# 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/s$^2$) 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.
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.
**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

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.

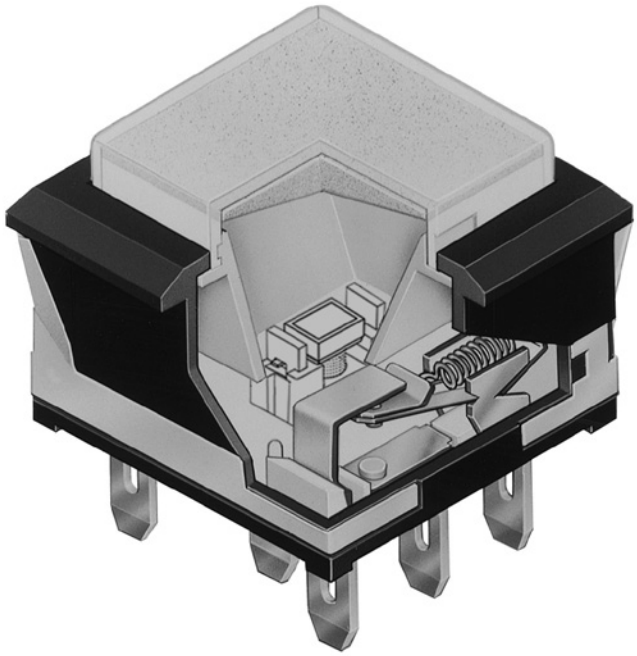
Snap-acting contact mechanism provides sensitive actuation with audible feedback; quick-make, quick-break characteristic limits arcing and prolongs electrical life.

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

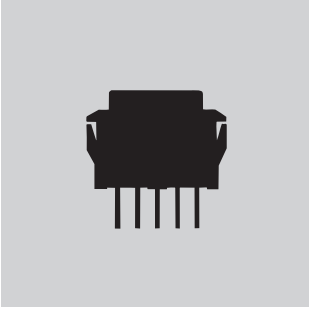
Terminals are epoxy sealed to lock out flux, solvents, and other contaminants.

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

Matching indicators available.



Actual Size



## TYPICAL SWITCH ORDERING EXAMPLE

UB | 1 | 5 | SK | G | 03 | 5C | — | CC

### Poles

| | |
|---|---|
| 1 | SPDT |
| 2 | DPDT |

### Circuits

| | | |
|---|---|---|
| 5 | ON | (ON) |
| ( ) = Momentary | | |
| 6 | ON | ON |
| Alternate Action with Latchdown | | |

### Mounting Types

| | |
|---|---|
| **PCB Mounting** | |
| SK | Square |
| RK | Rectangular |
| *** Snap-in Mounting** | |
| KK | Square |
| NK | Rectangular |
| NBK | Rectangular with Side Barriers |

* Standard with Solder Lug terminals

### 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 |

* Wire harness & cable assemblies offered only in Americas

### LEDs

**Bright LED**

| | |
|---|---|
| 5C | Red |
| 5D | Amber |
| 5F | Green |

**Super Bright LED**

| | |
|---|---|
| 6B | White |
| 6F | Green |
| 6G | Blue |
| Available with Square only | |

**Nonilluminated**

| | |
|---|---|
| N | Nonilluminated |

### 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 | Clear/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

**Full Face Illuminated Cap for Super Bright LED**

| | |
|---|---|
| JB | Clear Lens/White Diffuser |
| AB | Spot Illuminated Black Cap with White Window |

For Square only; see cap detail page

**Nonilluminated Cap Colors**

| | | | |
|---|---|---|---|
| A | Black | E | Yellow |
| B | White | F | Green |
| C | Red | G | Blue |

### 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

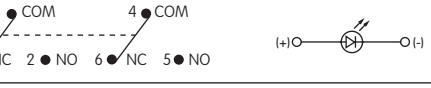
SPDT ON-(ON) Circuit

Straight PC Terminals

## POLES & CIRCUITS

| Pole | Model | Plunger Position ( ) = Momentary: Normal | Plunger Position ( ) = Momentary: Down | Connected Terminals: Normal | Connected Terminals: Down | Throw & Switch/Lamp Schematics |
|---|---|---|---|---|---|---|
| SP | **UB15**<br>***UB16** | ON<br>ON | (ON)<br>ON | 1-3 | 1-2 | SPDT |
| DP | **UB25**<br>***UB26** | ON<br>ON | (ON)<br>ON | 1-3 4-6 | 1-2 4-5 | DPDT |

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

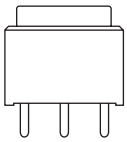


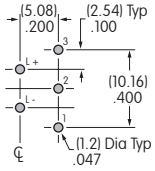

* When in latchdown position for the alternate circuit, cap position is .039" (1.0mm) above the housing.

## MOUNTING TYPES & SHAPES

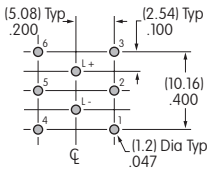
### PCB Mounting

**SK** **Square**



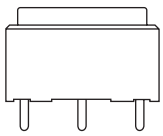


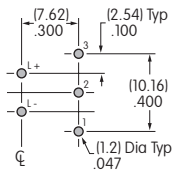

Single Pole



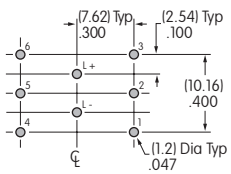

Double Pole

**RK** **Rectangular**





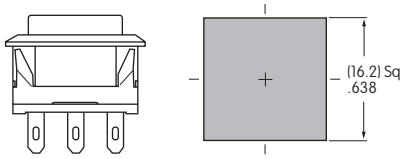

Single Pole



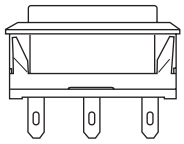

Double Pole

### Snap-in Mounting (Solder Lug)

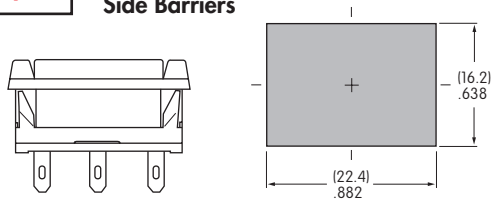
**KK** **Square with Built-in Bezel**




**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)

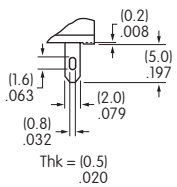
## CONTACT MATERIALS & RATINGS

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

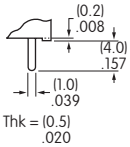
Complete explanation of operating range in Supplement section.

## TERMINALS

**01** **Solder Lug**




**03** **Straight PC**



## 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.

Super Bright LEDs are Electrostatic Sensitive

ATTENTION ELECTROSTATIC SENSITIVE DEVICES

| | | Bright | | | Super Bright | | | |
|---|---|---|---|---|---|---|---|---|
| | Color | 5C Red | 5D Amber | 5F Green | 6B White | 6F Green | 6G Blue | Unit |
| Forward Peak Current | $I_{FM}$ | 30 | 30 | 25 | 30 | 30 | 30 | mA |
| Typical Forward Current | $I_F$ | 20 | 20 | 20 | 20 | 20 | 20 | mA |
| Forward Voltage | $V_F$ | 1.85 | 2.0 | 2.1 | 3.2 | 3.2 | 3.2 | V |
| Reverse Peak Voltage | $V_{RM}$ | 5 | 5 | 5 | 5 | 5 | 5 | V |
| Current Reduction Rate Above 25°C | $\Delta I_F$ | 0.40 | 0.42 | 0.46 | 0.40 | 0.40 | .040 | mA/°C |
| Ambient Temperature Range | | −25° ~ +50°C | | | −25° ~ +50°C | | | |

**N** **No Lamp**

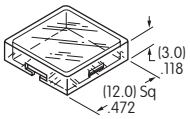
## CAP TYPES & COLOR COMBINATIONS

### Full Face Illuminated Cap for Bright LED

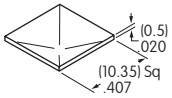
**Lens/Diffuser Colors Available for Square Cap:**

CB DD FJ JF
CC DJ JB JJ
CJ FB JC
DB FF JD

**AT4074 Lens**



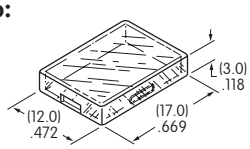

**AT4075 Diffuser**



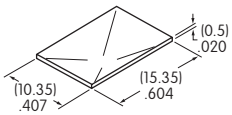

**Lens/Diffuser Colors Available for Rectangular Cap:**

CB FB JD
CC FF JF
DB JB
DD JC

**AT4117 Lens**




**AT4118 Diffuser**




Lens & Diffuser Material: Polycarbonate Lens Finish: Glossy Diffuser Finish: Textured

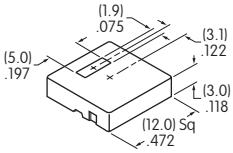
### Spot Illuminated Caps for Bright & Super Bright LEDs

**Cap/Window Colors Available:**

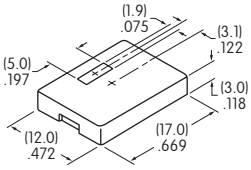
**AB** **Black Cap with Translucent White Window for LED Display**

Material: Polycarbonate Finish: Matte

**AT4119 Square** for Bright and Super Bright LED



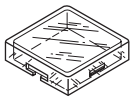

**AT4120 Rectangular** for Bright LED




### Full Face Illuminated Cap for Super Bright LED

**Lens/Diffuser Colors Available for Square Cap:**

**JB** **AT4074 Lens & AT4075 Diffuser** (Dimensions above)



Rectangular lens & diffuser are not available for combining with super bright LED.

Lens & Diffuser Material: Polycarbonate Lens Finish: Glossy Diffuser Finish: Textured

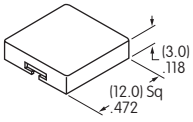
### Opaque Caps for Nonilluminated

**Cap Colors Available:**

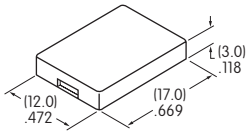
A C F
B E G

Material: Polycarbonate
Finish: Glossy

**AT4073 Square**



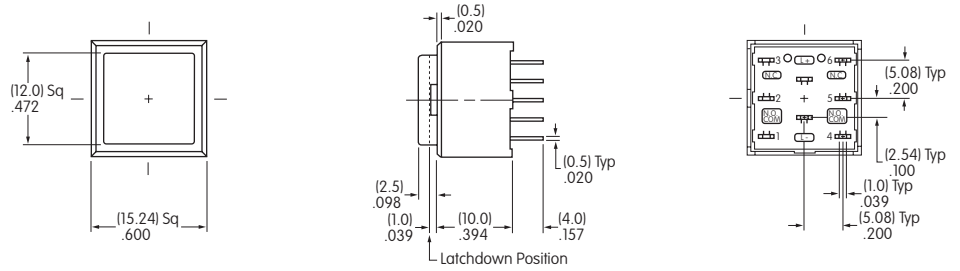

**AT4116 Rectangular**




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

## TYPICAL SWITCH DIMENSIONS

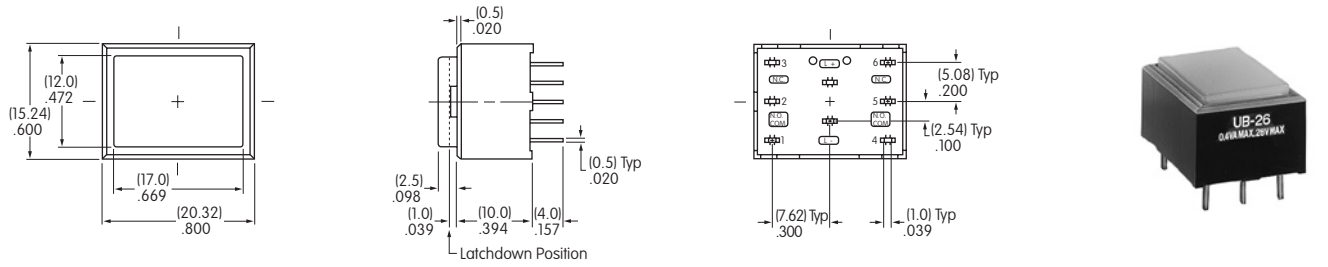
### Single & Double Pole — Square • PCB Mount




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

**UB15SKG035C-CB**

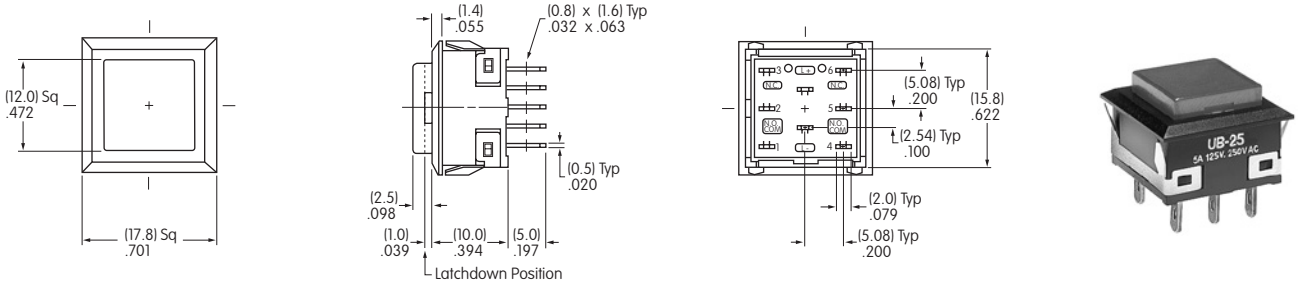
### Single & Double Pole — Rectangular • PCB Mount




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

**UB26RKG035D-DD**

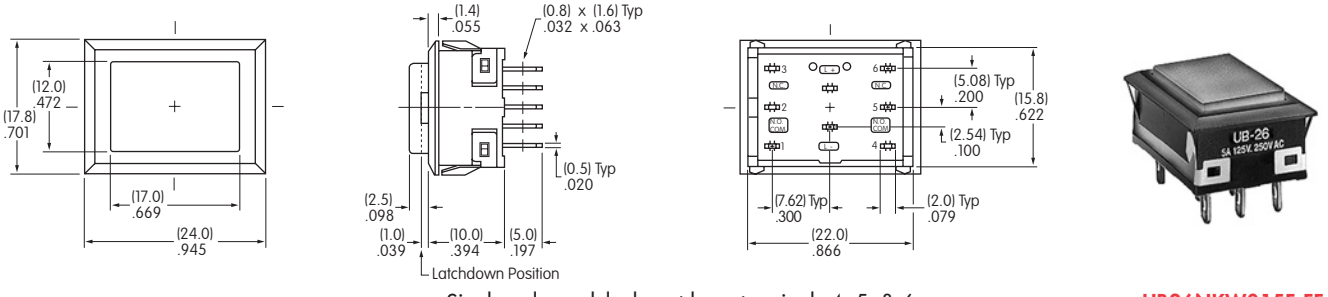
### Single & Double Pole — Square • Snap-in Mount • Built-in Bezel




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

**UB25KKW015C-CB**

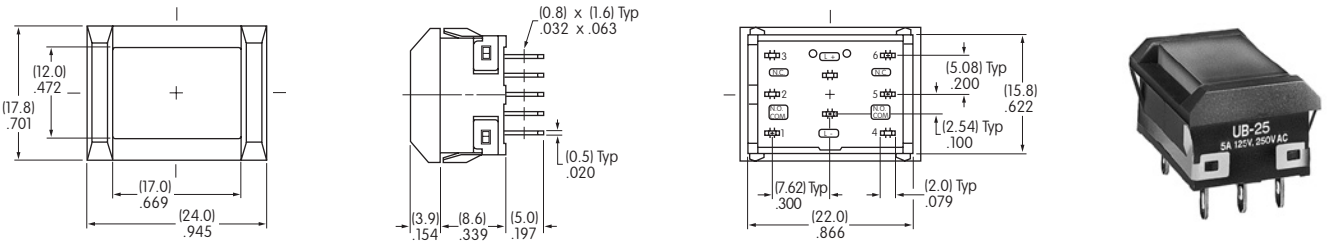
### Single & Double Pole — Rectangular • Snap-in Mount • Built-in Bezel




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

**UB26NKW015F-FF**

### Single & Double Pole — Rectangular • Snap-in Mount • Built-in Side Barriers




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

**UB25NBKW015F-FB**

## OPTIONAL ACCESSORIES

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

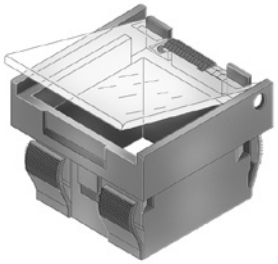
**AT4173**
**Square Protective Guard/ Snap-in Frame**

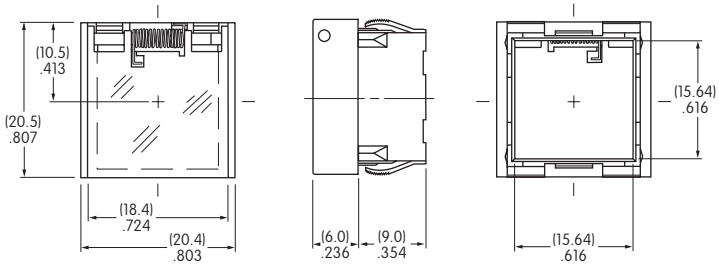
Opens 180°
Closes automatically

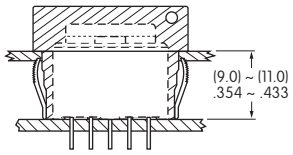
**Materials:**
Cover: Clear Polycarbonate
Base: Black Polyamide
Coil Spring: Stainless Steel

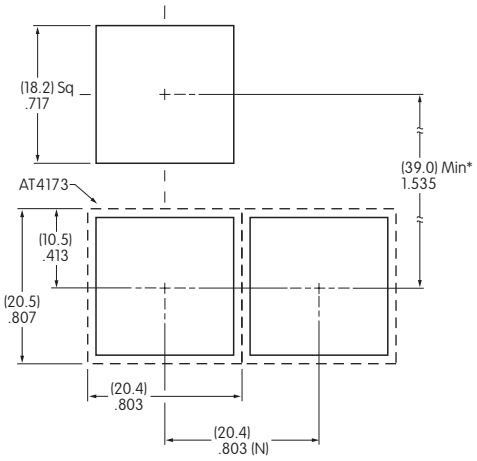
**Recommended Panel Thickness:**
.039" ~ .126"
(1.0mm ~ 3.2mm)

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

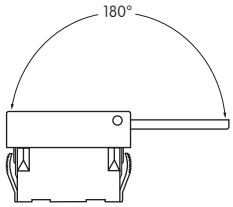




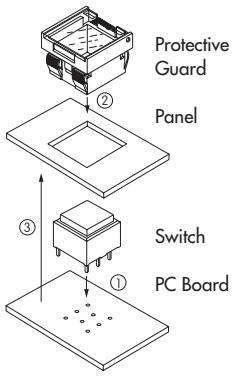




(N) = Number of switches
* Minimum dimension allows opening of cover to 180°




**Installation**

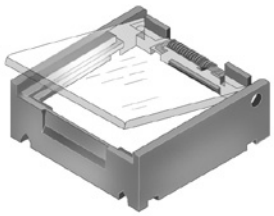
1. Install switch onto PC board.
2. Snap protective guard into panel.
3. Join the two assemblies.

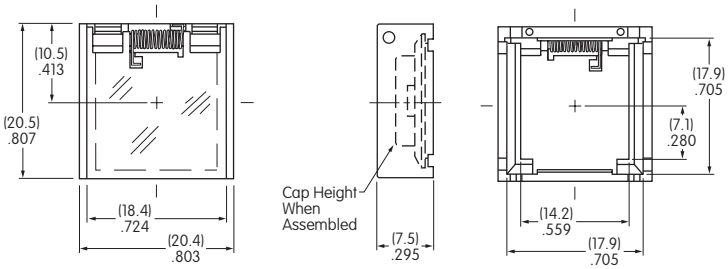


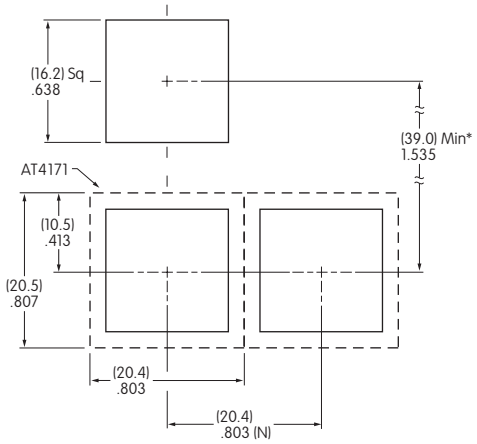

### Spring Loaded Protective Guard for Square Snap-in Model

**AT4171**
**Square Protective Guard**

Opens 180°
Closes automatically



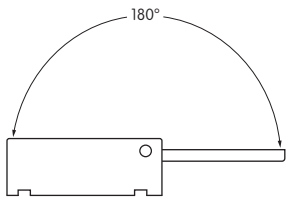



(N) = Number of switches * Minimum dimension allows opening of cover to 180°

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

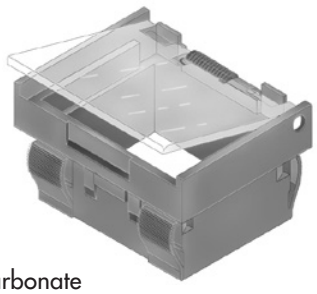
**Recommended Panel Thickness:**
.039" ~ .106" (1.0mm ~ 2.7mm)



## OPTIONAL ACCESSORIES

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

**AT4174**
**Rectangular**
**Protective Guard/**
**Snap-in Frame**

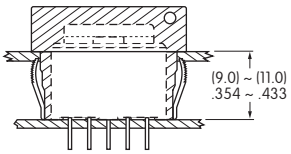


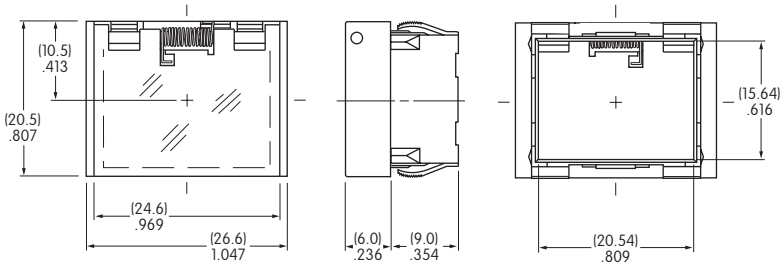
Opens 180°
Closes automatically

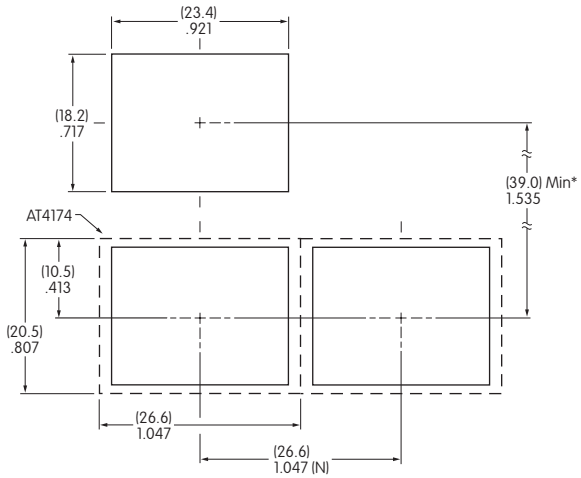
**Materials:**
Cover: Clear Polycarbonate
Base: Black Polyamide
Coil Spring: Stainless Steel

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

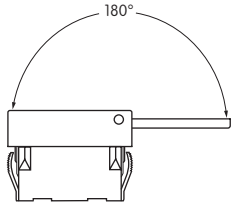
**Recommended**
**Panel-to-PCB Range:**
.354" ~ .433"
(9.0mm ~ 11.0mm)



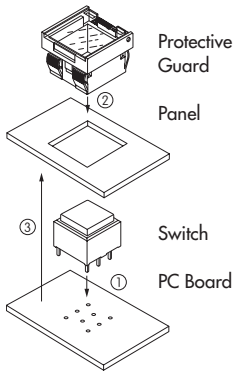




(N) = Number of switches * Minimum dimension allows opening of cover to 180°




**Installation**

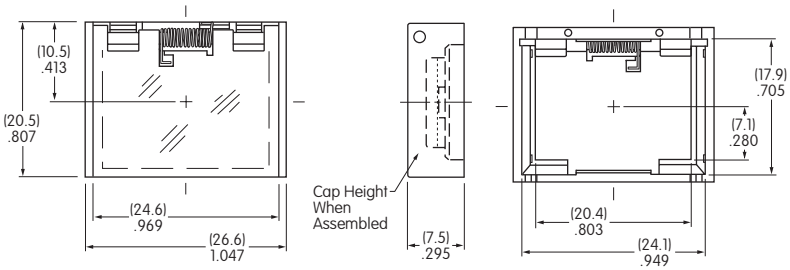
1. Install switch onto PC board.
2. Snap protective guard into panel.
3. Join the two assemblies.

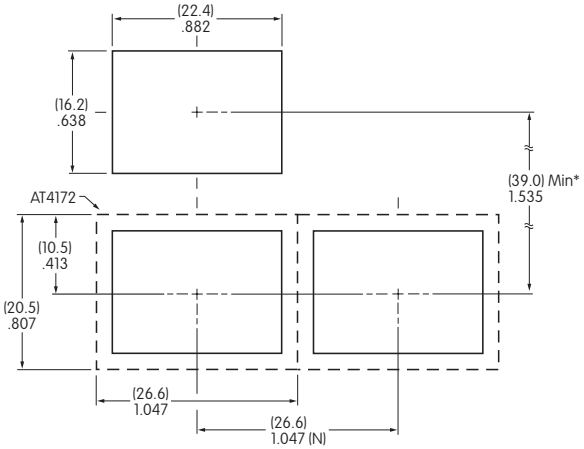



### Spring Loaded Protective Guard for Rectangular Snap-in Model

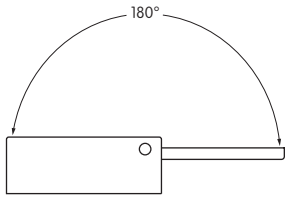
**AT4172**
**Rectangular**
**Protective Guard**

Opens 180°
Closes automatically




(N) = Number of switches * Minimum dimension allows opening of cover to 180°

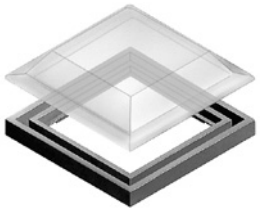



**Materials:**
Cover: Clear Polycarbonate
Base: Black GFR Polyamide
Coil Spring: Stainless Steel

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

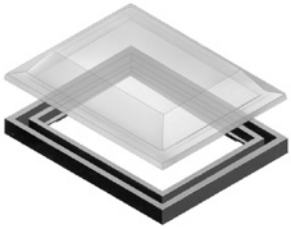
## OPTIONAL ACCESSORIES

**AT4001**
**Square**



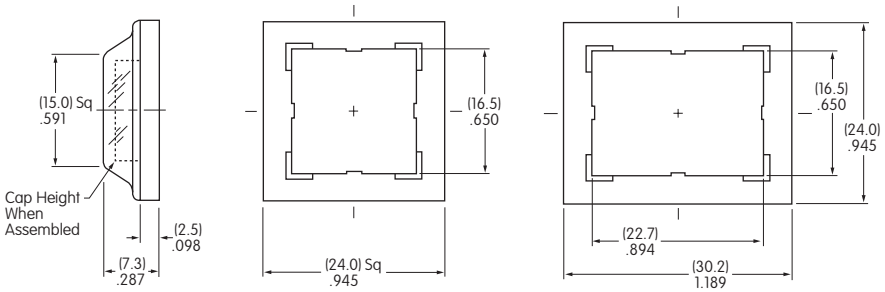
Only for use with KK mounting type

**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

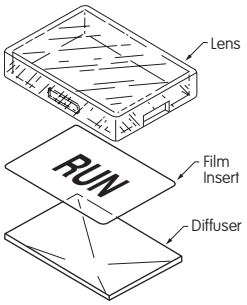
NKK Switches can provide custom legends for caps. Contact factory for more information.

**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.

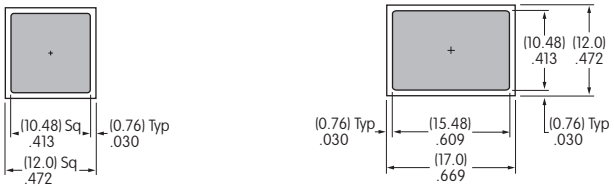
Square Cap

Rectangular Cap

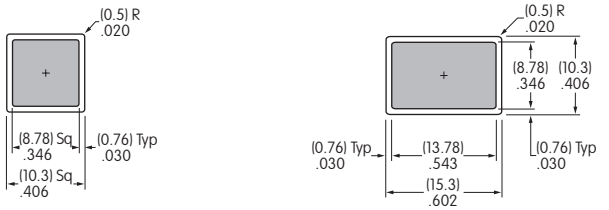



Shaded areas are printable areas.

Lens




Film Insert




Film Insert: Clear Polyester 4 mil max. thickness

# OCEAN CHIPS
## Океан Электроники
## Поставка электронных компонентов

Компания «Океан Электроники» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Поставка оригинальных импортных электронных компонентов напрямую с производств Америки, Европы и Азии, а так же с крупнейших складов мира;
- Широкая линейка поставок активных и пассивных импортных электронных компонентов (более 30 млн. наименований);
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Помощь Конструкторского Отдела и консультации квалифицированных инженеров;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Компания «Океан Электроники» является официальным дистрибьютором и эксклюзивным представителем в России одного из крупнейших производителей разъемов военного и аэрокосмического назначения «**JONHON**», а так же официальным дистрибьютором и эксклюзивным представителем в России производителя высокотехнологичных и надежных решений для передачи СВЧ сигналов «**FORSTAR**».

AVIC JONHON

**«JONHON»** (основан в 1970 г.)

Разъемы специального, военного и аэрокосмического назначения:

(Применяются в военной, авиационной, аэрокосмической, морской, железнодорожной, горно- и нефтедобывающей отраслях промышленности)

**«FORSTAR»** (основан в 1998 г.)

ВЧ соединители, коаксиальные кабели, кабельные сборки и микроволновые компоненты:

(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).

FORSTAR®

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