

# Distinctive Characteristics

Power and logic level capabilities available to suit varying applications.

Bushing and snap-in mount versions available; snap-in models offer many style and color choices to enhance front panel appearance.

Light touch actuation.

High torque bushing prevents rotation and separation from metal frame during installation.

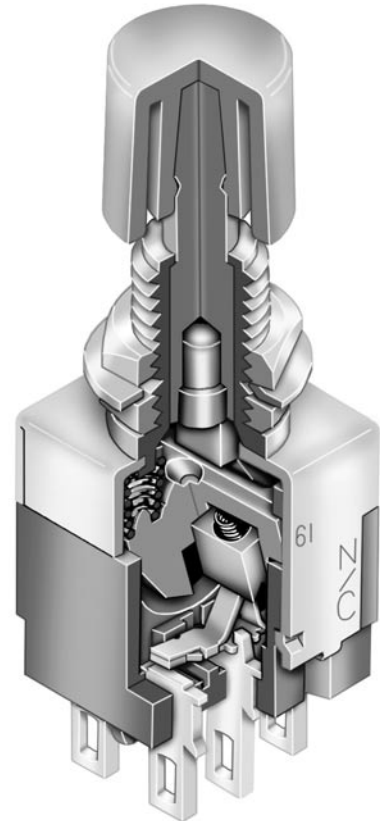
Stainless steel frame resists corrosion.

Case of heat resistant resin meets UL 94V-0 flammability rating.

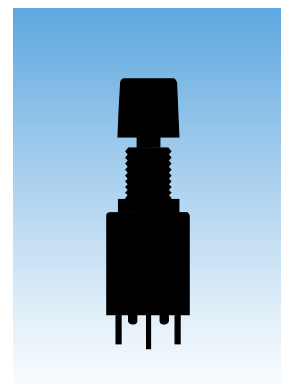
Higher insulating barriers protect against crossover in double pole devices.

1,500V dielectric strength between contacts and case is accomplished by clinching the frame away from the terminals.

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



Actual Size



# General Specifications

## Electrical Capacity (Resistive Load)

**Power Level (No code or P):** 3A @ 125V AC for silver contacts  
**Logic Level (code G or PG):** 0.4VA maximum @ 28V AC/DC maximum for gold contacts  
 (Applicable Range 0.1mA ~ 0.1A @ 20mV ~ 28V)  
 Note: Find additional explanation of 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:** 100,000 operations minimum  
**Electrical Life:** 25,000 operations minimum for silver;  
 50,000 operations minimum for gold  
**Nominal Operating Force:** Single Pole: 2.35N for Momentary and 2.65N for Alternate Action  
 Double Pole: 2.94N for Momentary and 3.63N for Alternate Action  
**Travel:** Momentary: Pretravel .047" (1.2mm); Overtravel .016" (0.4mm); Total Travel .063" (1.6mm)  
 Alternate: Pretravel .071" (1.8mm); Overtravel .016" (0.4mm); Total Travel .087" (2.2mm)

## Materials & Finishes

**Plunger:** Brass with chrome plating for Momentary; brass with nickel plating for Alternate  
**Bushing:** Brass with nickel plating  
**Frame:** Stainless steel  
**Case:** Melamine phenolic resin (UL94V-0)  
**Movable Contacts:** Copper with silver or gold plating  
**Stationary Contacts:** Silver with silver or gold plating  
**Terminals:** Copper with silver or gold plating




## Environmental Data

**Operating Temp Range:** -10°C through +70°C (+14°F through +158°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 and returning in 1 minute; 3 right angled directions for 2 hours  
**Shock:** 50G (490m/s<sup>2</sup>) acceleration (tested in 6 right angled directions, with 5 shocks in each direction)

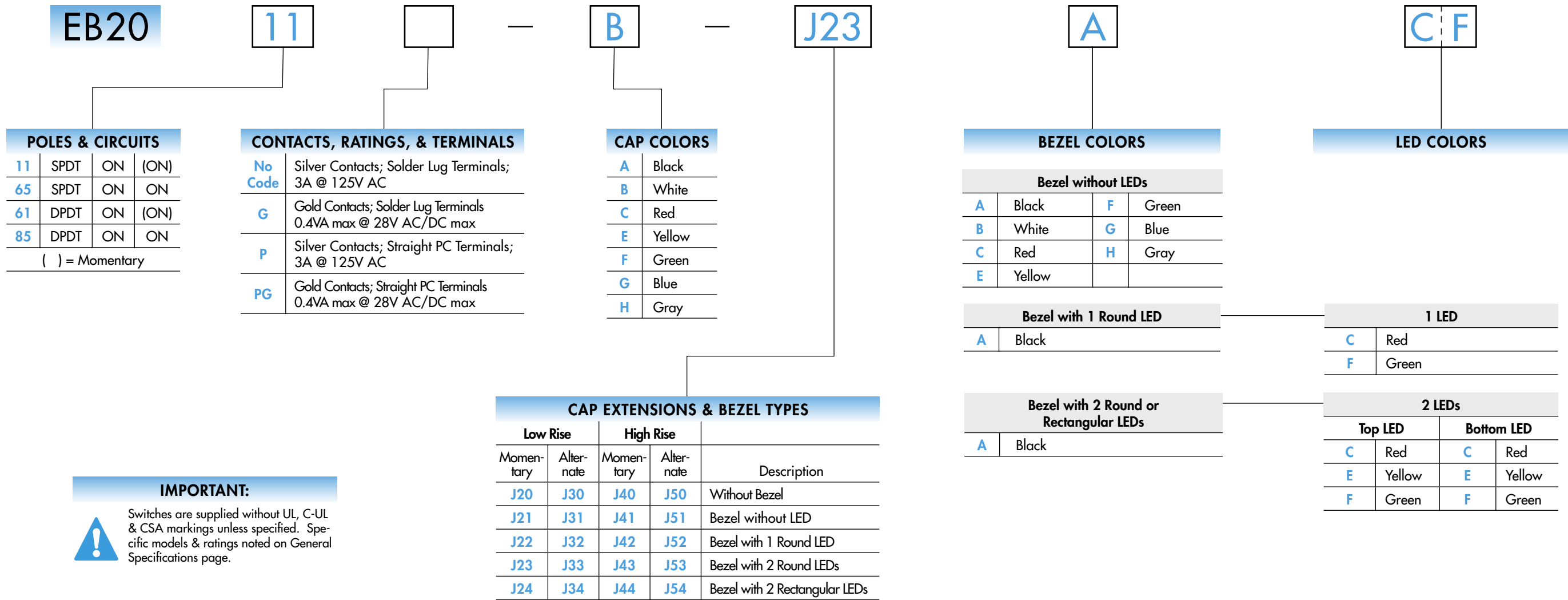
## Installation

**Mounting Torque:** 1.47Nm (13.0 lb•in) for double nut; 0.68Nm (6.0 lb•in) for single nut  
**Cap Installation Force:** 78.5N (17.65 lbf) maximum downward force on actuator  
**Soldering Time & Temp:** Wave Solder (Straight PC): 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

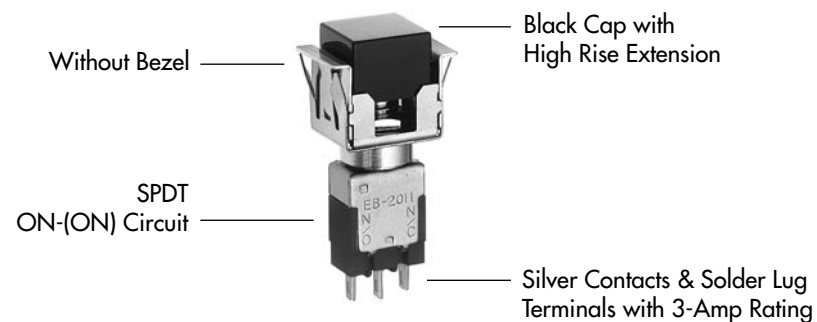
**Flammability Standards:** UL94V-0 case  
 **UL Recognized:** All single and double pole models recognized at 3A @ 125V AC; UL File No. WOYR2.E44145; add "/U" to end of part number to order UL mark on switch.  
 **C-UL Recognized:** All single and double pole models recognized at 3A @ 125V AC; UL File No. WOYR8.E44145; add "/C-UL" to end of part number to order C-UL mark on switch.  
 **CSA Certified:** Single pole solder lug and PC models certified at 3A @ 125V AC; double pole PC models certified at 3A @ 125V AC; CSA File No. 023535-0-000; add "/C" to end of part number to order CSA mark on switch.

TYPICAL SWITCH ORDERING EXAMPLE



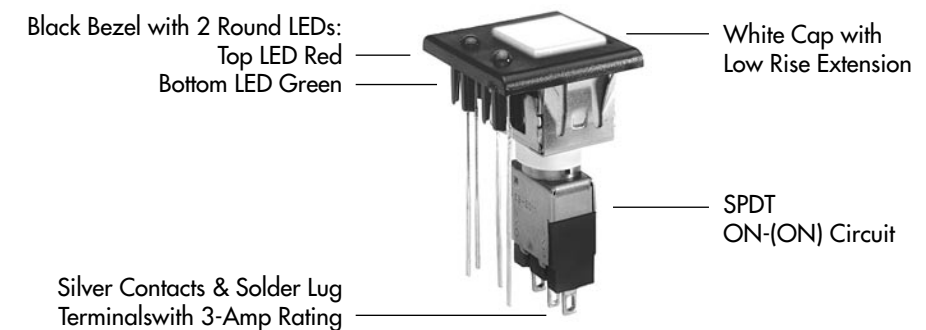
DESCRIPTION FOR TYPICAL ORDERING EXAMPLE WITHOUT BEZEL

EB2011-A-J40



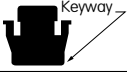


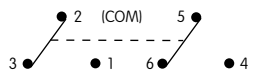


DESCRIPTION FOR TYPICAL ORDERING EXAMPLE WITH BEZEL

EB2011-B-J23ACF



## POLES & CIRCUITS

| Pole | Model            | Plunger Position<br>( ) = Momentary   |   | Connected Terminals   |   | Throw & Switch Schematics   |
|------|------------------|---|---|---|---|---|
|      |                  | Normal<br> | Down<br> | Normal<br> | Down<br> |   |
| SP   | EB2011<br>EB2065 | ON<br>ON  | (ON)<br>ON  | 2-3   | 2-1   | SPDT<br> |
| DP   | EB2061<br>EB2085 | ON<br>ON  | (ON)<br>ON  | 2-3 5-6   | 2-1 5-4   | DPDT<br> |

Note: Terminal numbers are not actually on the switch.

## CONTACT MATERIALS, RATINGS, & TERMINALS



**Solder Lug  
Silver Contacts**

**Power Level**

**3A @ 125V AC**

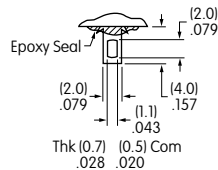


**Solder Lug  
Gold Contacts**

**Logic Level**

**0.4VA maximum @ 28V AC/DC maximum**

Complete explanation of operating range in Supplement section.



**Straight PC  
Silver Contacts**

**Power Level**

**3A @ 125V AC**



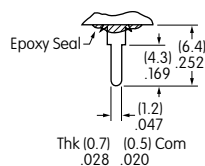
**Straight PC  
Gold Contacts**

**Logic Level**

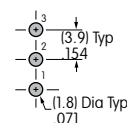
**0.4VA maximum @ 28V AC/DC maximum**

Complete explanation of operating range in Supplement section.

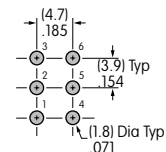
### PCB Footprints



Single Pole



Double Pole



### CAP COLORS

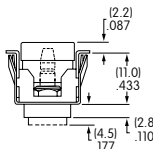
Factory Assembled on the Switch:  
 Square snap-on cap AT465, snap-in mounter  
 AT529, and optional bezels which follow.

|          |       |          |       |          |      |          |        |
|----------|-------|----------|-------|----------|------|----------|--------|
| <b>A</b> | Black | <b>B</b> | White | <b>C</b> | Red  | <b>E</b> | Yellow |
| <b>F</b> | Green | <b>G</b> | Blue  | <b>H</b> | Gray |          |        |

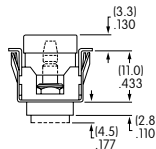
### CAP EXTENSIONS & BEZEL TYPES

Cap Extension without Bezel

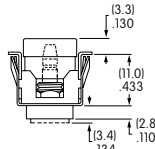
**J20**  
 Low Rise Momentary



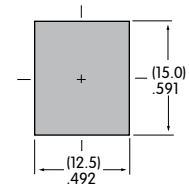
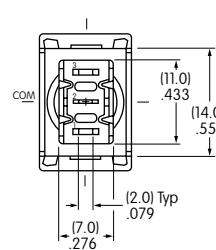
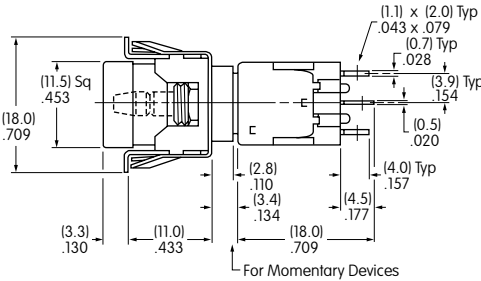
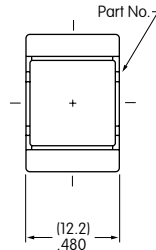
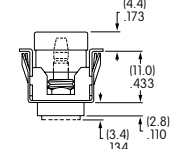
**J30**  
 Low Rise Alternate



**J40**  
 High Rise Momentary



**J50**  
 High Rise Alternate



Maximum Panel Thickness  
 .039" ~ .157" (1.0mm ~ 4.0mm)  
 Cutout applies to SP & DP

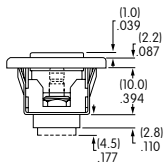
EB2011-A-J40

High Rise

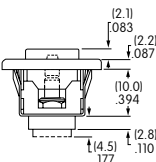
Single Pole

Cap Extension with Bezel

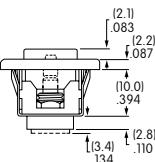
**J21**  
 Low Rise Momentary



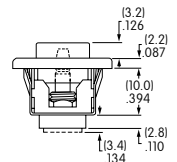
**J31**  
 Low Rise Alternate



**J41**  
 High Rise Momentary



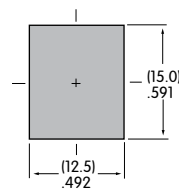
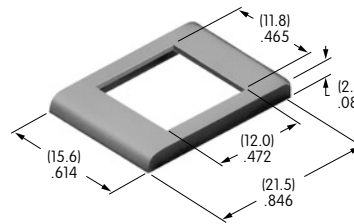
**J51**  
 High Rise Alternate



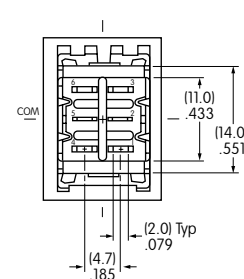
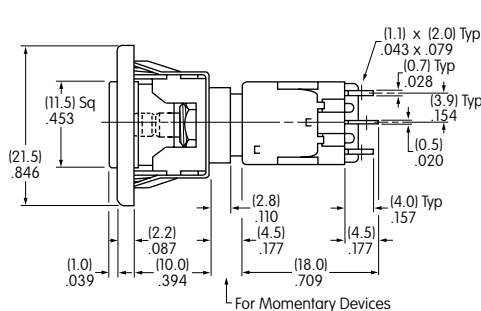
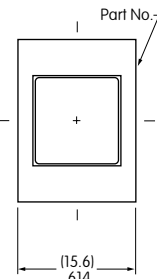
AT207 Bezel without LED

|          |        |
|----------|--------|
| <b>E</b> | Yellow |
| <b>A</b> | Black  |
| <b>B</b> | White  |
| <b>C</b> | Red    |
| <b>F</b> | Green  |
| <b>G</b> | Blue   |
| <b>H</b> | Gray   |

Material: Polycarbonate  
 Finish: Glossy



Maximum Panel Thickness  
 .039" ~ .126" (1.0mm ~ 3.2mm)  
 Cutout applies to SP & DP



EB2061-B-J21A

Low Rise

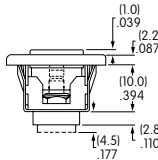
Double Pole

### CAP EXTENSIONS & BEZEL TYPES

Cap Extension with Bezel

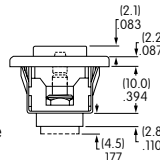
**J22**

Low Rise Momentary



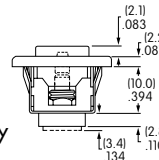
**J32**

Low Rise Alternate



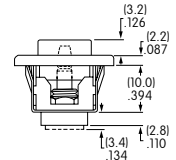
**J42**

High Rise Momentary



**J52**

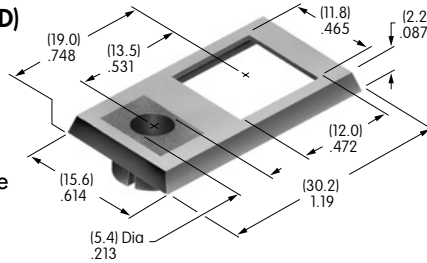
High Rise Alternate



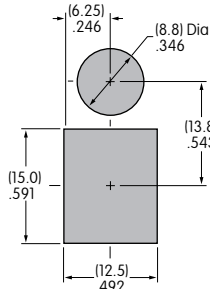
AT208 Bezel with 1 Round LED (AT070 LED)

**A** Black

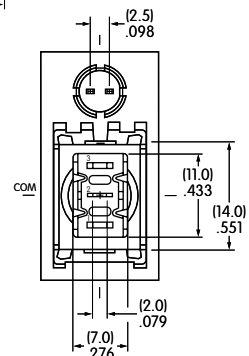
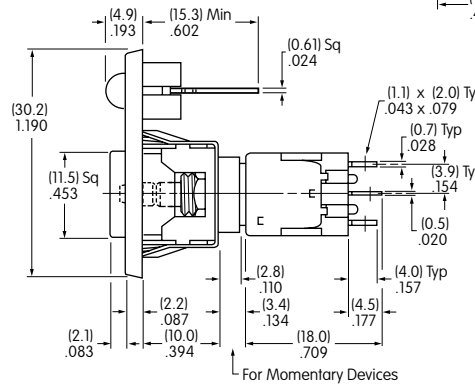
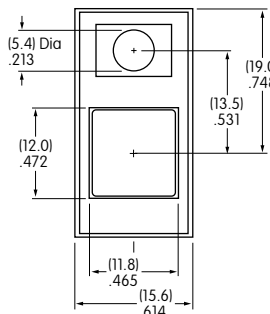
Material: Polycarbonate  
Finish: Glossy



Maximum Panel Thickness  
.039" ~ .126"  
(1.0mm ~ 3.2mm)  
Cutout applies to SP & DP



LED colors and specifications on next to last page of this EB section.



EB2011-B-J42AC

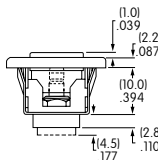
High Rise

Single Pole

Cap Extension with Bezel

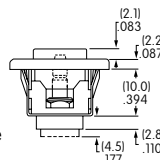
**J23**

Low Rise Momentary



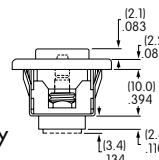
**J33**

Low Rise Alternate



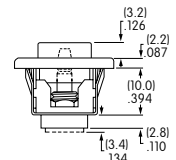
**J43**

High Rise Momentary



**J53**

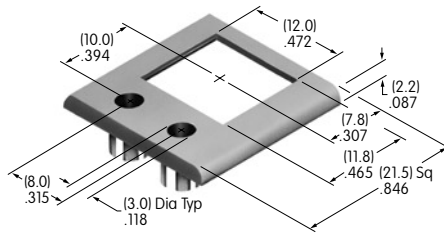
High Rise Alternate



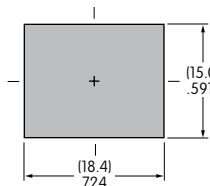
AT212 Bezel with 2 Round LEDs (AT617 LEDs)

**A** Black

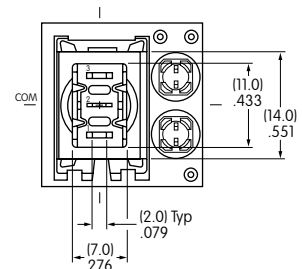
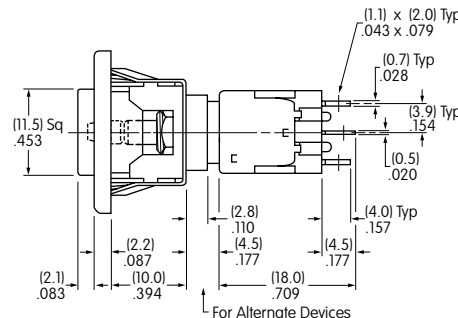
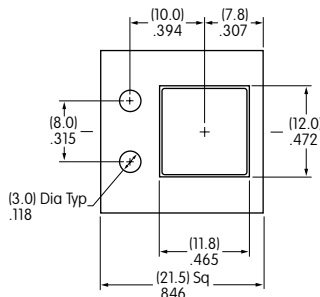
Material: Polycarbonate  
Finish: Glossy



Maximum Panel Thickness  
.039" ~ .126" (1.0mm ~ 3.2mm)  
Cutout applies to SP & DP



LED colors and specifications on next to last page of this EB section.



EB2065-B-J33ACF

Low Rise

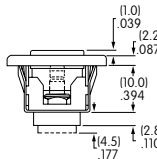
Single Pole

### CAP EXTENSIONS & BEZEL TYPES

Cap Extension with Bezel

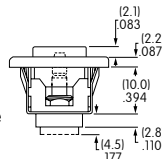
**J24**

Low Rise Momentary



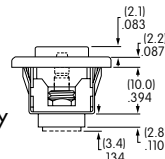
**J34**

Low Rise Alternate



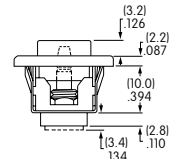
**J44**

High Rise Momentary



**J54**

High Rise Alternate

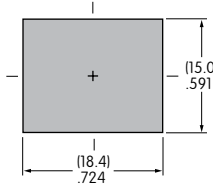
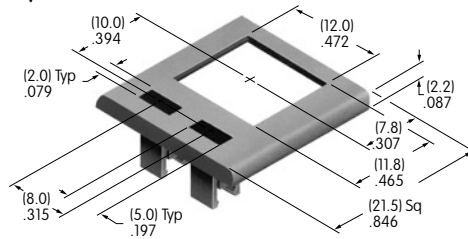


AT213 Bezel with 2 Rectangular LEDs (AT618 LEDs)

**A**

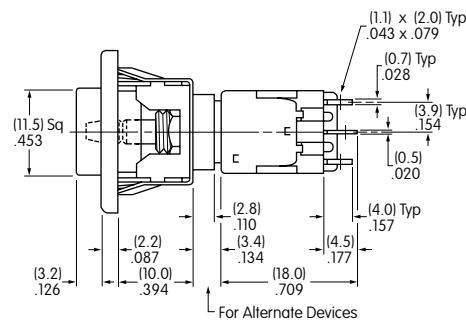
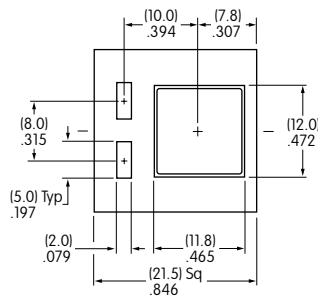
Black

Material: Polycarbonate  
Finish: Glossy

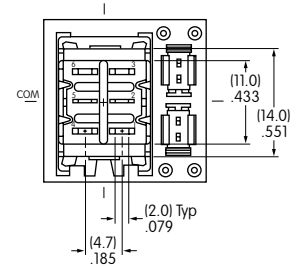


LED colors and specifications on next page of this EB section.

Maximum Panel Thickness  
.039" ~ .126" (1.0mm ~ 3.2mm)  
Cutout applies to SP & DP



For Alternate Devices



EB2085-B-J54ACF

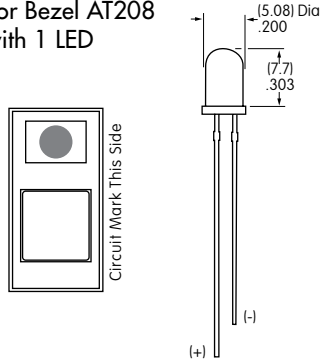
High Rise

Double Pole

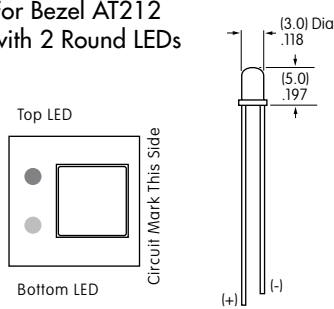
### LED COLORS & SPECIFICATIONS

#### Bezel Orientation on Switch

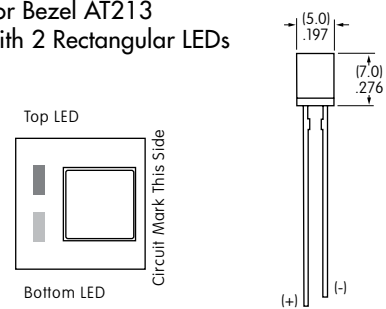
**AT070 LED**  
For Bezel AT208  
with 1 LED



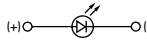
**AT617 LED**  
For Bezel AT212  
with 2 Round LEDs



**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      |
| Forward Peak Current   | $I_{FM}$     | 25mA         | 30mA       | 30mA         | 30mA       | 30mA       | 10mA         | 30mA       | 30mA       |
| Continuous Forward Current   | $I_F$        | 20mA         | 20mA       | 24mA         | 24mA       | 24mA       | 8mA          | 24mA       | 24mA       |
| Forward Voltage  | $V_F$        | 2.8V         | 2.1V       | 2.0V         | 2.0V       | 2.1V       | 1.9V         | 2.0V       | 2.1V       |
| Reverse Peak Voltage   | $V_{RM}$     | 4V           | 5V         | 5V           | 5V         | 5V         | 5V           | 5V         | 5V         |
| Current Reduction Rate Above 25°C  | $\Delta I_F$ | 0.33 mA/°C   | 0.40 mA/°C | 0.40 mA/°C   | 0.40 mA/°C | 0.40 mA/°C | 0.13 mA/°C   | 0.40 mA/°C | 0.40 mA/°C |
| Ambient Temperature Range (when used with a bezel)                                 |              | -10° ~ +70°C |            | -15° ~ +70°C |            |            | -15° ~ +70°C |            |            |

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

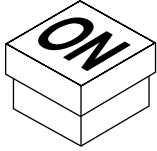
If the source voltage is greater than the rated voltage of the LED, a ballast resistor must be connected in series with the lamp.  
The ballast resistor calculation and more lamp detail are shown in the Supplement section.



### LEGENDS

General information and basic specifications are presented here for customers who want to do their own legends.

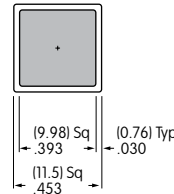
#### Suggested Printable Area for Cap



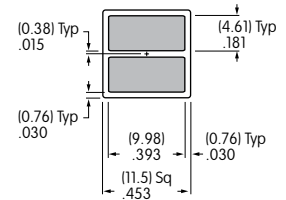
#### Recommended Print Method:

Screen Print or Pad Print

Epoxy based ink is recommended.



AT465



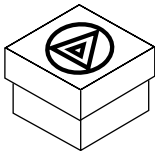
AT466

Shaded areas are printable areas.

#### Additional Method

An additional method for legends is engraving the cap. Maximum depth for engraving is .012" (0.3mm) on the cap. Enamel paint is recommended to fill the engraved area.

### LEGEND PACKET FOR ORDERING CAPS WITH LEGENDS



1. To order caps with legends, contact the factory and request the EB Legend Packet.
2. Once you determine your desired legend, fill out the ordering work sheet included in the packet.
3. Return the completed work sheet to receive a quotation.