

# 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.

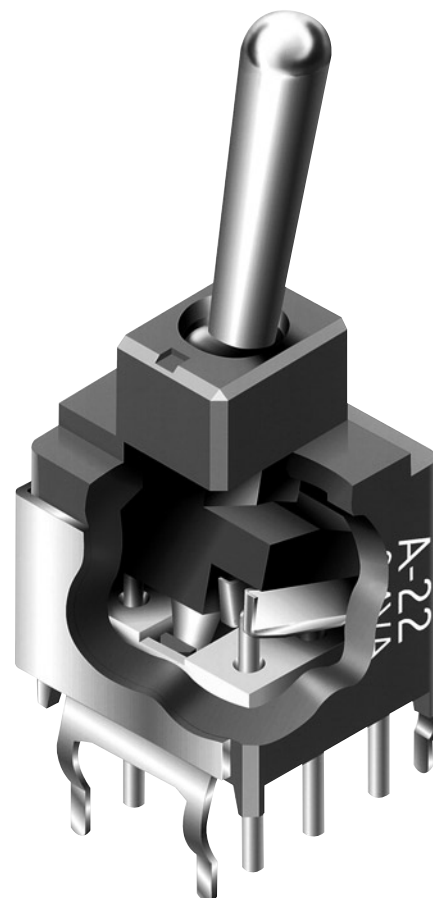
Award-winning STC contact mechanism with benefits unavailable in conventional mechanisms: smoother, positive detent actuation, increased contact stability and unparalleled logic-level reliability. (Additional STC details in Terms & Acronyms; see Supplement contents.)

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

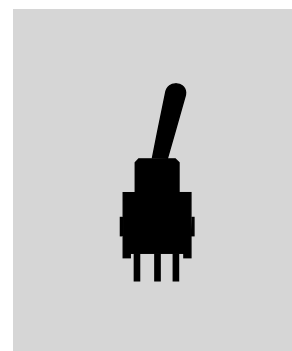
.100" x .100" (2.54mm x 2.54mm) terminal spacing conforms to standard PC board grid spacing.

Toggle option in antistatic material available for dissipating electrostatic discharges.

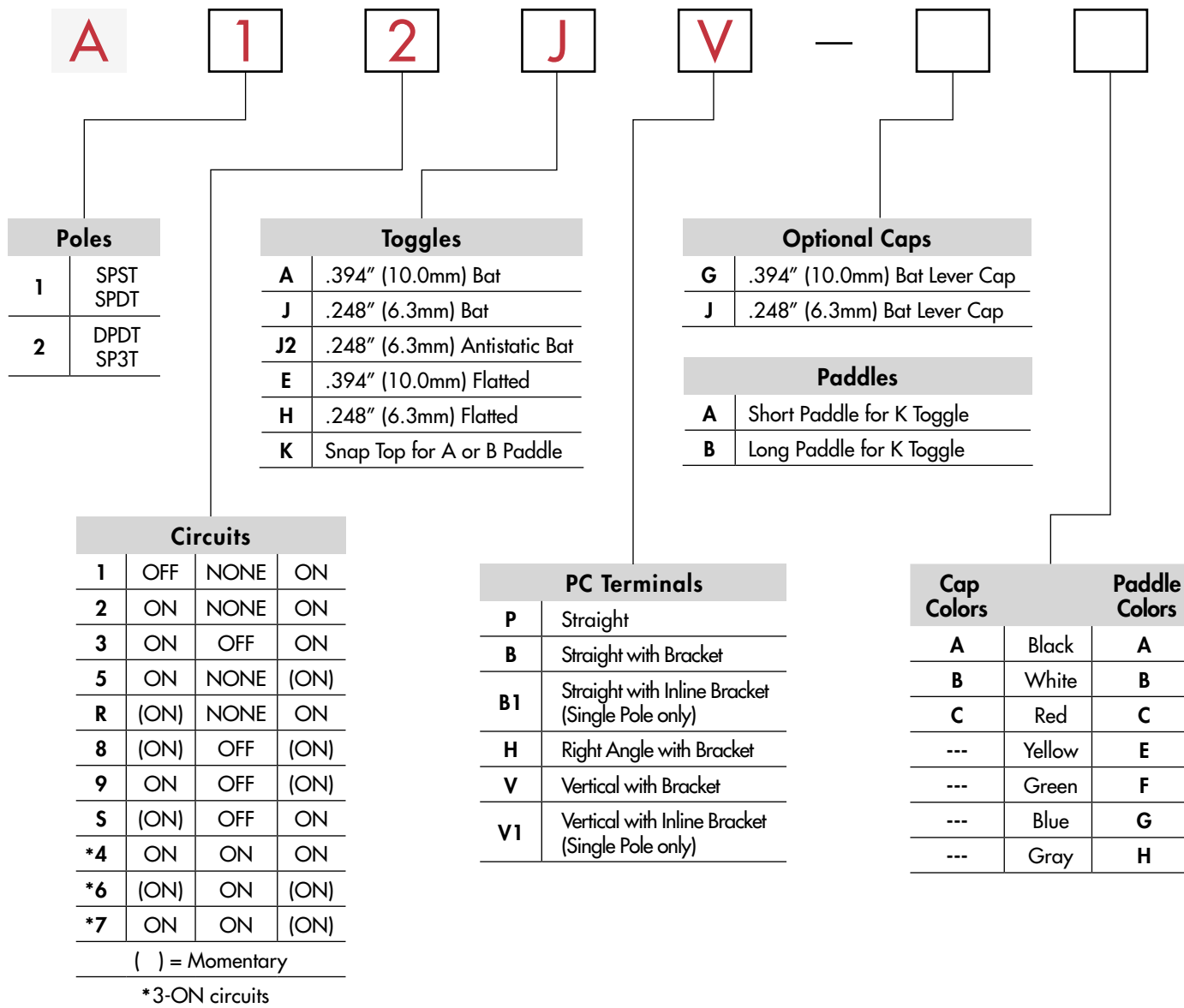
Matching indicators available.



Actual Size

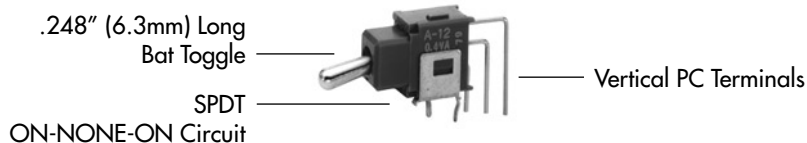


### TYPICAL SWITCH ORDERING EXAMPLE

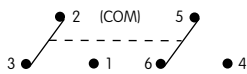


### DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

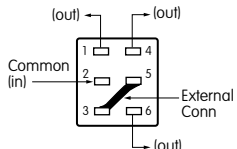
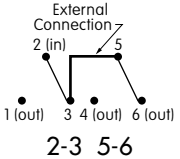
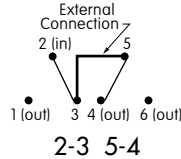
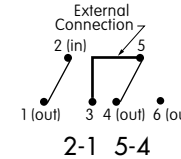
**A12JV**



## 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   | A11   | OFF                                                                                     | NONE                                                                                        | ON                                                                                        | OPEN                                                                                    | OPEN                                                                                        | 3-1                                                                                       | SPST<br> |
| SP   | A12   | ON                                                                                      | NONE                                                                                        | ON                                                                                        | 2-3                                                                                     | OPEN                                                                                        | 2-1                                                                                       | SPDT<br> |
|      | A13   | ON                                                                                      | OFF                                                                                         | ON                                                                                        |                                                                                         |                                                                                             |                                                                                           |                                                                                             |
|      | A15   | ON                                                                                      | NONE                                                                                        | (ON)                                                                                      |                                                                                         |                                                                                             |                                                                                           |                                                                                             |
|      | A1R   | (ON)                                                                                    | NONE                                                                                        | ON                                                                                        |                                                                                         |                                                                                             |                                                                                           |                                                                                             |
|      | A18   | (ON)                                                                                    | OFF                                                                                         | (ON)                                                                                      |                                                                                         |                                                                                             |                                                                                           |                                                                                             |
|      | A19   | ON                                                                                      | OFF                                                                                         | (ON)                                                                                      |                                                                                         |                                                                                             |                                                                                           |                                                                                             |
|      | A1S   | (ON)                                                                                    | OFF                                                                                         | ON                                                                                        |                                                                                         |                                                                                             |                                                                                           |                                                                                             |
| DP   | A22   | ON                                                                                      | NONE                                                                                        | ON                                                                                        | 2-3 5-6                                                                                 | OPEN                                                                                        | 2-1 5-4                                                                                   | DPDT<br> |
|      | A23   | ON                                                                                      | OFF                                                                                         | ON                                                                                        |                                                                                         |                                                                                             |                                                                                           |                                                                                             |
|      | A25   | ON                                                                                      | NONE                                                                                        | (ON)                                                                                      |                                                                                         |                                                                                             |                                                                                           |                                                                                             |
|      | A2R   | (ON)                                                                                    | NONE                                                                                        | ON                                                                                        |                                                                                         |                                                                                             |                                                                                           |                                                                                             |
|      | A28   | (ON)                                                                                    | OFF                                                                                         | (ON)                                                                                      |                                                                                         |                                                                                             |                                                                                           |                                                                                             |
|      | A29   | ON                                                                                      | OFF                                                                                         | (ON)                                                                                      |                                                                                         |                                                                                             |                                                                                           |                                                                                             |
|      | A2S   | (ON)                                                                                    | OFF                                                                                         | ON                                                                                        |                                                                                         |                                                                                             |                                                                                           |                                                                                             |

For 3 Throw (3-on)

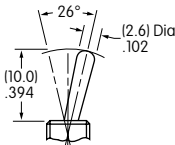
| Connected Terminals & Schematics |       |                                                                                                    |                                                                                                    |                                                      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

## TOGGLES

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

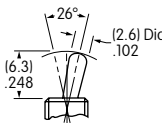
**A**

.394" (10.0mm) Bat



**J**

.248" (6.3mm) Bat

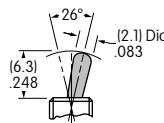


**J2**

.248" (6.3mm) Antistatic Bat

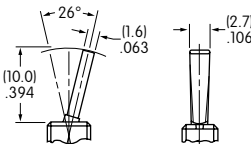
Dissipating 20Kv ESD: Straight PC

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



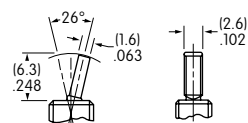
**E**

.394" (10.0mm) Flatted



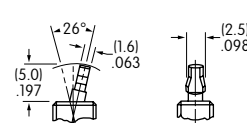
**H**

.248" (6.3mm) Flatted



**K**

Snap Top for Paddles



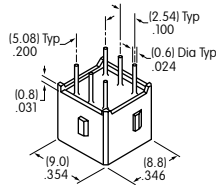
A  
Toggles  
Rocker  
Pushbuttons  
Illuminated PB  
Programmable  
Keylocks  
Rotaries  
Slides  
Tactiles  
Tilt  
Touch  
Indicators  
Accessories  
Supplement

### PC TERMINALS

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

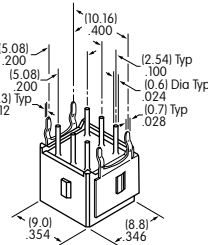
**P**

**Straight**



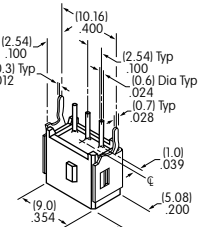
**B**

**Straight with Bracket**



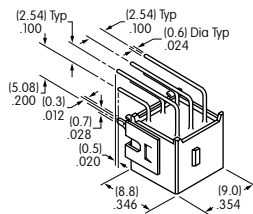
**B1**

**Straight with Inline Bracket  
Single Pole only**



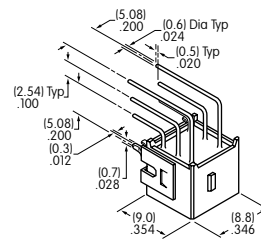
**H**

**Right Angle  
with Bracket**



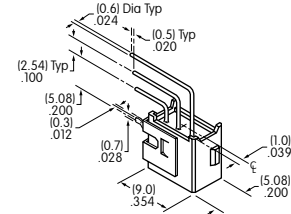
**V**

**Vertical with Bracket**



**V1**

**Vertical with Inline Bracket  
Single Pole only**

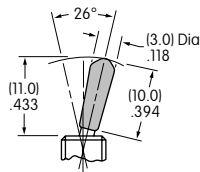


### CAPS & PADDLES

**G**

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

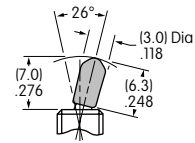
Material: PVC  
Colors Available:  
A, B, C



**J**

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

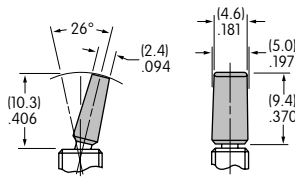
Material: PVC  
Colors Available:  
A, B, C



**A**

**AT467  
Short Paddle**

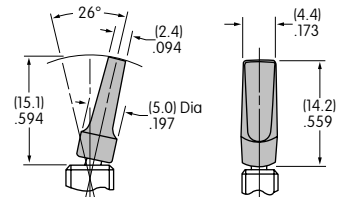
Material: Polyamide  
Colors Available:  
A, B, C, E, F, G, H



**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

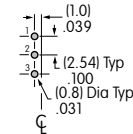
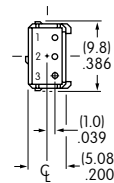
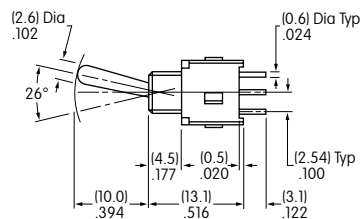
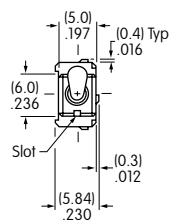
**H**

Gray

TYPICAL SWITCH DIMENSIONS

Single Pole

Straight PC

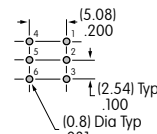
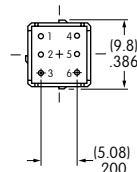
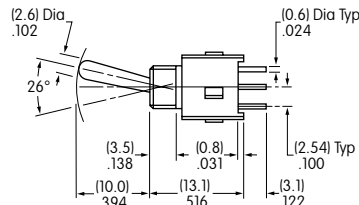
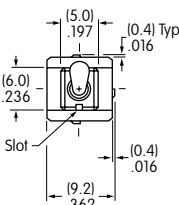


A11 models do not have Terminal 2

A12AP

Double Pole

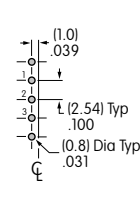
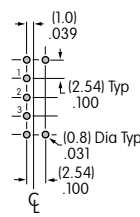
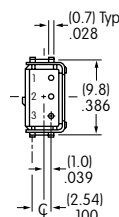
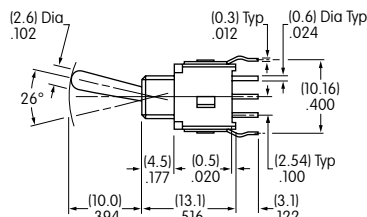
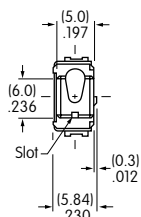
Straight PC



A22AP

Single Pole

Straight PC • Bracket



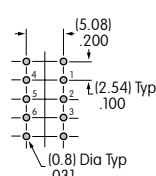
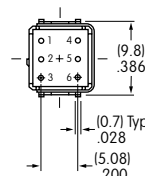
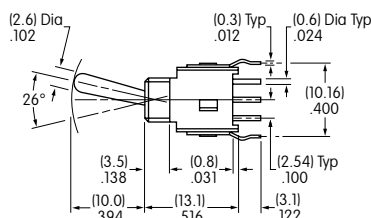
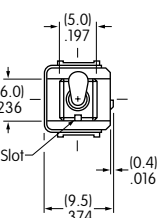
B Terminals

B1 Terminals

A12AB

Double Pole

Straight PC • Bracket



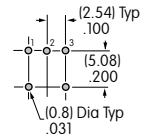
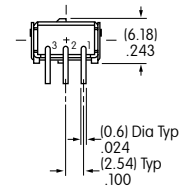
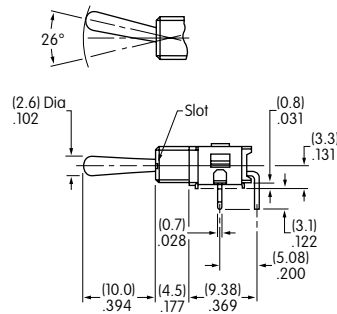
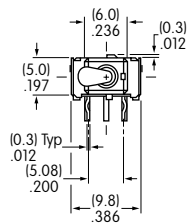
A22AB

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

### TYPICAL SWITCH DIMENSIONS

#### Right Angle PC

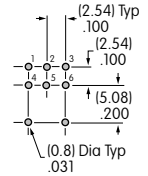
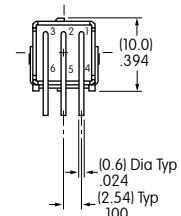
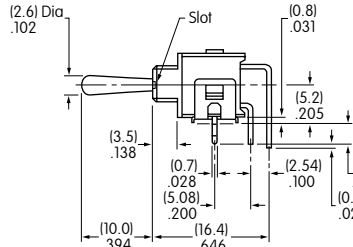
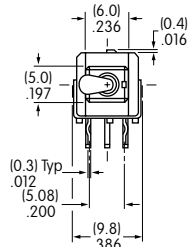
#### Single Pole



A12AH

#### Right Angle PC

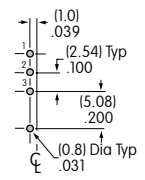
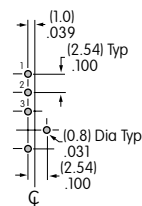
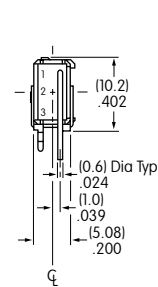
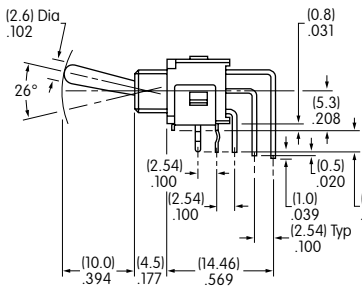
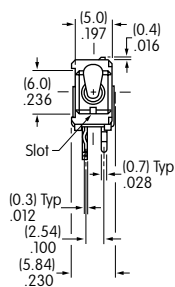
#### Double Pole



A22AH

#### Vertical PC

#### Single Pole



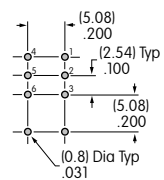
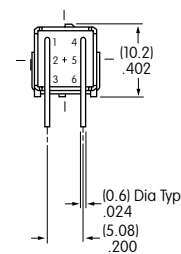
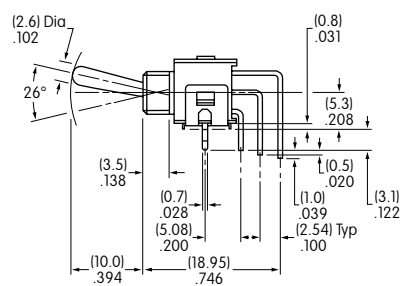
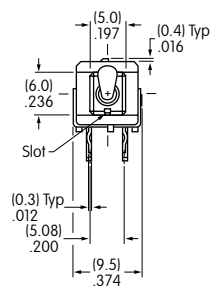
A12AV

V Terminals

V1 Terminals

#### Vertical PC

#### Double Pole



A22AV

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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