

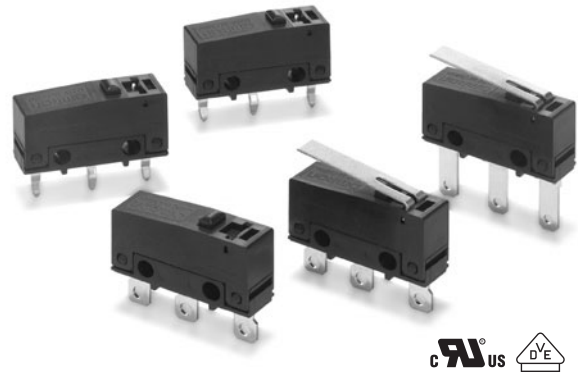
## Subminiature Basic Switch

## SS-P

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

- Insert molded case provides enhanced resistance to flux.
- Switch rating of 3 A at 125 V AC possible with a single-leaf movable spring. Models for micro loads are also available.

RoHS Compliant



## 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

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

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

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

Ambient temperature: 20±2°C

Ambient humidity: 65±5%

Operating frequency: 30 operations/min

2. Consult your OMRON sales representative for information on models for other loads.

### ■ Characteristics

Operating speed	0.1 mm to 1 m/s (pin plunger models)
Operating frequency	Mechanical: 300 operations/min max. Electrical: 30 operations/min max.
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 <sup>2</sup> {approx. 100 G} max. Malfunction: 300 m/s <sup>2</sup> {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 or condensation)
Ambient operating humidity	85% max. (for 5°C to 35°C)
Weight	Approx. 1.6 g (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. Consult your OMRON sales representative for testing conditions.

■ Approved Standards

Consult your OMRON sales representative for specific models with standard approvals.

**UL1054 (File No. E41515)/  
CSA C22.2 No. 55 (UL approval)**

	SS-3P	SS-01P
125 VAC	3 A	0.1 A
30 VDC	3 A	0.1 A

**EN61058-1 (File No. 40008425, VDE approval)**

	SS-3P	SS-01P
125 VAC	3 A	0.1 A
30 VDC	3 A	0.1 A

Testing conditions: 5E4 (50,000 operations), T55 (0°C to 55°C)

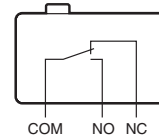
■ Contact Specifications

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 5.

■ Contact Form

SPDT

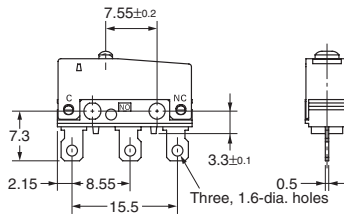


Dimensions

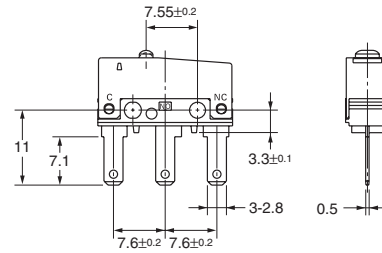
■ Terminals

**Note:** All units are in millimeters unless otherwise indicated. (Terminal plate thickness is 0.5 mm for all models.)

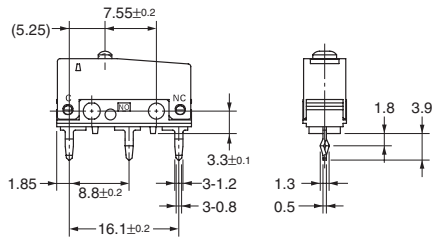
Solder Terminals



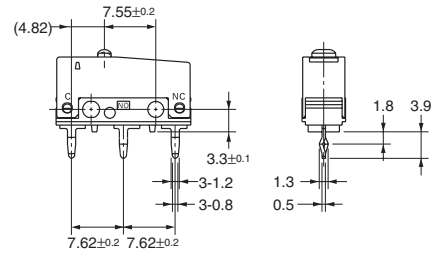
Quick-connect Terminals (#110)



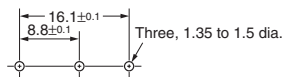
PCB Terminals (Uneven pitch)



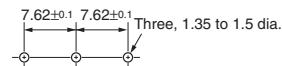
PCB Terminals (Even pitch)



PCB Mounting Dimensions (Reference)

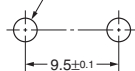


PCB Mounting Dimensions (Reference)




■ Mounting Holes

Two, 2.4-dia. mounting holes or M2.3 screw holes

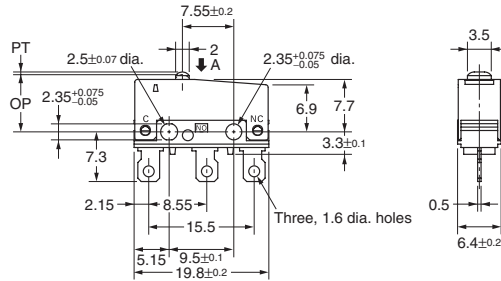


### ■ Dimensions and Operating Characteristics

- Note:**
1. All units are in millimeters unless otherwise indicated.
  2. The following illustrations and drawings are for solder terminal models. Refer to page 3 for details on models with quick-connect terminals (#110) or PCB terminals.
  3. Unless otherwise specified, a tolerance of  $\pm 0.4$  mm applies to all dimensions.
  4. The operating characteristics are for operation in the A direction (  ).

#### Pin Plunger Models

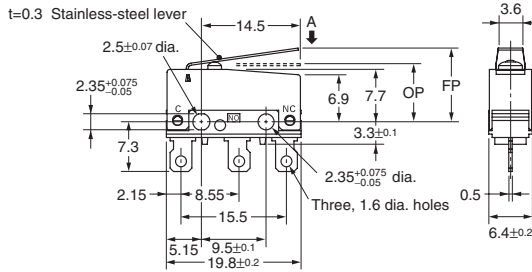
SS-3GP  
SS-01GP



OF max.	1.50 N {153 gf}
RF min.	0.2 N {20 gf}
PT max.	0.6 mm
OT min.	0.4 mm
MD max.	0.15 mm
OP	8.4±0.3 mm

#### Hinge Lever Models

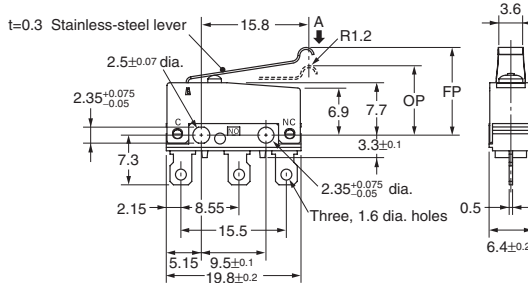
SS-3GLP  
SS-01GLP



OF max.	0.5 N {51 gf}
RF min.	0.05 N {5 gf}
OT min.	1.0 mm
MD max.	0.8 mm
FP max.	13.6 mm
OP	8.8±0.8 mm

#### Simulated Roller Lever Models

SS-3GL13P  
SS-01GL13P



OF max.	0.5 N {51 gf}
RF min.	0.05 N {5 gf}
OT min.	1.0 mm
MD max.	0.8 mm
FP max.	15.5 mm
OP	10.7±0.8 mm

# Precautions

Refer to *General Information*.

## ■ 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 conduct soldering.

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.

### 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.

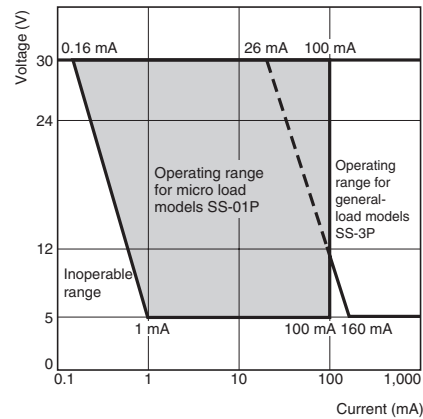
### Operating Stroke Setting

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 durability 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 durability. Therefore, insert a contact protection circuit where necessary.

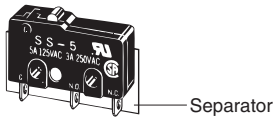
The minimum applicable load is the N-level reference value. This value indicates the malfunction reference level for the reliability level of 60% ( $\lambda_{60}$ ). The equation,  $\lambda_{60} = 0.5 \times 10^{-6}/\text{operations}$  indicates that the estimated malfunction rate is less than 1/2,000,000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



Separator

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

## ■ 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.

Nippon Tanshi Co., Ltd. Japan Phone: +81-463-61-8200  
Hong Kong Phone: +852-2191-2727

Tyco Electronics AMP K.K. Japan Phone: +81-44-844-8111  
U.S.A. Phone: +1-800-522-6752

This connector is for use with the SS-P and the terminal direction is 90° different from the SS Series.

**ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.**

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.