

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/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: **File No. E44145 - Recognized only when ordered with marking on switch.**
Add "/U" 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.

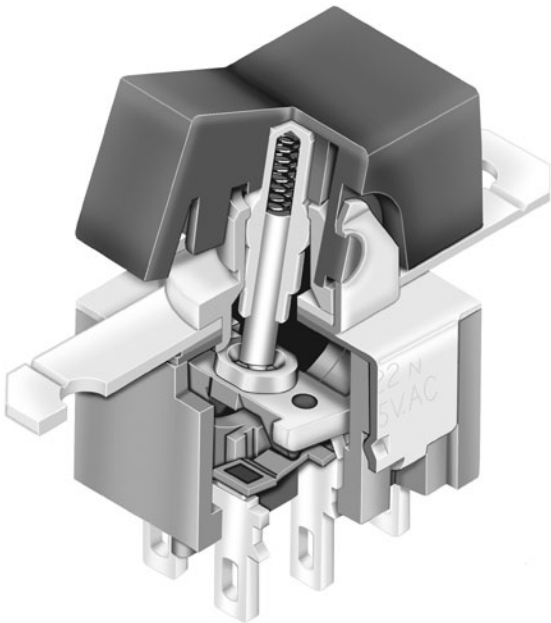
The molded diallyl phthalate case has a UL 94V-0 flammability rating.

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

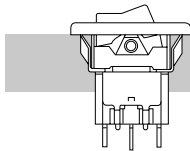
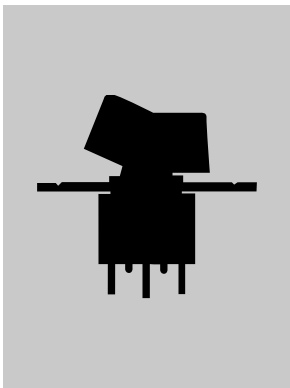
Prominent external insulating barriers increase insulation resistance and dielectric strength.

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.

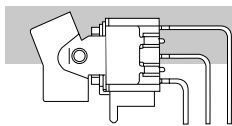
Clinching of the frame to the case well above the base and terminals provides 1,500V dielectric strength.



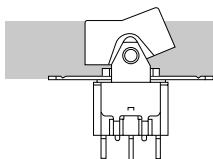
Actual Size



Snap-in Mount Page B64



Bracket PC Mount Page B72



Flat Frame Mount Page B83

TYPICAL SWITCH ORDERING EXAMPLE

M20

1

2

TN

W

01

—

D

C

Poles

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

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

Mounting Frames

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

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, & ordering instructions are noted on General Specifications page.

* Wire harness & cable assemblies offered only in Americas

DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

M2012TNW01-DC

NIKK
SWITCHES

www.nkk.com

B83

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

POLES & CIRCUITS

		Rocker Position () = Momentary			Connected Terminals			Throw & Schematics
Pole	Model	Down	Center	Up	Down	Center	Up	Note: Terminal numbers are not actually on the switch.
SP	M2012	ON	NONE	ON	2-3	OPEN	2-1	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	M2032	ON	NONE	ON	2-3 5-6 8-9	OPEN	2-1 5-4 8-7	3PDT
	M2033	ON	OFF	ON				
	M2035	ON	NONE	(ON)				
	M2038	(ON)	OFF	(ON)				
	M2039	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)				

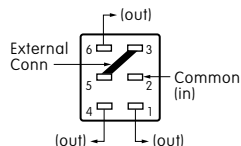
For 3 Throw (3-On)

Connected Terminals & Schematics

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

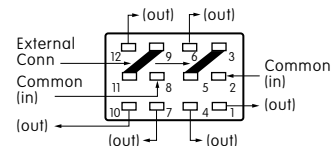
The SP3T model utilizes a double pole base.

External connection must be made during field installation.



The DP3T model utilizes a four pole base.

External connection must be made during field installation.

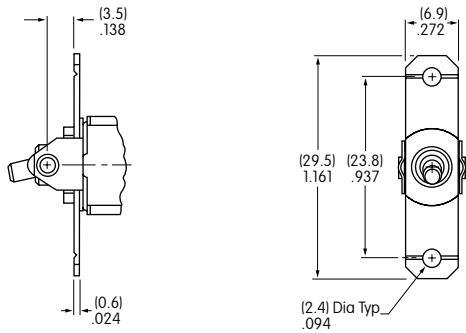


Flat Frame Mount Miniature Rockers

MOUNTING FRAMES

TN .272" (6.9mm)
Wide Flat Frame

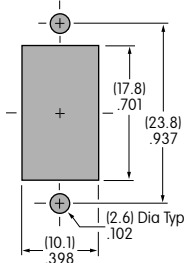
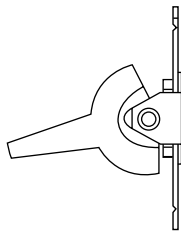
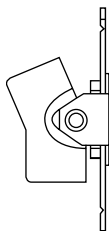
Mounting hardware kit HK-1, as shown on the following page, must be ordered separately.



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

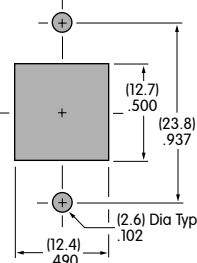
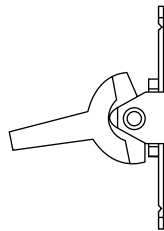
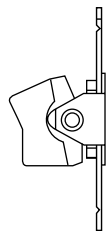
AT4148

AT4149



AT4150

AT4151



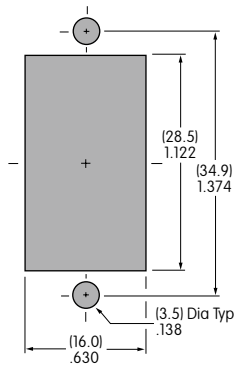
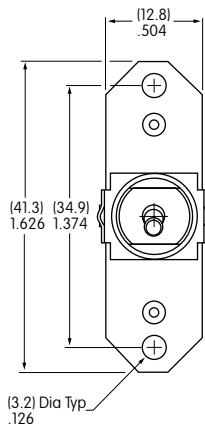
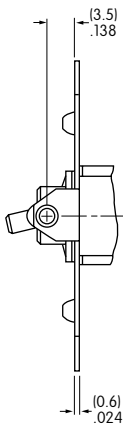
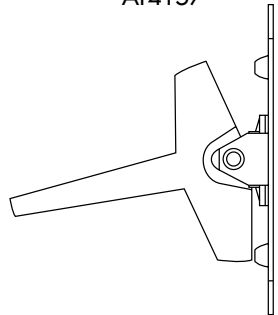
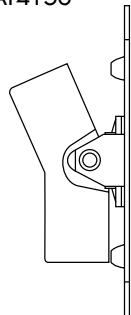
TY .504" (12.8mm)
Wide Flat Frame

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.

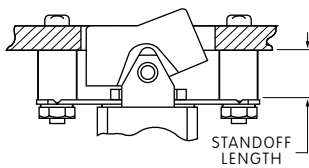
AT4156

AT4157



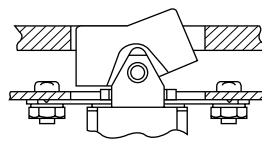
MOUNTING FRAMES (CONTINUED)

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**

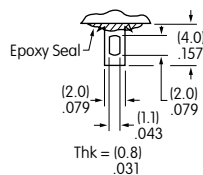
**6A @ 125V AC
or 0.4VA maximum @ 28V AC/DC maximum**

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.

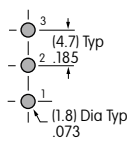
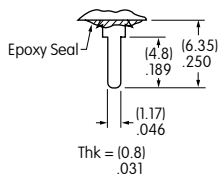
TERMINALS



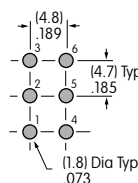
Solder Lug



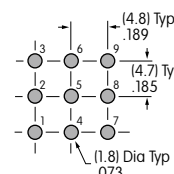
**.250" (6.35mm)
Straight PC**



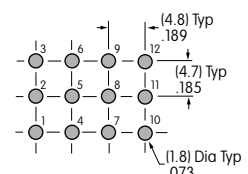
Single Pole



Double Pole



Three Pole



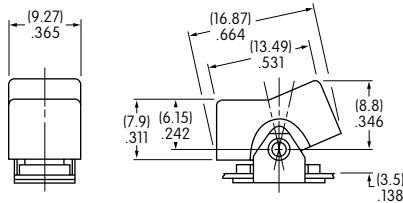
Four Pole

ROCKERS & PADDLES

For TN Frame

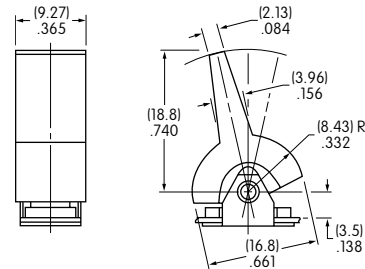
D AT4148 .365" (9.27mm) Wide Rocker

Material: Polyamide
Finish: Matte



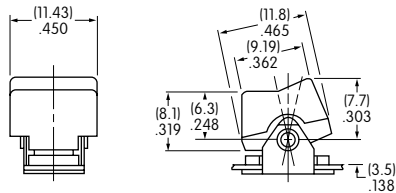
E AT4149 .365" (9.27mm) Wide Paddle

Material: Polyamide
Finish: Matte



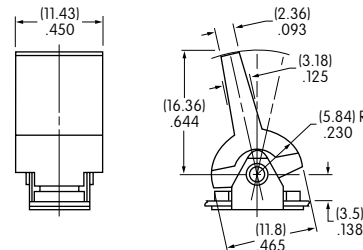
F AT4150 .450" (11.43mm) Wide Rocker

Material: Polyamide
Finish: Matte



G AT4151 .450" (11.43mm) Wide Paddle

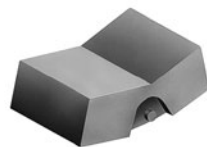
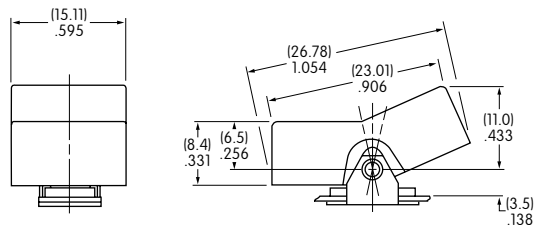
Material: Polyamide
Finish: Matte



For TY Frame

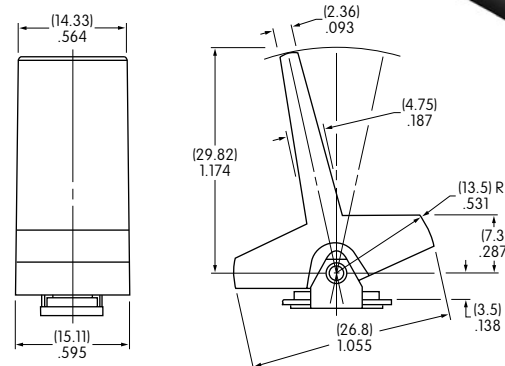
J AT4156 .595" (15.11mm) Wide Rocker

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

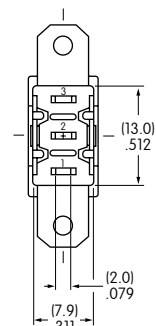
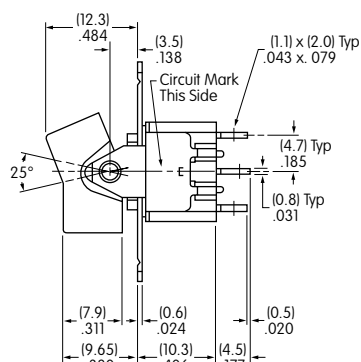
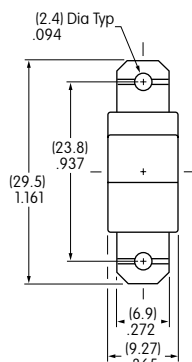
TYPICAL SWITCH DIMENSIONS

TN Frame • Solder Lug

Single Pole



M2012TNW01-DC

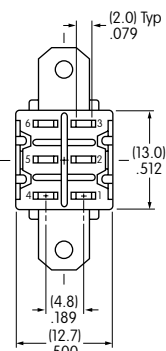
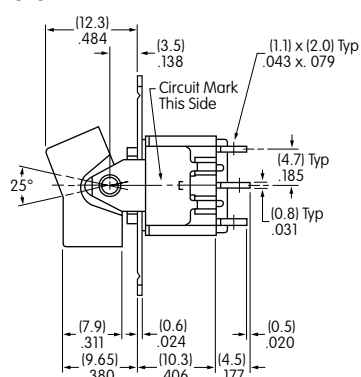
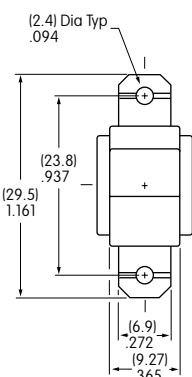


TN Frame • Solder Lug

Double Pole



M2022TNW01-DC

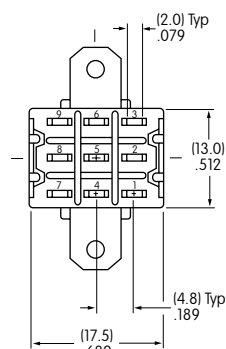
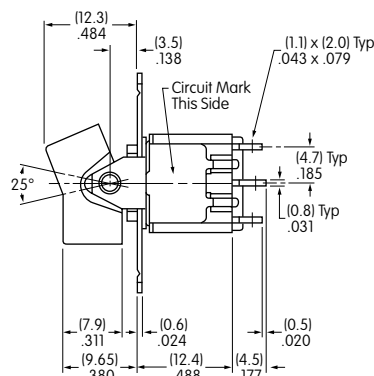
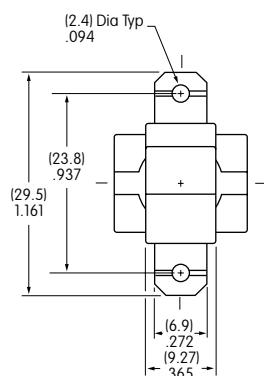


TN Frame • Solder Lug

Three Pole



M2032TNW01-DC

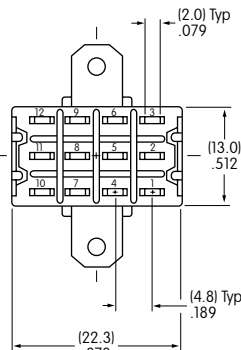
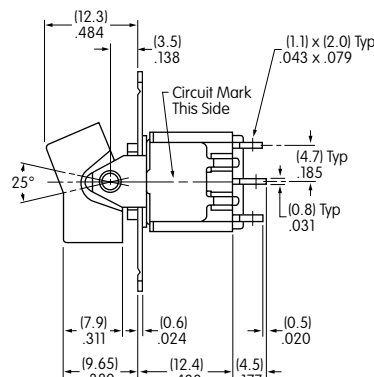
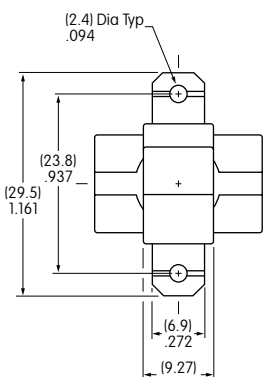


TN Frame • Solder Lug

Four Pole

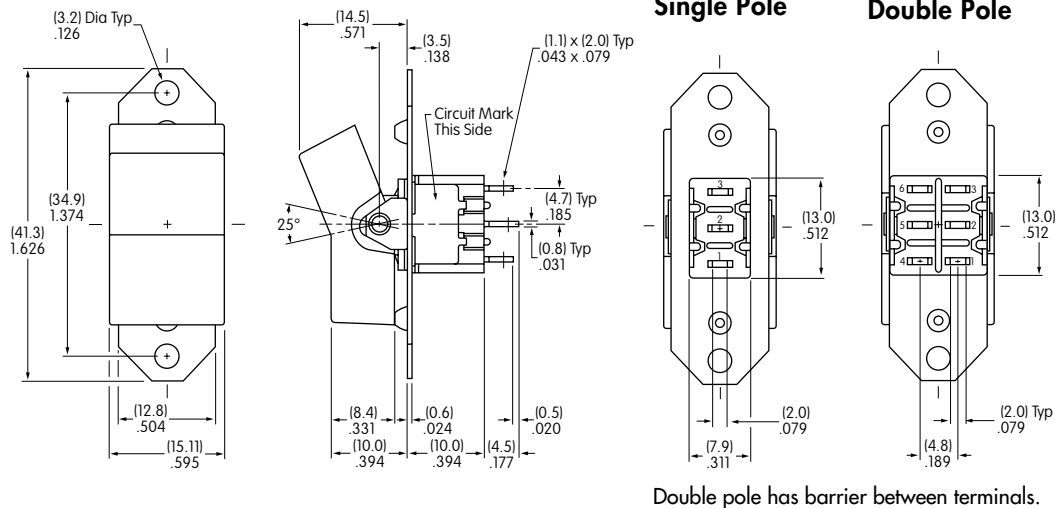


M2042TNW01-DC



TYPICAL SWITCH DIMENSIONS

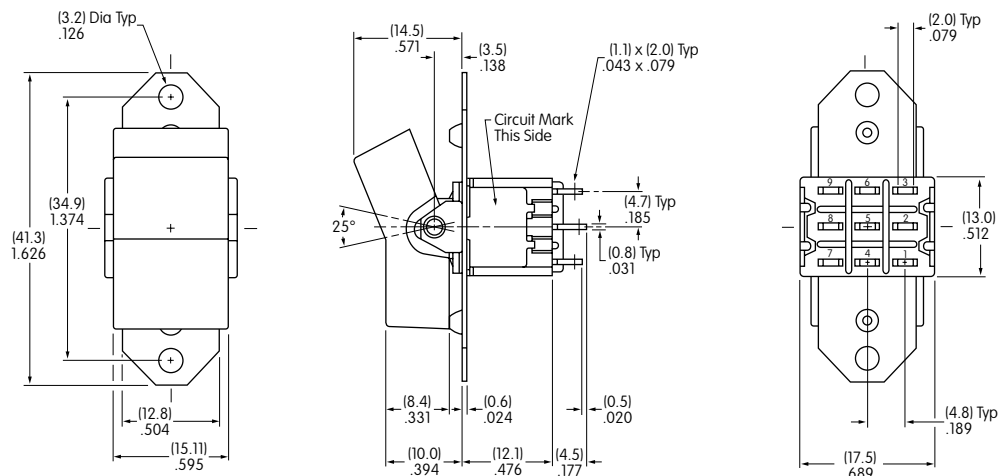
TY Frame • Solder Lug



M2012YW01-JC

Three Pole

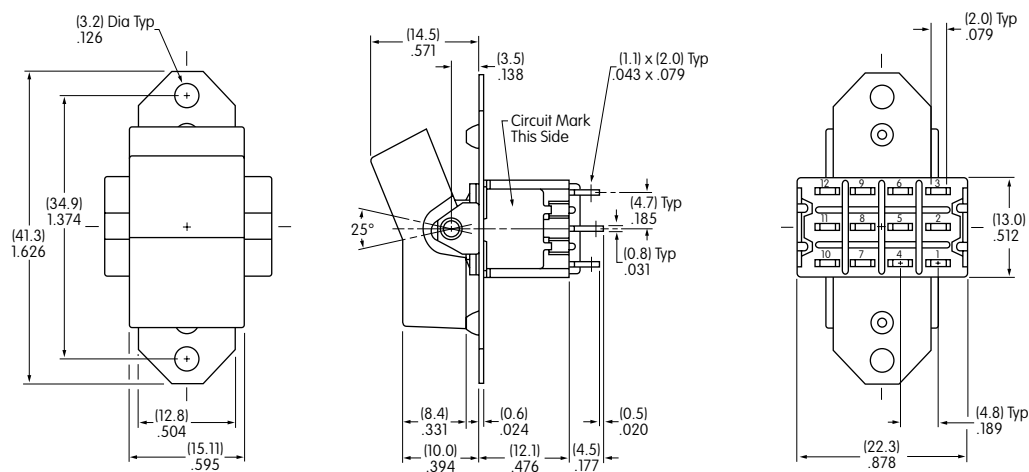
TY Frame • Solder Lug



M2032YW01-JC

Four Pole

TY Frame • Solder Lug



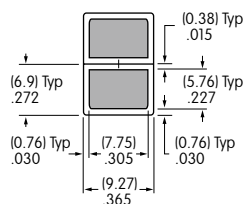
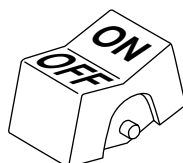
M2042YW01-JC

LEGENDS

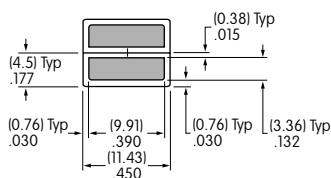
NKK Switches can provide custom legends for caps. Contact factory for more information.

Suggested Printable Area for Caps

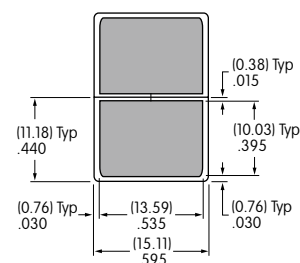
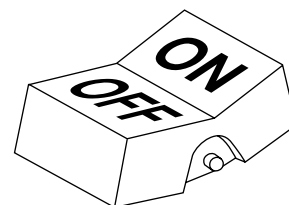
AT4148



AT4150



AT4156



Shaded areas are printable areas.

Recommended Print Method:

Pad Print

Epoxy based ink is recommended.

Компания «Океан Электроники» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Поставка оригинальных импортных электронных компонентов напрямую с производств Америки, Европы и Азии, а так же с крупнейших складов мира;
- Широкая линейка поставок активных и пассивных импортных электронных компонентов (более 30 млн. наименований);
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Помощь Конструкторского Отдела и консультации квалифицированных инженеров;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Компания «Океан Электроники» является официальным дистрибьютором и эксклюзивным представителем в России одного из крупнейших производителей разъемов военного и аэрокосмического назначения «JONHON», а так же официальным дистрибьютором и эксклюзивным представителем в России производителя высокотехнологичных и надежных решений для передачи СВЧ сигналов «FORSTAR».



JONHON

«JONHON» (основан в 1970 г.)

Разъемы специального, военного и аэрокосмического назначения:

(Применяются в военной, авиационной, аэрокосмической, морской, железнодорожной, горно- и нефтедобывающей отраслях промышленности)

«FORSTAR» (основан в 1998 г.)

ВЧ соединители, коаксиальные кабели,
кабельные сборки и микроволновые компоненты:

(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).



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