

## TYPICAL SWITCH ORDERING EXAMPLE

**M20**

POLES	
1	SPDT
2	DPDT SP3T
3	3PDT (used only with terminal codes 30 & 41 & frame code TX)
4	4PDT DP3T (used only with terminal code 41 & frame code TX)

**1**

**3**

CIRCUITS			
2	ON	NONE	ON
3	ON	OFF	ON
5	ON	NONE	(ON)
8	(ON)	OFF	(ON)
9	ON	OFF	(ON)
*4	ON	ON	ON
*6	(ON)	ON	(ON)
*7	ON	ON	(ON)
( ) = Momentary			
* 3-ON circuits			

**TX**

MOUNTING FRAMES	
TX	Narrow Frame for Small Actuator
TZ	Wide Frame for Large Actuator

**G**

CONTACT MATERIALS & RATINGS	
W	Silver Rated 6A @ 125V AC & 3A @ 250V AC
G	Gold Rated 0.4VA max. @ 28V AC/DC max.
A	Gold over Silver Rated 6A @ 125V AC & 0.4VA max. @ 28V AC/DC max.

**41**

TERMINALS FOR TX & TZ FRAMES	
<b>Straight PC with Bracket (1-2 Pole only)</b>	
13	6.35mm Straight PC with 11.8mm Bracket
15	10.8mm Straight PC with 16mm Bracket
17	24.5mm Straight PC with 29.2mm Bracket
<b>Straight PC w/Reinforced Bracket (1-2 Pole only)</b>	
23	6.35mm Straight PC with 11.8mm Bracket
25	10.8mm Straight PC with 16mm Bracket
26	19.05mm Straight PC with 24.2mm Bracket

TERMINALS FOR TX FRAME ONLY	
<b>Right Angle PC with Support (1-3 Pole only)</b>	
30	3.81mm Right Angle PC
<b>Vertical PC with Support (1-4 Pole)</b>	
41	3.81mm Vertical PC

**D**

ROCKERS & PADDLES	
<b>Small Actuators (TX Frame)</b>	
D	9.27mm Wide Rocker
E	9.27mm Wide Paddle
F	11.5mm Wide Rocker
G	11.5mm Wide Paddle
<b>Large Actuators (TZ Frame)</b>	
J	15.2mm Wide Rocker
H	15.2mm Wide Paddle

**C**

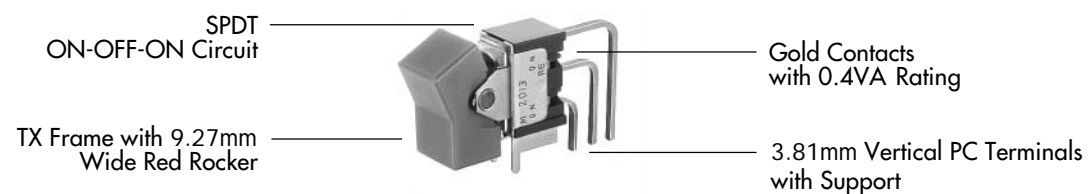
ROCKER & PADDLE COLORS	
A	Black
B	White
C	Red
E	Yellow
F	Green
G	Blue
H	Gray

**IMPORTANT:**

Switches are supplied without UL & CSA marking unless specified. Specific models & ratings noted on General Specifications page.

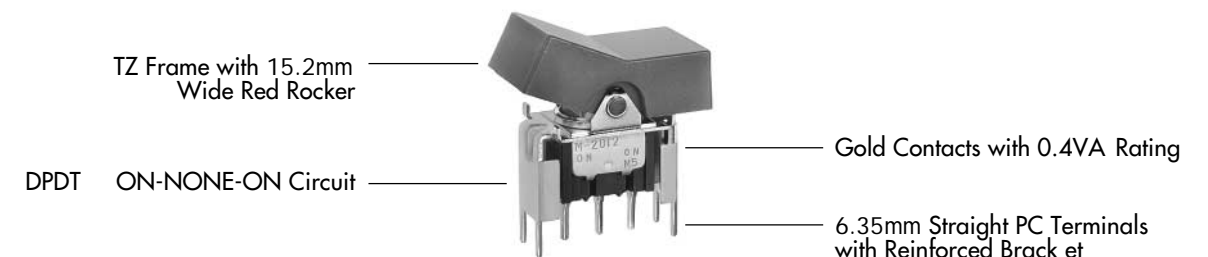
### DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

**M2013TXG41-DC**



### DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

**M2022TZG23-JC**





## GENERAL SPECIFICATIONS

### Electrical Capacity (Resistive Load)

- Power Level (code W):** 6A @ 125V AC & 3A @ 250V AC  
**Logic Level (code G):** 0.4VA maximum @ 28V AC/DC maximum  
**Logic/Power Level (code A):** Combines W & G ratings  
Note: See [Supplement Index](#) to find explanation of dual rating and operating range.

### Other Ratings

- Contact Resistance:** 10 milliohms maximum for silver; 20 milliohms maximum for gold  
**Insulation Resistance:** 1,000 megohms minimum @ 500V DC  
**Dielectric Strength:** 1,000V AC minimum between contacts; 1,500V AC minimum between contacts and case  
**Mechanical Life:** 50,000 operations minimum  
**Electrical Life:** 25,000 operations minimum for silver; 50,000 operations minimum for gold  
**Angle of Throw:** 25°

### Materials & Finishes

- Actuator Clip:** Beryllium alloy with nickel plating  
**Body Frame:** Stainless steel  
**Case:** Diallyl phthalate resin  
**Movable Contactor:** Phosphor bronze with silver or gold plating  
**Movable Contacts:** Silver alloy (code W); copper with gold plating over nickel plating (code G); or silver alloy with gold plating over nickel plating (code A)  
**Stationary Contacts:** Silver with silver plating (code W); copper or brass with gold plating over nickel plating (code G); or silver with gold plating over nickel plating (code A)  
**Terminals:** Copper or brass with silver plating; or copper or brass with gold plating over nickel

### Environmental Data

- Operating Temp Range:** -30°C through +85°C (-22°F through +185°F)  
**Humidity:** 90 ~ 95% humidity for 96 hours @ 40°C (104°F)  
**Vibration:** 10 ~ 55Hz with peak-to-peak amplitude of 1.5mm traversing the frequency range & returning in 1 minute; 3 right angled directions for 2 hours  
**Shock:** 50g acceleration (tested in 6 right angled directions, with 5 shocks in each direction)

### Installation

- Soldering Time & Temperature:** 3 seconds @ 350°C or 5 seconds @ 270°C  
**Process Seal:** Not available

### Standards & Certifications

- Flammability Standards:** UL94V-0 available  
**UL Recognized:** All models recognized at 6A @ 125V AC or 3A @ 250V AC or 0.4VA maximum @ 28V AC/DC maximum; UL File No. E44145  
**CSA Certified:** All models recognized at 6A @ 125V AC or 3A @ 250V AC or 0.4VA maximum @ 28V AC/DC maximum; CSA File No. LR23535



# Series M

## Miniature Rocker Switches

### POLES & CIRCUITS

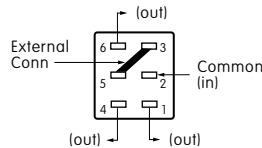
		Rocker Position ( ) = Momentary			Connected Terminals			Throw & Schematics
Pole	Model	Down 	Center 	Up 	Down 	Center 	Up 	Note: Terminal numbers are not actually on the switch. * Reverse circuits available upon request.
SP	M2012 M2013 M2015* M2018 M2019*	ON ON (ON) ON	NONE OFF NONE OFF OFF	ON ON (ON) ON	2-3	OPEN	2-1	SPDT 
DP	M2022 M2023 M2025* M2028 M2029*	ON ON (ON) ON	NONE OFF NONE OFF OFF	ON ON (ON) ON	2-3 5-6	OPEN	2-1 5-4	DPDT 
3P	M2032 M2033 M2035 M2038 M2039	ON ON (ON) ON	NONE OFF NONE OFF OFF	ON ON (ON) ON	2-3 5-6 8-9	OPEN	2-1 5-4 8-7	3PDT 
4P	M2042 M2043 M2045 M2048 M2049	ON ON (ON) ON	NONE OFF NONE OFF OFF	ON ON (ON) ON	2-3 5-6 8-9 11-12	OPEN	2-1 5-4 8-7 11-10	4PDT 

### For 3 Throw (3-On)

Pole	Model	Down	Center	Up	Connected Terminals & Schematics
SP	M2024 M2026 M2027	ON (ON) ON	ON ON ON	ON (ON) (ON)	 2-3 5-6 2-3 5-4 2-1 5-4
DP	M2044 M2046 M2047	ON (ON) ON	ON ON ON	ON (ON) (ON)	 2-3 5-6 8-9 11-12 2-3 5-4 8-9 11-10 2-1 5-4 8-7 11-10

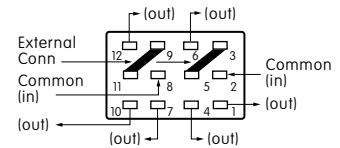
The SP3T model utilizes a double pole base.

External connection must be made during field installation.



The DP3T model utilizes a four pole base.

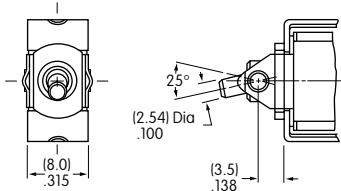
External connection must be made during field installation.



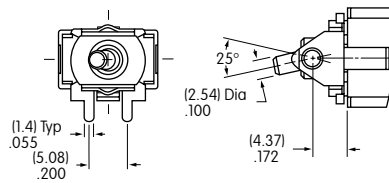
### MOUNTING FRAMES

**TX** **Narrow Mounting Frame for Small Actuators**  
with Straight PC Terminals (codes 13, 15, 17, 23, 25, & 26)  
or with Angle PC Terminals (codes 30 & 41)

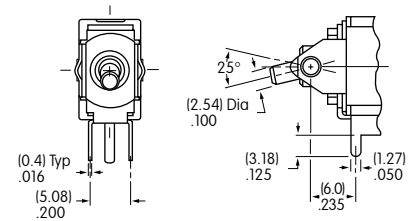
Straight PC Mounting



Right Angle PC Mounting

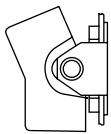


Vertical PC Mounting

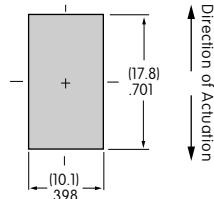
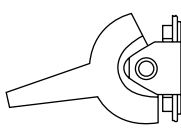


Small Actuators & Panel Cutouts for TX Frame (actuator details on the following pages)

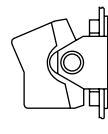
AT4148



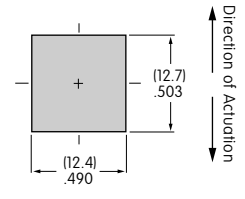
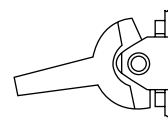
AT4149



AT4150

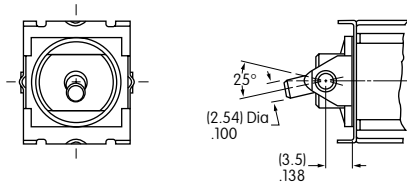


AT4151

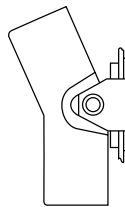


**TZ** **Wide Mounting Frame for Large Actuators**  
with Straight PC Terminals  
(codes 13, 15, 17, 23, 25, & 26)

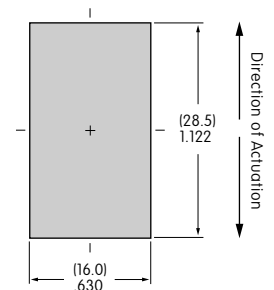
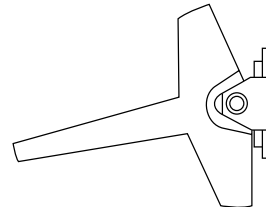
Large Actuators & Panel Cutouts for TZ Frame  
(actuator details on the following pages)



AT4156



AT4157



### CONTACT MATERIALS & RATINGS

<b>W</b> Silver over Silver	Power Level	6A @ 125V AC & 3A @ 250V AC
<b>G</b> Gold over Brass or Copper	Logic Level	0.4VA maximum @ 28V AC/DC maximum
Note: See <a href="#">Supplement Index</a> to find complete explanation of operating range.		
<b>A</b> Gold over Silver	Power Level or Logic Level	6A @ 125V AC or 0.4VA maximum @ 28V AC/DC maximum

Note: This dual rated option is suitable when two or more identical switches are used in logic and in power circuits within the same application. See [Supplement Index](#) to find complete explanation of dual rating and operating range.



# Series M

Miniature Rocker Switches

## TERMINALS

For TX and TZ 1-2 Pole  
Straight PC Mount with Bracket

**13**

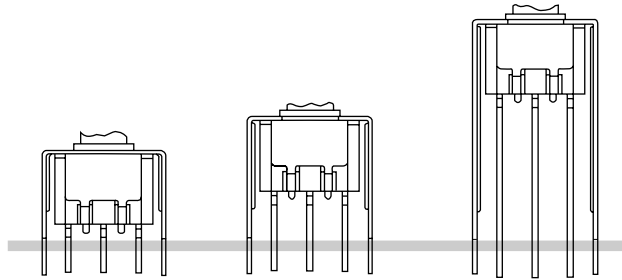
6.35mm Terminal  
w/11.8mm Bracket

**15**

10.8mm Terminal  
w/16mm Bracket

**17**

24.5mm Terminal  
w/29.2mm Bracket



For TX and TZ 1-2 Pole  
Straight PC Mount with Reinforced Bracket

**23**

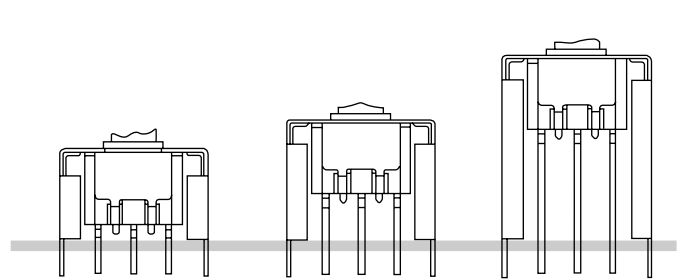
6.35mm Terminal  
w/11.8mm Bracket

**25**

10.8mm Terminal  
w/16mm Bracket

**26**

19.05mm Terminal  
w/24.2mm Bracket

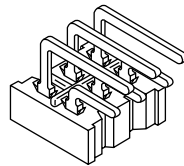


PCB footprints are on the following [Typical Switch Dimension pages](#).

For TX 1-3 Pole Right Angle PC Mount

**30**

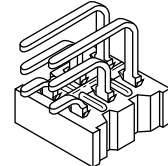
3.81mm Right Angle PC



For TX 1-4 Pole Vertical PC Mount

**41**

3.81mm Vertical PC

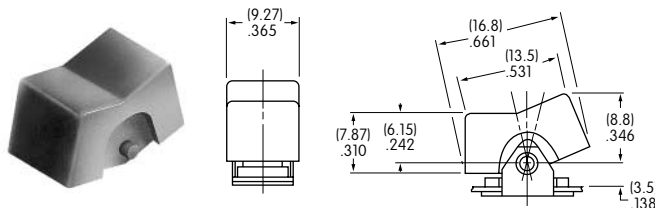


## ROCKERS & PADDLES FOR TX MOUNTING FRAME

**D**

**AT4148**  
9.27mm Wide Rocker

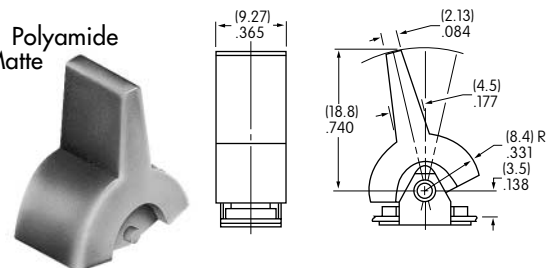
Material: Polyamide  
Finish: Matte



**E**

**AT4149**  
9.27mm Wide Paddle

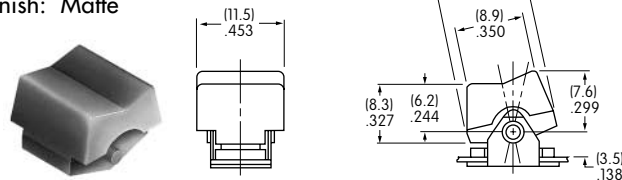
Material: Polyamide  
Finish: Matte



**F**

**AT4150**  
11.5mm Wide Rocker

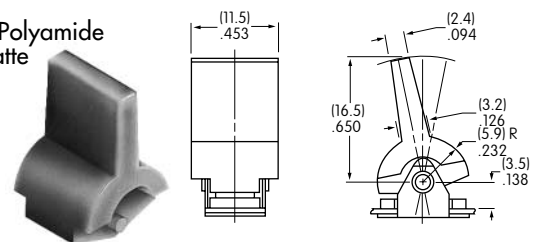
Material: Polyamide  
Finish: Matte



**G**

**AT4151**  
11.5mm Wide Paddle

Material: Polyamide  
Finish: Matte



Cap Colors  
Available:

**A**

Black

**B**

White

**C**

Red

**E**

Yellow

**F**

Green

**G**

Blue

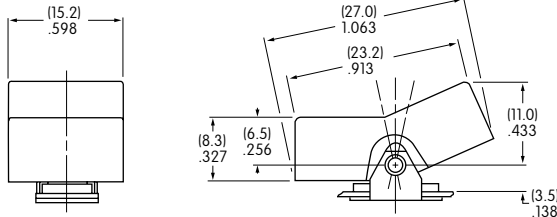
**H**

Gray

## ROCKERS & PADDLES FOR TZ MOUNTING FRAME

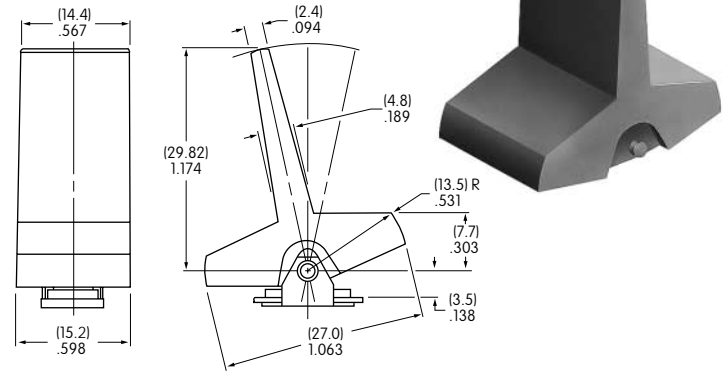
### J AT4156 15.2mm Wide Rocker

Material: Polyamide  
Finish: Matte



### H AT4157 15.2mm Wide Paddle

Material: Polyamide  
Finish: Matte



Cap Colors Available:



Black



White



Red



Yellow



Green



Blue



Gray

## OPTIONAL SNAP-IN PANEL FRAMES

Used with AT4148 Rocker and AT4149 Paddle

### AT064-1

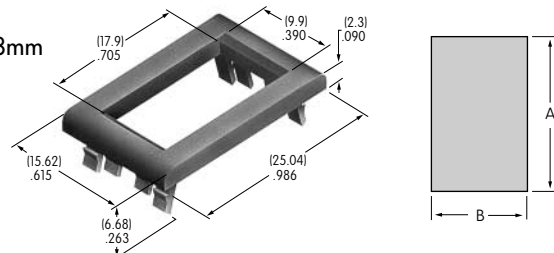
Accommodates 1.2 ~ 2.3mm panel thickness

Material: Polyamide  
Finish: Matte  
Color: Black

Mounted separately from switches

### AT064-2

Accommodates 1.57 ~ 3.18mm panel thickness



### Range of Panel Thicknesses and Cutout Tolerances

Part Number	Panel Thickness	Dimension A	Dimension B
AT064-1	1.2 ~ 2.3mm (.047 ~ .090")	20.24 ~ 20.4mm (.797 ~ .803")	12.57 ~ 12.83mm (.495 ~ .505")
AT064-2	1.57 ~ 3.18mm (.062 ~ .125")		

Used with AT4150 Rocker and AT4151 Paddle

### AT065-1

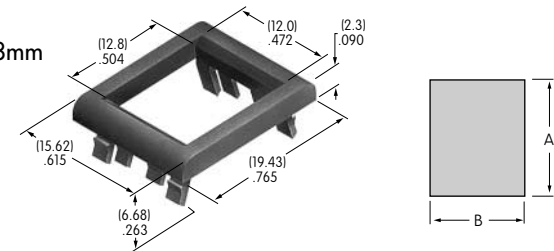
Accommodates 1.2 ~ 2.3mm panel thickness

Material: Polyamide  
Finish: Matte  
Color: Black

Mounted separately from switches

### AT065-2

Accommodates 1.57 ~ 3.18mm panel thickness



### Range of Panel Thicknesses and Cutout Tolerances

Part Number	Panel Thickness	Dimension A	Dimension B
AT065-1	1.2 ~ 2.3mm (.047 ~ .090")	15.11 ~ 15.37mm (.595 ~ .605")	12.57 ~ 12.7mm (.495 ~ .500")
AT065-2	1.57 ~ 3.18mm (.062 ~ .125")		

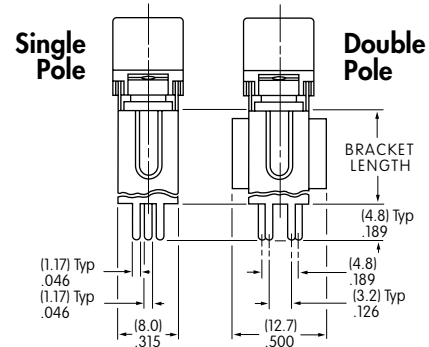
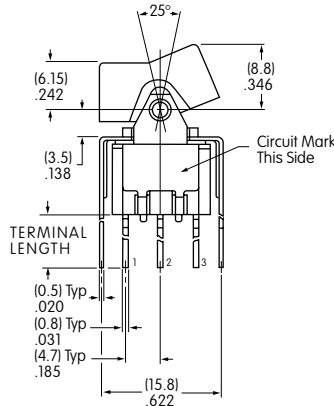


## TYPICAL SWITCH DIMENSIONS

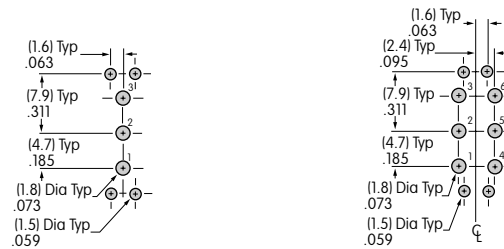
### Straight PC with Bracket



M2012TXG13-DC



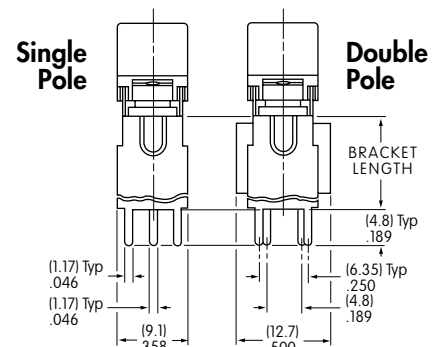
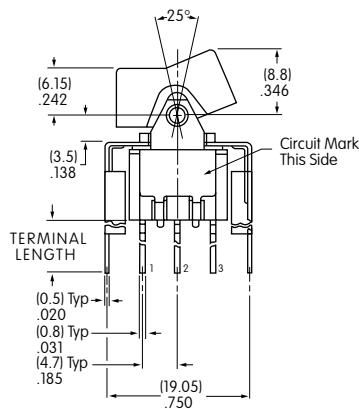
Terminal Code:	Terminal Length:	Bracket Length:
<b>13</b>	6.35mm/.250"	11.8mm/.465"
<b>15</b>	10.8mm/.425"	16mm/.630"
<b>17</b>	24.5mm/.964"	29.2mm/1.150"



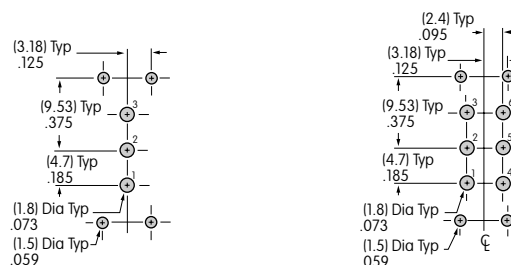
### Straight PC with Reinforced Bracket



M2012TXG23-DC



Terminal Code:	Terminal Length:	Bracket Length:
<b>23</b>	6.35mm/.250"	11.8mm/.465"
<b>25</b>	10.8mm/.425"	16mm/.630"
<b>26</b>	19.05mm/.750"	24.2mm/.953"





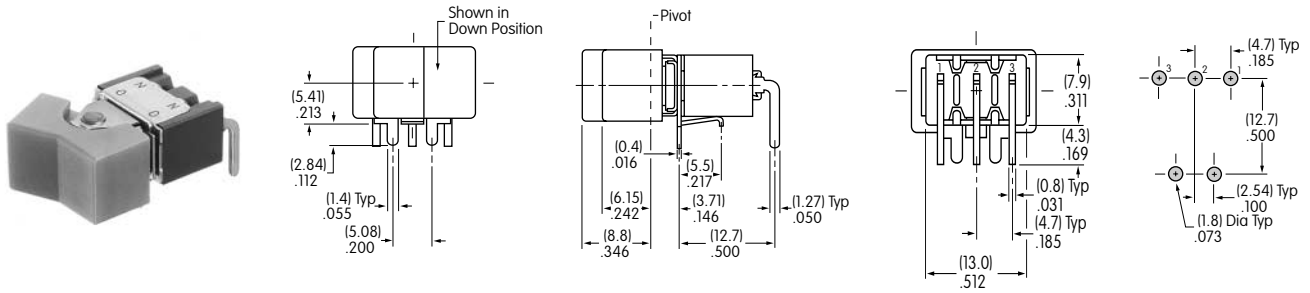
# Series M

Miniature Rocker Switches

## TYPICAL SWITCH DIMENSIONS

### 3.81mm Right Angle PC

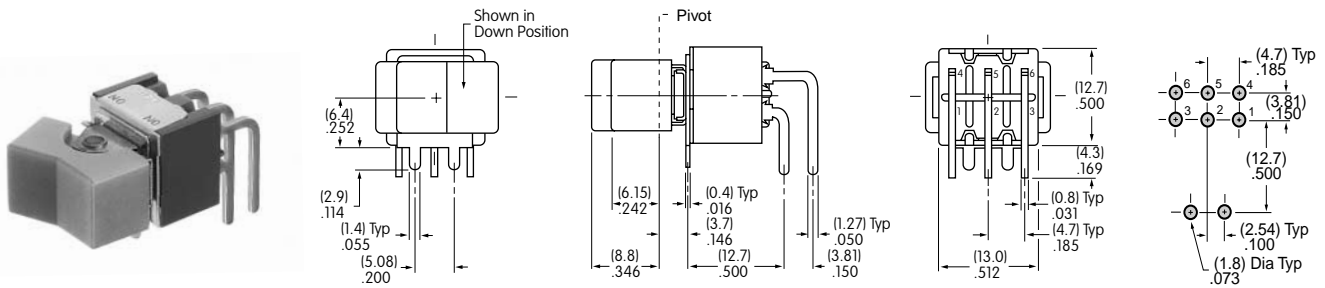
### Single Pole



M2012TXG30-DC

### 3.81mm Right Angle PC

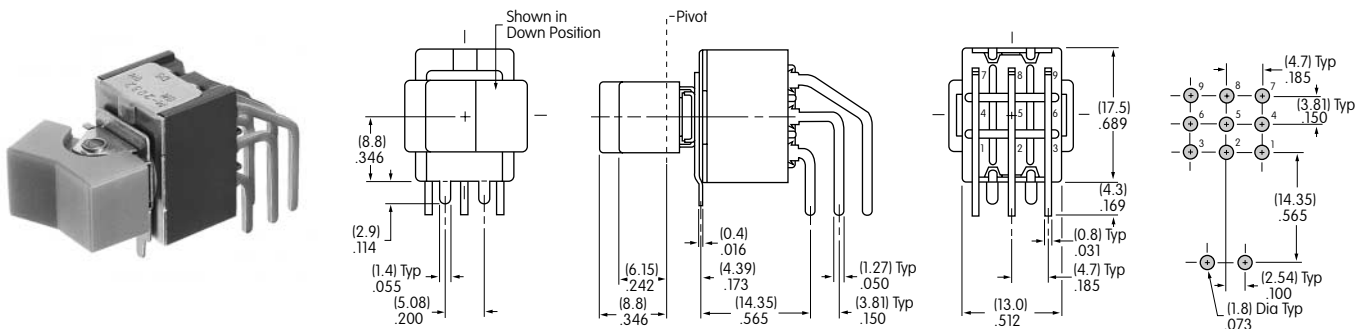
### Double Pole



M2022TXG30-DC

### 3.81mm Right Angle PC

### Three Pole



M2032TXG30-DC





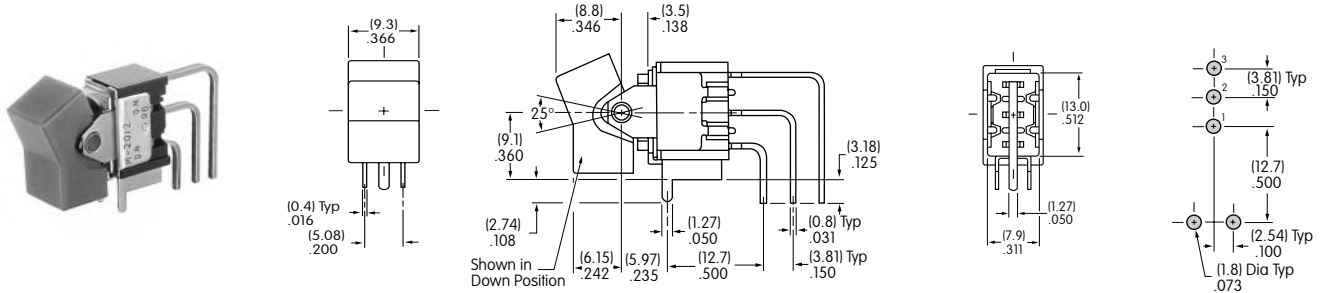
# Series M

Miniature Rocker Switches

## TYPICAL SWITCH DIMENSIONS

### 3.81mm Vertical PC

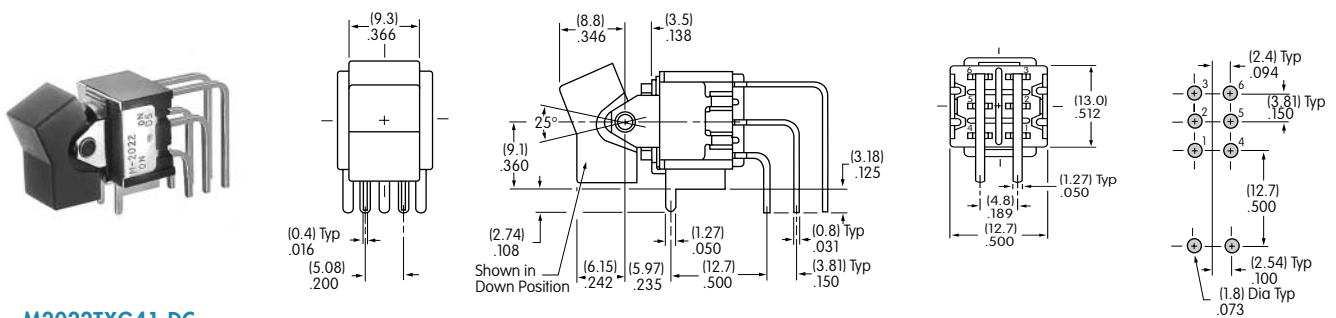
### Single Pole



M2012TXG41-DC

### 3.81mm Vertical PC

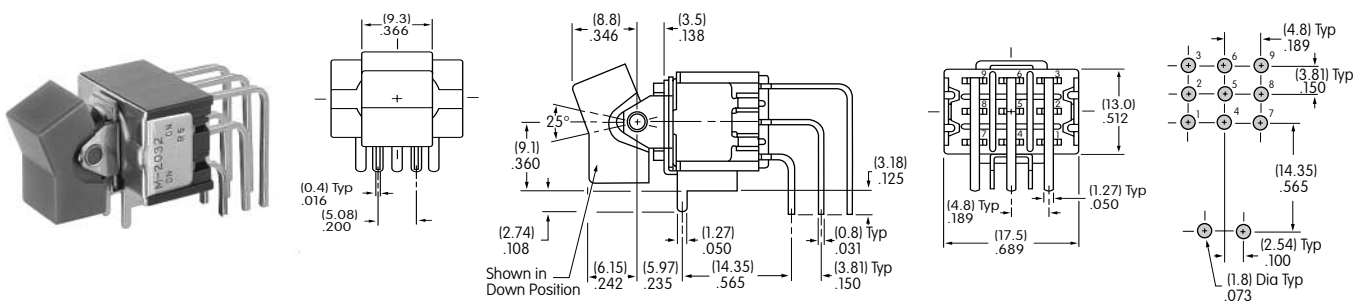
### Double Pole



M2022TXG41-DC

### 3.81mm Vertical PC

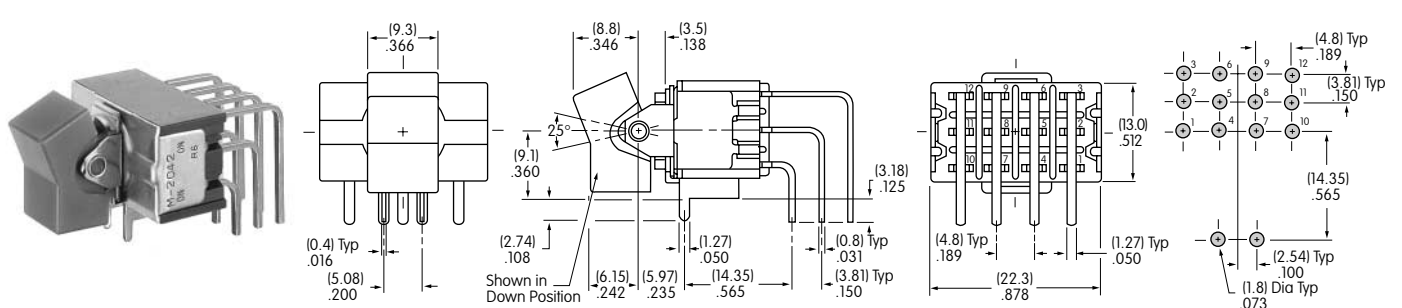
### Three Pole



M2032TXG41-DC

### 3.81mm Vertical PC

### Four Pole



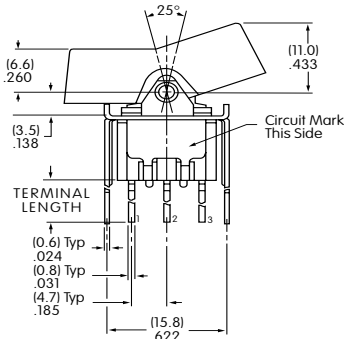
M2042TXG41-DC

### TYPICAL SWITCH DIMENSIONS

#### Straight PC with Bracket

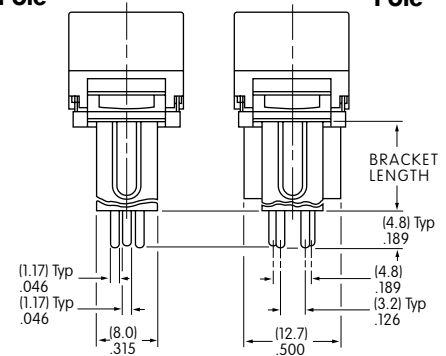


M2012TZG13-JC

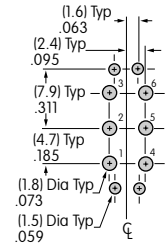
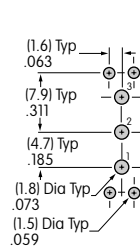


#### Single Pole

#### Double Pole



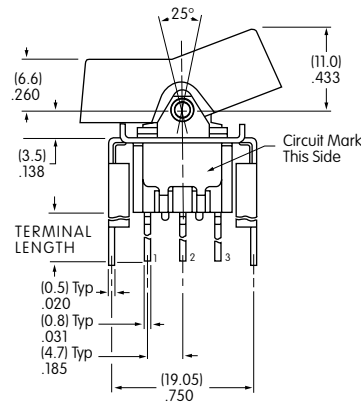
Terminal Code:	Terminal Length:	Bracket Length:
<b>13</b>	6.35mm/.250"	11.8mm/.465"
<b>15</b>	10.8mm/.425"	16.0mm/.630"
<b>17</b>	24.5mm/.964"	29.2mm/1.150"



#### Straight PC with Reinforced Bracket

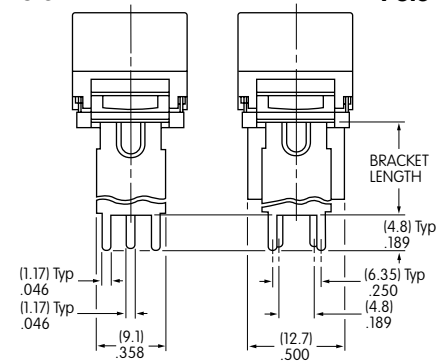


M2012TZG23-JC



#### Single Pole

#### Double Pole



Terminal Code:	Terminal Length:	Bracket Length:
<b>23</b>	6.35mm/.250"	11.8mm/.465"
<b>25</b>	10.8mm/.425"	16mm/.630"
<b>26</b>	19.05mm/.750"	24.2mm/.953"

