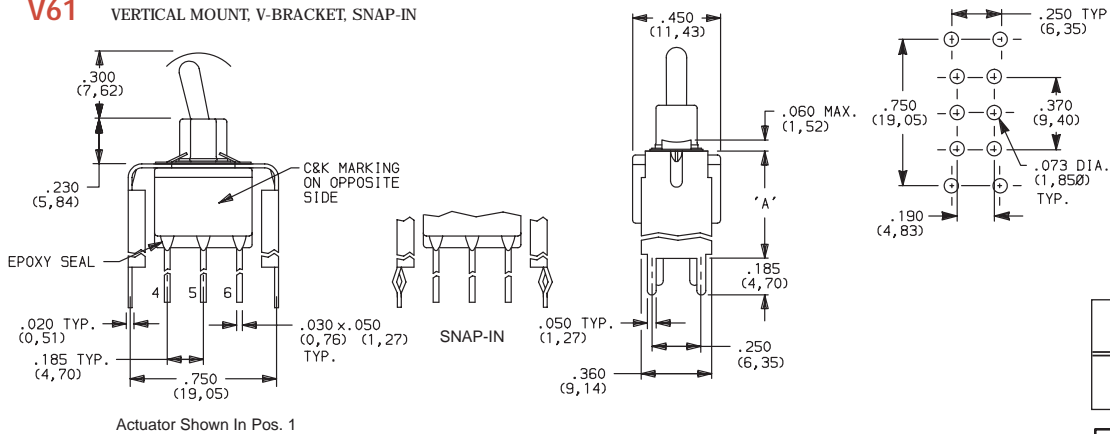
E101MD1_BE
SPDT

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

Not available with Y bushing.

V6 VERTICAL MOUNT, V-BRACKET

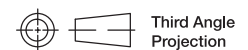
V61 VERTICAL MOUNT, V-BRACKET, SNAP-IN



E201MD1_BE
DPDT

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

Not available with Y bushing.



Third Angle Projection
Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change



G

Toggle

E Series Sealed Miniature Toggle Switches

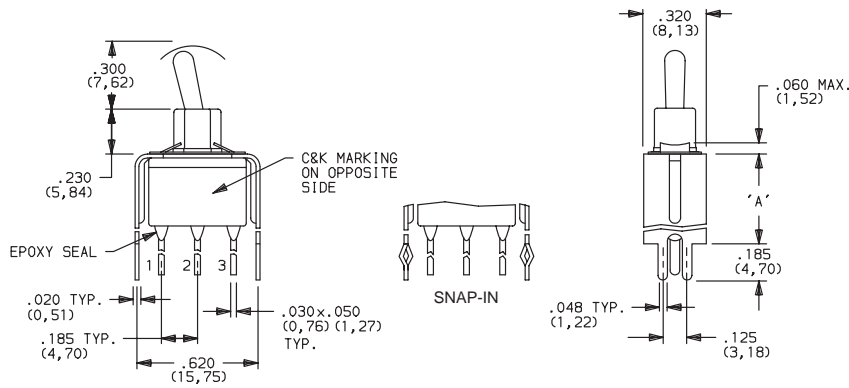
TERMINATIONS

V3, V9 VERTICAL MOUNT, V-BRACKET

V31 VERTICAL MOUNT, V-BRACKET, SNAP-IN



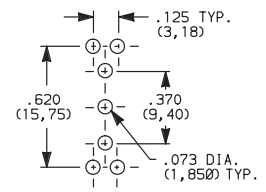
E101MD1_BE
SPDT



Actuator Shown In Pos. 1

Not available with Y bushing.

PC MOUNTING



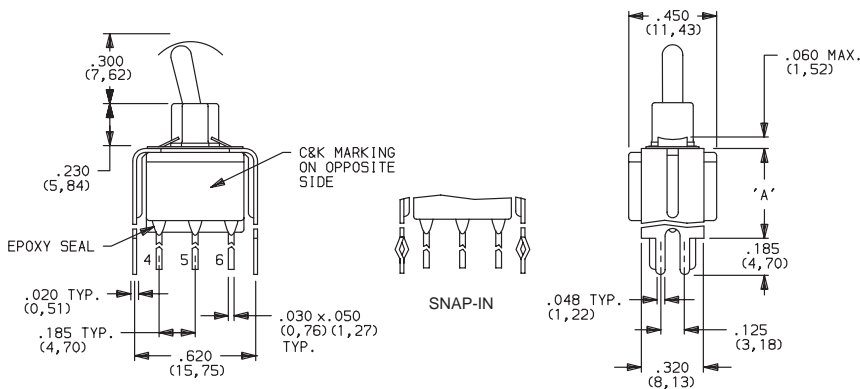
| OPTION CODE | DIM 'A' |
|----------------|---------------|
| V3, V31 | .460 (11,68) |
| V9 | 1.150 (29,21) |

V3, V9 VERTICAL MOUNT, V-BRACKET

V31 VERTICAL MOUNT, V-BRACKET, SNAP-IN



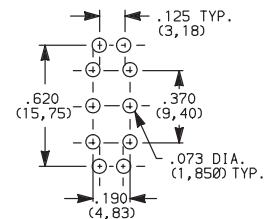
E201MD1_BE
DPDT



Actuator Shown In Pos. 1

Not available with Y bushing.

PC MOUNTING

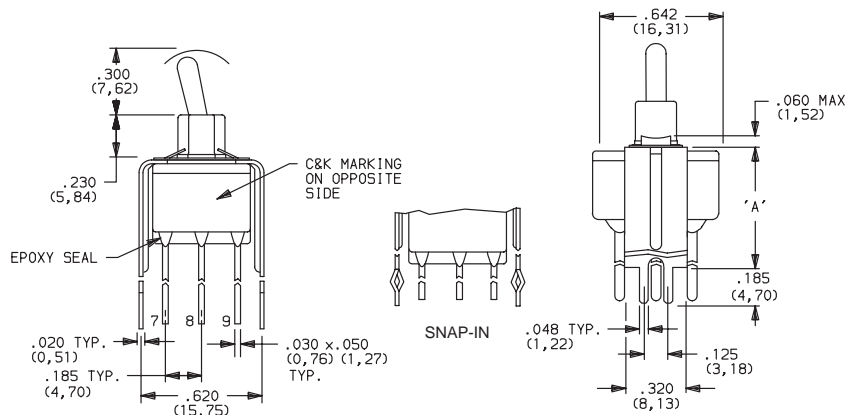


| OPTION CODE | DIM 'A' |
|----------------|---------------|
| V3, V31 | .460 (11,68) |
| V9 | 1.150 (29,21) |

V9 VERTICAL MOUNT, V-BRACKET



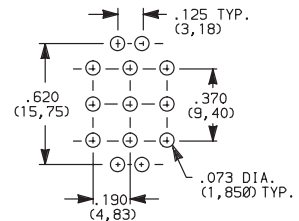
E301MD1_BE
3PDT



Actuator Shown In Pos. 1

Not available with D9 & Y bushings.

PC MOUNTING



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



G

Toggle



Third Angle Projection
Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change

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.

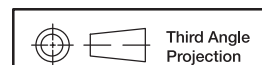
NOTE: Any models supplied with P, S, R, Q, B or G contact material are RoHS compliant.

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

B contact material standard with all terminations.

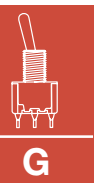
P, S & R contact materials not available with Z & Z3 terminations.

K, L and M options represent Non RoHS tin lead product and are not recommended for new designs. For additional information please contact Customer Service.



Third Angle
Projection

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



G

Toggle

ET Series Sealed Subminiature Toggle Switches

Features/Benefits

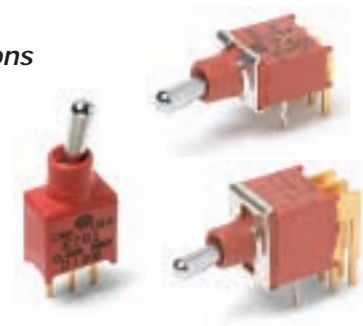
- Sealed against solder and cleaning process contaminants
- ESD protection available
- Thru-hole and surface mount models
- Compact size and small footprint save PCB space
- RoHS compliant models available



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-32 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 G-35 for drawings and reel information.

Materials

CASE & BUSHING: Glass filled nylon 6/6, flame retardant, heat stabilized (UL 94V-0). SA surface mount: High temperature material, 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 G-35 for additional contact materials.

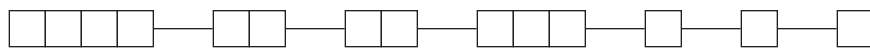
TERMINAL SEAL: Epoxy.

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 G-31 thru G-35. 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

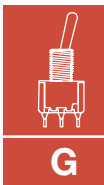
- B Gold
- P Gold, matte tin
- Q Silver
- S Silver/matte-tin
- G Gold over silver
- R Gold over silver, matte-tin

Seal

- E Epoxy

Plastic Actuator Color

- NONE No actuator color
- 2 Black
- 1 White



Toggle



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

ET Series Sealed Subminiature Toggle Switches

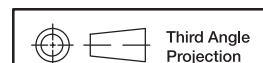
SWITCH FUNCTION

| 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. | | | | |
| | ET02 | OFF | NONE | ON | OPEN | N/A | 3-1 | SPST |
| <p>SPDT</p> <p>Part number shown: ET01MD1CBE ET02 Models: Omit terminal 2</p> | | | | | | | | |
| 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. | | | | |
| | ET24** | ON | ON | ON | 2-3,5-6 | 2-3,5-4 | 2-1,5-4 | |
| <p>DPDT</p> <p>Part number shown: ET21MD1CBE</p> | | | | | | | | |

MOM. = Momentary

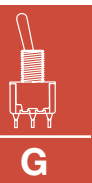
** Wiring for 3-way switch, see Section O.

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



Third Angle Projection

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



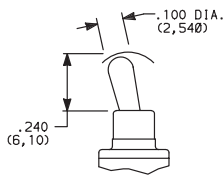
G

Toggle

ET Series Sealed Subminiature Toggle Switches

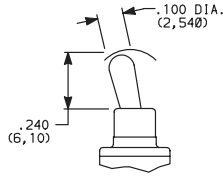
ACTUATOR

M .240" HIGH



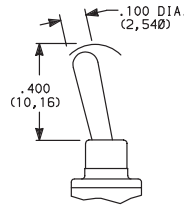
Standard with A, AV, V3 & V31 terminations.

M3 PLASTIC, ANTISTATIC, .240" HIGH



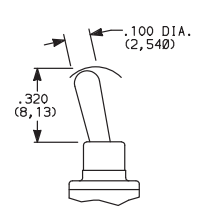
Material: Nylon 4/6 (UL 94V-0), black standard. Static resistance: 9,000 V DC min. @ sea level, actuator to terminals. Not available with F1 conductive bushing option. Not UL approved.

S .400" HIGH

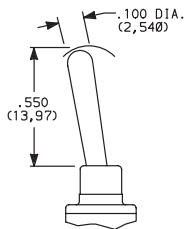


Standard with C or W terminations.

L .320" HIGH



S1 .540" HIGH



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

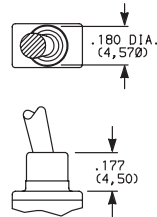
NOTE: All actuators have chrome finish (except M3 & S3).

BUSHING

D1 .177" HIGH, UNTHREADED

F1 ESD, CONDUCTIVE BUSHING UNTHREADED, .177" HIGH

F1 bushing is not UL/CSA approved



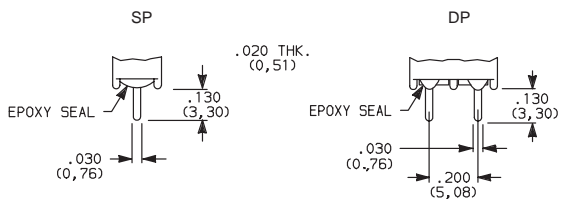
NOTE: ESD protection depends on proper grounding of switch support bracket. F1 conductive bushing option is impregnated with carbon fibers; dissipates electrostatic discharge (ESD) up to 20,000 V from actuator to ground.

Available with all metal actuator options and A, AV, AV3, V3 and V31 termination options only.

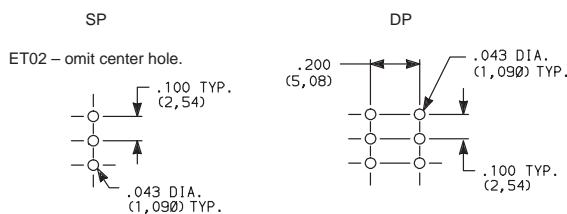
Internal actuator o-ring seal standard.

TERMINATIONS

C PC THRU-HOLE



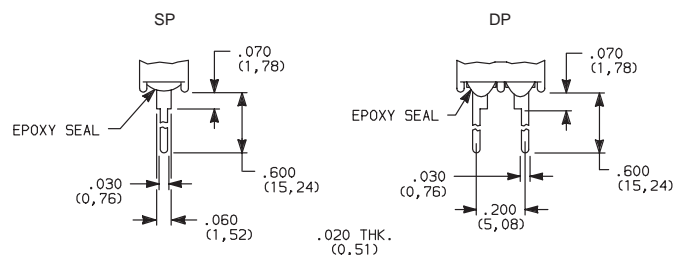
PC MOUNTING



SP and DP

Not available with F1 conductive bushing.

W WIRE WRAP



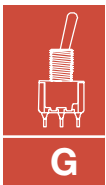
SP and DP

Not available with F1 conductive bushing.



Third Angle Projection

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



G

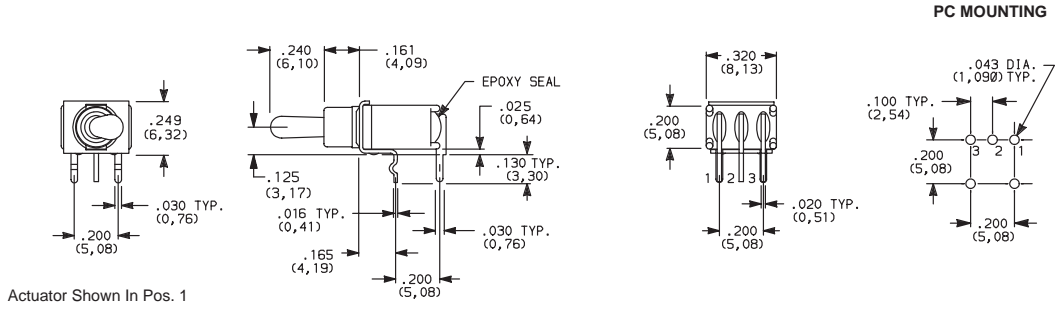
Toggle

C&K

ET Series Sealed Subminiature Toggle Switches

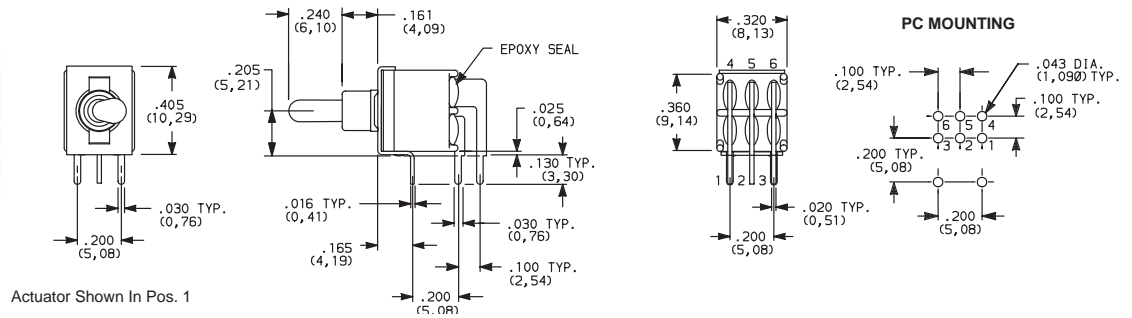
TERMINATIONS

A RIGHT ANGLE, PC THRU-HOLE

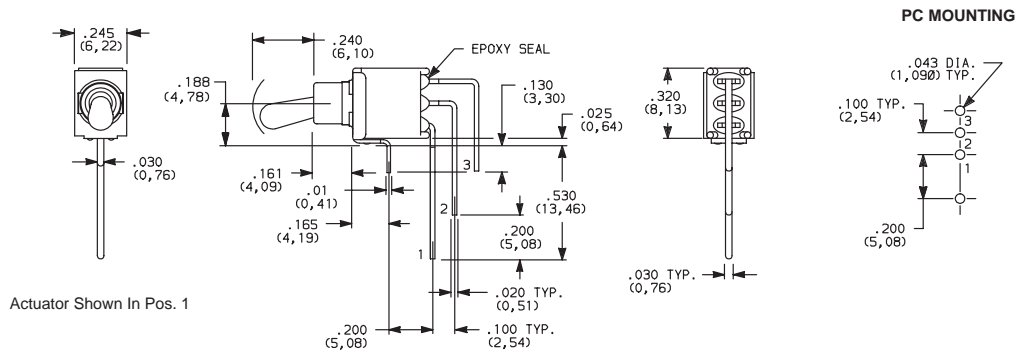


Not available with ET02 model.

A RIGHT ANGLE, PC THRU-HOLE



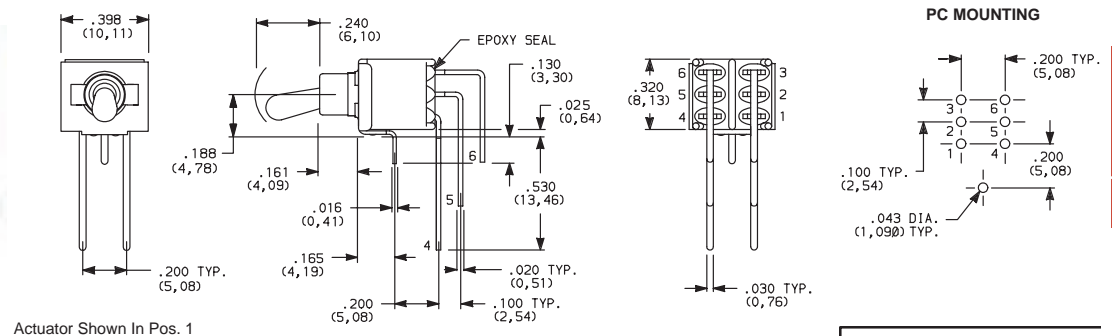
AV VERTICAL RIGHT ANGLE, PC THRU-HOLE



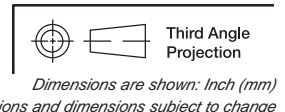
ET02 - omit terminal 2.

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

AV VERTICAL RIGHT ANGLE, PC THRU-HOLE



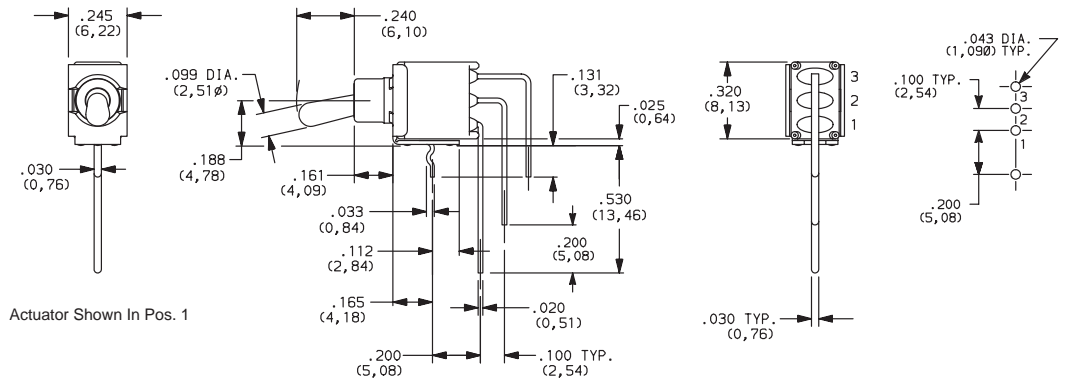
NOTE: Terminal bend radii and lead-in manufacturing option.



ET Series Sealed Subminiature Toggle Switches

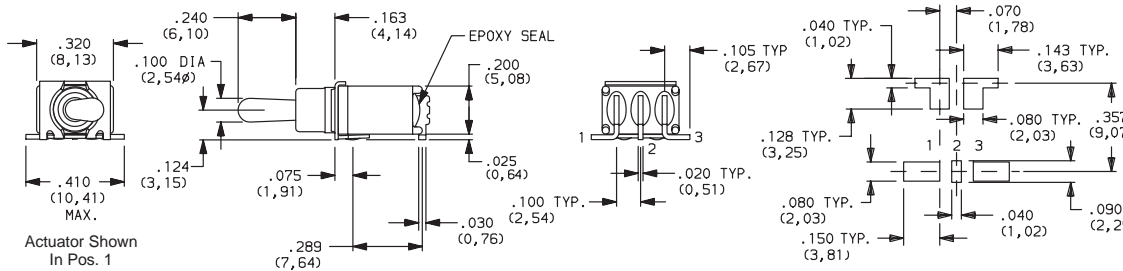
TERMINATIONS

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



ET01SD1AV2BE
Vertical Actuation
SPDT

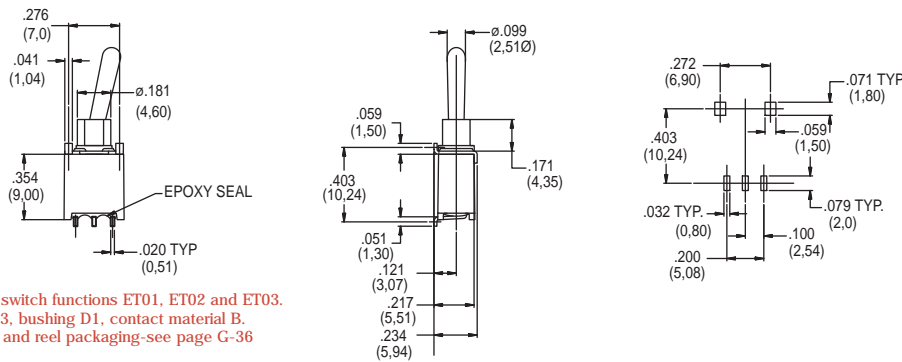
SA RIGHT ANGLE, SURFACE MOUNT



ET01M3D1SAKE
Horizontal Actuation
SPDT Only

Not available with S and S1 actuators. Standard with tape & reel packaging. See page G-35.

SA1 RIGHT ANGLE, SURFACE MOUNT

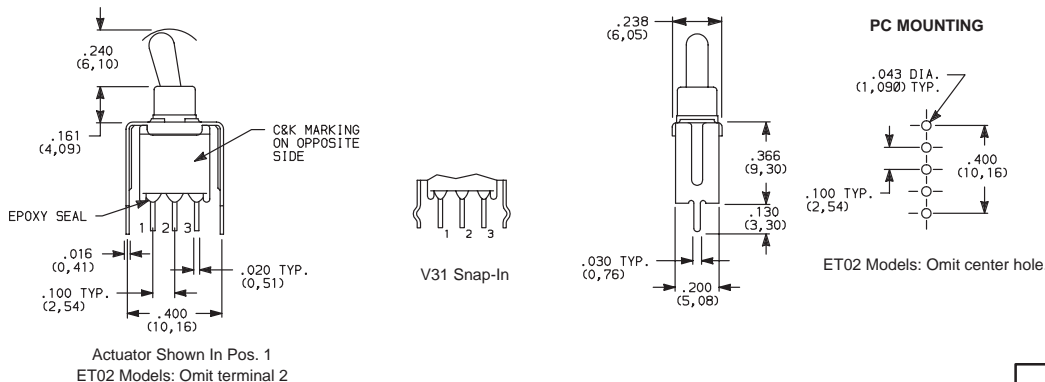


ET01M3D1SA1BE
Horizontal Actuation
SPDT Only

Only available with switch functions ET01, ET02 and ET03. Actuators M and M3, bushing D1, contact material B. Standard with tape and reel packaging-see page G-36

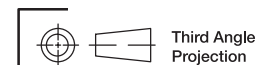
V3 VERTICAL MOUNT, V-BRACKET

V31 VERTICAL MOUNT, V-BRACKET, SNAP-IN



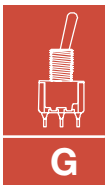
ET01MD1V3BE
SPDT

Actuator Shown In Pos. 1
ET02 Models: Omit terminal 2



Third Angle Projection

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



G

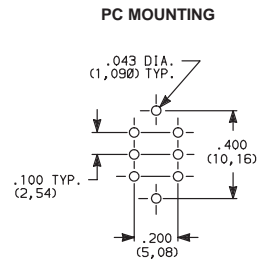
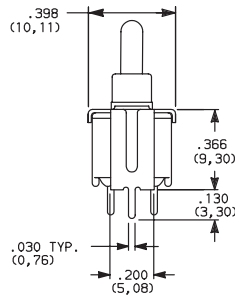
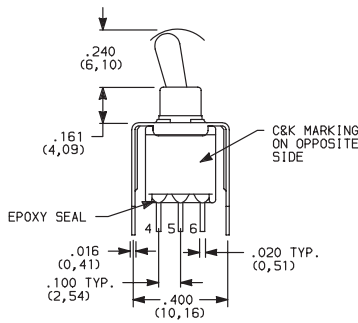
Toggle



ET Series Sealed Subminiature Toggle Switches

TERMINATIONS

V3 VERTICAL MOUNT, V-BRACKET



ET21MD1V3BE
DPDT

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 |
| S | | MATTE-TIN ⁶ | | ALL OTHER MODELS: 2 AMPS @ 120 V AC OR 28 V DC |
| 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 |
| R | | MATTE-TIN ⁶ | | ALL OTHER MODELS: 0.4 VA MAX. @ 20 V AC OR DC MAX. OR 2 AMPS @ 120 V AC OR 28 V DC |

* 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.

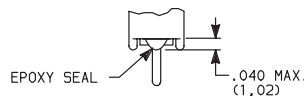
NOTE: Any models supplied with Q, B, G, P or R contact material are RoHS compliant.

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

K, L and M options represent Non RoHS tin lead product and are not recommended for new designs. For additional information please contact Customer Service.

SEAL

E EPOXY SEAL



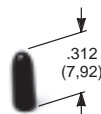
AVAILABLE HARDWARE

Cap

PART NO.

706201000 WHITE
706202000 BLACK
706203000 RED

Material: Vinyl
Finish: Matte



NOTE: Other colors available, consult Customer Service Center.



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



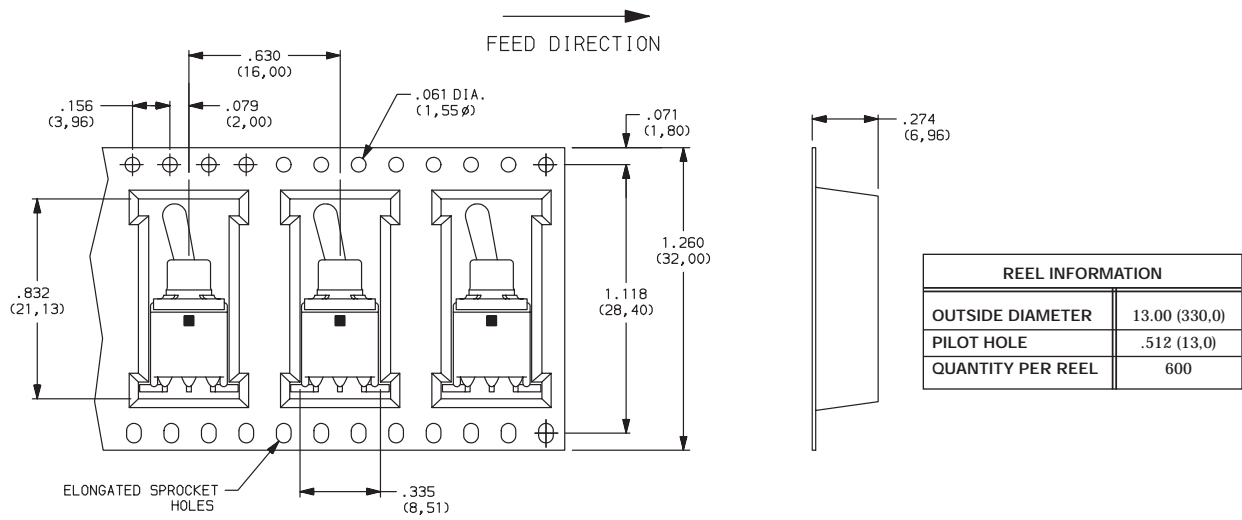
G

Toggle

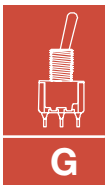
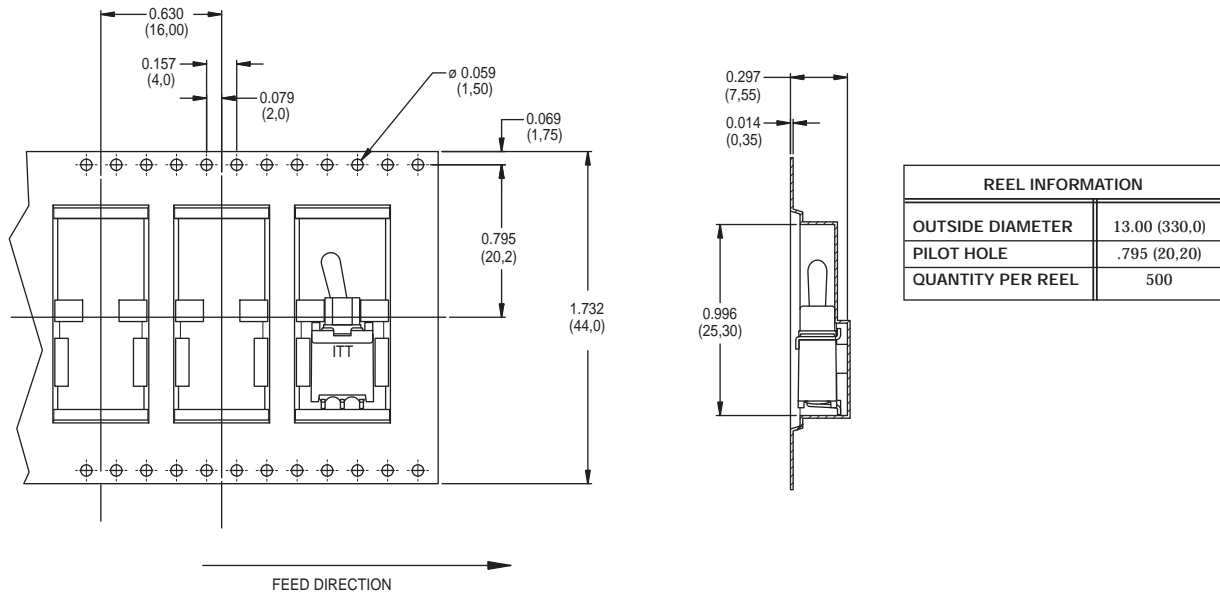
ET Series Sealed Subminiature Toggle Switches

TAPE & REEL

For part number ET01M3D1SAKE



For part number ET01M3D1SA1BE



Toggle



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

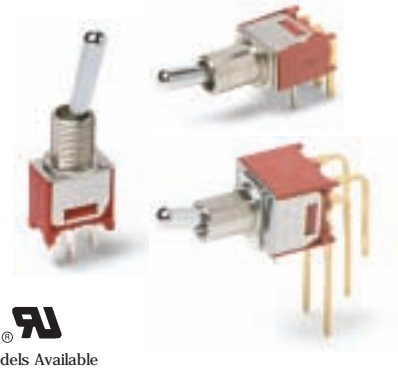
T Series Subminiature Toggle Switches

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



RU
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 G-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: 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).

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).

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.

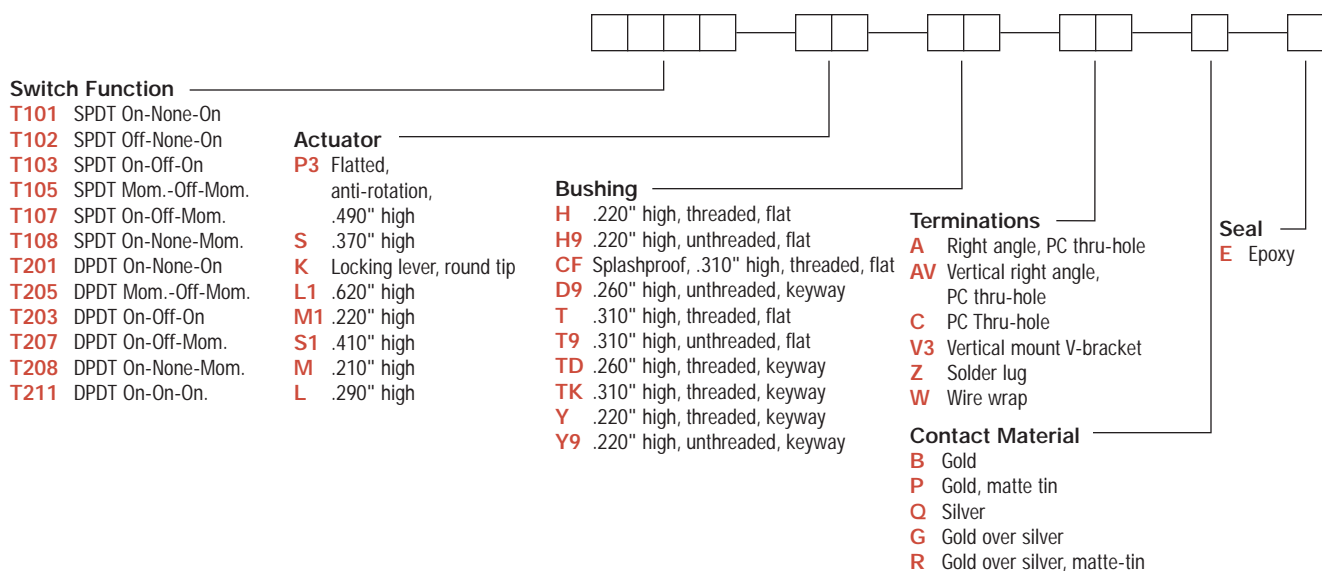
CENTER CONTACTS & TERMINALS: B contact material: Copper alloy, with gold plate over nickel plate. Q contact material: Copper alloy, silver plated. See page G-42 for additional contact materials.

TERMINAL SEAL: Epoxy.

HARDWARE: Nut & Locking Ring: Brass, nickel plated.
Lockwasher: Steel, nickel plated. Additional hardware available separately, see Section O.

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 G-38 thru G-42. 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.



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

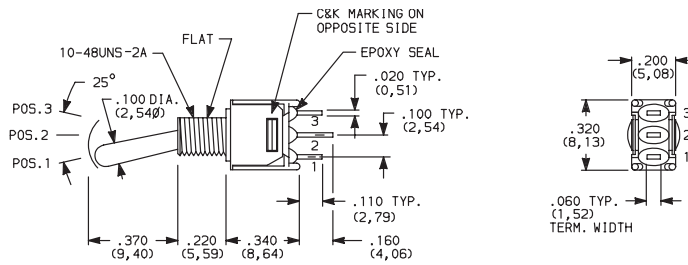


T Series Subminiature Toggle Switches

SWITCH FUNCTION

| NO. POLES | MODEL NO. | SWITCH FUNCTION | | | CONNECTED TERMINALS | | | SCHEMATIC |
|-----------|-------------|-----------------|--------|--------|---------------------|--------|--------|-----------|
| | | POS. 1 | POS. 2 | POS. 3 | POS. 1 | POS. 2 | POS. 3 | |
| 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. | | | | |
| | T108 | ON | NONE | MOM. | 2-3 | NA | 2-1 | |
| | T102 | OFF | NONE | ON | OPEN | N/A | 3-1 | |

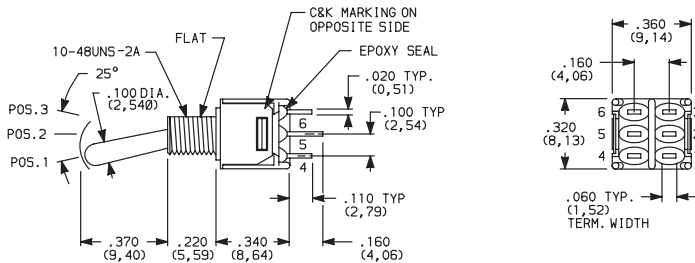
SPDT



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 | |
| 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

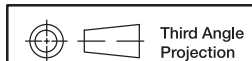
Terminal Nos.
For Reference Only

MOM. = Momentary

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

Toggle

C&K

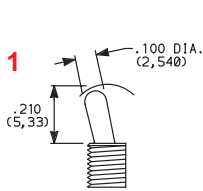


Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change

T Series Subminiature Toggle Switches

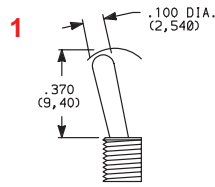
ACTUATOR

M .210" HIGH



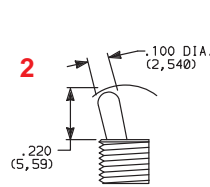
Standard with A, AV or V3 terminations.

S .370" HIGH

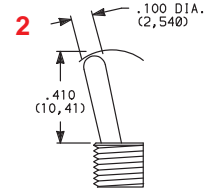


Standard with Z, C or W terminations.

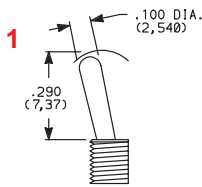
M1 .220" HIGH
(with "T" bushing)



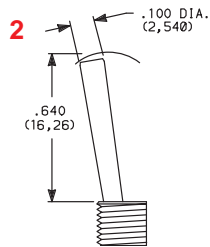
S1 .410" HIGH
(with "T" bushing)



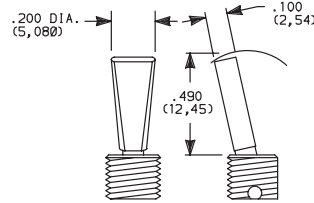
L .290" HIGH



L1 .620" HIGH



P3 ANTI-ROTATION, FLATTED,
.450" HIGH



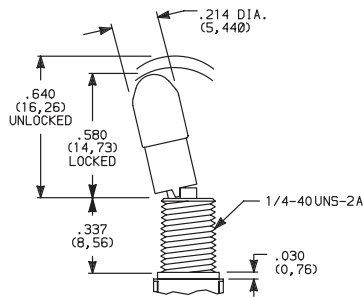
Available with T & T9 bushings only.
Dress nut part number 709901201
supplied standard with threaded bushing.

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



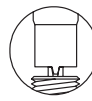
Not available with CF bushing option.

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



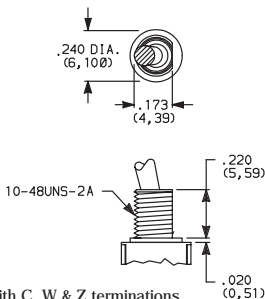
-08 Models
1 Position lock

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.

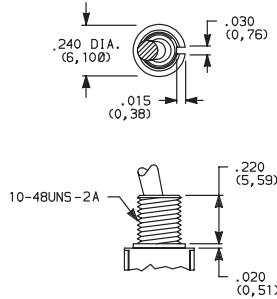
BUSHING

H .220" HIGH THREADED, FLAT



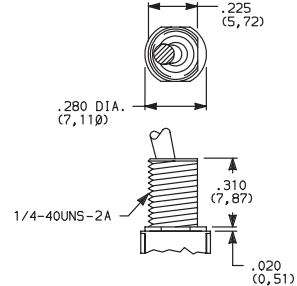
H standard with C, W & Z terminations.
H9 standard with A, AV & V3 terminations.

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: Inch (mm)
Specifications and dimensions subject to change

C&K



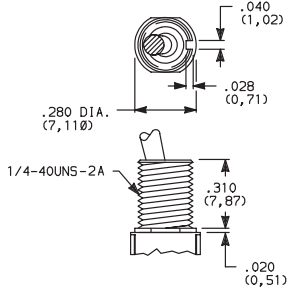
G

Toggle

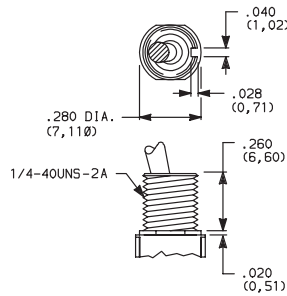
T Series Subminiature Toggle Switches

BUSHING

TK .310" HIGH THREADED, KEYWAY

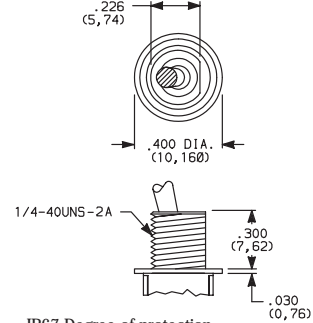


TD .260" HIGH THREADED, KEYWAY



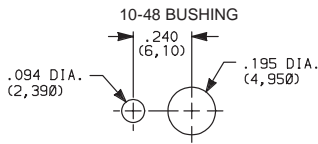
D9 .260" HIGH UNTHREADED, KEYWAY

CF SPLASHPROOF .310" HIGH THREADED, FLAT

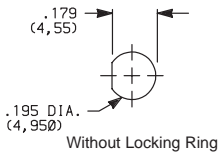


IP67 Degree of protection.
Internal o-ring actuator seal and
external bushing seal washer standard.

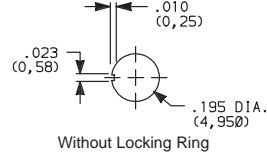
Not available with K locking lever option.



With Standard Locking Ring

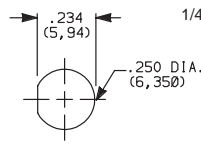


Without Locking Ring

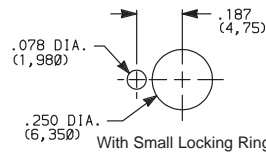


Without Locking Ring

PANEL MOUNTING

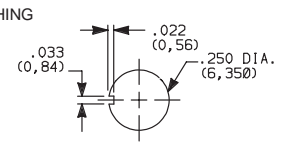


Without Locking Ring

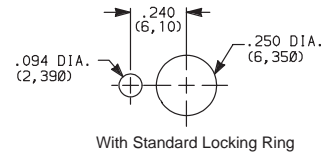


With Small Locking Ring

1/4 IN. BUSHING



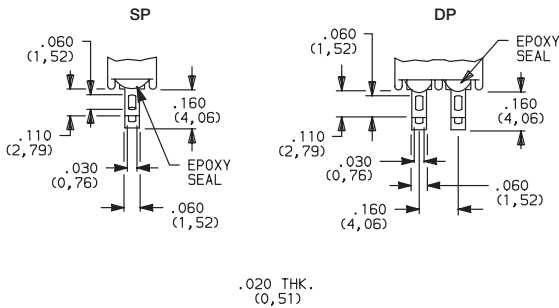
Without Locking Ring



With Standard Locking Ring

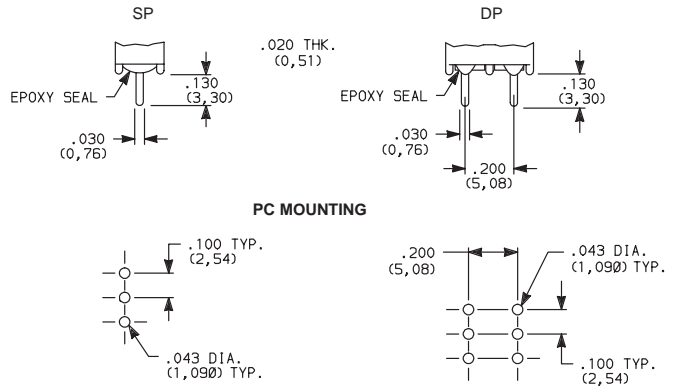
TERMINATIONS

Z SOLDER LUG



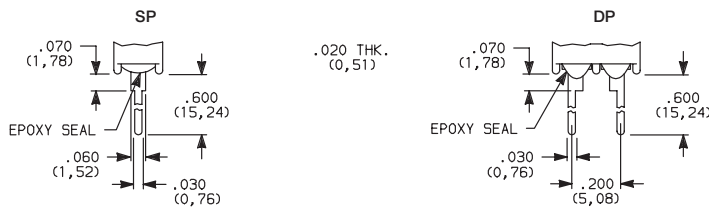
Not available with P or R contact materials.

C PC THRU-HOLE



T102 - omit center hole.

W WIRE WRAP



G

Toggle

C&K



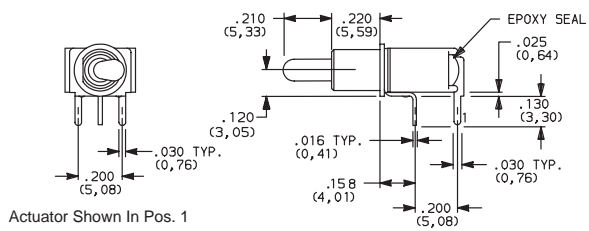
Third Angle
Projection

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

T Series Subminiature Toggle Switches

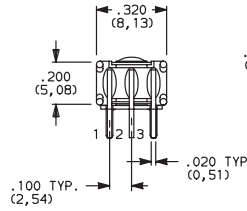
TERMINATIONS

A RIGHT ANGLE, PC THRU-HOLE

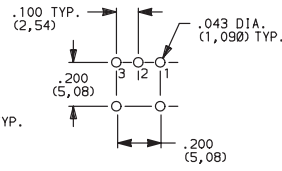


Actuator Shown In Pos. 1

Not available with T102 model.

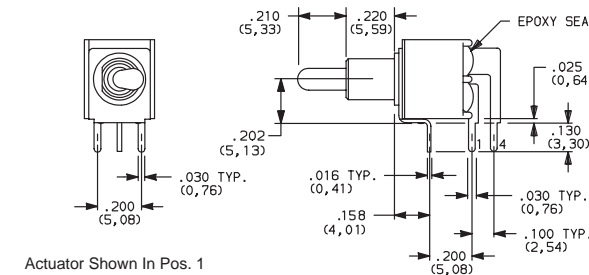


PC MOUNTING

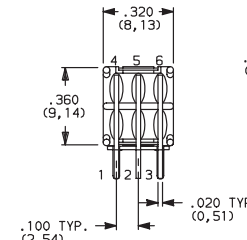


T101MH9ABE
Horizontal Actuation
SPDT

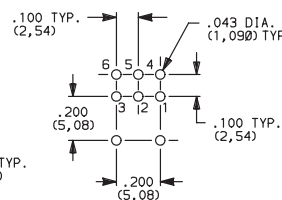
A RIGHT ANGLE, PC THRU-HOLE



Actuator Shown In Pos. 1

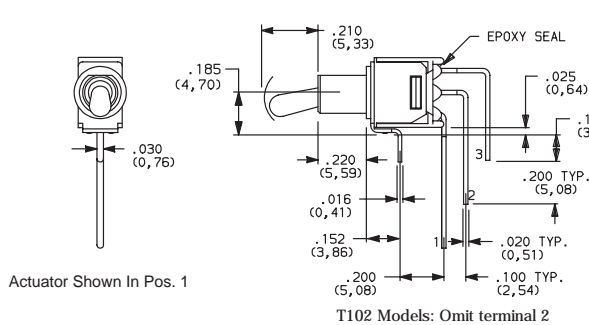


PC MOUNTING



T201MH9ABE
Horizontal Actuation
DPDT

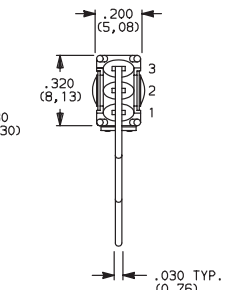
AV VERTICAL RIGHT ANGLE, PC THRU-HOLE



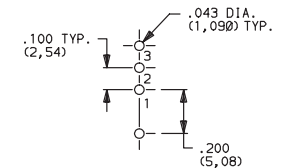
Actuator Shown In Pos. 1

T102 Models: Omit terminal 2

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

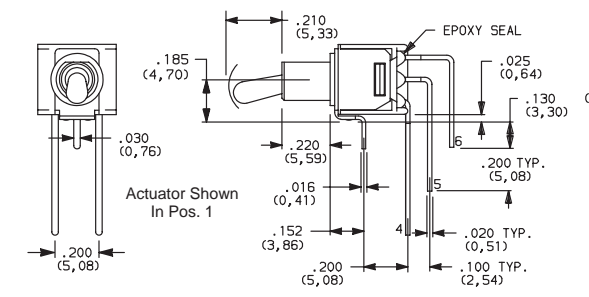


PC MOUNTING



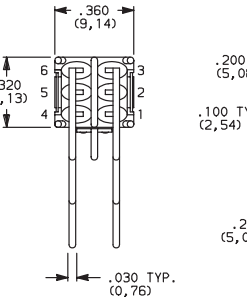
T101MH9AVBE
Vertical Actuation
SPDT

AV VERTICAL RIGHT ANGLE, PC THRU-HOLE

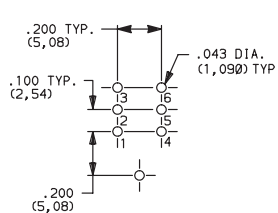


Actuator Shown In Pos. 1

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

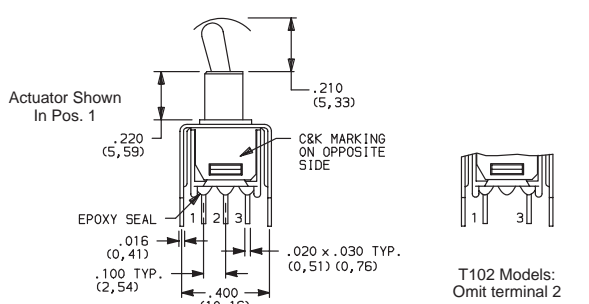


PC MOUNTING

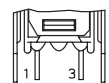


T201MH9AVBE
Vertical Actuation
DPDT

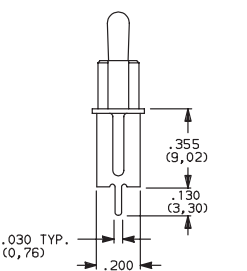
V3 VERTICAL MOUNT, V-BRACKET



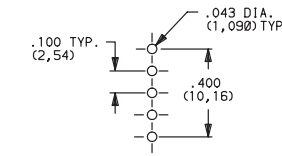
Actuator Shown In Pos. 1



T102 Models:
Omit terminal 2



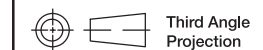
PC MOUNTING



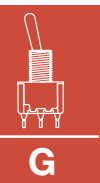
T102 Models:
Omit center hole.



T101MH9V3BE
SPDT



Third Angle
Projection
Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change



G

Toggle

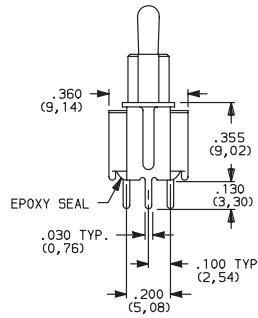
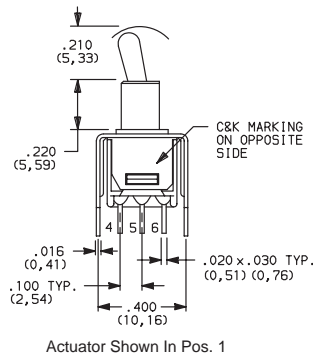
T Series Subminiature Toggle Switches

TERMINATIONS

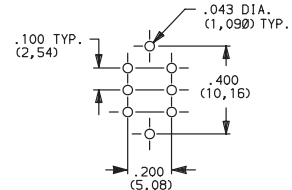
V3 VERTICAL MOUNT, V-BRACKET



T201MH9V3BE
DPDT



PC MOUNTING



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 | TX01 MODELS: 3 AMPS @ 120 V AC OR 28 V DC. ALL OTHER MODELS: 2 AMPS @ 120 V AC OR 28 V DC. |
| G | GOLD OVER SILVER ^{2,3} | GOLD ³ | LOW LEVEL/DRY CIRCUIT OR POWER | TX01 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 P, R, Q, B or G contact material are RoHS compliant. For the latest information regarding RoHS compliance, please go to: www.ittcannon.com/rohs.

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

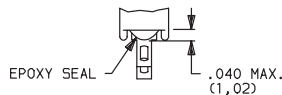
B contact material standard with A, AV, V3 & W terminations.

Q contact material standard with C & Z terminations.

K, L and M options represent Non RoHS tin lead product and are not recommended for new designs. For additional information please contact Customer Service.

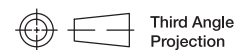
SEAL

E EPOXY SEAL



G

Toggle



Dimensions are shown: Inch (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: 10⁹ Ω 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 G-47 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 6/6 or 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.
 TERMINALS: 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.

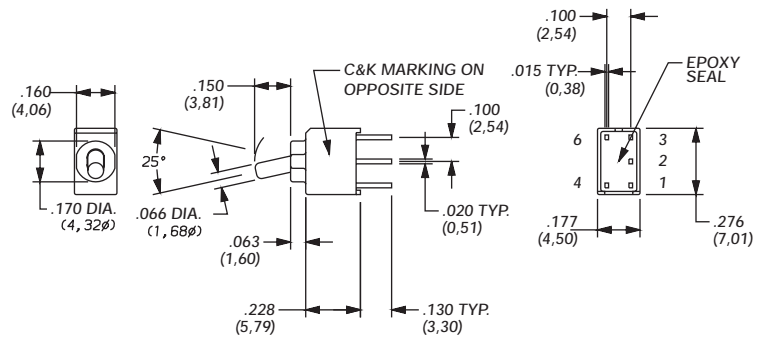
How To Order

Complete part numbers for GT Series Sealed Ultraminiature Toggle Switches are shown on pages G-43 thru G-47.

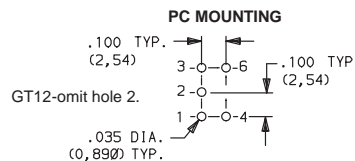


GT11MCBE
SPDT

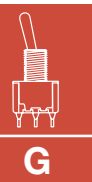
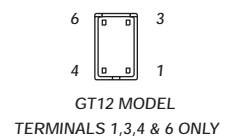
| PART NUMBER | SWITCH FUNCTION | | |
|--------------|----------------------------------|--------|--------|
| | POS. 1 | POS. 2 | POS. 3 |
| GT11MCBE | ON | NONE | ON |
| GT13MCBE | ON | OFF | ON |
| Conn. Terms. | 2-3 | OPEN | 2-1 |
| Schematic | | | |
| SPDT | Note: Pins 4 and 6 not connected | | |
| GT12MCBE | OFF | NONE | ON |
| Conn. Terms. | OPEN | N/A | 3-1 |
| Schematic | | | |
| SPST | Note: Pins 4 and 6 not connected | | |



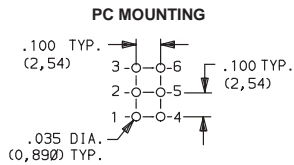
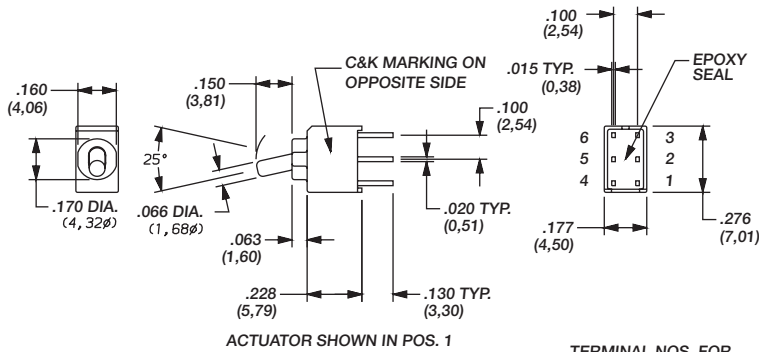
ACTUATOR SHOWN IN POS. 1



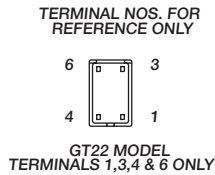
TERMINAL NOS. FOR REFERENCE ONLY



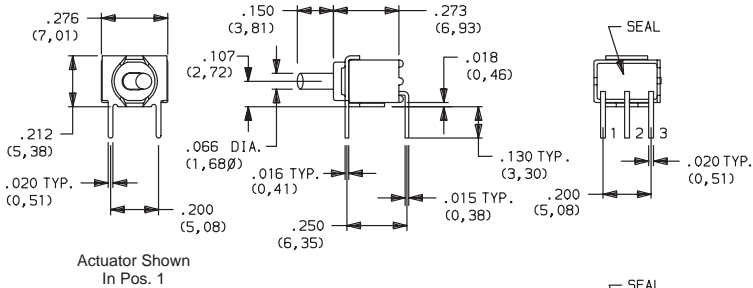
GT Series Sealed Ultraminiature Toggle Switches



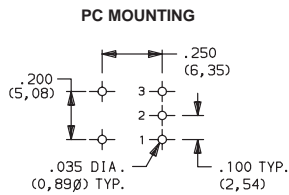
GT22-omit holes 2 & 5.



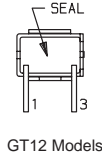
| PART NUMBER | SWITCH FUNCTION | | |
|-----------------|-----------------|--------|----------|
| | POS. 1 | POS. 2 | POS. 3 |
| GT21MCBE | ON | NONE | ON |
| GT23MCBE | ON | OFF | ON |
| Conn. Terms. | 2-3, 5-6 | OPEN | 2-1, 5-4 |
| Schematic | | | |
| DPDT | | | |
| GT22MCBE | OFF | NONE | ON |
| Conn.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



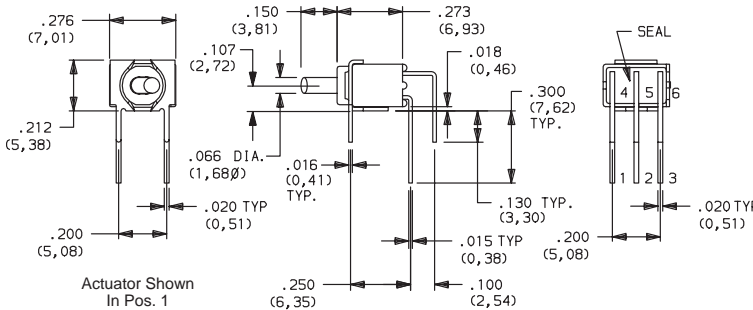
Actuator Shown
In Pos. 1



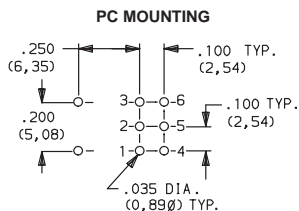
GT12-omit hole 2.



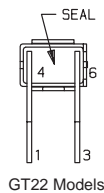
| PART NUMBER | SWITCH FUNCTION | | |
|-----------------|-----------------|--------|--------|
| | POS. 1 | POS. 2 | POS. 3 |
| GT11MABE | ON | NONE | ON |
| GT13MABE | ON | OFF | ON |
| Conn. Terms. | 2-3 | OPEN | 2-1 |
| Schematic | | | |
| SPDT | | | |
| GT12MABE | OFF | NONE | ON |
| Conn. Terms. | OPEN | N/A | 3-1 |
| Schematic | | | |
| SPST | | | |



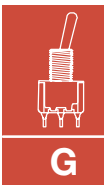
Actuator Shown
In Pos. 1



GT22-omit holes 2 & 5.



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



Toggle



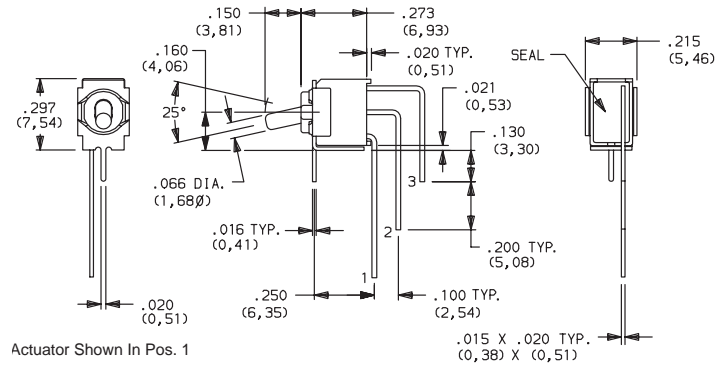
Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change

GT Series Sealed Ultraminiature Toggle Switches

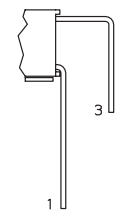
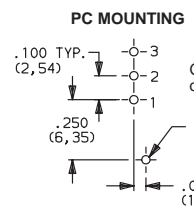


GT11MAVBE
Vertical
Actuation
SPDT

| 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 | | | |



Actuator Shown In Pos. 1

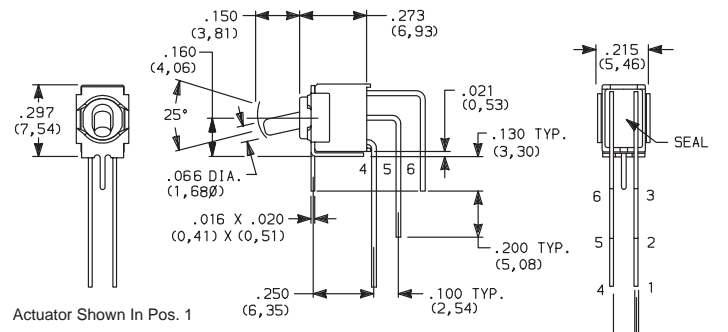


GT12 Models

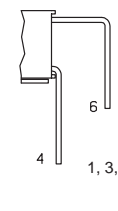
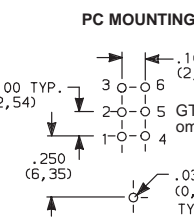


GT21MAVBE
Vertical
Actuation
DPDT

| 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 | | | |



Actuator Shown In Pos. 1

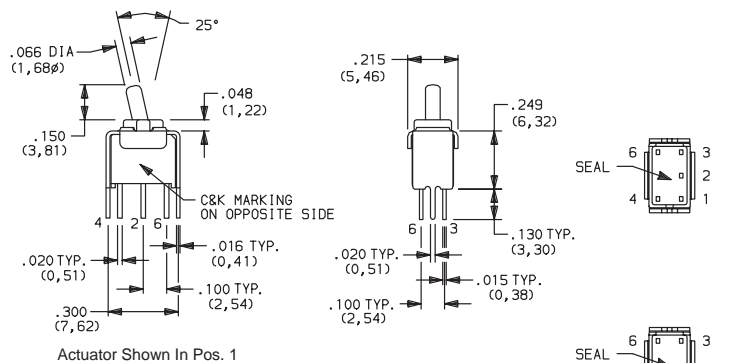


GT22 Models:
1, 3, 4 & 6 terminals only.

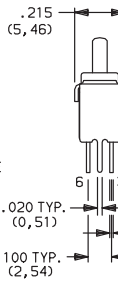
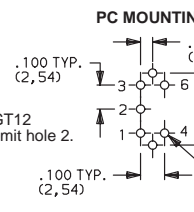


GT11MV3BE
SPDT

| 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 | | |



Actuator Shown In Pos. 1



GT12 Models

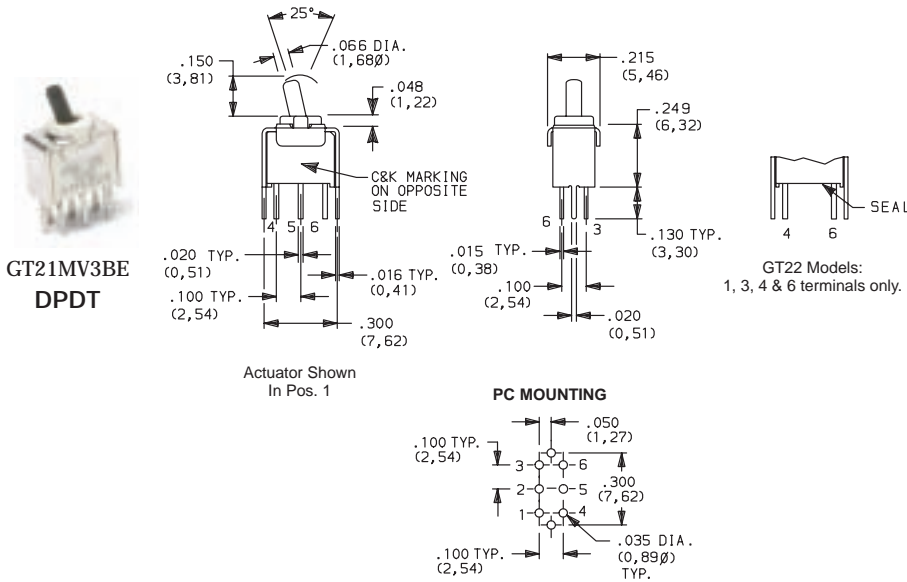


Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change

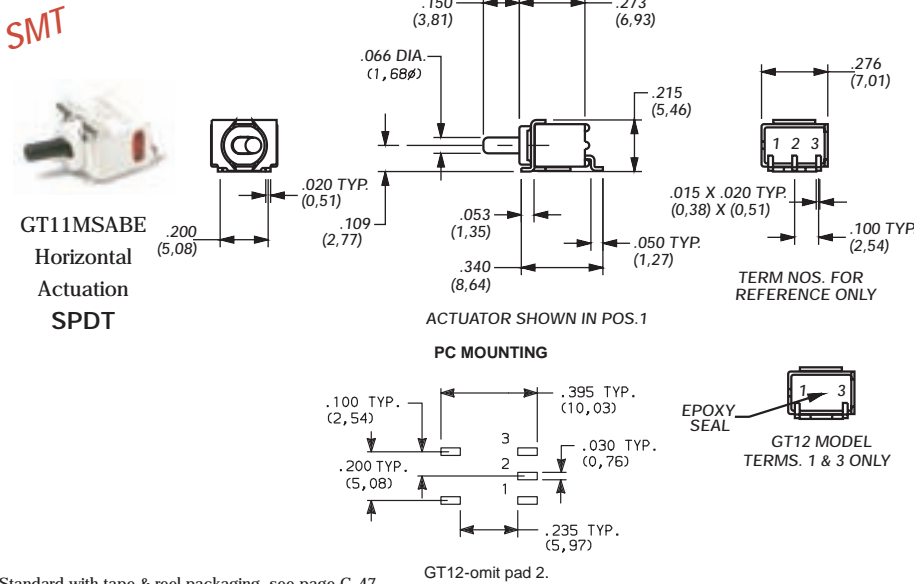


Toggle

GT Series Sealed Ultraminiature Toggle Switches

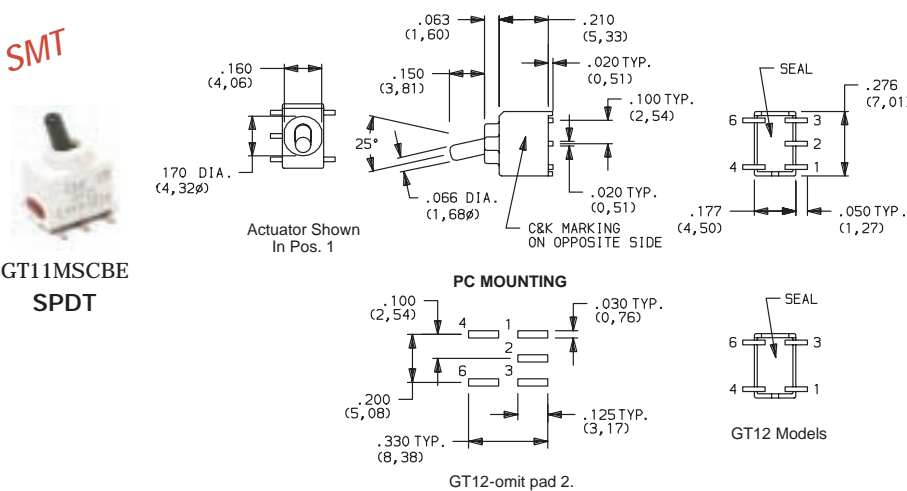


| PART NUMBER | SWITCH FUNCTION | | |
|------------------|-----------------|--------|----------|
| | POS.1 | POS. 2 | POS. 3 |
| GT21MV3BE | ON | NONE | ON |
| GT23MV3BE | ON | OFF | ON |
| Conn. Terms. | 2-3, 5-6 | OPEN | 2-1, 5-4 |
| Schematic | | | |
| GT22MV3BE | OFF | NONE | ON |
| Conn. Terms.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



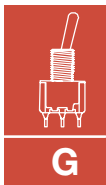
| PART NUMBER | SWITCH FUNCTION | | |
|--------------------|-----------------|--------|--------|
| | POS.1 | POS. 2 | POS. 3 |
| GT11MSABETR | ON | NONE | ON |
| GT13MSABETR | ON | OFF | ON |
| Conn. Terms. | 2-3 | OPEN | 2-1 |
| Schematic | | | |
| GT12MSABETR | OFF | NONE | ON |
| Conn. Terms. | OPEN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

Standard with tape & reel packaging, see page G-47.



| PART NUMBER | SWITCH FUNCTION | | |
|--------------------|----------------------------------|--------|--------|
| | POS.1 | POS. 2 | POS. 3 |
| GT11MSCBETR | ON | NONE | ON |
| GT13MSCBETR | ON | OFF | ON |
| Conn. Terms. | 2-3 | OPEN | 2-1 |
| Schematic | | | |
| SPDT | Note: Pins 4 and 6 not connected | | |
| GT12MSCBETR | 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 G-47.



Toggle



Third Angle Projection

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

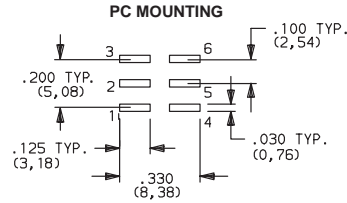
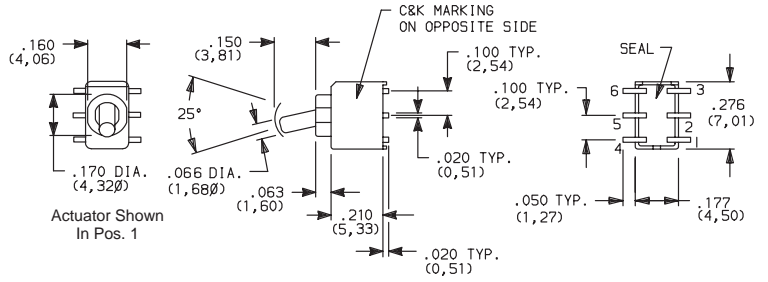
GT Series Sealed Ultraminiature Toggle Switches

SMT

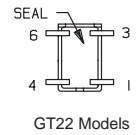


GT21MSCBE
DPDT

| 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 | | | |



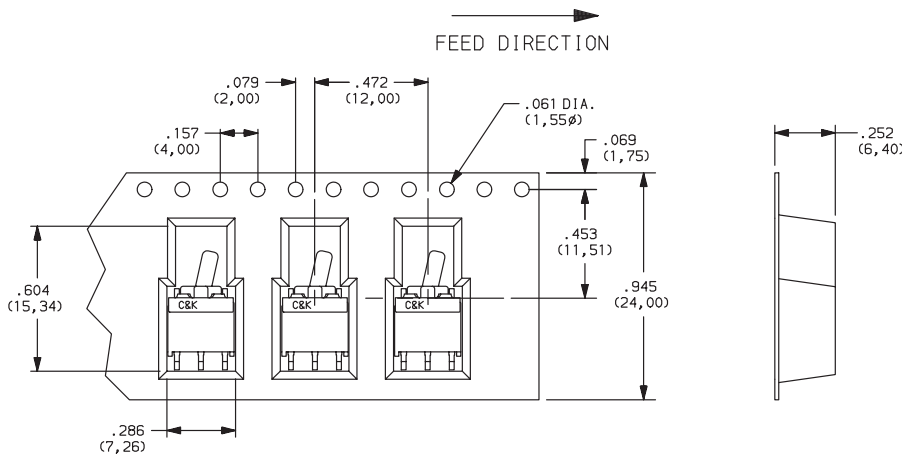
GT22-omit pads 2 & 5.



Standard with tape & reel packaging, see page G-47.

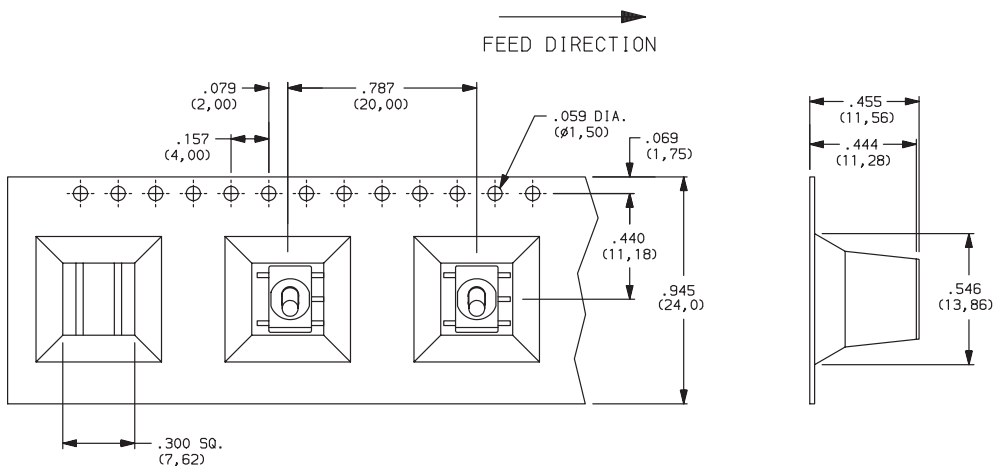
TAPE & REEL

For part numbers GT11MSABE, GT12MSABE, GT13MSABE

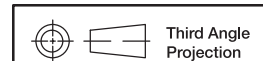


| REEL INFORMATION | |
|-------------------|---------------|
| OUTSIDE DIAMETER | 13.00 (330,0) |
| PILOT HOLE | .512 (13,0) |
| QUANTITY PER REEL | 600 |

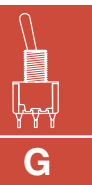
For part numbers GT11MSCBE, GT12MSCBE, GT13MSCBE, GT21MSCBE, GT22MSCBE, GT23MSCBE,



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



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



Toggle

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

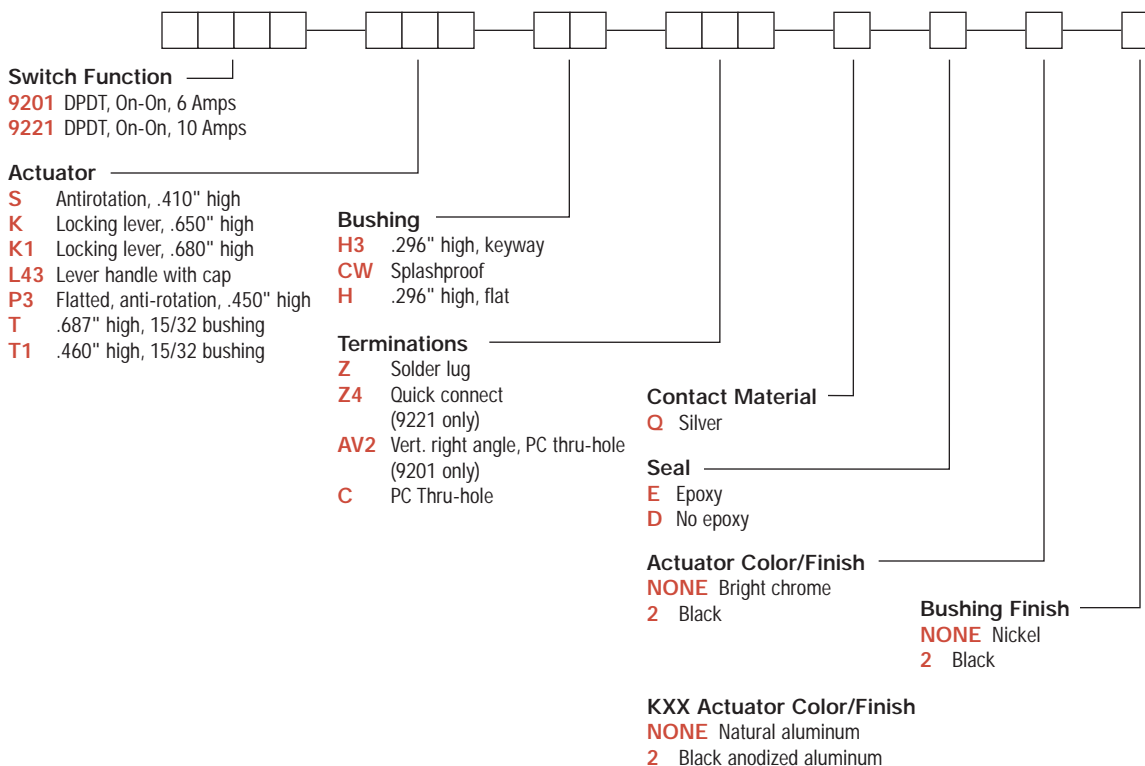
ALL TERMINALS: 9201 Model: Copper alloy, silver plated.
9221 Model: Copper alloy, matte-tin plated.

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 G-49 thru G-53. For additional options not shown in catalog, consult Customer Service Center.



Toggle



Dimensions are shown: Inch (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

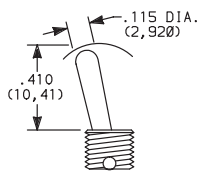
* See CONTACT MATERIAL, page G-52, for complete ratings.

All 9000 Series models meet international dimensional and electrical requirements.

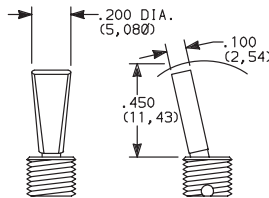
9221 model must be ordered with Z4 terminations and D seal option.

ACTUATOR

S ANTIROTATION, .410" HIGH



P3 FLATTED, ANTIROTATION, .450" HIGH



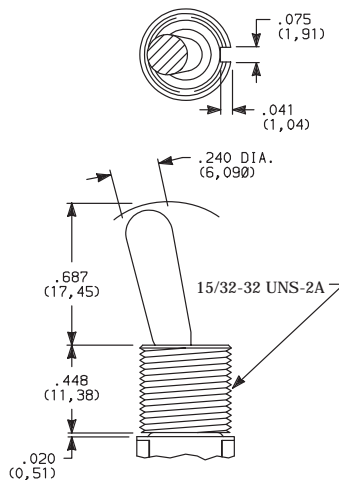
| OPTION CODE | ACTUATOR FINISH |
|-------------|---|
| NONE | NATURAL ALUMINUM—With Nickel Plated Bushing |
| 2 | BLACK |

NOTE: Black hardware is supplied when either black actuators or bushings are specified. All hardware is available separately, see Section O.

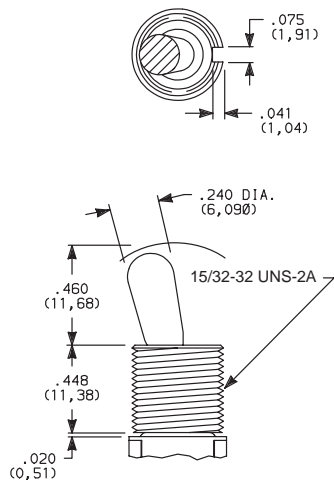
Antirotation is standard on all actuators, provides 'anti-push-in' feature on actuator.

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

T .687" HIGH, 15/32 BUSHING



T1 .460" HIGH, 15/32 BUSHING

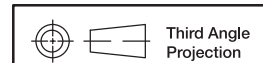


| OPTION CODE | ACTUATOR FINISH |
|-------------|--|
| NONE | BRIGHT CHROME—With Nickel Plated Bushing |
| 2 | BLACK |

NOTE: Bushing option code not required for T & T1 actuators unless CW splashproof bushing ordered.

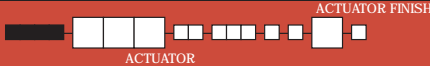
Black hardware is supplied when either black actuators or bushings are specified. All hardware is available separately, see Section O.

Antirotation is standard on all actuators except T & T1, provides 'anti-push-in' feature on actuator.

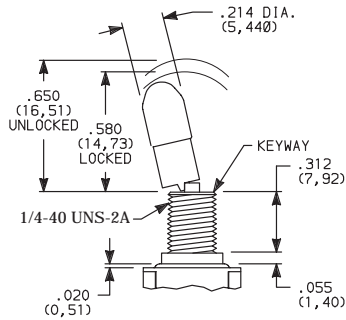


9000 Series Power Toggle Switches

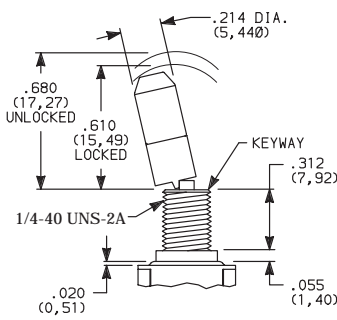
ACTUATOR



K LOCKING LEVER, .650" HIGH, THREADED



K1 LOCKING LEVER, .680" HIGH, THREADED



Locking Positions

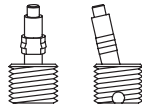


2 Position Lock

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.

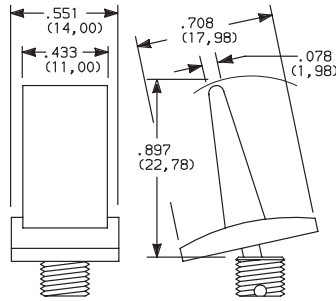
| OPTION CODE | ACTUATOR CAP FINISH |
|-------------|---|
| NONE | NATURAL ALUMINUM-With Nickel Plated Bushing |
| 2 | BLACK ANODIZED ALUMINUM |

L40 LEVER HANDLE WITHOUT CAP



No color choice required.

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



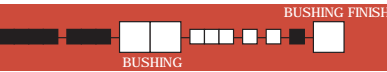
Finish: Matte

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

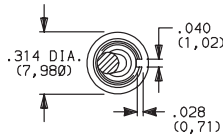
Other colors available, consult Customer Service Center.

NOTE: Lever handle actuator L43 supplied, but not installed. For interchangeability, order L40 actuator option and order lever handles separately, see page G-53. Antirotation is standard on all actuators, provides 'anti-push-in' feature.

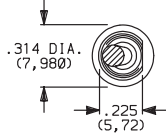
BUSHING



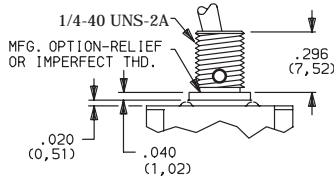
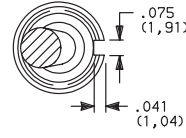
H3 .296" HIGH, THREADED, KEYWAY



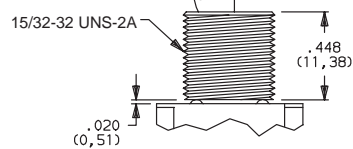
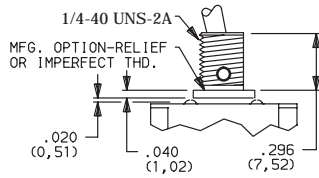
H .296" HIGH, THREADED, FLAT



CW SPLASHPROOF, 15/32 BUSHING



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



For T & T1 actuators only.

| OPTION CODE | BUSHING FINISH |
|-------------|----------------|
| NONE | NICKEL |
| 2 | BLACK |

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 O.

Internal actuator seal standard. External bushing seal washer available separately, order from: Multi-Flex Seals, Inc., Hackensack, NJ. Part number: MFS-60064.



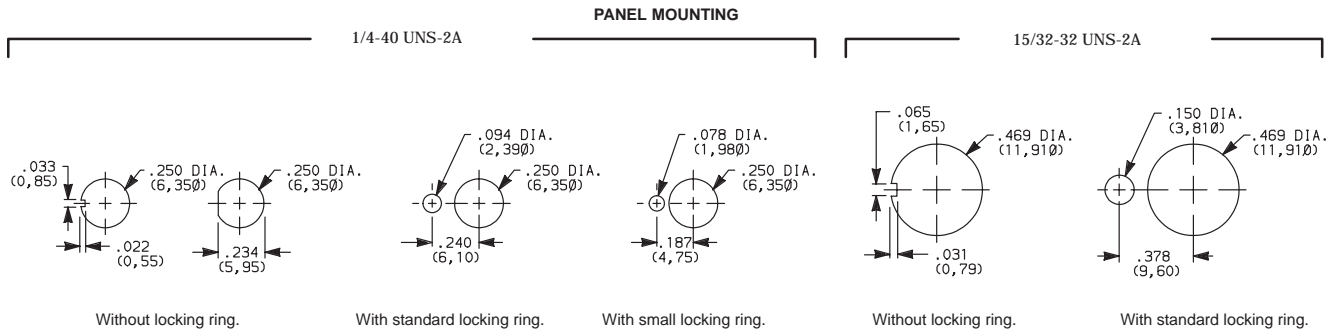
Third Angle Projection
Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change

Toggle



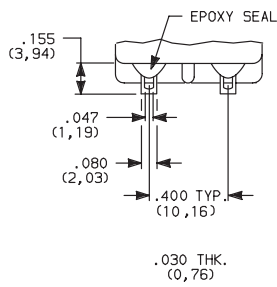
9000 Series Power Toggle Switches

BUSHING



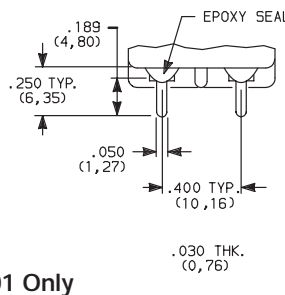
TERMINATIONS

Z SOLDER LUG



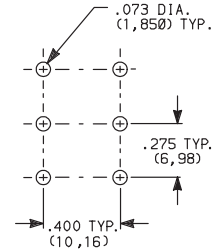
9201 Only

C PC THRU-HOLE



9201 Only

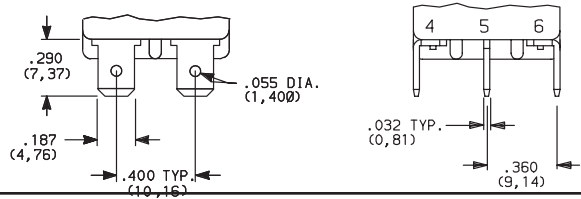
PC MOUNTING



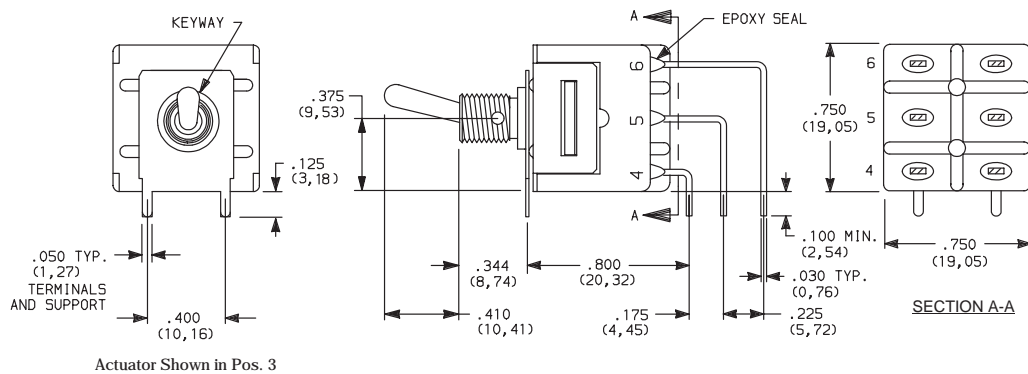
Z4 .187" QUICK CONNECT

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

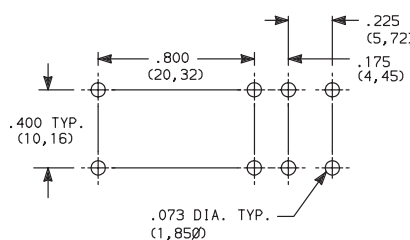


9201SH3AV2QE
Vertical Actuation
DPDT

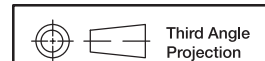
9201 Only

NOTE: Terminal bend radii and lead-in manufacturing option. Terminal spacing greater than 3mm at all points.

PC MOUNTING



Terminal Nos.
For Reference Only



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.

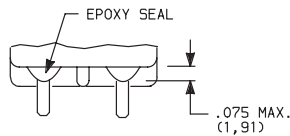
All 9000 Series models meet international dimensional and electrical requirements. 

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

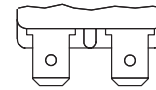
SEAL

E EPOXY SEAL

D NO EPOXY SEAL



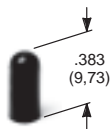
Not available with 9221 model or Z4 terminations.



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

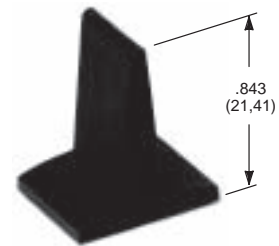
Cap
Compatible with S actuator



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 O.

Other colors available, consult Customer Service Center.



G

Toggle

C&K



Third Angle
Projection

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