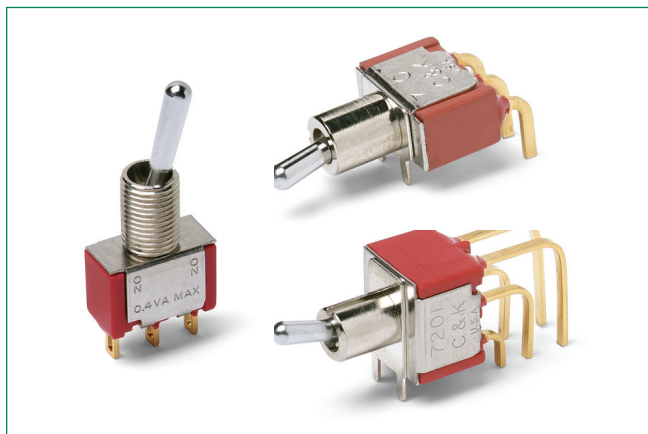


# 7000 Series

## Miniature Toggle Switches



### Agency Approvals

| Agency | Agency File Number |
|--------|--------------------|
|        | E42363             |

### Specifications

|                              |                                                                                                                                                                     |
|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Contact Rating</b>        | B contact material: 0.4 VA max. @ 20 V AC or DC max.<br>Q contact material: 5 amps @ 120 V AC or 28 V DC; 2 amps @ 250 V AC.<br>See page 17 for additional ratings. |
| <b>Electrical Life</b>       | 7X01 and UX1 models: 100,000 make-and-break cycles at full load. All other models: 40,000 cycles.                                                                   |
| <b>Contact Resistance</b>    | Below 10 m $\Omega$ typ. Initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.                                                                      |
| <b>Insulation Resistance</b> | 10 <sup>9</sup> $\Omega$ min.                                                                                                                                       |
| <b>Dielectric Strength</b>   | 1000 Vrms min. @ sea level                                                                                                                                          |
| <b>Operating Temperature</b> | -30°C to 85°C                                                                                                                                                       |
| <b>Solderability</b>         | Per MIL-STD-202G method 208H, or EIA RS-186E method 9 (1 hour steam aging).                                                                                         |

#### Notes:

Any models supplied with S, R, Q, B or G contact material are RoHS compliant and compatible. Specifications listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

### Description

With a wide variety of actuator and termination options available, the 7000 series miniature toggle switches from C&K, which now includes an optional knurled cap on the locking lever options, are used by designers throughout the medical equipment and telecommunications industry to give product designs the long-lasting, high performance switch they need to succeed. The 7000 series are epoxy terminal-seal compatible with bottom wash cleaning and are engineered to be both multi-pole and multi-position, ensuring a perfect fit, no matter the design specifications.

### Features & Benefits

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

### Applications

- Telecommunications
- Instrumentation
- Medical equipment

### Materials

|                                            |                                                                                                                                                                    |
|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Case</b>                                | Glass filled nylon 6/6, flame retardant, heat stabilized, ordiallyl phthalate (DAP) (UL 94 V-0).                                                                   |
| <b>Actuator</b>                            | Brass, chrome plated                                                                                                                                               |
| <b>Bushing</b>                             | Brass or zinc, nickel plated.                                                                                                                                      |
| <b>Housing</b>                             | Stainless steel                                                                                                                                                    |
| <b>Switch Support</b>                      | Brass or steel, tin plated.                                                                                                                                        |
| <b>End Contacts</b>                        | B contact material: Copper alloy, with gold plate over nickel plate. Q contact material: Coin silver, silver plated. See page 17 for additional contact materials. |
| <b>Center Contacts &amp; All Terminals</b> | B contact material: Copper alloy, with gold plate over nickel plate. Q contact material: Copper alloy, silver plated. See above for additional contact materials.  |
| <b>Terminal Seal</b>                       | Epoxy                                                                                                                                                              |
| <b>Hardware</b>                            | Nut & Locking Ring: Brass, nickel plated.<br>Lockwasher: Steel, nickel plated.                                                                                     |

# 7000 Series

## Miniature Toggle Switches



### Ordering Number

To order, simply select desired option from each category and place in the appropriate box. **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.

**7xxx - xxx - xx - xxx - x - x - x - x**

#### Switch Function

**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.  
**7201:** DP On-None-On  
**7203:** DP On-Off-On  
**7205:** DP Mom.-Off-Mom.  
**7207:** DP On-Off-Mom.  
**7211:** DP On-On-On  
**7301:** 3P On-None-On  
**7303:** 3P On-Off-On  
**7401:** 4P On-None-On

#### Actuator

**M:** 0.200" high  
**P3:** Flatted, anti-rotation, 0.450" high  
**S:** 0.420" high  
**T:** 0.687" high, 15/32 bushing  
**K2:** Locking lever, 0.704" high  
**K12:** Locking lever, 0.732" high  
**L40:** Lever handle without cap  
**L42:** 0.838" high lever handle with cap  
**P4:** Flatted, anti-rotation, 0.250" high  
**SP:** Anti-rotation, 0.420" high  
**T1:** 0.487" high, 15/32 bushing  
**TP:** Anti-rotation, 0.687" high, 15/32 bushing

#### Bushing

**D:** 0.280 high, keyway  
**H:** 0.296 high, flat  
**Y:** 0.350 high, keyway  
**NONE:** No bushing choice required  
**CW:** Splashproof  
**D9:** 0.280" high, keyway  
**Y9:** 0.350" high, keyway

#### Seal

**E:** Epoxy  
**I:** Epoxy potted base

#### Contact Material

**B:** Gold  
**Q:** Silver  
**S:** Silver, matte-pin  
**G:** Gold over silver  
**R:** Gold over silver, matte-pin

#### Terminations

**A:** Right angle, PC thru-hole  
**AV2:** Vert. right angle, PC thru-hole  
**C:** PC Thru-hole  
**V3:** 0.460 high, V-bracket  
**Z:** Solder lug  
**V7:** 0.630" high, V-bracket  
**V81:** 0.953" high, snap-in V-bracket  
**W3:** 0.425" long, wire wrap

#### Bushing Finish

**NONE:** Nickel on all bushings  
**2:** Black

#### Actuator Color/Finish

**None:** Bright chrome  
**2:** Black  
**3:** Red

#### KXX Actuator Color/Finish

**None:** Natural aluminum  
**2:** Black anodized aluminum  
**3:** Red anodized aluminum  
**7:** Blue anodized aluminum  
**G:** Grip tip aluminum

#### Notes:

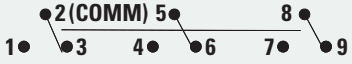
1. K2/K12 actuators not available with switch function 7X05.

# 7000 Series

## Miniature Toggle Switches



### Switch Function

| No. Poles | Model No.         | UL <sup>2</sup> Model No. | Switch Function                                                                             |                                                                                             |                                                                                             | Connected Terminals                                                                         |                                                                                             |                                                                                              | Schematic                                                                                     |
|-----------|-------------------|---------------------------|---------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
|           |                   |                           | POS. 1<br> | POS. 2<br> | POS. 3<br> | POS. 1<br> | POS. 2<br> | POS. 3<br> |                                                                                               |
| SP        | 7101              | U11                       | ON                                                                                          | NONE                                                                                        | ON                                                                                          | 2-3                                                                                         | N/A                                                                                         | 2-1                                                                                          | SPDT<br>   |
|           | 7103              | U13                       | ON                                                                                          | OFF                                                                                         | ON                                                                                          |                                                                                             | OPEN                                                                                        |                                                                                              |                                                                                               |
|           | 7105              | U15                       | MOM.                                                                                        | OFF                                                                                         | MOM.                                                                                        |                                                                                             | OPEN                                                                                        |                                                                                              |                                                                                               |
|           | 7107              | U17                       | ON                                                                                          | OFF                                                                                         | MOM.                                                                                        |                                                                                             | OPEN                                                                                        |                                                                                              |                                                                                               |
|           | 7108              | U18                       | ON                                                                                          | NONE                                                                                        | MOM.                                                                                        |                                                                                             | N/A                                                                                         |                                                                                              |                                                                                               |
| DP        | 7201              | U21                       | ON                                                                                          | NONE                                                                                        | ON                                                                                          | 2-3, 5-6                                                                                    | N/A                                                                                         | 2-1, 5-4                                                                                     | DPDT<br>   |
|           | 7203              | U23                       | ON                                                                                          | OFF                                                                                         | ON                                                                                          |                                                                                             | OPEN                                                                                        |                                                                                              |                                                                                               |
|           | 7205              | U25                       | MOM.                                                                                        | OFF                                                                                         | MOM.                                                                                        |                                                                                             | OPEN                                                                                        |                                                                                              |                                                                                               |
|           | 7207              | U27                       | ON                                                                                          | OFF                                                                                         | MOM.                                                                                        |                                                                                             | OPEN                                                                                        |                                                                                              |                                                                                               |
|           | 7211 <sup>1</sup> | U211 <sup>1</sup>         | ON                                                                                          | ON                                                                                          | ON                                                                                          |                                                                                             | 2-3, 5-4                                                                                    |                                                                                              |                                                                                               |
| 3P        | 7301              | U31                       | ON                                                                                          | NONE                                                                                        | ON                                                                                          | 2-3, 5-6, 8-9                                                                               | N/A                                                                                         | 2-1, 5-4, 8-7                                                                                | 3PDT<br>   |
|           | 7303              | U33                       | ON                                                                                          | OFF                                                                                         | ON                                                                                          |                                                                                             | OPEN                                                                                        |                                                                                              |                                                                                               |
|           | 7307              | U37                       | ON                                                                                          | OFF                                                                                         | MOM.                                                                                        |                                                                                             | OPEN                                                                                        |                                                                                              |                                                                                               |
| 4P        | 7401              | U41                       | ON                                                                                          | NONE                                                                                        | ON                                                                                          | 2-3, 5-6, 8-9, 11-12                                                                        | N/A                                                                                         | 2-1, 5-4, 8-7, 11-10                                                                         | 4PDT<br> |

#### Notes:

1. Wiring for 3 way switch.

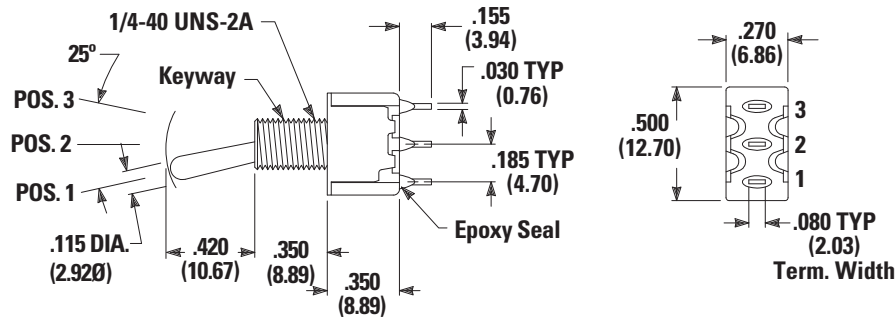
2. U11-U415 model nos.  With all options when ordered with G, R, Q or S contact material.

# 7000 Series

## Miniature Toggle Switches

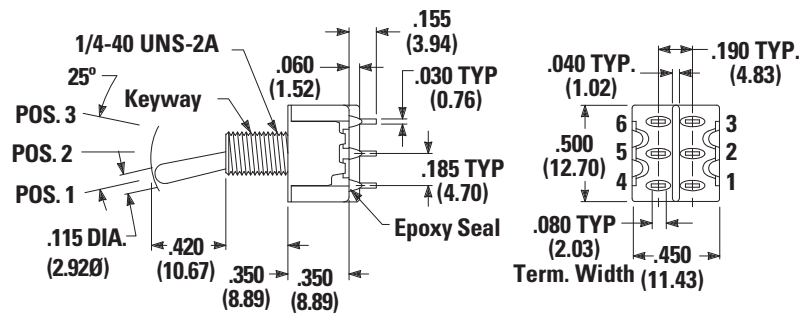


### SPDT



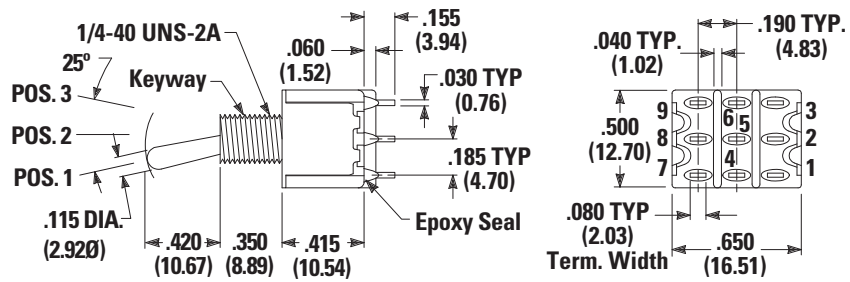
**Note:** Part Number shown: 7101SYZQE  
Terminal Numbers for Reference Only

### DPDT



**Note:** Part Number shown: 7201SYZQE  
Terminal Numbers for Reference Only

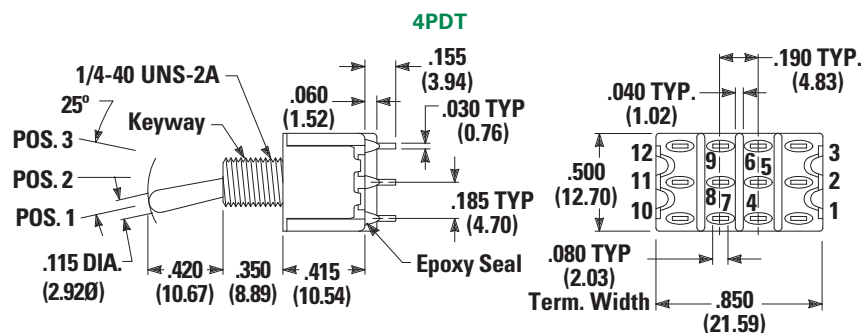
### 3PDT



**Note:** Part Number shown: 7301SYZQE  
Terminal Numbers for Reference Only

# 7000 Series

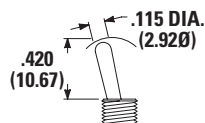
## Miniature Toggle Switches



**Note:** Part Number shown: 7401SYZQE  
Terminal Numbers for Reference Only

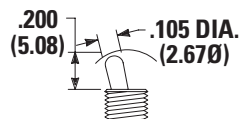
### Actuator

#### S 0.4206" High <sup>1,2</sup> SP Antirotation 0.4206"



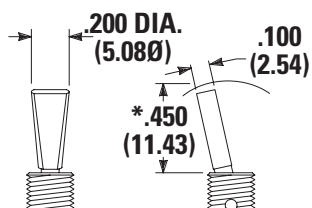
S actuator standard when ordered with W3 & Z terminations. Caps are available separately, see page 17.

#### M 0.2006" High <sup>1,2</sup>

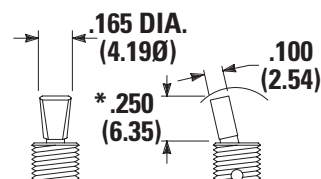


M actuator standard when ordered with all terminations except W3 & Z Caps are available separately, see page 17.

#### P3 Flatted with Antirotation, 0.4506" High<sup>1</sup>



#### P4 Flatted with Antirotation, 0.2506" High<sup>1</sup>



#### Notes:

1. Dress nut part number 709901201 supplied standard with threaded bushing. (Part number 709903201 with metric threaded bushings.)
2. S and M actuators not available with Y1 bushing.

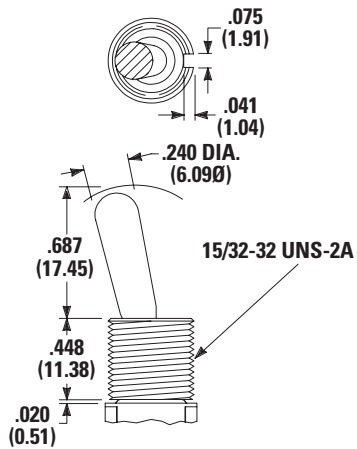
# 7000 Series

## Miniature Toggle Switches

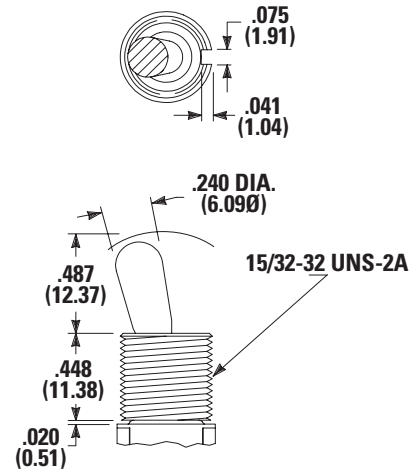


### Actuator

**T 0.687 (17.45) 6 High**  
**TP Antirotation, 0.687 (17.45)**  
**High, 15/32 Bushing**



**T1 0.487 (12.37) 6 High**



#### Notes:

Bushing option code not required unless CW splashproof bushing ordered. TP actuator not available with CW splashproof bushing. All TXX actuators not available on single pole models with A termination. All TXX actuators not available with Y1 bushing.

#### Notes:

1. Dress nut part number 709901201 supplied standard with threaded bushing. (Part number 709903201 with metric threaded bushings.)
2. S and M actuators not available with Y1 bushing.

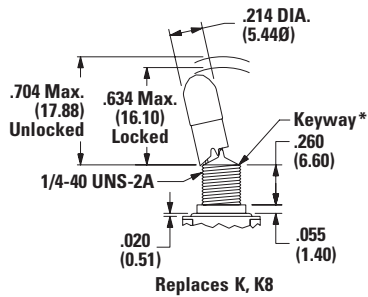
# 7000 Series

## Miniature Toggle Switches

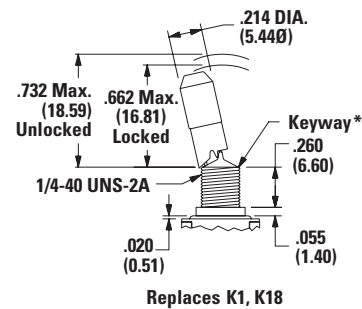


### Actuator

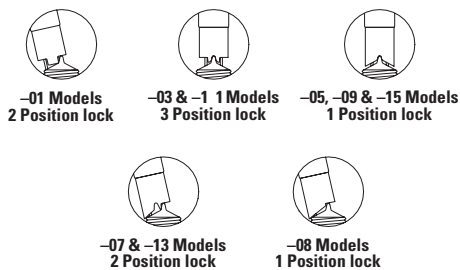
#### K2 Locking Lever, 0.704" High (threaded)



#### K12 Locking Lever, 0.732" High (threaded)



### Locking Positions



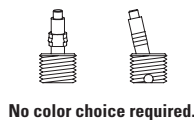
### KXX Actuator Color/Finish

| Option Code | Actuator Cap Finish                         |
|-------------|---------------------------------------------|
| None        | Natural Aluminum-With Nickle Plated Bushing |
| 2           | Black Anodized Aluminum                     |
| 3           | Red Anodized Aluminum                       |
| 7           | Blue Anodized Aluminum                      |
| G           | Grip Tip Aluminum                           |

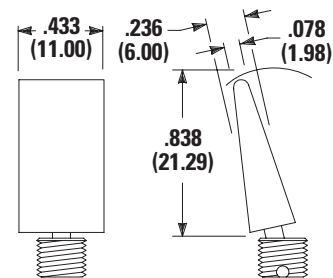
#### Notes:

All KXX models including KXXCW have a keyway. 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. K2/K12 actuators not available with switch function 7X05

#### L40 Lever Handle without Cap



#### L42 Plastic Lever Handle with Antirotation and Cap, P/N 4811



### Non-KXX Actuator Color/Finish

| Option Code | Actuator Colors/Finish |
|-------------|------------------------|
| None        | Bright Chrome          |
| 2           | Black                  |
| 3           | Red                    |

#### Notes:

Lever handle for L42 actuator supplied, but not installed. For interchangeability, order L40 actuator option and lever handles separately, see page 18.

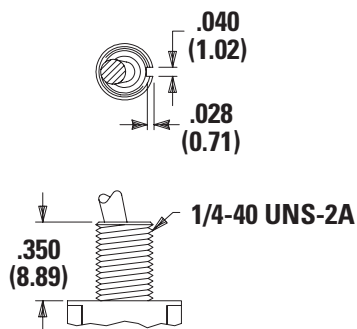
# 7000 Series

## Miniature Toggle Switches



### Bushing

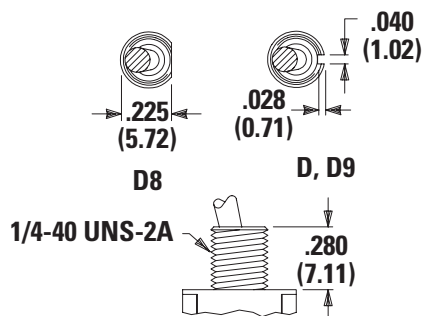
#### Y 0.350" High Threaded, Keyway Y9 0.350" High Unthreaded Keyway



#### Note:

Y bushing standard with C or Z terminations.

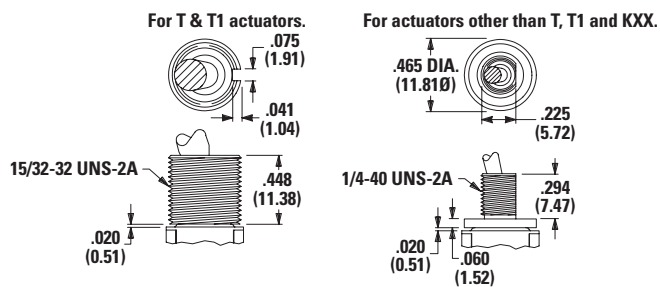
#### D 0.280" High Threaded, Keyway D9 0.280" High, Unthreaded, Keyway



#### Notes:

D9 bushing standard with all terminations except C or Z.  
Add 0.070 (1.78) to all actuator lengths with D and D9 bushings.

#### CW Threaded, Splashproof<sup>1</sup>



#### Notes:

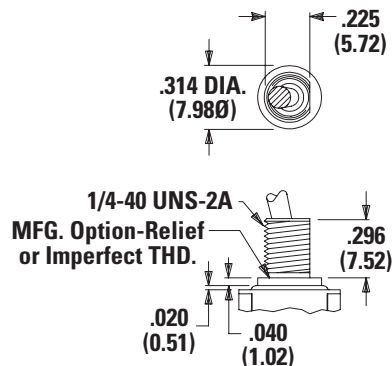
**For T & T1 actuators:** IP67 Degree of protection, totally protected against dust, full-scale voltage protection, temporary immersion. Internal actuator seal standard. External bushing seal available separately from APM Hex seal, part # MFS-60064.

**For actuators other than T, T1 and KXX:** IP67 Degree of protection, totally protected against dust, full-scale voltage protection, temporary immersion. Internal actuator seal and external bushing seal washer standard. IP65 degree of protection for P4 or SP with CW option.

#### None No Bushing

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

#### H 0.296" High, Flat Threaded, High Torque<sup>1</sup>



| Option Code | Bushing Finish         |
|-------------|------------------------|
| None        | Nickel on all bushings |
| 2           | Black                  |

#### Notes:

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.

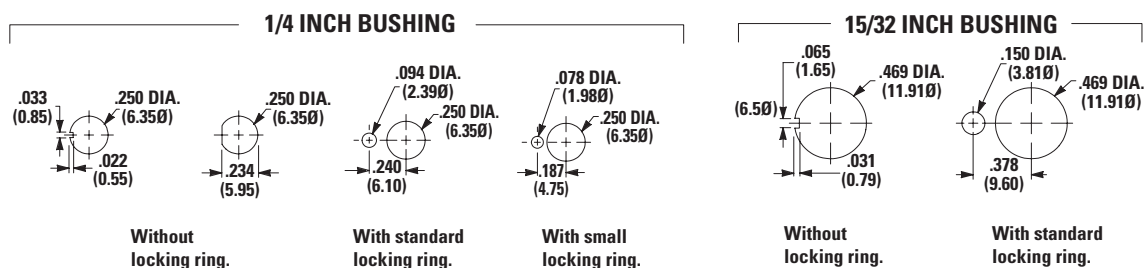
<sup>1</sup> Will withstand 12 in.-lbs. of torque with no distortion.

# 7000 Series

## Miniature Toggle Switches

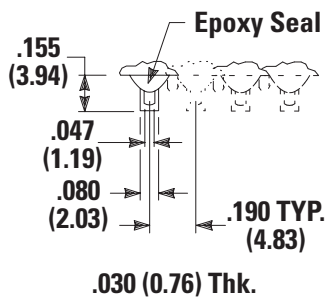


### Panel Mounting

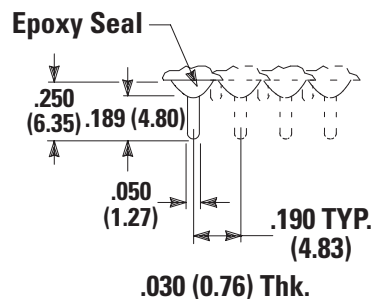


### Terminations

#### Z Solder Lug SPDT thru 4PDT

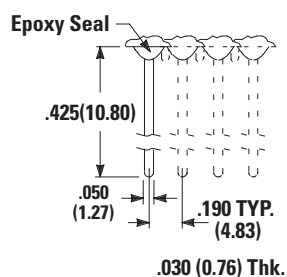


#### C PC Thru-hole SPDT thru 4PDT

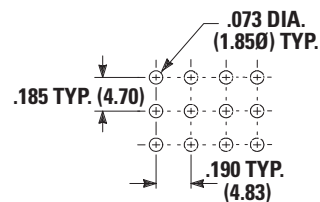


**Note:** Not available with R or S contact materials.

#### W3 Wire Wrap SPDT thru 4PDT



#### PC Mounting

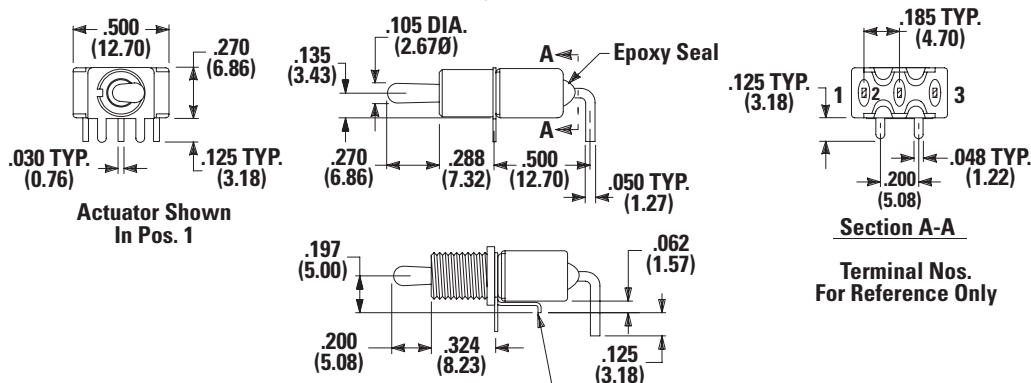


# 7000 Series

## Miniature Toggle Switches

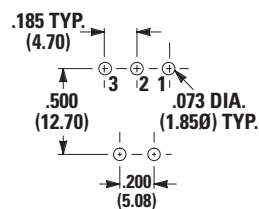


### Terminations A Right Angle, PC Thru-hole 7101MHABE

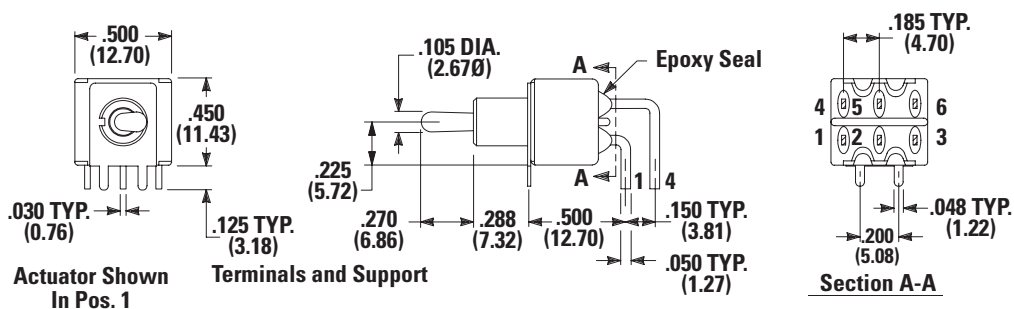


Note: Switch support with CW, H bushings and KXX actuators

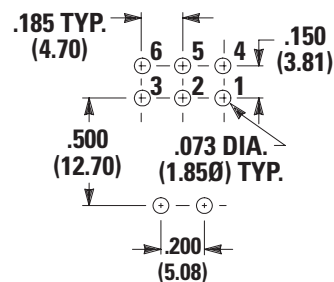
### PC Mounting



### A Right Angle, PC Thru-hole 7201MD9ABE



### PC Mounting

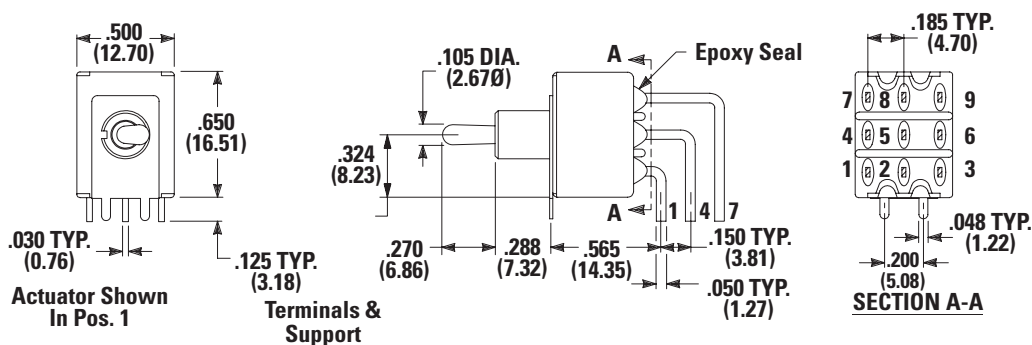


# 7000 Series

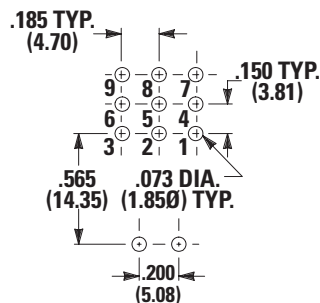
## Miniature Toggle Switches



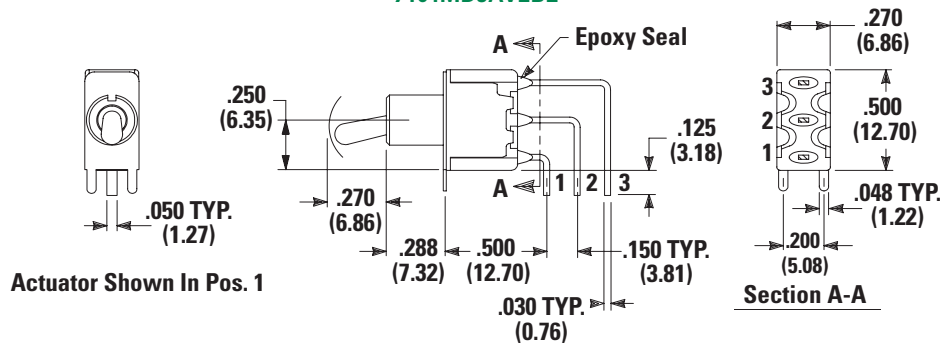
### Terminations A Right Angle, PC Thru-hole 7301MD9ABE



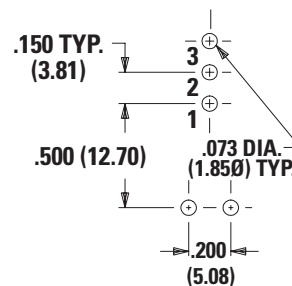
### PC Mounting



### AV2 Vertical Right Angle, PC Thru-hole, 0.150" Pitch 7101MD9AV2BE



### PC Mounting



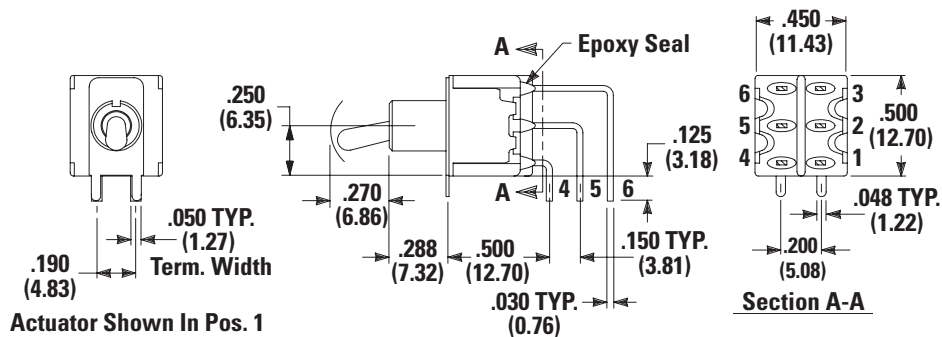
**Note:** Not available with I seal option. Terminal bend radii and lead-in manufacturing option.

# 7000 Series

## Miniature Toggle Switches

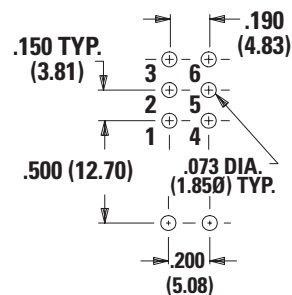


### AV2 Vertical Right Angle, PC Thru-hole, 0.150" Pitch 7201MD9AV2BE

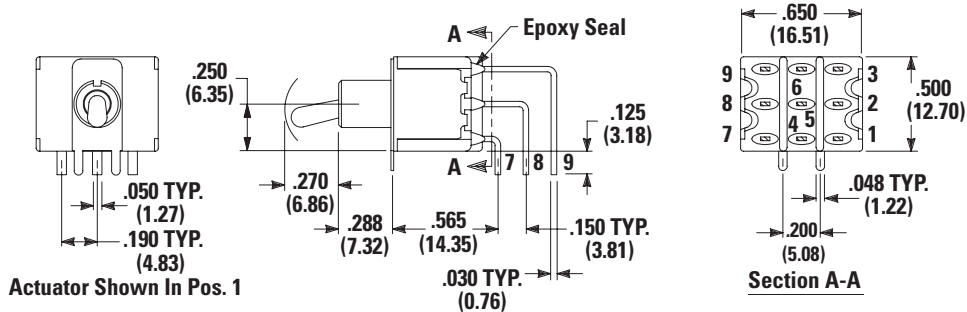


**Note:** Not available with I seal option. Terminal bend radii and lead-in manufacturing option.

#### PC Mounting

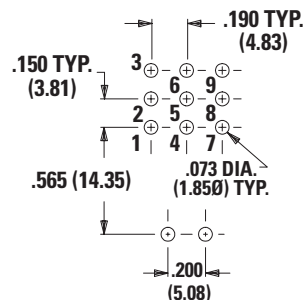


### AV2 Vertical Right Angle, PC Thru-hole, 0.150" Pitch 7301MD9AV2BE



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

#### PC Mounting



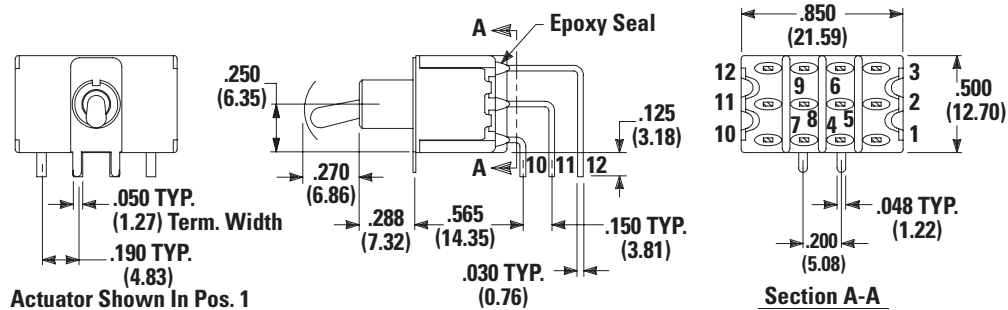
# 7000 Series

## Miniature Toggle Switches



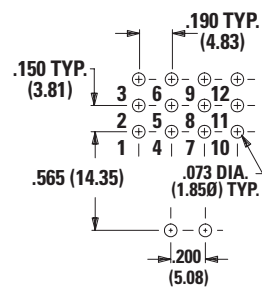
### Terminations

AV2 Vertical Right Angle, PC Thru-hole, 0.150" Pitch  
7401MD9AV2BE



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

### PC Mounting



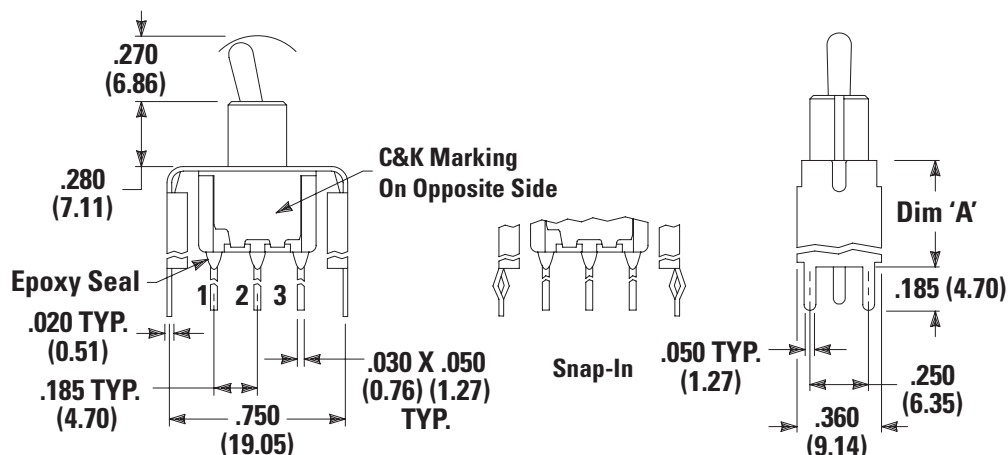
# 7000 Series

## Miniature Toggle Switches



### Terminations

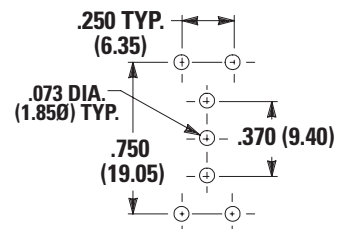
V7 Vertical Mount, V-bracket  
V81 Vertical Mount, V-bracket, Snap-in  
Part No. Shown 7101MD9\_E



Actuator Shown In Pos. 1

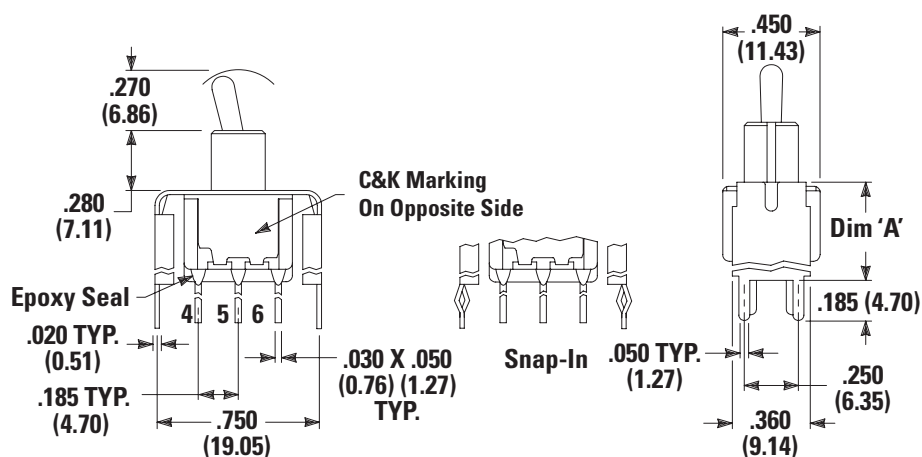
Note: Not available with I seal option.

### PC Mounting



| Option Code | DIM 'A'       |
|-------------|---------------|
| V7          | 0.630 (16.00) |
| V81         | 0.953 (24.21) |

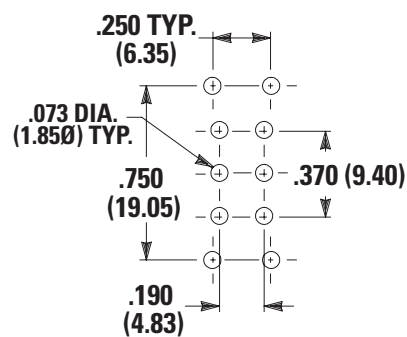
V7 Vertical Mount, V-bracket  
V81 Vertical Mount, V-bracket, Snap-in  
Part No. Shown 7201MD9\_E



Actuator Shown In Pos. 1

Note: Not available with I seal option.

### PC Mounting



| Option Code | DIM 'A'       |
|-------------|---------------|
| V7          | 0.630 (16.00) |
| V81         | 0.953 (24.21) |

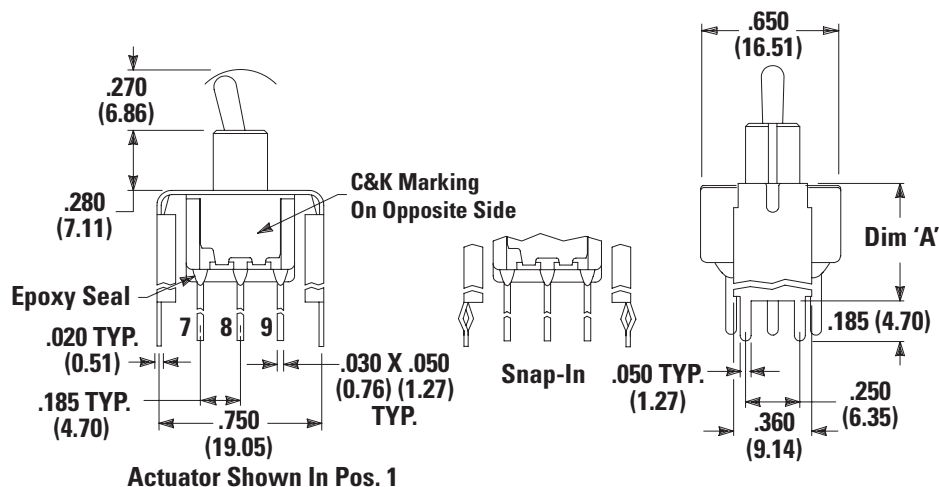
# 7000 Series

## Miniature Toggle Switches



### Terminations

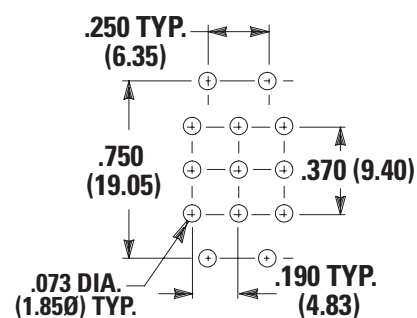
V7 Vertical Mount, V-bracket  
V81 Vertical Mount, V-bracket, Snap-in  
Part No. Shown 7301MD9\_E



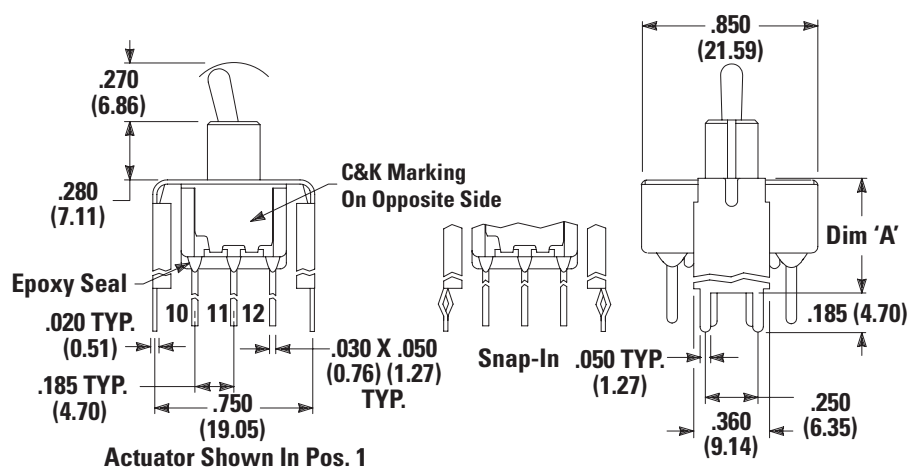
Note: Not available with I seal option.

| Option Code | DIM 'A'       |
|-------------|---------------|
| V7          | 0.630 (16.00) |
| V81         | 0.953 (24.21) |

### PC Mounting



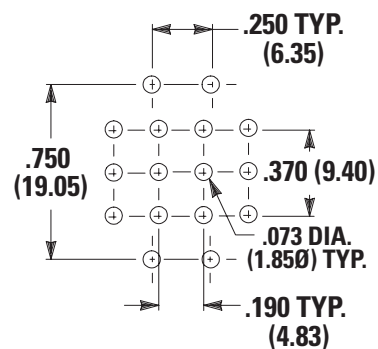
V7 Vertical Mount, V-Bracket  
V81 Vertical Mount, V-bracket, Snap-in  
Part No. Shown 7401MD9\_E



Note: Not available with I seal option.

| Option Code | DIM 'A'       |
|-------------|---------------|
| V7          | 0.630 (16.00) |
| V81         | 0.953 (24.21) |

### PC Mounting



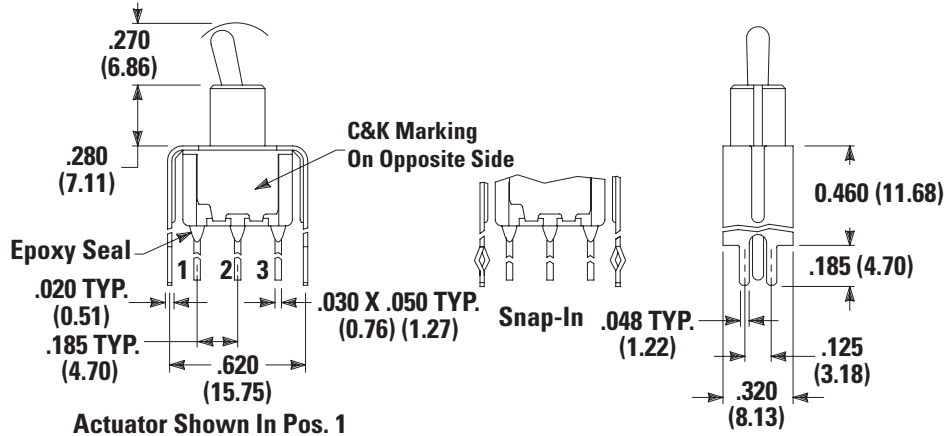
# 7000 Series

## Miniature Toggle Switches



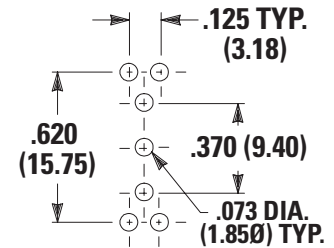
### Terminations

#### V3 Vertical Mount, V-bracket 7101MD9V3BE

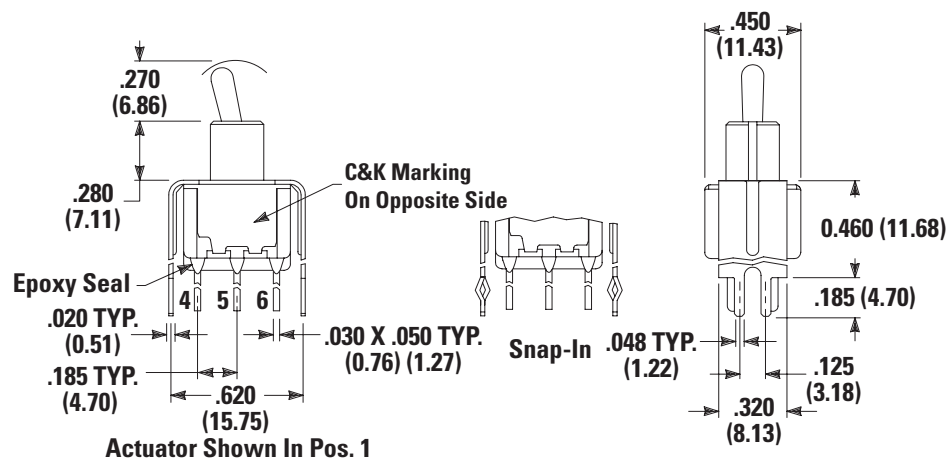


Note: Not available with I seal option.

### PC Mounting

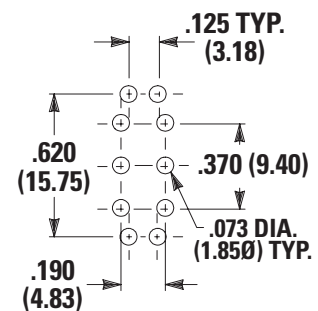


#### V3 Vertical Mount, V-bracket 7201MD9V3BE



Note: Not available with I seal option.

### PC Mounting



# 7000 Series

## Miniature Toggle Switches



### Contact Material

| Option Code | Contact Material                | Terminal Plating       | Ratings                                |                                                                                     |
|-------------|---------------------------------|------------------------|----------------------------------------|-------------------------------------------------------------------------------------|
| B           | Gold <sup>1</sup>               | Gold <sup>1</sup>      | Low Level / Dry Circuit                | 0.4 VA max. @ 20 V AC or DC max.                                                    |
| Q           | Silver <sup>4,5</sup>           | Silver <sup>5</sup>    | Power                                  | 5 amps @ 120 V AC or 28 V DC; 2 amps @ 250 V AC                                     |
| S           |                                 | Matte-Tin <sup>6</sup> |                                        |                                                                                     |
| G           | Gold over Silver <sup>2,3</sup> | Gold <sup>3</sup>      | Low Level / Dry Level 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 <sup>6</sup> |                                        |                                                                                     |

**Notes:** 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 Contacts & All Terminals:** Copper alloy, silver plated.

**6. Terminals:** Copper alloy, with matte tin alloy nickel plate.

Any models supplied with S, R, Q, B or G contact material are RoHS compliant. U11-U415 model numbers  us with all options when ordered with G, S, R, or Q contact material. B contact material standard with all terminations except C & Z. Q contact material standard with C, Z terminations. S & R contact materials not available with Z terminations.

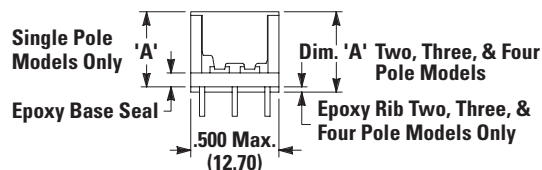
### Seal

#### E Epoxy Seal



**Note:** Compatible with "bottom-wash" PC board cleaning methods.

#### I Epoxy Potted Base



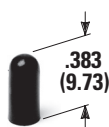
Length is Same as Case Length

**Note:** Available with C, Z or W3 terminations.

| No Poles | DIM 'A'       |
|----------|---------------|
| SP       | 0.410 (10.41) |
| DP       | 0.440 (11.19) |
| 3P       | 0.505 (12.83) |
| 4P       | 0.505 (12.83) |

### Available Hardware

#### Cap



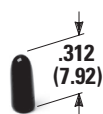
PART NO.  
896801000 WHITE  
896802000 BLACK  
896803000 RED  
Material: Polyethylene  
Finish: Matte

#### Cap



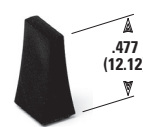
PART NO.  
763701000 WHITE  
763702000 BLACK  
763703000 RED  
Material: Vinyl  
Finish: Matte

#### Cap



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

#### L41 Lever Handle



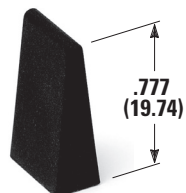
PART NO.  
481001000 WHITE  
481002263 BLACK  
481003000 RED  
Material: Nylon  
Finish: Matte

# 7000 Series

## Miniature Toggle Switches

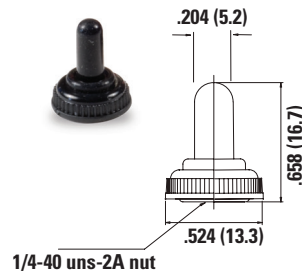


### L42 Lever Handle



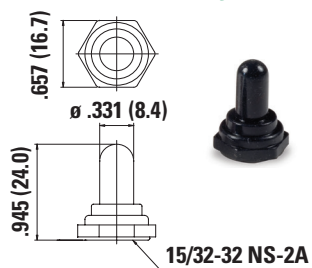
PART NO.  
481101000 WHITE  
481102263 BLACK  
481103000 RED  
Material: Nylon  
Finish: Matte

### 759D02000 Sealing Boot



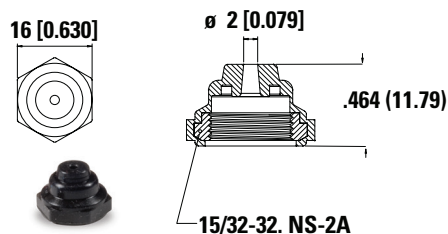
**Notes:** For use with S actuator style when combined with D, H, Y, and Y4 bushings

### 703D02000 Sealing Boot



**Notes:** For use with T and TP style actuators. Cannot be used for Switch Functions: 7103, 7203, 7303, 7107, 7207.

### 704D02000 Sealing Boot



**Notes:** For use with T and TP style actuators. Cannot be used for Switch Functions: 7103, 7203, 7303, 7107, 7207.