

General Specifications

Electrical Capacity (Resistive Load)

Power Level (code W): 3A @ 125V AC

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

Logic/Power Level (code A): Combines W & G ratings

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

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

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

Mounting & Body Frames: Stainless steel

Support Bracket: Brass with tin plating

Case: Polybutylene terephthalate (PBT) (UL94V-0)

Base: Diallyl phthalate resin

Movable Contactor: Phosphor bronze with silver or gold plating

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

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

Terminals: Copper with silver plating; 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 100 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)

Installation

Mounting Torque: 1.5Nm (13 lb•in) for double nut; 0.7Nm (6 lb•in) for single nut

Cap Installation Force: 80N (18 lbf) maximum downward force on actuator

Processing

Soldering: Wave Soldering Recommended: 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.

Standards & Certifications

Flammability Standards: UL94V-0 Case

UL : File No. E44145 - Recognized only when ordered with marking on switch.

Add "/U" or "/CUL" before dash in part number to order UL recognized switch.

All single & double pole models recognized at 3A @ 125V AC or 0.4VA max. @ 28V AC/DC max.

CSA: File No. 023535_0_000 - Certified only when ordered with marking on switch.

Add "/C" before dash in part number to order CSA certified switch.

Single pole & double pole models certified at 3A @ 125V AC or 0.4VA max. @ 28V AC/DC max.

Distinctive Characteristics

Short stroke and light touch.

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

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

Stainless steel frame resists corrosion.

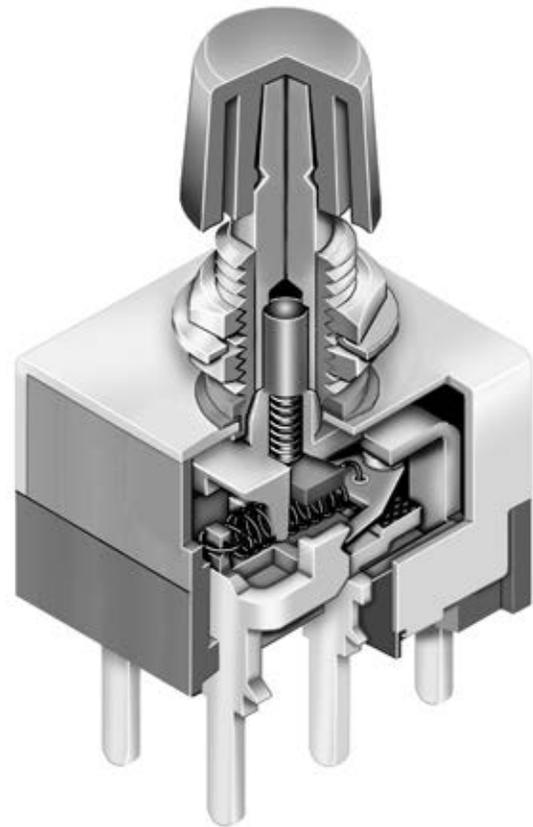
Longer center solder lug terminal simplifies wiring and soldering.

Patented silver contacts of specially composed alloy for hardness.

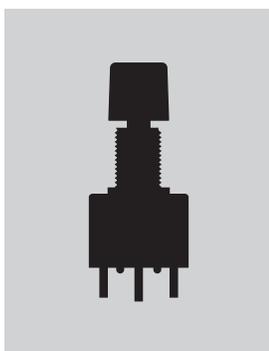
Epoxy sealed terminals prevent entry of solder flux and other contaminants.

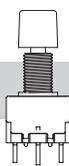
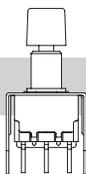
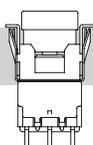
Snap-acting mechanism gives smooth actuation and audible feedback.

Prominent external insulating barriers increase insulation resistance and dielectric strength.



Actual Size



| | | |
|---|------------------|-----------|
|  | Bushing Mount | Page C118 |
|  | Bracket PC Mount | Page C121 |
|  | Snap-in Mount | Page C124 |

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

TYPICAL SWITCH ORDERING EXAMPLE

MB25

11

S4

W

01

B

C

Poles & Circuits

| | | | |
|-----------|------|----|------|
| 11 | SPDT | ON | (ON) |
| 21 | DPDT | ON | (ON) |

() = Momentary

Contact Materials & Ratings

| | |
|----------|--|
| W | Silver Rated 3A @ 125V AC |
| G | Gold Rated 0.4VA max @ 28V AC/DC max |

Caps

| | |
|----------|----------------------------|
| B | .315" (8.0mm) Diameter |
| C | .394" (10.0mm) Diameter |

Bushing

| | |
|-----------|---------------------------------------|
| S4 | .315" (8.0mm) Threaded with Keyway |
|-----------|---------------------------------------|

Terminals

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

Cap Colors

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

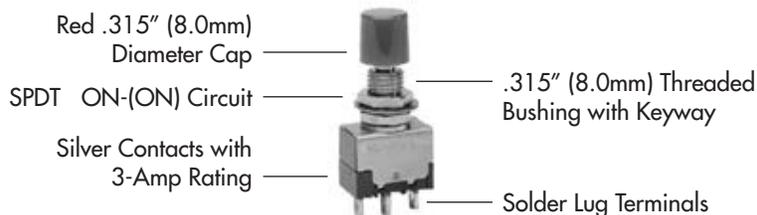
IMPORTANT:



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.

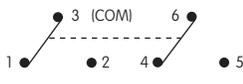
DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

MB2511S4W01-BC



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

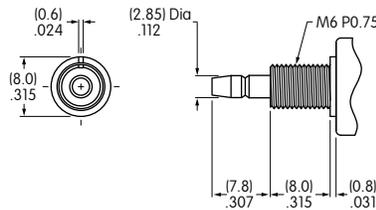
POLES & CIRCUITS

| Pole | Model | Plunger Position () = Momentary | | Connected Terminals | | Throw & Switch Schematics |
|------|--------|--|---|--|---|---|
| | | Normal  Keyway | Down  | Normal  Keyway | Down  | |
| SP | MB2511 | ON | (ON) | 3-1 | 3-2 | SPDT  |
| DP | MB2521 | ON | (ON) | 3-1 6-4 | 3-2 6-5 | DPDT  |

Note: Terminal numbers are not actually on the switch.

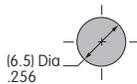
BUSHING

S4 .315" (8.0mm)
Threaded with Keyway

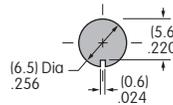


Panel Cutouts

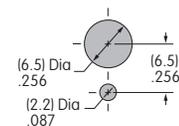
Without Keyway



With Keyway



With Optional Locking Ring



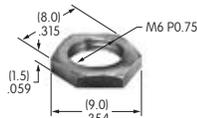
Maximum Panel Thickness with Standard Hardware: .134" (3.4mm)

Standard Hardware

AT513M Threaded Hex Nut

2 included with each switch

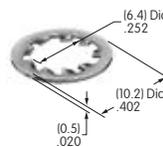
Brass with nickel plating



AT509 Lockwasher

1 included with each switch

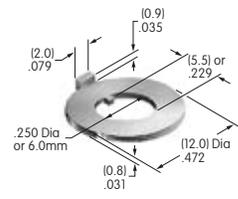
Steel with zinc/chromate



Optional Hardware

AT507M Locking Ring

Steel with zinc/chromate



CONTACT MATERIALS & RATINGS

W Silver over Silver

Power Level

3A @ 125V AC

G Gold over Brass or Copper

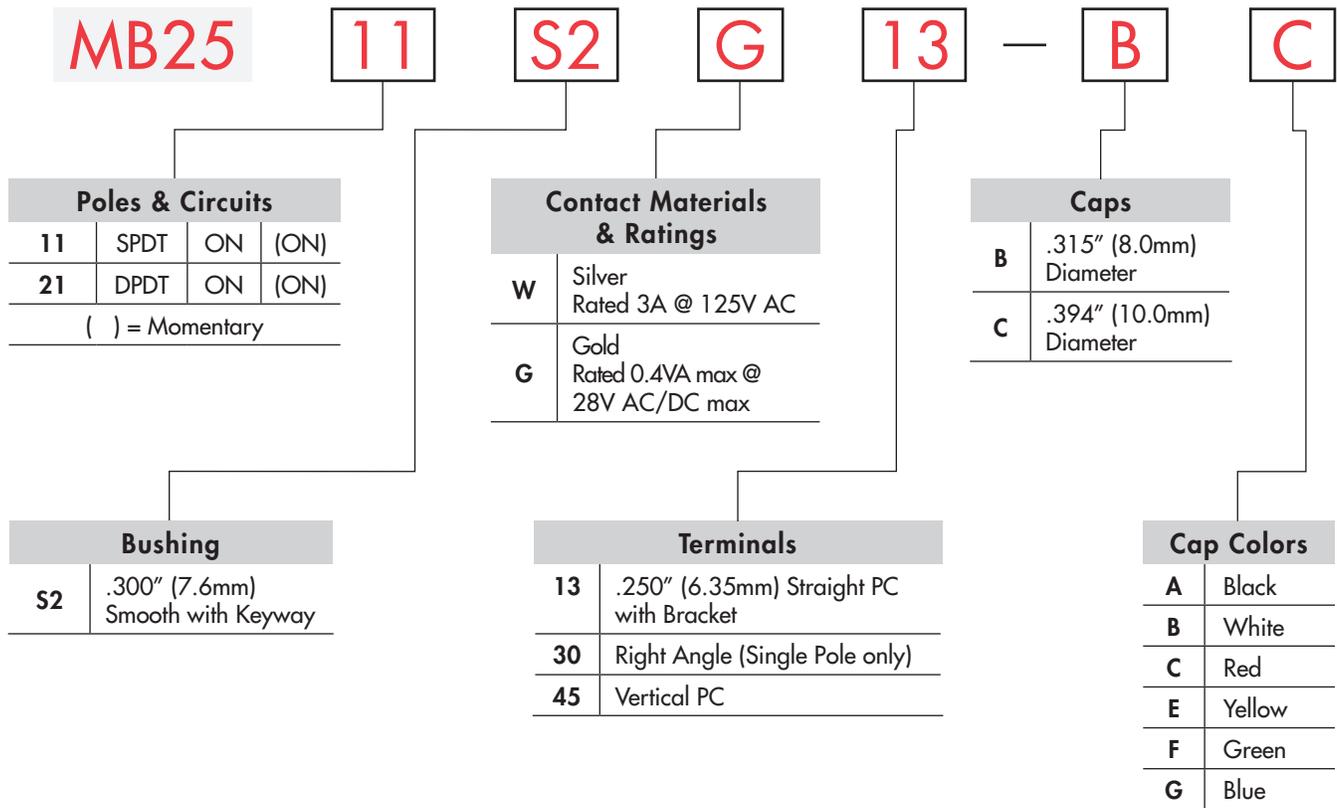
Logic Level

0.4VA maximum @ 28V AC/DC maximum

Note: Complete explanation of operating range in Supplement section.

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

TYPICAL SWITCH ORDERING EXAMPLE



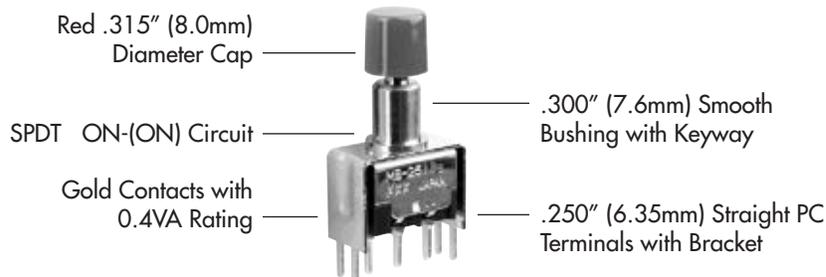
IMPORTANT:



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

MB2511S2G13-BC



Toggles

Rockers

Pushbuttons

Illuminated PB

Programmable

Keylocks

Rotaries

Slides

Tactiles

Tilt

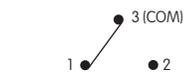
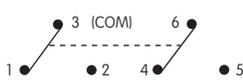
Touch

Indicators

Accessories

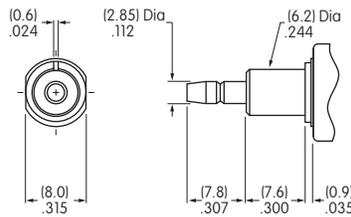
Supplement

POLES & CIRCUITS

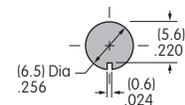
| Pole | Model | Plunger Position () = Momentary | | Connected Terminals | | Throw & Switch Schematics |
|------|--------|---|---|--|--|---|
| | | Normal  | Down  | Normal  | Down  | |
| SP | MB2511 | ON  | (ON)  | 3-1  | 3-2  | Note: Terminal numbers are not actually on the switch.  |
| DP | MB2521 | ON  | (ON)  | 3-1 6-4  | 3-2 6-5  |  |

BUSHING

S2 .300" (7.6mm)
Smooth with Keyway



Panel Cutout



CONTACT MATERIALS & RATINGS

W Silver over Silver

Power Level

3A @ 125V AC

G Gold over Brass or Copper

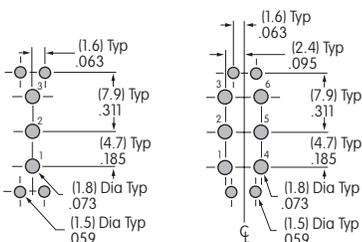
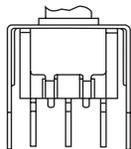
Logic Level

0.4VA maximum @ 28V AC/DC maximum

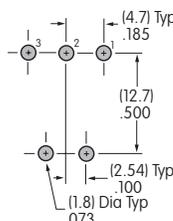
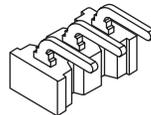
Note: Complete explanation of operating range in Supplement section.

TERMINALS

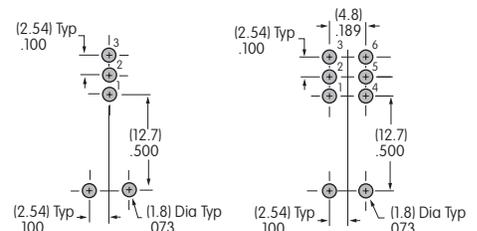
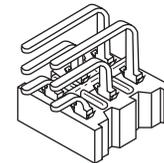
13 .250" (6.35mm) Terminal
with .465" (11.8mm) Bracket



30 Right Angle PC
Single Pole only



45 Vertical PC



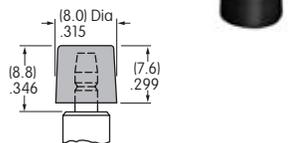
CAPS & CAP COLORS

B AT443
.315" (8.0mm) Diameter Cap



Material: Polycarbonate

Finish: Glossy

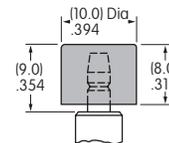


C AT442
.394" (10.0mm) Diameter Cap



Material: Polycarbonate

Finish: Glossy

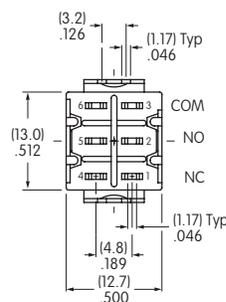
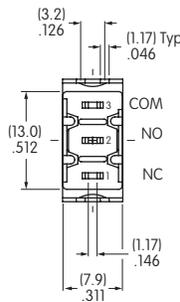
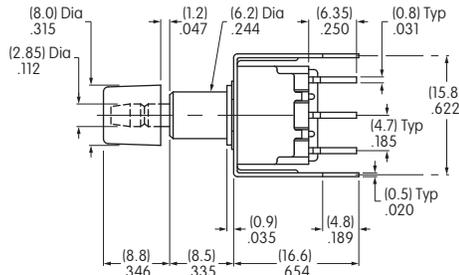
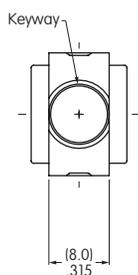


Cap Colors Available:

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

TYPICAL SWITCH DIMENSIONS

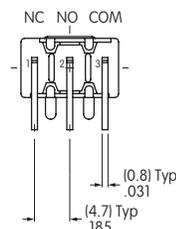
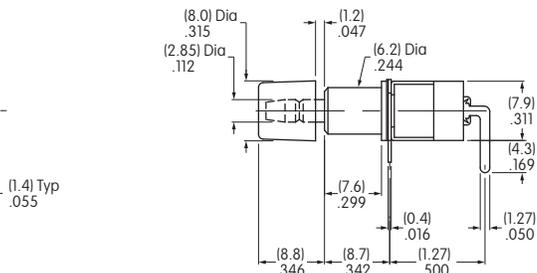
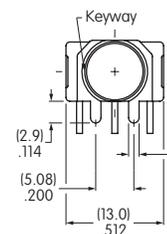
Single Pole Double Pole Straight PC • Bracket



MB2511S2G13-BC

Single Pole

Right Angle PC

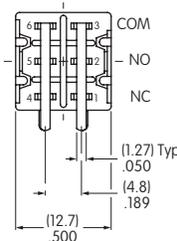
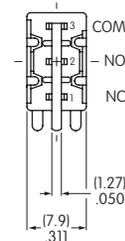
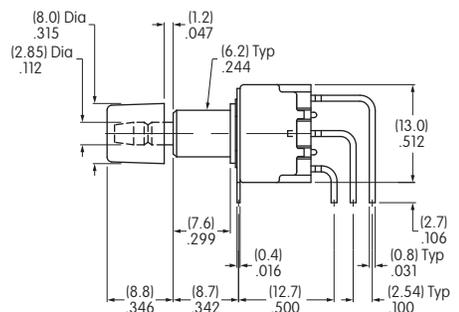
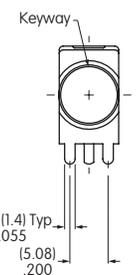


MB2511S2G30-BC

Single Pole

Double Pole

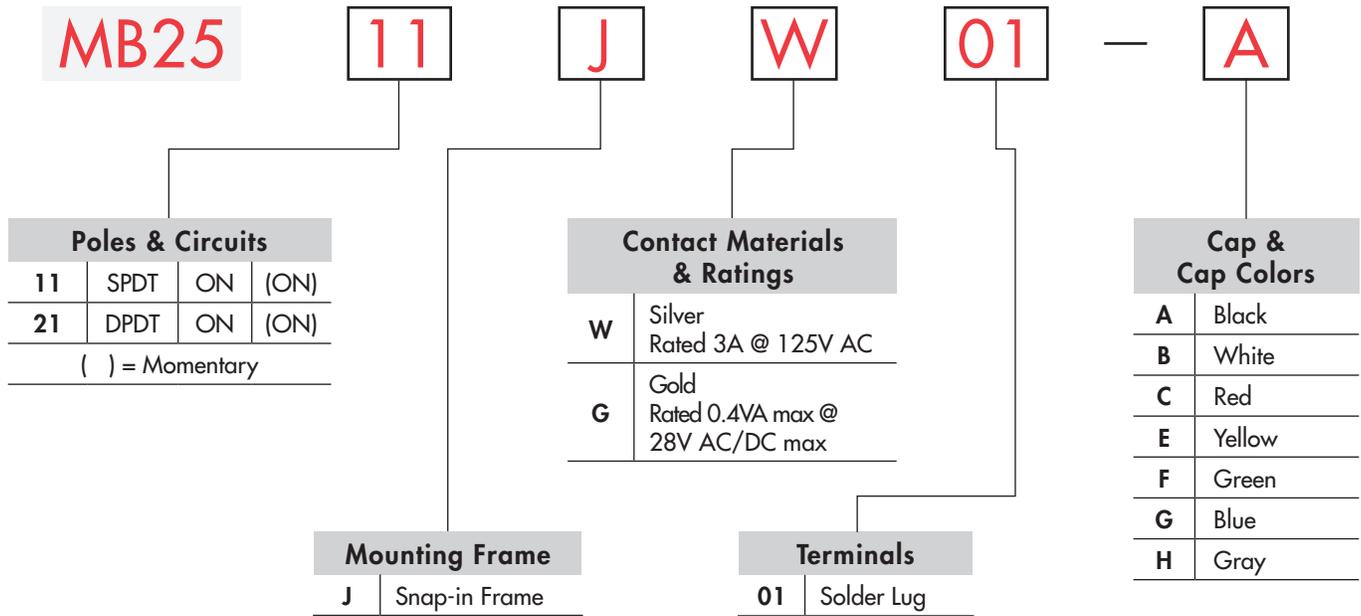
Vertical PC



MB2511S2G45-BC

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

TYPICAL SWITCH ORDERING EXAMPLE



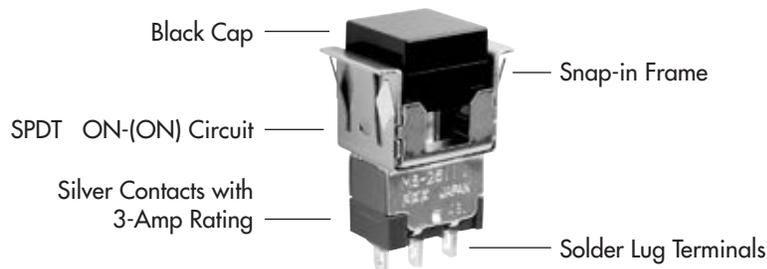
IMPORTANT:



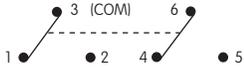
Switches are supplied without UL, cULus & CSA marking unless specified. **UL, cULus & CSA recognized only when ordered with marking on the switch.** Specific models, ratings, & ordering instructions are noted on the General Specifications page.

DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

MB2511JW01-A



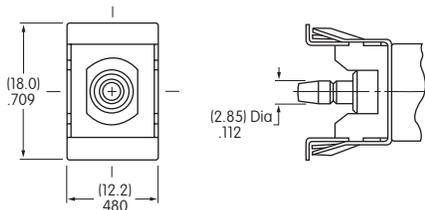
POLES & CIRCUITS

| Pole | Model | Plunger Position () = Momentary | | Connected Terminals | | Throw & Switch Schematics |
|------|--------|---|---|--|--|---|
| | | Normal | Down | Normal | Down | |
| SP | MB2511 | ON  | (ON)  | 3-1  | 3-2  | Note: Terminal numbers are not actually on the switch. SPDT  |
| DP | MB2521 | ON  | (ON)  | 3-1 6-4  | 3-2 6-5  | DPDT  |

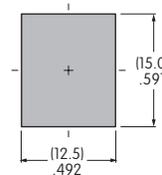
MOUNTING FRAME

J

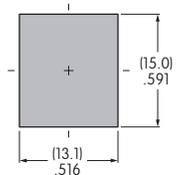
Snap-in Frame



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 over Silver

Power Level

3A @ 125V AC

G

Gold over Brass or Copper

Logic Level

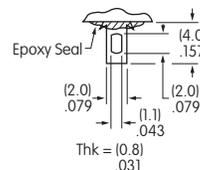
0.4VA maximum @ 28V AC/DC maximum

Note: Complete explanation of operating range in Supplement section.

TERMINALS

01

Solder Lug

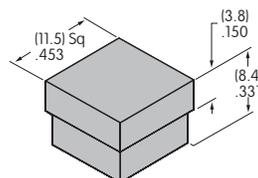


CAP & CAP COLORS

AT465

.453" (11.5mm) Square Cap

Material: Polycarbonate
Finish: Glossy



Contact factory for matte finish.

Cap Colors Available:

A

Black

B

White

C

Red

E

Yellow

F

Green

G

Blue

H

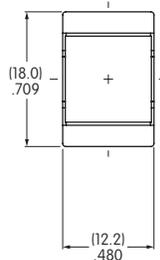
Gray

TYPICAL SWITCH DIMENSIONS

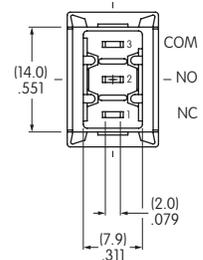
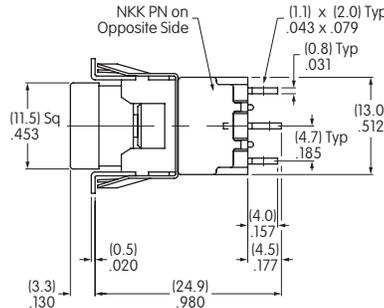
Solder Lug



MB2511JW01-A



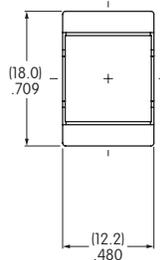
Single Pole



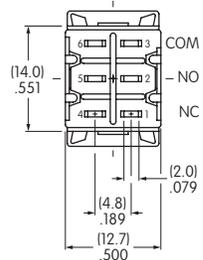
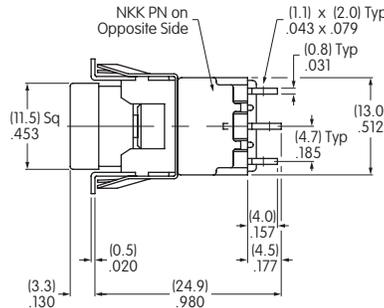
Solder Lug



MB2521JW01-C



Double Pole



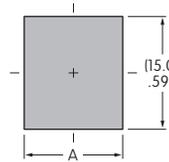
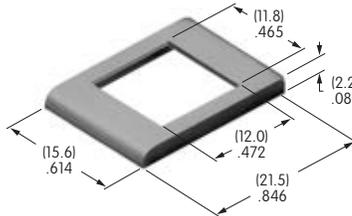
OPTIONAL SNAP-IN BEZELS & BEZEL COLORS

AT207 Bezel

Material: Polycarbonate
Finish: Glossy

Colors:
Black, White, Red, Yellow,
Green, Blue, Gray

Contact factory for matte finish.



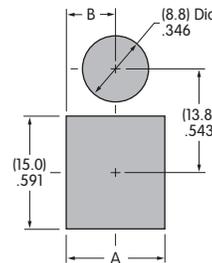
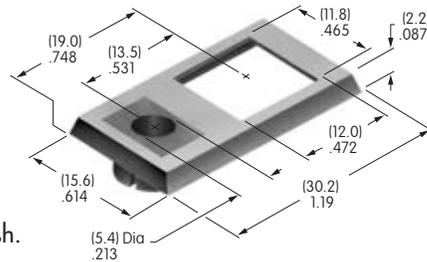
| | Single Pole | Double Pole |
|---|-------------------|-------------------|
| A | (12.5mm) .492" | (13.1mm) .516" |

AT208 Bezel for AT070 LED

Material: Polycarbonate
Finish: Glossy

Color: Black

Contact factory for matte finish.

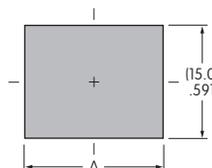
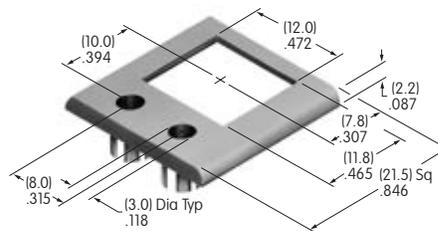


| | Single Pole | Double Pole |
|---|-------------------|-------------------|
| A | (12.5mm) .492" | (13.1mm) .516" |
| B | (6.25mm) .246" | (6.55mm) .258" |

AT212 Bezel for AT617 LED

Material: Polycarbonate
Finish: Semi-glossy

Color: Black



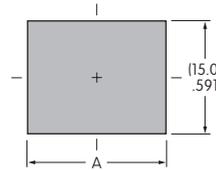
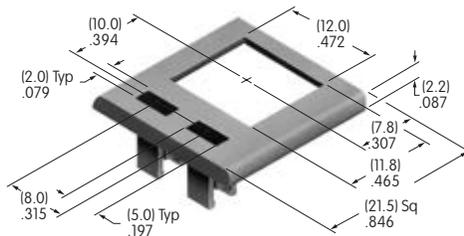
| | Single Pole | Double Pole |
|---|-------------------|-------------------|
| A | (18.4mm) .724" | (18.7mm) .736" |

OPTIONAL SNAP-IN BEZELS & BEZEL COLORS

AT213 Bezel for AT618 LED

Material: Polycarbonate
Finish: Semi-glossy

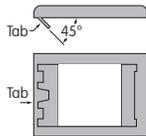
Color: Black



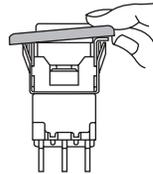
| | Single Pole | Double Pole |
|---|-------------------|-------------------|
| A | (18.4mm) .724" | (18.7mm) .736" |

Bezel Assembly

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



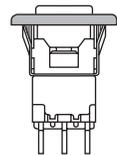
2. Insert switch frame under tab and snap on the bezel.



3. Push tab back into place.



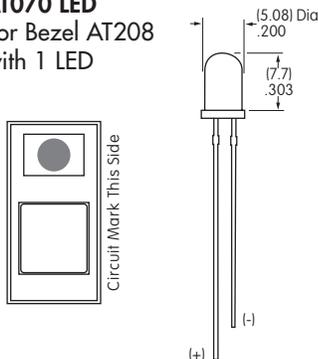
4. Snap assembled bezel and switch into panel.



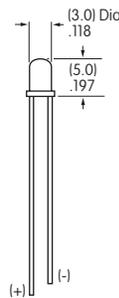
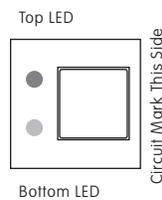
LED COLORS & SPECIFICATIONS

Bezel Orientation on Switch

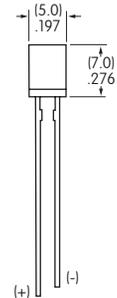
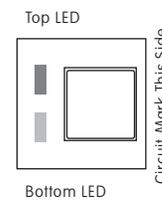
AT070 LED For Bezel AT208 with 1 LED



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 | 25mA | 25mA | 30mA | 25mA |
| Typical Forward Current | I_F | 20mA | 30mA | 20mA | 20mA | 20mA | 20mA | 20mA | 20mA |
| Forward Voltage | V_F | 2.8V | 2.1V | 2.0V | 2.1V | 2.25V | 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 | 0.33 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 LED.
The ballast resistor calculation and more lamp detail are shown in the Supplement section.