

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



**A Series**.....A4  
0.4VA Logic Level; Process Sealed  
Straight, Right Angle, & Vertical PC  
PCB Mount



**B Series**.....A12  
Antistatic; Process Sealed  
0.4VA Logic Level  
Straight, Right Angle, & Vertical PC  
PCB Mount



**B Series Illuminated**.....A20  
Subminiature Fully Illuminated; Process Sealed  
0.4VA Logic Level  
Straight, Right Angle, & Vertical PC  
PCB Mount



**D2 Series**.....A24  
0.4VA Logic Level  
Straight, Right Angle, & Vertical PC  
PCB Mount



**G Series**.....A34  
Ultra-Miniature; Process Sealed  
0.4VA Logic Level  
Straight, Right Angle, & Vertical PC  
PCB Mount



**G Series Illuminated**.....A38  
Ultra-Miniature Fully Illuminated  
0.4VA Logic Level  
Straight, Right Angle, & Vertical PC  
PCB Mount



**G3T Series**.....A42  
Ultra-Miniature; Process Sealed SMT  
0.4VA Logic Level  
Gull-wing Terminals  
Upright & Right Angle Mount



**M Series**.....A48  
Dual Seal Waterproof, IP67 Rated  
6A Power Level & 0.4VA Logic Level  
12mm Bushing, Solder Lug Terminals



**M Series**.....A52  
Bushing Mount  
6A Power Level & 0.4VA Logic Level  
Solder Lug, Quick Connect, Straight PC, & Wirewrap



**M Series** .....A64  
 Straight PC with Bracket  
 6A Power Level & 0.4VA Logic Level  
 PCB Mount



**M Series** .....A70  
 Right Angle & Vertical PC  
 6A Power Level & 0.4VA Logic Level  
 PCB Mount



**M2100 Series Illuminated** .....A80  
 6A Power Level & 0.4VA Logic Level  
 LED Tipped Toggle  
 Solder Lug, Quick Connect, & PC  
 Bushing, Flat Frame & Snap-in Mount



**M2T Series** .....A88  
 Process Sealed  
 6A Power Level & 0.4VA Logic Level  
 Straight, Right Angle, Vertical, & Extended PC  
 PCB Mount



**P Series** .....A96  
 Internationally Approved  
 10A Power Level  
 Solder Lug, Straight PC, & Quick Connect  
 Bushing Mount



**S Series** .....A100  
 5A to 50A Low, Medium, & High Capacity  
 Solder Lug, Quick Connect, & Screw Lug  
 Bushing Mount



**TL Series Illuminated** .....A126  
 6A Power Level or 0.4VA Logic Level  
 Translucent Toggle with Bright or Super Bright LED  
 Solder Lug; Bushing Mount



**WT Series** .....A132  
 Environmentally Sealed  
 10A Power Level  
 Solder Lug, Screw Lug, & Wire Lead  
 Bushing Mount

**A** Toggles  
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# 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.

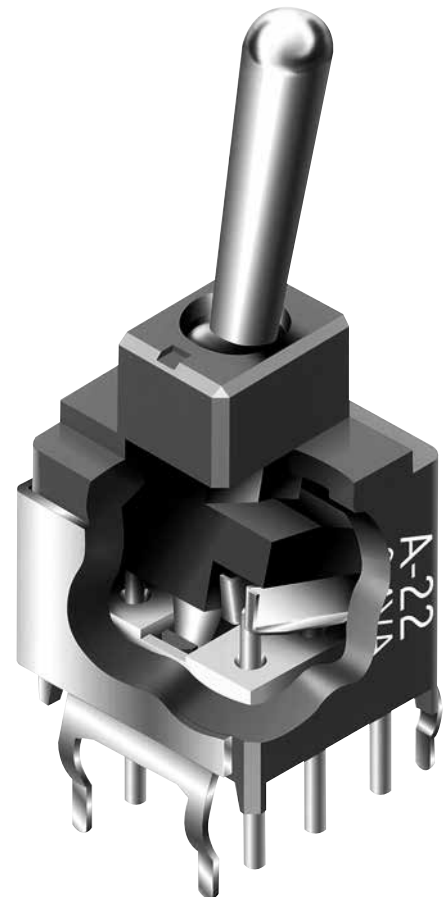
Award-winning STC contact mechanism with benefits unavailable in conventional mechanisms: smoother, positive detent actuation, increased contact stability and unparalleled logic-level reliability. (Additional STC details in Terms & Acronyms; see Supplement contents.)

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

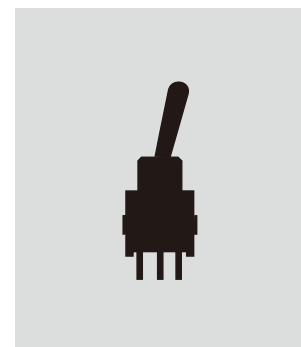
.100" x .100" (2.54mm x 2.54mm) terminal spacing conforms to standard PC board grid spacing.

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

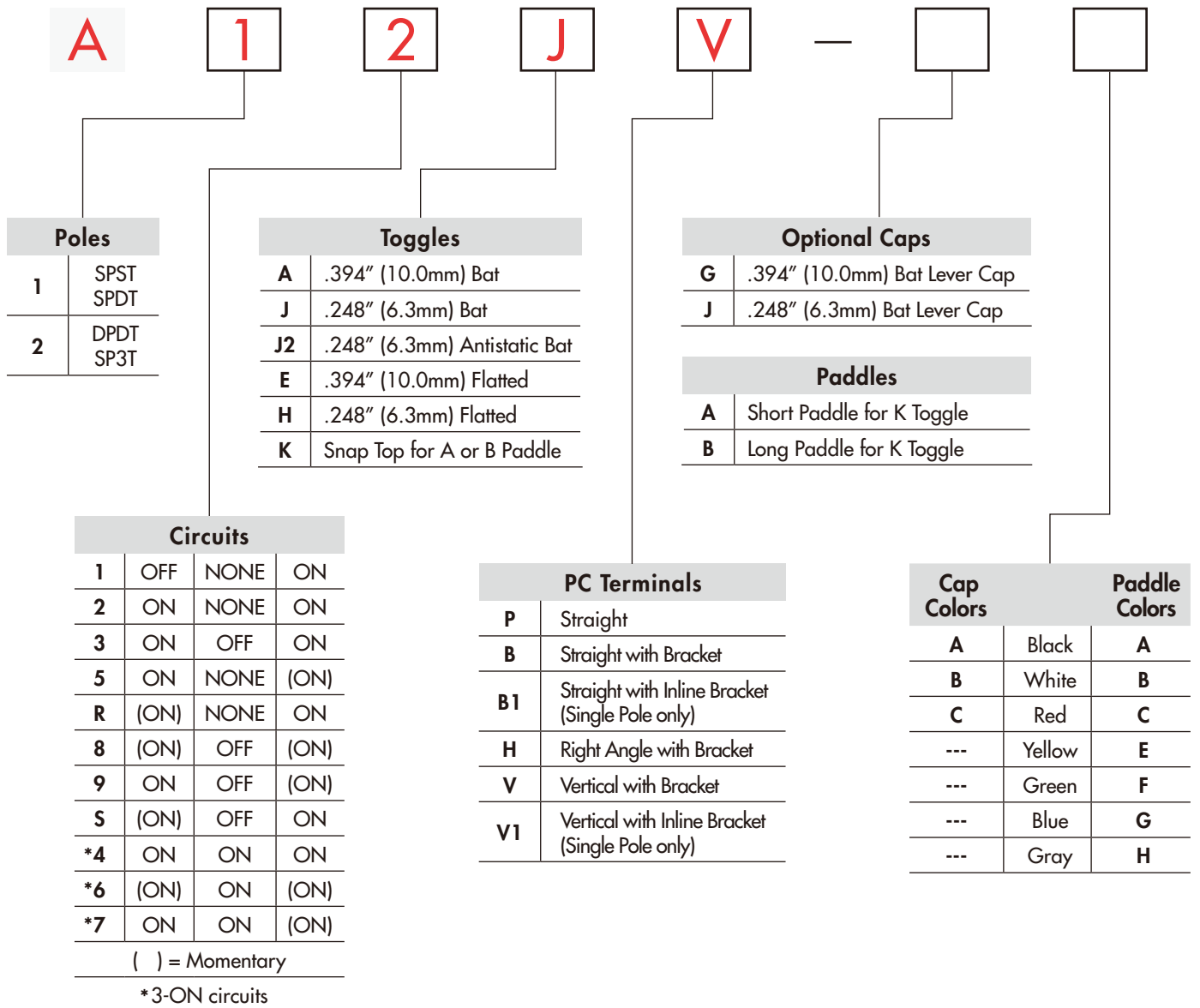
Indicators

Accessories

Supplement

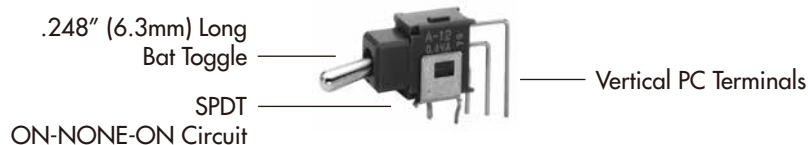
Toggles  
A

### TYPICAL SWITCH ORDERING EXAMPLE



### DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

**A12JV**



Touch

Indicators

Accessories

Supplement

POLES & CIRCUITS

Pole	Model	Toggle Position ( ) = Momentary			Connected Terminals			Throw & Schematics
		Up	Center	Down	Up	Center	Down	
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	2-3	OPEN	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)

Pole	Model	Connected Terminals & Schematics			External Connection
		Up	Center	Down	
SP	A24 A26 A27	ON (ON) ON 	ON ON ON 	ON (ON) (ON) 	<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

<p><b>A</b> .394" (10.0mm) Bat</p>	<p><b>J</b> .248" (6.3mm) Bat</p>	<p><b>J2</b> .248" (6.3mm) Antistatic Bat</p> <p>Dissipating 20Kv ESD: Straight PC</p> <p>Dissipating 10Kv ESD: Straight PC with Bracket, Right Angle, &amp; Vertical</p>
<p><b>E</b> .394" (10.0mm) Flatted</p>	<p><b>H</b> .248" (6.3mm) Flatted</p>	<p><b>K</b> Snap Top for Paddles</p>

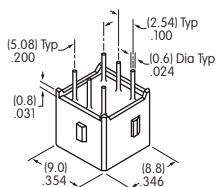
A Toggles  
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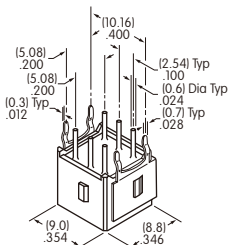
## PC TERMINALS

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

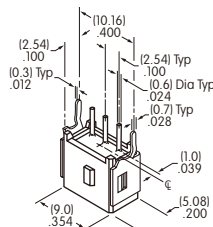
**P** Straight



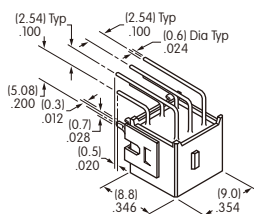
**B** Straight with Bracket



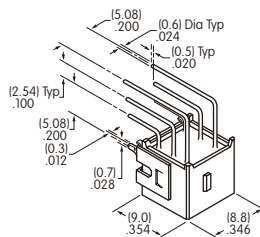
**B1** Straight with Inline Bracket  
Single Pole only



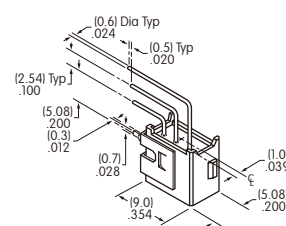
**H** Right Angle  
with Bracket



**V** Vertical with Bracket



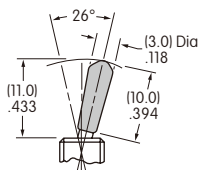
**V1** Vertical with Inline Bracket  
Single Pole only



## CAPS & PADDLES

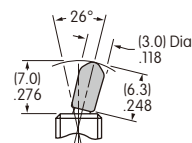
**G** AT4003  
.394" (10.0mm) Bat Lever Cap

Material: PVC  
Colors Available:  
A, B, C



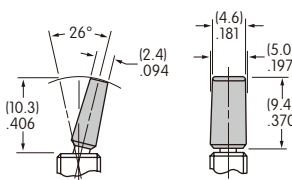
**J** AT4064  
.248" (6.3mm) Bat Lever Cap

Material: PVC  
Colors Available:  
A, B, C



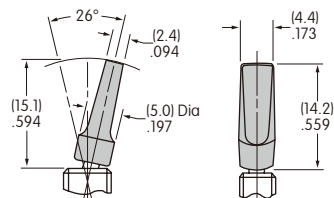
**A** AT467  
Short Paddle

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



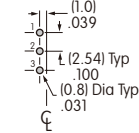
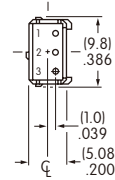
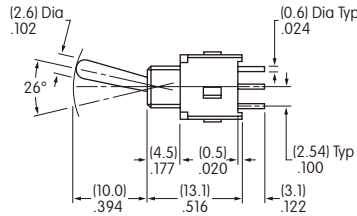
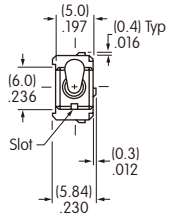
### Color Codes:

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

TYPICAL SWITCH DIMENSIONS

Single Pole

Straight PC

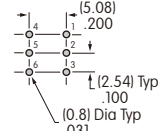
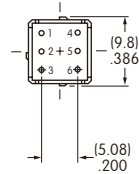
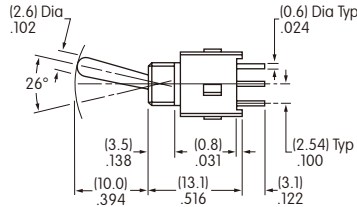
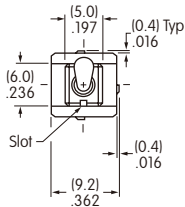


A11 models do not have Terminal 2

A12AP

Double Pole

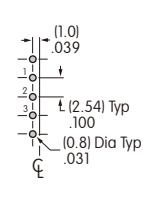
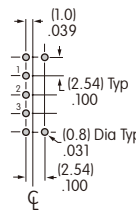
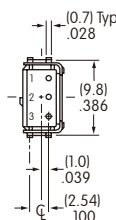
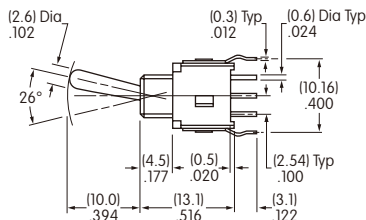
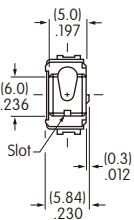
Straight PC



A22AP

Single Pole

Straight PC • Bracket



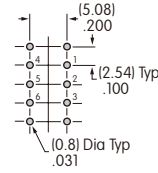
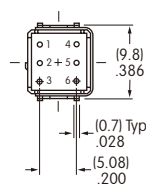
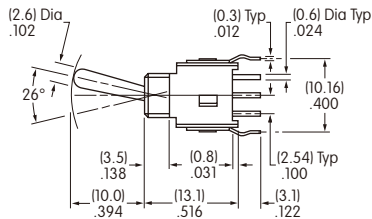
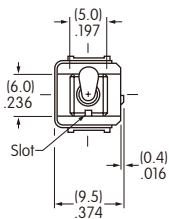
B Terminals

B1 Terminals

A12AB

Double Pole

Straight PC • Bracket



A22AB

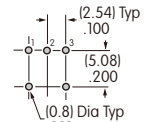
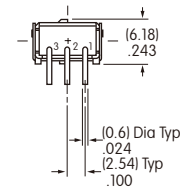
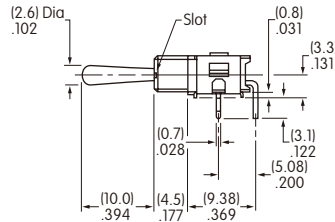
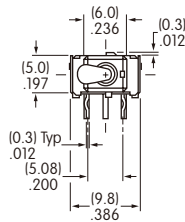


Toggles A  
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## TYPICAL SWITCH DIMENSIONS

### Right Angle PC

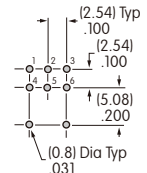
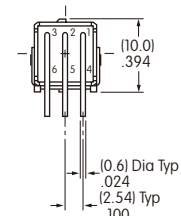
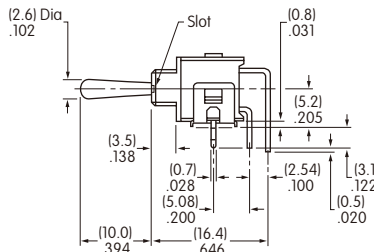
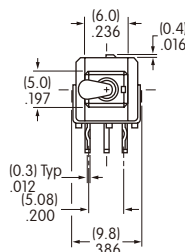
### Single Pole



**A12AH**

### Right Angle PC

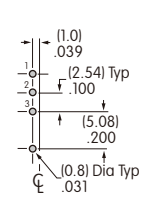
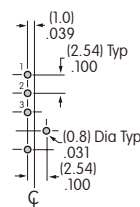
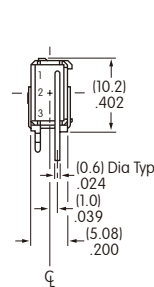
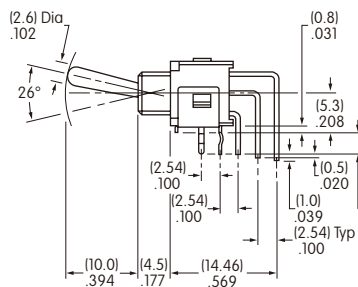
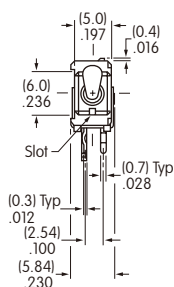
### Double Pole



**A22AH**

### Vertical PC

### Single Pole



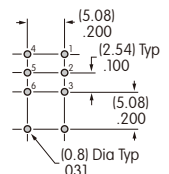
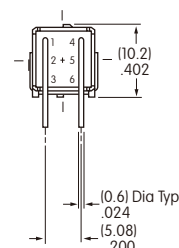
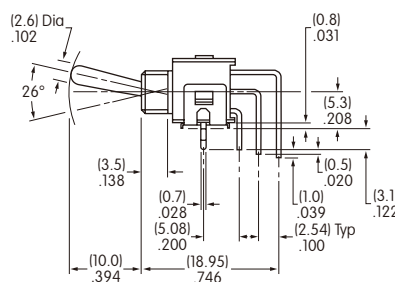
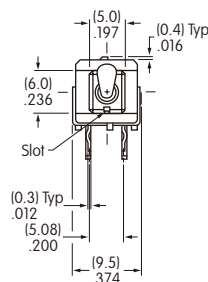
**A12AV**

V Terminals

V1 Terminals

### Vertical PC

### Double Pole



**A22AV**

