

**Global Subminiature Basic Switch  
Conforming to EN61058-1  
(IEC601058-1), UL1054, and CSA C22.2  
No.54**

- A wide operating temperature range of  $-25^{\circ}\text{C}$  to  $125^{\circ}\text{C}$  is available for at high-temperature use.
- PCB terminal models are resistant to flux.
- Even-pitched PCB terminals.
- Mounting hole size of M2.2.



## Ordering Information

### Model Number Legend

SSG-□□□□□  
1 2 3 4 5

#### 1. Ratings

- 5: 5 A at 125 VAC
- 01: 0.1 A at 125 VAC

#### 2. Actuator

- None: Pin plunger
- L1: Hinge lever
- L3: Simulated roller lever
- L2: Hinge roller lever

#### 3. Contact Form

- None: SPDT
- 2: SPST-NC
- 3: SPST-NO

#### 4. Terminals

- H: Solder terminals
- T: Quick-connect terminals (#110)
- P: PCB terminals (SPDT only)

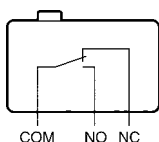
#### 5. Maximum Operating Force

- None: 1.5 N {153 gf}
- 5: 0.5 N {51 gf}

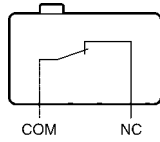
**Note:** These values are for the pin plunger models.

### Contact Form

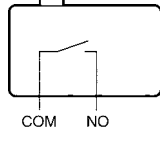
#### SPDT







#### SPST-NC



#### SPST-NO



## ■ List of Models

Actuator	Rating	OF max.	Solder terminals	Quick-connect terminals (#110)	PCB terminals
Pin plunger 	5 A	1.50 N {153 gf}	SSG-5H	SSG-5T	SSG-5P
		0.50 N {51 gf}	SSG-5H-5	SSG-5T-5	SSG-5P-5
	0.1 A	1.50 N {153 gf}	SSG-01H	SSG-01T	SSG-01P
		0.50 N {51 gf}	SSG-01H-5	SSG-01T-5	SSG-01P-5
Hinge lever 	5 A	0.60 N {61 gf}	SSG-5L1H	SSG-5L1T	SSG-5L1P
		0.20 N {20 gf}	SSG-5L1H-5	SSG-5L1T-5	SSG-5L1P-5
	0.1 A	0.60 N {61 gf}	SSG-01L1H	SSG-01L1T	SSG-01L1P
		0.20 N {20 gf}	SSG-01L1H-5	SSG-01L1T-5	SSG-01L1P-5
Simulated roller lever 	5 A	0.60 N {61 gf}	SSG-5L3H	SSG-5L3T	SSG-5L3P
		0.20 N {20 gf}	SSG-5L3H-5	SSG-5L3T-5	SSG-5L3P-5
	0.1 A	0.60 N {61 gf}	SSG-01L3H	SSG-01L3T	SSG-01L3P
		0.20 N {20 gf}	SSG-01L3H-5	SSG-01L3T-5	SSG-01L3P-5
Hinge roller lever 	5 A	0.60 N {61 gf}	SSG-5L2H	SSG-5L2T	SSG-5L2P
		0.20 N {20 gf}	SSG-5L2H-5	SSG-5L2T-5	SSG-5L2P-5
	0.1 A	0.60 N {61 gf}	SSG-01L2H	SSG-01L2T	SSG-01L2P
		0.20 N {20 gf}	SSG-01L2H-5	SSG-01L2T-5	SSG-01L2P-5

**Note:** Consult your OMRON sales representative for details on SPST-NO and SPST-NC models.

## Specifications

### ■ Ratings

#### General Ratings

Rated voltage	Non-inductive load				Inductive load			
	Resistive load		Lamp load		Inductive load		Motor load	
	NC	NO	NC	NO	NC	NO	NC	NO
125 VAC	5 (0.1) A (see note 1)		1.5 A	0.7 A	3 A		2.5 A	1.3 A
250 VAC	3 A		1 A	0.5 A	2 A		1.5 A	0.8 A
8 VDC	5 A		2 A		5 A		3 A	
14 VDC	5 A		2 A		4 A		3 A	
30 VDC	4 (0.1) A (see note 1)		2 A		3 A		3 A	
125 VDC	0.4 A		0.05 A		0.4 A		0.05 A	
250 VDC	0.2 A		0.03 A		0.2 A		0.05 A	

- Note:**
- The values in the parentheses are for the SSG-01.
  - The above current ratings are the values of the steady-state current.
  - Inductive load has a power factor of 0.7 min. (AC) and a time constant of 7 ms max. (DC).
  - Lamp load has an inrush current of 10 times the steady-state current.
  - Motor load has an inrush current of 6 times the steady-state current.
  - If the Switch is used in a DC circuit and is subjected to a surge current, connect a surge suppressor across the switch.
  - The ratings values apply under the following test conditions:  
 Ambient temperature:  $20 \pm 2^\circ\text{C}$   
 Ambient humidity:  $65 \pm 5\%$   
 Operating frequency: 30 operations/min

## ■ Characteristics

<b>Operating speed</b>	0.1 mm to 1 m/s (pin plunger models)
<b>Operating frequency</b>	Mechanical: 400 operations/min max. Electrical: 30 operations/min max.
<b>Insulation resistance</b>	100 MΩ min.
<b>Contact resistance</b>	OF 1.50 N: SSG-5 models: 30 mΩ max. SSG-01 models:50 mΩ max.  OF 0.50 N SSG-5 models: 50 mΩ max. SSG-01 models:100 mΩ max.
<b>Dielectric strength</b>	1,000 VAC, 50/60 Hz for 1 min between contacts of the same polarity (600 VAC for SSG-01H and SSG-01T models) 1,500 VAC, 50/60 Hz for 1 min between each terminal and ground 1,500 VAC, 50/60 Hz for 1 min between each terminal and non-current-carrying metal part
<b>Vibration resistance</b>	Malfunction: 10 to 2,000 Hz, 196 m/s <sup>2</sup> {20G} (Contact open: 10 μs max., lever position: at TTP)
<b>Shock resistance</b>	Malfunction: 490 m/s <sup>2</sup> {approx. 50G} (Contact open: 10 μs max., lever position: at TTP)
<b>Durability (see note 2)</b>	Mechanical: 10,000,000 operations min. (60 operations/min) Electrical: 200,000 operations min. (30 operations/min)
<b>Degree of protection (IP code)</b>	IEC IP40
<b>Degree of protection against electrical shock</b>	Class I
<b>Proof tracking index</b>	175
<b>Ambient operating temperature</b>	-25°C to 125°C (at ambient humidity of 60% max.) (with no icing)
<b>Ambient operating humidity</b>	85% max. (5°C to 30°C)
<b>Weight</b>	Approx. 1.6 g (pin plunger models)

- Note:** 1. The data given above are initial values.  
2. For testing conditions, consult your OMRON sales representative.

## ■ Approved Standards

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

### UL1054 (File No. E41515)/CSA C22.2 No. 55 (File No. LR21642)

Rated voltage	SSG-5	SSG-01
125 VAC	5 A	0.1 A
250 VAC	3 A	---
30 VDC	---	0.1 A

### EN61058-1 (File No. T9451449, TÜV Rheinland approval)

Rated voltage	SSG-5	SSG-01
250 VAC	5 A	---
30 VDC	---	0.1 A

Testing conditions: 5E4 (50,000 operations), T125 (0°C to 125°C)

## ■ Contact Specifications

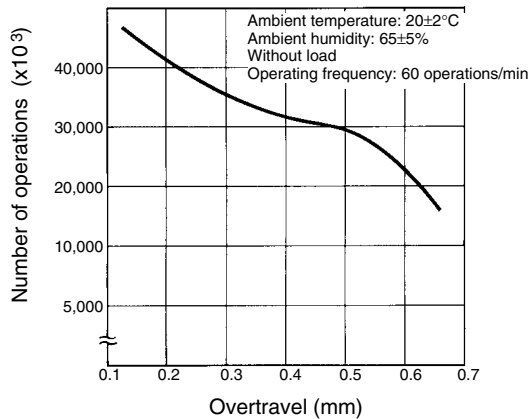
Item		SSG-5	SSG-01H.T	SSG-01P
Contact	Specification	Rivet	Crossbar	Crossbar
	Material	Silver	Gold alloy	Gold alloy
	Gap (standard value)	0.5 mm	0.25 mm	0.5 mm
Inrush current	NC	20 A max.	1 A max.	1 A max.
	NO	10 A max.	1 A max.	1 A max.
Minimum applicable load (see note)		160 mA at 5 VDC	1 mA at 5 VDC	1 mA at 5 VDC

**Note:** For more information on the minimum applicable load, refer to *Using Micro Loads* on page 189.

# Engineering Data (Reference Values)

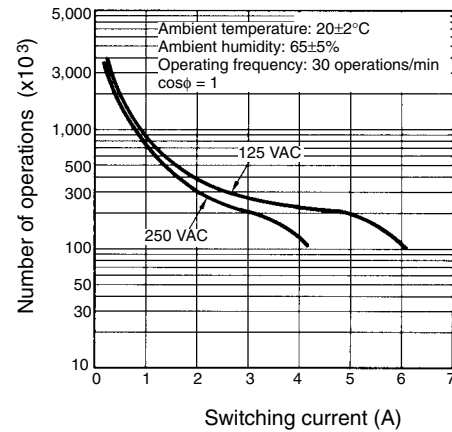
## Mechanical Durability (Pin Plunger Models)

### SSG-5 Models



## Electrical Durability (Pin Plunger Models)

### SSG-5 Models

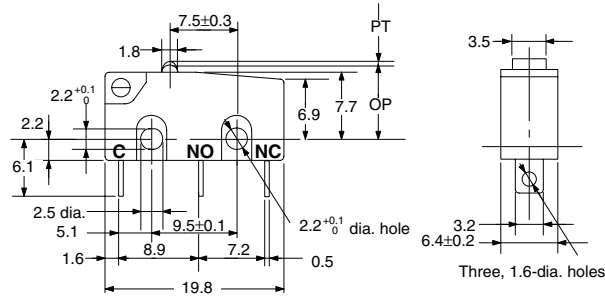


## Dimensions

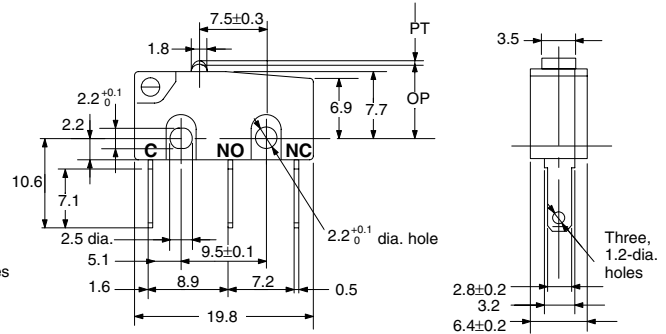
Note: All units are in millimeters unless otherwise indicated.

### Terminals

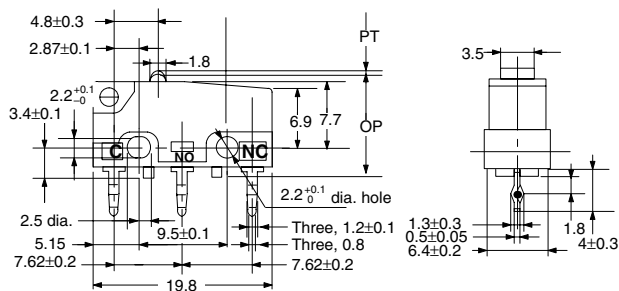
#### Solder Terminals



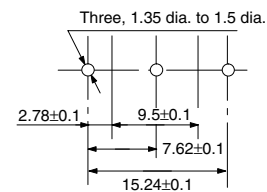
#### Quick-connect Terminals (#110)



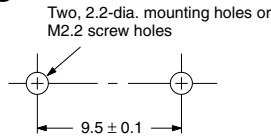
#### PCB Terminals



#### PCB Mounting Dimensions (Reference)



## ■ Mounting Holes



Make sure that the plate to which the SSG is mounted is flat. If the plate has protruding or warped part, the SSG may not operate properly.

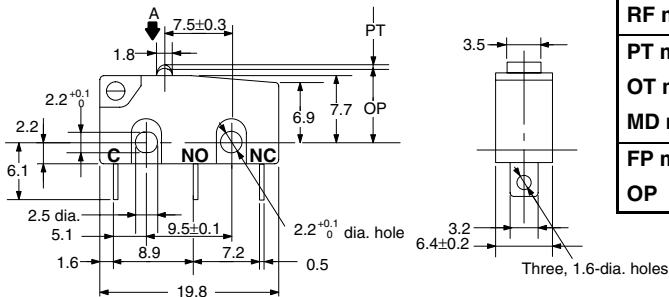
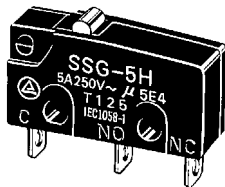
## ■ Dimensions and Operating Characteristics

- Note:**
1. All units are in millimeters unless otherwise indicated.
  2. Every actual model number includes the code instead of □ for the kind of terminals incorporated by the model.
  3. Unless otherwise specified, a tolerance of  $\pm 0.25$  mm applies to all dimensions.
  4. The operating characteristics are for operation in the A direction (▼).

### Solder/Quick-connect Terminals

#### Pin Plunger Models

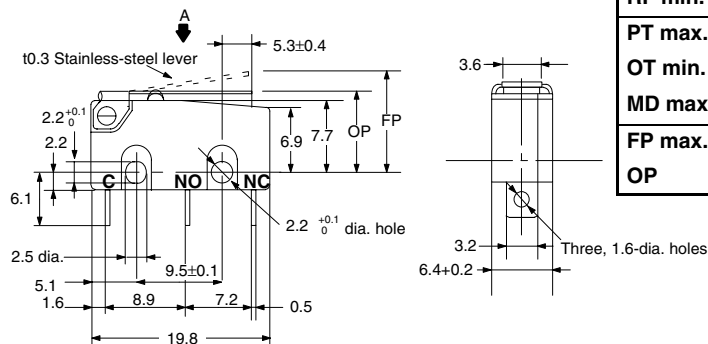
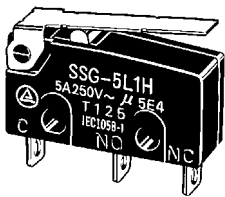
SSG-01□  
SSG-5□  
SSG-01□-5  
SSG-5□-5



Model	SSG-01□ SSG-5□	SSG-01□-5 SSG-5□-5
OF max.	1.50 N {153 gf}	0.50 N {51 gf}
RF min.	0.25 N {25 gf}	0.04 N {4 gf}
PT max.	0.6 mm	
OT min.	0.4 mm	
MD max.	0.1 mm	
FP max.	---	
OP	8.4±0.3 mm	

#### Hinge Lever Models

SSG-01L1□  
SSG-5L1□  
SSG-01L1□-5  
SSG-5L1□-5

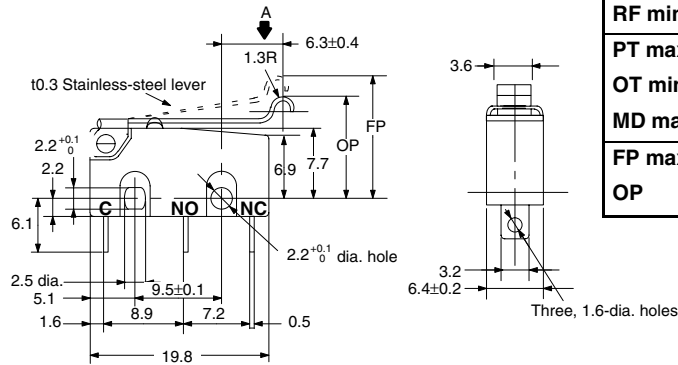
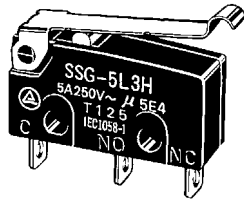


Model	SSG-01L1□ SSG-5L1□	SSG-01L1□-5 SSG-5L1□-5
OF max.	0.60 N {61 gf}	0.20 N {20 gf}
RF min.	0.06 N {6 gf}	0.02 N {2 gf}
PT max.	1.0 mm	
OT min.	0.8 mm	
MD max.	---	
FP max.	13.6 mm	
OP	8.8 <sup>+1.0</sup> <sub>-0.6</sub> mm	

**Note:** Also available are models with a hinge lever length of 39 mm under the following model numbers; SSG-01L14□, SSG-5L14□, SSG-01L14□-5, and SSG-5L14□-5. Consult your OMRON sales representative for these models.

### Simulated Roller Lever Models

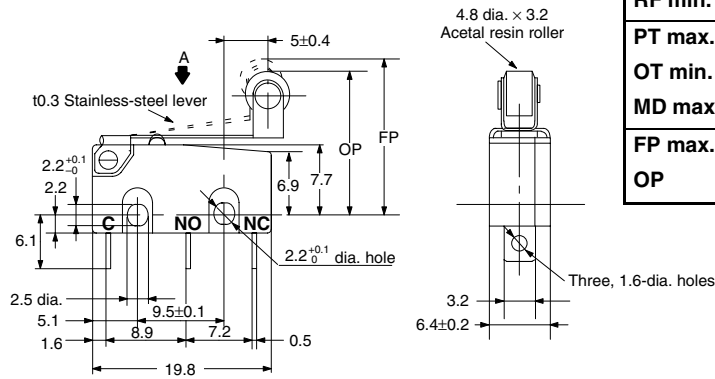
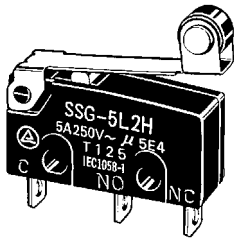
SSG-01L3□  
SSG-5L3□  
SSG-01L3□-5  
SSG-5L3□-5



Model	SSG-01L3□ SSG-5L3□	SSG-01L3□-5 SSG-5L3□-5
OF max.	0.60 N {61 gf}	0.20 N {20 gf}
RF min.	0.06 N {6 gf}	0.02 N {2 gf}
PT max.	1.0 mm	
OT min.	0.8 mm	
MD max.	---	
FP max.	15.5 mm	
OP	10.7 <sup>+1.0</sup> <sub>-0.6</sub> mm	

### Hinge Roller Lever Models

SSG-01L2□  
SSG-5L2□  
SSG-01L2□-5  
SSG-5L2□-5

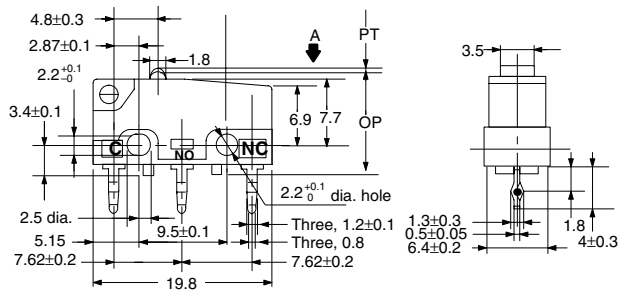
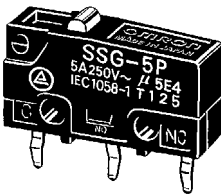


Model	SSG-01L2□ SSG-5L2□	SSG-01L2□-5 SSG-5L2□-5
OF max.	0.60 N {61 gf}	0.20 N {20 gf}
RF min.	0.06 N {6 gf}	0.02 N {2 gf}
PT max.	1.0 mm	
OT min.	0.8 mm	
MD max.	---	
FP max.	19.0 mm	
OP	14.5 <sup>+1.0</sup> <sub>-0.6</sub> mm	

### PCB Terminal Models

#### Pin Plunger

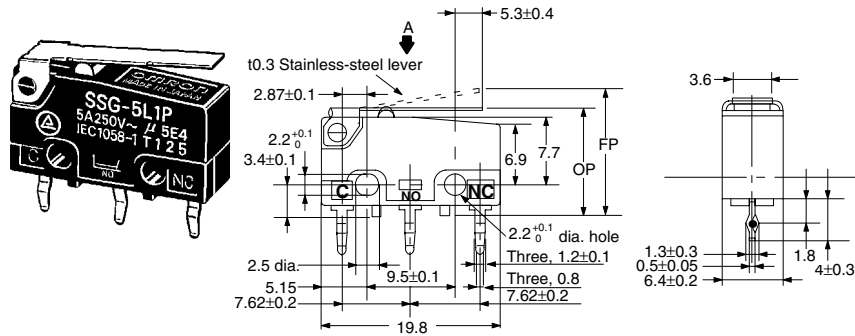
SSG-01P  
SSG-5P  
SSG-01P-5  
SSG-5P-5



Model	SSG-01P SSG-5P	SSG-01P-5 SSG-5P-5
OF max.	1.50 N {153 gf}	0.50 N {51 gf}
RF min.	0.25 N {25 gf}	0.04 N {4 gf}
PT max.	0.6 mm	
OT min.	0.4 mm	
MD max.	0.1 mm	
FP max.	---	
OP	11.8±0.4 mm	

## Hinge Lever Models

SSG-01L1P  
SSG-5L1P  
SSG-01L1P-5  
SSG-5L1P-5

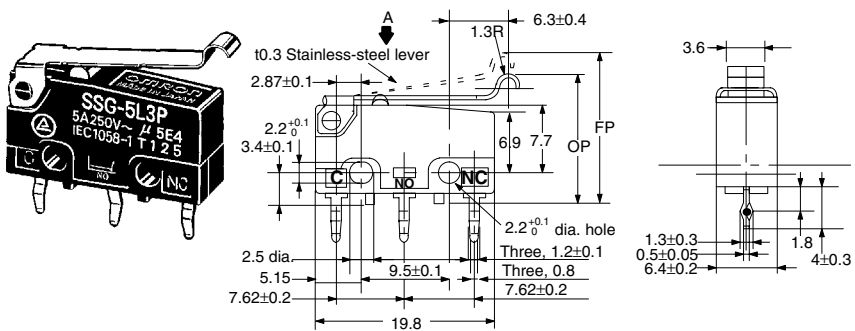


Model	SSG-01L1P SSG-5L1P	SSG-01L1P-5 SSG-5L1P-5
OF max.	0.60 N {61 gf}	0.20 N {20 gf}
RF min.	0.06 N {6 gf}	0.02 N {2 gf}
PT max.	---	
OT min.	1.0 mm	
MD max.	0.8 mm	
FP max.	17.0 mm	
OP	12.2 $^{+1.1}_{-0.7}$ mm	

**Note:** Also available are models with a hinge lever length of 39 mm under the following model numbers; SSG-01L14P, SSG-5L14P, SSG-01L14P-5, and SSG-5L14P-5. Consult your OMRON sales representative for these models.

## Simulated Roller Lever Models

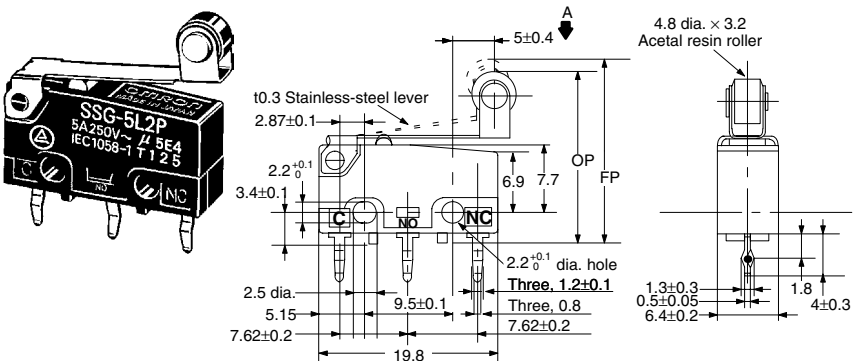
SSG-01L3P  
SSG-5L3P  
SSG-01L3P-5  
SSG-5L3P-5



Model	SSG-01L3P SSG-5L3P	SSG-01L3P-5 SSG-5L3P-5
OF max.	0.60 N {61 gf}	0.20 N {20 gf}
RF min.	0.06 N {6 gf}	0.02 N {2 gf}
PT max.	---	
OT min.	1.0 mm	
MD max.	0.8 mm	
FP max.	18.9 mm	
OP	14.4 $^{+1.1}_{-0.7}$ mm	

## Hinge Roller Lever Models

SSG-01L2P  
SSG-5L2P  
SSG-01L2P-5  
SSG-5L2P-5



Model	SSG-01L2P SSG-5L2P	SSG-01L2P-5 SSG-5L2P-5
OF max.	0.60 N {61 gf}	0.20 N {20 gf}
RF min.	0.06 N {6 gf}	0.02 N {2 gf}
PT max.	---	
OT min.	1.0 mm	
MD max.	0.8 mm	
FP max.	22.4 mm	
OP	17.9 $^{+1.1}_{-0.7}$ mm	

# Precautions

Refer to pages 26 to 31 for common precautions.

## ■ Cautions

### Terminal Connection

When soldering the lead wire to the terminal, first insert the lead wire conductor through the terminal hole and then take the following steps promptly.

- Make sure that the capacity of the soldering iron is 60 W maximum. Do not take more than 5 s to solder the switch terminal. Improper soldering involving an excessively high temperature or excessive soldering time may deteriorate the characteristics of the Switch.
- Be sure to apply only the minimum required amount of flux. The SSG may have contact failures if flux intrudes into the interior of the SSG.
- Use the following lead wires to connect to the solder terminals.

Type	Conductor size
SSG-01	AWG 22 to 20
SSG-5	AWG 20 to 18

To automatically solder the Switch to a PCB in a soldering bath, complete soldering within 5 seconds at a flux temperature of 250°C and avoid the overflow of flux onto the surface of the PCB where the Switch or other parts are mounted.

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.

### Insulation Distance

The Switch does not have a ground terminal. According to EN61058-1, the minimum insulation thickness for this Switch should be 0.9 mm. If the insulation distance cannot be provided in the product incorporating the Switch, either use a Switch with insulation barrier or use a Separator to ensure sufficient insulation distance.

## ■ Correct Use

### Mounting

Use M2.2 mounting screws with plane washers or spring washers to securely mount the Switch. Tighten the screws to a torque of 0.20 to 0.24 N • m {2 to 2.5 kgf • cm}.

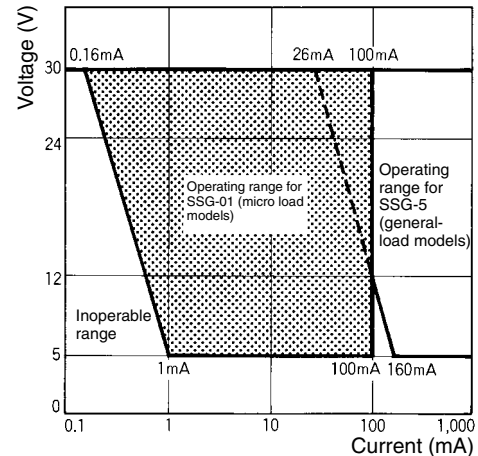
### Operating Stroke

Make sure that the operating stroke is 70% to 100% 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%.



**ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.**

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