

Distinctive Characteristics

Base of heat resistant resin meets UL94V-0 flammability rating.

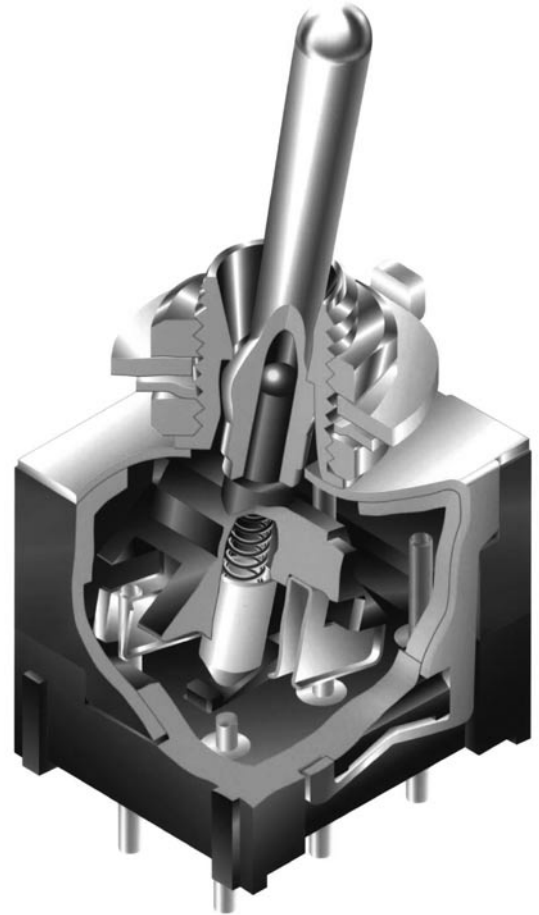
Maximized voltage capability of 48V allows use in medium source applications and increases operating life.

Award-winning STC contact mechanism with benefits unavailable in conventional mechanisms: smoother positive detent actuation, increased contact stability, and unparalleled reliability. (Additional STC details under Terms and Acronyms in Supplement section.)

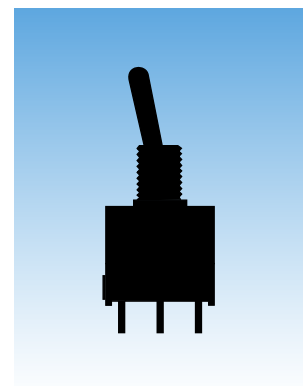
Round 0.8mm diameter PC terminals for easy PCB assembly.

Terminal spacing conforms to standard 2.54mm PC board grid spacing.

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



Actual Size



General Specifications

Electrical Capacity (Resistive Load)

Logic Level: 0.4VA maximum @ 48V AC/DC maximum
 (Applicable Range 0.1mA ~ 0.1A @ 20mV ~ 48V)
 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: 100,000 operations minimum for bat lever models
 50,000 operations minimum for locking lever models
Electrical Life: 50,000 operations minimum
Contact Timing: Nonshorting (break-before-make)
Angle of Throw: 24°

Materials & Finishes

Toggle/Lever: Brass with chrome plating
Bushing: Brass with nickel plating
Support Bracket: Straight PC: phosphor bronze with tin plating; right angle & vertical: brass with tin plating
Housing: Polybutylene terephthalate (PBT) (UL94V-0)
Base: 1- and 2-pole GFR polyamide (UL94V-0); 4-pole liquid crystal polymer (LCP) (UL94V-0)
Movable Contacts: Phosphor bronze with gold plating
Stationary Contacts: Brass 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 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/s²) acceleration (tested in 6 right angled directions, with 5 shocks in each direction)

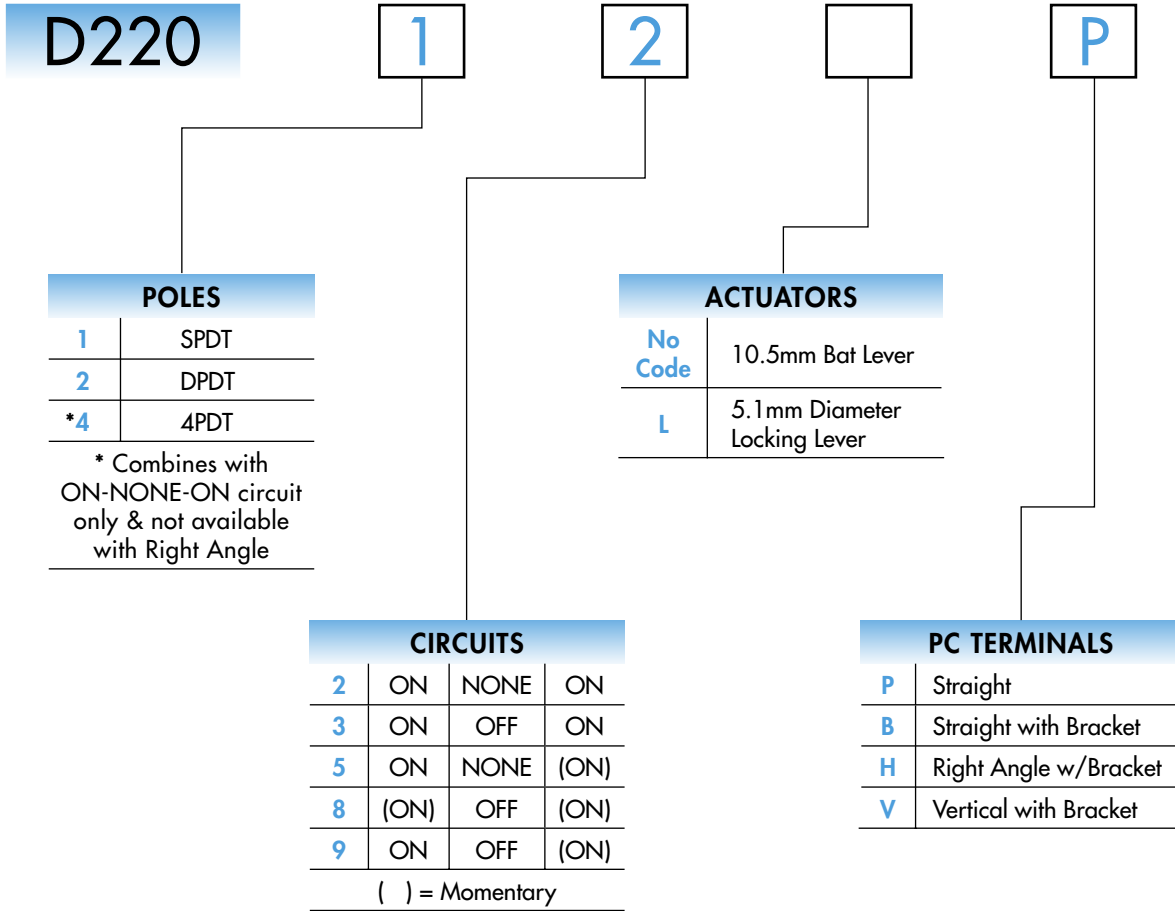
PCB Processing

Soldering: Wave Soldering recommended. See Profile A in Supplement section.
 Manual Soldering: 1- & 2-pole – 3 seconds maximum @ 350°C maximum;
 4-pole – 4 seconds maximum @ 410°C maximum.
Cleaning: Hand clean locally using alcohol based solution.
 See Cleaning specifications in Supplement section.

Standards & Certifications

Flammability Standards: UL94V-0 rated housing and base
UL Recognition or CSA Certification: The D2 Series toggles have not been tested for UL recognition or CSA certification.
 These switches are designed for use in a low-current, logic level circuit.
 When used as intended in a logic level circuit, the results do not produce hazardous energy.

TYPICAL SWITCH ORDERING EXAMPLE



DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

D22012P



POLES & CIRCUITS

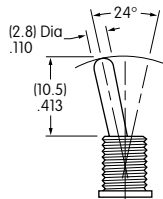
| Pole | Model | Toggle Position () = Momentary | | | Connected Terminals | | | Throw & Schematics |
|------|--|------------------------------------|-----------------------------------|----------------------------------|-------------------------------|--------|----------------------|--------------------|
| | | Down <small>Keyway</small> | Center | Up | Down <small>Keyway</small> | Center | Up | |
| SP | D22012 D22013 D22015 D22018 D22019 | ON ON ON (ON) ON | NONE OFF NONE OFF OFF | ON ON (ON) (ON) (ON) | 2-3 | OPEN | 2-1 | SPDT |
| DP | D22022 D22023 D22025 D22028 D22029 | ON ON ON (ON) ON | NONE OFF NONE OFF OFF | ON ON (ON) (ON) (ON) | 2-3 5-6 | OPEN | 2-1 5-4 | DPDT |
| 4P | D22042 | ON | NONE | ON | 2-3 5-6 8-9 11-12 | OPEN | 2-1 5-4 8-7 11-10 | 4PDT |

ACTUATORS

No Code

10.5mm
Bat Lever

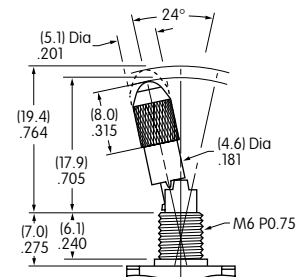
Material:
Chrome over brass



L

5.1mm Diameter
Locking Lever

Material:
Chrome over brass



PC TERMINALS

P

Straight



B

Straight with
Bracket



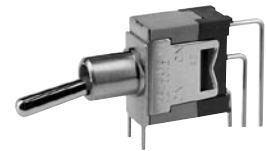
H

Right Angle
with Bracket



V

Vertical
with Bracket

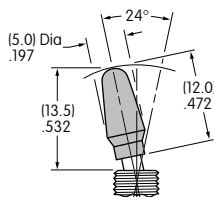


OPTIONAL CAPS & CAP COLORS

AT415
Bat Lever Cap

Material:
Polyethylene

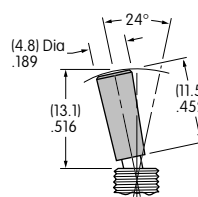
Colors Available:
A B C E F G



AT444 Bat Lever
Conical Cap

Material:
Polyethylene

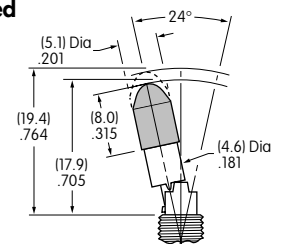
Colors Available:
A B C E F G



AT427 Cap Supplied
with Locking Lever

Material:
Aluminum

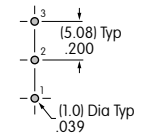
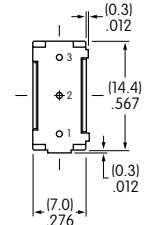
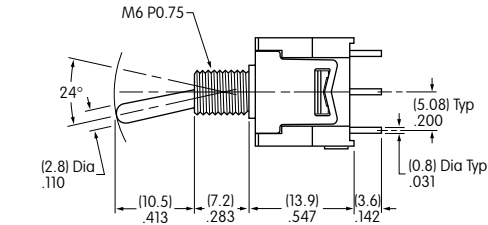
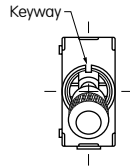
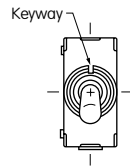
Colors Available:
A C G



Colors Codes: A Black B White C Red E Yellow F Green G Blue

TYPICAL SWITCH DIMENSIONS

Straight PC • Single Pole

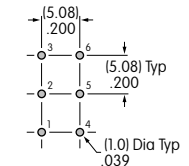
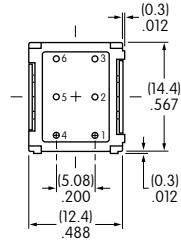
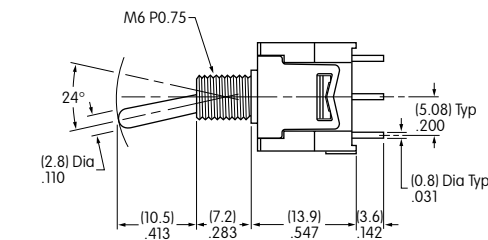
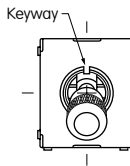
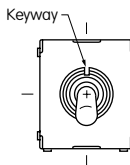


D22012P

D22012LP

Actuator in Down Position

Straight PC • Double Pole

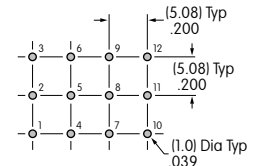
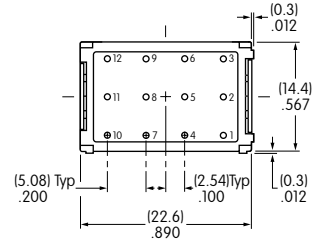
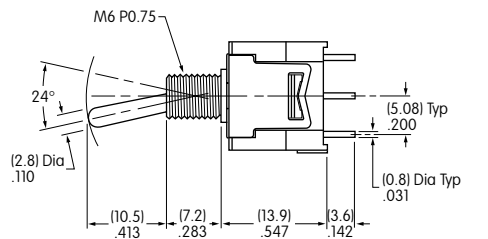
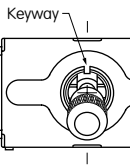
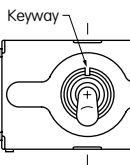
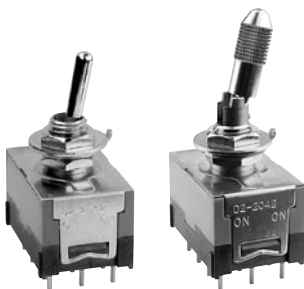


D22022P

D22022LP

Actuator in Down Position

Straight PC • Four Pole



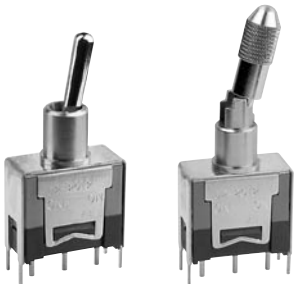
D22042P

D22042LP

Actuator in Down Position

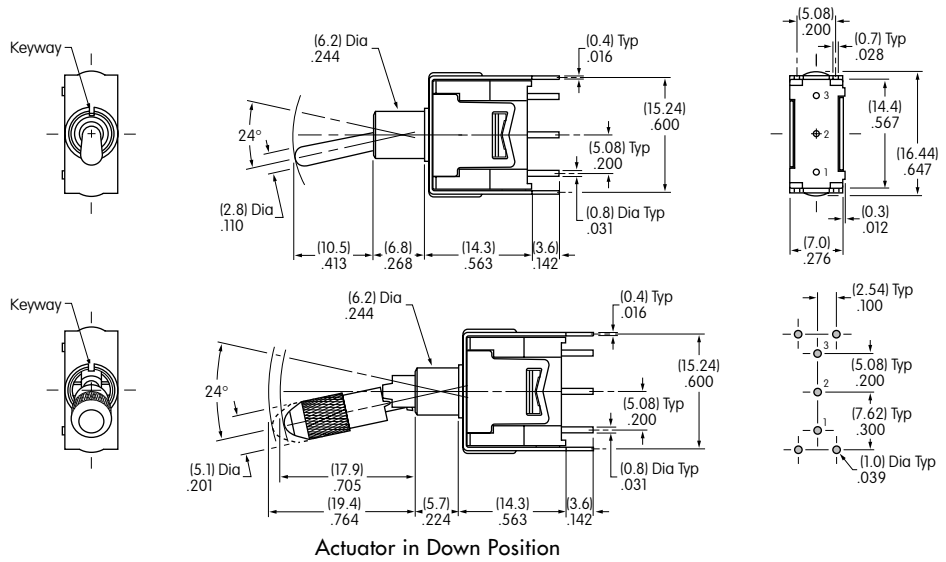
TYPICAL SWITCH DIMENSIONS

Straight PC • Bracket Single Pole

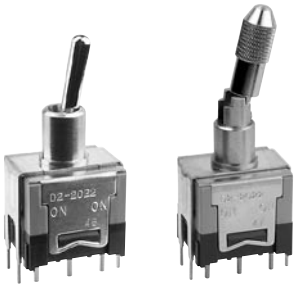


D22012B

D22012LB

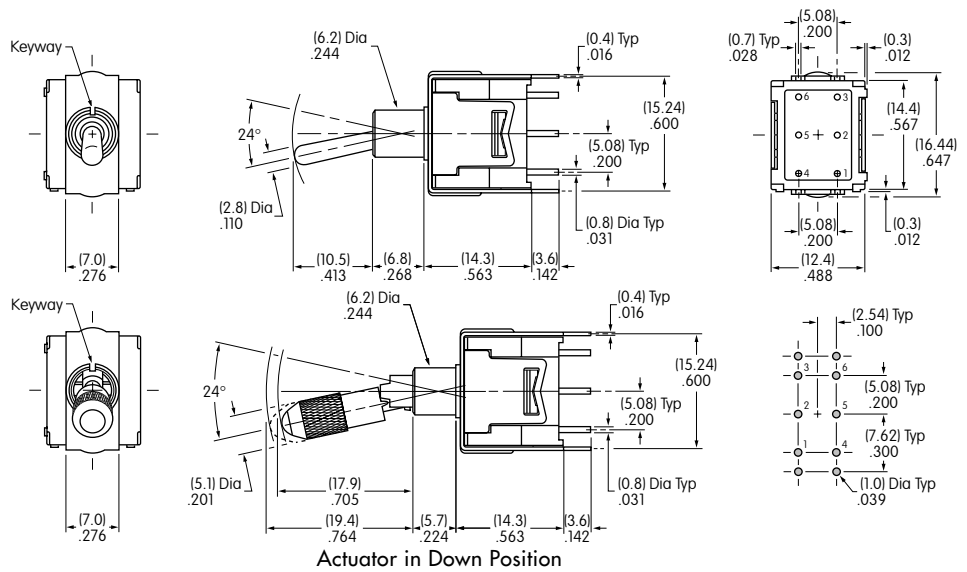


Straight PC • Bracket Double Pole

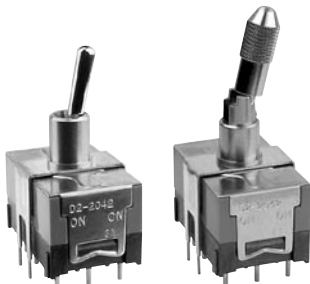


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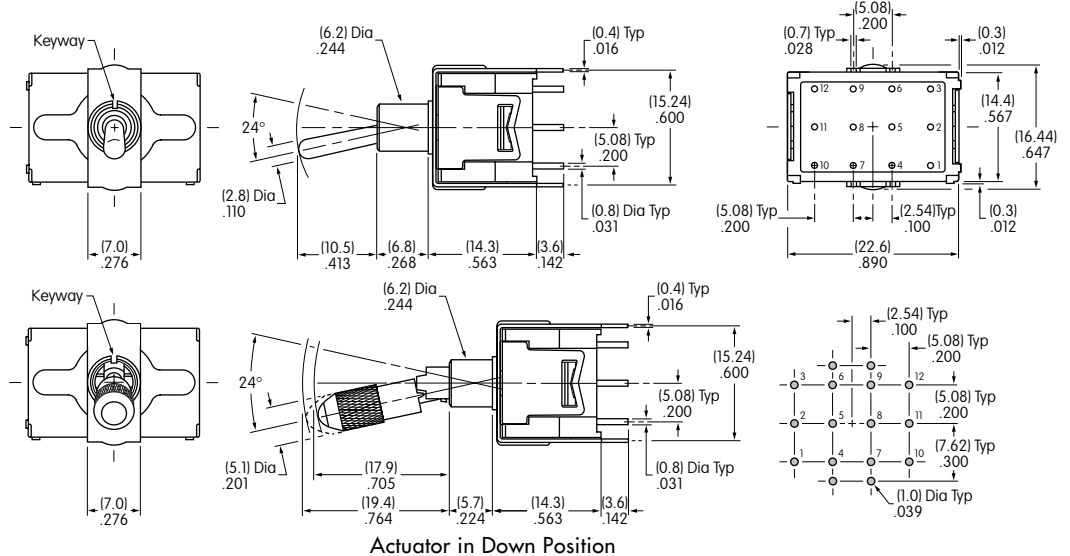


Straight PC • Bracket Four Pole



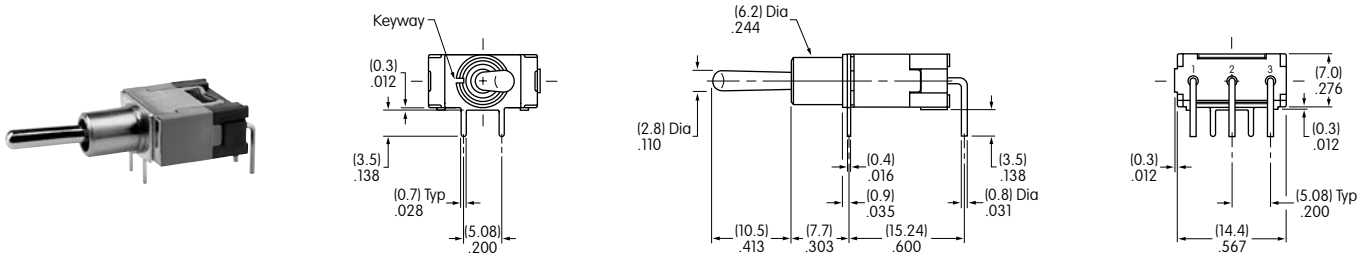
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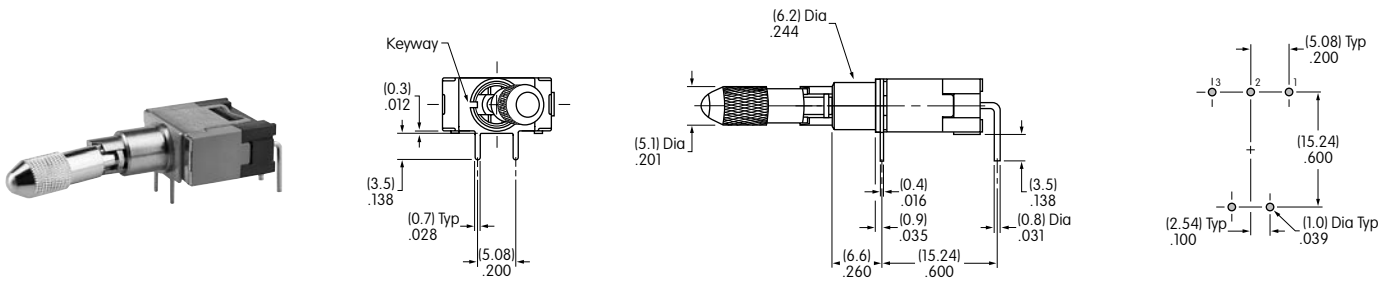


TYPICAL SWITCH DIMENSIONS

Right Angle PC • Single Pole



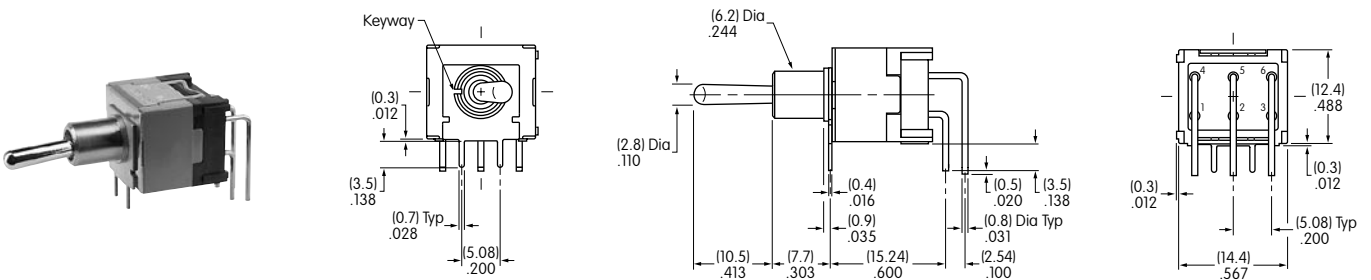
D22012H



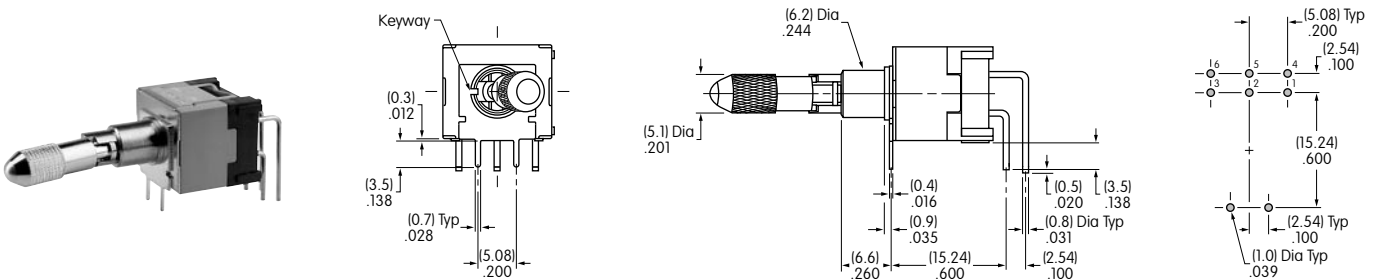
D22012LH

Actuator in Down Position

Right Angle PC • Double Pole



D22022H

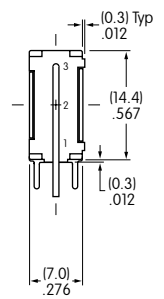
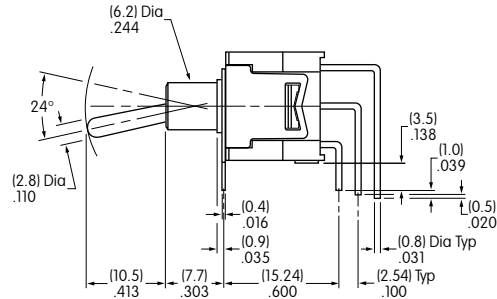
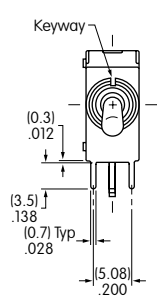
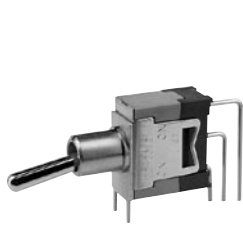


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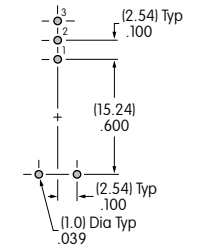
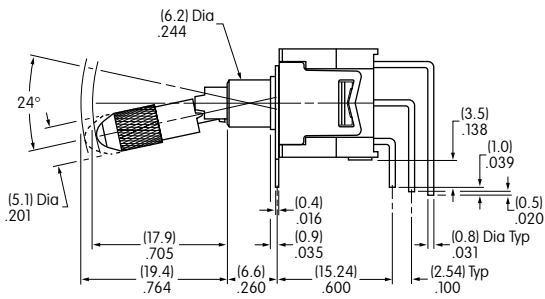
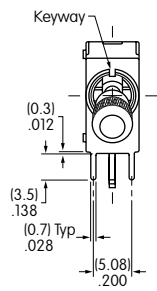
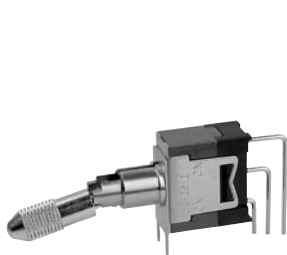
Actuator in Down Position

TYPICAL SWITCH DIMENSIONS

Vertical PC • Single Pole



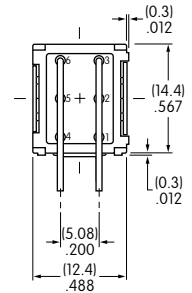
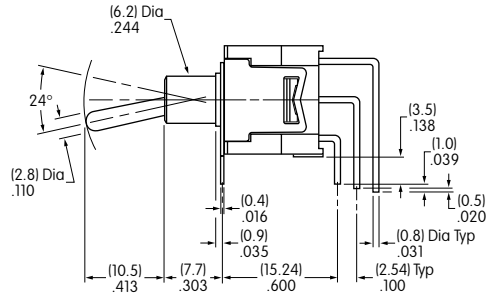
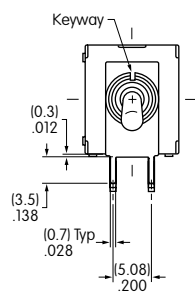
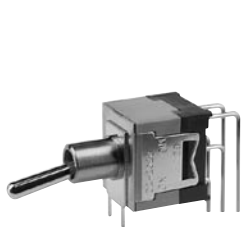
D22012V



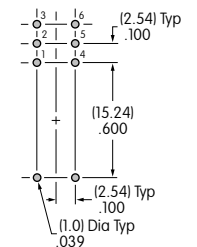
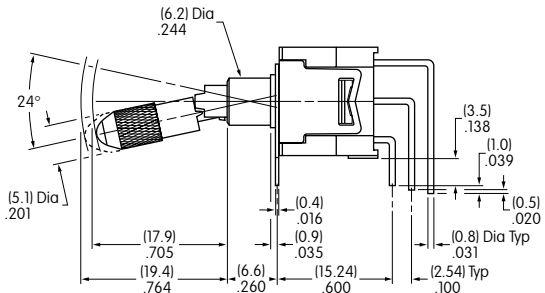
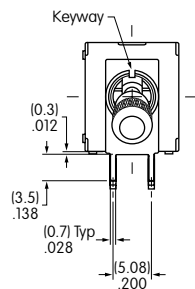
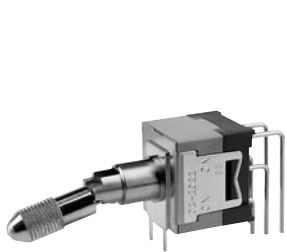
D22012LV

Actuator in Down Position

Vertical PC • Double Pole



D22022V

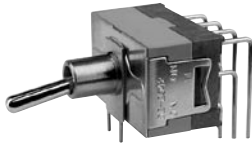


D22022LV

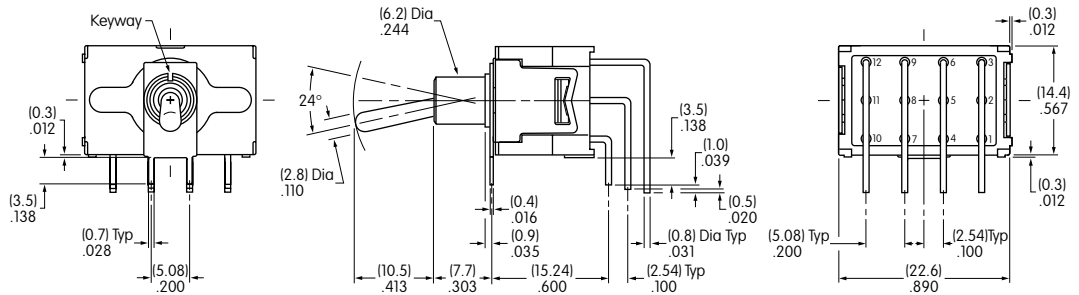
Actuator in Down Position

TYPICAL SWITCH DIMENSIONS

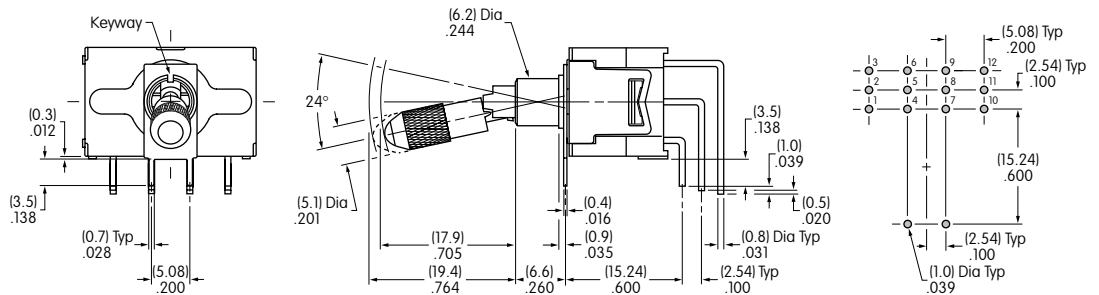
Vertical PC • Four Pole



D22042V



D22042LV



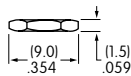
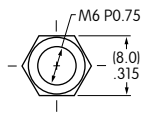
Actuator in Down Position

STANDARD HARDWARE

OPTIONAL

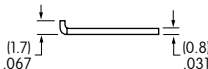
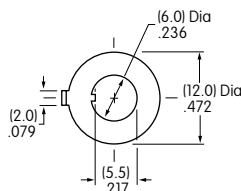
AT513M

Hex Nut
 Brass with nickel plating
 2 supplied



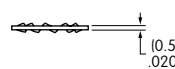
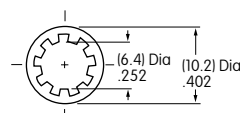
AT507M

Locking Ring
 Steel with zinc/chromate
 1 supplied



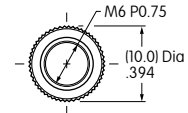
AT509

Lockwasher
 Steel with zinc/chromate
 1 supplied



AT501M

Knurled Face Nut
 Brass with chrome plating

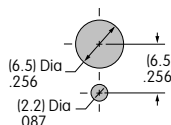


PANEL CUTOUTS & MAXIMUM PANEL THICKNESS

With Standard Hardware

2.2mm for Standard Lever

1.3mm for Locking Lever



Without Bottom Hex Nut

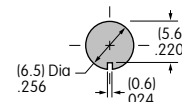
3.9mm for Standard Lever

2.8mm for Locking Lever

Without Locking Ring

3.0mm for Standard Lever

2.1mm for Locking Lever



Without Locking Ring & Bottom Hex Nut

4.7mm for Standard Lever

3.6mm for Locking Lever