

# 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 between contacts for 1 minute minimum;  
500V AC minimum between contacts & case for 1 minute minimum  
**Mechanical Life:** 100,000 operations minimum for On-None-On & On-Off-On  
50,000 operations minimum for other circuits  
**Electrical Life:** 50,000 operations minimum  
**Nominal Operating Force:** 1.47N (momentary); 1.18N (maintained) for .394" (10.0mm) toggles  
2.73N (momentary); 1.84N (maintained) for all other toggles  
**Contact Timing:** Nonshorting (break-before-make)  
**Angle of Throw:** 26°

## Materials & Finishes

**Toggle:** Glass fiber reinforced polyamide for antistatic; nickel plated brass for all others  
**Case Housing:** Glass fiber reinforced polyamide  
**Support Bracket:** Tin plated phosphor bronze  
**Movable Contact:** Phosphor bronze with gold plating  
**Stationary Contacts:** Brass with gold plating  
**Terminals:** Brass with gold plating

## Environmental Data

**Operating Temperature Range:** -30°C through +85°C (-22°F through +185°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/s<sup>2</sup>) 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 B in Supplement section.  
**Cleaning:** Automated cleaning. See Cleaning Specifications in Supplement section.

## Standards & Certifications

The A 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.

Totally sealed body construction prevents contact contamination and allows time- and money-saving automated soldering and cleaning.

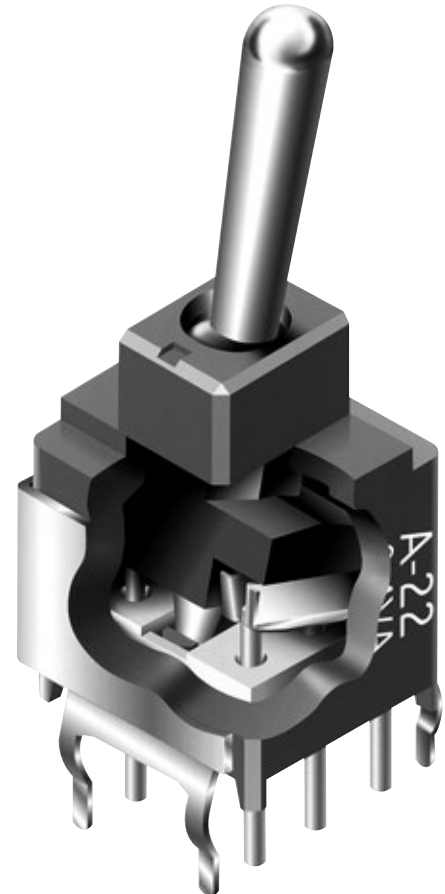
Award-winning STC contact mechanism with benefits unavailable in conventional mechanisms: smoother, positive detent actuation, increased contact stability and unparalleled logic-level reliability. (Additional STC details in Terms & Acronyms; see Supplement contents.)

Molded-in, epoxy sealed or ultrasonically welded terminals lock out flux, solvents, and other contaminants.

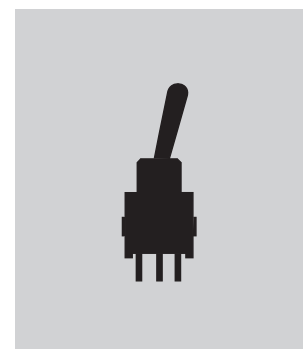
.100" x .100" (2.54mm x 2.54mm) terminal spacing conforms to standard PC board grid spacing.

Toggle option in antistatic material available for dissipating electrostatic discharges.

Matching indicators available.



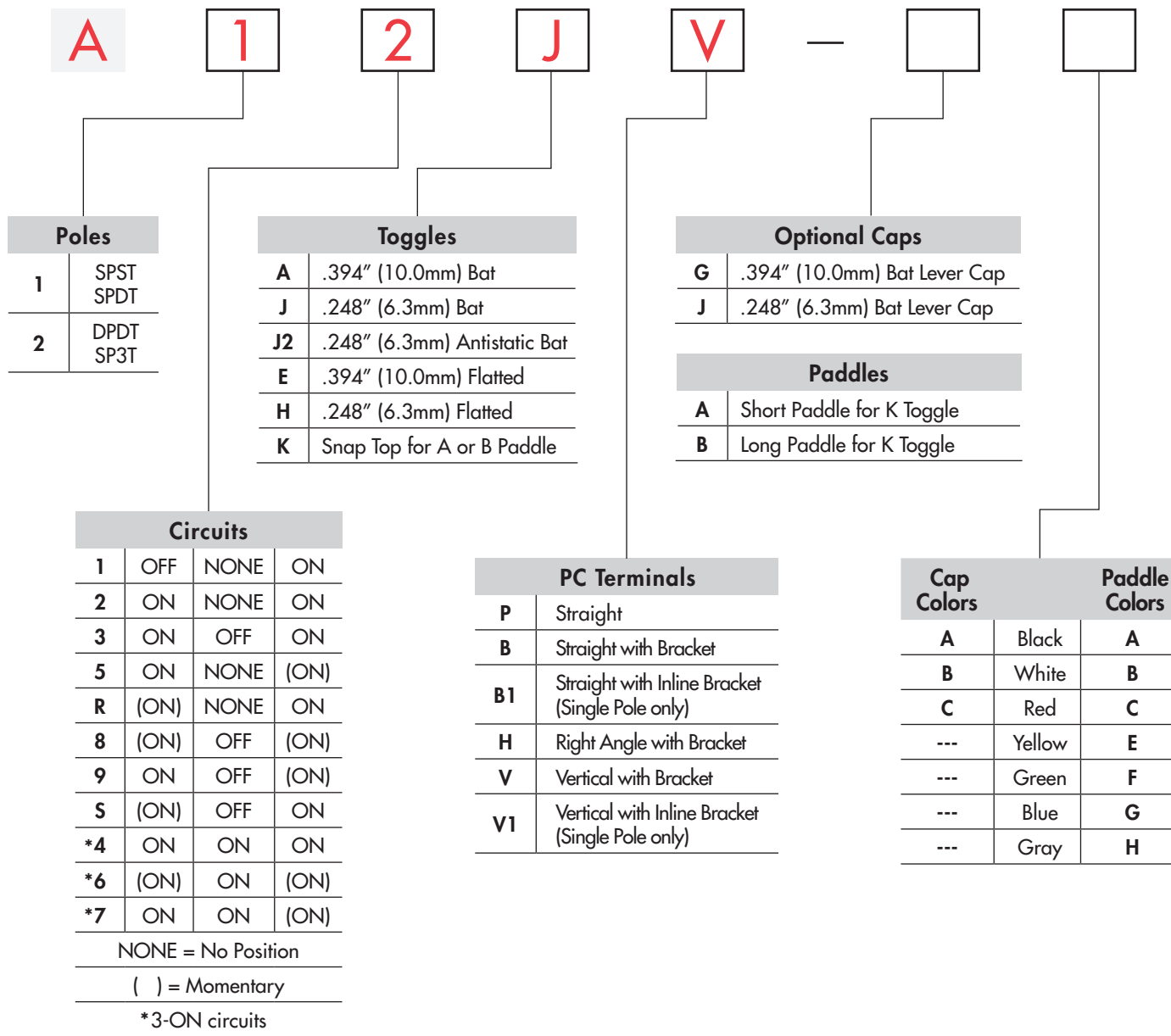
Actual Size



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

Toggles  
A

### TYPICAL SWITCH ORDERING EXAMPLE



### DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

**A12JV**



## POLES & CIRCUITS

Pole	Model	Toggle Position			Connected Terminals			Throw & Schematics
		Up	Center	Down	Up	Center	Down	
		NONE = No Position ( ) = Momentary						
								Note: Terminal numbers are not actually on the switch.
SP	A11	OFF	NONE	ON	OPEN	OPEN	3-1	SPST
SP	A12 A13 A15 A1R A18 A19 A1S	ON ON ON (ON) (ON) ON (ON)	NONE OFF NONE NONE OFF OFF OFF	ON ON (ON) ON (ON) (ON) ON		OPEN	2-3 2-1	SPDT
DP	A22 A23 A25 A2R A28 A29 A2S	ON ON ON (ON) (ON) ON (ON)	NONE OFF NONE NONE OFF OFF OFF	ON ON (ON) ON (ON) (ON) ON	2-3	5-6 OPEN	2-1 5-4	DPDT

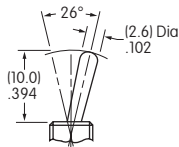
For 3 Throw (3-on)

Connected Terminals & Schematics					External Connection
Pole	Model	Up	Center	Down	
SP	A24 A26 A27	ON (ON) ON   2-3 5-6	ON ON ON   2-3 5-4	ON (ON) (ON)   2-1 5-4	<p>The SP3T model utilizes a double pole base.</p> <p>External connections must be made during field installation.</p>

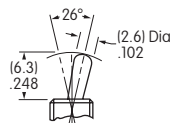
## TOGGLES

Standard Material & Finish: Brass with Bright Nickel    Material & Finish for J2: Matte finish black glass fiber reinforced polyamide

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



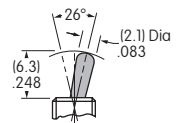
**J** .248" (6.3mm) Bat



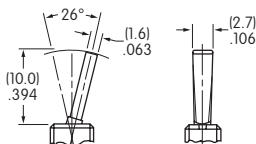
**J2** .248" (6.3mm) Antistatic Bat

Dissipating 20Kv ESD: Straight PC

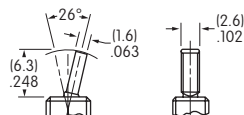
Dissipating 10Kv ESD: Straight PC with Bracket, Right Angle, & Vertical



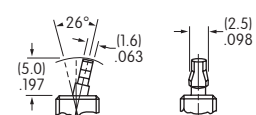
**E** .394" (10.0mm) Flatted



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



**K** Snap Top for Paddles

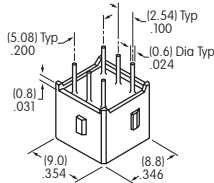


## PC TERMINALS

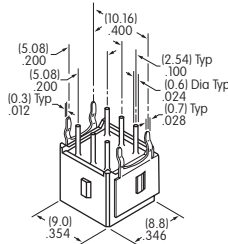
Use of a support bracket is recommended to increase PCB mounting strength and stability.

A11 models do not have Terminal 2.

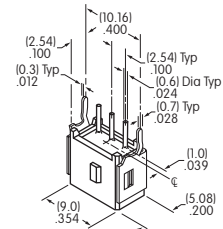
**P** Straight



**B** Straight with Bracket

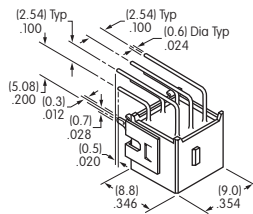


**B1** Straight with Inline Bracket  
Single Pole only

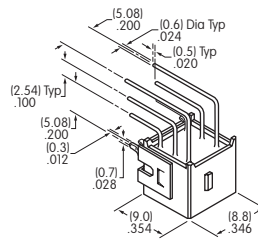


A11 models do not have Terminal 2.

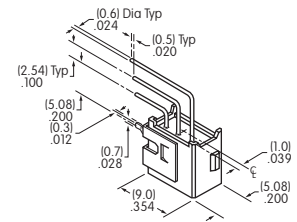
**H** Right Angle with Bracket



**V** Vertical with Bracket



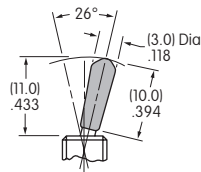
**V1** Vertical with Inline Bracket  
Single Pole only



## CAPS & PADDLES

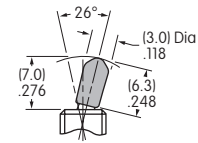
**G** AT4003  
.394" (10.0mm) Bat Lever Cap

Material: PVC  
Colors Available:  
A, B, C



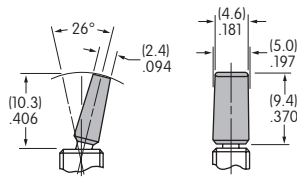
**J** AT4064  
.248" (6.3mm) Bat Lever Cap

Material: PVC  
Colors Available:  
A, B, C



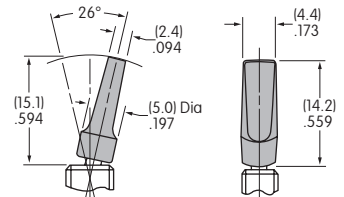
**A** AT467  
Short Paddle

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



**B** AT468  
Long Paddle

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

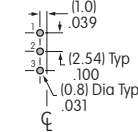
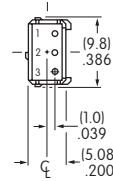
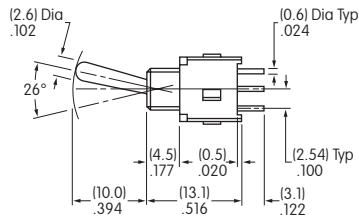
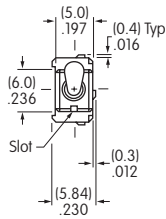


### Color Codes:

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

## TYPICAL SWITCH DIMENSIONS

### Single Pole



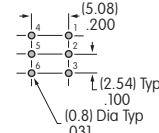
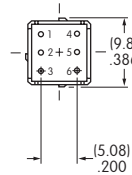
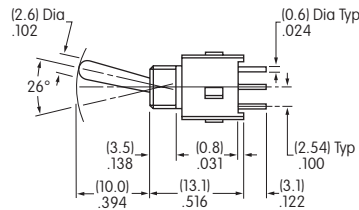
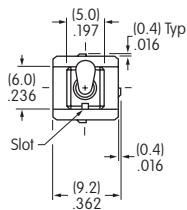
### Straight PC



A11 models do not have Terminal 2

**A12AP**

### Double Pole

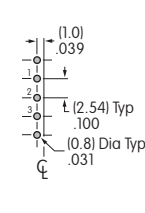
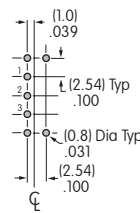
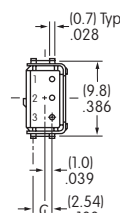
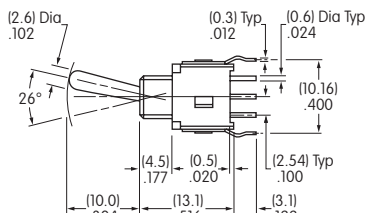
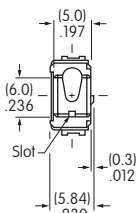


### Straight PC



**A22AP**

### Single Pole



### Straight PC • Bracket

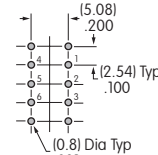
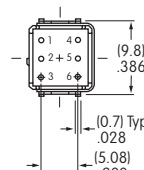
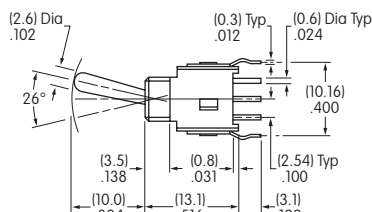
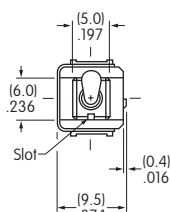


B Terminals

B1 Terminals

**A12AB**

### Double Pole



### Straight PC • Bracket

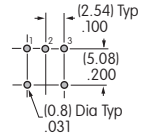
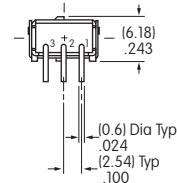
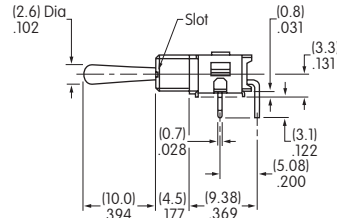
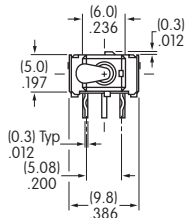


**A22AB**

## TYPICAL SWITCH DIMENSIONS

### Right Angle PC

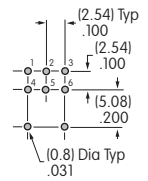
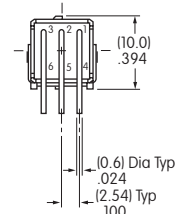
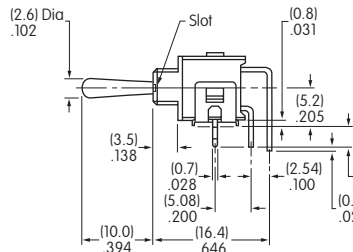
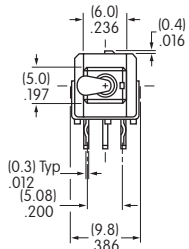
### Single Pole



A12AH

### Right Angle PC

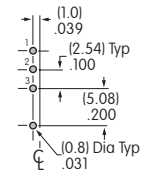
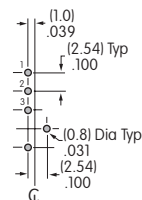
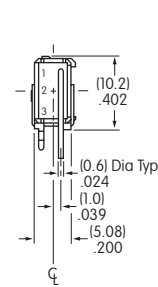
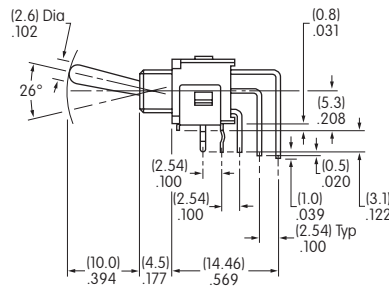
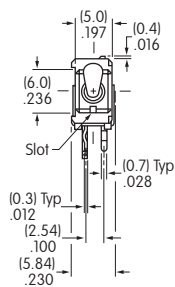
### Double Pole



A22AH

### Vertical PC

### Single Pole



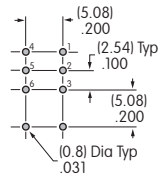
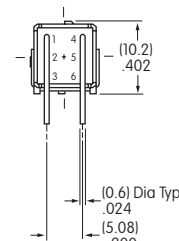
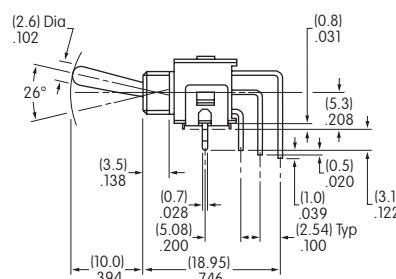
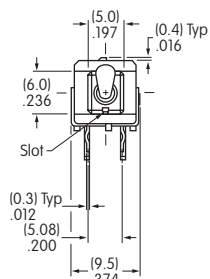
A12AV

V Terminals

V1 Terminals

### Vertical PC

### Double Pole



A22AV

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