

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.

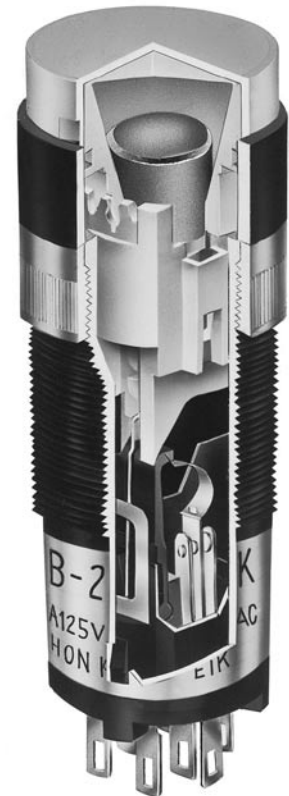
Molded-in terminals lock out flux, dust, and other contaminants.

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

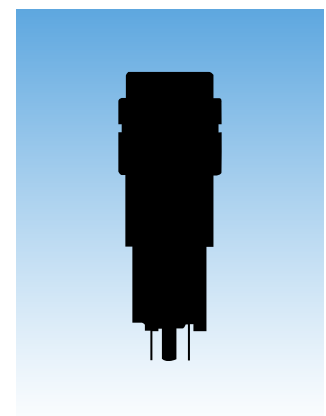
Optional PCB adaptors in straight and right angle types.

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/s²) acceleration (tested in 6 right angled directions, with 3 shocks in each direction)

Installation

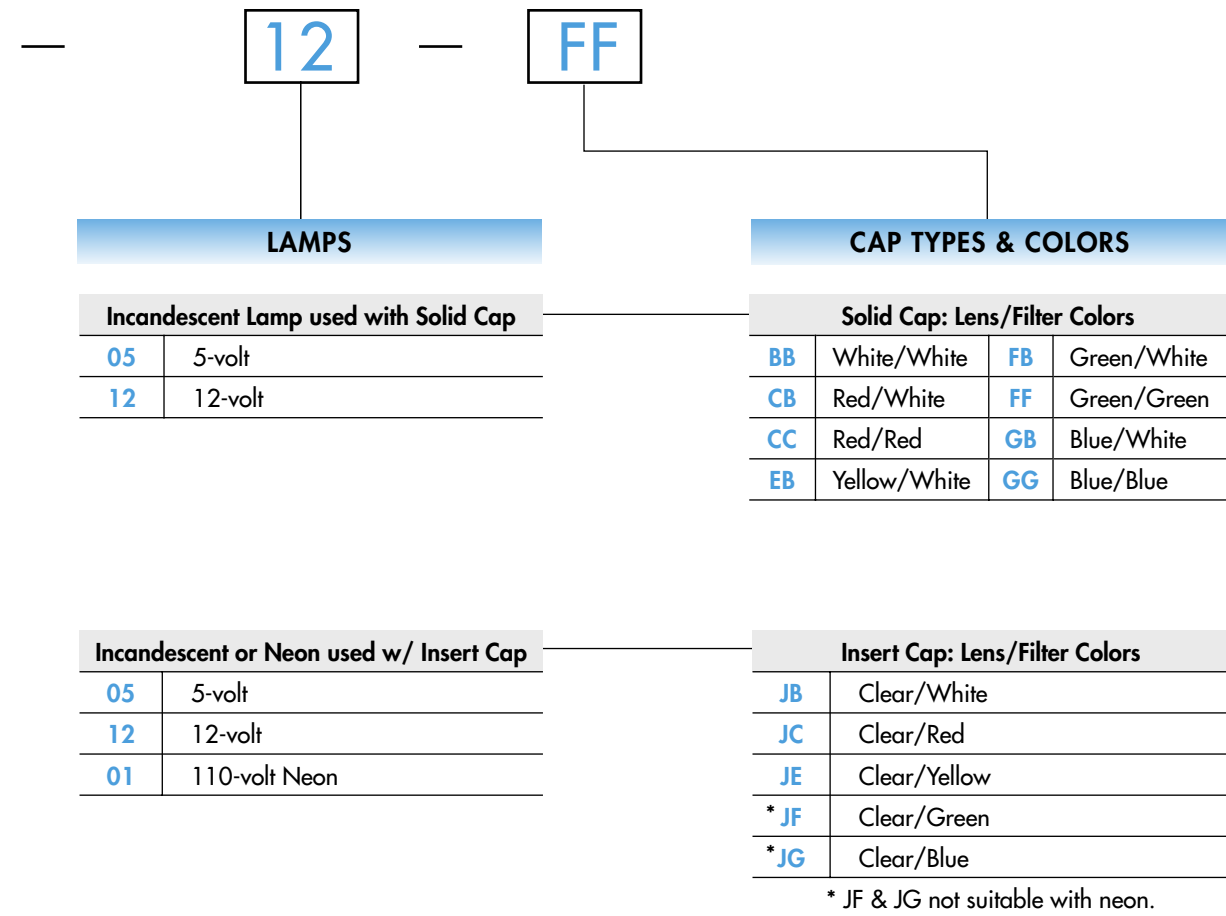
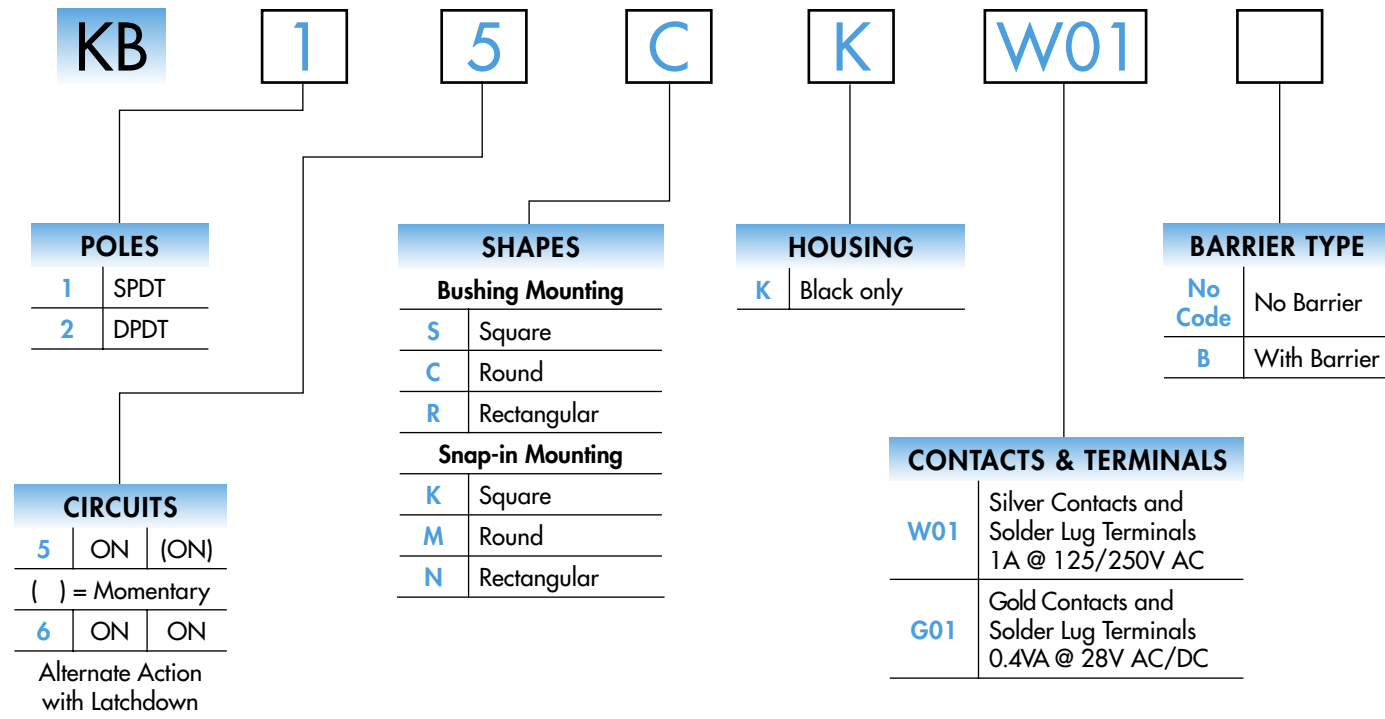
Mounting Torque: 0.78Nm (6.9 lb•in) maximum
Cap Installation Force: 4.51N (1.0 lbf) maximum downward force on cap
Soldering Time & Temperature: Manual Soldering: See Profile A in Supplement section.

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



Bright LED used with Cap for LED

Colors	Resistor		
	No Code	No Resistor	
5C	Red	No Code	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

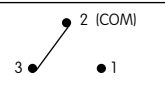
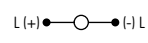
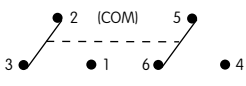
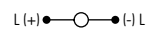
JB	Clear/White
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IMPORTANT:



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

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  

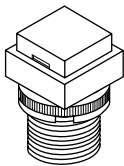
* When in latched position for the alternate circuit, cap position is .055" (1.4mm) above the built-in bezel.

MOUNTING TYPES & SHAPES

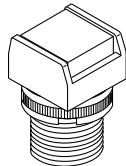
Bushing Mounting

S

.551" (14.0mm)
Square



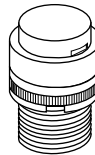
No barrier



With barrier

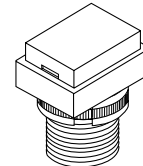
C

.551" (14.0mm)
Round

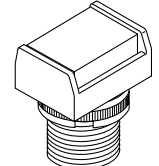


R

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



No barrier



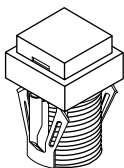
With barrier

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

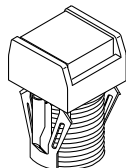
Snap-in Mounting

K

.551" (14.0mm)
Square



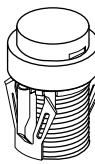
No barrier



With barrier

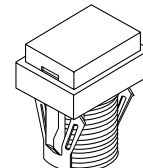
M

.551" (14.0mm)
Round

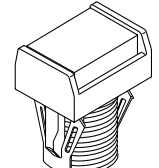


N

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



No barrier



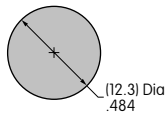
With barrier

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

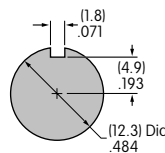
Panel Cutouts

Bushing Mounting

Without
Keyway



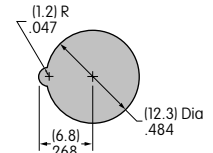
Panel Thickness:
.020" ~ .315"
(0.5 ~ 8.0mm)



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

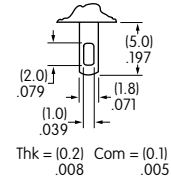
W

Silver Contacts

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

01

Solder Lug



G

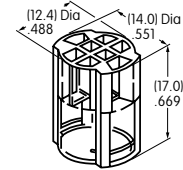
Gold Contacts

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.

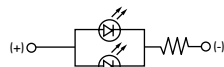
Incandescent & Neon Lamps

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

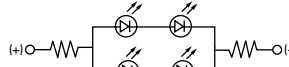
Bright LED with Resistor

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

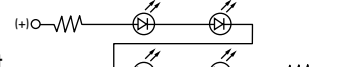
AT634
5-volt
2-element
with 1 Resistor



AT634
12-volt
4-element
with 2 Resistors


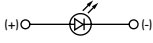


AT634
24-volt
4-element
with 2 Resistors






LAMP COLORS & SPECIFICATIONS

Bright LED without Resistor

AT635 LEDs are colored in OFF state.   T-1 1/2 Bi-pin	Red <div style="border: 1px solid black; padding: 2px; display: inline-block;">5C</div>	Amber <div style="border: 1px solid black; padding: 2px; display: inline-block;">5D</div>	Green <div style="border: 1px solid black; padding: 2px; display: inline-block;">5F</div>	<div style="border: 1px solid black; padding: 2px; display: inline-block;">No Code</div> No Resistor			
	Color Codes				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			ΔI_F	0.42mA/°C		
Ambient Temperature Range				-25° ~ +50°C			

Super Bright Single Element LED

AT625G Blue AT631B White AT632F Green   T-1 Bi-pin				<div style="border: 1px solid black; padding: 2px; display: inline-block;">6B</div>	<div style="border: 1px solid black; padding: 2px; display: inline-block;">6F</div>	<div style="border: 1px solid black; padding: 2px; display: inline-block;">6G</div>	
	Color	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			ΔI_F	0.50mA/°C	0.50mA/°C	0.50mA/°C
Ambient Temperature Range				-25° ~ +50°C			

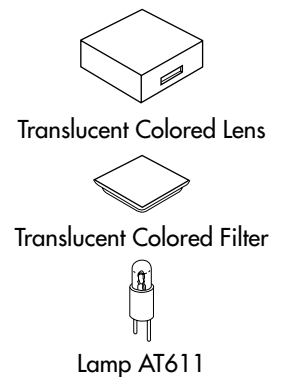
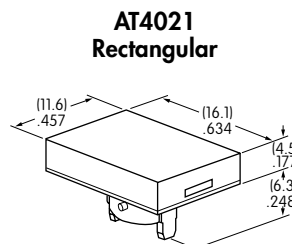
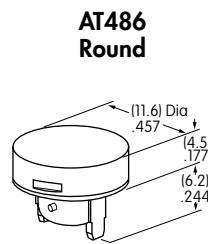
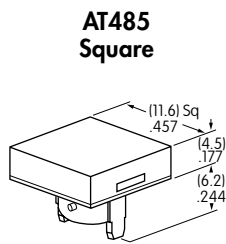
CAP TYPES & COLOR COMBINATIONS

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:

BB	FB
CB	FF
CC	GB
EB	GG

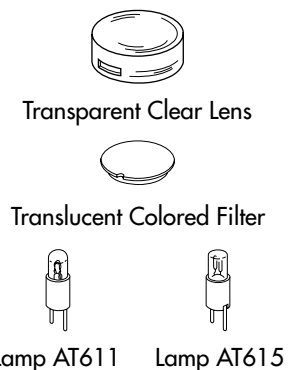
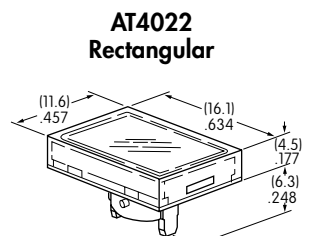
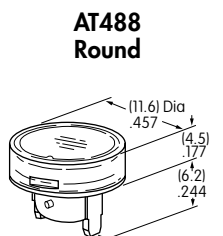
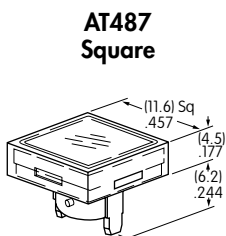


Material: Polycarbonate Finish: Glossy

Insert Cap for Incandescent or Neon Lamp

Lens/Filter Colors Available:

JB	JF
JC	JG
JE	



JF and JG not suitable with neon lamp.

Material: Polycarbonate Finish: Glossy

CAP TYPES & COLOR COMBINATIONS

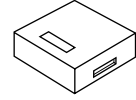
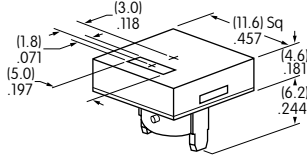
Color Codes: A Black B White C Red D Amber E Yellow F Green G Blue J Clear

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

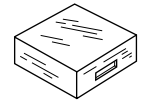
AT4134

Square

Round

Rectangular

Transparent Clear Lens



JC

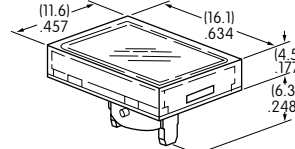
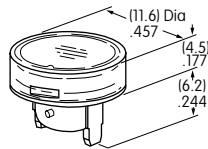
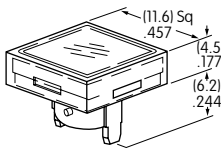
AT4158

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:

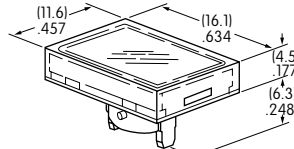
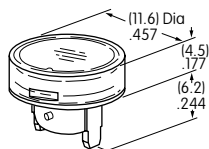
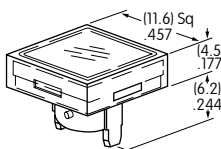
JB

AT4133
Square

AT4132
Round

AT4134
Rectangular

Translucent Clear Lens



Translucent White Diffuser



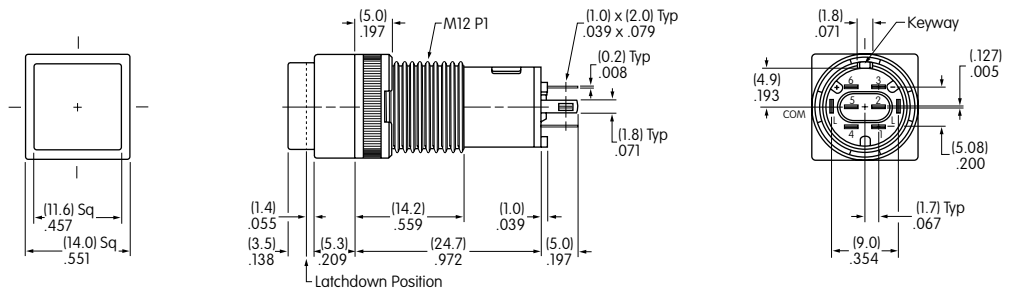
Super Bright LEDs
AT625
AT631 AT632

Material: Polycarbonate Finish: Glossy

TYPICAL SWITCH DIMENSIONS

Square • Bushing Mount

Single & Double Pole

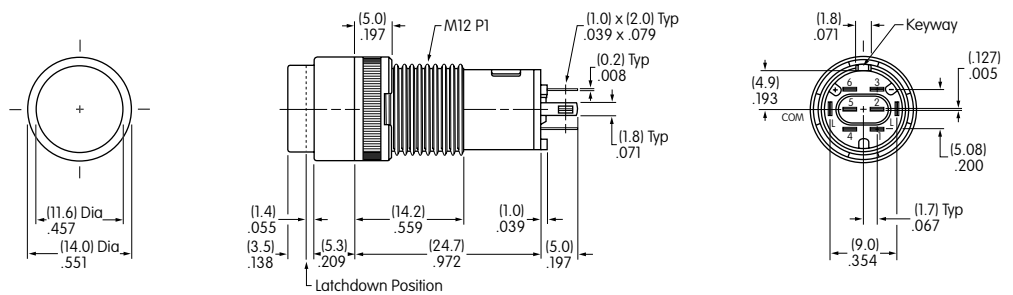


KB15SKW01-05-GG

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

Round • Bushing Mount

Single & Double Pole

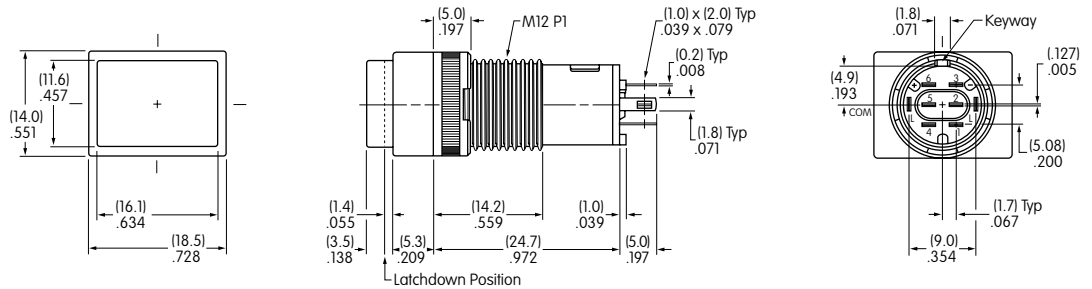


KB25CKW01-05-GG

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

Rectangular • Bushing Mount

Single & Double Pole



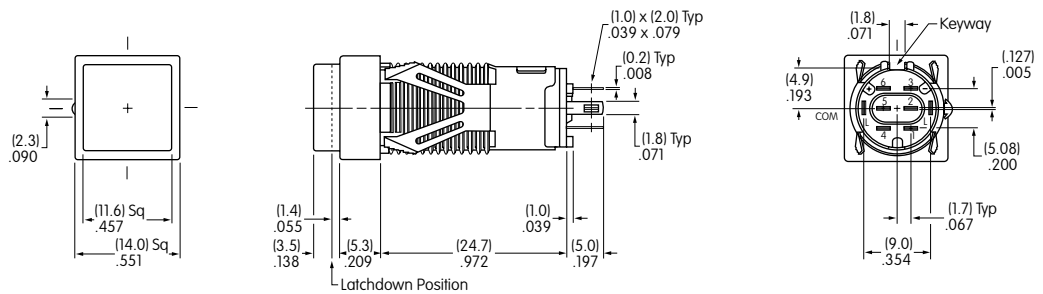
KB15RKW01-05-GG

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

TYPICAL SWITCH DIMENSIONS

Square • Snap-in Mount

Single & Double Pole

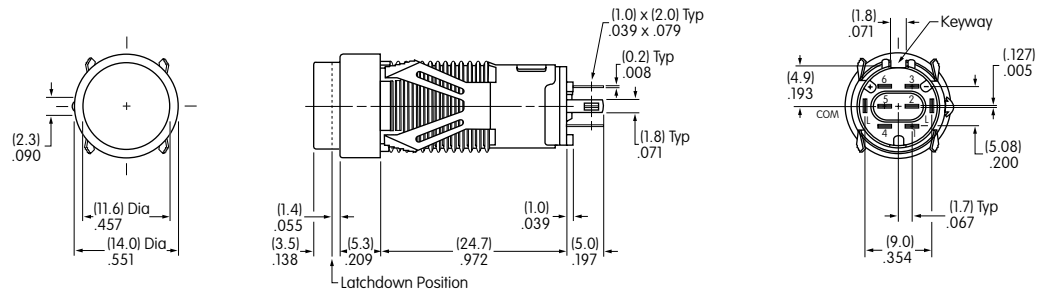


KB16KKW01-05-CB

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

Round • Snap-in Mount

Single & Double Pole

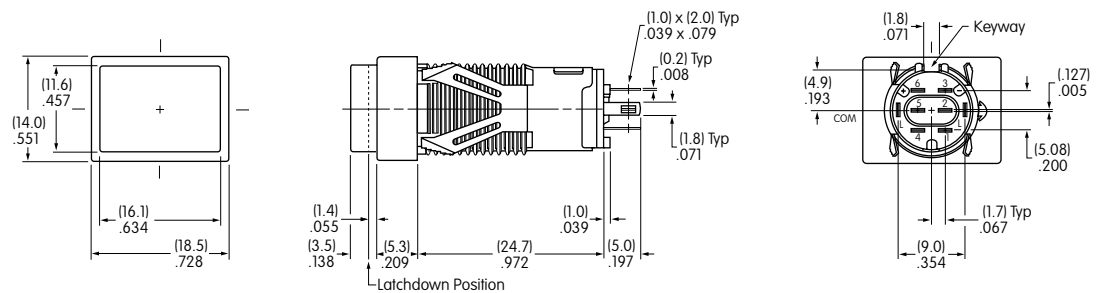


KB26MKW01-05-CB

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

Rectangular • Snap-in Mount

Single & Double Pole



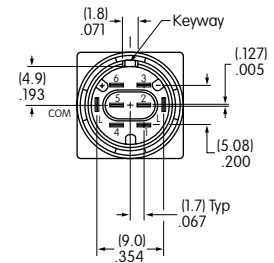
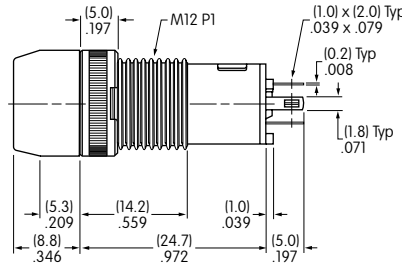
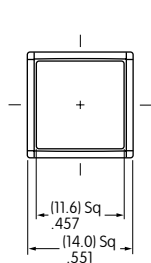
KB16NKW01-05-CB

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

TYPICAL SWITCH DIMENSIONS

Square • Barrier • Bushing Mount

Single & Double Pole

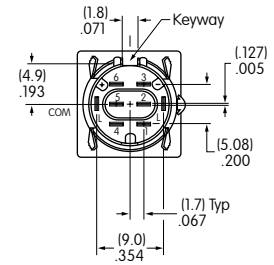
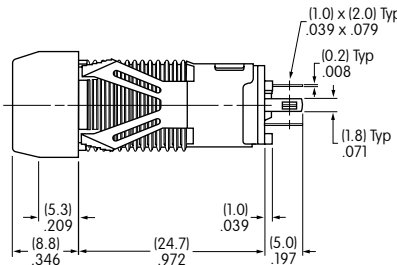
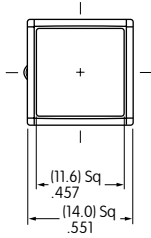


KB15SKW01B-6G-JB

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

Square • Barrier • Snap-in Mount

Single & Double Pole

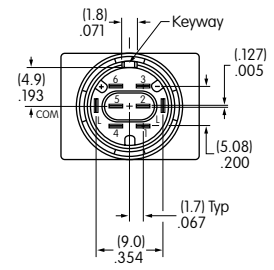
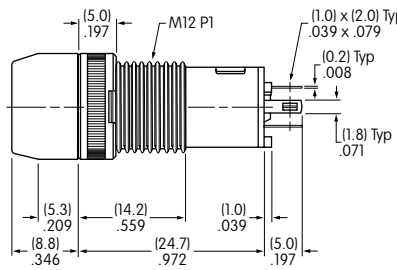
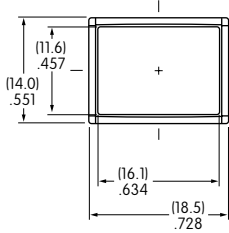


KB15KKW01B-5C-JC

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

Rectangular • Barrier • Bushing Mount

Single & Double Pole

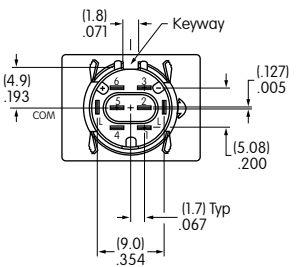
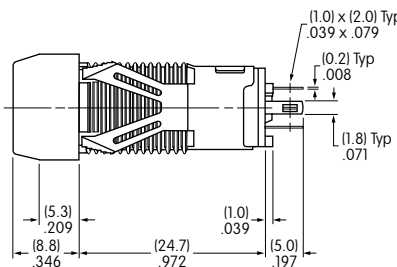
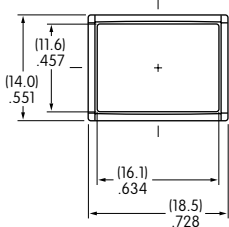


KB15RKW01B-5F-JF

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

AT494
For Square & Round
(not for Barrier type)



Protective Guards

AT4024
For Rectangular
(not for Barrier type)

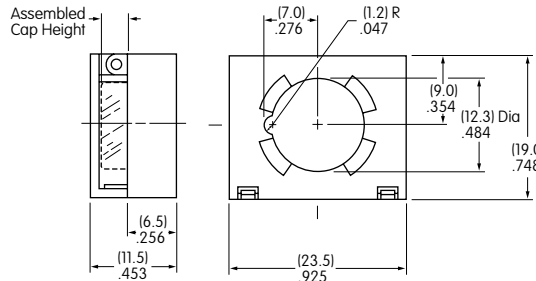
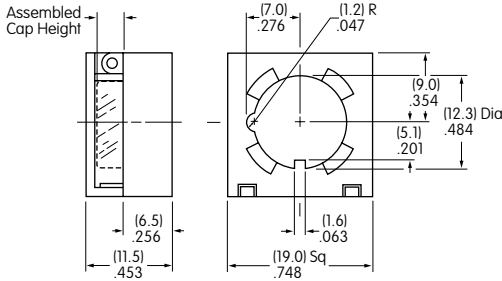


Panel Thickness
Range:

.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).



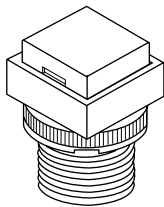
Material: Cover: Polycarbonate

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.



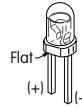
LED
AT635



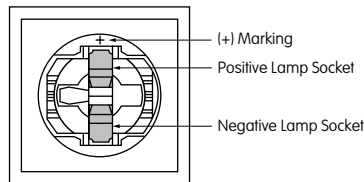
LED
AT634



LEDs
AT625
AT631
AT632

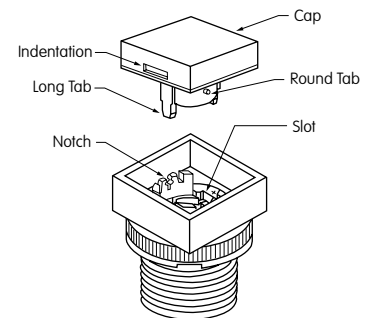


Top
View of
Switch



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.

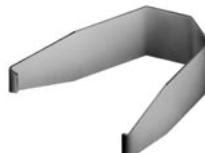


AT108 Socket Wrench for Bushing Mounting

Overtightening the
mounting nut
may damage the
switch housing.



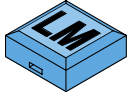
AT109 Cap Extractor



AT111 Lamping Tool



LEGENDS



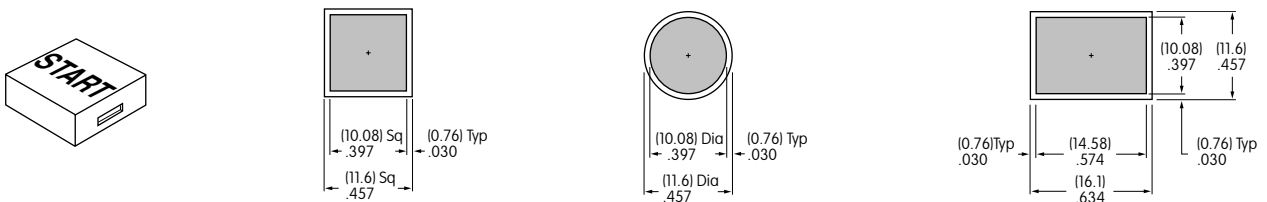
Easily create and submit your own legends using our new on-line Legend Maker.

Visit www.nkkswitches.com

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.

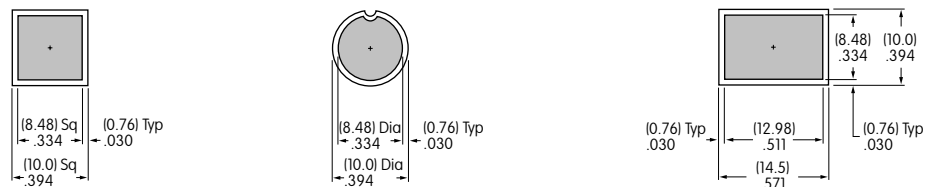
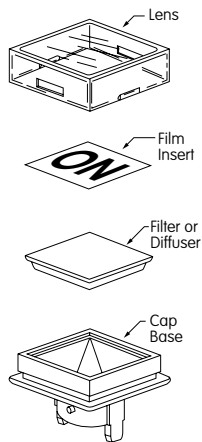


Shaded areas are printable areas.

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.