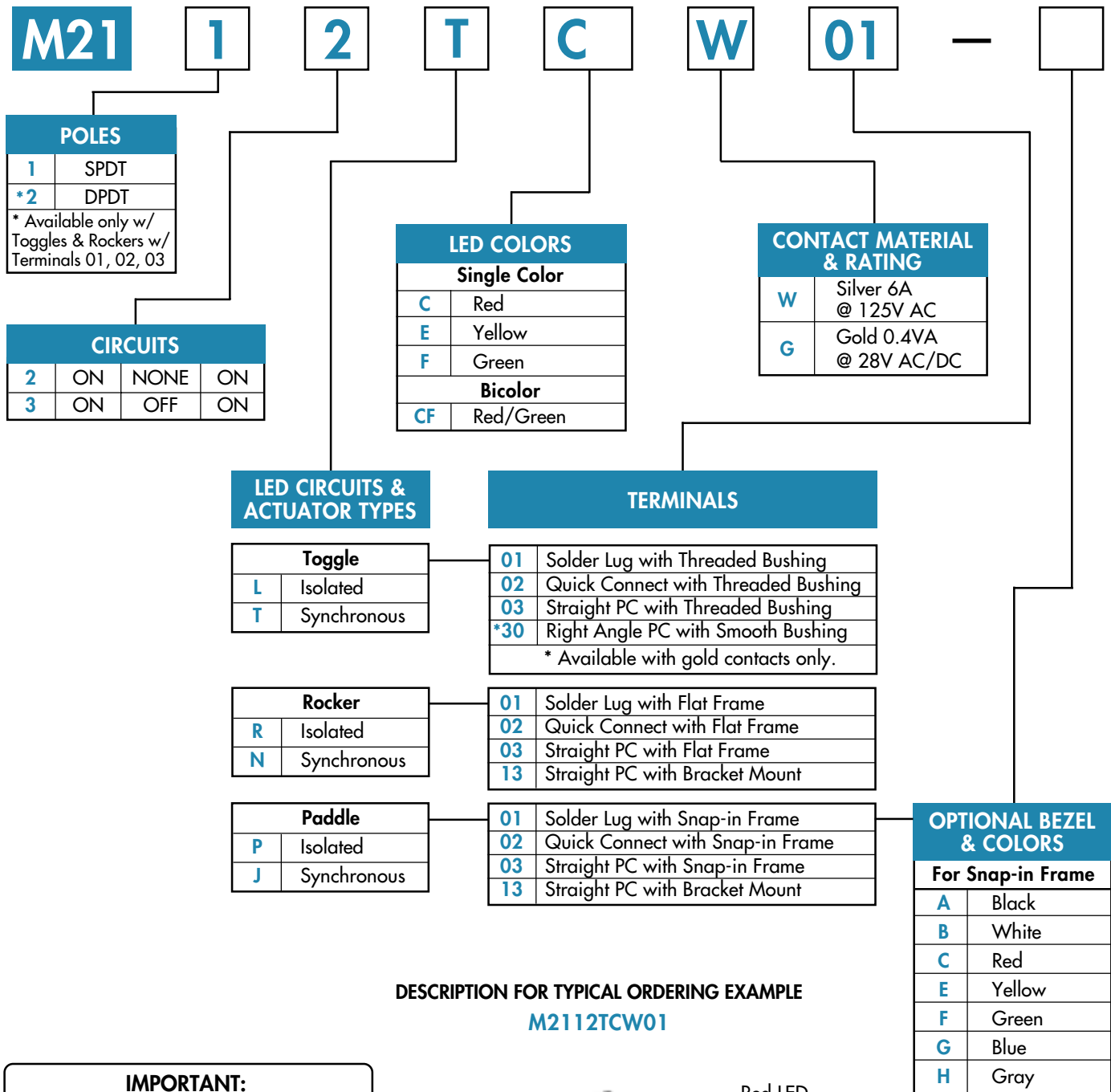




# Series M2100

LED Tipped Actuators

## TYPICAL TOGGLE & ROCKER SWITCH ORDERING EXAMPLE



### DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

**M2112TCW01**

**IMPORTANT:**



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

SPDT ON-NONE-ON  
Switch Circuit



Red LED

Synchronous LED Circuit  
in Toggle Actuator

Silver Contacts  
with 6-amp Rating

Solder Lug Terminals



## GENERAL SPECIFICATIONS

### Electrical Capacity (Resistive Load)

**Power Level (code W):** 6A @ 125V AC or 3A @ 250V AC or 3 A @ 30V DC

**Logic Level (code G):** 0.4VA maximum @ 28V AC/DC maximum

Note: See [Supplement Index](#) to find explanation of 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 & case

**Mechanical Life:** 50,000 operations minimum

**Electrical Life:** 25,000 operations minimum

**Nominal Operating Force:** Toggles & Paddles:

On to On position ~ 325 grams for single pole; 450 grams for double pole

Off to On position ~ 400 grams for single pole; 720 grams for double pole

Rockers:

On to On position ~ 650 grams for single pole; 1400 grams for double pole

Off to On position ~ 1000 grams for single pole; 1800 grams for double pole

**Angle of Throw:** 20°

### Materials & Finishes

**Bushing:** Brass with nickel plating

**Housing:** Stainless steel

**Mounting Bracket:** Steel with tin plating

**Movable Contacts:** Silver alloy or silver alloy with gold plating over nickel

**Stationary Contact:** Silver with silver plating or copper or brass with gold plating over nickel

**Lamp Contacts:** Phosphor bronze

**Base:** Diallyl phthalate

**Power Terminals:** Copper with silver or gold plating

**Lamp Terminals:** Brass with silver or gold plating

### Environmental Data

**Operating Temp Range:** -10°C through +55°C (+14°F through +131°F) for toggles & rockers

-25°C through +70°C (-13°F through +158°F) for paddles

**Humidity:** 93% 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

**Mounting Torque:** 15 kgf/cm (13 lb/in) for double nut; 7 kgf/cm (6 lb/in) for single nut

**Soldering Time & Temperature:** 3 seconds @ 350°C or 5 seconds @ 270°C

**Process Seal:** Not Available

### Standards & Certifications

**Flammability Standards:** UL94V-0 base

**UL Recognized:** Single pole toggles & rockers with synchronous circuits & solder lug or PC recognized at 6A @ 125V AC; UL File No. E44145




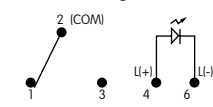
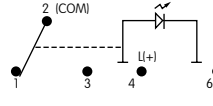
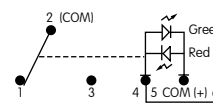
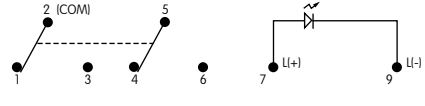
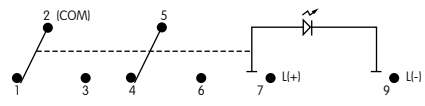
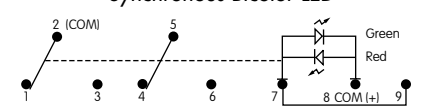
**CSA Certified:** All single pole toggles & rockers with synchronous circuits recognized at 6A @ 125/250V AC; CSA File No. LR23535



# Series M2100

LED Tipped Actuators

## POLES & CIRCUITS & LED ILLUMINATION

Model		Pole & Throw	Actuator Position & Terminal Numbers			Schematics
			Down 	Center 	Up 	
<b>M2112</b>		<b>SPDT</b>	ON	NONE	ON	<p>Notes: Terminal numbers are not actually on the switch. LEDs require an external power source.</p> <p><b>Isolated Single Color LED</b></p>  <p><b>Synchronous Single Color LED</b></p>  <p><b>Synchronous Bicolor LED</b></p> 
Connected Power Terminals			2-3	NONE	2-1	
LED Circuit	<b>Isolated Single Color LED</b> Connected LED Terminals		ON	NONE	ON	
	<b>Synchronous Single Color LED</b> Connected LED Terminals		ON	NONE	OFF OPEN	
	<b>Synchronous Bicolor LED</b> Connected LED Terminals		Red	NONE	Green	
<b>M2113</b>		<b>SPDT</b>	ON	OFF	ON	
Connected Power Terminals			2-3	OPEN	2-1	
LED Circuit	<b>Isolated Single Color LED</b> Connected LED Terminals		ON	ON	ON	
	<b>Synchronous Single Color LED</b> Connected LED Terminals		ON	OFF	ON	
	<b>Synchronous Bicolor LED</b> Connected LED Terminals		Red	OFF	Green	
<b>M2122</b>		<b>DPDT</b>	ON	NONE	ON	<p><b>Isolated Single Color LED</b></p>  <p><b>Synchronous Single Color LED</b></p>  <p><b>Synchronous Bicolor LED</b></p> 
Connected Power Terminals			2-3 5-6	NONE	2-1 5-4	
LED Circuit	<b>Isolated Single Color LED</b> Connected LED Terminals		ON	NONE	ON	
	<b>Synchronous Single Color LED</b> Connected LED Terminals		ON	NONE	OFF OPEN	
	<b>Synchronous Bicolor LED</b> Connected LED Terminals		Red	NONE	Green	
<b>M2123</b>		<b>DPDT</b>	ON	OFF	ON	
Connected Power Terminals			2-3 5-6	OPEN	2-1 5-4	
LED Circuit	<b>Isolated Single Color LED</b> Connected LED Terminals		ON	ON	ON	
	<b>Synchronous Single Color LED</b> Connected LED Terminals		ON	OFF	ON	
	<b>Synchronous Bicolor LED</b> Connected LED Terminals		Red	OFF	Green	

## LED COLORS & SPECIFICATIONS

Single Element LED	For Toggles & Rockers				For Paddles				
	Single Color		Bicolor		Single Color		Bicolor		
LED factory assembled <b>Not Available Separately</b> Bicolor is white in OFF state.	<b>C</b>	<b>E</b>	<b>F</b>	<b>CF</b>	<b>C</b>	<b>E</b>	<b>F</b>	<b>CF</b>	
Color	Red	Yellow	Green	Red/Green	Red	Yellow	Green	Red/Green	
Forward Peak Current	$I_{FM}$	25mA	30mA	30mA	25mA	10mA	30mA	30mA	30mA
Continuous Forward Current	$I_F$	20mA	20mA	20mA	20mA	8mA	24mA	24mA	25mA
Forward Voltage	$V_F$	2.1V	2.1V	2.1V	2.1V	1.9V	2.0V	2.1V	2.1V
Reverse Peak Voltage	$V_{RM}$	4V	4V	4V	—	5V	5V	5V	—
Current Reduction Rate Above 25°C	$\Delta I_F$	0.33mA/°C	0.40mA/°C	0.40mA/°C	0.33mA/°C	0.13mA/°C	0.40mA/°C	0.40mA/°C	0.33mA/°C
Ambient Temperature Range		-10°C ~ +55°C				-25°C ~ +70°C			



# Series M2100

LED Tipped Actuators

## LED CIRCUIT, TOGGLE, & MOUNTING TYPE COMBINATIONS



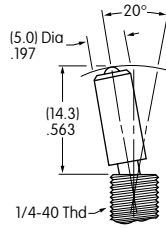
**Toggle with Isolated LED Circuit**



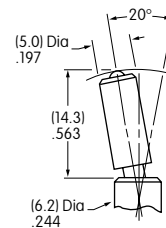
**Toggle with Synchronous LED Circuit**

Finish: Brushed aluminum

Standard Hardware: 2 AT513M Hex Nuts,  
1 AT507M Locking Ring, 1 AT509 Lockwasher  
Standard & optional hardware details in  
Accessories & Hardware section.



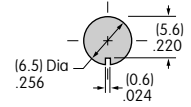
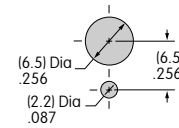
Threaded Bushing  
combines with terminal  
codes 01, 02, & 03.



Smooth Bushing  
combines with  
terminal code 30.

Max. Panel  
Thickness With  
Standard Hardware  
2.6mm (.102")

Max. Panel  
Thickness Without  
Locking Ring  
3.4mm (.134")



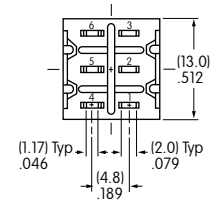
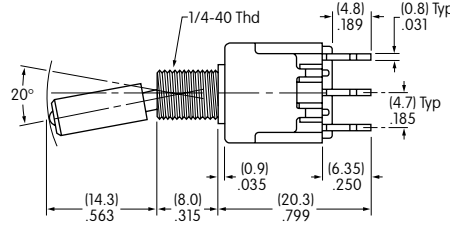
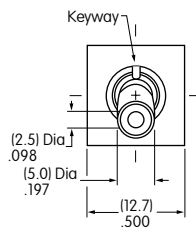
## TYPICAL TOGGLE SWITCH DIMENSIONS

### Solder Lug



M2112TCFW01

### Single Pole



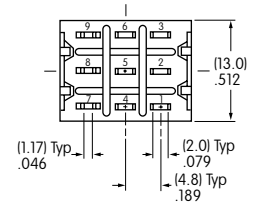
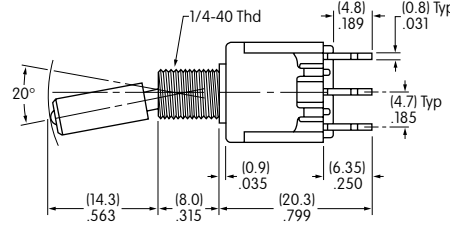
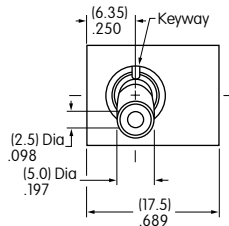
Single color LED switch does not have terminal 5.

### Solder Lug



M2122TCFW01

### Double Pole



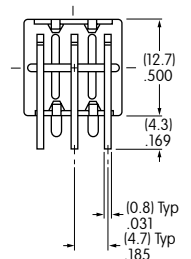
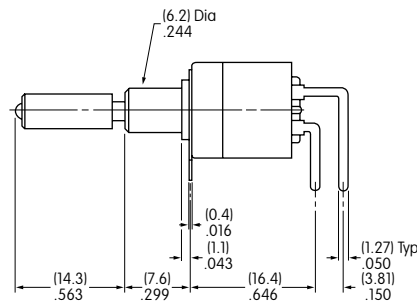
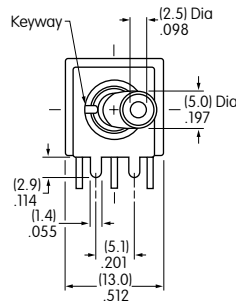
Single color LED switch does not have terminal 8.

### Right Angle PC



M2112TCFG30

### Single Pole Only



Gold contact material only.

Single color LED switch does not have terminal 5.



# Series M2100

LED Tipped Actuators

## LED CIRCUIT, ROCKER, & MOUNTING TYPE COMBINATIONS

**R**

Rocker with Isolated LED Circuit

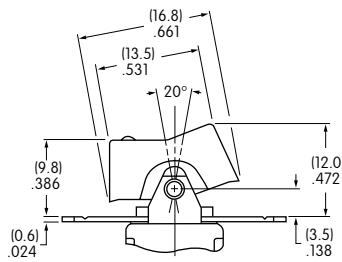
**N**

Rocker with Synchronous LED Circuit

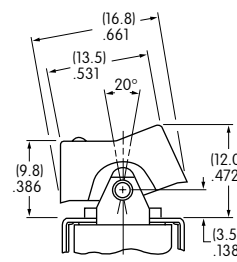
Material: Polyamide

Finish: Matte

Color: Black

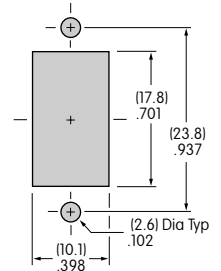


Flat Frame combines with Terminal codes 01, 02, & 03.



Bracket combines with Terminal code 13.

Max. Panel Thickness  
3.2mm (.126")



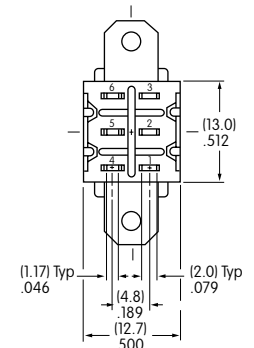
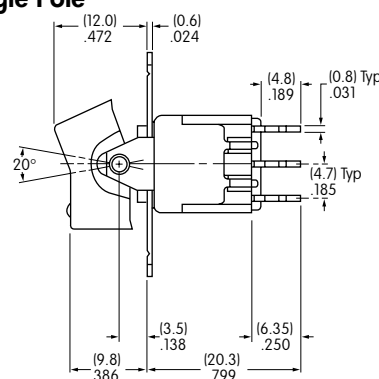
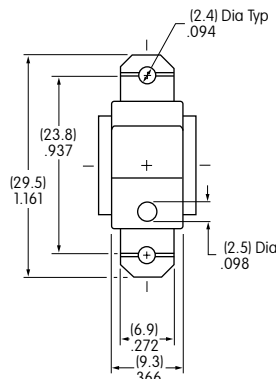
## TYPICAL ROCKER SWITCH DIMENSIONS

Solder Lug



M2112NCFW01

Single Pole



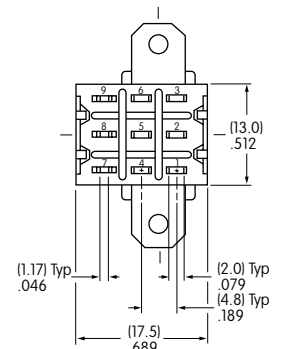
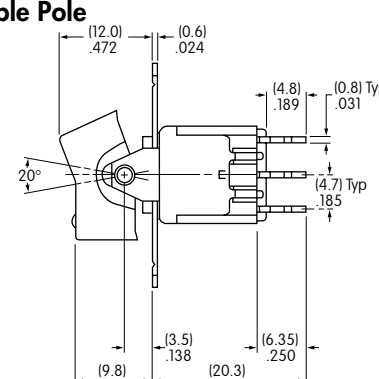
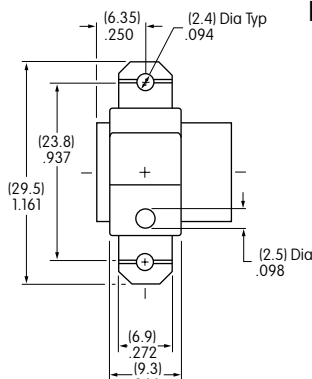
Single color LED switch does not have terminal 5.

Solder Lug



M2122NCFW01

Double Pole



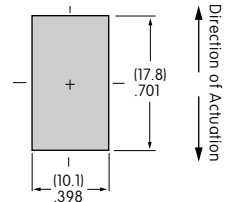
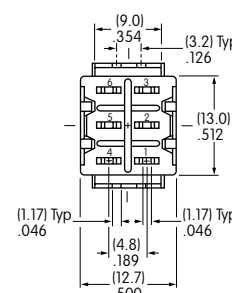
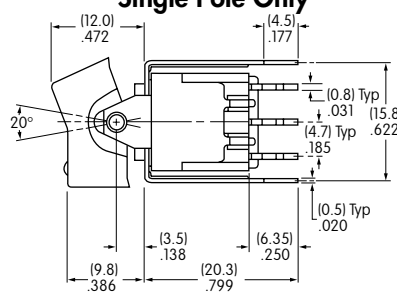
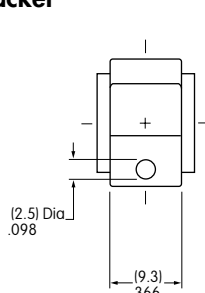
Single color LED switch does not have terminal 8.

Straight PC • Bracket



M2112NCFW13

Single Pole Only



Single color LED switch does not have terminal 5.

Silver contact material is standard.



# Series M2100

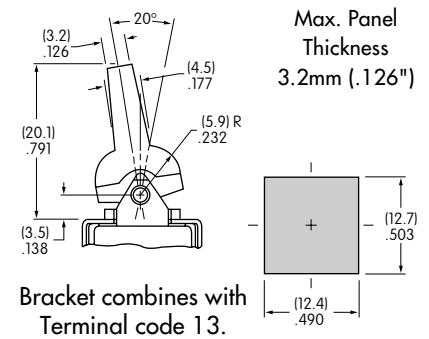
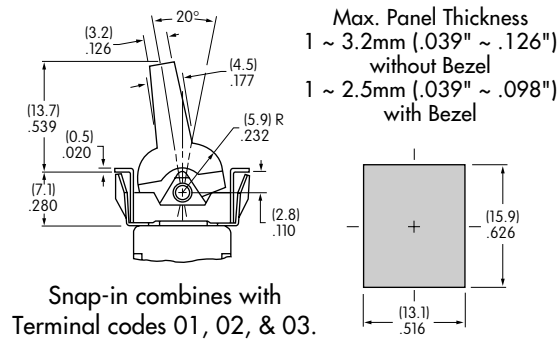
LED Tipped Actuators

## LED CIRCUIT, PADDLE, & MOUNTING TYPE COMBINATIONS

**P** Paddle with Isolated LED Circuit

**J** Paddle with Synchronous LED Circuit

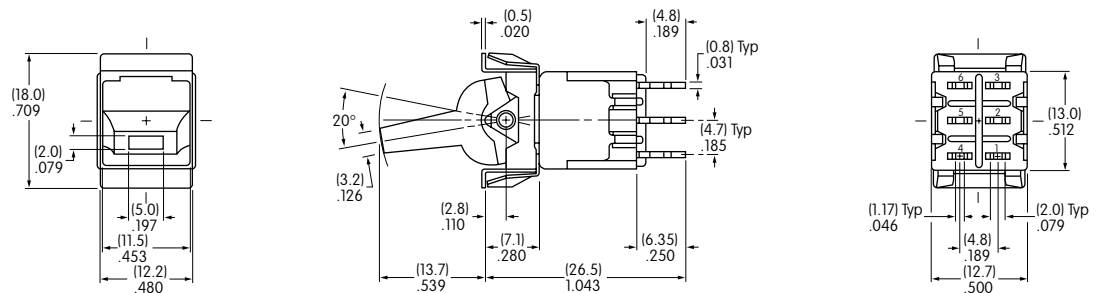
Material: Polyamide  
Finish: Matte  
Color: Black



## TYPICAL PADDLE SWITCH DIMENSIONS

Solder Lug • Snap-in

Single Pole Only

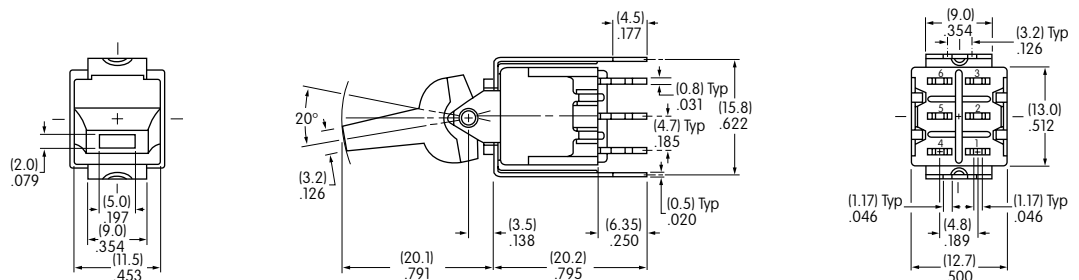


M2112JCFW01

Single color LED switch does not have terminal 5.

Straight PC • Bracket

Single Pole Only



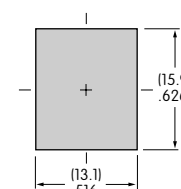
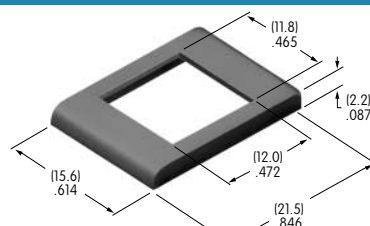
M2112JCFW13

Silver contact material is standard. Single color LED switch does not have terminal 5.

## OPTIONAL BEZEL & COLORS

AT2107 Bezel for Snap-in Panel Frame

Material: Nylon  
Finish: Matte



Colors Available:

- A** Black   **B** White   **C** Red   **E** Yellow   **F** Green   **G** Blue   **H** Gray



# Series M2100

LED Tipped Actuators

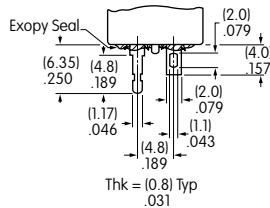
## CONTACT MATERIALS & RATINGS

<b>W</b> Silver Contacts	<b>Power Level</b>	<b>6A @ 125V AC &amp; 3A @ 250V AC</b>
<b>G</b> Gold Contacts	<b>Logic Level</b>	<b>0.4VA maximum @ 28V AC/DC</b>

See [Supplement Index](#) for complete explanation of operating range.

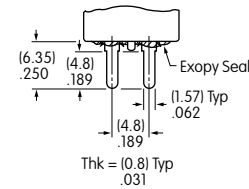
## TERMINALS

### 01 Solder Lug with Turret LED Terminal

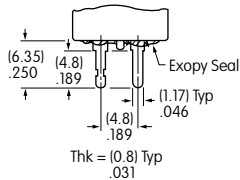


**Wiring:**  
Solder lug terminals have a .043" x .079" oval hole which accommodates one solid 18-gauge wire or two solid or stranded 20-gauge wires.

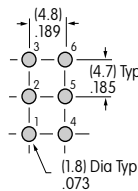
### 02 Quick Connect



### 03 Straight PC with Turret LED Terminal

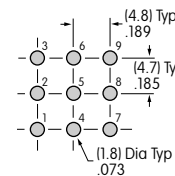


#### Single Pole



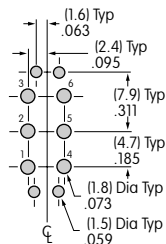
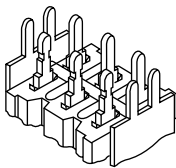
Single color LED switch does not have terminal 5.

#### Double Pole



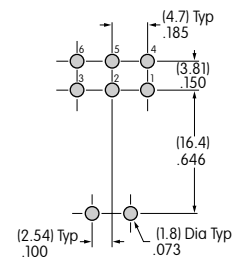
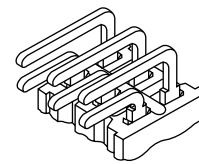
Single color LED switch does not have terminal 8.

### 13 Straight PC with Bracket & Turret LED Terminal



Single color LED switch does not have terminal 5.

### 30 Right Angle PC

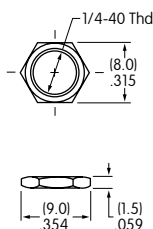


## STANDARD MOUNTING HARDWARE

#### AT513M

Hexagon nuts (2 per switch)

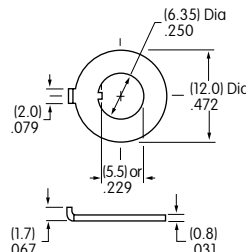
**Material:** Brass with nickel plating



#### AT507M

Locking ring (1 per switch)

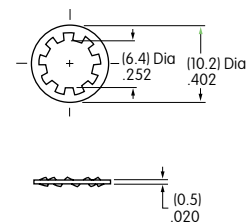
**Material:** Steel with chromate over zinc



#### AT509

Lockwasher (1 per switch)

**Material:** Steel with chromate over zinc



**Optional Hardware:** Knurled nuts, dress nuts, and ON-OFF plates are available; see details in [Accessories & Hardware](#) section.