

General Specifications

B Electrical Capacity (Resistive Load)

Power Level (silver):	6A @ 125V AC & 3A @ 250V AC 4A @ 30V DC for On-None-On; 3A @ 30V DC for all other circuits
Logic Level (gold):	0.4VA maximum @ 28V AC/DC maximum (Applicable Range 0.1mA ~ 0.1A @ 20mV ~ 28V)
Logic/Power Level (gold over silver):	Combines silver & gold 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/s ²) 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:	File No. E44145 - Recognized only when ordered with marking on switch. Add "/U" or "/CUL" before first dash in part number to order UL recognized switch. All models recognized at 6A @ 125V AC, 3A @ 250V AC or 0.4VA maximum @ 28V DC maximum.
CSA:	File No. 023535_0_000 - Certified only when ordered with marking on switch. Add "/C" before first dash in part number to order CSA certified switch. All models certified at 6A @ 125V AC or 3A @ 250V AC or 0.4VA maximum @ 28V maximum.

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.

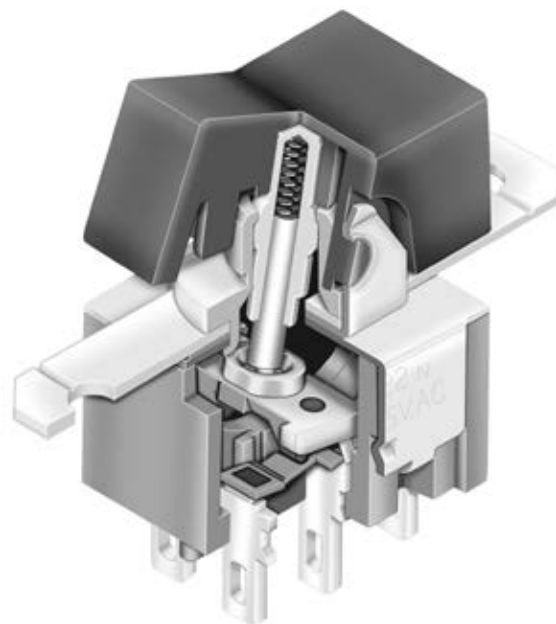
The molded diallyl phthalate case has a UL94V-0 flammability rating.

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

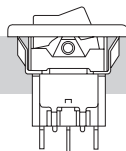
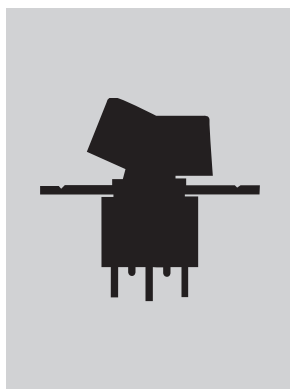
Prominent external insulating barriers increase insulation resistance and dielectric strength.

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.

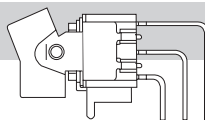


Actual Size



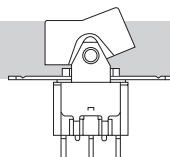
Snap-in Mount

Page B64



Bracket PC Mount

Page B72



Flat Frame Mount

Page B83

TYPICAL SWITCH

Toggles

Rockers **B**

Pushbuttons

Illuminated PB

Programmable

Keylocks

Rotaries

Slides

Tactiles

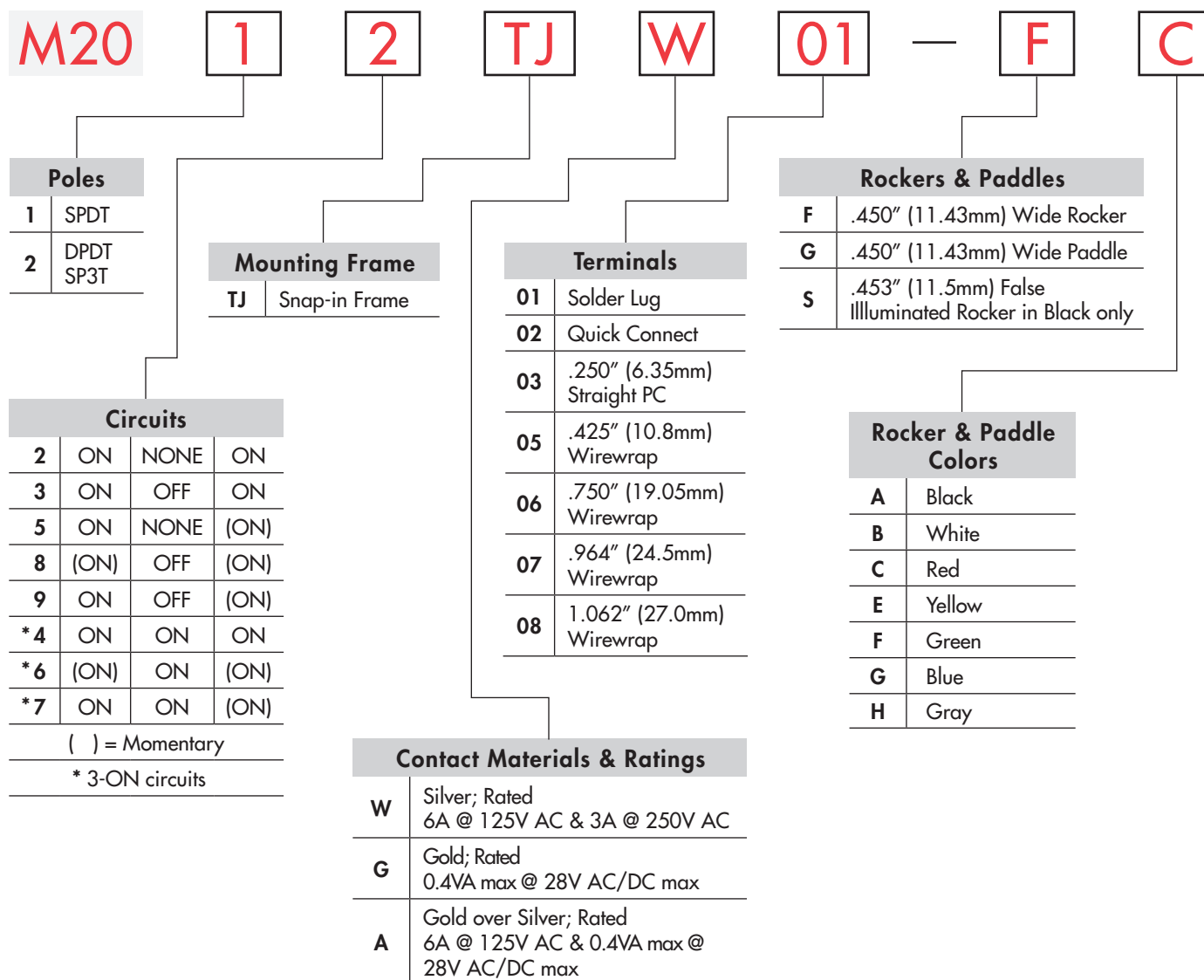
Tilt

Touch

Indicators

Accessories

Supplement

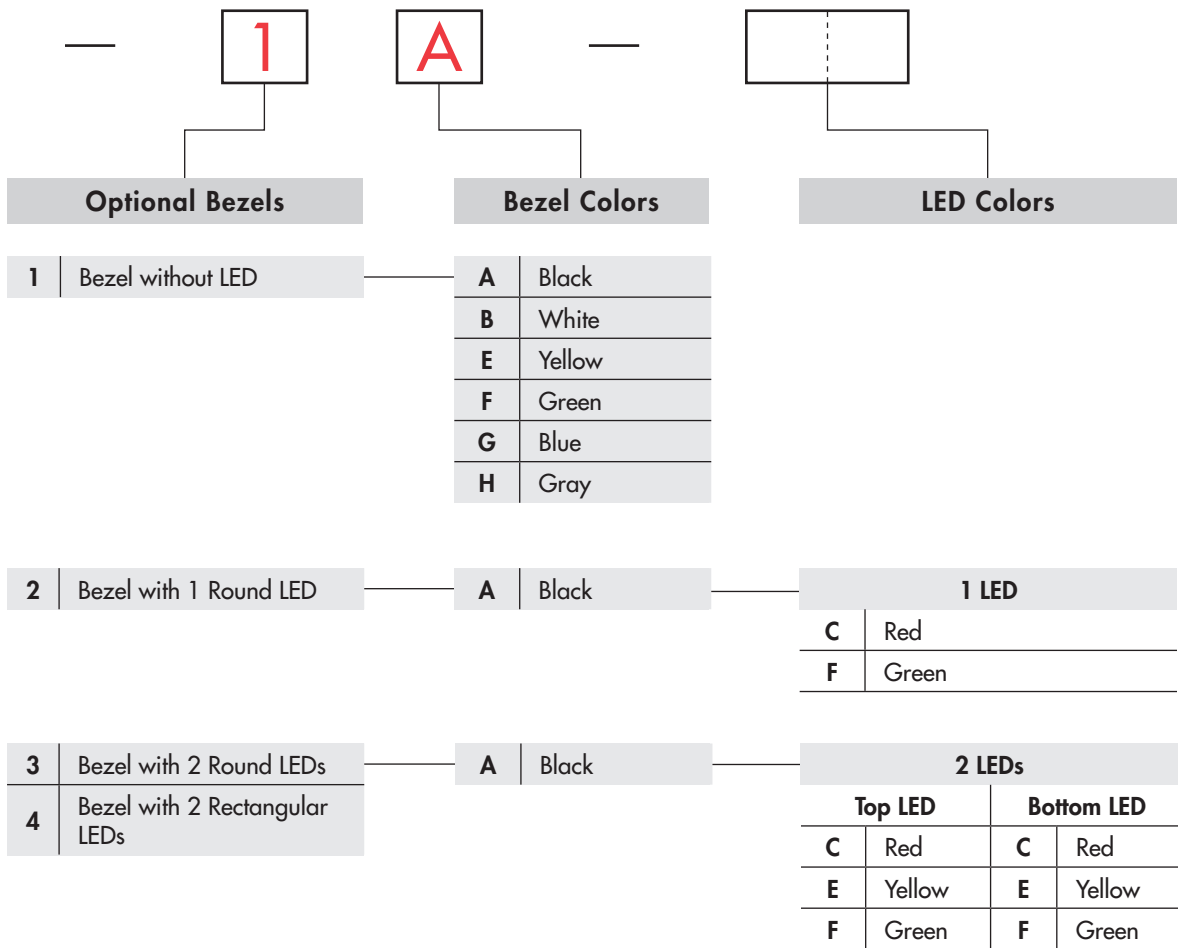


DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

M2012TJW01-FC-1A



ORDERING EXAMPLE



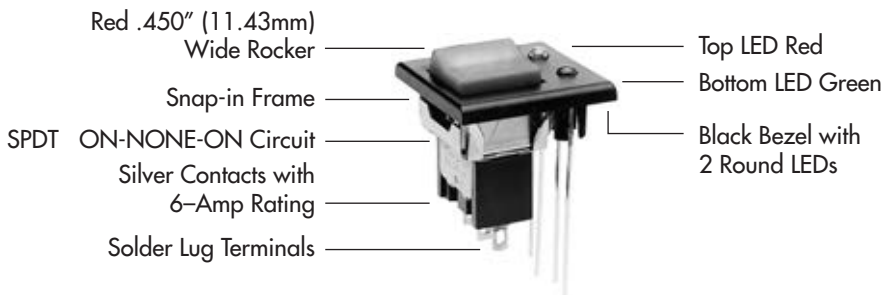
IMPORTANT:



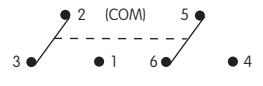
Switches are supplied without UL, cULus & CSA marking unless specified.
UL, cULus & CSA recognized only when ordered with marking on the switch.
Specific models, ratings, & ordering instructions are noted on the General Specifications page.

DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

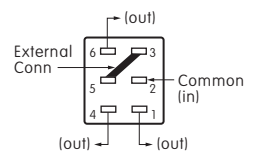
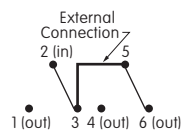
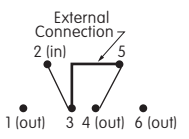
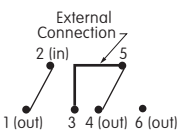
M2012TJW01-FC-3A-CF



POLES & CIRCUITS

Pole	Model	Rocker Position () = Momentary			Connected Terminals			Throw & Schematics
		Down	Center	Up	Down	Center	Up	
SP	M2012	ON	NONE	ON				SPDT 
	M2013	ON	OFF	ON				
	M2015	ON	NONE	(ON)	2-3	OPEN	2-1	
	M2018	(ON)	OFF	(ON)				
	M2019	ON	OFF	(ON)				
DP	M2022	ON	NONE	ON				DPDT 
	M2023	ON	OFF	ON				
	M2025	ON	NONE	(ON)	2-3 5-6	OPEN	2-1 5-4	
	M2028	(ON)	OFF	(ON)				
	M2029	ON	OFF	(ON)				

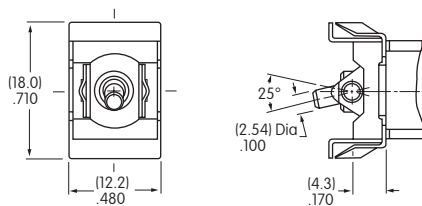
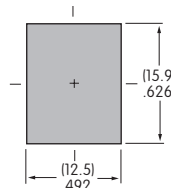
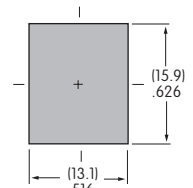
For 3 Throw (3-On)

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

MOUNTING FRAME

TJ

Snap-in Frame

Panel Cutout for
Single Pole
without BezelPanel 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 Level6A @ 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

Toggles

B Rockers

Pushbuttons

Illuminated PB

Programmable

Keylocks

Rotaries

Slides

Tactiles

Tilt

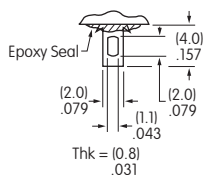
Touch

Indicators

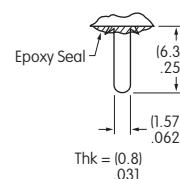
Accessories

Supplement

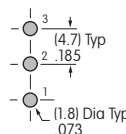
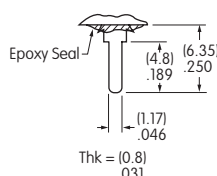
01 Solder Lug



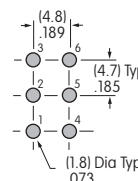
02 .062" (1.57mm) Wide Quick Connect



03 .250" (6.35mm) Straight PC



Single Pole



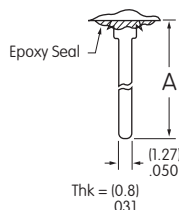
Double Pole

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.

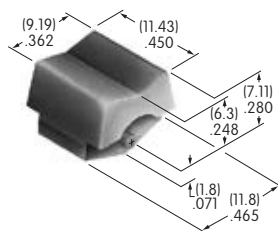
Dimension A = terminal lengths as shown beside the terminal codes at the left.

ROCKERS & PADDLES

F AT4150 .450" (11.43mm) Wide Rocker

Material: Polyamide
Finish: Matte

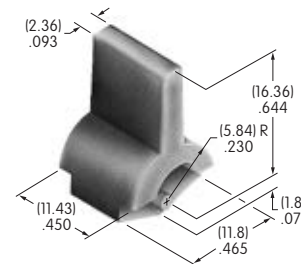
Colors Available:
A, B, C, E, F, G, H



G AT4151 .450" (11.43mm) Wide Paddle

Material: Polyamide
Finish: Matte

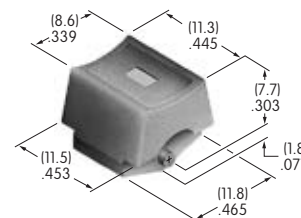
Colors Available:
A, B, C, E, F, G, H



S AT466 .453" (11.5mm) False Illuminated Rocker

Material: Polycarbonate
Finish: Glossy
Colors: Black

False Illuminator
Acrylonitrile Butadiene Styrene
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

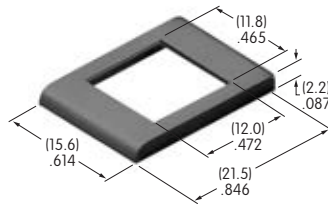
Gray

OPTIONAL SNAP-IN BEZELS & BEZEL COLORS

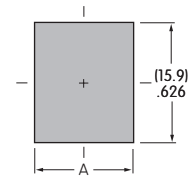
1 AT2107 Bezel

Material: Polyamide

Finish: Matte



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



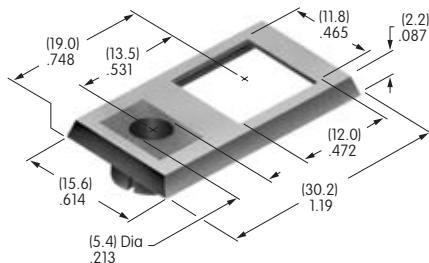
	Single Pole	Double Pole
A	(12.5)mm .492"	(13.1)mm .516"

2 AT208 Bezel for AT070 LED

Material: Polycarbonate

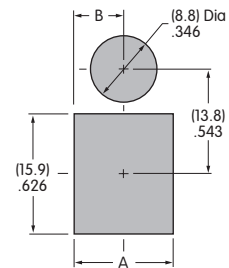
Finish: Glossy

Contact factory for matte finish.



A Black
LED colors & specifications on next page.

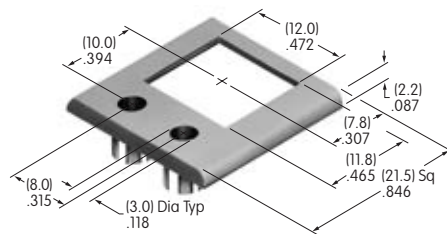
	Single Pole	Double Pole
A	(12.5)mm .492"	(13.1)mm .516"
B	(6.25)mm .246"	(6.55)mm .258"



3 AT212 Bezel for AT617 LED

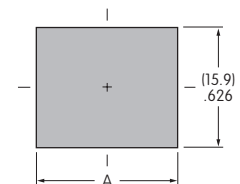
Material: Polycarbonate

Finish: Semi-glossy



A Black
LED colors & specifications on next page.

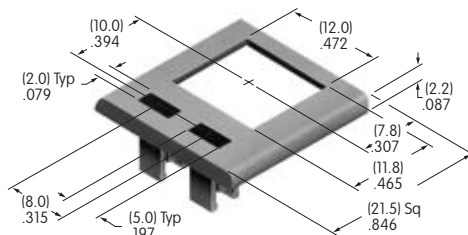
	Single Pole	Double Pole
A	(18.4)mm .724"	(18.7)mm .736"



4 AT213 Bezel for AT618 LED

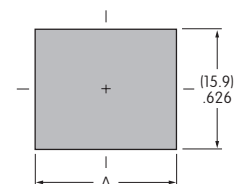
Material: Polycarbonate

Finish: Semi-glossy



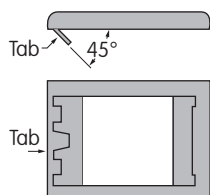
A Black
LED colors & specifications on next page.

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

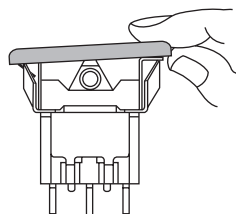


Bezel Assembly

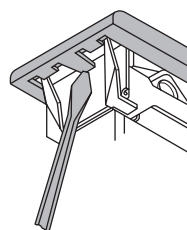
1. Pry out tab on bezel to a 45° angle.



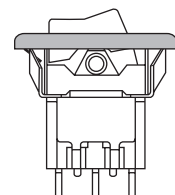
2. Insert switch frame under tab and snap on bezel.



3. Push tab back into place.



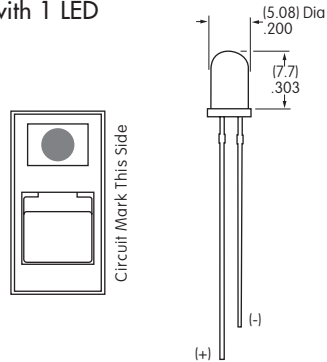
4. Snap assembled bezel and switch into panel.



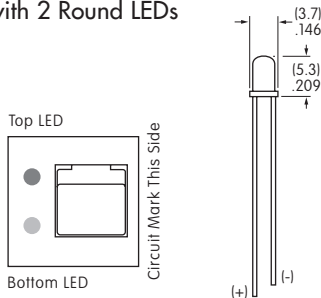
LED COLORS & SPECIFICATIONS

Bezel Orientation on Switch

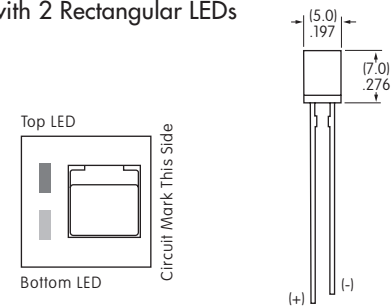
AT070 LED
For Bezel AT208
with 1 LED



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
Maximum Forward Current	I_{FM}	25mA	50mA	30mA	30mA	30mA	25mA	30mA	25mA
Typical Forward Current	I_F	20mA	30mA	20mA	20mA	20mA	20mA	20mA	20mA
Forward Voltage	V_F	2.8V	2.1V	2.1V	2.1V	2.2V	2.25V	2.1V	2.2V
Maximum Reverse 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	0.33 mA/°C	0.40 mA/°C	0.33 mA/°C
Ambient Temperature Range (when used with a bezel)		-10° ~ +70°C		-15° ~ +70°C			-25° ~ +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.

LEGENDS

NKK Switches can provide custom legends for caps. Contact factory for more information.

Suggested Printable Area for Cap

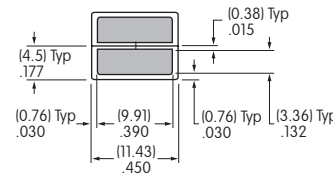
Recommended Print Method:

Pad Print

Epoxy based ink is recommended.



AT4150

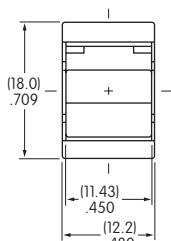


Shaded areas are printable areas.

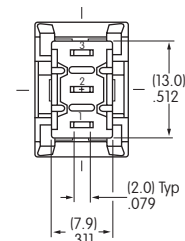
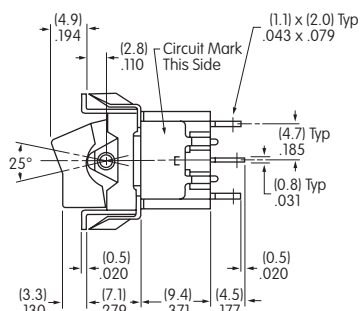
TYPICAL SWITCH DIMENSIONS

Snap-in Frame • Solder Lug

Single Pole

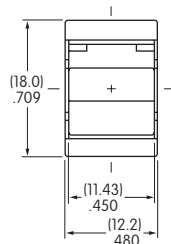


M2012TJW01-FC

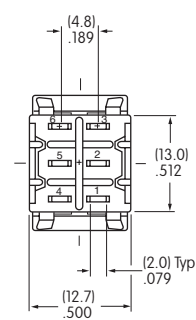
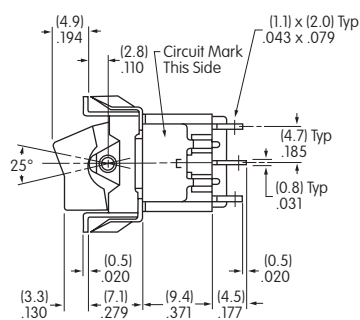


Snap-in Frame • Solder Lug

Double Pole

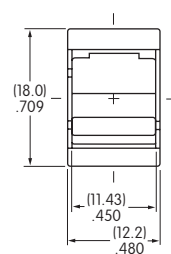


M2022TJW01-FC

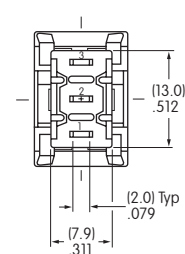
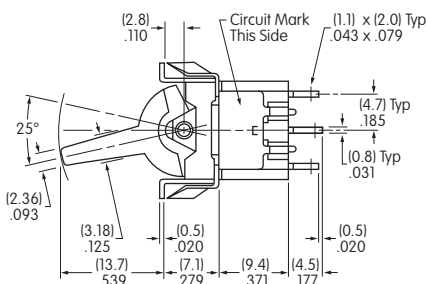


Snap-in Frame • Solder Lug

Single Pole

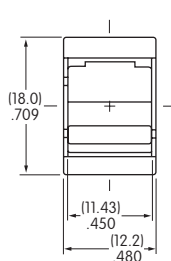


M2012TJW01-GC

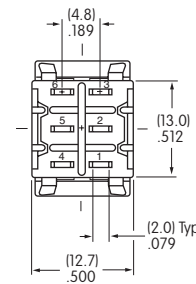
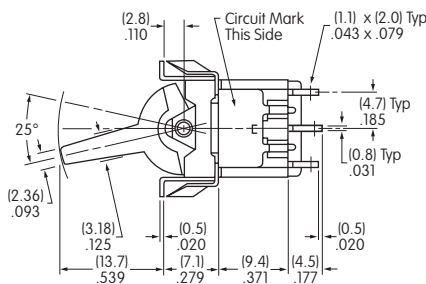


Snap-in Frame • Solder Lug

Double Pole



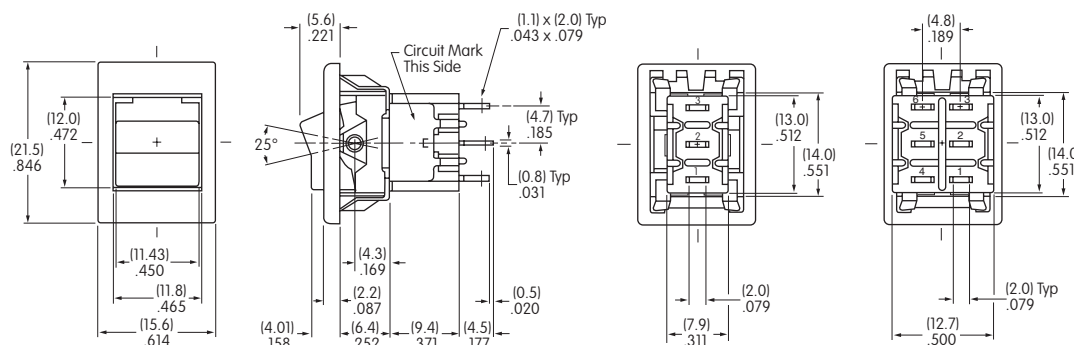
M2022TJW01-GC



TYPICAL SWITCH DIMENSIONS

Single & Double Pole

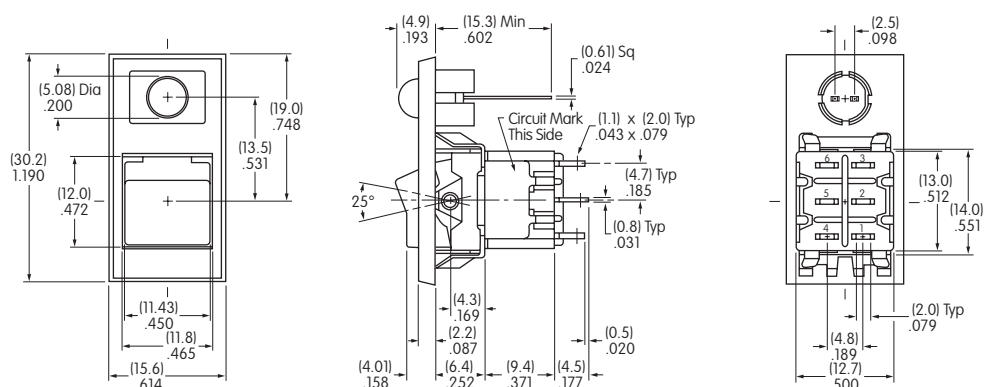
Snap-in Frame • AT2107 Bezel • Solder Lug



M2012TJW01-FC-1A

Double Pole

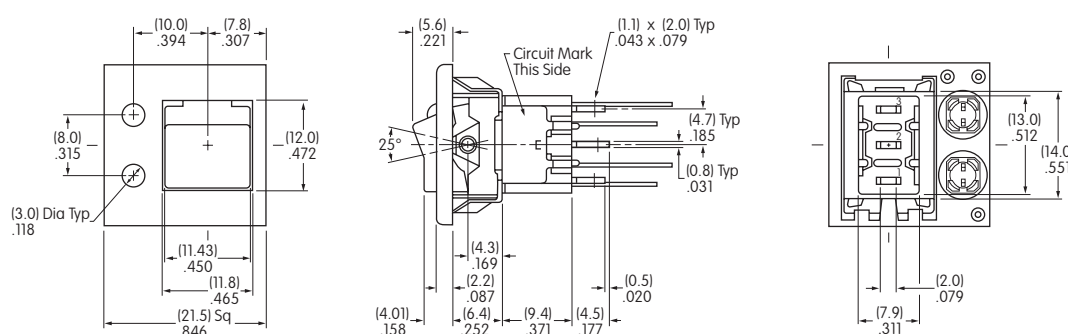
Snap-in Frame • AT208 Bezel • Solder Lug



M2022TJW01-FC-2A-C

Single Pole

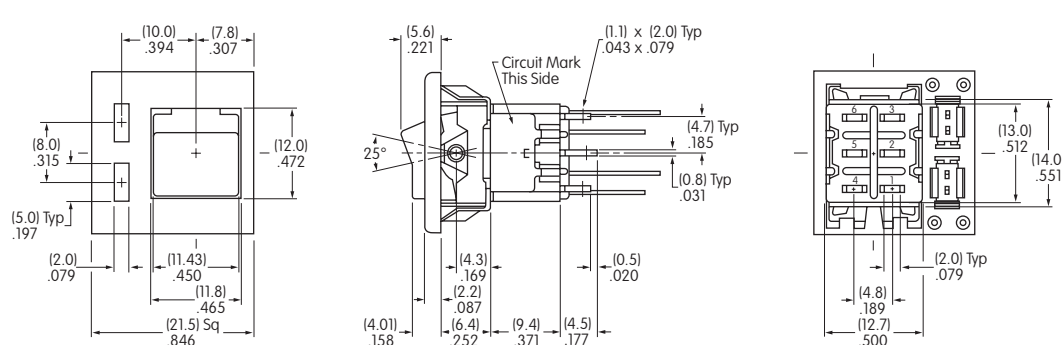
Snap-in Frame • AT212 Bezel • Solder Lug



M2012TJW01-FC-3A-CF

Double Pole

Snap-in Frame • AT213 Bezel • Solder Lug



M2022TJW01-FC-4A-CF

TYPICAL SWITCH

M20

1

3

TX

G

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)

Mounting Frames

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

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

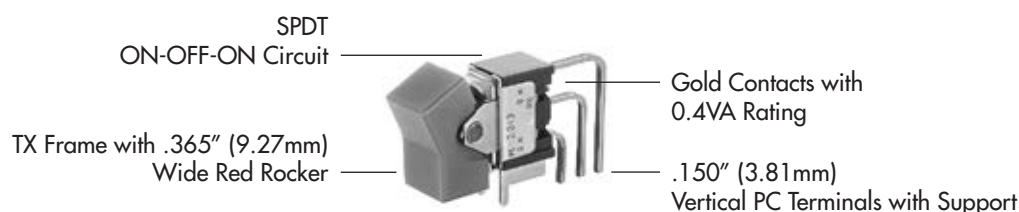
* 3-ON circuits

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

DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

M2013TXG41-DC



ORDERING EXAMPLE

41

Terminals For
TX & TZ Frames

Straight PC with Bracket
(1-2 Pole only)

13	.250" (6.35mm) Straight PC with .465" (11.8mm) Bracket
15	.425" (10.8mm) Straight PC with .630" (16.0mm) Bracket
17	.964" (24.5mm) Straight PC with 1.150" (29.2mm) Bracket

Straight PC with Reinforced Bracket
(1-2 Pole only)

23	.250" (6.35mm) Straight PC with .465" (11.8mm) Bracket
25	.425" (10.8mm) Straight PC with .630" (16.0mm) Bracket
26	.750" (19.05mm) Straight PC with .953" (24.2mm) Bracket

Terminals For
TX Frame Only

Right Angle PC with Support
(1-3 Pole only)

30	.150" (3.81mm) Right Angle PC
----	-------------------------------

Vertical PC with Support
(1-4 Pole)

41	.150" (3.81mm) Vertical PC
----	----------------------------

D

Rockers
& Paddles

Small Actuators
(TX Frame)

D	.365" (9.27mm) Wide Rocker
E	.365" (9.27mm) Wide Paddle
F	.450" (11.43mm) Wide Rocker
G	.450" (11.43mm) Wide Paddle

Large Actuators
(TZ Frame)

J	.595" (15.11mm) Wide Rocker
H	.595" (15.11mm) Wide Paddle

C

Rocker & Paddle
Colors

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

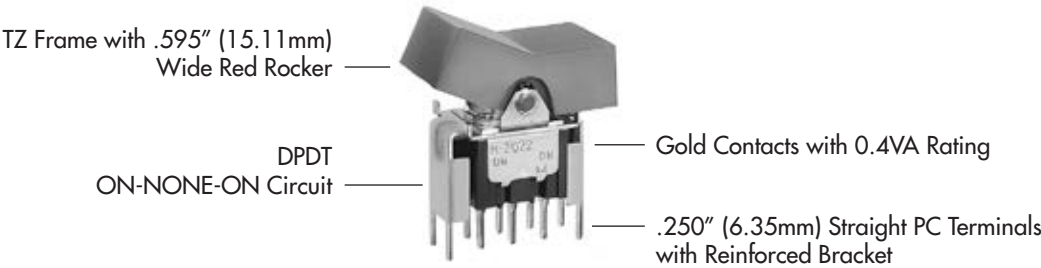
IMPORTANT:



Switches are supplied without UL & CSA marking unless specified.
UL & CSA recognized only when ordered with marking on the switch.
Specific models, ratings and ordering instructions are noted on the
General Specifications page.

DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

M2022TZG23-JC



POLES & CIRCUITS

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

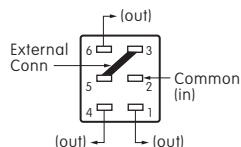
For 3 Throw (3-On)

Connected Terminals & Schematics

Pole	Model	Down	Center	Up	Down	Center	Up
SP	M2024 M2026 M2027	ON	ON	ON	2-3 5-6	2-3 5-4	2-1 5-4
		(ON)	ON	(ON)			
		ON	ON	(ON)			
DP	M2044 M2046 M2047	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
		(ON)	ON	(ON)			
		ON	ON	(ON)			

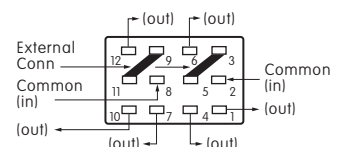
The SP3T model utilizes a double pole base.

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

Toggles

B
Rockers

Pushbuttons

Illuminated PB

Programmable

Keylocks

Rotaries

Slides

Tactiles

Tilt

Touch

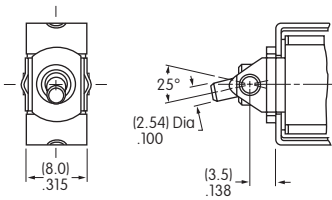
Indicators

Accessories

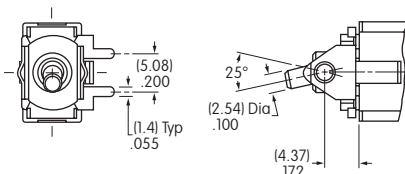
Supplement

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)

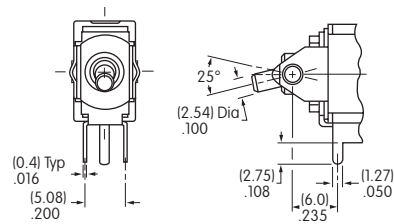
Straight PC Mounting



Right Angle PC Mounting



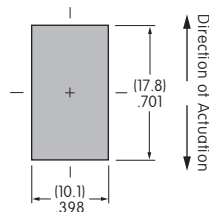
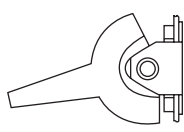
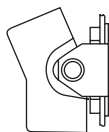
Vertical PC Mounting



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

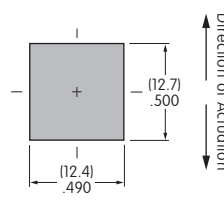
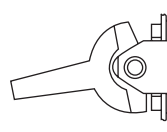
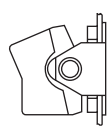
AT4148

AT4149



AT4150

AT4151

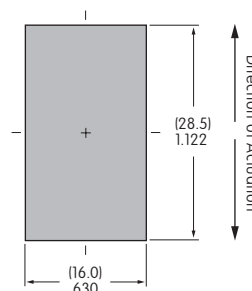
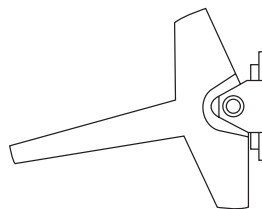
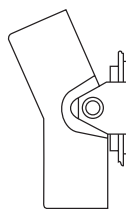
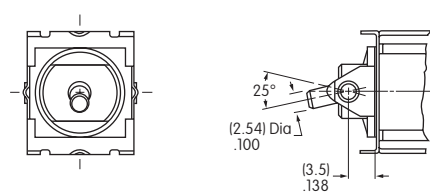


TZ Wide Mounting Frame for Large Actuators with Straight PC Terminals (codes 13, 15, 17, 23, 25, & 26)

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

AT4156

AT4157



CONTACT MATERIALS & RATINGS

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.

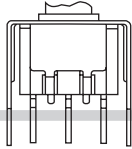
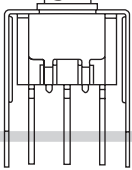
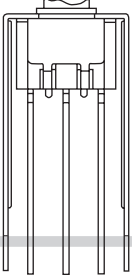
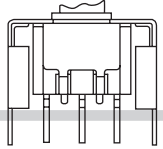
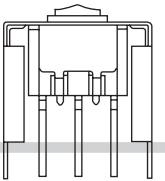
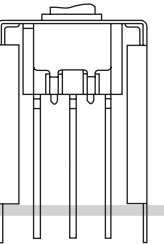
A Gold over Silver Power Level or Logic Level 6A @ 125V AC or 0.4VA maximum @ 28V AC/DC maximum

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

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

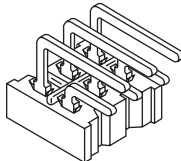
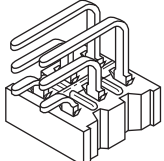
For TX and TZ 1-2 Pole
Straight PC Mount with Reinforced Bracket

13	15	17	23	25	26
.250" (6.35mm) Terminal with .465" (11.8mm) Bracket	.425" (10.8mm) Terminal with .630" (16.0mm) Bracket	.964" (24.5mm) Terminal with 1.150" (29.2mm) Bracket	.250" (6.35mm) Terminal with .465" (11.8mm) Bracket	.425" (10.8mm) Terminal with .630" (16.0mm) Bracket	.750" (19.05mm) Terminal with .953" (24.2mm) Bracket
					

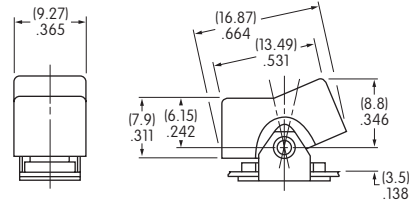
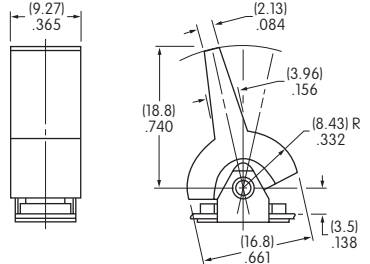
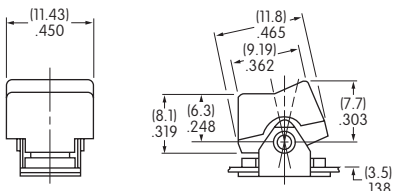
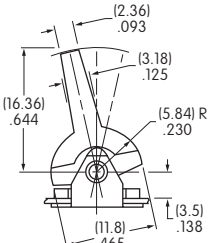
PCB footprints are on the following Typical Switch Dimension pages.

For TX 1-3 Pole Right Angle PC Mount

For TX 1-4 Pole Vertical PC Mount

30	41
.150" (3.81mm) Right Angle PC	.150" (3.81mm) Vertical PC
	

ROCKERS & PADDLES FOR TX MOUNTING FRAMES

D	AT4148 .365" (9.27mm) Wide Rocker	E	AT4149 .365" (9.27mm) Wide Paddle
	Material: Polyamide Finish: Matte		Material: Polyamide Finish: Matte
			
F	AT4150 .450" (11.43mm) Wide Rocker	G	AT4151 .450" (11.43mm) Wide Paddle
	Material: Polyamide Finish: Matte		Material: Polyamide Finish: Matte
			

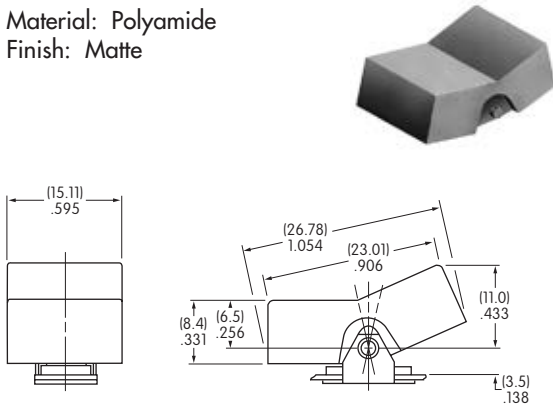
Cap Colors
Available:

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

ROCKERS & PADDLES FOR TZ MOUNTING FRAMES

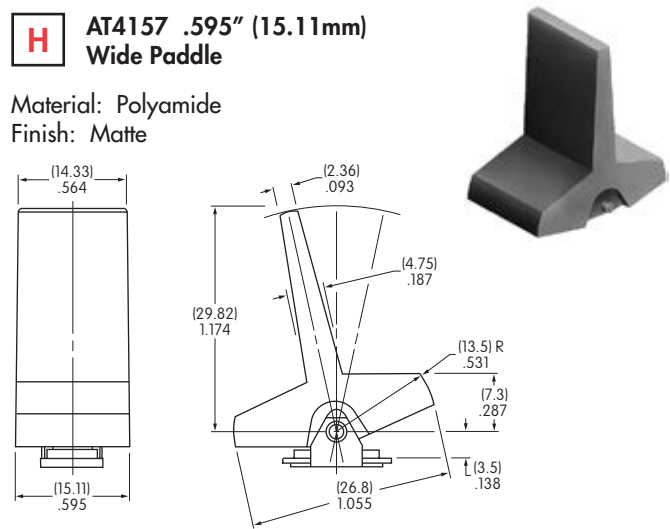
J AT4156 .595" (15.11mm) Wide Rocker

Material: Polyamide
Finish: Matte



H AT4157 .595" (15.11mm) 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 .047" ~ .090"
(1.2 ~ 2.3mm) panel thickness

Material: Polyamide
Finish: Matte
Color: Black

Mounted separately from switches

Cutout Tolerances:

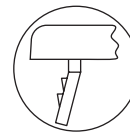
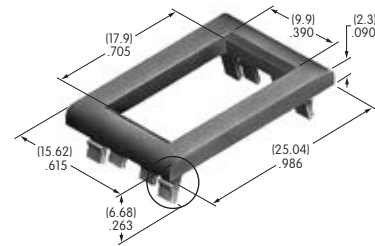
Dimension A:
.797" ~ .803" (20.24 ~ 20.4mm)

Dimension B:
.495" ~ .505" (12.57 ~ 12.83mm)



AT064-2

Accommodates .062" ~ .125"
(1.57 ~ 3.18mm) panel thickness



AT064-1 Enlarged Detail

Used with AT4150 Rocker and AT4151 Paddle

AT065-1

Accommodates .047" ~ .090"
(1.2 ~ 2.3mm) panel thickness

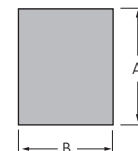
Material: Polyamide
Finish: Matte
Color: Black

Mounted separately from switches

Cutout Tolerances:

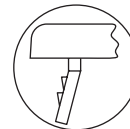
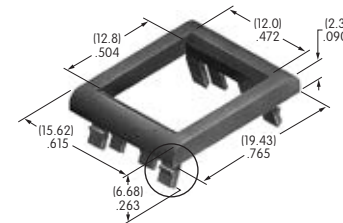
Dimension A:
.595" ~ .605" (15.11 ~ 15.37mm)

Dimension B:
.495" ~ .500" (12.57 ~ 12.7mm)

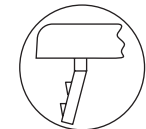


AT065-2

Accommodates .062" ~ .125"
(1.57 ~ 3.18mm) panel thickness



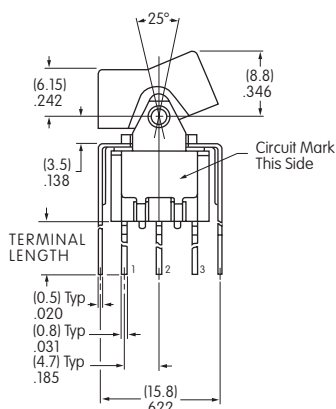
AT065-1 Enlarged Detail



AT065-2 Enlarged Detail

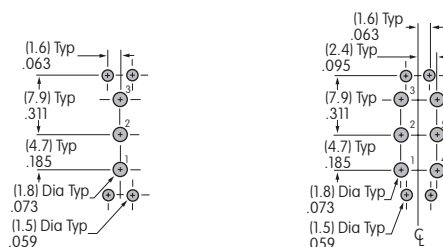
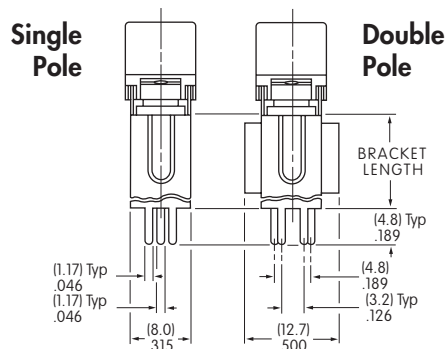
TYPICAL SWITCH DIMENSIONS

Straight PC • Bracket

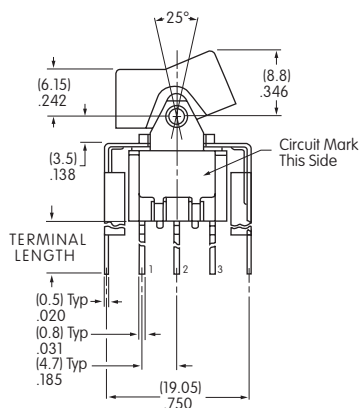


M2012TXG13-DC

Terminal Code:	Terminal Length:	Bracket Length:
13	.250" (6.35mm)	.465" (11.8mm)
15	.425" (10.8mm)	.630" (16.0mm)
17	.964" (24.5mm)	1.150" (29.2mm)

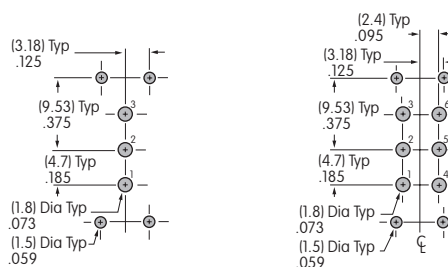
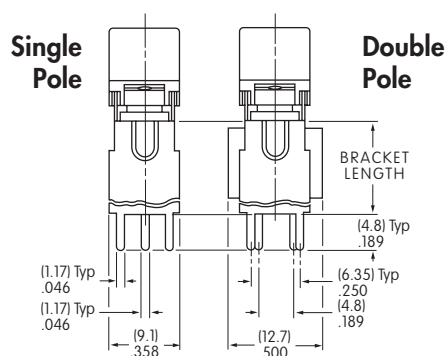


Straight PC • Reinforced Bracket



M2012TXG23-DC

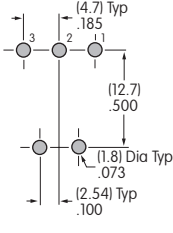
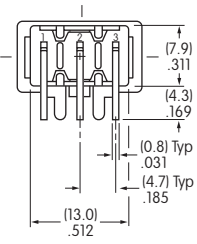
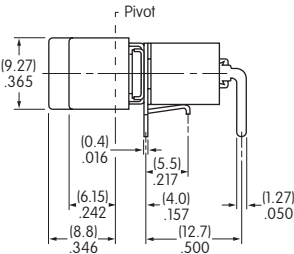
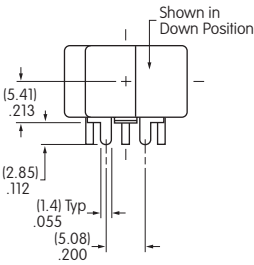
Terminal Code:	Terminal Length:	Bracket Length:
23	.250" (6.35mm)	.465" (11.8mm)
25	.425" (10.8mm)	.630" (16.0mm)
26	.750" (19.05mm)	.953" (24.2mm)



TYPICAL SWITCH DIMENSIONS

Single Pole

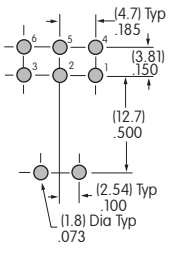
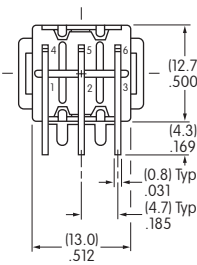
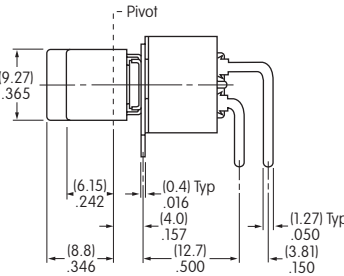
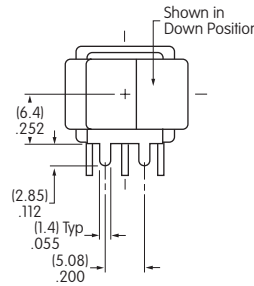
.150" (3.81mm) Right Angle PC



M2012TXG30-DC

Double Pole

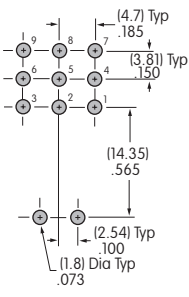
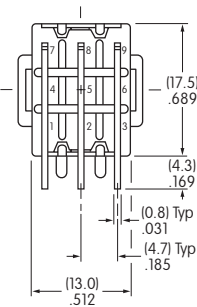
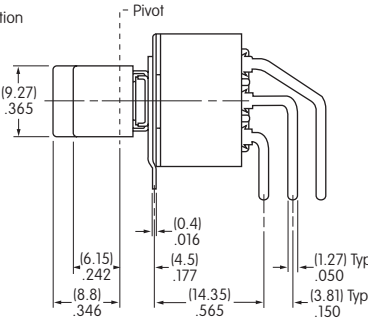
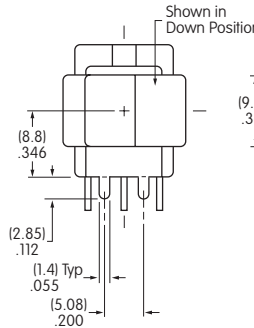
.150" (3.81mm) Right Angle PC



M2022TXG30-DC

Three Pole

.150" (3.81mm) Right Angle PC

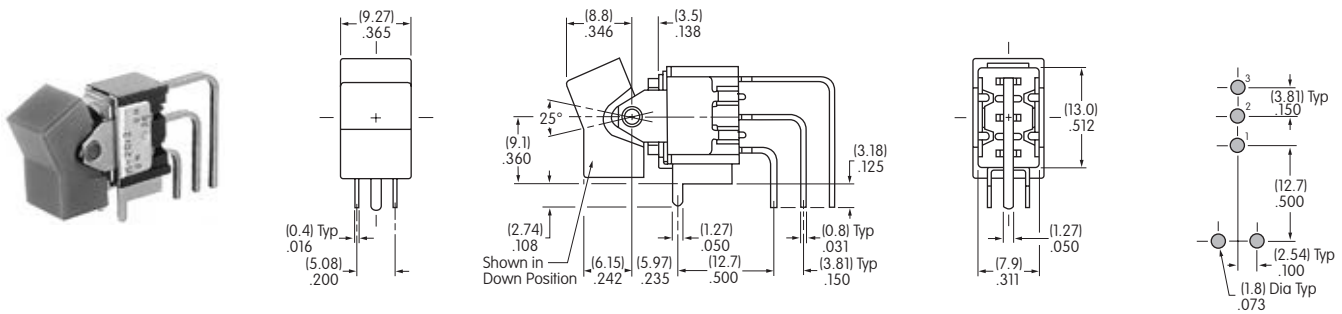


M2032TXG30-DC

TYPICAL SWITCH DIMENSIONS

.150" (3.81mm) Vertical PC

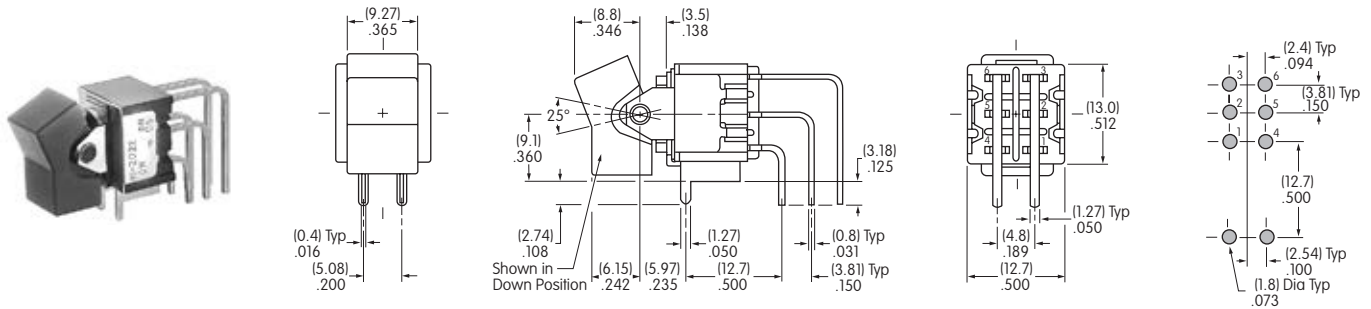
Single Pole



M2012TXG41-DC

.150" (3.81mm) Vertical PC

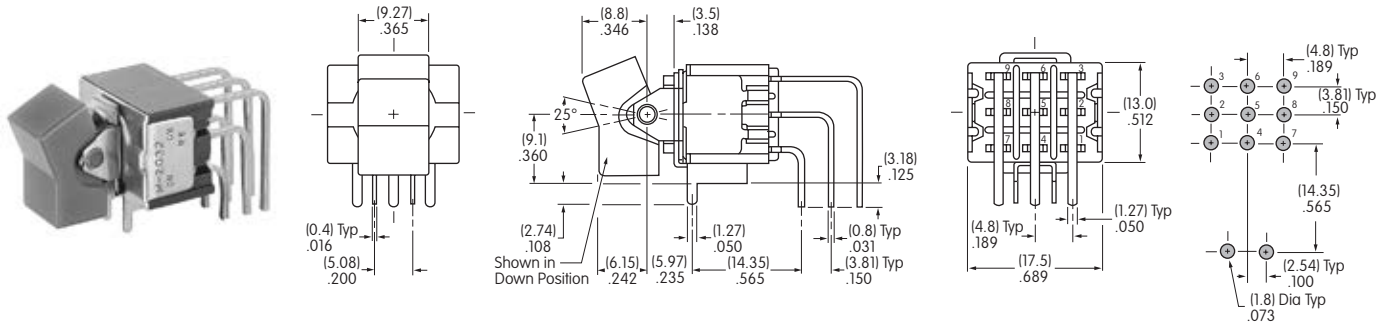
Double Pole



M2022TXG41-DC

.150" (3.81mm) Vertical PC

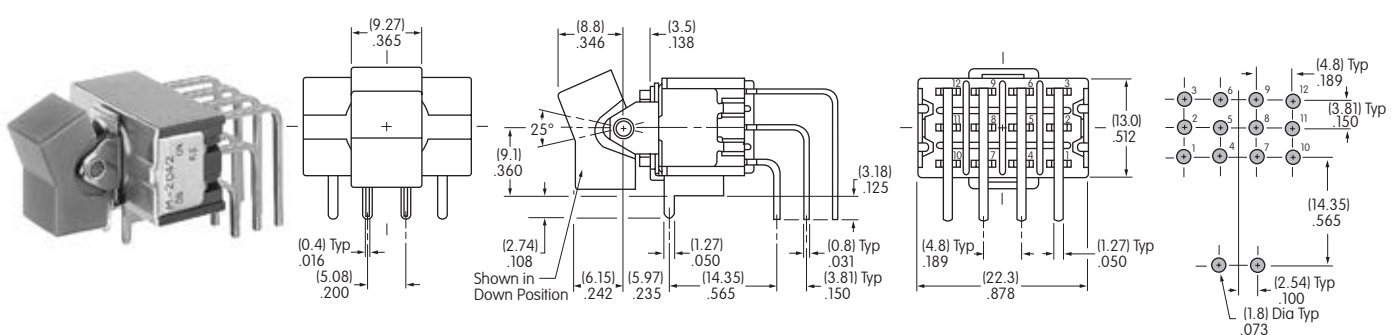
Three Pole



M2032TXG41-DC

.150" (3.81mm) Vertical PC

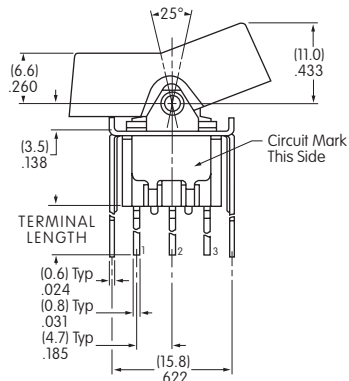
Four Pole



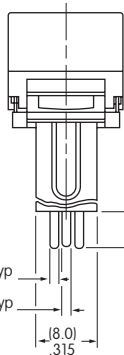
M2042TXG41-DC

TYPICAL SWITCH DIMENSIONS

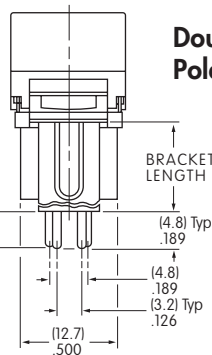
Straight PC • Bracket



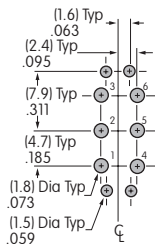
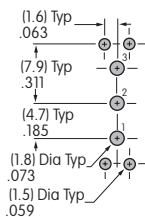
Single Pole



Double Pole

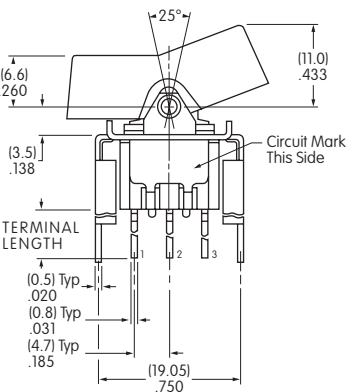


M2012TZG13-JC

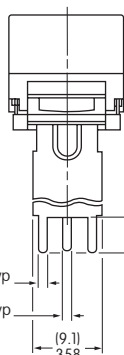


Terminal Code:	Terminal Length:	Bracket Length:
13	.250" (6.35mm)	.465" (11.8mm)
15	.425" (10.8mm)	.630" (16.0mm)
17	.964" (24.5mm)	1.150" (29.2mm)

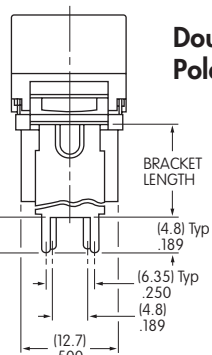
Straight PC • Reinforced Bracket



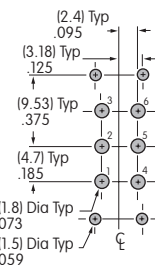
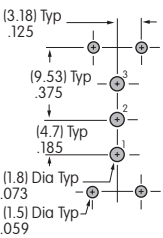
Single Pole



Double Pole



M2012TZG23-JC



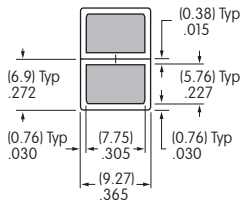
Terminal Code:	Terminal Length:	Bracket Length:
23	.250" (6.35mm)	.465" (11.8mm)
25	.425" (10.8mm)	.630" (16.0mm)
26	.750" (19.05mm)	.953" (24.2mm)

LEGENDS

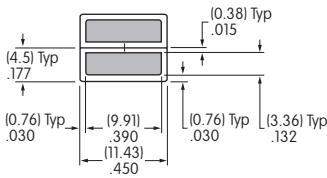
NKK Switches can provide custom legends for caps. Contact factory for more information.

Suggested Printable Area for Cap

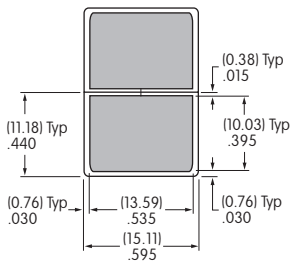
AT4148



AT4150



AT4156



Shaded areas are printable areas.

Recommended Print Method:

Pad Print

Epoxy based ink is recommended.

TYPICAL SWITCH ORDERING EXAMPLE

M20

1

2

TN

W

01

—

D

C

Poles

1	SPDT
2	DPDT SP3T
3	3PDT
4	4PDT DP3T

Mounting Frames

TN	.272" (6.9mm) Wide Flat Frame
TY	.504" (12.8mm) Wide Flat Frame

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

Rockers & Paddles

Small Actuators (TN Frame)

D	.365" (9.27mm) Wide Rocker
E	.365" (9.27mm) Wide Paddle
F	.450" (11.43mm) Wide Rocker
G	.450" (11.43mm) Wide Paddle

Large Actuators (TY Frame)

J	.595" (15.11mm) Wide Rocker
H	.595" (15.11mm) Wide Paddle

Terminals

01	Solder Lug
03	.250" (6.35mm) Straight PC

Rocker & Paddle Colors

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

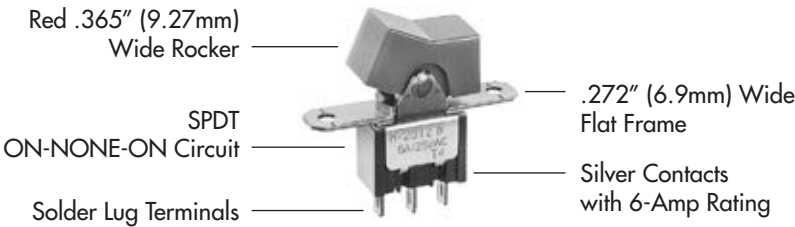
IMPORTANT:



Switches are supplied without UL & CSA marking unless specified.
UL & CSA recognized only when ordered with marking on the switch.
Specific models, ratings and ordering instructions are noted on the
General Specifications page.

DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

M2012TNW01-DC



POLES & CIRCUITS

Pole	Model	Rocker Position () = Momentary			Connected Terminals			Throw & Schematics
		Down	Center	Up	Down	Center	Up	
SP	M2012	ON	NONE	ON				SPDT
	M2013	ON	OFF	ON				
	M2015	ON	NONE	(ON)	2-3	OPEN	2-1	
	M2018	(ON)	OFF	(ON)				
	M2019	ON	OFF	(ON)				
DP	M2022	ON	NONE	ON				DPDT
	M2023	ON	OFF	ON				
	M2025	ON	NONE	(ON)	2-3 5-6	OPEN	2-1 5-4	
	M2028	(ON)	OFF	(ON)				
	M2029	ON	OFF	(ON)				
3P	M2032	ON	NONE	ON				3PDT
	M2033	ON	OFF	ON				
	M2035	ON	NONE	(ON)	2-3 5-6 8-9	OPEN	2-1 5-4 8-7	
	M2038	(ON)	OFF	(ON)				
	M2039	ON	OFF	(ON)				
4P	M2042	ON	NONE	ON				4PDT
	M2043	ON	OFF	ON				
	M2045	ON	NONE	(ON)	2-3 5-6 8-9 11-12	OPEN	2-1 5-4 8-7 11-10	
	M2048	(ON)	OFF	(ON)				
	M2049	ON	OFF	(ON)				

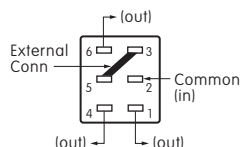
For 3 Throw (3-On)

Connected Terminals & Schematics

Pole	Model	Down	Center	Up	Down	Center	Up
SP	M2024	ON	ON	ON	 2-3 5-6	 2-3 5-4	 2-1 5-4
	M2026	(ON)	ON	(ON)			
	M2027	ON	ON	(ON)			
DP	M2044	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
	M2046	(ON)	ON	(ON)			
	M2047	ON	ON	(ON)			

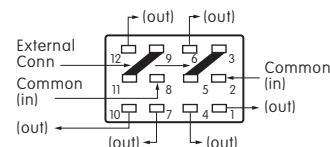
The SP3T model utilizes a double pole base.

External connection must be made during field installation.



The DP3T model utilizes a four pole base.

External connection must be made during field installation.

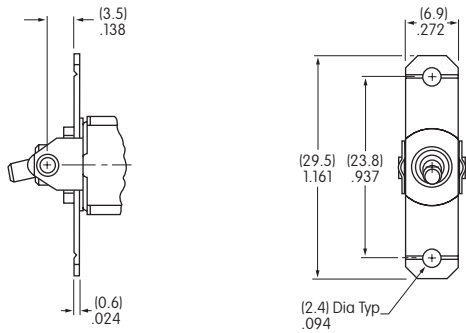


Flat Frame Mount Miniature Rockers

MOUNTING FRAMES

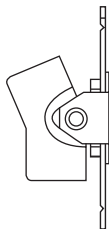
TN .272" (6.9mm)
Wide Flat Frame

Mounting hardware kit HK-1, as shown on the following page, must be ordered separately.

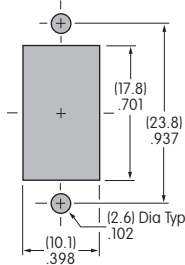
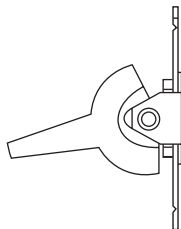


Small Actuators & Panel Cutouts for TN Frame (actuator details on the following pages)

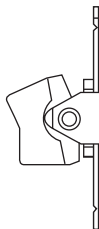
AT4148



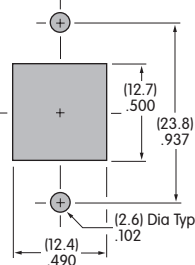
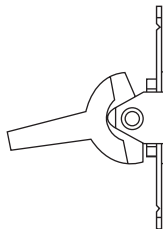
AT4149



AT4150



AT4151

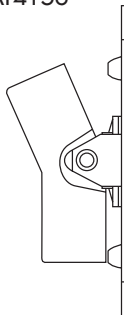


TY .504" (12.8mm)
Wide Flat Frame

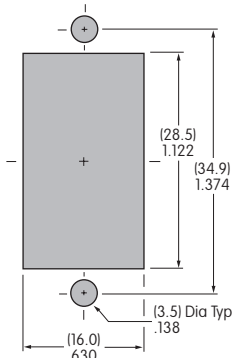
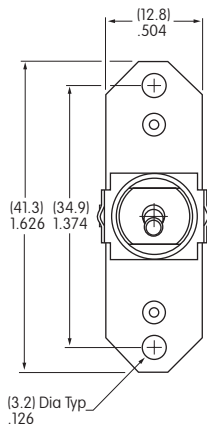
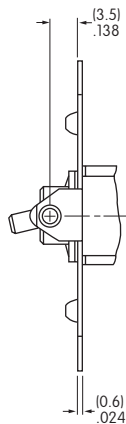
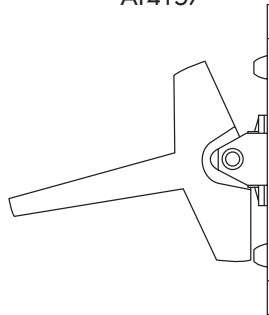
Large Actuators & Panel Cutout for TY Frame
(actuator details on the following pages)

Mounting hardware kit HK-2, as shown on the following page, must be ordered separately.

AT4156

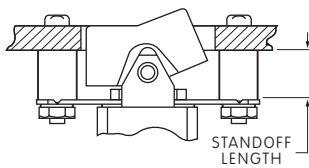


AT4157



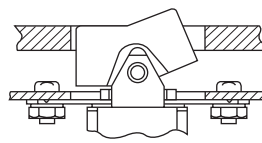
MOUNTING FRAMES (CONTINUED)

Face Panel Mounting



Flat frame devices may also be mounted to the face panel. Standoffs are used to recess the actuator and achieve an attractive front panel appearance.

Subpanel Mounting



These devices are especially designed for subpanel mounting. When installed on a mounting plate behind the panel, hardware is completely concealed and the front panel retains a clean, attractive appearance.

Optional Hardware Kits for Subpanel or Face Panel Mounting

Frame	Panel Thickness	Standoff Length	Hardware Kit Number
TN Frame	.125" (3.175mm)	.233" (5.918mm)	ATHK-1
TY Frame	.125" (3.175mm)	.312" (7.925mm)	ATHK-2

Hardware kits include:
2 stainless steel screws, 2 hex nuts, 2 lockwashers, & 2 standoffs

Optional Snap-in Panel Frames



AT064-1
AT064-2



AT065-1
AT065-2

Further details are shown in the previous bracketed PC mount subsection.

CONTACT MATERIALS & RATINGS



Silver over Silver

Power Level

6A @ 125V AC & 3A @ 250V AC



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.



Gold over Silver

**Power Level
or Logic Level**

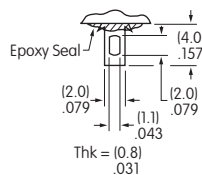
**6A @ 125V AC
or 0.4VA maximum @ 28V AC/DC maximum**

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.

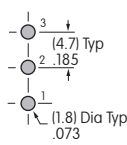
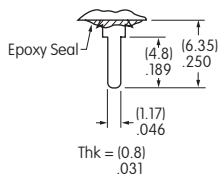
TERMINALS



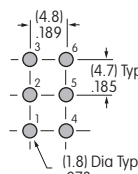
Solder Lug



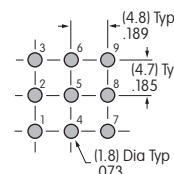
**.250" (6.35mm)
Straight PC**



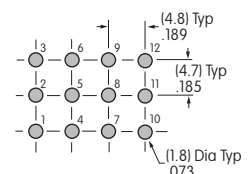
Single Pole



Double Pole



Three Pole



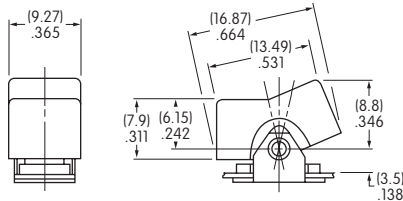
Four Pole

ROCKERS & PADDLES

For TN Frame

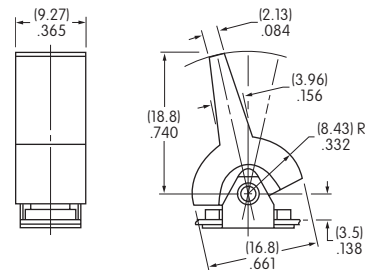
D AT4148 .365" (9.27mm) Wide Rocker

Material: Polyamide
Finish: Matte



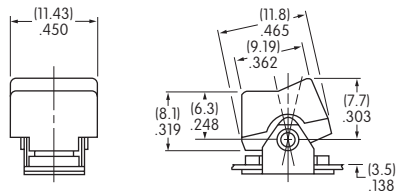
E AT4149 .365" (9.27mm) Wide Paddle

Material: Polyamide
Finish: Matte



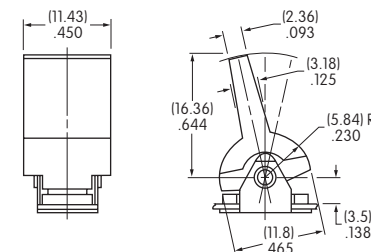
F AT4150 .450" (11.43mm) Wide Rocker

Material: Polyamide
Finish: Matte



G AT4151 .450" (11.43mm) Wide Paddle

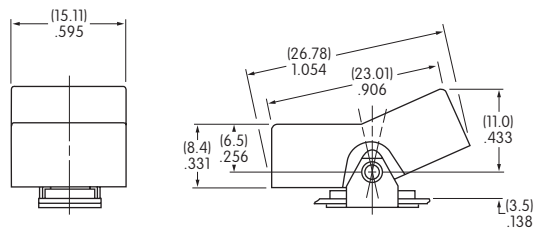
Material: Polyamide
Finish: Matte



For TY Frame

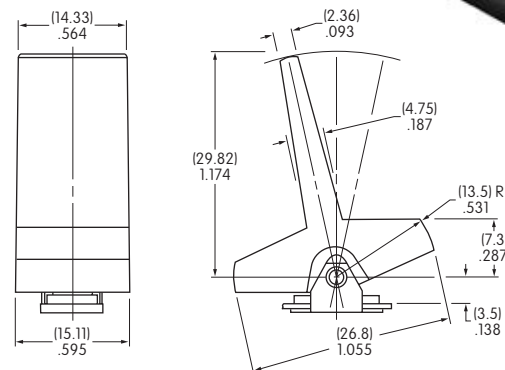
J AT4156 .595" (15.11mm) Wide Rocker

Material: Polyamide
Finish: Matte



H AT4157 .595" (15.11mm) Wide Paddle

Material: Polyamide
Finish: Matte



Cap Colors
Available:

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

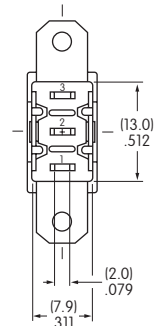
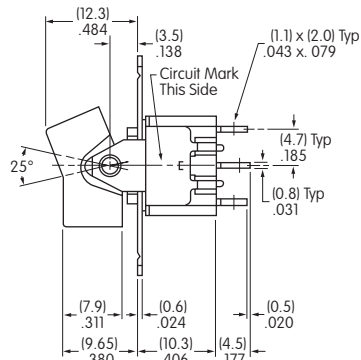
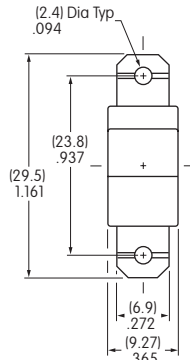
TYPICAL SWITCH DIMENSIONS

TN Frame • Solder Lug

Single Pole



M2012TNW01-DC

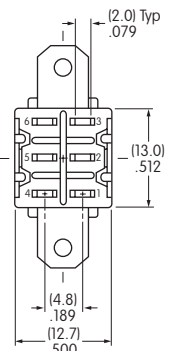
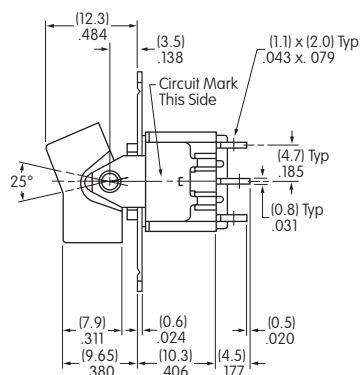
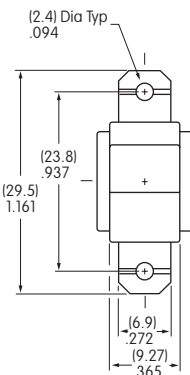


TN Frame • Solder Lug

Double Pole



M2022TNW01-DC

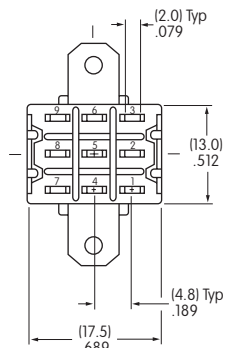
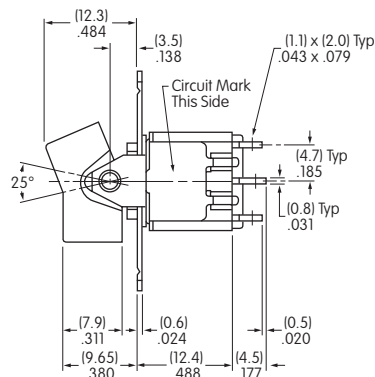
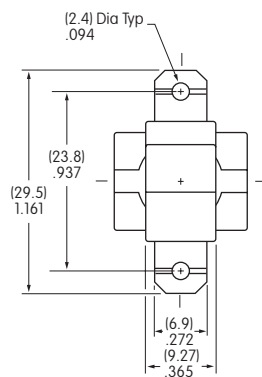


TN Frame • Solder Lug

Three Pole



M2032TNW01-DC

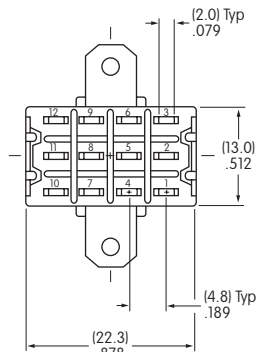
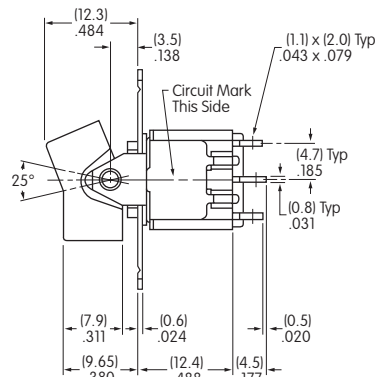
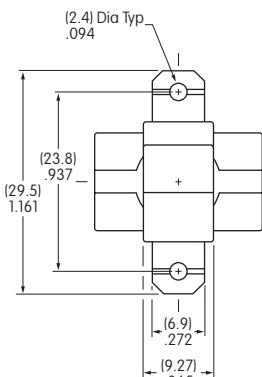


TN Frame • Solder Lug

Four Pole

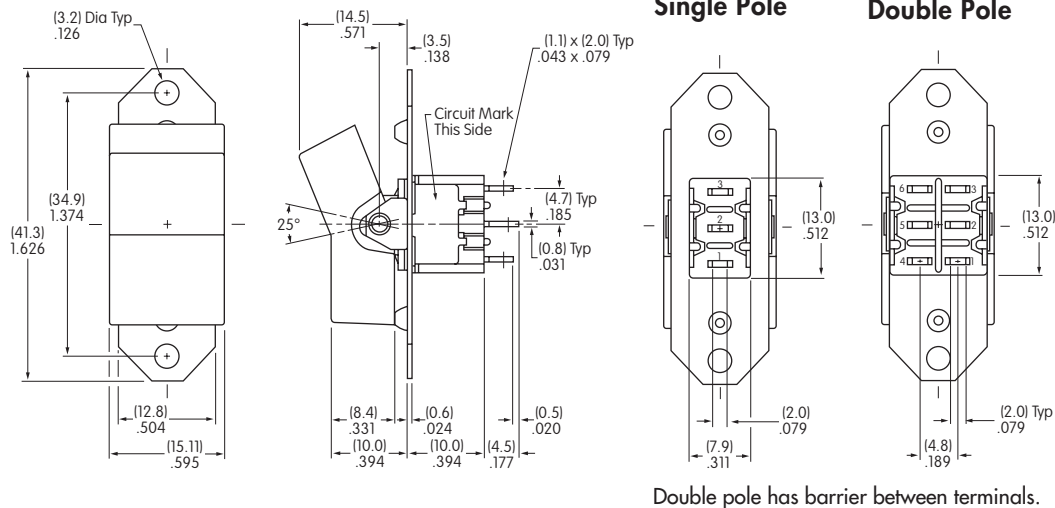


M2042TNW01-DC



TYPICAL SWITCH DIMENSIONS

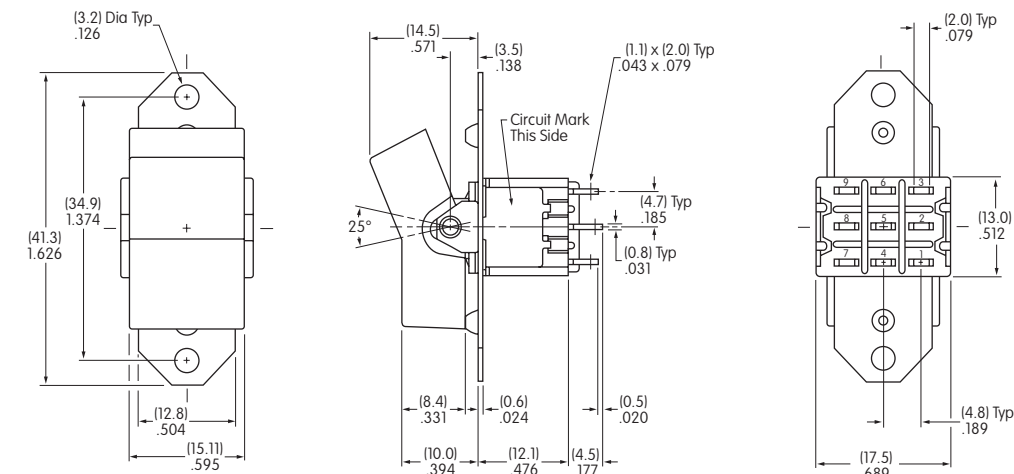
TY Frame • Solder Lug



M2012YW01-JC

Three Pole

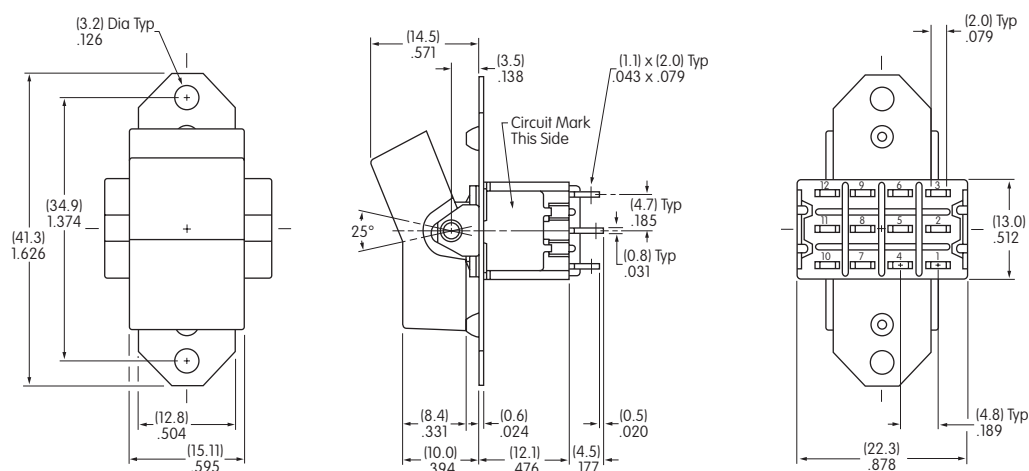
TY Frame • Solder Lug



M2032YW01-JC

Four Pole

TY Frame • Solder Lug



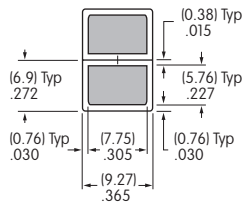
M2042YW01-JC

LEGENDS

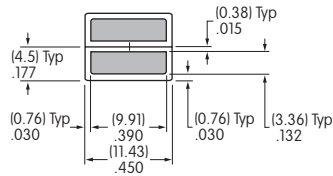
NKK Switches can provide custom legends for caps. Contact factory for more information.

Suggested Printable Area for Caps

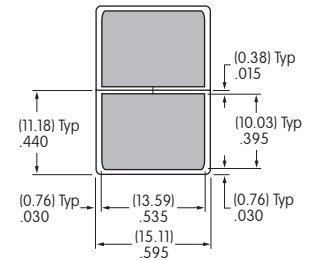
AT4148



AT4150



AT4156



Shaded areas are printable areas.

Recommended Print Method:

Pad Print

Epoxy based ink is recommended.

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

NKK Switches:

[M2013TJG01-FA-4A-FF](#) [M2023TNW01-FF](#) [M2023TNW05-DA](#) [M2024TYW01-HB](#) [M2022TNW01/CUL](#)
[M2029TXA13-DC](#) [M2015TZA23-JB](#) [M2012TXG26](#) [M2012TXG26-DA](#) [M2012TZW23-JB](#) [M2012TXW13/CUL](#)
[M2012TXW13/CUL-DA](#) [M2029TNW01-FA](#) [M2033TNW01-FF](#) [M2042TYW01-JE](#) [M2018TJG01-GH-1A](#) [M2024TJG03-](#)
[FH](#) [M2024TJW02-FA-1A](#) [M2018TJW01-GA-3A-EF](#) [M2019TJW01-FA](#) [M2018TJW01-GE-1A](#) [M2018TJG01-GG-1A](#)
[M2029TJW01-GG-1A](#) [M2024TNW01-DB](#) [M2024TNW03-DH](#) [M2028TNW03](#) [M2012TJW06-FA-1A](#) [M2022TJW03-GA-](#)
[3A-FE](#) [M2023TJW01-GA-4A-CF](#) [M2023TJW03-FA-3A-CF](#) [M2023TJW03-FB-1B](#) [M2022TJW03-GA-2A](#) [M2023TJW03-](#)
[GA-2A](#) [M2023TJW03-GB-2A](#) [M2018TNW01-FB](#) [M2018TNW01-GG](#) [M2023TNW03-FA](#) [M2012TNW01-GC](#)
[M2015TNW01-GG](#) [M2015TNW01-GH](#) [M2023TZW13-HB](#) [M2013TXG41-DA](#) [M2023TXW13/CUL](#) [M2024TJW01-FC-](#)
[1A](#) [M2024TJW02-FA](#) [M2012TJA01-GA-1A](#) [M2023TJG02-FA-1A](#) [M2023TJG02](#) [M2028TYW01-JC](#) [M2012TZW23/C-](#)
[JB](#) [M2015TZA23/U](#) [M2022TJW01-FA-4A-CE](#) [M2012TJW06](#) [M2018TNW01-EB](#) [M2018TYA01](#) [M2029TNW01-GH](#)
[M2024TJW02](#) [M2012TZW13-HA](#) [M2013TJW01-FA-3A-FF](#) [M2013TJW02-FA-3A-CC](#) [M2018TJW03-FA](#)
[M2024TJW01-FA-4A-FC](#) [M2024TJW01-FA-4A-FF](#) [M2012TJG03-FA](#) [M2012TJW01-FA-4A-FF](#) [M2012TJW03-FA](#)
[M2022TXW13/CUL](#) [M2022TXG13-GA](#) [M2022TZW13-HA](#) [M2013TXW41/CUL](#) [M2012TYW01-JG](#) [M2012TYW01-HG](#)
[M2012TYW01-HC](#) [M2018TYW01-HG](#) [M2027TJW01-FA-3A-CF](#) [M2032TNG01-FB](#) [M2025TXW13-DH](#) [M2013TXG13-](#)
[EA](#) [M2018TXG13-GA](#) [M2018TJG02-FA-1A](#) [MN42TNW01](#) [M2022TJW01/U-FA-1A](#) [M2018TYW03](#) [M2012TYW03](#)
[MN33TNW01](#) [M2018TXW13/CUL-DA](#) [MN33TNW01-DA](#)