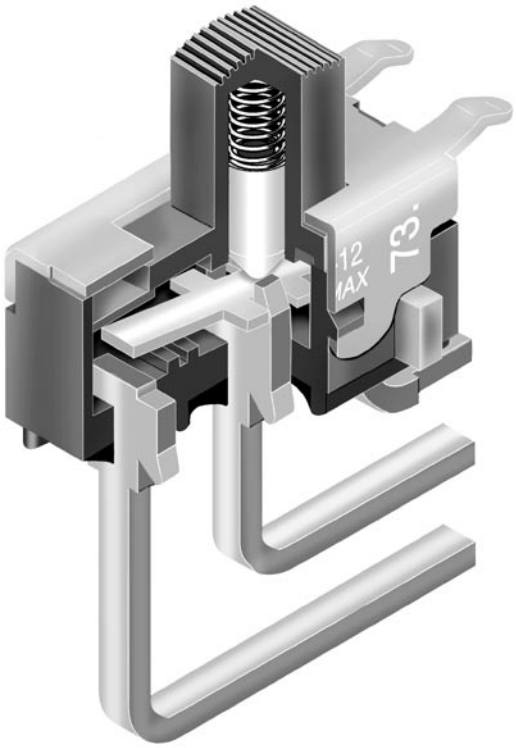
Distinctive Characteristics

Available in flat frame and bracketed PC mounting types.

Over-center actuator block and plunger design gives crisp actuation with clear indication of circuit status; this design also diminishes sparking and increases operating life.



Guide interlocked with actuator block prevents window locking and maintains correct plunger alignment to assure contact stability.

Antijamming design protects contacts from damage due to excessive downward force on the actuator.

High internal barriers between poles and insulating sheet between case and actuator block give added protection to contacts.

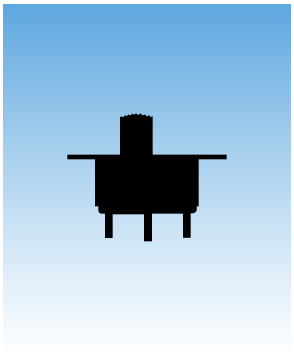
Specially composed silver alloy contacts for power applications or gold contacts for logic level applications give high contact reliability.

Prominent external insulating barriers increase insulation resistance and dielectric strength.

Epoxy sealed terminals prevent entry of flux, solvents, and other contaminants.

Clinching of frame to case well above base and terminals provides 1,500V dielectric strength.

Actual Size



General Specifications

Electrical Capacity (Resistive Load)

Power Level (code W): 6A @ 125V AC or 3A @ 250V AC

Logic Level (code G): 0.4VA maximum @ 28V AC/DC maximum
(Applicable Range 0.1mA ~ 0.1A @ 20mV ~ 28V)

Logic/Power Level (code A): Combines W & G ratings
Note: Find additional explanation of dual rating & operating range in Supplement section.

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 for 1 minute minimum;
1,500V AC minimum between contacts & case for 1 minute minimum

Mechanical Life: 100,000 operations minimum

Electrical Life: 25,000 operations minimum for silver; 50,000 operations minimum for gold

Contact Timing: Nonshorting (break-before-make)

Total Travel: On-None-On circuit .087" (2.2mm); all other circuits .138" (3.5mm)

Materials & Finishes

Actuator: Glass fiber reinforced polyester

Frame: Stainless steel for panel & PCB mount; phosphor bronze with tin plating for bracket mount

Dust Cover: Phosphor bronze with nickel plating

Case: Glass fiber reinforced diallyl phthalate resin (UL94V-0)

Movable Contacts: Silver alloy (code W); copper with gold plating (code G);
or silver alloy with gold plating (code A)

Stationary Contacts: Silver capped copper with silver plating (code W); copper with gold plating (code G);
or silver alloy with gold plating (code A)

Terminals: Copper or brass with silver or gold plating

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 (490m/s^2) acceleration (tested in 6 right angled directions, with 5 shocks in each direction)

Processing

Soldering: Wave Soldering recommended (PC Mount). See Profile A in Supplement section.
Manual Soldering: See Profile A in Supplement section.

Cleaning: These devices are not process sealed. Hand clean locally using alcohol based solution.

Standards & Certifications

Flammability Standards: UL94V-0 rated case

UL Recognized: All Single & Double Pole Double Throw models recognized at 6A @ 125V AC & 3A @ 250V AC; UL File No. WOYR2.E44145; add "/U" to end of part number to order UL mark on switch.

C-UL Recognized: All Single & Double Pole Double Throw models recognized at 6A @ 125V AC & 3A @ 250V AC; UL File No. WOYR8.E44145; add "/C-UL" to end of part number to order C-UL mark on switch.

CSA Certified: All Double Throw & 3 Throw models certified at 6A @ 125V AC, 3A @ 250V AC, & 0.4VA maximum @ 28V DC; CSA File No. 023535-0-000; add "/C" to end of part number to order CSA mark on switch.

TYPICAL SWITCH ORDERING EXAMPLE

MS	1	2	A	S	G	30

POLES

1	SPDT
2	DPDT SP3T

CIRCUITS

2	ON	NONE	ON
3	ON	OFF	ON
0	ON	ON	ON

ACTUATORS

A	.150" (3.8mm) Wide for Single or Double Pole
B	.323" (8.2mm) Wide for Double Pole

MOUNTING

F	Panel Mount (Terminal 01 only)
N	PCB Mount (Terminal 03 only)
S	Bracket Mount (Terminals 13, 30, & 40 only)

CONTACT MATERIALS & RATINGS

W	Silver; Rated 6A @ 125V AC & 3A @ 250V AC
G	Gold; Rated 0.4VA max. @ 28V AC/DC max.
A	Gold over Silver; Rated 6A @ 125V AC & 0.4VA max. @ 28V AC/DC max.

TERMINALS

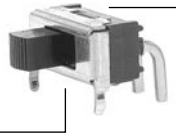
01	Solder Lug
03	Straight PC
13	Straight with Bracket
30	Right Angle PC
40	Vertical PC

IMPORTANT:

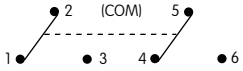
Switches are supplied without UL, C-UL & CSA markings unless specified. Specific models & ratings are noted on General Specifications page.

DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

MS12ASG30

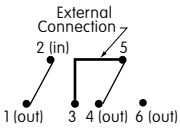
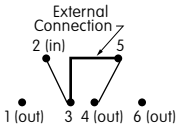
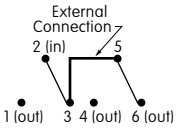
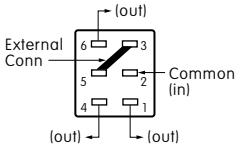


POLES & CIRCUITS

Pole	Model	Slide Position: Left	Slide Position: Center	Slide Position: Right	Connected Terminals: Left	Connected Terminals: Center	Connected Terminals: Right	Throw & Schematics
SP	MS12 MS13	ON ON	NONE OFF	ON ON	2-1	OPEN	2-3	SPDT 
DP	MS22 MS23	ON ON	NONE OFF	ON ON	2-1 5-4	OPEN	2-3 5-6	DPDT 

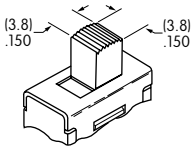
Note: Terminal numbers are not actually on the switch.

For 3 Throw (3-On)

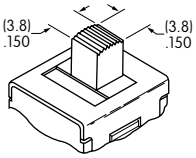
Pole	Model	Connected Terminals & Schematics: Left	Center	Right	External Connection
SP	MS20	ON  2-1 5-4	ON  2-3 5-4	ON  2-3 5-6	**The SP3T model utilizes a double pole base.** External connections must be made during field installation. 

ACTUATORS

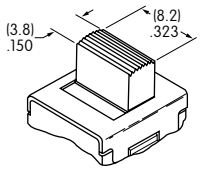
A **.150" (3.8mm) Wide for Single Pole**



.150" (3.8mm) Wide for Double Pole



B **.323" (8.2mm) Wide for Double Pole Only**



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: Complete explanation of operating range in Supplement section.

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

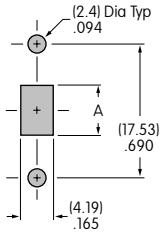
Note: This dual rated option is suitable when two or more identical switches are used in logic and in power circuits within the same application. See Supplement section for complete explanation of dual rating and operating range.

MOUNTING TYPES & TERMINALS

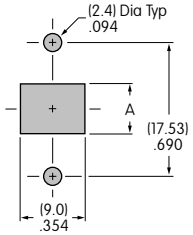
F **Panel Mount (Combines with Solder Lug Terminal 01 only)**

Dimension A =
.268″ (6.8mm) for on-none-on
.319″ (8.1mm) for on-off-on & on-on-on

Maximum Panel Thickness: .197″ (5.0mm)



SP or DP with .150″ (3.8mm) Actuator



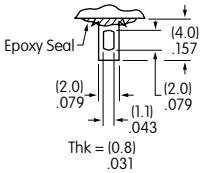
DP only with .323″ (8.2mm) Actuator

N **Straight PC Mount (Combines with Straight PC Terminal 03 only)**

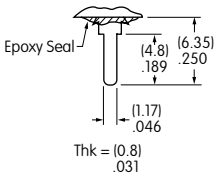
S **Support Bracket Mount (For Terminals 13, 30, & 40)**

Maximum Panel Thickness:
For Straight PC with Bracket Terminal 13: .197″ (5.0mm)
For Angle Mount Terminals 30 & 40: .177″ (4.5mm)

01 **Solder Lug**



03 **Straight PC**



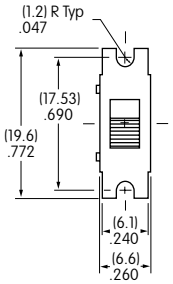
13 **Straight PC with Bracket**

30 **Right Angle PC**

40 **Vertical PC**

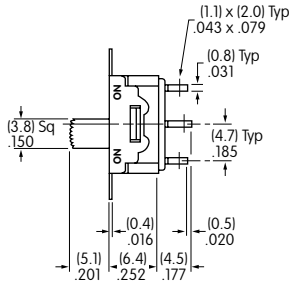
TYPICAL SWITCH DIMENSIONS

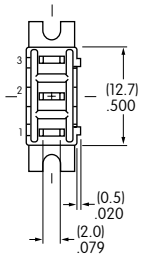
Solder Lug Terminals



MS12AFW01

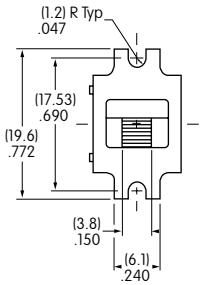
Single Pole





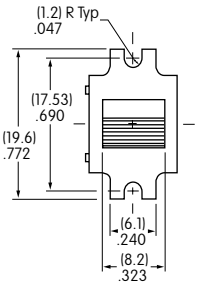
Actuator in LEFT Position

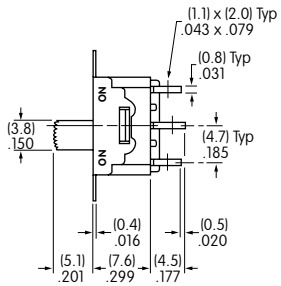
Solder Lug Terminals

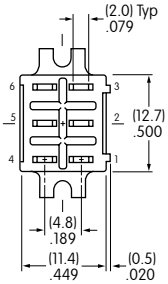


MS22BFW01

Double Pole





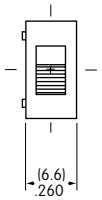


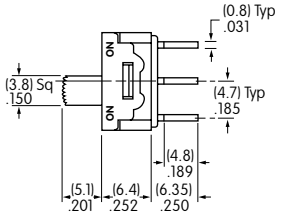
Actuator in LEFT Position

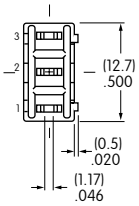
TYPICAL SWITCH DIMENSIONS

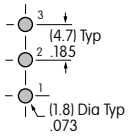
Straight PC Terminals

Single Pole







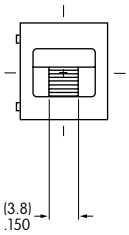


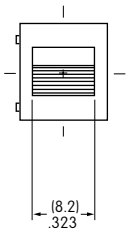
MS12ANG03

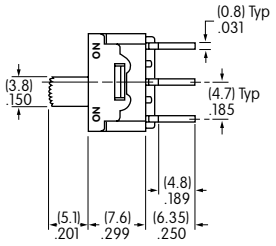
Actuator in LEFT Position

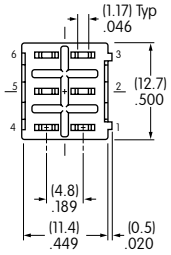
Straight PC Terminals

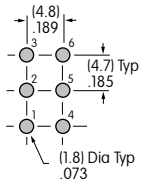
Double Pole









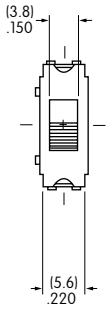


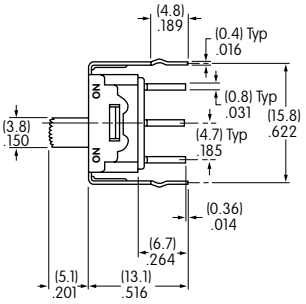
MS22BNG03

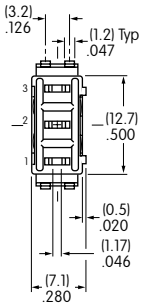
Actuator in LEFT Position

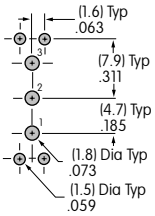
Straight PC Terminals with Bracket

Single Pole







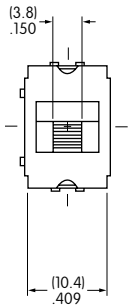


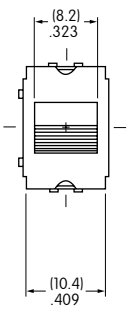
MS12ASG13

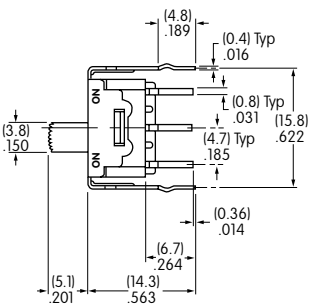
Actuator in LEFT Position

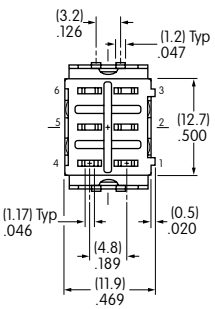
Straight PC Terminals with Bracket

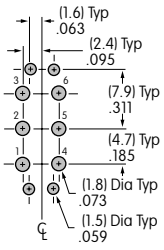
Double Pole









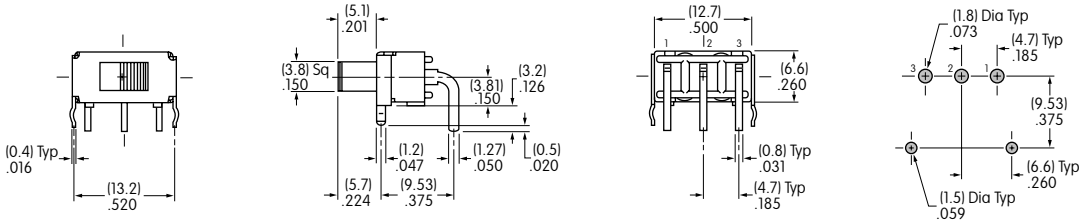


MS22BSG13

Actuator in LEFT Position

TYPICAL SWITCH DIMENSIONS

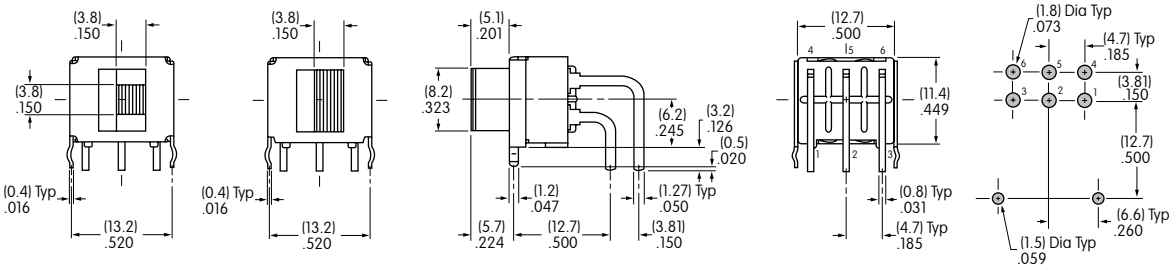
Right Angle PC Terminals — Single Pole



MS12ASG30

Actuator in LEFT Position

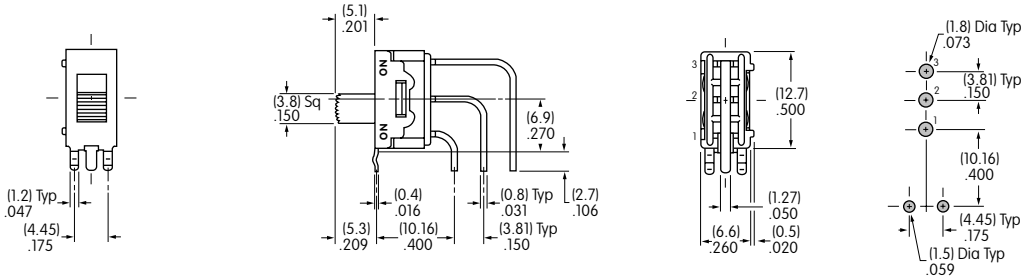
Right Angle PC Terminals — Double Pole



MS22BSG30

Actuator in LEFT Position

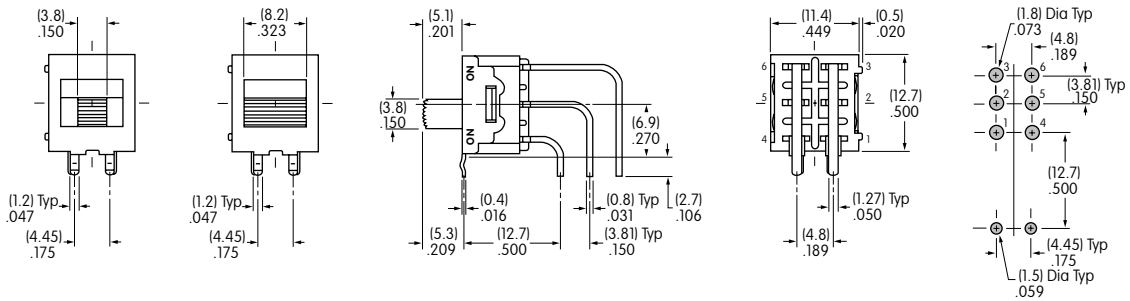
Vertical PC Terminals — Single Pole



MS12ASG40

Actuator in LEFT Position

Vertical PC Terminals — Double Pole



MS22BSG40

Actuator in LEFT Position