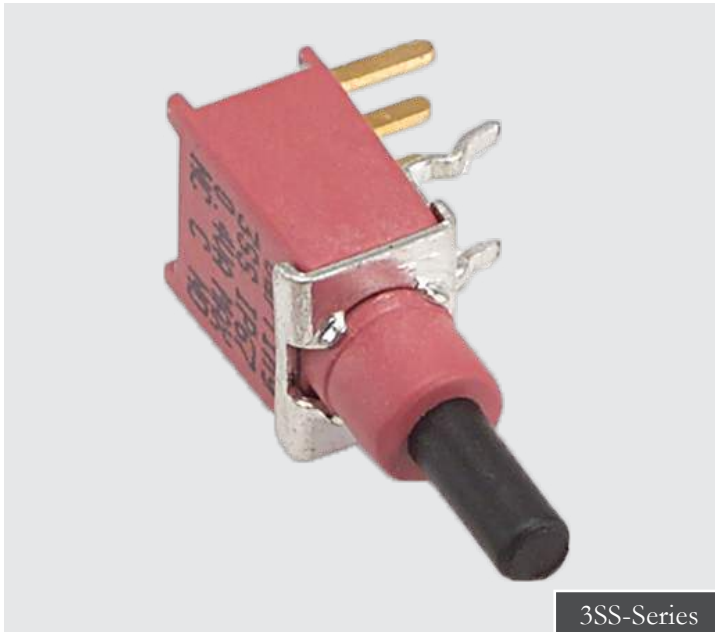


# 3SS/3S1/3SM

## 3S-Series

### SUB-MINIATURE PUSHBUTTONS

The 3S family of sub-miniature pushbutton switches is composed of three switch series; the **3S1-Series** sub-miniature pushbutton switch, the **3SS-Series** sealed sub-miniature pushbutton switch, and the **3SM-Series** surface mount sealed sub-miniature pushbutton switch. All switches are available with a variety of rating, termination and actuator choices, and will withstand temperatures from -30°C to +85°C.



#### Product Highlights:

- ♦ IP67 Sealing
- ♦ AC or Low Voltage DC Rated
- ♦ Snap-in, PC or Surface Mounting
- ♦ Bulk Packed or Tape Reel

#### Typical Applications:

- ♦ Telecommunications
- ♦ Performance Audio
- ♦ Networking
- ♦ Computers
- ♦ Instrumentation
- ♦ Low Power On/Off Designs

#### Resources:

Download 3D CAD Files

[IGS >](#) [STP >](#)



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**3SS-Series**  
Sealed  
Sub-Miniature  
Pushbutton Switch



**3S1-Series**  
Sub-Miniature  
Pushbutton  
Switch



**3SM-Series**  
Sealed Surface Mount  
Sub-Miniature  
Pushbutton Switch

### Electrical

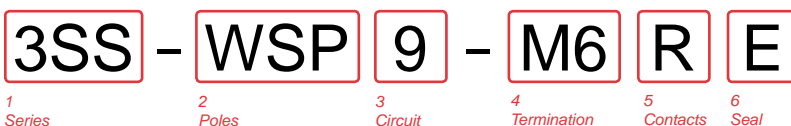
|                       |  |
|-----------------------|--|
| Contact Rating        | refer to ordering scheme   |
| Electrical Life       | 50,000 make & break cycles @ full load                                       |
| Contact Resistance    | 20 mΩ max. initial @ 2-4 VDC<br>100mA for both silver & gold plated contacts |
| Insulation Resistance | 1000 MΩ min.   |
| Dielectric Strength   | 1500 Volts RMS @ sea level   |

### Physical

|                        |                                   |
|------------------------|-----------------------------------|
| Operating Temperature  | -30°C to +85°C                    |
| Index of Protection    | <b>3SS &amp; 3SM-Series:</b> IP67 |
| Solder Heat Resistance | MIL-STD-202, Method 210           |

### Material

|                |   |
|----------------|---|
| Case           | all UL94 V-0<br><b>3S1-Series:</b> Diallyl phthalate (DAP)<br><b>3SS-Series:</b> Glass filled nylon 6/6, flame retardant, heat stabilized<br><b>3SM-Series:</b> Glass filled nylon 4/6, flame retardant, heat stabilized    |
| Plunger        | <b>3S1-Series:</b> Thermoplastic polyester, black<br><b>3SS-Series:</b> Thermoplastic polyester (UL 94V-0), with internal o-ring<br><b>3SM-Series:</b> Glass filled nylon 4/6, flame retardant, heat stabilized             |
| Bushing        | <b>3S1-Series:</b> Brass, nickel plated<br><b>3SS-Series:</b> Glass filled nylon 6/6, flame retardant, heat stabilized (UL 94V-0)<br><b>3SM-Series:</b> Glass filled nylon 4/6, flame retardant, heat stabilized (UL 94V-0) |
| Housing        | Stainless Steel   |
| Switch Support | Brass, tin plated   |
| Terminal Seal  | Epoxy   |



**1 SERIES**  
**3SS** Sealed Sub-Miniature Pushbutton Switch

**2 POLES**  
**WSP** Single pole - uses terminals 1, 2 & 3  
**WDP** Double pole - uses terminals 1, 2, 3, 4, 5 & 6

**3 CIRCUIT**  
( ) - momentary  
**Switching Position:**

|              |          |
|--------------|----------|
| <b>1</b>     | <b>2</b> |
| 2-3, 5-6     | 2-1, 5-4 |
| <b>8</b> ON  | (ON)     |
| <b>9</b> OFF | (ON)     |

Note: Plunger at rest in Position 1. Plunger depressed in Position 2.

**4 ACTUATOR STYLE 4**

|             |                          |
|-------------|--------------------------|
| <b>M2</b>   | PCB                      |
| <b>M6</b>   | PC Mount, 90° horizontal |
| <b>M61</b>  | Snap-In, 90° horizontal  |
| <b>M7</b>   | PC Mount, 90° vertical   |
| <b>M71</b>  | Snap-In, 90° vertical    |
| <b>VS2</b>  | PC Mount, U bracket      |
| <b>VS21</b> | Snap-In, U bracket       |

**5 CONTACTS / TERMINALS**

| Contact  | Material            | Terminal Plating   | Rating                    | Approvals |
|----------|---------------------|--------------------|---------------------------|-----------|
| <b>G</b> | silver <sup>1</sup> | gold over silver   | 1A 125VAC or 28VDC        | IP67      |
| <b>K</b> | gold <sup>2</sup>   | tin <sup>3,4</sup> | 0.4VA max 20V max (AC/DC) | IP67      |
| <b>P</b> | silver <sup>1</sup> | tin <sup>3,4</sup> | 1A 125VAC or 28VDC        | IP67      |
| <b>R</b> | gold <sup>2</sup>   | gold <sup>2</sup>  | 0.4VA max 20V max (AC/DC) | IP67      |

**6 EPOXY SEAL**

|                     |                             |
|---------------------|-----------------------------|
| <b>E</b> Epoxy Seal | <b>0</b> without Epoxy Seal |
|---------------------|-----------------------------|

- Notes:
- Movable contact & terminal platings: silver over copper alloy
  - Movable contact & terminal platings: gold over nickel over copper alloy
  - Terminal platings: tin over nickel over copper alloy
  - Tin option available with PC terminations only.

\*Manufacturer reserves the right to change product specification without prior notice.

**3S1 - SP 9 - B6 - M7 - R E**

1 Series      2 Poles      3 Circuit      4 Bushing      5 Termination      6 Contacts      7 Seal

**1 SERIES**  
**3S1** Sub-Miniature Pushbutton Switch

**2 POLES**  
**SP** Single pole - uses terminals 1, 2 & 3

**3 CIRCUIT**  
 ( ) - momentary  
**Switching Position:**

|          |          |          |
|----------|----------|----------|
|          | <b>1</b> | <b>2</b> |
|          | 2-3, 5-6 | 2-1, 5-4 |
| <b>8</b> | ON       | (ON)     |
| <b>9</b> | OFF      | (ON)     |

Note: Plunger at rest in Position 1. Plunger depressed in Position 2.

**4 BUSHING**

|                        |                     |            |                     |
|------------------------|---------------------|------------|---------------------|
| <b>B5</b> <sup>1</sup> | 10-48 Threaded      | <b>B9</b>  | Flush Bushing       |
| <b>B6</b>              | Unthreaded "D"      | <b>B0</b>  | 1/4" Unthreaded "D" |
| <b>B7</b>              | Unthreaded          | <b>OP1</b> | Snap-In with bezel  |
| <b>B8</b> <sup>2</sup> | 1/4-40 Threaded "D" | <b>P0</b>  | Flush Plunger       |

**5 TERMINATION**

|            |                          |             |                        |
|------------|--------------------------|-------------|------------------------|
| <b>M1</b>  | Solder Lug               | <b>M7</b>   | PC Mount, 90° vertical |
| <b>M2</b>  | PCB                      | <b>M71</b>  | Snap-In, 90° vertical  |
| <b>M6</b>  | PC Mount, 90° horizontal | <b>VS2</b>  | PC Mount, U bracket    |
| <b>M61</b> | Snap-In, 90° horizontal  | <b>VS21</b> | Snap-In, U bracket     |

See page 50-51 for dimensional specifications.

**6 CONTACTS / TERMINALS**

|          | Contact Material      | Terminal Plating    | Rating                      |
|----------|-----------------------|---------------------|-----------------------------|
| <b>G</b> | silver <sup>3</sup>   | gold over silver    | 1A@125VAC or 28VDC          |
| <b>K</b> | gold <sup>4,7</sup>   | tin <sup>6</sup>    | 0.4VA max @ 20V max (AC/DC) |
| <b>P</b> | silver <sup>3,8</sup> | tin <sup>6</sup>    | 1A@125VAC or 28VDC          |
| <b>Q</b> | silver <sup>3</sup>   | silver <sup>3</sup> | 1A@125VAC or 28VDC          |
| <b>R</b> | gold <sup>4</sup>     | gold <sup>5</sup>   | 0.4VA max @ 20V max (AC/DC) |

**7 EPOXY SEAL**

|          |            |          |                    |
|----------|------------|----------|--------------------|
| <b>E</b> | Epoxy Seal | <b>0</b> | without Epoxy Seal |
|----------|------------|----------|--------------------|

Notes:  
 1 Hardware includes (2) 2M1-HDW21 nuts, and (1) 2M1-HDW22 washer  
 2 Hardware includes (2) 2M1-HDW21 nuts, (1) 2M1-HDW22 washer, (1) 2M1-HDW11 washer, and (1) 2M1-HDW16 locking ring  
 3 Movable contact and terminal platings: silver over copper alloy  
 4 Movable contact and terminal platings: gold over nickel over copper alloy  
 5 Terminal platings: gold over nickel over copper alloy  
 6 Terminal platings: tin over copper alloy  
 7 Terminal contact platings: Gold over nickel alloy  
 8 Terminal contact platings: silver over nickel alloy

**3SM - SP 9 - M6 - R E**

1 Series      2 Poles      3 Circuit      4 Termination      5 Contacts      6 Seal      7 Packaging

**1 SERIES**  
**3SM** Sealed Surface Mount Sub-Miniature Pushbutton Switch

**2 POLES**  
**SP** Single pole - uses terminals 1, 2 & 3

**3 CIRCUIT**  
 ( ) - momentary  
**Switching Position:**

|          |          |          |
|----------|----------|----------|
|          | <b>1</b> | <b>2</b> |
|          | 2-3      | 2-1      |
| <b>8</b> | ON       | (ON)     |
| <b>9</b> | OFF      | (ON)     |

Note: Plunger at rest in Position 1. Plunger depressed in Position 2.

**4 TERMINATION**

|           |  |
|-----------|--|
| <b>K6</b> | Surface Mount, horizontal .433 [11.00 mm]    |
| <b>M6</b> | Surface Mount, 90° flat .286 [7.26 mm]       |
| <b>M7</b> | Surface Mount, 90° right angle               |
| <b>S6</b> | Surface Mount, 90° horizontal .353 [8.97 mm] |

**5 CONTACTS / TERMINALS**

|          | Contact Material      | Terminal Plating    | Rating                    | Approvals |
|----------|-----------------------|---------------------|---------------------------|-----------|
| <b>G</b> | silver <sup>1</sup>   | gold over silver    | 1A 125VAC or 28VDC        | IP67      |
| <b>K</b> | gold <sup>2,5</sup>   | tin <sup>4</sup>    | 0.4VA max 20V max (AC/DC) | IP67      |
| <b>P</b> | silver <sup>1,6</sup> | tin <sup>4</sup>    | 1A 125VAC or 28VDC        | IP67      |
| <b>Q</b> | silver <sup>1</sup>   | silver <sup>1</sup> | 1A 125VAC or 28VDC        | IP67      |
| <b>R</b> | gold <sup>2</sup>     | gold <sup>3</sup>   | 0.4VA max 20V max (AC/DC) | IP67      |

**6 EPOXY SEAL**

|          |            |          |                    |
|----------|------------|----------|--------------------|
| <b>E</b> | Epoxy Seal | <b>0</b> | without Epoxy Seal |
|----------|------------|----------|--------------------|

**7 PACKAGING**  
**T/R** tape reel - 500 pieces per reel  
 Switches are bulk packed, unless T/R is specified at the end of the part number.

Notes:  
 1 Movable contact and terminals platings: silver over copper alloy  
 2 Movable contact platings: gold over nickel over copper alloy  
 3 Terminal platings: gold over nickel over copper alloy  
 4 Terminals platings: tin over copper alloy  
 5 Terminal contact platings: gold over nickel alloy  
 6 Terminal contact platings: silver over nickel alloy

**3S-Series Accessories**

To order accessories assembled on a switch, specify the switch number followed by the accessory part number and the word "assembled".  
 Ex: 3S1-SP9-B6-M7-RE-C23 ASSEMBLED. To order accessories in bulk, specify the Series, followed by the accessory. Ex: 3S1-C13.

**Optional Cap**

**3S1 - C1 3**

1 Series      2 Toggle Cap Size      3 Color

**1 SERIES**  
**3S1** Fits 3SS, 3S1 or 3MS

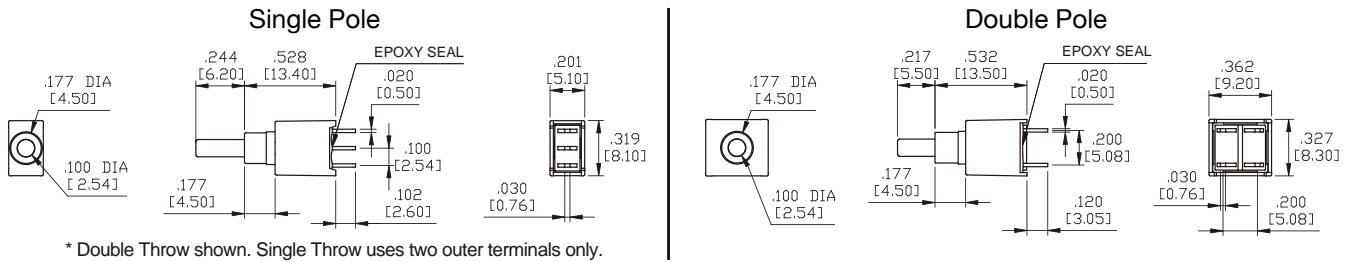
**2 TOGGLE CAP SIZE**

|           |                        |           |                         |
|-----------|------------------------|-----------|-------------------------|
| <b>C1</b> | .158" [4.01 mm] height | <b>C2</b> | .138" [35.05 mm] height |
|-----------|------------------------|-----------|-------------------------|

**3 CAP COLOR**

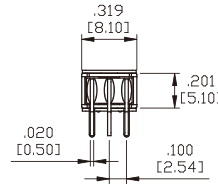
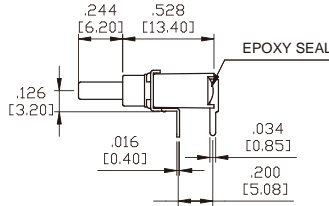
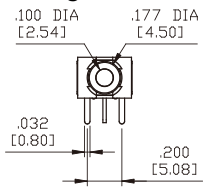
|          |        |          |        |
|----------|--------|----------|--------|
| <b>1</b> | White  | <b>5</b> | Yellow |
| <b>2</b> | Black  | <b>6</b> | Green  |
| <b>3</b> | Red    | <b>7</b> | Blue   |
| <b>4</b> | Orange |          |        |

## 3SS-Series Dimensional Specifications: in. [mm]

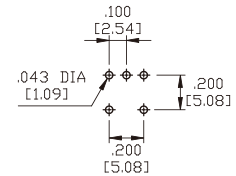


### Termination Options

#### M6 Single Pole

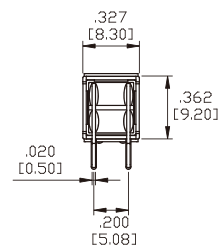
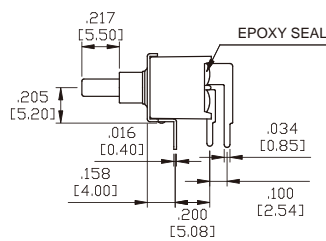
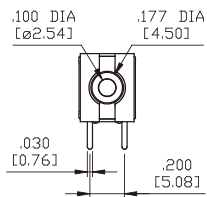


#### P.C.MOUNTING

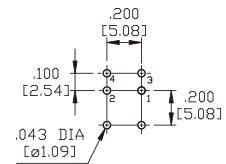


\* Double Throw shown. Single Throw uses two outer terminals only.

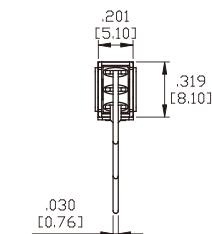
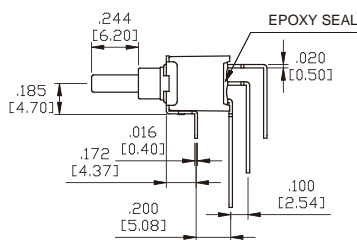
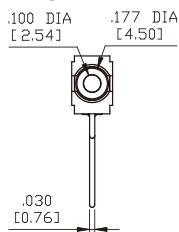
#### M6 Double Pole



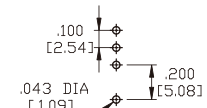
#### P.C.MOUNTING



#### M7 Single Pole

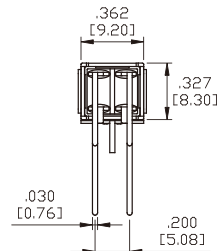
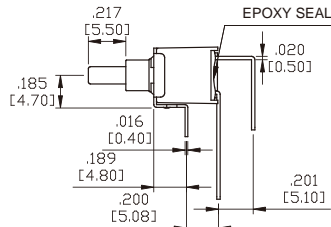
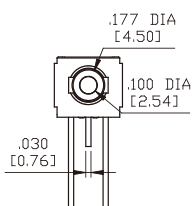


#### P.C.MOUNTING

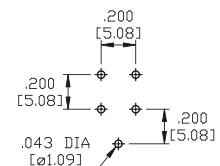


\* Double Throw shown. Single Throw uses two outer terminals only.

#### M7 Double Pole



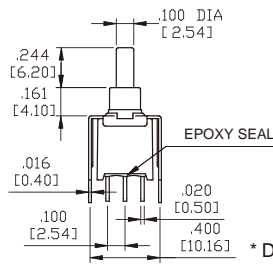
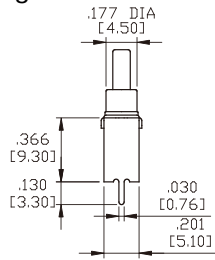
#### P.C.MOUNTING



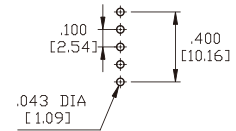
## 3SS-Series Dimensional Specifications: in. [mm]

### Termination Options

#### VS2 Single Pole

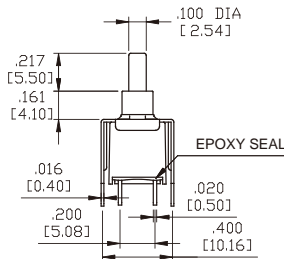
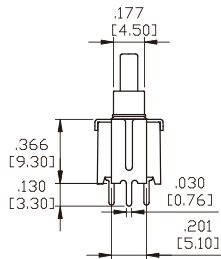


#### P.C. MOUNTING

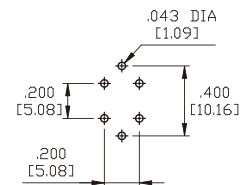


\* Double Throw shown. Single Throw uses outer terminals only.

#### VS2 Double Pole

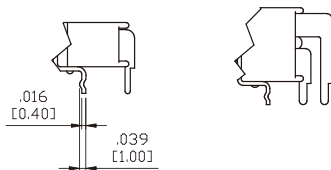


#### P.C. MOUNTING

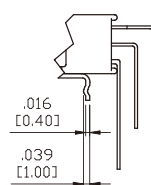


### Snap-In Termination Options

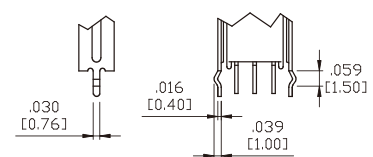
#### M61



#### M71

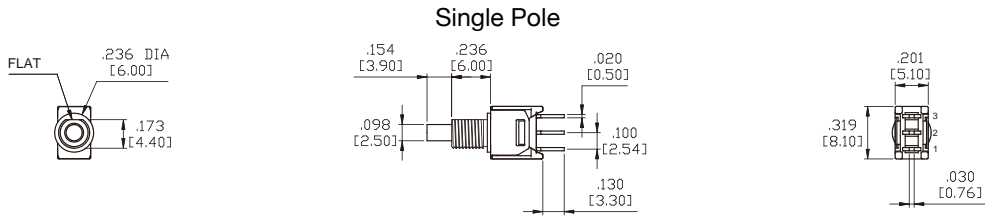


#### VS21



\* PC Mounting for M61, M71, VS21 refer to M6, M7, VS2 respectively.

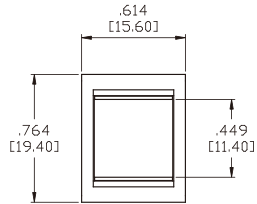
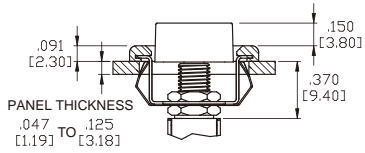
## 3S1-Series Dimensional Specifications: in. [mm]



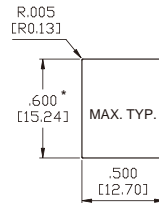
\* Double Throw shown. Single Throw uses two outer terminals only.

### Actuator Options for Snap-In Front Mount

**OP1**

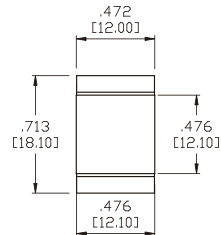
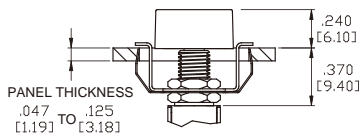


**PANEL MOUNTING**

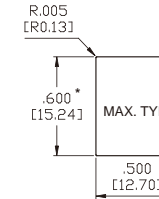


\* Increase this dimension to .620/.625 [15.75/15.88] for .091/.125 [2.31/3.18] thk. panels.

**OP1 Without Frame**



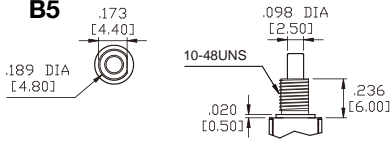
**PANEL MOUNTING**



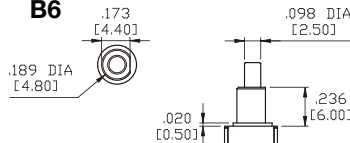
\* Increase this dimension to .620/.625 [15.75/15.88] for .091/.125 [2.31/3.18] thk. panels.

### Bushing Options

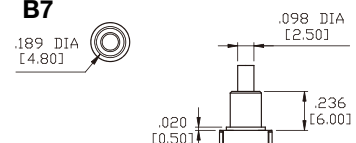
**B5**



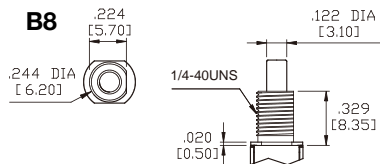
**B6**



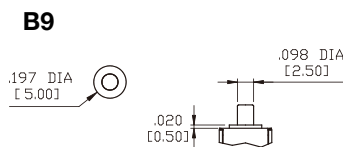
**B7**



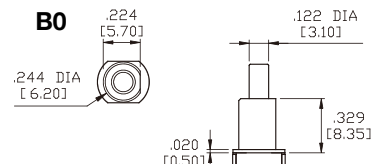
**B8**



**B9**

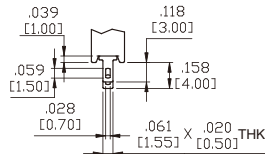


**B0**

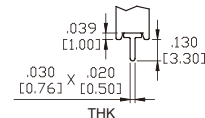


### Termination Options

**M1**



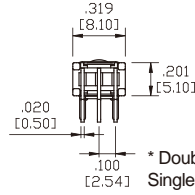
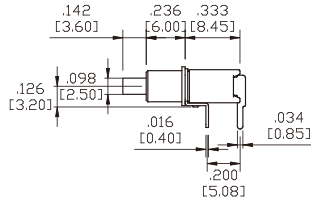
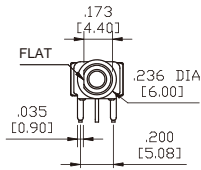
**M2**



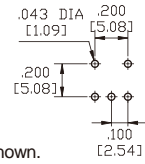
## 3S1-Series Dimensional Specifications: in. [mm]

### Termination Options

#### M6 Single Pole

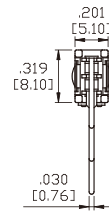
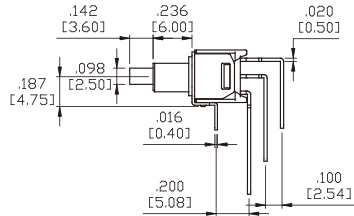
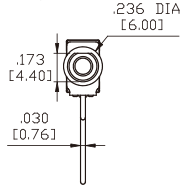


#### P.C.MOUNTING

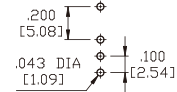


\* Double Throw shown.  
Single Throw uses two outer terminals only.

#### M7 Single Pole

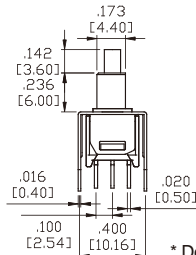
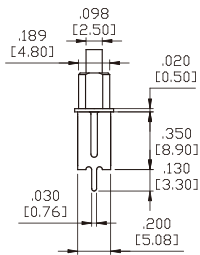


#### P.C.MOUNTING

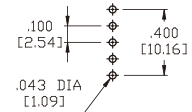


\* Double Throw shown.  
Single Throw uses two outer terminals only.

#### VS2 Single Pole



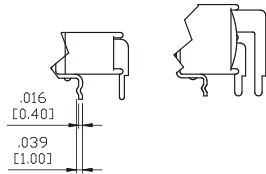
#### P.C.MOUNTING



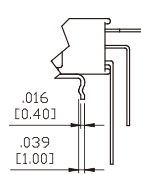
\* Double Throw shown. Single Throw uses outer terminals only.

### Snap-In Termination Options

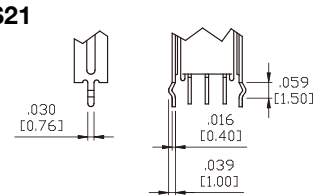
#### M61



#### M71



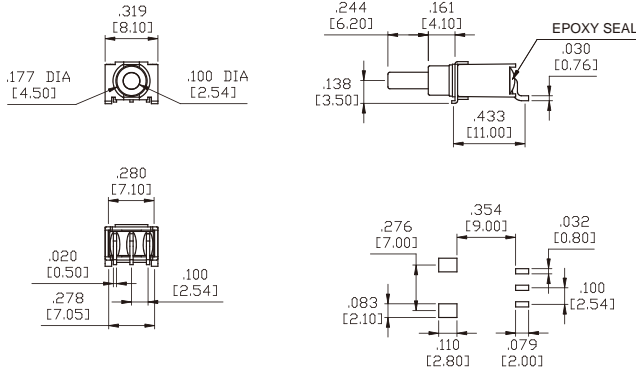
#### VS21



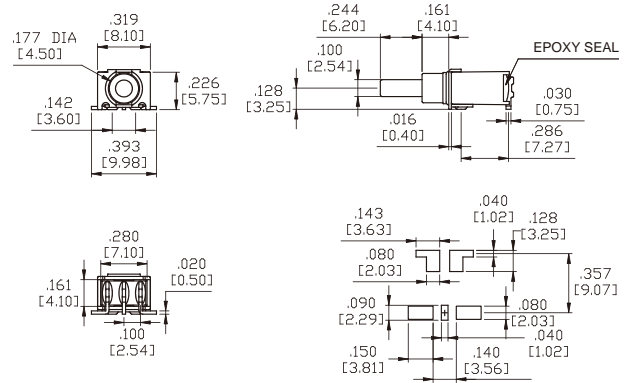
\* PC Mounting for M61, M71, VS21 refer to M6, M7, VS2 respectively.

## 3SM-Series Dimensional Specifications: in. [mm]

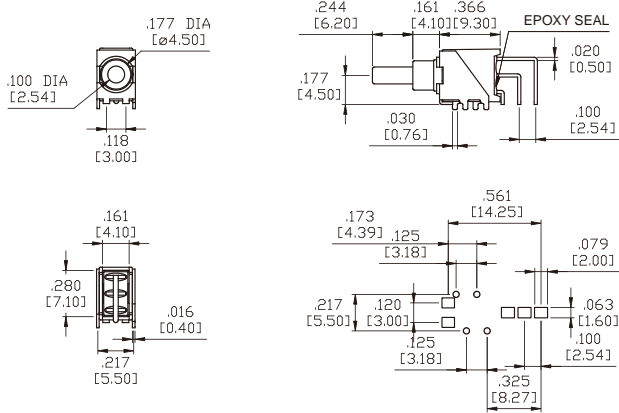
**K6 Single Pole**



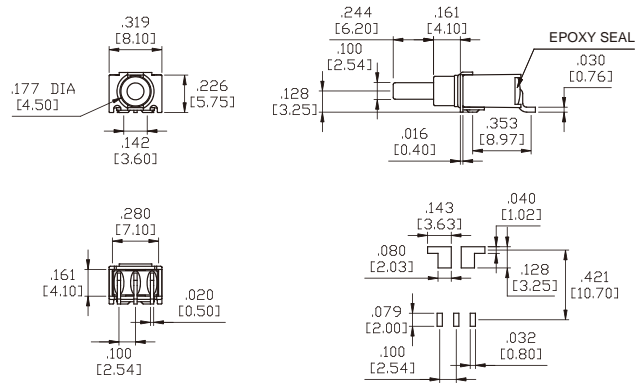
**M6 Single Pole**



**M7 Single Pole**



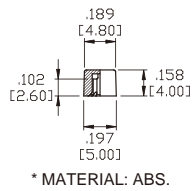
**S6 Single Pole**



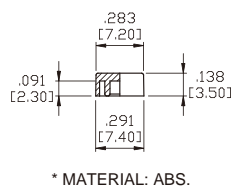
\* Double Throw shown. Single Throw uses two outer terminals only.

### Plunger Caps

**C1**



**C2**



**CAP COLORS**

|   |        |   |       |
|---|--------|---|-------|
| 1 | White  | 6 | Green |
| 2 | Black  | 7 | Blue  |
| 3 | Red    | 8 | Brown |
| 4 | Orange | 9 | Gray  |
| 5 | Yellow |   |       |



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