## Subminiature Basic Switch SS

## Subminiature Basic Switch Offers Long

 Life and High Reliability■ A design that combines simplicity and stability by the use of two split springs ensures a long durability of 30,000,000 operations.
■ A variety of models are available, with operating force ranging from low to high.
Available by $10.1 \mathrm{~A}, 5 \mathrm{~A}$, and 0.1 A models.


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## Ordering Information

- Model Number Legend


## SS <br> 

1. Ratings

10: $\quad 10.1 \mathrm{~A}$ at 125 VAC
5: $\quad 5 \mathrm{~A}$ at 125 VAC
01: 0.1 A at 30 VDC
2. Actuator

None: Pin plunger
GL: Hinge lever
GL13: Simulated roller lever
GL2: Hinge roller lever
3. Maximum Operating Force (see note 1)

None: $1.47 \mathrm{~N}\{150 \mathrm{gf}\}$
-F: $\quad 0.49 \mathrm{~N}\{50 \mathrm{gf}\}(0.1 \mathrm{~A}, 5 \mathrm{~A})$
-E: $\quad 0.25 \mathrm{~N}\{25 \mathrm{gf}\}(0.1 \mathrm{~A})$
Note: These values are for pin plunger models.
4. Contact Form None: SPDT
-2: SPST-NC
-3: SPST-NO
5. Terminals

None: Solder terminals
T: Quick-connect terminals (\#110)
D: PCB terminals (see note 2)
6. Special Code

None: Standard $\left(85^{\circ} \mathrm{C}\right)$
-T: Heat resistive $\left(120^{\circ} \mathrm{C}\right)$

## ■ List of Models

## Standard Models

| Actuator | Terminal | Contact Form | Rating OF max. | 10.1 A | 5 A | 0.1 A |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Pin plunger | Solder terminal | SPDT | 1.47 N \{150 gf $\}$ | SS-10 | SS-5 | SS-01 |
|  |  | SPST-NC |  | SS-10-2 | SS-5-2 | SS-01-2 |
|  |  | CPST-NO |  | SS-10-3 | SS-5-3 | SS-01-3 |
|  | Quick-connect terminal (\#110) | SPDT |  | SS-10T | SS-5T | SS-01T |
|  |  | SPST-NC |  | SS-10-2T | SS-5-2T | SS-01-2T |
|  |  | CPST-NO |  | SS-10-3T | SS-5-3T | SS-01-3T |
|  | PCB terminal | SPDT |  | SS-10D | SS-5D | SS-01D |
|  |  | SPST-NC |  | SS-10-2D | SS-5-2D | SS-01-2D |
|  |  | CPST-NO |  | SS-10-3D | SS-5-3D | SS-01-3D |
|  | Solder terminal | SPDT | 0.49 N \{50 gf $\}$ | --- | SS-5-F | SS-01-F |
|  |  | SPST-NC |  | --- | SS-5-F-2 | SS-01-F-2 |
|  |  | CPST-NO |  | --- | SS-5-F-3 | SS-01-F-3 |
|  | Quick-connect terminal (\#110) | SPDT |  | --- | SS-5-FT | SS-01-FT |
|  |  | SPST-NC |  | --- | SS-5-F-2T | SS-01-F-2T |
|  |  | CPST-NO |  | --- | SS-5-F-3T | SS-01-F-3T |
|  | PCB terminal | SPDT |  | --- | SS-5-FD | SS-01-FD |
|  |  | SPST-NC |  | --- | SS-5-F-2D | SS-01-F-2D |
|  |  | CPST-NO |  | --- | SS-5-F-3D | SS-01-F-3D |
|  | Solder terminal | SPDT | $0.25 \mathrm{~N}\{25 \mathrm{gf}\}$ | --- | --- | SS-01-E |
|  |  | SPST-NC |  | --- | --- | SS-01-E-2 |
|  |  | CPST-NO |  | --- | --- | SS-01-E-3 |
|  | Quick-connect terminal (\#110) | SPDT |  | --- | --- | SS-01-ET |
|  |  | SPST-NC |  | --- | --- | SS-01-E-2T |
|  |  | CPST-NO |  | --- | --- | SS-01-E-3T |
|  | PCB terminal | SPDT |  | --- | --- | SS-01-ED |
|  |  | SPST-NC |  | --- | --- | SS-01-E-2D |
|  |  | CPST-NO |  | --- | --- | SS-01-E-3D |
| Hinge lever | Solder terminal | SPDT | $0.49 \mathrm{~N}\{50 \mathrm{gf}\}$ | SS-10GL | SS-5GL | SS-01GL |
|  |  | SPST-NC |  | SS-10GL-2 | SS-5GL-2 | SS-01GL-2 |
|  |  | CPST-NO |  | SS-10GL-3 | SS-5GL-3 | SS-01GL-3 |
|  | Quick-connect terminal (\#110) | SPDT |  | SS-10GLT | SS-5GLT | SS-01GLT |
|  |  | SPST-NC |  | SS-10GL-2T | SS-5GL-2T | SS-01GL-2T |
|  |  | CPST-NO |  | SS-10GL-3T | SS-5GL-3T | SS-01GL-3T |
|  | PCB terminal | SPDT |  | SS-10GLD | SS-5GLD | SS-01GLD |
|  |  | SPST-NC |  | SS-10GL-2D | SS-5GL-2D | SS-01GL-2D |
|  |  | CPST-NO |  | SS-10GL-3D | SS-5GL-3D | SS-01GL-3D |
|  | Solder terminal | SPDT | $0.16 \mathrm{~N}\{16 \mathrm{gf}\}$ | --- | SS-5GL-F | SS-01GL-F |
|  |  | SPST-NC |  | --- | SS-5GL-F-2 | SS-01GL-F-2 |
|  |  | CPST-NO |  | --- | SS-5GL-F-3 | SS-01GL-F-3 |
|  | Quick-connect terminal (\#110) | SPDT |  | --- | SS-5GL-FT | SS-01GL-FT |
|  |  | SPST-NC |  | --- | SS-5GL-F-2T | SS-01GL-F-2T |
|  |  | CPST-NO |  | --- | SS-5GL-F-3T | SS-01GL-F-3T |


| Actuator | Terminal | Contact Form | Rating OF max. | 10.1 A | 5 A | 0.1 A |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Hinge lever | PCB terminal | SPDT | 0.16 N \{16 gf \} | --- | SS-5GL-FD | SS-01GL-FD |
|  |  | SPST-NC |  | -- | SS-5GL-F-2D | SS-01GL-F-2D |
|  |  | CPST-NO |  | --- | SS-5GL-F-3D | SS-01GL-F-3D |
|  | Solder terminal | SPDT | $0.08 \mathrm{~N}\{8 \mathrm{gf}\}$ | --- | --- | SS-01GL-E |
|  |  | SPST-NC |  | --- | --- | SS-01GL-E-2 |
|  |  | CPST-NO |  | --- | --- | SS-01GL-E-3 |
|  | Quick-connect terminal (\#110) | SPDT |  | --- | --- | SS-01GL-ET |
|  |  | SPST-NC |  | --- | --- | SS-01GL-E-2T |
|  |  | CPST-NO |  | --- | --- | SS-01GL-E-3T |
|  | PCB terminal | SPDT |  | --- | --- | SS-01GL-ED |
|  |  | SPST-NC |  | --- | -- | SS-01GL-E-2D |
|  |  | CPST-NO |  | --- | --- | SS-01GL-E-3D |
| Simulated roller lever | Solder terminal | SPDT | $0.49 \mathrm{~N}\{50 \mathrm{gf}\}$ | SS-10GL13 | SS-5GL13 | SS-01GL13 |
|  |  | SPST-NC |  | SS-10GL13-2 | SS-5GL13-2 | SS-01GL13-2 |
|  |  | CPST-NO |  | SS-10GL13-3 | SS-5GL13-3 | SS-01GL13-3 |
|  | Quick-connect terminal (\#110) | SPDT |  | SS-10GL13T | SS-5GL13T | SS-01GL13T |
|  |  | SPST-NC |  | SS-10GL13-2T | SS-5GL13-2T | SS-01GL13-2T |
|  |  | CPST-NO |  | SS-10GL13-3T | SS-5GL13-3T | SS-01GL13-3T |
|  | PCB terminal | SPDT |  | SS-10GL13D | SS-5GL13D | SS-01GL13D |
|  |  | SPST-NC |  | SS-10GL13-2D | SS-5GL13-2D | SS-01GL13-2D |
|  |  | CPST-NO |  | SS-10GL13-3D | SS-5GL13-3D | SS-01GL13-3D |
|  | Solder terminal | SPDT | $0.16 \mathrm{~N}\{16 \mathrm{gf}\}$ | --- | SS-5GL13-F | SS-01GL13-F |
|  |  | SPST-NC |  | --- | SS-5GL13-F-2 | SS-01GL13-F-2 |
|  |  | CPST-NO |  | --- | SS-5GL13-F-3 | SS-01GL13-F-3 |
|  | Quick-connect terminal (\#110) | SPDT |  | --- | SS-5GL13-FT | SS-01GL13-FT |
|  |  | SPST-NC |  | --- | SS-5GL13-F-2T | SS-01GL13-F-2T |
|  |  | CPST-NO |  | --- | SS-5GL13-F-3T | SS-01GL13-F-3T |
|  | PCB terminal | SPDT |  | --- | SS-5GL13-FD | SS-01GL13-FD |
|  |  | SPST-NC |  | --- | SS-5GL13-F-2D | SS-01GL13-F-2D |
|  |  | CPST-NO |  | --- | SS-5GL13-F-3D | SS-01GL13-F-3D |
|  | Solder terminal | SPDT | $0.08 \mathrm{~N}\{8 \mathrm{gf}\}$ | --- | --- | SS-01GL13-E |
|  |  | SPST-NC |  | --- | --- | SS-01GL13-E-2 |
|  |  | CPST-NO |  | --- | --- | SS-01GL13-E-3 |
|  | Quick-connect terminal (\#110) | SPDT |  | --- | --- | SS-01GL13-ET |
|  |  | SPST-NC |  | --- | --- | SS-01GL13-E-2T |
|  |  | CPST-NO |  | --- | --- | SS-01GL13-E-3T |
|  | PCB terminal | SPDT |  | --- | --- | SS-01GL13-ED |
|  |  | SPST-NC |  | --- | --- | SS-01GL13-E-2D |
|  |  | CPST-NO |  | --- | --- | SS-01GL13-E-3D |


| Actuator | Terminal | Contact Form | Rating OF max. | 10.1 A | 5 A | 0.1 A |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Hinge roller lever | Solder terminal | SPDT | $0.49 \mathrm{~N}\{50 \mathrm{gf}\}$ | SS-10GL2 | SS-5GL2 | SS-01GL2 |
|  |  | SPST-NC |  | SS-10GL2-2 | SS-5GL2-2 | SS-01GL2-2 |
|  |  | CPST-NO |  | SS-10GL2-3 | SS-5GL2-3 | SS-01GL2-3 |
|  | Quick-connect terminal (\#110) | SPDT |  | SS-10GL2T | SS-5GL2T | SS-01GL2T |
|  |  | SPST-NC |  | SS-10GL2-2T | SS-5GL2-2T | SS-01GL2-2T |
|  |  | CPST-NO |  | SS-10GL2-3T | SS-5GL2-3T | SS-01GL2-3T |
|  | PCB terminal | SPDT |  | SS-10GL2D | SS-5GL2D | SS-01GL2D |
|  |  | SPST-NC |  | SS-10GL2-2D | SS-5GL2-2D | SS-01GL2-2D |
|  |  | CPST-NO |  | SS-10GL2-3D | SS-5GL2-3D | SS-01GL2-3D |
|  | Solder terminal | SPDT | $0.16 \mathrm{~N}\{16 \mathrm{gf}\}$ | --- | SS-5GL2-F | SS-01GL2-F |
|  |  | SPST-NC |  | --- | SS-5GL2-F-2 | SS-01GL2-F-2 |
|  |  | CPST-NO |  | --- | SS-5GL2-F-3 | SS-01GL2-F-3 |
|  | Quick-connect terminal (\#110) | SPDT |  | --- | SS-5GL2-FT | SS-01GL2-FT |
|  |  | SPST-NC |  | --- | SS-5GL2-F-2T | SS-01GL2-F-2T |
|  |  | CPST-NO |  | --- | SS-5GL2-F-3T | SS-01GL2-F-3T |
|  | PCB terminal | SPDT |  | --- | SS-5GL2-FD | SS-01GL2-FD |
|  |  | SPST-NC |  | --- | SS-5GL2-F-2D | SS-01GL2-F-2D |
|  |  | CPST-NO |  | --- | SS-5GL2-F-3D | SS-01GL2-F-3D |
|  | Solder terminal | SPDT | 0.08 N \{8 gf $\}$ | --- | --- | SS-01GL2-E |
|  |  | SPST-NC |  | --- | --- | SS-01GL2-E-2 |
|  |  | CPST-NO |  | --- | --- | SS-01GL2-E-3 |
|  | Quick-connect terminal (\#110) | SPDT |  | --- | --- | SS-01GL2-ET |
|  |  | SPST-NC |  | --- | --- | SS-01GL2-E-2T |
|  |  | CPST-NO |  | --- | --- | SS-01GL2-E-3T |
|  | PCB terminal | SPDT |  | --- | --- | SS-01GL2-ED |
|  |  | SPST-NC |  | --- | --- | SS-01GL2-E-2D |
|  |  | CPST-NO |  | --- | --- | SS-01GL2-E-3D |

Heat resistive models

| Actuator | Terminal | Contact Form | Rating OF max. | 10.1 A | 5 A | 0.1 A |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Pin plunger | Solder terminal | SPDT | $1.47 \mathrm{~N}\{150 \mathrm{gf}\}$ | SS-10-T | SS-5-T | SS-01-T |
|  | Quick-connect |  |  | SS-10T-T | SS-5T-T | SS-01T-T |
|  | PCB terminal |  |  | SS-10D-T | SS-5D-T | SS-01D-T |
| Hinge lever | Solder terminal |  | $0.49 \mathrm{~N}\{50 \mathrm{gf}\}$ | SS-10GL-T | SS-5GL-T | SS-01GL-T |
|  | Quick-connect |  |  | SS-10GLT-T | SS-5GLT-T | SS-01GLT-T |
|  | PCB terminal |  |  | SS-10GLD-T | SS-5GLD-T | SS-01GLD-T |
| Simulated roller lever | Solder terminal |  | $0.49 \mathrm{~N}\{50 \mathrm{gf}\}$ | SS-10GL13-T | SS-5GL13-T | SS-01GL13-T |
|  | Quick-connect |  |  | SS-10GL13T-T | SS-5GL13T-T | SS-01GL13T-T |
|  | PCB terminal |  |  | SS-10GL13D-T | SS-5GL13D-T | SS-01GL13D-T |
| Hinge roller lever | Solder terminal |  | $0.49 \mathrm{~N}\{50 \mathrm{gf}\}$ | SS-10GL02-T | SS-5GL02-T | SS-01GL02-T |
|  | Quick-connect |  |  | SS-10GL02T-T | SS-5GL02T-T | SS-01GL02T-T |
|  | PCB terminal |  |  | SS-10GL02D-T | SS-5GL02D-T | SS-01GL02D-T |

## Specifications

- Ratings

| Model |  | Item <br> Rated voltage |
| :--- | :--- | :--- |
| SS-10 | 250 VAC | 10.1 A |
| SS-5 | 125 VAC | 5 A |
|  | 250 VAC | 3 A |
| SS-01 | 125 VAC | 0.1 A |
|  | 30 VDC | 0.1 A |

Note: The ratings values apply under the following test condi-
tions:
Ambient temperature: $20 \pm 2^{\circ} \mathrm{C}$
Ambient humidity: $65 \pm 5 \%$
Operating frequency: 30 operations $/ \mathrm{min}$

## - Characteristics

| Operating speed | 0.1 mm to $1 \mathrm{~m} / \mathrm{s}$ (pin plunger models) |
| :---: | :---: |
| Operating frequency | Mechanical:400 operations/min max. Electrical:30 operations/min max. |
| Insulation resistance | $100 \mathrm{M} \Omega \mathrm{min}$. (at 500 VDC ) |
| Contact resistance (initial value) |  |
| Dielectric strength (see note 2) | 1,000 VAC (600 VAC for SS-01 models), $50 / 60 \mathrm{~Hz}$ for 1 min between terminals of the same polarities 1,500 VAC, $50 / 60 \mathrm{~Hz}$ for 1 min between current-carrying metal part and ground, and between each terminal and non-current-carrying metal part |
| Vibration resistance (see note 3) | Malfunction: 10 to $55 \mathrm{~Hz}, 1.5-\mathrm{mm}$ double amplitude |
| Shock resistance (see note 4) | Destruction: OF $1.47 \mathrm{~N}\{150 \mathrm{gf}\}: 1,000 \mathrm{~m} / \mathrm{s}^{2}$ \{approx. 100G $\}$ max. <br>  OF $0.25 \mathrm{~N}\{25 \mathrm{gf}\} / 0.49 \mathrm{~N}\{50 \mathrm{gf}\}: 500 \mathrm{~m} / \mathrm{s}^{2}\{$ approx. 50 G$\}$ max. <br> Malfunction: OF $1.47 \mathrm{~N}\{150 \mathrm{gf}\}: 300 \mathrm{~m} / \mathrm{s}^{2}\{$ approx. 30G $\}$ max. <br>  OF $0.25 \mathrm{~N}\{25 \mathrm{gf}\} / 0.49 \mathrm{~N}\{50 \mathrm{gf}\}: 200 \mathrm{~m} / \mathrm{s}^{2}$ \{approx. 20G $\}$ max. |
| Durability (see note 5) | $\begin{array}{\|ll} \hline \text { Mechanical: } & 30,000,000 \text { operations } \mathrm{min} .(60 \text { operations } / \mathrm{min})(\text { Refer to the following Engineering Data.) } \\ \text { Electrical: } & \begin{array}{l} 10,000,000 \text { operations } \mathrm{min} .(60 \text { operations } / \mathrm{min}) \text { for SS }-10 \text { models } \\ \\ \\ \\ \\ 500,000 \text { operations } \mathrm{min} .(30 \text { operations } / \mathrm{min}) \text { (Refer to the following Engineering Data.) } \\ 50,000 \text { operations min. ( } 30 \text { operations } / \mathrm{min}) \text { for SS }-10 \text { models } \end{array} \\ \hline \end{array}$ |
| Degree of protection | IEC IP40 |
| Degree of protection against electrical shock | Class I |
| Proof Tracking Index (PTI) | 175 |
| Ambient operating temperature | $-25^{\circ} \mathrm{C}$ to $85^{\circ} \mathrm{C}$ (at ambient humidity of $60 \%$ max.) (with no icing or condensation) |
| Ambient operating humidity | 85\% max. (for $5^{\circ} \mathrm{C}$ to $35^{\circ} \mathrm{C}$ ) |
| 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 use at both the free position and total travel position. For the lever models, they apply at the total travel position.
4. Lever-type models: Total travel position (with a contact separation time of 1 ms max.)
5. For testing conditions, contact 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 | SS-10 | SS-5 | SS-01 |
| :--- | :--- | :--- | :--- |
| 125 VAC | --- | 5 A | 0.1 A |
| 250 VAC | 10.1 A | 3 A | --- |
| 30 VDC | --- | --- | 0.1 A |

EN61058-1 (File No. 129246 for SS-5, 125256 for SS-10, VDE approval)

| Rated voltage | SS-10 | SS-5 |
| :--- | :--- | :--- |
| 250 VAC | 10 A | 5 A |

Testing conditions: 5E4 (50,000 operations); T85 $\left(0^{\circ} \mathrm{C}\right.$ to $\left.85^{\circ} \mathrm{C}\right)$.

## - Contact Specifications

| Item |  | SS-10 | SS-5 | SS-01 |
| :--- | :--- | :--- | :--- | :--- |
| Contact | Specification | Rivet | Crossbar |  |
|  | Material | Silver alloy | Silver | Gold alloy |
|  | Gap (standard <br> value) | 0.5 mm | 0.25 mm |  |
|  | NC | NO | 15 A max. | 1 A max. |
|  | NO | $10 \mathrm{~A} \mathrm{max}$. | 1 A max. |  |
| Minimum applicable load <br> (see note) | 160 mA at 5 VDC | 1 mA <br> at 5 VDC |  |  |

Note: For more information on the minimum applicable load, refer to Using Micro Loads on page 9.

## - Contact Form

SPDT


SPST-NC


SPST-NO


## Dimensions

Note: All units are in millimeters unless otherwise indicated.

## ■ Terminals

Terminal plate thickness is 0.5 mm for all models.

## Solder Terminals



Quick-connect Terminals (\#110)


PCB Terminals


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 illustration and drawing are for solder terminal models. Refer to page 6 for details on models with quick-connect terminals (\#110) or PCB terminals.
3. Unless otherwise specified, a tolerance of $\pm 0.4 \mathrm{~mm}$ applies to all dimensions.
4. The operating characteristics are for operation in the A direction ( ) .

## Pin Plunger Models

SS-10
SS-5(-F)
SS-01(-F, -E)


| Model | SS-10 | SS-5 <br> SS-01 | SS-5-F <br> SS-01-F | SS-01-E |
| :--- | :--- | :--- | :--- | :--- |
| OF max. | $1.47 \mathrm{~N}\{150 \mathrm{gf}\}$ | $1.47 \mathrm{~N}\{150 \mathrm{gf}\}$ | $0.49 \mathrm{~N}\{50 \mathrm{gf}\}$ | $0.25 \mathrm{~N}\{25 \mathrm{gf}\}$ |
| RF min. | $0.25 \mathrm{~N}\{25 \mathrm{gf}\}$ | $0.65 \mathrm{~N}\{25 \mathrm{gf}\}$ | $0.04 \mathrm{~N}\{4 \mathrm{gf}\}$ | $0.02 \mathrm{~N}\{2 \mathrm{gf}\}$ |
| PT max. | 0.4 mm | 0.5 mm | 0.5 mm | 0.5 mm |
| OT min. | 0.12 mm | 0.5 mm | 0.5 mm | 0.5 mm |
| MD max. | $8.4 \pm 0.5 \mathrm{~mm}$ | 0.1 mm | 0.1 mm | mm |
| OP |  |  |  |  |

## Hinge Lever Models



Note: 1. Stainless-steel lever
2. Besides the SS $-\square$ GL models with a hinge lever length of 14.5 , the SS- $\square$ GL11 models with a hinge lever length of 18.5 , the SS- $\square$ GL111 models with a hinge lever length of 22.6 , and the SS- $\square$ GL1111 models with a hinge lever length of 37.8 are available. Contact your OMRON representative for these models

| Model | SS-10GL | SS-5GL <br> SS-01GL | SS-5GL-F <br> SS-01GL-F | SS-01GL-E |
| :--- | :--- | :--- | :--- | :--- |
| OF max. | $0.49 \mathrm{~N}\{50 \mathrm{gf}\}$ | $0.49 \mathrm{~N}\{50 \mathrm{gf}\}$ | $0.16 \mathrm{~N}\{16 \mathrm{gf}\}$ | $0.08 \mathrm{~N}\{8 \mathrm{gf}\}$ |
| RF min. | $0.06 \mathrm{~N}\{6 \mathrm{gf}\}$ | $0.06 \mathrm{~N}\{6 \mathrm{gf}\}$ | $0.02 \mathrm{~N}\{2 \mathrm{gf}\}$ |  |
| OT min. | 1.0 mm | 1.2 mm | 1.2 mm | $0.01 \mathrm{~N}\{1 \mathrm{gf}\}$ <br> (reference value) |
| MD max. | 1.0 mm | 0.8 mm | 1.2 mm |  |
| FP max. | 13.6 mm | 0.8 mm | 0.8 mm |  |
| OP | $8.8 \pm 0.8 \mathrm{~mm}$ |  |  |  |

Note: The values indicated in parentheses are reference values for cases when the installation direction is such that the lever weight is not applied to the plunger.

## Simulated Roller Lever Models

SS-10GL13
SS-5GL13(-F)
SS-01GL13(-F, -E)


Note: Stainless-steel spring lever

| Model | SS-10GL13 | $\begin{aligned} & \hline \text { SS-5GL13 } \\ & \text { SS-01GL13 } \end{aligned}$ | $\begin{aligned} & \text { SS-5GL13-F } \\ & \text { SS-01GL13-F } \end{aligned}$ | SS-01GL13-E |
| :---: | :---: | :---: | :---: | :---: |
| OF max. RF min. | $\begin{array}{\|l\|} \hline 0.49 \mathrm{~N}\{50 \mathrm{gf}\} \\ 0.06 \mathrm{~N}\{6 \mathrm{gf}\} \end{array}$ | $\begin{aligned} & 0.49 \mathrm{~N}\{50 \mathrm{gf}\} \\ & 0.06 \mathrm{~N}\{6 \mathrm{gf}\} \end{aligned}$ | $\begin{aligned} & \hline 0.16 \mathrm{~N}\{16 \mathrm{gf}\} \\ & 0.02 \mathrm{~N}\{2 \mathrm{gf}\} \end{aligned}$ | $0.08 \mathrm{~N}\{8 \mathrm{gf}\}$ $0.01 \mathrm{~N}\{1 \mathrm{gf}\}$ (reference value) |
| OT min. MD max. | $\begin{aligned} & 1.0 \mathrm{~mm} \\ & 1.0 \mathrm{~mm} \end{aligned}$ | $\begin{aligned} & 1.2 \mathrm{~mm} \\ & 0.8 \mathrm{~mm} \end{aligned}$ | $\begin{aligned} & 1.2 \mathrm{~mm} \\ & 0.8 \mathrm{~mm} \end{aligned}$ | $\begin{aligned} & 1.2 \mathrm{~mm} \\ & 0.8 \mathrm{~mm} \end{aligned}$ |
| FP max. OP | $\begin{aligned} & 15.5 \mathrm{~mm} \\ & 10.7 \pm 0.8 \mathrm{~mm} \end{aligned}$ |  |  |  |

Note: The values indicated in parentheses are reference values for cases when the installation direction is such that the lever weight is not applied to the plunger.

Hinge Roller Lever Models
SS-10GL2
SS-5GL2(-F)
SS-01GL2(-F, -E)


| Model | SS-10GL2 | SS-5GL2 <br> SS-01GL2 | SS-5GL2-F <br> SS-01GL2-F | SS-01GL2-E |
| :--- | :--- | :--- | :--- | :--- |
| OF max. | $0.49 \mathrm{~N}\{50 \mathrm{gf}\}$ | $0.49 \mathrm{~N}\{50 \mathrm{gf}\}$ | $0.16 \mathrm{~N}\{16 \mathrm{gf}\}$ | $0.08 \mathrm{~N}\{8 \mathrm{gf}\}$ |
| RF min. | $0.06 \mathrm{~N}\{6 \mathrm{gf}\}$ | $0.06 \mathrm{~N}\{6 \mathrm{gf}\}$ | $0.02 \mathrm{~N}\{2 \mathrm{gf}\}$ | $0.01 \mathrm{~N}\{1 \mathrm{gf}\}$ <br> $($ reference value $)$ |
| OT min. | 1.0 mm | 1.2 mm | 1.2 mm | 1.2 mm |
| MD max. | 1.0 mm | 0.8 mm | 0.8 mm |  |
| FP max. | 19.3 mm |  |  |  |
| OP | $14.5 \pm 0.8 \mathrm{~mm}$ |  |  |  |

Note: The values indicated in parentheses are reference values for cases when the installation direction is such that the lever weight is not applied to the plunger.

## Precautions

Refer to General Information.

## - Cautions

## Terminal Connection

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 capacity of the soldering iron is 60 W maximum. Do not take more than $350^{\circ} \mathrm{C}$ for the temperature at the tip of the soldering iron. 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 Switch may have contact failures if flux intrudes into the interior of the Switch.
Use the following lead wires to connect to the solder terminals.

| Model | Conductor size |
| :--- | :--- |
| SS-5 | 0.5 to $0.75 \mathrm{~mm}^{2}$ |
| SS-10 | $0.75 \mathrm{~mm}^{2}$ |

If the PCB terminal models are soldered in the solder bath, flux will permeate inside the Switch and cause contact failure. Therefore, manually solder the PCB terminal.
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

According to EN61058-1, the minimum insulation thickness for this Switch should be 1.1 mm and minimum clearance distance between the terminal and mounting plate should be 1.6 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. Refer to Separator.

## ■ 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 $0.26 \mathrm{~N} \cdot \mathrm{~m}\{2.3$ to $2.7 \mathrm{kgf} \cdot \mathrm{cm}\}$.

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 $70 \%$ 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, $\lambda 60=0.5 \times 10^{-6} /$ operations indicates that the estimated malfunction rate is less than 1/ $2,000,000$ operations with a reliability level of $60 \%$.


## - Separators

| Applicable <br> Switch | Thickness (mm) | Model (see note) |
| :--- | :--- | :--- |
| SS, D2S, D2SW | 0.18 | Separator for SS0.18 |
|  | 0.4 | Separator for SS0.4 |

## Separator for SS $\square$



Note: The material is EAVTC (Epoxide Alkyd Varnished Tetron Cloth) and its heat-resisting temperature is $130^{\circ} \mathrm{C}$.

## - Connector

Refer to Terminal Connectors.

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937 . To convert grams into ounces, multiply by 0.03527 .

