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General Specifications

Electrical Capacity (Resistive Load)

Power Level (silver): 3A @ 125V AC for silver contacts
Logic Level (gold): 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

Materials & Finishes

Plunger: Brass with nickel plating
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 & copper 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 & returning in 1 minute; 3 right angled directions for 2 hours
Shock: 50G (490m/s^2) 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: **File No. E44145 - Recognized only when ordered with marking on switch.**
Add "/U" or "/CUL" before first dash in part number to order UL recognized switch.
All single and double pole models recognized at 3A @ 125V AC.
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.
Single pole solder lug and PC models certified at 3A @ 125V AC; double pole PC models certified at 3A @ 125V AC.

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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.

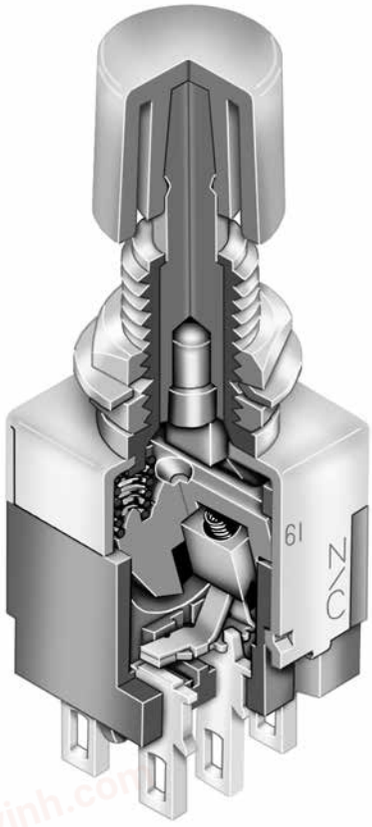
Stainless steel frame resists corrosion.

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

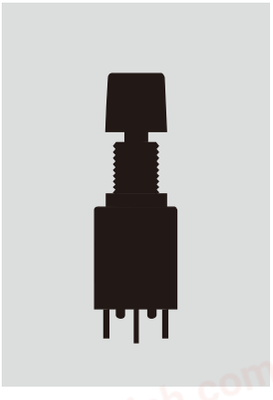
Higher insulating barriers protect against crossover in double pole devices.

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.

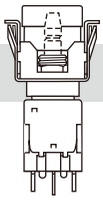


Actual Size





Bushing Mount Page C26



Snap-in Mount Page C30

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Series EB

Light Touch Miniature Pushbuttons

TYPICAL SWITCH ORDERING EXAMPLE

EB20 [65] [ ] — [B] [F]

Poles & Circuits

11	SPDT	ON	(ON)
65	SPDT	ON	ON
61	DPDT	ON	(ON)
85	DPDT	ON	ON

( ) = Momentary

Caps

B	.315" (8.0mm) Dia.
C	.394" (10.0mm) Dia.

Contacts, Ratings, & Terminals

No Code	Silver Contacts; Solder Lug Terminals 3A @ 125V AC
G	Gold Contacts; Solder Lug Terminals 0.4VA max @ 28V AC/DC max
P	Silver Contacts; Straight PC Terminals; 3A @ 125V AC
PG	Gold Contacts; Straight PC Terminals 0.4VA max @ 28V AC/DC max

Colors

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

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.

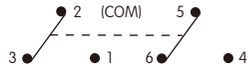
DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

EB2065-BF



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POLES & CIRCUITS

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

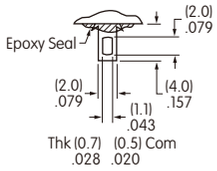
Note: Terminal numbers are not actually on the switch.

CONTACT MATERIALS, RATINGS, & TERMINALS

No Code — **Solder Lug, Silver Contacts** — **Power Level** — **3A @ 125V AC**

G — **Solder Lug, Gold Contacts** — **Logic Level** — **0.4VA max @ 28V AC/DC max**

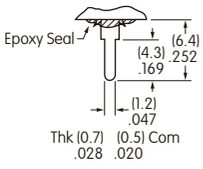
Complete explanation of operating range in Supplement section.



P — **Straight PC, Silver Contacts** — **Power Level** — **3A @ 125V AC**

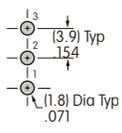
PG — **Straight PC, Gold Contacts** — **Logic Level** — **0.4VA max @ 28V AC/DC max**

Complete explanation of operating range in Supplement section.

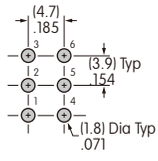


PCB Footprints

Single Pole



Double Pole



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Series EB

Light Touch Miniature Pushbuttons

CAPS & COLORS

B **AT443**
.315" (8.0mm) Diameter Snap-on Cap

Cap Colors Available:

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

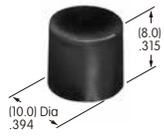


Cap Material: Polycarbonate Finish: Glossy

C **AT442**
.394" (10.0mm) Diameter Snap-on Cap

Cap Colors Available:

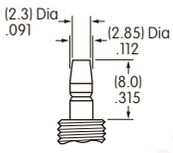
A	Black	F	Green
B	White	G	Blue
C	Red	H	Gray
E	Yellow		



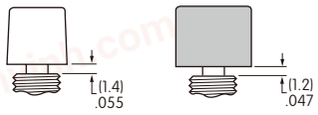
Cap Material: Polycarbonate Finish: Glossy

Plunger Extension

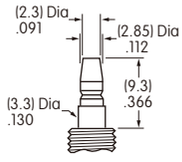
Due to a difference in plunger lengths on the momentary and alternate action models, cap distance from top of bushing varies.



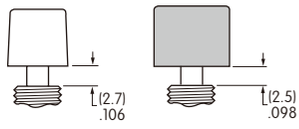
Momentary
Plunger Length



Momentary
Cap Location



Alternate
Plunger Length



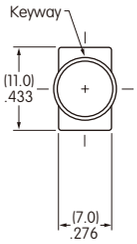
Alternate
Cap Location

TYPICAL SWITCH DIMENSIONS

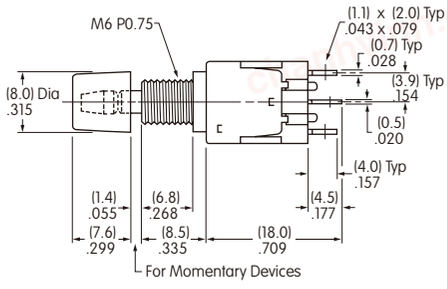
Solder Lug

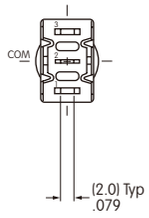


EB2011-BA



Single Pole

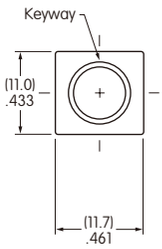




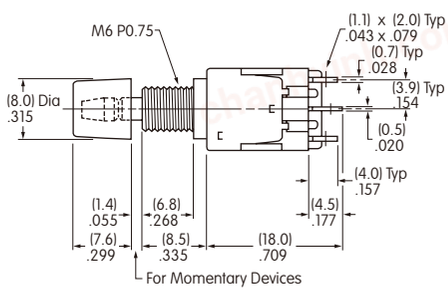
Solder Lug

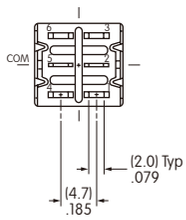


EB2061-BA



Double Pole



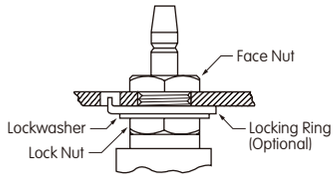


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HARDWARE

Installation/Assembly

2 AT513M Metric Hexagon Nuts
1 AT509 Internal Tooth Lockwasher



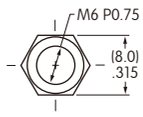
Optional Hardware:
AT507M Metric Locking Ring

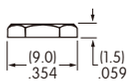
Note: Cap must be snapped on after the switch is mounted into the panel.

Standard Hardware

AT513M
Metric Hexagon Nut

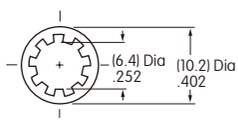
Material:
Brass with
Nickel Plating





AT509
Lockwasher

Material:
Steel with
Zinc/Chromate

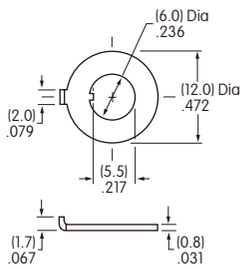




Optional Hardware

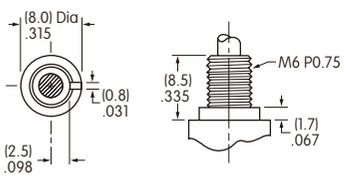
AT507M
Metric Locking Ring

Material:
Steel with
Zinc/Chromate

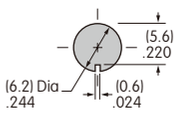


PANEL CUTOUTS & THICKNESSES

Metric Bushing

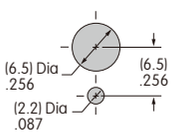


With Standard Hardware



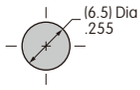
Maximum Effective
Panel Thickness:
.118″ (3.0mm)

With Standard Hardware & Optional Locking Ring



Maximum Effective
Panel Thickness:
.055″ (1.4mm)

Without Bottom Hex Nut



Maximum Effective
Panel Thickness:
.185″ (4.7mm)

See Accessories & Hardware section for optional Conical Nuts:
AT512M used with cap AT443 and AT512CM used with cap AT442.

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Series EB

Light Touch Miniature Pushbuttons

TYPICAL SWITCH

EB20 [11] [ ] — [B] — [J23]

Poles & Circuits

11	SPDT	ON	(ON)
65	SPDT	ON	ON
61	DPDT	ON	(ON)
85	DPDT	ON	ON

( ) = Momentary

Contacts, Ratings, & Terminals

No Code	Silver Contacts; Solder Lug Terminals 3A @ 125V AC
G	Gold Contacts; Solder Lug Terminals 0.4VA max @ 28V AC/DC max
P	Silver Contacts; Straight PC Terminals; 3A @ 125V AC
PG	Gold Contacts; Straight PC Terminals 0.4VA max @ 28V AC/DC max

Cap Colors

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

Cap Extensions & Bezel Types

Low Rise		High Rise		
Momentary	Alternate	Momentary	Alternate	Description
J20	**J30**	**J40**	**J50**	Without Bezel
J21	**J31**	**J41**	**J51**	Bezel without LED
J22	**J32**	**J42**	**J52**	Bezel with 1 Round LED
J23	**J33**	**J43**	**J53**	Bezel with 2 Round LEDs
J24	**J34**	**J44**	**J54**	Bezel with 2 Rectangular LEDs

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 WITHOUT BEZEL

EB2011-A-J40



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ORDERING EXAMPLES

A	C	F
Bezel Colors		Led Colors

Bezel without LEDs

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

Bezel with 1 Round LED

A	Black

1 LED

C	Red
F	Green

Bezel with 2 Round or Rectangular LEDs

A	Black

2 LEDs

Top LED		Bottom LED	
C	Red	**C**	Red
E	Yellow	**E**	Yellow
F	Green	**F**	Green

DESCRIPTION FOR TYPICAL ORDERING EXAMPLE WITH BEZEL

EB2011-B-J23ACF

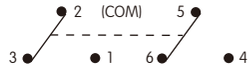


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Series EB

Light Touch Miniature Pushbuttons

POLES & CIRCUITS

Pole	Model	Plunger Position ( ) = Momentary: Normal	Plunger Position ( ) = Momentary: Down	Connected Terminals: Normal	Connected Terminals: Down	Throw & Switch Schematics
		Keyway		Keyway		Note: Terminal numbers are not actually on the switch.
SP	**EB2011** **EB2065**	ON ON	(ON) ON	2-3	2-1	SPDT 
DP	**EB2061** **EB2085**	ON ON	(ON) ON	2-3 5-6	2-1 5-4	DPDT 

CONTACT MATERIALS, RATINGS, & TERMINALS

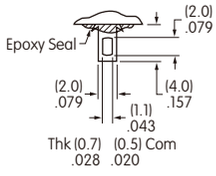
No Code **Solder Lug**
Silver Contacts

Power Level **3A @ 125V AC**

G **Solder Lug**
Gold Contacts

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

Complete explanation of operating range in Supplement section.



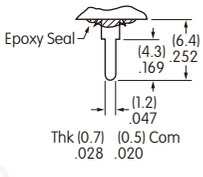
P **Straight PC**
Silver Contacts

Power Level **3A @ 125V AC**

PG **Straight PC**
Gold Contacts

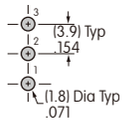
Logic Level **0.4VA maximum @ 28V AC/DC maximum**

Complete explanation of operating range in Supplement section.

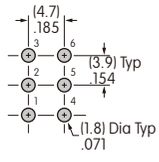


PCB Footprints

Single Pole



Double Pole



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CAP COLORS

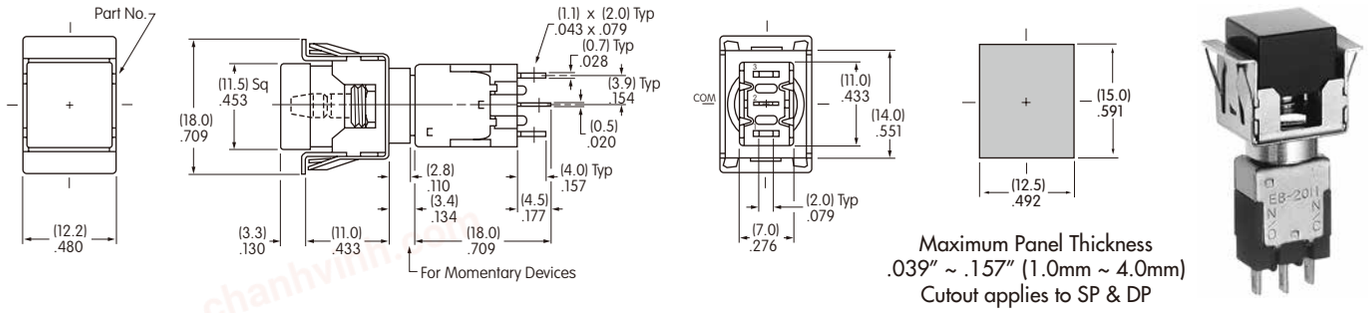
Factory Assembled on the Switch:
Square snap-on cap AT465, snap-in mounter AT529, and optional bezels which follow.

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

CAP EXTENSIONS & BEZEL TYPES

Cap Extension without Bezel

J20	J30	J40	J50
Low Rise Momentary	Low Rise Alternate	High Rise Momentary	High Rise Alternate



High Rise — Single Pole — **EB2011-A-J40**

Cap Extension with Bezel

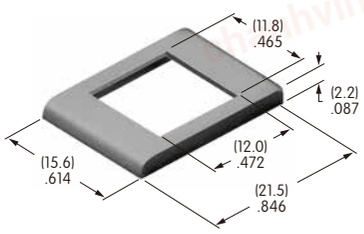
J21	J31	J41	J51
Low Rise Momentary	Low Rise Alternate	High Rise Momentary	High Rise Alternate

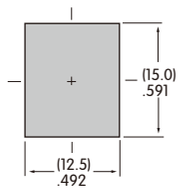
AT207 Bezel without LED

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

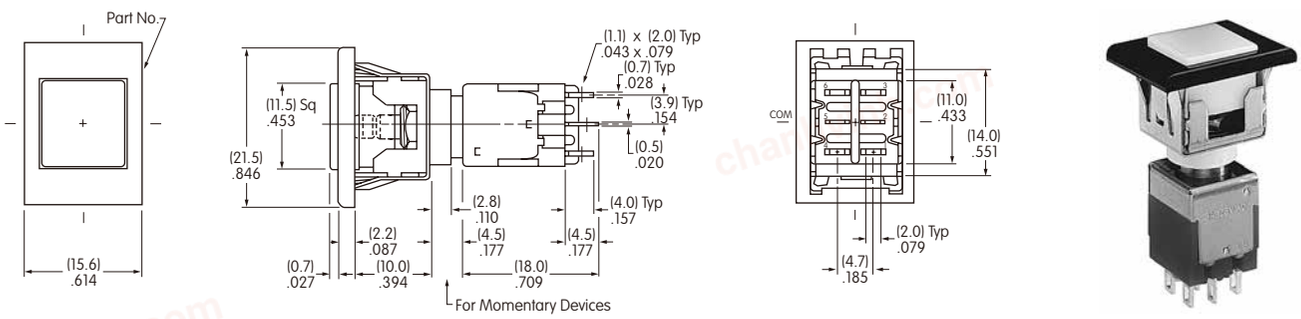
Material: Polycarbonate

Finish: Glossy





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



Low Rise — Double Pole — **EB2061-B-J21A**

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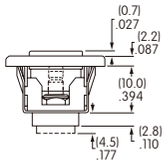
Series EB

Light Touch Miniature Pushbuttons

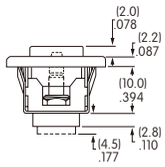
CAP EXTENSIONS & BEZEL TYPES

Cap Extension with Bezel

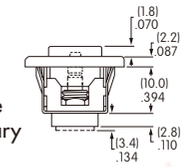
J22 Low Rise Momentary



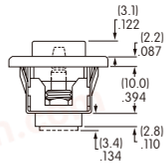
J32 Low Rise Alternate



J42 High Rise Momentary



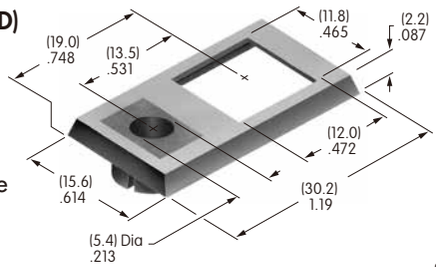
J52 High Rise Alternate



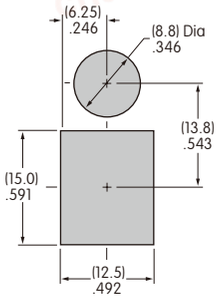
AT208 Bezel with 1 Round LED (AT070 LED)

A Black

Material: Polycarbonate
Finish: Glossy

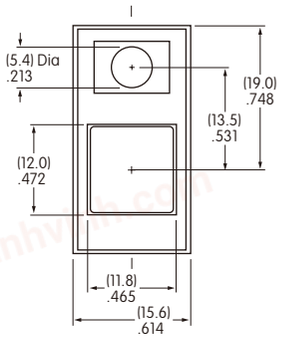


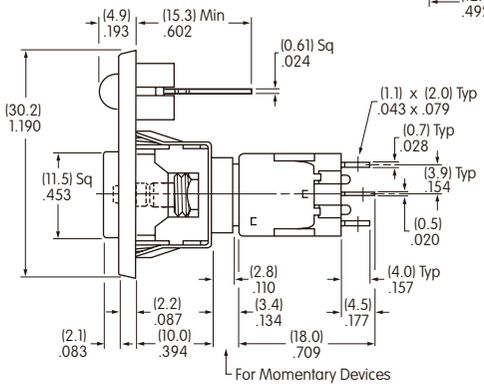
Maximum Panel Thickness
.039" ~ .126"
(1.0mm ~ 3.2mm)
Cutout applies to SP & DP

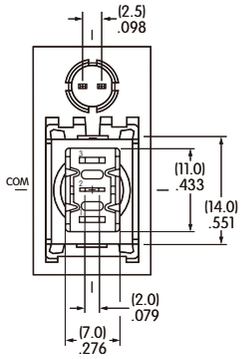


LED colors and specifications on next to last page of this EB section.





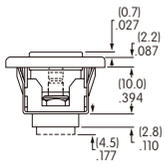




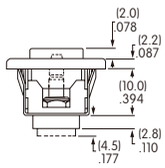
EB2011-B-J42AC — High Rise — Single Pole

Cap Extension with Bezel

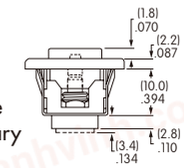
J23 Low Rise Momentary



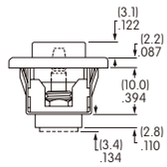
J33 Low Rise Alternate



J43 High Rise Momentary



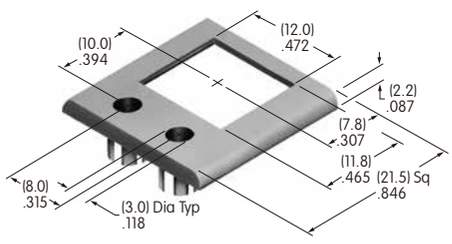
J53 High Rise Alternate

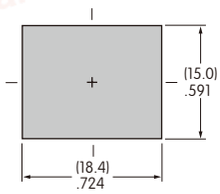


AT212 Bezel with 2 Round LEDs (AT617 LEDs)

A Black

Material: Polycarbonate
Finish: Glossy

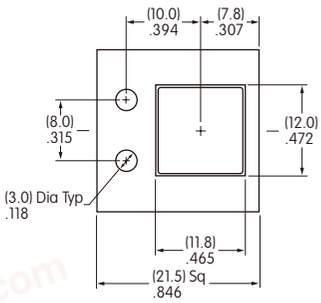


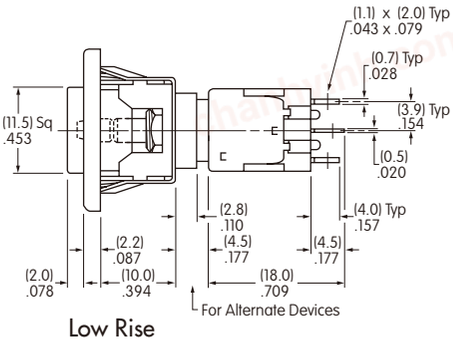


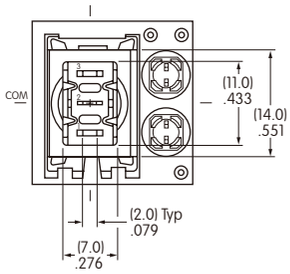
Maximum Panel Thickness
.039" ~ .126" (1.0mm ~ 3.2mm)
Cutout applies to SP & DP

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









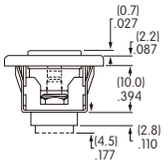
EB2065-B-J33ACF — Low Rise — Single Pole

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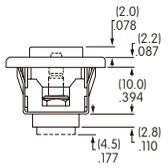
CAP EXTENSIONS & BEZEL TYPES

Cap Extension with Bezel

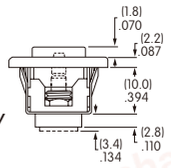
J24 Low Rise Momentary



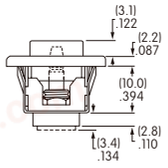
J34 Low Rise Alternate



J44 High Rise Momentary



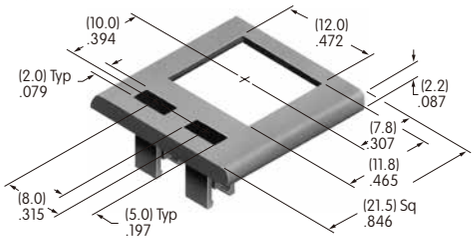
J54 High Rise Alternate

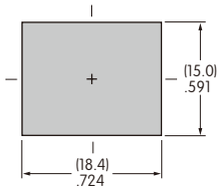


AT213 Bezel with 2 Rectangular LEDs (AT618 LEDs)

A Black

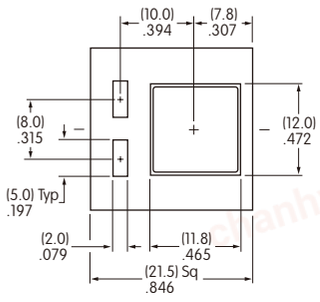
Material: Polycarbonate
Finish: Glossy

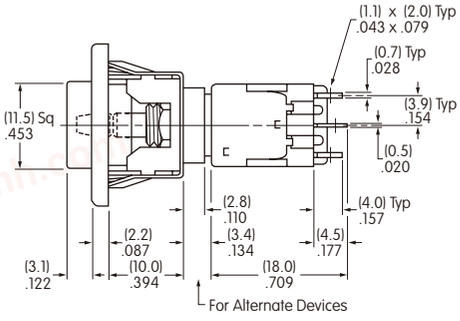




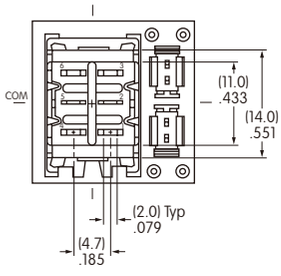
Maximum Panel Thickness
.039" ~ .126" (1.0mm ~ 3.2mm)
Cutout applies to SP & DP

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





High Rise



Double Pole



EB2085-B-J54ACF

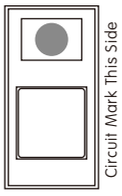
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LED COLORS & SPECIFICATIONS

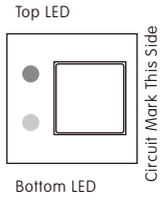
Bezel Orientation on Switch

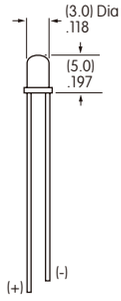
AT070 LED
For Bezel AT208
with 1 LED



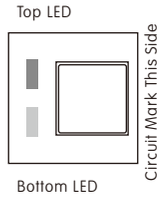


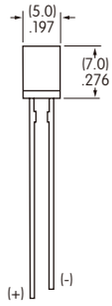
AT617 LED
For Bezel AT212
with 2 Round LEDs





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	C	E	F	C	E	F
	Color	Red	Red	Yellow	Green	Red	Yellow	Green
Maximum Forward Current	I_{FM}	25mA	30mA	30mA	25mA	25mA	30mA	25mA
Typical Forward Current	I_F	20mA	20mA	20mA	20mA	20mA	20mA	20mA
Forward Voltage	V_F	2.8V	2.0V	2.1V	2.25V	2.25V	2.1V	2.2V
Maximum Reverse Voltage	V_{RM}	4V	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	0.33 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° ~ +50°C		

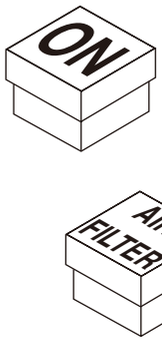
The electrical specifications shown are determined at a basic temperature of 25°C.
LED circuit is independent of switch operation. LED is colored in OFF state.

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.

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LEGENDS

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

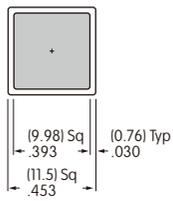


Recommended Print Method:

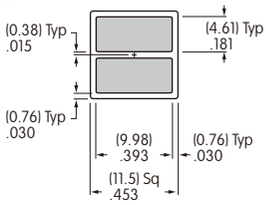
Screen Print or Pad Print

Epoxy based ink is recommended.

Suggested Printable Area for Cap



AT465



AT465

Shaded areas are printable areas.