

# 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:** 1,000 megohms minimum @ 500V DC  
**Dielectric Strength:** 1,000V AC minimum between contacts for 1 minute minimum;  
1,500V AC minimum between contacts & case for 1 minute minimum

**Mechanical Life:** 200,000 operations minimum  
**Electrical Life:** 100,000 operations minimum  
**Nominal Operating Force:** Single Pole: 1.96N  
Double Pole: 2.94N  
**Travel:** Pretravel .020" (0.5mm); Overtravel .020" (0.5mm); Total Travel .039" (1.0mm)

## Materials & Finishes

**Plunger:** Brass with nickel plating  
**Bushing:** Brass with nickel plating  
**Frame:** Stainless steel  
**Case:** Glass fiber reinforced polyamide  
**Movable Contacts:** Copper with gold plating  
**Stationary Contacts:** Phosphor bronze with gold plating  
**Terminals:** Brass with gold plating

## Environmental Data

**Operating Temp Range:** -10°C through +70°C (+14°F through +158°F)  
**Humidity:** 90 ~ 95% humidity for 96 hours @ 40°C (104°F)  
**Vibration:** 10 ~ 55Hz with peak-to-peak amplitude of 1.5mm traversing the frequency range & returning in 1 minute; 3 right angled directions for 2 hours  
**Shock:** 50G (490m/s<sup>2</sup>) acceleration (tested in 6 right angled directions, with 5 shocks in each direction)

## Installation

**Mounting Torque:** 1.47Nm (13.0 lb•in) for double nut; 0.68Nm (6.0 lb•in) for single nut  
**Cap Installation Force:** 78.5N (17.65 lbf) maximum downward force on actuator

## PCB Processing

**Soldering:** Wave Soldering Recommended. See Profile A in Supplement section.  
Manual Soldering: See Profile B in Supplement section.  
**Cleaning:** These devices are not process sealed. Hand clean locally using alcohol based solution.

## Standards & Certifications

The DB Series pushbuttons have not been tested for UL recognition or CSA certification. These switches are designed for use in 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

Both PCB and panel mounting options available.

Choice of cap sizes in .315" (8.0mm) and .394" (10.0mm) diameter cap design for simple, snap-on installation.

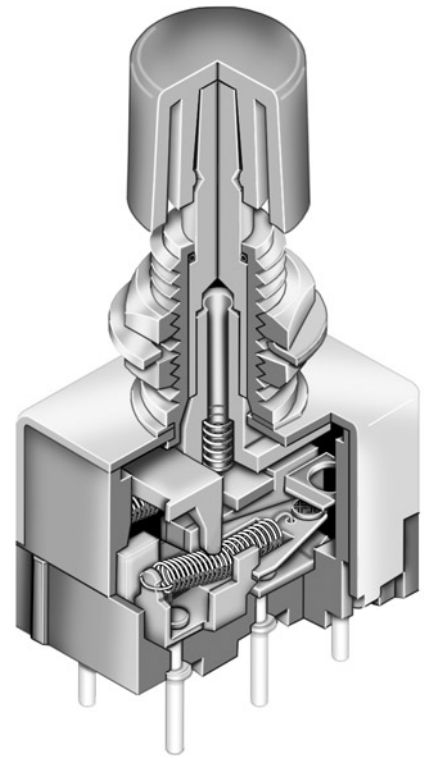
High torque bushing prevents rotation and separation from metal frame during installation.

Stainless steel frame resists corrosion.

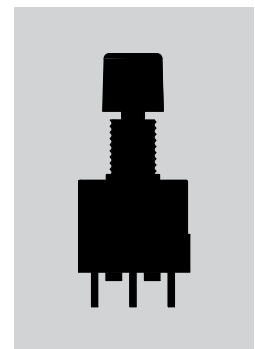
Snap action contacts give smooth actuation, short stroke, light touch, and audible feedback. This mechanism also provides long mechanical life.

Molded-in terminals prevent entry of solder flux, dust, and other contaminants.

.100" x .100" (2.54mm x 2.54mm) terminal spacing conforms to standard PC board grid spacing. Round terminals for easier through-hole mounting on PC boards.



Actual Size



Toggles

Rockers

**C** Pushbuttons

Illuminated PB

Programmable

Keylocks

Rotaries

Slides

Tactiles

Tilt

Touch

Indicators

Accessories

Supplement

### TYPICAL SWITCH ORDERING EXAMPLE

**DB25**

**21**

**B**

#### Poles & Circuits

<b>11</b>	SPDT	ON	(ON)
<b>21</b>	DPDT	ON	(ON)

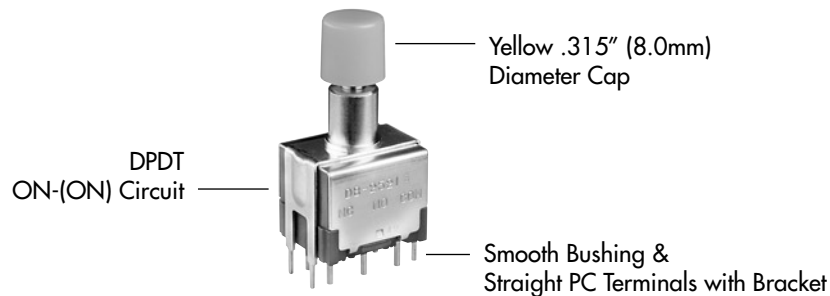
( ) = Momentary

#### PC Terminals

Threaded Bushing	
<b>P</b>	Straight
Smooth Bushing	
<b>B</b>	Straight with Bracket
<b>H</b>	Right Angle with Bracket
<b>V</b>	Vertical with Bracket

### DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

**DB2521B with AT443E Cap**

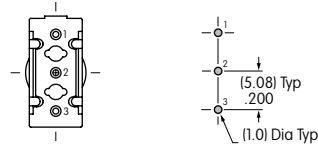
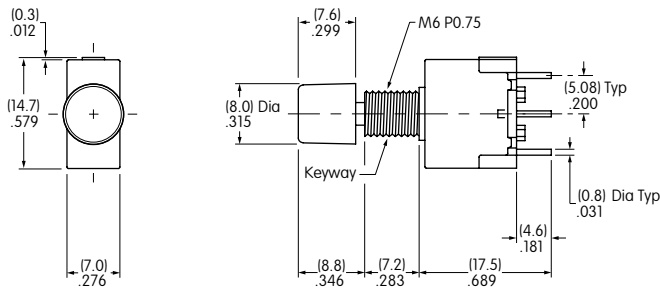


### POLES & CIRCUITS

		Plunger Position ( ) = Momentary		Connected Terminals		Throw & Switch Schematics
Pole	Model	Normal	Down	Normal	Down	
SP	DB2511	ON	(ON)	3-1	3-2	SPDT 
DP	DB2521	ON	(ON)	3-1 6-4	3-2 6-5	DPDT 

## TYPICAL SWITCH DIMENSIONS

### Single Pole

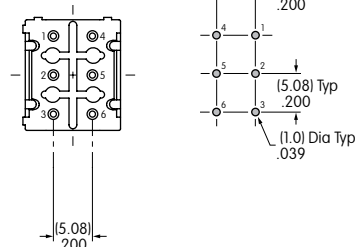
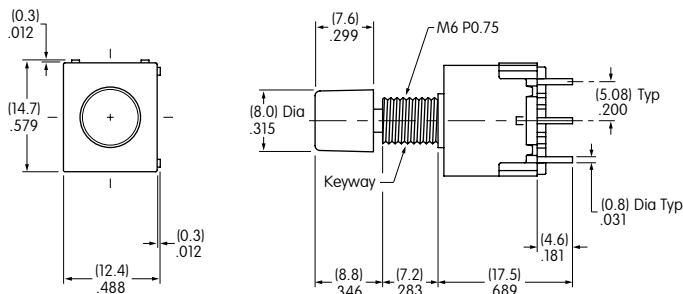


### Straight PC



DB2511P with AT443C

### Double Pole

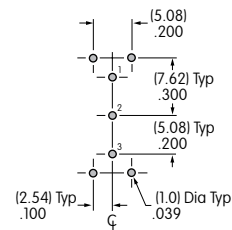
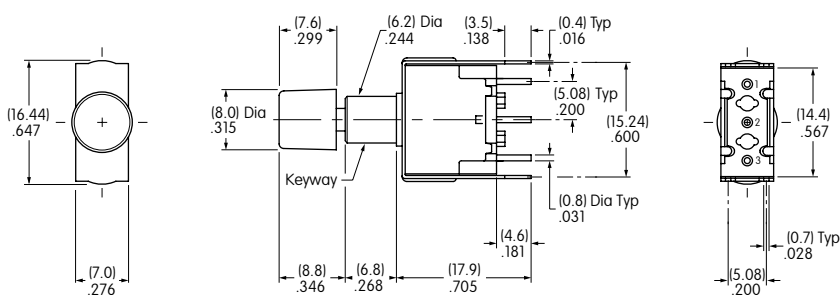


### Straight PC



DB2521P with AT442A

### Single Pole

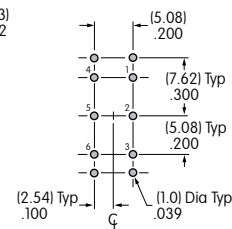
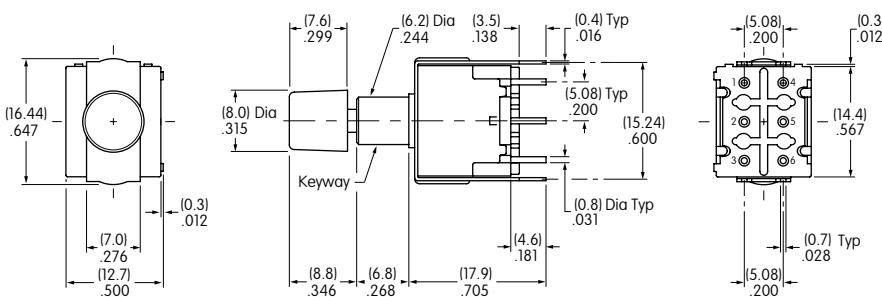


### Straight PC with Bracket



DB2511B with AT442C

### Double Pole



### Straight PC with Bracket

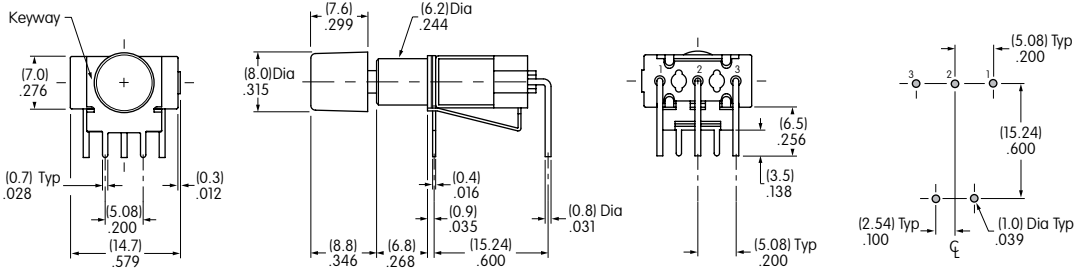
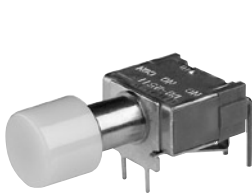


DB2521B with AT443E

## TYPICAL SWITCH DIMENSIONS

### Right Angle PC with Bracket

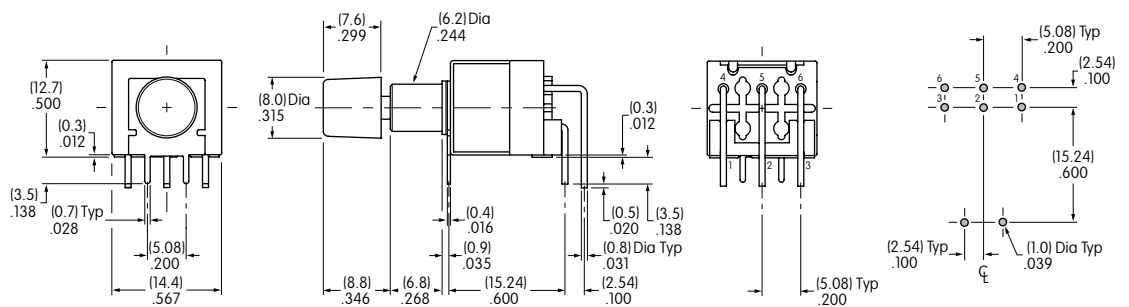
### Single Pole



DB2511H with AT442B

### Right Angle PC with Bracket

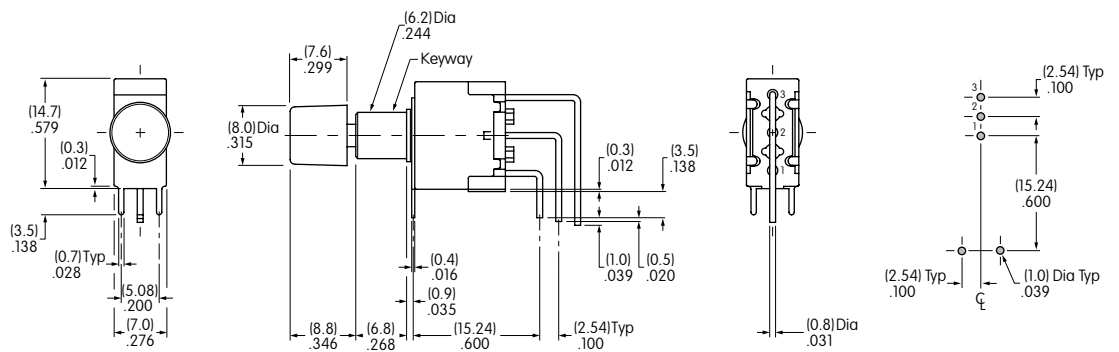
### Double Pole



DB2521H with AT442A

### Vertical PC with Bracket

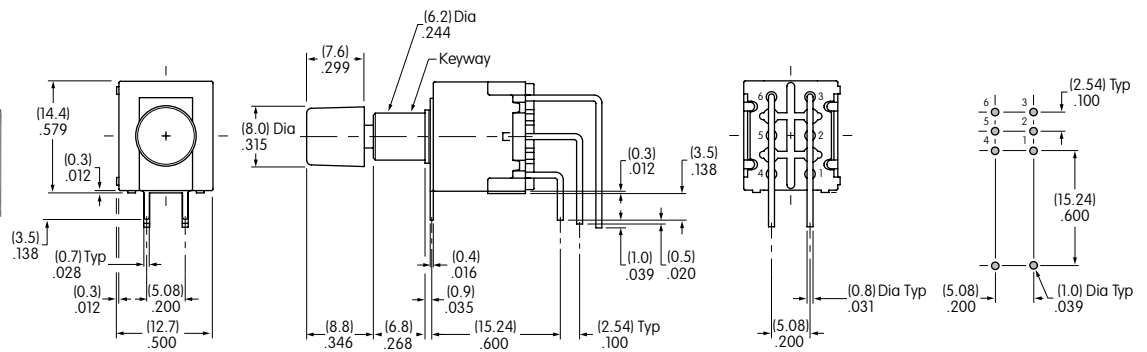
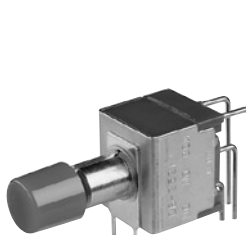
### Single Pole



DB2511V with AT443C

### Vertical PC with Bracket

### Double Pole



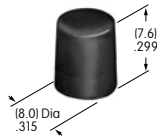
DB2521V with AT443C

## OPTIONAL CAPS & COLORS

### AT443 .315" (8.0mm) Diameter Snap-on Cap

Cap 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   |

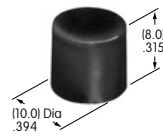


Cap Material: Polycarbonate Finish: Glossy

### AT442 .394" (10.0mm) Diameter Snap-on Cap

Cap 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   |



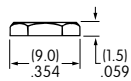
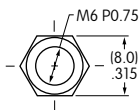
Cap Material: Polycarbonate Finish: Glossy

## HARDWARE

### Standard Hardware

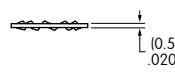
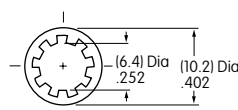
#### AT513M Metric Hexagon Nut

Material:  
Brass with  
Nickel Plating



#### AT509 Lockwasher

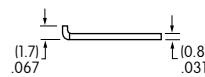
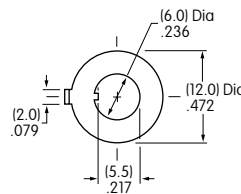
Material:  
Steel with  
Zinc/Chromate



### Optional Hardware

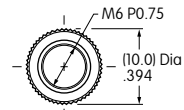
#### AT507M Metric Locking Ring

Material:  
Steel with  
Zinc/Chromate



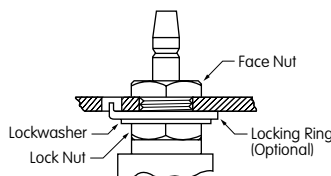
#### AT501M Metric Knurled Face Nut

Material:  
Brass with  
Chrome Plating



## INSTALLATION/ASSEMBLY

- 2 AT513M Metric Hexagon Nuts
- 1 AT509 Internal Tooth Lockwasher

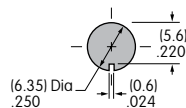


Optional Hardware:  
AT507M Metric Locking Ring

Note: Cap must be snapped on after the switch is mounted into the panel.

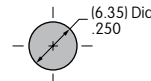
## PANEL CUTOUTS & THICKNESSES

### With Standard Hardware



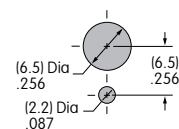
Maximum Effective Panel Thickness:  
.118" (3.0mm)

### Without Bottom Hex Nut



Maximum Effective Panel Thickness:  
.185" (4.7mm)

### With Standard Hardware & Optional Locking Ring



Maximum Effective Panel Thickness:  
.087" (2.2mm)