

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.

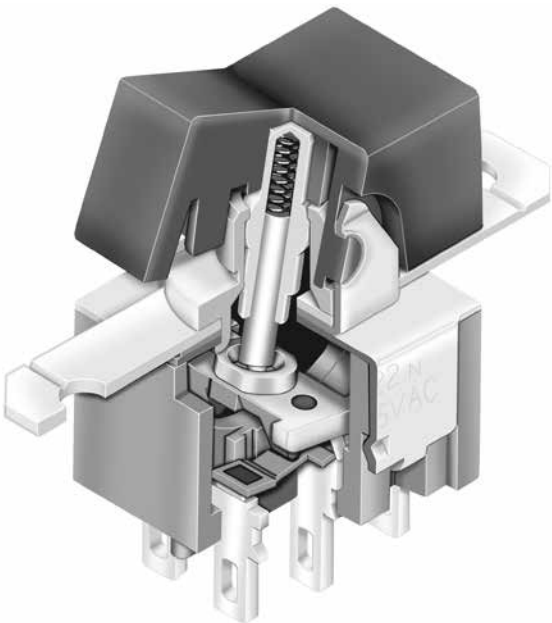
The molded diallyl phthalate case has a UL 94V-0 flammability rating.

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

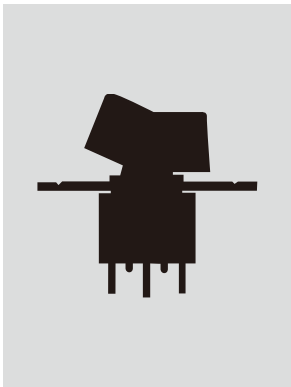
Prominent external insulating barriers increase insulation resistance and dielectric strength.

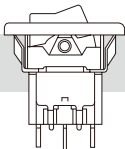
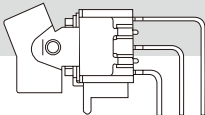
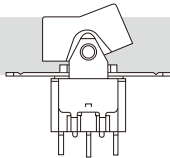
Bias guard prevents misalignment of contacts; interlocking of actuator block with rocker and internal guide does not allow transmission of diagonal force on rocker to reach contact mechanism.

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



Actual Size



	Snap-in Mount	Page B64
	Bracket PC Mount	Page B72
	Flat Frame Mount	Page B83

Toggles
Rockers
Pushbuttons
Illuminated PB
Programmable
Keylocks
Rotaries
Slides
Tactiles
Tilt
Touch
Indicators
Accessories
Supplement

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)

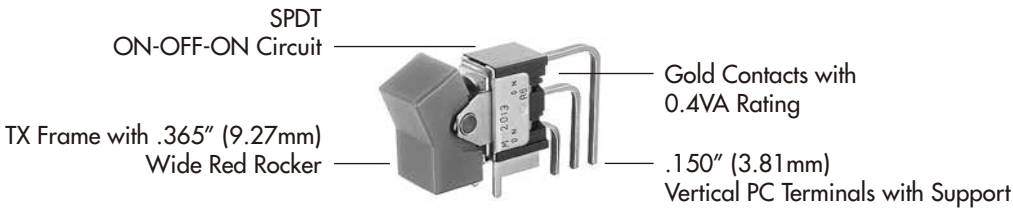
() = Momentary

* 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

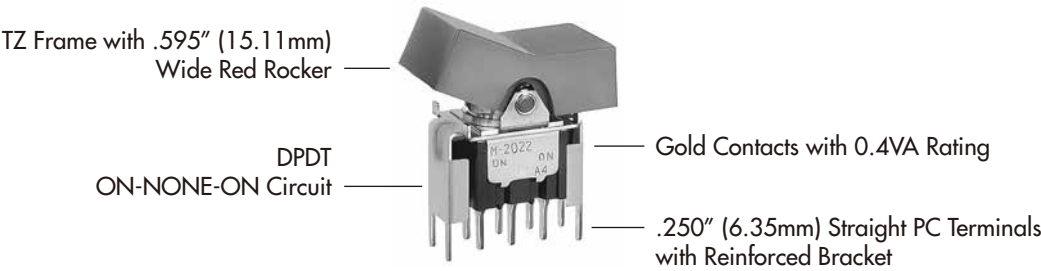
IMPORTANT:



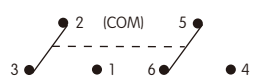
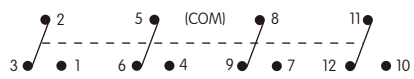
Switches are supplied without UL & CSA marking unless specified.
UL & CSA recognized only when ordered with marking on the switch.
Specific models, ratings and ordering instructions are noted on the
General Specifications page.

DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

M2022TZG23-JC

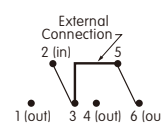
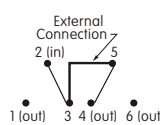
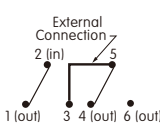
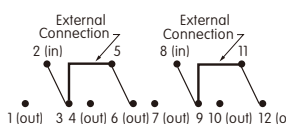
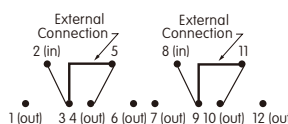
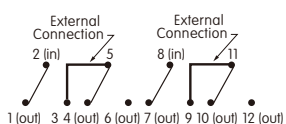


POLES & CIRCUITS

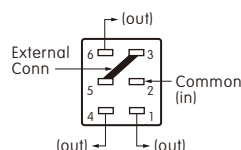
Pole	Model	Rocker Position () = Momentary			Connected Terminals			Throw & Schematics
		Down	Center	Up	Down	Center	Up	
SP	M2012	ON	NONE	ON	2-3	OPEN	2-1	Note: Terminal numbers are not actually on the switch. * Reverse circuits available for vertical mount SP & DP upon request. SPDT 
	M2013	ON	OFF	ON				
	*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

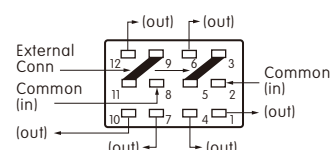
Pole	Model	Down	Center	Up	Down	Center	Up
SP	M2024	ON	ON	ON	 2-3 5-6	 2-3 5-4	 2-1 5-4
	M2026	(ON)	ON	(ON)			
	M2027	ON	ON	(ON)			
DP	M2044	ON	ON	ON	 2-3 5-6 8-9 11-12	 2-3 5-4 8-9 11-10	 2-1 5-4 8-7 11-10
	M2046	(ON)	ON	(ON)			
	M2047	ON	ON	(ON)			

The SP3T model utilizes a double pole base.



External connection must be made during field installation.

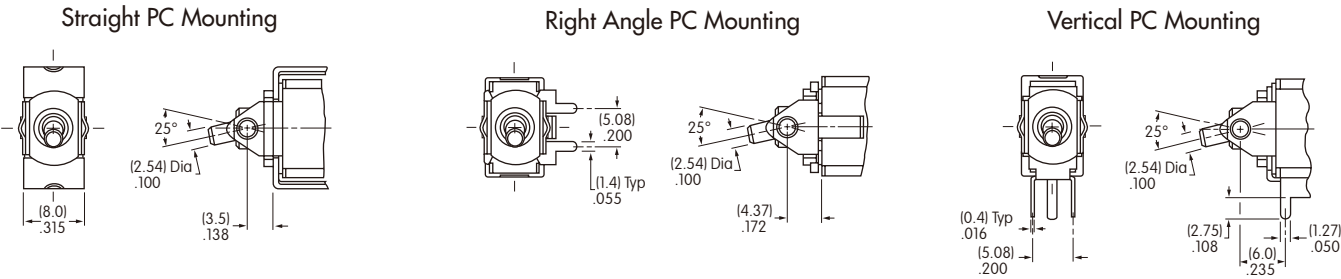
The DP3T model utilizes a four pole base.



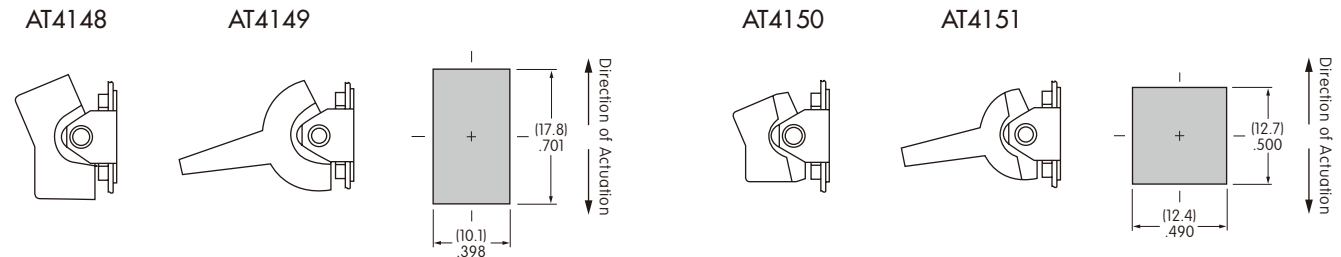
External connection must be made during field installation.

MOUNTING FRAMES

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

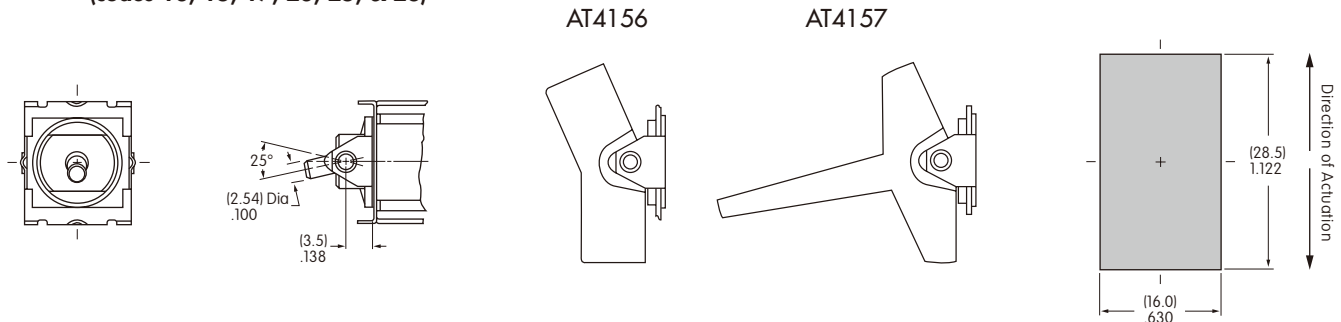


Small Actuators & Panel Cutouts for TX Frame (actuator details on the following pages)



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)



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.

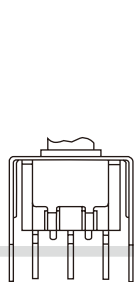
TERMINALS

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

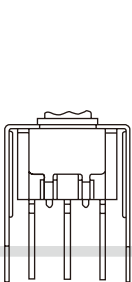
13

.250" (6.35mm)
Terminal with
.465" (11.8mm)
Bracket



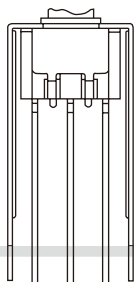
15

.425" (10.8mm)
Terminal with
.630" (16.0mm)
Bracket



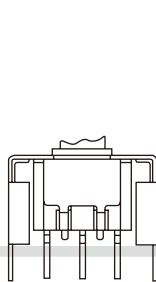
17

.964" (24.5mm)
Terminal with
1.150" (29.2mm)
Bracket



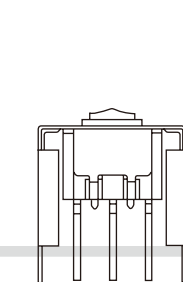
23

.250" (6.35mm)
Terminal with
.465" (11.8mm)
Bracket



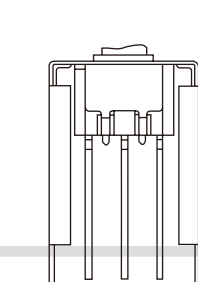
25

.425" (10.8mm)
Terminal with
.630" (16.0mm)
Bracket



26

.750" (19.05mm)
Terminal with
.953" (24.2mm)
Bracket

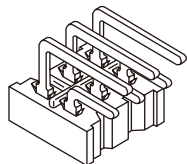


PCB footprints are on the following Typical Switch Dimension pages.

For TX 1-3 Pole Right Angle PC Mount

30

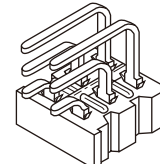
.150" (3.81mm)
Right Angle PC



For TX 1-4 Pole Vertical PC Mount

41

.150" (3.81mm)
Vertical PC

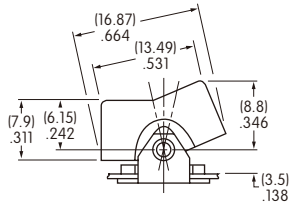
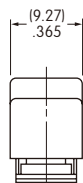


ROCKERS & PADDLES FOR TX MOUNTING FRAMES

D

AT4148 .365" (9.27mm)
Wide Rocker

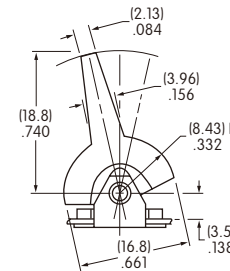
Material: Polyamide
Finish: Matte



E

AT4149 .365" (9.27mm)
Wide Paddle

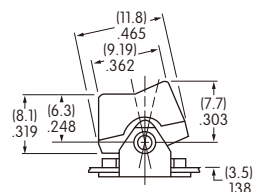
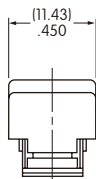
Material: Polyamide
Finish: Matte



F

AT4150 .450" (11.43mm)
Wide Rocker

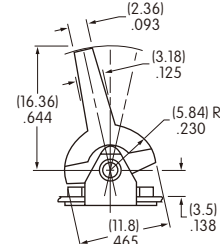
Material: Polyamide
Finish: Matte



G

AT4151 .450" (11.43mm)
Wide Paddle

Material: Polyamide
Finish: Matte



Cap Colors
Available:

A

Black

B

White

C

Red

E

Yellow

F

Green

G

Blue

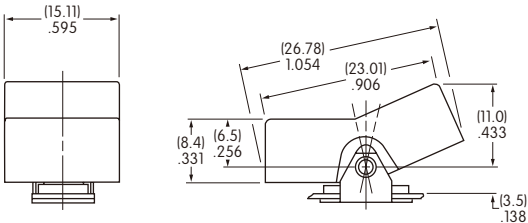
H

Gray

ROCKERS & PADDLES FOR TZ MOUNTING FRAMES

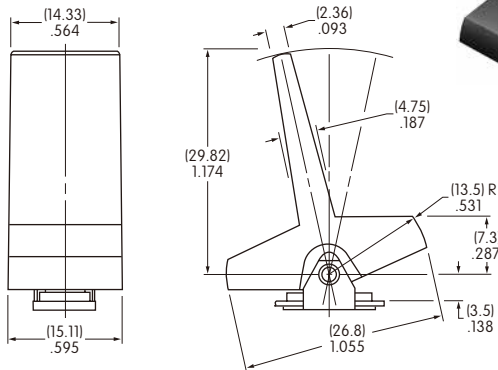
J AT4156 .595" (15.11mm)
Wide Rocker

Material: Polyamide
Finish: Matte



H AT4157 .595" (15.11mm)
Wide Paddle

Material: Polyamide
Finish: Matte



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

OPTIONAL SNAP-IN PANEL FRAMES

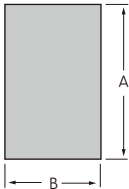
Used with AT4148 Rocker and AT4149 Paddle

AT064-1
Accommodates .047" ~ .090"
(1.2 ~ 2.3mm) panel thickness

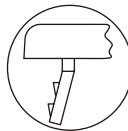
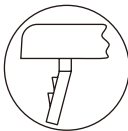
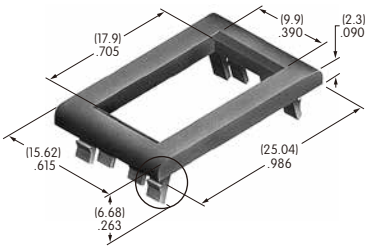
Material: Polyamide
Finish: Matte
Color: Black

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

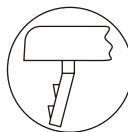
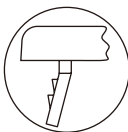
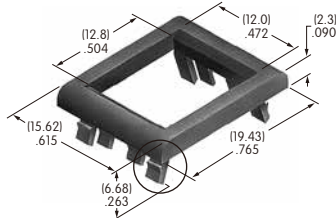
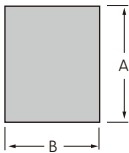
Used with AT4150 Rocker and AT4151 Paddle

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)

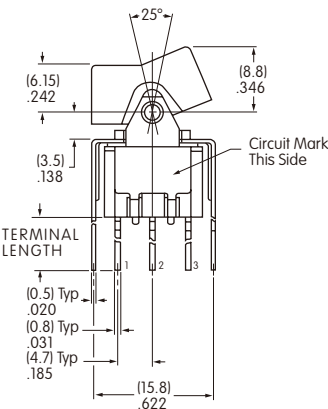


AT065-1 Enlarged Detail

AT065-2 Enlarged Detail

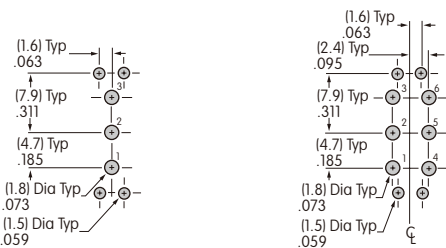
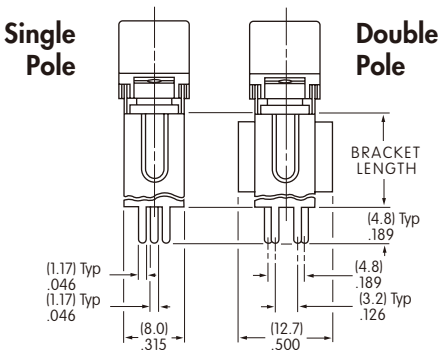
TYPICAL SWITCH DIMENSIONS

Straight PC • Bracket

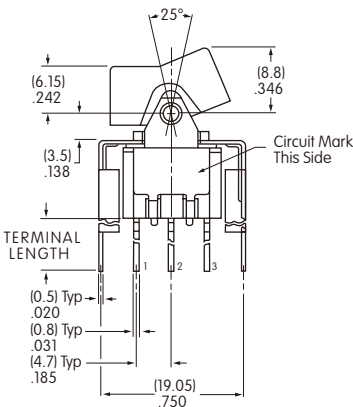


M2012TXG13-DC

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)

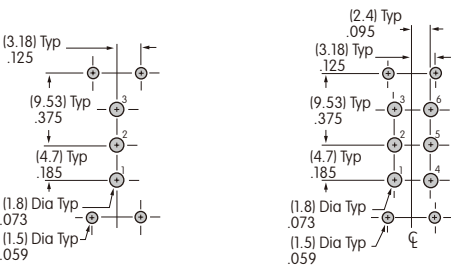
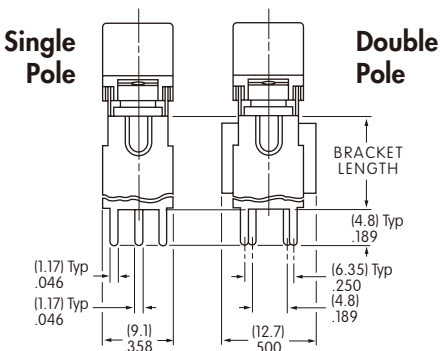


Straight PC • Reinforced Bracket



M2012TXG23-DC

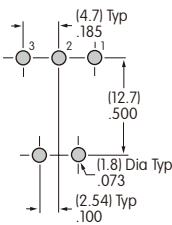
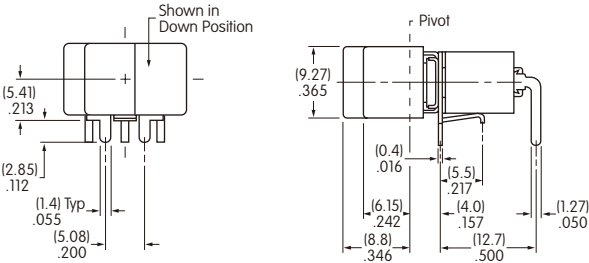
Terminal Code:	Terminal Length:	Bracket Length:
23	.250" (6.35mm)	.465" (11.8mm)
25	.425" (10.8mm)	.630" (16.0mm)
26	.750" (19.05mm)	.953" (24.2mm)



TYPICAL SWITCH DIMENSIONS

Single Pole

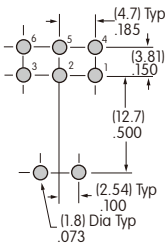
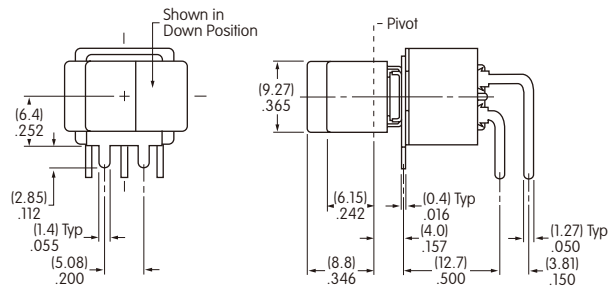
.150" (3.81mm) Right Angle PC



M2012TXG30-DC

Double Pole

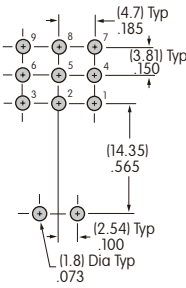
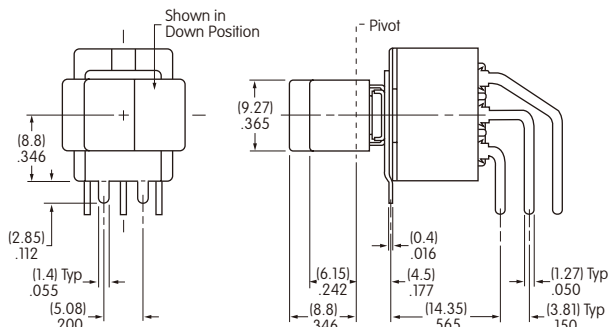
.150" (3.81mm) Right Angle PC



M2022TXG30-DC

Three Pole

.150" (3.81mm) Right Angle PC

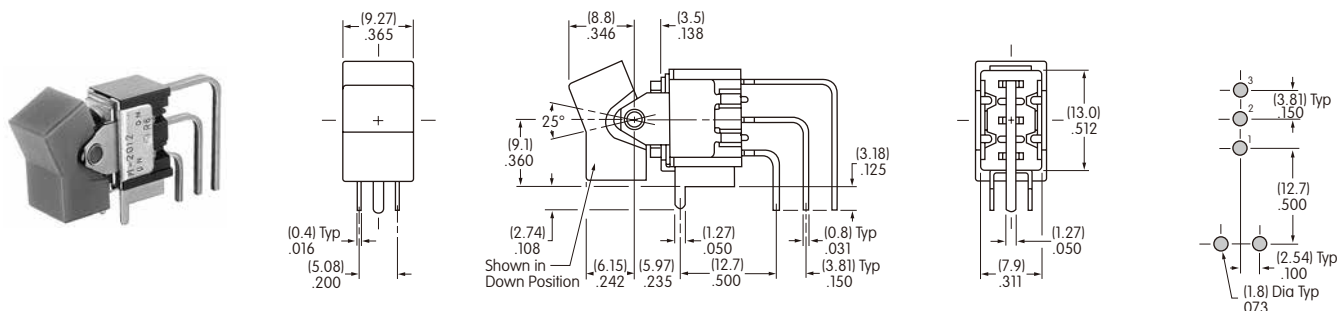


M2032TXG30-DC

TYPICAL SWITCH DIMENSIONS

.150" (3.81mm) Vertical PC

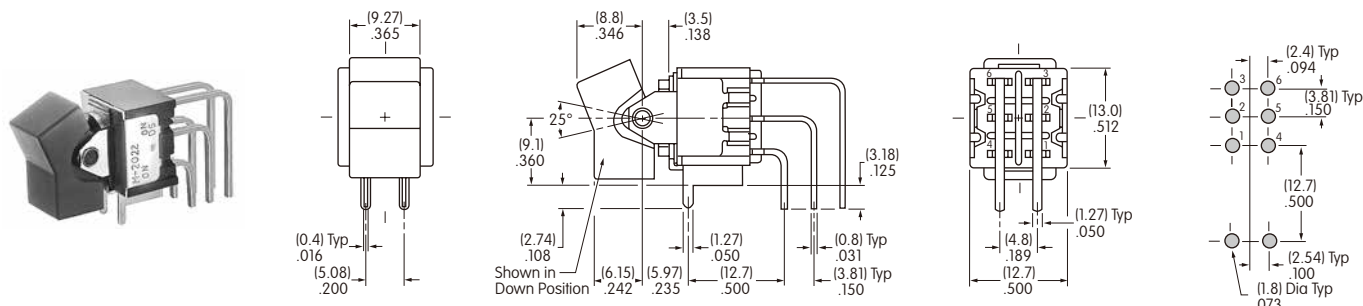
Single Pole



M2012TXG41-DC

.150" (3.81mm) Vertical PC

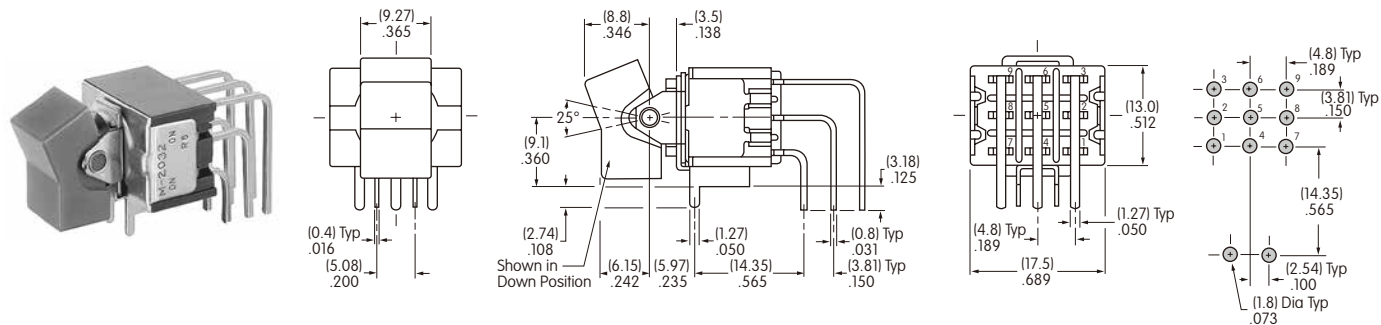
Double Pole



M2022TXG41-DC

.150" (3.81mm) Vertical PC

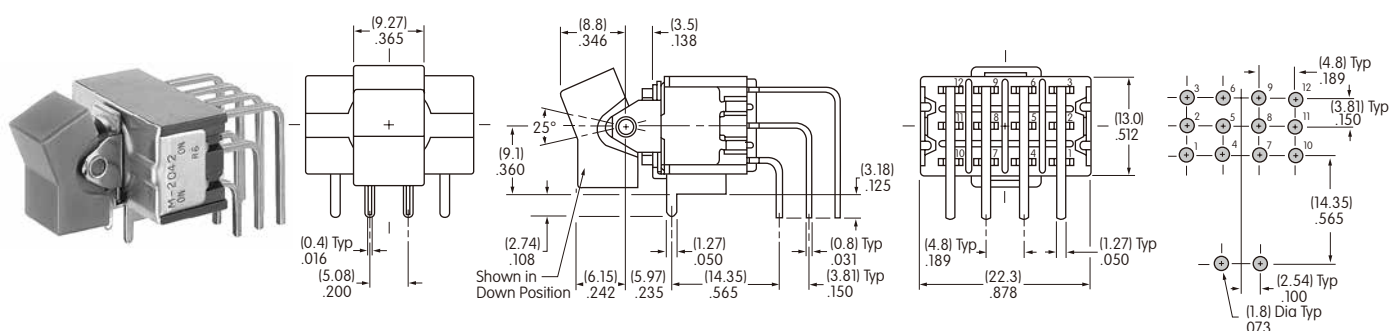
Three Pole



M2032TXG41-DC

.150" (3.81mm) Vertical PC

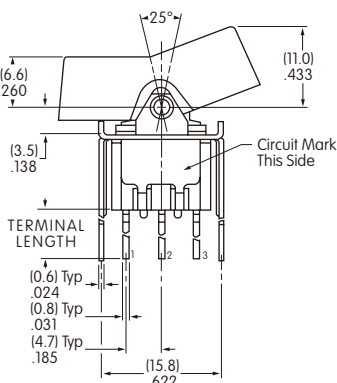
Four Pole



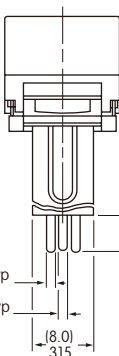
M2042TXG41-DC

TYPICAL SWITCH DIMENSIONS

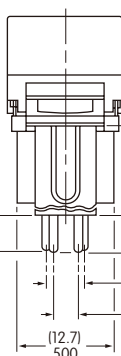
Straight PC • Bracket



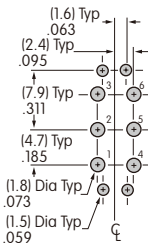
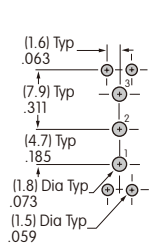
Single Pole



Double Pole

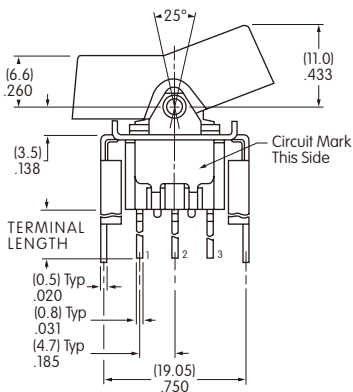


M2012TZG13-JC

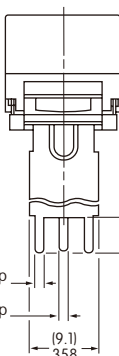


Terminal Code:	Terminal Length:	Bracket Length:
13	.250" (6.35mm)	.465" (11.8mm)
15	.425" (10.8mm)	.630" (16.0mm)
17	.964" (24.5mm)	1.150" (29.2mm)

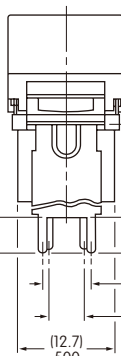
Straight PC • Reinforced Bracket



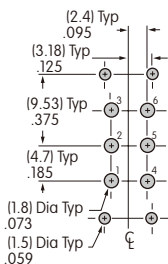
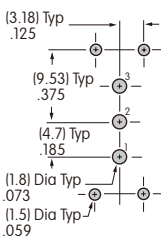
Single Pole



Double Pole



M2012TZG23-JC



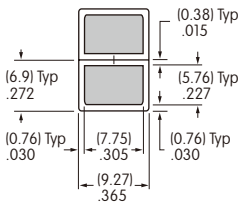
Terminal Code:	Terminal Length:	Bracket Length:
23	.250" (6.35mm)	.465" (11.8mm)
25	.425" (10.8mm)	.630" (16.0mm)
26	.750" (19.05mm)	.953" (24.2mm)

LEGENDS

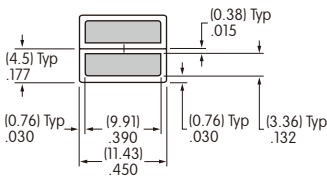
NKK Switches can provide custom legends for caps. Contact factory for more information.

Suggested Printable Area for Cap

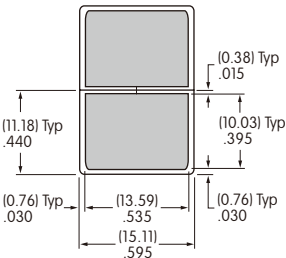
AT4148



AT4150



AT4156



Shaded areas are printable areas.

Recommended Print Method:

Pad Print

Epoxy based ink is recommended.