

# Distinctive Characteristics

Bright illumination with numerous color variations. Spot illumination available. Square, rectangular, and round shaped caps.

Incandescent, LED, and neon lamps. Front panel relamping.

Choice of bright or super bright LEDs in red, amber, green, white, and blue.

Latchdown feature gives indication of circuit status. Audible and tactile feedback with smooth and responsive operation.

Snap-action mechanism for long life.

Stainless steel frame on snap-in models has a specially designed projection, which prevents rotation and correctly orients switch in panel.

12mm body diameter.

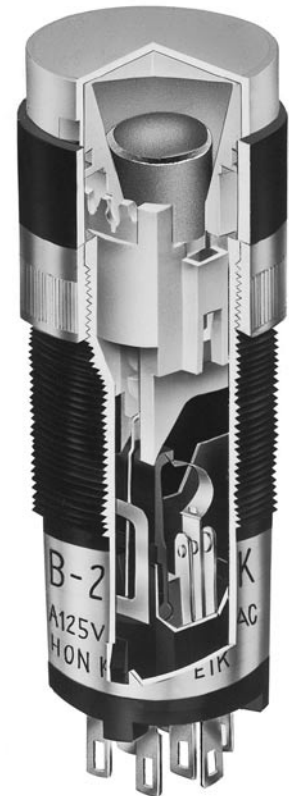
Molded-in terminals lock out flux, dust, and other contaminants.

8mm panel thickness capability. Rear panel bushing or snap-in mounting.

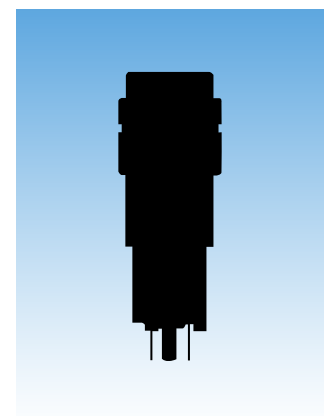
Optional PCB adaptors in straight and right angle types.

Nonilluminated models available and shown in Pushbutton section.

Matching indicators available and shown at the end of Section M.



Actual Size



# General Specifications

## Electrical Capacity (Resistive Load)

**Power Level (code W):** 1A @ 125/250V AC or 1A @ 30V DC  
**Logic Level (code G):** 0.4VA maximum @ 28V AC/DC maximum (Applicable Range 0.1mA ~ 0.1A @ 20mV ~ 28V)  
 Note: Find additional explanation of operating range in Supplement section.

## Other Ratings

**Contact Resistance:** 50 milliohms maximum  
**Insulation Resistance:** 1,000 megohms minimum @ 500V DC  
**Dielectric Strength:** For Silver: 1,000V AC minimum between contacts for 1 minute minimum & 1,500V AC minimum between contacts & case for 1 minute minimum; For Gold: 750V AC minimum between contacts for 1 minute minimum & 1,500V AC minimum between contacts & case for 1 minute minimum  
**Mechanical Life:** 100,000 operations minimum  
**Electrical Life:** 50,000 operations minimum for silver; 100,000 operations minimum for gold  
**Nominal Operating Force:** Single pole 0.98 ~ 2.45N for maintained & 0.98 ~ 1.96N for momentary; Double pole 1.47 ~ 3.43N for maintained & 1.47 ~ 2.94N for momentary  
**Contact Timing:** Nonshorting (break-before-make)  
**Travel:** Pretravel .087" (2.2mm); Overtravel .031" (0.8mm); Total Travel .118" (3.0mm)

## Materials & Finishes

**Housing:** Polyamide (UL94V-0)  
**Movable Contactor:** Silver for power circuit; copper with gold plating for logic level circuit  
**Stationary Contacts:** Silver for power circuit; copper with gold plating for logic level circuit  
**Housing Base:** Polyamide (UL94V-0)  
**Terminal Base:** Polyester  
**Common Terminals:** Phosphor bronze with silver flash plating for power circuit; Phosphor bronze with gold flash plating for logic level circuit  
**End Terminals:** Brass with silver flash plating for power circuit; Brass with gold flash plating for logic level circuit  
**Lamp Terminals:** Phosphor bronze with nickel flash plating

## Environmental Data

**Operating Temp Range:** -25°C through +50°C (-13°F through +122°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<sup>2</sup>) acceleration (tested in 6 right angled directions, with 3 shocks in each direction)

## Installation

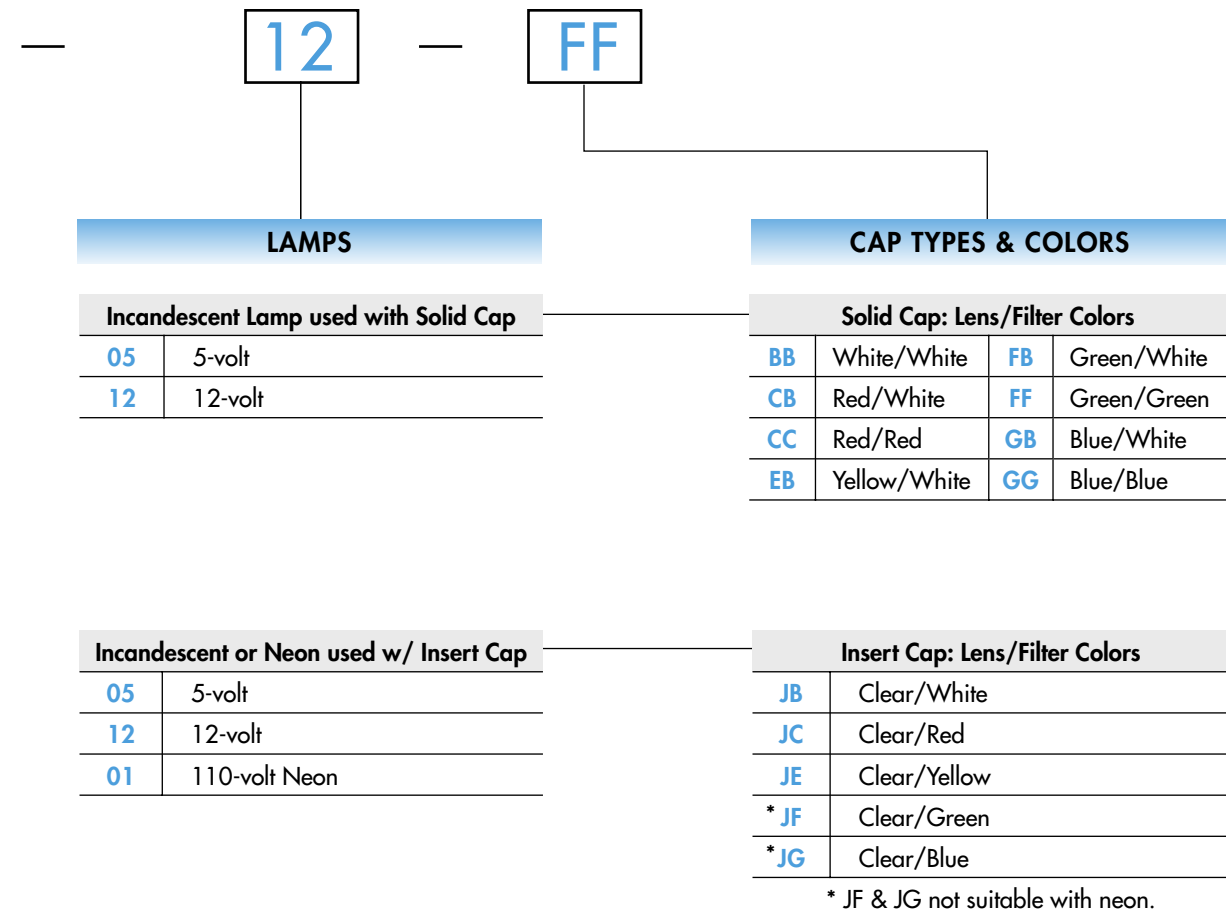
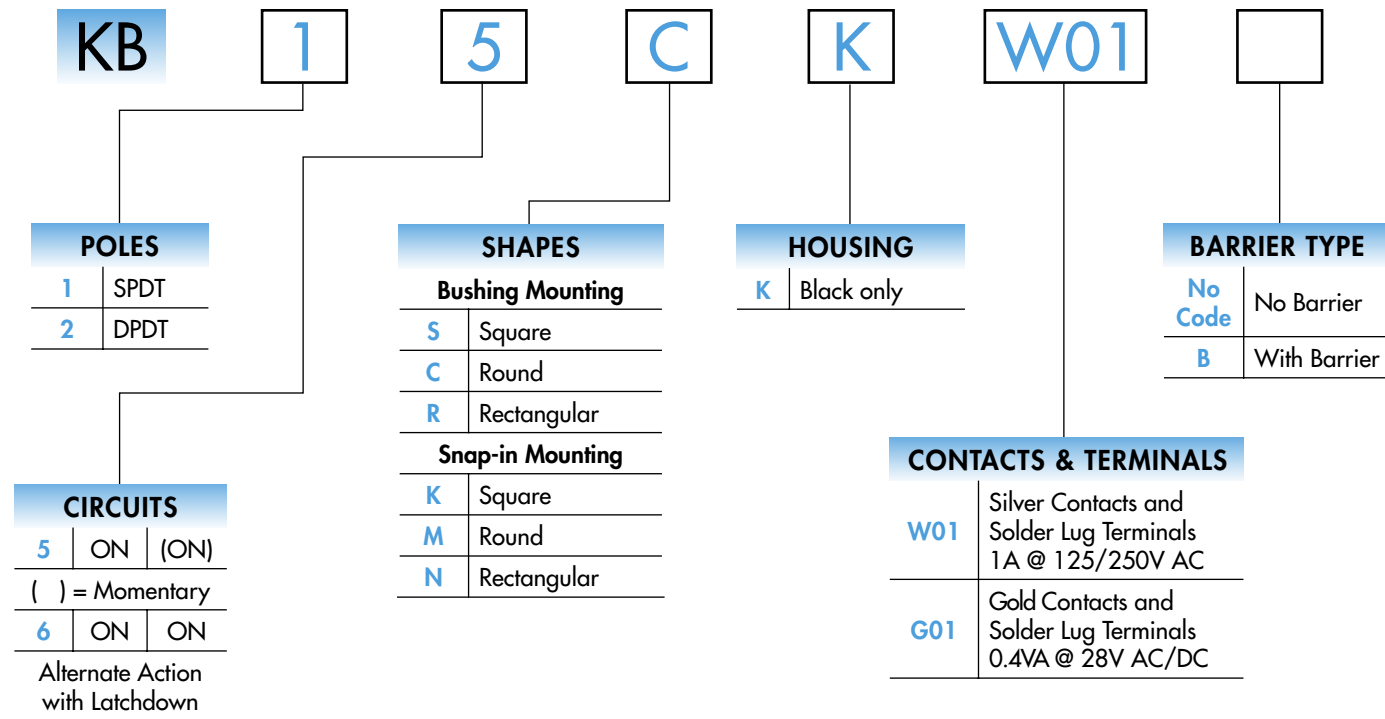
**Mounting Torque:** 0.78Nm (6.9 lb•in) maximum  
**Cap Installation Force:** 4.51N (1.0 lbf) maximum downward force on cap  
**Soldering Time & Temperature:** Manual Soldering: See Profile A in Supplement section.

## Standards & Certifications

**Flammability Standards:** UL94V-0 housing & housing base  
**UL & C-UL Recognized:** Single & double pole models recognized at 1A @ 125/250V AC, 1A @ 30V DC, & 0.4A @ 28V DC; UL File No. WOYR2.E44145: add "/U" to end of part number to order UL mark on switch. UL File No. WOYR8.E44145: add "/C-UL" to end of part number to order C-UL mark on switch.  
**CSA Certified:** Single & double pole models recognized at 1A @ 125/250V AC, 1A @ 30V DC, & 0.4VA @ 28V maximum; 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**

**KB15CKW01-12-FF**



**IMPORTANT:**



Switches are supplied without UL, C-UL, & CSA markings unless specified. Specific models & ratings noted on General Specifications page.

**Bright LED used with Cap for LED**

Colors	Resistor	
	No Code	No Resistor
5C	Red	No Resistor
5D	Amber	05 5-volt
5F	Green	12 12-volt
		24 24-volt

**LED Cap: Lens/Diffuser Colors**

AB	Square Spot Illuminated Black Cap/White Window
JB	Clear/White
JC	Clear/Red
JD	Clear/Amber
JF	Clear/Green

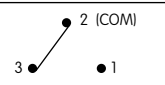
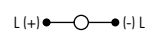
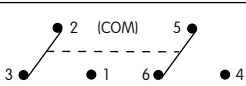
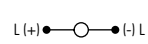
**Super Bright LED used with Cap for LED**

6B	White
6F	Green
6G	Blue

**LED Cap: Lens/Diffuser Colors**

JB	Clear/White
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## POLES & CIRCUITS

Pole	Model	Plunger Position ( ) = Momentary		Connected Terminals		Throw & Switch/Lamp Schematics
		Normal	Down	Normal	Down	
SP	KB15 *KB16	ON ON	(ON) ON	2-3	2-1	Notes: Switch is marked with "+" and "-". Lamp circuit is isolated and requires external power source. SPDT  
DP	KB25 *KB26	ON ON	(ON) ON	2-3 5-6	2-1 5-4	DPDT  

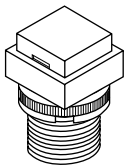
\* When in latched position for the alternate circuit, cap position is .055" (1.4mm) above the built-in bezel.

## MOUNTING TYPES & SHAPES

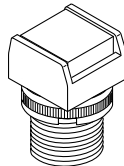
### Bushing Mounting

**S**

.551" (14.0mm)  
Square



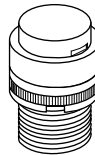
No barrier



With barrier

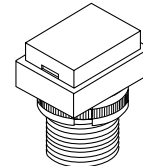
**C**

.551" (14.0mm)  
Round

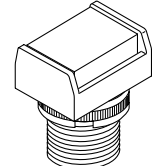


**R**

.551" x .728" (14.0mm x 18.5mm)  
Rectangular



No barrier



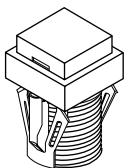
With barrier

Bezel or barrier is an integral part of the switch body. One mounting nut AT057 supplied with each switch.

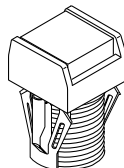
### Snap-in Mounting

**K**

.551" (14.0mm)  
Square



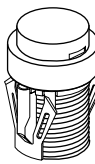
No barrier



With barrier

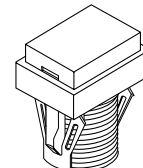
**M**

.551" (14.0mm)  
Round

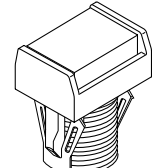


**N**

.551" x .728" (14.0mm x 18.5mm)  
Rectangular



No barrier



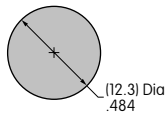
With barrier

Bezel or barrier is an integral part of the switch body.

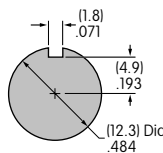
### Panel Cutouts

#### Bushing Mounting

Without  
Keyway



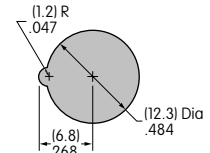
Panel Thickness:  
.020" ~ .315"  
(0.5 ~ 8.0mm)



With  
Keyway

#### Snap-in Mounting

Panel Thickness:  
.039" ~ .138"  
(1.0 ~ 3.5mm)



Panel thicknesses, when using optional accessories, are shown with the accessories at the end of this KB section.

## HOUSING

**K**

Housing available in black only. Bezel or barrier is an integral part of the switch body.

## CONTACT MATERIALS, RATINGS & TERMINALS

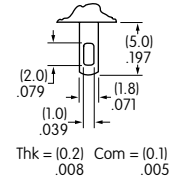
**W**

Silver Contacts

**Power Level**  
1A @ 125V AC & 250V AC

**01**

Solder Lug



**G**

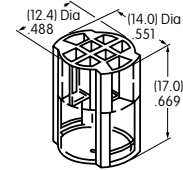
Gold Contacts

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

Complete explanation of operating range in Supplement section.

A partitioned plastic guard is supplied with each switch to provide insulation between terminals.  
Installation steps:

1. Identify wire-to-terminal connections.
2. Thread wires through the guard.
3. Solder the connections.
4. Push the guard fully onto the switch body.



## BARRIER TYPE

**No Code**

No Barrier

Built-in bezel

**B**

With Barrier

Built-in barrier only available for square and rectangular

## LAMP COLORS & SPECIFICATIONS



The electrical specifications shown are determined at a basic temperature of 25°C.  
LED circuit is isolated and requires external power source. Polarity marks are on the bottom of the switch.

If the source voltage exceeds the rated voltage, a ballast resistor is required.


The resistor value can be calculated by using the formula in the Supplement section.

Ambient Temperature Range for lamps below: -25°C ~ +50°C.

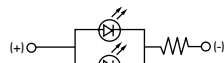
### Incandescent & Neon Lamps

			<b>05</b>	<b>12</b>	<b>01</b>	Recommended Resistors for Neon: 33K ohms for 110V AC; 100K ohms for 220V AC
<b>AT611</b> Incandescent		Voltage	5V AC	12V AC	110V AC	
<b>AT615</b> Neon		Current	115mA	60mA	1.5mA	
T-1 Bi-pin		Endurance	7,000 average		10,000	

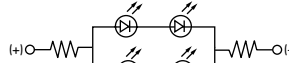
### Bright LED with Resistor

<b>AT634</b>	LEDs are colored in OFF state.		T-1 1/4 Bi-pin	Red	Amber	Green	Resistor Codes		
				<b>5C</b>	<b>5D</b>	<b>5F</b>	<b>05</b>	<b>12</b>	<b>24</b>
Color Codes:				<b>5C</b>	<b>5D</b>	<b>5F</b>	<b>05</b>	<b>12</b>	<b>24</b>
Forward Peak Current						$I_{FM}$	—	—	—
Continuous Forward Current						$I_F$	25mA	20mA	10mA
Forward Voltage						$V_F$	5V	12V	24V
Reverse Peak Voltage						$V_{RM}$	4V	8V	16V
Current Reduction Rate Above 25°C						$\Delta I_F$	—	—	—

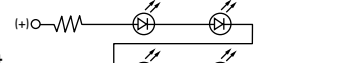
AT634  
5-volt  
2-element  
with 1 Resistor



AT634  
12-volt  
4-element  
with 2 Resistors

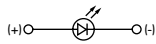


AT634  
24-volt  
4-element  
with 2 Resistors

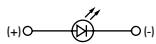



## LAMP COLORS & SPECIFICATIONS

### Bright LED without Resistor

<b>AT635</b>  LEDs are colored in OFF state.   T-1 1/2 Bi-pin		Red	Amber	Green	<b>No Code</b> No Resistor			
	Color Codes	<b>5C</b>	<b>5D</b>	<b>5F</b>	Red	Amber	Green	
	Forward Peak Current				$I_{FM}$	30mA	30mA	30mA
	Continuous Forward Current				$I_F$	20mA	20mA	20mA
	Forward Voltage				$V_F$	1.9V	2.0V	2.1V
	Reverse Peak Voltage				$V_{RM}$	5V	5V	5V
	Current Reduction Rate Above 25°C				$\Delta I_F$	0.42mA/°C		
Ambient Temperature Range					-25° ~ +50°C			

### Super Bright Single Element LED

<b>AT625G Blue</b> <b>AT631B White</b> <b>AT632F Green</b>   T-1 Bi-pin				Color	<b>6B</b>	<b>6F</b>	<b>6G</b>	
				White	Green	Blue		
	Forward Peak Current				$I_{FM}$	30mA	30mA	30mA
	Continuous Forward Current				$I_F$	20mA	20mA	20mA
	Forward Voltage				$V_F$	3.6V	3.5V	3.6V
	Reverse Peak Voltage				$V_{RM}$	5V	5V	5V
	Current Reduction Rate Above 25°C				$\Delta I_F$	0.50mA/°C	0.50mA/°C	0.50mA/°C
Ambient Temperature Range					-25° ~ +50°C			

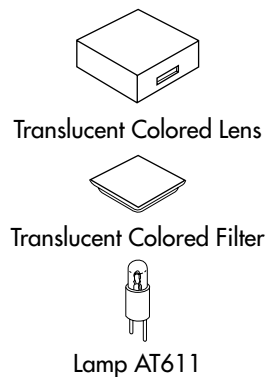
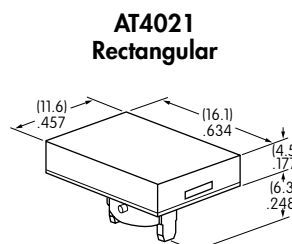
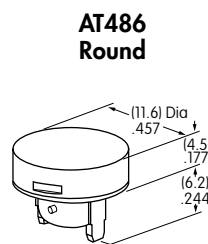
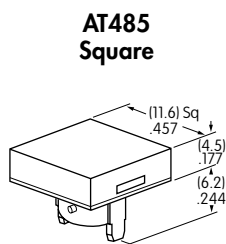
## CAP TYPES & COLOR COMBINATIONS

Color Codes:    **A** Black    **B** White    **C** Red    **E** Yellow    **F** Green    **G** Blue    **J** Clear

### Solid Cap for Incandescent Lamp

Lens/Filter Colors Available:

<b>BB</b>	<b>FB</b>
<b>CB</b>	<b>FF</b>
<b>CC</b>	<b>GB</b>
<b>EB</b>	<b>GG</b>

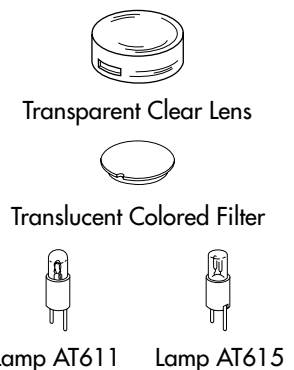
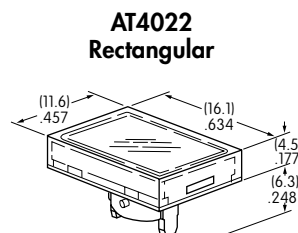
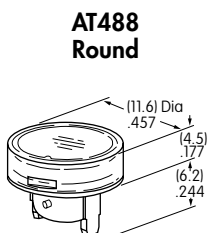
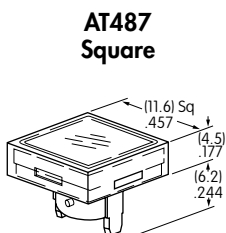


Material: Polycarbonate    Finish: Glossy

### Insert Cap for Incandescent or Neon Lamp

Lens/Filter Colors Available:

<b>JB</b>	<b>JF</b>
<b>JC</b>	<b>JG</b>
<b>JE</b>	



JF and JG not suitable with neon lamp.

Material: Polycarbonate    Finish: Glossy

### CAP TYPES & COLOR COMBINATIONS

Color Codes: A Black B White C Red D Amber E Yellow F Green G Blue J Clear

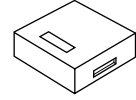
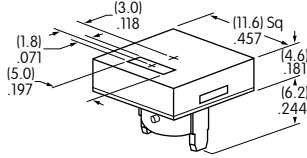
#### Spot Illuminated Cap for Bright LED without Resistor or with Resistor

Cap/Window Colors Available:

**AB**

Opaque Black Cap with Translucent White Window for Spot Illumination

**AT4051 Square**



Bright LED AT635

Bright LED AT634

Material: Polycarbonate Finish: Matte

#### Cap for Bright LED without Resistor or LED with Resistor

Lens/Diffuser Colors Available: (AT4133, 4132, 4134 white diffusers; AT4158, 4160, 4159 colored diffusers)

**JB**

**AT4133**

**AT4132**

**AT4134**

Square

Round

Rectangular

Transparent Clear Lens

**JC**

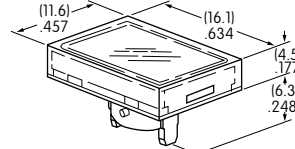
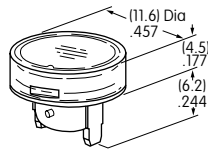
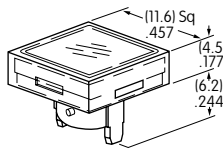
**AT4158**

**AT4160**

**AT4159**

**JD**

**JF**



Translucent Diffuser



Bright LED AT635

Bright LED AT634

Material: Polycarbonate Finish: Glossy

#### Cap for Super Bright LED

Lens/Diffuser Colors Available:

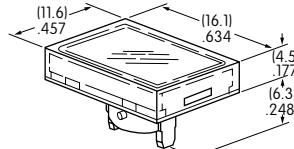
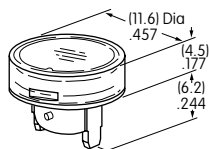
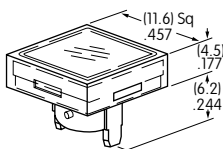
**JB**

**AT4133 Square**

**AT4132 Round**

**AT4134 Rectangular**

Translucent Clear Lens



Translucent White Diffuser



Super Bright LEDs AT625 AT631 AT632

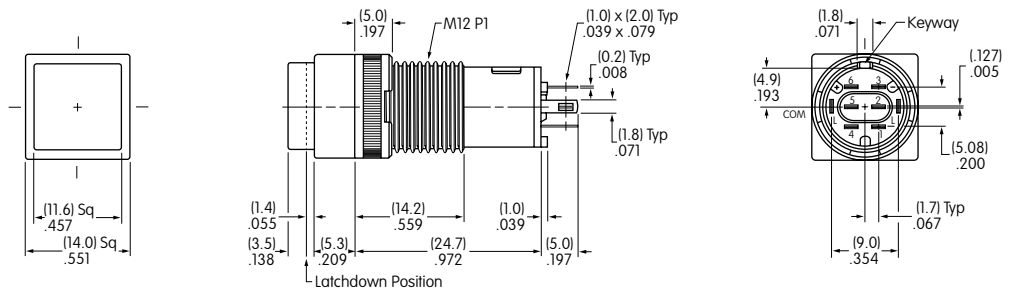
Material: Polycarbonate Finish: Glossy



### TYPICAL SWITCH DIMENSIONS

#### Square • Bushing Mount

#### Single & Double Pole

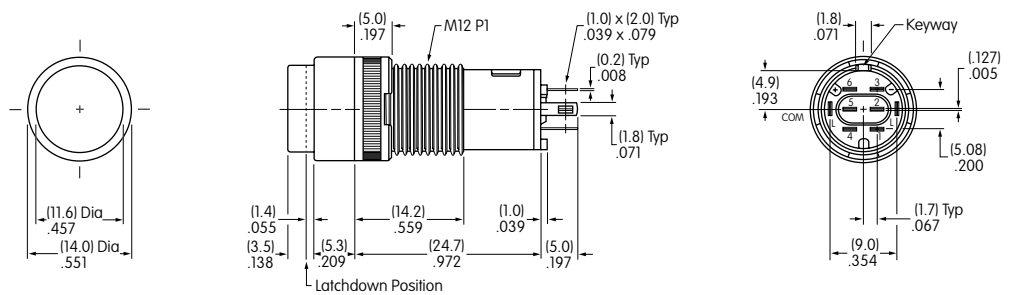


KB15SKW01-05-GG

Single pole models do not have terminals 4, 5, & 6.

#### Round • Bushing Mount

#### Single & Double Pole

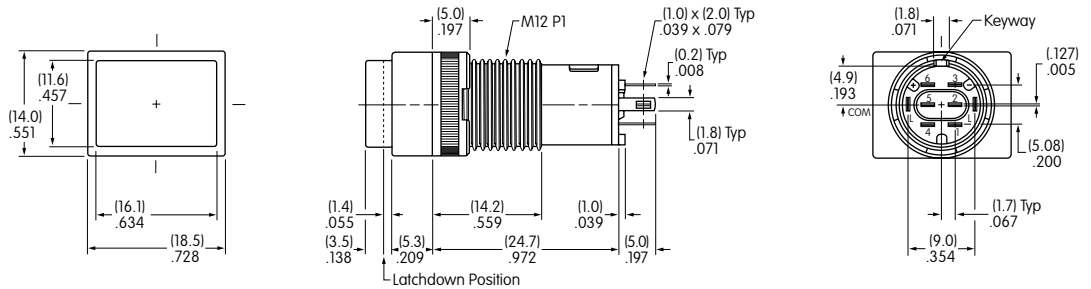


KB25CKW01-05-GG

Single pole models do not have terminals 4, 5, & 6.

#### Rectangular • Bushing Mount

#### Single & Double Pole



KB15RKW01-05-GG

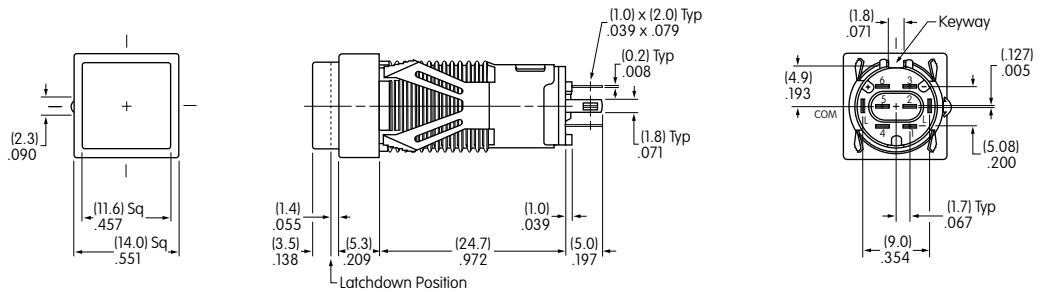
Single pole models do not have terminals 4, 5, & 6.



## TYPICAL SWITCH DIMENSIONS

### Square • Snap-in Mount

### Single & Double Pole

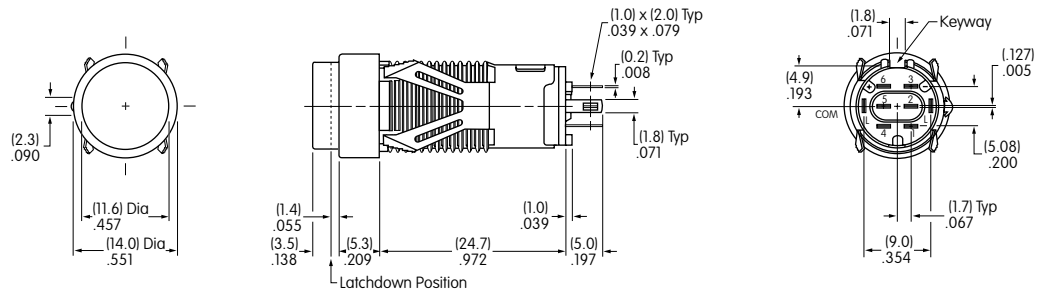


KB16KKW01-05-CB

Single pole models do not have terminals 4, 5, & 6.

### Round • Snap-in Mount

### Single & Double Pole

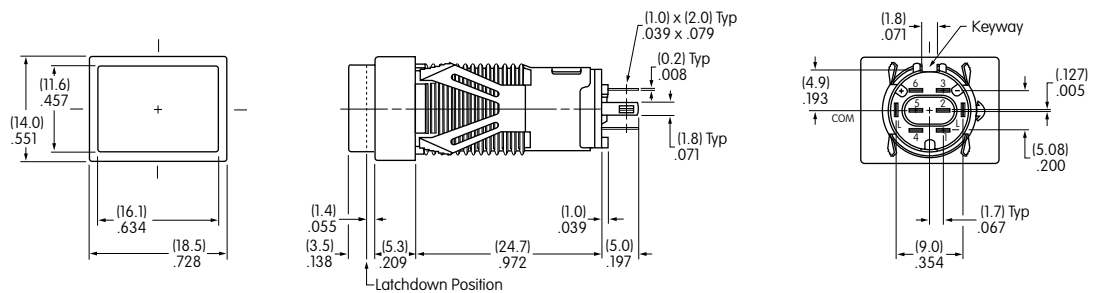


KB26MKW01-05-CB

Single pole models do not have terminals 4, 5, & 6.

### Rectangular • Snap-in Mount

### Single & Double Pole



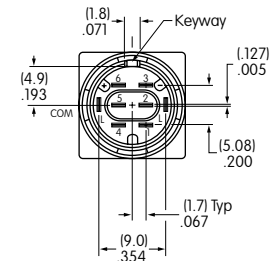
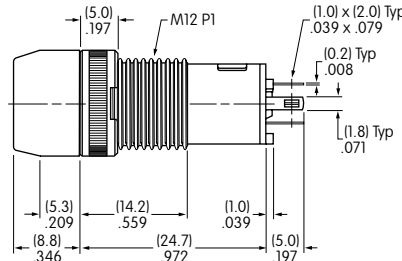
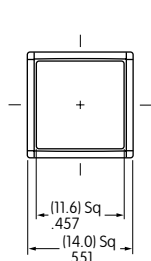
KB16NKW01-05-CB

Single pole models do not have terminals 4, 5, & 6.

### TYPICAL SWITCH DIMENSIONS

#### Square • Barrier • Bushing Mount

#### Single & Double Pole

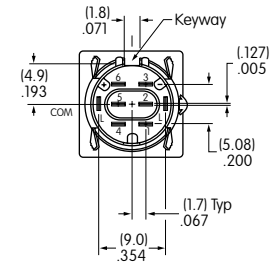
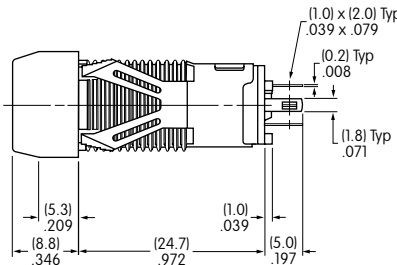
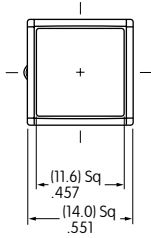


KB15SKW01B-6G-JB

Single pole models do not have terminals 4, 5, & 6.

#### Square • Barrier • Snap-in Mount

#### Single & Double Pole

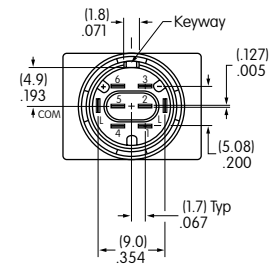
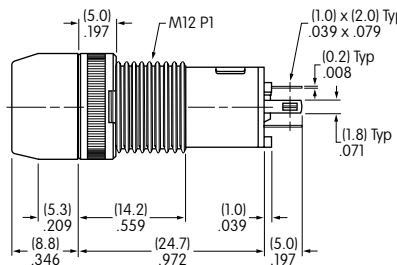
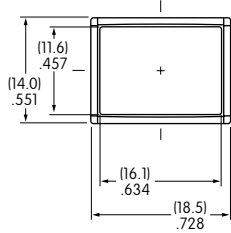


KB15KKW01B-5C-JC

Single pole models do not have terminals 4, 5, & 6.

#### Rectangular • Barrier • Bushing Mount

#### Single & Double Pole

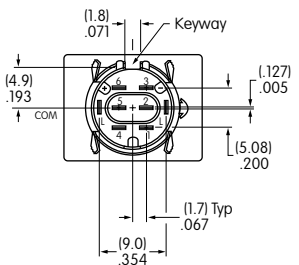
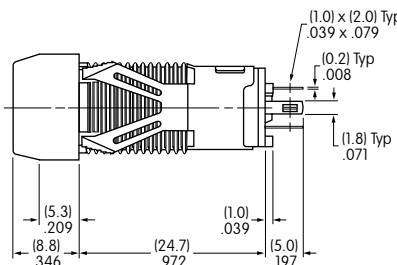
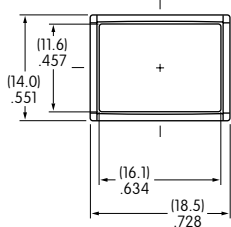


KB15RKW01B-5F-JF

Single pole models do not have terminals 4, 5, & 6.

#### Rectangular • Barrier • Snap-in Mount

#### Single & Double Pole



KB15NKW01B-5D-JD

Single pole models do not have terminals 4, 5, & 6.

## OPTIONAL ACCESSORIES

### PCB Adaptors

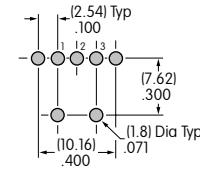
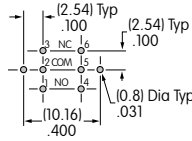
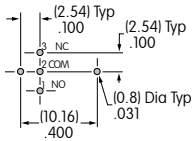
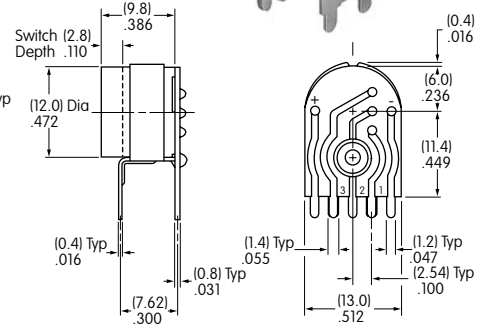
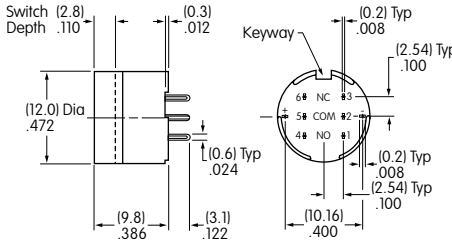
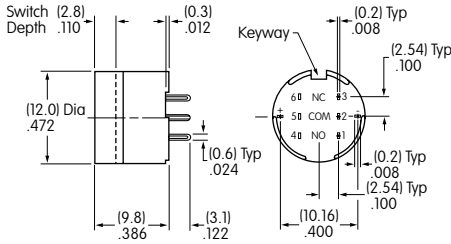
**AT701**  
Single Pole  
Straight PC  
Terminals



**AT702**  
Double Pole  
Straight PC  
Terminals



**AT077**  
Single Pole  
Right Angle PC  
Terminals

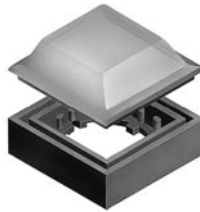


Material: Glass fiber reinforced polyamide Note: Order adaptors separately

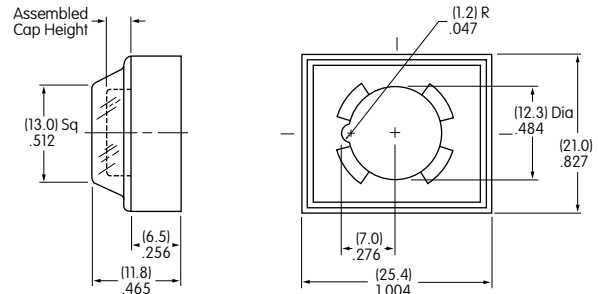
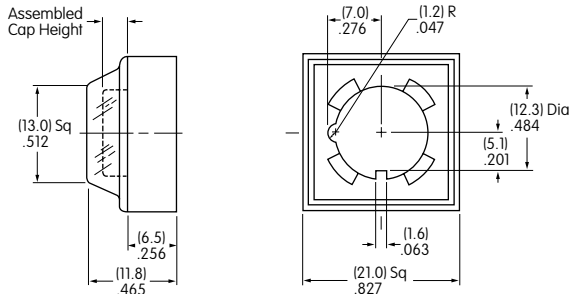
### Dust Covers

Panel Thickness Range: .020 ~ .268" (0.5 ~ 6.8mm) for Bushing Mounting; .020 ~ .079" (0.5 ~ 2.0mm) for Snap-in Mounting  
Dust Covers reduce the depth of switch behind panel by .047" (1.2mm).

**AT495**  
For Square & Round  
(not for Barrier type)



**AT4025**  
For Rectangular  
(not for Barrier type)



Material: Lid: PVC PVC loses pliability below 0°C (32°F). Base: Polyamide

## OPTIONAL ACCESSORIES

**AT494**  
For Square & Round  
(not for Barrier type)



### Protective Guards

**AT4024**  
For Rectangular  
(not for Barrier type)

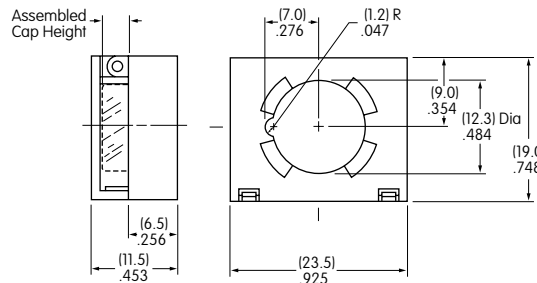
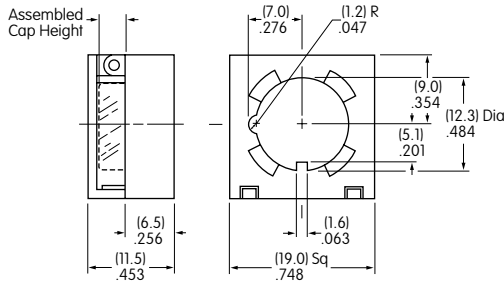


Panel Thickness  
Range:

.020" ~ .268"  
(0.5 ~ 6.8mm)  
for Bushing Mounting

.020" ~ .091"  
(0.5 ~ 2.3mm)  
for Snap-in Mounting

Protective Guards reduce  
the depth of switch  
behind panel by  
.047" (1.2mm).



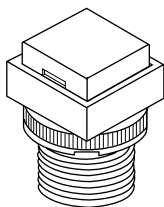
Material: Cover: Polycarbonate

Base: Polyamide

## ASSEMBLY INSTRUCTIONS

### Cap Removal & Installation

For alternate action models cap must be in UP position for cap removal. Indentations on opposite sides of the cap provide an easy way to lift the cap out of the holder, using either the finger nails, or cap extractor AT109.



### LED Polarity & Orientation in Lamp Socket

Super Bright LEDs AT625, AT631, & AT632 are electrostatic sensitive.



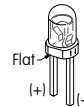
LED  
AT635



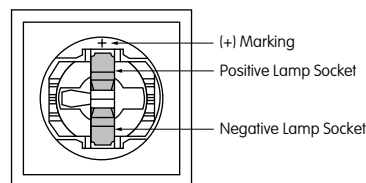
LED  
AT634



LEDs  
AT625  
AT631  
AT632

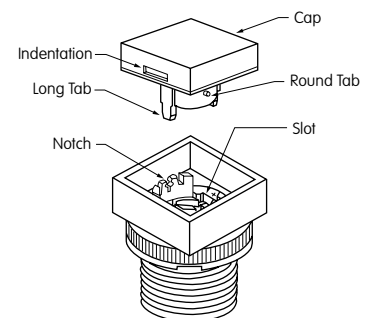


Top  
View  
of  
Switch



### Cap Replacement

Note that the cap has a pair of round tabs and a pair of long tabs which should be used for correctly replacing the cap in its holder. Using the long tabs as guides, slide the cap with the long tabs moving into the slots on opposite sides of the cap holder. Then, the round tabs will snap into notches on the other two sides of the holder.

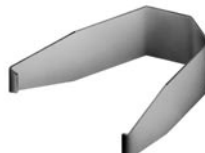


### AT108 Socket Wrench for Bushing Mounting

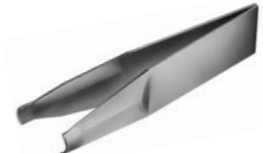
Overtightening the  
mounting nut  
may damage the  
switch housing.



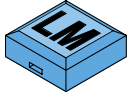
### AT109 Cap Extractor



### AT111 Lamping Tool



## LEGENDS



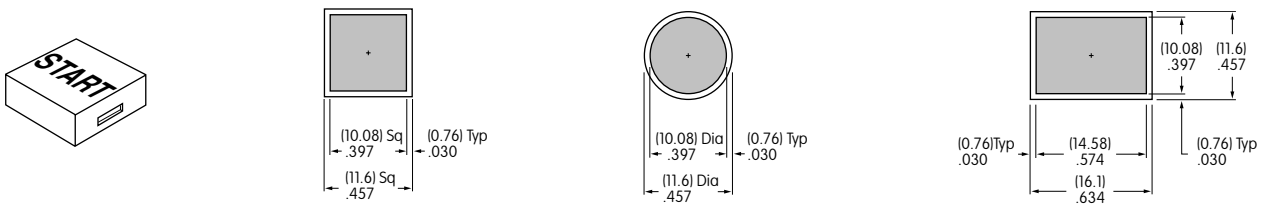
Easily create and submit your own legends using our new on-line Legend Maker.

Visit [www.nkkswitches.com](http://www.nkkswitches.com)

For other legend support options, customers may either contact the factory and request the KB Legend Packet, or utilize the general information and basic specifications presented below.

### Suggested Printable Area for KB Lens

**Recommended Methods:** Laser Etch on clear lens, Screen Print, or Pad Print on Lens.  
Epoxy based ink is recommended.

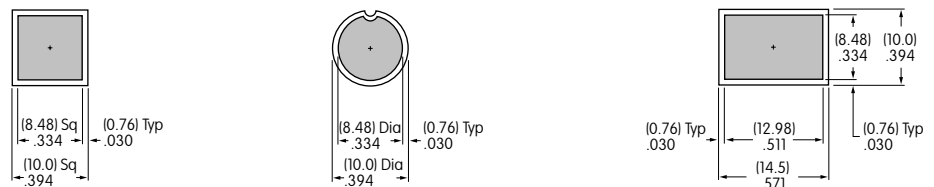
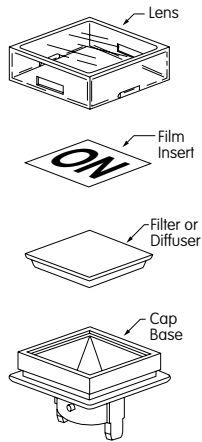


Shaded areas are printable areas.

### Suggested Printable Area for Film Insert

**Recommended Print Method:** Screen Print with Epoxy based ink

Film Insert: Clear Polyester, 4 mil max. thickness



Shaded areas are printable areas.

### Additional Methods

Additional methods for legends are engraving the lens and laser printing on film inserts.  
Maximum depth for engraving is .012" (0.3mm) on the cap lens.  
Enamel paint is recommended to fill the engraved area.