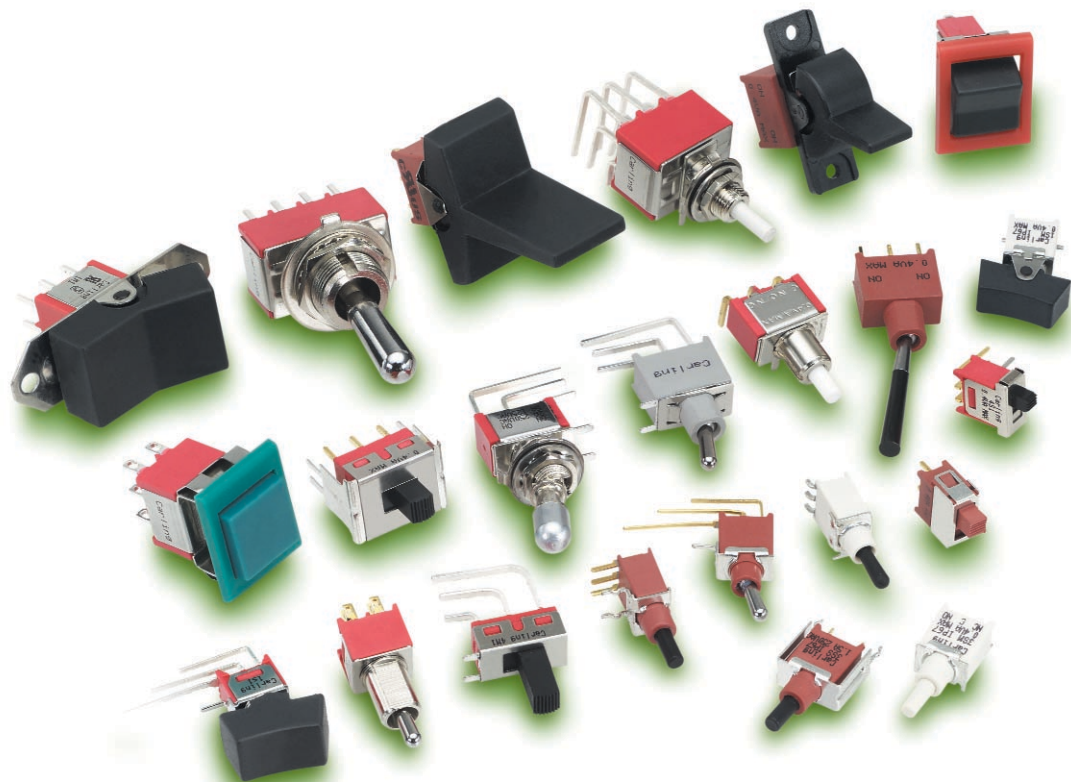


Miniature Switches

Rocker, Toggle,
Pushbutton
& Slide



Carling Technologies™
Innovative Designs. Powerful Solutions.

Transforming Customer Needs into Customer Solutions

At Carling Technologies, we do much more than manufacture electrical components. We engineer powerful solutions. Working closely with your product team, we can tailor switching and circuit protection solutions that meet your application needs — cost effectively.

Since our founding in 1920, there are few products we haven't turned on, fewer industries that haven't turned to us. With five ISO registered manufacturing locations and technical sales offices worldwide, Carling Technologies now ranks among the world's largest privately owned manufacturers of hydraulic/magnetic circuit breakers, thermal circuit protectors, electrical switches and assemblies, power distribution centers and electronic control systems. What makes all our switches and controls especially attractive is their superior performance and reliability — both hallmarks of Carling Technologies.

We have over 2000 employees working through offices and manufacturing sites across the globe, providing engineered solutions to leading electronic and industrial OEMs in a variety of industries, including:

- Electronics (telecom, medical, computers, office automation)
- Transportation (on/off road vehicles, trucks, buses, boats)
- Commercial Facilities Control
- Industrial Controls
- Appliances
- Factory Automation

We look forward to helping you create safe, reliable products that exceed the tough demands of today's applications. You'll find our commitment to excellence consistently delivers "Quality by Design," our company's mission.



Our commitment to quality products begins with our investment in research and development. Not only does Carling have a team of highly-qualified engineers on staff, we equip them with the industry's most advanced computer-aided design tools.

Our engineering team will work closely with yours to advance your project from initial product concepts to final design and manufacturing. Using industry-leading CAD/CAM software, Carling engineers can evaluate multiple design alternatives as well as develop products, tooling and manufacturing processes concurrently. The result? Functionally superior, aesthetically pleasing products — produced faster and at a lower cost.



We can even share electronic files that can be easily incorporated into the rest of your design. Just one more reason you'll think of Carling as much more than an approved vendor, but rather as a proven partner.

Our automated call center system ensures that your calls are routed to the right Customer Care person for prompt attention. Our customer care personnel are technically trained to discuss your requirements and provide the advice and services you expect from Carling Technologies. Each member of the Carling Customer Care team is technically trained on our standard products, and Application Engineers are also available to answer your more advanced technical questions. In addition, Carling is proud to offer a global network of fully trained representatives and distributors, who are always ready to service you.

Carling Technologies' Products

Within this catalog, you'll find a comprehensive line of miniature and sub-miniature switches, including rocker, toggle, pushbutton, and slide switches, many sealed to IP67, and many certified to UL/CUL under file number E7560, and to CSA under file number LRA9280.

We also offer full size switches, hydraulic/magnetic and ground fault circuit breakers, thermal circuit protectors, digital switching systems and power distribution centers. For more information on our other products, please request one of the catalogs listed on the inside back cover of this catalog, or go to: **www.carlingtech.com**.

How To Use This Catalog

Please refer to the Product Selector Guide, located on this page, for the type of switch required. Each switch Series is located under an alphabetical code. Each code refers you to the specific pages covering an individual Series. Product features/specifications and dimensional drawings are provided to assist you with product selection.

Follow our easy step-by-step catalog number sequence to construct the switch, which meets your needs. An ordering format and an example for constructing a catalog number are provided for each Series.





















www.carlingtech.com

Our website also offers a fast and easy way for you to configure part numbers and check stock on-line for your switch needs. Our on-line product selector will guide you to a valid Series based on your requirements, and the on-line product configurator will help you build a valid part number. A stock check feature is also included at www.carlingtech.com. Product Selector, Configurit, Product pages & PDF files make the Carling Technologies web site your "one stop shop" for quick and thorough product information.

Customer Care Center

For additional application assistance, we urge you to consult with our experienced staff in our Customer Care Center. Our Technical and Engineering staff has extensive test, research and development capabilities, and have assisted many customers in solving unique design and application problems with standard or customized products. Please refer to our location listing on the back of this catalog, for contact information for your area.

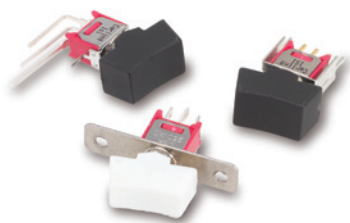
We look forward to working with you.

| | Series | Sub-Miniature | Miniature | Sealed | Surface Mount | Approvals | IP67 | page |
|------------|--|---------------|-----------|--------|---------------|-----------|------|--------------|
| ROCKER | 1S1  | • | | | | UL, CSA | | 2-5 |
| | 1SS  | • | | • | | | • | 2-5 |
| | 1SM  | • | | • | • | | • | 2-6 |
| | 1M1  | | • | | | UL, CSA | | 7-12 |
| | 1MS  | | • | • | | UL, CUL | • | 7-12 |
| TOGGLE | 2S1  | • | | | | UL, CSA | | 13-17 |
| | 2SM  | • | | • | • | | • | 13-19 |
| | 2SS  | • | | • | | | • | 13-17 |
| | 2M1  | | • | | | UL, CSA | | 20-26 |
| | 2M2  | | • | | | UL, CUL | | 20-26 |
| | 2MS  | | • | • | | UL, CUL | • | 20-26 |
| PUSHBUTTON | 3S1  | • | | | | | | 27-30 |
| | 3SS  | • | | • | | | • | 27-28, 31-32 |
| | 3SM  | • | | • | • | | • | 27-28, 33-34 |
| | 3MN  | | • | | | UL, CUL | | 35-36, 38-40 |
| | 3MS  | | • | • | | UL, CUL | IP68 | 35,37, 41-42 |
| | 3MA  | | • | | | UL, CUL | | 35,37, 43-45 |
| SLIDE | 4S1  | • | | | | | | 46,48 |
| | 4SS  | • | | • | | | | 46-49 |
| | 4M1  | | • | | | UL, CSA | | 46,47, 50-51 |
| | 4PM  | | • | | | | | 52 |

The range of temperatures that switches can perform at may be effected by various factors, including current load, voltage, foreign contaminant's, environmental conditions, frequency of operation, etc. As a result, switches should be tested for suitability under actual application conditions, before making a final product selection. Operating temperature is defined as the temperature of the switch at rated current plus ambient temperature.

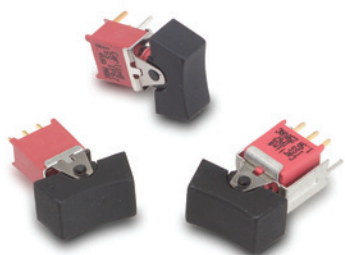
The product information published in this catalog is subject to change without notice. Modification of material, finishes, technical specifications and agency approvals may occur as part of our continual pursuit of product enhancement. All statements, technical information and recommendations are based on facts and tests we believe to be reliable. The product described may be used in a variety of applications. Since the user's product information, specific use application, and conditions of use are all outside of Carling's control, IT IS THE RESPONSIBILITY OF THE PURCHASER TO DETERMINE THE SUITABILITY OF THESE PRODUCTS FOR THE PURCHASER'S SPECIFIC USE AND THE PURCHASER ASSUMES ALL ASSOCIATED RISKS. The purchaser should review applicable codes and standards such as UL, NEMA, CSA, VDE, OSHA and others for recommended practices and safety standards along with electrical ratings as marked on product to ensure compatibility of product performance to application requirements.

Warranty Policy Carling Technologies, Inc. (Seller) warrants that goods sold hereunder shall be free of defects in material and workmanship for one year from date of shipment. In the event of such defects, the Seller's only obligation shall be the replacement or the cost of the defective goods, themselves, excluding, without limitation, labor costs, which are or may be required in connection with the replacement or reinstallation of the goods. This warranty is the Seller's sole obligation and excludes all other remedies or warranties, express or implied, including warranties of merchantability and fitness for a particular purpose, whether or not purposes or specifications are described herein. This Warranty expressly excludes any and all incidental, special and/or consequential damages of any nature. Seller further disclaims any responsibility for injury to person or damage to or loss of property or value caused by any product which has been subjected to misuse, negligence, or accident; or misapplied, or modified or repaired by a person or persons not authorized by the Seller or which have been improperly installed.



1S1-Series

Sub-Miniature Rocker Switch



1SS-Series

Sealed Sub-Miniature Rocker Switch



1SM-Series

Sealed Surface Mount Sub-Miniature Rocker Switch

Specifications

| | |
|-------------------------------|---|
| Contact Rating | refer to ordering scheme |
| Electrical Life | <i>1S1-Series:</i> 30,000 make & break cycles @ full load |
| | <i>1SS & 1SM-Series:</i> 50,000 make & break cycles @ full load |
| Contact Resistance. | 20 mΩ max. initial @ 2-4 VDC |
| | 100mA for both silver & gold plated contacts. |
| Insulation Resistance . . . | 1000 MΩ min. |
| Dielectric Strength | 1500 Volts RMS @ sea level |
| Operating Temperature . . . | -30°C to +85°C |
| Index of Protection | <i>1SS & 1SM-Series:</i> IP67 |
| Solder Heat Resistance. . . | MIL-STD-202, Method 210 |
| Actuator Travel | 25° |

Materials

| | |
|--------------------------|---|
| Case | all UL94 V-0 <i>1S1-Series:</i> Diallyl phthalate (DAP) <i>1SS-Series:</i> Glass filled nylon 6/6, flame retardant, heat stabilized <i>1SM-Series:</i> Glass filled nylon 4/6, flame retardant, heat stabilized |
| Rocker. | <i>1S1-Series:</i> Nylon (UL 94V-0) <i>1SS & 1SM-Series:</i> Nylon, black standard, internal o-ring sealed |
| Bushing | <i>1S1-Series:</i> Brass, nickel plated <i>1SS-Series:</i> Glass filled nylon 6/6, flame retardant, heat stabilized (UL 94V-0) <i>1SM-Series:</i> Glass filled nylon 4/6, flame retardant, heat stabilized (UL 94V-0) |
| Housing. | <i>1S1-Series:</i> Stainless Steel |
| Switch Support | <i>1S1 & 1SM-Series:</i> Brass, tin plated |
| Terminal Seal | Epoxy |

1S1-Series Ordering Scheme

1S1 - MSP 1 - R2 / 2 M6 Q E

1 Series 2 Poles 3 Circuit 4 Actuator Style 5 Actuator 6 Termination 7 Contact 8 Seal

| | | | | | | |
|--|--|------|----------|--|--|--|
| 1 SERIES | | | | | | |
| 1S1 Sub-Miniature Rocker Switch | | | | | | |
| 2 POLES | | | | | | |
| MSP | single pole - uses terminals 1, 2 & 3. | | | | | |
| MDP | double pole uses terminals 1,2, 3, 4, 5 & 6. | | | | | |
| 3 CIRCUIT | | | | | | |
| () - momentary | | | | | | |
| Switching Position: | | | | | | |
| | 2-3, 5-6 | OPEN | 2-1, 5-4 | | | |
| 1 | ON | NONE | ON | | | |
| 2 | ON | NONE | (ON) | | | |
| 3 | ON | OFF | ON | | | |
| 4 | (ON) | OFF | (ON) | | | |
| 5 | ON | OFF | (ON) | | | |

| | | | |
|-------------------------|---------------------|--|--|
| 4 ACTUATOR STYLE | | | |
| R1 | Small rocker | | |
| R2 | Narrow black rocker | | |

| | | | |
|--|-------|----------|--------|
| 5 ACTUATOR COLOR¹ | | | |
| 1 | white | 4 | orange |
| 2 | black | 5 | yellow |
| 3 | red | 6 | green |
| | | 7 | blue |
| | | 8 | brown |
| | | 9 | gray |
| ¹ Black, white and red are standard. Other colors available, consult factory. | | | |

| | | | |
|----------------------|---|-------------|---|
| 6 TERMINATION | | VS3 | PC Mount, U bracket, .620 mounting x .630 high |
| M1 | Solder Lug | M61 | Snap-In, U bracket, 90° horizontal |
| M2 | PCB | M71 | Snap-In, U bracket, 90° vertical |
| M6 | PC Mount, 90° horizontal | VS21 | Snap-In, U bracket |
| M7 | PC Mount, 90° vertical | | |
| VS2 | PC Mount, U bracket, .620 mounting x .460 high | | |

1SS-Series Ordering Scheme

1 SERIES
1SS Sealed Sub-Miniature Rocker Switch

2 POLES
WMSP single pole - uses terminals 1, 2 & 3.
WMDP double pole uses terminals 1, 2, 3, 4, 5 & 6.

3 CIRCUIT

() - momentary

| | Switching Position: | | |
|---|---------------------|------|----------|
| | 2-3, 5-6 | OPEN | 2-1, 5-4 |
| 1 | ON | NONE | ON |
| 2 | ON | NONE | (ON) |
| 3 | ON | OFF | ON |
| 4 | (ON) | OFF | (ON) |
| 5 | ON | OFF | (ON) |

4 ACTUATOR STYLE
R1 Small rocker **R2** Narrow rocker

5 ACTUATOR COLOR¹

| | | |
|---------|----------|---------|
| 1 white | 4 orange | 7 blue |
| 2 black | 5 yellow | 8 brown |
| 3 red | 6 green | 9 gray |

1 White, black & red are standard. Other colors available for quantities of 5K or more.

6 TERMINATION

| | |
|-------------|--|
| M1 | Solder Lug |
| M2 | PCB |
| M6 | PC Mount, 90° horizontal |
| M7 | PC Mount, 90° vertical |
| VS2 | PC Mount, U bracket, .620 mounting x .460 high |
| M61 | Snap-In, U bracket, 90° horizontal |
| M71 | Snap-In, U bracket, 90° vertical |
| VS21 | Snap-In, U bracket, .620 mounting x .460 high |

7 CONTACT

| | Material | Terminal Plating | Rating | |
|----------|---------------------|-------------------------------|-----------------------------------|------|
| G | silver ¹ | gold over silver ³ | 3A@125VAC or 28VDC, 1.5A @ 250VAC | IP67 |
| K | gold ² | tin-lead ⁴ | 0.4VA max. @20V max (AC/DC) | IP67 |
| P | silver ¹ | tin-lead ⁴ | 3A@125VAC or 28VDC, 1.5A @ 250VAC | IP67 |
| R | gold ² | gold ² | 0.4VA max. @20V max (AC/DC) | IP67 |

NOTE:

Standard G plating for sealed product.

Tin-lead option available with PC type terminations only.

- 1 Moveable contact & terminals: copper alloy, silver plate
- 2 Moveable contact & terminals: copper alloy with gold plated over nickel plate
- 3 Terminals: silver plated with outer layer in gold plating
- 4 Outer terminals: copper alloy with tin-lead over nickel plate

8 EPOXY SEAL
E epoxy seal

1SM-Series Ordering Scheme

1 SERIES
1SM Sealed Surface Mount Sub-Miniature Rocker Switch

2 POLES
WMSP single pole - uses terminals 1, 2 & 3.

3 CIRCUIT

() - momentary

| | Switching Position: | | |
|---|---------------------|------|------|
| | 2-3 | OPEN | 2-1 |
| 1 | ON | NONE | ON |
| 2 | ON | NONE | (ON) |
| 3 | ON | OFF | ON |
| 4 | (ON) | OFF | (ON) |
| 5 | ON | OFF | (ON) |

4 ACTUATOR STYLE
R2 Narrow black rocker

5 TERMINATION

| | |
|-----------|---|
| M6 | Surface Mount, 90° flat - horizontal/side terms |
| S6 | Surface Mount, 90° horizontal/back terms |
| S7 | Surface Mount, 90° vertical |

6 CONTACT

| | Material | Terminal Plating | Rating | |
|----------|---------------------|-------------------------------|-----------------------------------|------|
| G | silver ¹ | gold over silver ³ | 3A@125VAC or 28VDC, 1.5A @ 250VAC | IP67 |
| K | gold ² | tin-lead ⁴ | 0.4VA max. @20V max (AC/DC) | IP67 |
| P | silver ¹ | tin-lead ⁴ | 3A@125VAC or 28VDC, 1.5A @ 250VAC | IP67 |
| Q | silver ¹ | silver ¹ | 3A@125VAC or 28VDC, 1.5A @ 250VAC | IP67 |
| R | gold ² | gold ² | 0.4VA max. @20V max (AC/DC) | IP67 |

NOTE:

Standard G plating for sealed product. P&K for PC mount only.

Tin-lead option available with PC type terminations only.

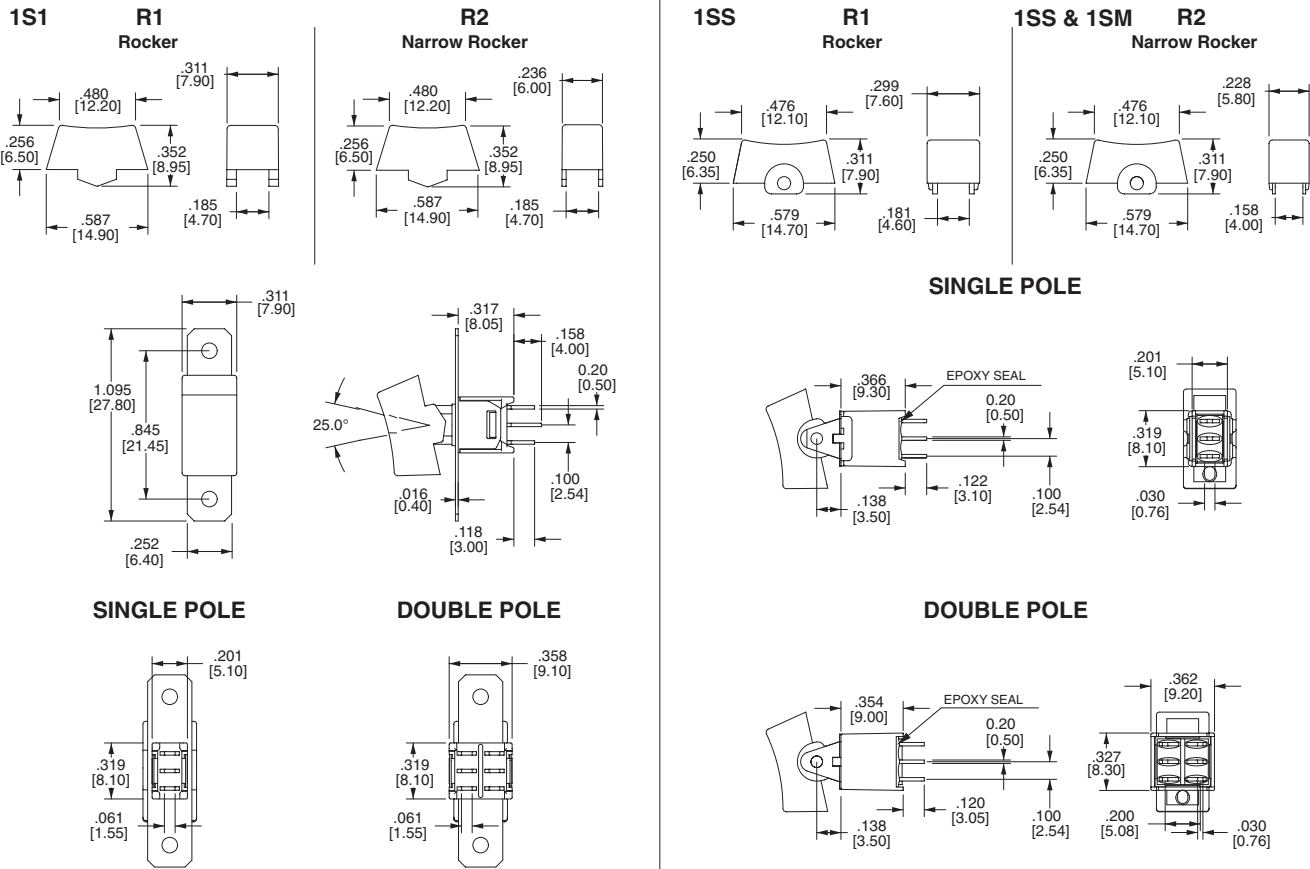
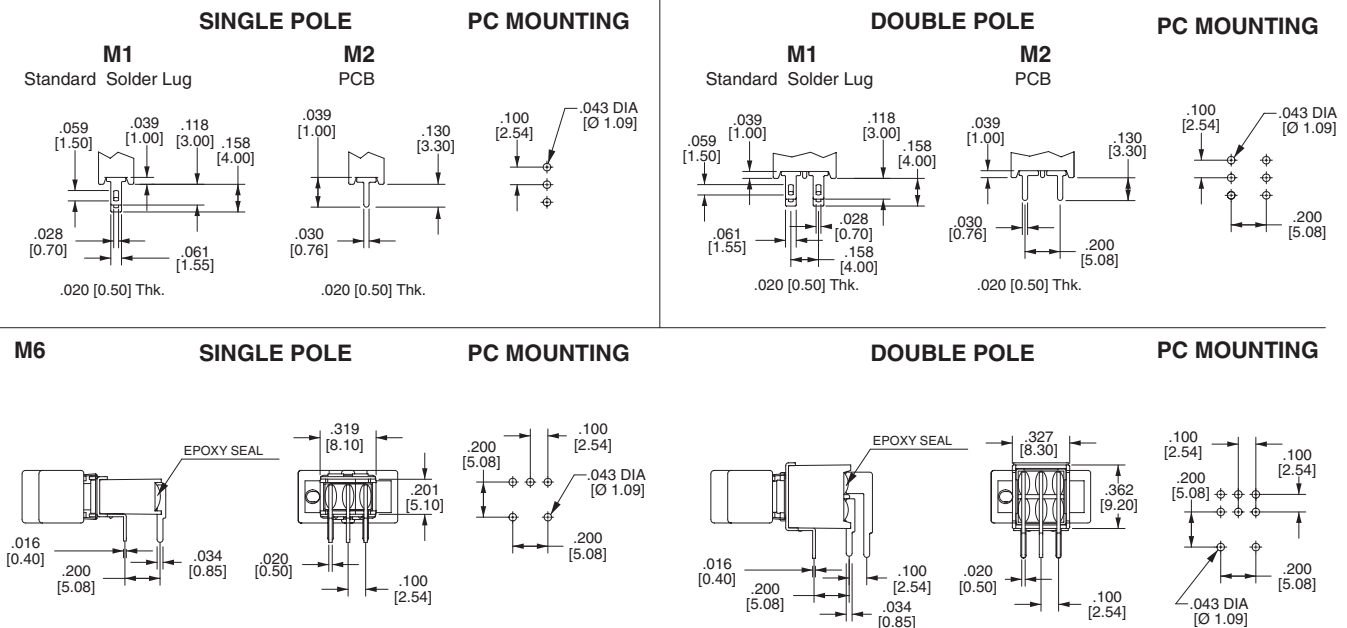
- 1 Moveable contact & terminals: copper alloy, silver plate
- 2 Moveable contact & terminals: copper alloy with gold plate over nickel plate
- 3 Terminals: silver plated with outer layer in gold plating
- 4 Outer terminals: copper alloy with tin-lead over nickel plate

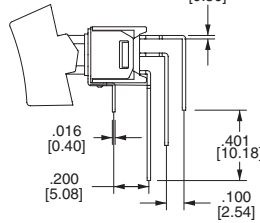
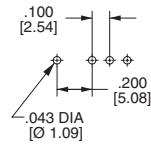
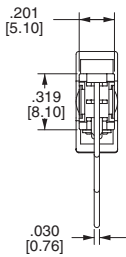
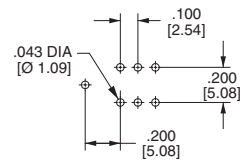
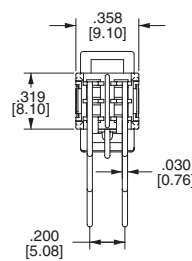
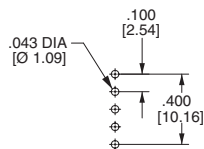
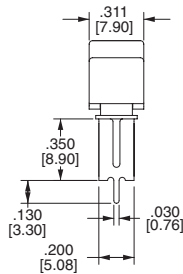
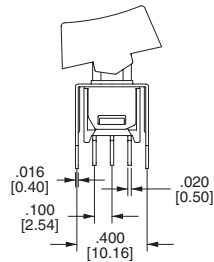
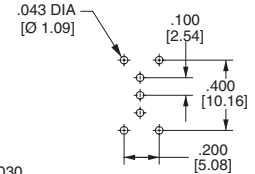
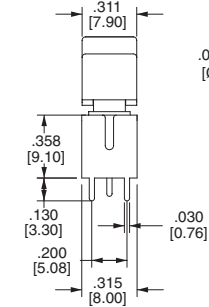
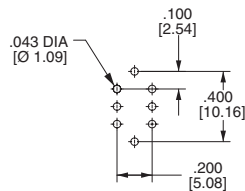
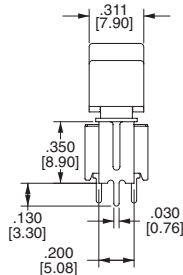
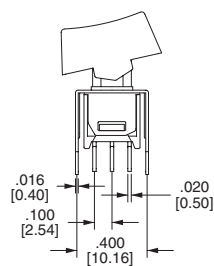
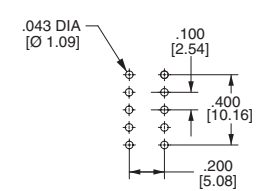
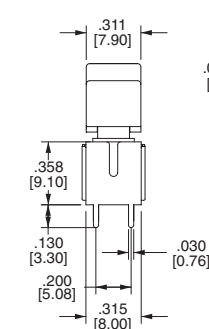
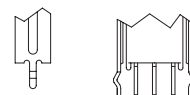
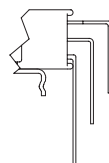
7 EPOXY SEAL
E epoxy seal

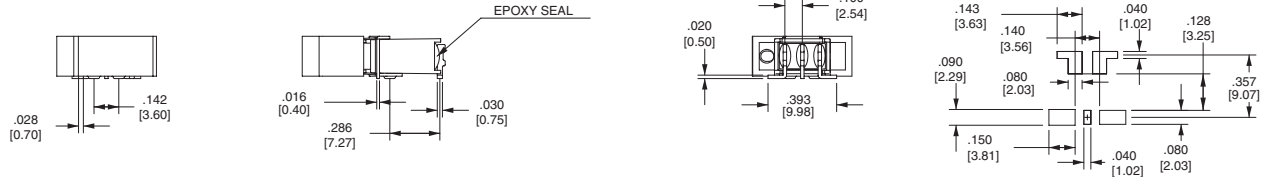
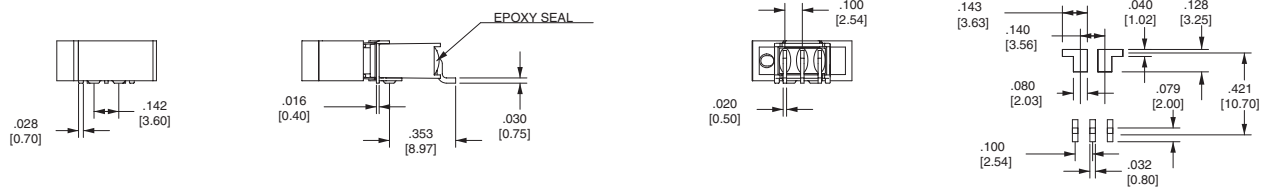
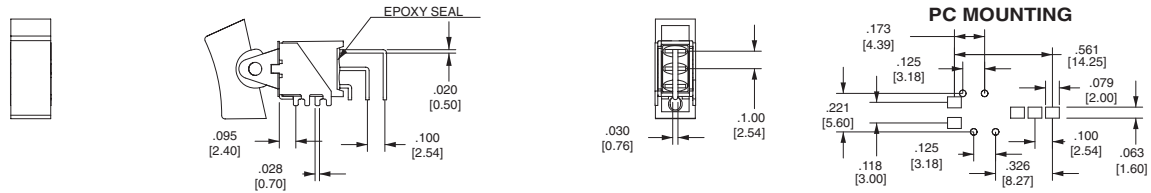
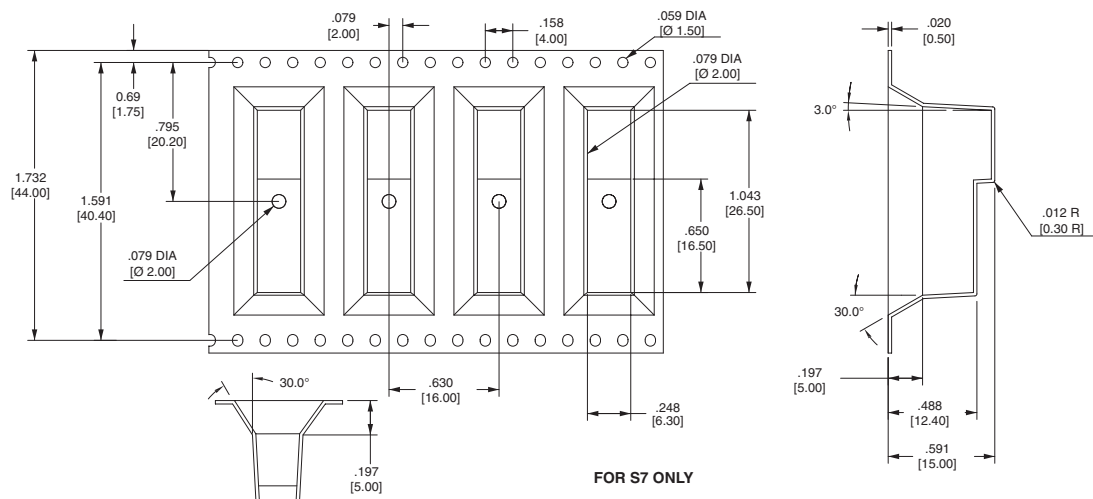
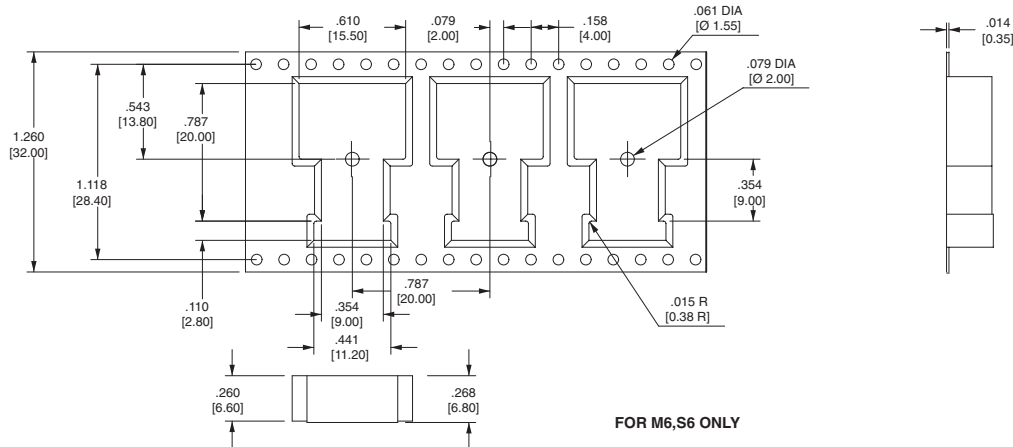
8 PACKAGING

 Switches are bulk packed, unless **T/R** is specified at the end of the part number.

T/R tape reel - 500 pieces per reel

1S-Series Dimensional Specifications: in. [mm]
ACTUATOR

TERMINATION


1S-Series Dimensional Specifications: in. [mm]
TERMINATION
M7 SINGLE POLE
PC MOUNTING

DOUBLE POLE
PC MOUNTING

VS2
PC MOUNTING

SINGLE POLE

VS3
PC MOUNTING

VS2
PC MOUNTING

DOUBLE POLE

VS3
PC MOUNTING

SNAP-IN TERMINATION
M61
M71
VS21


1SM-Series Dimensional Specifications: in. [mm]
TERMINATION
M6

S6

S7

REEL TAPING




1M1-Series
Miniature Rocker &
Paddle Switch



1MS-Series
Sealed Miniature
Rocker & Paddle
Switch

Specifications

| | |
|-------------------------------|---|
| Contact Rating | refer to ordering scheme. |
| Electrical Life | 1M1-Series: 50,000 make & break cycles @ full load |
| | 1MS-Series: 30,000 make & break cycles @ full load |
| Contact Resistance. | 10 mΩ max. initial @ 2-4 VDC |
| | 100mA for both silver & gold plated contacts. |
| Insulation Resistance | 1000 MΩ min. |
| Dielectric Strength | 1500 Volts RMS @ sea level |
| Operating Temperature . . . | -30°C to +85°C |
| Index of Protection | 1MS-Series: IP67 |
| Solder Heat Resistance. . . | MIL-STD-202, Method 210 |
| Actuator Travel | 25° |

Materials

| | |
|-------------------------------|--|
| Case | 1M1-Series: Dially phthalate (DAP) (UL 94V-0) |
| | 1MS-Series: Glass filled nylon 6/6, flame retardant, heat stabilized (UL 94V-0) |
| Rocker/Paddle. | 1M1-Series: Nylon (UL 94V-0) |
| | 1MS-Series: Nylon, black standard, internal o-ring sealed |
| Bushing | 1M1-Series: Brass, nickel plated |
| | 1MS-Series: Glass filled nylon 6/6, flame retardant, heat stabilized (UL 94V-0) |
| Housing. | 1M1-Series: Stainless Steel |
| | 1MS-Series: Spring Steel |
| Actuator Pivot & Mounting | |
| Bracket | 1M1-Series: Stainless Steel |
| | 1MS-Series: Nylon (UL 94V-0) |
| Actuator Pivot Retainer . . . | 1MS-Series: Stainless Steel |
| Switch Support | Brass, tin plated |
| Terminal Seal | Epoxy |

1M1-Series Ordering Scheme



1 SERIES

1M1 Miniature Rocker Switch

2 POLES

SP single pole - uses terminals 1, 2 & 3.
DP double pole uses terminals 1, 2, 3, 4, 5 & 6.
3P double pole uses terminals 1, 2, 3, 4, 5, 6, 7, 8 & 9.
4P double pole uses terminals 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12.

3 CIRCUIT

() - momentary

Switching Position:

| | 2-3, 5-6, 8-9, 11-12 | OPEN | 2-1, 5-4, 8-7, 11-10 |
|---|----------------------|------|----------------------|
| 1 | ON | NONE | ON |
| 2 | ON | NONE | (ON) |
| 3 | ON | OFF | ON |
| 4 | (ON) | OFF | (ON) |
| 5 | ON | OFF | (ON) |

4 ACTUATOR STYLE

| | | | |
|-----------|---------------|-----------|--------------------|
| R1 | Small rocker | R5 | Large rocker |
| R2 | Small paddle | R6 | Rocker & frame |
| R3 | Medium rocker | R7 | Paddle & frame |
| R4 | Large paddle | R8 | Rocker w/out frame |
| | | R9 | Paddle w/out frame |

5 ACTUATOR COLOR & 6 FRAME COLOR^{1,2}

| | | |
|---------|----------|---------|
| 1 white | 4 orange | 7 blue |
| 2 black | 5 yellow | 8 brown |
| 3 red | 6 green | 9 gray |

- 1 Black is standard. Other colors available, consult factory for details.
 2 Selection 6 is blank if actuator style R8 or R9 (no frame)

7 TERMINATION

| | | | |
|-------------|--|-------------|---|
| M1 | Solder Lug | VS4 | PC Mount, U bracket, .460 high |
| M2 | PCB | VS5 | PC Mount, U bracket, .630 high |
| M3 | Quick Connect | M61 | Snap-In, U bracket, 90° horizontal |
| M5-1 | Wire Wrap .750 [19.05] | M71 | Snap-In, U bracket, 90° vertical |
| M5-2 | Wire Wrap .964 [24.48] | VS21 | Snap-In, U bracket, .620 mounting x .460 high |
| M5-3 | Wire Wrap .425 [10.80] | VS31 | Snap-In, U bracket, .620 mounting x .630 high |
| M5-4 | Wire Wrap 1.062 [26.97] | VS41 | Snap-In, U bracket |
| M6 | PC Mount, 90° horizontal | VS51 | Snap-In, U bracket |
| M7 | PC Mount, 90° vertical | | |
| VS2 | PC Mount, U bracket, .620 mounting x .460 high | | |
| VS3 | PC Mount, U bracket, .620 mounting x .630 high | | |

8 CONTACT

| | Material | Terminal Plating | Rating | Approvals |
|----------|---------------------|-------------------------------|-----------------------------------|-----------|
| G | silver ¹ | gold over silver ² | 5A @ 125VAC or 28VDC, 2A @ 250VAC | UL CSA |
| K | gold ² | tin-lead ⁴ | 0.4VA max. @ 20V max (AC/DC) | — |
| P | silver ¹ | tin-lead ⁴ | 5A @ 125VAC or 28VDC, 2A @ 250VAC | UL CSA |
| Q | silver ¹ | silver ¹ | 5A @ 125VAC or 28VDC, 2A @ 250VAC | UL CSA |
| R | gold ² | gold ² | 0.4VA max. @ 20V max (AC/DC) | — |

NOTE:

- Tin-lead option available with PC type terminations only.
 1 Moveable contact & terminals: copper alloy, silver plate
 2 Moveable contact & terminals: copper alloy with gold plate over nickel plate
 3 Terminals: silver plate with outer layer in gold plating
 4 Outer terminals: copper alloy with tin-lead over nickel plate

9 EPOXY SEAL

E epoxy seal

1MS-Series Ordering Scheme



1 SERIES

1MS Sealed Miniature Rocker Switch

2 POLES

SP single pole - uses terminals 1, 2 & 3.
DP double pole uses terminals 1, 2, 3, 4, 5 & 6.
3P double pole uses terminals 1, 2, 3, 4, 5, 6, 7, 8 & 9.

3 CIRCUIT

() - momentary

Switching Position:

| | 2-3, 5-6, 8-9 | OPEN | 2-1, 5-4, 8-7 |
|---|---------------|------|---------------|
| 1 | ON | NONE | ON |
| 2 | ON | NONE | (ON) |
| 3 | ON | OFF | ON |
| 4 | (ON) | OFF | (ON) |
| 5 | ON | OFF | (ON) |

4 ACTUATOR STYLE

| | | | |
|-----------|---------------|-----------|--------------------|
| R1 | Small rocker | R5 | Large rocker |
| R2 | Small paddle | R6 | Rocker & frame |
| R3 | Medium rocker | R7 | Paddle & frame |
| R4 | Large paddle | R8 | Rocker w/out frame |
| | | R9 | Paddle w/out frame |

5 TERMINATION

| | | | |
|-------------|--|-------------|--|
| M1 | Solder Lug | VS3 | PC Mount, U bracket, .620 mounting x .630 high |
| M2 | PCB | VS4 | PC Mount, U bracket, .460 high |
| M3 | Quick Connect | VS5 | PC Mount, U bracket, .630 high |
| M5-1 | Wire Wrap .750 [19.05] | VS21 | Snap-In, U bracket, .620 mounting x .460 high |
| M5-2 | Wire Wrap .964 [24.48] | VS31 | Snap-In, U bracket, .620 mounting x .630 high |
| M5-3 | Wire Wrap .425 [10.80] | VS41 | Snap-In, U bracket |
| M5-4 | Wire Wrap 1.062 [26.97] | VS51 | Snap-In, U bracket |
| M6 | PC Mount, 90° horizontal | | |
| M7 | PC Mount, 90° vertical | | |
| VS2 | PC Mount, U bracket, .620 mounting x .460 high | | |

6 CONTACT

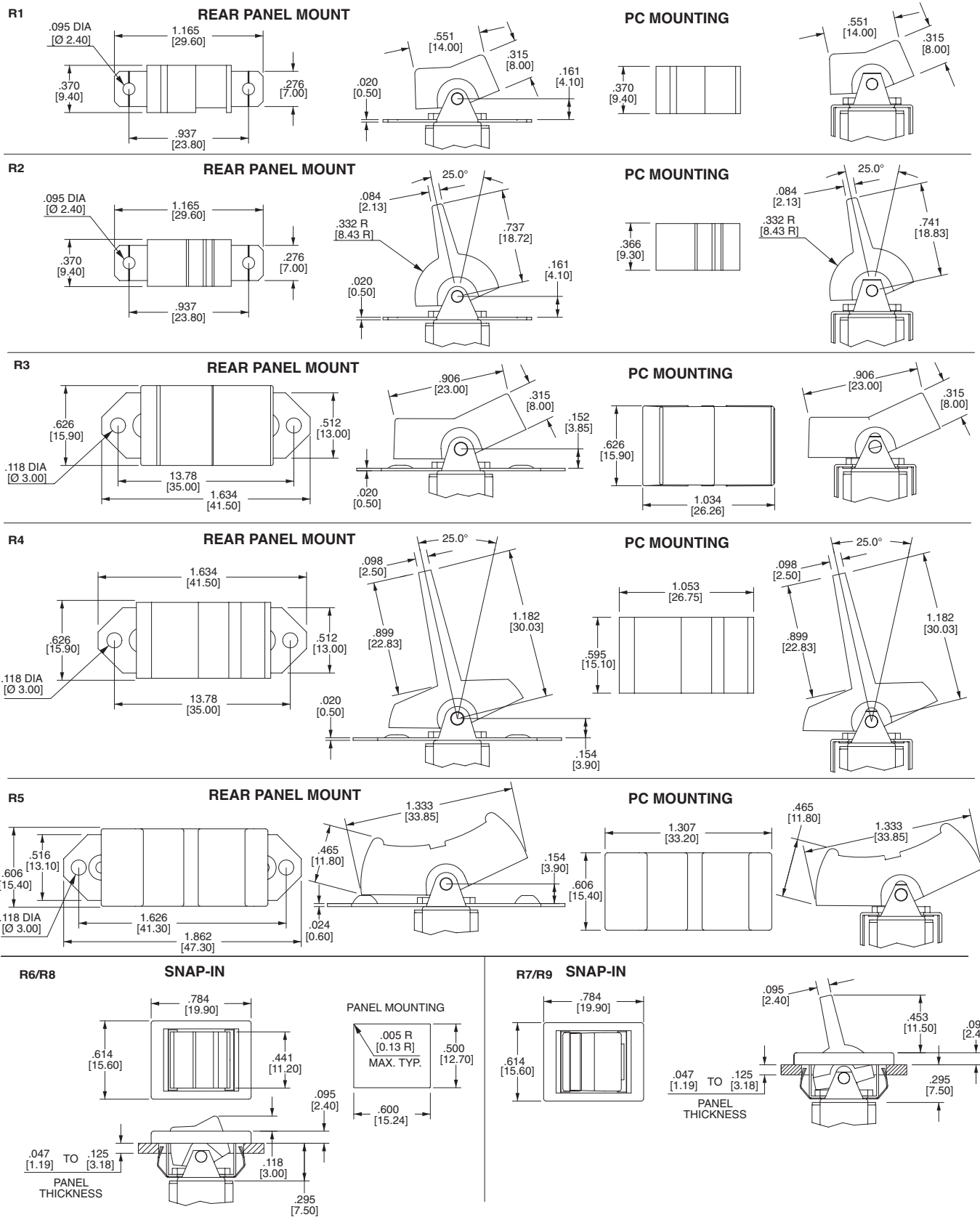
| | Material | Terminal Plating | Rating | Approvals |
|----------|---------------------|-------------------------------|-----------------------------------|-----------|
| G | silver ¹ | gold over silver ² | 5A @ 125VAC or 28VDC, 2A @ 250VAC | UL CUL |
| K | gold ² | tin-lead ⁴ | 0.4VA max. @ 20V max (AC/DC) | — |
| P | silver ¹ | tin-lead ⁴ | 5A @ 125VAC or 28VDC, 2A @ 250VAC | UL CUL |
| R | gold ² | gold ² | 0.4VA max. @ 20V max (AC/DC) | — |

NOTE:

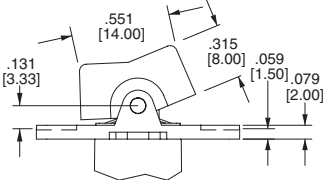
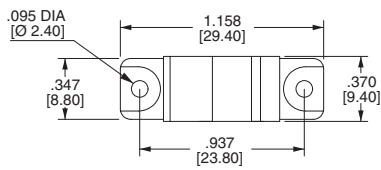
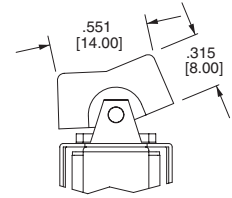
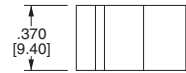
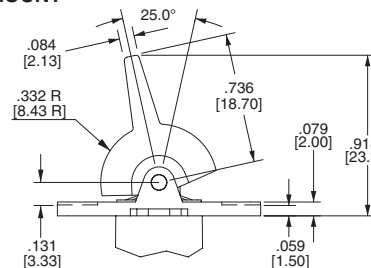
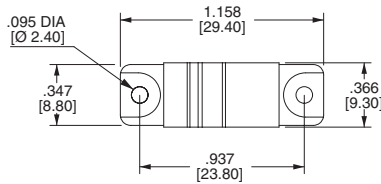
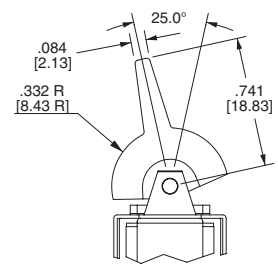
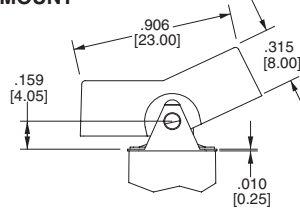
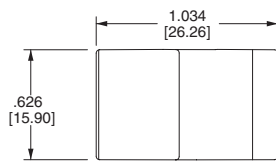
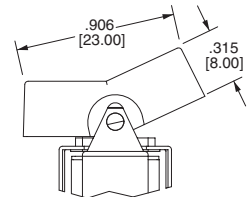
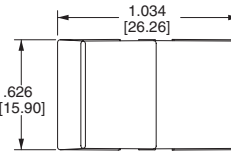
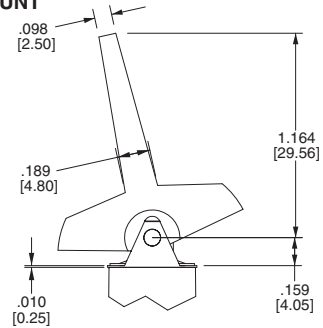
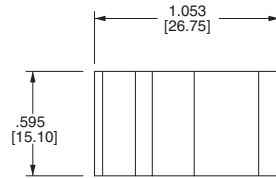
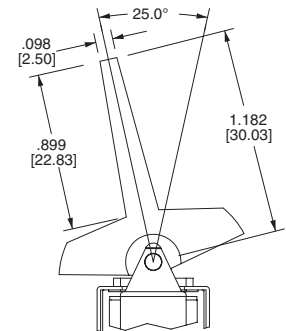
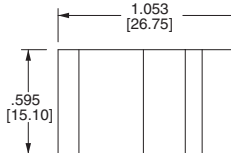
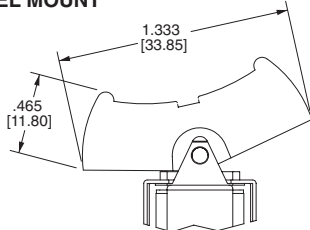
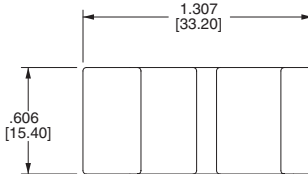
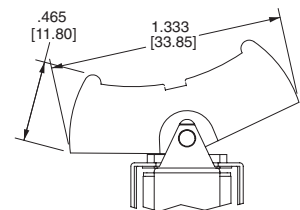
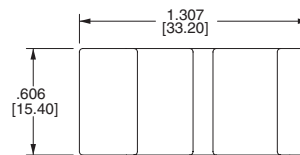
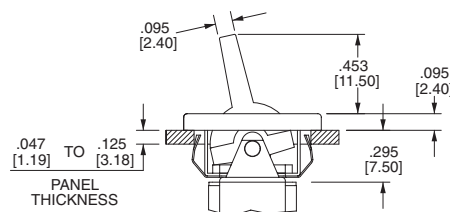
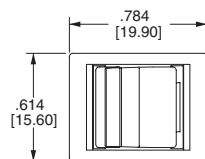
- Tin-lead option available with PC type terminations only.
 1 Moveable contact & terminals: copper alloy, silver plate
 2 Moveable contact & terminals: copper alloy with gold plate over nickel plate
 3 Terminals: silver plate with outer layer in gold plating
 4 Outer terminals: copper alloy with tin-lead over nickel plate

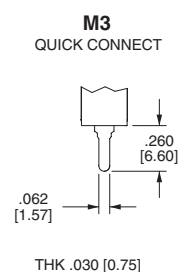
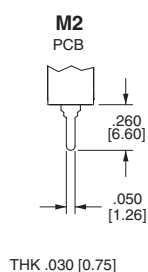
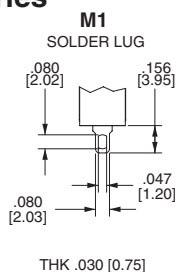
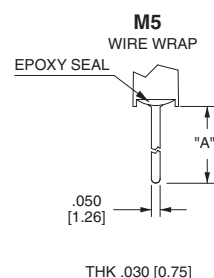
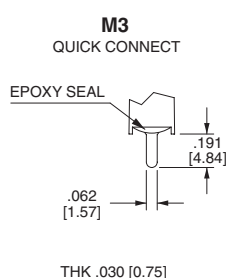
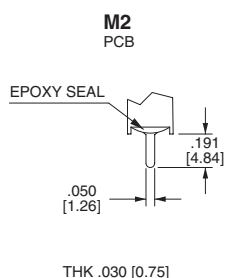
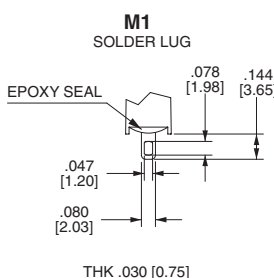
7 EPOXY SEAL

E epoxy seal

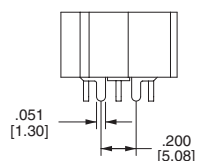
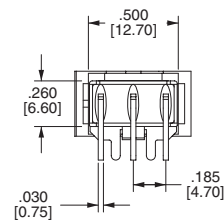
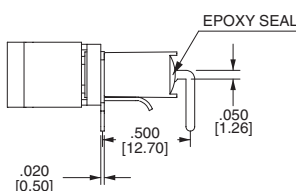
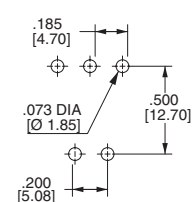
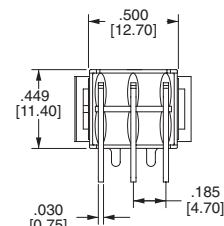
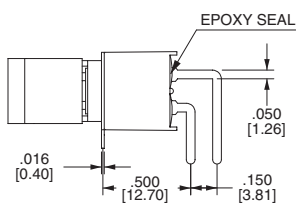
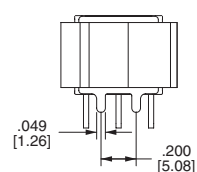
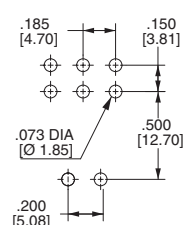
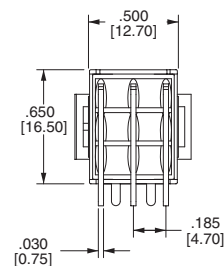
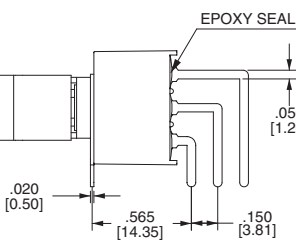
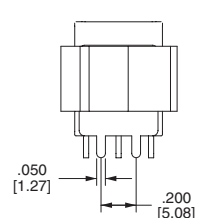
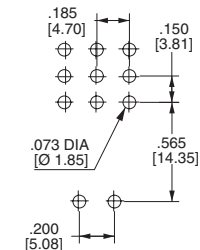
1M1-Series Dimensional Specifications: in.[mm]
ACTUATOR


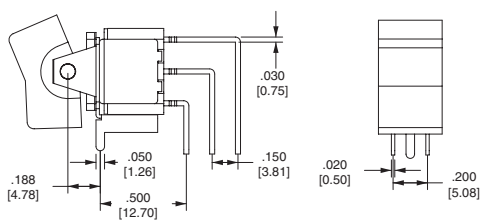
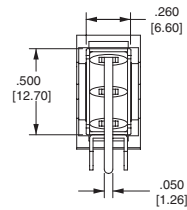
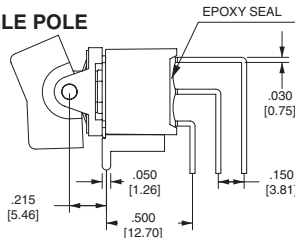
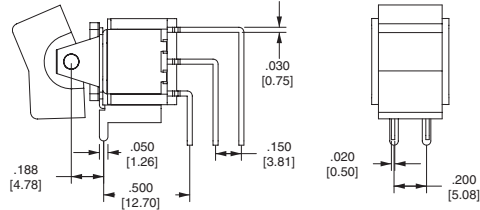
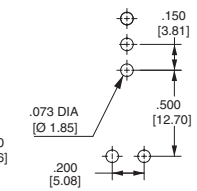
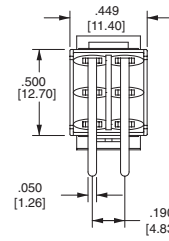
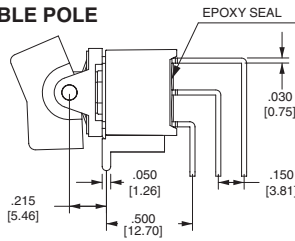
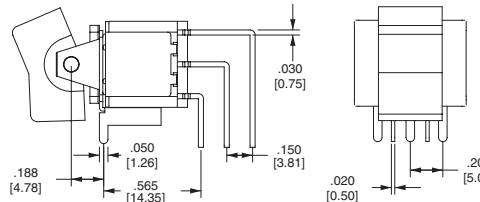
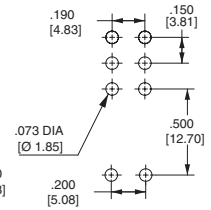
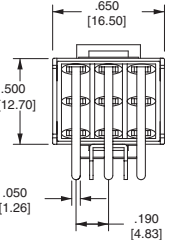
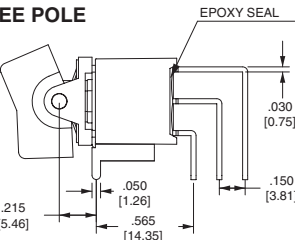
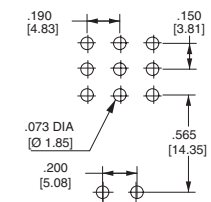
R8 and R9 are without frame. Actuators are as shown.

1MS-Series Dimensional Specifications: in.[mm]
ACTUATOR
R1 REAR PANEL MOUNT

PC MOUNTING

R2 REAR PANEL MOUNT

PC MOUNTING

R3 REAR PANEL MOUNT

PC MOUNTING

R4 REAR PANEL MOUNT

PC MOUNTING

R5 REAR PANEL MOUNT

PC MOUNTING

R7 SNAP-IN


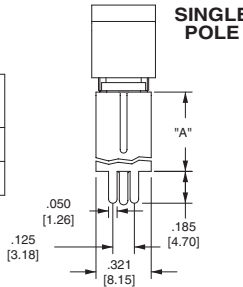
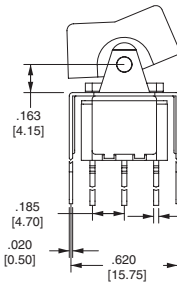
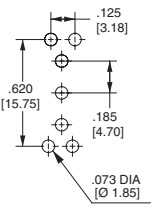
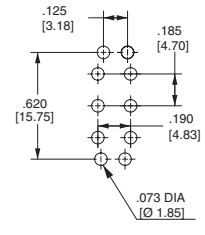
1M-Series Dimensional Specifications: in.[mm]
TERMINATION
1M1-Series

1MS-Series


| OPTION CODE | DIM. "A" |
|-------------|---------------|
| M5-1 | .750 [19.05] |
| M5-2 | .964 [24.48] |
| M5-3 | .425 [10.80] |
| M5-4 | 1.062 [26.97] |

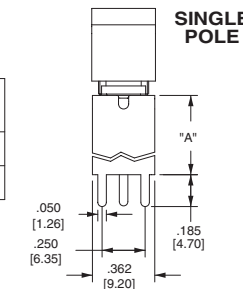
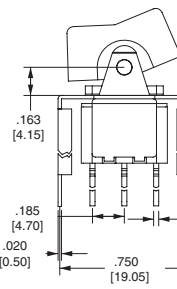
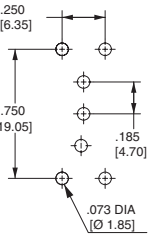
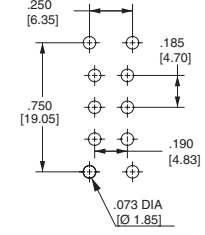
1M-Series
M6

SINGLE POLE

PC MOUNTING

DOUBLE POLE

PC MOUNTING

THREE POLE

PC MOUNTING


1M-Series Dimensional Specifications: in.[mm]
TERMINATION
M7

SINGLE POLE

PC MOUNTING

DOUBLE POLE

PC MOUNTING

THREE POLE

PC MOUNTING

VS2 & VS3

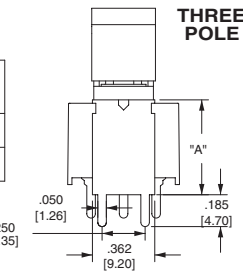
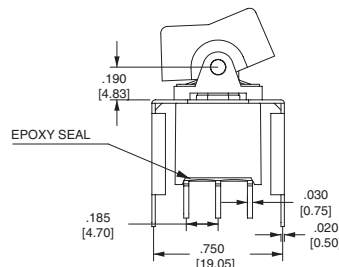
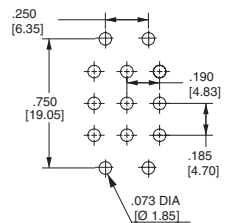
| OPTION CODE | DIM. "A" |
|-------------|--------------|
| VS2 | .460 [11.68] |
| VS3 | .630 [16.00] |

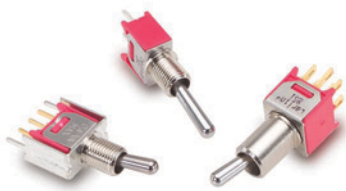

SINGLE POLE
PC MOUNTING

DOUBLE POLE
PC MOUNTING

VS4 & VS5

| OPTION CODE | DIM. "A" |
|-------------|--------------|
| VS4 | .460 [11.68] |
| VS5 | .630 [16.00] |

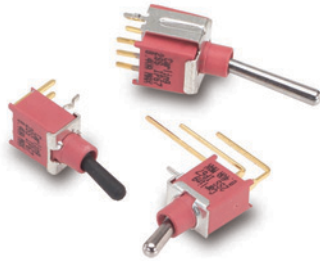

SINGLE POLE
PC MOUNTING

DOUBLE POLE
PC MOUNTING

U4 & VS5

| OPTION CODE | DIM. "A" |
|-------------|--------------|
| U4 | .551 [14.00] |
| VS5 | .630 [16.00] |

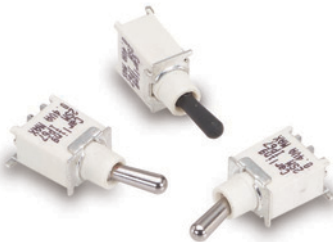

THREE POLE

PC MOUNTING




2S1-Series
Sub-Miniature Toggle
Switch



2SS-Series
Sealed Sub-Miniature
Toggle Switch



2SM-Series
Sealed Surface
Mount Sub-Miniature
Toggle Switch

Specifications

| | |
|-------------------------------|---|
| Contact Rating | refer to ordering scheme |
| Electrical Life | 30,000 make & break cycles @ full load |
| Contact Resistance. | 20 mΩ max. initial @ 2-4 VDC 100mA for both silver & gold plated contacts. |
| Insulation Resistance . . . | 1000 MΩ min. |
| Dielectric Strength | 1500 Volts RMS @ sea level |
| Operating Temperature . . . | -30°C to +85°C |
| Index of Protection | 2SS & 2SM-Series: IP67 |
| Solder Heat Resistance. . . | MIL-STD-202, Method 210 |
| Actuator Travel | .25° |

Materials

| | |
|--------------------------|---|
| Case | all UL 94 V-0 2S1-Series: Diallyl phthalate (DAP) 2SS-Series: Glass filled nylon 6/6, flame retardant, heat stabilized 2SM-Series: Glass filled nylon 4/6, flame retardant, heat stabilized |
| Toggle. | 2S1-Series: Brass, chrome plated. 2SS & 2SM-Series: Brass, chrome plated or nylon, internal o-ring sealed |
| Bushing | 2S1-Series: Brass, nickel plated 2SS-Series: Glass filled nylon 6/6, flame retardant, heat stabilized (UL 94V-0) 2SM-Series: Glass filled nylon 4/6, flame retardant, heat stabilized (UL 94V-0) |
| Housing. | Stainless Steel |
| Switch Support | Brass, tin plated |
| Terminal Seal | Epoxy |

2S1-Series Ordering Scheme

| | | | | | | | | | | | | |
|------------|---|------------|--|----------|---|----------------|---|-----------|---|-------------|----------|----------|
| 2S1 | - | MSP | | 1 | - | T1 | - | B4 | - | M6 | Q | E |
| 1 | | 2 | | 3 | | 4 | | 5 | | 6 | 7 | 8 |
| Series | | Poles | | Circuit | | Actuator Style | | Bushing | | Termination | Contact | Seal |

1 SERIES

2S1 Sub-Miniature Toggle Switch

2 POLES

MSP single pole - uses terminals 1, 2 & 3.
MDP double pole uses terminals 1,2, 3, 4, 5 & 6.

3 CIRCUIT

() - momentary

| | Switching Position: | | |
|---|---------------------|------|----------|
| | 2-3, 5-6 | OPEN | 2-1, 5-4 |
| 1 | ON | NONE | ON |
| 2 | ON | NONE | (ON) |
| 3 | ON | OFF | ON |
| 4 | (ON) | OFF | (ON) |
| 5 | ON | OFF | (ON) |

4 ACTUATOR STYLE

| | |
|------------------------------------|------------------------------------|
| T1 Round toggle .358 length | T3 Round toggle .299 length |
| T2 Round toggle .220 length | T4 Round toggle .433 length |

5 BUSHING¹

| | |
|-----------|-------------------------------|
| B1 | Threaded Standard, keyway |
| B2 | Non-Threaded Standard, keyway |
| B3 | Threaded Short, keyway |
| B4 | Non-Threaded Short, keyway |
| B5 | High Torque, 7.5mm, flat |
| B6 | High Torque, 8.0mm, keyway |
| B7 | Long threaded |
| B8 | Metric |

Note:
1 All Switches come with standard nut, washer and locking ring shipped bulk. B5 & B7 bushing styles use small locking ring.

6 TERMINATION

| | |
|-------------|--|
| M1 | Solder Lug |
| M2 | PCB |
| M6 | PC Mount, 90° horizontal |
| M7 | PC Mount, 90° vertical |
| VS2 | PC Mount, U bracket, .620 mounting x .460 high |
| VS3 | PC Mount, U bracket, .620 mounting x .630 high |
| VS21 | Snap-In, U bracket |

7 CONTACT

| | Material | Terminal Plating | Rating | Approvals |
|----------|---------------------|-------------------------------|-----------------------------------|-----------|
| G | silver ¹ | gold over silver ³ | 3A@125VAC or 28VDC, 1.5A @ 250VAC | UL CSA |
| K | gold ² | tin-lead ⁴ | 0.4VA max. @20V max (AC/DC) | — |
| P | silver ¹ | tin-lead ⁴ | 3A@125VAC or 28VDC, 1.5A @ 250VAC | UL CSA |
| Q | silver ¹ | silver ¹ | 3A@125VAC or 28VDC, 1.5A @ 250VAC | UL CSA |
| R | gold ² | gold ² | 0.4VA max. @20V max (AC/DC) | — |

NOTE:

- Tin-lead option available with PC type terminations only.
1 Moveable contact & terminals: copper alloy, silver plate
2 Moveable contact & terminals: copper alloy with gold plated over nickel plate
3 Terminals: silver plate with outer layer in gold plating
4 Outer terminals: copper alloy with tin-lead over nickel plate

8 EPOXY SEAL

E epoxy seal

2SS-Series Ordering Scheme



1 SERIES

2SS Sealed Sub-Miniature Toggle Switch

2 POLES

MSP single pole - uses terminals 1, 2 & 3.
MDP double pole uses terminals 1, 2, 3, 4, 5 & 6.

3 CIRCUIT

() - momentary

Switching Position:

| | 2-3, 5-6 | OPEN | 2-1, 5-4 |
|---|----------|------|----------|
| 1 | ON | NONE | ON |
| 2 | ON | NONE | (ON) |
| 3 | ON | OFF | ON |
| 4 | (ON) | OFF | (ON) |
| 5 | ON | OFF | (ON) |

4 ACTUATOR STYLE

T1 Round toggle .358 length
T2 Round toggle .220 length
T3 Round toggle .299 length
T4 Round toggle .433 length
P1 ESD resistant plastic toggle .421 length
P2 ESD resistant plastic toggle .272 length

5 BUSHING

B4 Unthreaded bushing

6 TERMINATION

M2 PCB
M6 PC Mount, 90° horizontal
M61 Snap-In PC Mount, 90° horizontal
M7 PC Mount, 90° vertical
M71 Snap-In PC Mount, 90° vertical
VS2 PC Mount, U bracket, .620 mounting x .460 high
VS21 Snap-In, U bracket

7 CONTACT

| | Material | Terminal Plating | Rating | |
|----------|---------------------|-------------------------------|-----------------------------------|------|
| G | silver ¹ | gold over silver ³ | 3A@125VAC or 28VDC, 1.5A @ 250VAC | IP67 |
| K | gold ² | tin-lead plated ⁴ | 0.4VA max. @20V max (AC/DC) | IP67 |
| P | silver ¹ | tin-lead plated ⁴ | 3A@125VAC or 28VDC, 1.5A @ 250VAC | IP67 |
| R | gold ² | gold plated ² | 0.4VA max. @20V max (AC/DC) | IP67 |

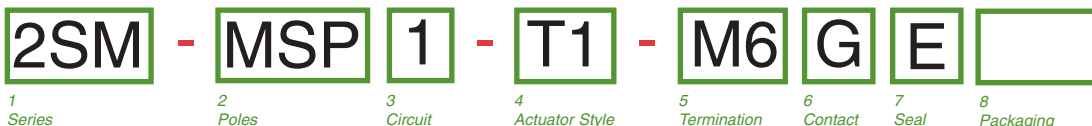
NOTE:

- Tin-lead option available with PC type terminations only.
1 Moveable contact & terminals: copper alloy, silver plate
2 Moveable contact & terminals: copper alloy with gold plate over nickel plate
3 Terminals: silver plate with outer layer in gold plating
4 Outer terminals: copper alloy with tin-lead over nickel plate

8 EPOXY SEAL

E epoxy seal

2SM-Series Ordering Scheme



1 SERIES

2SM Sealed Surface Mount Sub-Miniature Toggle Switch

2 POLES

MSP single pole - uses terminals 1, 2 & 3.

3 CIRCUIT

() - momentary

Switching Position:

| | 2-3 | OPEN | 2-1 |
|---|------|------|------|
| 1 | ON | NONE | ON |
| 2 | ON | NONE | (ON) |
| 3 | ON | OFF | ON |
| 4 | (ON) | OFF | (ON) |
| 5 | ON | OFF | (ON) |

4 ACTUATOR STYLE

T1 Round toggle .358 length
T2 Round toggle .220 length
P1 ESD resistant plastic toggle .421 length
P2 ESD resistant plastic toggle .272 length

5 TERMINATION

M6 Surface Mount, 90° flat
M7 Surface Mount, 90° vertical
S6 Surface Mount, 90° horizontal

6 CONTACT

| | Material | Terminal Plating | Rating | |
|----------|---------------------|-------------------------------|-----------------------------------|------|
| G | silver ¹ | gold over silver ³ | 3A@125VAC or 28VDC, 1.5A @ 250VAC | IP67 |
| K | gold ² | tin-lead plated ⁴ | 0.4VA max. @20V max (AC/DC) | IP67 |
| P | silver ¹ | tin-lead plated ⁴ | 3A@125VAC or 28VDC, 1.5A @ 250VAC | IP67 |
| R | gold ² | gold plated ² | 0.4VA max. @20V max (AC/DC) | IP67 |

NOTE:

- Tin-lead option available with PC type terminations only.
1 Moveable contact & terminals: copper alloy, silver plate
2 Moveable contact & terminals: copper alloy with gold plate over nickel plate
3 Terminals: silver plate with outer layer in gold plating
4 Outer terminals: copper alloy with tin-lead over nickel plate

7 EPOXY SEAL

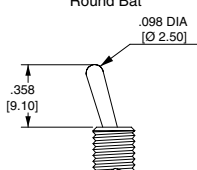
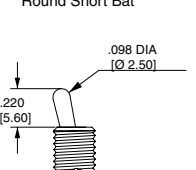
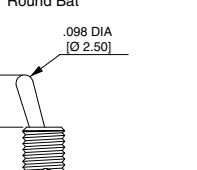
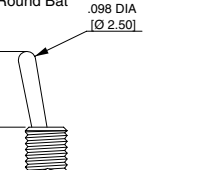
E epoxy seal

8 PACKAGING

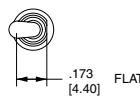
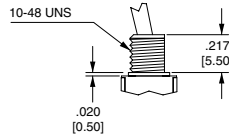
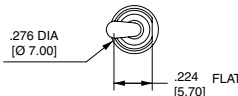
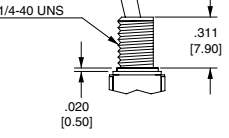
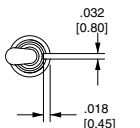
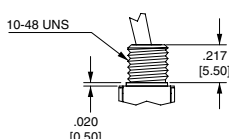
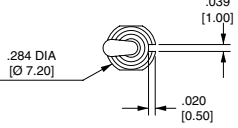
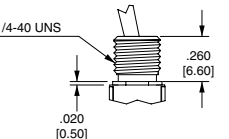
Switches are bulk packed, unless **T/R** is specified at the end of the part number.

T/R tape reel - 500 pieces per reel

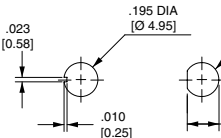
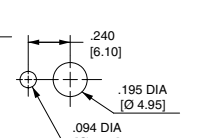
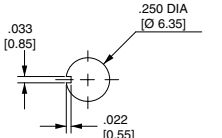
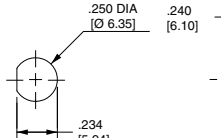
2S-Series Dimensional Specifications: in. [mm]
2S1-Series
ACTUATOR

| | | | |
|---|---|--|--|
| T1¹ Round Bat  | T2¹ Round Short Bat  | T3 Round Bat  | T4 Long Round Bat  |
|---|---|--|--|

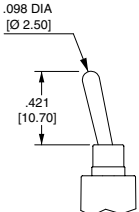
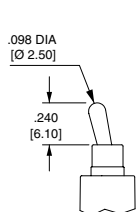
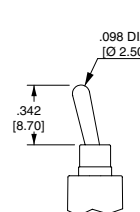
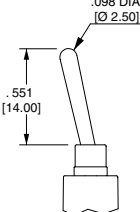
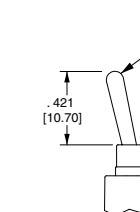
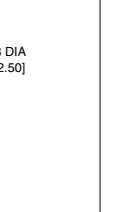
BUSHING

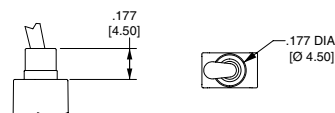
| | | | |
|---|--|--|--|
| B1¹ Threaded, Flat B2 Non-Threaded, Flat  |  | B5 Threaded, Flat B6 Non-Threaded, Flat  |  |
| B3 Threaded Keyway B4 Non-Threaded Keyway  |  | B7 Threaded Keyway B8 Non-Threaded Keyway  |  |

PANEL MOUNTING

| | | | |
|--|---|---|---|
| 10-48 BUSHING (B1,B2,B3,B4 BUSHINGS)  |  | 1/4 IN. BUSHING (B5,B6,B7,B8 BUSHINGS)  |  |
|--|---|---|---|

2SS-Series
ACTUATOR

| | | | | | |
|--|--|--|--|--|---|
| T1  | T2  | T3  | T4  | P1 ESD Resistant Plastic Toggle  | P2 ESD Resistant Plastic Toggle  |
|--|--|--|--|--|---|

BUSHING
B4


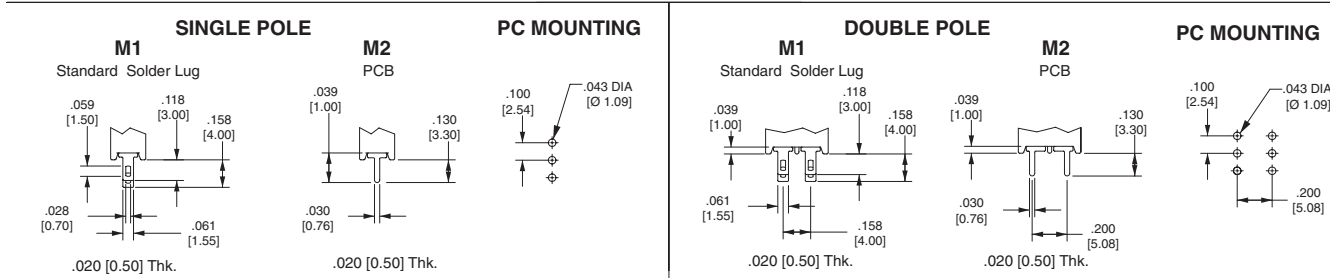
NOTE:

1 Subtract 2.55mm from toggle length for B1 bushing.

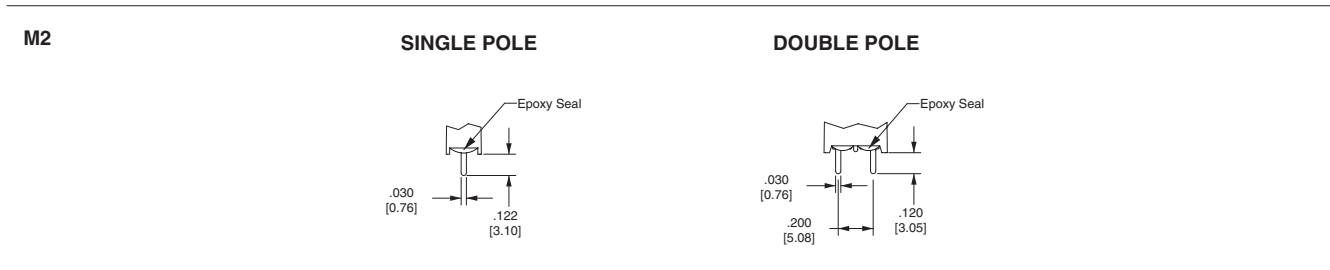
2S-Series Dimensional Specifications: in. [mm]

TERMINATION

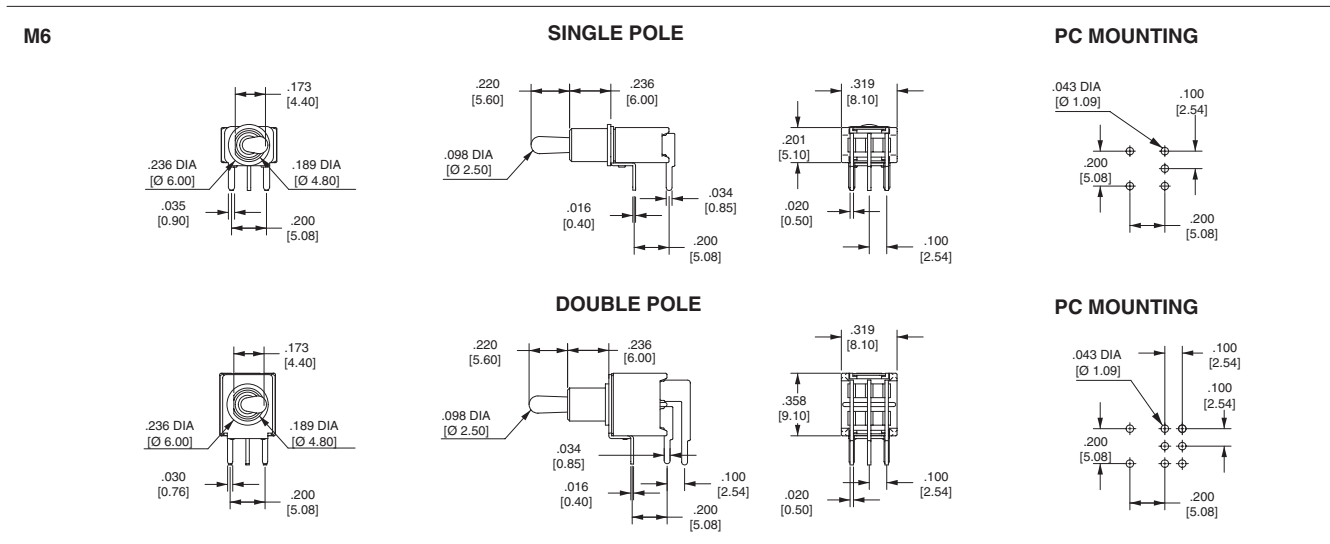
2S1-Series



2SS-Series



2S-Series



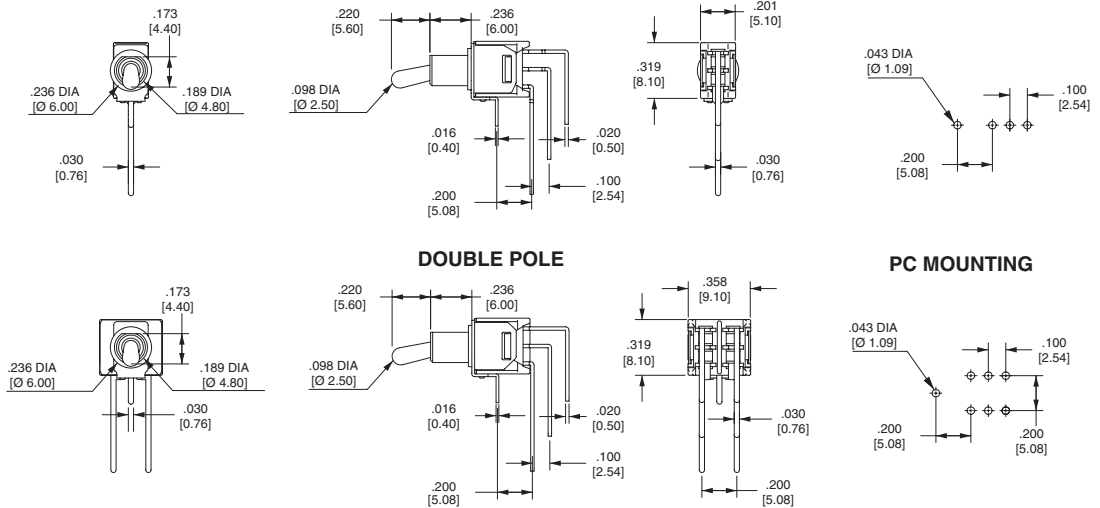
2S-Series Dimensional Specifications: in. [mm]

TERMINATION

M7

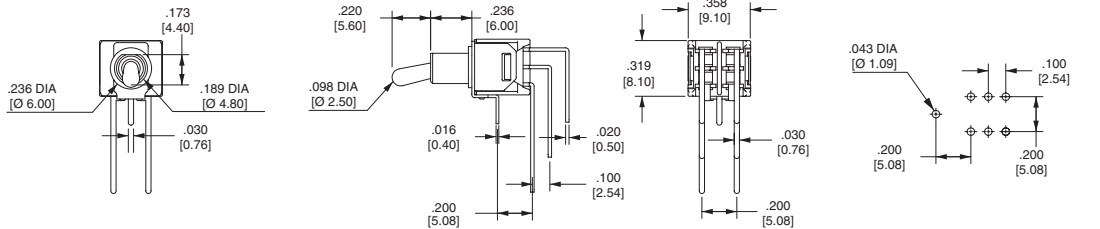
SINGLE POLE

PC MOUNTING



DOUBLE POLE

PC MOUNTING



VS2-VS3

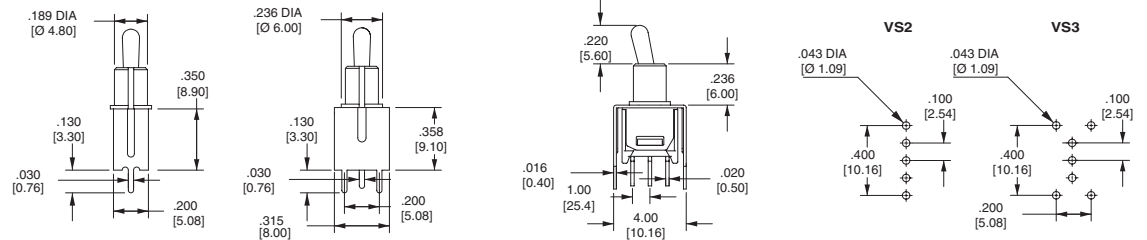
U Bracket Snap-in

VS2

VS3

SINGLE POLE

PC MOUNTING

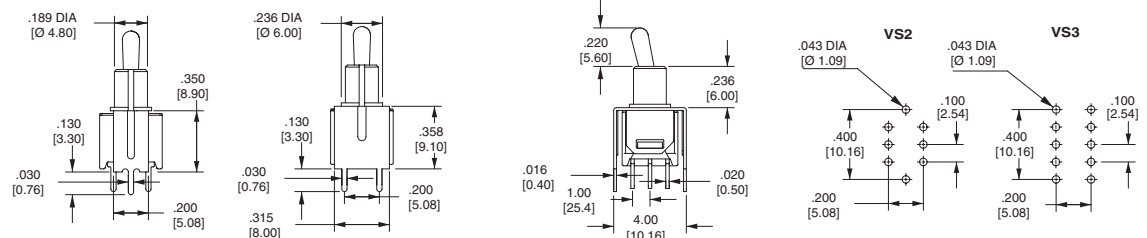


VS2

VS3

DOUBLE POLE

PC MOUNTING

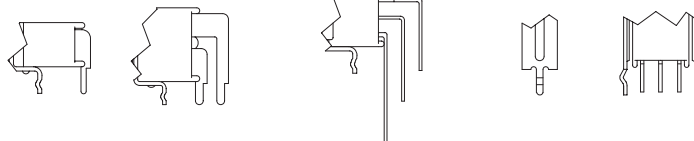


SNAP-IN TERMINATION

M61

M71

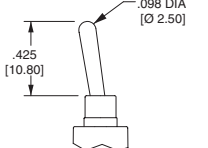
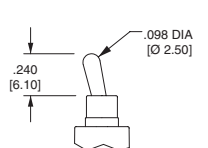
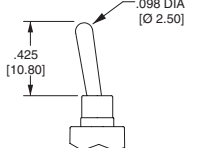
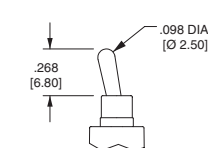
VS21



M61,M71,VS21 have the same P.C. mounting but with snap-in bracket.

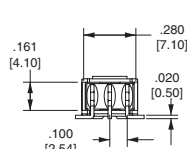
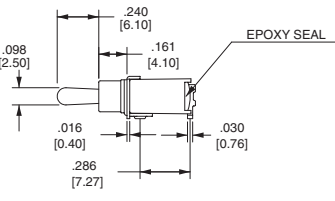
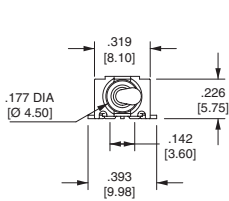
2SM-Series Dimensional Specifications: in. [mm]

ACTUATOR

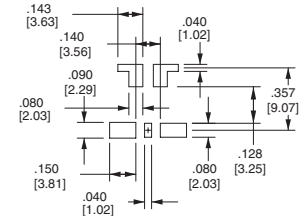
| <p>T1 Round Bat</p>  <p>For S6,M7 Only</p> | <p>T2 Round Bat</p>  | <p>P1 ESD Resistant Plastic Toggle</p>  | <p>P2 ESD Resistant Plastic Toggle</p>  |
|--|--|--|---|
|--|--|--|---|

TERMINATION

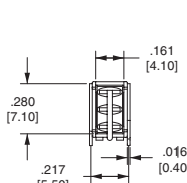
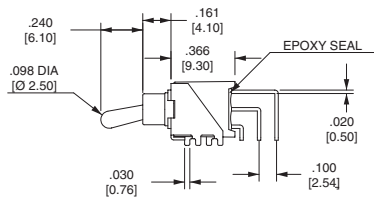
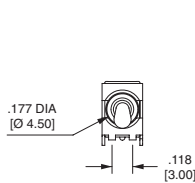
M6 90° Horizontal



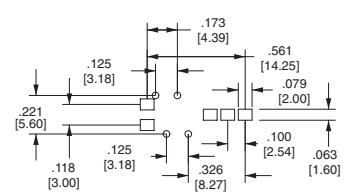
PC MOUNTING



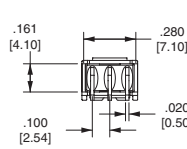
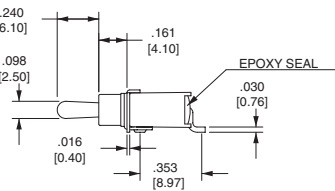
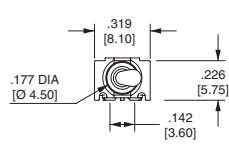
M7 90° Vertical



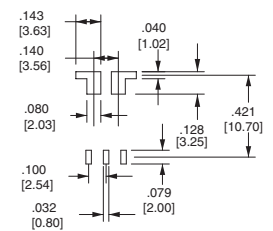
PC MOUNTING



S6 90° Horizontal

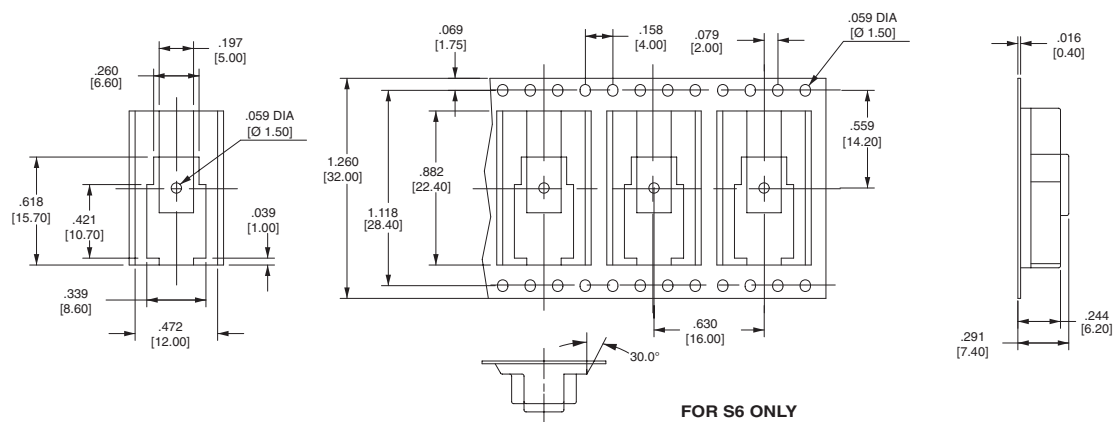
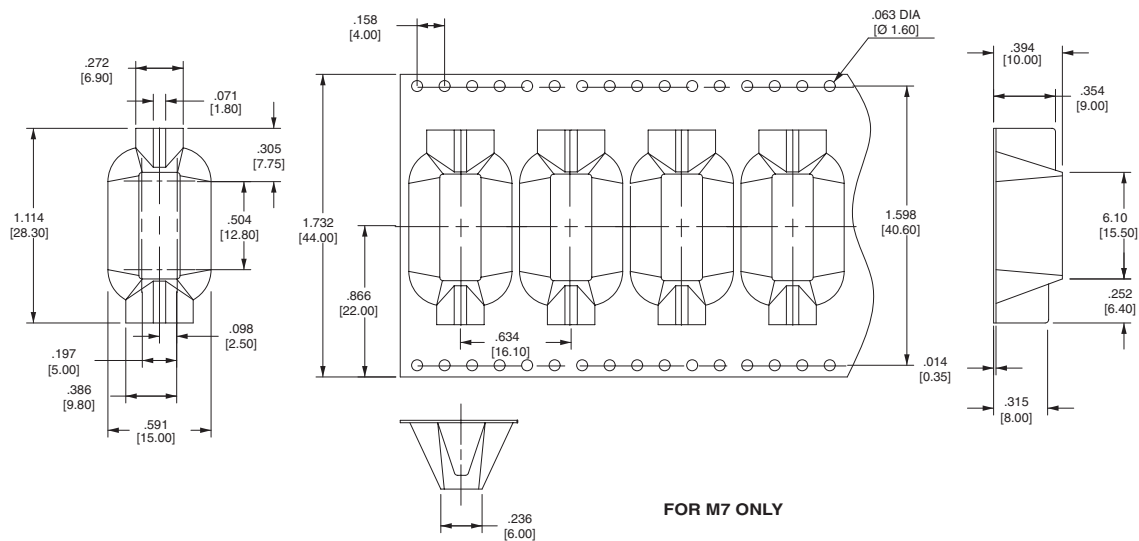
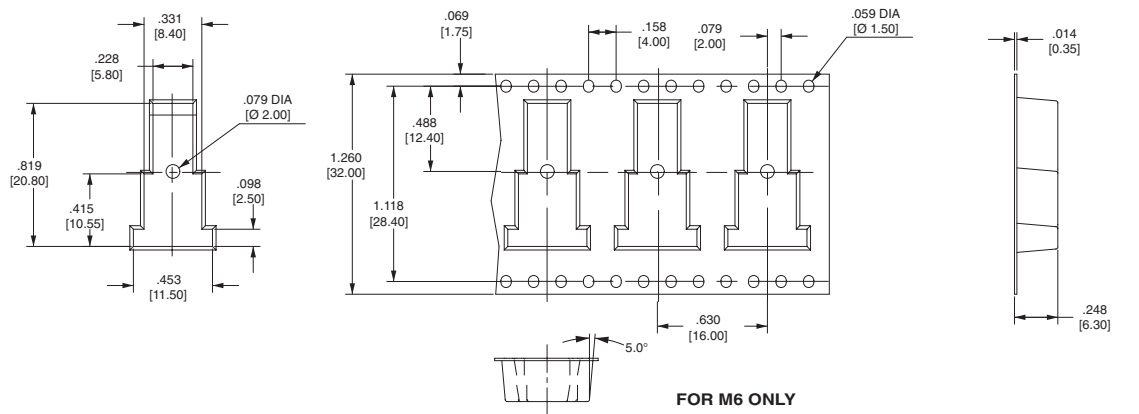


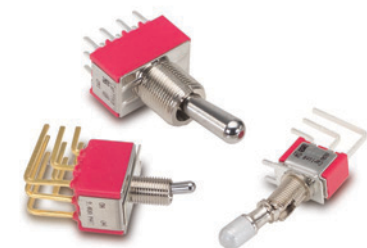
PC MOUNTING



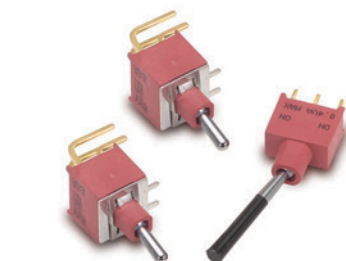
2SM-Series Dimensional Specifications: in. [mm]

REEL TAPING

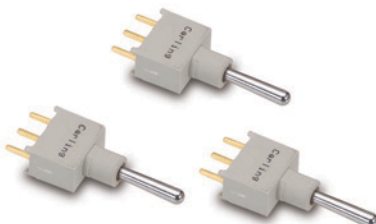




2M1-Series
Miniature Toggle
Switch



2MS-Series
Sealed Nylon
Miniature Toggle
Switch



2M2-Series
Nylon Miniature
Toggle Switch

Specifications

Contact Rating refer to ordering scheme
 Electrical Life 50,000 make & break cycles @ full load
 Contact Resistance. 10 mΩ max. initial @ 2-4 VDC
 100mA for both silver & gold plated contacts.
 Insulation Resistance 1000 MΩ min.
 Dielectric Strength 1500 Volts RMS @ sea level
 Operating Temperature . . . -30°C to +85°C
 Index of Protection **2MS-Series:** IP67
 Solder Heat Resistance. . . MIL-STD-202, Method 210
 Actuator Travel 25°

Materials

Case **2M1-Series:** Diallyl phthalate (DAP) (UL 94V-0)
2MS & 2M2-Series: Glass filled nylon 6/6, flame retardant, heat stabilized (UL 94V-0)
 Toggle. **2M1-Series:** Brass, chrome plated.
2MS & 2M2-Series: Brass, chrome plated, internal o-ring sealed
 Bushing **2M1-Series:** Brass, nickel plated
2MS & 2M2-Series: Glass filled nylon 6/6, flame retardant, heat stabilized (UL 94V-0)
 Housing. Stainless Steel
 Switch Support Brass, tin plated
 Terminal Seal Epoxy

2M1-Series Accessories

To order accessories assembled on a switch, specify the switch number followed by the accessory part number and the word "assembled".

Ex: 2M1-SP1-T1-B1-M1QE-T12ASSEMBLED

To order accessories in bulk, specify the Series, followed by the accessory. Ex.) 2M1-T12.

Optional Toggle Cap

2M1 - **T1** **2**

1
Series

2
Toggle
Cap Size

3
Color

1 SERIES OR SWITCH CATALOG NUMBER
2M1, 2MS or 2M2

2 TOGGLE CAP SIZE

T1 10.6mm

T2 7.6mm

3 CAP COLOR¹

1

white

3

red

6

green

2

black

5

yellow

7

blue

NOTE

1 Black, white & red are standard. Additional colors available. Consult factory.

Optional Dress and Knurled Nuts

2M1 - **HDW3**

1
Series

2
Nut

1 SERIES OR SWITCH CATALOG NUMBER
2M1, 2MS or 2M2

2 NUT

HDW3 dress nut for 1/4" bushing

HDW5 knurled nut for 15/32" bushing (2M1-Series only)

Optional Rubber Hood

2M1 - **E1A**

1
Series

2
Rubber Hood

1 SERIES OR SWITCH CATALOG NUMBER
2M1, 2MS or 2M2

2 RUBBER HOOD

E1A rubber hood sealing (for all bushings except B0).

2M1-Series Ordering Scheme

1 SERIES
2M1 Miniature Toggle Switch

2 POLES

SP single pole - uses terminals 1, 2 & 3.
DP double pole uses terminals 1, 2, 3, 4, 5 & 6.
3P three pole uses terminals 1, 2, 3, 4, 5, 6, 7, 8 & 9.
4P four pole uses terminals 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 & 11.

3 CIRCUIT

() - momentary

Switching Position:

| | 2-3, 5-6, 8-9, 11-12 | OPEN | 2-1, 5-4, 8-7, 11-10 |
|----------------|----------------------|------|----------------------|
| 1 | ON | NONE | ON |
| 2 | ON | NONE | (ON) |
| 3 | ON | OFF | ON |
| 4 | (ON) | OFF | (ON) |
| 5 | ON | OFF | (ON) |
| 6 ¹ | ON | ON | ON |

NOTE:

1 ON-ON-ON available with DP and 4P switches only.

4 ACTUATOR

| | |
|--|---|
| T1 round bat | T8 extra-large bat (with B0 bushing) |
| T2 round short bat | T9 black plastic |
| T3 paddle | T0 rectangular |
| T4 medium paddle | TA locking lever |
| T5 long paddle | TI locking lever |
| T6 flat (with B1, B2 or B5 bushing) | TL locking lever |
| T7 large bat (with B0 bushing) | |

5 BUSHING

| | |
|-----------------------|--|
| B1 | Threaded Standard, keyway |
| B2 | Non-Threaded Standard, keyway |
| B3 | Threaded Short, keyway |
| B4 | Non-Threaded Short, keyway |
| B5 | High Torque, 7.5mm, flat |
| B6 | High Torque, 8.0mm, keyway |
| B7 | Long threaded |
| B8² | Metric |
| B9 | Splashproof |
| B0 | 15/32" Threaded (Standard for T7 and T8 actuator styles) |

6 TERMINATION

| | |
|-------------|--|
| M1 | Solder Lug |
| M2 | PCB |
| M3 | Quick Connect |
| M5-1 | Wire Wrap .750 [19.05] |
| M5-2 | Wire Wrap [24.48] |
| M5-3 | Wire Wrap [10.80] |
| M5-4 | Wire Wrap [26.97] |
| M6 | PC Mount, 90° horizontal |
| M7 | PC Mount, 90° vertical |
| VS2 | PC Mount, U bracket, .620 mounting x .460 high |
| VS3 | PC Mount, U bracket, .620 mounting x .630 high |
| VS4 | PC Mount, U bracket, .750 mounting x .460 high |
| VS5 | PC Mount, U bracket, .750 mounting x .630 high |
| VS21 | Snap-In, U bracket |

7 CONTACT

| | Material | Terminal Plating | Rating | Approvals |
|----------|---------------------|-------------------------------|--------------------------------------|-----------|
| G | silver ¹ | gold over silver ² | 5A @ 125VAC or 28VDC, 2A @ 250VAC | UL CSA |
| K | gold ² | tin-lead ⁴ | 0.4VA max. @ 20V max (AC/DC) | — |
| P | silver ¹ | tin-lead ⁴ | 5A @ 125VAC or 28VDC, 2A @ 250VAC | UL CSA |
| Q | silver ¹ | silver ¹ | 5A @ 125VAC or 28VDC, 2A @ 250VAC | UL CSA |
| R | gold ² | gold ² | 0.4VA max. @ 20V max (AC/DC) | — |

NOTE:

Tin-lead option available with PC type terminations only.

1 Moveable contact & terminals: copper alloy, silver plate

2 Moveable contact & terminals: copper alloy with gold plate over nickel plate

3 Terminals: silver plate with outer layer in gold plating

4 Outer terminals: copper alloy with tin-lead over nickel plate

8 EPOXY SEAL
E epoxy seal

NOTES:

All switches come with standard nut, washer and locking ring shipped bulk.

T7 and T8 actuator styles come with a larger nut, washer and locking ring, to accommodate the switch.

Additional nut styles available. See page 26.

Custom colors available, consult factory.

Rubber seal available. Order part number E1A separately.

2MS & 2M2-Series Ordering Scheme

1 SERIES

2MS Sealed Nylon Miniature Toggle Switch
2M2 Nylon Miniature Toggle Switch

2 POLES

WSP single pole - uses terminals 1, 2 & 3.
WDP double pole uses terminals 1,2, 3, 4, 5 & 6.
W3P three pole uses terminals 1, 2, 3, 4, 5, 6, 7, 8 & 9.

3 CIRCUIT

() - momentary

| | Switching Position: | | |
|---|----------------------------|------|---------------|
| | 2-3, 5-6, 8-9 | OPEN | 2-1, 5-4, 8-7 |
| 1 | ON | NONE | ON |
| 2 | ON | NONE | (ON) |
| 3 | ON | OFF | ON |
| 4 | (ON) | OFF | (ON) |
| 5 | ON | OFF | (ON) |

4 ACTUATOR STYLE

T1 round bat
T2 round short bat
T9 long black plastic

5 BUSHING

B1 Threaded Standard, keyway for ST, PC termination
B4 Non-Threaded Short, keyway for H9, V9 termination

6 TERMINATION

M1 Solder Lug
M2 PCB
M3 Quick Connect
M6 PC Mount, 90° horizontal
M7 PC Mount, 90° vertical
VS2 PC Mount, U bracket, .620 mounting x .460 high
VS3 PC Mount, U bracket, .620 mounting x .630 high
VS4 PC Mount, U bracket, .750 mounting x .460 high
VS5 PC Mount, U bracket, .750 mounting x .630 high
VS21 Snap-In, U bracket
VS41 Snap-In, U bracket

7 CONTACT

| | Material | Terminal Plating | Rating | 2MS-Series Approvals | |
|----------|---|-------------------------------|-----------------------------------|----------------------|------|
| G | silver ¹ | gold over silver ³ | 5A @ 125VAC or 28VDC, 2A @ 250VAC | UL CUL | IP67 |
| K | gold ² | tin-lead ⁴ | 0.4VA max. @20V max (AC/DC) | — | — |
| P | silver ¹ | tin-lead ⁴ | 5A @ 125VAC or 28VDC, 2A @ 250VAC | UL CUL | IP67 |
| R | gold ² | gold ² | 0.4VA max. @20V max (AC/DC) | — | — |
| 1 | Moveable contact & terminals: copper alloy, silver plated | | | | |
| 2 | Moveable contact & terminals: copper alloy with gold plate over nickel plated | | | | |
| 3 | Terminals: silver plated with outer layer in gold plating | | | | |
| 4 | Outer terminals: copper alloy with tin-lead over nickel plated | | | | |

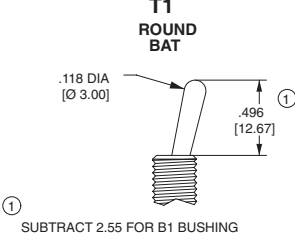
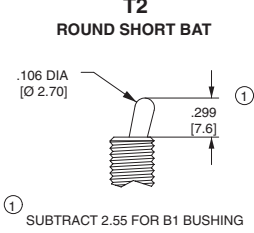
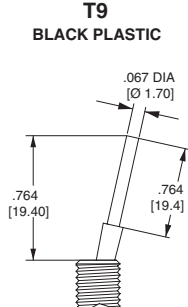
8 EPOXY SEAL

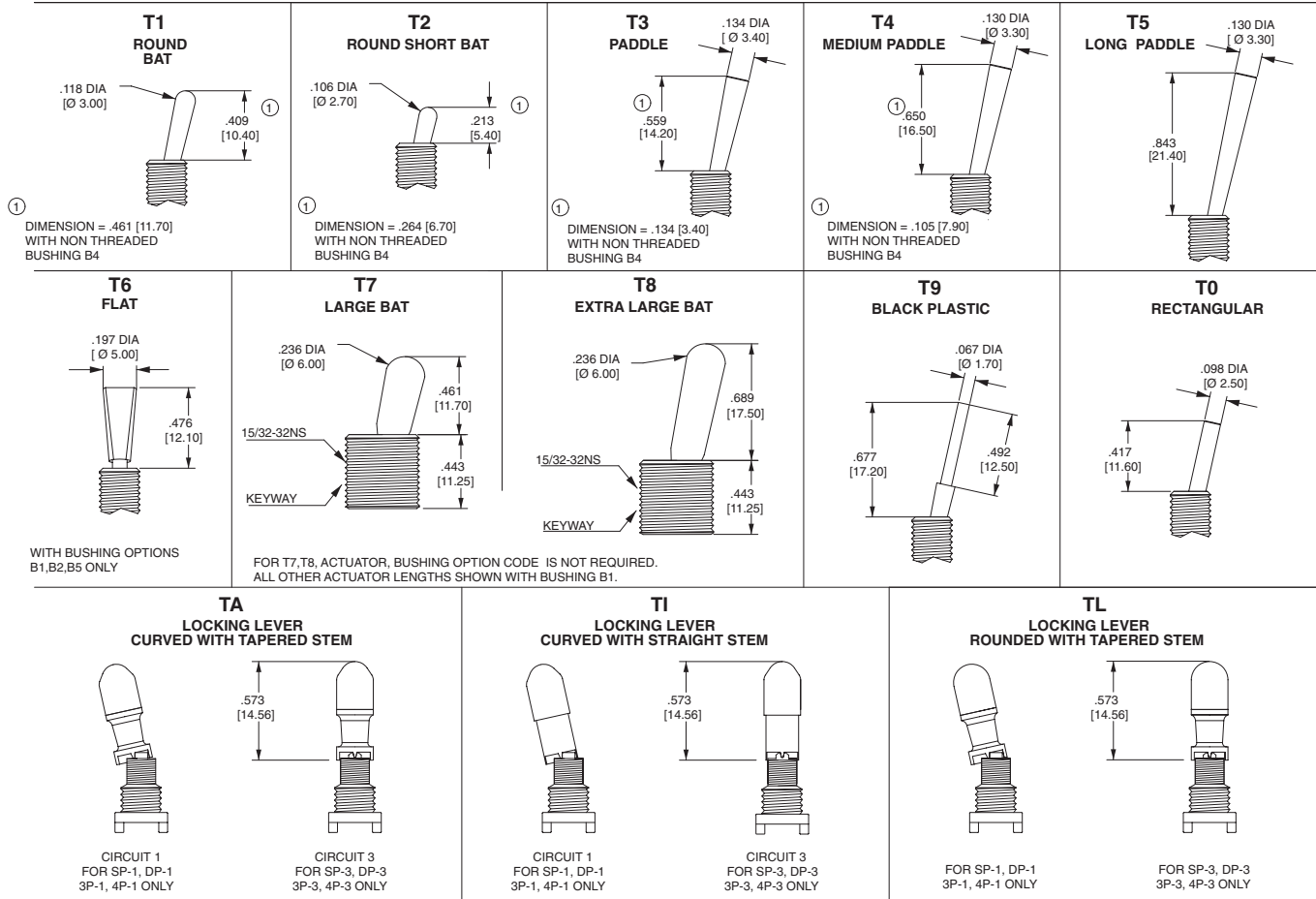
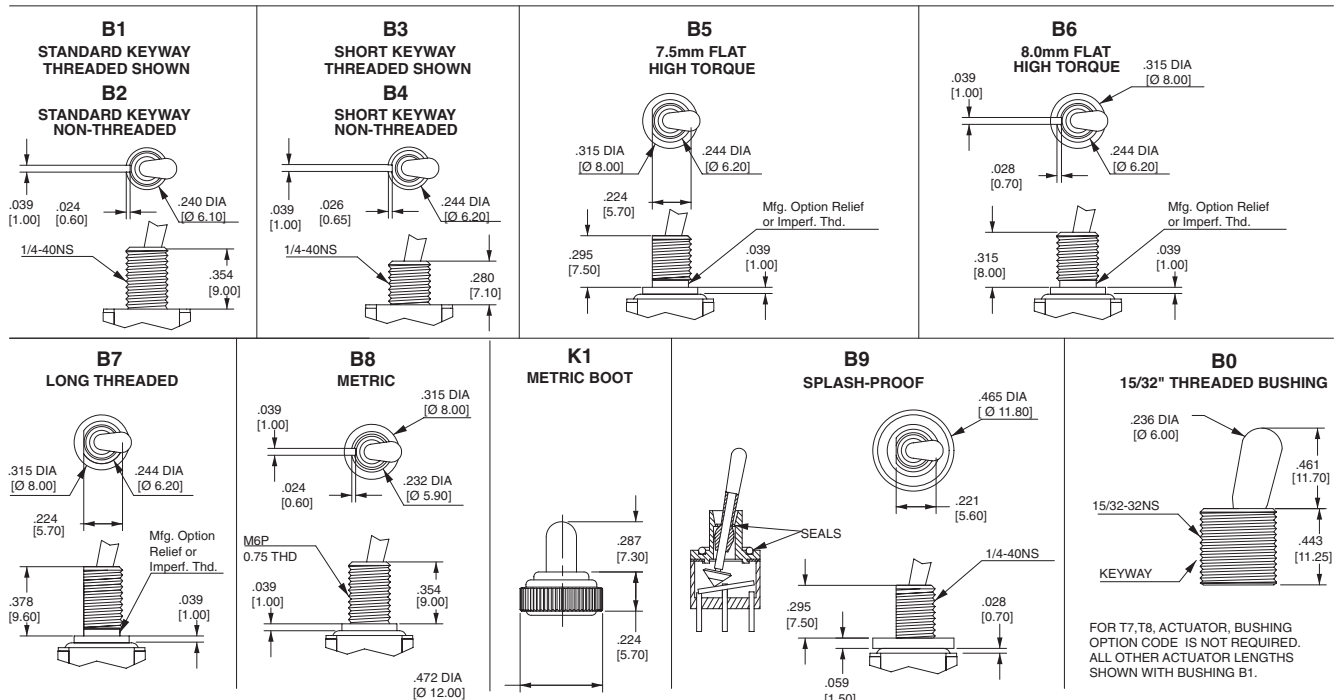
E epoxy seal

NOTE:

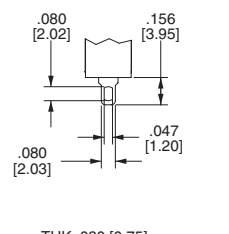
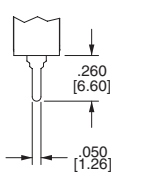
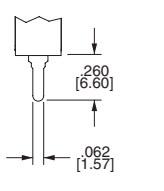
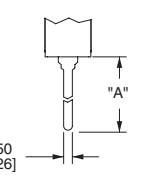
All switches come with standard nut, washer and locking ring. T7 and T8 actuator styles come with a larger nut, washer and locking ring, to accommodate the switch.

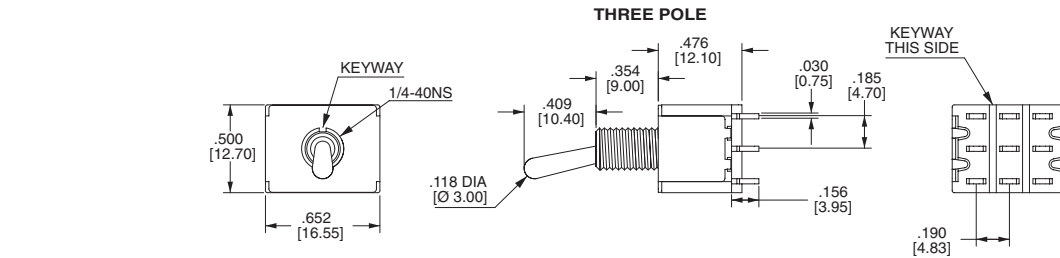
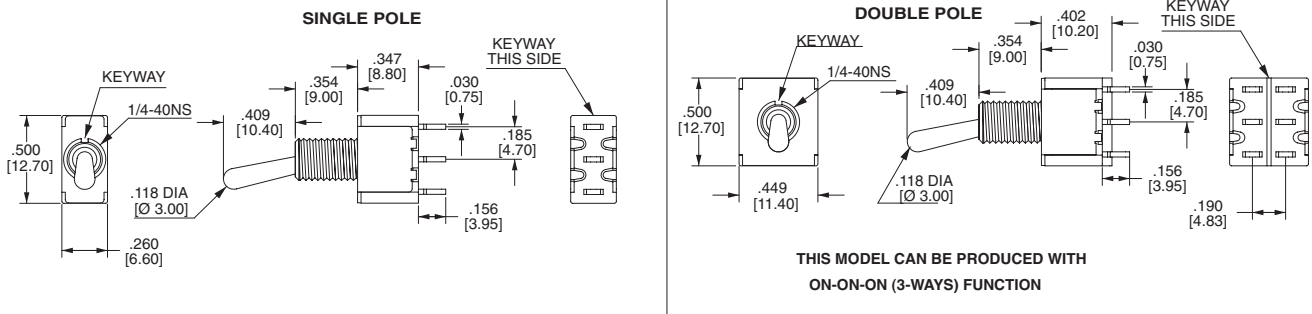
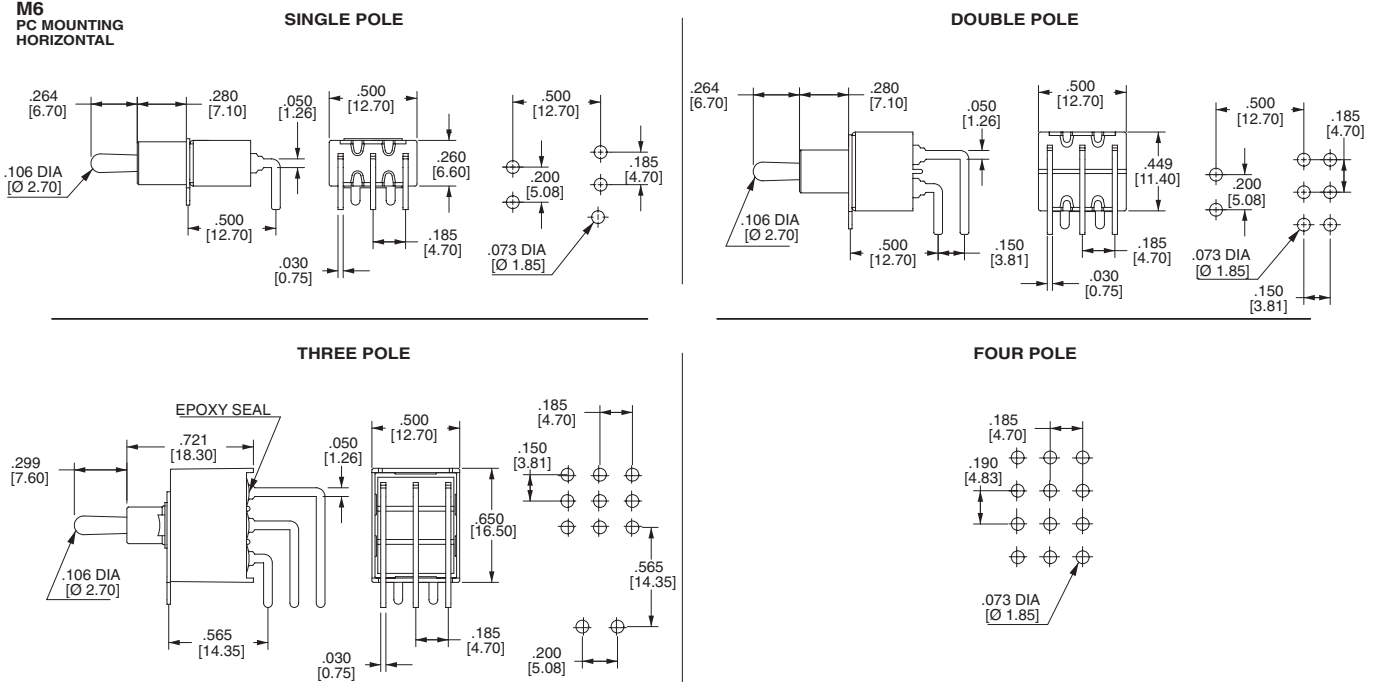
2M-Series Dimensional Specifications: in. [mm]
2MS & 2M2-Series
ACTUATOR

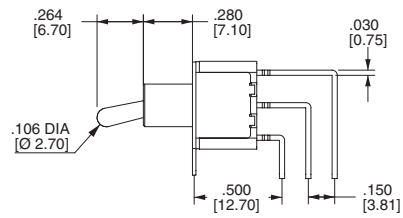
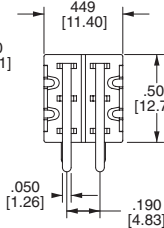
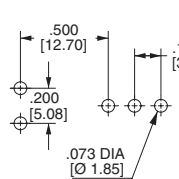
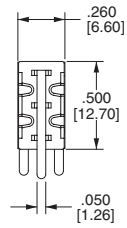
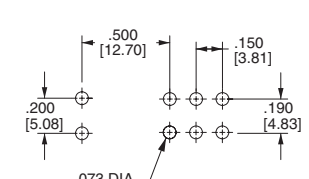
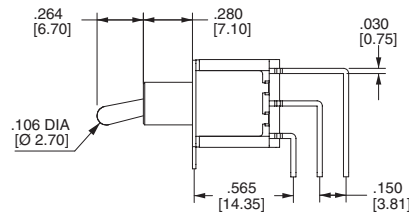
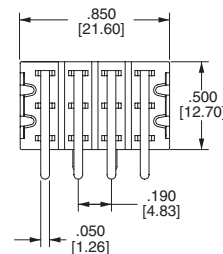
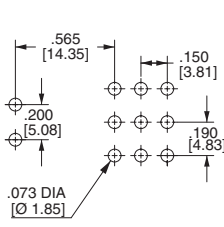
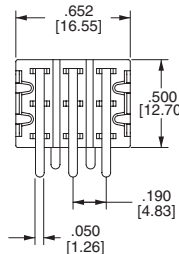
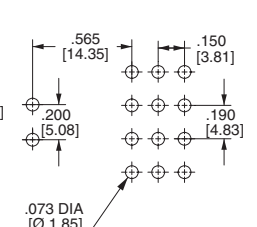
| T1 ROUND BAT | T2 ROUND SHORT BAT | T9 BLACK PLASTIC |
|---|---|---|
|  <p>① SUBTRACT 2.55 FOR B1 BUSHING</p> |  <p>① SUBTRACT 2.55 FOR B1 BUSHING</p> |  |

2M-Series Dimensional Specifications: in. [mm]
2M1-Series
ACTUATOR

BUSHING


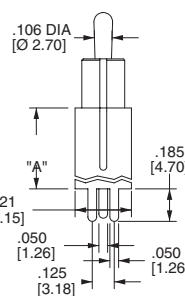
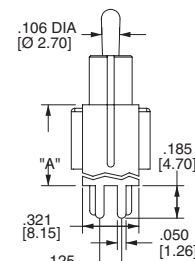
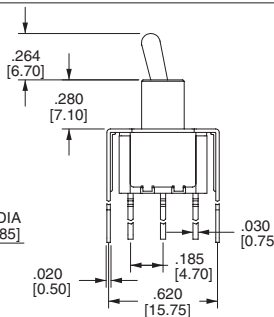
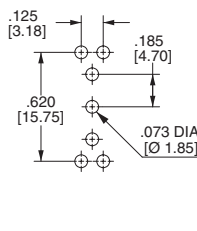
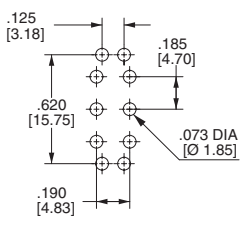
2M-Series Dimensional Specifications: in. [mm]
TERMINATION

| <p>M1 SOLDER LUG</p>  <p>THK .030 [0.75]</p> | <p>M2 PCB</p>  <p>THK .030 [0.75]</p> | <p>M3 QUICK CONNECT</p>  <p>THK .030 [0.75]</p> | <p>M5 WIRE WRAP</p>  <p>THK .030 [0.75]</p> | <table><tr><th>OPTION CODE</th><th>DIM. "A"</th></tr><tr><td>M5-1</td><td>.750 [19.05]</td></tr><tr><td>M5-2</td><td>.964 [24.48]</td></tr><tr><td>M5-3</td><td>.425 [10.80]</td></tr><tr><td>M5-4</td><td>1.062 [26.97]</td></tr></table> | OPTION CODE | DIM. "A" | M5-1 | .750 [19.05] | M5-2 | .964 [24.48] | M5-3 | .425 [10.80] | M5-4 | 1.062 [26.97] |
|--|---|---|--|--|-------------|----------|------|--------------|------|--------------|------|--------------|------|---------------|
| OPTION CODE | DIM. "A" | | | | | | | | | | | | | |
| M5-1 | .750 [19.05] | | | | | | | | | | | | | |
| M5-2 | .964 [24.48] | | | | | | | | | | | | | |
| M5-3 | .425 [10.80] | | | | | | | | | | | | | |
| M5-4 | 1.062 [26.97] | | | | | | | | | | | | | |

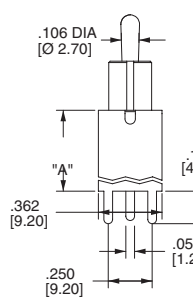
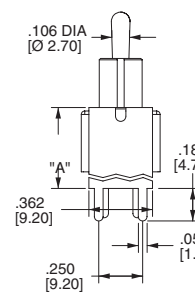
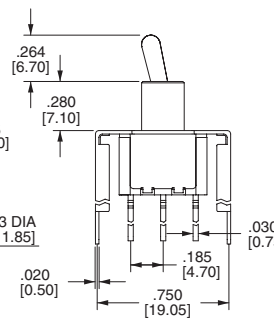
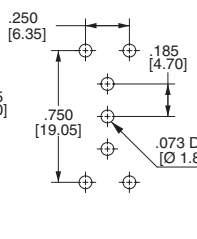
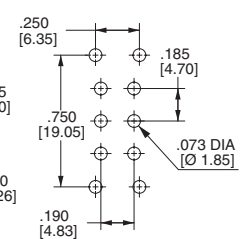

**M6
PC MOUNTING
HORIZONTAL**


2M-Series Dimensional Specifications: in. [mm]
TERMINATION
**M7
SINGLE POLE & DOUBLE POLE
PC MOUNT VERTICAL**

SINGLE POLE

DOUBLE POLE

PC MOUNT VERTICAL

THREE POLE

FOUR POLE

**VS2 & VS3
"U" BRACKET
PC MOUNT**

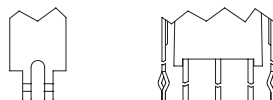
| OPTION CODE | DIM. "A" |
|-------------|--------------|
| VS2 | .460 [11.68] |
| VS3 | .630 [16.00] |

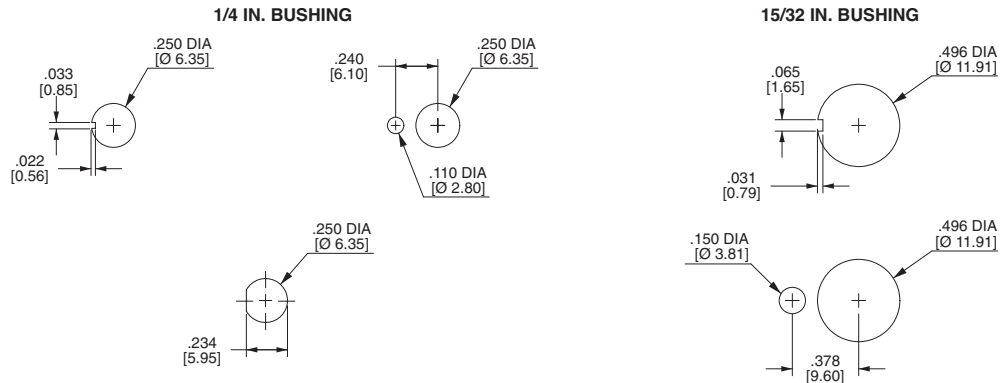
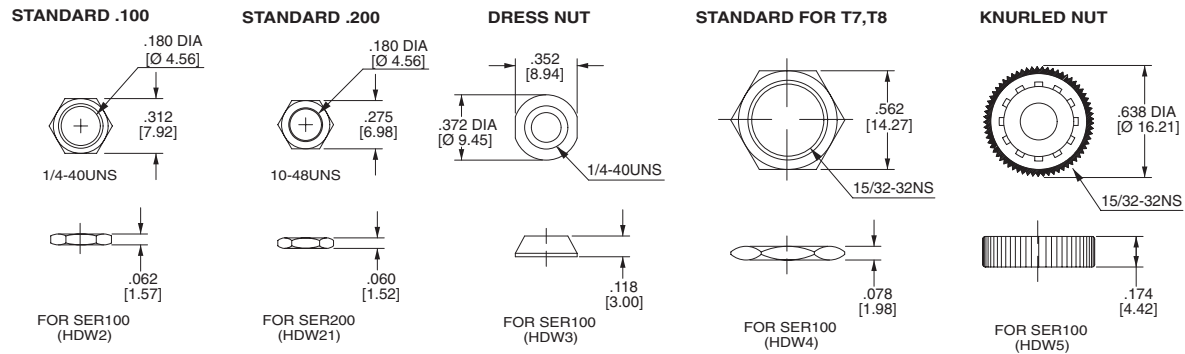
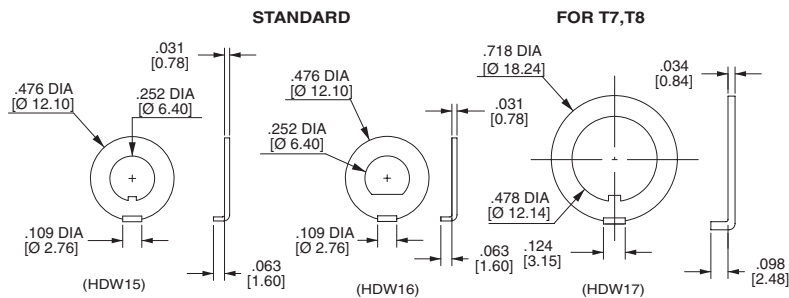
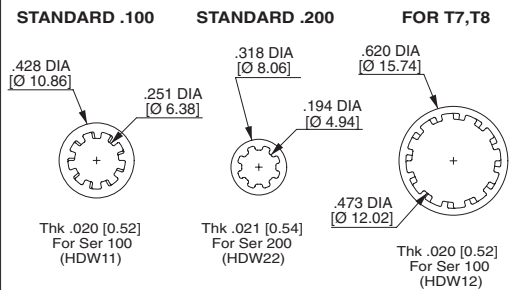
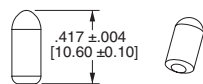
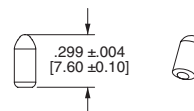

SINGLE POLE

DOUBLE POLE

**VS4 & VS5
"U" BRACKET
PC MOUNT**

| OPTION CODE | DIM. "A" |
|-------------|--------------|
| VS4 | .460 [11.68] |
| VS5 | .630 [16.00] |


SINGLE POLE

DOUBLE POLE

SNAP-IN TERMINATION OPTIONS
VS21

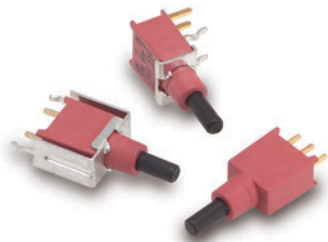
SNAP-IN, WITH BRACKET
(Same Mounting Pattern as VS2)



2M-Series Dimensional Specifications: in. [mm]
PANEL MOUNTING

NUT

LOCKING RING

LOCK WASHER

TOGGLE CAPS
T1

T2




3S1-Series
Sub-Miniature
Pushbutton Switch



3SS-Series
Sealed Sub-Miniature
Pushbutton Switch



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

Specifications

| | |
|-------------------------------|---|
| Contact Rating | refer to ordering scheme |
| Electrical Life | 50,000 make & break cycles @ full load |
| Contact Resistance. | 20 mΩ max. initial @ 2-4 VDC 100mA for both silver & gold plated contacts. |
| Insulation Resistance . . . | 1000 MΩ min. |
| Dielectric Strength | 1500 Volts RMS @ sea level |
| Operating Temperature . . . | -30°C to +85°C |
| Index of Protection | 3SS & 3SM-Series: IP67 |
| Solder Heat Resistance. . . | MIL-STD-202, Method 210 |
| Actuator Travel | .25° |

Materials

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

3S1-Series Ordering Scheme

| | | | | | | | | | | |
|------------|---|-----------|----------|---|-----------|---|-------------|---|----------|----------|
| 3S1 | - | SP | 9 | - | B6 | - | M7 | - | R | E |
| 1 | | 2 | 3 | | 4 | | 5 | | 6 | 7 |
| Series | | Poles | Circuit | | Bushing | | Termination | | Contact | Seal |

1 SERIES

3S1 Sub-Miniature Pushbutton Switch

2 POLES

SP single pole

3 CIRCUIT

() - momentary

8 ON (ON)
9 OFF (ON)

4 BUSHING

B5 10-48 Threaded
B6 Unthreaded "D"
B7 Unthreaded
B8 1/4-40 Threaded "D"
B9 Flush Bushing
B0 1/4" Unthreaded "D"

5 TERMINATION

M1 Solder Lug
M2 PCB
M6 PC Mount, 90° horizontal
M61 Snap-In, 90° horizontal
M7 PC Mount, 90° vertical
M71 Snap-In, 90° vertical
VS2 PC Mount, U bracket, .620 mounting x .460 high
VS21 Snap-In, U bracket

6 CONTACT

| Material | Terminal Plating | Rating |
|------------------------------|-------------------------------|-----------------------------|
| G silver ¹ | gold over silver ³ | 1A@125VAC or 28VDC |
| K gold ² | tin-lead ⁴ | 0.4VA max. @20V max (AC/DC) |
| P silver ¹ | tin-lead ⁴ | 1A@125VAC or 28VDC |
| Q silver ¹ | silver ¹ | 1A@125VAC or 28VDC |
| R gold ² | gold ² | 0.4VA max. @20V max (AC/DC) |

NOTE:

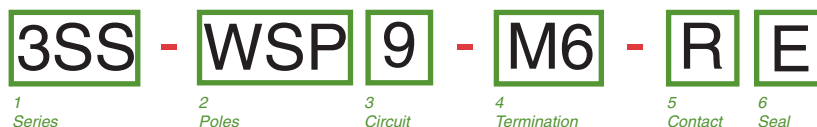
Tin-lead option available with PC type terminations only.

- 1 Moveable contact & terminals: copper alloy, silver plate
- 2 Moveable contact & terminals: copper alloy with gold plate over nickel plate
- 3 Terminals: silver plated with outer layer in gold plating
- 4 Outer terminals: copper alloy with tin-lead over nickel plate

7 EPOXY SEAL

E epoxy seal

3SS-Series Ordering Scheme



| | | |
|--|--------------------------|------|
| 1 SERIES 3SS Sealed Sub-Miniature Pushbutton Switch | | |
| 2 POLES WSP single pole WDP double pole | | |
| 3 CIRCUIT () - momentary | | |
| 8 | ON | (ON) |
| 9 | OFF | (ON) |
| 4 TERMINATION | | |
| M2 | PCB | |
| M6 | PC Mount, 90° horizontal | |
| M61 | Snap-In, 90° horizontal | |
| M7 | PC Mount, 90° vertical | |
| M71 | Snap-In, 90° vertical | |
| VS2 | PC Mount, U bracket | |
| VS21 | Snap-In, U bracket | |

| 5 CONTACT | | | |
|---|--|-------------------------------|----------------------------------|
| | <i>Material</i> | <i>Terminal Plating</i> | <i>Rating</i> |
| G | silver ¹ | gold over silver ³ | 1A@125VAC or 28VDC IP67 |
| K | gold ² | tin-lead ⁴ | 0.4VA max. @20V max (AC/DC) IP67 |
| P | silver ¹ | tin-lead ⁴ | 1A@125VAC or 28VDC IP67 |
| R | gold ² | gold ² | 0.4VA max. @20V max (AC/DC) IP67 |
| NOTE: | | | |
| Tin-lead option available with PC type terminations only. | | | |
| 1 | Moveable contact & terminals: copper alloy, silver plate | | |
| 2 | Moveable contact & terminals: copper alloy with gold plate over nickel plate | | |
| 3 | Terminals: silver plate with outer layer in gold plating | | |
| 4 | Outer terminals: copper alloy with tin-lead over nickel plate | | |
| | | | |
| 6 EPOXY SEAL | | | |
| E | epoxy seal | | |

3SM-Series Ordering Scheme



| | | |
|--|-------------------------------|------|
| 1 SERIES 3SM Sealed Surface Mount Pushbutton Switch | | |
| 2 POLES SP single pole DP double pole | | |
| 3 CIRCUIT () - momentary | | |
| 8 | ON | (ON) |
| 9 | OFF | (ON) |
| 4 TERMINATION | | |
| M6 | Surface Mount, 90° flat | |
| M7 | Surface Mount, 90° vertical | |
| S6 | Surface Mount, 90° horizontal | |

| 5 CONTACT | | | |
|---|--|-------------------------------|----------------------------------|
| | Material | Terminal Plating | Rating |
| G | silver ¹ | gold over silver ³ | 1A@125VAC or 28VDC IP67 |
| K | gold ² | tin-lead plated ⁴ | 0.4VA max. @20V max (AC/DC) IP67 |
| P | silver ¹ | tin-lead plated ⁴ | 1A@125VAC or 28VDC IP67 |
| R | gold ² | gold plated ² | 0.4VA max. @20V max (AC/DC) IP67 |
| NOTE: | | | |
| Tin-lead option available with PC type terminations only. | | | |
| 1 | Moveable contact & terminals: copper alloy, silver plate | | |
| 2 | Moveable contact & terminals: copper alloy with gold plate over nickel plate | | |
| 3 | Terminals: silver plate with outer layer in gold plating | | |
| 4 | Outer terminals: copper alloy with tin-lead over nickel plate | | |

| 6 EPOXY SEAL | |
|--------------|------------|
| E | epoxy seal |

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

3S-Series Optional Cap

To order accessories assembled on a switch, specify the switch number followed by the accessory part number and the word "assembled".

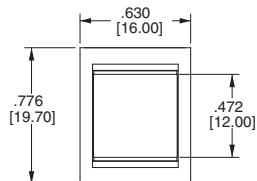
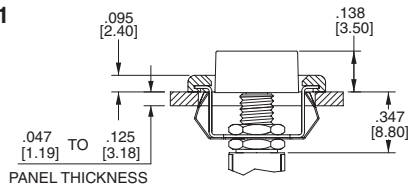
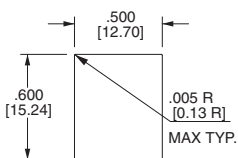
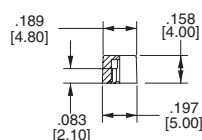
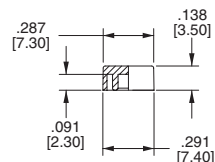
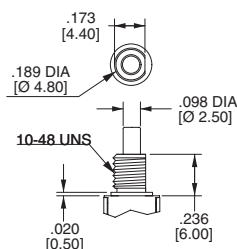
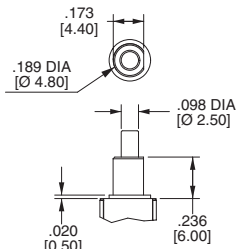
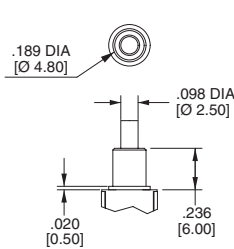
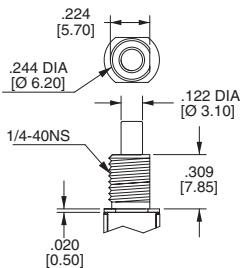
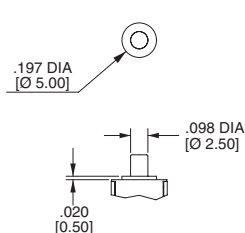
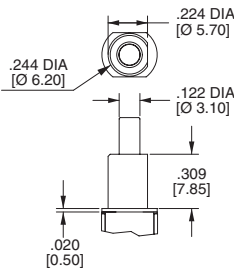
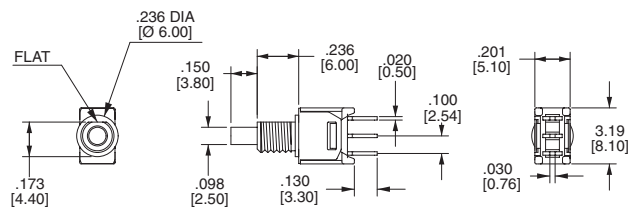
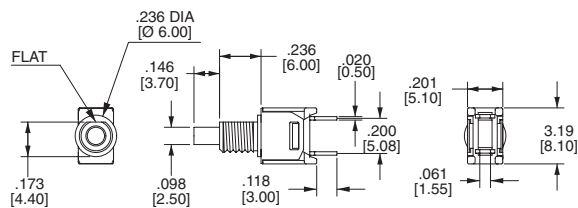
Ex: 3S1-SP9-B6-M7-RE-C23ASSEMBLED

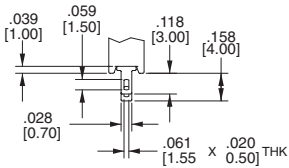
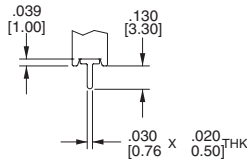
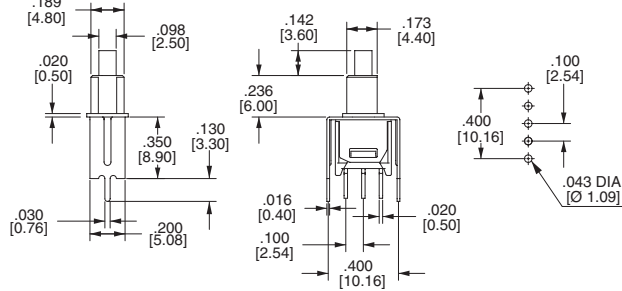
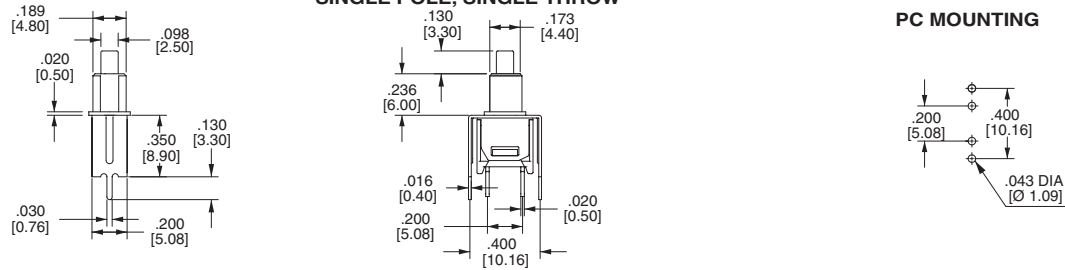
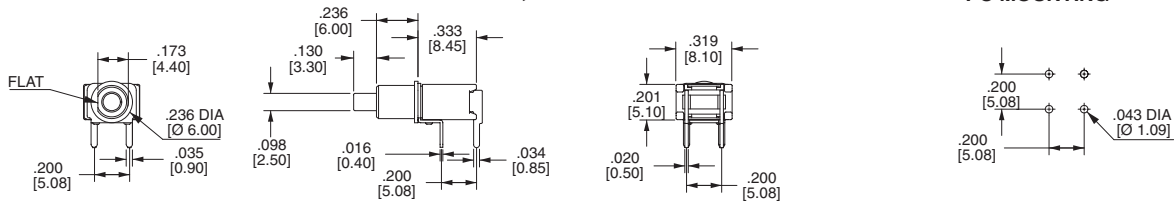
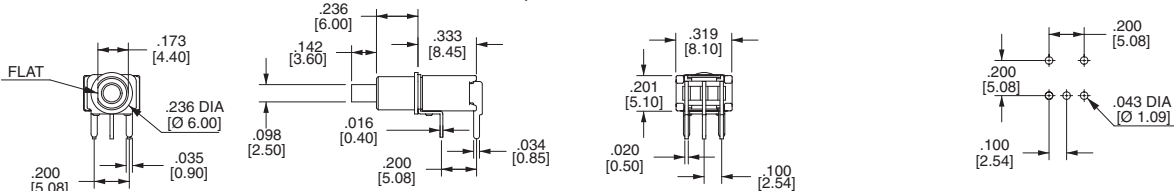
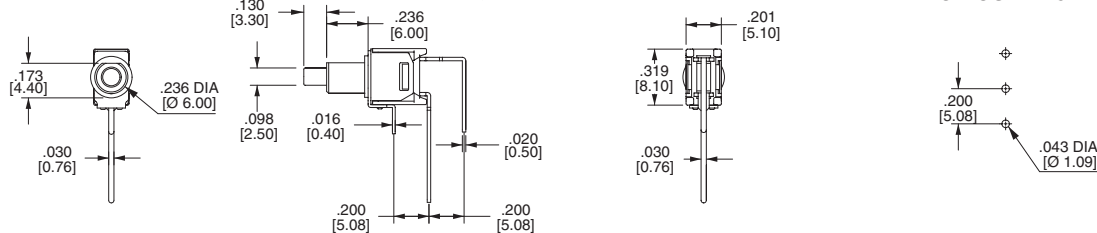
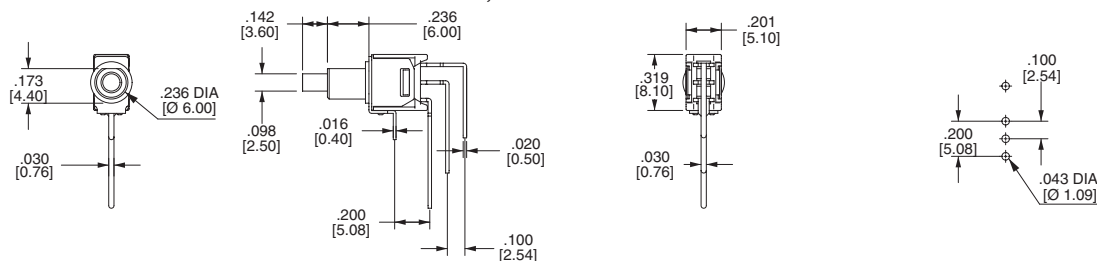
To order accessories in bulk, specify the Series, followed by the accessory. Ex.) 3S1-C13



| | |
|--|--------|
| 1 SERIES OR SWITCH CATALOG NUMBER 3S1, 3SS or 3SM | |
| 2 CAP SIZE | |
| C1 | 10.6mm |
| C2 | 7.6mm |

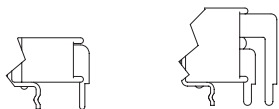
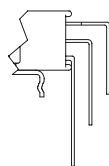
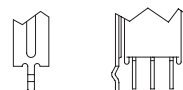
| | |
|---|--------|
| 3 CAP COLOR¹ | |
| 1 | white |
| 2 | black |
| 3 | red |
| 4 | orange |
| 5 | yellow |
| 6 | green |
| 7 | blue |
| 1 Black, white & red standard. Other colors available. Consult factory. | |

3S1-Series Dimensional Specifications: in. [mm]
ACTUATOR
OP1

PANEL MOUNTING

CAP
C1

C2

BUSHING
B5

B6

B7

B8

B9

B0

TERMINATION
SP8
SINGLE POLE DOUBLE THROW

SP9
SINGLE POLE SINGLE THROW


3S1-Series Dimensional Specifications: in. [mm]
TERMINATION
M1

M2

VS2
SINGLE POLE DOUBLE THROW
PC MOUNTING

VS2
SINGLE POLE, SINGLE THROW
PC MOUNTING

M6
SINGLE POLE, SINGLE THROW
PC MOUNTING

SINGLE POLE, DOUBLE THROW
PC MOUNTING

M7
SINGLE POLE, SINGLE THROW
PC MOUNTING

SINGLE POLE, DOUBLE THROW
PC MOUNTING


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

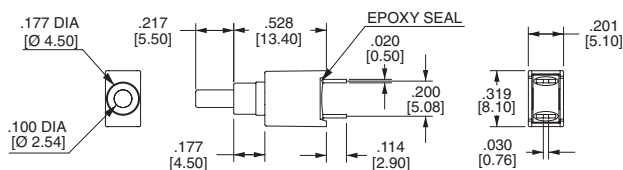
SNAP-IN TERMINATION

M61

M71

VS21


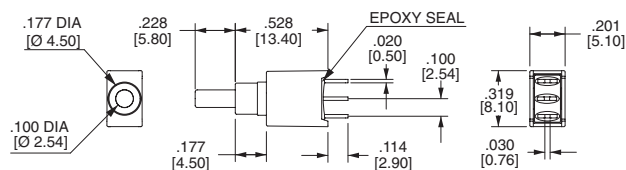
M61, M71, VS21 have the same P.C. mounting but with snap-in bracket.

TERMINATION

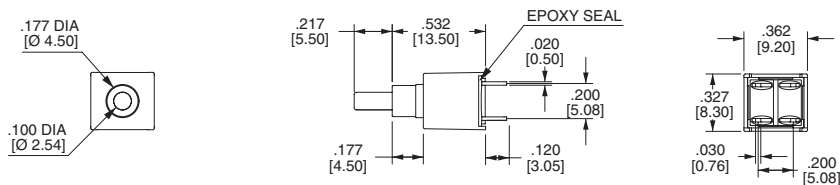
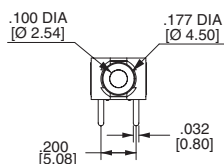
SINGLE POLE, SINGLE THROW



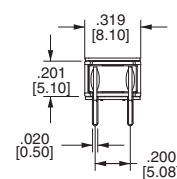
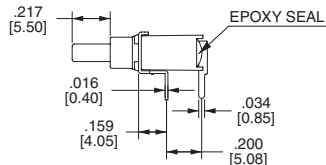
SINGLE POLE, DOUBLE THROW



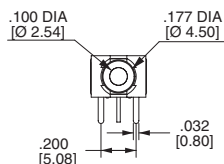
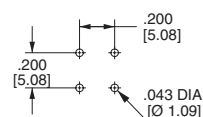
DOUBLE POLE, SINGLE THROW


M6


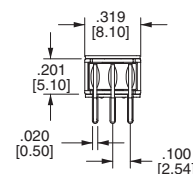
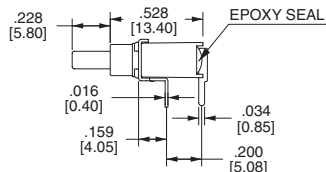
SINGLE POLE, SINGLE THROW



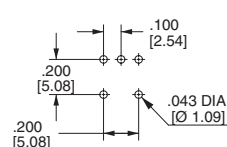
PC MOUNTING



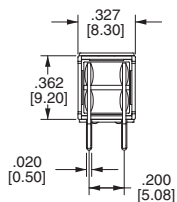
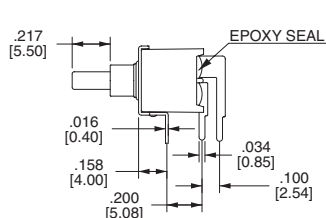
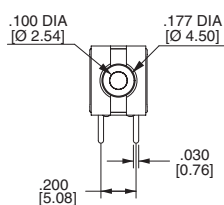
SINGLE POLE, DOUBLE THROW



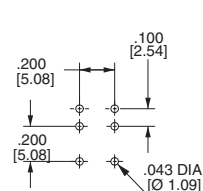
PC MOUNTING

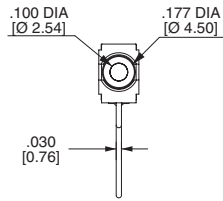
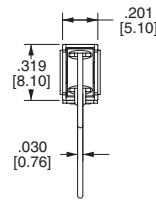
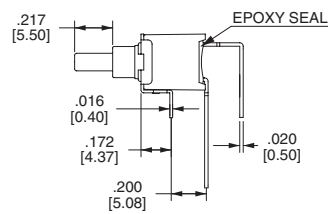
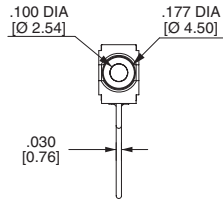
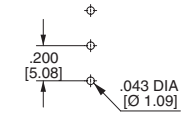
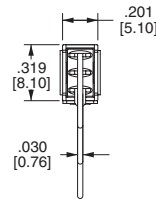
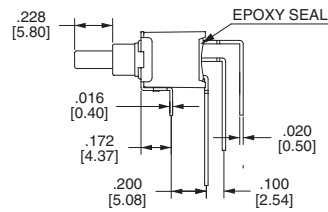
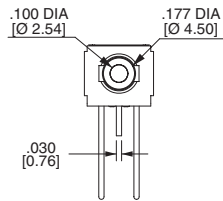
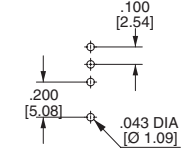
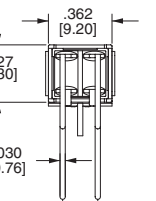
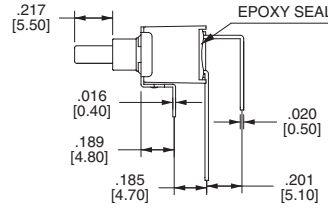
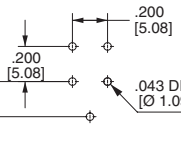
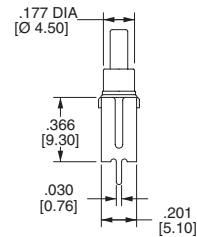
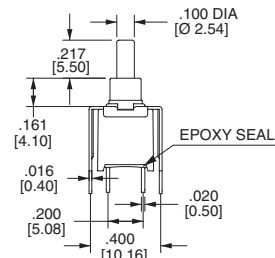
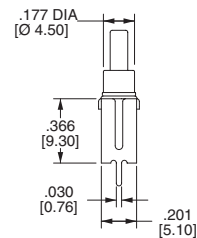
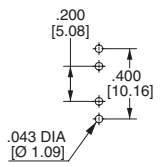
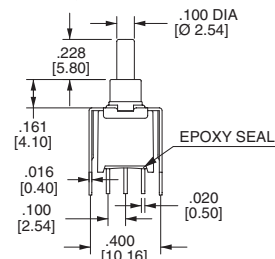
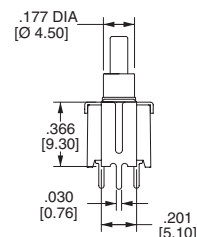
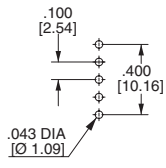
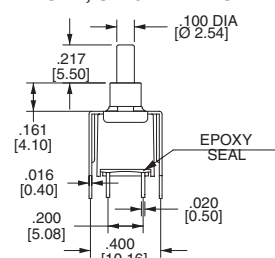
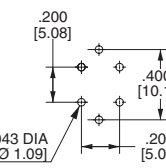


DOUBLE POLE, SINGLE THROW



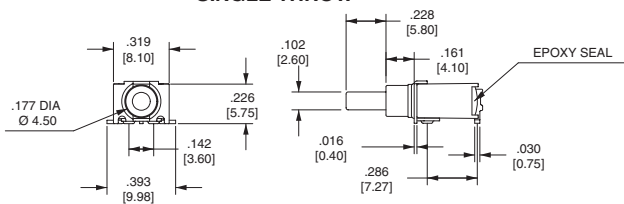
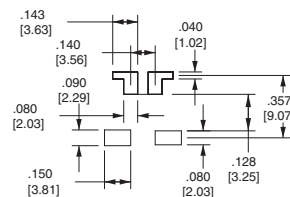
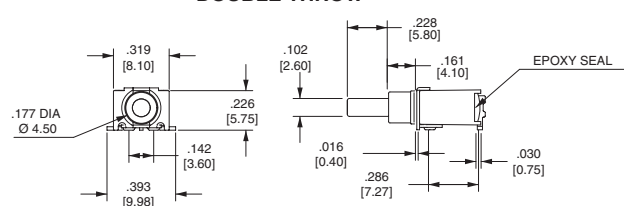
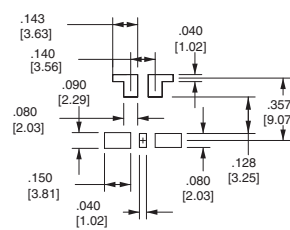
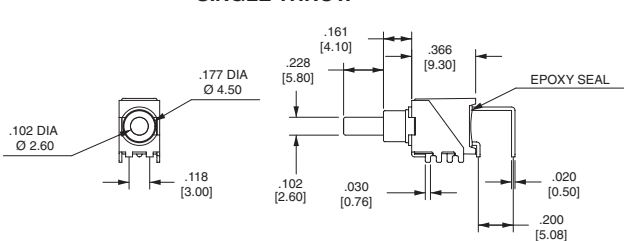
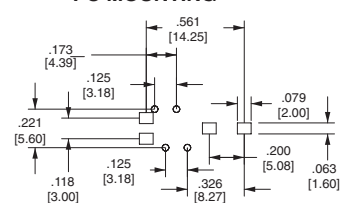
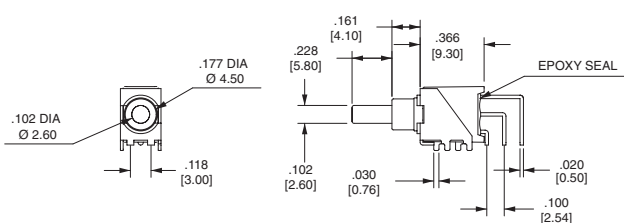
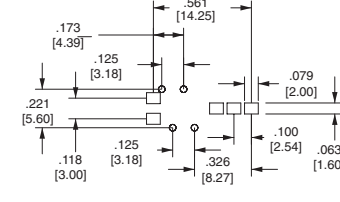
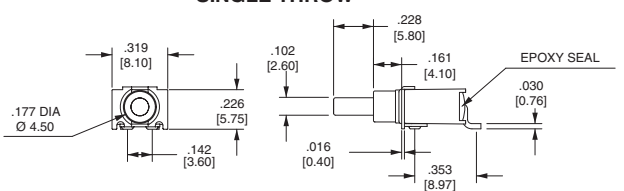
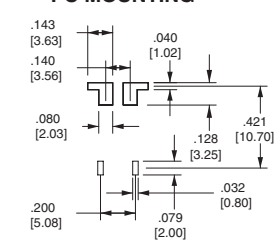
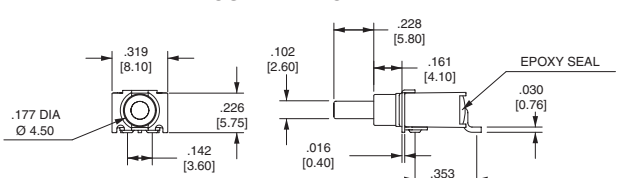
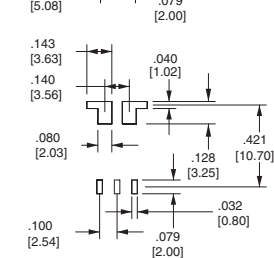
PC MOUNTING



3SS-Series Dimensional Specifications: in. [mm]
TERMINATION
M7

SINGLE POLE, SINGLE THROW

PC MOUNTING

SINGLE POLE, DOUBLE THROW

PC MOUNTING

DOUBLE POLE, SINGLE THROW

PC MOUNTING

VS2

SINGLE POLE, SINGLE THROW

PC MOUNTING

SINGLE POLE, DOUBLE THROW

PC MOUNTING

DOUBLE POLE, SINGLE THROW

PC MOUNTING


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

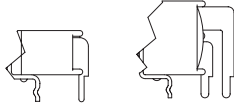
TERMINATION

M6
SINGLE THROW

PC MOUNTING

DOUBLE THROW

PC MOUNTING

M7
SINGLE THROW

PC MOUNTING

DOUBLE THROW

PC MOUNTING

S6
SINGLE THROW

PC MOUNTING

DOUBLE THROW

PC MOUNTING


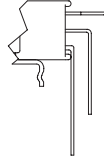
3SM-Series Dimensional Specifications: in. [mm]

SNAP-IN TERMINATION

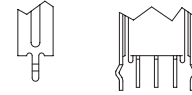
M61



M71

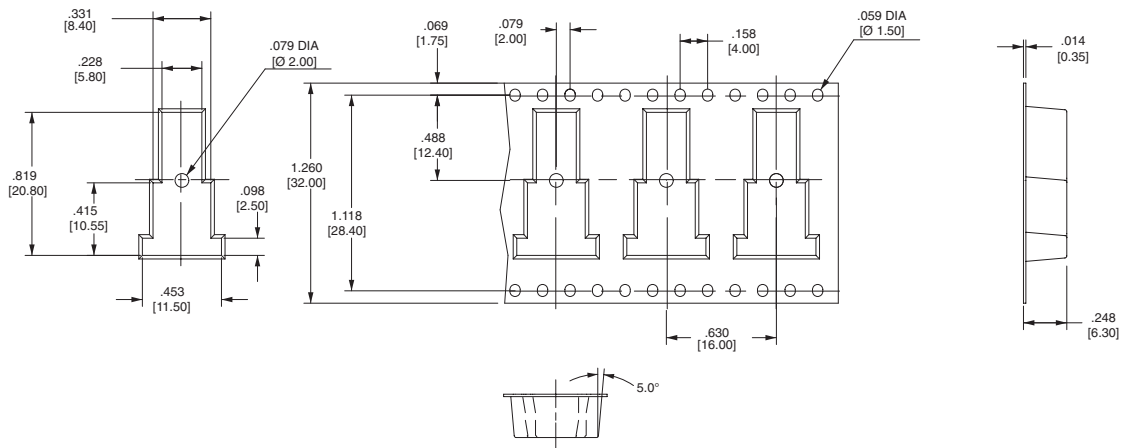


VS21



M61, M71, VS21 have the same P.C. mounting but with snap-in bracket.

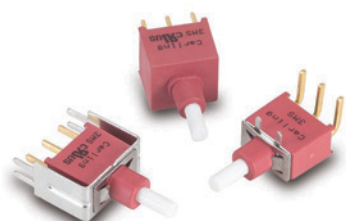
REEL TAPING



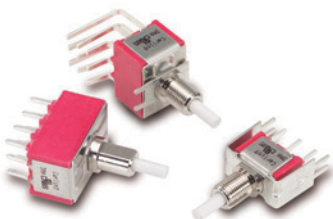
FOR M6 ONLY



3MN-Series
Snap-Acting Miniature
Pushbutton Switch



3MS-Series
Sealed Snap-Acting
Miniature Pushbutton
Switch



3MA-Series
Alternate Acting
Miniature Pushbutton
Switch

Specifications

| | |
|-------------------------------|--|
| Contact Rating | refer to ordering scheme |
| Electrical Life | 50,000 make & break cycles @ full load |
| Contact Resistance. | 3MN & 3MA-Series: 10 mΩ max. initial @ 2-4 VDC 100mA for both silver & gold plated contacts. 3MS-Series: 50 mΩ max. initial @ 2-4 VDC 100mA for both silver & gold plated contacts. |
| Insulation Resistance . . . | 1000 MΩ min. |
| Dielectric Strength | 1500 Volts RMS @ sea level |
| Operating Temperature . . . | -30°C to +85°C |
| Index of Protection | 3MS -Series: IP68 |
| Cap Installation Support . . | 3MS-Series: 10 lbs. max. |
| Solder Heat Resistance. . . | MIL-STD-202, Method 210 |
| Actuator Travel | 25° |

Materials

| | |
|-----------------------------|---|
| Case | 3MN & 3MA-Series: Diallyl phthalate (DAP) (UL 94V-0) 3MS-Series: Glass filled nylon 6/6, flame retardant, heat stabilized (UL 94V-0) |
| Plunger. | 3MN-Series: Thermoplastic polyester, black 3MS & 3MA-Series: Glass filled nylon or glass filled polyester (UL 94V-0) |
| Bushing | 3MN-Series: Brass, nickel plated 3MA-Series: Zinc, nickel plated |
| Housing. | 3MN & 3MA-Series: Stainless Steel |
| Switch Support Retainer . . | 3MS-Series: Stainless Steel |
| Terminal Seal | Epoxy |

3M-Series Optional Cap

To order a cap assembled on a switch, specify the switch number followed by the cap part number and the word "assembled".

Ex: 3MN-SP-7-P2-B6-M6QE-C13ASSEMBLED

To order caps in bulk, specify the Series, followed by the cap. Ex.) 3MN-C13



1 SERIES OR SWITCH CATALOG NUMBER 3MN, 3MS or 3MA

2 CAP SIZE

| | | | |
|-----------|----------------------|-----------|--|
| C1 | round 7.6mm dia. | C5 | round 14.5mm dia. (for 3MA w/ PL bushing) |
| C2 | round 9.35 mm dia. | C6 | brass chrome plated (for 3MA w/ PD bushing) |
| C3 | square 11.7 x 11.7mm | | |
| C4 | round 5mm dia. | | |

3 CAP COLOR

| | | | |
|----------|--------|----------|--------|
| 1 | white | 5 | yellow |
| 2 | black | 6 | green |
| 3 | red | 7 | blue |
| 4 | orange | | |

1 Black, white & red standard. Other colors available. Consult factory.

3MN-Series Ordering Scheme
with Square Actuator

with Plunger Actuator

1 SERIES
3MN Snap-Acting Miniature Pushbutton Switch

2 POLES
SP single pole **DP** double pole

3 CIRCUIT

() - momentary

7 ON (ON)

4 ACTUATOR¹
SQUARE ACTUATOR (use with Color Options in Selection 5A & 5B.)

AP1 square with no frame
AP2 square raised above frame
AP3 square flush with frame

PLUNGER ACTUATOR (use with Bushing Options in Selection 5)

P0 2.5mm short plunger(for B6 bushing only)
P1 5.2mm plunger(for bushing B10,B11,B20,B21; 7.5mm for B6)
P2 2.0mm plunger(for bushing B10,B11,B20,B21; 4.2mm for B6)

5A ACTUATOR COLOR & 5B FRAME COLOR^{1,2}

| | | |
|----------------|-----------------|----------------|
| 1 white | 4 orange | 7 blue |
| 2 black | 5 yellow | 8 brown |
| 3 red | 6 green | 9 gray |

1 Black, white and red are standard. Other colors available, consult factory for details.
 2 Selection 5B is blank if actuator style is AP1 (no frame)

OR
5 BUSHING
B6 Unthreaded (for terminations VS6-VS9 only)
B10 Threaded keyway
B11 Threaded with flat
B20 Unthreaded keyway
B21 Unthreaded with flat

NOTE:

 If ordering optional CAP with bushings B10, B11, B20 or B21, specify actuator P1.
 For CAP with bushing B6, specify actuator P2.
 For CAP options, see ordering scheme on page 35.

6 TERMINATION

| | |
|-------------|--|
| M1 | Solder Lug |
| M2 | PCB |
| M5-1 | Wire Wrap .750 [19.05] |
| M5-3 | Wire Wrap .425 [10.80] |
| M6 | PC Mount, 90° horizontal |
| M7 | PC Mount, 90° vertical |
| VS2 | PC Mount, U bracket, .620 mounting x .460 high |
| VS3 | PC Mount, U bracket, .620 mounting x .630 high |
| VS4 | PC Mount, U bracket, .750 mounting x .460 high |
| VS5 | PC Mount, U bracket, .750 mounting x .630 high |
| VS6 | PC Mount, U bracket, .460 high (for B6 bushing only) |
| VS7 | PC Mount, U bracket, .630 high (for B6 bushing only) |
| VS8 | PC Mount, U bracket, .460 high (for B6 bushing only) |
| VS9 | PC Mount, U bracket, .630 high (for B6 bushing only) |

7 CONTACT

| | Material | Terminal Plating | Rating | Approvals |
|----------|---------------------|-------------------------------|-----------------------------|-----------|
| G | silver ¹ | gold over silver ³ | 1A@120VAC or 28VDC | UL, CUL |
| Q | silver ¹ | silver ¹ | 1A@120VAC or 28VDC | UL, CUL |
| R | gold ² | gold ² | 0.4VA max. @20V max (AC/DC) | |

NOTE:

Tin-lead option available with PC type terminations only.

1 Moveable contact & terminals: copper alloy, silver plate
 2 Moveable contact & terminals: copper alloy with gold plate over nickel plate
 3 Terminals: silver plate with outer layer in gold plating

8 EPOXY SEAL
E epoxy seal

3MS-Series Ordering Scheme

3MS - **WSP** **7** - **P1** - **B1** - **M6** **Q** **E**

1 Series 2 Poles 3 Circuit 4 Actuator 5 Bushing 6 Termination 7 Contact 8 Seal

| | | | | | | | | | | | | | | | | | | | | | | | |
|---|---------------------|---|-----------------------------|------------------|-----------------|-------------------------|---------------|------------------|----------|---------------------|-------------------------------|--------------------|--------------|----------|---------------------|---------------------|--------------------|--------------|----------|-------------------|-------------------|-----------------------------|------|
| 1 SERIES 3MS Sealed Snap-Acting Miniature Pushbutton Switch | | 6 TERMINATION M1 Solder Lug M2 PCB M6 PC Mount, 90° horizontal M61 Snap-In, 90° horizontal M7 PC Mount, 90° vertical M71 Snap-In, 90° vertical VS2 PC Mount, U bracket, .620 mounting x .460 high VS21 Snap-In, U bracket, .620 mounting x .460 high VS3 PC Mount, U bracket, .620 mounting x .630 high VS4 PC Mount, U bracket, .750 mounting x .460 high VS5 PC Mount, U bracket, .750 mounting x .630 high | | | | | | | | | | | | | | | | | | | | | |
| 2 POLES WSP single pole WDP double pole | | 7 CONTACT <table><tr><td></td><td><i>Material</i></td><td><i>Terminal Plating</i></td><td><i>Rating</i></td><td><i>Approvals</i></td></tr><tr><td>G</td><td>silver¹</td><td>gold over silver³</td><td>1A@120VAC or 28VDC</td><td>UL, CUL IP68</td></tr><tr><td>Q</td><td>silver¹</td><td>silver¹</td><td>1A@120VAC or 28VDC</td><td>UL, CUL IP68</td></tr><tr><td>R</td><td>gold²</td><td>gold²</td><td>0.4VA max. @20V max (AC/DC)</td><td>IP68</td></tr></table> <p>NOTE: Tin-lead option available with PC type terminations only.</p> <p>1 Moveable contact & terminals: copper alloy, silver plate 2 Moveable contact & terminals: copper alloy with gold plate over nickel plate 3 Terminals: silver plate with outer layer in gold plating</p> | | | <i>Material</i> | <i>Terminal Plating</i> | <i>Rating</i> | <i>Approvals</i> | G | silver ¹ | gold over silver ³ | 1A@120VAC or 28VDC | UL, CUL IP68 | Q | silver ¹ | silver ¹ | 1A@120VAC or 28VDC | UL, CUL IP68 | R | gold ² | gold ² | 0.4VA max. @20V max (AC/DC) | IP68 |
| | <i>Material</i> | <i>Terminal Plating</i> | <i>Rating</i> | <i>Approvals</i> | | | | | | | | | | | | | | | | | | | |
| G | silver ¹ | gold over silver ³ | 1A@120VAC or 28VDC | UL, CUL IP68 | | | | | | | | | | | | | | | | | | | |
| Q | silver ¹ | silver ¹ | 1A@120VAC or 28VDC | UL, CUL IP68 | | | | | | | | | | | | | | | | | | | |
| R | gold ² | gold ² | 0.4VA max. @20V max (AC/DC) | IP68 | | | | | | | | | | | | | | | | | | | |
| 3 CIRCUIT () - momentary 7 ON (ON) | | | | | | | | | | | | | | | | | | | | | | | |
| 4 ACTUATOR P1 .173" plunger (for B1 bushing); .276" (for B4 bushing) P2 .220" plunger (for B1 bushing); .327" (for B4 bushing) P3 .087" plunger (for B1 bushing); .193" (for B4 bushing) | | | | | | | | | | | | | | | | | | | | | | | |
| 5 BUSHING B1 Threaded B4 Unthreaded | | 7 EPOXY SEAL E epoxy seal | | | | | | | | | | | | | | | | | | | | | |

3MA-Series Ordering Scheme

with Square Actuator **3MA** - **SP** **1** - **AP2** / **3** **2** - **M6** **Q** **E**

1 Series 2 Poles 3 Circuit 4 Actuator 5A Actuator Color 5B Frame Color 6 Termination 7 Contact 8 Seal

with Plunger Actuator **3MA** - **SP** **1** - **PD** - **BD** - **M6** **Q** **E**

1 Series 2 Poles 3 Circuit 4 Actuator 5 Bushing 6 Termination 7 Contact 8 Seal

1 SERIES

3MA Alternate-Acting Miniature Pushbutton Switch

2 POLES

SP single poleDP double pole3P three pole4P four pole

3 CIRCUIT

() - momentary

Switching Position:

2-3, 5-6, 8-9, 11-12

OPEN

2-1, 5-4, 8-7, 11-10

ON

ON

NONE

ON

NONE

4 ACTUATOR

SQUARE ACTUATOR (use with Color Options in Selection 5A & 5B.)

AP1square with no frame

AP2square raised above frame

PLUNGER ACTUATOR (use with Bushing Options in Selection 5)

PA.118 dia. x .299" plunger length

PI.118 dia. x .244" plunger length

PL.118 dia. x .327" plunger length

PC.315" dia. brass chrome plated plunger (for BD bushing only)

PD.242" dia. brass chrome plated plunger (for BD bushing only)

5A ACTUATOR COLOR & 5B FRAME COLOR^{1,2}

1 white

4 orange

7 blue

2 black

5 yellow

8 brown

3 red

6 green

9 gray

1 Black, red and white are standard. Other colors available, consult factory for details.

2 Selection 5B is blank if actuator style AP1 (no frame)

OR

5 BUSHING

BDBig bushing for PC, PD actuator 15/32"

B10Threaded 1/4 - 40

B20Unthreaded

B21Unthreaded with flat

NOTE: For CAP options, see ordering scheme on page 35.

6 TERMINATION

M1Solder Lug

VS2PC Mount, U bracket, .620 mounting x .460 high

M2PCB

VS3PC Mount, U bracket, .620 mounting x .630 high

M5-1Wire Wrap .750 [19.05]

VS4PC Mount, U bracket, .750 mounting x .460 high

M5-2Wire Wrap .964 [24.48]

VS5PC Mount, U bracket, .750 mounting x .630 high

M5-3Wire Wrap .425 [10.80]

M5-4Wire Wrap 1.062 [26.87]

M6PC Mount, 90° horizontal

M7PC Mount, 90° vertical

7 CONTACT

Material

Terminal Plating

Rating

Approvals

Gsilver¹

gold over silver³

6A@125VAC or 28VDC, 3A@250VAC

UL, CUL

Kgold²

tin-lead⁴

6A@125VAC or 28VDC, 3A@250VAC

UL, CUL

Psilver¹

tin-lead⁴

6A@125VAC or 28VDC, 3A@250VAC

UL, CUL

Qsilver¹

silver¹

6A@125VAC or 28VDC, 3A@250VAC

UL, CUL

Rgold²

gold²

0.4VA max. @20V max (AC/DC)

NOTE:

Tin-lead option available with PC type terminations only.

1Moveable contact & terminals: copper alloy, silver plate

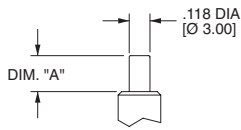
2Moveable contact & terminals: copper alloy with gold plate over nickel plate

3Terminals: silver plate with outer layer in gold plating

4Outer terminals: copper alloy with tin-lead over nickel plate

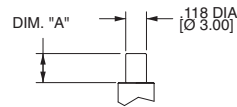
8 EPOXY SEAL

Eepoxy seal

3MN-Series Dimensional Specifications: in. [mm]
PLUNGER


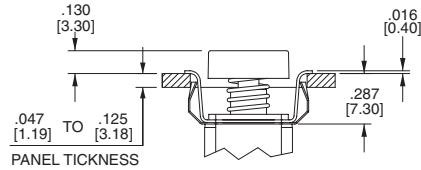
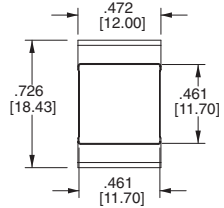
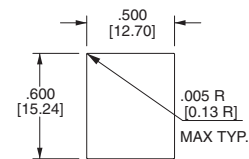
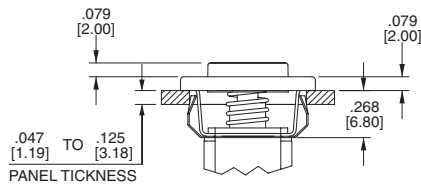
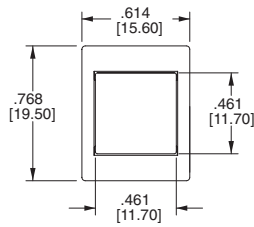
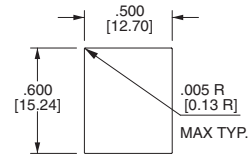
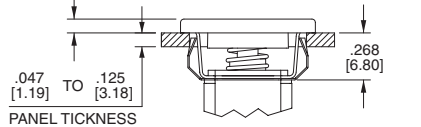
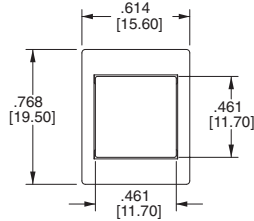
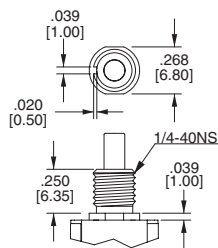
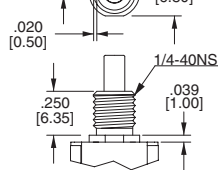
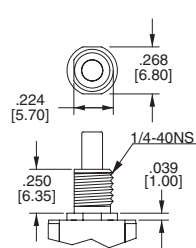
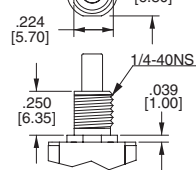
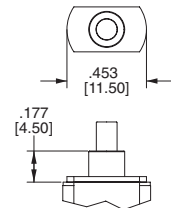
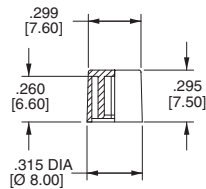
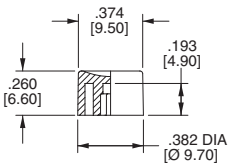
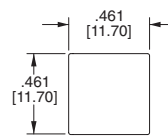
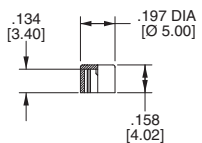
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|-------------|-------------|
| P0 | .000 [0.00] |
| P1 | .205 [5.20] |
| P2 | .079 [2.00] |

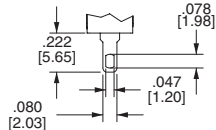
FOR B10,B11,B20,B21 ONLY



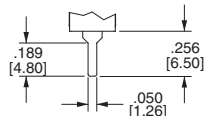
FOR B6 ONLY

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|-------------|-------------|
| P0 | .098 [2.50] |
| P1 | .295 [7.50] |
| P2 | .165 [4.20] |

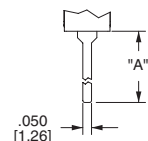
ACTUATOR
AP1

PANEL MOUNTING

AP2

PANEL MOUNTING

AP3

BUSHING
**B10
STANDARD KEYWAY
THREADED SHOWN**

**B20
STANDARD KEYWAY
NON-THREADED**

**B11
THREADED SHOWN
WITH FLAT**

**B21
NON-THREADED
WITH FLAT**

**B6
NON-THREADED
(FOR TERMINATION
OPTIONS VS6-VS9 ONLY)**

CAP
C1

C2

C3

C4


3MN-Series Dimensional Specifications: in. [mm]
TERMINATION
M1


THK .030 [0.75]

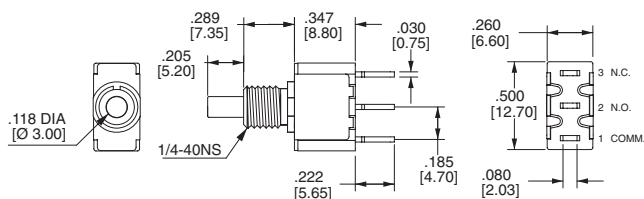
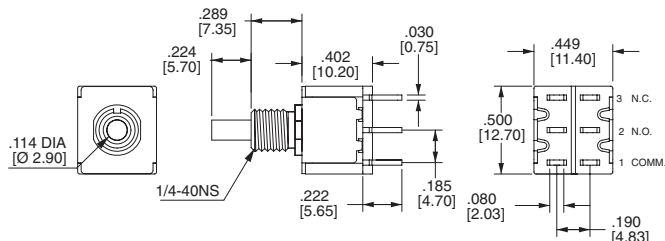
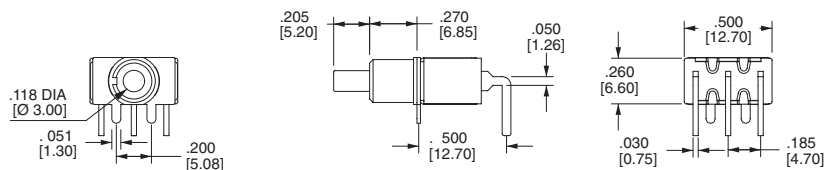
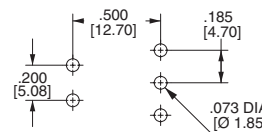
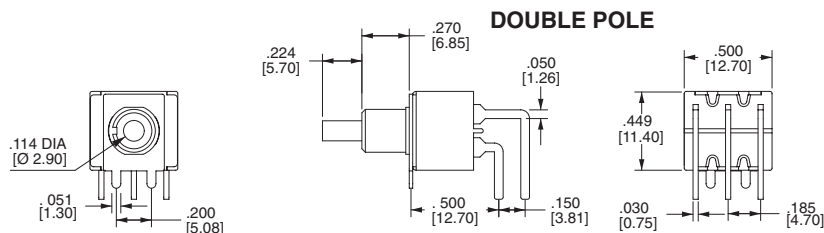
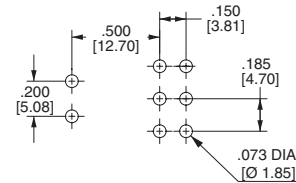
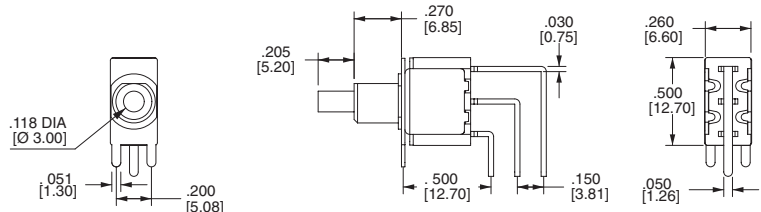
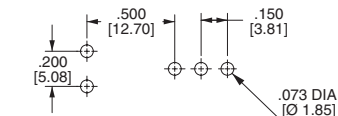
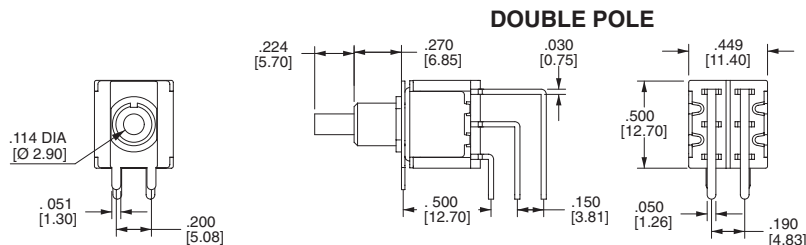
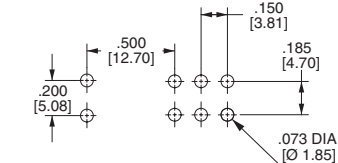
M2


THK .030 [0.75]

M5


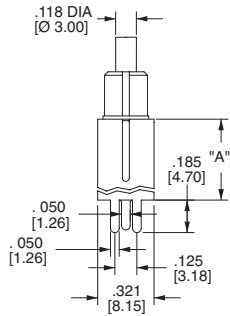
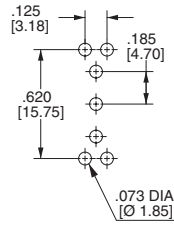
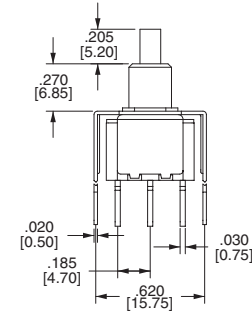
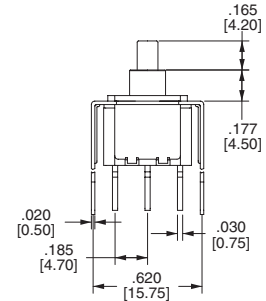
THK .030 [0.75]

| OPTION CODE | DIM. "A" |
|-------------|--------------|
| M5-1 | .750 [19.05] |
| M5-3 | .425 [10.80] |

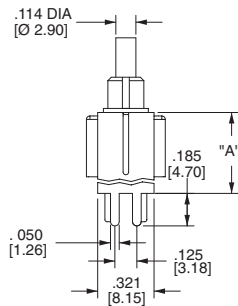
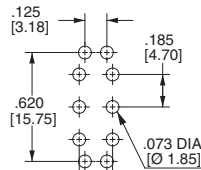
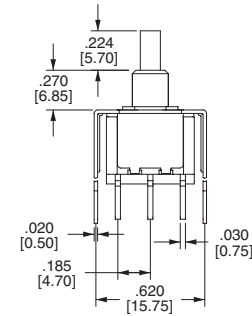
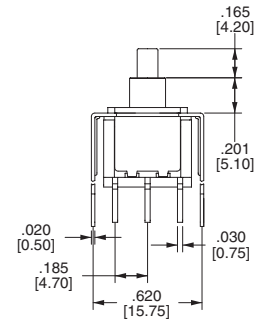
SINGLE POLE

DOUBLE POLE

M6
SINGLE POLE

PC MOUNTING

DOUBLE POLE

PC MOUNTING

M7
SINGLE POLE

PC MOUNTING

DOUBLE POLE

PC MOUNTING


3MN-Series Dimensional Specifications: in. [mm]
TERMINATION
SINGLE POLE

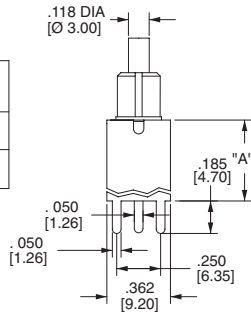
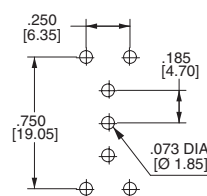
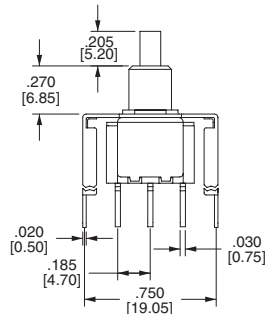
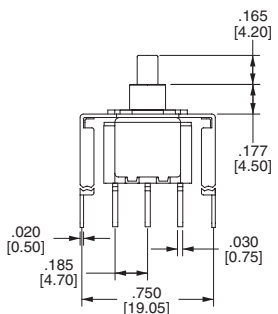
| OPTION CODE | DIM. "A" |
|-------------|--------------|
| VS2 | .460 [11.68] |
| VS6 | .630 [16.00] |
| VS3 | .630 [16.00] |
| VS7 | .630 [16.00] |


PC MOUNTING

VS2-VS3

**VS6-VS7
(For B6 Bushing Only)**

DOUBLE POLE

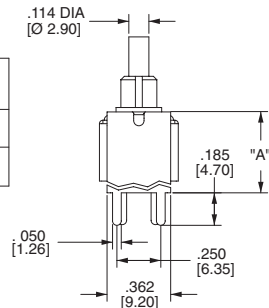
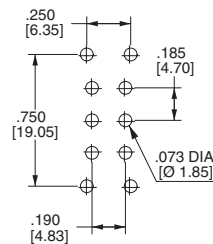
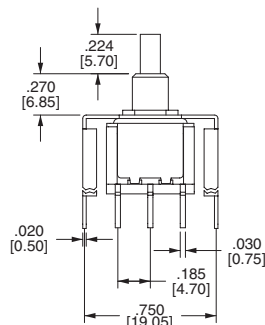
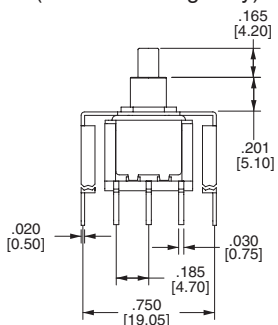
| OPTION CODE | DIM. "A" |
|-------------|--------------|
| VS2 | .460 [11.68] |
| VS6 | .630 [16.00] |
| VS3 | .630 [16.00] |
| VS7 | .630 [16.00] |


PC MOUNTING

VS2-VS3

**VS6-VS7
(For B6 Bushing Only)**

SINGLE POLE

| OPTION CODE | DIM. "A" |
|-------------|--------------|
| VS4 | .460 [11.68] |
| VS8 | .630 [16.00] |
| VS5 | .630 [16.00] |
| VS9 | .630 [16.00] |

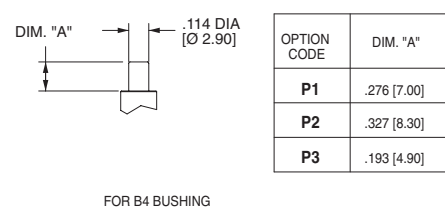
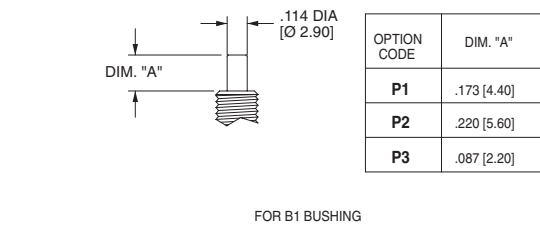

PC MOUNTING

VS4-VS5

**VS8-VS9
(For B6 Bushing Only)**

DOUBLE POLE

| OPTION CODE | DIM. "A" |
|-------------|--------------|
| VS4 | .460 [11.68] |
| VS8 | .630 [16.00] |
| VS5 | .630 [16.00] |
| VS9 | .630 [16.00] |

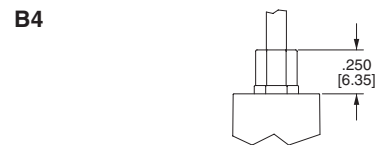
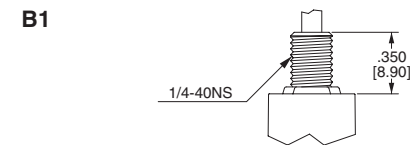

PC MOUNTING

VS4-VS5

**VS8-VS9
(For B6 Bushing Only)**


3MS-Series Dimensional Specifications: in. [mm]

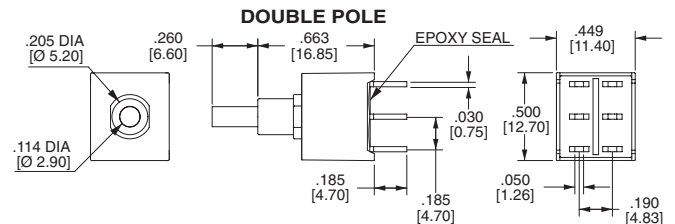
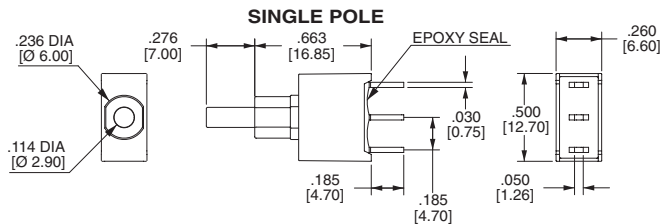
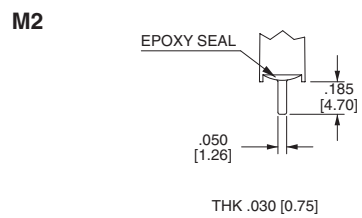
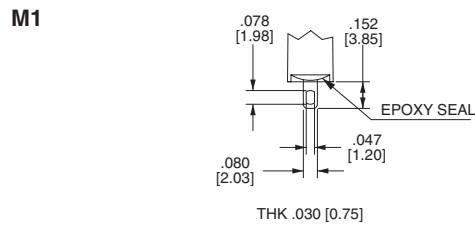
PLUNGER



BUSHING

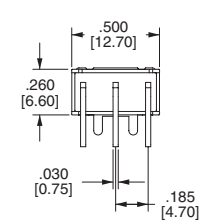
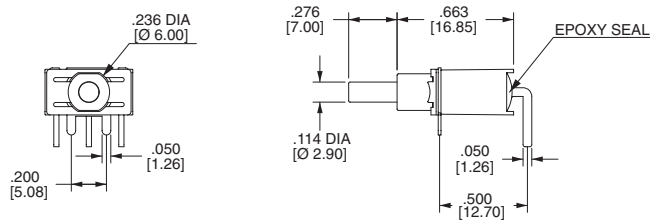


TERMINATION

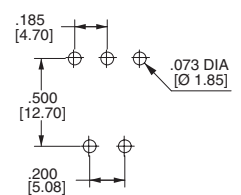


M6

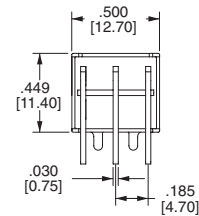
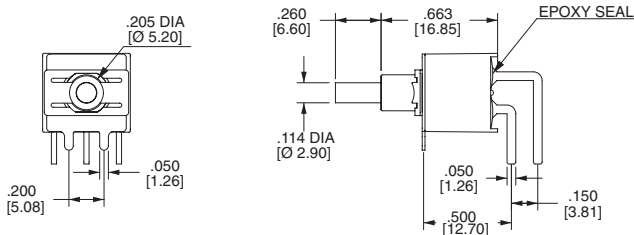
SINGLE POLE



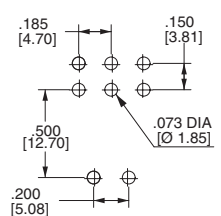
PC MOUNTING

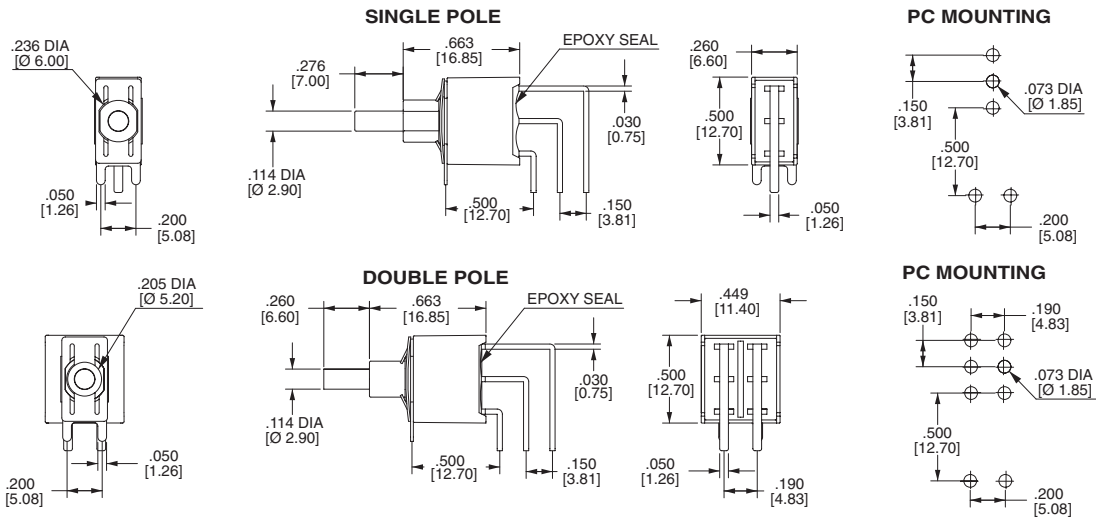
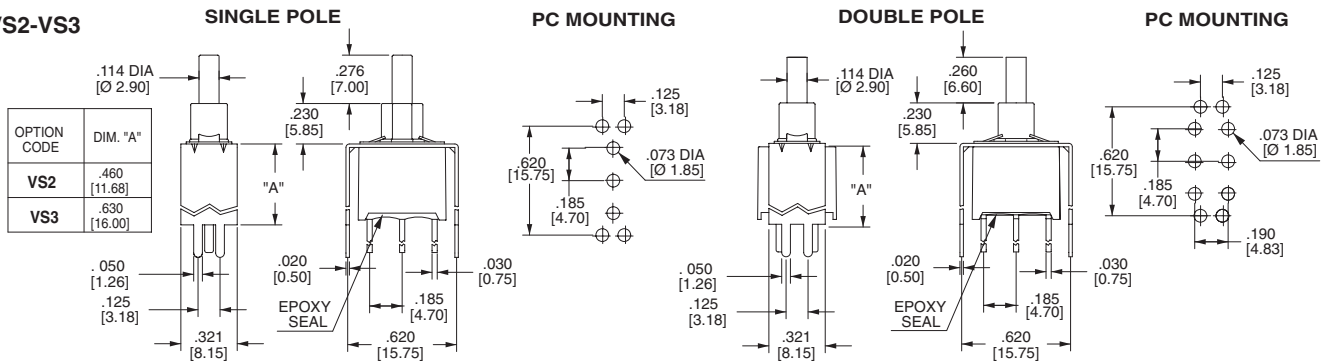
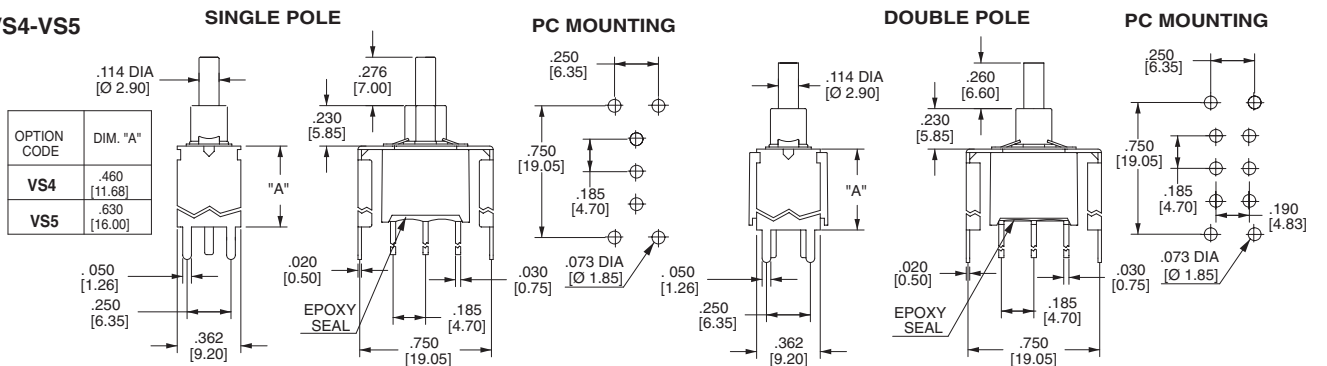


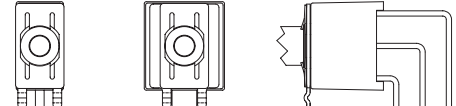
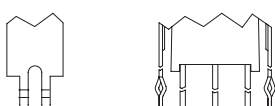
DOUBLE POLE



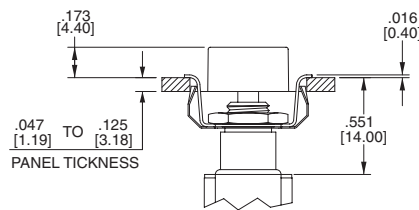
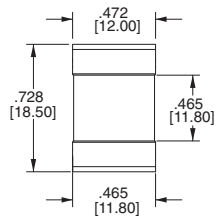
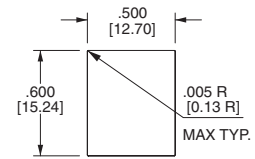
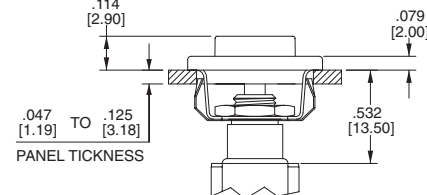
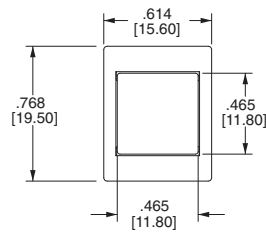
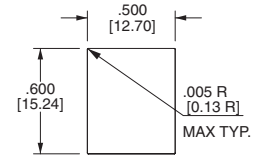
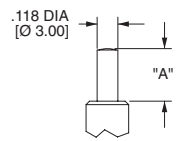
PC MOUNTING



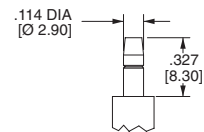
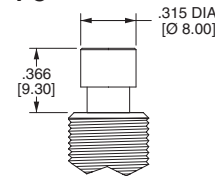
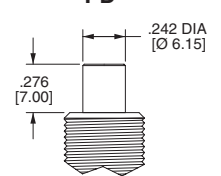
3MS-Series Dimensional Specifications: in. [mm]
TERMINATION
M7

VS2-VS3

VS4-VS5

SNAP-IN TERMINATION OPTIONS
M61

M71

VS21,VS31

VS41,VS51

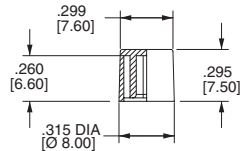
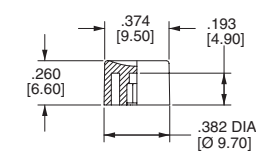
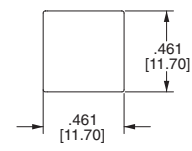
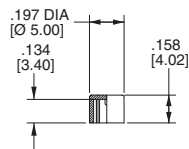
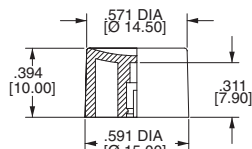

M61,M71,VS21,VS31,VS41,VS51 have the same P.C. mounting but with snap-in bracket.

3MA-Series Dimensional Specifications: in. [mm]
ACTUATOR
AP1

PANEL MOUNTING

AP2

PANEL MOUNTING

PLUNGER
PA,PI


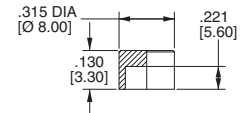
| OPTION CODE | DIM. "A" |
|-------------|-------------|
| PA | .299 [7.60] |
| PI | .244 [6.20] |

PL

PC

Brass Chrome Plated
PD


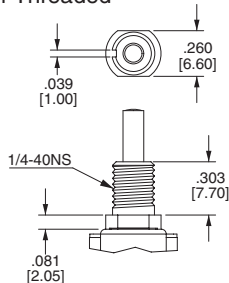
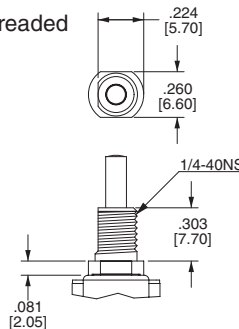
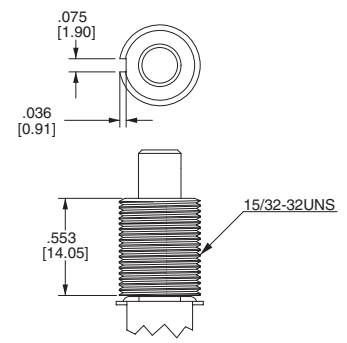
PC, PD Plunger must fit with BD bushing

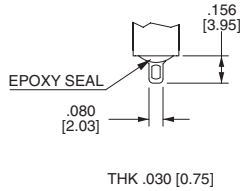
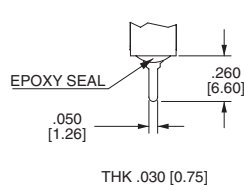
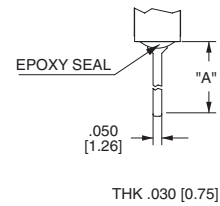
CAP
C1

C2

C3

C4

C5


For PL Bushing Only

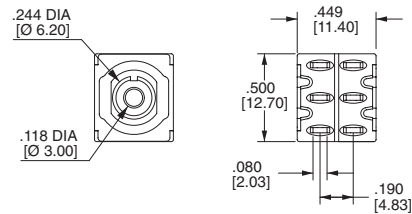
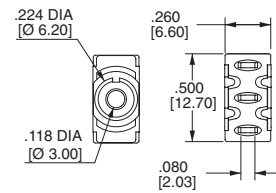
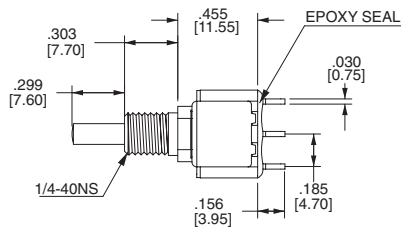
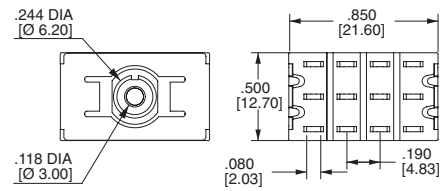
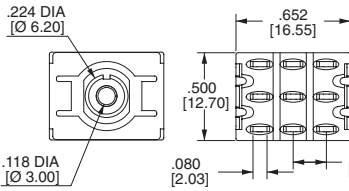
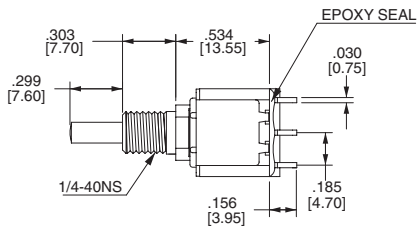
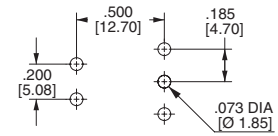
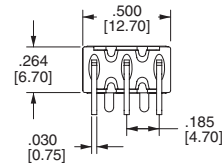
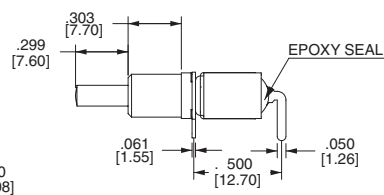
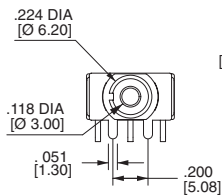
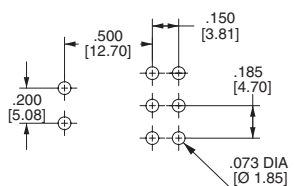
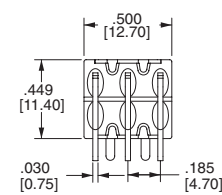
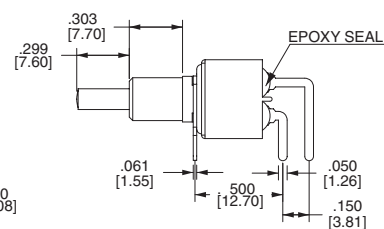
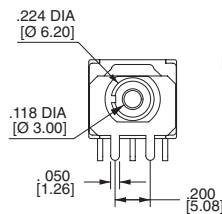
C6
Brass Chrome Plated


For PD Bushing Only

BUSHING
**B10 Threaded
B20 Non-Threaded**

B21 Non-Threaded

BD


3MA-Series Dimensional Specifications: in. [mm]
TERMINATION
M1

M2

M5


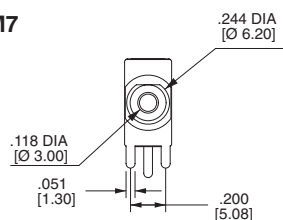
| OPTION CODE | DIM. "A" |
|-------------|---------------|
| M5-1 | .750 [19.05] |
| M5-2 | .964 [24.48] |
| M5-3 | .425 [10.80] |
| M5-4 | 1.062 [26.97] |

SINGLE POLE
DOUBLE POLE

3 POLE
4 POLE

M6
SINGLE POLE
PC MOUNTING

DOUBLE POLE
PC MOUNTING


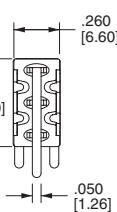
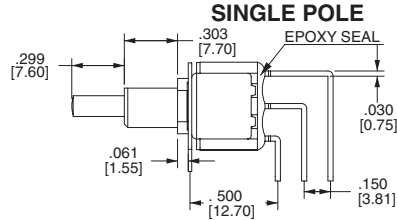
3MA-Series Dimensional Specifications: in. [mm]

TERMINATION

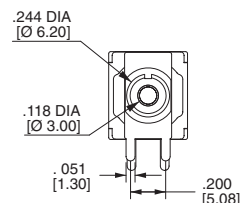
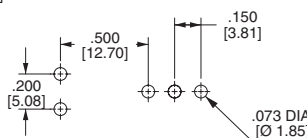
M7



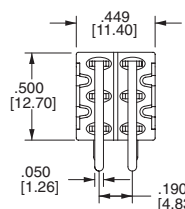
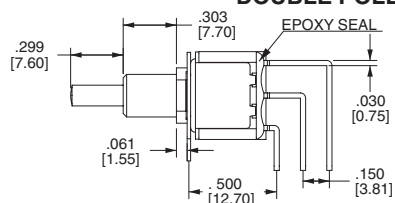
SINGLE POLE



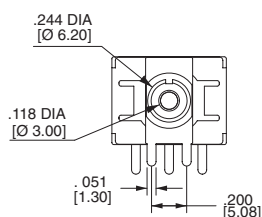
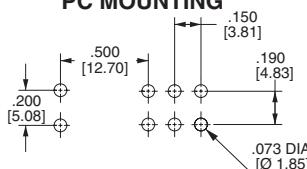
PC MOUNTING



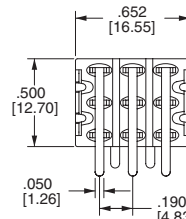
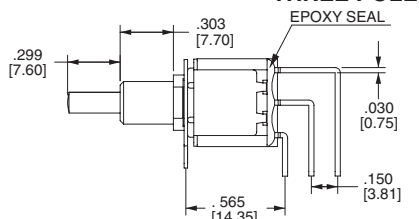
DOUBLE POLE



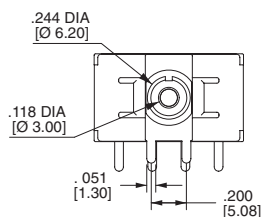
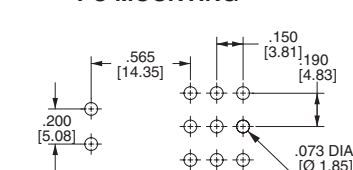
PC MOUNTING



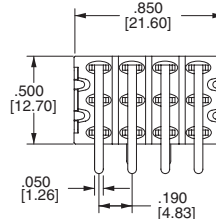
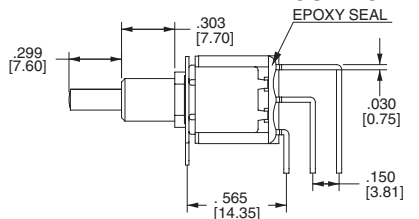
THREE POLE



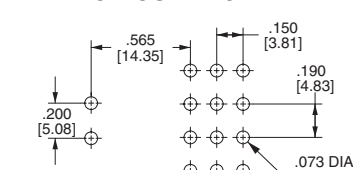
PC MOUNTING



FOUR POLE

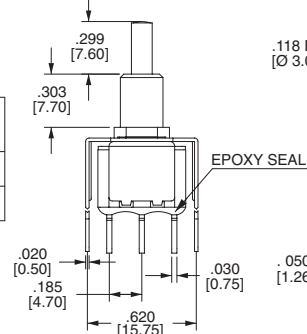


PC MOUNTING

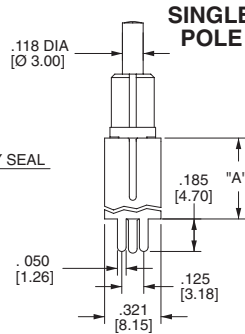


VS2-VS3

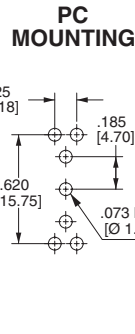
| OPTION CODE | DIM. "A" |
|-------------|--------------|
| VS2 | .460 [11.68] |
| VS3 | .630 [16.00] |



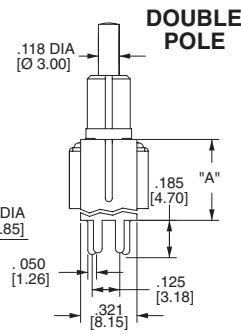
SINGLE POLE



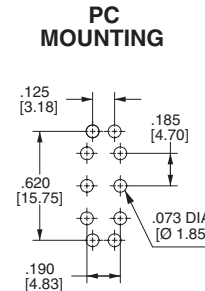
PC MOUNTING



DOUBLE POLE

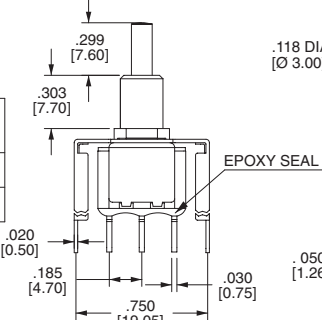


PC MOUNTING

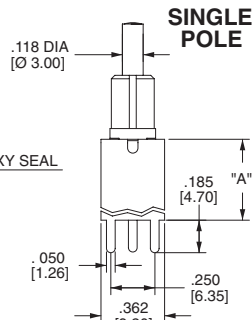


VS4-VS5

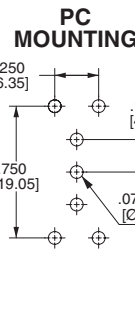
| OPTION CODE | DIM. "A" |
|-------------|--------------|
| VS4 | .460 [11.68] |
| VS5 | .630 [16.00] |



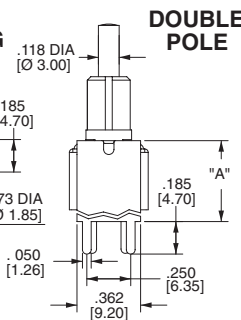
SINGLE POLE



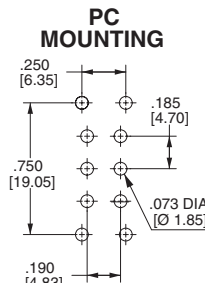
PC MOUNTING



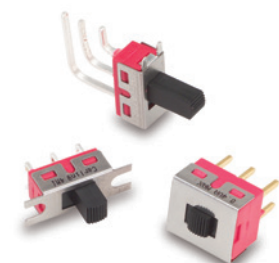
DOUBLE POLE



PC MOUNTING



Sub-Miniature Slide Switches



Miniature Slide Switch

| | |
|-------------------------------|---|
| Contact Rating | refer to ordering scheme |
| Electrical Life | 30,000 make & break cycles at full load |
| Contact Resistance. | 10 mΩ max. initial @ 2-4 VDC 100mA for both silver & gold plated contacts. |
| Insulation Resistance . . . | 1000 MΩ min. |
| Dielectric Strength | 1500 Volts RMS @ sea level |
| Operating Temperature . . . | -30°C to +85°C |
| Solder Heat Resistance. . . | MIL-STD-202, Method 210 |
| Actuator Travel | 25° |

Case Diallyl phthalate (DAP) (UL 94V-0)
Slide Handle. Nylon
Housing. Stainless Steel
Terminal Seal Epoxy

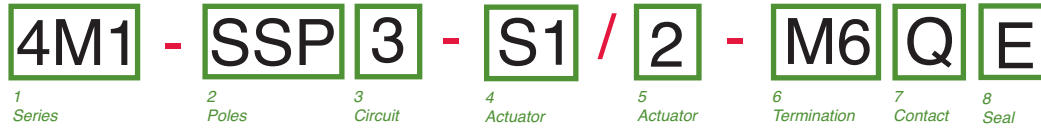
The diagram shows a 7-digit part number structure with hyphens between the 3rd and 4th digits, and between the 5th and 6th digits. The digits are: 4, S, 1, F, S, P, 1, M, 6, Q, E, and an empty box. Below each digit is a label: 1 Series, 2 Poles, 3 Circuit, 4 Termination, 5 Contact, 6 Seal, and 7 Packaging.

M2 PCB
M6 PC Mount, 90° horizontal

- 1 Moveable contact & terminals: copper alloy, silver plate
- 2 Moveable contact & terminals: copper alloy with gold plate over nickel plate
- 3 Terminals: silver plate with outer layer in gold plating

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

4M1-Series Ordering Scheme



1 SERIES

4M1 Miniature Slide Switch

2 POLES

SSP single pole **SDP** double pole

3 CIRCUIT *Switching Position*

| | 2-1, 5-4 | OPEN | 2-3, 5-6 |
|---|----------|------|----------|
| 1 | ON | NONE | ON |
| 3 | ON | OFF | ON |

4 ACTUATOR

| | |
|-----------|----------------------------------|
| S1 | .201 [5.10] high |
| S2 | .285 [7.25] high |
| S3 | .370 [9.40] high |
| S4 | .140 [3.55] high |
| S5 | .053 [1.35] high (for DPDT only) |
| S6 | .482 [12.25] high |
| S7 | .311 [7.90] high |
| T1 | .201 [5.10] high (for DPDT only) |

5 ACTUATOR COLOR¹

| | | | | |
|---------|----------|----------|---------|--------|
| 1 white | 3 red | 5 yellow | 7 blue | 9 gray |
| 2 black | 4 orange | 6 green | 8 brown | |

¹ White, black & red are standard. Other colors available for quantities of 5K or more.

6 TERMINATION

| | |
|------------------------------------|---|
| M1 Solder Lug | M5-3 Wire Wrap [10.80] |
| M2 PCB | M5-4 Wire Wrap [26.97] |
| M3 Quick Connect | M6 PC Mount, 90° horizontal |
| M5-1 Wire Wrap .750 [19.05] | M7 PC Mount, 90° vertical |
| M5-2 Wire Wrap [24.48] | VS2 PC Mount, U bracket, .620 mounting x .460 high |

7 CONTACT

| | Material | Terminal Plating | Rating | Approvals |
|----------|---------------------|-------------------------------|------------------------------------|-----------|
| G | silver ¹ | gold over silver ³ | 5A@125VAC or 28VDC; 2A @ 250VAC | UL, CSA |
| K | gold ² | tin-lead ⁴ | 0.4VA max. @20V max (AC/DC) | |
| P | silver ¹ | tin-lead ⁴ | 5A@125VAC or 28VDC; 2A @ 250VAC | UL, CSA |
| Q | silver ¹ | silver ¹ | 5A@125VAC or 28VDC; 2A @ 250VAC | UL, CSA |
| R | gold ² | gold ² | 0.4VA max. @20V max (AC/DC) | |

NOTE:

Tin-lead option available with PC type terminations only.

- 1 Moveable contact & terminals: copper alloy, silver plate
- 2 Moveable contact & terminals: copper alloy with gold plate over nickel plate
- 3 Terminals: silver plate with outer layer in gold plating
- 4 Outer terminals: copper alloy with tin-lead over nickel plate

8 EPOXY SEAL

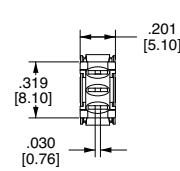
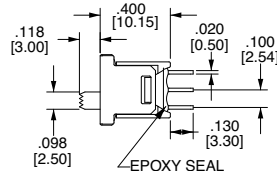
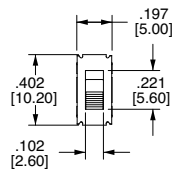
E epoxy seal

4S-Series Dimensional Specifications: in. [mm]

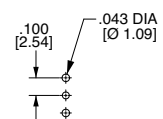
4S1-Series

TERMINATION

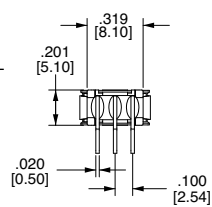
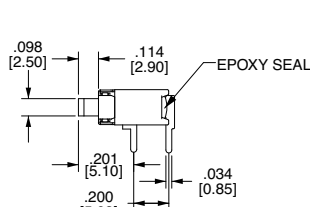
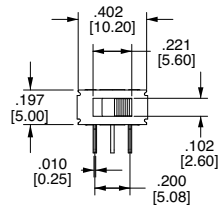
M2



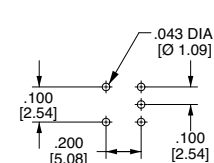
PC MOUNTING



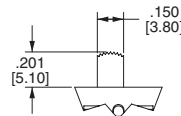
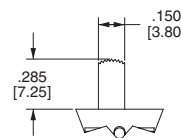
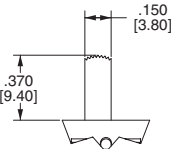
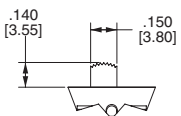
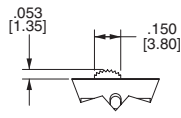
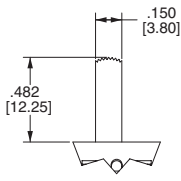
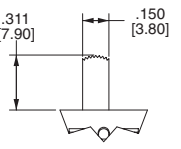
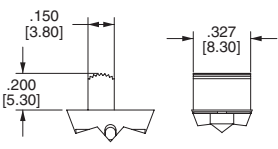
M6



PC MOUNTING

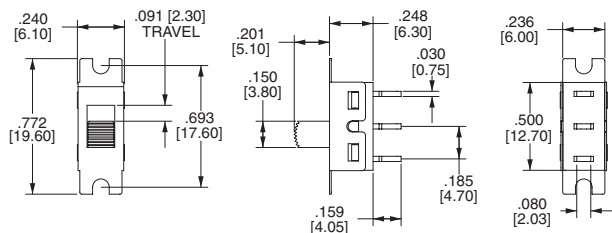
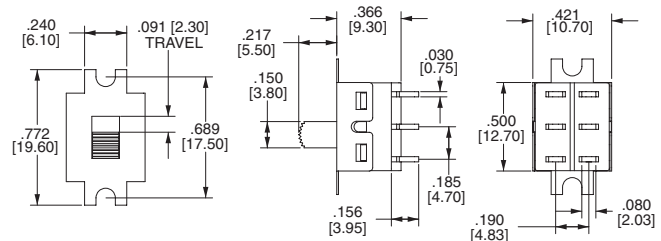
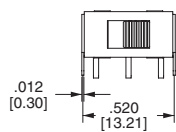
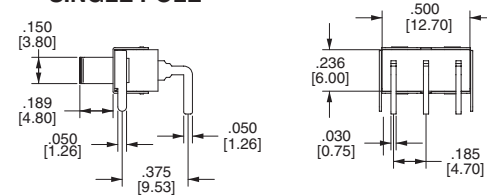
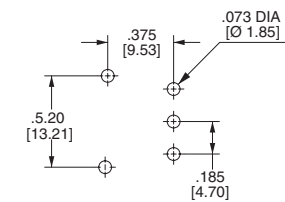
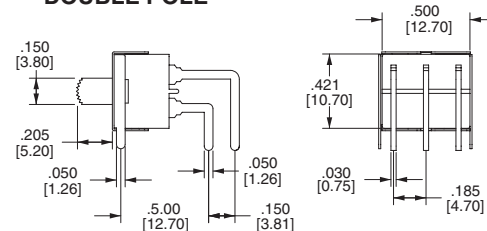
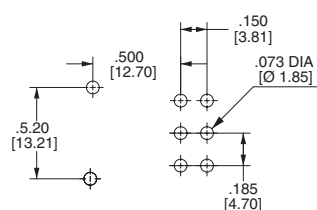


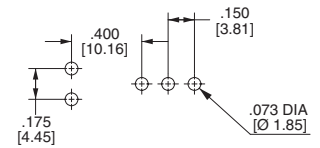
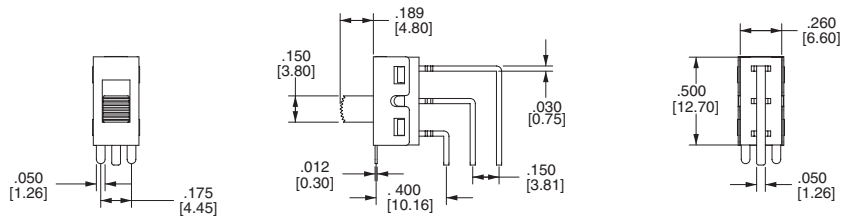
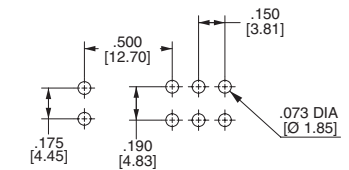
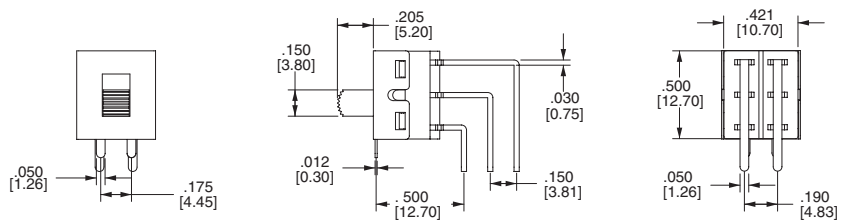
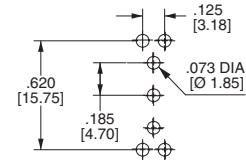
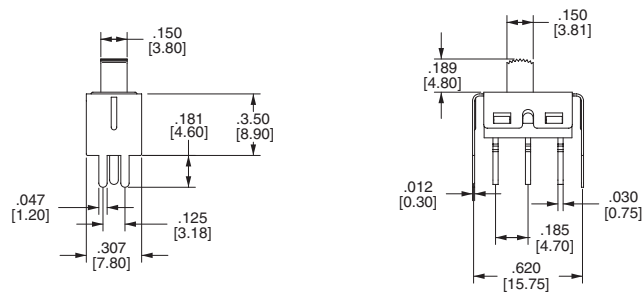
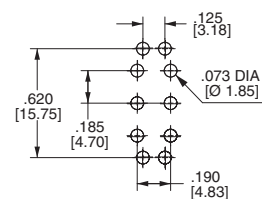
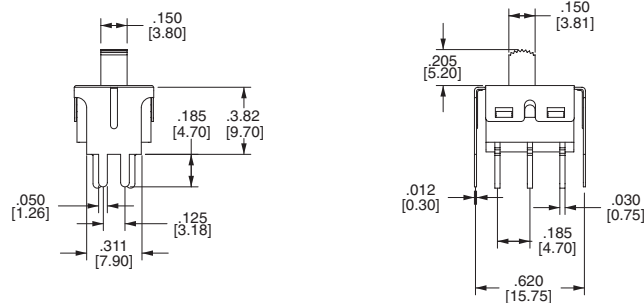
4M1-Series Dimensional Specifications: in. [mm]
ACTUATOR

| | | | |
|--|--|---|--|
| S1  | S2  | S3  | S4  |
| S5 (For DPDT Only)  | S6  | S7  | T1 (For DPDT Only)  |

TERMINATION

| <p>M1 STANDARD</p> <p>THK .030 [0.75]</p> | <p>M2</p> <p>THK .030 [0.75]</p> | <p>M3 QUICK CONNECT</p> <p>THK .030 [0.75]</p> | <p>M5</p> <p>THK .030 [0.75]</p> | <table><tr><th>OPTION CODE</th><th>DIM. "A"</th></tr><tr><td>M5-1</td><td>.750 [19.05]</td></tr><tr><td>M5-2</td><td>.964 [24.48]</td></tr><tr><td>M5-3</td><td>.425 [10.80]</td></tr><tr><td>M5-4</td><td>1.062 [26.97]</td></tr></table> | OPTION CODE | DIM. "A" | M5-1 | .750 [19.05] | M5-2 | .964 [24.48] | M5-3 | .425 [10.80] | M5-4 | 1.062 [26.97] |
|--|---|---|---|--|-------------|----------|------|--------------|------|--------------|------|--------------|------|---------------|
| OPTION CODE | DIM. "A" | | | | | | | | | | | | | |
| M5-1 | .750 [19.05] | | | | | | | | | | | | | |
| M5-2 | .964 [24.48] | | | | | | | | | | | | | |
| M5-3 | .425 [10.80] | | | | | | | | | | | | | |
| M5-4 | 1.062 [26.97] | | | | | | | | | | | | | |

SINGLE POLE

DOUBLE POLE

M6

SINGLE POLE

PC MOUNTING

DOUBLE POLE

PC MOUNTING


4M1-Series Dimensional Specifications: in. [mm]
TERMINATION
M7
SINGLE POLE
PC MOUNTING

DOUBLE POLE
PC MOUNTING

VS2
SINGLE POLE
PC MOUNTING

DOUBLE POLE
PC MOUNTING




4PM-Series Sub-Miniature Slide Switches for PC Board

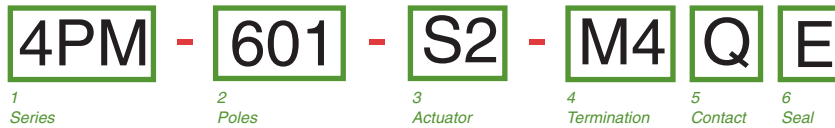
Specifications

Contact Rating refer to ordering scheme
 Electrical Life 10,000 make & break cycles @ full load
 Contact Resistance. 10 mΩ max.
 Insulation Resistance 1000 MΩ min. @500 VDC
 Mechanical Life 20,000 cycles
 Operating Temperature . . . -30°C to +85°C
 Solder Heat Resistance. . . MIL-STD-202, Method 210
 Actuator Travel 25°

Materials

Case & Slide Handle. . . . PBT, Glass filled
 Housing. POM
 Terminal Seal Epoxy

4PM-Series Ordering Scheme



1 SERIES

4PM Sub-Miniature Slide Switch

2 POLES

601 single pole
602 double pole

Switching Position:

| | | |
|----------|------|----------|
| 2-1, 5-4 | OPEN | 2-3, 5-6 |
| ON | NONE | ON |
| ON | NONE | ON |

3 ACTUATOR

S1 flush slider **S2** high slider **S3** side slider

4 TERMINATION

| | |
|------------------------------------|----------------------------------|
| M1 narrow pitch single pole | M3 wide pitch single pole |
| M2 narrow pitch double pole | M4 wide pitch double pole |

5 CONTACT

| Material | Terminal Plating | Rating |
|------------------------------|---------------------|--------------|
| Q silver ¹ | silver ¹ | 2A @ 250VAC |
| R gold ² | gold ² | 0.1A @ 30VDC |

1 Moveable contact & terminals: copper alloy, silver plated
 2 Moveable contact & terminals: copper alloy with gold plate over nickel plate

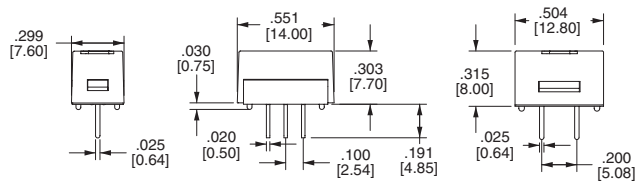
6 EPOXY SEAL

E epoxy seal

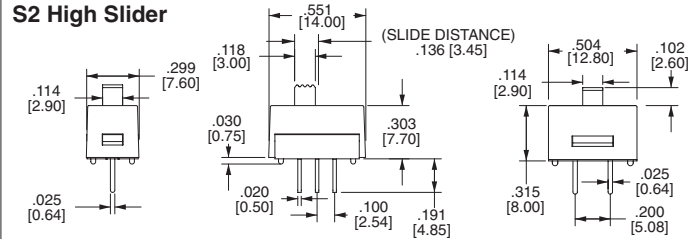
4PM-Series Dimensional Specifications: in. [mm]

ACTUATOR

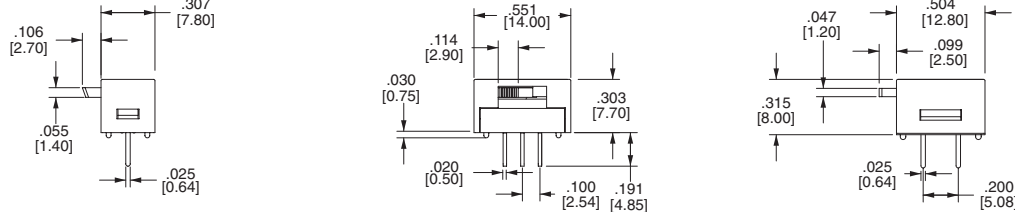
S1 Flush Slider



S2 High Slider

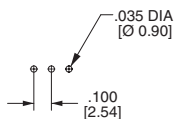


S3 Side Slider

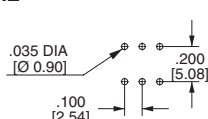


TERMINATION

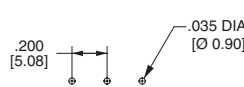
M1 SINGLE POLE



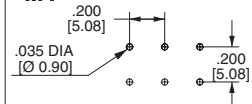
M2 DOUBLE POLE



M3 SINGLE POLE



M4 DOUBLE POLE



Other Carling Technologies Catalogs

Switches and Controls



This catalog includes the Carlingswitch brand of electrical switches for most any power switching need. Included are rocker, toggle, push-button, rotary and sealed switches with a wide variety of cir-

cuits, ratings, terminations, colors, illuminations, and legends. Worldwide certifications, UL1500, CE marked. Dimmer, Mirror Rotate & Wiper/Washer controls are also included.

Thermal Circuit Protectors



This catalog details Carling's thermal circuit protection products. Thermal protectors range from 0.1 to 40 amps. Front Panel Snap-in Mounting styles and Quick Connect

Terminals are included. Worldwide certifications, including UL1500, TUV and CE marked.

Circuit Protection



This catalog details the complete line of Carling circuit protection products including hydraulic/magnetic circuit breakers, thermal circuit protectors, and ground fault breakers. Breakers range

from 0.1 to 700 amps Hi-inrush delay curves, Front Panel Snap-in Mounting styles, Rockerguard Bezels, Dual-Coil functions, and Quick Connect Terminals are included. Worldwide certifications, including UL1500, UL489 and CE marked.

Digital Switching Systems



This catalog details Carling's Digital Switching Systems, including the Electronic Control System III, (ECS III). The ECS III features the latest in digital multiplex technology, creating a safer and

fully configurable control system for the marine environment. The ECS III eliminates complex wiring while increasing switching features and functionality, and simplifies troubleshooting.

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