

# 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.

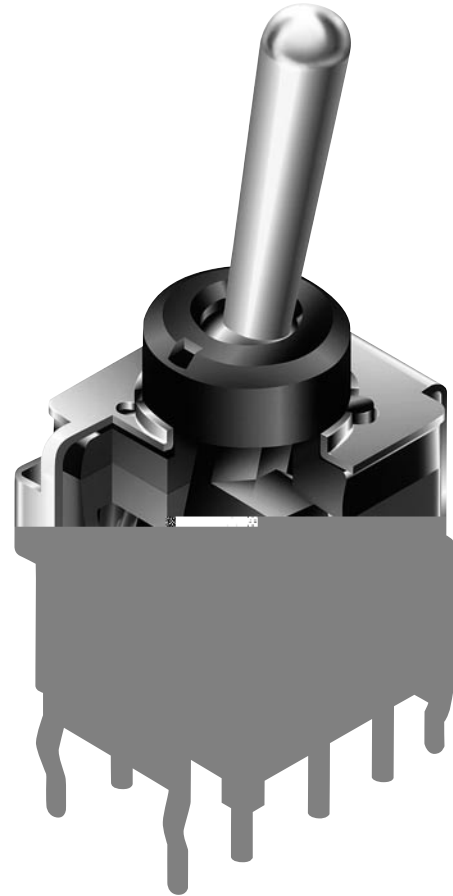
Optional threaded, 6mm diameter bushing for panel seal mounting meets IP65 of IEC60529 specifications (similar to NEMA 4 and 13).

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.

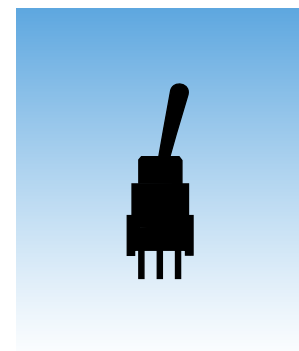
Award-winning STC contact mechanism with benefits unavailable in conventional mechanisms: smoother, positive detent actuation, increased contact stability and unparalleled logic-level reliability. (Additional STC details in Terms & Acronyms; see Supplement section.)

.100" x .100" (2.54mm x 2.54mm) terminal spacing conforms to standard PC board grid spacing.

Illuminated toggles available and shown in the Illuminated Other section.



Actual Size



# 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

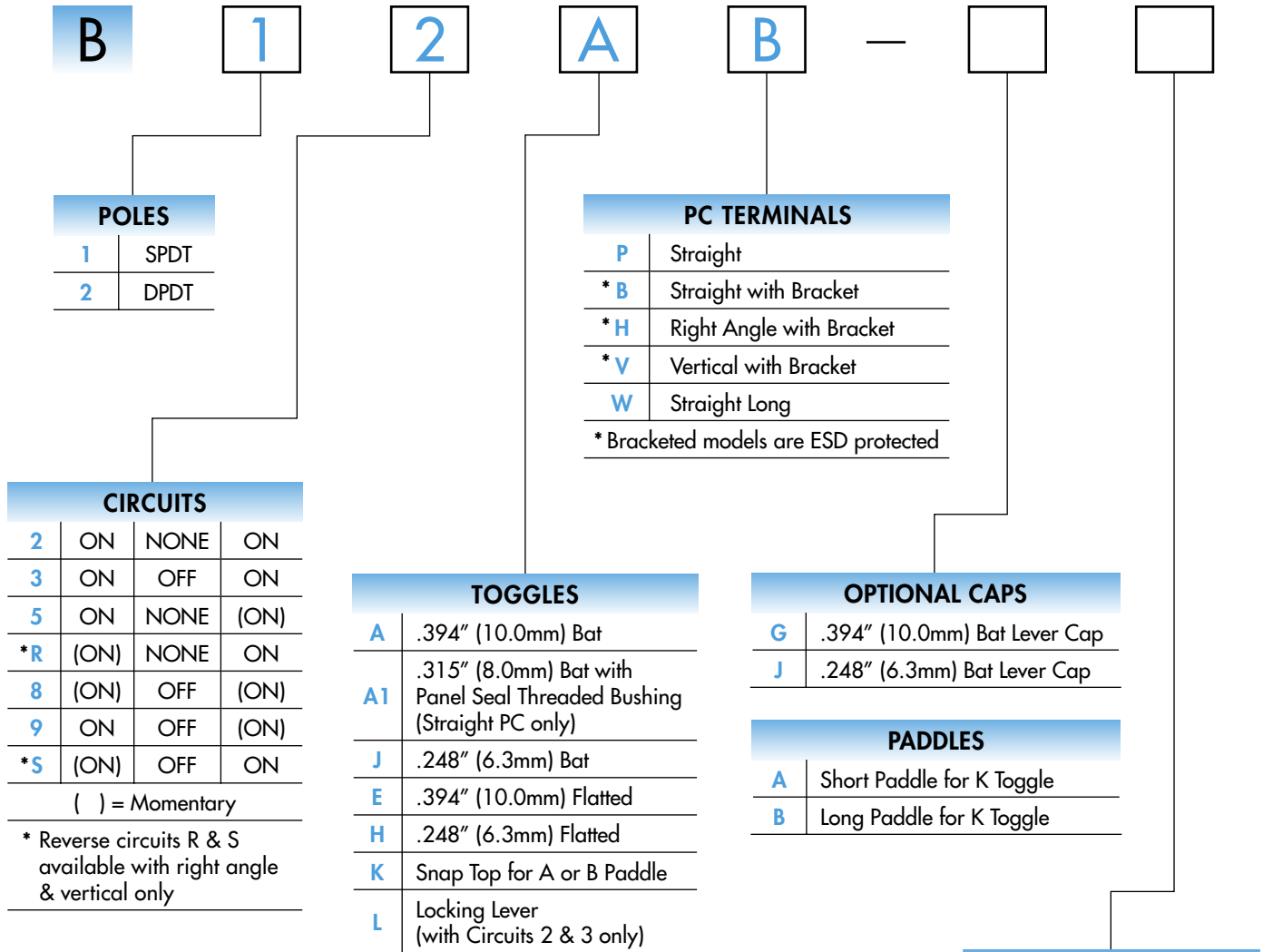
## PCB Processing

**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

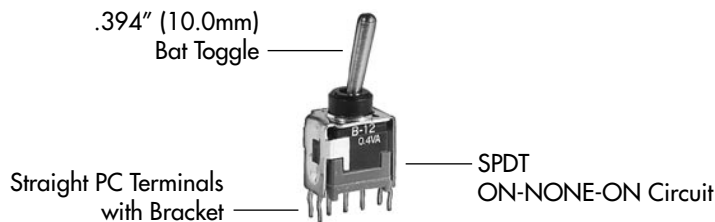
**Flammability Standards:** UL94V-0 available  
**UL Recognition or CSA Certification:** The B Series toggles have not been tested for UL recognition or CSA certification. These switches are designed for use in a low-voltage, low-current, logic-level circuit. When used as intended in a logic-level circuit, the results do not produce hazardous energy.

### TYPICAL SWITCH ORDERING EXAMPLE









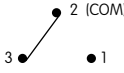
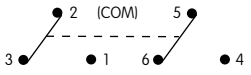
### DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

**B12AB**



CAP COLORS		PADDLE COLORS
A	Black	A
B	White	B
C	Red	C
---	Yellow	E
---	Green	F
---	Blue	G
---	Gray	H

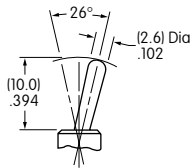
### POLES & CIRCUITS

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

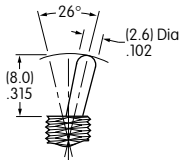
### TOGGLES

Standard Material & Finish: Brass with Bright Nickel

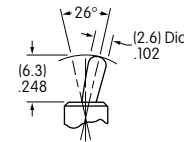
**A** .394" (10.0mm) Bat



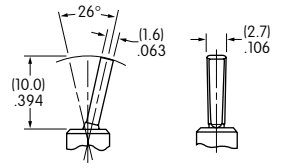
**A1** .315" (8.0mm) Bat with Panel Seal Threaded Bushing



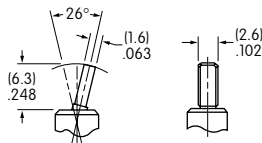
**J** .248" (6.3mm) Bat



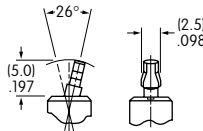
**E** .394" (10.0mm) Flatted



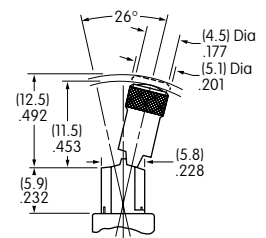
**H** .248" (6.3mm) Flatted



**K** Snap Top for Paddles



**L** Locking Lever

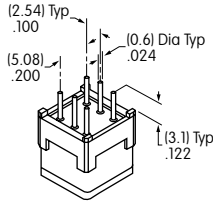


### PC TERMINALS

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

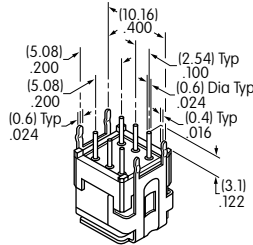
**P**

**Straight**



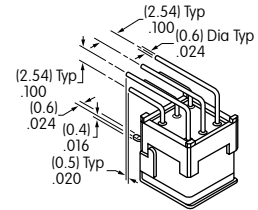
**B**

**Straight with Bracket**



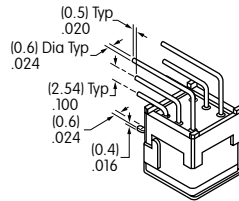
**H**

**Right Angle with Bracket**



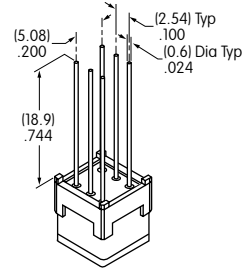
**V**

**Vertical with Bracket**



**W**

**Straight Long**

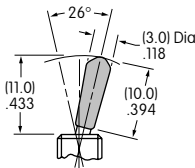


### OPTIONAL CAPS

**G**

**AT4003**  
**.394" (10.0mm) Bat Lever Cap**

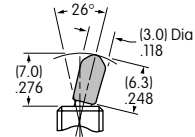
Material: PVC  
Colors Available:  
A, B, C



**J**

**AT4064**  
**.248" (6.3mm) Bat Lever Cap**

Material: PVC  
Colors Available:  
A, B, C

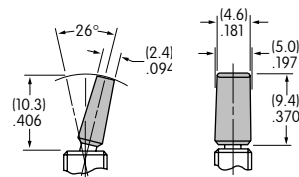


### PADDLES

**A**

**AT467**  
**Short Paddle for K Toggle**

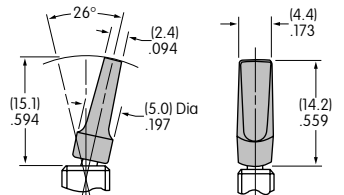
Material: Polyamide  
Colors Available:  
A, B, C, E, F, G, H



**B**

**AT468**  
**Long Paddle for K Toggle**

Material: Polyamide  
Colors Available:  
A, B, C, E, F, G, H



### Color Codes:

**A**

Black

**B**

White

**C**

Red

**E**

Yellow

**F**

Green

**G**

Blue

**H**

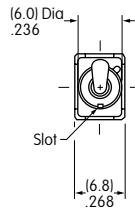
Gray

### TYPICAL SWITCH DIMENSIONS

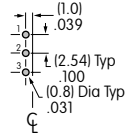
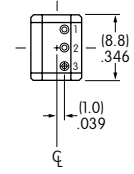
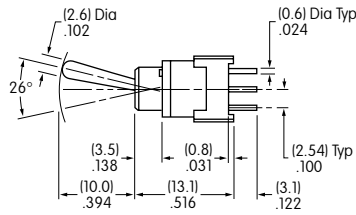
#### Straight PC



**B12AP**



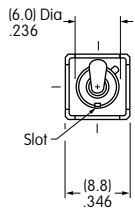
#### Single Pole



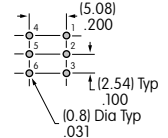
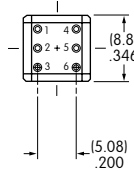
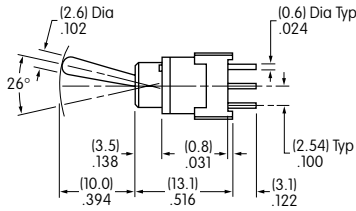
#### Straight PC



**B22AP**



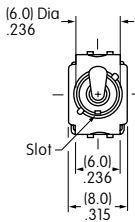
#### Double Pole



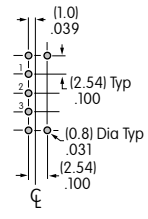
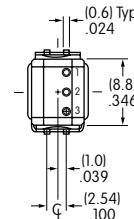
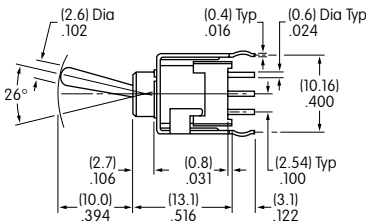
#### Straight PC • Bracket



**B12AB**



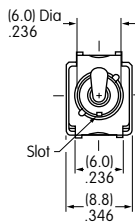
#### Single Pole



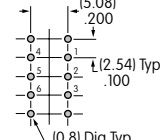
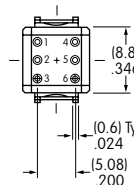
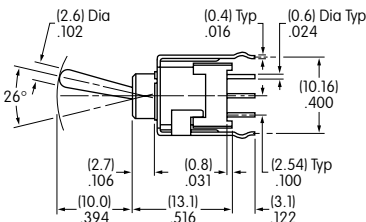
#### Straight PC • Bracket



**B22AB**



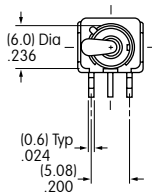
#### Double Pole



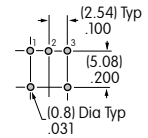
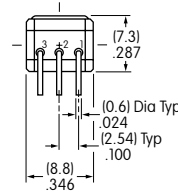
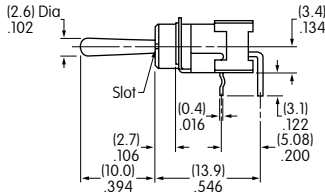
#### Right Angle PC



**B12AH**



#### Single Pole



### TYPICAL SWITCH DIMENSIONS

Right Angle PC

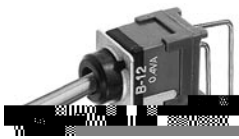
Double Pole



B22AH

Vertical PC

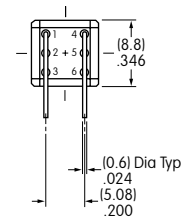
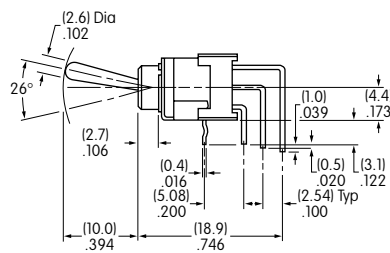
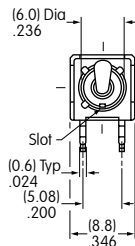
Single Pole



B12AV

Vertical PC

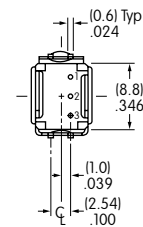
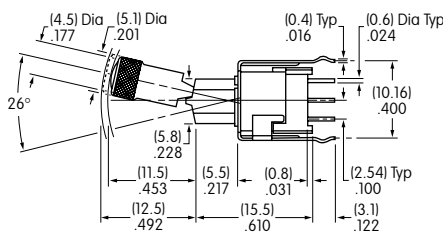
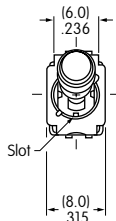
Double Pole



B22AV

Locking Lever • Straight PC • Bracket

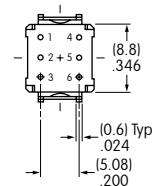
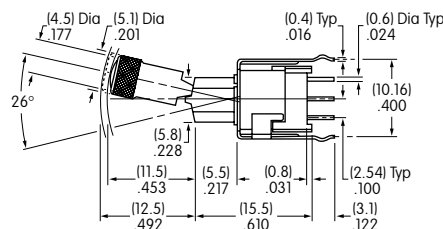
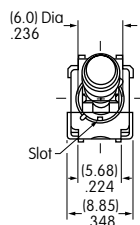
Single Pole



B12LB

Locking Lever • Straight PC • Bracket

Double Pole

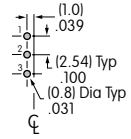
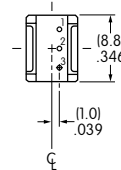
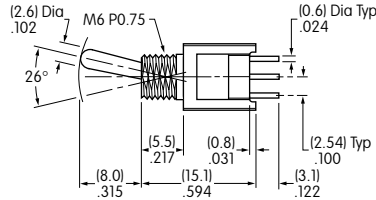
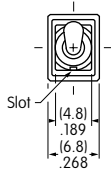


B22LB

### TYPICAL SWITCH DIMENSIONS

#### Threaded Bushing • Straight PC

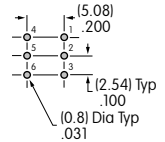
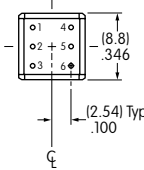
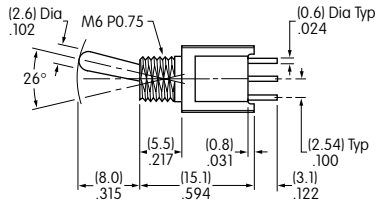
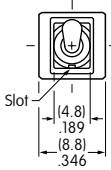
#### Panel Seal • Single Pole



**B12A1P**

#### Threaded Bushing • Straight PC

#### Panel Seal • Double Pole

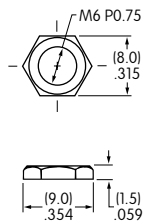


**B22A1P**

### STANDARD HARDWARE & PANEL CUTOUT

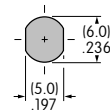
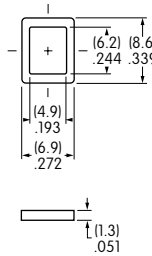
#### AT513M Metric Hex Nut

Material:  
Brass,  
Nickel plated



#### AT063 Gasket

Material:  
Nitrile butadiene  
rubber



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