

General Specifications

Electrical Capacity (Resistive Load)

Power Level (silver): 2A @ 125V AC
Logic Level (gold): 0.4VA maximum @ 28V AC/DC maximum (Applicable Range 0.1mA ~ 0.1A @ 20mV ~ 28V)

Other Ratings

Contact Resistance: 20 milliohms maximum for silver; 30 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 & case for 1 minute minimum
Mechanical Life: 200,000 operations minimum
Electrical Life: 25,000 operations minimum for silver; 100,000 operations minimum for gold
Nominal Operating Force: Single pole 2.45N; double pole 3.92N
Nominal Travel: Pretravel .024" (0.6mm); Overtravel .016" (0.4mm); Total Travel .039" (1.0mm)

Materials & Finishes

Plunger: Brass with nickel plating
Bushing: Brass with nickel plating
Frame: Stainless steel
Guide: Polybutylene terephthalate (PBT) (UL94V-0)
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)
Stationary Contacts: Silver alloy with silver plating (code W); copper or brass with gold plating (code G)
Terminals: Copper or brass with silver plating; copper or brass with gold plating

Environmental Data

Operating Temperature Range: -30°C through +85°C (-22°F through +185°F)
Humidity: 90 ~ 95% humidity for 240 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: 500m/s² acceleration (tested in 6 right angled directions, with 3 shocks in each direction)

Installation

Mounting Torque: 1.5Nm (13.0 lb•in) for double nut; 0.7Nm (6.0 lb•in) for single nut
Cap Installation Force: 80.0N (18.0 lbf) maximum downward force on actuator
Soldering: Wave Soldering (PC version): See Profile B in Supplement section.
 Manual Soldering: See Profile B in Supplement section.
Cleaning: These devices are not process sealed. Hand clean locally using alcohol based solution.
 See Cleaning Specifications in Supplement section.

Standards & Certifications

Flammability Standards: UL94V-0 Guide & Case
UL: Contact NNK Switches for UL or CUL marking option requirements.

Distinctive Characteristics

Snap-acting mechanism gives smooth actuation, short stroke, light touch, and audible feedback. This mechanism also provides long mechanical life.

High torque bushing construction prevents rotation or separation from frame during installation.

Antijamming design protects contacts from damage due to excessive downward force on the actuator.

Compatible companions with M series toggles. Body, bushing, and footprint dimensions ideal for mounting MBNR pushbuttons and M toggles next to one another.

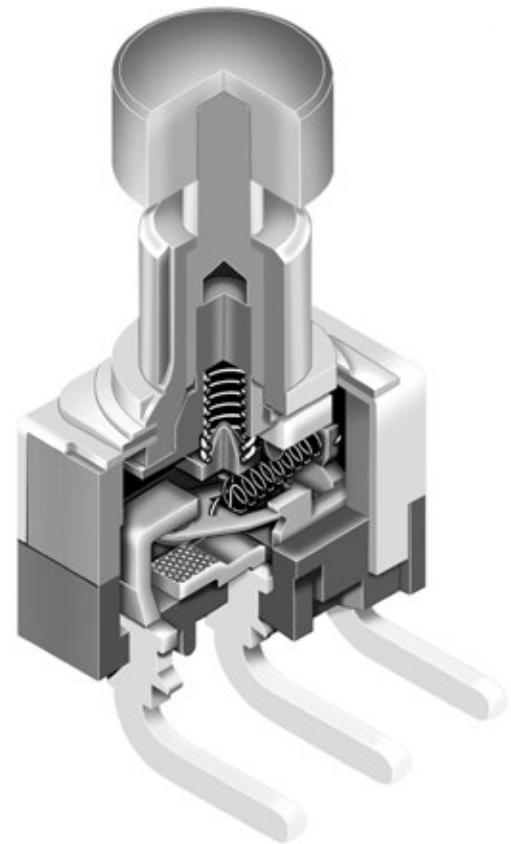
Stainless steel frame resists corrosion.

Longer center solder lug terminal simplifies wiring and soldering.

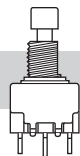
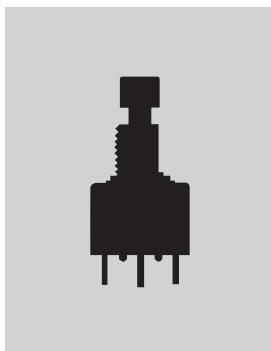
Silver contacts of specially composed alloy for hardness.

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

Prominent external insulating barriers increase insulation resistance and dielectric strength.

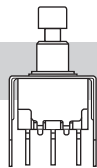


Actual Size



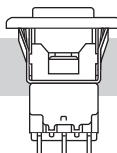
Bushing Mount

Page C98



Bracket PC Mount

Page C102

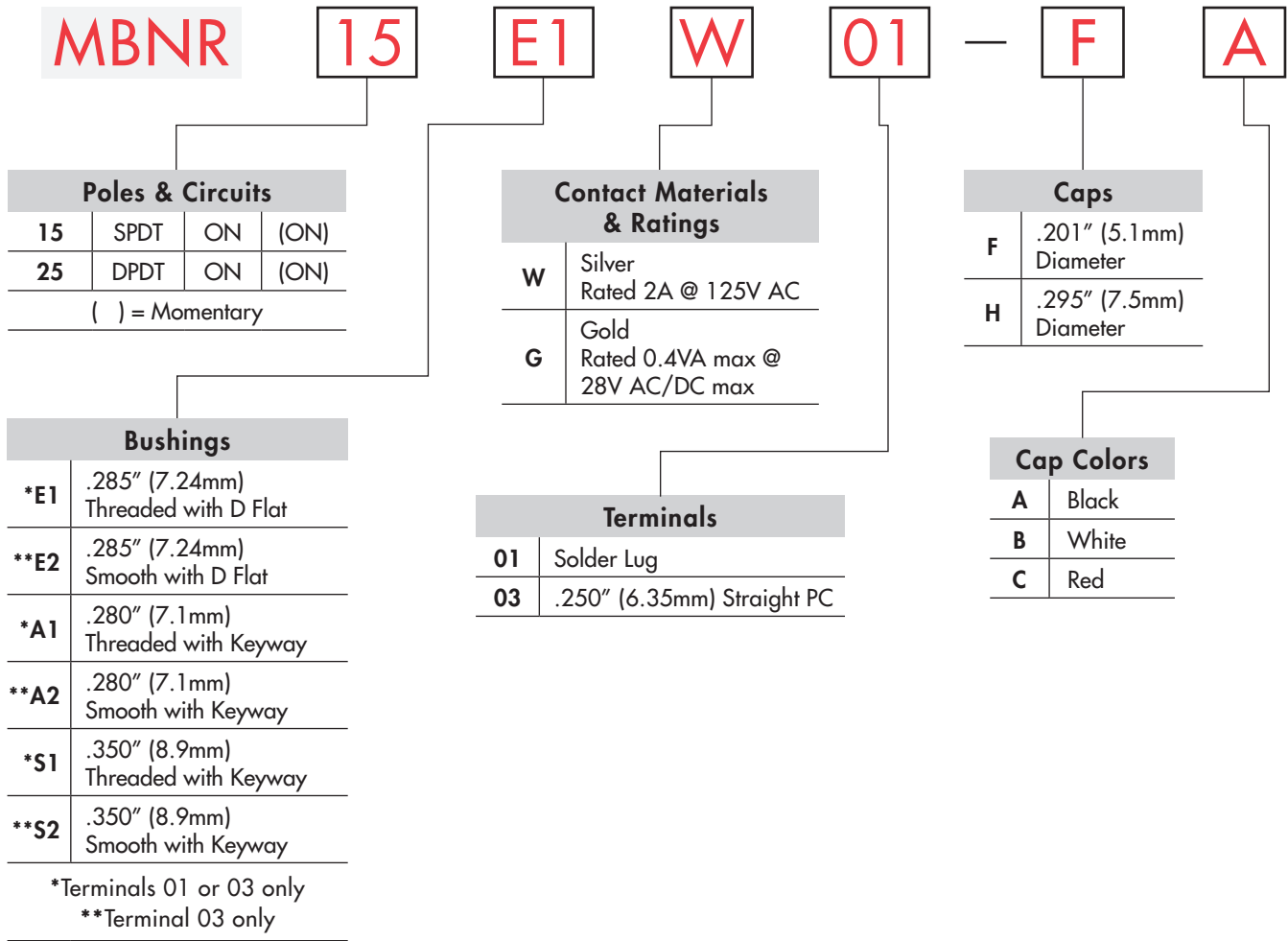


Snap-in Mount

Page C106

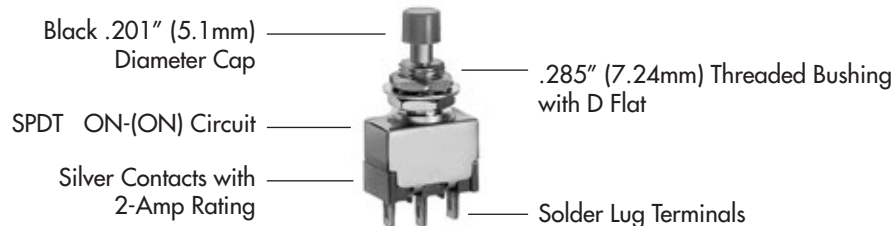
- Supplement
- Accessories
- Indicators
- Touch
- Tilt
- Tactiles
- Slides
- Rotaries
- Keylocks
- Programmable
- Illuminated PB
- Pushbuttons
- Rockers
- Toggles

TYPICAL SWITCH ORDERING EXAMPLE



DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

MBNR15E1W01-FA



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

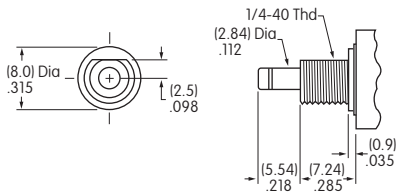
POLES & CIRCUITS

Pole	Model	Plunger Position () = Momentary		Connected Terminals		Throw & Switch Schematics
		Normal	Down	Normal	Down	
						Note: Terminal numbers are not actually on the switch.
SP	MBNR15	ON	(ON)	1-3	1-2	SPDT
DP	MBNR25	ON	(ON)	1-3 4-6	1-2 4-5	DPDT

BUSHINGS

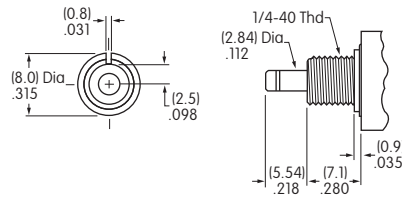
Note: Plunger selection is not required for MBNR pushbuttons. The plunger can be used with or without a cap.

E1 .285" (7.24mm)
Threaded with D Flat



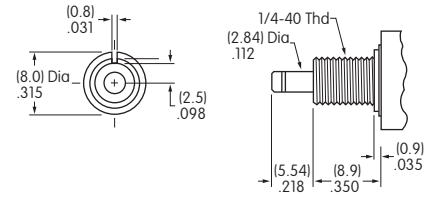
Maximum Panel Thickness with Standard Hardware: .068" (1.74mm)

A1 .280" (7.1mm)
Threaded with Keyway



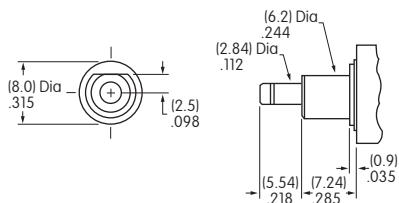
Maximum Panel Thickness with Standard Hardware: .068" (1.74mm)

S1 .350" (8.9mm)
Threaded with Keyway

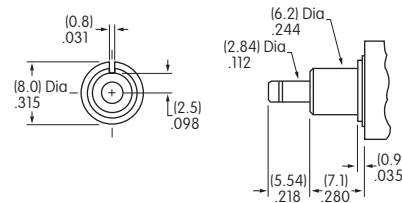


Maximum Panel Thickness with Standard Hardware: .134" (3.40mm)

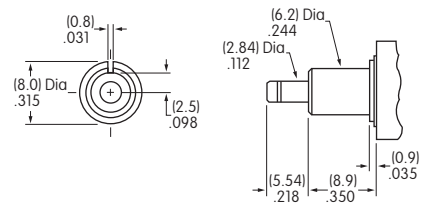
E2 .285" (7.24mm)
Smooth with D Flat



A2 .280" (7.1mm)
Smooth with Keyway

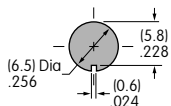


S2 .350" (8.9mm)
Smooth with Keyway

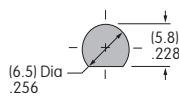


Panel Cutouts

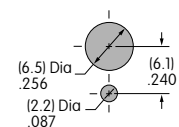
For A1, A2, S1, or S2 Bushing with Keyway



For E1 or E2 Bushing with D Flat



With Optional Locking Ring



Standard hardware includes 2 hex nuts & 1 lockwasher.
Hardware is illustrated following the Typical Switch Dimension drawings.

CONTACT MATERIALS & RATINGS

W

Silver

Power Level

2A @ 125V AC

G

Gold

Logic Level

0.4VA maximum @ 28V AC/DC maximum

Note: Complete explanation of operating range in Supplement section.

Gold over Silver

Power Level
or Logic Level

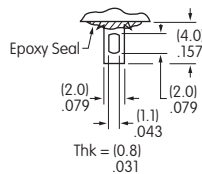
2A @ 125V AC
or 0.4VA maximum @ 28V AC/DC maximum

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

TERMINALS

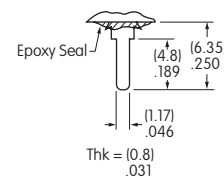
01

Solder Lug

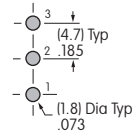


03

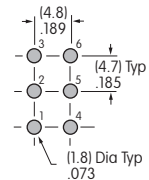
.250" (6.35mm)
Straight PC



Single Pole



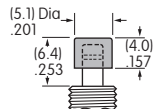
Double Pole



CAPS & CAP COLORS

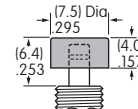
F

AT475
.201" (5.1mm)
Diameter Cap



H

AT496
.295" (7.5mm)
Diameter Cap



Material: Polyamide

Finish: Glossy



Material: Polyamide

Finish: Glossy



Cap Colors
Available:

A

Black

B

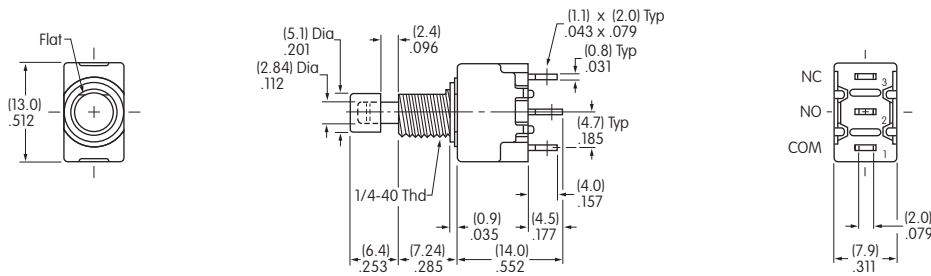
White

C

Red

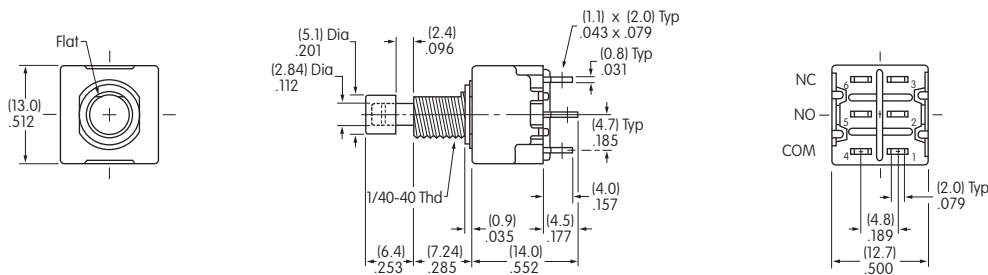
TYPICAL SWITCH DIMENSIONS

Single Pole



MBNR15E1W01-FA

Double Pole



MBNR25E1W01-FA

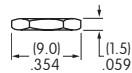
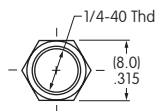
HARDWARE

Standard Hardware

AT513H Inch Threaded Hexagon Nut

2 included with each switch

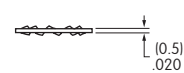
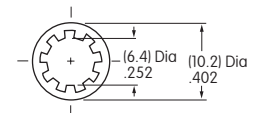
Material:
Brass with Nickel Plating



AT509 Lockwasher

1 included with each switch

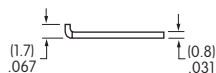
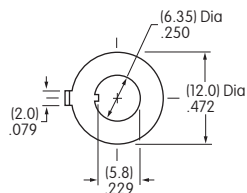
Material:
Steel with Zinc/Chromate



Optional Hardware

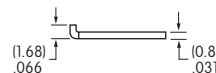
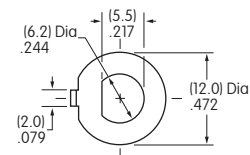
AT507H Locking Ring for A1 or S1 Bushing

Material:
Steel with Zinc/Chromate



AT515 Locking Ring for E1 Bushing

Material:
Steel with Zinc/Chromate



TYPICAL SWITCH ORDERING EXAMPLE

MBNR

15

A2

W

40

F

A

Poles & Circuits

15	SPDT	ON	(ON)
25	DPDT	ON	(ON)

() = Momentary

Contact Materials & Ratings

W	Silver Rated 2A @ 125V AC
G	Gold Rated 0.4VA max @ 28V AC/DC max

Caps

F	.201" (5.1mm) Dia.
H	.295" (7.5mm) Dia.

Bushings

A2	.280" (7.1mm) Smooth with Keyway
E2	.285" (7.24mm) Smooth with D Flat
S2	.350" (8.9mm) Smooth with Keyway

Cap Colors

A	Black
B	White
C	Red

Terminals

With Bracket

13	.250" (6.35mm) Straight PC with .465" (11.8mm) Bracket
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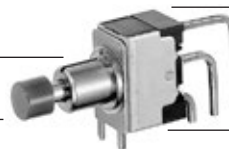
With Terminal Support

30	Right Angle PC
40	Vertical PC

DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

MBNR15A2W40-FA

.280" (7.1mm) Smooth Bushing
with Keyway
Black .201" (5.1mm)
Diameter Cap



SPDT
ON-(ON) Circuit
Vertical PC Terminals
Silver Contacts with
2A Rating

POLES & CIRCUITS

Pole	Model	Plunger Position () = Momentary		Connected Terminals		Throw & Switch Schematics
		Normal	Down	Normal	Down	
						Note: Terminal numbers are not actually on the switch.
SP	MBNR15	ON	(ON)	1-3	1-2	SPDT
DP	MBNR25	ON	(ON)	1-3 4-6	1-2 4-5	DPDT

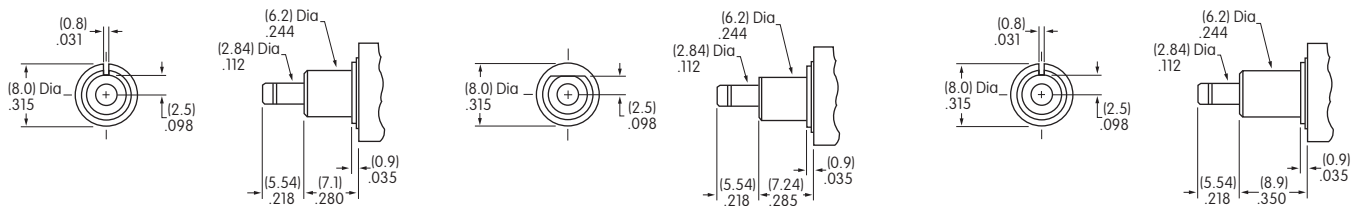
BUSHINGS

Note: Plunger selection is not required for MBNR pushbuttons. The plunger can be used with or without a cap.

A2 .280" (7.1mm)
Smooth with Keyway

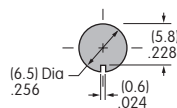
E2 .285" (7.24mm)
Smooth with D Flat

S2 .350" (8.9mm)
Smooth with Keyway

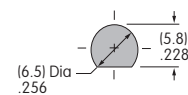


Panel Cutouts

For A2 or S2 Bushing
with Keyway



For E2 Bushing
with D Flat



CONTACT MATERIALS & RATINGS

W Silver

Power Level

2A @ 125V AC

G Gold

Logic Level

0.4VA maximum @ 28V AC/DC maximum

Note: Complete explanation of operating range in Supplement section.

Gold over Silver

Power Level
or Logic Level

2A @ 125V AC
or 0.4VA maximum @ 28V AC/DC maximum

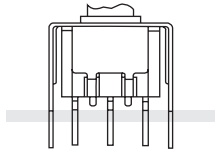
Note: Gold over silver is available as a custom option. This dual rated option is suitable when two or more identical switches are used in logic and in power circuits within the same application. See Supplement section to find complete explanation of dual rating and operating range.

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

TERMINALS

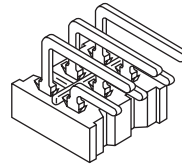
13

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



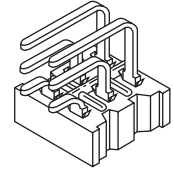
30

Right Angle PC



40

Vertical PC

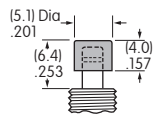


PCB footprints are on the following Typical Switch Dimension pages.

CAPS & CAP COLORS

F

AT475
.201" (5.1mm)
Diameter Cap

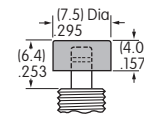


Material: Polyamide
Finish: Glossy



H

AT496
.295" (7.5mm)
Diameter Cap



Material: Polyamide
Finish: Glossy



Cap Colors Available:

A

Black

B

White

C

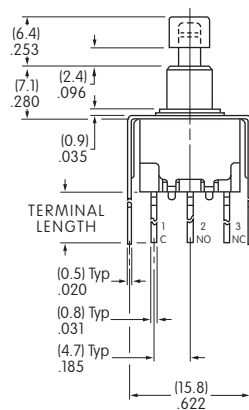
Red

TYPICAL SWITCH DIMENSIONS

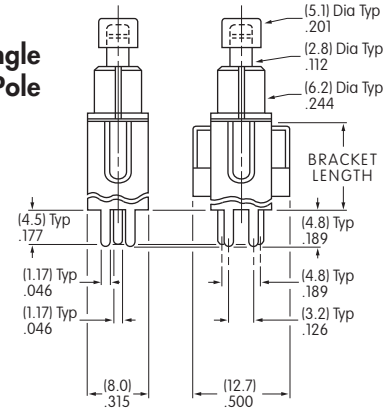
Straight PC • Bracket



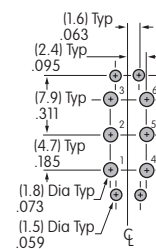
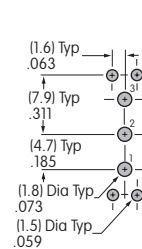
MBNR15A2G13-FA



Single Pole



Double Pole

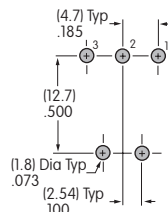
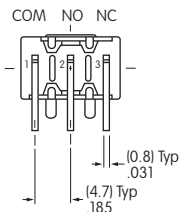
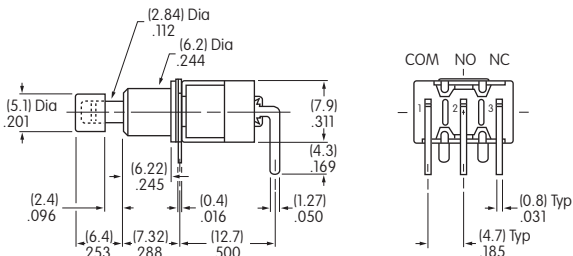
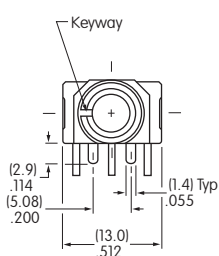


Terminal Code:	Terminal Length:	Bracket Length:
13	.250 (6.35mm)	.465 (11.8mm)

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

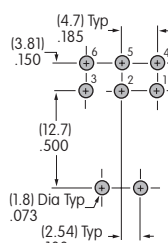
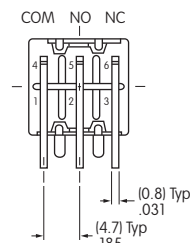
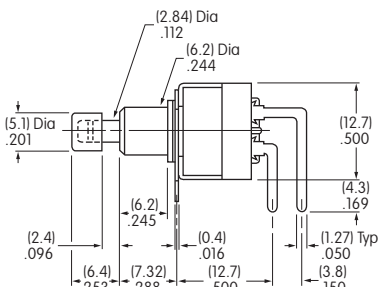
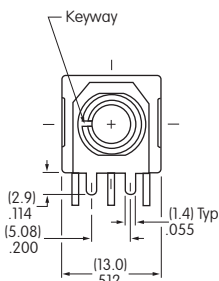
TYPICAL SWITCH DIMENSIONS

Single Pole



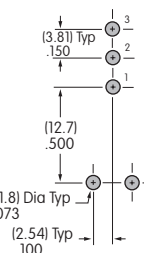
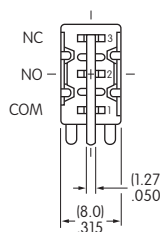
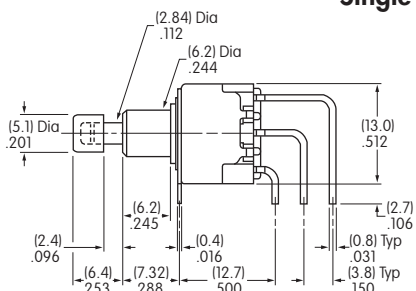
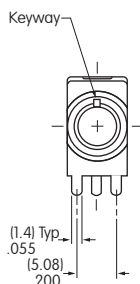
MBNR15A2G30-FA

Double Pole



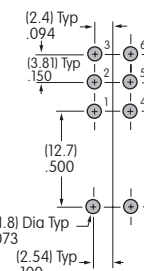
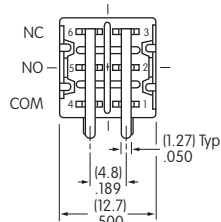
MBNR25A2W30-FA

Single Pole

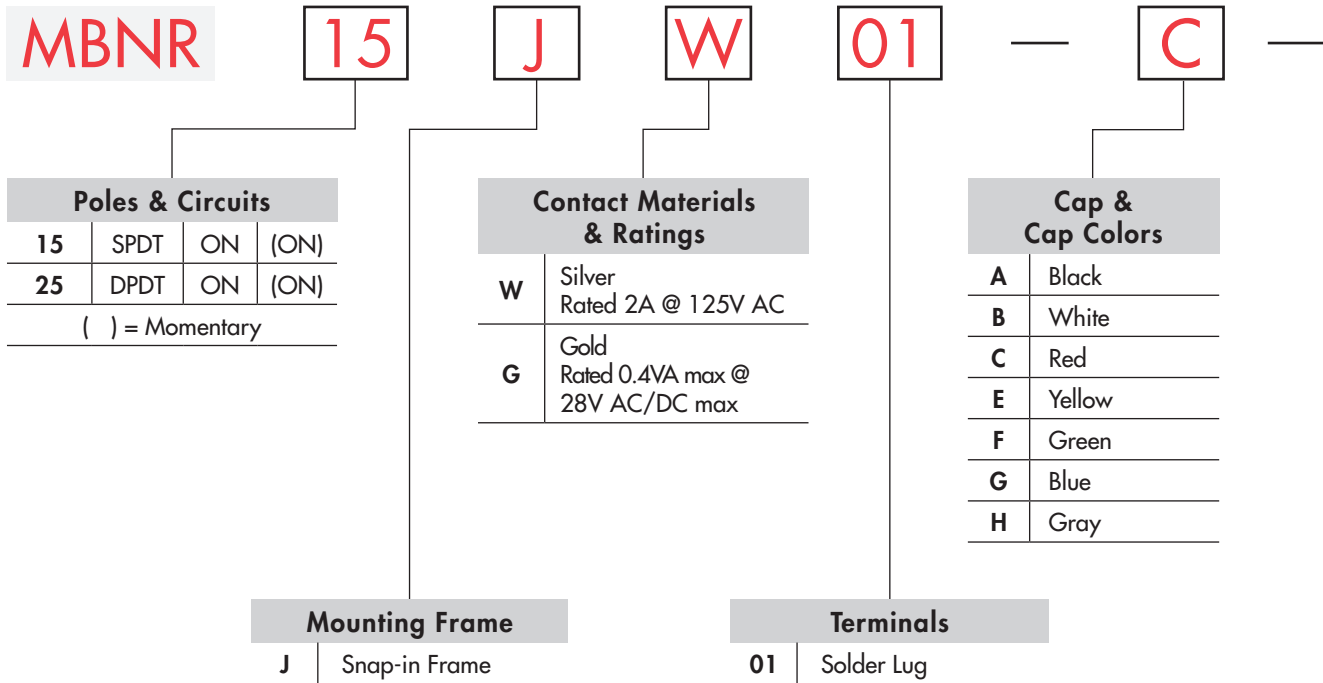


MBNR15A2W40-FA

Double Pole

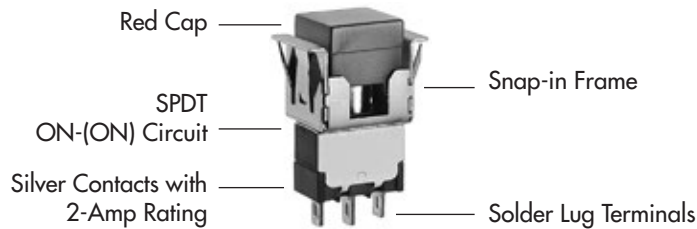


TYPICAL SWITCH

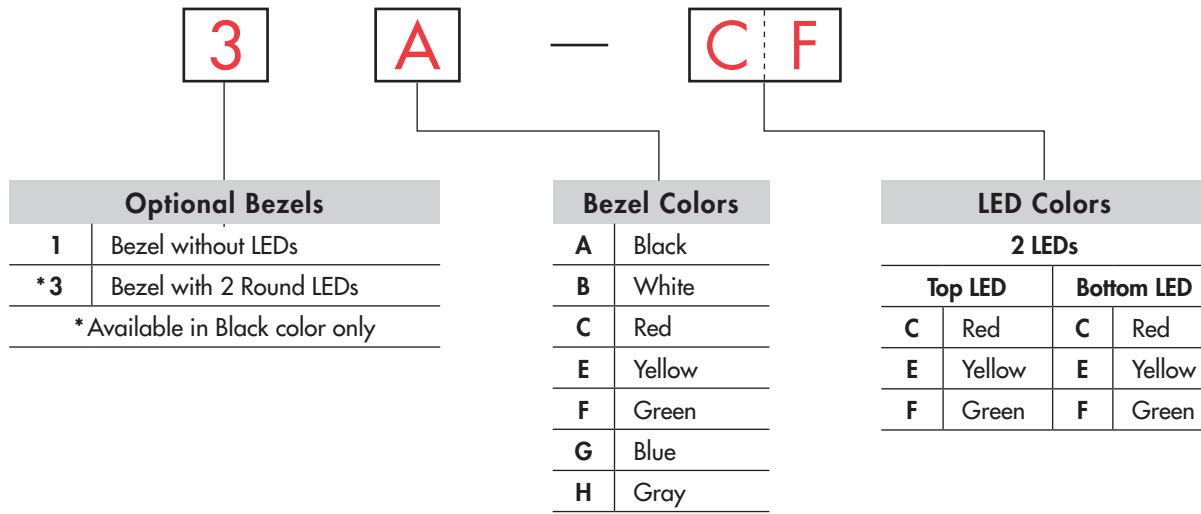


DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

MBNR15JW01-C



ORDERING EXAMPLE



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

Toggles

Rockers

Pushbuttons

Programmable Illuminated PB

Keylocks

Rotaries

Slides

Tactiles

Tilt






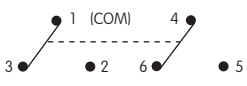
Touch

Indicators

Accessories

Supplement

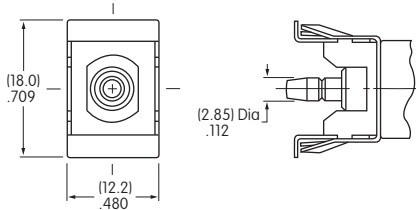
POLES & CIRCUITS

		Plunger Position () = Momentary		Connected Terminals		Throw & Switch Schematics
Pole	Model	Normal	Down	Normal	Down	
						Note: Terminal numbers are not actually on the switch.
SP	MBNR15	ON	(ON)	1-3	1-2	SPDT 
DP	MBNR25	ON	(ON)	1-3 4-6	1-2 4-5	DPDT 

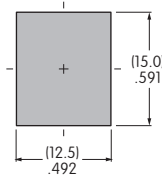
MOUNTING FRAME

J

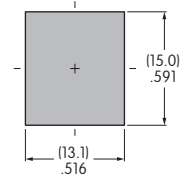
Snap-in Frame



Panel Cutout for Single Pole without Bezel



Panel Cutout for Double Pole without Bezel



Panel Thickness without Bezel: .039" ~ .157" (1.0mm ~ 4.0mm)
 Panel Thickness with Bezel: .039" ~ .126" (1.0mm ~ 3.2mm)

CONTACT MATERIALS & RATINGS

W

Silver

Power Level

2A @ 125V AC

G

Gold

Logic Level

0.4VA maximum @ 28V AC/DC maximum

Note: Complete explanation of operating range in Supplement section.

Gold over Silver

Power Level
or Logic Level

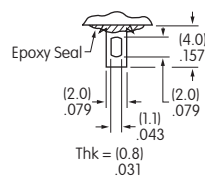
2A @ 125V AC
or 0.4VA maximum @ 28V AC/DC maximum

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

TERMINALS

01

Solder Lug

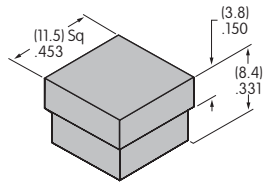


CAP & CAP COLORS

AT465 .453" (11.5mm) Square Cap

Material: Polycarbonate
Finish: Glossy

Contact factory for
matte finish.



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

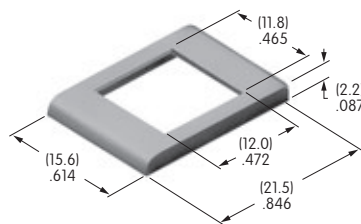
Legend details are on the following page.

OPTIONAL SNAP-IN BEZELS & BEZEL COLORS

1 AT207 Bezel

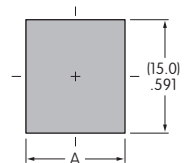
Material: Polycarbonate
Finish: Glossy

Contact factory for
matte finish.



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

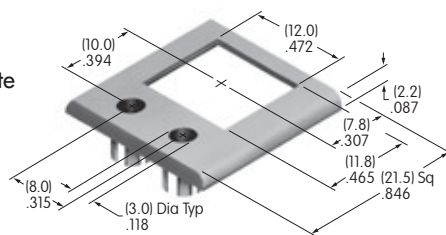
	Single Pole	Double Pole
A	(12.5)mm .492"	(13.1)mm .516"



3 AT212 Bezel for AT617 LED

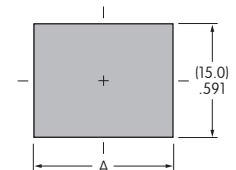
Material: Polycarbonate

Finish: Semi-glossy



A Black

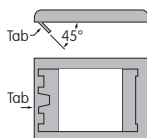
	Single Pole	Double Pole
A	(18.4)mm .724"	(18.7)mm .736"



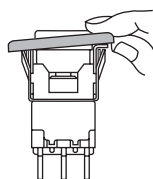
LED colors and specifications are on the following page.

Bezel Assembly

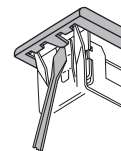
1. Pry out
tab on
bezel to a
45° angle.



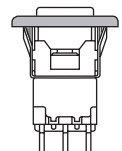
2. Insert
switch frame
under tab
and snap
on the bezel.



3. Push tab
back into
place.



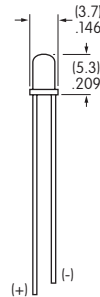
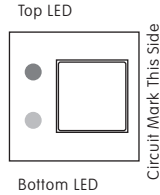
4. Snap
assembled
bezel and
switch into
panel.



LED COLORS & SPECIFICATIONS

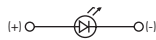
Bezel Orientation on Switch

AT617 LED
For Bezel AT212
with 2 Round LEDs



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

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



Color

C

Red

AT617 LED

E

Yellow

F

Green

Maximum Forward Current

I_{FM}

30mA

30mA

30mA

Typical Forward Current

I_F

20mA

20mA

20mA

Forward Voltage

V_F

2.1V

2.1V

2.2V

Maximum Reverse Voltage

V_{RM}

5V

5V

5V

Current Reduction Rate Above 25°C

ΔI_F

0.40mA/°C

0.40mA/°C

0.40mA/°C

Ambient Temperature Range
(when used with a bezel)

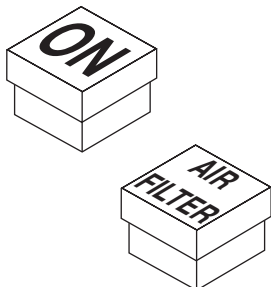
-15° ~ +70°C

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.

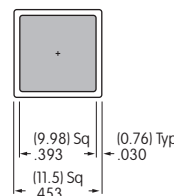
Suggested Printable Area for Cap



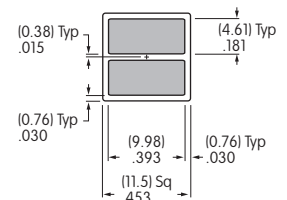
Recommended Print Method:

Screen Print or Pad Print

Epoxy based ink is recommended.



AT465



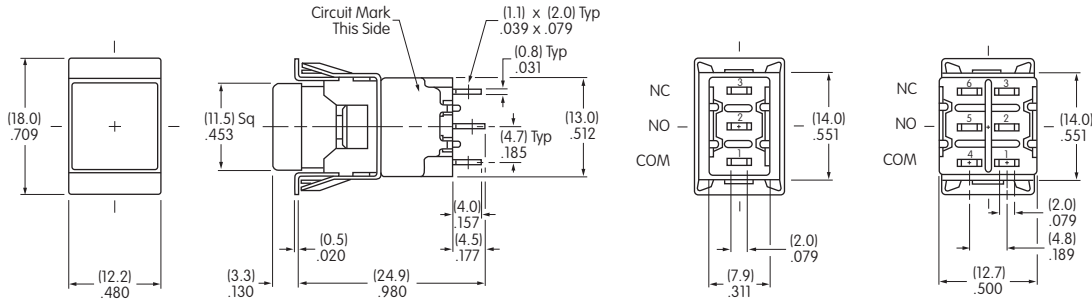
AT465

Shaded areas are printable areas.

TYPICAL SWITCH DIMENSIONS

Single & Double Pole

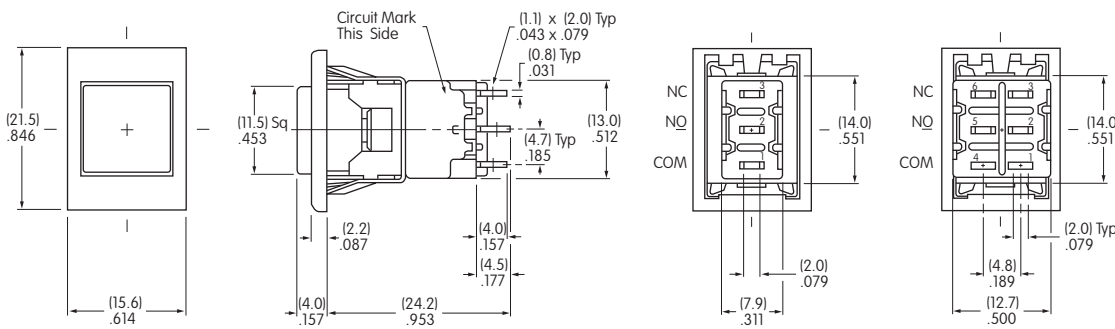
Solder Lug



MBNR15JW01-C

Single & Double Pole

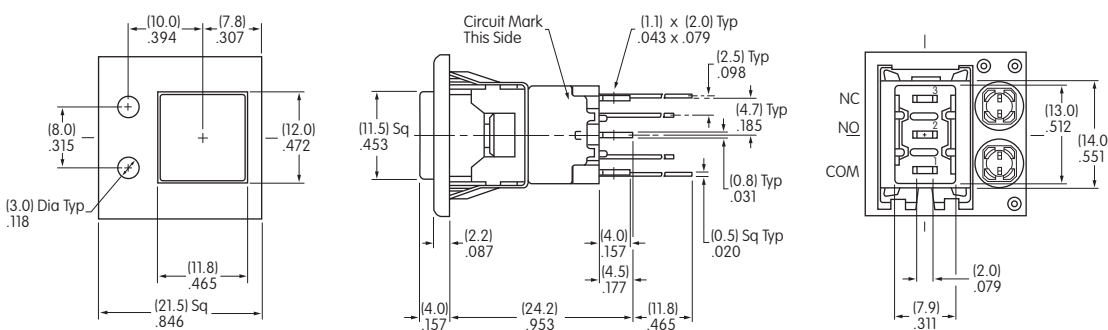
Solder Lug • AT207 Bezel



MBNR15JW01-C-1A

Single Pole

Solder Lug • AT212 Bezel



MBNR15JW01-C-3A-CF