General Specifications

Electrical Capacity (Resistive Load)

Power Level (silver): 6A @ 125V AC or 3A @ 250V AC
Logic Level (gold): 0.4VA maximum @ 28V AC/DC maximum
(Applicable Range 0.1mA ~ 0.1A @ 20mV ~ 28V)
Logic/Power Level: (gold over silver) Combines silver & gold 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 PBT resin (UL94V-0)
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

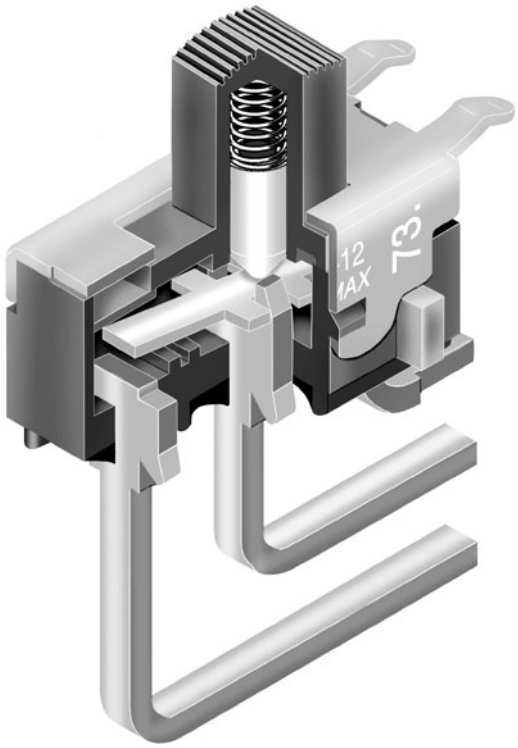
Flammability Standards: UL94V-0 rated actuator & case
UL: **File No. E44145 - Recognized only when ordered with marking on switch.**
Add "/U" or "/CUL" to end of part number to order UL recognized switch.
All Single & Double Pole Double Throw models recognized at 6A @ 125V AC & 3A @ 250V AC.
CSA: **File No. 023535_0_000 - Certified only when ordered with marking on switch.**
Add "/C" to end of part number to order CSA certified switch.
All Double Throw & 3 Throw models certified at 6A @ 125V AC, 3A @ 250V AC, & 0.4VA maximum @ 28V DC.

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.

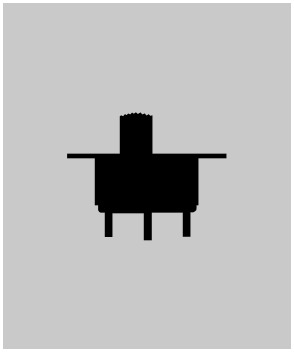
Specially composed silver alloy contacts for power applications or gold contacts for logic level applications give high contact reliability.

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



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

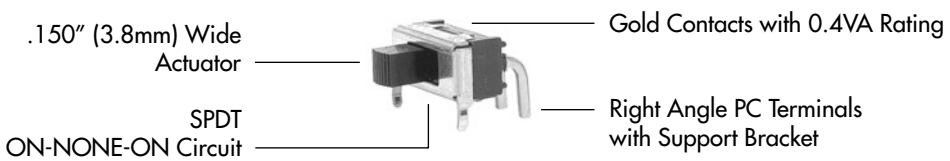
* Wire harness & cable assemblies offered only in Americas

IMPORTANT:

Switches are supplied without UL, cULus & CSA marking unless specified.
UL, cULus & CSA recognized only when ordered with marking on the switch.
Specific models, ratings, & ordering instructions are noted on General Specifications page.

DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

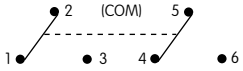
MS12ASG30



POLES & CIRCUITS

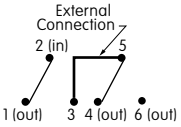
Pole	Model	Slide Position: Left	Slide Position: Center	Slide Position: Right	Connected Terminals: Left	Connected Terminals: Center	Connected Terminals: Right	Throw & Schematics
SP	**MS12** **MS13**	ON ON	NONE OFF	ON ON	2-1	OPEN	2-3	SPDT
DP	**MS22** **MS23**	ON ON	NONE OFF	ON ON	2-1 5-4	OPEN	2-3 5-6	DPDT

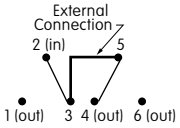
Note: Terminal numbers are not actually on the switch.

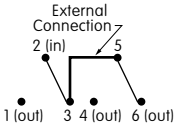


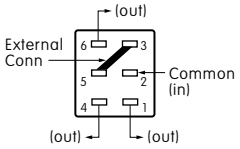
For 3 Throw (3-On)

Pole	Model	Connected Terminals & Schematics: Left	Connected Terminals & Schematics: Center	Connected Terminals & Schematics: 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.



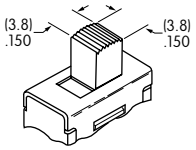




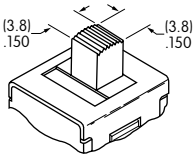


ACTUATORS

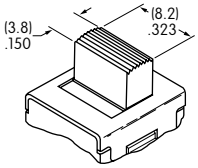
A **.150" (3.8mm) Wide for Single Pole**



.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**

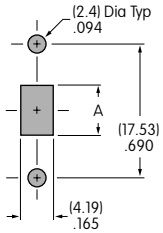
Note: This dual rated option is suitable when two or more identical switches are used in logic and in power circuits within the same application. See Supplement section for complete explanation of dual rating and operating range.

MOUNTING TYPES & TERMINALS

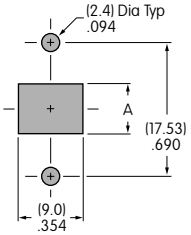
F **Panel Mount (Combines with Solder Lug Terminal 01 only)**

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



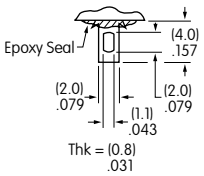
DP only with .323″ (8.2mm) Actuator

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

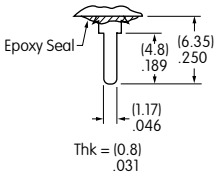
S **Support Bracket Mount (For Terminals 13, 30, & 40)**

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**

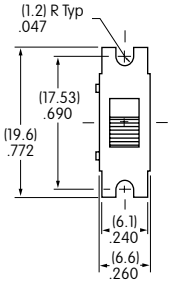
30 **Right Angle PC**

40 **Vertical PC**

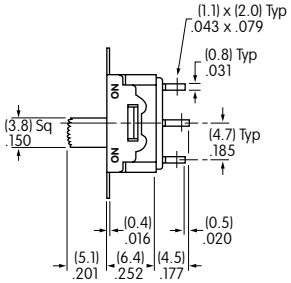
TYPICAL SWITCH DIMENSIONS

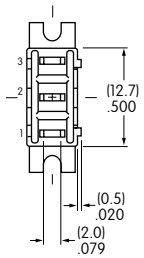
Solder Lug Terminals

Single Pole



MS12AFW01

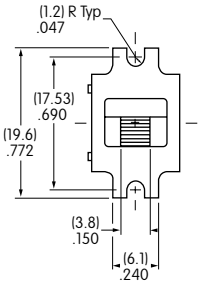




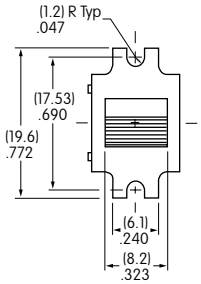
Actuator in LEFT Position

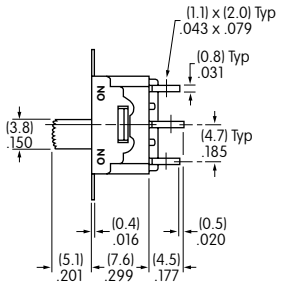
Solder Lug Terminals

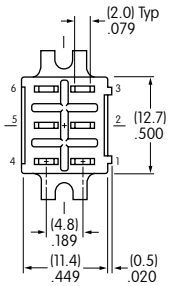
Double Pole



MS22BFW01



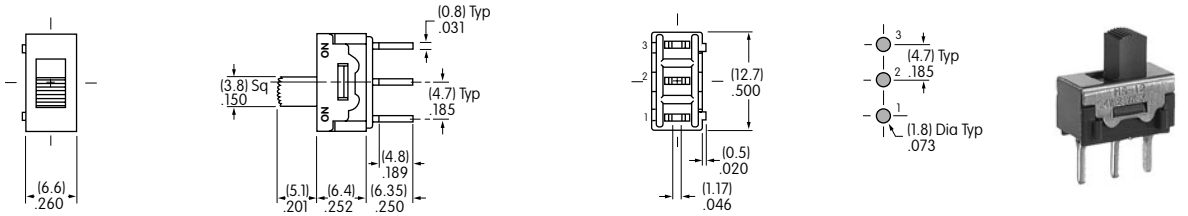




Actuator in LEFT Position

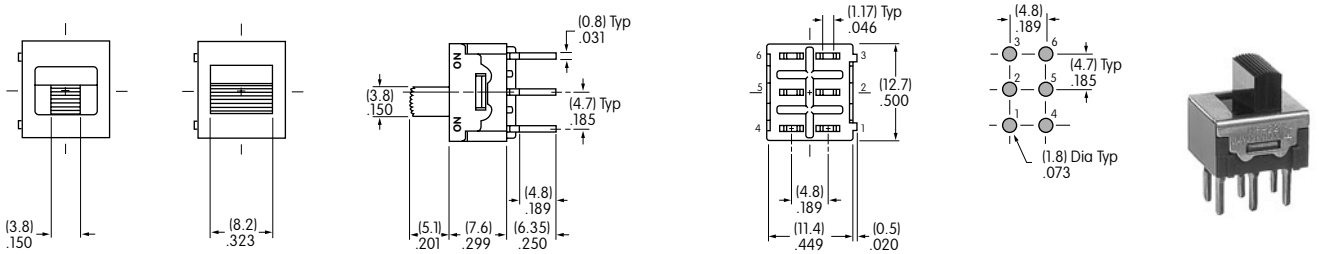
TYPICAL SWITCH DIMENSIONS

Single Pole — Straight PC Terminals



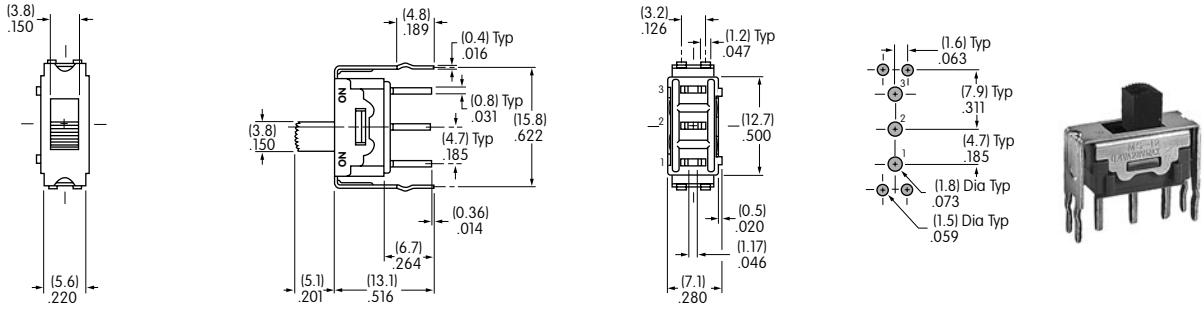
Actuator in LEFT Position — **MS12ANG03**

Double Pole — Straight PC Terminals



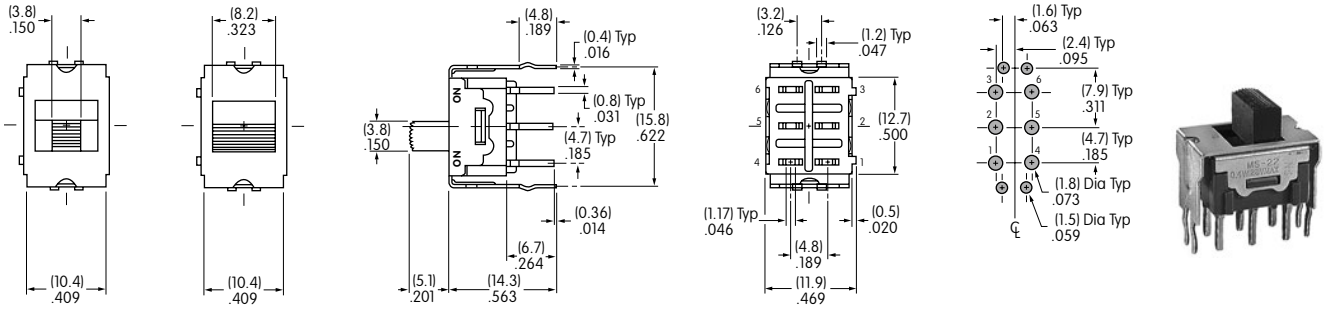
Actuator in LEFT Position — **MS22BNG03**

Single Pole — Straight PC Terminals with Bracket



Actuator in LEFT Position — **MS12ASG13**

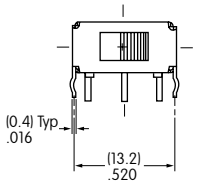
Double Pole — Straight PC Terminals with Bracket

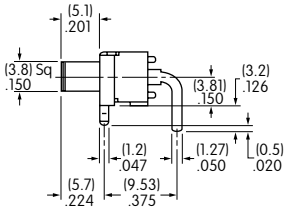


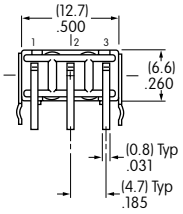
Actuator in LEFT Position — **MS22BSG13**

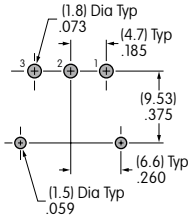
TYPICAL SWITCH DIMENSIONS

Right Angle PC Terminals — Single Pole





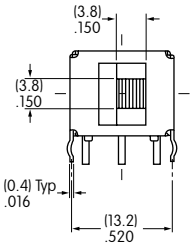


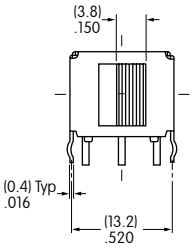


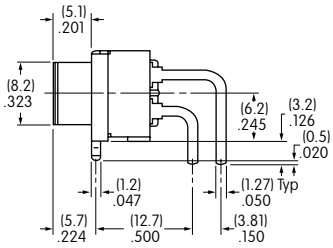
MS12ASG30

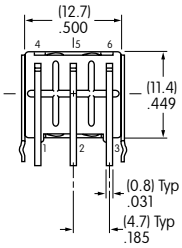
Actuator in LEFT Position

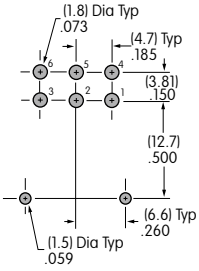
Right Angle PC Terminals — Double Pole







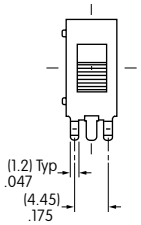


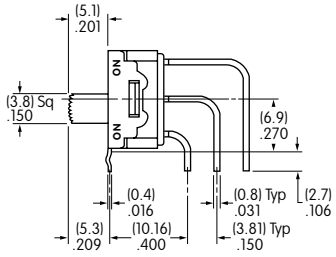


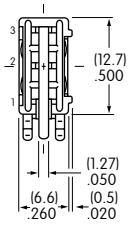
MS22BSG30

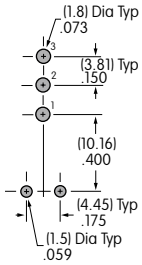
Actuator in LEFT Position

Vertical PC Terminals — Single Pole





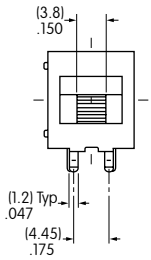


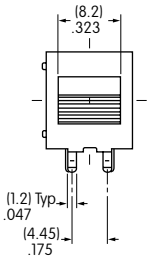


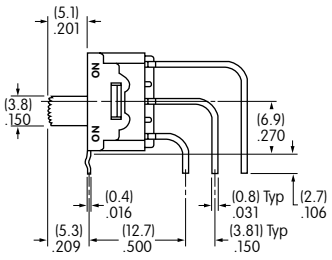
MS12ASG40

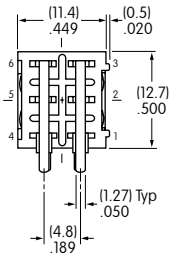
Actuator in LEFT Position

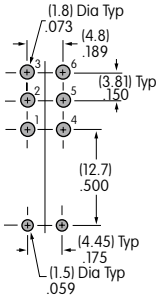
Vertical PC Terminals — Double Pole











MS22BSG40

Actuator in LEFT Position

OCEAN CHIPS
Океан Электроники
Поставка электронных компонентов

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**».

AVIC 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).

FORSTAR®

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