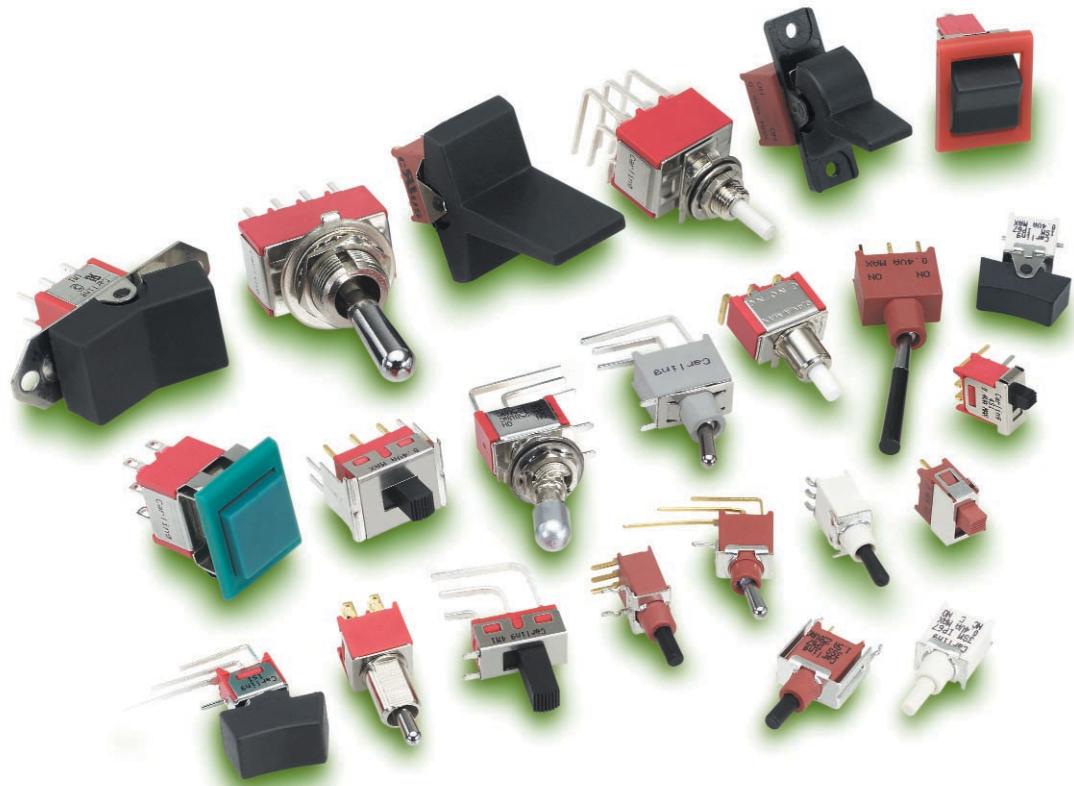


Miniature Switches

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.

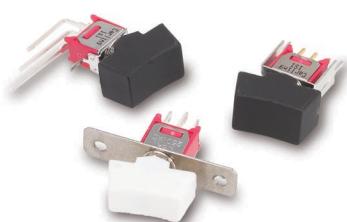
We look forward to working with you.

	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
	3S1		•					27-30
PUSHBUTTON	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
	4S1		•					46,48
SLIDE	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 Carlingswitch'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 misaligned, 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	1S1-Series: 30,000 make & break cycles @ full load 1SS & 1SM-Series: 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	1SS & 1SM-Series: IP67
Solder Heat Resistance.	MIL-STD-202, Method 210
Actuator Travel	25°
Materials	
Case	all UL94 V-0
	1S1-Series: Dially phthalate (DAP)
	1SS-Series: Glass filled nylon 6/6, flame retardant, heat stabilized
	1SM-Series: Glass filled nylon 4/6, flame retardant, heat stabilized
Rocker.	1S1-Series: Nylon (UL 94V-0)
	1SS & 1SM-Series: Nylon, black standard, internal o-ring sealed
Bushing	1S1-Series: Brass, nickel plated
	1SS-Series: Glass filled nylon 6/6, flame retardant, heat stabilized (UL 94V-0)
	1SM-Series: Glass filled nylon 4/6, flame retardant, heat stabilized (UL 94V-0)
Housing.	1S1-Series: Stainless Steel
Switch Support	1S1 & 1SM-Series: Brass, tin plated
Terminal Seal	Epoxy

1S1-Series Ordering Scheme



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
1 ON NONE
2 ON NONE
3 ON OFF
4 (ON) OFF
5 ON OFF

4 ACTUATOR STYLE
R1 Small rocker
R2 Narrow black rocker

5 ACTUATOR COLOR¹
1 white
2 black
3 red
4 orange
5 yellow
6 green
7 blue
8 brown
9 gray

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

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
M61	Snap-In, U bracket, 90° horizontal
M71	Snap-In, U bracket, 90° vertical
VS21	Snap-In, U bracket

7 CONTACT

Material	Terminal Plating	Rating	Approvals
G silver ¹	gold over silver ²	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 plated

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

8 EPOXY SEAL

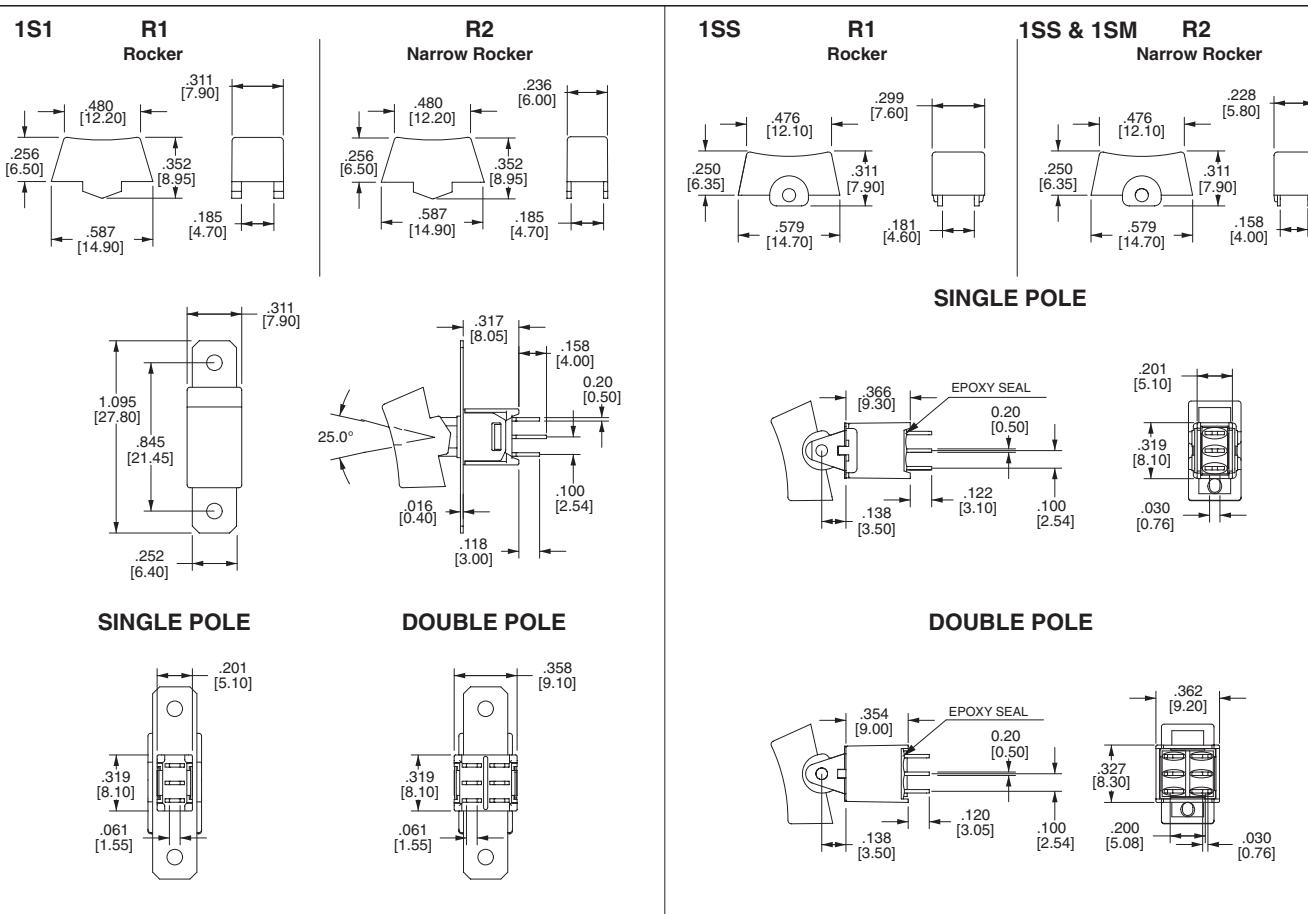
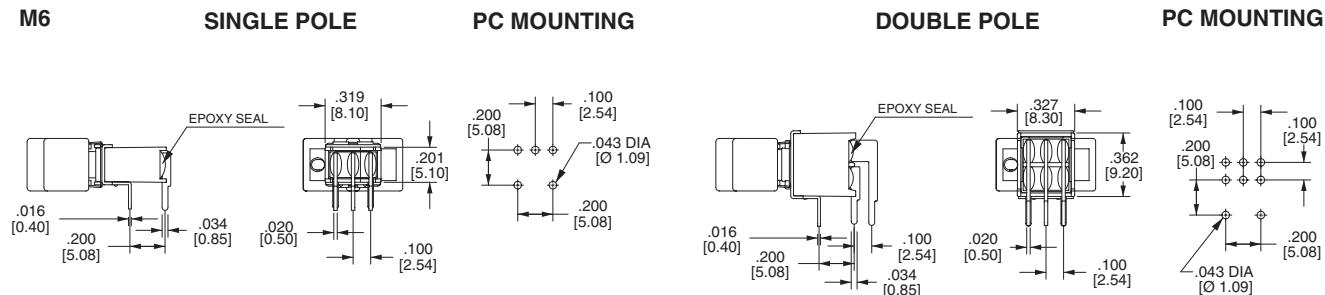
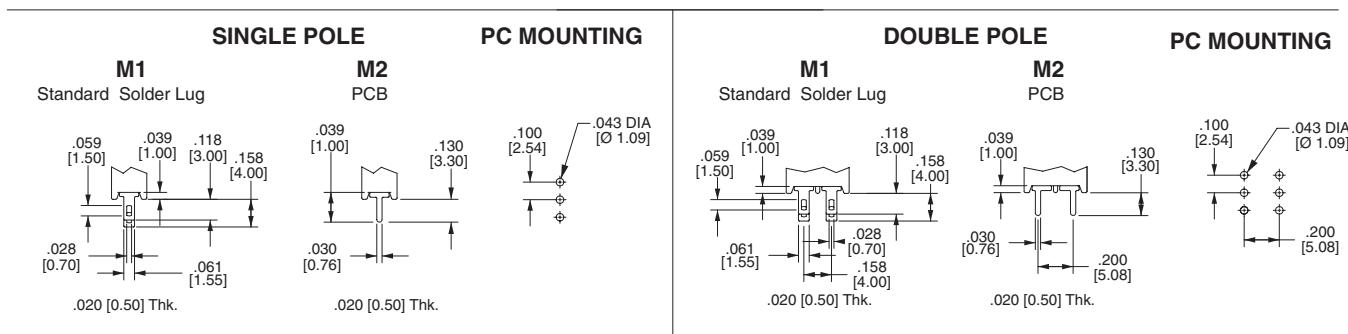
E	epoxy seal
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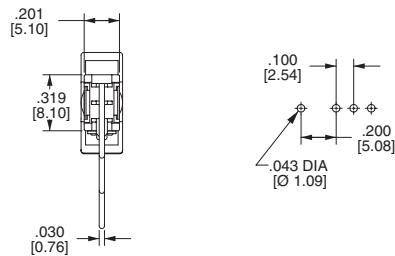
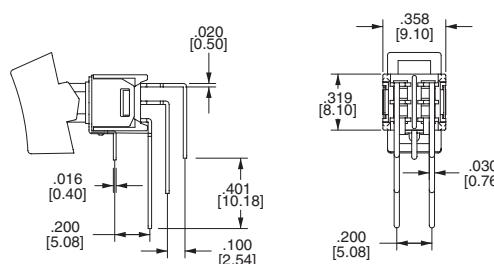
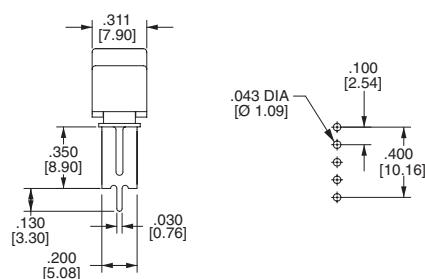
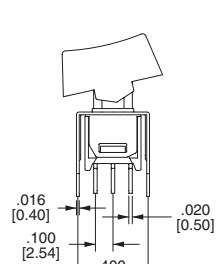
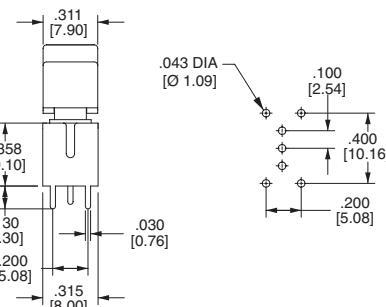
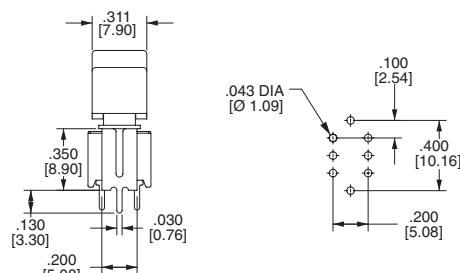
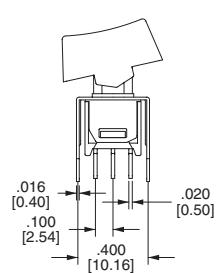
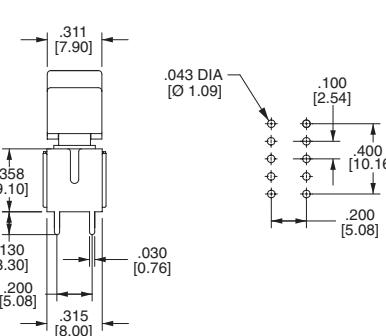
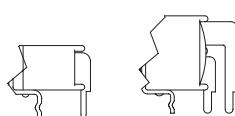
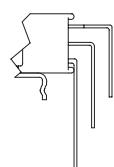
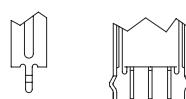
1SS-Series Ordering Scheme

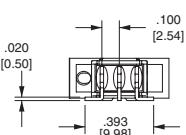
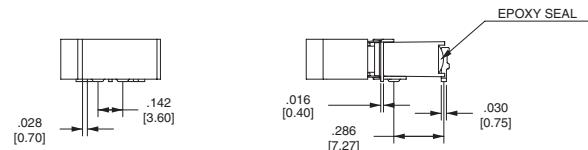
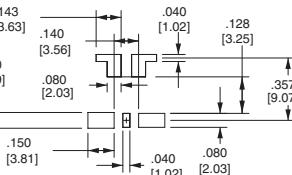
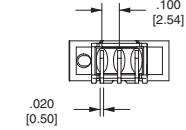
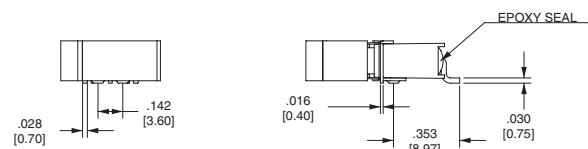
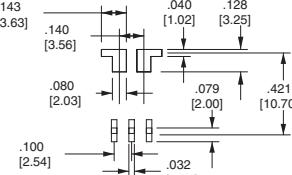
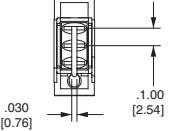
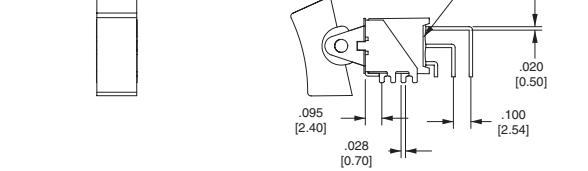
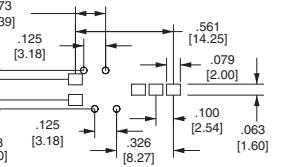
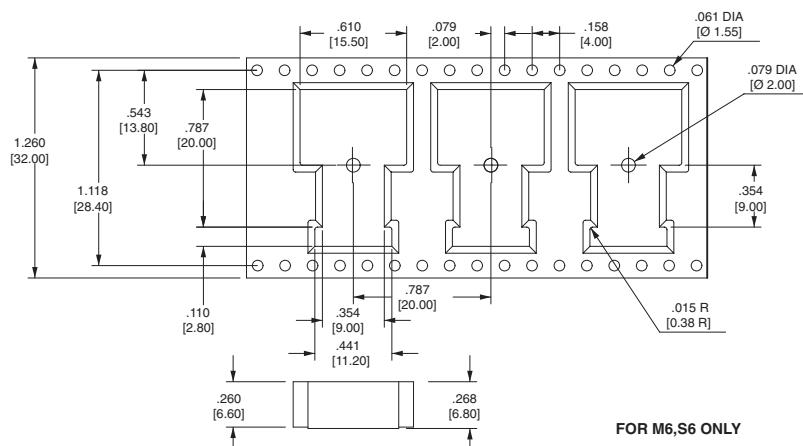
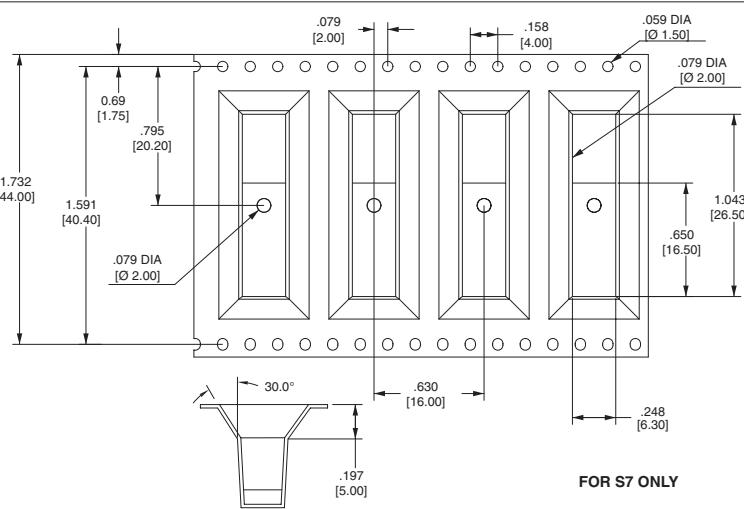
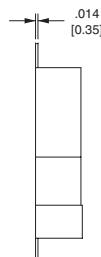
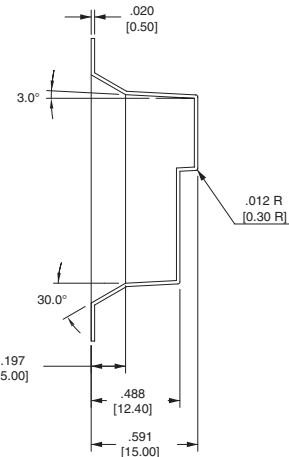

1 SERIES 1SS Sealed Sub-Miniature Rocker Switch	6 TERMINATION M1 Solder Lug M2 PCB M6 PC Mount, 90° horizontal M7 PC Mount, 90° vertical VS2 PC Mount, U bracket, .620 mounting x .460 high M61 Snap-In, U bracket, 90° horizontal M71 Snap-In, U bracket, 90° vertical VS21 Snap-In, U bracket, .620 mounting x .460 high
2 POLES WMSP single pole - uses terminals 1, 2 & 3. WMSP 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)	7 CONTACT 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
4 ACTUATOR STYLE R1 Small rocker R2 Narrow rocker	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
5 ACTUATOR COLOR¹ 1 white 4 orange 7 blue 2 black 5 yellow 8 brown 3 red 6 green 9 gray	8 EPOXY SEAL E epoxy seal

1SM-Series Ordering Scheme


1 SERIES 1SM Sealed Surface Mount Sub-Miniature Rocker Switch	5 TERMINATION M6 Surface Mount, 90° flat - horizontal/side terms S6 Surface Mount, 90° horizontal/back terms S7 Surface Mount, 90° vertical
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)	6 CONTACT 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
4 ACTUATOR STYLE R2 Narrow black rocker	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
PC MOUNTING

VS3
PC MOUNTING

VS2
PC MOUNTING

DOUBLE POLE
PC MOUNTING

VS3
PC MOUNTING

SNAP-IN TERMINATION
M61

M71

VS21


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

PC MOUNTING

S6

PC MOUNTING

S7

PC MOUNTING

REEL TAPING

FOR M6, S6 ONLY

FOR S7 ONLY




1M1-Series
Miniature Rocker &
Paddle Switch



1MS-Series
Sealed Miniature
Rocker & Paddle
Switch

Specifications

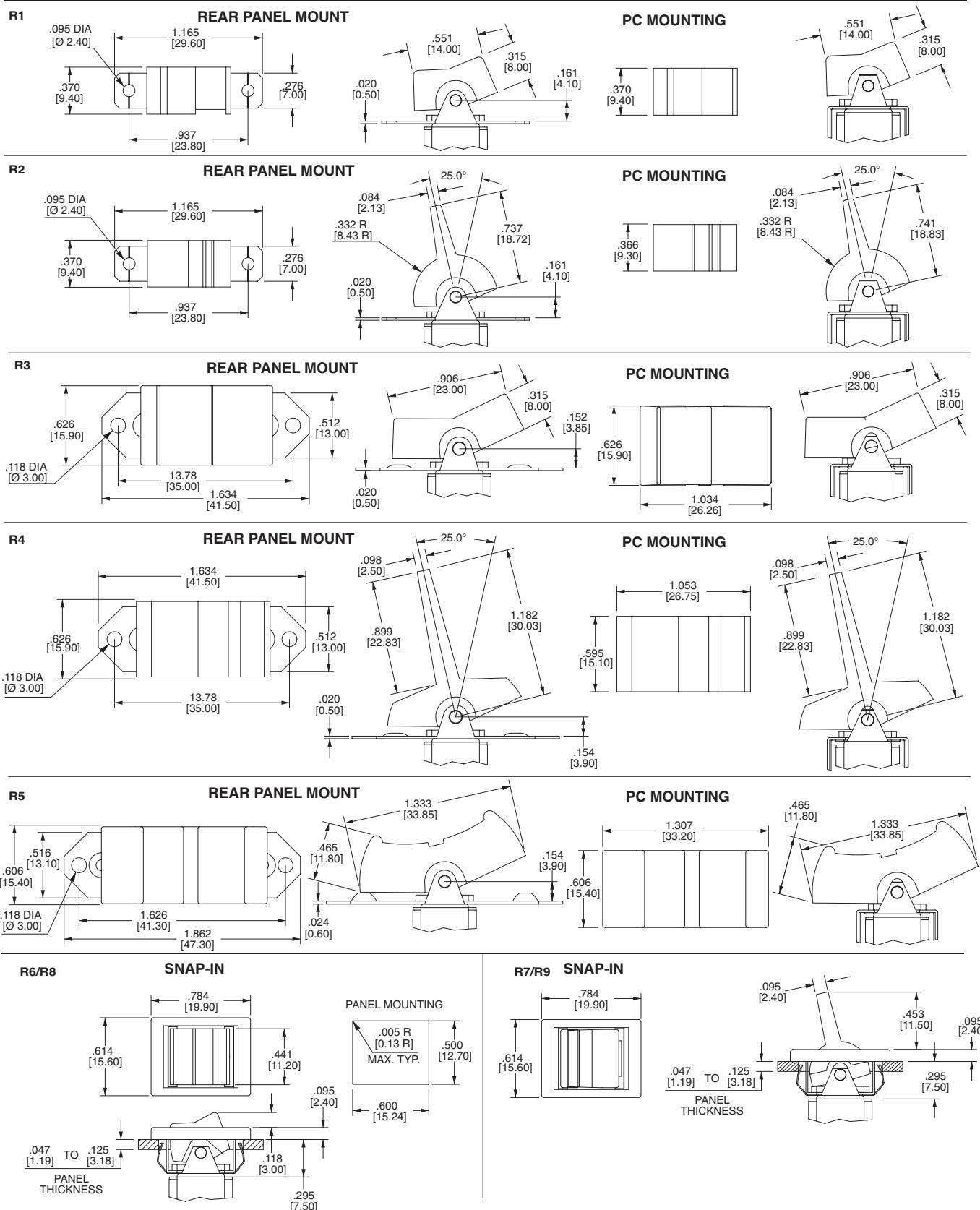
Contact Rating	refer to ordering scheme.
Electrical Life	1M1-Series: 50,000 make & break cycles @ full load 1MS-Series: 30,000 make & break cycles @ full load
Contact Resistance.	10 mΩ max. initial @ 2-4 VDC 100mA for both silver & gold plated contacts.
Insulation Resistance	1000 MΩ min.
Dielectric Strength	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

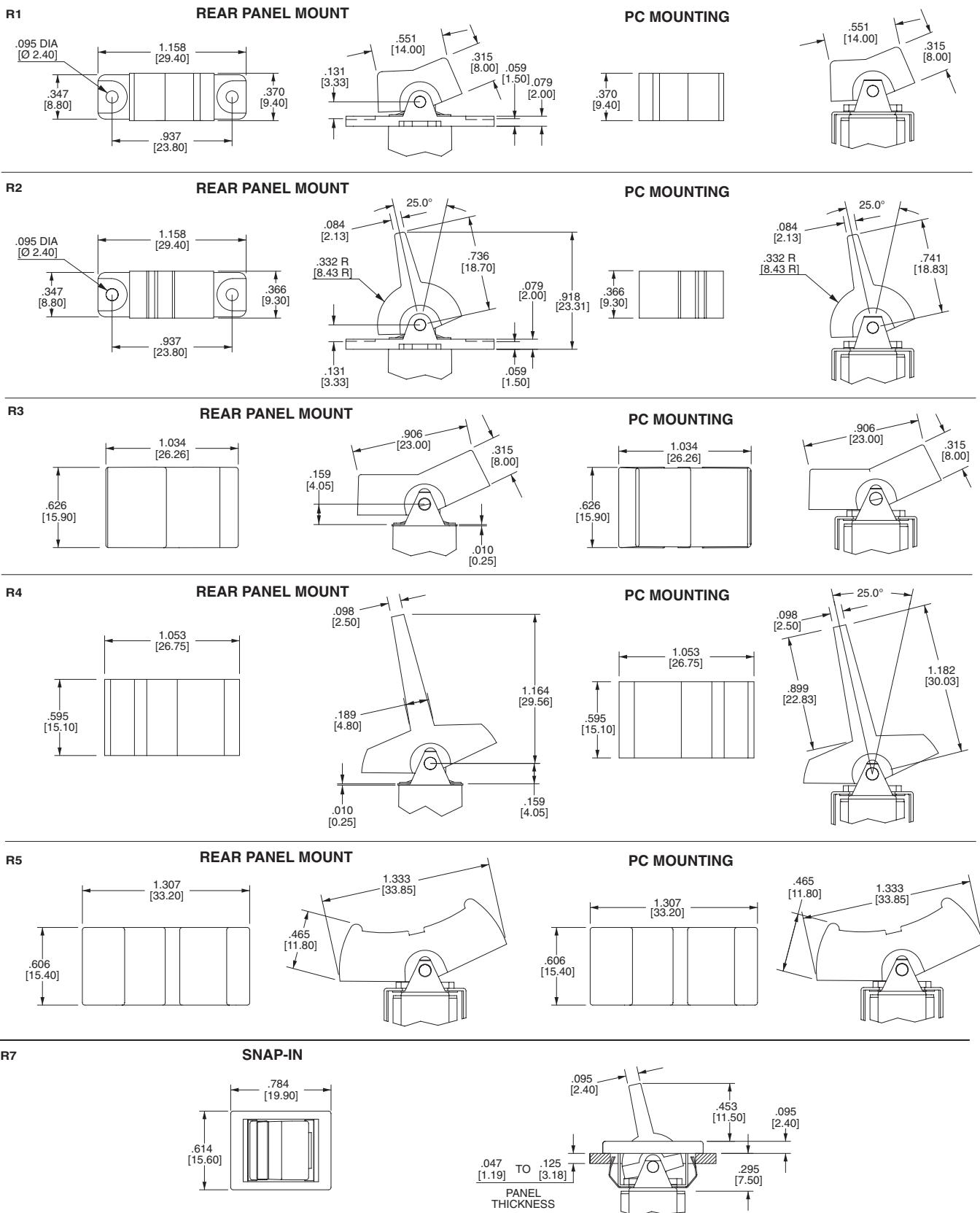

1 SERIES 1M1 Miniature Rocker Switch	7 TERMINATION M1 Solder Lug M2 PCB M3 Quick Connect M5-1 Wire Wrap .750 [19.05] M5-2 Wire Wrap .964 [24.48] M5-3 Wire Wrap .425 [10.80] M5-4 Wire Wrap 1.062 [26.97] M6 PC Mount, 90° horizontal M7 PC Mount, 90° vertical VS2 PC Mount, U bracket, .620 mounting x .460 high VS3 PC Mount, U bracket, .620 mounting x .630 high	VS4 PC Mount, U bracket, .460 high VS5 PC Mount, U bracket, .630 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 VS31 Snap-In, U bracket, .620 mounting x .630 high VS41 Snap-In, U bracket VS51 Snap-In, U bracket
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	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) –	
4 ACTUATOR STYLE R1 Small rocker R2 Small paddle R3 Medium rocker R4 Large paddle	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	NOTE: 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
	1 Black is standard. Other colors available, consult factory for details. 2 Selection 6 is blank if actuator style R8 or R9 (no frame)	
	9 EPOXY SEAL E epoxy seal	

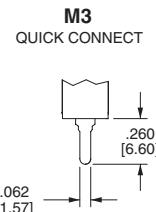
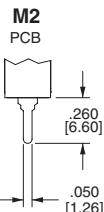
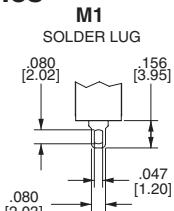
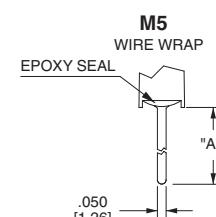
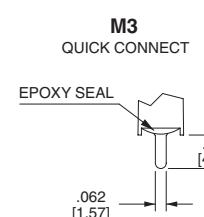
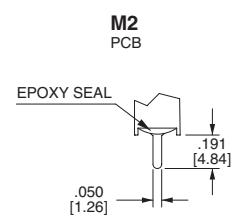
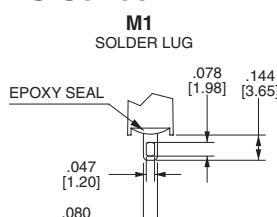
1MS-Series Ordering Scheme


1 SERIES 1MS Sealed Miniature Rocker Switch	5 TERMINATION M1 Solder Lug M2 PCB M3 Quick Connect M5-1 Wire Wrap .750 [19.05] M5-2 Wire Wrap .964 [24.48] M5-3 Wire Wrap .425 [10.80] M5-4 Wire Wrap 1.062 [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, .460 high VS5 PC Mount, U bracket, .630 high VS21 Snap-In, U bracket, .620 mounting x .460 high VS31 Snap-In, U bracket, .620 mounting x .630 high VS41 Snap-In, U bracket VS51 Snap-In, U bracket
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	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) –	
4 ACTUATOR STYLE R1 Small rocker R2 Small paddle R3 Medium rocker R4 Large paddle	7 EPOXY SEAL E epoxy seal	
	NOTE: 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	

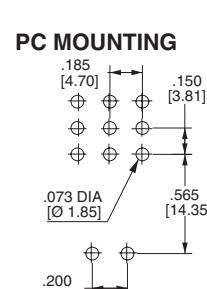
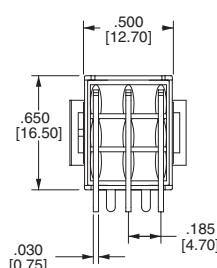
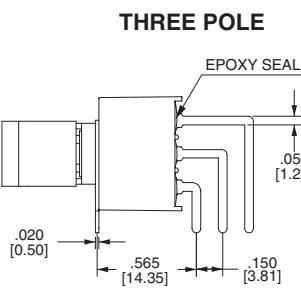
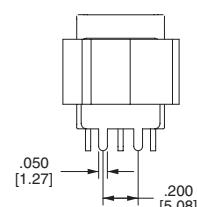
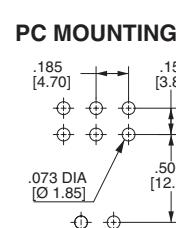
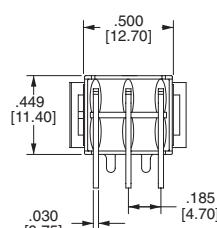
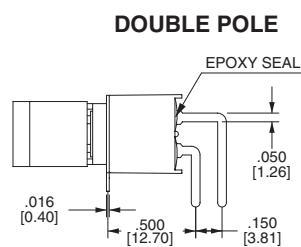
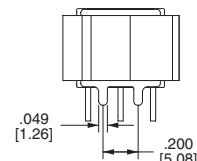
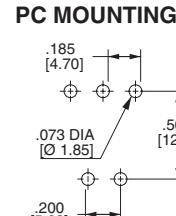
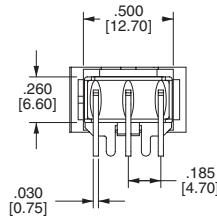
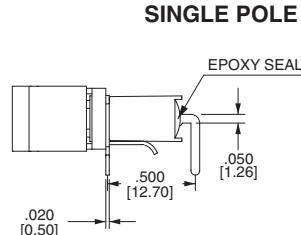
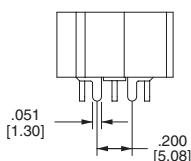
1M1-Series Dimensional Specifications: in.[mm]
ACTUATOR


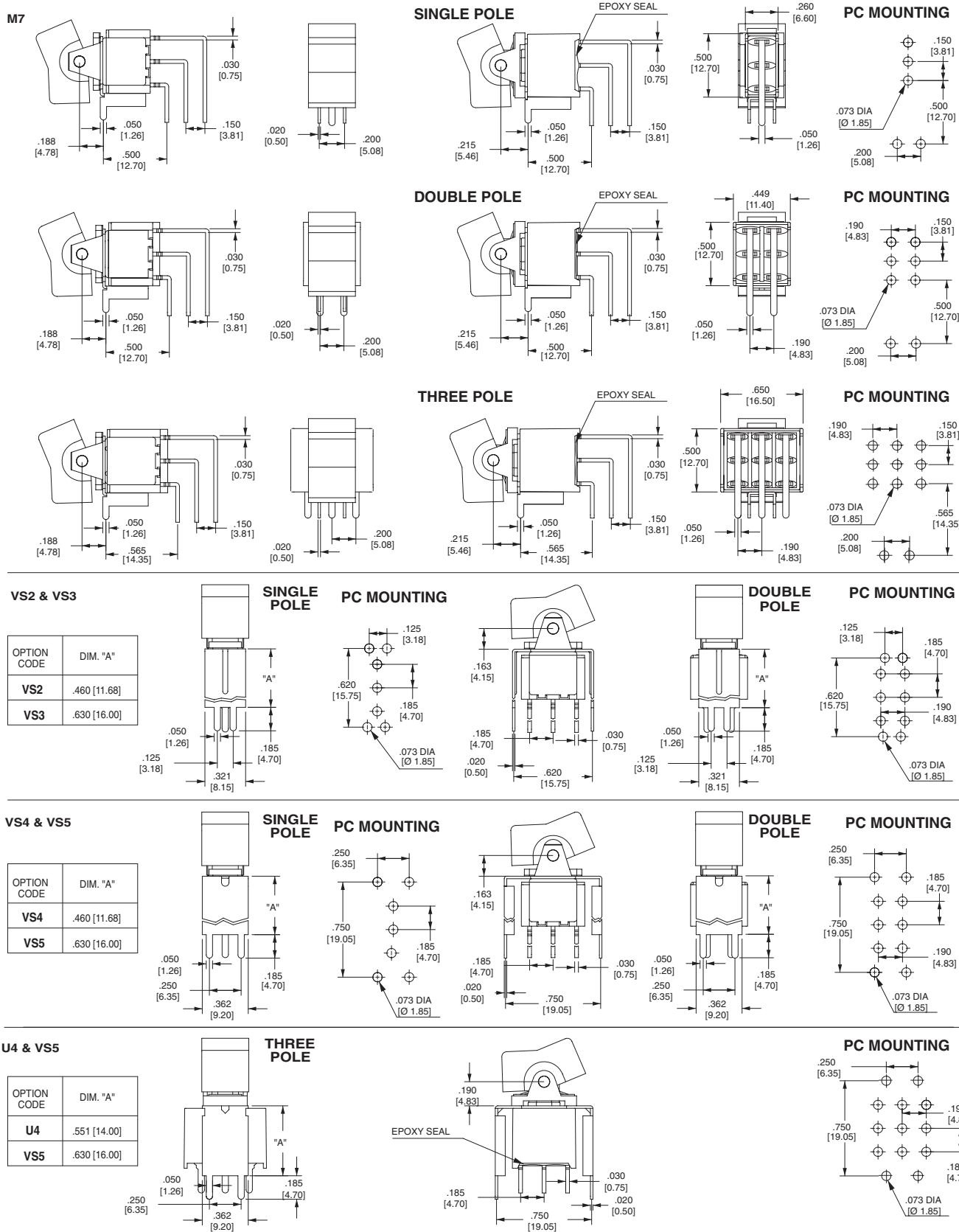
R8 and R9 are without frame. Actuators are as shown.

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


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

1MS-Series


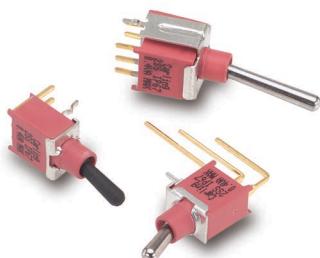
OPTION CODE	DIM. "A"
M5-1	.750 [19.05]
M5-2	.964 [24.48]
M5-3	.425 [10.80]
M5-4	1.062 [26.97]

1M-Series
M6


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




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: Dially 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



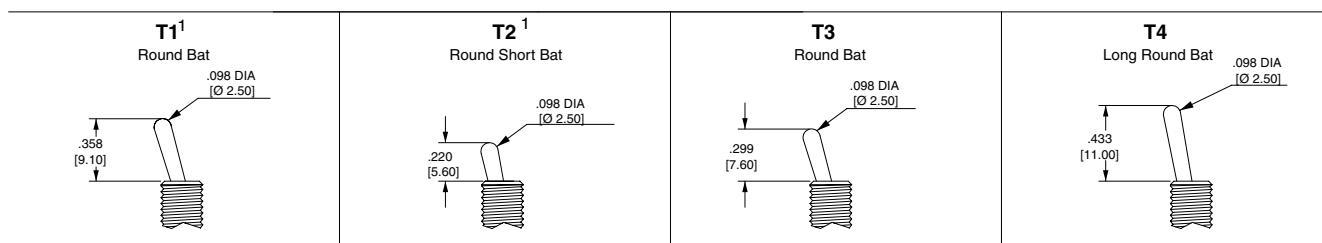
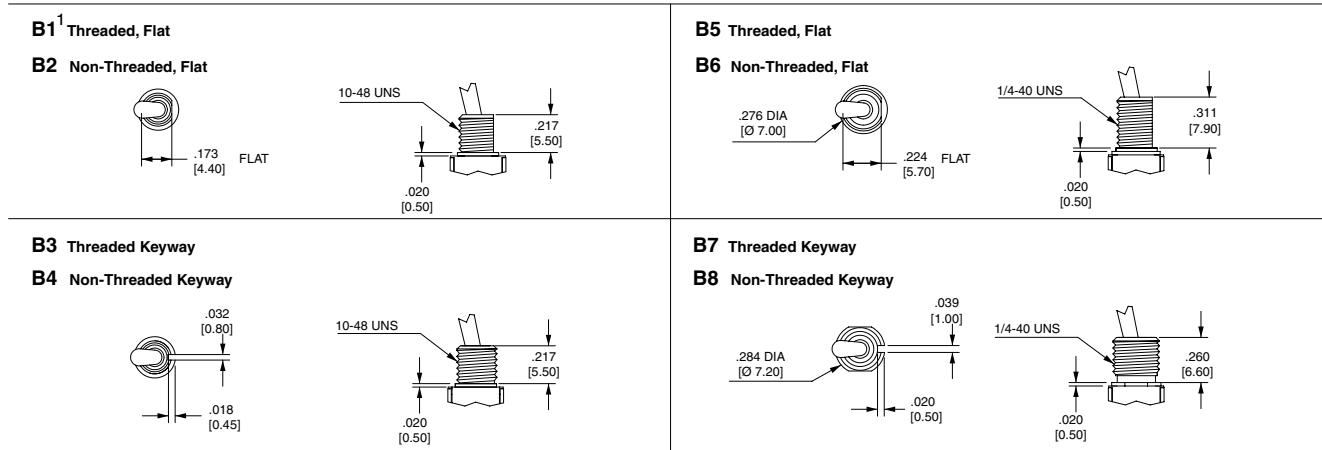
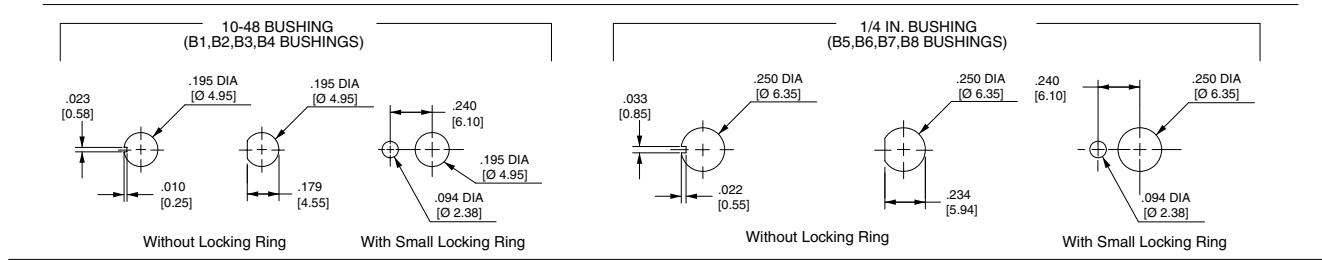
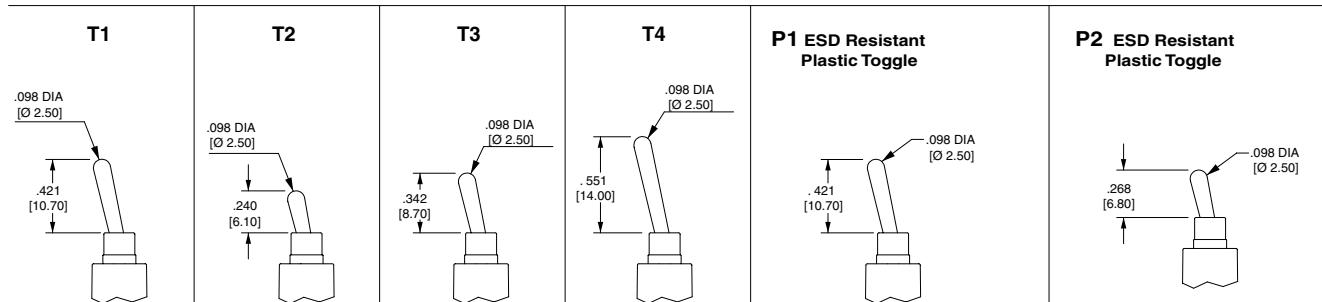
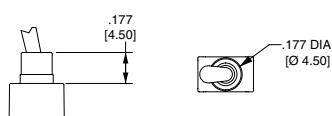
1 SERIES 2S1 Sub-Miniature Toggle Switch	6 TERMINATION M1 Solder Lug M2 PCB M6 PC Mount, 90° horizontal M7 PC Mount, 90° vertical VS2 PC Mount, U bracket, .620 mounting x .460 high VS3 PC Mount, U bracket, .620 mounting x .630 high VS21 Snap-In, U bracket
2 POLES MSP single pole - uses terminals 1, 2 & 3. MDP double pole uses terminals 1,2, 3, 4, 5 & 6.	
3 CIRCUIT () - momentary	
Switching Position: 2-3, 5-6 1 ON NONE 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	7 CONTACT Material Terminal Plating Rating Approvals G silver ¹ gold over silver ³ 3A@125VAC or 28VDC, UL CSA K gold ² tin-lead ⁴ 1.5A @ 250VAC P silver ¹ tin-lead ⁴ 0.4VA max. @20V max (AC/DC) Q silver ¹ silver ¹ 3A@125VAC or 28VDC, UL CSA R gold ² gold ² 1.5A @ 250VAC 0.4VA max. @20V max (AC/DC)
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 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
Note: 1 All Switches come with standard nut, washer and locking ring shipped bulk. B5 & B7 bushing styles use small locking ring.	8 EPOXY SEAL E epoxy seal

2SS-Series Ordering Scheme

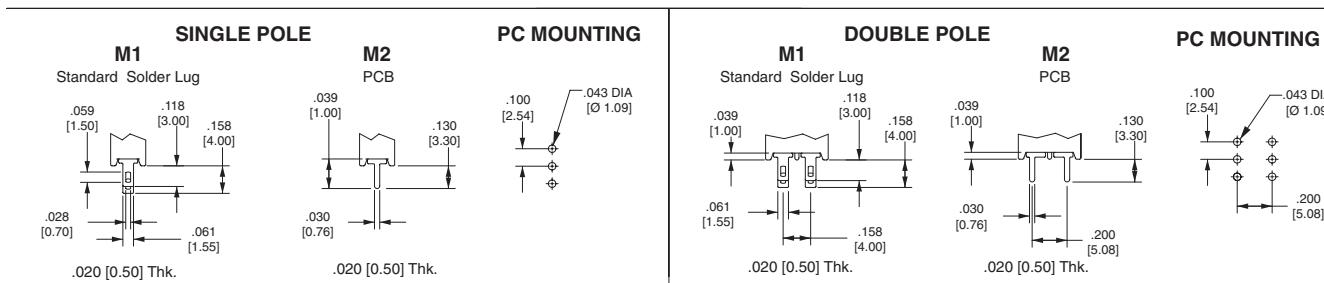

1 SERIES 2SS Sealed Sub-Miniature Toggle Switch	6 TERMINATION M2 PCB M6 PC Mount, 90° horizontal M61 Snap-In PC Mount, 90° horizontal M7 PC Mount, 90° vertical M71 Snap-In PC Mount, 90° vertical VS2 PC Mount, U bracket, .620 mounting x .460 high VS21 Snap-In, U bracket																				
2 POLES MSP single pole - uses terminals 1, 2 & 3. MDP double pole uses terminals 1,2, 3, 4, 5 & 6.																					
3 CIRCUIT () - momentary	7 CONTACT <table><thead><tr><th>Material</th><th>Terminal Plating</th><th>Rating</th><th></th></tr></thead><tbody><tr><td>G silver¹</td><td>gold over silver³</td><td>3A@125VAC or 28VDC, 1.5A @ 250VAC</td><td>IP67</td></tr><tr><td>K gold²</td><td>tin-lead plated⁴</td><td>0.4VA max. @20V max (AC/DC)</td><td>IP67</td></tr><tr><td>P silver¹</td><td>tin-lead plated⁴</td><td>3A@125VAC or 28VDC, 1.5A @ 250VAC</td><td>IP67</td></tr><tr><td>R gold²</td><td>gold plated²</td><td>0.4VA max. @20V max (AC/DC)</td><td>IP67</td></tr></tbody></table>	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
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R gold ²	gold plated ²	0.4VA max. @20V max (AC/DC)	IP67																		
4 ACTUATOR STYLE T1 Round toggle .358 length T2 Round toggle .220 length T3 Round toggle .299 length T4 Round toggle .433 length	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																				
5 BUSHING B4 Unthreaded bushing	8 EPOXY SEAL E epoxy seal																				

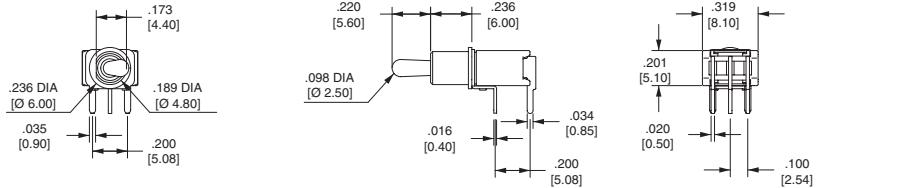
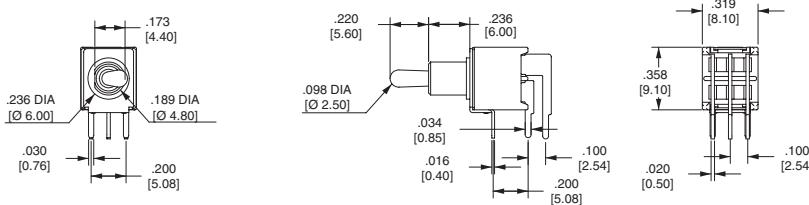
2SM-Series Ordering Scheme

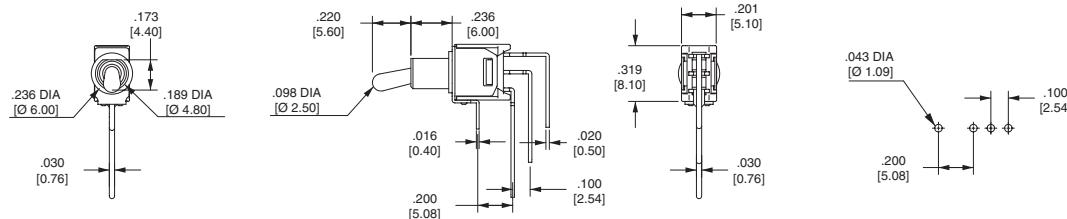
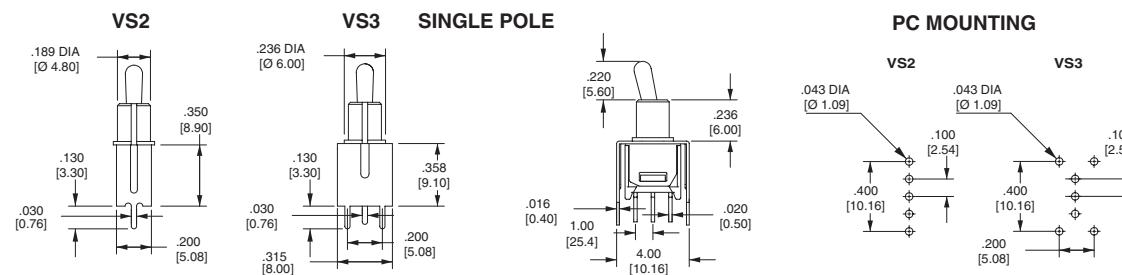
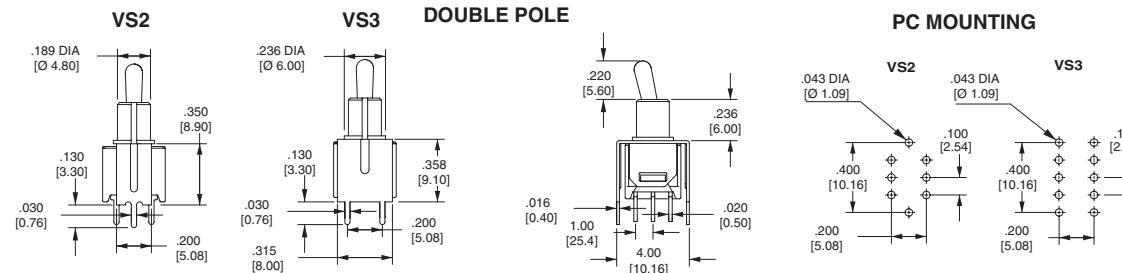
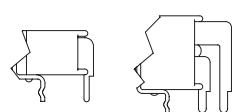
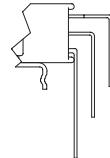
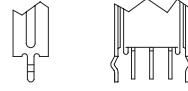

1 SERIES 2SM Sealed Surface Mount Sub-Miniature Toggle Switch	5 TERMINATION M6 Surface Mount, 90° flat M7 Surface Mount, 90° vertical S6 Surface Mount, 90° horizontal																				
2 POLES MSP single pole - uses terminals 1, 2 & 3.																					
3 CIRCUIT () - momentary	6 CONTACT <table><thead><tr><th>Material</th><th>Terminal Plating</th><th>Rating</th><th></th></tr></thead><tbody><tr><td>G silver¹</td><td>gold over silver³</td><td>3A@125VAC or 28VDC, 1.5A @ 250VAC</td><td>IP67</td></tr><tr><td>K gold²</td><td>tin-lead plated⁴</td><td>0.4VA max. @20V max (AC/DC)</td><td>IP67</td></tr><tr><td>P silver¹</td><td>tin-lead plated⁴</td><td>3A@125VAC or 28VDC, 1.5A @ 250VAC</td><td>IP67</td></tr><tr><td>R gold²</td><td>gold plated²</td><td>0.4VA max. @20V max (AC/DC)</td><td>IP67</td></tr></tbody></table>	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
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R gold ²	gold plated ²	0.4VA max. @20V max (AC/DC)	IP67																		
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	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.																				

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

BUSHING

PANEL MOUNTING

2SS-Series
ACTUATOR

BUSHING
B4

NOTE:

1 Subtract 2.55mm from toggle length for B1 bushing.

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

2SS-Series
M2
SINGLE POLE
DOUBLE POLE

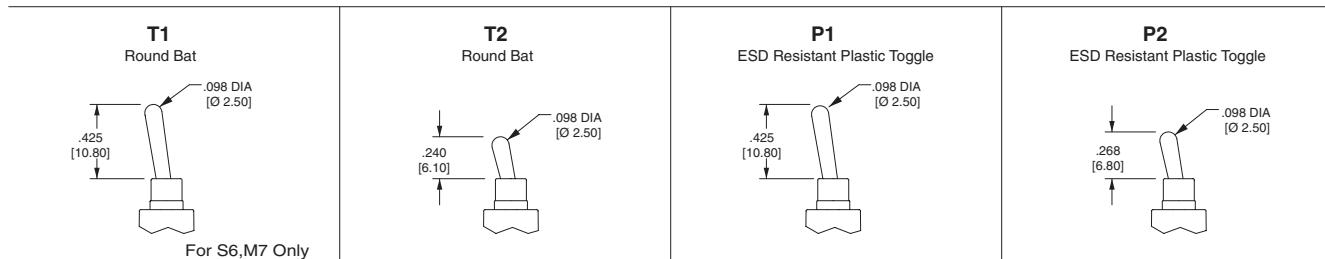
2S-Series
M6
SINGLE POLE
PC MOUNTING

DOUBLE POLE
PC MOUNTING


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
VS3

VS2
VS3
DOUBLE POLE
PC MOUNTING
VS3
SNAP-IN TERMINATION
M61

M71

VS21


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

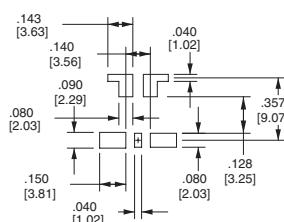
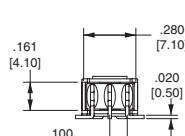
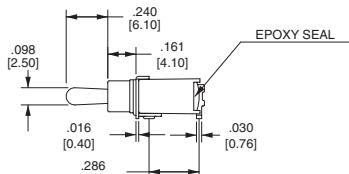
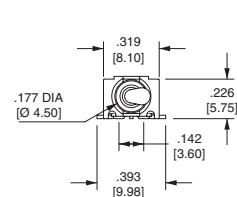
2SM-Series Dimensional Specifications: in. [mm]

ACTUATOR

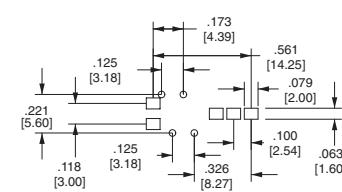
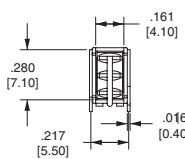
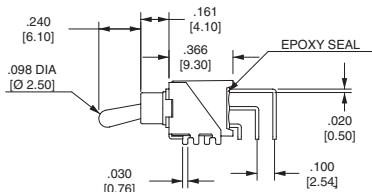
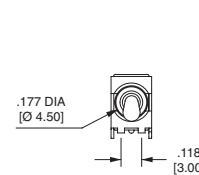


TERMINATION

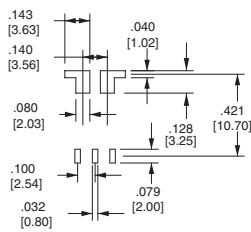
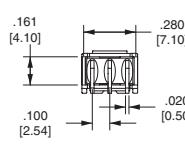
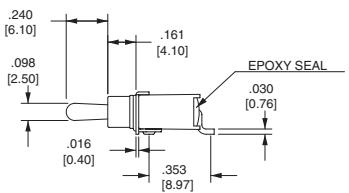
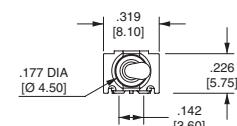
M6
90° Horizontal

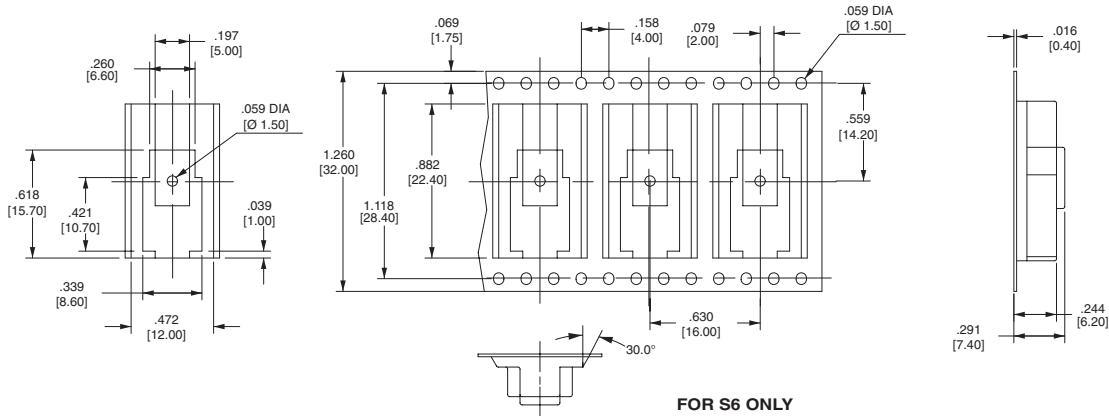
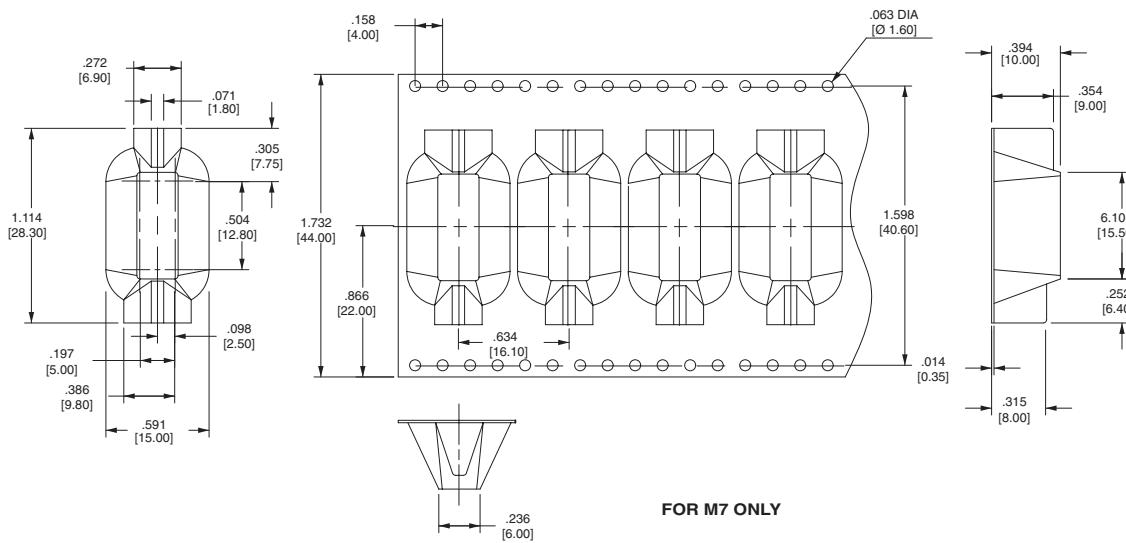
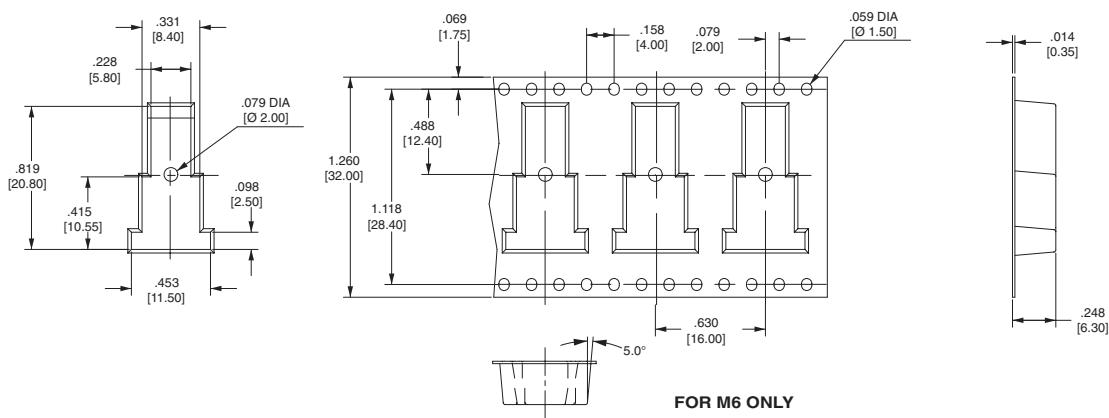


M7
90° Vertical



S6
90° Horizontal



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:** Dially 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



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



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



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 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 B8 ² 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 <table border="1"><thead><tr><th>Material</th><th>Terminal Plating</th><th>Rating</th><th>Approvals</th></tr></thead><tbody><tr><td>G silver¹</td><td>gold over silver³</td><td>5A @125VAC or 28VDC, 2A @ 250VAC</td><td>UL CSA</td></tr><tr><td>K gold²</td><td>tin-lead⁴</td><td>0.4VA max. @20V max (AC/DC)</td><td>–</td></tr><tr><td>P silver¹</td><td>tin-lead⁴</td><td>5A @125VAC or 28VDC, 2A @ 250VAC</td><td>UL CSA</td></tr><tr><td>Q silver¹</td><td>silver¹</td><td>5A @125VAC or 28VDC, 2A @ 250VAC</td><td>UL CSA</td></tr><tr><td>R gold²</td><td>gold²</td><td>0.4VA max. @20V max (AC/DC)</td><td>–</td></tr></tbody></table> NOTE: 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	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)	–	8 EPOXY SEAL E epoxy seal
Material	Terminal Plating	Rating	Approvals																												
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R gold ²	gold ²	0.4VA max. @20V max (AC/DC)	–																												

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 (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)	–

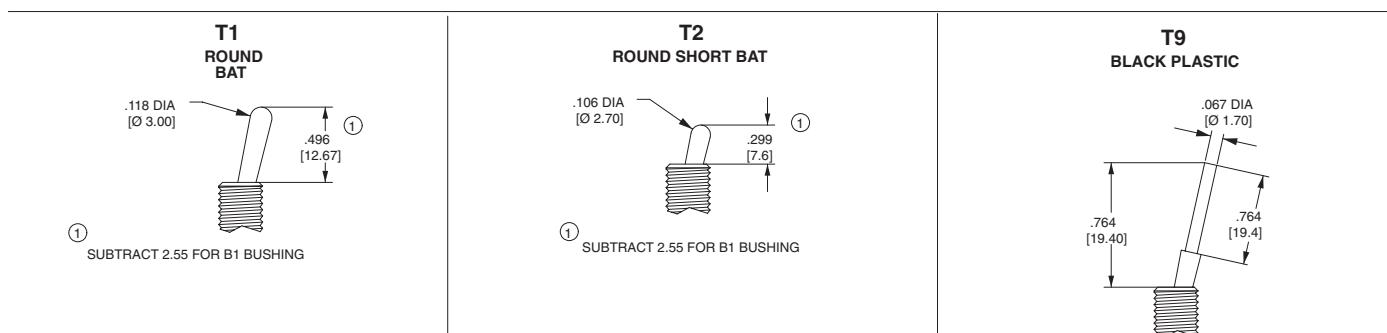
1 Moveable contact & terminals: copper alloy, silver plated
 2 Moveable contact & terminals: copper alloy with gold plate over nickel plated
 3 Terminals: silver plated with outer layer in gold plating
 4 Outer terminals: copper alloy with tin-lead over nickel plated

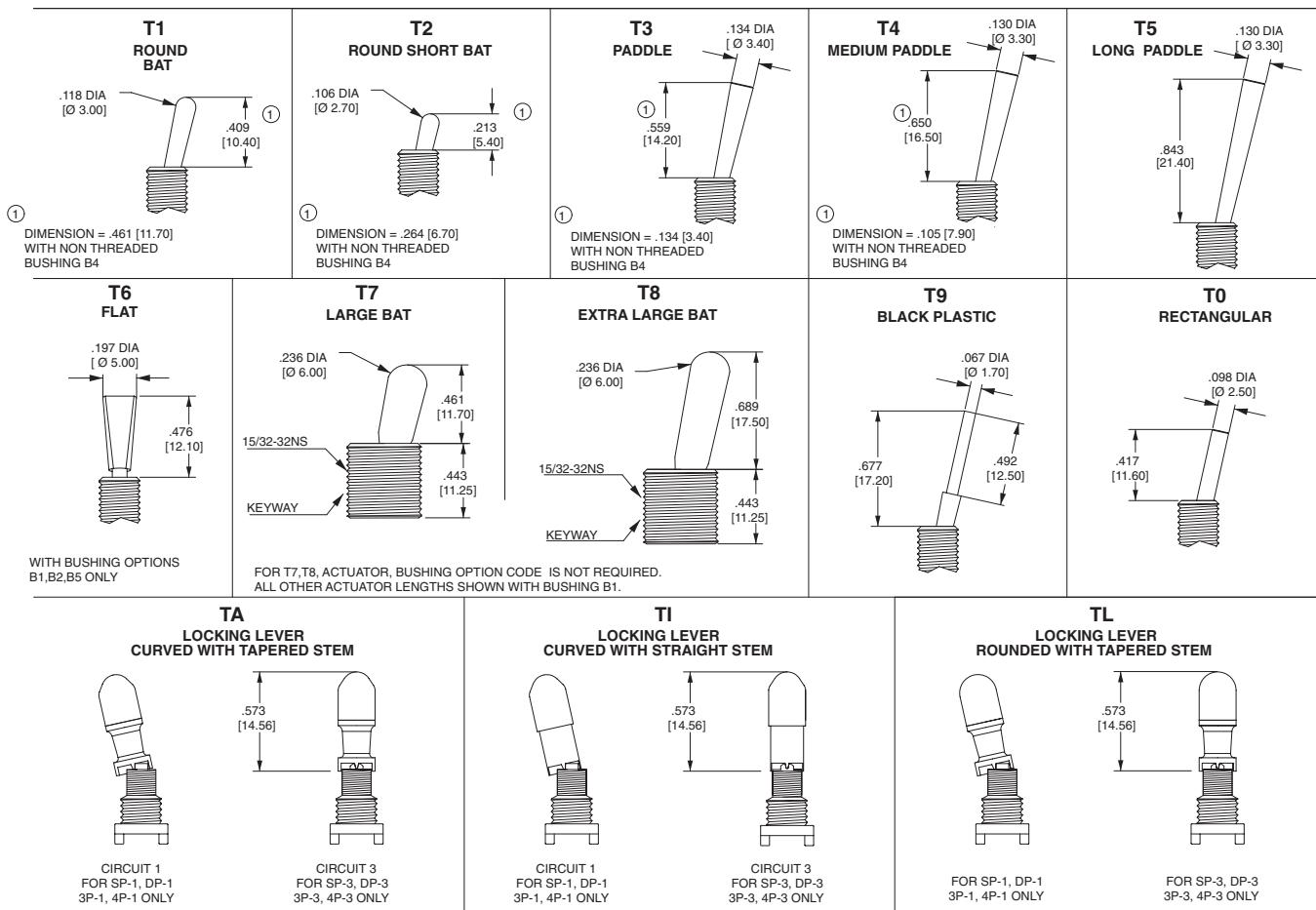
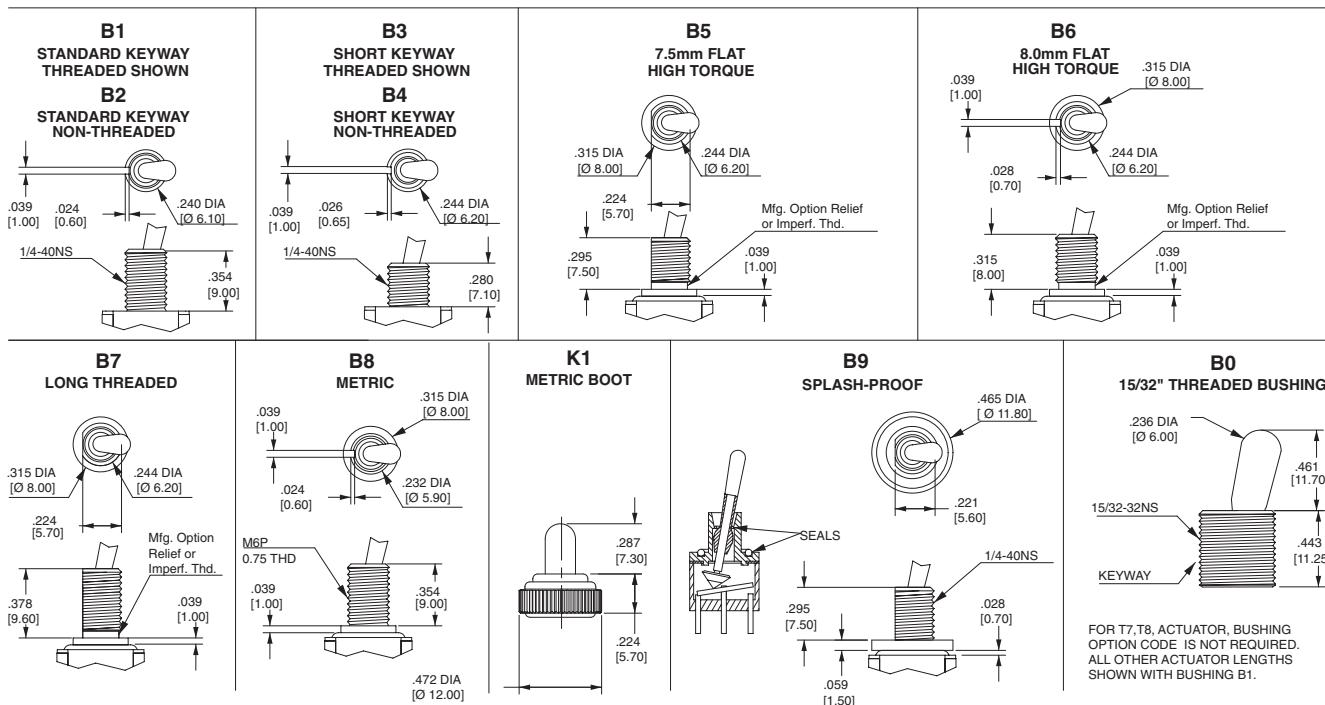
8 EPOXY SEAL

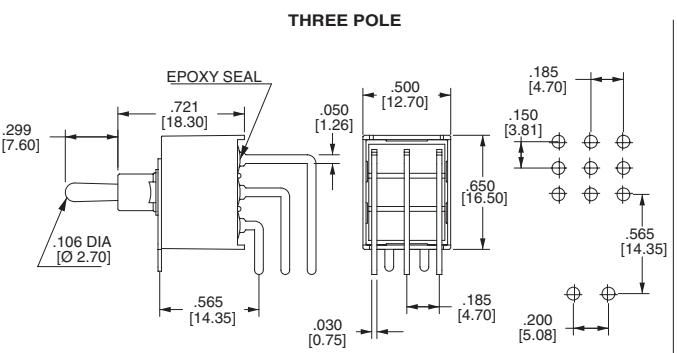
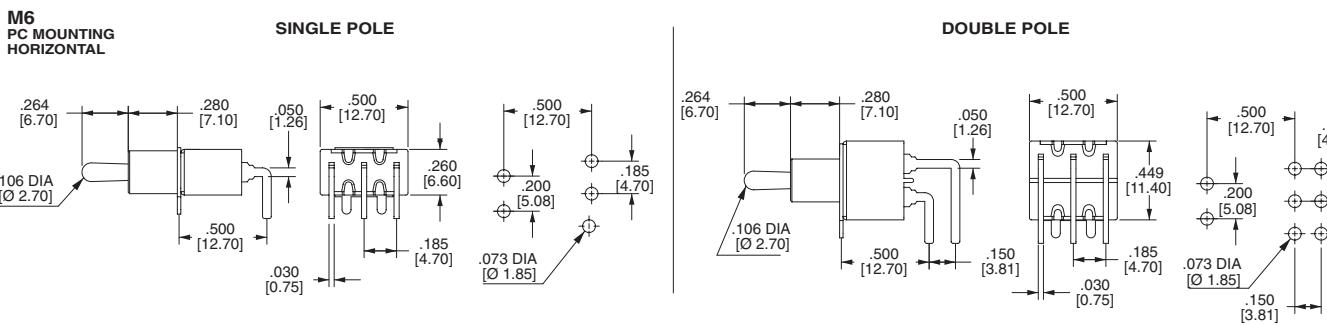
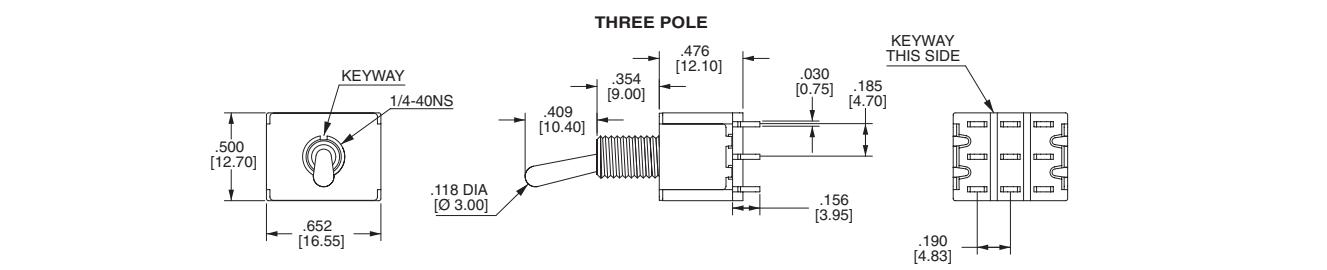
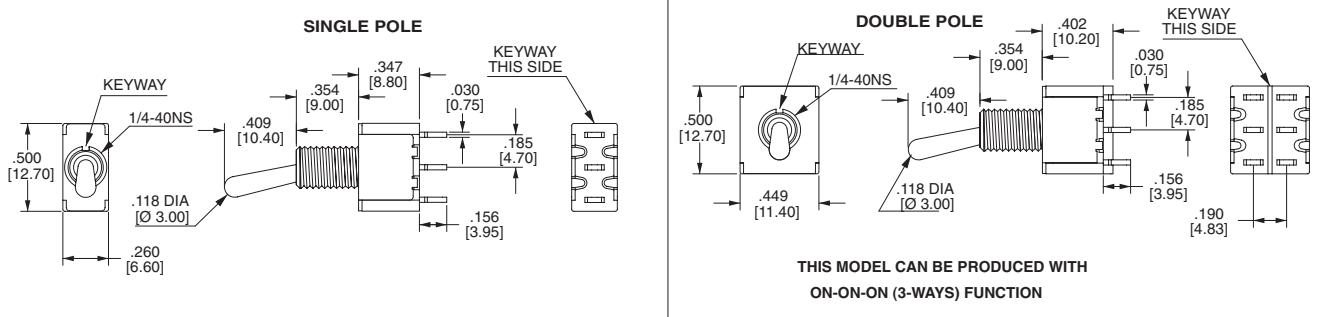
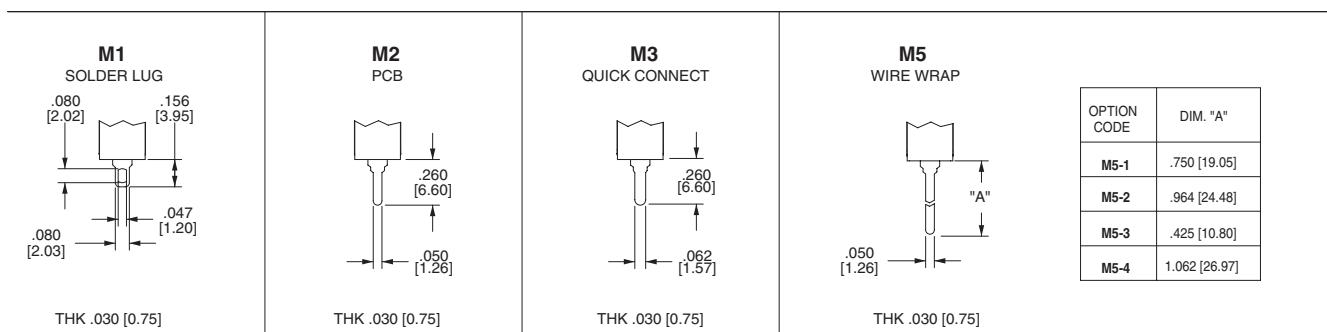
E epoxy seal

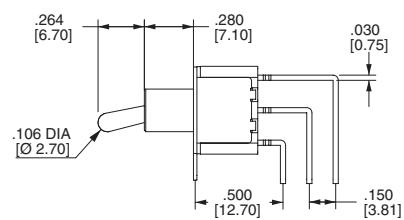
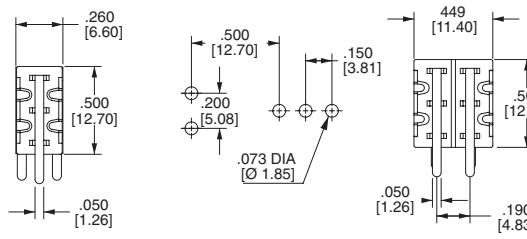
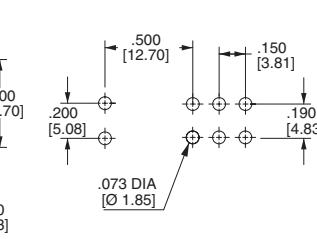
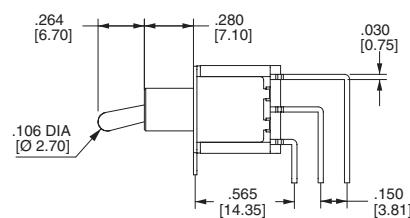
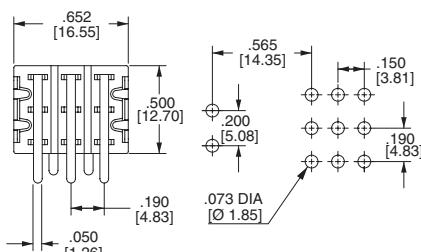
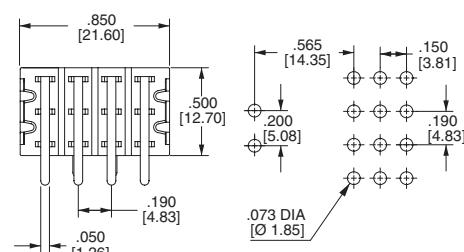
NOTE:

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.

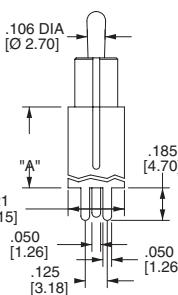
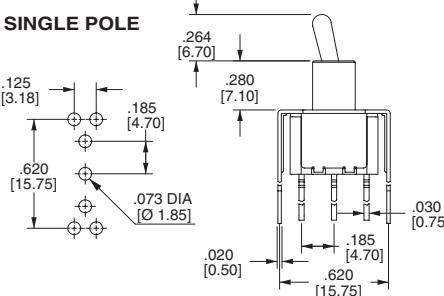
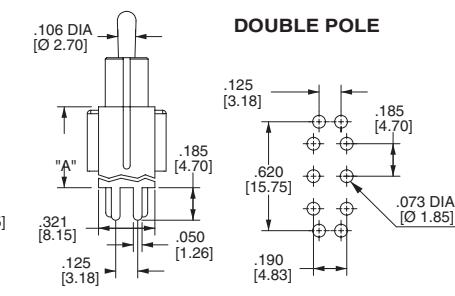
2M-Series Dimensional Specifications: in. [mm]
2MS & 2M2-Series
ACTUATOR


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

BUSHING


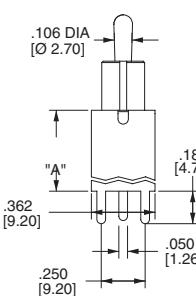
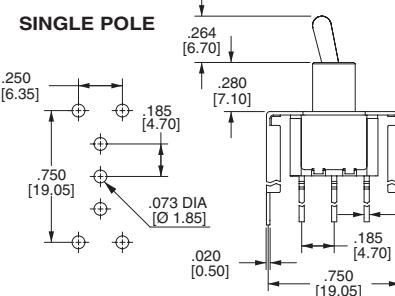
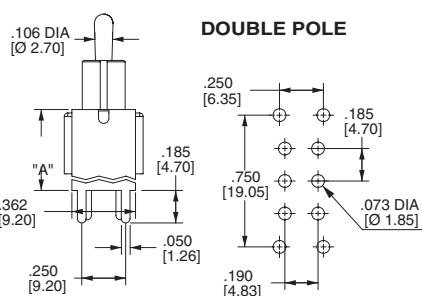
2M-Series Dimensional Specifications: in. [mm]
TERMINATION


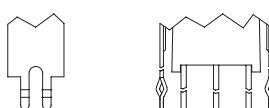
2M-Series Dimensional Specifications: in. [mm]
TERMINATION
M7
SINGLE POLE & DOUBLE POLE
PC MOUNT VERTICAL

SINGLE POLE

DOUBLE POLE

PC MOUNT VERTICAL

THREE POLE

FOUR POLE

VS2 & VS3
"U" BRACKET
PC MOUNT

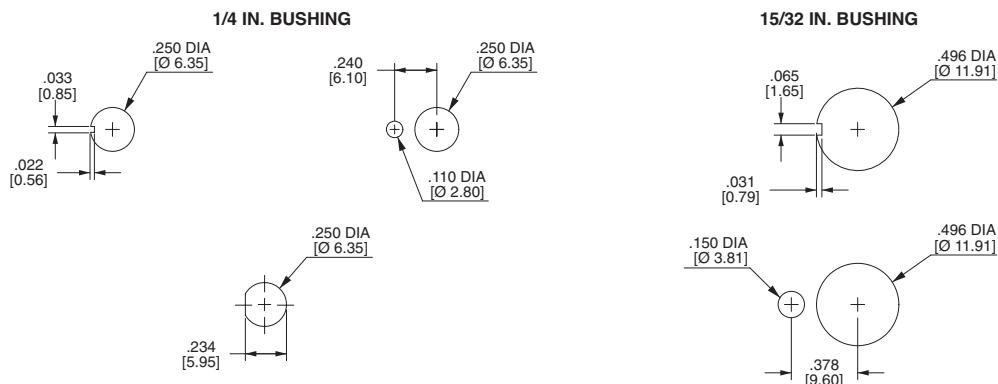
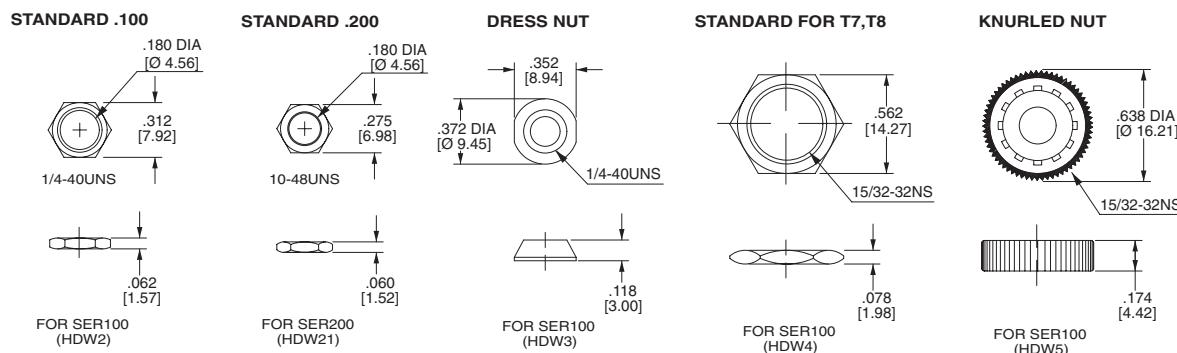
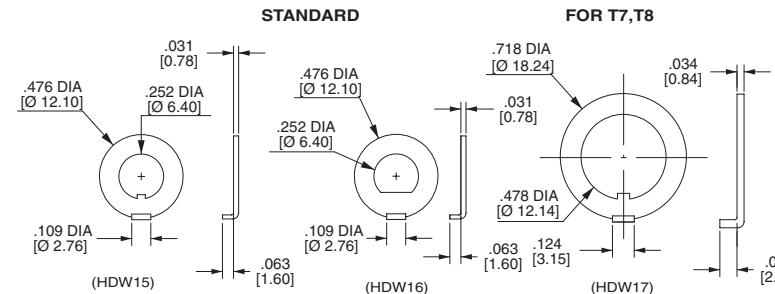
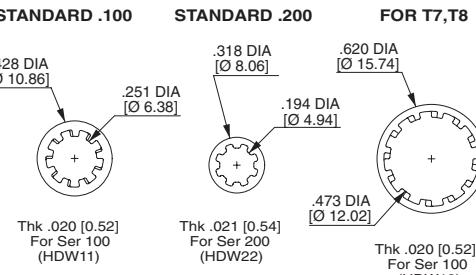
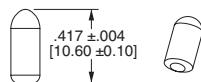
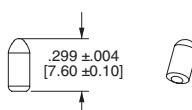
OPTION CODE	DIM. "A"
VS2	.460 [11.68]
VS3	.630 [16.00]


SINGLE POLE

DOUBLE POLE

VS4 & VS5
"U" BRACKET
PC MOUNT

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

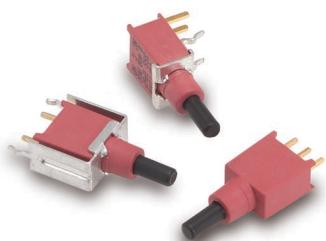

SINGLE POLE

DOUBLE POLE

SNAP-IN TERMINATION OPTIONS
VS21

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


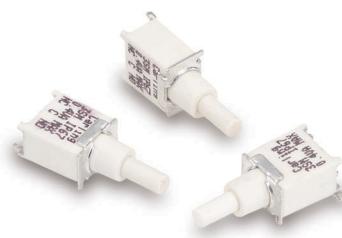
2M-Series Dimensional Specifications: in. [mm]
PANEL MOUNTING

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

3S1-Series Ordering Scheme



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"

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	<i>3SS & 3SM-Series:</i> IP67
Solder Heat Resistance	MIL-STD-202, Method 210
Actuator Travel	25°
Materials	
Case	UL 94-0
	<i>3S1-Series:</i> Dially phthalate (DAP)
	<i>3SS-Series:</i> Glass filled nylon 6/6, flame retardant, heat stabilized
	<i>3SM-Series:</i> Glass filled nylon 4/6, flame retardant, heat stabilized
Plunger	<i>3S1-Series:</i> Thermoplastic polyester, black
	<i>3SS -Series:</i> Thermoplastic polyester (UL 94V-0), with internal o-ring seal
	<i>3SM-Series:</i> Glass filled nylon 4/6, flame retardant, heat stabilized
Bushing	<i>3S1-Series:</i> Brass, nickel plated
	<i>3SS-Series:</i> Glass filled nylon 6/6, flame retardant, heat stabilized (UL 94V-0)
	<i>3SM-Series:</i> Glass filled nylon 4/6, flame retardant, heat stabilized (UL 94V-0)
Housing	Stainless Steel
Switch Support	Brass, tin plated
Terminal Seal	Epoxy

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

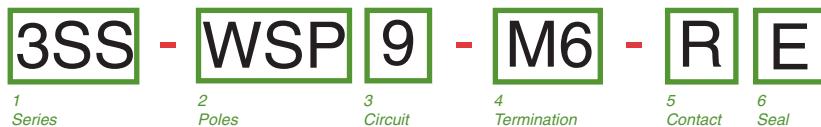
2 Moveable contact & terminals: copper alloy with gold plate over nickel plate

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	5 CONTACT Material Terminal Plating Rating 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
2 POLES WSP single pole WDP double pole	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
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	6 EPOXY SEAL E epoxy seal

3SM-Series Ordering Scheme


1 SERIES 3SM Sealed Surface Mount Pushbutton Switch	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
2 POLES SP single pole DP double pole	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
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	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".

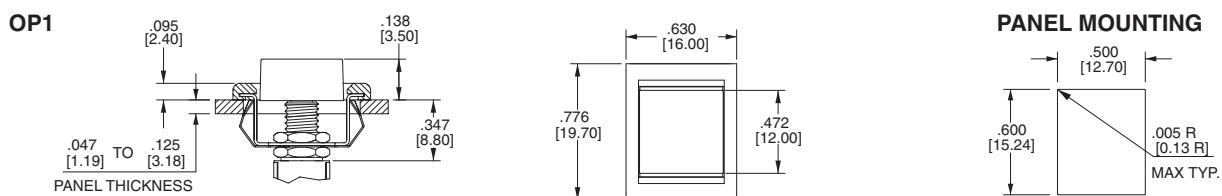
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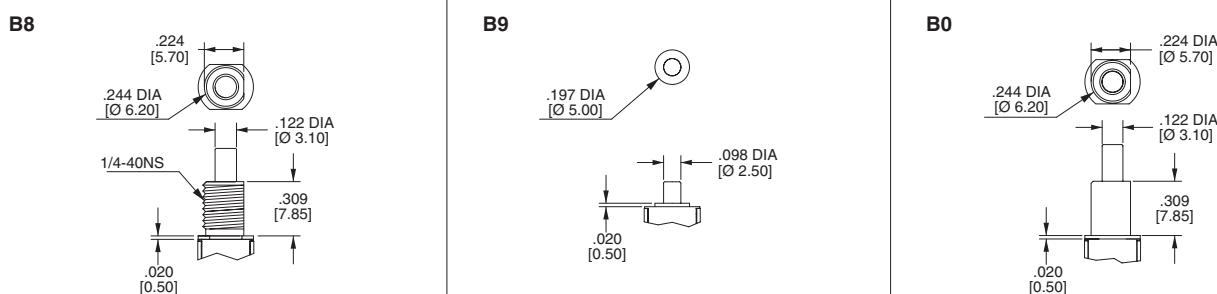
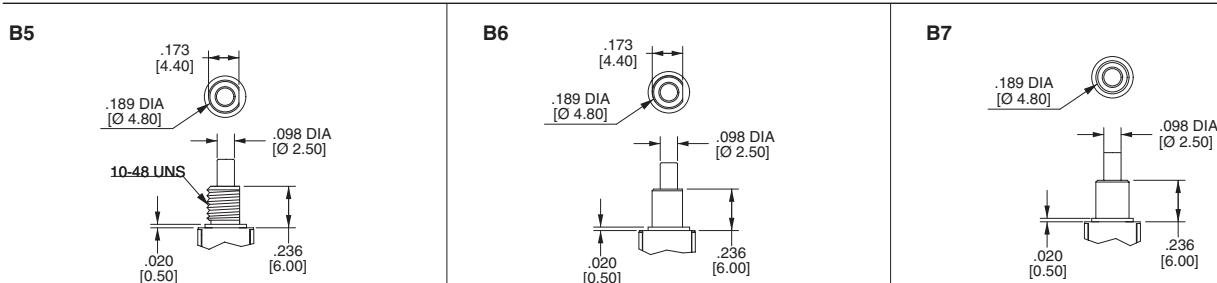
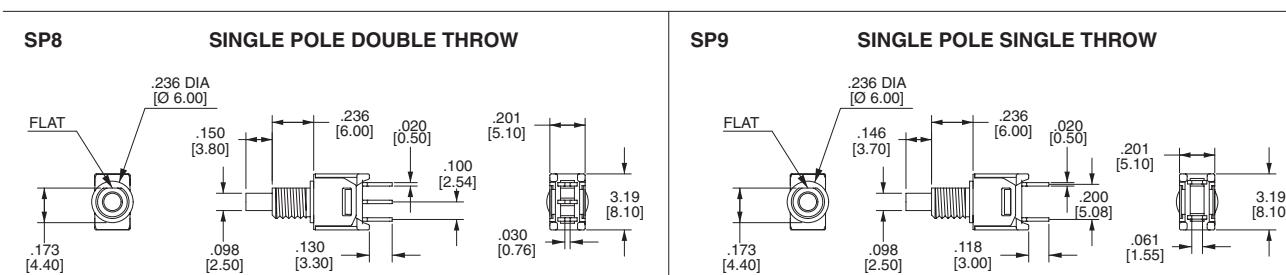
To order accessories in bulk, specify the Series, followed by the accessory. Ex.) 3S1-C13

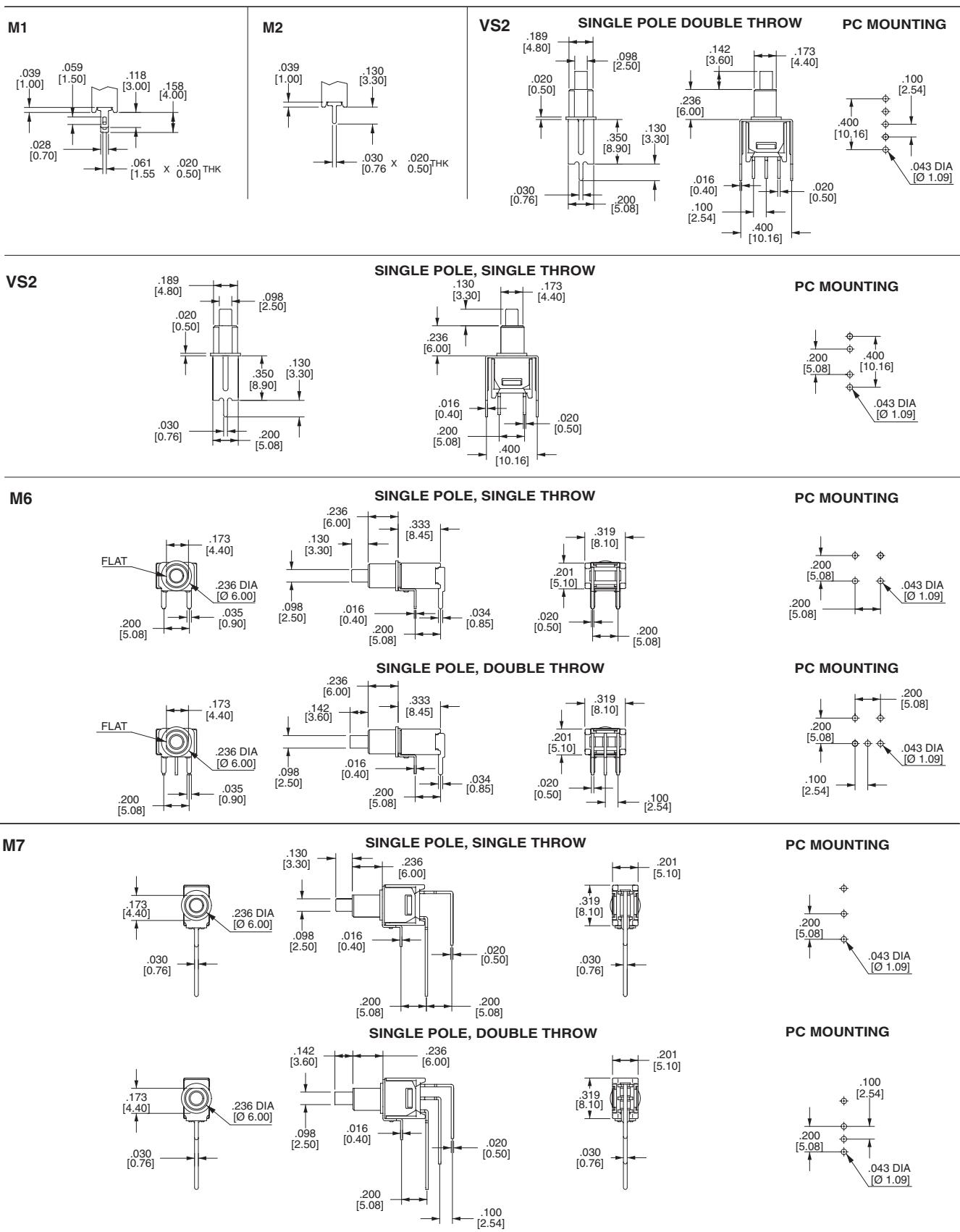


1 SERIES OR SWITCH CATALOG NUMBER 3S1, 3SS or 3SM	3 CAP COLOR¹
2 CAP SIZE C1 10.6mm	1 white 5 yellow
	2 black 6 green
C2 7.6mm	3 red 7 blue
	4 orange

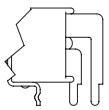
1 Black, white & red standard. Other colors available. Consult factory.

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

CAP

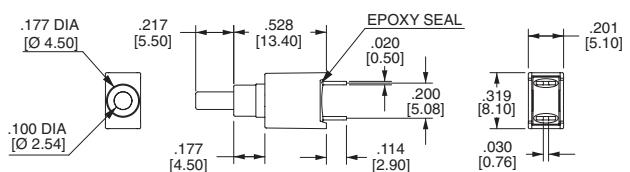
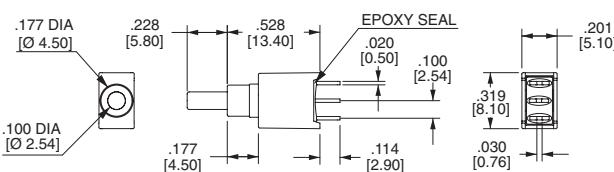
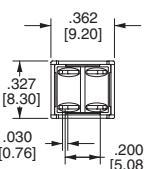
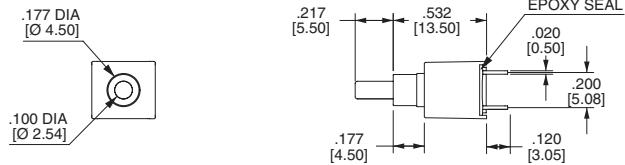
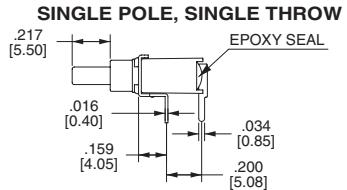
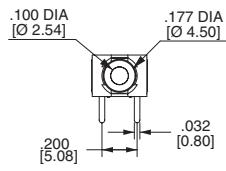
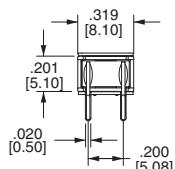
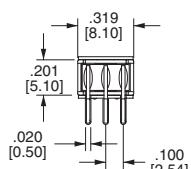
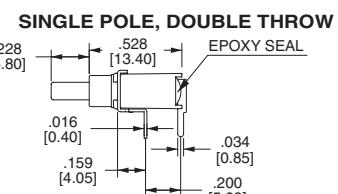
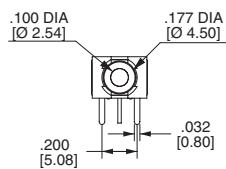
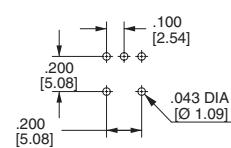
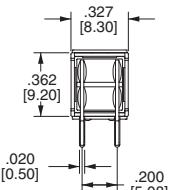
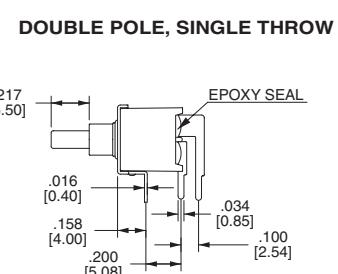
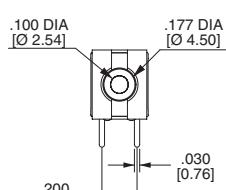
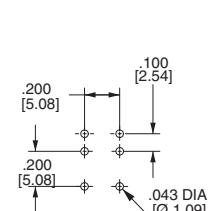
BUSHING

TERMINATION


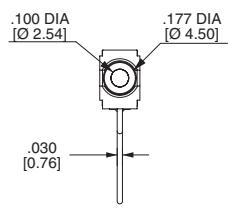
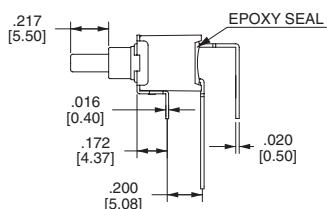
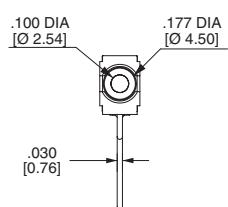
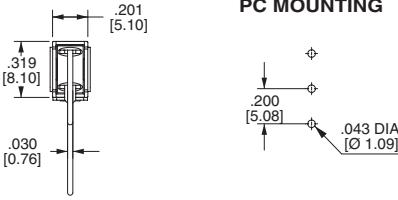
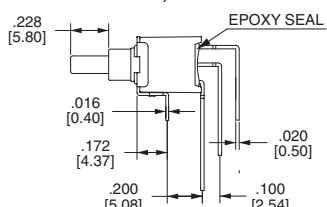
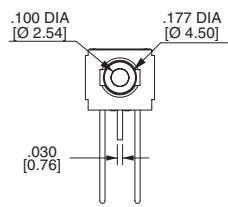
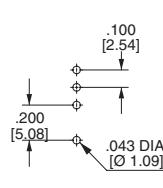
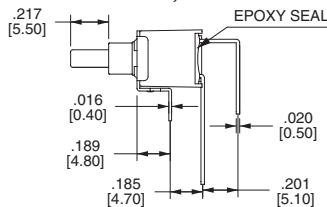
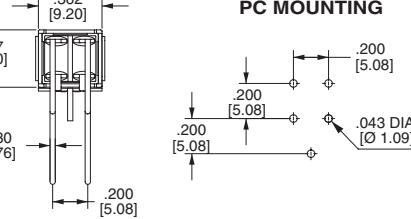
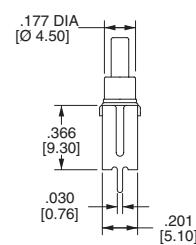
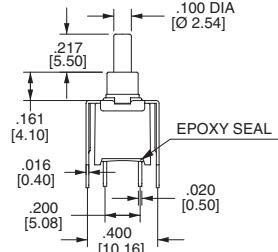
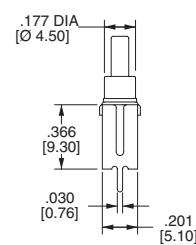
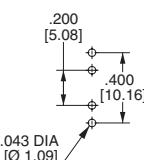
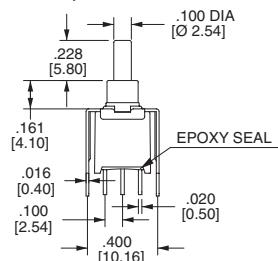
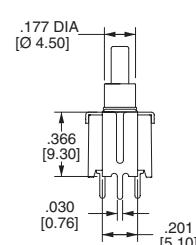
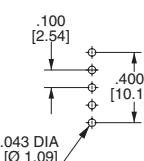
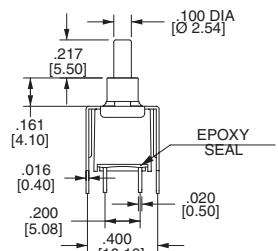
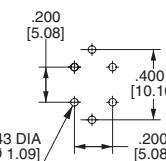
3S1-Series Dimensional Specifications: in. [mm]
TERMINATION


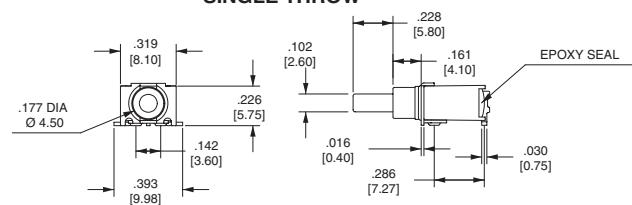
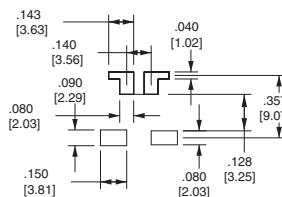
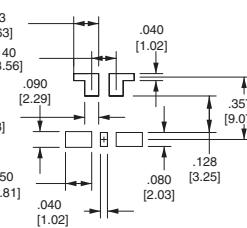
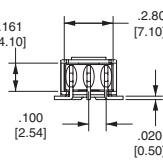
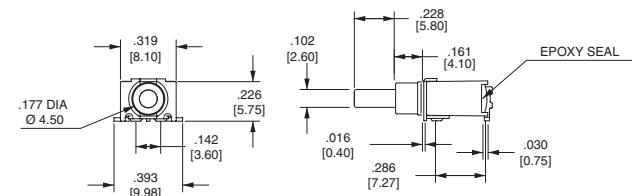
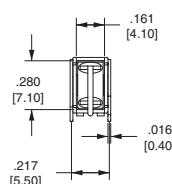
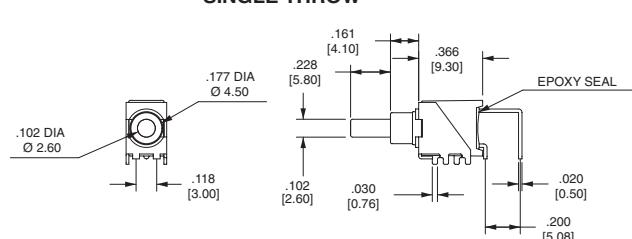
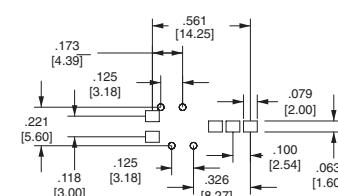
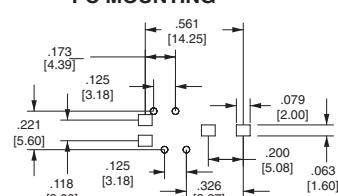
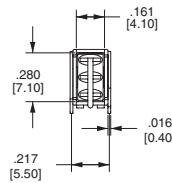
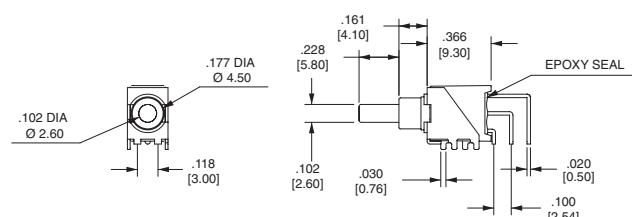
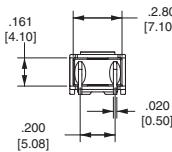
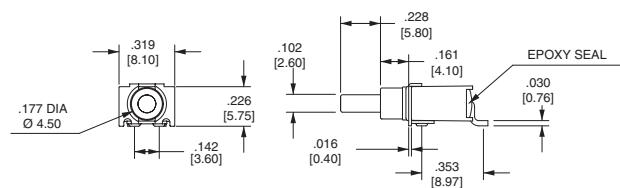
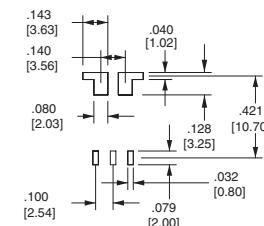
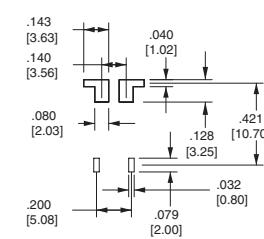
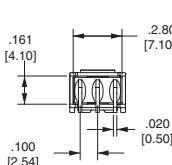
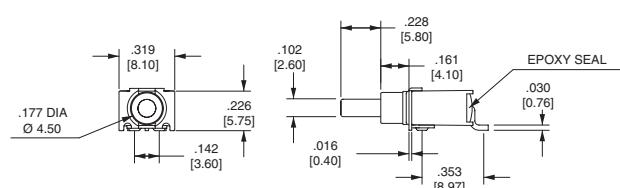
3SS-Series Dimensional Specifications: in. [mm]
SNAP-IN TERMINATION
M61

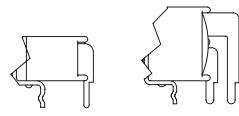
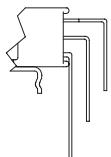
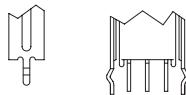
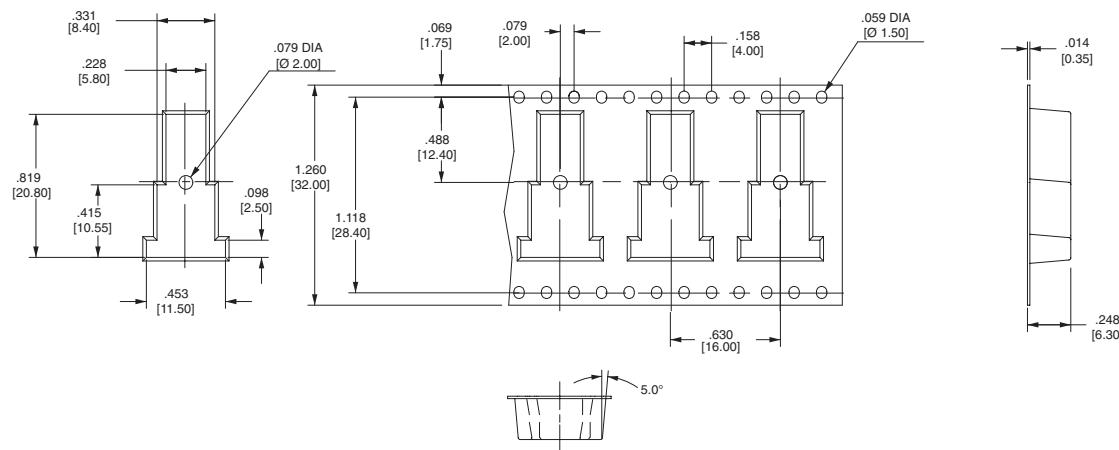
M71

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

PC MOUNTING

PC MOUNTING

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

M7
SINGLE THROW

PC MOUNTING

DOUBLE THROW

S6
SINGLE THROW

PC MOUNTING

DOUBLE THROW


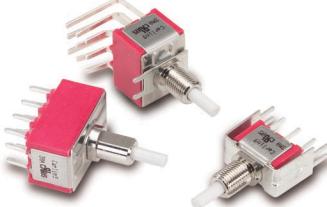
3SM-Series Dimensional Specifications: in. [mm]
SNAP-IN TERMINATION
M61

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:** Dially 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

3MN - **C1** **3**

1
Series

2
Cap Size

3
Color

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.

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

2 CAP SIZE

C1	round 7.6mm dia.
C2	round 9.35 mm dia.
C3	square 11.7 x 11.7mm
C4	round 5mm dia.

C5	round 14.5mm dia. (for 3MA w/ PL bushing)
C6	brass chrome plated (for 3MA w/ PD bushing)

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

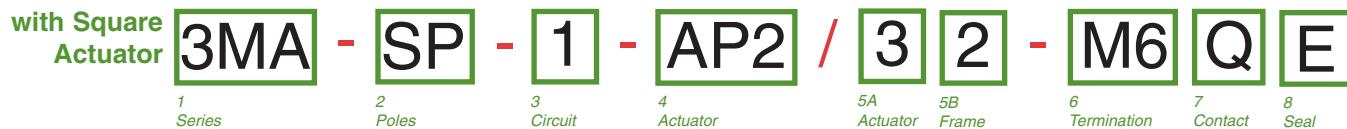
3 Terminals: silver plate with outer layer in gold plating

8 EPOXY SEAL

E epoxy seal

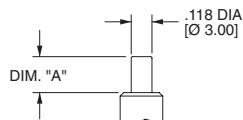
3MS-Series Ordering Scheme


1 SERIES 3MS Sealed Snap-Acting Miniature Pushbutton Switch	2 POLES WSP single pole	3 CIRCUIT () - momentary	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	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
7 ON (ON)					7 CONTACT Material Terminal Plating Rating Approvals 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	
					NOTE: 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	
					7 EPOXY SEAL E epoxy seal	

3MA-Series Ordering Scheme


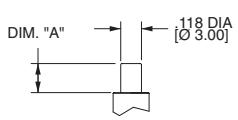
1 SERIES 3MA Alternate-Acting Miniature Pushbutton Switch	6 TERMINATION M1 Solder Lug M2 PCB M5-1 Wire Wrap .750 [19.05] M5-2 Wire Wrap .964 [24.48] M5-3 Wire Wrap .425 [10.80] M5-4 Wire Wrap 1.062 [26.87] M6 PC Mount, 90° horizontal M7 PC Mount, 90° vertical
2 POLES SP single pole	VS2 PC Mount, U bracket, .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
DP double pole	
3P three pole	
4P four pole	
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 (ON) 2 ON NONE	7 CONTACT Material Terminal Plating Rating Approvals G silver ¹ gold over silver ³ 6A@125VAC or 28VDC, 3A@250VAC UL, CUL K gold ² tin-lead ⁴ 6A@125VAC or 28VDC P silver ¹ tin-lead ⁴ 6A@125VAC or 28VDC, 3A@250VAC Q silver ¹ silver ¹ 6A@125VAC or 28VDC, 3A@250VAC R gold ² gold ² 0.4VA max. @20V max (AC/DC)
	NOTE: 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

5A ACTUATOR COLOR & 5B FRAME COLOR^{1,2}	8 EPOXY SEAL E epoxy seal
1 white	4 orange
2 black	5 yellow
3 red	6 green
7 blue	8 brown
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)	
5 BUSHING	
BD	Big bushing for PC, PD actuator 15/32"
B10	Threaded 1/4 - 40
B20	Unthreaded
B21	Unthreaded with flat
NOTE: For CAP options, see ordering scheme on page 35.	

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


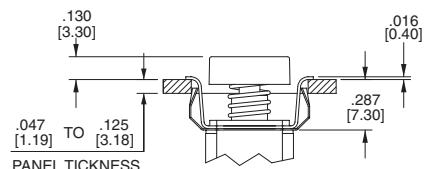
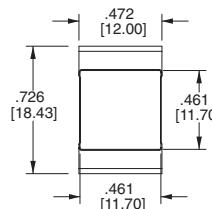
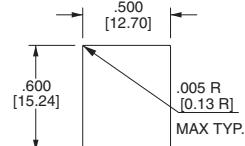
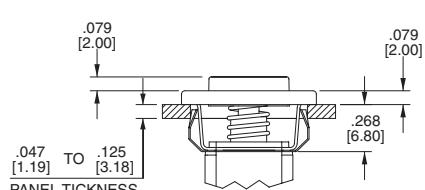
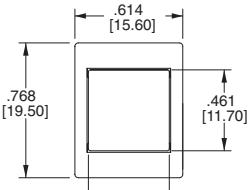
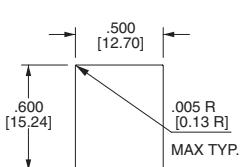
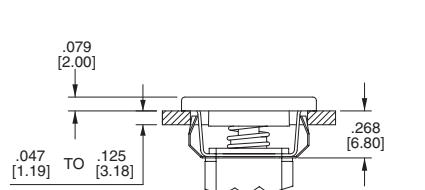
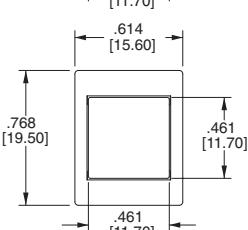
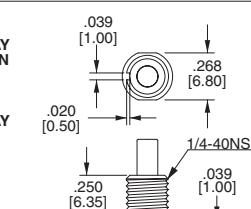
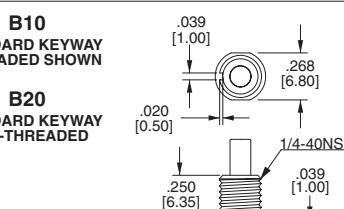
FOR B10,B11,B20,B21 ONLY

OPTION CODE	DIM. "A"
P0	.000 [0.00]
P1	.205 [5.20]
P2	.079 [2.00]

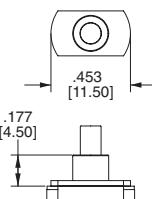
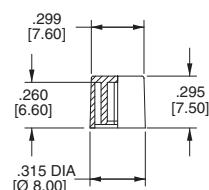
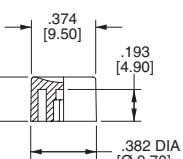
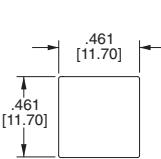
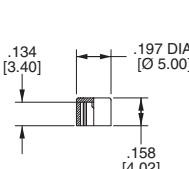


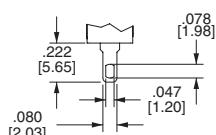
FOR B6 ONLY

OPTION CODE	DIM. "A"
P0	.098 [2.50]
P1	.295 [7.50]
P2	.165 [4.20]

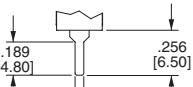
ACTUATOR
AP1

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

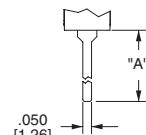
B6
NON-THREADED
(FOR TERMINATION
OPTIONS VS6-VS9 ONLY)

CAP
C1

C2

C3

C4


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


THK .030 [0.75]

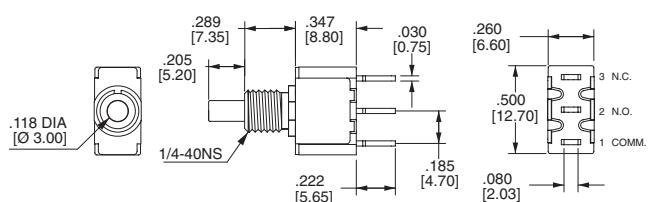
M2


THK .030 [0.75]

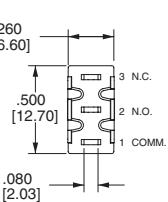
M5


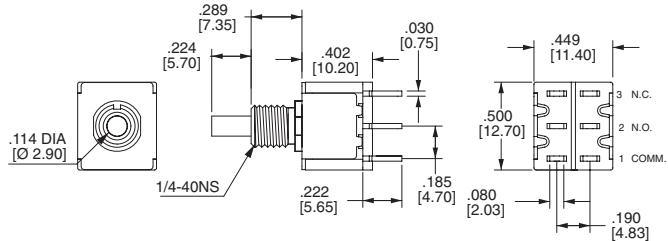
THK .030 [0.75]

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

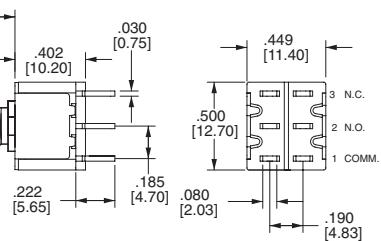
SINGLE POLE


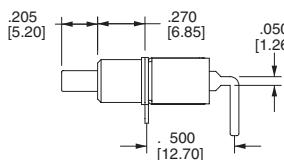
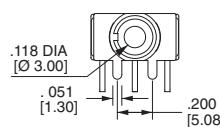
1/4-40NS


 3 N.C.
2 N.O.
1 COMM.

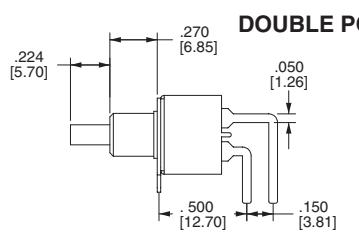
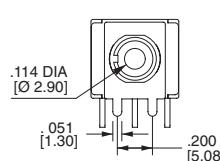
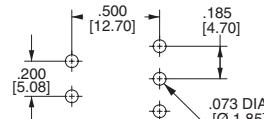
DOUBLE POLE


1/4-40NS


 3 N.C.
2 N.O.
1 COMM.

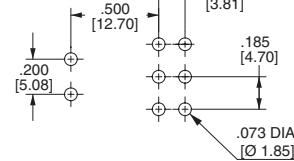
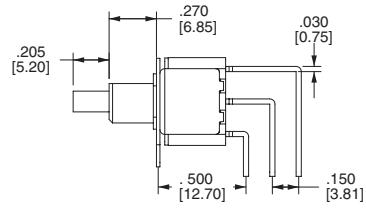
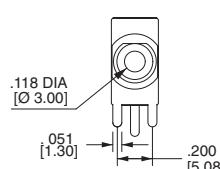
M6


1/4-40NS

SINGLE POLE
PC MOUNTING


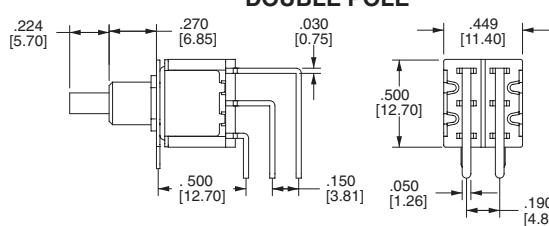
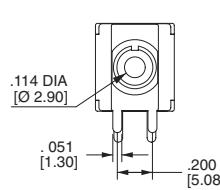
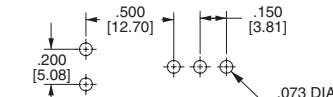
1/4-40NS

 3 N.C.
2 N.O.
1 COMM.

PC MOUNTING

M7


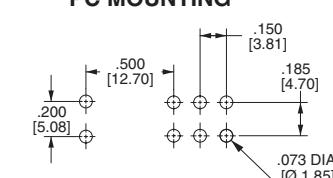
1/4-40NS

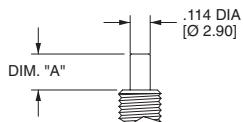
 3 N.C.
2 N.O.
1 COMM.

PC MOUNTING


1/4-40NS

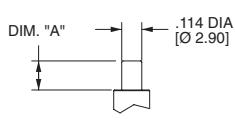
 3 N.C.
2 N.O.
1 COMM.

PC MOUNTING


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


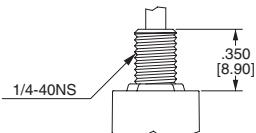
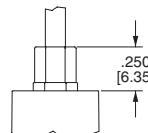
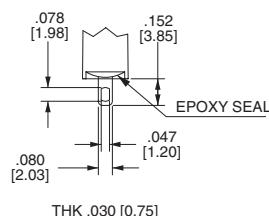
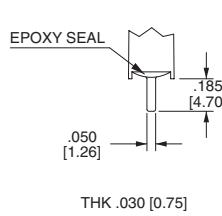
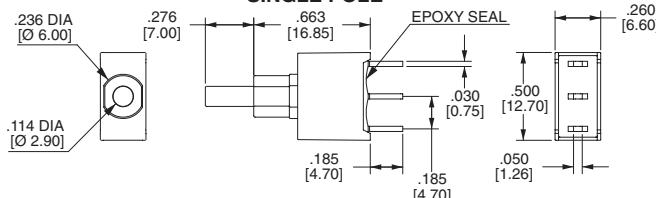
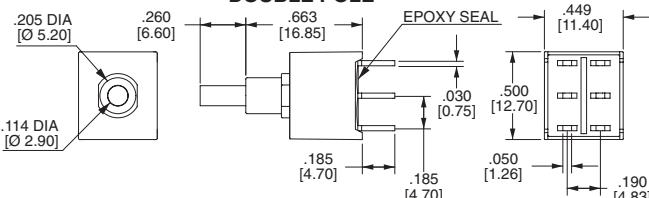
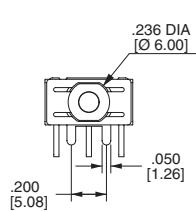
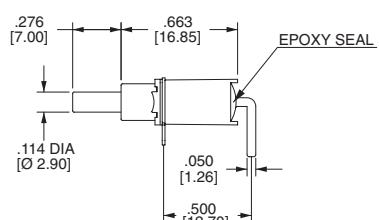
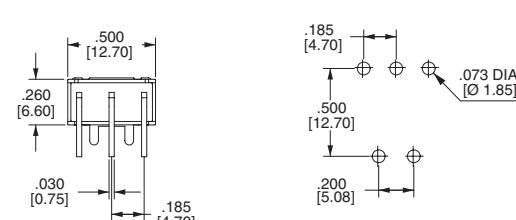
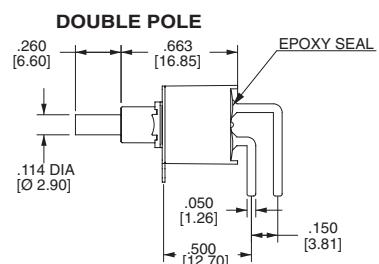
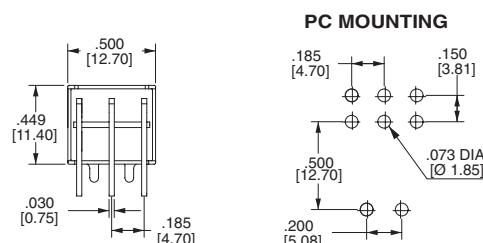
FOR B1 BUSHING

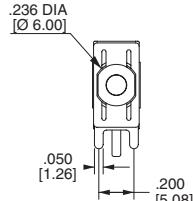
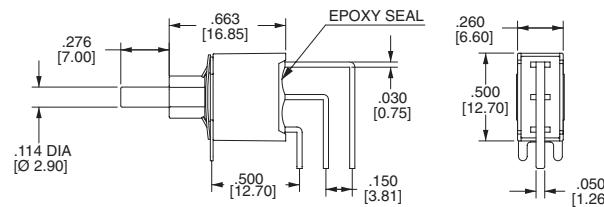
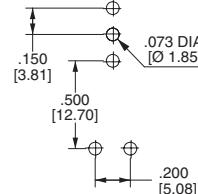
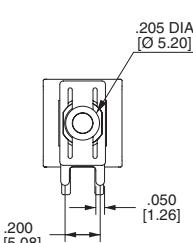
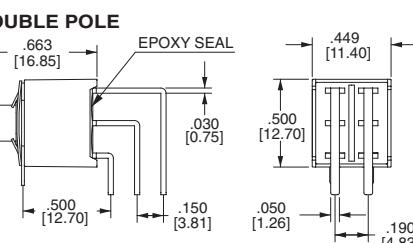
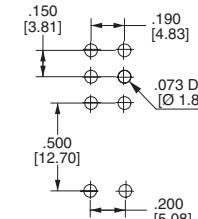
OPTION CODE	DIM. "A"
P1	.173 [4.40]
P2	.220 [5.60]
P3	.087 [2.20]



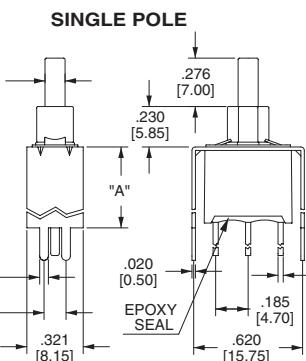
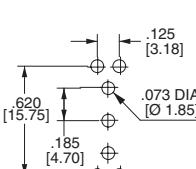
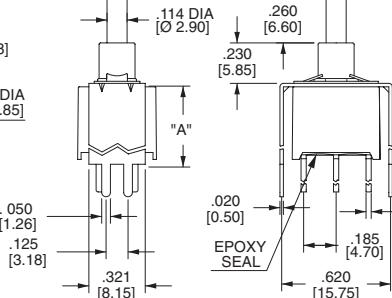
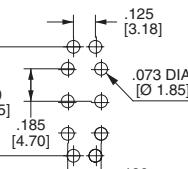
FOR B4 BUSHING

OPTION CODE	DIM. "A"
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P2	.327 [8.30]
P3	.193 [4.90]

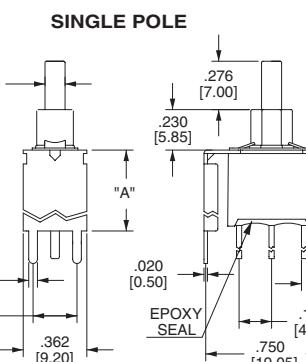
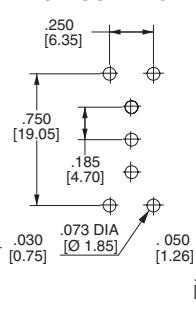
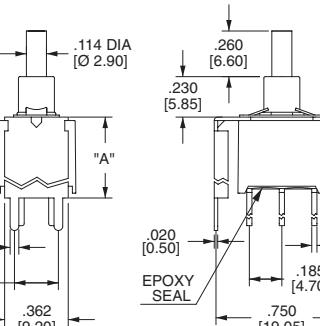
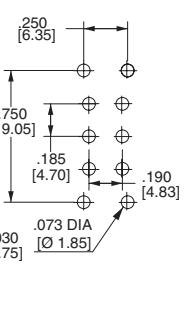
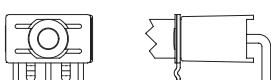
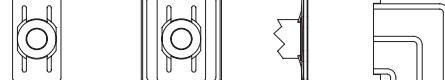
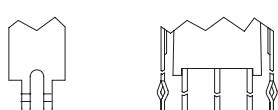
BUSHING
B1

B4

TERMINATION
M1

M2

SINGLE POLE

DOUBLE POLE

M6

SINGLE POLE

PC MOUNTING

DOUBLE POLE

PC MOUNTING


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

SINGLE POLE

PC MOUNTING

DOUBLE POLE

PC MOUNTING

PC MOUNTING

VS2-VS3
SINGLE POLE

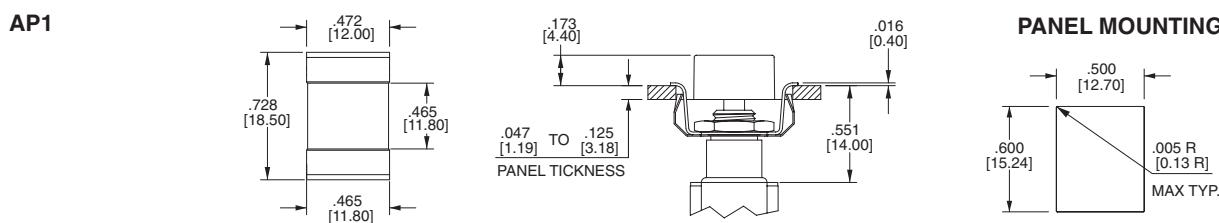
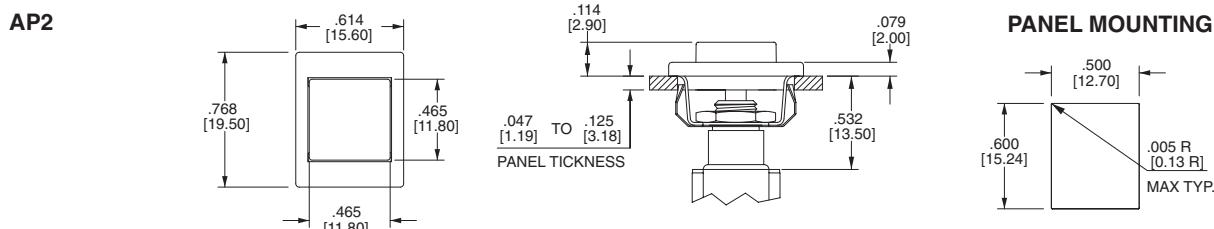
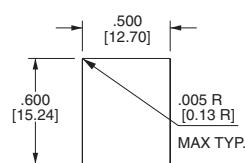
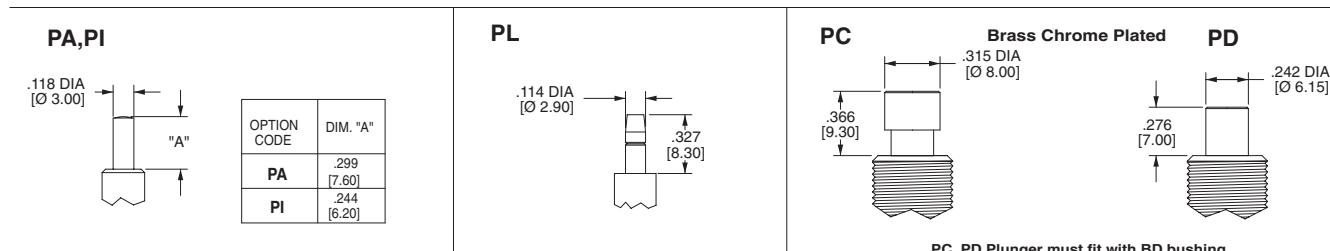
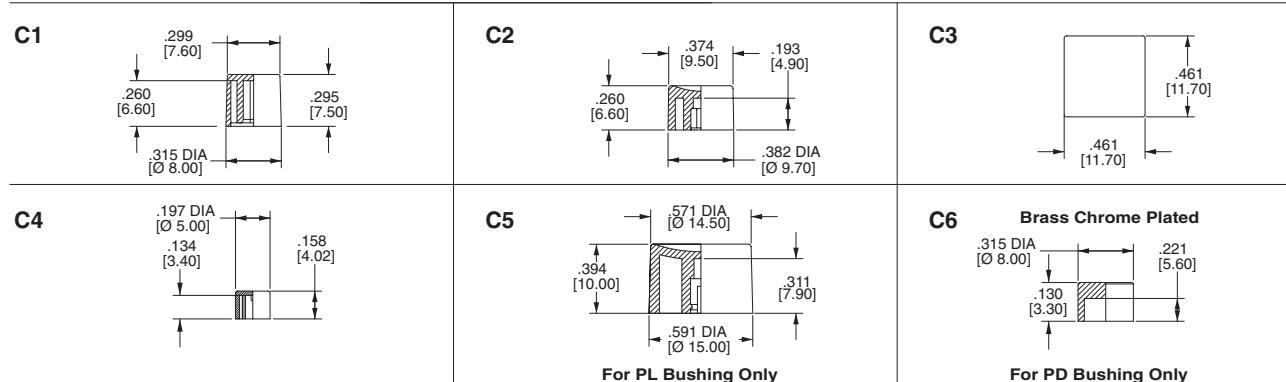
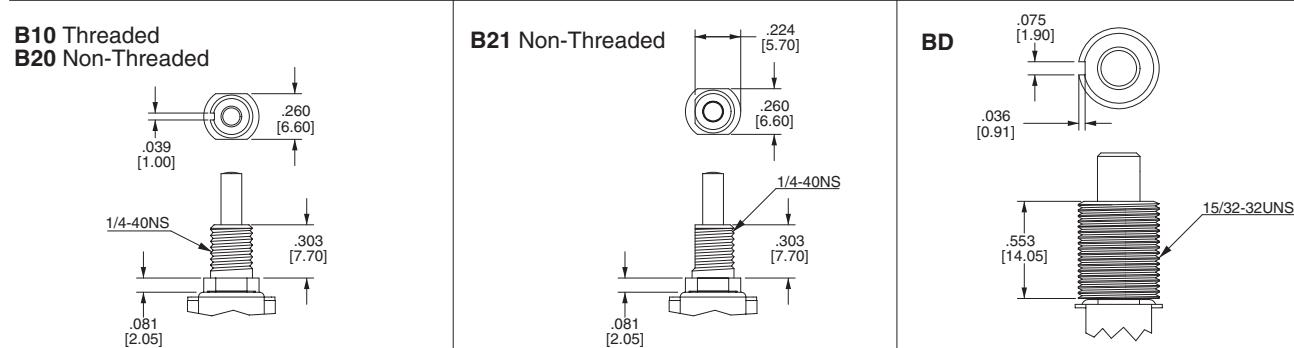
OPTION CODE	DIM. "A"
VS2	.460 [11.68]
VS3	.630 [16.00]


PC MOUNTING

DOUBLE POLE

PC MOUNTING

VS4-VS5
SINGLE POLE

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


PC MOUNTING

DOUBLE POLE

PC MOUNTING

SNAP-IN TERMINATION OPTIONS
M61

M71

VS21,VS31

VS41,VS51

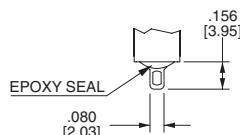

M61,M71,VS21,VS31,VS41,VS51 have the same P.C. mounting but with snap-in bracket.

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

PANEL MOUNTING

PLUNGER

CAP

BUSHING


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

TERMINATION

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]



THK .030 [0.75]

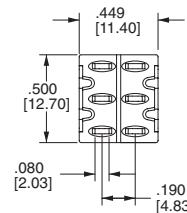
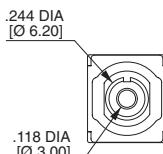
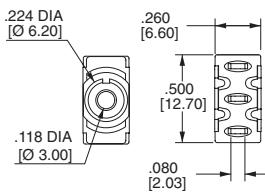
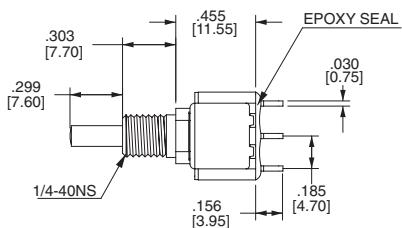


THK .030 [0.75]

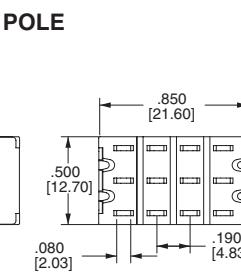
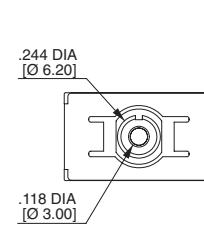
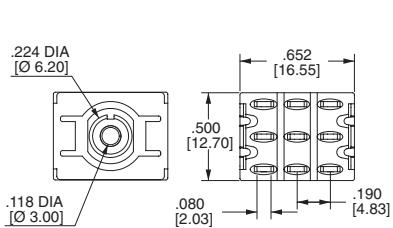
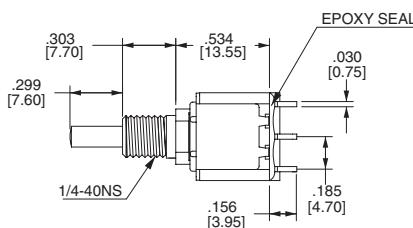




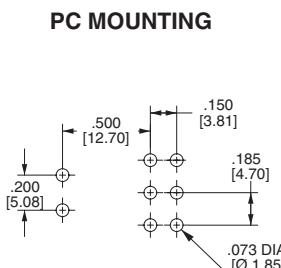
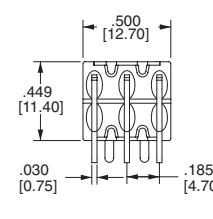
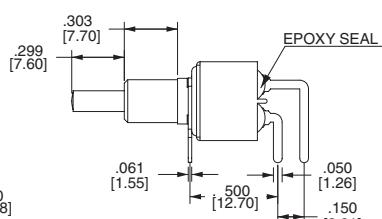
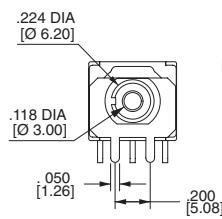
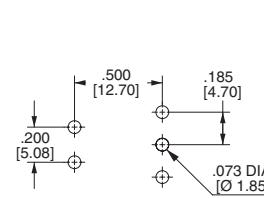
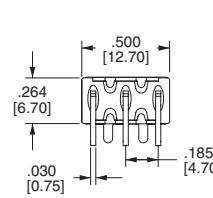
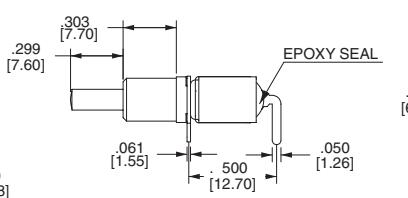
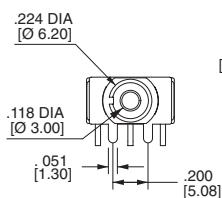
SINGLE POLE

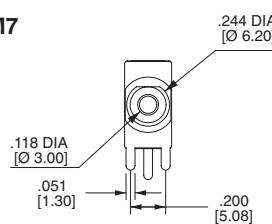
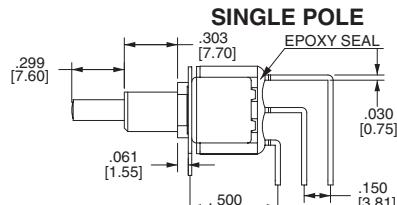
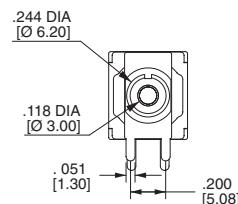
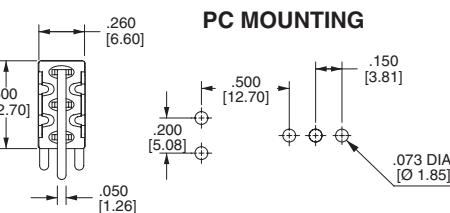
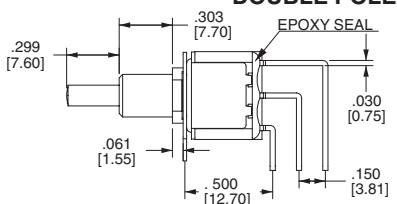
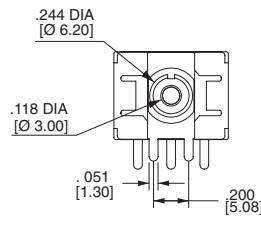
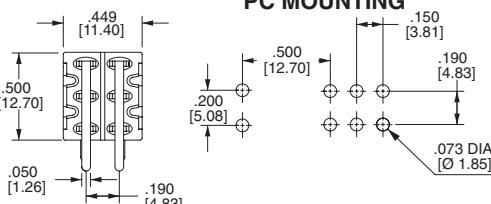
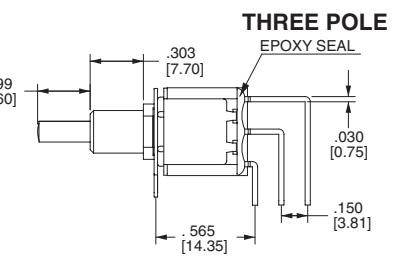
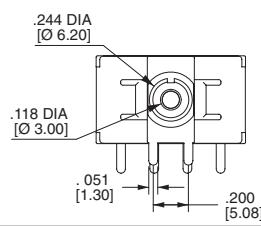
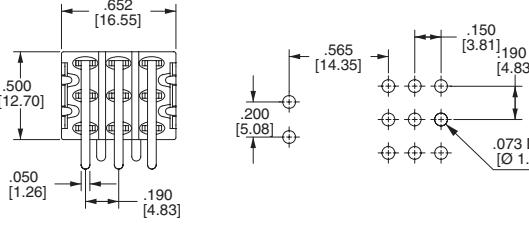
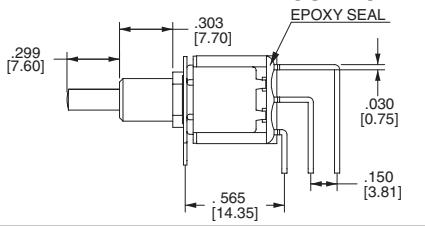
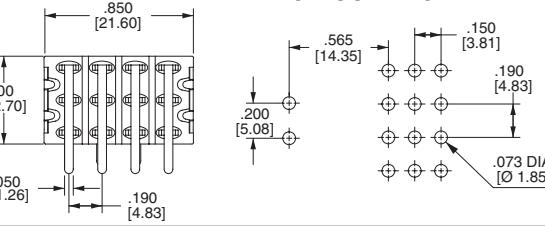


3 POLE

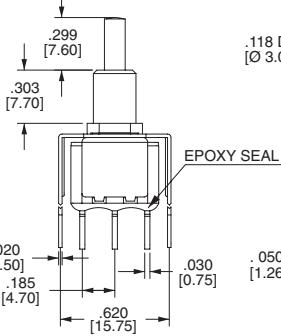
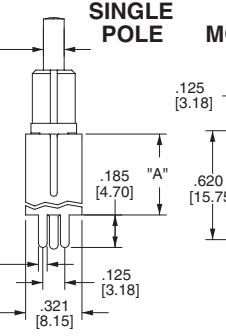
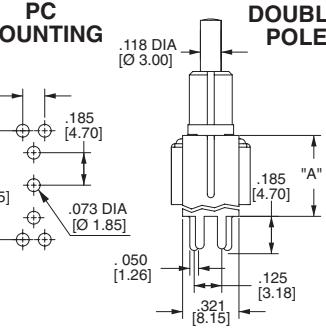
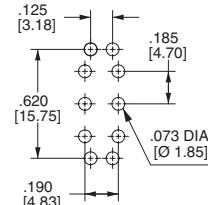


M6

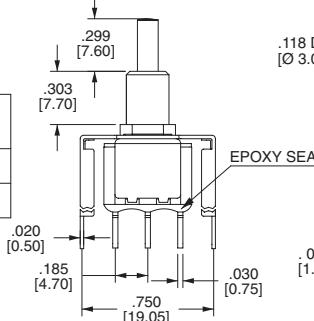
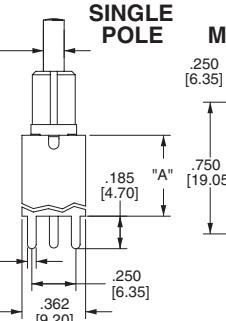
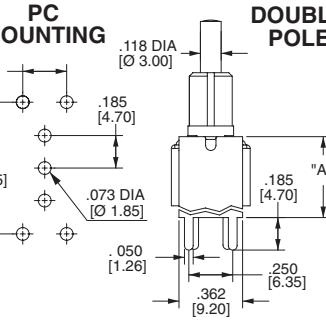
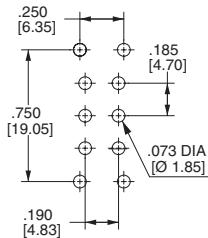


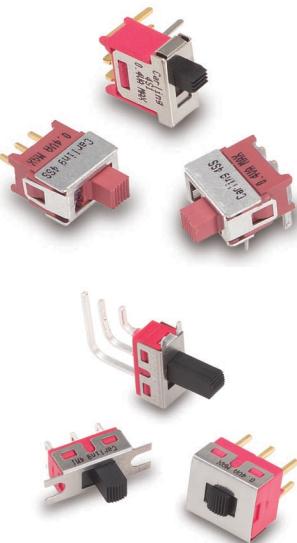
3MA-Series Dimensional Specifications: in. [mm]
TERMINATION
M7

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

DOUBLE POLE

PC MOUNTING

VS4-VS5

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


SINGLE POLE

DOUBLE POLE

PC MOUNTING




4S1 & 4SS-Series Sub-Miniature & Sealed Sub-Miniature Slide Switches

4M1-Series Miniature Slide Switch

Specifications

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°

Materials

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

4S1-Series Ordering Scheme



1 SERIES 4S1 Sub-Miniature Slide Switch												
2 POLES FSP single pole												
3 CIRCUIT Switching Position: <table> <tr> <td>2-1</td> <td>OPEN</td> <td>2-3</td> </tr> <tr> <td>1 ON</td> <td>NONE</td> <td>ON</td> </tr> <tr> <td>2 ON</td> <td>NONE</td> <td>(ON)</td> </tr> <tr> <td>3 ON</td> <td>OFF</td> <td>ON</td> </tr> </table>	2-1	OPEN	2-3	1 ON	NONE	ON	2 ON	NONE	(ON)	3 ON	OFF	ON
2-1	OPEN	2-3										
1 ON	NONE	ON										
2 ON	NONE	(ON)										
3 ON	OFF	ON										
4 TERMINATION M2 PCB M6 PC Mount, 90° horizontal												

5 CONTACT			
Material	Terminal Plating	Rating	
G silver ¹	gold over silver ³	3A@125VAC or 28VDC; 1.5A @ 250VAC	
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	
Q silver ¹	silver ¹	3A@125VAC or 28VDC; 1.5A @ 250VAC	
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

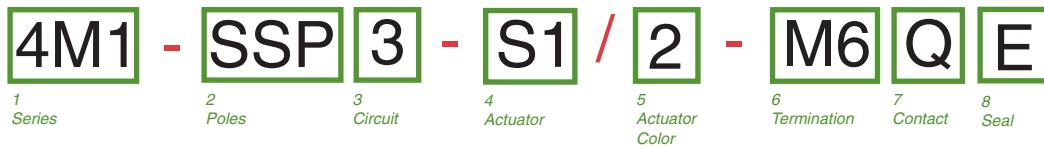
6 EPOXY SEAL
E epoxy seal

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

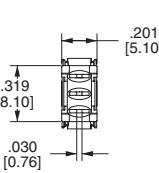
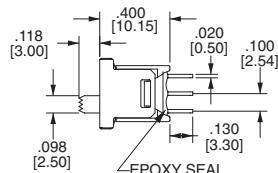
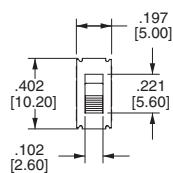
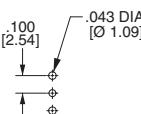
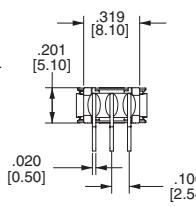
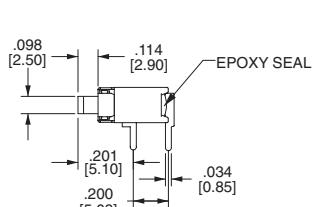
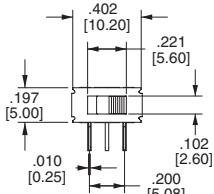
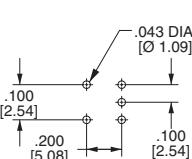
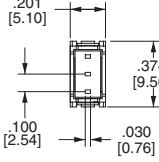
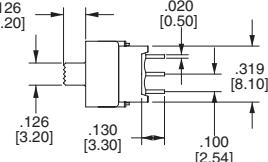
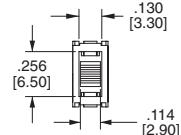
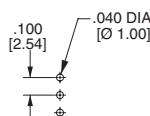
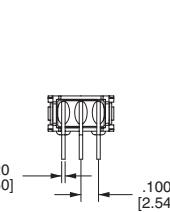
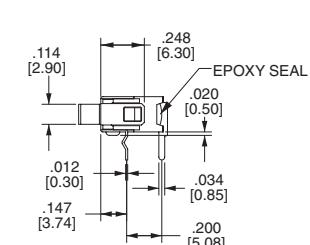
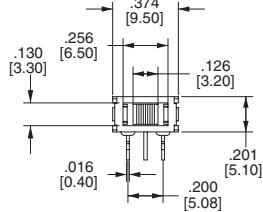
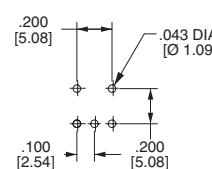
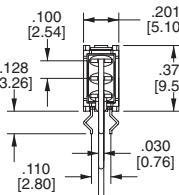
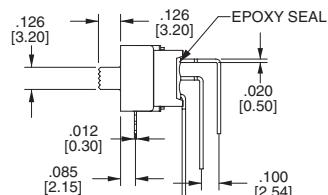
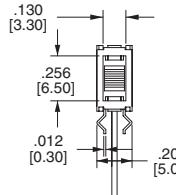
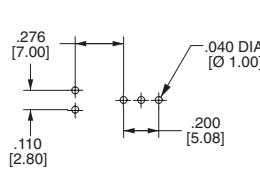
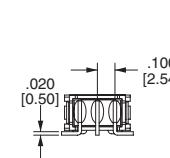
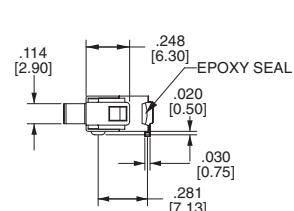
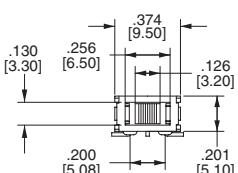
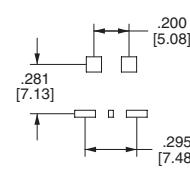
4SS-Series Ordering Scheme

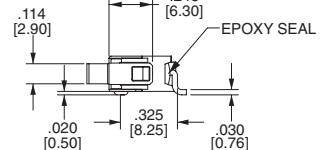
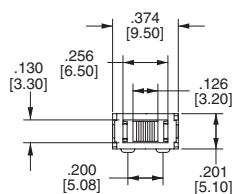
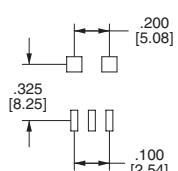
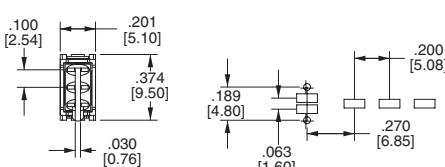
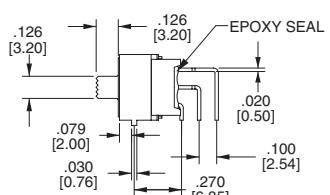
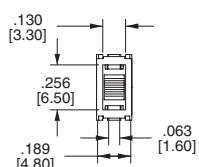
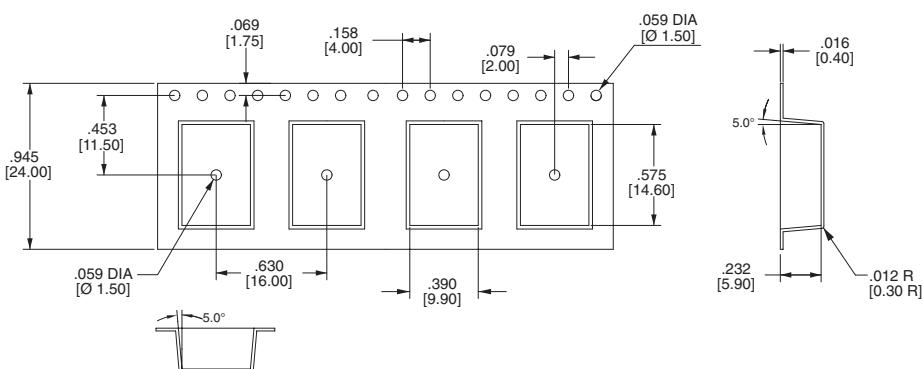
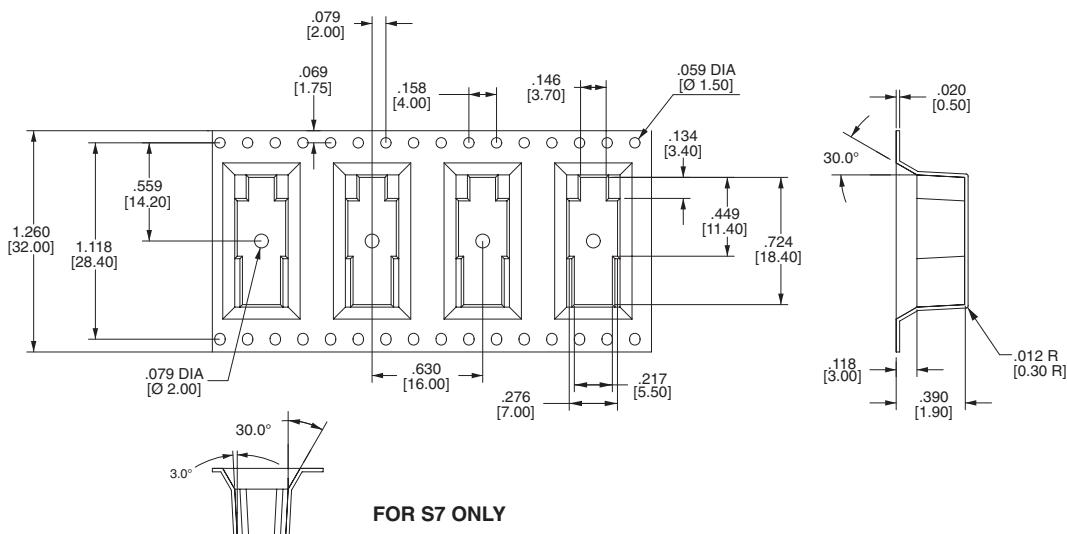

1 SERIES 4SS Sealed Sub-Miniature Slide Switch	5 CONTACT Material Terminal Plating Rating G silver ¹ gold over silver ³ 1.5A @ 125VAC or 28VDC; 1.5A @ 250VAC K gold ² tin-lead ⁴ 0.4VA max. @ 20V max (AC/DC) P silver ¹ tin-lead ⁴ 1.5A @ 125VAC or 28VDC; 1.5A @ 250VAC R gold ² gold ² 0.4VA max. @ 20V max (AC/DC)																		
2 POLES FSP single pole	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																		
3 CIRCUIT Switching Position: <table border="0"><tr><td>1</td><td>ON</td><td>2-1</td><td>OPEN</td><td>2-3</td><td>ON</td></tr><tr><td>3</td><td>ON</td><td></td><td>NONE</td><td></td><td>ON</td></tr><tr><td></td><td></td><td></td><td>OFF</td><td></td><td></td></tr></table>	1	ON	2-1	OPEN	2-3	ON	3	ON		NONE		ON				OFF			6 EPOXY SEAL E epoxy seal
1	ON	2-1	OPEN	2-3	ON														
3	ON		NONE		ON														
			OFF																
4 TERMINATION Termination options for switches with brick color actuators M2 PCB M6 PC Mount, 90° horizontal M7 PC Mount, 90° vertical Termination options for switches with white color actuators L6 Surface Mount, 90° flat S6 Surface Mount, 90° horizontal S7 Surface Mount, 90° vertical	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																		

4M1-Series Ordering Scheme


1 SERIES 4M1 Miniature Slide Switch	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																		
2 POLES SSP single pole	7 CONTACT Material Terminal Plating Rating G silver ¹ gold over silver ³ 5A @ 125VAC or 28VDC; K gold ² tin-lead ⁴ 2A @ 250VAC P silver ¹ tin-lead ⁴ 0.4VA max. @ 20V max (AC/DC) Q silver ¹ silver ¹ 5A @ 125VAC or 28VDC; R gold ² gold ² 2A @ 250VAC 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	UL, CSA																		
3 CIRCUIT Switching Position <table border="0"><tr><td>1</td><td>ON</td><td>2-1, 5-4</td><td>OPEN</td><td>2-3, 5-6</td><td>ON</td></tr><tr><td>3</td><td>ON</td><td></td><td>NONE</td><td></td><td>ON</td></tr><tr><td></td><td></td><td></td><td>OFF</td><td></td><td></td></tr></table>	1	ON	2-1, 5-4	OPEN	2-3, 5-6	ON	3	ON		NONE		ON				OFF			8 EPOXY SEAL E epoxy seal	
1	ON	2-1, 5-4	OPEN	2-3, 5-6	ON															
3	ON		NONE		ON															
			OFF																	
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.

4S-Series Dimensional Specifications: in. [mm]
4S1-Series
TERMINATION
M2

PC MOUNTING

M6

PC MOUNTING

4SS-Series
TERMINATION
M2

PC MOUNTING

M6

PC MOUNTING

M7

PC MOUNTING

L6

PC MOUNTING


4SS-Series Dimensional Specifications: in. [mm]
TERMINATION
S6

PC MOUNTING

S7

PC MOUNTING
REEL TAPING

FOR S6,L6 ONLY

FOR S7 ONLY

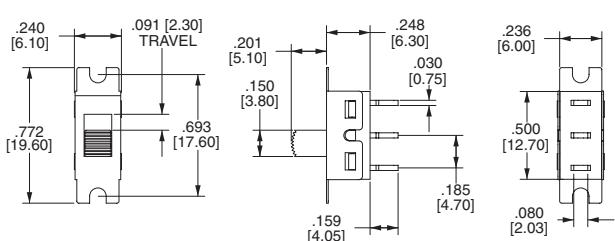
4M1-Series Dimensional Specifications: in. [mm]

ACTUATOR

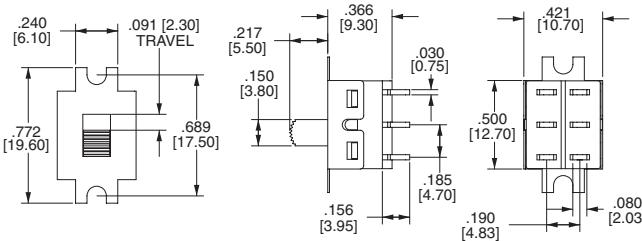
TERMINATION

M1 STANDARD	M2	M3 QUICK CONNECT	M5
<p>THK .030 [0.75]</p>	<p>THK .030 [0.75]</p>	<p>THK .030 [0.75]</p>	<p>THK .030 [0.75]</p>
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]		

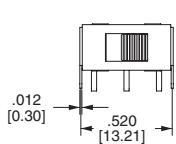
SINGLE POLE



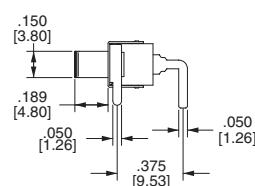
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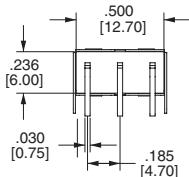
M6



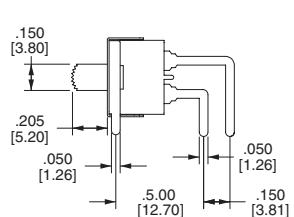
SINGLE POLE



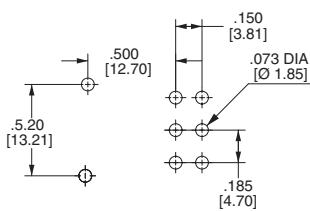
PC MOUNTING

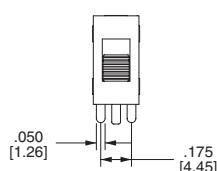
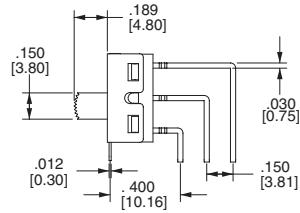
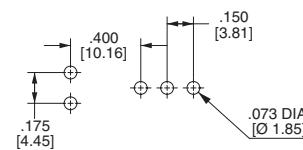
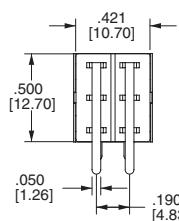
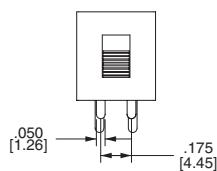
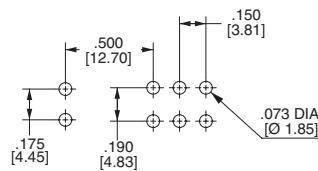
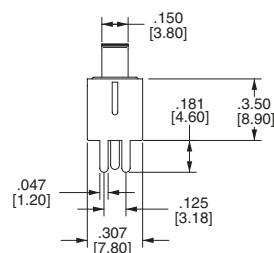
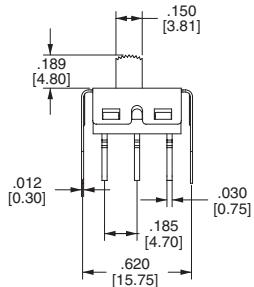
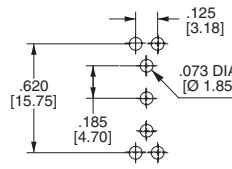
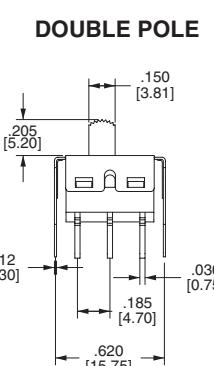
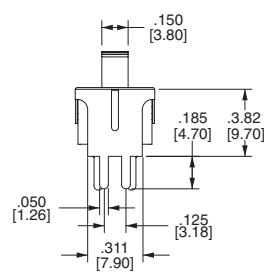
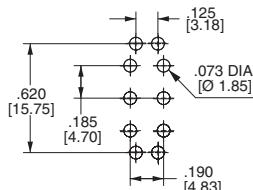


DOUBLE POLE



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

4PM-Series Ordering Scheme

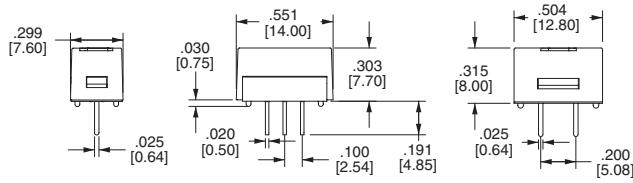
1 SERIES	4PM	Sub-Miniature Slide Switch
2 POLES		
601	single pole	Switching Position: 2-1, 5-4 OPEN ON NONE 2-3, 5-6
602	double pole	ON NONE ON
3 ACTUATOR		
S1	flush slider	S2 high slider
S3	side slider	

4 TERMINATION		5 CONTACT		6 EPOXY SEAL	
M1	narrow pitch single pole	M3	wide pitch single pole	E	epoxy seal
M2	narrow pitch double pole	M4	wide pitch double pole		
Q	silver ¹	Terminal Plating	Rating		
R	gold ²	silver ¹	2A@250VAC		
		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				

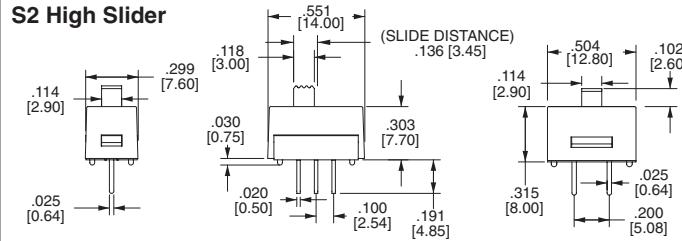
4PM-Series Dimensional Specifications: in. [mm]

ACTUATOR

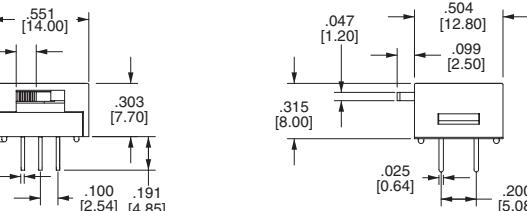
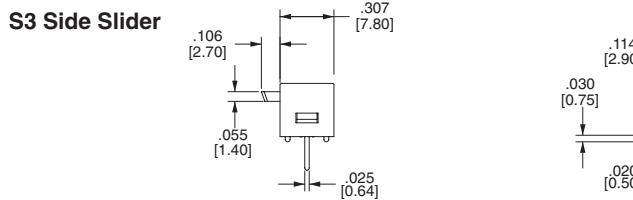
S1 Flush Slider



S2 High Slider



S3 Side Slider



TERMINATION

M1 SINGLE POLE

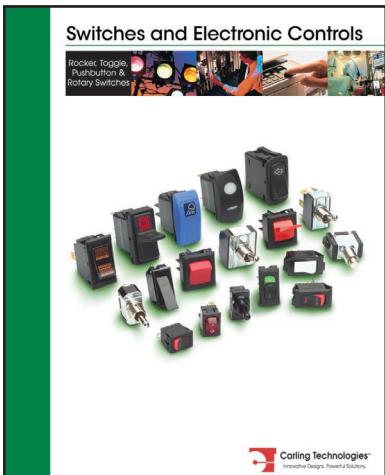
M2 DOUBLE POLE

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 includ-

ed. Worldwide certifications, including UL1500, TUV and CE marked.

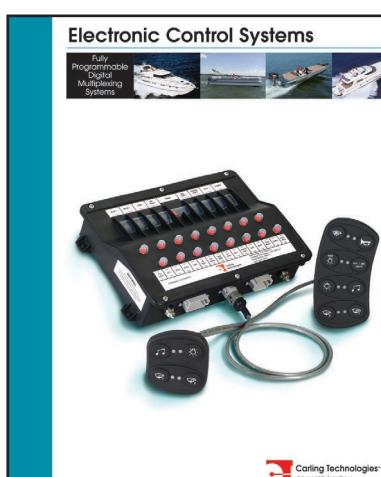
Circuit Protection



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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