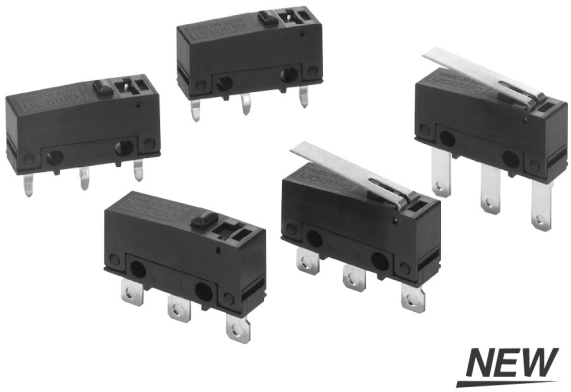
Subminiature Basic Switch
SS-P

SS Series Compatible Mounting with a Simple Construction and Easy-to-Use Design Concept

- Insert molded base and improved case-to-base seal provides enhanced resistance to flux.
- Switch rating of 3 A at 125 VAC possible with a single-leaf movable spring. Models for micro loads with gold crossbar contact are also available.
- Long mechanical life.
- Internal lever provides increased durability and sensitivity.
- Solder, quick-connect terminals (#110), and PCB terminals are available, including even-pitched PCB terminals.



Ordering Information

■ Model Number Legend

SS-□□□P□
1 2 3 4

1. Ratings
3: 3 A at 125 VAC
01: 0.1 A at 30 VDC

2. Contact Gap
G: 0.5 mm

3. Actuator
None: Pin plunger
L: Hinge lever
L13: Simulated roller lever

4. Terminals
None: Solder terminals
T: Quick-connect terminals (#110)
D: PCB terminals (Uneven pitch)
B: PCB terminals (Even pitch)

■ List of Models

Stock Note: Shaded items are normally stocked.

Rating	Actuator	Terminals	Solder terminals	Quick-connect terminals (#110)	PCB terminals	
					Uneven pitch	Even pitch
3 A	Pin plunger		**SS-3GP**	**SS-3GPT**	**SS-3GPD**	**SS-3GPB**
	Hinge lever		**SS-3GLP**	**SS-3GLPT**	**SS-3GLPD**	**SS-3GLPB**
	Simulated roller lever		**SS-3GL13P**	**SS-3GL13PT**	**SS-3GL13PD**	**SS-3GL13PB**
0.1 A	Pin plunger		**SS-01GP**	**SS-01GPT**	**SS-01GPD**	**SS-01GPB**
	Hinge lever		**SS-01GLP**	**SS-01GLPT**	**SS-01GLPD**	**SS-01GLPB**
	Simulated roller lever		**SS-01GL13P**	**SS-01GL13PT**	**SS-01GL13PD**	**SS-01GL13PB**

Specifications

■ Ratings

Model	SS-3P	SS-01P
Rated voltage / Item	Resistive load	
125 VAC	3 A	0.1 A
30 VDC	3 A	0.1 A

Note: 1. The rating values apply under the following test conditions.

Ambient temperature: 20±2°C

Ambient humidity: 65±5%

Operating frequency: 30 operations/min

2. Contact your OMRON representative for information on models for other loads.

■ Characteristics

Operating speed	0.1 mm to 1 m/s (for pin plunger models)
Operating frequency	Mechanical: 300 operations/min Electrical: 30 operations/min
Insulation resistance	100 MΩ min. (at 500 VDC)
Contact resistance (initial value)	SS-3P: 50 mΩ max. SS-01P: 100 mΩ max.
Dielectric strength (See note 2)	1,000 VAC, 50/60 Hz for 1 min between terminals of the same polarities 1,500 VAC, 50/60 Hz for 1 min between current-carrying metal parts and ground, and between each terminal and non-current-carrying metal parts
Vibration resistance (See note 3)	Malfunction: 10 to 55 Hz, 1.5-mm double amplitude
Shock resistance (See note 3)	Destruction: 1,000 m/s^2 {approx. 100 G} max. Malfunction: 300 m/s^2 {approx. 30 G} max.
Durability (See note 4)	Mechanical: 1,000,000 operations min. (60 operations/min) Electrical: SS-3P: 70,000 operations min. (20 operations/min, 125 VAC) 100,000 operations min. (20 operations/min, 30 VDC) SS-01P: 200,000 operations min. (20 operations/min)
Degree of protection	IEC IP40
Degree of protection against electrical shock	Class I
Proof Tracking Index (PTI)	175
Ambient operating temperature	–25°C to 85°C (at ambient humidity of 60% max.) (with no icing)
Ambient operating humidity	85% max. (for 5°C to 35°C)
Weight	Approx. 1.6 g (for pin plunger models)

Note: 1. The data given above are initial values.

2. The dielectric strength shown in the table indicates a value for models with a Separator.

3. For the pin plunger models, the above values apply for both the free position and total travel position. For the lever models, the values apply at the total travel position. Contact opening or closing time is within 1 ms.

4. Contact your OMRON sales representative for testing conditions.

■ Approved Standards

UL, CSA, and EN approval projected for September 2003.

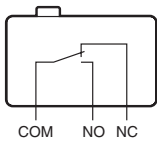
■ Contact Specifications

Item	**Model**	**SS-3P**	**SS-01P**
Contact	**Specification**	Rivet	Crossbar
	Material	Silver alloy	Gold alloy
	Gap (standard value)	0.5 mm	
Minimum applicable load (See note)		160 mA at 5 VDC	1 mA at 5 VDC

Note: For more information on the minimum applicable load, refer to *Using Micro Loads* on page 6.

■ Contact Form

SPDT



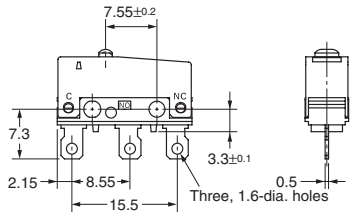
Dimensions

■ Terminals

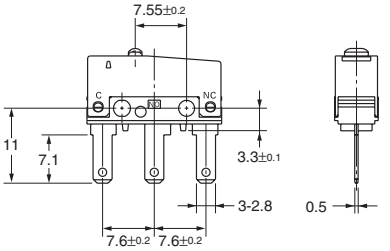
Unit: mm

Note: Terminal plate thickness is 0.5 mm for all models.

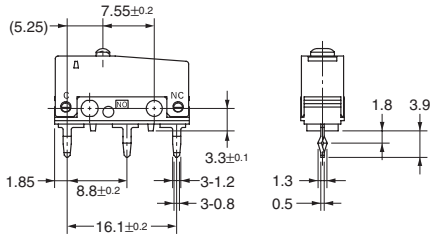
Solder Terminals



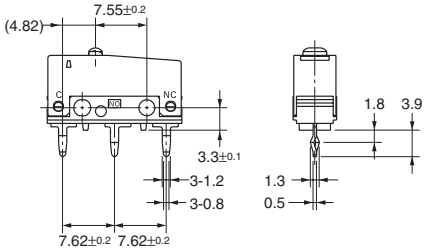
Quick-connect Terminals (#110)



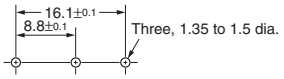
PCB Terminals (Uneven pitch)



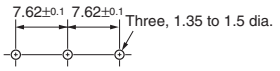
PCB Terminals (Even pitch)



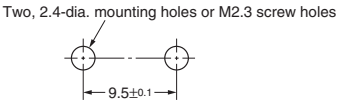
PCB Mounting Dimensions (Reference)



PCB Mounting Dimensions (Reference)



■ Mounting Holes



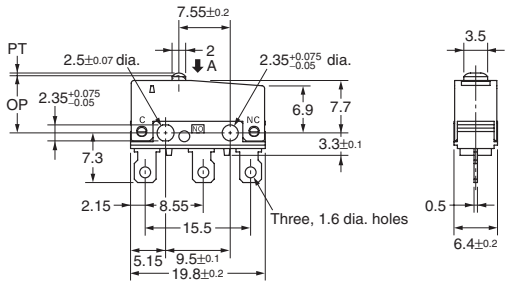
■ Dimensions and Operating Characteristics

Unit: mm

Pin Plunger Models

SS-3GP
SS-01GP



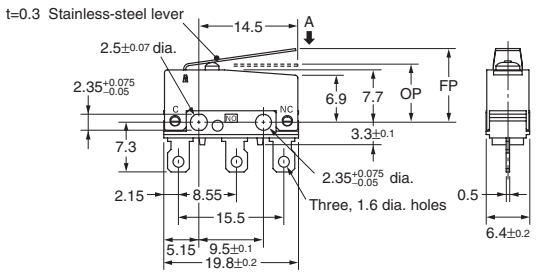


Model	SS-3GP	SS-01GP
OF max. **RF min.**	1.50 N 0.2 N	
PT max. **OT min.** **MD max.**	0.6 mm 0.4 mm 0.15 mm	
OP	8.4±0.3 mm	

Hinge Lever Models

SS-3GLP
SS-01GLP



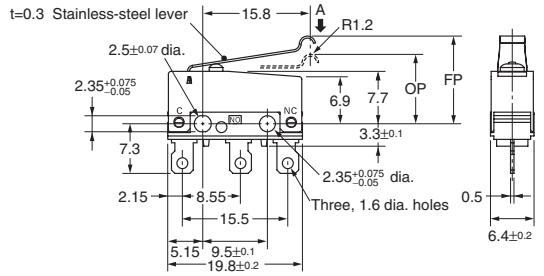


Model	SS-3GLP	SS-01GLP
OF max. **RF min.**	0.5 N 0.05 N	
OT min. **MD max.**	1.0 mm 0.8 mm	
FP max. **OP**	13.6 mm 8.8±0.8 mm	

Simulated Roller Lever Models

SS-3GL13P
SS-01GL13P





Model	SS-3GL13P	SS-01GL13P
OF max. **RF min.**	0.5 N 0.05 N	
OT min. **MD max.**	1.0 mm 0.8 mm	
FP max. **OP**	15.5 mm 10.7±0.8 mm	

Note: 1. The above illustrations and drawings are for solder terminal models. Refer to page 4 for details on models with quick-connect terminals (#110) or PCB terminals.

2. Unless otherwise specified, a tolerance of ±0.4 mm applies to all dimensions.

3. The operating characteristics are for operation in the A direction (⬇).

Precautions

■ Cautions

Connecting to Solder Terminals

When soldering the lead wire to the terminal, first insert the lead wire conductor through the terminal hole and then solder.

Make sure that the temperature at the tip of the soldering iron is 350 to 400°C. Do not take more than 3 seconds to solder the switch terminal, and do not impose external force on the terminal for 1 min after soldering. Improper soldering involving an excessively high temperature or excessive soldering time may deteriorate the characteristics of the Switch.

Connecting to Quick-connect Terminals

Wire the quick-connect terminals (#110) with receptacles. Insert the terminals straight into the receptacles. Do not impose excessive force on the terminal in the horizontal direction, otherwise the terminal may be deformed or the housing may be damaged.

Connectors

Use the following quick-connect connector made by Nippon Tanshi or Tyco Electronics. This connector is not sold by OMRON. Contact the following Nippon Tanshi or Tyco Electronics office to purchase this connector.

This connector is for use with the SS-P and the terminal direction is 90° different from the SS Series. Individual quick connect receptacles are common to both types.

Nippon Tanshi Co., Ltd.	Japan	Tel: (81)463-30-1150
	Hong Kong	Tel: (852)2191-2727
Connector part number		9880-4203
Quick connect part number		171587-M2
Tyco Electronics AMP	Japan	Tel: (81)44-844-8111
	U.S.A.	Tel (1)800-522-6752
	Website	www.amp.com
Quick connect part number		63202

Connecting to PCB Terminal Boards

When using automatic soldering baths, we recommend soldering at 260±5°C within 5 seconds. Make sure that the liquid surface of the solder does not flow over the edge of the board.

When soldering by hand, as a guideline, solder with a soldering iron with a tip temperature of 350 to 400°C within 3 seconds, and do not apply any external force for at least 1 minutes after soldering. When applying solder, keep the solder away from the case of the Switch and do not allow solder or flux to enter the case.

■ Correct Use

Mounting

Turn OFF the power supply before mounting or removing the Switch, wiring, or performing maintenance or inspection. Failure to do so may result in electric shock or burning.

Use M2.3 mounting screws with plane washers or spring washers to securely mount the Switch. Tighten the screws to a torque of 0.23 to 0.26 N·m {2.3 to 2.7 kgf·cm}.

Mount the Switch onto a flat surface. Mounting on an uneven surface may cause deformation of the Switch, resulting in faulty operation or breakage in the housing.

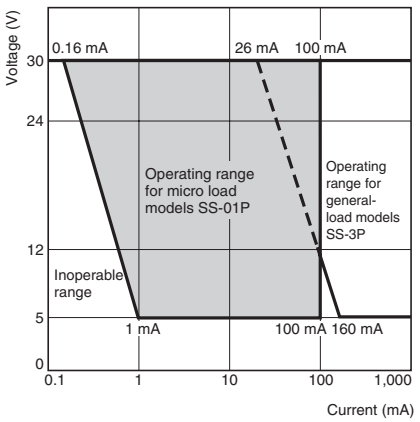
Operating Stroke Setting

Take particular care in setting the operating stroke for the pin plunger models. Make sure that the operating stroke is 60% to 90% of the rated OT distance. Do not operate the actuator exceeding the OT distance, otherwise the life expectancy of the Switch may be shortened.

Using Micro Loads

Using a model for ordinary loads to open or close the contact of a micro load circuit may result in faulty contact. Use models that operate in the following range. However, even when using micro load models within the operating range shown below, if inrush current occurs when the contact is opened or closed, it may increase contact wear and so decrease life expectancy. Therefore, insert a contact protection circuit where necessary.

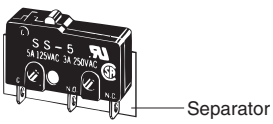
The minimum applicable load is the N-level reference value. This value indicates the malfunction reference level for the reliability level of 60% (λ_{60}). The equation, $\lambda_{60} = 0.5 \times 10^{-6}$/operations indicates that the estimated malfunction rate is less than 1/2,000,000 operations with a reliability level of 60%.



■ Separators

Thickness	Model
0.18 mm	Separator for SS0.18
0.4 mm	Separator for SS0.4

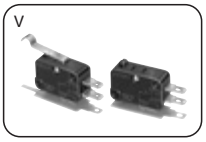
Separator for SS□

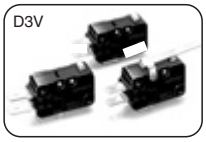


Note: The material is EAVTC (Epoxide Alkyd Varnished Tetron Cloth) and its heat-resisting temperature is 130°C.

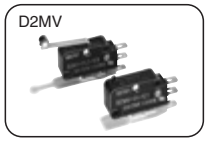
OMRON Switches for Integration in Machinery

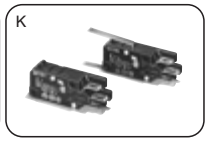
Miniature Basic Switches (V-size)

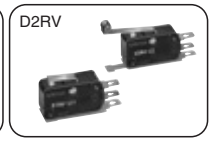


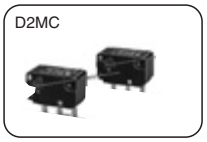




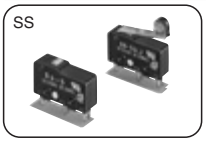


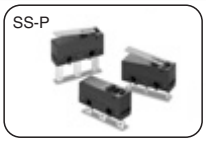




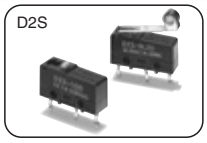


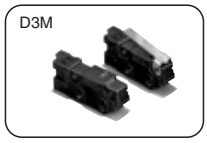
Subminiature Basic Switches (S-size)



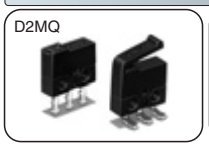


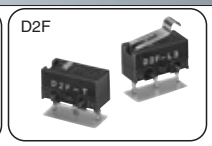


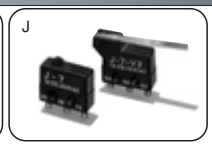




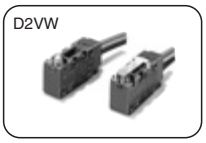
Ultra Subminiature Basic Switches (J-size)

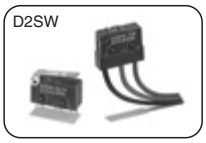




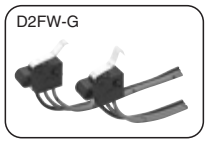


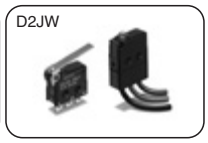
Sealed Basic Switches







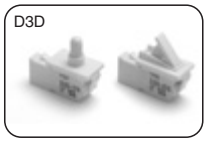




Door Switches







Miniature Detection Switches

