FP01 Series ................. D4
Photo Interrupter
3 Million Actuations
6-pin Connector
Snap-in Mount

GB Series .................. D8
Ultra-miniature Fully Illuminated Plunger
0.4VA Logic Level
Process Sealed; Straight, Right Angle & Vertical PC

HB Series Illum & Nonillum....... D12
0.1A Power Level; Full Face & Spot Illumination
Solder Lug
Rear Panel Threaded Mounting

HB2 Series .................. D18
Audio/Video Quiet Actuation; 0.4VA Logic Level
Bicolor LED
PCB Mounting

KB Series Illum & Nonillum....... D22
1A Power Level & 0.4VA Logic Level
Full Face & Spot Illumination
Solder Lug; Bushing & Snap-in Mount

KP Series .................. D36
Audio/Video with Silent & Audible Options
100mA Low Level
Bicolor & RGB LEDs; Alternating Legends
Rectangular Cap Assembly & Home Keys
PCB Mounting

LB Series Illum & Nonillum....... D48
Snap-in Mount
3A Power Level & 0.4VA Logic Level
Full Face & Spot Illumination; Super Bright & Bright LEDs
Solder Lug/Quick Connect
**LB Series Illum & Nonillum**

- Panel Seal
- 3A Power Level & 0.4VA Logic Level
- Full Face & Spot Illumination; Super Bright & Bright LEDs
- Solder Lug/Quick Connect

**LP01 Series**

- Secured Cap Design; 3A Power Level
- Full Face Illumination or Spot Illumination
- Solder Lug/Quick Connect

**NP01 Series Illum & Nonillum**

- Soft Touch, Smooth Actuation
- 0.4VA Logic Level
- Bicolor Alternating Legends
- PCB Mounting

**UB Series Illum & Nonillum**

- 5A Power Level & 0.4VA Logic Level
- Full Face & Spot Illumination; Bicolor Alternating Legends
- Solder Lug & Straight PC
- PCB & Snap-in Mount

**UB2 Series Illum & Nonillum**

- 5A Power Level & 0.4VA Logic Level
- Variety of Illumination Effects; Alternating Legends
- Bright, Super Bright, & Bicolor LEDs
- Solder Lug & Straight PC; PCB & Snap-in Mount

**YB Series Illum & Nonillum**

- 3A Power Level & 0.4VA Logic Level
- Full Face & Spot Illumination
- Incandescent & Multi-element LEDs
- Solder Lug/Quick Connect & Straight PC
- Bushing & Snap-in Mount

**YB2 Series Illum & Nonillum**

- 22mm Flush Mount Panel Seal
- 3A Power Level & 0.4VA Logic Level
- Cap Option with Illumination Ring
- Solder Lug/Quick Connect

---

www.nkkswitches.com
Distinctive Characteristics

Brilliant illumination for highly visible status indication with LEDs and caps in red, green, or amber; subdued illumination for low light requirements with white cap over red, green, or amber LEDs.

Photo interrupter, rather than contacts, ensures high reliability and long life of 3 million operations minimum.

Rugged construction and smooth actuation allow repeated, rapid actuation force anywhere on cap surface.

Snap-in mounting for easy installation.

Connector socket with 6 pins for simple connection.

Well suited for gaming and vending machines, as well as equipment exposed to corrosive gases used in environments such as chemical or steel manufacturing plants.
TYPICAL SWITCH ORDERING EXAMPLE

FP0115CAC1FF

ACTUATOR & INTERRUPTER

Model: FP0115
Single Photo Transistor

When shaded, the photo transistor momentarily activates electrical function which signals the external device to change its state.

HOUSING SHAPE & COLOR

Shape: Round (C)
Color: Black (A)

RECEPTACLE

Receptacle: 6-pin Socket (C1)

DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

FP0115CAC1FF

Round, Black Housing

Contact factory for custom options
### Series FP01

**Contactless Pushbuttons**

#### Switch Specifications

<table>
<thead>
<tr>
<th>Actuator Up</th>
<th>Actuator Down</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Status of Photo Interrupter:</strong></td>
<td><strong>Shaded</strong></td>
</tr>
<tr>
<td><strong>Collector Current ( I_C ):</strong></td>
<td>(0.8, \text{mA minimum})</td>
</tr>
<tr>
<td><strong>Status of Photo Transistor:</strong></td>
<td><strong>On</strong></td>
</tr>
<tr>
<td><strong>Output Condition of Photo Transistor:</strong></td>
<td>( I_T = 20, \text{mA &amp; } V_{CE} = 5, \text{V} )</td>
</tr>
</tbody>
</table>

#### Mechanical Specifications

- **Total Travel:** \(0.079\, \text{" (2.0mm)}\)
- **Operating Force:** \(0.75\, \text{N (169 lbf)}\)
- **Mechanical Life:** \(3,000,000\) operations minimum
- **Operating Temperature Range:** \(-25°C\) through \(+50°C\) \((-13°F\) through \(+122°F\)\)

#### Materials

- **Actuator:** Polyacetal
- **Housing:** Polyamide

#### Photo Interrupter Specifications

**Electrical & Optical Characteristics**

<table>
<thead>
<tr>
<th>Typical</th>
<th>Maximum</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Input</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forward Voltage ( V_F ):</td>
<td>1.3V</td>
<td>1.6V</td>
</tr>
<tr>
<td>Reverse Current ( I_R ):</td>
<td>10µA</td>
<td></td>
</tr>
<tr>
<td><strong>Transmission</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collector-Emitter Saturation Voltage ( V_{CE} ) sat:</td>
<td>0.4V</td>
<td></td>
</tr>
</tbody>
</table>

**Absolute Maximum Ratings**

- **Input LED**
  - Typical Forward Current \( I_F \): 50mA
  - Reverse Voltage \( V_R \): 5V
  - Power Dissipation \( P_D \): 80mW
- **Output Photo Transistor**
  - Collector-Emitter Voltage \( V_{CEO} \): 30V
  - Emitter-Collector Voltage \( V_{ECE} \): 4.5V
  - Collector Current \( I_C \): 30mA
  - Collector Dissipation \( P_C \): 80mW

**Circuit Design Considerations**

Output of the infrared LED in the photo interrupter decreases approximately 50% after 100,000 hours. Recommended load resistance (RL) is 40k ~ 120kΩ for the illustrated circuit.

#### LED Colors & Specifications

LEDs are an integral part of the switch and not available separately. The electrical specifications shown are determined at a basic temperature of 25°C.

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

<table>
<thead>
<tr>
<th>Single Element LED</th>
<th>Color</th>
<th>C</th>
<th>D</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Red</strong></td>
<td><strong>Maximum Forward Current</strong> ( I_{FM} ): 30mA</td>
<td>25mA</td>
<td>30mA</td>
<td></td>
</tr>
<tr>
<td><strong>Amber</strong></td>
<td><strong>Typical Forward Current</strong> ( I_F ): 20mA</td>
<td>20mA</td>
<td>20mA</td>
<td></td>
</tr>
<tr>
<td><strong>Green</strong></td>
<td><strong>Forward Voltage</strong> ( V_F ): 1.85V</td>
<td>2.0V</td>
<td>2.1V</td>
<td></td>
</tr>
<tr>
<td><strong>Yellow</strong></td>
<td><strong>Maximum Reverse Voltage</strong> ( V_{RMS} ): 5V</td>
<td>5V</td>
<td>10V</td>
<td></td>
</tr>
<tr>
<td><strong>Current Reduction</strong></td>
<td>( \Delta I_f ):</td>
<td>0.38mA</td>
<td>0.28mA</td>
<td>0.40mA</td>
</tr>
<tr>
<td><strong>Rate Above 25°C</strong></td>
<td></td>
<td>(^°/C)</td>
<td>(^°/C)</td>
<td>(^°/C)</td>
</tr>
<tr>
<td><strong>Ambient Temperature Range</strong></td>
<td></td>
<td>(-25° ~ +50°C)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Contactless Pushbuttons

**Series FP01**

**ACTUATOR COLORS**

<table>
<thead>
<tr>
<th>B</th>
<th>White</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>Red</td>
</tr>
<tr>
<td>D</td>
<td>Amber</td>
</tr>
<tr>
<td>F</td>
<td>Green</td>
</tr>
</tbody>
</table>

**CONNECTOR OPTIONS**

**C2**  
**AT021 Assembled Connector with Wire Leads**

- Connector body: JST model ZHR-6
- Crimp connector pins: JST model SZH-002T-P0.5
- Wire leads: 28-26AWG; 12-inch, unstripped; Blue for Pin 1

**C3**  
**AT022 Unassembled Connector and Pins**

- 1 connector and 8 crimp connector pins only (no wire leads provided).
- Matching wire leads: 28-26AWG

**No Code**  
**No Connector**

- Recommended connector for assembly: JST model number ZHR-6
- Recommended crimp connector pins: JST model SZH-002T-P0.5 for 28-26AWG wire leads or SZH-003T-P0.5 for 32-28AWG wire leads.

**TYPICAL SWITCH DIMENSIONS**

**LEGENDS**

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

**Suggested Printable Area for FP01 Cap**

- **Recommended Methods:**
  - Screen Print on cap.
  - Epoxy based ink is recommended.

Shaded area is printable area.
General Specifications

Electrical Capacity (Resistive Load)
Logic Level: 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: 80 milliohms maximum
Insulation Resistance: 500 megohms minimum @ 500V DC
Dielectric Strength: 500V AC minimum for 1 minute minimum
Mechanical Life: 50,000 operations minimum
Electrical Life: 50,000 operations minimum
Nominal Operating Force: 1.70N
Travel: Pretravel .035" (0.9mm); Overtravel .008" (0.2mm); Total Travel .043" (1.1mm)

Materials & Finishes
Plunger: Polyamide
Case: Glass fiber reinforced polyamide
Sealing Rings: Nitrile butadiene rubber
Movable Contact: Phosphor bronze with gold plating
Stationary Contacts: Phosphor bronze with gold plating
Base: Glass fiber reinforced polyamide
Switch Terminals: Phosphor bronze with gold plating
Lamp Terminals: Phosphor bronze with gold plating

Environmental Data
Operating Temperature Range: –25°C through +55°C (–13°F through +131°F)
Humidity: 90 ~ 95% humidity for 240 hours @ 40°C (104°F)
Vibration: 10 ~ 500Hz with peak-to-peak amplitude of 1.5mm traversing the frequency range & returning in 15 minutes; 3 right angled directions for 2 hours
Shock: 50G (490m/s²) acceleration (tested in 6 right angled directions, with 5 shocks in each direction)

PCB Processing
Soldering: Wave Soldering recommended. See Profile A in Supplement section.
Manual Soldering: See Profile A in Supplement section.
Cleaning: Automated alcohol based cleaning recommended, 5 minutes maximum. Do not use high-purity alcohol (50% alcohol or more) or organic solvent. High alcohol solution can damage clear plastic. See Cleaning specifications in Supplement section.

Standards & Certifications
The GB Series illuminated pushbuttons have not been tested for UL recognition or CSA certification. These switches are designed for use in a low-voltage, low-current, logic-level circuit. When used as intended in a logic-level circuit, the results do not produce hazardous energy.
Distinctive Characteristics

Fully illuminated plunger for highly visible status indication with single color LED in red, green, or amber.

Ultra-miniature size allows high density mounting, and extremely light weight makes these switches ideal for handheld equipment.

Totally sealed body construction prevents contact contamination and allows time- and money-saving automated soldering and cleaning. Insert-molded terminals lock out flux, solvents, and other contaminants.

Award-winning STC contact mechanism with benefits unavailable in conventional mechanisms: smooth, positive detent actuation, increased contact stability, and unparalleled logic-level reliability. (Additional STC details in Terms & Acronyms; see Supplement section.)

.100” x .100” (2.54mm x 2.54mm) terminal spacing conforms to standard PC board grid spacing. Round terminals facilitate easier through-hole mounting on PC boards.

Nonilluminated pushbuttons available and shown in the Pushbutton section.
Series GB

Ultra-Miniature Fully Illuminated Plungers

TYPICAL SWITCH ORDERING EXAMPLE

<table>
<thead>
<tr>
<th>Pole</th>
<th>Circuit</th>
<th>Actuator</th>
<th>PC Terminals</th>
<th>LEDs</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP</td>
<td>1 SPDT</td>
<td>J Clear</td>
<td>P Straight</td>
<td>C Red</td>
</tr>
<tr>
<td></td>
<td>5 ON</td>
<td></td>
<td>H Right Angle</td>
<td>D Amber</td>
</tr>
<tr>
<td></td>
<td>(ON)</td>
<td></td>
<td></td>
<td>F Green</td>
</tr>
</tbody>
</table>

DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

GB15JHF

POLE & CIRCUIT

<table>
<thead>
<tr>
<th>Pole</th>
<th>Model</th>
<th>Plunger Position</th>
<th>Connected Terminals</th>
<th>Throw &amp; Switch/Lamp Schematics</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP</td>
<td>GB15</td>
<td>Normal Down</td>
<td>5-6</td>
<td>Note: Terminal numbers are not actually on the switch. LED circuit is isolated and requires an external power source.</td>
</tr>
</tbody>
</table>

ACTUATOR

J Clear Plunger

LED COLORS & SPECIFICATIONS

LEDs are an integral part of the switch and not available separately.

The electrical specifications shown are determined at a basic temperature of 25°C.

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.
Ultra-Miniature Fully Illuminated Plungers

Series GB

PC TERMINALS

P  Straight

H  Right Angle

V  Vertical

TYPICAL SWITCH DIMENSIONS

Straight PC

Terminals 1 & 3 are lamp terminals.

GB15JPD

Right Angle PC

Terminals 1 & 3 are lamp terminals.

GB15JHF

Vertical PC

Terminals 1 & 3 are lamp terminals.

GB15JVC

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General Specifications

**Electrical Capacity (Resistive Load)**

Power Level (silver): 0.1A maximum @ 30V AC/DC

**Other Ratings**

- Contact Resistance: 50 milliohms maximum
- Insulation Resistance: 100 megohms minimum @ 500V DC
- Dielectric Strength: 500V AC minimum for 1 minute minimum
- Mechanical Life: 100,000 operations minimum
- Electrical Life: 50,000 operations minimum
- Nominal Operating Force: 3.43N
- Contact Timing: Nonshorting (break before make)
- Travel: Pretravel .087” (2.2mm); Overtravel .031” (0.8mm); Total Travel .118” (3.0mm)

**Materials & Finishes**

- Housing: Glass fiber reinforced polyamide
- Base: Glass fiber reinforced polyamide
- Movable Contact: Phosphor bronze with silver plating
- Stationary Contacts: Phosphor bronze with silver plating
- Common Terminal: Phosphor bronze with silver plating
- End Terminals: Phosphor bronze with silver plating
- Lamp Terminals: Phosphor bronze with silver plating

**Environmental Data**

- Operating Temperature Range: –25°C through +50°C (–13°F through +122°F) for Illuminated
  –25°C through +70°C (–13°F through +158°F) for Nonilluminated
- 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 5 shocks in each direction)

**Installation**

- Mounting Torque: 0.49Nm (4.34 lb•in) maximum for round mounting nut
- Cap Installation Force: 9.8N (2.2 lbf) maximum downward force on cap

**Standards & Certifications**

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 models recognized at 0.1A @ 30V AC/DC.
Distinctive Characteristics

Full face and spot illumination available. Front panel relamping.

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

Compact front panel design with 9mm square or round bezel options.

Rear panel threaded mounting. Behind panel depth of less than one inch. 8mm body diameter fits common size panel cutout.

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

Dual, sliding contacts with self-cleaning action provide contact stability, high reliability, and increased operating life.

Solder lug terminals have spacing of .100” (2.54mm) for choice of mounting.

Longer normally closed terminal facilitates wiring and soldering.

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

Matching indicators available.
**TYPICAL SWITCH ORDERING EXAMPLE**

**HB**  
**1**  
**5**  
**S**  
**K**  
**W01**  
**6G**  
**JB**

- **Pole**: 1 SPDT
- **Shapes**:  
  - S Square  
  - C Round
- **Contacts & Terminals**:  
  - Silver Contacts and Solder Lug Terminals  
  - 0.1A @ 30V AC/DC
- **Housing**:  
  - K Black only
- **Circuits**:  
  - 5 ON (ON)  
  - ( ) = Momentary  
  - 6 ON ON  
  - Alternate Action with Latchdown
- **LEDs**:  
  - Bright  
    - 5C Red  
    - 5D Amber  
    - 5F Green  
  - Super Bright  
    - 6B White  
    - 6F Green  
    - 6G Blue
- **Cap Types & Colors**:  
  - LED Cap: Lens/Diffuser Color  
    - AB Black Cap/White Window for Spot Illuminated (Square only)  
    - CB Red/White  
    - DB Amber/White  
    - FB Green/White  
    - JB Clear/White  
  - Nonilluminated Cap Colors  
    - A Black (Square Only)  
    - B White  
    - C Red  
    - E Yellow  
    - F Green  
    - G Blue

**IMPORTANT:**
Switches are supplied without UL & cULus marking unless specified. UL & cULus 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**

**HB15SKW01-6G-JB**

- Blue, Super Bright LED
- Square Shape
- SPDT ON-(ON) Circuit
- White Cap
- Black Housing
- Silver Contacts & Solder Lug Terminals; rated 0.1A @ 30V AC/DC
**Series HB**

### POLES & CIRCUITS

<table>
<thead>
<tr>
<th>Pole</th>
<th>Model</th>
<th>Connected Terminals</th>
<th>Throw &amp; Switch/Lamp Schematics</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP</td>
<td>HB15</td>
<td>Normal (ON) Down ON</td>
<td>SPDT (ON) 1-3 1-2</td>
</tr>
</tbody>
</table>

**Notes:** Switch is marked with NO, NC, C, L. LED circuit is isolated and requires external power source.

* When in latchdown position for the alternate circuit, cap position is .051" (1.3mm) above the built-in bezel.

### SHAPES & PANEL CUTOUT

**S** .354" (9.0mm) Square

The bezel is an integral part of the switch body.

**C** .354" (9.0mm) Round

The bezel is an integral part of the switch body.

### HOUSING

**K** Housing available in black only.

### CONTACT MATERIALS, RATINGS, & TERMINALS

**W01** Silver Contacts

Power Level 0.1A maximum @ 30V AC/DC

**Solder Lug**

Solder lug terminals are spaced .100" x .200" (2.54mm x 5.08mm).

This enables PCB mounting which can be accomplished by elongating PC board holes to .080" (2.03mm).

**PCB Mounting**

Overtightening the mounting nut AT073 may damage the switch housing.
Series HB

Subminiature Pushbuttons

LED COLORS & SPECIFICATIONS

The electrical specifications shown are determined at a basic temperature of 25°C. LED circuit is isolated and requires external power source. Single element LED is colored in OFF state.

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.

<table>
<thead>
<tr>
<th>Bright</th>
<th>AT633</th>
</tr>
</thead>
<tbody>
<tr>
<td>Super Bright</td>
<td></td>
</tr>
<tr>
<td>AT624G Blue</td>
<td></td>
</tr>
<tr>
<td>AT629B White</td>
<td></td>
</tr>
<tr>
<td>AT630F Green</td>
<td></td>
</tr>
<tr>
<td>T-1 Bi-pin</td>
<td></td>
</tr>
</tbody>
</table>

Note for Super Bright:

- AT4031 Square
- AT4036 Round

<table>
<thead>
<tr>
<th>Bright</th>
<th>Super Bright</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color</td>
<td>5C</td>
</tr>
<tr>
<td></td>
<td>Red</td>
</tr>
<tr>
<td>Max. Forward Current</td>
<td>$I_{FM}$</td>
</tr>
<tr>
<td>Typical Forward Current</td>
<td>$I_F$</td>
</tr>
<tr>
<td>Forward Voltage</td>
<td>$V_F$</td>
</tr>
<tr>
<td>Max. Reverse Voltage</td>
<td>$V_{RM}$</td>
</tr>
<tr>
<td>Current Reduction Rate Above 25°C</td>
<td>$\Delta I_F$</td>
</tr>
<tr>
<td>Ambient Temperature Range</td>
<td>-25° ~ +50°C</td>
</tr>
</tbody>
</table>

CAP TYPES & COLORS

<table>
<thead>
<tr>
<th>Color Codes:</th>
<th>A Black</th>
<th>B White</th>
<th>C Red</th>
<th>D Amber</th>
<th>E Yellow</th>
<th>F Green</th>
<th>G Blue</th>
<th>J Clear</th>
</tr>
</thead>
</table>

Cap Colors Available:

- **AB** Black Cap with Translucent White Window for LED Display
  - AT4052 Spot Illuminated
  - Black Cap with Translucent White Window for LED Display

- **CB** Red/White
- **DB** Amber/White
- **FB** Green/White

<table>
<thead>
<tr>
<th>Lens/Diffuser</th>
<th>AT4166 Square</th>
<th>AT4167 Round</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color Available:</td>
<td>Transparent Colored Lens</td>
<td>Transparent White Diffuser</td>
</tr>
<tr>
<td>Material: Polycarbonate</td>
<td>Colored LED</td>
<td>Colored LEDs</td>
</tr>
<tr>
<td>Finish: Matte</td>
<td>AT633</td>
<td></td>
</tr>
</tbody>
</table>

White Cap for Bright & Super Bright LEDs

- **JB** Clear Lens/White Diffuser
  - AT4031 Square
  - AT4032 Round
  - Transparent Clear Lens
  - Transparent White Diffuser
  - Colored LEDs
  - AT624, AT629, AT630, or AT633

Nonilluminated Caps

- **A** Black (Square Only)
- **B** White
- **C** Red
- **E** Yellow
- **F** Green
- **G** Blue

<table>
<thead>
<tr>
<th>Cap Colors Available:</th>
<th>AT4035 Square</th>
<th>AT4036 Round</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material: Polycarbonate</td>
<td>Finish: Glossy</td>
<td>Finish: Glossy</td>
</tr>
</tbody>
</table>
**TYPICAL SWITCH DIMENSIONS**

**Single Pole**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.4 sq</td>
<td>0.291</td>
</tr>
<tr>
<td>9.0 sq</td>
<td>0.354</td>
</tr>
<tr>
<td>7.4 dia</td>
<td>0.291</td>
</tr>
<tr>
<td>9.0 dia</td>
<td>0.354</td>
</tr>
</tbody>
</table>

**Square**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.0 x 2.0 typ</td>
<td>0.197</td>
</tr>
<tr>
<td>10.0 x 0.79</td>
<td>0.071</td>
</tr>
</tbody>
</table>

**Round**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.0 x 1.0</td>
<td>0.276</td>
</tr>
<tr>
<td>5.0 x 2.0</td>
<td>0.197</td>
</tr>
</tbody>
</table>

**ASSEMBLY INSTRUCTIONS**

**Cap Removal**

1. Have cap in extended position (not latchdown) for alternate action models.
2. Use the grip slots on the sides of the cap and pull it out of the switch.

**LED Polarity & Orientation in Lamp Socket**

For AT624, AT629, AT630 and AT633:
Insert the LED with the D flat opposite the black dot molded inside the switch lamp socket.

AT624
AT629
AT630

AT633

**Cap Replacement**

1. Match the prongs on the cap base with the projections in the switch, at the same time aligning the spring clips on the cap with the indentations in the switch.
2. Press firmly in place.

**AT111 Lamping Tool**

Lamping Tool AT111 may be used to remove and replace LED.

**AT110 Socket Wrench**

Socket Wrench AT110 may be used to tighten the mounting nut.

Super Bright LEDs AT624, AT629, & AT630 are electrostatic sensitive.
Series HB2 Subminiature Audio/Video Pushbuttons

General Specifications

Electrical Capacity (Resistive Load)
Logic Level (gold): 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: 80 milliohms maximum
Insulation Resistance: 500 megohms minimum @ 500V DC
Dielectric Strength: 500V AC minimum for 1 minute minimum
Mechanical Life: 100,000 operations minimum for momentary;
Electrical Life: 100,000 operations minimum
Nominal Operating Force: 1.8N
Travel: Pretravel .051” (1.3mm); Overtravel .020” (0.5mm); Total Travel .071” (1.8mm)

Materials & Finishes
Housing: Glass fiber reinforced polyamide
Base: Glass fiber reinforced polyamide
Movable Contact: Phosphor bronze with gold plating
Switch Terminals: Brass with gold plating
Lamp Terminals: Steel with silver plating

Environmental Data
Operating Temperature Range: –25°C through +50°C (–13°F through +122°F)
Humidity: 90 ~ 95% humidity for 240 hours @ 40°C (104°F)
Vibration: 10 ~ 55Hz with peak-to-peak amplitude of 1.5mm traversing the frequency range & returning
in 1 minute; 3 right angled directions for 2 hours
Shock: 50G (490m/s²) acceleration (tested in 6 right angled directions, with 5 shocks in each direction)

Installation
Cap Installation Force: 15.0N (3.37 lbf) maximum downward force on cap

PCB Processing
Soldering: Wave Soldering: See Profile A in Supplement section.
Cleaning: These devices are not process sealed. Hand clean locally using alcohol based solution.

Standards & Certifications
The HB2 pushbuttons have not been tested for UL recognition or CSA certification.
These switches are designed for use in a low-voltage, low-current, logic-level circuit.
When used as intended in a logic-level circuit, the results do not produce hazardous energy.
Distinctive Characteristics

Quiet actuation combined with crisp tactile feedback suited for broadcast equipment.

Full face illumination with choice of red/green or red/yellow bicolor LEDs, as well as simultaneous bicolor illumination which produces amber.

Option of legends on caps or film insert.

Compact design with short body .669” (17.0mm) from PCB to top of cap and .295” (7.5mm) square cap.

Sliding Twin Crossbar (STC) mechanism provides unequalled logic-level reliability, contact stability, smooth positive detent actuation, and long life.

Crimped power terminals ensure secure PCB mounting and prevent dislodging during soldering.

Suitable applications include broadcast, telecommunication, and medical equipment, as well as measuring instruments, etc.

Actual Size
Series HB2

Subminiature Audio/Video Pushbuttons

TYPICAL SWITCH ORDERING EXAMPLE

<table>
<thead>
<tr>
<th>HB2</th>
<th>1</th>
<th>S</th>
<th>K</th>
<th>G03</th>
<th>CF</th>
<th>JB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pole</td>
<td>SPST</td>
<td>Shape</td>
<td>Square</td>
<td>Contacts &amp; Terminals</td>
<td>Gold Contacts and PC Terminals, Rated 0.4VA @ 28V AC/DC</td>
<td></td>
</tr>
<tr>
<td>Circuit</td>
<td>5 OFF (ON)</td>
<td>Housing</td>
<td>Black</td>
<td>Cap Colors</td>
<td>JB Clear Lens/White Diffuser</td>
<td></td>
</tr>
<tr>
<td>Description for Typical Ordering Example</td>
<td>HB215SKG03CF-JB</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Circuit: 5 OFF (ON)

Contacts & Terminals: G03

Cap Colors: JB Clear Lens/White Diffuser

Description: Gold Contacts and PC Terminals with 0.4VA @ 28V AC/DC Rating

LEDs: CE Red/Yellow, CF Red/Green

Amber can be achieved by simultaneous illumination of LEDs.

POLE & CIRCUIT

<table>
<thead>
<tr>
<th>Pole</th>
<th>Model</th>
<th>Normal Plunger Position</th>
<th>Connected Terminals</th>
<th>Throw &amp; Switch/Lamp Schematics</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP</td>
<td>HB215</td>
<td>Normal Down</td>
<td>Normal Down</td>
<td>Notes: Switch terminals are not marked on the switch. Red LED terminal is marked with “R”. Lamp circuit is isolated and requires external power source.</td>
</tr>
</tbody>
</table>

Housing Shape & Color

<table>
<thead>
<tr>
<th>S</th>
<th>K</th>
</tr>
</thead>
<tbody>
<tr>
<td>.307” (7.8mm) Square Body</td>
<td>Black Housing</td>
</tr>
</tbody>
</table>

CONTACT MATERIALS, RATINGS & TERMINALS

G03 Gold Contacts Logic Level 0.4VA maximum @ 28V AC/DC maximum

Switch Terminal

Lamp Terminal

PCB Footprint
Series HB2

Subminiature Audio/Video Pushbuttons

BICOLOR LEDS & SPECIFICATIONS

LED is an integral part of the switch.

<table>
<thead>
<tr>
<th>Color</th>
<th>Red</th>
<th>Yellow</th>
<th>Red</th>
<th>Green</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Forward Current</td>
<td>$I_{FM}$</td>
<td>*30mA</td>
<td>*25mA</td>
<td>*30mA</td>
</tr>
<tr>
<td>Typical Forward Current</td>
<td>$I_F$</td>
<td>20mA</td>
<td>20mA</td>
<td>20mA</td>
</tr>
<tr>
<td>Forward Voltage</td>
<td>$V_F$</td>
<td>2.0V</td>
<td>2.2V</td>
<td>2.0V</td>
</tr>
<tr>
<td>Maximum Reverse Voltage</td>
<td>$V_{RM}$</td>
<td>5V</td>
<td>5V</td>
<td>5V</td>
</tr>
<tr>
<td>Current Reduction Rate Above 25°C</td>
<td>$\Delta I_F$</td>
<td>0.40mA/°C</td>
<td>0.33mA/°C</td>
<td>0.40mA/°C</td>
</tr>
<tr>
<td>Ambient Temperature Range</td>
<td></td>
<td>$-25^\circ$ ~ $+50^\circ$</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The electrical specifications shown are determined at a basic temperature of 25°C. LED circuit is isolated and requires an external power source. 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.

* Value applies to single color illumination for either Red or Yellow or Red or Green. When both colors are illuminated simultaneously, the sum of the currents should not exceed the smallest value of the maximum forward current.

CAP COLORS

- **J**: Clear Transparent Lens
  - AT3081
  - Square Lens
  - Lens & Diffuser Material: Polycarbonate
  - Lens Finish: Glossy
  - Diffuser Finish: Frosted

- **B**: White Translucent Diffuser
  - AT3082
  - Square Diffuser

TYPICAL SWITCH DIMENSIONS

Single Pole

<table>
<thead>
<tr>
<th>Dimension</th>
<th>mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>(3.5) Sq</td>
<td>295</td>
</tr>
<tr>
<td>(7.5) Sq</td>
<td>295</td>
</tr>
</tbody>
</table>

Square

<table>
<thead>
<tr>
<th>Dimension</th>
<th>mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>(3.5) Sq</td>
<td>138</td>
</tr>
<tr>
<td>(10.4) Sq</td>
<td>100</td>
</tr>
<tr>
<td>(17.7) Sq</td>
<td>669</td>
</tr>
<tr>
<td>(13.1) Sq</td>
<td>122</td>
</tr>
</tbody>
</table>

LEGENDS

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

Suggested Printable Area for HB2 Lens & Film Insert

**Recommended Methods**: Screen Print or Pad Print on Lens; Laser Print on Film Insert.

Epoxy based ink is recommended. Film Insert: Clear Polyester, 4 mil max. thickness.

Lens

<table>
<thead>
<tr>
<th>Dimension</th>
<th>mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>(5.98) Sq</td>
<td>233</td>
</tr>
<tr>
<td>(7.5) Sq</td>
<td>295</td>
</tr>
</tbody>
</table>

Film Insert

<table>
<thead>
<tr>
<th>Dimension</th>
<th>mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>(10.76) Sq</td>
<td>030</td>
</tr>
</tbody>
</table>

Diffuser

<table>
<thead>
<tr>
<th>Dimension</th>
<th>mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>(0.61 R) 024</td>
<td></td>
</tr>
</tbody>
</table>

Shaded areas are printable areas.
General Specifications

Electrical Capacity (Resistive Load)
- **Power Level (silver):** 1A @ 125/250V AC or 1A @ 30V DC
- **Logic Level (gold):** 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:** 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:** Noshorting (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 Temperature Range:** -25°C through +50°C (-13°F through +122°F) for Illuminated
  
  -25°C through +70°C (-13°F through +158°F) for Nonilluminated
- **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:** 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.
  
  Single & double pole models recognized at 1A @ 125/250V AC, 1A @ 30V DC, & 0.4VA @ 28V DC.
  
  **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 & double pole models recognized at 1A @ 125/250V AC, 1A @ 30V DC, & 0.4VA @ 28V DC.
Distinctive Characteristics

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

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.

Matching indicators available.
Series KB Miniature Pushbuttons

**TYPICAL SWITCH**

**KB** 1 5 C K W01

**Poles**
- 1: SPDT
- 2: DPDT

**Shapes**
- **Bushing Mounting**
  - S: Square
  - C: Round
  - R: Rectangular

**Housing**
- K: Black only

**Barrier Type**
- No Code: No Barrier
- B: With Barrier

**Contacts & Terminals**
- W01: Silver Contacts and Solder Lug Terminals
  1A @ 125/250V AC
- G01: Gold Contacts and Solder Lug Terminals
  0.4VA @ 28V AC/DC

**Circuits**
- 5: ON (ON)
- ( ) = Momentary
- 6: ON ON

Alternate Action with Latchdown

**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**

KB15CKW01-12-FF

12-volt Incandescent Lamp
- Round with Bushing Mounting

Solid Cap with Green Lens and Green Filter

Black Housing

Silver Contacts and Solder Lug Terminals;
Rated 1A @ 125/250V AC
### Ordering Example

**Lamps**

<table>
<thead>
<tr>
<th>Incandescent Lamp Used with Solid Cap</th>
<th>Solid Cap: Lens/Filter Colors</th>
</tr>
</thead>
<tbody>
<tr>
<td>05 5-volt</td>
<td>A Black/None (Nonilluminated Only. Available in Square and Round Only.)</td>
</tr>
<tr>
<td>12 12-volt</td>
<td>BB White/White</td>
</tr>
<tr>
<td>No Code Nonilluminated</td>
<td>FB Green/White</td>
</tr>
<tr>
<td></td>
<td>CB Red/White</td>
</tr>
<tr>
<td></td>
<td>FF Green/Green</td>
</tr>
<tr>
<td></td>
<td>CC Red/Red</td>
</tr>
<tr>
<td></td>
<td>GB Blue/White</td>
</tr>
<tr>
<td></td>
<td>EB Yellow/White</td>
</tr>
<tr>
<td></td>
<td>GG Blue/Blue</td>
</tr>
</tbody>
</table>

**Incandescent or Neon Used with Insert Cap**

<table>
<thead>
<tr>
<th>Incandescent or Neon Used with Insert Cap</th>
<th>Insert: Lens/Filter Colors</th>
</tr>
</thead>
<tbody>
<tr>
<td>05 5-volt</td>
<td>JB Clear/White</td>
</tr>
<tr>
<td>12 12-volt</td>
<td>JC Clear/Red</td>
</tr>
<tr>
<td>01 110-volt Neon</td>
<td>JE Clear/Yellow</td>
</tr>
<tr>
<td>No Code Nonilluminated</td>
<td>* JF Clear/Green</td>
</tr>
<tr>
<td></td>
<td>* JG Clear/Blue</td>
</tr>
<tr>
<td></td>
<td>* JF &amp; JG not suitable with neon.</td>
</tr>
</tbody>
</table>

**Bright LED Used with Cap for LED**

<table>
<thead>
<tr>
<th>Colors</th>
<th>Resistor</th>
</tr>
</thead>
<tbody>
<tr>
<td>5C Red</td>
<td>No Code</td>
</tr>
<tr>
<td>5D Amber</td>
<td>05 5-volt</td>
</tr>
<tr>
<td>5F Green</td>
<td>12 12-volt</td>
</tr>
</tbody>
</table>

**Super Bright LED Used with Cap for LED**

<table>
<thead>
<tr>
<th>Colors</th>
</tr>
</thead>
<tbody>
<tr>
<td>6B White</td>
</tr>
<tr>
<td>6F Green</td>
</tr>
<tr>
<td>6G Blue</td>
</tr>
</tbody>
</table>

**LED Cap: Lens/Diffuser Colors**

<table>
<thead>
<tr>
<th>LED Cap: Lens/Diffuser Colors</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB Square Spot Illuminated Black Cap/White Window</td>
</tr>
<tr>
<td>JB Clear/White</td>
</tr>
<tr>
<td>JC Clear/Red</td>
</tr>
<tr>
<td>JD Clear/Amber</td>
</tr>
<tr>
<td>JF Clear/Green</td>
</tr>
</tbody>
</table>

**LED Cap: Lens/Filter Colors**

<table>
<thead>
<tr>
<th>LED Cap: Lens/Filter Colors</th>
</tr>
</thead>
<tbody>
<tr>
<td>JB Clear/White</td>
</tr>
</tbody>
</table>

**Cap Types & Colors**

<table>
<thead>
<tr>
<th>Cap Types &amp; Colors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solid Cap: Lens/Filter Colors</td>
</tr>
<tr>
<td>D Illuminated PB</td>
</tr>
<tr>
<td>Tactiles</td>
</tr>
<tr>
<td>Keylocks</td>
</tr>
<tr>
<td>Rockers</td>
</tr>
<tr>
<td>Pushbuttons</td>
</tr>
<tr>
<td>Programmable</td>
</tr>
<tr>
<td>Touch</td>
</tr>
<tr>
<td>Supplement</td>
</tr>
</tbody>
</table>
POLES & CIRCUITS

<table>
<thead>
<tr>
<th>Pole</th>
<th>Model</th>
<th>Normal</th>
<th>Down</th>
<th>Normal</th>
<th>Down</th>
<th>Throw &amp; Switch/Lamp Schematics</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP</td>
<td>KB15</td>
<td>ON</td>
<td>(ON)</td>
<td>ON</td>
<td>2-3</td>
<td>SPDT 2 ICOMI 1 L (L) L</td>
</tr>
<tr>
<td></td>
<td>KB16</td>
<td>ON</td>
<td>ON</td>
<td>ON</td>
<td>2-1</td>
<td></td>
</tr>
<tr>
<td>DP</td>
<td>KB25</td>
<td>ON</td>
<td>(ON)</td>
<td>ON</td>
<td>2-3  5-6</td>
<td>DPDT</td>
</tr>
<tr>
<td></td>
<td>KB26</td>
<td>ON</td>
<td>ON</td>
<td>ON</td>
<td>2-1  5-4</td>
<td></td>
</tr>
</tbody>
</table>

Notes: Switch is marked with “+” and “−”. Lamp circuit is isolated and requires external power source.

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

MOUNTING TYPES & SHAPES

Bushing Mounting

<table>
<thead>
<tr>
<th></th>
<th>.551” (14.0mm)</th>
<th>.551” (14.0mm)</th>
<th>.551” x .728” (14.0mm x 18.5mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>Square</td>
<td>Rectangular</td>
<td></td>
</tr>
<tr>
<td></td>
<td>No barrier</td>
<td>With barrier</td>
<td></td>
</tr>
<tr>
<td>K</td>
<td>Square</td>
<td>Round</td>
<td></td>
</tr>
<tr>
<td></td>
<td>No barrier</td>
<td>With barrier</td>
<td></td>
</tr>
</tbody>
</table>

Snap-in Mounting

<table>
<thead>
<tr>
<th></th>
<th>.551” (14.0mm)</th>
<th>.551” (14.0mm)</th>
<th>.551” x .728” (14.0mm x 18.5mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>K</td>
<td>Square</td>
<td>Rectangular</td>
<td></td>
</tr>
<tr>
<td></td>
<td>No barrier</td>
<td>With barrier</td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>Round</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>No barrier</td>
<td>With barrier</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>Rectangular</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>No barrier</td>
<td>With barrier</td>
<td></td>
</tr>
</tbody>
</table>

Panel Cutouts

<table>
<thead>
<tr>
<th></th>
<th>Without Keyway</th>
<th>With Keyway</th>
</tr>
</thead>
<tbody>
<tr>
<td>Panel Thickness:</td>
<td>.020” ~ .315”</td>
<td>.039” ~ .138”</td>
</tr>
<tr>
<td>(0.5 ~ 8.0mm)</td>
<td>(1.0 ~ 3.5mm)</td>
<td></td>
</tr>
</tbody>
</table>

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
  - Supplement: 01 Solder Lug

- **G** Gold Contacts
  - Logic Level: 0.4VA maximum @ 28V AC/DC

  Complete explanation of operating range in Supplement section.

### AT055 Crossover Guard

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

<table>
<thead>
<tr>
<th>Model</th>
<th>Type</th>
<th>Voltage</th>
<th>Current</th>
<th>Endurance</th>
<th>Recommended Resistors for Neon:</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT611</td>
<td>Incandescent</td>
<td>5V AC</td>
<td>115mA</td>
<td>7,000</td>
<td>33K ohms for 110V AC; 100K ohms for 220V AC</td>
</tr>
<tr>
<td>AT615</td>
<td>Neon</td>
<td>12V AC</td>
<td>60mA</td>
<td>10,000</td>
<td></td>
</tr>
<tr>
<td>AT615</td>
<td>Neon</td>
<td>110V AC</td>
<td>1.5mA</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Resistor Codes**
  - **05**: 33K ohms
  - **12**: 100K ohms
  - **24**: For 220V AC

#### Bright LED with Resistor

<table>
<thead>
<tr>
<th>Model</th>
<th>Color Codes</th>
<th>Resistor Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT634</td>
<td>Red: 5C; Amber: 5D; Green: 5F</td>
<td>05; 12; 24</td>
</tr>
</tbody>
</table>

**LEDs are colored in OFF state.**

| AT634     | 5-volt 2-element with 1 Resistor |
| AT634     | 12-volt 4-element with 2 Resistors |
| AT634     | 24-volt 4-element with 2 Resistors |

**Resistor Codes**

- **5C**: Maximum Forward Current $I_{FM}$
- **5D**: Typical Forward Current $I_f$
- **5F**: Forward Voltage $V_f$
- **05**: Maximum Reverse Voltage $V_{RM}$
- **12**: Current Reduction Rate Above 25°C $\Delta I_f$
- **24**: —
Series KB

Miniature Pushbuttons

<table>
<thead>
<tr>
<th>LAMP COLORS &amp; SPECIFICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bright LED without Resistor</strong></td>
</tr>
<tr>
<td>AT635</td>
</tr>
<tr>
<td>Color Codes</td>
</tr>
<tr>
<td>Maximum Forward Current $I_{FM}$</td>
</tr>
<tr>
<td>Typical Forward Current $I_f$</td>
</tr>
<tr>
<td>Forward Voltage $V_f$</td>
</tr>
<tr>
<td>Maximum Reverse Voltage $V_{RM}$</td>
</tr>
<tr>
<td>Current Reduction Rate Above 25°C $\Delta I_f$</td>
</tr>
<tr>
<td>Ambient Temperature Range</td>
</tr>
</tbody>
</table>

**Super Bright Single Element LED**

<table>
<thead>
<tr>
<th>AT625G Blue</th>
<th>AT631B White</th>
<th>AT632F Green</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Forward Current $I_{FM}$</td>
<td>30mA</td>
<td>30mA</td>
</tr>
<tr>
<td>Typical Forward Current $I_f$</td>
<td>20mA</td>
<td>20mA</td>
</tr>
<tr>
<td>Forward Voltage $V_f$</td>
<td>3.3V</td>
<td>3.3V</td>
</tr>
<tr>
<td>Maximum Reverse Voltage $V_{RM}$</td>
<td>7V</td>
<td>7V</td>
</tr>
<tr>
<td>Current Reduction Rate Above 25°C $\Delta I_f$</td>
<td>0.40mA/°C</td>
<td>0.40mA/°C</td>
</tr>
<tr>
<td>Ambient Temperature Range</td>
<td>-25°C ~ +50°C</td>
<td></td>
</tr>
</tbody>
</table>

**CAP TYPES & COLOR COMBINATIONS**

<table>
<thead>
<tr>
<th>Color Codes:</th>
<th>A Black</th>
<th>B White</th>
<th>C Red</th>
<th>E Yellow</th>
<th>F Green</th>
<th>G Blue</th>
<th>J Clear</th>
</tr>
</thead>
</table>

**Lens/Filter Colors Available:**

- **Solid Cap for Incandescent Lamp & Nonilluminated**
  - Nonilluminated Only; Square & Round Only
  - Material: Polycarbonate
  - Finish: Glossy
  - Lamp AT611

**Lens/Filter Colors Available:**

- **Transparent Clear Lens**
- **Translucent Colored Filter**
- Lamp AT611

JF and JG not suitable with neon lamp.
CAP TYPES & COLOR COMBINATIONS

<table>
<thead>
<tr>
<th>Color Codes</th>
<th>A</th>
<th>Black</th>
<th>B</th>
<th>White</th>
<th>C</th>
<th>Red</th>
<th>D</th>
<th>Amber</th>
<th>E</th>
<th>Yellow</th>
<th>F</th>
<th>Green</th>
<th>G</th>
<th>Blue</th>
<th>J</th>
<th>Clear</th>
</tr>
</thead>
</table>

Spot Illuminated Cap for Bright LED without Resistor or with Resistor

Cap/Window Colors Available:

- **Opaque Black Cap with Translucent White Window for Spot Illumination**

  | AT4051 |
  | Square |

Material: Polycarbonate  Finish: Matte

Bright LED AT635  Bright LED AT634

---

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  Square
  - AT4132  Round
  - AT4134  Rectangular

Transparent Clear Lens

- **JC**
  - AT4158
  - AT4160
  - AT4159

Translucent Diffuser

- **JD**

- **JF**

Material: Polycarbonate  Finish: Glossy

Bright LED AT635  Bright LED AT634

---

Cap for Super Bright LED

Lens/Diffuser Colors Available:

- **JB**
  - AT4133  Square
  - AT4132  Round
  - AT4134  Rectangular

Translucent Clear Lens

Translucent White Diffuser

Material: Polycarbonate  Finish: Glossy

Super Bright LEDs AT625  AT631 AT632
## TYPICAL SWITCH DIMENSIONS

### Square • Bushing Mount

<table>
<thead>
<tr>
<th>Model</th>
<th>Dimensions</th>
<th>Single &amp; Double Pole</th>
</tr>
</thead>
<tbody>
<tr>
<td>KB15SKW01-05-GG</td>
<td><img src="image1.png" alt="Square Bushing Mount" /></td>
<td><img src="image2.png" alt="Single &amp; Double Pole" /></td>
</tr>
</tbody>
</table>

- **Square Bushing Mount**
  - Single pole models do not have terminals 4, 5, & 6.

### Round • Bushing Mount

<table>
<thead>
<tr>
<th>Model</th>
<th>Dimensions</th>
<th>Single &amp; Double Pole</th>
</tr>
</thead>
<tbody>
<tr>
<td>KB25CKW01-05-GG</td>
<td><img src="image3.png" alt="Round Bushing Mount" /></td>
<td><img src="image4.png" alt="Single &amp; Double Pole" /></td>
</tr>
</tbody>
</table>

- **Round Bushing Mount**
  - Single pole models do not have terminals 4, 5, & 6.

### Rectangular • Bushing Mount

<table>
<thead>
<tr>
<th>Model</th>
<th>Dimensions</th>
<th>Single &amp; Double Pole</th>
</tr>
</thead>
<tbody>
<tr>
<td>KB15RKW01-05-GG</td>
<td><img src="image5.png" alt="Rectangular Bushing Mount" /></td>
<td><img src="image6.png" alt="Single &amp; Double Pole" /></td>
</tr>
</tbody>
</table>

- **Rectangular Bushing Mount**
  - Single pole models do not have terminals 4, 5, & 6.
TYPICAL SWITCH DIMENSIONS

Single & Double Pole

Square • Snap-in Mount

D31

Indicators
Accessories
Supplement
Tactiles
Keylocks
Rotaries
Pushbuttons

Illuminated PB
Programmable
Toggles
Rockers

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

KB16KKW01-05-CB

KB26MKW01-05-CB

KB16NKW01-05-CB

www.nkkswitches.com
Series KB

Miniature Pushbuttons

TYPICAL SWITCH DIMENSIONS

Square • Barrier • Bushing Mount

Single & Double Pole

![Image of KB15SKW01B-6G-JB](Image)

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

Square • Barrier • Snap-in Mount

Single & Double Pole

![Image of KB15KKW01B-SC-JC](Image)

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

Rectangular • Barrier • Bushing Mount

Single & Double Pole

![Image of KB15RKW01B-SF-JF](Image)

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

Rectangular • Barrier • Snap-in Mount

Single & Double Pole

![Image of KB15NKW01B-5D-JD](Image)

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

KB15SKW01B-6G-JB

KB15KKW01B-SC-JC

KB15RKW01B-SF-JF

KB15NKW01B-5D-JD

www.nkkswitches.com
OPTIONAL ACCESSORIES

PCB Adaptors

AT701
Single Pole
Straight PC Terminals

AT702
Double Pole
Straight 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

www.nkkswitches.com
OPTIONAL ACCESSORIES

Protective Guards

AT494
For Square & Round
(not for Barrier type)

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.

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

ATTENTION ELECTROSTATIC SENSITIVE DEVICES

LEDs
AT625
AT631
AT632

LED AT635
Flat
(+)
(−)

LED AT634
Flat
(+)
(−)

(+1) Marking
Positive Lamp Socket

(−1) Marking
Negative Lamp Socket
LEGENDS

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

Suggested Printable Area for KB Lens

**Recommended Methods:** 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:** Laser Print

Film Insert: Clear Polyester, 4 mil max. thickness

Shaded areas are printable areas.
Series KP
Compact Illuminated Pushbuttons

General Specifications

Electrical Capacity (Resistive Load)
Low Level: 100mA maximum @ 12V DC

Other Ratings
- Contact Resistance: 200 milliohms maximum
- Insulation Resistance: 100 megohms minimum @ 250V DC
- Dielectric Strength: 1,000V AC minimum between contacts for 1 minute minimum
  1,500V AC minimum between contacts & case for 1 minute minimum
- Mechanical Life: 5,000,000 operations minimum;
  1,000,000 operations minimum for Rectangular Switch/Cap Assembly (at center of cap)
- Electrical Life: 5,000,000 operations minimum;
  1,000,000 operations minimum for Rectangular Switch/Cap Assembly (at center of cap)
- Nominal Operating Force: KP01: 1.9N maximum for Tactile & Nontactile models (at center of cap)
  KP02: 1.6N maximum for Tactile, Nontactile & Tactile/Audible models (at center of cap)
- Travel: KP01: Pretravel .122” (3.1mm); Overtravel .055” (1.4mm); Total Travel .177” (4.5mm)
  KP02: Pretravel .091” (2.3mm); Overtravel .047” (1.2mm); Total Travel .138” (3.5mm)

Materials & Finishes
- Plunger/Upper Housing: Polyacetal
- Lower Housing: Glass fiber reinforced PBT (UL94V-0)
- Movable Contact: Stainless steel with gold plating
- Stationary Contacts: Gold over copper alloy
- Switch Terminals: Brass with tin plating

Environmental Data
- Operating Temperature Range: -25°C through +50°C (-13°F through +122°F)
- Humidity: 90-95% humidity for 240 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: 51G (500m/s²) acceleration (tested in 6 right angled directions, with 5 shocks in each direction)

Installation
- Cap Installation Force: 50.0N maximum downward force on actuator

PCB Processing
- Soldering: For RGBP 4-pin: Wave Soldering. Preheat temperature: 140°C @ 60 seconds;
  Peak temperature: 270°C @ 11 seconds; Cycles: 2
  Manual Soldering. 410°C @ 4 seconds; Cycles: 2
  For all others: Wave Soldering. Preheat temperature: 110°C @ 40 seconds;
  Peak temperature: 270°C @ 6 seconds; Cycles: 2
  Manual Soldering. 390°C @ 4 seconds; Cycles: 2
- Cleaning: These devices are not process sealed. Hand clean locally using alcohol based solution.

Standards & Certifications
- Flammability Standards: UL94V-0 lower housing

The KP Series pushbuttons have not been tested for UL recognition or CSA certification. These switches are designed for use in a low-voltage, low-current, logic-level circuit. When used as intended in a logic-level circuit, the results do not produce hazardous energy.
**Distinctive Characteristics**

KP series offers a complete switch solution for all control panel needs, including home keys and the rectangular switch/cap assembly.

Distinct, long total travel of .177” (4.5mm) for KP01 or shorter stroke of .138” (3.5mm) for KP02.

Available with super bright amber/blue bicolor LED or super bright RGB LED. The RGB LED provides vibrant full color spectrum in unlimited color combinations, and is offered in both 4-pin or 8-pin terminations.

Unique actuation guide gives positive indication of circuit transfer as well as smooth and silent operation.

Choices of tactile, nontactile or tactile/audible actuation.

Compact design with height of .906” (23.0mm) from PC board to top of cap (same height as programmable SmartDisplay).

Flat, sculptured or home key square caps in three common sizes for design flexibility in various applications.

Twin contacts with gold plating assure high reliability and long life of 5,000,000 operations minimum.

Improved profile for soldering specifications (RGBP models).

Standard and custom alternating legends available.
### Series KP

**Compact Illuminated Pushbuttons**

#### TYPICAL SWITCH

<table>
<thead>
<tr>
<th><strong>KP</strong></th>
<th><strong>01</strong></th>
<th><strong>15A</strong></th>
<th><strong>N</strong></th>
<th><strong>B</strong></th>
<th><strong>K</strong></th>
<th><strong>G03</strong></th>
<th><strong>RGBP</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pole &amp; Circuit</td>
<td>15A</td>
<td>SPST OFF (ON)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( ) = Momentary Normally Open Contacts</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15A</td>
<td>SPST OFF (ON)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>11.6mm Plunger for 12.0mm Cap</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.6mm Plunger for 15.0mm &amp; 17.4mm Caps</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.6mm Plunger and 15.0mm Sculptured Cap</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clear Lens and White Diffuser</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SPST OFF-Momentary ON Circuit Normally Open Contacts</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Straight PC Terminals</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gold Contacts and Straight PC Terminals; 100mA @ 12V DC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gold Contacts and Straight PC Terminals; 100mA @ 12V DC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LEDS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6DG</td>
<td>Super Bright Amber/Blue Bicolor</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RGB</td>
<td>Red/Green/Blue 4-Pin</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RGB</td>
<td>Red/Green/Blue 8-Pin</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* See Notes Next Page</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Contacts & Terminals

- Gold Contacts and Straight PC Terminals; 100mA @ 12V DC

#### Actuation

- 01
  - Stroke: 4.5mm (.177")
  - Actuation Force: 1.9N
  - Tactile
- 02
  - Stroke: 3.5mm (.138")
  - Actuation Force: 1.6N
  - Nontactile

#### Plungers

- A
  - 9.2mm Plunger for 12.0mm Cap
- B
  - 11.6mm Plunger for 15.0mm & 17.4mm Caps

#### Travel & Force

- 01
  - Stroke: 4.5mm (.177")
  - Actuation Force: 1.9N
  - Tactile
- 02
  - Stroke: 3.5mm (.138")
  - Actuation Force: 1.6N
  - Nontactile

#### Housing

- K Black Only

### LEDS

- 6DG Super Bright Amber/Blue Bicolor
- RGB Red/Green/Blue 4-Pin
- RGB Red/Green/Blue 8-Pin

* See Notes Next Page

**DESCRIPTION FOR TYPICAL ORDERING EXAMPLE**

**KP0115ANBKG03RGBP-2SJB**

- 11.6mm Plunger and 15.0mm Sculptured Cap
- Clear Lens and White Diffuser
- SPST OFF-Momentary ON Circuit Normally Open Contacts
- Straight PC Terminals
- RGB LED with 4 Pins
- Nontactile Actuation
- Black Housing
- Gold Contacts with 100mA Rating
## Ordering Example

### Cap Types
- **F**: Flat
- **S**: Sculptured
- **T**: Home Key

### Cap Sizes

<table>
<thead>
<tr>
<th>Number</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>12.0mm Square</td>
</tr>
<tr>
<td>2</td>
<td>15.0mm Square</td>
</tr>
<tr>
<td>3</td>
<td>17.4mm Square</td>
</tr>
</tbody>
</table>

**See Notes**

### Cap Colors
- **JB**: Clear Lens & White Diffuser

### Bicolor Alternating Legend Caps
- **JCF**: Red/Green (Combines with RGBP LED only)
- **JDG**: Amber/Blue (Combines with 6DG LED only)

**See Notes**

### Alternating Legends

<table>
<thead>
<tr>
<th>Number</th>
<th>Legend Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>ON / OFF (Positive – Black Legend, Clear Background)</td>
</tr>
<tr>
<td>12</td>
<td>ON / OFF (Negative – Clear Legend, Black Background)</td>
</tr>
<tr>
<td>13</td>
<td>START / STOP</td>
</tr>
<tr>
<td>14</td>
<td>OPEN / CLOSE</td>
</tr>
</tbody>
</table>

**See Notes**

Contact factory for custom options.

### Notes

- **Amber/Blue Bicolor**
- **RGBP LED**
- **RGB LED**
- **Rectangular Cap**
- **Alternating Legends**

<table>
<thead>
<tr>
<th>Notes</th>
<th>Page No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>* Amber/Blue Bicolor</td>
<td>D43</td>
</tr>
<tr>
<td>* RGBP LED</td>
<td>D44</td>
</tr>
<tr>
<td>* RGB LED</td>
<td>D45</td>
</tr>
<tr>
<td>(not recommended for new design)</td>
<td></td>
</tr>
<tr>
<td>** Rectangular Cap</td>
<td>D46</td>
</tr>
<tr>
<td>*** Alternating Legends</td>
<td>D42</td>
</tr>
</tbody>
</table>
## Series KP Compact Illuminated Pushbuttons

### POLE & CIRCUIT

<table>
<thead>
<tr>
<th>Pole</th>
<th>Model</th>
<th>Normal Plunger</th>
<th>Connected Terminals</th>
<th>Throw &amp; Switch Schematic</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP</td>
<td>KP0115A</td>
<td>Off</td>
<td>Normally Open</td>
<td>SPST 1-1a</td>
</tr>
<tr>
<td></td>
<td>KP0215A</td>
<td>(ON)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Switch terminals “1” & “1a” are actually marked on the switch.

### ACTUATION

- **C**: Tactile | KP01 or KP02
- **N**: Nontactile | KP01 or KP02
- **S**: Tactile/Audible | KP02 only

### PLUNGERS

- **A**: 9.2mm Plunger for 12.0mm Cap
  - 9.2mm Plunger is designed with a narrower neck to hold the 12.0mm Cap.

- **B**: 11.6mm Plunger for 15.0mm & 17.4mm Caps
  - 11.6mm Plunger is designed with a wider neck to hold both the 15.0mm and 17.4mm Caps.

### HOUSING

- **K**: Black Only

### CONTACTS, TERMINALS, & RATING

- **G03**: Gold Contacts | Straight PC Terminals | 100mA @ 12V DC
CAP TYPES & COLORS

Caps for Bicolor, RGBP & RGB

1 12.0mm Square  Used on A Plunger

F AT3083 Flat Cap

S AT3078 Sculptured Cap

T AT3086 Home Key Cap

2 15.0mm Square  Used on B Plunger

F AT3084 Flat Cap

S AT3079 Sculptured Cap

T AT3087 Home Key Cap

3 17.4mm Square  Used on B Plunger

F AT3085 Flat Cap

S AT3080 Sculptured Cap

T AT3088 Home Key Cap

JB Lens & Diffuser Colors Available:

Clear/White

Materials & Finishes: Lens - Polycarbonate with glossy finish
Diffuser - Polycarbonate with textured finish
 Optional Protective Guard AT4170 available; contact factory.
Series KP

Compact Illuminated Pushbuttons

Caps for Alternating Legends

1. 12.0mm Square
   Used on A Plunger
   - F AT3093 Flat Cap
   - S AT3090 Sculptured Cap
   - T AT3096 Home Key Cap

2. 15.0mm Square
   Used on B Plunger
   - F AT3094 Flat Cap
   - S AT3091 Sculptured Cap
   - T AT3097 Home Key Cap

3. 17.4mm Square
   Used on B Plunger
   - F AT3095 Flat Cap
   - S AT3092 Sculptured Cap
   - T AT3098 Home Key Cap

Standard Alternating Legend Pairs

<table>
<thead>
<tr>
<th>#</th>
<th>Legend</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>ON OFF</td>
<td>Green/Red or Blue/Amber</td>
</tr>
<tr>
<td>12</td>
<td>ON OFF</td>
<td>Green/Red or Blue/Amber</td>
</tr>
<tr>
<td>13</td>
<td>START STOP</td>
<td>Green/Red or Blue/Amber</td>
</tr>
<tr>
<td>14</td>
<td>OPEN CLOSE</td>
<td>Green/Red or Blue/Amber</td>
</tr>
</tbody>
</table>

Cap illumination is alternating Green/Red or Blue/Amber; legend text is black.
Contact factory for other Alternating Legends.

Legend illustrations are approximate representations of the actual characters on the filters.

Part Numbers for Alternating Legends

<table>
<thead>
<tr>
<th>Color</th>
<th>Cap Size</th>
<th>Flat Cap</th>
<th>Sculptured Cap</th>
<th>Home Key Cap</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cap Number</td>
<td>Part Number</td>
<td>Part Number</td>
<td>Part Number</td>
</tr>
<tr>
<td>Red/Green</td>
<td>12mm Square</td>
<td>AT3093JCF11 ~ AT3093JCF14</td>
<td>AT3090JCF11 ~ AT3090JCF14</td>
<td>AT3096JCF11 ~ AT3096JCF14</td>
</tr>
<tr>
<td></td>
<td>15mm Square</td>
<td>AT3094JCF11 ~ AT3094JCF14</td>
<td>AT3091JCF11 ~ AT3091JCF14</td>
<td>AT3097JCF11 ~ AT3097JCF14</td>
</tr>
<tr>
<td></td>
<td>17.4mm Square</td>
<td>AT3095JCF11 ~ AT3095JCF14</td>
<td>AT3092JCF11 ~ AT3092JCF14</td>
<td>AT3098JCF11 ~ AT3098JCF14</td>
</tr>
<tr>
<td>Amber/Blue</td>
<td>12mm Square</td>
<td>AT3093JDG11 ~ AT3093JDG14</td>
<td>AT3090JDG11 ~ AT3090JDG14</td>
<td>AT3096JDG11 ~ AT3096JDG14</td>
</tr>
<tr>
<td></td>
<td>15mm Square</td>
<td>AT3094JDG11 ~ AT3094JDG14</td>
<td>AT3091JDG11 ~ AT3091JDG14</td>
<td>AT3097JDG11 ~ AT3097JDG14</td>
</tr>
<tr>
<td></td>
<td>17.4mm Square</td>
<td>AT3095JDG11 ~ AT3095JDG14</td>
<td>AT3092JDG11 ~ AT3092JDG14</td>
<td>AT3098JDG11 ~ AT3098JDG14</td>
</tr>
</tbody>
</table>

See Ordering Table for Alternating Legend that corresponds with last 2 digits of part number.
**Series KP Compact Illuminated Pushbuttons**

## SUPER BRIGHT BICOLOR LED SPECIFICATIONS

The electrical specifications shown are determined at a basic temperature of 25°C. LEDs are an integral part of the switch and are not available separately. LED circuit is isolated and requires an external power source. 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.

<table>
<thead>
<tr>
<th></th>
<th>Colors</th>
<th>6DG</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td><strong>Amber</strong></td>
</tr>
<tr>
<td>Minimum Luminous Intensity</td>
<td>$I_V$</td>
<td>204</td>
</tr>
<tr>
<td>Standard Luminous Intensity</td>
<td>$I_V$</td>
<td>340</td>
</tr>
<tr>
<td>Maximum Forward Current</td>
<td>$I_{FM}$</td>
<td>30</td>
</tr>
<tr>
<td>Typical Forward Current</td>
<td>$I_f$</td>
<td>20</td>
</tr>
<tr>
<td>Forward Voltage</td>
<td>$V_f$</td>
<td>2.1</td>
</tr>
<tr>
<td>Power Peak Dissipation</td>
<td>$P_D$</td>
<td>75</td>
</tr>
<tr>
<td>Maximum Reverse Voltage</td>
<td>$V_{RM}$</td>
<td>4</td>
</tr>
<tr>
<td>Wavelength at Peak Emission</td>
<td>$\lambda$</td>
<td>583 ~ 595</td>
</tr>
<tr>
<td>Current Reduction Rate Above 25°C</td>
<td>$\Delta I_f$</td>
<td>0.40</td>
</tr>
<tr>
<td>Ambient Temperature Range</td>
<td></td>
<td>–25 ~ +50°C</td>
</tr>
</tbody>
</table>

Purple can be achieved by simultaneous illumination of Amber & Blue.

## TYPICAL SWITCH DIMENSIONS

**12.0mm Square Cap**

**15.0mm Cap**

**17.4mm Cap**

**15.0mm & 17.4mm Square Caps**

**Bicolor Alternating Legend • 15.0mm Square Cap**

---

**ATTENTION ELECTROSTATIC SENSITIVE DEVICES**

The electrical specifications shown are determined at a basic temperature of 25°C. LEDs are an integral part of the switch and are not available separately. LED circuit is isolated and requires an external power source. 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.
Series KP
Compact Illuminated Pushbuttons

LED SPECIFICATIONS • RGBP with 4 Pins

The electrical specifications shown are determined at a basic temperature of 25°C.
LEDs are an integral part of the switch and are not available separately.
LED circuit is isolated and requires an external power source.
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.

Note: For applications that require white illumination, contact factory.

**For applications that require white illumination, contact factory.**

<table>
<thead>
<tr>
<th>Color</th>
<th>Red</th>
<th>Green</th>
<th>Blue</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Forward Current</td>
<td>$I_{FM}$</td>
<td>50</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Typical Forward Current</td>
<td>$I_F$</td>
<td>15</td>
<td>16</td>
<td>10</td>
</tr>
<tr>
<td>Forward Voltage</td>
<td>$V_F$</td>
<td>2.0</td>
<td>2.9</td>
<td>2.9</td>
</tr>
<tr>
<td>Power Peak Dissipation</td>
<td>$P_D$</td>
<td>100</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>Maximum Reverse Voltage</td>
<td>$V_R$</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Dominant Wavelength</td>
<td>$\lambda_d$</td>
<td>620</td>
<td>525</td>
<td>467</td>
</tr>
<tr>
<td>Current Reduction Rate Above 25°C</td>
<td>$\Delta I_F$</td>
<td>0.75</td>
<td>0.25</td>
<td><strong>0.22</strong></td>
</tr>
</tbody>
</table>

Ambient Temperature Range: −25 ~ +50 °C

*Forward Voltage ($V_F$) and Dominant Wavelength ($\lambda_d$) are Typical Value measured by Typical Forward Current ($I_F$).

**Current Reduction Rate (Δ$I_F$) Above 40°C

TYPICAL SWITCH DIMENSIONS

12.0mm Square Cap with RGBP LED

![12.0mm Square Cap with RGBP LED](image)

**KP0115ACAKG03RGBP-15JB**

15.0mm & 17.4mm Square Caps with RGBP LEDs

15.0mm Cap

![15.0mm Cap](image)

Terminal Detail

**KP0115ANBK03RGBP-25JB**

17.4mm Cap

![17.4mm Cap](image)

Terminal Detail

**KP0115ANBK03RGBP-35JB**
LED SPECIFICATIONS • RGB with 8 Pins

The electrical specifications shown are determined at a basic temperature of 25°C. LEDs are an integral part of the switch and are not available separately. LED circuit is isolated and requires an external power source. 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.

Note: For applications that require white illumination, contact factory.

<table>
<thead>
<tr>
<th>Color</th>
<th>Red</th>
<th>Green</th>
<th>Blue</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Forward Current</td>
<td>$I_{FM}$</td>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Typical Forward Current</td>
<td>$I_F$</td>
<td>20</td>
<td>14</td>
<td>9</td>
</tr>
<tr>
<td>Forward Voltage</td>
<td>$V_F$</td>
<td>2.0</td>
<td>2.9</td>
<td>2.9</td>
</tr>
<tr>
<td>Power Peak Dissipation</td>
<td>$P_D$</td>
<td>60</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>Maximum Reverse Voltage</td>
<td>$V_{RM}$</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Dominant Wavelength</td>
<td>$\lambda_d$</td>
<td>621.5</td>
<td>522.5</td>
<td>472.5</td>
</tr>
<tr>
<td>Current Reduction Rate Above 25°C</td>
<td>$\Delta I$</td>
<td>0.50</td>
<td>0.50</td>
<td>0.50</td>
</tr>
</tbody>
</table>

Ambient Temperature Range $-25 ~ +50 ^\circ C$

*Forward Voltage ($V_F$) and Dominant Wavelength ($\lambda_d$) are Typical Value measured by Typical Forward Current ($I_F$).

TYPICAL SWITCH DIMENSIONS

12.0mm Square Cap with RGB LED

15.0mm & 17.4mm Square Caps with RGB LEDs
Series KP
Compact Illuminated Pushbuttons

RECTANGULAR CAP ASSEMBLY

CAP ASSEMBLY DIMENSIONS

<table>
<thead>
<tr>
<th>Description</th>
<th>Dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switch/Rectangular Cap Assembly</td>
<td>See below for complete assembly of switch, LEDs and LED holders.</td>
</tr>
</tbody>
</table>

LED SPECIFICATIONS

The electrical specifications shown are determined at a basic temperature of 25°C. Center LED is an integral part of the switch. LEDs are not sold separately. LED circuits are isolated and require an external power source. 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.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Forward Current</td>
<td>( I_{FM} ) 30 mA</td>
</tr>
<tr>
<td>Typical Forward Current</td>
<td>( I_F ) 20 mA</td>
</tr>
<tr>
<td>Forward Voltage</td>
<td>( V_F ) 2.0 V</td>
</tr>
<tr>
<td>Maximum Reverse Voltage</td>
<td>( V_{RM} ) 4 V</td>
</tr>
<tr>
<td>Dominant Wavelength</td>
<td>( \lambda_d ) 623 nm</td>
</tr>
<tr>
<td>Current Reduction Rate Above 25°C</td>
<td>( \Delta I_F ) 0.32 mA/°C</td>
</tr>
<tr>
<td>Ambient Temperature Range</td>
<td>–25 ~ +50 °C</td>
</tr>
</tbody>
</table>

Contact factory for other LED colors.

ASSEMBLY & INSTALLATION INSTRUCTIONS

Switch/Rectangular Cap assembly has 3 LEDs to achieve bright and even illumination.

One LED (in center of switch bottom) is an integral part of the switch; the other 2 LEDs and 2 LED Holders are packaged separately.

1. Install LED into LED Holder (quantity 2).
2. Solder LEDs and LED Holders into PCB.
3. Solder switch into PCB making sure that the two outer LEDs and LED Holders clear the bottom side opening of the cap.
ASSEMBLY INSTRUCTIONS FOR SQUARE CAPS

Cap Orientation
As shown in the accompanying illustration, the cap and plunger are designed with tabs and notches to assure proper orientation of the cap on the switch.

Removal of Cap Assembly & Separation of Lens & Diffuser
Holding the switch tightly, pull the cap off the switch. Once the cap assembly is released from the plunger, the lens and diffuser can be separated. Pry up the lens with fingernail or flat tip screwdriver inserted at the step on the diffuser.

Installation or Replacement of Cap
After aligning notches with tabs, join the lens and diffuser. Hold the switch tightly without touching the terminals. Firmly press the cap onto the plunger by applying pressure from one side to the other until both are snapped together.

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

Suggested Printable Areas for KP Lens
Recommended Methods:
- Laser Etch on clear lens, Screen Print, or Pad Print on lens.
- Laser Print on film insert.
- Epoxy based ink is recommended.

Shaded areas are suggested printable areas for Lens.

Flat Cap Lens
Sculptured Cap Lens

Suggested Printable Areas for KP Film Insert
Shaded areas are suggested printable areas for Film Insert.

Flat Cap Film Inserts
Sculptured or Home Key Cap Film Inserts

Film Insert Material and Thickness: Clear Polyester; 4 mil (100µ) maximum thickness
Series LB

General Specifications

Electrical Capacity (Resistive Load)
- Power Level (silver): 3A @ 125V AC or 3A @ 250V AC or 3A @ 30V DC
- Logic Level (gold): 0.4V A 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 for silver; 100 milliohms maximum for gold
- Insulation Resistance: 200 megohms minimum @ 500V DC
- Dielectric Strength: 1,000V AC minimum between contacts for 1 minute minimum; 1,500V AC minimum between contacts & case for 1 minute minimum
- Mechanical Life: 1,000,000 operations minimum for momentary circuit
- Electrical Life: 200,000 operations minimum for maintained circuit
- Nominal Operating Force: 4.41N
- Contact Timing: Nonshorting (break-before-make)
- Travel: Pretravel .059” (1.5mm); Overtravel .059” (1.5mm); Total Travel .118” (3.0mm)

Materials & Finishes
- Housing: Glass fiber reinforced polyamide (UL94V-0)
- Snap-in Frame: Stainless steel
- Movable Contact: Silver alloy or copper with gold plating
- Stationary Contacts: Silver alloy or copper with gold plating
- Base: Liquid crystal polymer (UL94V-0)
- Switch Terminals: Phosphor bronze with silver or gold plating
- Lamp Terminals: Brass with silver plating

Environmental Data
- Operating Temperature Range: −25°C through +50°C (−13°F through +122°F) for Illuminated
- 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 (490ms²) acceleration (tested in 6 right angled directions, with 5 shocks in each direction)
- Sealing: Not available for snap-in; see next section for panel seal.

Installation
- Cap Installation Force: 3.92N maximum downward force on cap
- Quick Connect Force: 52.95N maximum downward force on connector

Standards & Certifications
- Flammability Standards: UL94V-0 housing & base
  - 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 models recognized at 3A @ 125V or 250V AC or 0.4VA @ 28V AC/DC maximum.
  - 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.
    All models certified at 3A @ 125V or 250V AC or 0.4VA @ 28V AC/DC maximum.
Distinctive Characteristics

Carefully designed light diffusion and filtering system produces bright, full surface illumination with front panel relamping.

Spot illumination available in single and bicolor LEDs.

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

Stainless steel clips provide secure mounting with a wide range of panel thicknesses.

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

Snap-action contact mechanism gives long electrical life and sensitivity of actuation.

Combination solder lug and .110" quick connect terminals are epoxy sealed to prevent entry of flux, dust, and other contaminants.

Panel sealed model meets IP65 of IEC60529 specifications (similar to NEMA 4 & 13).

Compact switch design minimizes behind panel depth.

Matching indicators available.
**Series LB**

**Standard Size Snap-in Pushbuttons**

**TYPICAL SWITCH**

**Poles**
- 1: SPDT
- 2: DPDT

**Circuits**
- 5: ON (ON)
- ( ) = Momentary
- 6: ON ON

Alternate Action with Latchdown

**Shapes**
- S: Square
- C: Round
- R: Rectangular

**Housing**
- K: Black
- G: Gray

**Contacts & Terminals**
- **W01**
  - Silver Contacts
  - Rated 3A @ 125/250V AC
  - Solder Lug/Quick Connect Terminals

- **G01**
  - Gold Contacts
  - Rated 0.4VA @ 28V AC/DC
  - Solder Lug/Quick Connect Terminals

**IMPORTANT:**

Switches are supplied without UL, cULus and CSA marking unless specified. UL, cULus & CSA recognized only when ordered with marking on the switch.

Specific models, ratings, and ordering instructions are noted on the General Specifications page.

**DESCRIPTION FOR TYPICAL ORDERING EXAMPLE**

**LB15SKW01-5C12-JC**

Red, 12-volt, Bright LED with Resistor

Clear Cap with Red Diffuser

SPDT ON-(ON) Circuit

Silver Contacts
Rated 3A @ 125/250V AC;
Solder Lug/Quick Connect Terminals

Square Shape

Black Housing

www.nkkswitches.com
## Standard Size Snap-in Pushbuttons

### SERIES LB

#### ORDERING EXAMPLE

![TYPICAL SWITCH](#)

**ORDERING EXAMPLE**

```
5C 12
```

<table>
<thead>
<tr>
<th>Lamps</th>
<th>Cap Types &amp; Colors</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Incandescent Lamp Used with Solid Cap</strong></td>
<td><strong>Solid Cap: Lens/Filter Colors</strong></td>
</tr>
<tr>
<td>05 5-volt</td>
<td>BJ White/Clear</td>
</tr>
<tr>
<td>12 12-volt</td>
<td>CJ Red/Clear</td>
</tr>
<tr>
<td><strong>No Code</strong></td>
<td>EJ Yellow/Clear</td>
</tr>
<tr>
<td></td>
<td>FJ Green/Clear</td>
</tr>
<tr>
<td></td>
<td>GJ Blue/Clear</td>
</tr>
</tbody>
</table>

| **Incandescent or Neon Used with Insert Cap** | **Insert Cap: Lens/Filter Colors** |
| 01 110-volt Neon | **JB** Clear/White |
| 05 5-volt Incandescent | **JC** Clear/Red |
| 12 12-volt Incandescent | **JE** Clear/Yellow |
| **No Code** | ***JF** Clear/Green |
| | ***JG** Clear/Blue |
| | *JF & JG not suitable with neon.* |

| **Bright LED Used with LED Cap** | **LED Cap: Lens/Diffuser Colors** |
| **Colors** | **JB** Clear/White |
| **Resistor** | **JC** Clear/Red |
| **Resistor** | **JD** Clear/Amber |
| **Resistor** | **JF** Clear/Green |

**Bright LED Used with LED Cap**

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

| **Super Bright LED Used with LED Cap** | **LED Cap: Lens/Diffuser Colors** |
| **Colors** | **JB** Clear/White |
| 6B White | **JC** Clear/Red |
| 6F Green | **JD** Clear/Amber |
| 6G Blue | **JF** Clear/Green |

| **LED in Spot Illuminated Cap** | **Spot Illuminated Cap Colors** |
| **Colors** | **Available in Square and Round only.** |
| 1C Red Single Color | **A** Black |
| 1D Amber Single Color | **B** White |
| 1F Green Single Color | **C** Red |
| 1F Red/Green Bicolor | **F** Green |

| **Nonilluminated** | **Nonilluminated Cap Colors** |
| **No Code** | **A** Black |
| | **F** Green |
| | **B** White |
| | **G** Blue |
| | **C** Red |
| | **H** Gray |
| | **E** Yellow |
Series LB

Standard Size Snap-in Pushbuttons

<table>
<thead>
<tr>
<th>POLES &amp; CIRCUITS</th>
<th>Plunger Position</th>
<th>Connected Terminals</th>
<th>Throw &amp; Switch/Lamp Schematics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pole</td>
<td>Model</td>
<td>Normal</td>
<td>Down</td>
</tr>
<tr>
<td>SP</td>
<td>LB15  * LB16</td>
<td>ON</td>
<td>ON</td>
</tr>
<tr>
<td>DP</td>
<td>LB25  * LB26</td>
<td>ON</td>
<td>ON</td>
</tr>
</tbody>
</table>

**Notes:** Switch is marked with NC, NO, COM, L+, L-.
Lamp circuit is isolated and requires an external power source.

* When in latchdown position for the alternate circuit, cap position is .039” (1.0mm) above the built-in bezel.

**SHAPES & PANEL CUTOUTS**

- **S** .622” (15.8mm) Square
  - Cutout for 1 switch: .638” x .638” (16.2mm x 16.2mm)
  - Cutout for 1 switch with barriers: .638” x .815” (16.2mm x 20.7mm)

- **C** .854” (21.7mm) Round
  - Cutout for 1 switch: .882” x .882” (22.4mm x 22.4mm)
  - Cutout for 1 switch with barriers: .882” x 1.059” (22.4mm x 26.9mm)

**Panel Thickness for Switches & Barriers:** .039” ~ .157” (1.0 ~ 4.0mm)
**Panel Thickness for Protective Guards & Splash Covers:** .039” ~ .138” (1.0 ~ 3.5mm)

**HOUSING**

| Housing Colors Available: | K Black | G Gray |

**CONTACT MATERIALS, RATINGS & TERMINALS**

- **W01** Silver Contacts
- **G01** Gold Contacts

**Solder Lug/Quick Connect**
Optional PCB adaptors AT711 & AT712 available; illustrated in “Optional Accessories” immediately following “Typical Switch Dimensions.”

**INCANDESCENT & NEON LAMP CODES & SPECIFICATIONS**

<table>
<thead>
<tr>
<th>AT607 &amp; AT607N</th>
<th>AT607 Incandescent 5-volt or 12-volt; AT607N Neon 110-volt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage V</td>
<td>5V AC</td>
</tr>
<tr>
<td>Current I</td>
<td>115mA</td>
</tr>
<tr>
<td>Endurance Avg. Hours</td>
<td>10,000</td>
</tr>
<tr>
<td>Ambient Temp. Range</td>
<td>–25°C ~ +50°C</td>
</tr>
</tbody>
</table>

**T-1 Bi-pin**

*Recommended Resistors for Neon:*
- 33K ohms for 110V AC;
- 100K ohms for 220V AC

The electrical specifications shown are determined at a basic temperature of 25°C. Lamp circuit is isolated and requires external power source.
# LED 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 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. Additional lamp detail is shown in the Accessories & Hardware section.

## Bright LED without Resistor

<table>
<thead>
<tr>
<th>AT635</th>
<th>Color Codes</th>
<th>Red</th>
<th>Amber</th>
<th>Green</th>
<th>No Code</th>
<th>No Resistor</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEDs are colored in OFF state.</td>
<td></td>
<td><strong>5C</strong></td>
<td><strong>5D</strong></td>
<td><strong>5F</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Maximum Forward Current</td>
<td>$I_{FM}$</td>
<td>30mA</td>
<td>30mA</td>
<td>30mA</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Typical Forward Current</td>
<td>$I_f$</td>
<td>20mA</td>
<td>20mA</td>
<td>20mA</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Forward Voltage</td>
<td>$V_f$</td>
<td>1.9V</td>
<td>2.0V</td>
<td>2.1V</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Maximum Reverse Voltage</td>
<td>$V_{RA}$</td>
<td>5V</td>
<td>5V</td>
<td>5V</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Current Reduction Rate Above 25°C</td>
<td>$\Delta I_f$</td>
<td>0.42mA/°C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ambient Temperature Range</td>
<td></td>
<td>$-25^\circ \sim +50^\circ C$</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Bright LED with Resistor

<table>
<thead>
<tr>
<th>AT627</th>
<th>Color Codes</th>
<th>Red</th>
<th>Amber</th>
<th>Green</th>
<th>Resistor Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>with Resistor</td>
<td></td>
<td><strong>5C</strong></td>
<td><strong>5D</strong></td>
<td><strong>5F</strong></td>
<td><strong>05</strong></td>
</tr>
<tr>
<td></td>
<td>Maximum Forward Current</td>
<td>$I_{FM}$</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>Typical Forward Current</td>
<td>$I_f$</td>
<td>52mA</td>
<td>26mA</td>
<td>13mA</td>
</tr>
<tr>
<td></td>
<td>Forward Voltage</td>
<td>$V_f$</td>
<td>5V</td>
<td>12V</td>
<td>24V</td>
</tr>
<tr>
<td></td>
<td>Maximum Reverse Voltage</td>
<td>$V_{RA}$</td>
<td>4V</td>
<td>8V</td>
<td>16V</td>
</tr>
<tr>
<td></td>
<td>Current Reduction Rate Above 25°C</td>
<td>$\Delta I_f$</td>
<td>0.50mA/°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ambient Temperature Range</td>
<td></td>
<td>$-25^\circ \sim +50^\circ C$</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Super Bright Single Element LED

<table>
<thead>
<tr>
<th>AT625G Blue</th>
<th>AT631B White</th>
<th>AT632F Green</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATTENTION ELECTROSTATIC SENSITIVE DEVICES</td>
<td>Color</td>
<td><strong>6B</strong></td>
</tr>
<tr>
<td></td>
<td>Maximum Forward Current</td>
<td>$I_{FM}$</td>
</tr>
<tr>
<td></td>
<td>Typical Forward Current</td>
<td>$I_f$</td>
</tr>
<tr>
<td></td>
<td>Forward Voltage</td>
<td>$V_f$</td>
</tr>
<tr>
<td></td>
<td>Maximum Reverse Voltage</td>
<td>$V_{RA}$</td>
</tr>
<tr>
<td></td>
<td>Current Reduction Rate Above 25°C</td>
<td>$\Delta I_f$</td>
</tr>
<tr>
<td></td>
<td>Ambient Temperature Range</td>
<td></td>
</tr>
</tbody>
</table>

No Code | No Lamp
### CAP TYPES & COLOR COMBINATIONS

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

#### Solid Cap for Incandescent Lamp & Nonilluminated

**Lens/Filter Colors Available:**

<table>
<thead>
<tr>
<th>Cap Type</th>
<th>Material</th>
<th>Finish</th>
<th>Lamp</th>
</tr>
</thead>
<tbody>
<tr>
<td>BJ FJ CJ GJ EJ</td>
<td>Polycarbonate</td>
<td>Glossy</td>
<td>AT607</td>
</tr>
</tbody>
</table>

#### Insert Cap for Incandescent or Neon Lamp & Nonilluminated

**Lens/Filter Colors Available:**

<table>
<thead>
<tr>
<th>Cap Type</th>
<th>Material</th>
<th>Finish</th>
<th>Lamp</th>
</tr>
</thead>
<tbody>
<tr>
<td>JB JF JC JG JE</td>
<td>Polycarbonate</td>
<td>Glossy</td>
<td>AT607 or 607N</td>
</tr>
</tbody>
</table>

JF and JG not suitable with neon lamp.

#### Cap for Bright LED without Resistor

**Lens/Diffuser Colors Available:**

<table>
<thead>
<tr>
<th>Cap Type</th>
<th>Material</th>
<th>Finish</th>
<th>Lamp</th>
</tr>
</thead>
<tbody>
<tr>
<td>JB JC JD JF</td>
<td>Polycarbonate</td>
<td>Glossy</td>
<td>AT635</td>
</tr>
</tbody>
</table>

#### Cap for Bright LED with Resistor

**Lens/Diffuser Colors Available:**

<table>
<thead>
<tr>
<th>Cap Type</th>
<th>Material</th>
<th>Finish</th>
<th>Lamp</th>
</tr>
</thead>
<tbody>
<tr>
<td>JB JC JD JF</td>
<td>Polycarbonate</td>
<td>Glossy</td>
<td>AT627</td>
</tr>
</tbody>
</table>

**Bright LED:**
- AT635
- AT627
CAP TYPES & COLOR COMBINATIONS

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

Cap for Super Bright LEDs

<table>
<thead>
<tr>
<th>Cap for Super Bright LEDs</th>
<th>Material: Polycarbonate</th>
<th>Finish: Glossy</th>
</tr>
</thead>
<tbody>
<tr>
<td>JB AT4129 Square</td>
<td>(13.2) Sq 520</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(3.5) 138</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(6.5) 256</td>
<td></td>
</tr>
<tr>
<td>AT4128 Round</td>
<td>(19.0) Dia 748</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(4.5) 177</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(6.5) 217</td>
<td></td>
</tr>
<tr>
<td>AT4130 Rectangular</td>
<td>(19.4) Dia 764</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(5.0) 197</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(6.0) 236</td>
<td></td>
</tr>
</tbody>
</table>

Transparent Clear Lens

Translucent White Diffuser

Spot Illuminated Cap with LED

The electrical specifications shown are determined at a basic temperature of 25°C. LED circuit is isolated and requires an external power source. Single color LEDs are colored in OFF state; bicolor LEDs are translucent white in OFF state. Polarity marks are on 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. Additional lamp detail is shown in the Accessories & Hardware section.

LED Specifications

<table>
<thead>
<tr>
<th>LED factory assembled in Spot Illuminated Caps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Available Separately</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Single Color LED with 1 Element</th>
<th>Bicolor LED with 2 Elements</th>
<th>Single Color</th>
<th>Bicolor</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1C (Red)</td>
<td>1D (Amber)</td>
<td>1F (Green)</td>
</tr>
<tr>
<td>Maximum Forward Current I_{FM}</td>
<td>25mA</td>
<td>30mA</td>
<td>25mA</td>
</tr>
<tr>
<td>Typical Forward Current I_{F}</td>
<td>20mA</td>
<td>20mA</td>
<td>20mA</td>
</tr>
<tr>
<td>Forward Voltage V_{F}</td>
<td>2.25V</td>
<td>2.1V</td>
<td>2.2V</td>
</tr>
<tr>
<td>Maximum Reverse Voltage V_{RM}</td>
<td>5V</td>
<td>5V</td>
<td>5V</td>
</tr>
<tr>
<td>Current Reduction Rate Above 25°C ΔI_{F}</td>
<td>0.33mA/°C</td>
<td>0.40mA/°C</td>
<td>0.33mA/°C</td>
</tr>
</tbody>
</table>

Ambient Temperature Range: -25° ~ +70°C

Cap Colors Available:

A  C  F
B  E

Material: Polycarbonate  Finish: Glossy

Cap with Window

Factory Assembled LED; Not Available Separately

When ordering spot illuminated cap separately, LED color must be specified.
Examples: AT480CA (red LED, black cap); AT4016CFB (red/green bicolor LED, white cap)

Cap Colors Available:

A  E  H
B  F
C  G

Material: Polycarbonate  Finish: Glossy

Cap
No Lamp
**Series LB**  
Standard Size Snap-in Pushbuttons

### TYPICAL SWITCH DIMENSIONS

#### Square

<table>
<thead>
<tr>
<th>LB15SKW01-12-CJ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single &amp; Double Pole</td>
</tr>
</tbody>
</table>

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

#### Round

<table>
<thead>
<tr>
<th>LB16CKW01-12-CJ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single &amp; Double Pole</td>
</tr>
</tbody>
</table>

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

#### Rectangular

<table>
<thead>
<tr>
<th>LB26RGW01-12-CJ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single &amp; Double Pole</td>
</tr>
</tbody>
</table>

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

### OPTIONAL ACCESSORIES

**PCB Adaptors**

<table>
<thead>
<tr>
<th>AT711 Single Pole • Straight PC Terminals</th>
<th>AT712 Double Pole • Straight PC Terminals</th>
</tr>
</thead>
<tbody>
<tr>
<td>![AT711 Diagram]</td>
<td>![AT712 Diagram]</td>
</tr>
</tbody>
</table>

Note: Order adaptors separately.

---

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**D56**
OPTIONAL ACCESSORIES

Barriers

AT497
End

End Position

AT498
Center

Center Position

Material: Polyamide

Cutouts for More Than 1 Switch

Square

A = .752" (19.1mm) x Number of Switches + .051" (1.3mm)

Rectangular

A = .996" (25.3mm) x Number of Switches + .051" (1.3mm)

Protective Guard

AT499
Square Protective Guard

Opens 90°
Closes manually

Material: Polyamide

Protective Guards reduce depth of switch behind panel by .020" (0.5mm).

Spring Loaded Protective Guard

AT4171
Square Protective Guard

Opens 180°
Closes automatically

Materials:
Cover: Clear Polycarbonate
Base: Black GFR Polyamide
Coil Spring: Stainless Steel

Recommended Panel Thickness:
.039" ~ .106" (1.0mm ~ 2.7mm)
Series LB
Standard Size Snap-in Pushbuttons

**OPTIONAL ACCESSORIES**

**AT4057**
Rectangular
Protective Guard

Opens 90°
Closes manually

Material: Polyamide

Protective Guards reduce depth of switch behind panel by .020" (0.5mm).

**AT4172**
Rectangular
Protective Guard

Opens 180°
Closes automatically

Materials:
Cover: Clear Polycarbonate
Base: Black GFR Polyamide
Coil Spring: Stainless Steel

Recommended Panel Thickness:
.039" ~ .106" (1.0mm ~ 2.7mm)

**Dust Covers**

AT4002 Round
AT4001 Square
AT4011 Rectangular

Materials: PVC with polyethylene gasket; PVC loses pliability below 0°C (32°F). Dust Covers reduce depth of switch behind panel by .020" (0.5mm).
General Specifications

Electrical Capacity (Resistive Load)
- Power Level (silver): 3A @ 125V AC or 3A @ 250V AC or 3A @ 30V DC
- Logic Level (gold): 0.4VA maximum @ 28V AC/DC maximum

Note: Find additional explanation of operating range in Supplement section.

Other Ratings
- Contact Resistance: 50 milliohms maximum for silver; 100 milliohms maximum for gold
- Insulation Resistance: 200 megohms minimum @ 500V DC
- Dielectric Strength: 1,000V AC minimum between contacts for 1 minute minimum;
  1,500V AC minimum between contacts & case for 1 minute minimum
- Mechanical Life: 1,000,000 operations minimum for momentary circuit
- Electrical Life: 200,000 operations minimum for maintained circuit
- Nominal Operating Force: 5.39N
- Contact Timing: Nonshorting (break-before-make)
- Travel: Pretravel .059” (1.5mm); Overtravel .059” (1.5mm); Total Travel .118” (3.0mm)

Materials & Finishes
- Housing: Glass fiber reinforced polyamide (UL94V-0)
- O-ring: Nitrile butadiene rubber
- Inner Seal: Silicone rubber
- Movable Contact: Silver alloy or copper with gold plating
- Stationary Contacts: Silver alloy or copper with gold plating
- Base: Liquid crystal polymer (UL94V-0)
- Switch Terminals: Phosphor bronze with silver or gold plating
- Lamp Terminals: Brass with silver plating

Environmental Data
- Operating Temperature Range: –25°C through +50°C (–13°F through +122°F) for Illuminated
  –25°C through +70°C (–13°F through +158°F) for Nonilluminated
- 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 5 shocks in each direction)
- Sealing: IP65 of IEC60529 standard (similar to NEMA 4 & 13)

Installation
- Mounting Torque: 1.96Nm (17.35 lb-in) maximum
- Cap Installation Force: 3.92N maximum downward force on cap
- Quick Connect Force: 52.95N maximum downward force on connector

Standards & Certifications
- Flammability Standards:
  - 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 models recognized at 3A @ 125V or 250V AC or 0.4VA @ 28V AC/DC maximum.
  - 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.
    All models certified at 3A @ 125V or 250V AC or 0.4VA @ 28V AC/DC maximum.
Series LB

Standard Size Panel Seal Pushbuttons

**TYPICAL SWITCH**

<table>
<thead>
<tr>
<th>Poles</th>
<th>Circuits</th>
<th>Shape</th>
<th>Housing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SPDT</td>
<td></td>
<td>K</td>
</tr>
<tr>
<td>2</td>
<td>DPDT</td>
<td></td>
<td>G</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Rating</th>
<th>Terminals</th>
</tr>
</thead>
<tbody>
<tr>
<td>3A @ 125/250V AC</td>
<td>Solder Lug/Quick Connect Terminals</td>
</tr>
</tbody>
</table>

Red, 12-volt, Bright LED with Resistor

Clear Cap with Red Diffuser

Round Shape

SPDT ON-ON Circuit

Black Housing

Silver Contacts

Rated 3A @ 125/250V AC

Solder Lug/Quick Connect Terminals

**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.
# Standard Size Panel Seal Pushbuttons

## ORDERING EXAMPLE

<table>
<thead>
<tr>
<th>Lamps</th>
<th>Cap Types &amp; Colors</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Incandescent Lamp Used with Solid Cap</strong></td>
<td><strong>Solid Cap: Lens/Filter Colors</strong></td>
</tr>
<tr>
<td>05</td>
<td>5-volt</td>
</tr>
<tr>
<td>12</td>
<td>12-volt</td>
</tr>
<tr>
<td><strong>No Code</strong></td>
<td>Nonilluminated</td>
</tr>
<tr>
<td><strong>Incandescent or Neon Used with Insert Cap</strong></td>
<td><strong>Insert Cap: Lens/Filter Colors</strong></td>
</tr>
<tr>
<td>01</td>
<td>110-volt Neon</td>
</tr>
<tr>
<td>05</td>
<td>5-volt Incandescent</td>
</tr>
<tr>
<td>12</td>
<td>12-volt Incandescent</td>
</tr>
<tr>
<td><strong>No Code</strong></td>
<td>Nonilluminated</td>
</tr>
<tr>
<td><strong>Bright LED Used with LED Cap</strong></td>
<td><strong>LED Cap: Lens/Diffuser Colors</strong></td>
</tr>
<tr>
<td>5C</td>
<td>Red</td>
</tr>
<tr>
<td>5D</td>
<td>Amber</td>
</tr>
<tr>
<td>5F</td>
<td>Green</td>
</tr>
<tr>
<td><strong>No Code</strong></td>
<td>No Resistor</td>
</tr>
<tr>
<td><strong>Super Bright LED Used with LED Cap</strong></td>
<td><strong>LED Cap: Lens/Diffuser Colors</strong></td>
</tr>
<tr>
<td>6B</td>
<td>White</td>
</tr>
<tr>
<td>6F</td>
<td>Green</td>
</tr>
<tr>
<td>6G</td>
<td>Blue</td>
</tr>
</tbody>
</table>

**Solid Cap: Lens/Filter Colors**
- **BJ** White/Clear
- **CJ** Red/Clear
- **EJ** Yellow/Clear
- **FJ** Green/Clear
- **GJ** Blue/Clear

**Insert Cap: Lens/Filter Colors**
- **JB** Clear/White
- **JC** Clear/Red
- **JE** Clear/Yellow
- ***JF** Clear/Blue
- ***JG** Clear/Blue

*JF & JG not suitable with neon.

**LED Cap: Lens/Diffuser Colors**
- **JB** Clear/White
- **JC** Clear/Red
- **JD** Clear/Amber
- **JF** Clear/Green
### Series LB

#### Standard Size Panel Seal Pushbuttons

#### POLES & CIRCUITS

<table>
<thead>
<tr>
<th>Pole</th>
<th>Model</th>
<th>Normal</th>
<th>Down</th>
<th>Connected Terminals</th>
<th>Throw &amp; Switch/Lamp Schematics</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP</td>
<td>LB15</td>
<td>ON</td>
<td>ON</td>
<td>1-3</td>
<td>SPDT</td>
</tr>
<tr>
<td></td>
<td>*LB16</td>
<td>ON</td>
<td>(ON)</td>
<td>1-2</td>
<td></td>
</tr>
<tr>
<td>DP</td>
<td>LB25</td>
<td>ON</td>
<td>ON</td>
<td>1-3 4-6</td>
<td>DPDT</td>
</tr>
<tr>
<td></td>
<td>*LB26</td>
<td>ON</td>
<td>(ON)</td>
<td>1-2 4-5</td>
<td></td>
</tr>
</tbody>
</table>

Notes: Switch is marked with NC, NO, COM, L+, L–. Lamp circuit is isolated and requires external power source.

* When in latchdown position for the alternate circuit, cap position is .039” (1.0mm) above the built-in bezel.

#### SHAPE & PANEL CUTOUT

- **W**
  - .866” (22.0mm)
  - Round

Recommended Panel Thickness: .039” – .157” (1.0mm ~ 4.0mm)

Recommended Panel Thickness with Splash Cover: .039” – .138” (1.0mm ~ 3.5mm)

Overtightening the mounting nut AT074 may damage the switch housing.

#### HOUSING

Housing Colors Available:

- **K** Black
- **G** Gray

#### CONTACT MATERIALS, RATINGS & TERMINALS

- **W01** Silver Contacts
  - Power Level
    - 3A @ 125V AC & 250V AC
  - Solder Lug/Quick Connect

- **G01** Gold Contacts
  - Logic Level
    - 0.4VA max. @ 28V AC/DC max.

Complete explanation of operating range in Supplement section.

#### INCANDESCENT & NEON LAMP CODES & SPECIFICATIONS

<table>
<thead>
<tr>
<th>AT607 &amp; AT607N</th>
<th>AT607 Incandescent 5-volt or 12-volt; AT607N Neon 110-volt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage</td>
<td>V  5V AC  12V AC  110V AC</td>
</tr>
<tr>
<td>Current</td>
<td>I  115mA  60mA  1.5mA</td>
</tr>
<tr>
<td>Endurance</td>
<td>Avg. Hours  10,000  10,000</td>
</tr>
<tr>
<td>Ambient Temp. Range</td>
<td>–25°C ~ +50°C</td>
</tr>
</tbody>
</table>

- **AT607** Incandescent 5-volt or 12-volt; **AT607N** Neon 110-volt

The electrical specifications shown are determined at a basic temperature of 25°C. Lamp circuit is isolated and requires external power source.

* Recommended Resistors for Neon:
  - 33K ohms for 110V AC;
  - 100K ohms for 220V AC

---

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# Standard Size Panel Seal Pushbuttons

## LED 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 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. Additional lamp detail is shown in the Accessories Hardware section.

### Bright LED without Resistor

<table>
<thead>
<tr>
<th>AT635</th>
<th>Color Codes</th>
<th>Red</th>
<th>Amber</th>
<th>Green</th>
<th>Resistors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>5C</td>
<td>5D</td>
<td>5F</td>
<td>No Code</td>
</tr>
<tr>
<td>LEDs are colored in OFF state.</td>
<td>Maximum Forward Current</td>
<td>$I_{FM}$</td>
<td>30mA</td>
<td>30mA</td>
<td>30mA</td>
</tr>
<tr>
<td></td>
<td>Typical Forward Current</td>
<td>$I_{F}$</td>
<td>20mA</td>
<td>20mA</td>
<td>20mA</td>
</tr>
<tr>
<td></td>
<td>Forward Voltage</td>
<td>$V_{f}$</td>
<td>1.9V</td>
<td>2.0V</td>
<td>2.1V</td>
</tr>
<tr>
<td></td>
<td>Maximum Reverse Voltage</td>
<td>$V_{RM}$</td>
<td>5V</td>
<td>5V</td>
<td>5V</td>
</tr>
<tr>
<td></td>
<td>Current Reduction Rate Above 25°C</td>
<td>$\Delta I_{f}$</td>
<td>0.42mA/°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ambient Temperature Range</td>
<td></td>
<td>$-25° ~ +50°C$</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Bright LED with Resistor

<table>
<thead>
<tr>
<th>AT627</th>
<th>Color Codes:</th>
<th>Red</th>
<th>Amber</th>
<th>Green</th>
<th>Resistors</th>
</tr>
</thead>
<tbody>
<tr>
<td>with Resistor</td>
<td>5C</td>
<td>5D</td>
<td>5F</td>
<td>05</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Maximum Forward Current</td>
<td>$I_{FM}$</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>Typical Forward Current</td>
<td>$I_{F}$</td>
<td>52mA</td>
<td>26mA</td>
<td>13mA</td>
</tr>
<tr>
<td></td>
<td>Forward Voltage</td>
<td>$V_{f}$</td>
<td>5V</td>
<td>12V</td>
<td>24V</td>
</tr>
<tr>
<td></td>
<td>Maximum Reverse Voltage</td>
<td>$V_{RM}$</td>
<td>4V</td>
<td>8V</td>
<td>16V</td>
</tr>
<tr>
<td></td>
<td>Current Reduction Rate Above 25°C</td>
<td>$\Delta I_{f}$</td>
<td>0.50mA/°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ambient Temperature Range</td>
<td></td>
<td>$-25° ~ +50°C$</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Super Bright Single Element LED

<table>
<thead>
<tr>
<th>AT625G Blue</th>
<th>AT631B White</th>
<th>AT632F Green</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT627 5-volt 4-element with Resistor</td>
<td>AT627 12-volt 4-element with Resistor</td>
<td>AT627 24-volt 4-element with Resistor</td>
</tr>
<tr>
<td>Color</td>
<td>6B</td>
<td>6F</td>
</tr>
<tr>
<td>White</td>
<td>30mA</td>
<td>30mA</td>
</tr>
<tr>
<td>Green</td>
<td>20mA</td>
<td>20mA</td>
</tr>
<tr>
<td>Blue</td>
<td>3.3V</td>
<td>3.3V</td>
</tr>
<tr>
<td>Maximum Reverse Voltage</td>
<td>$V_{RM}$</td>
<td>7V</td>
</tr>
<tr>
<td>Current Reduction Rate Above 25°C</td>
<td>$\Delta I_{f}$</td>
<td>0.40mA/°C</td>
</tr>
<tr>
<td>Ambient Temperature Range</td>
<td></td>
<td>$-25° ~ +50°C$</td>
</tr>
</tbody>
</table>
### CAP TYPES & COLOR COMBINATIONS

<table>
<thead>
<tr>
<th>Color Codes</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>J</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>White</td>
<td>C</td>
<td>Red</td>
<td>D</td>
<td>Amber</td>
<td>E</td>
<td>Yellow</td>
</tr>
<tr>
<td>F</td>
<td>Green</td>
<td>G</td>
<td>Blue</td>
<td>J</td>
<td>Clear</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Solid Cap for Incandescent Lamp & Nonilluminated

- **Lens/Filter**
- **Colors Available:** BJ, FJ, CJ, GJ

![Solid Cap for Incandescent Lamp & Nonilluminated](image)

- **Material:** Polycarbonate
- **Finish:** Glossy

#### Insert Cap for Incandescent or Neon Lamp & Nonilluminated

- **Lens/Filter**
- **Colors Available:** JB, JF, JC, JG

![Insert Cap for Incandescent or Neon Lamp & Nonilluminated](image)

- **Material:** Polycarbonate
- **Finish:** Glossy

#### Cap for Bright LED without Resistor

- **Lens/Diffuser**
- **Colors Available:** JB, JC, JD, JF

![Cap for Bright LED without Resistor](image)

- **Material:** Polycarbonate
- **Finish:** Glossy

#### Cap for Bright LED with Resistor

- **Lens/Diffuser**
- **Colors Available:** JB, JC, JD, JF

![Cap for Bright LED with Resistor](image)

- **Material:** Polycarbonate
- **Finish:** Glossy
Standard Size Panel Seal Pushbuttons

Series LB

CAP TYPES & COLOR COMBINATIONS

Cap for Super Bright LEDs

<table>
<thead>
<tr>
<th>Material: Polycarbonate</th>
<th>Finish: Glossy</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT4131 Clear Lens White Diffuser</td>
<td></td>
</tr>
</tbody>
</table>

TYPICAL SWITCH DIMENSIONS

Single & Double Pole

Panel Seal

Optional Accessories

AT9410 Splash Cover for Panel Seal

Materials:
- Lid: PVC (loses pliability below 0°C/32°F)
- Base: Polyethylene
- O-ring: NBR

Recommended Panel Thickness:
.039” ~ .138” (1.0mm ~ 3.5mm)
**Series LB**

**Standard Size Pushbuttons**

## ASSEMBLY INSTRUCTIONS

### Lamp Installation & LED Orientation

**Incandescent & Neon Lamps AT607 & AT607N**
Align projections on lamp with grooves (B) in holder when inserting lamp. To correctly join the lamp holder and cap base, match the cut corners (A).

**Bright LED AT627**
- **Panel Seal Models**
  For panel seal models, Bright LED must first be inserted into the lamp socket which is built into the switch. The cap can then be placed on the switch.

**Snap-in Models**
For snap-in models, Bright LED must be inserted into the cap first. Align cut corners (C) when inserting the LED.

**Bright & Super Bright LEDs AT625, AT631, AT632, AT635**
Align D-flat on LED with flat (B) in holder when inserting the LED. To correctly join the lamp holder and cap base, match the cut corners (A).

### Switch & Cap Assembly

**Round & Rectangular**
Match clip on cap assembly with receptacle inside switch. Lamp terminals will then be aligned correctly with lamp socket.

**Square**
Match projection (C) on cap assembly with groove (C) inside switch. Lamp terminals will then be aligned correctly with lamp socket.

### Panel Seal
With Lamps AT607, AT607N, and LEDs AT614, AT625, AT631, AT632:
Match projection on cap assembly with notch inside switch. Lamp terminals will then be aligned correctly with lamp socket.

### Installation & Maintenance

**Snap-in Mount**
Snap-in clip holds all switches firmly in place. To mount round switch, match the antirotation projection on switch with guide cut in panel. Snap into panel cutout.

**Panel Seal Bushing Mount**
Insert switch from the front of the panel with the o-ring between the built-in bezel and the panel. Install mounting nut AT075 (supplied with switch) from the rear of the panel. Over tightening mounting nut may damage the switch housing.

**Lamp Replacement**
Actuator must be in UP position. Pull off cap with cap extractor AT109. Replace lamp and reassemble as shown above.

---

**AT109 Cap Extractor**

---

**AT112 Socket Wrench**
LEGENDS

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

Suggested Printable Area for 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:** Laser Print or Screen Print with Epoxy based ink

Film Insert: Clear Polyester, 4 mil max. thickness

Shaded areas are printable areas.
Series LP01

Short Body Pushbuttons

General Specifications

Electrical Capacity (Resistive Load)

Power Level (silver): 3A @ 125V AC or 3A @ 250V AC or 3A @ 30V DC

Other Ratings

Contact Resistance: 50 milliohms maximum (DC2 ~ 4V 100mA)
Insulation Resistance: 200 megohms minimum @ 500V DC
Dielectric Strength: 1,000V AC minimum between contacts for 1 minute minimum
 Mechanical Life: 500,000 operations minimum
 Electrical Life: 50,000 operations minimum for 3A @ 125V/250V AC & 3A @ 30V DC
 Nominal Operating Force: 1.5 ± 0.7N for Single Pole; 3.0 ± 1.2N for Double Pole
 Contact Rating: Nonshorting (break-before-make)
 Travel: Total Travel .118" (3.0mm)

Materials & Finishes

Actuator: Polycarbonate
Housing: Bushing mount: Glass fiber reinforced polyamide (UL94V-0);
Snap in mount: Polybutylene terephthalate (PBT) (UL94V-0)
Base: Glass fiber reinforced polyamide (UL94V-0)
Movable Contact: Phosphor bronze & silver with silver plating
Stationary Contacts: Common terminal: Phosphor bronze with silver plating;
Contact terminals: Phosphor bronze with tin plating
Lamp Terminals: Phosphor bronze with tin plating

Environmental Data

Operating Temperature Range: −10°C through +50°C (+14°F through +122°F) for Illuminated
−25°C through +70°C (−13°F through +158°F) for Nonilluminated
Humidity: 90 ~ 95% humidity for 240 hours @ 40°C (104°F)
Vibration: 10 ~ 55Hz with peak-to-peak amplitude of 1.5mm traversing the frequency range & returning
in 1 minute; 3 right angled directions for 2 hours
Shock: 50G (490m/s²) acceleration (tested in 6 right angled directions, with 5 shocks in each direction)

Installation

Mounting Torque: 0.8Nm (7.08 lb-in) maximum
Cleaning: Hand clean locally with alcohol based solution

Standards & Certifications

Flammability Standards: UL94V-0 housing & base
UL: File No. E44145 - Recognized only when ordered with marking on switch.
Add “/U” or “/CUL” to end of part number to order UL recognized switch.
All single & double pole models recognized at 3A @ 125V/250V AC or 3A @ 30V DC.

Note: The spot illuminated switches do not have UL approval and cannot be ordered with the markings.
Distinctive Characteristics


Smooth, slightly concave surface of cap designed to fit fingertip. Unique design and construction of cap prevents its removal and limits tampering.

Bright LED illumination in choice of red, green or amber through translucent white cap. Spot illumination in red, green or amber enhanced by black cap.

Short body of .551” (14.0mm) conserves behind-panel space.

Installation options include 16.0mm bushing mount or 17.3mm snap-in mount.

Combination solder lug and .110” quick connect terminals are epoxy sealed to prevent entry of flux, dust, or other contaminants.

Crisp actuation and clear circuit status provided by snap-action contact mechanism. Arc barrier between movable contacts protects against crossover.
Series LP01

Short Body Pushbuttons

TYPICAL SWITCH ORDERING EXAMPLE

LP01 1 5 C C K W01 5C B

Poles

<table>
<thead>
<tr>
<th>Pole</th>
<th>Model</th>
<th>Normal</th>
<th>Down</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP</td>
<td>LP0115</td>
<td>ON</td>
<td>(ON)</td>
</tr>
<tr>
<td>DP</td>
<td>LP0125</td>
<td>ON</td>
<td>(ON)</td>
</tr>
</tbody>
</table>

Mounting Types

<table>
<thead>
<tr>
<th>Code</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>Bushing</td>
</tr>
<tr>
<td>M</td>
<td>Snap-in</td>
</tr>
</tbody>
</table>

Contacts & Terminals

<table>
<thead>
<tr>
<th>Code</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>W01</td>
<td>Silver Rated 3A @ 125/250V AC</td>
</tr>
<tr>
<td></td>
<td>Solder Lug/Quick Connect Terminals</td>
</tr>
</tbody>
</table>

Circuit

<table>
<thead>
<tr>
<th>Code</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>5C</td>
<td>Red</td>
</tr>
<tr>
<td>5D</td>
<td>Amber</td>
</tr>
<tr>
<td>5F</td>
<td>Green</td>
</tr>
</tbody>
</table>

Housing

<table>
<thead>
<tr>
<th>Code</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>K</td>
<td>Black</td>
</tr>
</tbody>
</table>

LEDs

<table>
<thead>
<tr>
<th>Cap Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
</tr>
<tr>
<td>B</td>
</tr>
</tbody>
</table>

IMPORTANT:

Switches are supplied without UL & cULus markings unless specified. UL & cULus recognized only when ordered with marking on switch. Specific models, ratings, & ordering instructions are noted on the General Specifications page. Spot illuminated switches do not have UL approval and cannot be ordered with the markings.

DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

LP0115CCKW015CB

White Cap

SPDT ON-(ON) Circuit

Red LED

Bushing Mount

Black Housing

Silver Contacts

Rated 3A @ 125/250V AC;
Solder Lug/Quick Connect Terminals

POLES & CIRCUIT

<table>
<thead>
<tr>
<th>Pole</th>
<th>Model</th>
<th>Plunger Position ( ) = Momentary</th>
<th>Connected Terminals</th>
<th>Throw &amp; Power/Lamp Schematics</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP</td>
<td>LP0115</td>
<td>Normal Down Normal Down</td>
<td>1-3 1-2</td>
<td>Note: Terminal markings “COM, NO, NC, L, + and –” are actually on the switch; terminal numbers are not on the switch.</td>
</tr>
<tr>
<td>DP</td>
<td>LP0125</td>
<td>Normal Down Normal Down</td>
<td>1-3 4-6 1-2 4-5</td>
<td></td>
</tr>
</tbody>
</table>

POLES & CIRCUIT

<table>
<thead>
<tr>
<th>Pole</th>
<th>Model</th>
<th>Plunger Position ( ) = Momentary</th>
<th>Connected Terminals</th>
<th>Throw &amp; Power/Lamp Schematics</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP</td>
<td>LP0115</td>
<td>Normal Down Normal Down</td>
<td>1-3 1-2</td>
<td>Note: Terminal markings “COM, NO, NC, L, + and –” are actually on the switch; terminal numbers are not on the switch.</td>
</tr>
<tr>
<td>DP</td>
<td>LP0125</td>
<td>Normal Down Normal Down</td>
<td>1-3 4-6 1-2 4-5</td>
<td></td>
</tr>
</tbody>
</table>
Short Body Pushbuttons

Series LP01

MOUNTING TYPES

C  Bushing  .630" (16.0mm) Diameter

This mounting option is supplied with a steel hexagon nut with nickel plating.

Recommended Panel Thickness:
.079" ~ .256" (2.0mm ~ 6.5mm)

M  Snap-in  .681" (17.3mm) Diameter

Recommended Panel Thickness:
.039" ~ .126" (1.0mm ~ 3.2mm)

Allow .984" (25.0mm) distance from center-to-center between switches when mounted side-by-side.

Allow .827" (21.0mm) distance from center-to-center between switches when mounted side-by-side.

HOUSING

K  Black

Housing available in black only. The one-piece body and bezel have a matte finish.

CONTACT MATERIALS, RATINGS, & TERMINALS

W01  Silver Contacts  Power Level  Solder Lug/

3A @ 125V AC/250V AC; 3A @ 30V DC

Note: If used at 1A @ 125V AC/250V AC or 1A @ 30V DC, electrical life will be 100,000 operations minimum.

LED 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 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.

<table>
<thead>
<tr>
<th>LED Colors</th>
<th>5C</th>
<th>5D</th>
<th>5F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colors</td>
<td>Red</td>
<td>Amber</td>
<td>Green</td>
</tr>
<tr>
<td>Maximum Forward Current</td>
<td>$I_{FM}$</td>
<td>30mA</td>
<td>30mA</td>
</tr>
<tr>
<td>Typical Forward Current</td>
<td>$I_F$</td>
<td>20mA</td>
<td>20mA</td>
</tr>
<tr>
<td>Forward Voltage</td>
<td>$V_F$</td>
<td>1.95V</td>
<td>2.0V</td>
</tr>
<tr>
<td>Maximum Reverse Voltage</td>
<td>$V_{RM}$</td>
<td>5V</td>
<td>5V</td>
</tr>
<tr>
<td>Current Reduction Rate Above 25°C</td>
<td>$\Delta I_F$</td>
<td>0.41mA/°C</td>
<td>0.29mA/°C</td>
</tr>
<tr>
<td>Ambient Temperature Range</td>
<td></td>
<td>$-10^\circ C \sim +50^\circ C$</td>
<td></td>
</tr>
</tbody>
</table>

LEDs are an integral part of the switch and are not available separately.

No Code  No Lamp

www.nkkswitches.com
Series LP01

CAP COLORS

Spot Illuminated Cap
Cap Color Available:
- A Black with Spot Illumination

Illuminated Cap
Cap Color Available:
- B White

Nonilluminated Cap
Cap Colors Available:
- A Black
- C Red
- F Green

Material: Polycarbonate  Finish: Matte
Spot illuminated, illuminated, and nonilluminated caps are an integral part of the switch and are not available separately.

TYPICAL SWITCH DIMENSIONS

Bushing Mount

LP0115CCKW015CB

Snap-in Mount

LP0115CMKW015CB

Bushing Mount & Spot Illumination

LP0115CCKW015CA

Snap-in Mount & Spot Illumination

LP0115CMKW015CA
### OPTIONAL ACCESSORIES

**Adaptors**

**AT716**
- Single Pole
- Solder Lug/Quick Connect Terminals

**AT717**
- Double Pole
- Solder Lug/Quick Connect Terminals

**AT718**
- Single Pole
- Straight PC Terminals

**AT719**
- Double Pole
- Straight PC Terminals

---

**Material:** Glass fiber reinforced polyamide  
**Note:** Order adaptors separately

---

**Switch Dimensions Shown with Adaptor AT716**

- **Dimension A:** Solder Lug .197” (5.0mm); Straight PC .157” (4.0mm)
- **Panel thickness for LP01 Bushing Mount:** .079” ~ .256” (2.0mm ~ 6.5mm)

---

### LEGENDS

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

---

**Suggested Printable Area for LP01 Cap**

**Recommended Methods:**
- Pad Print or Laser Etch on cap.
- Epoxy based ink is recommended.

**Note:** Suggested printable area does not apply to spot illuminated cap.

**Shaded area is printable area**
General Specifications

Electrical Capacity (Resistive Load)
Logic Level: 0.4VA maximum @ 28V AC/DC maximum
(Applicable Range 0.1mA ~ 0.1A @ 20mV ~ 28V)

Other Ratings
Contact Resistance: 50 milliohms maximum
Insulation Resistance: 500 megohms minimum @ 250V DC
Dielectric Strength: 250V AC minimum between contacts for 1 minute minimum
Mechanical Life: 500,000 operations minimum
Electrical Life: 500,000 operations minimum
Nominal Operating Force: Standard: 1.5N ±0.5 Newtons
High: 2.5N ±0.8 Newtons
Stroke: 1.5mm (.059")

Materials & Finishes
Actuator: Silicon rubber
Case: Polycarbonate resin
Base: Glass fiber reinforced polyamide resin
Movable Contact: Silver over nickel with gold plating
Stationary Contacts: Brass with gold plating
Switch Terminals: Brass with gold plating

Environmental Data
Operating Temperature Range: –25°C through +50°C (~13°F through +122°F) for Illuminated
–25°C through +70°C (~13°F through +158°F) for Nonilluminated
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 5 shocks in each direction)

Installation
Cap Installation Force: 5.0N maximum downward force on actuator

PCB Processing
Soldering: Wave Soldering: 270°C maximum @ 6 seconds maximum
Manual Soldering: 390°C maximum @ 4 seconds maximum
Cleaning: These devices are not process sealed. Hand clean locally using alcohol based solution.

Standards & Certifications
The NP01 Series pushbuttons have not been tested for UL recognition or CSA certification. These switches are designed for use in a low-voltage, low-current, logic-level circuit. When used as intended in a logic-level circuit, the results do not produce hazardous energy.
Subminiature Smooth Actuation Pushbuttons

Distinctive Characteristics

Soft touch actuation achieved by mechanical silicon rubber structure.

Distinct, long stroke of 1.5mm (.059”).

Entire cap is fully illuminated with single or bicolor LED.

Compact design with dimension of 12.5mm (.492”) from PC board to top of cap.

Alternating legend options with bicolor LED.

Available in both high (2.5N) or standard (1.5N) operating force.

Gold plated contacts provide high reliability.

Crimped terminals ensure secure PC mounting and prevent dislodging during soldering.

Molded-in terminals prevent entry of flux, solvents, and other contaminants.
# Series NP01

Subminiature Smooth Actuation Pushbuttons

## TYPICAL SWITCH ORDERING EXAMPLE

<table>
<thead>
<tr>
<th>NP01</th>
<th>15</th>
<th>H</th>
<th>G03</th>
<th>L</th>
<th>F</th>
<th>JF</th>
</tr>
</thead>
</table>

- **Pole & Circuit**: 15 SPST OFF (ON)
  - ( ) = Momentary
  - Normally Open Contacts
- **Contacts & Terminals**: G03
  - Gold Contacts and PC Terminals, Rated 0.4VA @ 28V AC/DC
- **Illumination**: L
  - Illuminated
  - N Nonilluminated
- **Operating Force**: A
  - Standard (1.5N) (Black Switch Body)
  - H High (2.5N) (Gray Switch Body)
- **LEDs**: Single or Bicolor LED
  - C Red
  - D Amber
  - F Green
  - CF Bicolor Red/Green
  - DG Bicolor Amber/Blue
- **Cap Types & Colors**: Cap Lens/Diffuser Colors
  - JB Clear/White (Combine with any LED)
  - JC Clear/Red
  - JD Clear/Amber
  - JF Clear/Green
  - Bicolor LED
    - CF Red/Green
    - DG Amber/Blue
  - Nonilluminated
    - N No LED
- **Packaging**: No Code
  - Partitioned Tray, Any Quantity (With or without caps installed)
- **Alternating Legends**: 11 ON (pos) OFF (pos)
  - 12 ON (neg) OFF (neg)
  - 13 START STOP
  - 14 OPEN CLOSE
  - Contact factory for custom options.

### Part Numbers for Alternating Legends

<table>
<thead>
<tr>
<th>Color</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red/Green</td>
<td>AT3023JCF11 ~ AT3023JCF14</td>
</tr>
<tr>
<td>Amber/Blue</td>
<td>AT3023JDG11 ~ AT3023JDG14</td>
</tr>
</tbody>
</table>

Refer to Ordering Table for Alternating Legend that corresponds with last 2 digits of part number.

### Description for Typical Ordering Example

NP0115HG03LF-JF

- High (2.5N) Operating Force
- SPST OFF-Momentary ON Circuit Normally Open Contacts
- Clear Lens with Green Diffuser
- Green LED
- Gold Contacts with 0.4VA Rating
- Straight PC Terminals

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## Subminiature Smooth Actuation Pushbuttons  
### Series NP01

#### POLE & CIRCUIT

<table>
<thead>
<tr>
<th>Pole</th>
<th>Model</th>
<th>Plunger Position ( ) = Momentary</th>
<th>Connected Terminals</th>
<th>Throw &amp; Switch Schematic</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP</td>
<td>NP0115AG03L, NP0115HG03L</td>
<td>OFF (ON) Normally Open</td>
<td>1-2</td>
<td>SPST</td>
</tr>
</tbody>
</table>

#### Nonilluminated Models

<table>
<thead>
<tr>
<th>Pole</th>
<th>Model</th>
<th>Plunger Position ( ) = Momentary</th>
<th>Connected Terminals</th>
<th>Throw &amp; Switch Schematic</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP</td>
<td>NP0115AG03N, NP0115HG03N</td>
<td>OFF (ON) Normally Open</td>
<td>1-2</td>
<td>SPST</td>
</tr>
</tbody>
</table>

#### OPERATING FORCE

- **A** Standard Nominal Operating Force
  - $1.5 \pm 0.5N$
  - Switch base is Black

- **H** High Nominal Operating Force
  - $2.5 \pm 0.8N$
  - Switch base is Gray

#### CONTACTS, TERMINALS, & RATING

- **G03** Gold Contacts  
  - Straight PC Terminals  
  - 0.4VA maximum @ 28V AC/DC maximum

#### ILLUMINATION

- **L** Illuminated  
  - Nonilluminated

---

D77

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LED COLORS & SPECIFICATIONS

LEDs are an integral part of the switch and not available separately. The electrical specifications shown are determined at a basic temperature of 25°C.

If the source voltage exceeds the forward voltage, a ballast resistor is required. Specifications in parentheses ( ) below for Bicolor LED denote simultaneous illumination of Red and Green.

\[ R = \frac{E - V_F}{I_F} \]

Where:
- \( R \) = Resistor Value (Ohms)
- \( E \) = Source Voltage (V)
- \( V_F \) = Forward Voltage (V)
- \( I_F \) = Forward Current (A)

<table>
<thead>
<tr>
<th>Color</th>
<th>Single Color LED</th>
<th>Bicolor LED</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>Red</td>
<td>CF</td>
</tr>
<tr>
<td>D</td>
<td>Amber</td>
<td>Green</td>
</tr>
<tr>
<td>F</td>
<td>Red</td>
<td>CF</td>
</tr>
<tr>
<td>CF</td>
<td>Green</td>
<td>Amber</td>
</tr>
<tr>
<td>DG</td>
<td>Blue</td>
<td>Blue</td>
</tr>
</tbody>
</table>

Maximum Forward Current \( I_{FM} \)
- 30mA
- 20mA
- 1.95V
- 2.0V
- 3.3V
- 5V
- 5V
- 0.41mA/°C above 25°C
- 0.38mA/°C above 25°C
- 0.33mA/°C above 25°C
- 0.40mA/°C above 25°C
- 0.4mA/°C above 25°C

Typical Forward Current \( I_F \)
- 20mA
- 16mA
- 20mA
- 16mA
- 20mA
- 5V
- 5V
- 0.41mA/°C above 25°C
- 0.38mA/°C above 25°C
- 0.33mA/°C above 25°C
- 0.40mA/°C above 25°C
- 0.4mA/°C above 25°C

Forward Voltage \( V_F \)
- 1.95V
- 2.0V
- 3.3V
- 5V
- 5V
- 0.41mA/°C above 25°C
- 0.38mA/°C above 25°C
- 0.33mA/°C above 25°C
- 0.40mA/°C above 25°C
- 0.4mA/°C above 25°C

Maximum Reverse Voltage \( V_{RM} \)
- 5V
- 5V
- 5V
- 5V
- 5V
- 5V
- 5V

Current Reduction Rate \( \Delta I_F \)
- 0.41mA/°C above 25°C
- 0.38mA/°C above 25°C
- 0.33mA/°C above 25°C
- 0.40mA/°C above 25°C
- 0.40mA/°C above 25°C

Ambient Temperature Range
-25° ~ +50°C

CAP TYPES & COLORS

AT3022 12mm Square Cap
- Material: Polycarbonate Resin
- Cap for Single or Bicolor LED

AT3023 12mm Square Cap
- Material: Polycarbonate Resin
- Alternating Legend Cap for Bicolor LED

Standard Alternating Legend Pairs

11 ON OFF
12 ON OFF
13 START STOP
14 OPEN CLOSE

Cap illumination is alternating Green/Red or Blue/Amber; legend text is black.

Contact factory for other Alternating Legends.
Legend illustrations are approximate representations of the actual characters on the filters.
Subminiature Smooth Actuation Pushbuttons

Series NP01

CAP TYPES & COLORS (CONTINUED)

Solid Color Cap for Nonilluminated

AT3024
12mm Square Cap

Material: Polycarbonate Resin

A Black
B White
C Red
H Gray

TYPICAL SWITCH DIMENSIONS

Illuminated • Straight PC

PACKAGING

No Code

Partitioned Tray

Any quantity. No code is required. Switches may be packaged with or without caps installed.

S Stick-Tube Packaging

50 pieces per stick

Switches must be ordered in 50-piece increments when stick-tube packaging is selected. This packaging is for the switch body only. Caps will be packaged separately.

LEGEND ORIENTATION

Top View  Bottom View

Orient cap with legend as shown here, and “LC2” at lower right of switch body.

Orders for switches with legends will be assembled as illustrated.

PRECAUTIONS FOR HANDLING & STORAGE

1. NP01 Pushbuttons are electrostatically sensitive. To prevent damage to LED, devices must be properly isolated from static electricity.
2. Once the cap is installed onto the switch body, it cannot be removed.
3. When assembling cap, align projection on switch body to slot on inside of cap. (Refer to illustration at right.)
4. * Legends may be printed on the lens with laser etch, screen print or pad print methods. Epoxy based ink is recommended.
5. Do not use excessive force during installation on PC board or for cap installation.

* NKK Switches can provide custom legends for caps. Contact factory for more information.
### General Specifications

#### Electrical Capacity (Resistive Load)
- **Power Level (silver):** 5A @ 125/250V AC or 5A @ 30V DC
- **Logic Level (gold):** 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 for silver; 100 milliohms maximum for gold
- **Insulation Resistance:** 200 megohms minimum @ 500V DC
- **Dielectric Strength:** 1,000V AC minimum between contacts for 1 minute minimum;
  1,500V AC minimum between contacts & case for 1 minute minimum
- **Mechanical Life:** 1,000,000 operations minimum for momentary;
  200,000 operations minimum for alternate action
- **Electrical Life:**
  - 10,000 operations minimum for silver;
  - 100,000 operations minimum for silver with resistive load of 3A @ 125V AC
  - 200,000 operations minimum for gold
- **Nominal Operating Force:**
  - Single Pole: 1.9N for Square & 1.9N for Rectangular
  - Double Pole: 2.55N for Square & 3.1N for Rectangular
- **Contact Timing:**
  - Break before make
- **Travel:**
  - Pretravel .067” (1.7mm); Overtravel .024” (0.6mm); Total Travel .091” (2.3mm)

#### Materials & Finishes
- **Housing/Bezel:** Glass fiber reinforced polyamide (UL94V-0)
- **Snap-in Frame:** Stainless steel
- **Movable Contactor:** Phosphor bronze
- **Movable Contacts:** Silver alloy or copper with gold plating
- **Stationary Contacts:** Silver alloy or copper with gold plating
- **Switch Terminals:** Phosphor bronze with silver or gold plating
- **Lamp Terminals:** Brass with silver plating
- **Base:** Glass fiber reinforced liquid crystal polymer (UL94V-0)

#### Environmental Data
- **Operating Temperature Range:**
  - –25°C through +50°C (–13°F through +122°F) for Illuminated
  - –20°C through +70°C (–4°F through +158°F) for Nonilluminated
- **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 5 shocks in each direction)

#### Installation
- **Cap Installation Force:** 7.55N (1.70 lbf) maximum downward force on cap
- **Soldering Time & Temp:**
  - Wave Soldering (PC version): See Profile A in Supplement section.
- **Cleaning:** These devices are not process sealed. Hand clean locally using alcohol based solution.

#### Standards & Certifications
- **Flammability Standards:**
  - UL: File No. E44145 - Recognized only when ordered with marking on switch.
  - Add “/U” or “/CUL” before dash in part number to order UL recognized switch.
  - UL recognized only when ordered switch body with cap assembled.
  - All single & double pole models recognized at 5A @ 125/250V AC or 0.014A @ 28V DC.
- **CSA:** File No. 023535_0_000 - Certified only when ordered with marking on switch.
  - Add “/C” before dash in part number to order CSA certified switch.
  - All single & double pole models certified at 5A @ 125/250V AC or 5A @ 30V DC or 0.4VA maximum @ 28V AC/DC maximum.
Distinctive Characteristics

Red/green and amber/blue bicolors with alternating standard or custom legends. Super bright LED provides brilliant uniform illumination.

Bright or super bright LEDs (an integral part of the switch) of red, amber, green, blue, or white, in full face or spot illumination plus square or rectangular models.

Combination of PCB mountability and short body allows use in compact applications.

Small behind panel dimension for snap-in mounting in tight spaces.

Snap-acting contact mechanism provides sensitive actuation with audible feedback; quick-make, quick-break characteristic limits arcing and prolongs electrical life.

Latchdown mechanism, independent of switching mechanism, gives visible and tactile indication of circuit status.

Terminals are epoxy sealed to lock out flux, solvents, and other contaminants.

Momentary and alternate action circuits available in the same space-saving body size.

Matching indicators available.
Series UB
Low Profile Pushbuttons

TYPICAL SWITCH

UB 1 5 SK G 03

Poles
1 SPDT
2 DPDT

Circuits
5 ON (ON)
Alternate Action with Latchdown

Mounting Types
PCB Mounting
SK Square
RK Rectangular
* Snap-in Mounting

Contacts & Ratings
W Silver Rated 5A @ 125/250V AC
G Gold Rated 0.4VA max @ 28V AC/DC max

Terminals
01 Solder Lug (for Snap-in Mounting)
03 Straight PC

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 General Specifications page.

DESCRIPTION FOR TYPICAL ORDERING EXAMPLE
UB15SKG035C-CC

Gold Contacts with 0.4VA Rating
Square with PCB Mounting

Red, Bright LED & Red Lens with Red Diffuser
SPDT ON-(ON) Circuit
Straight PC Terminals
ORDERING EXAMPLE

5C

LEDS

Bright LED
5C Red
5D Amber
5F Green

CC

Cap Types & Colors

Full Face Illuminated Cap for Bright LED

Lens/Diffuser Colors
CB Red/White FF Green/Green
CC Red/Red *FJ Green/Clear
*CJ Red/Clear JB Clear/White
DB Amber/White JC Clear/Red
DD Amber/Amber JD Amber/Amber
*DJ Amber/Clear JF Clear/Green
FB Green/White *JJ Clear/Clear
AB Square & Rectangular Spot Illuminated Black Cap with White Window

* Not available with Rectangular cap

Super Bright LED
6B White
6F Green
6G Blue

Super Bright Bicolor LED
6CF Red/Green
6DG Amber/Blue

Nonilluminated
N Nonilluminated

Part Numbers for Alternating Legends

Square Alternating Legends

<table>
<thead>
<tr>
<th>Color</th>
<th>Part Number</th>
<th>Color</th>
<th>Part Number</th>
<th>Color</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red/Green</td>
<td>AT9450CF11</td>
<td>Amber/Blue</td>
<td>AT9450DG11</td>
<td>Red/Green</td>
<td>AT9451CF11</td>
</tr>
<tr>
<td></td>
<td>AT9450CF12</td>
<td></td>
<td>AT9450DG12</td>
<td></td>
<td>AT9451CF12</td>
</tr>
<tr>
<td></td>
<td>AT9450CF13</td>
<td></td>
<td>AT9450DG13</td>
<td></td>
<td>AT9451CF13</td>
</tr>
<tr>
<td></td>
<td>AT9450CF14</td>
<td></td>
<td>AT9450DG14</td>
<td></td>
<td>AT9451CF14</td>
</tr>
</tbody>
</table>

Rectangular Alternating Legends

<table>
<thead>
<tr>
<th>Color</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red/Green</td>
<td>AT9451DG11</td>
</tr>
<tr>
<td></td>
<td>AT9451DG12</td>
</tr>
<tr>
<td></td>
<td>AT9451DG13</td>
</tr>
<tr>
<td></td>
<td>AT9451DG14</td>
</tr>
</tbody>
</table>

Alternating Legends

11 ON (pos) OFF (pos)
12 ON (neg) OFF (neg)
13 START STOP
14 OPEN CLOSE

Refer to Ordering Table for Alternating Legend that corresponds with last 2 digits of part number.
### POLES & CIRCUITS

<table>
<thead>
<tr>
<th>Pole</th>
<th>Model</th>
<th>Connected Terminals</th>
<th>Throw &amp; Switch/Lamp Schematics</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP</td>
<td>UB15</td>
<td>ON ON (ON) ON 1-3 1-2</td>
<td>SPDT</td>
</tr>
<tr>
<td>DP</td>
<td>UB25</td>
<td>ON ON (ON) ON 1-3 4-6 1-2 4-5</td>
<td>DPDT</td>
</tr>
</tbody>
</table>

* When in latchdown position for the alternate circuit, cap position is .039" (1.0mm) above the housing.

### MOUNTING TYPES & SHAPES

- **PCB Mounting**
  - **SK** Square
  - **RK** Rectangular

- **Snap-in Mounting (Solder Lug)**
  - **KK** Square with Built-in Bezel
  - **NK** Rectangular with Built-in Bezel
  - **NBK** Rectangular with Built-in Side Barriers

Snap-in Mounting with Solder Lug terminals is the standard combination. Panel Thickness: .039 ~ .126" (1.0 ~ 3.2mm)

### CONTACT MATERIALS & RATINGS

- **Silver Contacts**
  - **Power Level**: 5A @ 125V AC & 250V AC

- **Gold Contacts**
  - **Logic Level**: 0.4VA maximum @ 28V AC/DC maximum

Complete explanation of operating range in Supplement section.

### TERMINALS

- **01 Solder Lug**
- **03 Straight PC**
**CAP TYPES & COLOR COMBINATIONS**

**Full Face Illuminated Cap for Bright LED & Super Bright Single Color LED**

<table>
<thead>
<tr>
<th>Lens/Diffuser</th>
<th>Color</th>
<th>Material</th>
<th>Finish</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT4074 Lens</td>
<td>CB</td>
<td>Polycarbonate</td>
<td>Glossy</td>
</tr>
<tr>
<td>AT4075 Diffuser</td>
<td>DD</td>
<td>Polycarbonate</td>
<td>Textured</td>
</tr>
</tbody>
</table>

**Spot Illuminated Caps for Bright & Super Bright LEDs**

<table>
<thead>
<tr>
<th>Cap/Window Colors Available:</th>
<th>Material: Polycarbonate</th>
<th>Finish: Matte</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black Cap with Translucent White Window for LED Display</td>
<td>AT4119 Square for Bright and Super Bright LED</td>
<td>AT4120 Rectangular for Bright and Super Bright LED</td>
</tr>
</tbody>
</table>

**Full Face Illuminated Caps for Super Bright Bicolor LED**

<table>
<thead>
<tr>
<th>Lens/Diffuser</th>
<th>Material: Polycarbonate</th>
<th>Finish: Glossy</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT4074 Square Lens</td>
<td>AT4117 Rectangular Lens</td>
<td>AT4189 Rectangular Diffuser</td>
</tr>
</tbody>
</table>

**Opaque Caps for Nonilluminated**

<table>
<thead>
<tr>
<th>Color Codes:</th>
<th>Material: Polycarbonate</th>
<th>Finish: Glossy</th>
</tr>
</thead>
<tbody>
<tr>
<td>A B C F</td>
<td>AT4073 Square</td>
<td>AT4116 Rectangular</td>
</tr>
</tbody>
</table>

---

**BRIGHT & SUPER BRIGHT LED 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 bottom of switch. If the source voltage exceeds the rated voltage, a ballast resistor is required. Resistor value can be calculated by using the formula in the Supplement section. LED is an integral part of switch and not available separately.

<table>
<thead>
<tr>
<th>Super Bright LEDs are Electrostatic Sensitive</th>
<th>Bright</th>
<th>Super Bright</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color</td>
<td>5C</td>
<td>5D</td>
</tr>
<tr>
<td>Red</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Amber</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Green</td>
<td>1.85</td>
<td>2.0</td>
</tr>
<tr>
<td>White</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Blue</td>
<td>0.40</td>
<td>0.42</td>
</tr>
</tbody>
</table>

**Ambient Temperature Range**

-25°C ~ +50°C
SUPER BRIGHT BICOLOR LEDS FOR ALTERNATING LEGENDS

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 bottom of switch. If the source voltage exceeds the rated voltage, a ballast resistor is required. Resistor value can be calculated by using the formula in the Supplement section. LED is an integral part of switch and not available separately.

---

### Electrical Specifications for Super Bright Bicolor LEDs

<table>
<thead>
<tr>
<th>Super Bright Bicolor LEDs are</th>
<th>6CF</th>
<th>6DG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrostatic Sensitive Color</td>
<td>Red</td>
<td>Green</td>
</tr>
<tr>
<td>Maximum Forward Current $I_{FM}$</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Typical Forward Current $I_f$</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Forward Voltage $V_f$</td>
<td>2.3</td>
<td>3.2</td>
</tr>
<tr>
<td>Maximum Reverse Voltage $V_{RM}$</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Current Reduction Rate Above 25°C $\Delta I_f$</td>
<td>0.33</td>
<td>0.33</td>
</tr>
<tr>
<td>Ambient Temperature Range</td>
<td>-25° ~ +50°</td>
<td>-25° ~ +50°</td>
</tr>
</tbody>
</table>

* Value applies to single color illumination for either Red or Green or Amber or Blue. When both colors are illuminated simultaneously, the sum of the currents should not exceed the smallest value of the maximum forward current.

---

### Alternating Legend Caps for Super Bright Bicolor LED

**JCF**  
AT4074 12.0mm Square Flat Cap  
AT9450 Square Legend Insert  
AT4188 Square Diffuser

**JDG**  
AT4117 12.0mm x 17.0mm Rectangular Flat Cap  
AT9451 Rectangular Legend Insert  
AT4189 Rectangular Diffuser

- Lens & Diffuser Material: Polycarbonate
- Legend Insert Material: Polyethylene Terephthalate (PET)
- Lens Finish: Glossy
- Diffuser Finish: Textured

---

### Standard Alternating Legend Pairs

- **11** ON OFF  
  - Green/Red or Blue/Amber
- **12** ON OFF  
  - Green/Red or Blue/Amber
- **13** START STOP  
  - Green/Red or Blue/Amber
- **14** OPEN CLOSE  
  - Green/Red or Blue/Amber

Cap illumination is alternating Green/Red or Blue/Amber; legend text is black.

Contact factory for other Alternating Legends.

Legend illustrations are approximate representations of the actual characters on the filters.
### TYPICAL SWITCH DIMENSIONS

#### Single & Double Pole
- **Square • PCB Mount**
  - UB15SKG035C-CB
- **Square • Snap-in Mount • Built-in Bezel**
  - UB26RKG035D-DD
- **Rectangular • PCB Mount**
  - UB25KKW015C-CB
- **Rectangular • Snap-in Mount • Built-in Bezel**
  - UB26NKW015F-FF
- **Rectangular • Snap-in Mount • Built-in Side Barriers**
  - UB25NBKW015F-FB

#### Single Pole Models
- Models do not have terminals 4, 5, & 6.

#### Typical Dimensions

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Single Pole</th>
<th>Double Pole</th>
<th>Square</th>
<th>Rectangular</th>
</tr>
</thead>
<tbody>
<tr>
<td>(12.0) Sq</td>
<td>(4.72)</td>
<td>(4.72)</td>
<td>(2.04)</td>
<td>(2.04)</td>
</tr>
<tr>
<td>(15.24) Sq</td>
<td>(6.00)</td>
<td>(6.00)</td>
<td>(2.35)</td>
<td>(2.35)</td>
</tr>
<tr>
<td>(112.05) Sq</td>
<td>(4.42)</td>
<td>(4.42)</td>
<td>(1.43)</td>
<td>(1.43)</td>
</tr>
<tr>
<td>(122.05) Sq</td>
<td>(4.79)</td>
<td>(4.79)</td>
<td>(1.49)</td>
<td>(1.49)</td>
</tr>
<tr>
<td>Latchdown Position</td>
<td></td>
<td></td>
<td>(1.56)</td>
<td>(1.56)</td>
</tr>
<tr>
<td></td>
<td>(1.56)</td>
<td>(1.56)</td>
<td>(3.94)</td>
<td>(3.94)</td>
</tr>
<tr>
<td>(2.54) Typ</td>
<td>(1.00)</td>
<td>(1.00)</td>
<td>(1.00)</td>
<td>(1.00)</td>
</tr>
<tr>
<td></td>
<td>(2.54) Typ</td>
<td>(1.00)</td>
<td>(1.00)</td>
<td>(1.00)</td>
</tr>
<tr>
<td></td>
<td>(2.54) Typ</td>
<td>(1.00)</td>
<td>(1.00)</td>
<td>(1.00)</td>
</tr>
</tbody>
</table>

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

**Supplement**

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

**Series UB**
## TYPICAL SWITCH DIMENSIONS

### Square • PCB Mount

<table>
<thead>
<tr>
<th>Model</th>
<th>Dimensions</th>
<th>Notes</th>
</tr>
</thead>
</table>

### Square • Snap-in Mount • Built-in Bezel

<table>
<thead>
<tr>
<th>Model</th>
<th>Dimensions</th>
<th>Notes</th>
</tr>
</thead>
</table>

### Rectangular • PCB Mount

<table>
<thead>
<tr>
<th>Model</th>
<th>Dimensions</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>UB25RG036DG-JDG11</td>
<td><img src="UB25RG036DG-JDG11.png" alt="Image" /></td>
<td>Single pole models do not have terminals 4, 5, &amp; 6.</td>
</tr>
</tbody>
</table>

### Rectangular • Snap-in Mount • Built-in Bezel

<table>
<thead>
<tr>
<th>Model</th>
<th>Dimensions</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>UB26NKW016DG-JDG11</td>
<td><img src="UB26NKW016DG-JDG11.png" alt="Image" /></td>
<td>Single pole models do not have terminals 4, 5, &amp; 6.</td>
</tr>
</tbody>
</table>

### Rectangular • Snap-in Mount • Built-in Side Barriers

<table>
<thead>
<tr>
<th>Model</th>
<th>Dimensions</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>UB26NBK016DG-JDG11</td>
<td><img src="UB26NBK016DG-JDG11.png" alt="Image" /></td>
<td>Single pole models do not have terminals 4, 5, &amp; 6.</td>
</tr>
</tbody>
</table>

---

**Panel Thickness:**

- (1.0 ~ 3.2mm) .039 ~ .126"
OPTIONAL ACCESSORIES

Spring Loaded Protective Guard for Snap-in Mounting of Square PCB Model

AT4173
Square Protective Guard/
Snap-in Frame

Opens 180°
Closes automatically

Materials:
Cover: Clear Polycarbonate
Base: Black Polyamide
Coil Spring: Stainless Steel

Recommended Panel Thickness:
.039” ~ .126”
(1.0mm ~ 3.2mm)

Recommended Panel-to-PCB Range:
.354” ~ .433”
(9.0mm ~ 11.0mm)

Spring Loaded Protective Guard for Square Snap-in Model

AT4171
Square
Protective Guard

Opens 180°
Closes automatically

Materials:
Cover: Clear Polycarbonate
Base: Black GFR Polyamide
Coil Spring: Stainless Steel

Recommended Panel Thickness:
.039” ~ .106” (1.0mm ~ 2.7mm)

IN = Number of switches
* Minimum dimension allows opening of cover to 180°

Installation
1. Install switch onto PC board.
2. Snap protective guard into panel.
3. Join the two assemblies.

IN = Number of switches
* Minimum dimension allows opening of cover to 180°
OPTIONAL ACCESSORIES

Spring Loaded Protective Guard for Snap-in Mounting of Rectangular PCB Model

AT4174
Rectangular Protective Guard/ Snap-in Frame

Opens 180°
Closes automatically

Materials:
Cover: Clear Polycarbonate
Base: Black Polyamide
Coil Spring: Stainless Steel

Recommended Panel Thickness:
.039” ~ .126”
(1.0mm ~ 3.2mm)

Recommended Panel-to-PCB Range:
.354” ~ .433”
(9.0mm ~ 11.0mm)

AT4172
Rectangular Protective Guard

Opens 180°
Closes automatically

Materials:
Cover: Clear Polycarbonate
Base: Black GFR Polyamide
Coil Spring: Stainless Steel

Recommended Panel Thickness:
.039” ~ .106”
(1.0mm ~ 2.7mm)
Low Profile Pushbuttons

Series UB

OPTIONAL ACCESSORIES

AT4001
Square

Only for use with KK mounting type

AT4011
Rectangular

Only for use with NK mounting type

Dust Covers

Materials:
PVC with polyethylene gasket
(PVC loses pliability below 0°C (32°F).)

Recommended Panel Thickness: .039” ~ .098” (1.0mm ~ 2.5mm)

LEGENDS

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

Suggested Printable Area for UB Lens & Film Insert

Recommended Methods: Laser Etch on clear lens, Screen Print or Pad Print on lens;
Laser Print on film insert.

Square Cap

Rectangular Cap

Film Insert: Clear Polyester 0.15mm max. thickness
### General Specifications

#### Electrical Capacity (Resistive Load)
- **Power Level (silver):** 5A @ 125/250V AC or 5A @ 30V DC
- **Logic Level (gold):** 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 millionohms maximum for silver; 100 millionohms maximum for gold
- **Insulation Resistance:** 200 megohms minimum @ 500V DC
- **Dielectric Strength:** 1,000V AC minimum between contacts for 1 minute minimum; 1,500V AC minimum between contacts & case for 1 minute minimum
- **Mechanical Life:** 1,000,000 operations minimum for momentary; 200,000 operations minimum for alternate action
- **Electrical Life:** 10,000 operations minimum for silver; 200,000 operations minimum for gold
- **Nominal Operating Force:** Single Pole: 1.90N; Double Pole: 2.55N
- **Contact Timing:** Break before make
- **Travel:** Pretravel .067” (1.7mm); Overtravel .024” (0.6mm); Total Travel .091” (2.3mm)

#### Materials & Finishes
- **Housing/Bezel:** Glass fiber reinforced polyamide (UL94V-0)
- **Snap-in Frame:** Stainless steel
- **Movable Contactor:** Phosphor bronze
- **Movable Contacts:** Silver alloy or copper with gold plating
- **Stationary Contacts:** Silver alloy or copper with gold plating
- **Switch Terminals:** Phosphor bronze with silver or gold plating
- **Lamp Terminals:** Brass with tin plating
- **Base:** Glass fiber reinforced liquid crystal polymer (UL94V-0)

#### Environmental Data
- **Operating Temperature Range:** –25°C through +50°C (–13°F through +122°F) for Illuminated
  –25°C through +70°C (–13°F through +158°F) for Nonilluminated

- **Humidity:** 90 ~ 95% humidity for 240 hours @ 40°C (104°F)
- **Vibration:** 10 ~ 55Hz with peak-to-peak amplitude of 1.5mm traversing the frequency range & returning in 1 minute; 3 right angled directions for 2 hours
- **Shock:** 50G (490m/s²) acceleration (tested in 6 right angled directions, with 5 shocks in each direction)

#### Installation
- **Cap Installation Force:** 15.0N maximum downward force on cap

#### Processing
- **Soldering:** Wave Soldering (PC version): See Profile A in Supplement section.
  Manual Soldering: See Profile A in Supplement section.
- **Cleaning:** These devices are not process sealed. Hand clean locally using alcohol based solution.

#### Standards & Certifications
- **Flammability Standards:** UL94V-0 housing/bezel & base
- **UL:** File No. E44145 - Recognized only when ordered with marking on switch.
  Add “/U” or “/CUL” before dash in part number to order UL recognized switch.
  UL recognized only when ordered switch body with cap assembled.
  All single & double pole models recognized at 5A @ 125/250V AC or 0.014A @ 28V DC.
**Distinctive Characteristics**

Wide selection of illumination effects is achieved with single and bicolor, 1- or 6-element LEDs in flat, beveled, or sculptured caps.

Alternating legends in choice of sculptured or flat caps, combined with super bright bicolor LED.

Combination of PCB mountability and short body allows use in compact applications.

Small behind panel dimension for snap-in mounting in tight spaces.

Snap-acting contact mechanism provides sensitive actuation with audible feedback; quick-make, quick-break characteristic limits arcing and prolongs electrical life.

Latchdown mechanism, independent of switching mechanism, gives outstanding stability and reliability plus visible and tactile indication of circuit status.

Terminals are epoxy sealed to lock out flux, solvents, and other contaminants.

Momentary and alternate action circuits available in the same space-saving body size.

Matching indicators available.
Series UB2

Low Profile Pushbuttons

UB2

1 5 SK G 03

Poles
1 SPDT
2 DPDT

Circuits
5 ON (ON)

Alternate Action with Latchdown

Mounting Types
PCB Mounting
SK Square

* Snap-in Mounting
KK Square

* Standard with Solder Lug terminals

Terminals
01 Solder Lug (for Snap-in Mounting)
03 Straight PC

Contacts & Ratings
W Silver Rated 5A @ 125/250V AC
G Gold Rated 0.4VA max @ 28V AC/DC max

Part Numbers for Alternating Legends

<table>
<thead>
<tr>
<th>Color</th>
<th>15mm Square Sculptured Cap</th>
<th>15mm Square Flat Cap</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red/Green</td>
<td>AT3069JCF11 ~ AT3069JCF14</td>
<td>AT3070JCF11 ~ AT3070JCF14</td>
</tr>
<tr>
<td>Amber/Blue</td>
<td>AT3069JDG11 ~ AT3069JDG14</td>
<td>AT3070JDG11 ~ AT3070JDG14</td>
</tr>
</tbody>
</table>

Refer to Ordering Table for Alternating Legend that corresponds with last 2 digits of part number.

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

DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

UB215SKG035C-1JC

Gold Contacts with 0.4VA Rating

Square with PCB Mounting

Red, Bright LED and Sculptured Cap with Clear Lens and Red Diffuser

SPDT

ON-(ON) Circuit
## Low Profile Pushbuttons

### Ordering Example

<table>
<thead>
<tr>
<th>LEDs</th>
<th>Cap Types &amp; Colors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sculptured Cap Lens/Diffuser Colors</td>
</tr>
<tr>
<td></td>
<td>1JB Clear/White</td>
</tr>
<tr>
<td></td>
<td>1JC Clear/Red</td>
</tr>
<tr>
<td></td>
<td>1JD Clear/Green</td>
</tr>
<tr>
<td></td>
<td>1JF Clear/Amber</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Beveled Cap &amp; Colors</th>
</tr>
</thead>
<tbody>
<tr>
<td>2B</td>
<td>White</td>
</tr>
<tr>
<td>2C</td>
<td>Red</td>
</tr>
<tr>
<td>2D</td>
<td>Amber</td>
</tr>
<tr>
<td>2F</td>
<td>Green</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Flat Cap Lens/Diffuser Colors</th>
</tr>
</thead>
<tbody>
<tr>
<td>3JB</td>
<td>Clear/White</td>
</tr>
<tr>
<td>3JC</td>
<td>Clear/Red</td>
</tr>
<tr>
<td>3JD</td>
<td>Clear/Amber</td>
</tr>
<tr>
<td>3JF</td>
<td>Clear/Green</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Super Bright LED</th>
<th>Sculptured Cap Lens/Diffuser Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>6B</td>
<td>Clear/White</td>
</tr>
<tr>
<td>6F</td>
<td>Clear/Amber</td>
</tr>
<tr>
<td>6G</td>
<td>Green</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Super Bright Bicolor LED</th>
<th>Sculptured Cap Lens/Diffuser Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>6CF</td>
<td>Clear/Red</td>
</tr>
<tr>
<td>6DG</td>
<td>Clear/Amber</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Nonilluminated</th>
<th>Sculptured Cap Lens/Insert Colors</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>Clear/Black</td>
</tr>
<tr>
<td></td>
<td>Clear/White</td>
</tr>
<tr>
<td></td>
<td>Clear/Red</td>
</tr>
</tbody>
</table>

### Alternating Legends

- **11**: ON (pos) OFF (pos)
- **12**: ON (neg) OFF (neg)
- **13**: START STOP
- **14**: OPEN CLOSE

See Part Numbers Table on Previous Page.

Contact factory for custom options.
POLES & CIRCUITS

<table>
<thead>
<tr>
<th>Pole</th>
<th>Model</th>
<th>Normal</th>
<th>Down</th>
<th>Connected Terminals</th>
<th>Throw &amp; Switch/Lamp Schematics</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP</td>
<td>UB215 *UB216</td>
<td>ON</td>
<td>ON</td>
<td>ON, ON</td>
<td>SPDT</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1-3 1-2</td>
<td>3 2</td>
</tr>
<tr>
<td>DP</td>
<td>UB225 *UB226</td>
<td>ON</td>
<td>ON</td>
<td>ON, ON</td>
<td>DPDT</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1-3 4-6 1-2 4-5</td>
<td>3 2 4 5</td>
</tr>
</tbody>
</table>

* When in latchdown position for the alternate circuit, cap positions above the housing are: .059" (1.5mm) for snap-in models & .276" (7.0mm) for PCB models.

MOUNTING TYPES & SHAPES

PCB Mounting

**SK** Square SP, Single Color LED

**KK** Square with Built-in Bezel DP, Single Color LED

Snap-in Mounting (Solder Lug)

Panel Thickness: .039 ~ .126" (1.0 ~ 3.2mm)

CONTACT MATERIALS & RATINGS

| W | Silver Contacts | Power Level | 5A @ 125V AC & 250V AC |
| G | Gold Contacts   | Logic Level | 0.4VA maximum @ 28V AC/DC maximum |

Complete explanation of operating range in Supplement section.

SWITCH & LAMP TERMINALS

| 01 | Solder Lug | For Switch & Bright LED | For Super Bright & Bicolor LED |
| 03 | Straight PC | For Switch & Bright LED | For Super Bright & Bicolor LED |
BRIGHT LED & CAPS

The electrical specifications shown are determined at a basic temperature of 25°C. LED circuit is isolated and requires an 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.

The LED is an integral part of the switch and not available separately.

Electrical Specifications for Bright LED

<table>
<thead>
<tr>
<th>Color</th>
<th>5C</th>
<th>5D</th>
<th>5F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. Forward Current</td>
<td>30</td>
<td>30</td>
<td>25</td>
</tr>
<tr>
<td>Typical Forward Current</td>
<td>20</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Forward Voltage</td>
<td>1.85</td>
<td>2.0</td>
<td>2.1</td>
</tr>
<tr>
<td>Max. Reverse Voltage</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Current Reduction Rate Above 25°C</td>
<td>0.40</td>
<td>0.42</td>
<td>0.46</td>
</tr>
<tr>
<td>Ambient Temperature Range</td>
<td>-25° ~ +50°</td>
<td>&quot;</td>
<td>&quot;</td>
</tr>
</tbody>
</table>

Bright Single Color LED with 1 element

Caps for Bright LED

1. AT3074 Sculptured
2. AT3075 Beveled
3. AT3076 Flat

Lens/Diffuser Colors Available:
- JB Clear/White
- JC Clear/Red
- JD Clear/Amber
- JF Clear/Green

Cap Colors Available:
- B White
- C Red
- D Amber
- F Green

Lens/Diffuser Colors Available:
- JB Clear/White
- JC Clear/Red
- JD Clear/Amber
- JF Clear/Green

Material: Polycarbonate  Finish: Glossy
**SUPER BRIGHT LEDS & CAPS**

The electrical specifications shown are determined at a basic temperature of 25°C. LED circuit is isolated and requires an 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. The LED is an integral part of the switch and not available separately.

### Electrical Specifications for Super Bright LEDS

<table>
<thead>
<tr>
<th>Super Bright LEDs are Electrostatic Sensitive</th>
<th>Color</th>
<th>6B</th>
<th>6F</th>
<th>6G</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Forward Current ( I_{FM} )</td>
<td></td>
<td>20</td>
<td>30</td>
<td>30</td>
<td>mA</td>
</tr>
<tr>
<td>Typical Forward Current ( I_{F} )</td>
<td></td>
<td>15</td>
<td>20</td>
<td>20</td>
<td>mA</td>
</tr>
<tr>
<td>Forward Voltage ( V_{F} )</td>
<td></td>
<td>3.3</td>
<td>3.5</td>
<td>3.6</td>
<td>V</td>
</tr>
<tr>
<td>Maximum Reverse Voltage ( V_{RM} )</td>
<td></td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>V</td>
</tr>
<tr>
<td>Current Reduction Rate Above 25°C ( \Delta I_{F} )</td>
<td></td>
<td>0.25</td>
<td>0.50</td>
<td>0.50</td>
<td>mA/°C</td>
</tr>
<tr>
<td>Ambient Temperature Range</td>
<td></td>
<td>-20° ~ +50°</td>
<td></td>
<td></td>
<td>°C</td>
</tr>
</tbody>
</table>

**Super Bright Single Color LED with 1 element**

**Caps for Super Bright LED**

- **1JB**
  - AT3074JB
  - Sculptured
  - Clear Lens/
  - White Diffuser

- **2B**
  - AT3075B
  - Beveled
  - White Cap

- **3JB**
  - AT3076JB
  - Flat
  - Clear Lens/
  - White Diffuser

Material: Polycarbonate
Finish: Glossy

**SUPER BRIGHT BICOLOR LEDS & CAPS**

The electrical specifications shown are determined at a basic temperature of 25°C. LED circuit is isolated and requires an 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. The LED is an integral part of the switch and not available separately.

### Electrical Specifications for Super Bright Bicolor LEDS

<table>
<thead>
<tr>
<th>Super Bright Bicolor LEDs are Electrostatic Sensitive</th>
<th>Color</th>
<th>6CF</th>
<th>6DG</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Forward Current ( I_{FM} ) * 25 for Amber</td>
<td></td>
<td>30</td>
<td>30</td>
<td>mA</td>
</tr>
<tr>
<td>Typical Forward Current ( I_{F} ) * 22 for Amber</td>
<td></td>
<td>20</td>
<td>20</td>
<td>mA</td>
</tr>
<tr>
<td>Forward Voltage ( V_{F} )</td>
<td></td>
<td>2.1</td>
<td>3.5</td>
<td>V</td>
</tr>
<tr>
<td>Maximum Reverse Voltage ( V_{RM} )</td>
<td></td>
<td>4</td>
<td>4</td>
<td>V</td>
</tr>
<tr>
<td>Current Reduction Rate Above 25°C ( \Delta I_{F} )</td>
<td></td>
<td>0.40</td>
<td>0.33</td>
<td>mA/°C</td>
</tr>
<tr>
<td>Ambient Temperature Range</td>
<td></td>
<td>-20° ~ +50°</td>
<td>-20° ~ +50°</td>
<td>°C</td>
</tr>
</tbody>
</table>

**Super Bright Bicolor LED with 2 elements**

* Amber color is achieved by lighting red and green simultaneously, but is not suitable for Alternating Legends.*
Series UB2 Low Profile Pushbuttons

Caps for Super Bright Bicolor LED

1JB AT3074JB Sculptured Clear Lens/White Diffuser

2B AT3075B Beveled White Cap

3JB AT3076JB Flat Clear Lens/White Diffuser

Material: Polycarbonate Finish: Glossy

Alternating Legend Caps for Super Bright Bicolor LED

AT3069J Sculptured Cap with Alternating Legend

4JCF Red/Green

4JDG Amber/Blue

Material: Polycarbonate

AT3070J Flat Cap with Alternating Legend

5JCF Red/Green

5JDG Amber/Blue

Material: Polycarbonate Finish: Glossy

Standard Alternating Legend Pairs

11 ON OFF 12 ON OFF 13 START STOP 14 OPEN CLOSE

Green/Red or Blue/Amber Green/Red or Blue/Amber Green/Red or Blue/Amber Green/Red or Blue/Amber

Cap illumination is alternating Green/Red or Blue/Amber; legend text is black.

Legend illustrations are approximate representations of the actual characters on the filters.

No Code No Lamp

CAP TYPES & COLOR COMBINATIONS FOR NONILLUMINATED

4 AT3073 Sculptured Lens/Insert Colors Available:

JA Clear/Black

JB Clear/White

JC Clear/Red

JD Clear/Amber

JF Clear/Green Material: Polycarbonate Finish: Glossy

5 AT3077 Beveled Cap Colors Available:

A Black

B White

C Red

D Amber

F Green Material: Polycarbonate Finish: Glossy

www.nkkswitches.com
Low Profile Pushbuttons

Series UB2

OPTIONAL ACCESSORIES

AT4141
Opens 90°
Closes manually

Materials:
Cover: Clear Polycarbonate
Base: Black GFR Polyamide

Recommended Panel Thickness:
.039” ~ .106” (1.0mm ~ 2.7mm)

AT4170
Opens 180°
Closes automatically

Materials:
Cover: Clear Polycarbonate
Base: Black Polyamide
Coil Spring: Stainless Steel

Recommended Panel Thickness:
.039” ~ .126”
(1.0mm ~ 3.2mm)

Recommended Panel-to-PCB Range:
.531” (13.5mm)

Protection Guard for Snap-in Model

Protection Guard for Snap-in Mounting of PCB Model

* Minimum dimension allows opening of cover to 180°
**Series UB2**

**Low Profile Pushbuttons**

---

**OPTIONAL ACCESSORIES**

Spring Loaded Protective Guard for Snap-in Model

**AT4142**

Opens 180°
Closes automatically

**Materials:**
Cover: Clear Polycarbonate
Base: Black GFR Polyamide
Coil Spring: Stainless Steel

**Recommended Panel Thickness:**
.039” ~ .106” (1.0mm ~ 2.7mm)

---

Dust Cover

**AT4145**  Not for use with barriers.

**Materials:**
Lid: Clear PVC
Operating temperature range: 
0°C ~ +70°C (32°F ~ 158°C).
Gasket: Polyethylene

**Recommended Panel Thickness**
.039” ~ .098” (1.0mm ~ 2.5mm)

---

Barriers for Snap-in Mount

**AT4143**  **AT4144**

End  Center

**Material:** Polyamide

**Cutouts for more than 1 Switch:**

\[
A = 0.799” (20.3mm) \times \text{Number of Switches} + 0.063” (1.6mm)
\]
LEGENDS

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

Suggested Printable Area for UB2 Lens, Film Insert or Diffuser

Recommended Methods: Laser Etch on clear lens, Screen Print or Pad Print on lens; Laser Print on film insert.

Shaded areas are printable areas.

Beveled Cap

Flat Cap

Sculptured Cap

Film Insert: Clear Polyester 4 mil maximum thickness
Series YB

Short Body Pushbuttons

General Specifications

**Electrical Capacity (Resistive Load)**

- **Power Level (silver):** 3A @ 125V AC or 3A @ 250V AC or 3A @ 30V DC
- **Logic Level (gold):** 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 for silver; 100 milliohms maximum for gold
- **Insulation Resistance:** 200 megohms minimum @ 500V DC
- **Dielectric Strength:** 1,000V AC minimum between contacts for 1 minute minimum; 1,500V AC minimum between contacts & case for 1 minute minimum
- **Mechanical Life:** 1,000,000 operations minimum for momentary circuit
- **Electrical Life:** 200,000 operations minimum for maintained circuit
- **Nominal Operating Force:** Single pole: 1.47N for nonsealed; 1.67N for sealed
  Double pole: 2.75N for nonsealed; 2.94N for sealed
- **Contact Timing:** Nonshorting (break-before-make)
  - **Travel:** Pretravel .059” (1.5mm); Overtravel .059” (1.5mm); Total Travel .118” (3.0mm)

**Materials & Finishes**

- **Housing/Bezel:** Glass fiber reinforced polyamide (UL94V-0)
- **Snap-in Frame:** Stainless steel
- **Base:** Glass fiber reinforced polyamide (UL94V-0)
- **Movable Contactor:** Phosphor bronze with silver or gold plating
- **Movable Contacts:** Silver alloy with silver plating or brass with gold plating
- **Stationary Contacts:** Silver alloy or copper with gold plating
- **Switch Terminals:** Phosphor bronze with tin plating
- **Lamp Terminals:** Phosphor bronze with tin plating

**Environmental Data**

- **Operating Temperature Range:** –25°C through +50°C (-13°F through +122°F) for Illuminated
  –25°C through +70°C (-13°F through +158°F) for Nonilluminated
- **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 5 shocks in each direction)
- **Sealing:** IP65 of IEC60529 standard for panel seal models

**Installation**

- **Mounting Torque:** 0.785Nm (6.95 lb-in) maximum
- **Quick Connect Force:** 24.5N maximum downward force on connector
- **Soldering Time & Temperature:** Manual Soldering: See Profile A in Supplement section.

**Standards & Certifications**

- **Flammability Standards:** UL94V-0 housing & base
  - **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 solder lug models recognized at 3A @ 125/250V AC or 0.4VA @ 28V AC/DC maximum.
  - **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.
    - All solder lug models certified at 3A @ 125/250V AC or 0.4VA @ 28V AC/DC maximum.

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Distinctive Characteristics

Full face or spot illumination with incandescent lamps or multi-element LEDs, with or without resistors.

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

Combination bezel-barrier is an integral part of the switch and prevents accidental actuation.

Unique thermoplastic elastomer seal inside caps plus rolled sleeve of nitrile butadiene rubber at joining of housing and inner case, all for added protection to interior mechanism.

Dust and oil tight as well as splashproof panel seal models qualify to IP65 of IEC60529 Standards (similar to NEMA 4 and 13). Panel seal models provided with exterior o-ring.

Distinctive design of snap-action contacts for shock resistance, long life, and sensitive actuation.

High density design to give behind panel depth of less than one inch.

Terminals are epoxy sealed to lock out flux, dust, solvents, and other contaminants.

Latchdown for indication of circuit status, plus audible, tactile feedback with smooth, responsive operation.

Matching indicators available.
### Series YB

#### Short Body Pushbuttons

<table>
<thead>
<tr>
<th>Poles</th>
<th>Panel Seal</th>
<th>Housing</th>
<th>Terminals</th>
<th>Contact Materials &amp; Ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 SPDT</td>
<td>Without Panel Seal</td>
<td>K Black only</td>
<td>01 Solder Lug/.110&quot; (2.8mm) Quick Connect</td>
<td>W Silver Rated 3A @ 125V AC</td>
</tr>
<tr>
<td>2 DPDT</td>
<td>With Panel Seal (Bushing Mount only)</td>
<td></td>
<td>03 Straight PC</td>
<td>G Gold Rated 0.4VA max. @ 28V AC/DC max.</td>
</tr>
</tbody>
</table>

### Poles

**1 SPDT**

**2 DPDT**

### Panel Seal

**No Code**

- Without Panel Seal

**W**

- With Panel Seal (Bushing Mount only)

### Housing

**K** Black only

### Circuits

**5 ON (ON)**

- Momentary

**6 ON ON**

- Alternate Action with Latchdown

### Shapes

**Bushing Mounting**

- **S** Square
- **C** Round
- **R** Rectangular

**Snap-in Mounting**

- **K** Square
- **M** Round
- **N** Rectangular

---

**IMPORTANT:**

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

---

**DESCRIPTION FOR TYPICAL ORDERING EXAMPLE**

**YB15CKW01-6F-JB**

- Green, Super Bright LED
- Round with Bushing Mounting
- Black Housing
- SPDT ON-(ON) Circuit
- Led Cap with Clear Lens and White Insert
- Without Panel Seal
- Silver Contacts with 3 Amp Rating
- Solder Lug/.110" (2.8mm) Quick Connect Terminals

---

**D106**

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### Lamps

<table>
<thead>
<tr>
<th>Incandescent Lamp</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>05</td>
<td>5-volt</td>
</tr>
<tr>
<td>12</td>
<td>12-volt</td>
</tr>
<tr>
<td>No Code</td>
<td>Nonilluminated</td>
</tr>
</tbody>
</table>

### Cap Types & Colors

<table>
<thead>
<tr>
<th>Solid Cap: Lens/Insert Colors</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>BB White/White</td>
<td></td>
</tr>
<tr>
<td>CB Red/White</td>
<td></td>
</tr>
<tr>
<td>EB Yellow/White</td>
<td></td>
</tr>
<tr>
<td>FB Green/White</td>
<td></td>
</tr>
<tr>
<td>GB Blue/White</td>
<td></td>
</tr>
</tbody>
</table>

### LED for Spot Illuminated Cap

<table>
<thead>
<tr>
<th>LED for Spot Illuminated Cap</th>
<th>LED Colors</th>
<th>Forward Voltage</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1C</td>
<td>Red</td>
<td>02 2-volt (no resistor)</td>
</tr>
<tr>
<td></td>
<td>1D</td>
<td>Amber</td>
<td>05 5-volt</td>
</tr>
<tr>
<td></td>
<td>1F</td>
<td>Green</td>
<td>12 12-volt</td>
</tr>
<tr>
<td></td>
<td>1CF</td>
<td>Red/Green</td>
<td>24 24-volt</td>
</tr>
</tbody>
</table>

### Spot Illuminated Cap: Lens/Insert Colors

<table>
<thead>
<tr>
<th>Spot Illuminated Cap: Lens/Insert Colors</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>JA Clear/Black</td>
<td></td>
</tr>
<tr>
<td>JB Clear/White</td>
<td></td>
</tr>
<tr>
<td>JC Clear/Red</td>
<td></td>
</tr>
<tr>
<td>JE Clear/Yellow</td>
<td></td>
</tr>
<tr>
<td>JF Clear/Green</td>
<td></td>
</tr>
</tbody>
</table>

### Bright LED

<table>
<thead>
<tr>
<th>Bright LED</th>
<th>LED Colors</th>
<th>Resistor</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5C</td>
<td>Red</td>
<td>No Code</td>
</tr>
<tr>
<td></td>
<td>5D</td>
<td>Amber</td>
<td>No Resistor</td>
</tr>
<tr>
<td></td>
<td>5F</td>
<td>Green</td>
<td>05 5-volt</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>12 12-volt</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>24 24-volt</td>
</tr>
</tbody>
</table>

### Super Bright LED

<table>
<thead>
<tr>
<th>Super Bright LED</th>
<th>LED Colors</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>6B</td>
<td>White</td>
<td></td>
</tr>
<tr>
<td>6F</td>
<td>Green</td>
<td></td>
</tr>
<tr>
<td>6G</td>
<td>Blue</td>
<td></td>
</tr>
</tbody>
</table>

### Bicolor LED for Full Face Illuminated

<table>
<thead>
<tr>
<th>Bicolor LED for Full Face Illuminated</th>
<th>LED Colors</th>
<th>Forward Voltage</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2CF</td>
<td>Red/Green</td>
<td>02 2-volt (no resistor)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>05 5-volt</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>12 12-volt</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>24 24-volt</td>
</tr>
</tbody>
</table>

### LED Cap: Lens/Insert Colors

<table>
<thead>
<tr>
<th>LED Cap: Lens/Insert Colors</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>JB Clear/White</td>
<td></td>
</tr>
<tr>
<td>JC Clear/Red</td>
<td></td>
</tr>
<tr>
<td>JD Clear/Amber</td>
<td></td>
</tr>
<tr>
<td>JF Clear/Green</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LED Cap: Lens/Insert Colors</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>JB Clear/White</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LED Cap: Lens/Insert Colors</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>JB Clear/White</td>
<td></td>
</tr>
</tbody>
</table>
Series YB  Short Body Pushbuttons

POLES & CIRCUITS

<table>
<thead>
<tr>
<th>Pole</th>
<th>Model</th>
<th>Normal</th>
<th>Down</th>
<th>Connected Terminals</th>
<th>Throw &amp; Switch/Lamp Schematics</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP</td>
<td>YB15</td>
<td>ON</td>
<td>(ON)</td>
<td>1-3</td>
<td>SPDT</td>
</tr>
<tr>
<td></td>
<td>*YB16</td>
<td>ON</td>
<td>ON</td>
<td>1-2</td>
<td></td>
</tr>
<tr>
<td>DP</td>
<td>YB25</td>
<td>ON</td>
<td>(ON)</td>
<td>1-3 4-6</td>
<td>DPDT</td>
</tr>
<tr>
<td></td>
<td>*YB26</td>
<td>ON</td>
<td>ON</td>
<td>1-2 4-5</td>
<td></td>
</tr>
</tbody>
</table>

Notes: Switch is marked with NC, NO, COM, L+, L-. Lamp circuit is isolated and requires external power source.

* When in latchdown position for the alternate circuit, cap position is .020" (0.5mm) above the built-in bezel.

**CONTACT MATERIALS & RATINGS**

- **W** Silver Contacts  
  Power Level  
  3A @ 125/250V AC

- **G** Gold Contacts  
  Logic Level  
  0.4VA max. @ 28V AC/DC max.

Complete explanation of operating range in Supplement section.
Series YB

**TERMINALS**

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Code</th>
<th>Measurements</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Solder Lug/0.110&quot; (2.8mm) Quick Connect</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**INCANDESCENT LAMP & SOLID CAP**

Electrical specifications are determined at a basic temperature of 25°C. Lamp circuit is independent of switch operation. For dimension drawing of lamp see the Accessories & Hardware section.

<table>
<thead>
<tr>
<th>AT611</th>
<th>Voltage</th>
<th>Current</th>
<th>MSCP</th>
<th>Endurance</th>
<th>Ambient Temperature Range</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>V</td>
<td>I</td>
<td>.150</td>
<td>Hours</td>
<td>–25°C ~ +50°C</td>
</tr>
</tbody>
</table>

**No Code** No Lamp

**Solid Cap for Incandescent Lamp & Nonilluminated**

- Lens/Insert Colors Available:
  - BB White/White
  - CB Red/White
  - EB Yellow/White
  - FB Green/White
  - GB Blue/White

- Materials:
  - Lens & Insert: Polycarbonate
  - Seal/Filter: Thermoplastic Elastomer
  - Incandescent Lamp AT611

- Translucent Colored Lens
- Translucent White Insert
- Translucent White Seal/Filter

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The electrical specifications shown are determined at a basic temperature of 25°C. LED circuit is isolated and requires external power source. Single color LEDs are colored in OFF state. Bicolor LED is translucent white in OFF state.

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.

### Colors Available:

<table>
<thead>
<tr>
<th>JA</th>
<th>JB</th>
<th>JC</th>
<th>JE</th>
<th>JF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clear/Black</td>
<td>Clear/White</td>
<td>Clear/Red</td>
<td>Clear/Yellow</td>
<td>Clear/Green</td>
</tr>
</tbody>
</table>

### Lens/Insert Colors Available:

<table>
<thead>
<tr>
<th>JA</th>
<th>JB</th>
<th>JC</th>
<th>JE</th>
<th>JF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clear Lens</td>
<td>Colored Insert</td>
<td>Seal</td>
<td>Built-in LED (integral part of the cap)</td>
<td>Clear Lens</td>
</tr>
</tbody>
</table>

### Lens/Insert Material:

- Lens & Insert: Polycarbonate
- Seal: Thermoplastic Elastomer
BRIGHT LED & LED CAPS

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

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.

### Electrical Specifications for Bright LED without Resistor

<table>
<thead>
<tr>
<th>Bright</th>
<th>Colors Available:</th>
<th>LED Colors</th>
<th>No Code</th>
<th>No Resistor</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT628</td>
<td>5C Red 5D Amber 5F Green</td>
<td>Red 40 40 40 mA</td>
<td>Amber 26 26 26 mA</td>
<td>Green 2.0 2.0 2.0 V</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.9 mA</td>
<td>26 mA</td>
<td>1.9 V</td>
<td>4 V</td>
</tr>
</tbody>
</table>

### Electrical Specifications for Bright LED with Resistor

<table>
<thead>
<tr>
<th>Bright</th>
<th>Colors Available:</th>
<th>LED Colors</th>
<th>05</th>
<th>12</th>
<th>24</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>—</td>
<td>25 mA</td>
<td>5 V</td>
<td>4 V</td>
<td>—</td>
</tr>
</tbody>
</table>

### Cap for Bright LED

<table>
<thead>
<tr>
<th>Lens/Insert</th>
<th>Colors Available:</th>
<th>AT3004</th>
<th>AT3005</th>
<th>AT3006</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clear/White</td>
<td>JB</td>
<td>Square</td>
<td>Round</td>
<td>Rectangular</td>
</tr>
<tr>
<td>Clear/Red</td>
<td>JC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clear/Amp</td>
<td>JD</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clear/Green</td>
<td>JF</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Materials:

Lens & Insert: Polycarbonate
Seal/Diffuser: Thermoplastic Elastomer

Bright LEDs: AT628 AT634

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### Series YB

**Short Body Pushbuttons**

---

**SUPER BRIGHT LED & LED CAPS**

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

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.

<table>
<thead>
<tr>
<th>Super Bright AT625G Blue</th>
<th>AT631B White</th>
<th>AT632F Green</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Iₚ₅</strong></td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td><strong>Iᵢ</strong></td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td><strong>Vᵢ</strong></td>
<td>3.3</td>
<td>3.3</td>
</tr>
<tr>
<td><strong>Vᵣ₅</strong></td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td><strong>ΔIₚ</strong></td>
<td>0.40</td>
<td>0.40</td>
</tr>
<tr>
<td><strong>Ambient Temperature Range</strong></td>
<td>-25 ~ +50</td>
<td>°C</td>
</tr>
</tbody>
</table>

#### Electrical Specifications for Super Bright LED

<table>
<thead>
<tr>
<th>Colors:</th>
<th>6B</th>
<th>6F</th>
<th>6G</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Green</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit</td>
<td>mA</td>
<td>mA</td>
<td>mA</td>
</tr>
</tbody>
</table>

### Cap for Super Bright LED

- **AT3014** Square
- **AT3015** Round
- **AT3016** Rectangular

**Materials:**
- Lens & Insert: Polycarbonate
- Seal/Diffuser: Thermoplastic Elastomer

**Colors Available:**
- Super Bright LEDs
  - AT625
  - AT631
  - AT632

**Lens/Insert Colors Available:**
- **JB** Clear/White
BICOLOR LED & LED CAPS

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

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.

### Electrical Specifications for Bicolor LED

<table>
<thead>
<tr>
<th>Bicolor AT621</th>
<th>Bicolor LED is translucent white in OFF state.</th>
<th>02</th>
<th>05</th>
<th>12</th>
<th>24</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Maximum Forward Current $I_{FM}$</td>
<td>60</td>
<td>60</td>
<td>20</td>
<td>12</td>
<td>mA</td>
</tr>
<tr>
<td></td>
<td>Typical Forward Current $I_T$</td>
<td>45</td>
<td>45</td>
<td>15</td>
<td>10</td>
<td>mA</td>
</tr>
<tr>
<td></td>
<td>Forward Voltage (Red/Green) $V_F$</td>
<td>1.9 / 2.1</td>
<td>5</td>
<td>12</td>
<td>24</td>
<td>V</td>
</tr>
<tr>
<td></td>
<td>Current Reduction Rate Above 25°C $\Delta I_{F}$</td>
<td>0.80</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>mA/°C</td>
</tr>
<tr>
<td></td>
<td>Ambient Temperature Range</td>
<td>−25 ~ +50</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>°C</td>
</tr>
</tbody>
</table>

**LED Caps**

**AT3004** Square

**AT3005** Round

**AT3006** Rectangular

**Lens/Insert**
Colors Available:

- JB Clear/White

**Materials:**
- Lens & Insert: Polycarbonate
- Seal/Diffuser: Thermoplastic Elastomer
- Bicolor LED AT621
Series YB

TYPICAL SWITCH DIMENSIONS

Square • Bushing Mounting

Single & Double Pole

![YB15SKW01-12-CB](image1)

Round • Panel Seal

Single & Double Pole

![YB26WCKW01-12-EB](image2)

Rectangular • Snap-in Mounting

Single & Double Pole

![YB15NKW01-5C-JC](image3)

PANEL THICKNESS & CUTOUTS

Bushing & Panel Seal Mount

Panel Thickness

.020” ~ .197”

(0.5mm ~ 5.0mm)

Snap-in Mount

Panel Thickness

.039” ~ .138”

(1.0mm ~ 3.5mm)

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OPTIONAL ACCESSORIES

Dust Covers and Protective Guards reduce depth of switch behind panel by .047” (1.2mm).

Panel Thickness Range with Dust Cover or Protective Guards:

- **Bushing Mounting**: 0.020” ~ 0.150” (0.5mm ~ 3.8mm)
- **Snap-in Mounting**: 0.020” ~ 0.091” (0.5mm ~ 2.3mm)
- **Panel Seal**: 0.020” ~ 0.118” (0.5mm ~ 3.0mm)

**AT4115 Dust Cover**

For Snap-in or Bushing Mount

**AT4115 Splash Cover**

and AT541 O-ring for Bushing Mount

**Materials:**

- **Lid**: Polyvinyl Chloride
- **Base**: Polyamide
- **O-ring**: Nitrile butadiene rubber

**Note:** AT089 o-ring supplied with panel seal model.

**AT4072 Protective Guard**

Opens 90°

Closes manually

**Materials:**

- **Lid**: Polycarbonate
- **Base**: Glass Fiber Reinforced Polycarbonate

**AT4175 Spring Loaded Protective Guard**

Opens 180°

Closes automatically

**Materials:**

- **Lid**: Polycarbonate
- **Base**: Glass Fiber Reinforced Polyamide
- **Coil Spring**: Stainless Steel

*Minimum dimension allows opening of cover to 180°*
Series YB

OPTIONAL ACCESSORIES

Adaptors

AT716
Single Pole
Solder Lug/
Quick Connect
Terminals

AT717
Double Pole
Solder Lug/
Quick Connect
Terminals

AT718
Single Pole
Straight PC
Terminals

AT719
Double Pole
Straight PC
Terminals

Material: Glass fiber reinforced polyamide
Note: Order adaptors separately

Switch Dimensions Shown with Adaptor AT716

Dimension A:
Solder Lug .197” (5.0mm); Straight PC .157” (4.0mm)

Panel thickness for YB Bushing Mount:
.020” ~ .197” (0.5mm ~ 5.0mm)
ASSEMBLY INSTRUCTIONS

Cap Assembly

LED Polarity & Orientation in Lamp Socket

The following installation tools are available: AT106 Socket Wrench for bushing mounting (Overtightening the mounting nut AT092 may damage the switch housing.); AT109 Cap Extractor; AT111 Lamping Tool.

Further details and dimensions are shown in the Accessories and Hardware section.

LEGENDS

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

Suggested Printable Area for YB 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: Laser Print

Film Insert: Clear Polyester, 4 mil max. thickness

Shaded areas are printable areas.
General Specifications

**Electrical Capacity (Resistive Load)**
- **Power Level (silver):** 3A @ 125V AC or 3A @ 250V AC or 3A @ 30V DC
- **Logic Level (gold):** 0.4VA maximum @ 28V AC/DC maximum (Applicable Range 0.1mA ~ 0.1A @ 20mV ~ 28V)

**Other Ratings**
- **Contact Resistance:** 50 milliohms maximum for silver; 100 milliohms maximum for gold
- **Insulation Resistance:** 200 megohms minimum @ 500V DC
- **Dielectric Strength:** 1,000V AC minimum between contacts for 1 minute minimum; 1,500V AC minimum between contacts & case for 1 minute minimum
- **Mechanical Life:** 1,000,000 operations minimum for momentary circuit; 200,000 operations minimum for maintained circuit
- **Electrical Life:** 100,000 operations minimum
- **Nominal Operating Force:** Single pole: 1.5N; Double pole: 3.0N
- **Contact Timing:** Nonshorting (break-before-make)
  - **Travel:** Pretravel .059” (1.5mm); Overtravel .059” (1.5mm); Total Travel .118” (3.0mm)

**Materials & Finishes**
- **Bezel:** Black: Glass fiber reinforced polyamide (UL94V-0); Chrome plated: Chrome plating over ABS resin (UL94V-2)
- **Housing:** Glass fiber reinforced polyamide (UL94V-0)
- **Base:** Glass fiber reinforced polyamide (UL94V-0)
- **Movable Contactor:** Phosphor bronze with silver or gold plating
- **Movable Contacts:** Silver alloy or copper with gold plating
- **Stationary Contacts:** Silver alloy or copper with gold plating
- **Switch Terminals:** Phosphor bronze with tin plating
- **Lamp Terminals:** Phosphor bronze with tin plating

**Environmental Data**
- **Operating Temperature Range:** –25°C through +50°C (~13°F through +122°F) for Illuminated; –25°C through +70°C (~13°F through +158°F) for Nonilluminated
- **Humidity:** 90 ~ 95% humidity for 240 hours @ 40°C (104°F)
- **Vibration:** 10 ~ 55Hz with peak-to-peak amplitude of 1.5mm traversing the frequency range & returning in 1 minute; 3 right angled directions for 2 hours
- **Shock:** 50G (490m/s²) acceleration (tested in 6 right angled directions, with 5 shocks in each direction)
- **Sealing:** IP65 of IEC60529 standard

**Installation**
- **Mounting Torque:** 0.785Nm (6.95 lb-in) maximum
- **Soldering Time & Temperature:** Manual Soldering: See Profile A in Supplement section.

**Standards & Certifications**
- **Flammability Standards:** UL94V-0 housing, base & black bezel
- **UL:** File No. E44145 - Recognized only when ordered with marking on switch. Add “/CUL” before first dash in part number to order CULus marking on switch. All solder lug models recognized at 3A @ 125/250V AC or 0.4VA @ 28V AC/DC maximum.
Distinctive Characteristics

24mm square and 25mm diameter pushbuttons with the shortest above-panel dimension (1.8mm) in the industry for splashproof design.

Meets IP65 of IEC60529 standards (similar to NEMA 4 and 13), providing dust tight and splashproof panel seal protection.

Tamper resistant 18mm square and 19mm diameter actuators.

Short body of .965" (24.5mm) conserves behind-panel space.

Distinctive long stroke and light touch actuation for clear indication of circuit status.

Choice of cap colors includes clear, brushed chrome, red, green, or yellow, for enhanced panel appearance. Metallic silver cap option has bright ring illumination (round only). Unbrushed chrome has the look of stainless steel when non-illuminated, and LED color or legends when illuminated.

Brilliant illumination with multiple LED colors.

Bezel color options in black or brushed chrome.

Brushed chrome option is lighter weight than actual metal switches due to metal plating on resin.

Available in momentary and alternate action with latchdown.

Crisp actuation and clear circuit status provided by snap-action contact mechanism. Arc barrier protects against crossover.

Combination solder lug and .110” quick connect terminals. Terminals are epoxy sealed to lock out flux, dust, solvents, and other contaminants, as well as to secure terminals and improve contact stability.

Custom legends on actuator or inserts.
Series YB2

Panel Seal Pushbuttons

TYPICAL SWITCH

YB2 1 5 C W C K W 01

Poles

1 SPDT
2 DPDT

Contact Point

C Normally Open and Normally Closed

Shape

C Round
S Square

Terminals

01 Solder Lug/.110” (2.8mm) Quick Connect

Circuits

5 ON (ON)

Panel Seal

W With Panel Seal

Bezel

K Black
P Brushed Chrome

Contact Materials & Ratings

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

IMPORTANT:

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

DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

YB215CWCKW01-6B-JB

White, Super Bright LED
Black Bezel
Round Black Housing
SPDT ON-(ON) Circuit
LED Cap with Clear Lens & White Diffuser
With Panel Seal
Silver Contacts with 3 Amp Rating
Solder Lug/.110” (2.8mm) Quick Connect Terminals
# Panel Seal Pushbuttons

## Series YB2

### ORDERING EXAMPLE

<table>
<thead>
<tr>
<th>Position</th>
<th>Number</th>
<th>LED</th>
<th>Cap Type</th>
<th>Color</th>
<th>Resistor</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>B</td>
<td>LEDs</td>
<td>Bright LED</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5C</td>
<td>Red</td>
<td>No Code</td>
<td>No Resistor (not for Green)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5D</td>
<td>Amber</td>
<td>05</td>
<td>5-volt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5F</td>
<td>Green</td>
<td>12</td>
<td>12-volt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>24-volt</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>JB</td>
<td>Cap Types &amp; Colors</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>JB</td>
<td>Clear/White</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>JS</td>
<td>Metallic Silver Cap/Clear Ring (Round only)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>CB</td>
<td>Red/White</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>EB</td>
<td>Yellow/White</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>FB</td>
<td>Green/White</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>HB</td>
<td>Unbrushed Chrome/White</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Super Bright LED**

- 6B | White
- 6F | Green
- 6G | Blue

**Nonilluminated**

- N | No Lamp

LED and cap need to be the same color. Yellow cap pairs with amber LED to achieve amber illumination. Codes JB and JS (Round only) may be combined with all LED colors.

### Lens/Diffuser Colors

- JB | Clear/White
- JS | Metallic Silver Cap/Clear Ring (Round only)
- CB | Red/White
- EB | Yellow/White
- FB | Green/White
- HB | Unbrushed Chrome/White

### Lens/Diffuser Cap Colors

- JB | Clear/White
- JS | Metallic Silver Cap/Clear Ring (Round only)
- HB | Unbrushed Chrome/White

### Cap Color

- JB | Clear/White
- CB | Red/White
- EB | Yellow/White
- FB | Green/White
- HB | Unbrushed Chrome/White
- P | Brushed Chrome

### Round or Square Cap with Legend

- Round Cap for Bright LED
- Round Cap for Super Bright LED
- Square Cap for Bright or Super Bright LED

<table>
<thead>
<tr>
<th>Part Numbers for Unbrushed Chrome Caps with Legends</th>
</tr>
</thead>
<tbody>
<tr>
<td>Round Cap for Bright LED</td>
</tr>
<tr>
<td>AT3017HB-001</td>
</tr>
<tr>
<td>AT3017HB-002</td>
</tr>
<tr>
<td>AT3017HB-003</td>
</tr>
<tr>
<td>AT3017HB-004</td>
</tr>
<tr>
<td>AT3017HB-005</td>
</tr>
</tbody>
</table>

Refer to Ordering Table for legend that corresponds with last 3 digits of part number.
**Series YB2**

**Panel Seal Pushbuttons**

## POLES & CIRCUITS

<table>
<thead>
<tr>
<th>Pole</th>
<th>Model</th>
<th>Normal</th>
<th>Down (ON)</th>
<th>Connected Terminals</th>
<th>Normal</th>
<th>Down</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP</td>
<td>YB215 YB216</td>
<td>ON ON  ON</td>
<td>ON ON</td>
<td>1-3 1-2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DP</td>
<td>YB225 YB226</td>
<td>ON ON  ON</td>
<td>ON ON</td>
<td>1-3 4-6 1-2 4-5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Throw & Switch/Lamp Schematics**

Notes: Switch is marked with NC, NO, COM, L+, L−. Lamp circuit is isolated and requires an external power source.

### CONTACT POINT

- **C** Normally Open and Normally Closed

  Contact points are both Normally Open and Normally Closed.

### PANEL SEAL

- **W** Panel Seal (Round and Square)

  Two o-rings provide panel seal protection meeting IP65 of IEC60529 standards.

### SHAPE

- **C** Round
- **S** Square

### BEZEL

- **K** Black
- **P** Brushed Chrome

For Round or Square

### CONTACT MATERIALS & RATINGS

- **W** Silver Contacts
  - Power Level: 3A @ 125/250V AC
  - Switch base is black

- **G** Gold Contacts
  - Logic Level: 0.4VA max. @ 28V AC/DC max.
  - Switch base is ivory

### TERMINALS

- **01** Solder Lug/.110” (2.8mm) Quick Connect

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**www.nkkswitches.com**
### BRIGHT & SUPER BRIGHT LEDS

The electrical specifications shown are determined at a basic temperature of 25°C. LED circuit is isolated and requires an external power source. If the source voltage exceeds the rated voltage, a ballast resistor is required.

Base of AT634 and AT636 is Black for 5V, Light Blue for 12V and Gray for 24V.

#### Electrical Specifications for Bright LED without Resistor

<table>
<thead>
<tr>
<th>Bright</th>
<th>AT628</th>
<th>Colors Available:</th>
<th>5C</th>
<th>Red</th>
<th>5D</th>
<th>Amber</th>
<th>No Code</th>
<th>No Resistor</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>LED Colors</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Maximum Forward Current</td>
<td>$I_{FM}$</td>
<td>40</td>
<td>40</td>
<td>mA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Typical Forward Current</td>
<td>$I_f$</td>
<td>26</td>
<td>26</td>
<td>mA</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Forward Voltage</td>
<td>$V_f$</td>
<td>1.9</td>
<td>2.0</td>
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<td>$V_{RM}$</td>
<td>4</td>
<td>4</td>
<td>V</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Current Reduction Rate Above 25°C</td>
<td>$\Delta I_f$</td>
<td>0.50</td>
<td>mA/°C</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ambient Temperature Range</td>
<td></td>
<td>-25 ~ +50</td>
<td>°C</td>
<td></td>
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<td></td>
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</table>

#### Electrical Specifications for Bright Red & Amber LED with Resistor

<table>
<thead>
<tr>
<th>Bright</th>
<th>AT634</th>
<th>Colors Available:</th>
<th>5C</th>
<th>Red</th>
<th>5D</th>
<th>Amber</th>
<th>05</th>
<th>12</th>
<th>24</th>
<th>Unit</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>LED Colors</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Maximum Forward Current</td>
<td>$I_{FM}$</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>mA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Typical Forward Current</td>
<td>$I_f$</td>
<td>25</td>
<td>20</td>
<td>10</td>
<td>mA</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Forward Voltage</td>
<td>$V_f$</td>
<td>5</td>
<td>12</td>
<td>24</td>
<td>V</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Maximum Reverse Voltage</td>
<td>$V_{RM}$</td>
<td>4</td>
<td>8</td>
<td>16</td>
<td>V</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Current Reduction Rate Above 25°C</td>
<td>$\Delta I_f$</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>mA/°C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ambient Temperature Range</td>
<td></td>
<td>-25 ~ +50</td>
<td>°C</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Electrical Specifications for Super Bright LED

<table>
<thead>
<tr>
<th>Super Bright</th>
<th>AT625G Blue</th>
<th>AT631B White</th>
<th>AT632F Green</th>
<th>Colors:</th>
<th>6B</th>
<th>6F</th>
<th>6G</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>LED Colors</td>
<td>White</td>
<td>Green</td>
<td>Blue</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Maximum Forward Current</td>
<td>$I_{FM}$</td>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Typical Forward Current</td>
<td>$I_f$</td>
<td>20</td>
<td>20</td>
<td>20</td>
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<tr>
<td></td>
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<td>Forward Voltage</td>
<td>$V_f$</td>
<td>3.3</td>
<td>3.3</td>
<td>3.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Maximum Reverse Voltage</td>
<td>$V_{RM}$</td>
<td>7</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Current Reduction Rate Above 25°C</td>
<td>$\Delta I_f$</td>
<td>0.40</td>
<td>0.40</td>
<td>0.40</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Ambient Temperature Range</td>
<td></td>
<td>-25 ~ +50</td>
<td>°C</td>
<td></td>
</tr>
</tbody>
</table>

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Electrical Specifications for Super Bright LED

<table>
<thead>
<tr>
<th>Super Bright</th>
<th>AT625G Blue</th>
<th>AT631B White</th>
<th>AT632F Green</th>
<th>Colors:</th>
<th>6B</th>
<th>6F</th>
<th>6G</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>LED Colors</td>
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<td>Green</td>
<td>Blue</td>
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<td>Maximum Forward Current</td>
<td>$I_{FM}$</td>
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<td>Typical Forward Current</td>
<td>$I_f$</td>
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<td></td>
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<td></td>
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<td>Forward Voltage</td>
<td>$V_f$</td>
<td>3.3</td>
<td>3.3</td>
<td>3.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Maximum Reverse Voltage</td>
<td>$V_{RM}$</td>
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<td>7</td>
<td>7</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Current Reduction Rate Above 25°C</td>
<td>$\Delta I_f$</td>
<td>0.40</td>
<td>0.40</td>
<td>0.40</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Ambient Temperature Range</td>
<td></td>
<td>-25 ~ +50</td>
<td>°C</td>
<td></td>
</tr>
</tbody>
</table>
Series YB2
Panel Seal Pushbuttons

BALLAST RESISTOR CALCULATION FOR LEDS

If the source voltage is greater than the rated voltage of a lamp or LED, a ballast resistor must be connected in series with the lamp. This circuit diagram and formula will assist in calculating the value of the required ballast resistor.

![Circuit Diagram]

\[ R = \frac{E - V_F}{I_F} \]

Where:
- \( R \) = Resistor Value (Ohms)
- \( E \) = Source Voltage (V)
- \( V_F \) = Forward Voltage (V)
- \( I_F \) = Forward Current (A)

CAPS & CAP COLORS

**AT3017 Cap for Bright LED or Nonilluminated**

**Lens/Diffuser Colors Available:**
- **JB** Clear/White
- **CB** Red/White
- **EB** *Yellow/White
- **FB** Green/White
- **HB** Unbrushed Chrome/White

**Material for Lens & Diffuser:**
- Polycarbonate
- HB Lens: ABS Resin & Unbrushed Chrome Plating

*Yellow cap pairs with amber LED to achieve amber illumination.

**AT3018 Cap for Super Bright LED**

**Lens/Diffuser Colors Available:**
- **JB** Clear/White

**Material for Lens:** ABS Resin

**Material for Diffuser:** ABS Resin & Brushed Chrome Plating

**AT3019 Cap for Nonilluminated**

**Lens/Diffuser Colors Available:**
- **JB** Clear/White
- **P** Brushed Chrome

**Material for Lens:** ABS Resin

**Material for Diffuser:** Brushed Chrome

**AT3020 Cap with Illumination Ring for Bright or Super Bright LED**

**Cap Color Available:**
- **JS** Metallic Silver with Clear Ring

**Material for Lens:**
- Polycarbonate

**Material for Diffuser:**
- ABS Resin

**AT3025 Cap for Illuminated or Nonilluminated**

**Lens/Diffuser Colors Available:**
- **JB** Clear/White
- **CB** Red/White
- **EB** *Yellow/White
- **FB** Green/White
- **HB** Unbrushed Chrome/White

**Cap Color Available:**
- **P** Brushed Chrome

**Material for Lens:**
- ABS Resin & Brushed Chrome Plating

**Material for Diffuser:**
- Polycarbonate

**AT3027 Cap for Nonilluminated**

**Material for Lens:**
- ABS Resin

**Material for Diffuser:**
- Brushed Chrome Plating
Series YB2

Panel Seal Pushbuttons

Standard Legends for Unbrushed Chrome Caps

001
Round or Square Cap
Bright or Super Bright LED

002
START
Round or Square Cap
Bright or Super Bright LED

003
STANDBY
Round or Square Cap
Bright or Super Bright LED

004
STOP
Round or Square Cap
Bright or Super Bright LED

005
Round or Square Cap
Bright or Super Bright LED

Images appear the color of the LED when lit.
Contact factory for other legends options.
Legend illustrations are approximate representations of the actual images on the caps.

Unbrushed Chrome/White Cap with Lens/Diffuser

Without Illumination

With Illumination

Depending on the design and the color of ink used, the legend may be visible when it is not illuminated.
It is recommended that the legend be clear and without ink in order to achieve the maximum visibility when the cap is illuminated.
**Series YB2**

**Panel Seal Pushbuttons**

### TYPICAL SWITCH DIMENSIONS

#### Single Pole

- **YB215CWCKW01-6B-JB**

#### Double Pole

- **YB216CWSPW01-N-P**

### PANEL THICKNESS & CUTOUT

#### Recommended Panel Thickness

- **Single Pole**
  - .020” ~ .197” (0.5mm ~ 5.0mm)

- **Double Pole**
  - .020” ~ .197” (0.5mm ~ 5.0mm)

- **Side-by-side Mounting**

- **Side-by-side Mounting**
OPTIONAL ACCESSORIES

Adaptors

**AT716**
Single Pole
Solder Lug/Quick Connect Terminals

**AT717**
Double Pole
Solder Lug/Quick Connect Terminals

**AT718**
Single Pole
Straight PC Terminals

**AT719**
Double Pole
Straight PC Terminals

Material: Glass fiber reinforced polyamide  
Note: Order adaptors separately

Round & Square Switch Dimensions Shown with Adaptor AT716

**Dimension A:**
Solder Lug .197" (5.0mm); Straight PC .157" (4.0mm)

Panel thickness for YB2 Round: 
.020" ~ .161" (0.5mm ~ 4.1mm)

Panel thickness for YB2 Square: 
.020" ~ .126" (0.5mm ~ 3.2mm)
1. Remove knurled mounting nut.

2. Remove bezel and red o-ring from housing. There are two o-rings in this assembly: one is red, one is orange.

3. Install LED.

   - **LEDs AT634 & AT636**
     
     **ATTENTION ELECTROSTATIC SENSITIVE DEVICES**

     Align D-flat on LED with Part Number on switch for appropriate polarity and insert LED into base.

   - **LED AT628**

     Align D-flat on LED with Part Number on switch for appropriate polarity and insert LED into base.

   - **LEDs AT625G, AT631B, AT632F**

     The larger metal part within the LED represents the cathode (–). Align LED for appropriate polarity and insert LED into base.

4. Align tabs (B) on both sides of actuator with the projections (A) inside of the housing and push actuator firmly down to snap in.

5. Install the red o-ring which was removed in step 2 at the inside bottom of the bezel.

6. Align tab inside of the bezel with keyway on housing and bring bezel back into its original position.

7. Before installing into panel, make sure that the orange o-ring is present at the back of the bezel. Align keyway on bezel with tab in panel and push switch all the way into the panel.

8. Attach mounting nut behind panel and tighten. Make sure that bezel and actuator fit properly and that there is no space between bezel and panel. Do not overtighten.

   Mounting torque: 0.785Nm (6.95 lb•in) maximum.

   Optional socket wrench AT106 available.
ASSEMBLY INSTRUCTIONS FOR SQUARE

1. Remove knurled mounting nut.

2. Remove bezel and blue o-ring from housing.

3. Install LED.

   LED AT634 & AT636
   LED AT628
   LED AT625G, AT631B, AT632F

   Align D-flat on LED with Part Number on switch for appropriate polarity and insert LED into base.

4. Align tabs (B) on both sides of actuator with the projections (A) inside of the housing and push actuator firmly down to snap in.

5. Install the blue o-ring which was removed in step 2 at the inside bottom of the bezel.

6. Align tab inside of the bezel with keyway on housing and bring bezel back into its original position.

7. Before installing into panel, make sure that the square gasket is present at the back of the bezel. Align keyway on bezel with tab in panel and push switch all the way into the panel.

8. Attach mounting nut behind panel and tighten. Make sure that bezel and actuator fit properly and that there is no space between bezel and panel. Do not overtighten.

   Mounting torque: 0.785Nm (6.95 lb•in) maximum. Optional socket wrench AT106 available.

ATTENTION ELECTROSTATIC SENSITIVE DEVICES

ATTENTION ELECTROSTATIC SENSITIVE DEVICES

The larger metal part within the LED represents the cathode (-). Align LED for appropriate polarity and insert LED into base.

LEDs AT634 & AT636
LED AT628
LEDs AT625G, AT631B, AT632F

Part Number
This Side
Cathode Socket (-)
Anode Socket (+)

Panel
Bezel
Back of Bezel

Bezel

Knurled Mounting Nut

Panel

Housing

Actuator

Bezel

Spacer

AT106 Socket Wrench

www.nkkswitches.com
LEGENDS

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

Suggested Printable Area for YB2 Caps

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

For Caps
AT3017, AT3018, and AT3019

For Cap
AT3020 (with clear ring for illumination)

For Caps
AT3025 and AT3027

Shaded areas are printable areas.

Suggested Printable Area for Film Inserts

**Recommended Method:** Screen Print; Epoxy based ink is recommended

Film Material and Thickness:
Clear Polyester, 4 mil max.

Shaded areas are printable areas.

HANDLING & PRECAUTIONS

**ATTENTION ELECTROSTATIC SENSITIVE DEVICES**

LEDs are electrostatic sensitive devices. When installing and handling LEDs, use an electrostatic protected work station to prevent LED damage.