## Subminiature Basic Switch

## SSG

## Global Subminiature Basic Switch Conforming to EN61058-1 (EC601058-1), UL1054, and CSA C22.2 No. 54

- A wide operating temperature range of $-25^{\circ} \mathrm{C}$ to $125^{\circ} \mathrm{C}$ is available for at high-temperature use.
- Flexible change lever using the external snap-fit lever.
- PCB terminal models are resistant to flux.
- Even-pitched PCB terminals conform to IEC1020-6-2.
- Mounting hold size conforms to IEC1020-6-2.
- RoHS Compliant.



## Ordering Information

## Model Number Legend

## SSG- $\frac{\square}{\mathbf{1}} \frac{\square}{\mathbf{3}} \frac{\square}{5}$

1. Ratings
0.1: 0.1A

5: 5 A
2. Actuator

Note: Pin plunger
L1: Hinge lever
L3: Simulated hinge lever
L2: Hinge roller lever
3. Contact Form

None: SPDT
-2: SPST-NC
-3: SPST-NO
4. Terminals

H: Solder
T: Quick-connect terminals (\#110)
P: PCB
5. Operating Force max.

None: $1.5 \mathrm{~N}\{153 \mathrm{gf}\}$
$-5: \quad 0.5 \mathrm{~N}\{51 \mathrm{gf}\}$
Note: These values are for the pin plunger model.

## List of Models

| Actuator | Rating | OF max. | Solder | Quick-connect terminal (\#110) | PCB |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Pin plunger | 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 |
|  | 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 |
| Hinge lever | 0.1 A | $0.60 \mathrm{~N}\{61 \mathrm{gf}\}$ | SSG-01L1H | SSG-01L1T | SSG-01L1P |
|  |  | $0.20 \mathrm{~N}\{20 \mathrm{gf}\}$ | SSG-01L1H-5 | SSG-01L1T-5 | SSG-01L1P-5 |
|  | 5 A | $0.60 \mathrm{~N}\{61 \mathrm{gf}\}$ | SSG-5L1H | SSG-5L1T | SSG-5L1P |
|  |  | $0.20 \mathrm{~N}\{20 \mathrm{gf}\}$ | SSG-5L1H-5 | SSG-5L1T-5 | SSG-5L1P-5 |
| $\ldots$ | 0.1 A | $0.60 \mathrm{~N}\{61 \mathrm{gff}$ | SSG-01L3H | SSG-01L3T | SSG-01L3P |
|  |  | $0.20 \mathrm{~N}\{20 \mathrm{gf}\}$ | SSG-01L3H-5 | SSG-01L3T-5 | SSG-01L3P-5 |
|  | 5 A | $0.60 \mathrm{~N}\{61 \mathrm{gf}\}$ | SSG-5L3H | SSG-5L3T | SSG-5L3P |
|  |  | $0.20 \mathrm{~N}\{20 \mathrm{gf}\}$ | SSG-5L3H-5 | SSG-5L3T-5 | SSG-5L3P-5 |
|  | 0.1 A | $0.60 \mathrm{~N}\{61 \mathrm{gf}\}$ | SSG-01L2H | SSG-01L2T | SSG-01L2P |
|  |  | $0.20 \mathrm{~N}\{20 \mathrm{gf}\}$ | SSG-01L2H-5 | SSG-01L2T-5 | SSG-01L2P-5 |
|  | 5 A | $0.60 \mathrm{~N}\{61 \mathrm{gf}\}$ | SSG-5L2H | SSG-5L2T | SSG-5L2P |
|  |  | $0.20 \mathrm{~N}\{20 \mathrm{gf}\}$ | SSG-5L2H-5 | SSG-5L2T-5 | SSG-5L2P-5 |

Note: SPST models are also available, but not listed in the above table.

## 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 |
| $\begin{aligned} & 125 \text { VAC } \\ & 250 \text { VAC } \end{aligned}$ | $\begin{aligned} & 5 \text { (0.1) A (see note 1) } \\ & 3 \text { A } \end{aligned}$ |  | $\begin{aligned} & 1.5 \mathrm{~A} \\ & 1 \end{aligned}$ | $\begin{aligned} & \hline 0.7 \mathrm{~A} \\ & 0.5 \mathrm{~A} \end{aligned}$ | $\begin{aligned} & 3 \mathrm{~A} \\ & 2 \mathrm{~A} \end{aligned}$ |  | $\begin{aligned} & \hline 2.5 \mathrm{~A} \\ & 1.5 \mathrm{~A} \end{aligned}$ | $\begin{aligned} & 1.3 \mathrm{~A} \\ & 0.8 \mathrm{~A} \end{aligned}$ |
| 8 VDC 14 VDC 30 VDC 125 VDC 250 VDC | $\begin{aligned} & \hline 5 \mathrm{~A} \\ & 5 \mathrm{~A} \\ & 4 \text { (0.1) A (s } \\ & 0.4 \mathrm{~A} \\ & 0.2 \mathrm{~A} \end{aligned}$ |  | 2 A 2 A 2 A 0.05 A 0.03 A |  | 5 A <br> 4 A <br> 3 A <br> 0.4 A <br> 0.2 A |  | $\begin{aligned} & \hline 3 \mathrm{~A} \\ & 3 \mathrm{~A} \\ & 3 \mathrm{~A} \\ & 0.05 \mathrm{~A} \\ & 0.05 \mathrm{~A} \end{aligned}$ |  |

Note: 1. The values in the parentheses are for the SSG-01.
2. The above current ratings are the values of the steady-state current.
3. Inductive load has a power factor of 0.7 min . AC ) and a time constant of 7 ms max. (DC).
4. Lamp load has an inrush current of 10 times the steady-state current.
5. Motor load has an inrush current of 6 times the steady-state current.
6. If the Switch is used in a DC circuit and is subjected to a surge current, connect a surge suppressor across the switch.

Use the Switch in the following operation range.


| Model | SSG-01 | SSG-5 |
| :---: | :---: | :---: |
| Minimum applicable load | 1 mA at 5 VDC | 160 mA at 5 VDC |

## Characteristics

| Operating speed | 0.1 mm to $1 \mathrm{~m} / \mathrm{s}$ (at pin plunger models) |  |
| :---: | :---: | :---: |
| Operating frequency | Mechanical: Electrical: | 400 operations per minute 60 operations per minute |
| Insulation resistance | $100 \mathrm{M} \Omega \mathrm{min}$. |  |
| Contact resistance | $\text { OF 1.50 N: SSG-5 models: } 30 \mathrm{~m} \Omega \text { max. }$ |  |
|  |  | SSG-01 models: $50 \mathrm{~m} \Omega \mathrm{~m}$ |
|  | OF 0.50 N : | SSG-5 models: $50 \mathrm{~m} \Omega \mathrm{max}$ |
|  |  | SSG-01 models: $100 \mathrm{~m} \Omega$ |
| Dielectric strength | $\begin{aligned} & 1,000 \text { VAC, } 5 \\ & \text { (600 VAC for } \\ & 1,500 \text { VAC, } 5 \\ & 1,500 \text { VAC, } 5 \end{aligned}$ | 60 Hz for 1 min. between con SG-01H and SSG-01T mo 60 Hz for 1 min . between 60 Hz for 1 min . between |
| Vibration resistance | Malfunction: | 10 to $2,000 \mathrm{~Hz}, 196 \mathrm{~m} / \mathrm{s}^{2}$ |
| Shock resistance | Malfunction: | $490 \mathrm{~m} / \mathrm{s}^{2}$ \{approx. 50G\} (c) |
| Life expectancy | Mechanical: Electrical: | 10,000,000 operations mi 200,000 operations min. resistive OT: full) |
| Degree of protection (IP code) | IP00 |  |
| Degree of protection against electrical shock | Class I |  |
| Ambient temperature | Operating: $\quad-25^{\circ} \mathrm{C}$ to $125^{\circ} \mathrm{C}$ (with no ic |  |
| Ambient humidity | Operating: $85 \%$ max. $\left(5^{\circ} \mathrm{C}\right.$ to $\left.30^{\circ} \mathrm{C}\right)$ |  |
| Proof tracking index | 175 |  |
| Switch category (IEC335-1) | D |  |
| Weight | Approx. 1.6 g (pin plunger models) |  |

## Approved Standards

| Standard | EN61058-1/EC60158-1 |
| :--- | :--- |
| Approval body | TÜV Rheinland (File No. T9451449) |
|  | BEAB (File No. C0746) |
|  | IMQ (File No. EL662) |
|  | VDE (File No. 100873, EN61058-1 1992+ AI: 1993) |
| Rating | SSG-5 models: 5 A at 250 VAC (T125, 50,000 operations) |
|  | SSG-01 models: 0.1 A at 30 VDC (T125, 50,000 operations) |

UL1054 (File No. E41515), CSA C22.2 No. 55 (File No. LR21642) Approved Ratings
SSG-5 Models: 5 A at 125 VAC, 3 A at 250 VAC
3 A at 250 VAC, 3 A at $30 \operatorname{VDC}$ (100,000 operations)
SSG-01 Models: $\quad 0.1 \mathrm{~A}$ at $125 \mathrm{VAC}, 0.1 \mathrm{~A}$ at 30 VDC

## Contact

| Item |  | SSG-5 | SSG-01H.T | SSG-01P |
| :--- | :--- | :--- | :--- | :--- |
| Contact | Rivet | Crossbar | Crossbar |  |
|  | Specification | Silver | Gold alloy | Gold alloy |
|  | Material | 0.5 mm | 0.25 mm | 0.5 mm |
|  | Gap (standard value) | 20 A max. | 1 A max. | 1 A max |
| Inrush current | NC | 10 A max. | 1 A max. | 1 A max. |
|  | NO |  |  |  |

## Dimensions

## $\square$ Terminals

## Solder Terminals



## PCB Terminals



## Quick connect Terminals (\#110)



РСВ Mounting


## Dimensions and Operating Characteristics

Note: 1. All units are in millimeters unless otherwise indicated
2. Every actual model number includes the code instead of $\square$ for the kind of terminals incorporated by the model.
3. Unless otherwise specified, a tolerance of $\pm 0.25 \mathrm{~mm}$ applies to all dimensions.

## Solder/Quick-connect Terminal



| Model | SSG-01 $\square$ <br> SSG-5 $\square$ | SSG-01 $\square-5$ <br> SSG-5 $\square-5$ |
| :--- | :--- | :--- |
| OF max. | $1.50 \mathrm{~N}\{153 \mathrm{gf}\}$ | $0.50 \mathrm{~N}\{51 \mathrm{gf}\}$ |
| RF min. | $0.25 \mathrm{~N}\{25 \mathrm{gf}\}$ | $0.04 \mathrm{~N}\{4 \mathrm{gf}\}$ |
| PT max. | 0.6 mm |  |
| OT min. | 0.4 mm |  |
| MD max. | 0.1 mm |  |
| FP max. | - |  |
| OP | $8.4 \pm 0.3 \mathrm{~mm}$ |  |



Note: Also available are models with a hinge lever length of 39 mm under the following model numbers: SSG-01L14 $\square$, SSG-5L14 $\square$, SSG01L14 $\square-5$, and SSG-5L14 $\square-5$. Contact your OMRON representative for these models.


| Model | SSG-01L3 $\square$ <br> SSG-5L3 $\square$ | SSG-01L3 $\square-5$ <br> SSG-5L3 $\square-5$ |
| :--- | :--- | :--- |
| OF max. | $0.60 \mathrm{~N}\{61 \mathrm{gf}\}$ | $0.20 \mathrm{~N}\{20 \mathrm{gf}\}$ |
| RF min. | $0.06 \mathrm{~N}\{6 \mathrm{gf}\}$ | $0.02 \mathrm{~N}\{2 \mathrm{gf}\}$ |
| PT max. | 1.0 mm |  |
| OT min. | 0.8 mm |  |
| MD max. | - |  |
| FP max. | 15.5 mm |  |
| OP | $10.7^{+1.0}-.-.6 \mathrm{~mm}$ |  |

Hinge Roller Lever SSG-01L2 $\square$
SSG-5L2 $\square$
SSG-01L2 $\square$-5


| Model | SSG-01L2 $\square$ <br> SSG-5L2 $\square$ | SSG-01L2 $\square-5$ <br> SSG-5L2 $\square-5$ |
| :--- | :--- | :--- |
| OF max. | $0.60 \mathrm{~N}\{61 \mathrm{gf}\}$ | $0.20 \mathrm{~N}\{20 \mathrm{gf}\}$ |
| RF min. | $0.06 \mathrm{~N}\{6 \mathrm{gf}\}$ | $0.02 \mathrm{~N}\{2 \mathrm{gf}\}$ |
| PT max. | 1.0 mm |  |
| OT min. | 0.8 mm |  |
| MD max. | - |  |
| FP max. | 19.0 mm |  |
| OP | $14.5^{+1.0} /_{-0.6} \mathrm{~mm}$ |  |

## PCB Terminal



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. Contact your OMRON representative for these models.


| Model | SSG-01L3P <br> SSG-5L3P | SSG-01L3P-5 <br> SSG-5L3P-5 |
| :--- | :--- | :--- |
| OF max. | $0.60 \mathrm{~N}\{61 \mathrm{gf}\}$ | $0.20 \mathrm{~N}\{20 \mathrm{gf}\}$ |
| RF min. | $0.06 \mathrm{~N}\{6 \mathrm{gf}\}$ | $0.02 \mathrm{~N}\{2 \mathrm{gf}\}$ |
| PT max. | - |  |
| OT min. | 1.0 mm |  |
| MD max. | 0.8 mm |  |
| FP max. | 18.9 mm |  |
| OP | $14.4^{+1.1} /-0.7 \mathrm{~mm}$ |  |


| Model | SSG-01L2P <br> SSG-5L2P | SSG-01L2P-5 <br> SSG-5L2P-5 |
| :--- | :--- | :--- |
| OF max. | $0.60 \mathrm{~N}\{61 \mathrm{gf}\}$ | $0.20 \mathrm{~N}\{20 \mathrm{gf}\}$ |
| RF min. | $0.06 \mathrm{~N}\{6 \mathrm{~g} f\}$ | $0.02 \mathrm{~N}\{2 \mathrm{gf}\}$ |
| PT max. | - |  |
| OT min. | 1.0 mm |  |
| MD max. | 0.8 mm |  |
| FP max. | 22.4 mm |  |
| OP | $17.9^{+1.1} /-0.7 \mathrm{~mm}$ |  |

## Precautions

## - Terminal Connections

When soldering a lead wire to a switch terminal, insert the wire conductor into the hole of the switch terminal and 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 |

- Soldering Categories (Refer to the conditions of EN61058-1).

| Type | Classified by EN61058-1 |
| :--- | :--- |
| Solder terminal | Soldering iron used with soldering hole <br> Solder terminal type 1.2 |
| PCB terminal | Soldering bath used <br> Solder terminal type 1.2 |

To automatically solder the Switch to a PCB in a soldering bath, complete soldering within 5 seconds at a flux temperature of $250^{\circ} \mathrm{C}$ 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. The minimum distance through insulation (IEC61058-1) is 0.9 mm . If proper insulation for the end product cannot be secured, additional insulation such as a Separator or insulation cover should be attached.

## Mounting

When securing the SSG, be sure to use M2.2 mounting screws and tighten the screws with flat washers and spring washers securely within a torque range between 0.20 to $0.24 \mathrm{~N} \cdot \mathrm{~m}(2$ to $2.5 \mathrm{kgf} \cdot \mathrm{cm})$.

## Mounting Holes

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

## 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 life expectancy of the SSG may be shortened.

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NEVER USE THE PRODUCT FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCT IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.
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## ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

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

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