



## → Product Type

### **PC Mount Miniature & Sub-Miniature Pushbutton Switches**

## → Product Series

### **3M-Series**

## → Description

The 3M family of miniature pushbutton switches is composed of three switch series:

3MN-Series snap-action miniature pushbutton switch

3MS-Series sealed snap-action miniature pushbutton switch

3MA-Series alternate-action miniature pushbutton switch

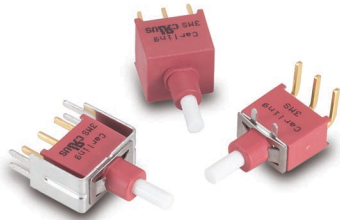
These series of PC mount sub-miniature pushbutton switches offer a variety of ratings, circuits, contact materials, terminal platings, pushbutton styles, and optional color caps.

The 3MS-Series are sealed switches that are UL and CUL approved and IP68 certified. The 3MN and 3MA-Series of switches have UL & CUL agency approvals. All series within the 3M family of switches are able to withstand temperatures from -30°C to +85°C, and all offer PC mounting.

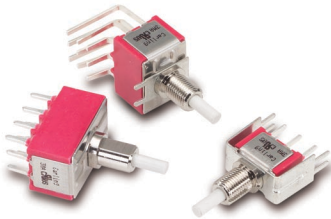
<b>Certifications</b>	3MN-Series and 3MA-Series: UL, CUL 3MS-Series: UL, CUL, IP68
<b>Number of Poles</b>	3MN-Series & 3MS-Series: 1-2 poles 3MA-Series: 1-4 poles
<b>Ratings</b>	1A @ 120 VAC or 28VDC  6A @ 125 VAC or 28VDC 3A @ 250VAC  0.4VA max @ 20V max (AC/DC)
<b>Dielectric Strength</b>	1500 Volts RMS @ sea level
<b>Insulation Resistance</b>	1000 megohms (minimum)
<b>Actuator Style</b>	square pushbutton plunger pushbutton
<b>Case Material</b>	all UL94 V-0 3MN-Series & 3MA-Series: Dially phthalate (DAP) 3MS-Series: Glass filled nylon 6/6, flame retardant, heat stabilized
<b>Plunger Material</b>	3MN-Series: Thermoplastic polyester, black 3MS-Series & 3MA-Series: Glass filled nylon or glass filled polyester (UL94V-0)
<b>Bushing Material</b>	3MN-Series: Brass, nickel plated 3MA-Series: Zinc, nickel plated
<b>Housing Material</b>	3MN-Series & 3MA-Series: Stainless Steel
<b>Switch Support</b>	Stainless steel
<b>Terminal Options</b>	Solder Lug PCB PC Mount Snap-in, U bracket Wire Wrap
<b>Mounting Hole Dimensions</b>	See PDF elibrary file above for dimensions



**3MN-Series**  
**Snap-Action** Miniature Pushbutton Switch



**3MS-Series**  
**Sealed Snap-Action** Miniature Pushbutton Switch



**3MA-Series**  
**Alternate Action** Miniature Pushbutton Switch

### Specifications

Contact Rating . . . . .	refer to ordering scheme
Electrical Life . . . . .	50,000 make & break cycles @ full load
Contact Resistance. . . . .	<i>3MN &amp; 3MA-Series:</i> 10 mΩ max. initial @ 2-4 VDC 100mA for both silver & gold plated contacts. <i>3MS-Series:</i> 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 . . . . .	<i>3MS -Series:</i> IP68
Cap Installation Support . .	<i>3MS-Series:</i> 10 lbs. max.
Solder Heat Resistance. . .	MIL-STD-202, Method 210
Actuator Travel . . . . .	.25°

### Materials

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

### 3M-Series Optional Cap

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

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

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



1 SERIES OR SWITCH CATALOG NUMBER 3MN, 3MS or 3MA		
2 CAP SIZE		
<b>C1</b>	round 7.6mm dia.	<b>C5</b>
<b>C2</b>	round 9.35 mm dia.	round 14.5mm dia. (for 3MA w/ PL bushing)
<b>C3</b>	square 11.7 x 11.7mm	<b>C6</b>
<b>C4</b>	round 5mm dia.	brass chrome plated (for 3MA w/ PD bushing)

3 CAP COLOR			
<b>1</b>	white	<b>5</b>	yellow
<b>2</b>	black	<b>6</b>	green
<b>3</b>	red	<b>7</b>	blue
<b>4</b>	orange		
<small>1 Black, white &amp; red standard. Other colors available. Consult factory.</small>			

**3MN-Series Ordering Scheme  
with Square Actuator**

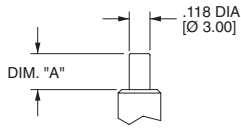
**with Plunger Actuator**


<b>1 SERIES</b> <b>3MN</b> Snap-Action Miniature Pushbutton Switch									
<b>2 POLES</b> <table style="width: 100%;"> <tr> <td style="width: 50%;"><b>SP</b> single pole</td> <td style="width: 50%;"><b>DP</b> double pole</td> </tr> </table>	<b>SP</b> single pole	<b>DP</b> double pole							
<b>SP</b> single pole	<b>DP</b> double pole								
<b>3 CIRCUIT</b> ( ) - momentary  <table style="width: 100%;"> <tr> <td style="width: 33%;"><b>7</b></td> <td style="width: 33%;">ON</td> <td style="width: 33%;">(ON)</td> </tr> </table>	<b>7</b>	ON	(ON)						
<b>7</b>	ON	(ON)							
<b>4 ACTUATOR<sup>1</sup></b> <b>SQUARE ACTUATOR</b> (use with Color Options in Selection 5A & 5B.) <b>AP1</b> square with no frame <b>AP2</b> square raised above frame <b>AP3</b> square flush with frame  <b>PLUNGER ACTUATOR</b> (use with Bushing Options in Selection 5) <b>P0</b> 2.5mm short plunger(for B6 bushing only) <b>P1</b> 5.2mm plunger(for bushing B10,B11,B20,B21; 7.5mm for B6) <b>P2</b> 2.0mm plunger(for bushing B10,B11,B20,B21; 4.2mm for B6)									
<b>5A ACTUATOR COLOR &amp; 5B FRAME COLOR<sup>1,2</sup></b> <table style="width: 100%; text-align: center;"> <tr> <td style="width: 33%;">1 white</td> <td style="width: 33%;">4 orange</td> <td style="width: 33%;">7 blue</td> </tr> <tr> <td>2 black</td> <td>5 yellow</td> <td>8 brown</td> </tr> <tr> <td>3 red</td> <td>6 green</td> <td>9 gray</td> </tr> </table> <p>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)</p> <p style="text-align: center;"><b>OR</b></p> <b>5 BUSHING</b> <b>B6</b> Unthreaded (for terminations VS6-VS9 only) <b>B10</b> Threaded keyway <b>B11</b> Threaded with flat <b>B20</b> Unthreaded keyway <b>B21</b> Unthreaded with flat  <small>NOTE:</small> 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.	1 white	4 orange	7 blue	2 black	5 yellow	8 brown	3 red	6 green	9 gray
1 white	4 orange	7 blue							
2 black	5 yellow	8 brown							
3 red	6 green	9 gray							

<b>6 TERMINATION</b> <b>M1</b> Solder Lug <b>M2</b> PCB <b>M5-1</b> Wire Wrap .750 [19.05] <b>M5-3</b> Wire Wrap .425 [10.80] <b>M6</b> PC Mount, 90° horizontal <b>M7</b> PC Mount, 90° vertical <b>VS2</b> PC Mount, U bracket, .620 mounting x .460 high <b>VS3</b> PC Mount, U bracket, .620 mounting x .630 high <b>VS4</b> PC Mount, U bracket, .750 mounting x .460 high <b>VS5</b> PC Mount, U bracket, .750 mounting x .630 high <b>VS6</b> PC Mount, U bracket, .460 high (for B6 bushing only) <b>VS7</b> PC Mount, U bracket, .630 high (for B6 bushing only) <b>VS8</b> PC Mount, U bracket, .460 high (for B6 bushing only) <b>VS9</b> PC Mount, U bracket, .630 high (for B6 bushing only)																
<b>7 CONTACT</b> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; font-weight: normal;">Material</th> <th style="text-align: left; font-weight: normal;">Terminal Plating</th> <th style="text-align: left; font-weight: normal;">Rating</th> <th style="text-align: left; font-weight: normal;">Approvals</th> </tr> </thead> <tbody> <tr> <td><b>G</b> silver<sup>1</sup></td> <td>gold over silver<sup>3</sup></td> <td>1A @ 120VAC or 28VDC</td> <td>UL, CUL</td> </tr> <tr> <td><b>Q</b> silver<sup>1</sup></td> <td>silver<sup>1</sup></td> <td>1A @ 120VAC or 28VDC</td> <td>UL, CUL</td> </tr> <tr> <td><b>R</b> gold<sup>2</sup></td> <td>gold<sup>2</sup></td> <td>0.4VA max. @20V max (AC/DC)</td> <td></td> </tr> </tbody> </table> <small>NOTE:</small> 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	Material	Terminal Plating	Rating	Approvals	<b>G</b> silver <sup>1</sup>	gold over silver <sup>3</sup>	1A @ 120VAC or 28VDC	UL, CUL	<b>Q</b> silver <sup>1</sup>	silver <sup>1</sup>	1A @ 120VAC or 28VDC	UL, CUL	<b>R</b> gold <sup>2</sup>	gold <sup>2</sup>	0.4VA max. @20V max (AC/DC)	
Material	Terminal Plating	Rating	Approvals													
<b>G</b> silver <sup>1</sup>	gold over silver <sup>3</sup>	1A @ 120VAC or 28VDC	UL, CUL													
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<b>R</b> gold <sup>2</sup>	gold <sup>2</sup>	0.4VA max. @20V max (AC/DC)														
<b>8 EPOXY SEAL</b> <b>E</b> epoxy seal																

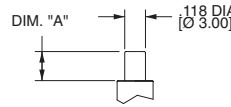
## 3MN-Series Dimensional Specifications: in. [mm]

### PLUNGER



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

FOR B10,B11,B20,B21 ONLY

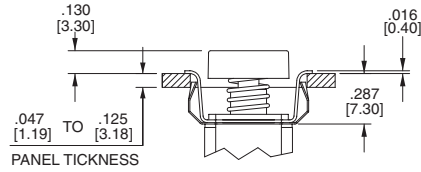
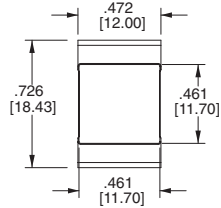


OPTION CODE	DIM. "A"
P0	.098 [2.50]
P1	.295 [7.50]
P2	.165 [4.20]

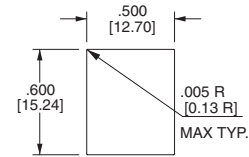
FOR B6 ONLY

### ACTUATOR

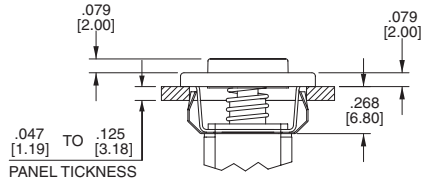
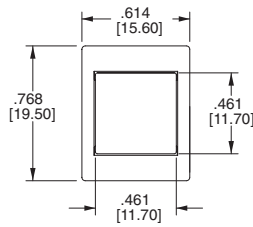
#### AP1



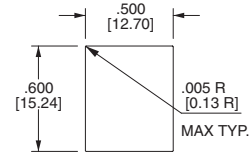
#### PANEL MOUNTING



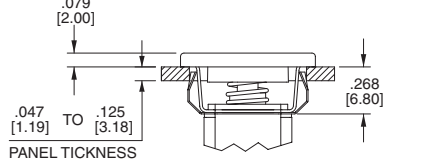
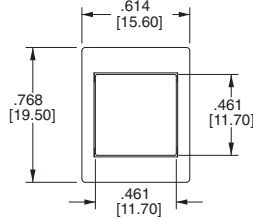
#### AP2



#### PANEL MOUNTING

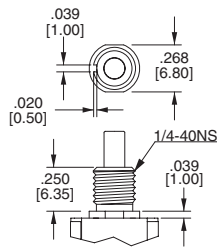


#### AP3

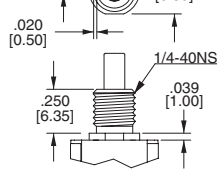


### BUSHING

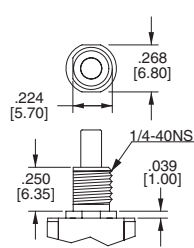
**B10**  
STANDARD KEYWAY  
THREADED SHOWN



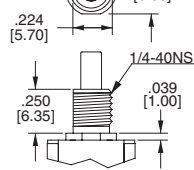
**B20**  
STANDARD KEYWAY  
NON-THREADED



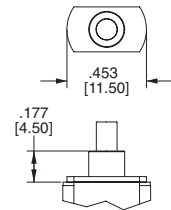
**B11**  
THREADED SHOWN  
WITH FLAT



**B21**  
NON-THREADED  
WITH FLAT

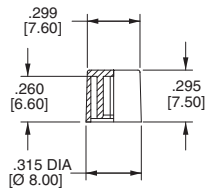


**B6**  
NON-THREADED  
(FOR TERMINATION  
OPTIONS VS6-VS9 ONLY)

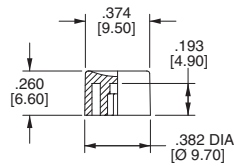


### CAP

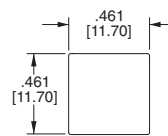
#### C1



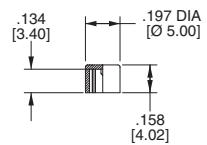
#### C2



#### C3



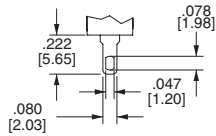
#### C4



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

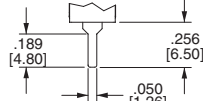
**TERMINATION**

**M1**



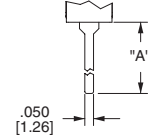
THK .030 [0.75]

**M2**



THK .030 [0.75]

**M5**

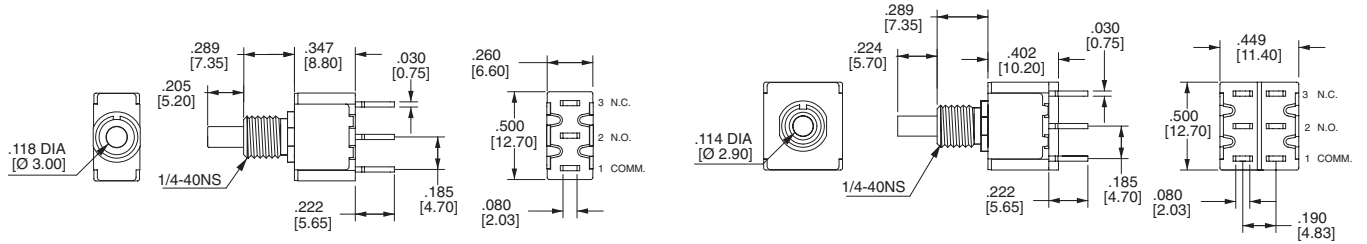


THK .030 [0.75]

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

**SINGLE POLE**

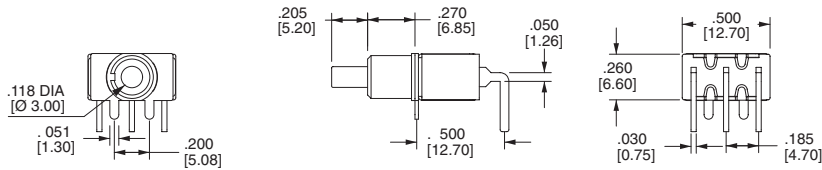
**DOUBLE POLE**



**M6**

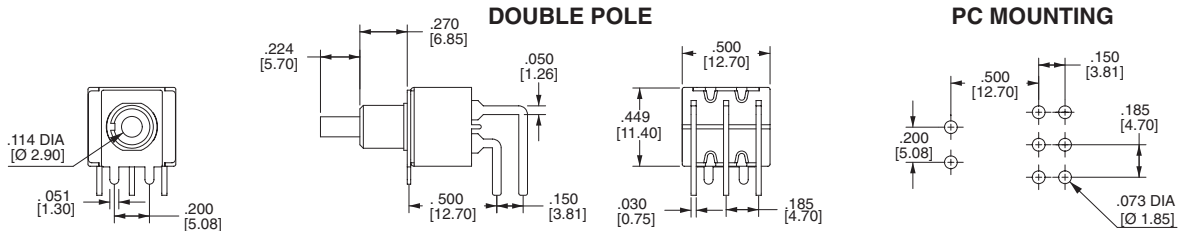
**SINGLE POLE**

**PC MOUNTING**



**DOUBLE POLE**

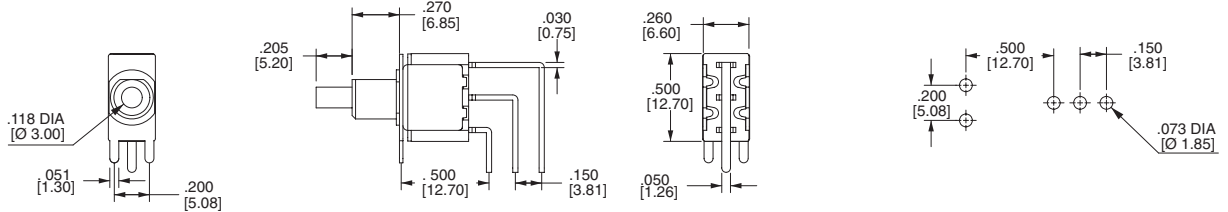
**PC MOUNTING**



**M7**

**SINGLE POLE**

**PC MOUNTING**



**DOUBLE POLE**

**PC MOUNTING**

