Distinctive Characteristics

Three methods of panel mounting: flat frame for flush with face or subpanel, snap-in, and PCB.

High insulating barriers increase isolation of circuits in multipole devices and provide added protection to contact points.

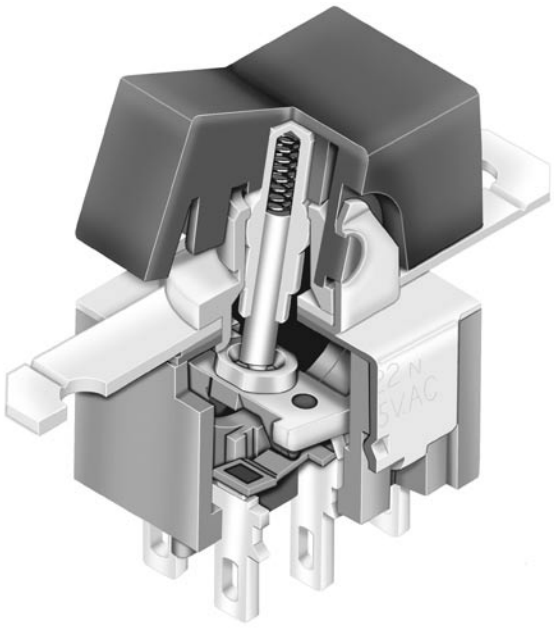
The molded diallyl phthalate case has a UL 94V-0 flammability rating.

Epoxy sealed terminals prevent entry of solder flux and other contaminants.

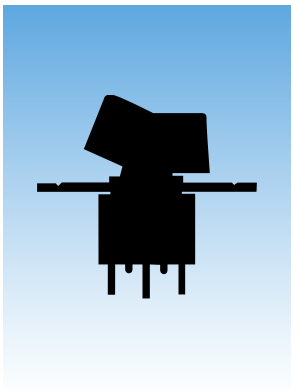
Prominent external insulating barriers increase insulation resistance and dielectric strength.

Bias guard prevents misalignment of contacts; interlocking of actuator block with rocker and internal guide does not allow transmission of diagonal force on rocker to reach contact mechanism.

Clinching of the frame to the case well above the base and terminals provides 1,500V dielectric strength.



Actual Size



General Specifications

Electrical Capacity (Resistive Load)

Power Level (code W): 6A @ 125V AC & 3A @ 250V AC
4A @ 30V DC for On-None-On; 3A @ 30V DC for all other circuits

Logic Level (code G): 0.4VA maximum @ 28V AC/DC maximum
(Applicable Range 0.1mA ~ 0.1A @ 20mV ~ 28V)

Logic/Power Level (code A): Combines W & G ratings
Note: Find additional explanation of dual rating & operating range in Supplement section.

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 for 1 minute minimum;
1,500V AC minimum between contacts and case for 1 minute minimum

Mechanical Life: 50,000 operations minimum

Electrical Life: 25,000 operations minimum for silver; 50,000 operations minimum for gold;
50,000 operations minimum for silver at 3A @ 125V AC

Angle of Throw: 25°

Materials & Finishes

Actuator Clip & Mounting Frame: Stainless Steel

Body Frame: Stainless steel

Case: Diallyl phthalate resin (UL94V–0)

Movable Contactor: Phosphor bronze with silver or gold plating

Movable Contacts: Silver alloy (code W); copper with gold plating (code G); or
silver alloy with gold plating (code A)

Stationary Contacts: Silver with silver plating (code W); copper or brass with gold plating (code G);
or silver with gold plating (code A)

Terminals: Copper or brass with silver plating; or copper or brass with gold plating

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 (490m/s²) acceleration (tested in 6 right angled directions, with 5 shocks in each direction)

Processing

Soldering: Wave Soldering (PC version) for Gold: See Profile A in Supplement section.
Manual Soldering for Gold: See Profile A in Supplement section.
Wave Soldering (PC version) for Silver: See Profile B in Supplement section.
Manual Soldering for Silver: See Profile B in Supplement section.
Note: Actuator must be in OFF (center) position while soldering.

Cleaning: These devices are not process sealed. Hand clean locally using alcohol based solution.

Standards & Certifications

Flammability Standards: UL94V–0 for case

UL Recognized: All models recognized at 6A @ 125V AC or 3A @ 250V AC or
0.4VA maximum @ 28V DC maximum; UL File No. WOYR2.E44145;
add "/U" to end of part number to order UL mark on switch.

CSA Certified: All models recognized at 6A @ 125V AC or 3A @ 250V AC or
0.4VA maximum @ 28V maximum; CSA File No. 023535-0-000;
add "/C" to end of part number to order CSA mark on switch.

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	.250″ (6.35mm) Straight PC
05	.425″ (10.8mm) Wirewrap
06	.750″ (19.05mm) Wirewrap
07	.964″ (24.5mm) Wirewrap
08	1.062″ (27.0mm) Wirewrap

ROCKERS & PADDLES

F	.450″ (11.43mm) Wide Rocker
G	.450″ (11.43mm) Wide Paddle
S	.453″ (11.5mm) False Illluminated 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

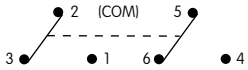
M2012TJW01-FC-1A

DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

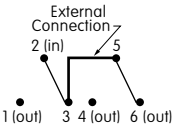
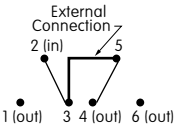
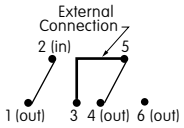
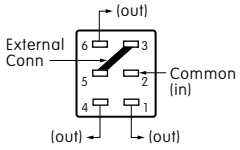
M2012TJW01-FC-3A-CF

NKK Switches • email: sales@nkkswitches.com • Phone (480) 991-0942 • Fax (480) 998-1435 • www.nkkswitches.com

POLES & CIRCUITS

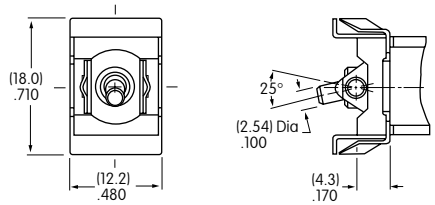
Pole	Model	Rocker Position ( ) = Momentary: Down	Center	Up	Connected Terminals: Down	Center	Up	Throw & Schematics
								Note: Terminal numbers are not actually on the switch.
SP	M2012 M2013 M2015 M2018 M2019	ON ON ON (ON) ON	NONE OFF NONE OFF OFF	ON ON (ON) (ON) (ON)	2-3	OPEN	2-1	SPDT 
DP	M2022 M2023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

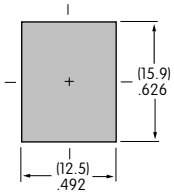
Pole	Model	Connected Terminals & Schematic: Down	Center	Up	External Connection
SP	M2024 M2026 M2027	ON (ON) ON	ON ON ON	ON (ON) (ON)	**The SP3T model utilizes a double pole base.**
		 2-3 5-6	 2-3 5-4	 2-1 5-4	External connection must be made during field installation. 

MOUNTING FRAME

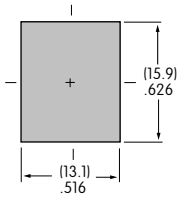
TJ **Snap-in Frame**



Panel Cutout for Single Pole without Bezel



Panel Cutout for Double Pole without Bezel



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

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**

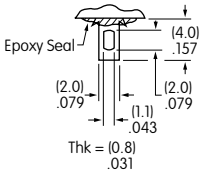
Note: See Supplement section to find complete explanation of operating range.

A	**Gold over Silver**	**Power Level or Logic Level**	**6A @ 125V AC or 0.4VA maximum @ 28V AC/DC maximum**

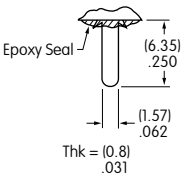
Note: This dual rated option is suitable when two or more identical switches are used in logic and in power circuits within the same application. See Supplement section to find complete explanation of dual rating and operating range.

TERMINALS

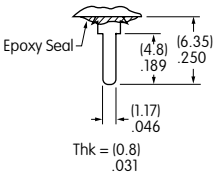
01 **Solder Lug**

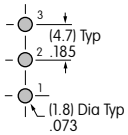


02 **.062" (1.57mm) Wide Quick Connect**

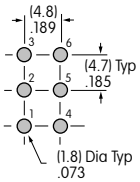


03 **.250" (6.35mm) Straight PC**





Single Pole



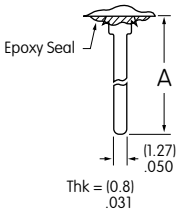
Double Pole

05 **.425" (10.8mm) Wirewrap or Extended PC**

06 **.750" (19.05mm) Wirewrap or Extended PC**

07 **.964" (24.5mm) Wirewrap or Extended PC**

08 **1.062" (27.0mm) Wirewrap or Extended PC**



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

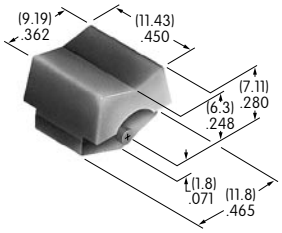
Dimension A = terminal lengths as shown beside the terminal codes at the left.

ROCKERS & PADDLES

F **AT4150 .450" (11.43mm) Wide Rocker**

Material: Polyamide
Finish: Matte

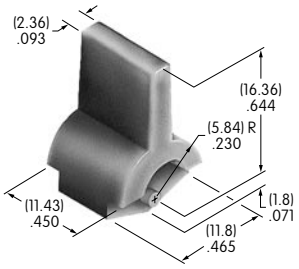
Colors Available:
A, B, C, E, F, G, H



G **AT4151 .450" (11.43mm) Wide Paddle**

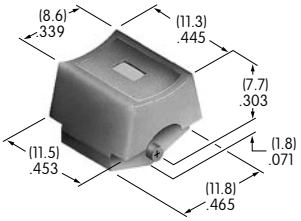
Material: Polyamide
Finish: Matte

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



S **AT466 .453" (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.

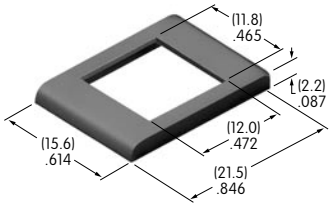
Cap Colors Available: **A** Black **B** White **C** Red **E** Yellow **F** Green **G** Blue **H** Gray

OPTIONAL SNAP-IN BEZELS & BEZEL COLORS

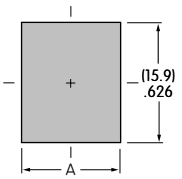
1 AT2107 Bezel

Material: Polyamide

Finish: Matte



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



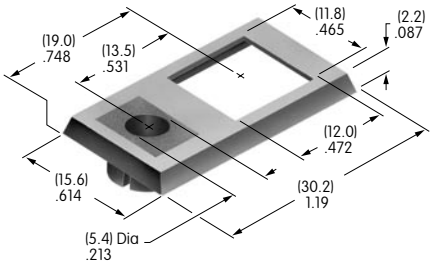
	Single Pole	Double Pole
A	(12.5)mm .492″	(13.1)mm .516″

2 AT208 Bezel for AT070 LED

Material: Polycarbonate

Finish: Glossy

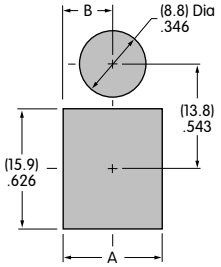
Contact factory for matte finish.



A	Black

LED colors & specifications on next page.

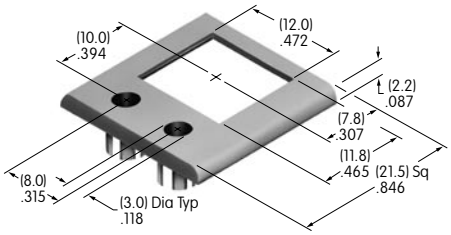
	Single Pole	Double Pole
A	(12.5)mm .492″	(13.1)mm .516″
B	(6.25)mm .246″	(6.55)mm .258″



3 AT212 Bezel for AT617 LED

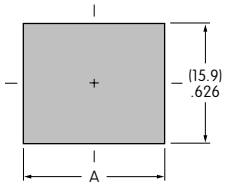
Material: Polycarbonate

Finish: Semi-glossy



A	Black

LED colors & specifications on next page.

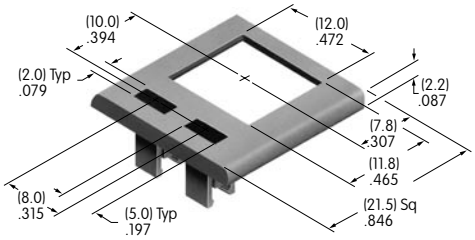


	Single Pole	Double Pole
A	(18.4)mm .724″	(18.7)mm .736″

4 AT213 Bezel for AT618 LED

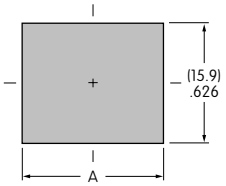
Material: Polycarbonate

Finish: Semi-glossy



A	Black

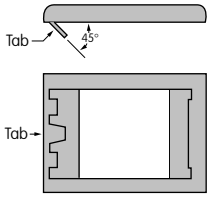
LED colors & specifications on next page.



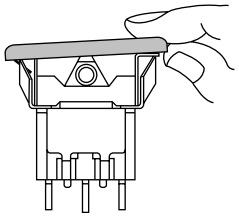
	Single Pole	Double Pole
A	(18.4)mm .724″	(18.7)mm .736″

Bezel Assembly

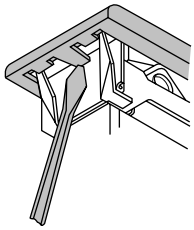
1. Pry out tab on bezel to a 45° angle.



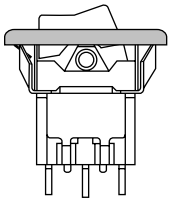
2. Insert switch frame under tab and snap on bezel.



3. Push tab back into place.



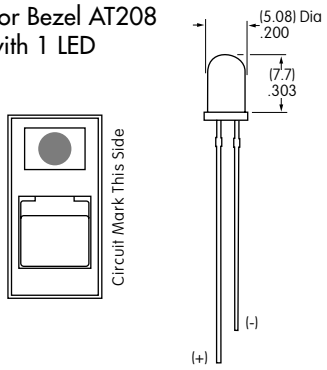
4. Snap assembled bezel and switch into panel.



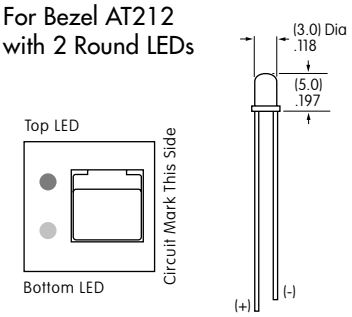
LED COLORS & SPECIFICATIONS

Bezel Orientation on Switch

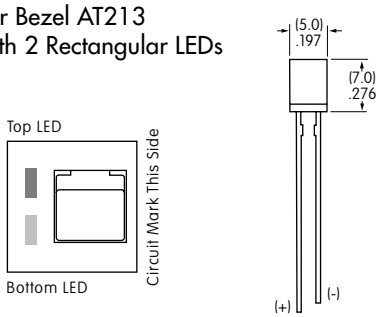
AT070 LED
For Bezel AT208
with 1 LED



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
	Color	Red	Green	Red	Yellow	Green	Red	Yellow	Green
Forward Peak Current	I_{FM}	25mA	50mA	30mA	30mA	30mA	10mA	30mA	30mA
Continuous Forward Current	I_F	20mA	30mA	24mA	24mA	24mA	8mA	24mA	24mA
Forward Voltage	V_F	2.8V	2.1V	2.0V	2.0V	2.1V	1.9V	2.0V	2.1V
Reverse Peak Voltage	V_{RM}	4V	5V	5V	5V	5V	5V	5V	5V
Current Reduction Rate Above 25°C	ΔI_F	0.33 mA/°C	0.40 mA/°C	0.40 mA/°C	0.40 mA/°C	0.40 mA/°C	0.13 mA/°C	0.40 mA/°C	0.40 mA/°C
Ambient Temperature Range (when used with a bezel)		−10° ~ +70°C		−15° ~ +70°C			−15° ~ +70°C		

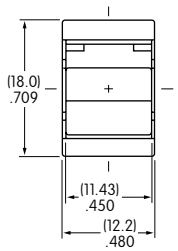
The electrical specifications shown are determined at a basic temperature of 25°C.
LED circuit is independent of switch operation. LED is colored in OFF state.

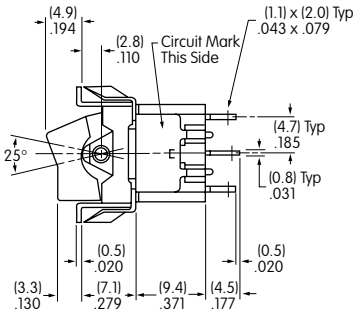
If the source voltage is greater than the rated voltage of the LED, a ballast resistor must be connected in series with the lamp.
The ballast resistor calculation and more lamp detail are shown in the Supplement section.

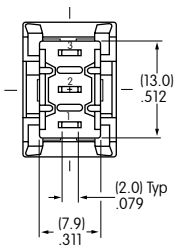
TYPICAL SWITCH DIMENSIONS

Snap-in Frame • Solder Lug

Single Pole



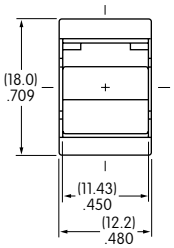


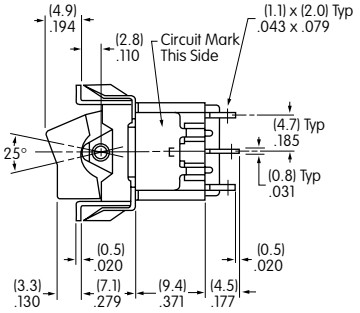


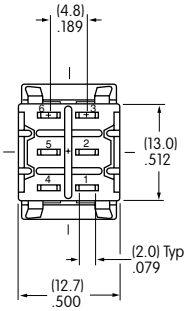
M2012TJW01-FC

Snap-in Frame • Solder Lug

Double Pole



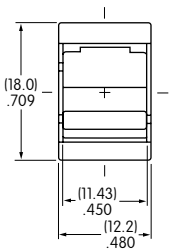


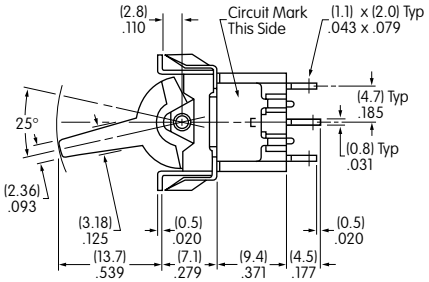


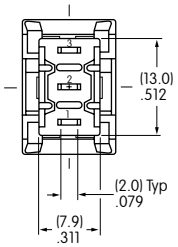
M2022TJW01-FC

Snap-in Frame • Solder Lug

Single Pole



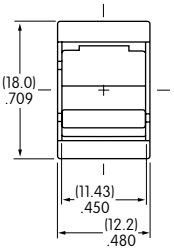


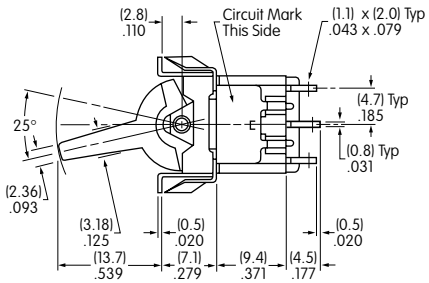


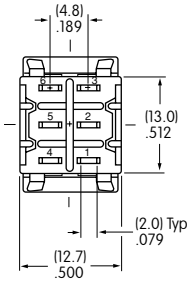
M2012TJW01-GC

Snap-in Frame • Solder Lug

Double Pole





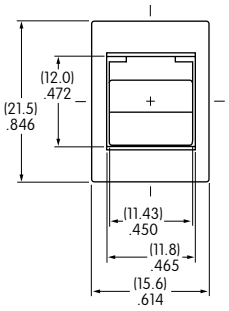


M2022TJW01-GC

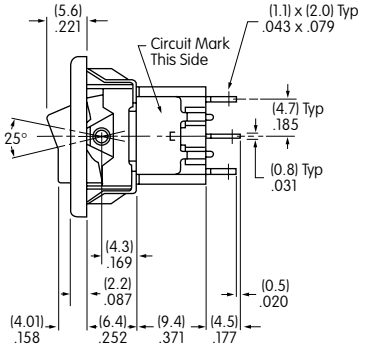
TYPICAL SWITCH DIMENSIONS

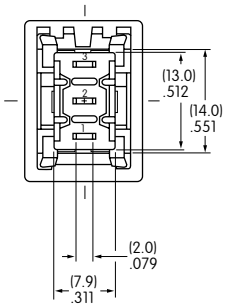
Snap-in Frame • AT2107 Bezel • Solder Lug

M2012TJW01-FC-1A



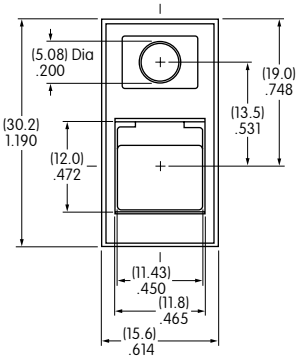
Single & Double Pole



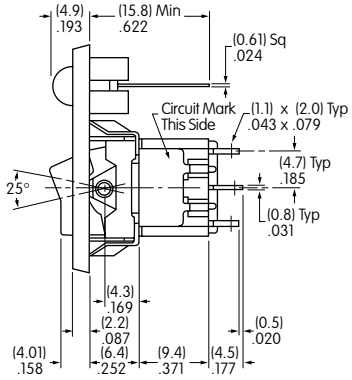


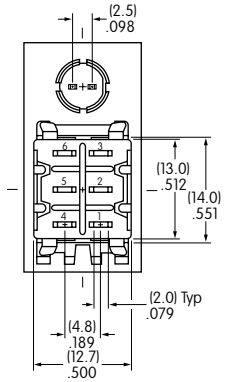
Snap-in Frame • AT208 Bezel • Solder Lug

M2022TJW01-FC-2A-C



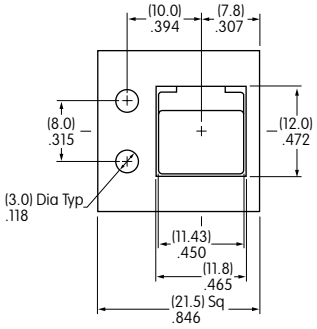
Double Pole



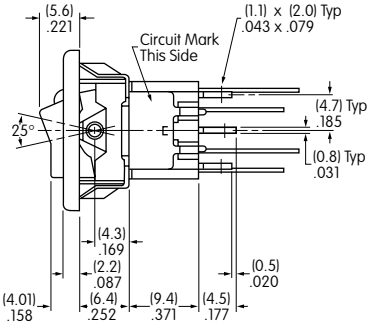


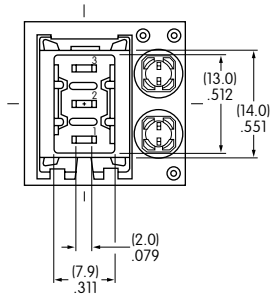
Snap-in Frame • AT212 Bezel • Solder Lug

M2012TJW01-FC-3A-CF



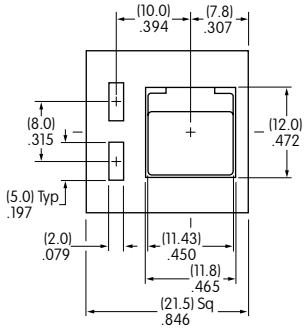
Single Pole



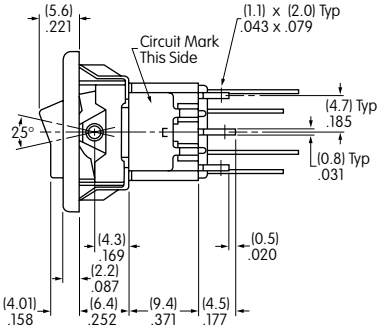


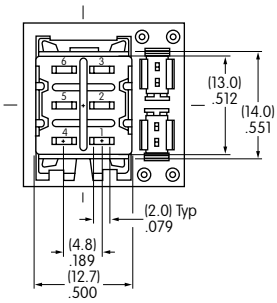
Snap-in Frame • AT213 Bezel • Solder Lug

M2022TJW01-FC-4A-CF



Double Pole





LEGENDS

General information and basic specifications are presented here for customers who want to do their own legends.

Suggested Printable Area for Cap

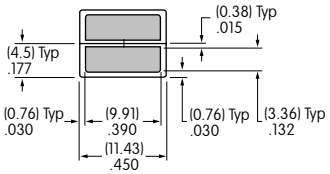
AT4150

Shaded areas are printable areas.

Recommended Print Method:

Screen Print or Pad Print

Epoxy based ink is recommended.



Additional Method

An additional method for legends is engraving the cap.
Maximum depth for engraving is .012" (0.3mm) on the cap.
Enamel paint is recommended to fill the engraved area.

LEGEND PACKET

1. To order caps with legends contact the factory and request the M Rocker Legend Packet.
2. Once you determine your desired legend, fill out the ordering work sheet included in the packet.
3. Return the completed work sheet to receive a quotation.