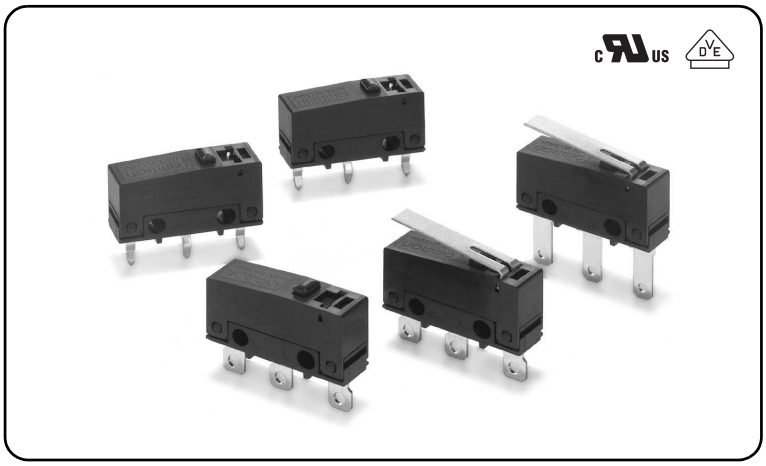
# SS-P

## Subminiature Basic Switch

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

- **One-piece terminal construction to keep out flux.**
- **A single leaf movable spring construction.**
- **Conforms to North American and European safety Standards.**
- **1 mm MIN Contact Gap Models available for Interlock applications**

**RoHS Compliant**





## Model Number Legend

SS-[1] G [2] P [3]

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

**2. Actuator**
- None : Pin plunger
- L : Hinge lever
- L13 : Simulated roller lever
- L111 : Long hinge lever

**3. Terminals**
- None : Solder terminals
- T : Quick-connect terminals (#110)
- D : PCB terminals

## List of Models

**●0.5 mm Contact Gap Models**

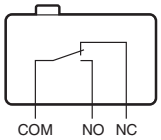
| Ratings | Actuator | Terminals | Solder terminals | Quick-connect terminals (#110) | PCB terminals |
|---|---|---|---|---|---|
| 3A | Pin plunger | | **SS-3GP** | **SS-3GPT** | **SS-3GPD** |
| | Hinge lever | | **SS-3GLP** | **SS-3GLPT** | **SS-3GLPD** |
| | Simulated roller lever | | **SS-3GL13P** | **SS-3GL13PT** | **SS-3GL13PD** |
| 0.1A | Pin plunger | | **SS-01GP** | **SS-01GPT** | **SS-01GPD** |
| | Hinge lever | | **SS-01GLP** | **SS-01GLPT** | **SS-01GLPD** |
| | Simulated roller lever | | **SS-01GL13P** | **SS-01GL13PT** | **SS-01GL13PD** |

**●1 mm MIN Contact Gap Models**

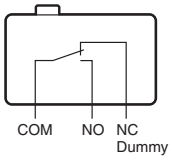
| Ratings | Actuator | Terminals Contact form | Solder terminals | Quick-connect terminals (#110) |
|---|---|---|---|---|
| 3A | Long hinge lever | SPST-NO | **SS-3FL111P-3** | **SS-3FL111P-3T** |

## Contact Form

**●SPDT**




**●SPST-NO (SS-3FP models)**




Separator (Sold Separately), Terminal Connector (Sold Separately) ➡ Refer to "**Basic Switch Common Accessories**"

## Contact Specifications

| Item | Model | SS-3P models | SS-01P models | SS-3FP models |
|---|---|---|---|---|
| Contact | Specification | Rivet | Crossbar | Rivet |
| | Material | Silver | Gold alloy | Silver |
| | Gap (standard value) | 0.5 mm | 0.5 mm | 1 mm min. |
| Inrush current | NC | 9 A max. | - | 9 A max. |
| | NO | | | |
| Minimum applicable load (reference value) * | | 5 VDC 160 mA | 5 VDC 1 mA | 5 VDC 160 mA |

* Please refer to "**Using Micro Loads**" in "●**Precautions**" for more information on the minimum applicable load.

## Ratings

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

Note 1. The above rating values apply under the following test conditions.
(1) Ambient temperature: 20±2°C
(2) Ambient humidity: 65±5%
(3) Operating frequency: 20 operations/min
Note 2. Consult your OMRON sales representative for information on models for other loads.

## Approved Safety Standards

### UL (UL1054/CSA C22.2 No.55)

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

### VDE (EN61058-1)

| Rated voltage / Model | SS-3P / SS-3FP | SS-01P |
|---|---|---|
| 125 VAC | 3 A | 0.1 A |
| 30 VDC | 3 A | 0.1 A |

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

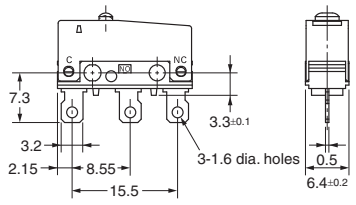
## Characteristics

| Item | Model | SS-3P models | SS-01P models | SS-3FP models |
|---|---|---|---|---|
| Permissible operating speed | | 0.1 mm to 1 m/s (for pin plunger models) | | |
| Permissible operating frequency | Mechanical | 300 operations/min | | |
| | Electrical | 30 operations/min | | |
| Insulation resistance | | 100 MΩ min. (at 500 VDC with insulation tester) | | |
| Contact resistance (initial value) | | 50 mΩ max. | 100 mΩ max. | 50 mΩ max. |
| Dielectric strength *1 | Between terminals of the same polarity | 1,000 VAC 50/60 Hz for 1 min | | |
| | Between current-carrying metal parts and ground | 1,500 VAC 50/60 Hz for 1 min | | |
| | Between each terminals and non-current-carrying metal parts | 1,500 VAC 50/60 Hz for 1 min | | |
| Vibration resistance *2 | Malfunction | 10 to 55 Hz, 1.5 mm double amplitude | | |
| Shock resistance | Durability | 1,000 m/s² {approx. 100G} max. | | |
| | Malfunction *2 | 300 m/s² {approx. 30G} max. | | |
| Durability *3 | Mechanical | 1,000,000 operations min. (60 operations/min) | | 100,000 operations min. (60 operations/min) |
| | Electrical | 70,000 operations min. (20 operations/min, 125 VAC) | 200,000 operations min. (20 operations/min) | 100,000 operations min. (20 operations/min, 30 VDC) |
| | | 100,000 operations min. (20 operations/min, 30 VDC) | | |
| Degree of protection | | IEC IP40 | | |
| Degree of protection against electric shock | | Class I | | |
| Proof tracking index (PTI) | | 250 | | |
| 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 to +35°C) | | |
| Weight | | Approx. 1.6 g (pin plunger models) | | |

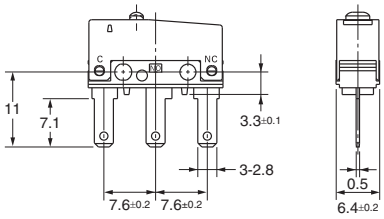
Note. The data given above are initial values.
*1. The values for dielectric strength shown are for models with a Separator (refer to "**Micro Switch Common Accessories**").
*2. The values are at Free Position and Total Travel Position values for pin plunger, and Total Travel Position value for lever. Close or open circuit of the contact is 1 ms max.
*3. For testing conditions, consult your OMRON sales representative.

## Terminals/Appearances (Unit: mm)

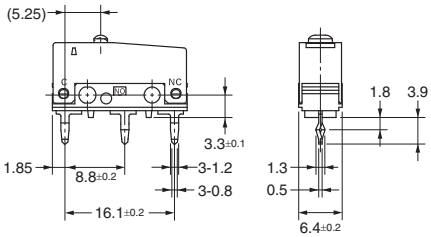
### ●Solder terminals



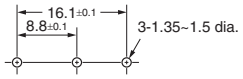

### ●Quick Connect Terminals (#110)



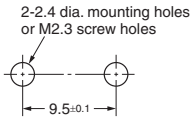

### ●PCB terminals




**<PCB Mounting Dimensions (Reference)>**



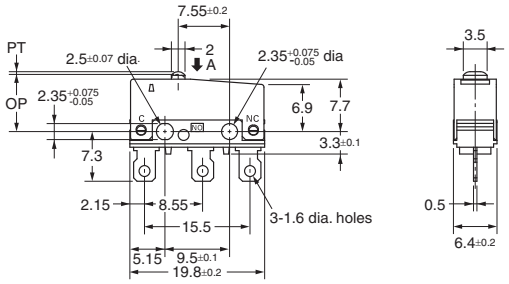

## Mounting Holes (Unit: mm)




## Dimensions (Unit: mm) and Operating Characteristics

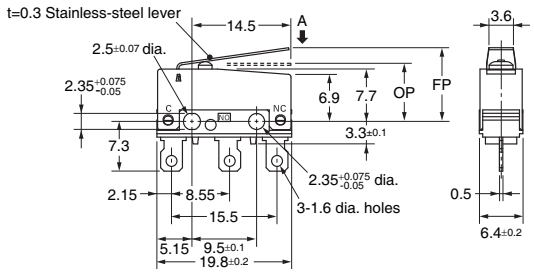
The illustrations and dimensions are for models with solder terminals. Refer to **"Terminals/Appearances"** for details on models with quick connect terminals (#110) or PCB terminals.

### ●Pin plunger
### SS-3GP
### SS-01GP



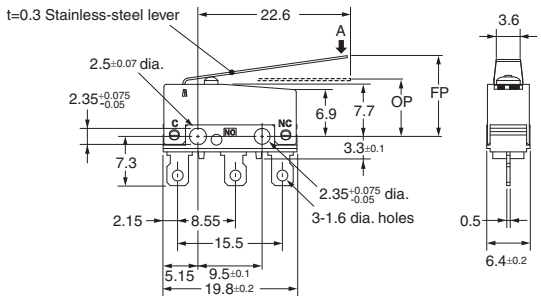

| Operating characteristics | | Model | SS-3GP | SS-01GP |
|---|---|---|---|---|
| Operating Force | OF | Max. | 1.50 N {153 gf} | |
| Releasing Force | RF | Min. | 0.2 N {20 gf} | |
| Pretravel | PT | Max. | 0.6 mm | |
| Overtravel | OT | Min. | 0.4 mm | |
| Movement Differential | MD | Max. | 0.15 mm | |
| Operating Position | OP | | 8.4±0.3 mm | |

### ●Hinge lever
### SS-3GLP
### SS-01GLP




| Operating characteristics | | Model | SS-3GLP | SS-01GLP |
|---|---|---|---|---|
| Operating Force | OF | Max. | 0.5 N {51 gf} | |
| Releasing Force | RF | Min. | 0.05 N {5 gf} | |
| Overtravel | OT | Min. | 1.0 mm | |
| Movement Differential | MD | Max. | 0.8 mm | |
| Free Position | FP | Max. | 13.6 mm | |
| Operating Position | OP | | 8.8±0.8 mm | |

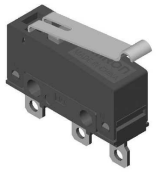
### ●Long hinge lever
### SS-3FL111P-3

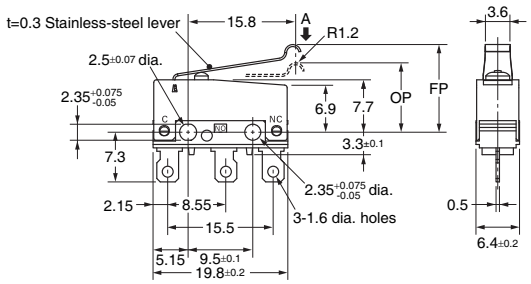



| Operating characteristics | | Model | SS-3FL111P-3 |
|---|---|---|---|
| Operating Force | OF | Max. | 0.55 N {56 gf} |
| Releasing Force | RF | Min. | 0.01 N {1 gf} |
| Overtravel | OT | Min. | 1.0 mm |
| Movement Differential | MD | Max. | 3.0 mm |
| Free Position | FP | Max. | 16.8 mm |
| Operating Position | OP | | 8.8±1.5 mm |

Note 1. Unless otherwise specified, a tolerance of ±0.4 mm applies to all dimensions.
Note 2. The operating characteristics are for operation in the A direction (⬇).

**●Simulated roller lever**
**SS-3GL13P**
**SS-01GL13P**






| Operating characteristics | | Model | SS-3GL13P | SS-01GL13P |
|---|---|---|---|---|
| Operating Force | OF | Max. | 0.5 N {51 gf} | |
| Releasing Force | RF | Min. | 0.05 N {5 gf} | |
| Overtravel | OT | Min. | 1.0 mm | |
| Movement Differential | MD | Max. | 0.8 mm | |
| Free Position | FP | Max. | 15.5 mm | |
| Operating Position | OP | | 10.7±0.8 mm | |

Note 1. Unless otherwise specified, a tolerance of ±0.4 mm applies to all dimensions.
Note 2. The operating characteristics are for operation in the A direction ( ⬇ ).

## Precautions

**★Please refer to "Common Precautions" for correct use.**

### Cautions

**●Soldering**

- Connecting to Solder Terminals

  Complete the soldering at the iron tip temperature of 350 to 400°C within 5 seconds, and do not apply any external force for 1 minute after soldering. Soldering at an excessively high temperature or soldering for more than 5 seconds may deteriorate the characteristics of the Switch.

- Connecting to PCB terminals

  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 terminals manually, complete the soldering at the iron tip temperature between 350 to 400°C within 3 seconds, and do not apply any external force for 1 minute after soldering. When applying solder, keep the solder away from the case of the Switch and do not allow solder or flux to flow into the case.

### Correct Use

**●Mounting**

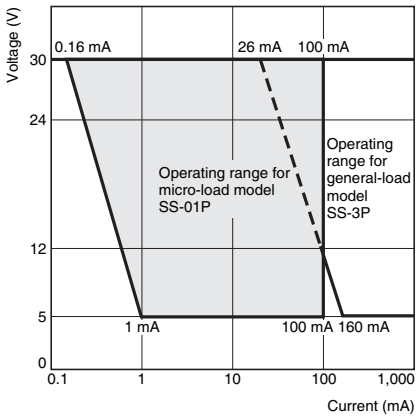
Use M2.3 mounting screw with plane washers or spring washers to securely mount the Switch. Tighten the screws to a torque of 0.23 to 0.26 N·m {2.3 to 2.7 kgf·cm}.

**●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 following operating range, if inrush current occurs when the contact is opened or closed, it may increase the contact wear and so decrease durability. Therefore, insert a contact protection circuit where necessary. The N-level reference value applies for the minimum applicable load. This value indicates the malfunction reference level for the reliability level of 60% ($\lambda_{60}$).

(JIS C5003)

The equation, $\lambda_{60}=0.5\times10^{-6}$/operation indicates that the estimated malfunction rate is less than $\frac{1}{2{,}000{,}000}$ operations with a reliability level of 60%.



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