TYPICAL SWITCH ORDERING EXAMPLE

M20 1 2 TJ W 01 — F C — 1 A —

POLES

1	SPDT
2	DPDT SP3T

MOUNTING FRAME

TJ	Snap-in Frame

TERMINALS

01	Solder Lug
02	Quick Connect
03	6.35mm Straight PC
05	10.8mm Wirewrap
06	19.05mm Wirewrap
07	24.5mm Wirewrap
08	27mm Wirewrap

ROCKERS & PADDLES

F	11.5mm Wide Rocker
G	11.5mm Wide Paddle
S	11.5mm False Illuminated Rocker in black only

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			

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.

ROCKER & PADDLE COLORS

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

OPTIONAL BEZELS

1	Bezel without LED
2	Bezel with 1 Round LED
3	Bezel with 2 Round LEDs
4	Bezel with 2 Rectang. LEDs

BEZEL COLORS

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

LED COLORS

1 LED

C	Red
F	Green

2 LEDs

Top LED		Bottom LED	
C	Red	C	Red
E	Yellow	E	Yellow
F	Green	F	Green

IMPORTANT:

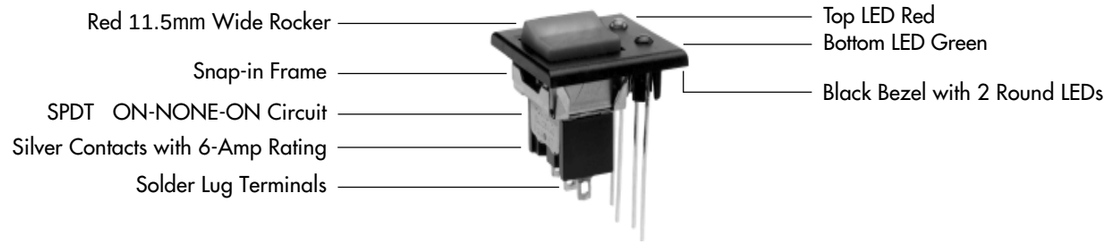
Switches are supplied without UL & CSA marking unless specified. Specific models & ratings noted on General Specifications page.

DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

M2012TJW01-FC-1A

DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

M2012TJW01-FC-3A-CF



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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
Mounting Frame: Stainless steel
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

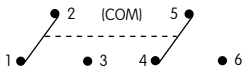
Standards & Certifications

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

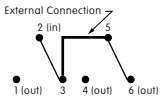
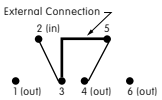
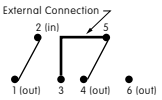
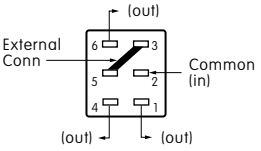
Series M

Miniature Rocker Switches

POLES & CIRCUITS

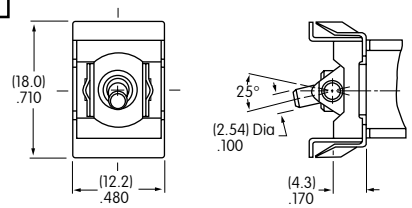
Pole	Model	Rocker Position ( ) = Momentary: Down	Center	Up	Connected Terminals: Down	Center	Up	Throw & Schematics
SP	M2012 M2013 M2015 M2018 M2019	ON ON ON (ON) ON	NONE OFF NONE OFF OFF	ON ON (ON) (ON) (ON)	2-3	OPEN	2-1	Note: Terminal numbers are not actually on the switch. SPDT 
DP	M2022 M2023 M2025 M2028 M2029	ON ON ON (ON) ON	NONE OFF NONE OFF OFF	ON ON (ON) (ON) (ON)	2-3 5-6	OPEN	2-1 5-4	DPDT 

For 3 Throw (3-On)

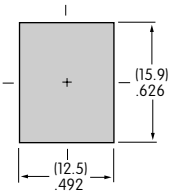
Pole	Model	Connected Terminals & Schematics: Down	Center	Up	External Connection
SP	M2024 M2026 M2027	ON (ON) ON  2-3 5-6	ON ON ON  2-3 5-4	ON (ON) (ON)  2-1 5-4	**The SP3T model utilizes a double pole base.** External connections must be made during field installation. 

MOUNTING FRAME

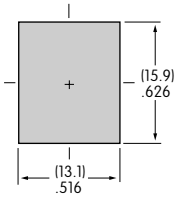
TJ **Snap-in Frame**



Panel Cutout for Single Pole without Bezel



Panel Cutout for Double Pole without Bezel



Panel Thickness without Bezel: 1.0mm ~ 3.2mm (.039" ~ .126")
Panel Thickness with Bezel: 1.0mm ~ 2.5mm (.039" ~ .098")

CONTACT MATERIALS & RATINGS

W	**Silver over Silver**	**Power Level**	**6A @ 125V AC & 3A @ 250V AC**
G	**Gold over Brass or Copper**	**Logic Level**	**0.4VA maximum @ 28V AC/DC maximum**

Note: See Supplement Index to find complete explanation of operating range.

A	**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.

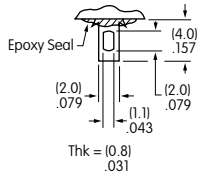
Series M

Miniature Rocker Switches

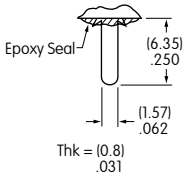
TERMINALS

01 **Solder Lug**

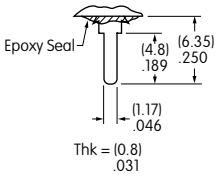
The 1.1mm x 2mm oblong hole accommodates 1 solid 18-gauge wire or 2 solid or stranded 20-gauge wires.

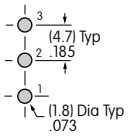


02 **1.57mm Wide Quick Connect**

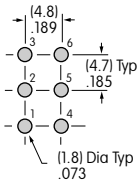


03 **6.35mm Straight PC**





Single Pole



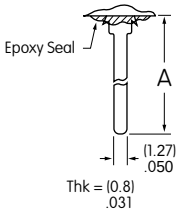
Double Pole

05 **10.8mm / .425" Wirewrap or Extended PC**

06 **19.05mm / .750" Wirewrap or Extended PC**

07 **24.5mm / .964" Wirewrap or Extended PC**

08 **27.0mm / 1.062" Wirewrap or Extended PC**



If using as extended PC terminal, refer to the above footprints.

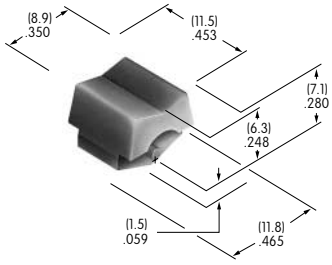
Dimension A = terminal lengths as shown beside the terminal codes at the left.

ROCKERS & PADDLES

F **AT4150 11.5mm Wide Rocker**

Material: Polyamide
Finish: Matte

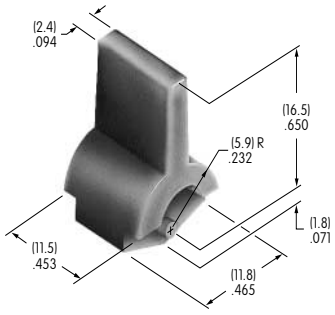
Colors Available:
A, B, C, E, F, G, H



G **AT4151 11.5mm Wide Paddle**

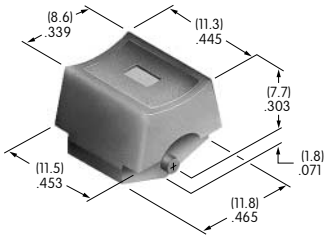
Material: Polyamide
Finish: Matte

Colors Available:
A, B, C, E, F, G, H



S **AT466 11.5mm False Illuminated Rocker**

	Rocker	False Illuminator
Material:	Polycarbonate	Acrylonitrile Butadiene Styrene
Finish:	Glossy	
Colors:	Black	White and Red



When a bezel is selected with AT466, glossy polycarbonate AT207 is supplied.

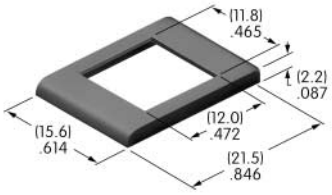
Cap Colors Available: A Black B White C Red E Yellow F Green G Blue H Gray

OPTIONAL SNAP-IN BEZELS & BEZEL COLORS

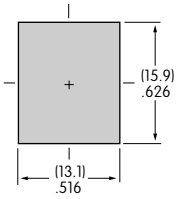
1 AT2107 Bezel

Material: Nylon

Finish: Matte



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

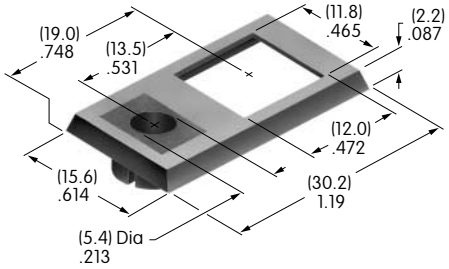


2 AT208 Bezel for AT070 LED

Material: Polycarbonate

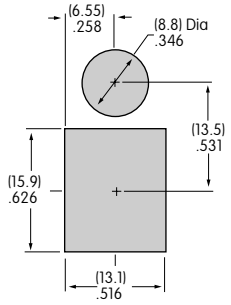
Finish: Glossy

Contact factory for matte finish.



- A Black

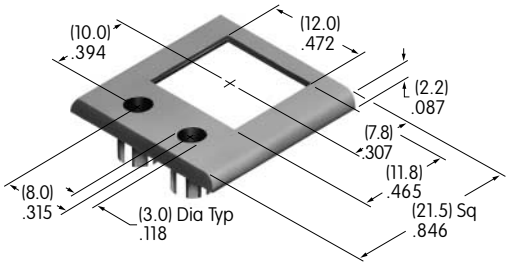
LED colors & specifications on next page.



3 AT212 Bezel for AT617 LED

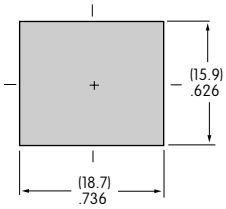
Material: Polycarbonate

Finish: Semi-glossy



- A Black

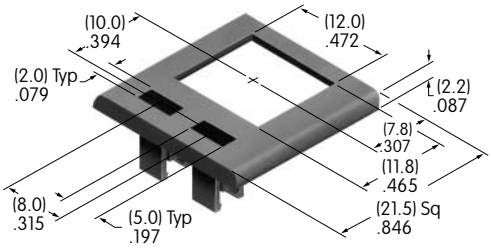
LED colors & specifications on next page.



4 AT213 Bezel for AT618 LED

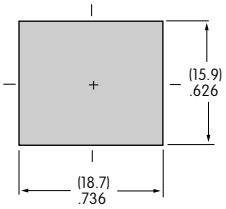
Material: Polycarbonate

Finish: Semi-glossy



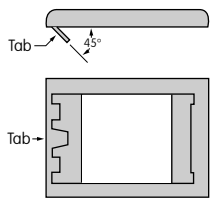
- A Black

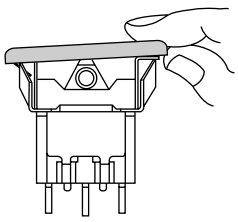
LED colors & specifications on next page.

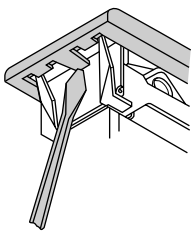


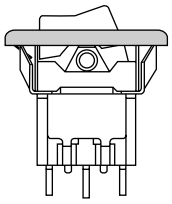
Bezel Assembly

1. Pry out tab on bezel to a 45° angle.
2. Insert switch frame under tab and snap on bezel.
3. Push tab back into place.
4. Snap assembled bezel and switch into panel.





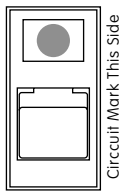


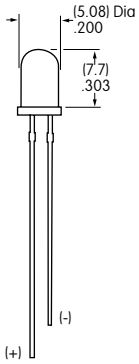


LED COLORS & SPECIFICATIONS

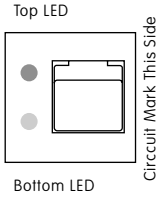
Bezel Orientation on Switch

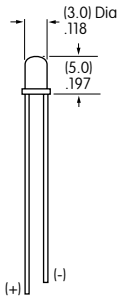
AT070 LED
For Bezel AT208
with 1 LED



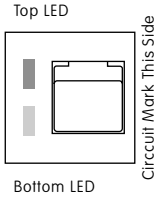


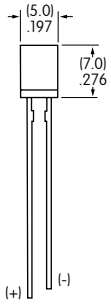
AT617 LED
For Bezel AT212
with 2 Round LEDs





AT618 LED
For Bezel AT213
with 2 Rectangular LEDs





Note: Lead lengths may differ from manufacturing lot to lot. The longer lead is the anode (+).

		AT070		AT617			AT618		
		C	F	C	E	F	C	E	F
Lamp Color		Red	Green	Red	Yellow	Green	Red	Yellow	Green
Forward Peak Current	I_{FM}	25mA	30mA	30mA	20mA	30mA	10mA	20mA	30mA
Continuous Forward Current	I_F	20mA	20mA	24mA	16mA	24mA	8mA	16mA	24mA
Forward Voltage	V_F	2.8V	2.1V	2.01V	1.96V	1.95V	1.9V	1.9V	2.0V
Reverse Peak Voltage	V_{RM}	4V	5V	5V	4V	5V	5V	4V	5V
Current Reduction Rate Above 25°C	ΔI_F	0.33 mA/°C	0.40 mA/°C	0.40 mA/°C	0.27 mA/°C	0.40 mA/°C	0.13 mA/°C	0.27 mA/°C	0.40 mA/°C
Ambient Temperature Range		-10°C ~ +70°C		-15°C ~ +70°C			-15°C ~ +70°C		

Electrical specifications are determined at a basic temperature of 25°C.
Lamp circuit is independent of switch operation.

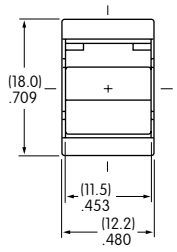
If the source voltage is greater than the LED's rated voltage, a ballast resistor must be connected in series with the LED. That ballast resistor value can be calculated by using the formula shown in the Supplement.

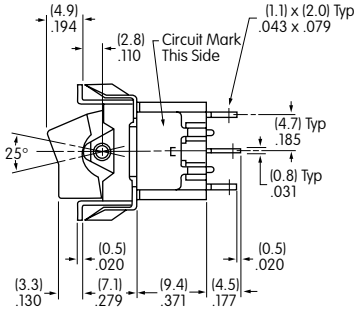
TYPICAL SWITCH DIMENSIONS

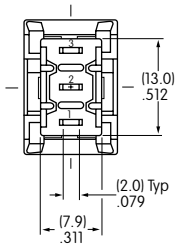
Snap-in Frame • Solder Lug

Single Pole

M2012TJW01-FC



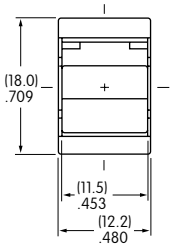


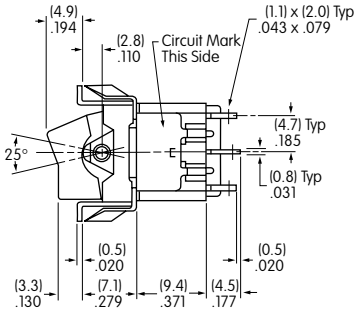


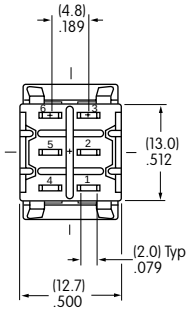
Snap-in Frame • Solder Lug

Double Pole

M2022TJW01-FC



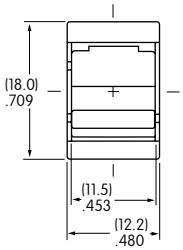


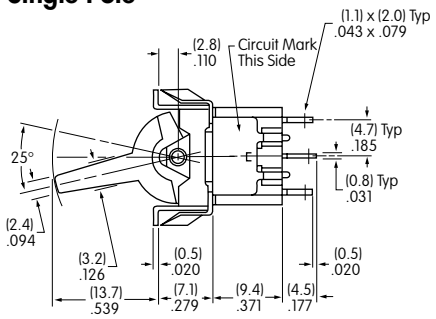


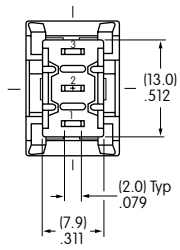
Snap-in Frame • Solder Lug

Single Pole

M2012TJW01-GC



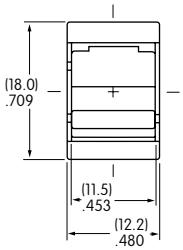


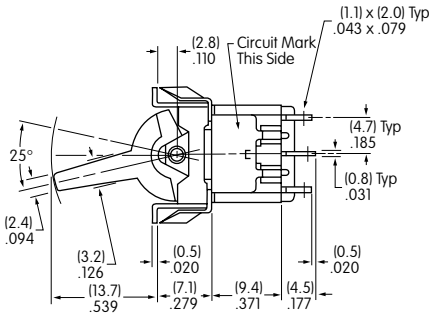


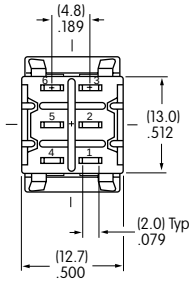
Snap-in Frame • Solder Lug

Double Pole

M2022TJW01-GC





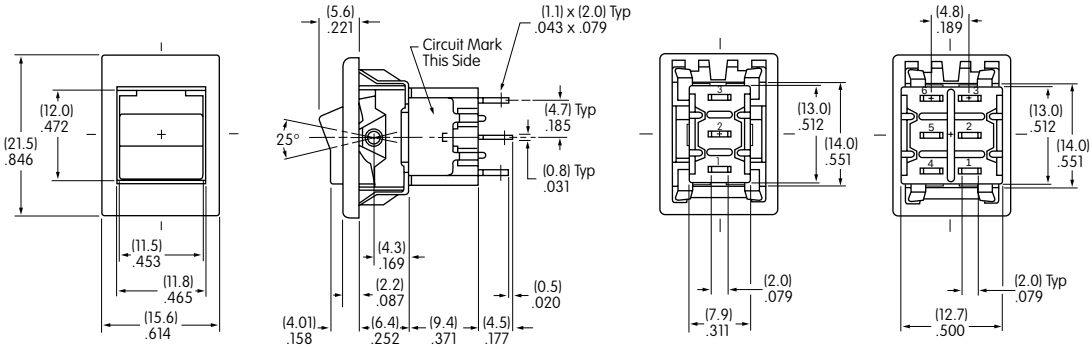


TYPICAL SWITCH DIMENSIONS

Snap-in Frame • AT2107 Bezel • Solder Lug

Single & Double Pole

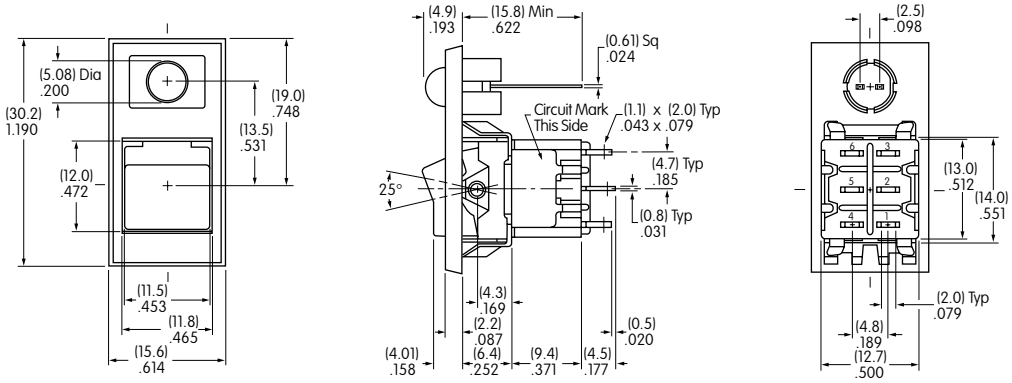
M2012TJW01-FC-1A



Snap-in Frame • AT208 Bezel • Solder Lug

Double Pole

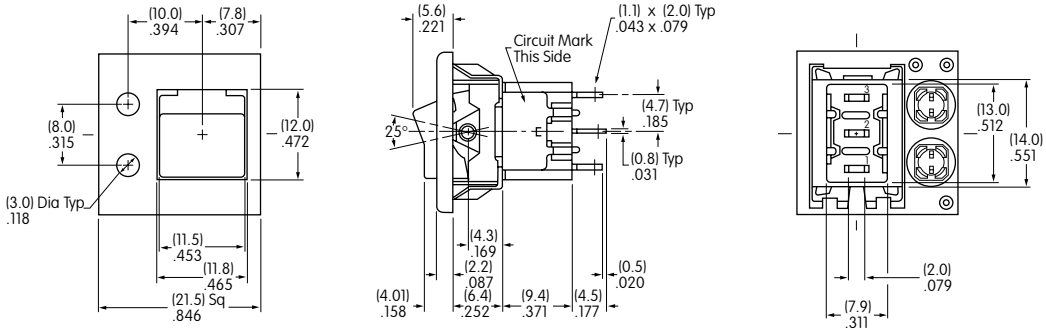
M2022TJW01-FC-2A-C



Snap-in Frame • AT212 Bezel • Solder Lug

Single Pole

M2012TJW01-FC-3A-CF



Snap-in Frame • AT213 Bezel • Solder Lug

Double Pole

M2022TJW01-FC-4A-CF