

# A 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:** 50 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 On-None-On & On-Off-On  
50,000 operations minimum for other circuits  
50,000 operations minimum for locking lever models  
**Electrical Life:** 50,000 operations minimum  
**Nominal Operating Force:** Toggles A, A1, E & K with Long Paddle: 1.47N (momentary); 1.18N (maintained)  
Toggles J & H & K with Short Paddle: 2.72N (momentary); 1.84N (maintained)  
Toggle L: 0.59N  
**Contact Timing:** Nonshorting (break-before-make)  
**Angle of Throw:** 26°

## Materials & Finishes

**Toggle:** Nickel plated brass  
**Bushing:** Carbon blended polyamide; nickel plated zinc alloy for locking levers & threaded bushing  
**Gasket:** Nitrile butadiene rubber  
**Case Housing:** Glass fiber reinforced polyamide  
**Support Bracket:** Tin plated phosphor bronze  
**Movable Contact:** Phosphor bronze with gold plating  
**Stationary Contacts:** Copper alloy with gold plating  
**Terminals:** Copper alloy with gold plating

## Environmental Data

**Operating Temperature Range:** -30°C through +85°C (-22°F through +185°F)  
**Humidity:** 90 ~ 95% humidity for 96 hours @ 40°C (104°F)  
**Vibration:** 10 ~ 55Hz with peak-to-peak amplitude of 1.5mm traversing the frequency range & returning in 1 minute; 3 right angled directions for 2 hours  
**Shock:** 50G (490m/s<sup>2</sup>) acceleration (tested in 6 right angled directions, with 5 shocks in each direction)

## Installation

**Mounting Torque:** .30 ~ .45Nm (2.65 ~ 3.98 lb•in) for A1 actuator with threaded bushing only

## PCB Processing

**Soldering:** Wave Soldering Recommended: See Profile A in Supplement section.  
Manual Soldering: See Profile A in Supplement section.  
**Cleaning:** Automated cleaning. See Cleaning specifications in Supplement section.

## Standards & Certifications

**Flammability Standards:** UL94V-0 available  
The B Series toggles 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

Subminiature size saves space on PC boards.

Specifically developed for logic-level applications.

Antistatic superstructure, consisting of the carbon impregnated bushing and the support bracket, prevents static discharge to the contacts. Static electricity from an operator's touch travels from actuator through the bushing and bracket to the PC board.

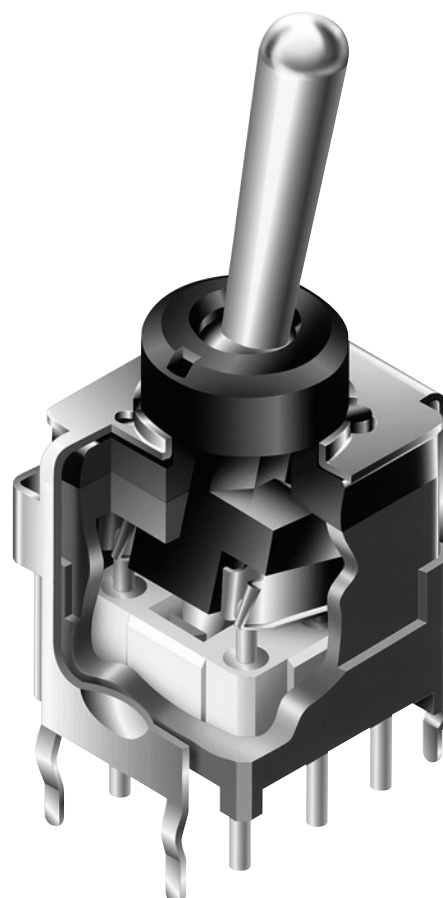
Locking lever mechanism offered as a toggle option.

Optional threaded, 6mm diameter bushing for panel seal mounting meets IP65 of IEC60529 specifications (similar to NEMA 4 and 13).

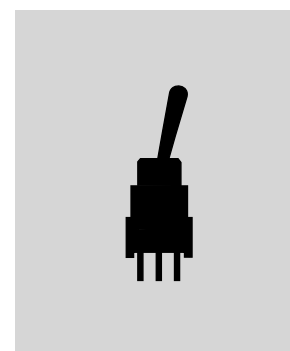
Totally sealed body construction prevents contact contamination and allows time- and money-saving soldering and cleaning. Epoxy sealed terminals lock out flux and other contaminants.

Award-winning STC contact mechanism with benefits unavailable in conventional mechanisms: smoother, 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.

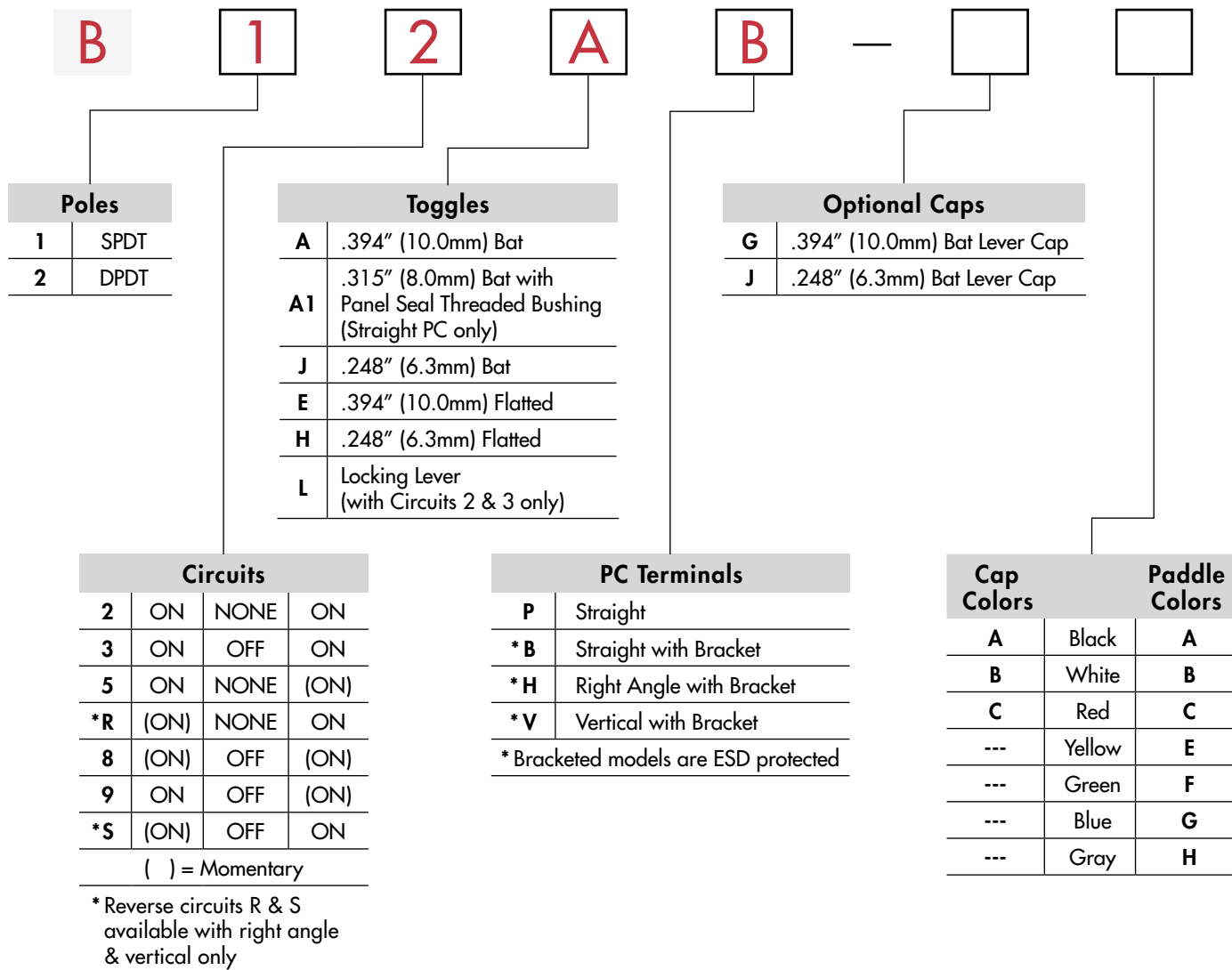


Actual Size



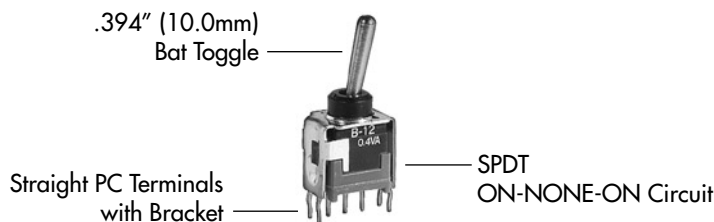
|   |                |
|---|----------------|
| A | Toggles        |
|   | Rockers        |
|   | Pushbuttons    |
|   | Illuminated PB |
|   | Programmable   |
|   | Keylocks       |
|   | Rotaries       |
|   | Slides         |
|   | Tactiles       |
|   | Tilt           |
|   | Touch          |
|   | Indicators     |
|   | Accessories    |
|   | Supplement     |

### TYPICAL SWITCH ORDERING EXAMPLE

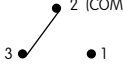
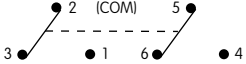


### DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

**B12AB**



## Process Sealed Subminiature Antistatic Toggles

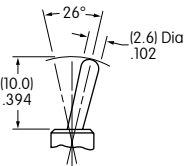
| POLES & CIRCUITS |       |                                                                                         |                                                                                             |                                                                                           |                                                                                         |                                                                                             |                                                                                           |                                                                                                                                                        |
|------------------|-------|-----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| Pole             | Model | Toggle Position<br>( ) = Momentary                                                      |                                                                                             |                                                                                           | Connected Terminals                                                                     |                                                                                             |                                                                                           | Throw & Schematics                                                                                                                                     |
|                  |       | Up<br> | Center<br> | Down<br> | Up<br> | Center<br> | Down<br> |                                                                                                                                                        |
| SP               | B12   | ON                                                                                      | NONE                                                                                        | ON                                                                                        |                                                                                         |                                                                                             |                                                                                           | Note: Terminal numbers are not actually on the switch.<br><br>SPDT  |
|                  | B13   | ON                                                                                      | OFF                                                                                         | ON                                                                                        |                                                                                         |                                                                                             |                                                                                           |                                                                                                                                                        |
|                  | B15   | ON                                                                                      | NONE                                                                                        | (ON)                                                                                      |                                                                                         |                                                                                             |                                                                                           |                                                                                                                                                        |
|                  | B1R   | (ON)                                                                                    | NONE                                                                                        | ON                                                                                        | 2-3                                                                                     | OPEN                                                                                        | 2-1                                                                                       |                                                                                                                                                        |
|                  | B18   | (ON)                                                                                    | OFF                                                                                         | (ON)                                                                                      |                                                                                         |                                                                                             |                                                                                           |                                                                                                                                                        |
|                  | B19   | ON                                                                                      | OFF                                                                                         | (ON)                                                                                      |                                                                                         |                                                                                             |                                                                                           |                                                                                                                                                        |
|                  | B1S   | (ON)                                                                                    | OFF                                                                                         | ON                                                                                        |                                                                                         |                                                                                             |                                                                                           |                                                                                                                                                        |
| DP               | B22   | ON                                                                                      | NONE                                                                                        | ON                                                                                        |                                                                                         |                                                                                             |                                                                                           | DPDT                                                                |
|                  | B23   | ON                                                                                      | OFF                                                                                         | ON                                                                                        |                                                                                         |                                                                                             |                                                                                           |                                                                                                                                                        |
|                  | B25   | ON                                                                                      | NONE                                                                                        | (ON)                                                                                      |                                                                                         |                                                                                             |                                                                                           |                                                                                                                                                        |
|                  | B2R   | (ON)                                                                                    | NONE                                                                                        | ON                                                                                        | 2-3 5-6                                                                                 | OPEN                                                                                        | 2-1 5-4                                                                                   |                                                                                                                                                        |
|                  | B28   | (ON)                                                                                    | OFF                                                                                         | (ON)                                                                                      |                                                                                         |                                                                                             |                                                                                           |                                                                                                                                                        |
|                  | B29   | ON                                                                                      | OFF                                                                                         | (ON)                                                                                      |                                                                                         |                                                                                             |                                                                                           |                                                                                                                                                        |
|                  | B2S   | (ON)                                                                                    | OFF                                                                                         | ON                                                                                        |                                                                                         |                                                                                             |                                                                                           |                                                                                                                                                        |

## TOGGLES

Standard Material & Finish: Brass with Bright Nickel

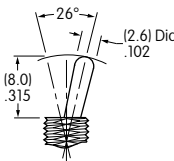
**A**

.394" (10.0mm)  
Bat



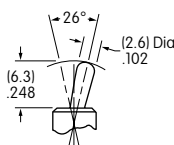
**A1**

.315" (8.0mm) Bat with  
Panel Seal Threaded Bushing



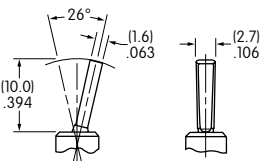
**J**

.248" (6.3mm)  
Bat



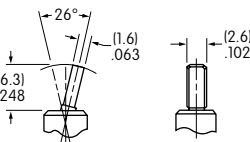
**E**

.394" (10.0mm)  
Flatted



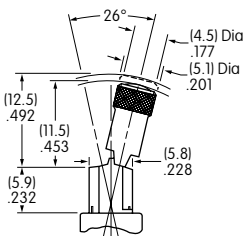
**H**

.248" (6.3mm) Flatted



**L**

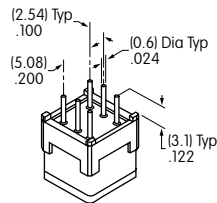
Locking Lever



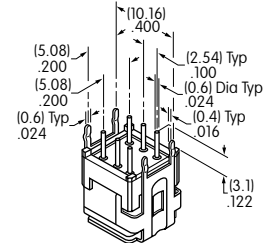
### PC TERMINALS

Use of a support bracket is recommended to increase PCB mounting strength and stability.

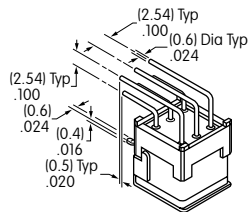
#### P Straight



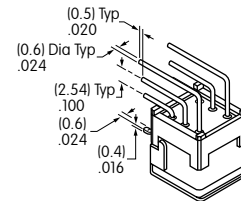
#### B Straight with Bracket



#### H Right Angle with Bracket



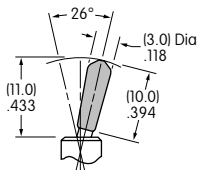
#### V Vertical with Bracket



### OPTIONAL CAPS

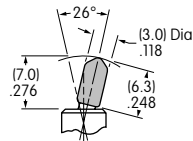
#### G AT4003 .394" (10.0mm) Bat Lever Cap

Material: PVC  
Colors Available:  
A, B, C



#### J AT4064 .248" (6.3mm) Bat Lever Cap

Material: PVC  
Colors Available:  
A, B, C



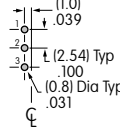
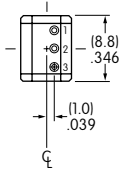
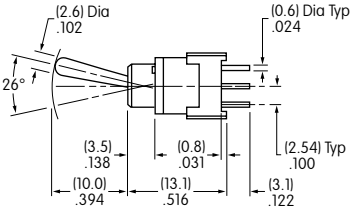
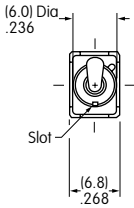
#### Color Codes:

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

TYPICAL SWITCH DIMENSIONS

Single Pole

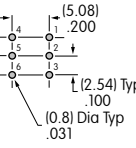
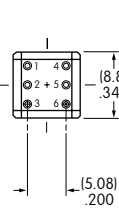
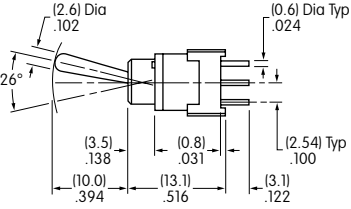
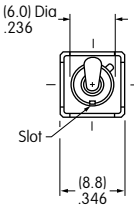
Straight PC



B12AP

Double Pole

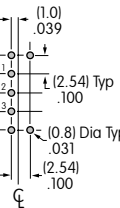
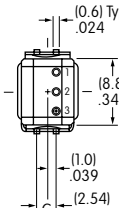
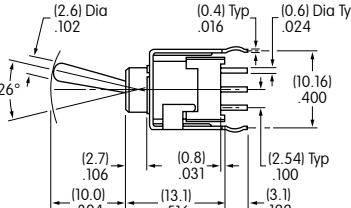
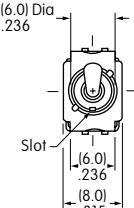
Straight PC



B22AP

Single Pole

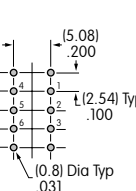
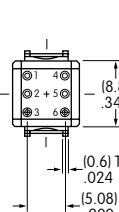
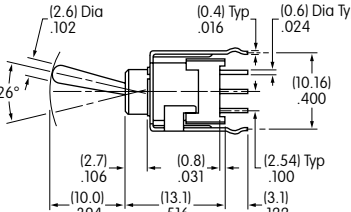
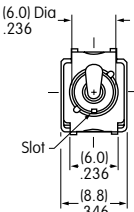
Straight PC • Bracket



B12AB

Double Pole

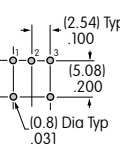
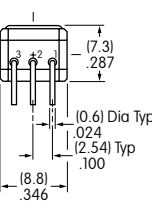
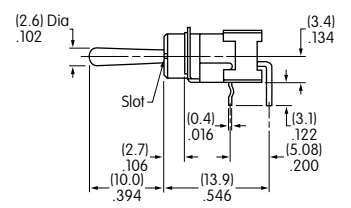
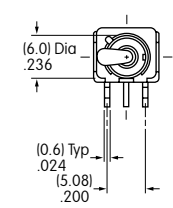
Straight PC • Bracket



B22AB

Single Pole

Right Angle PC



B12AH

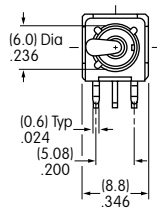
|   |                |
|---|----------------|
| A | Toggles        |
|   | Rockers        |
|   | Pushbuttons    |
|   | Illuminated PB |
|   | Programmable   |
|   | Keylocks       |
|   | Rotaries       |
|   | Slides         |
|   | Tactiles       |
|   | Tilt           |
|   | Touch          |
|   | Indicators     |
|   | Accessories    |
|   | Supplement     |

### TYPICAL SWITCH DIMENSIONS

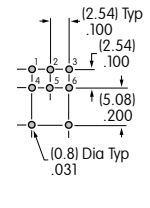
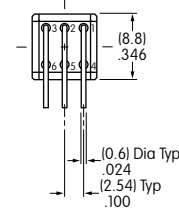
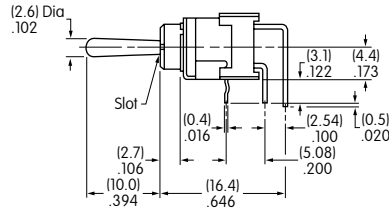
#### Right Angle PC



**B22AH**



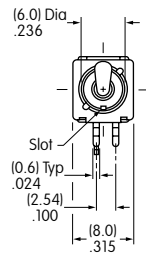
#### Double Pole



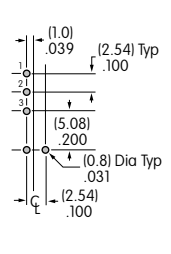
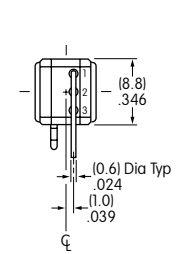
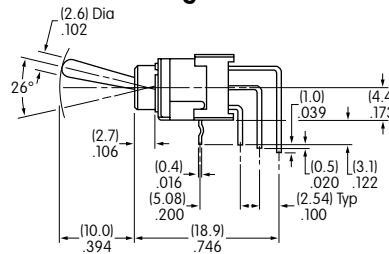
#### Vertical PC



**B12AV**



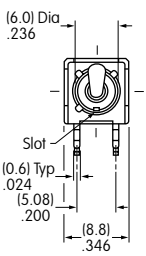
#### Single Pole



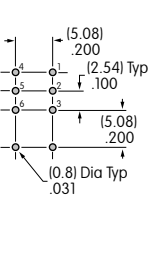
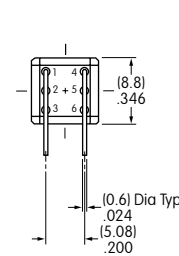
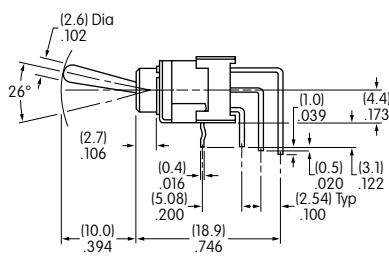
#### Vertical PC



**B22AV**



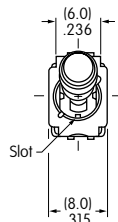
#### Double Pole



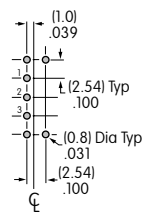
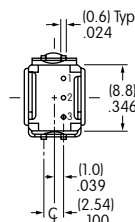
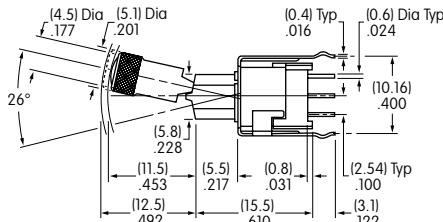
#### Locking Lever • Straight PC • Bracket



**B12LB**



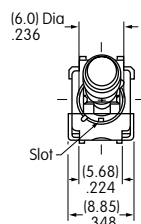
#### Single Pole



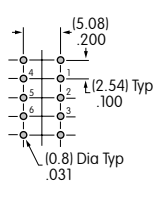
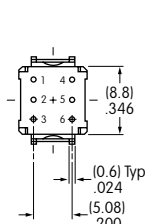
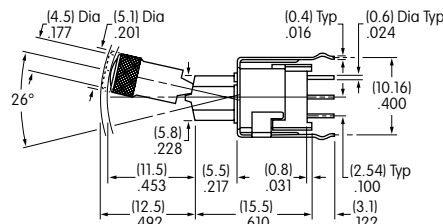
#### Locking Lever • Straight PC • Bracket



**B22LB**



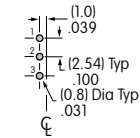
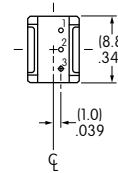
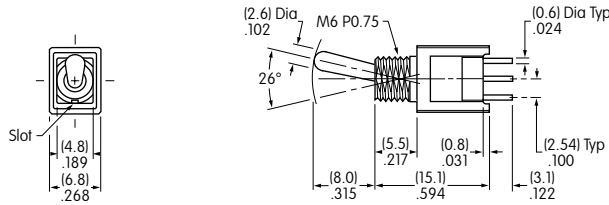
#### Double Pole



## TYPICAL SWITCH DIMENSIONS

### Panel Seal • Single Pole

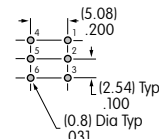
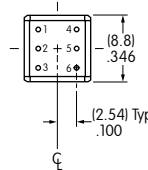
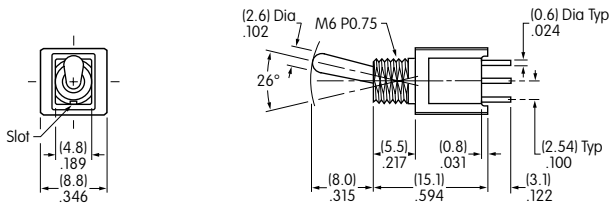
### Threaded Bushing • Straight PC



**B12A1P**

### Panel Seal • Double Pole

### Threaded Bushing • Straight PC

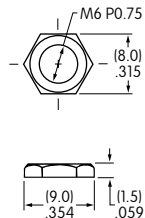


**B22A1P**

## STANDARD HARDWARE & PANEL CUTOUT

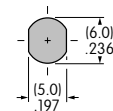
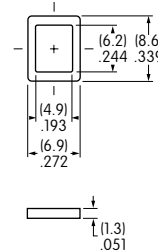
### AT513M Metric Hex Nut

Material:  
Brass,  
Nickel plated



### AT063 Gasket

Material:  
Nitrile butadiene  
rubber



Maximum Panel Thickness  
with Standard Hardware:  
.087" (2.2mm)

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».



## 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).



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