



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of "Quality Parts,Customers Priority,Honest Operation,and Considerate Service",our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



## Contact us

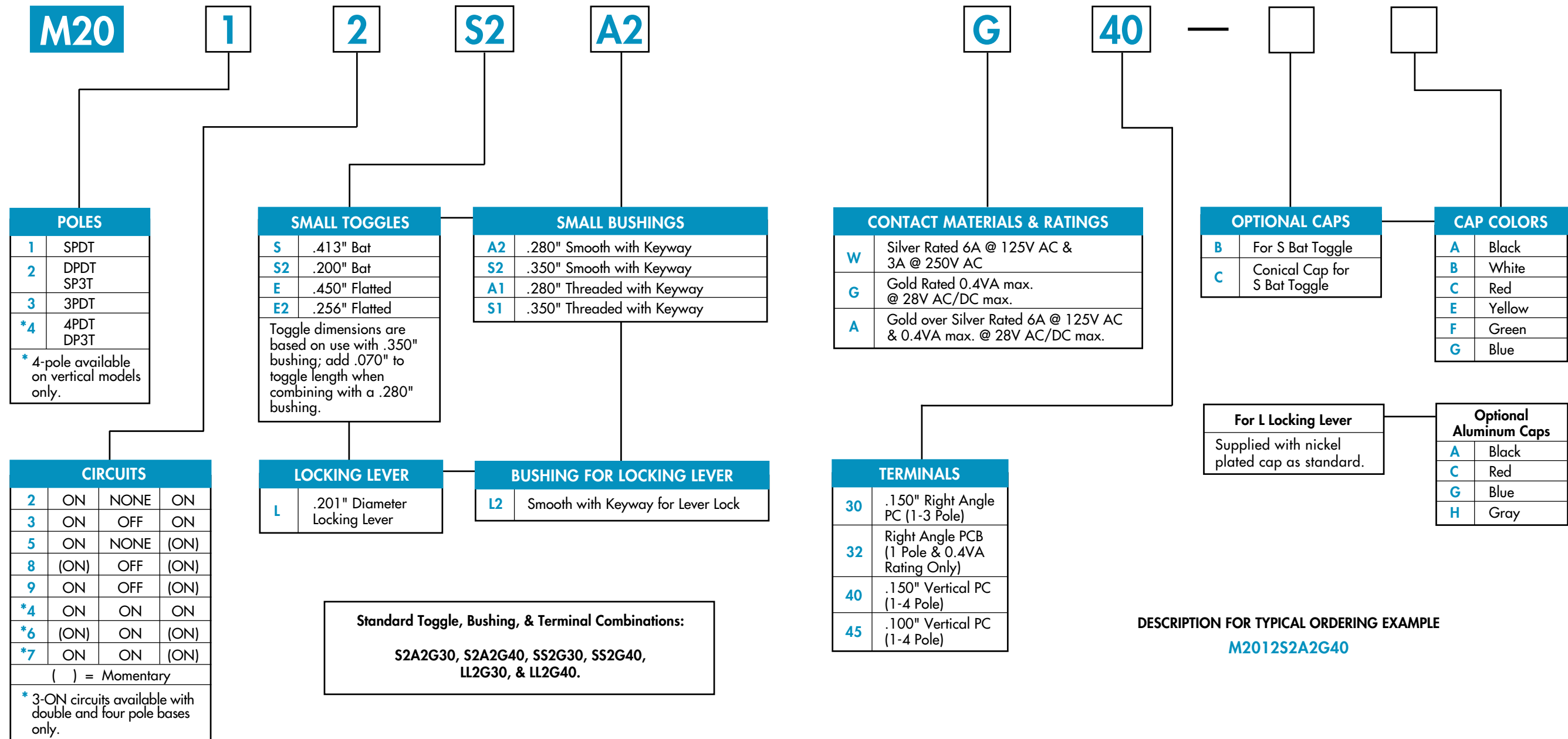
Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

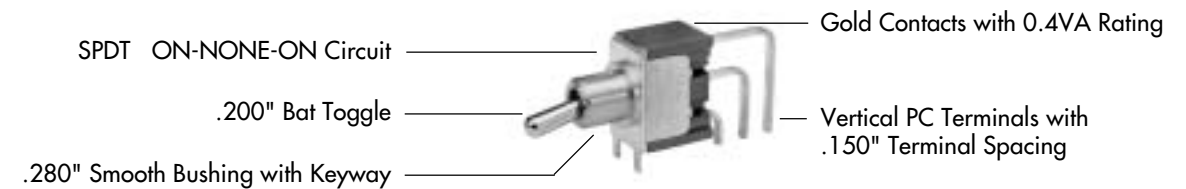
Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



TYPICAL SWITCH ORDERING EXAMPLE



**IMPORTANT:**  
Switches are supplied without UL & CSA marking unless specified. Specific models & ratings noted on General Specifications page.



### GENERAL SPECIFICATIONS

#### Electrical Capacity (Resistive Load)

- Power Level (code W):** 6A @ 125V AC & 3A @ 250V AC or  
4A @ 30V DC for On-None-On; 3A @ 30V DC for all other circuits
- Logic Level (code G):** 0.4VA maximum @ 28V AC/DC maximum
- Logic/Power Level (code A):** Combines W & G ratings
- Note: See Supplement Index (page Z1) to find explanation of dual rating and operating range.

#### Other Ratings

- Contact Resistance:** 10 milliohms maximum for silver; 20 milliohms maximum for gold
- Insulation Resistance:** 1,000 megohms minimum @ 500V DC
- Dielectric Strength:** 1,000V AC minimum between contacts; 1,500V AC minimum between contacts and case
- Mechanical Life:** 100,000 operations minimum;  
50,000 operations minimum for flat, locking, & splashproof devices
- Electrical Life:** 25,000 operations minimum for silver; 50,000 operations minimum for gold;  
50,000 operations minimum for silver at 3A @ 125V AC
- Nominal Operating Force:** 400 grams for Single Pole                      450 grams for Double Pole  
700 grams for Three Pole                                      800 grams for Four Pole
- Angle of Throw:** 25°

#### Materials & Finishes

- Toggle:** Brass with chrome plating
- Bushing:** Brass with nickel plating
- Frame:** Stainless steel
- Support Bracket:** Stainless steel with tin-lead plating
- Case:** Diallyl phthalate resin
- Movable Contact:** Phosphor bronze with silver or gold plating
- Movable Contacts:** Silver alloy (code W); copper with gold plating over nickel plating (code G); or  
silver alloy with gold plating over nickel plating (code A)
- Stationary Contacts:** Silver with silver plating (code W); copper or brass with gold plating  
over nickel plating (code G); or silver with gold plating over nickel plating (code A)
- Terminals:** Copper or brass with silver plating; or copper or brass with gold plating over nickel

#### Environmental Data

- Operating Temp 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 acceleration (tested in 6 right angled directions, with 5 shocks in each direction)

#### Installation

- Mounting Torque:** 15kgf/cm (13lb/in) for double nut; 7kgf/cm (6lb/in) for single nut
- Soldering Time & Temperature:** 3 seconds @ 350°C or 5 seconds @ 270°C
- Process Seal:** Not available

#### Standards & Certifications

- Flammability Standards:** UL94V-0 available
- UL Recognized:** All models recognized at 6A @ 125V AC or 3A @ 250V AC or  
0.4A maximum @ 28V DC maximum; UL File No. E44145
- CSA Certified:** All models certified at 6A @ 125V AC or 3A @ 250V AC or  
0.4VA @ 28V maximum; CSA File No. LR23535



### SMALL TOGGLES

**Important:**

Toggle length changes based on bushing selected. All illustrations are shown with .350" long bushing. When using a .280" long bushing, toggle length increases .070".

**Standard Material & Finish:**

Brass with Bright Chrome

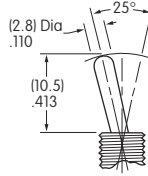
**Optional Finishes:**

Contact factory for satin chrome or black.

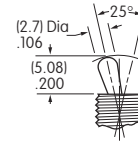
**Other Toggle Options:**

Contact factory for other toggle options.

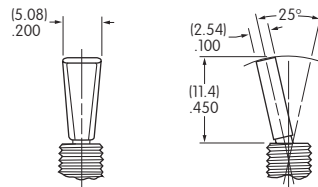
**S** .413" Bat



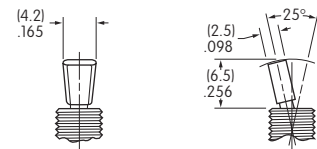
**S2** .200" Bat



**E** .450" Flatted

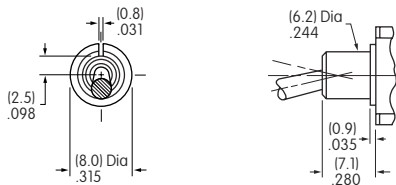


**E2** .256" Flatted

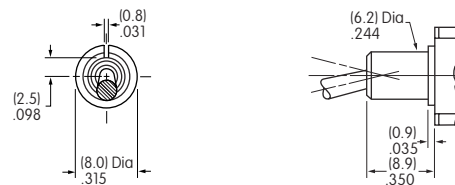


### SMALL BUSHINGS

**A2** .280" Smooth with Keyway

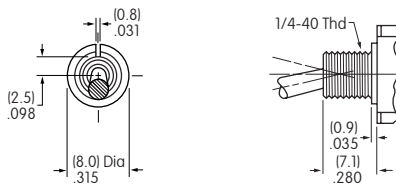


**S2** .350" Smooth with Keyway

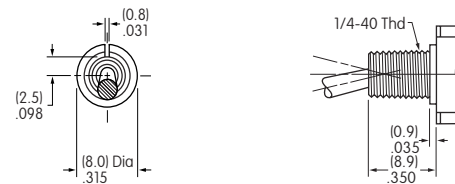


When using this bushing, toggle length is increased by .070".

**A1** .280" Threaded with Keyway



**S1** .350" Threaded with Keyway

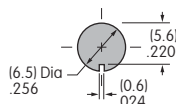


When using this bushing, toggle length is increased by .070".  
Max. Panel Thickness w/Standard Hardware: 0.8mm (.031")

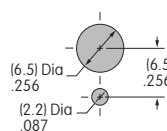
Max. Panel Thickness w/Standard Hardware: 2.6mm (.102")

### Panel Cutouts

For A2, S2, A1, or S1 Bushing with Keyway



For A1 or S1 Bushing with Locking Ring



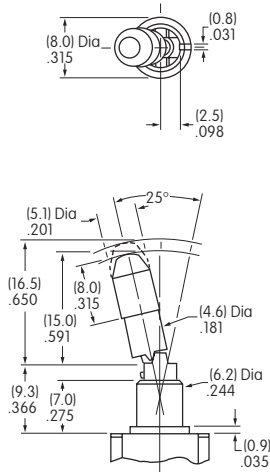
**Standard Hardware:**

- 2 Hex Nuts (AT513H)
- 1 Lockwasher (AT509)
- 1 Locking Ring (AT507H)

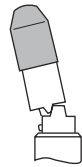
For dimensions, see page Y1.

### LOCKING LEVER & BUSHING

#### LL2 Smooth with Keyway



#### Cap for Locking Lever

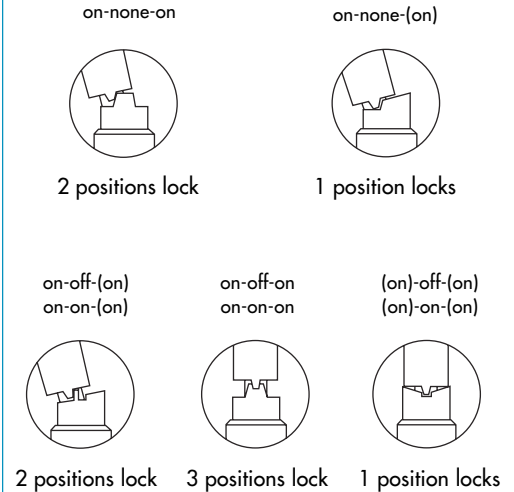


Supplied with Cap AT427  
**Cap Material:**  
 Brass with Nickel Plating  
**Lever Material & Finish:**  
 Brass with Chrome Plating

#### Color Codes for Optional Anodized Aluminum Caps

- |                |                                  |
|----------------|----------------------------------|
| <b>A</b> Black | <b>C</b> Red                     |
| <b>G</b> Blue  | <b>H</b> Gray (natural aluminum) |

#### Locking Mechanism



### CONTACT MATERIALS & RATINGS

**W** Silver over Silver      Power Level      **6A @ 125V AC & 3A @ 250V AC**

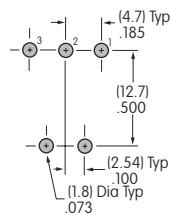
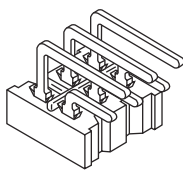
**G** Gold over Brass or Copper      Logic Level      **0.4VA maximum @ 28V AC/DC maximum**  
 Note: See Supplement Index (page Z1) to find complete explanation of operating range.

**A** Gold over Silver      Power Level or Logic Level      **6A @ 125V AC or 0.4VA maximum @ 28V AC/DC maximum**

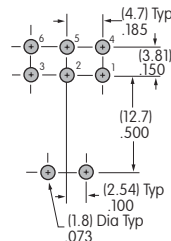
Note: This dual rated option is suitable when two or more identical switches are used in logic and in power circuits within the same application. See Supplement Index (page Z1) to find complete explanation of dual rating and operating range.

### TERMINALS

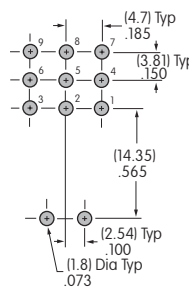
#### 30 .150" Right Angle PC (1-3 Pole)



Single Pole

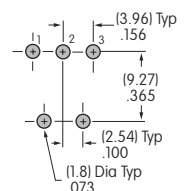
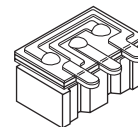


Double Pole



Three Pole

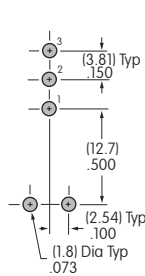
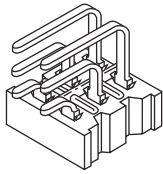
#### 32 Right Angle PCB with Reverse Circuit (1 Pole & 0.4VA Rating Only)



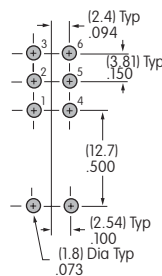
Terminal dimensions are shown on the Typical Switch Dimensions pages which follow.

### TERMINALS (Continued)

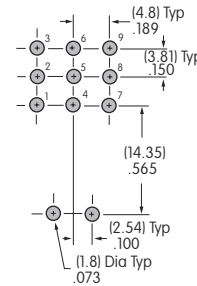
#### 40 .150" Vertical PC (1-4 Pole)



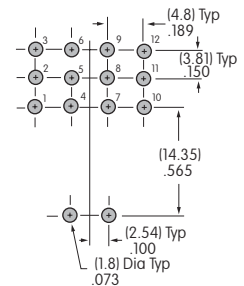
Single Pole



Double Pole

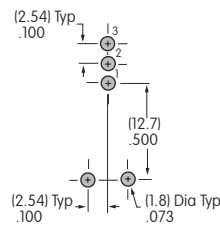
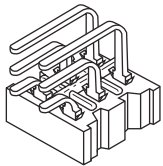


Three Pole

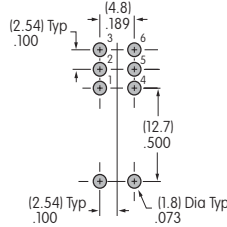


Four Pole

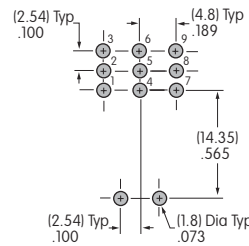
#### 45 .100" Vertical PC (1-4 Pole)



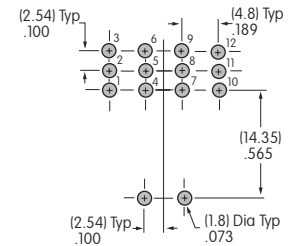
Single Pole



Double Pole



Three Pole



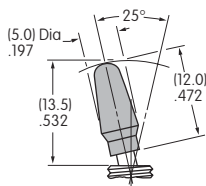
Four Pole

Terminal dimensions are shown on the Typical Switch Dimensions pages which follow.

### OPTIONAL CAPS & CAP COLORS

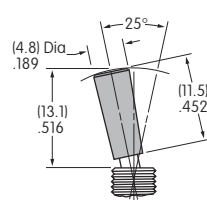
#### B AT415 For S Bat Toggle

Material: Polyethylene



#### C AT444 Conical Cap for S Bat Toggle

Material: Polyethylene

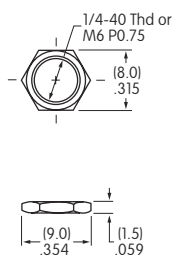


#### Colors Available

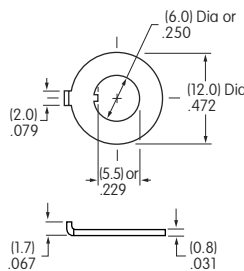
- |                |                 |
|----------------|-----------------|
| <b>A</b> Black | <b>E</b> Yellow |
| <b>B</b> White | <b>F</b> Green  |
| <b>C</b> Red   | <b>G</b> Blue   |

### STANDARD HARDWARE

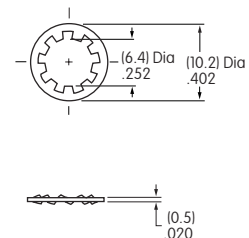
AT513H for Inch  
AT513M for Metric  
Hex Nut (2 per switch)  
Nickel/Brass



AT507H for Inch  
AT507M for Metric  
Locking Ring (1 per switch)  
Steel with Chromate/Zinc



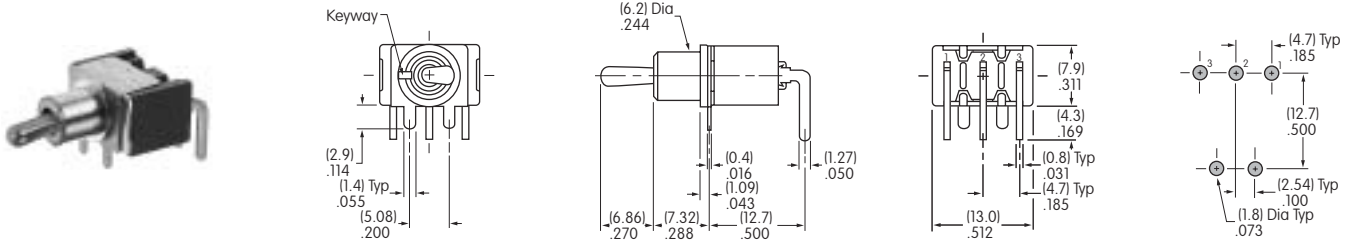
AT509  
Lockwasher (1 per switch, none with splashproof)  
Steel with Chromate/Zinc



### TYPICAL SWITCH DIMENSIONS

#### .150" Right Angle PC

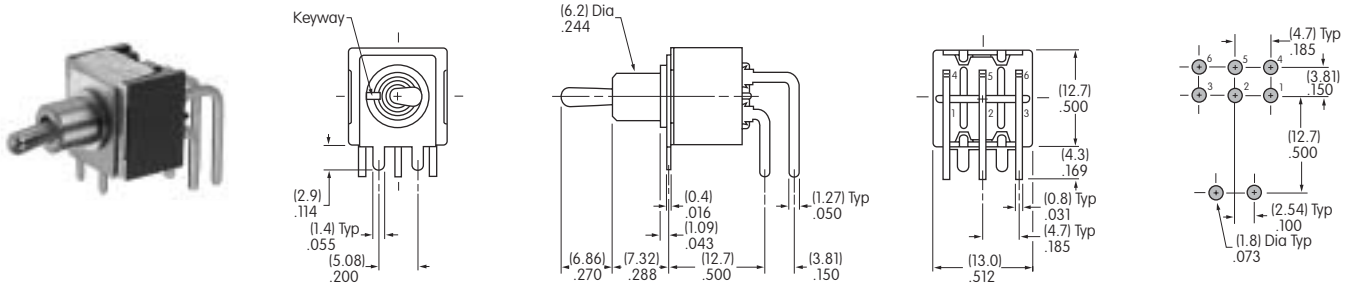
#### Single Pole



M2012S2A2G30

#### .150" Right Angle PC

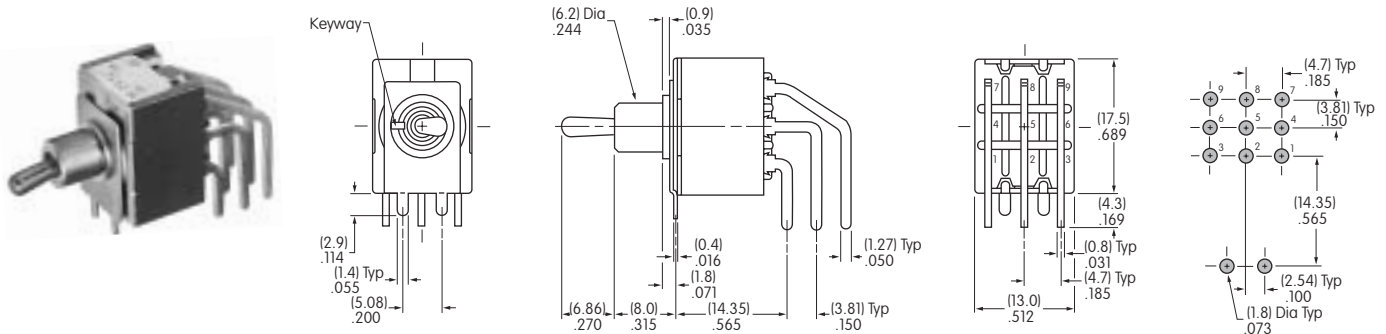
#### Double Pole



M2022S2A2G30

#### .150" Right Angle PC

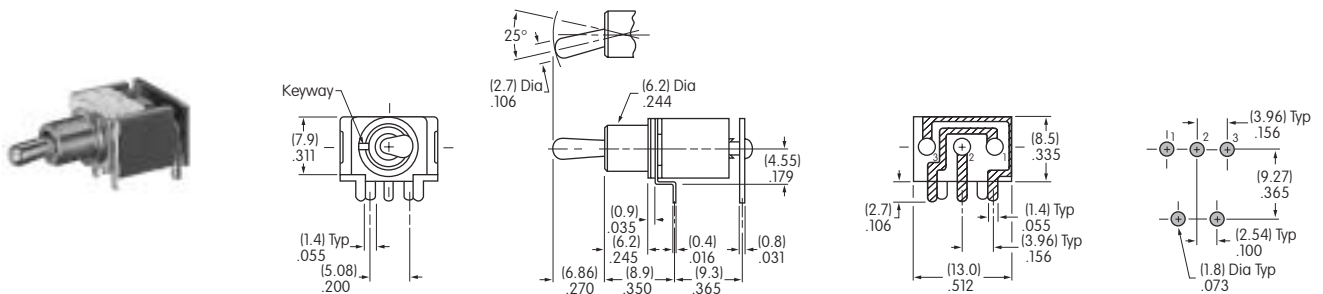
#### Three Pole



M2032S2A2G30

#### Right Angle PCB

#### Single Pole • Reverse Circuit

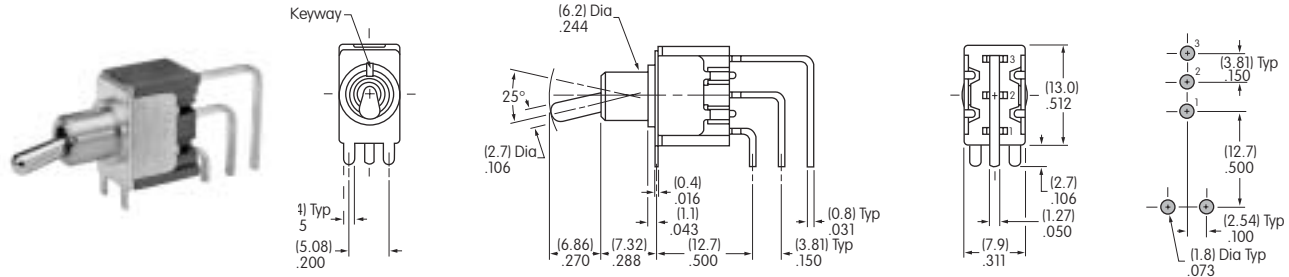


M2012S2A2G32

### TYPICAL SWITCH DIMENSIONS

#### .150" Vertical PC

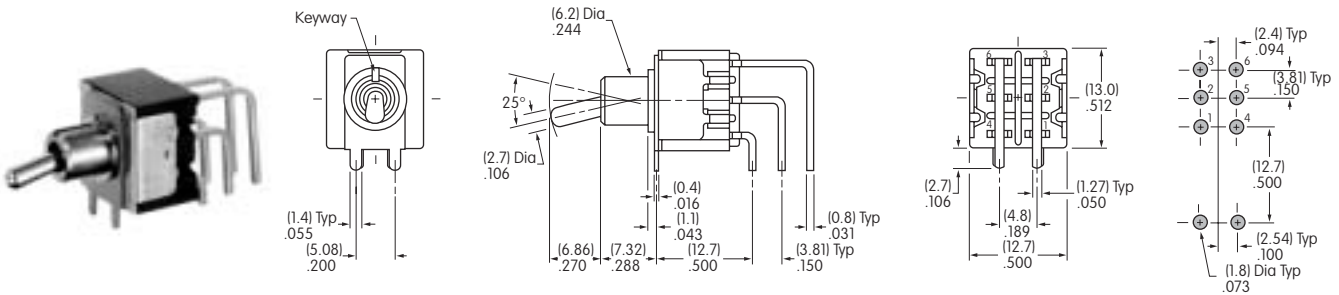
#### Single Pole



M2012S2A2G40

#### .150" Vertical PC

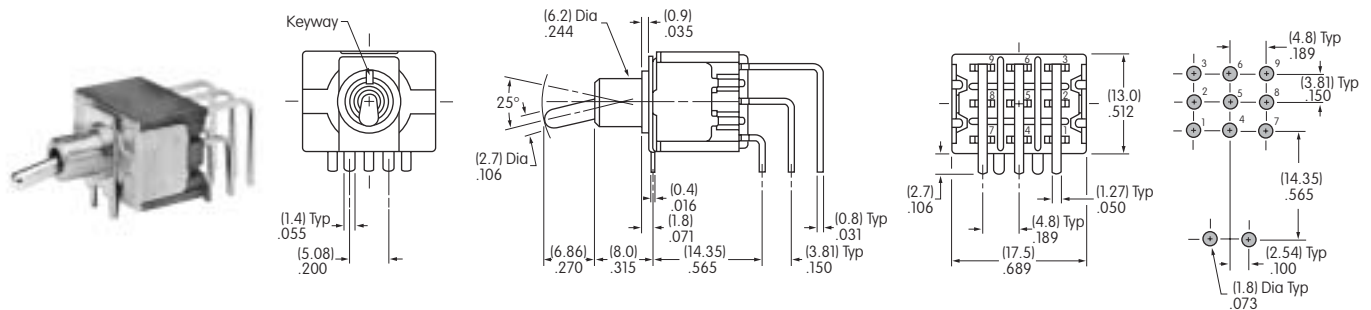
#### Double Pole



M2022S2A2G40

#### .150" Vertical PC

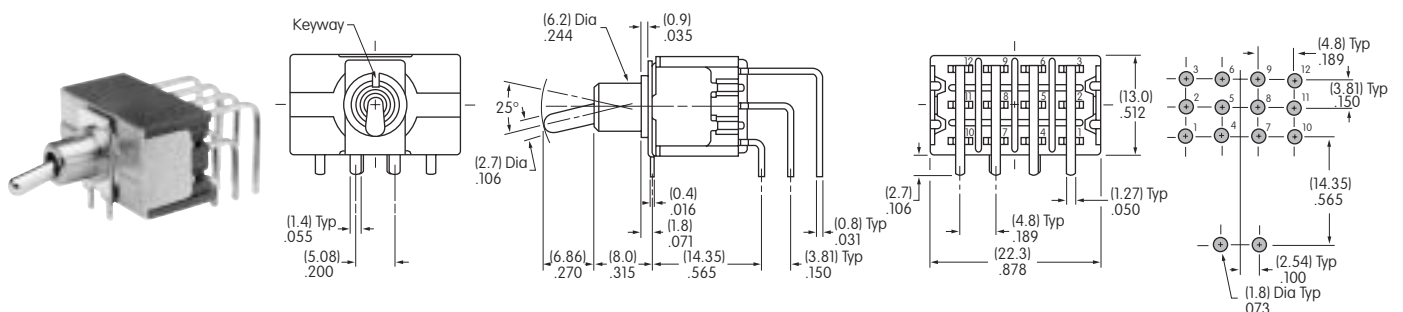
#### Three Pole



M2032S2A2G40

#### .150" Vertical PC

#### Four Pole

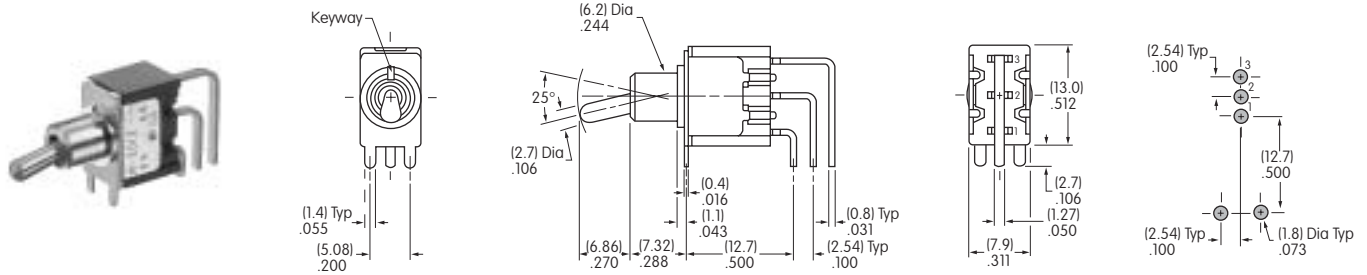


M2042S2A2G40

### TYPICAL SWITCH DIMENSIONS

#### .100" Vertical PC

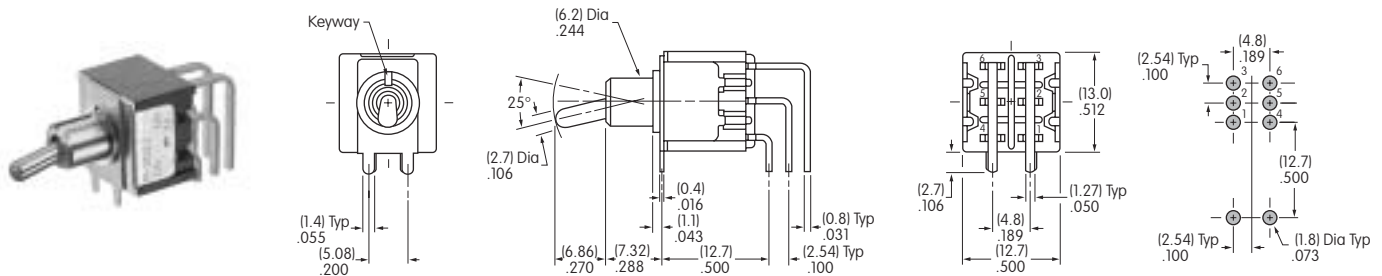
#### Single Pole



M2012S2A2G45

#### .100" Vertical PC

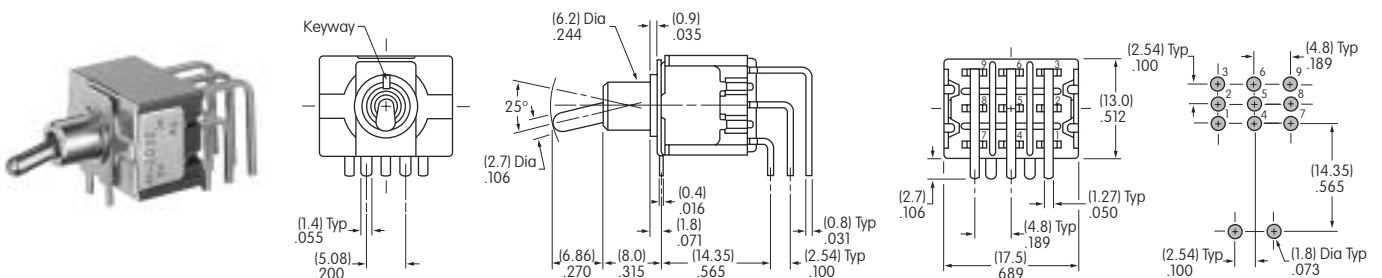
#### Double Pole



M2022S2A2G45

#### .100" Vertical PC

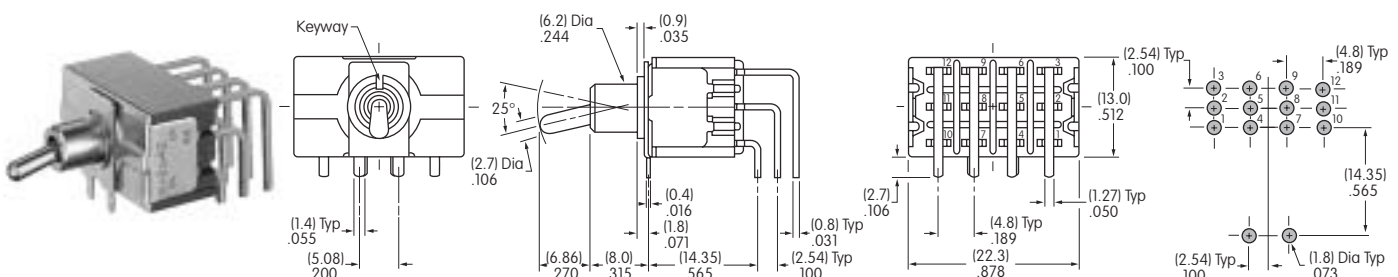
#### Three Pole



M2032S2A2G45

#### .100" Vertical PC

#### Four Pole



M2042S2A2G45