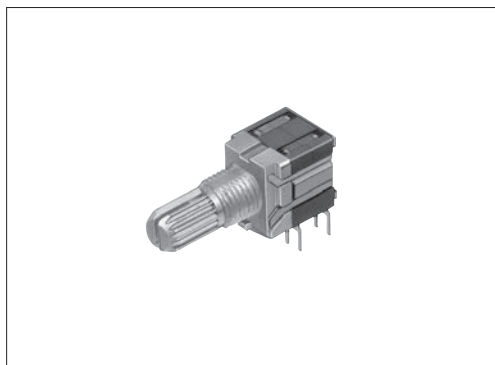


Pulse switching (20 pulses) model available in same shape



Typical Specifications

| Items | | Specifications | |
|---|--------------|-----------------------------|---------------|
| | | Rotary switch | Pulse switch |
| Rating (max.)/(min.) (Resistive load) | | 0.1A 16V DC / 50μA 3V DC | |
| Contact resistance (Initial / After operating life) | | 50mΩ max. / 150mΩ max. | |
| Rotational torque | | 40±20 mN·m | 15±7 mN·m |
| Operating life | Without load | 10,000 cycles | 30,000 cycles |
| | With load | 10,000 cycles (0.1A 16V DC) | |

Product Line

| Number of wafers | Poles | Positions | Changeover angle | Changeover timing | Actuator configuration | Actuator length (mm) | Minimum order unit (pcs.) | | Product No. | Drawing No. | | |
|------------------|-------|-----------|--------------------|-------------------|------------------------|----------------------|---------------------------|--------|-------------------|-------------|-------|-------------------|
| | | | | | | | Japan | Export | | | | |
| 1 | 2 | 2 | 30±3° | Non shorting | 18-tooth serration | L=15 | 200 | 1,600 | SRBM120700 | 1 | | |
| | | | | | Flat | | | | SRBM121300 | | | |
| | | 3 | | | 18-tooth serration | L=20 | | | 150 | | 1,200 | SRBM131300 |
| | | | | | Flat | L=15 | | | 200 | | 1,600 | SRBM131400 |
| | | 4 | | | 18-tooth serration | L=20 | | | 150 | | 1,200 | SRBM140700 |
| | | | | | Flat | L=20 | | | 150 | | 1,200 | SRBM140800 |
| | 1 | 5 | 18-tooth serration | L=15 | 200 | 1,600 | SRBM150500 | | | | | |
| | | | Flat | | | | SRBM154002 | | | | | |
| | | 6 | 18-tooth serration | | | | SRBM160700 | | | | | |
| | | | Flat | | | | SRBM1L0800 | | | | | |
| 20 pulses | 18±3° | — | 18-tooth serration | L=15 | 200 | 1,600 | SRBM1L1400 | 2 | | | | |
| | | | Flat | | | | | | | | | |

Note

All the axis are die casting shafts.

Packing Specifications

Tray

| Product No. | Number of packages (pcs.) | | Export package measurements (mm) |
|---|---------------------------|-------------------------|----------------------------------|
| | 1 case / Japan | 1 case / export packing | |
| SRBM120700 SRBM121300 SRBM131300 SRBM140700 SRBM150500 SRBM154002 SRBM160700 SRBM1L0800 SRBM1L1400 | 200 | 1,600 | 400×270×290 |
| SRBM131400 SRBM140800 SRBM149501 | 150 | 1,200 | |

Refer to P.149 for shaft configurations.
Refer to P.158 for soldering conditions.

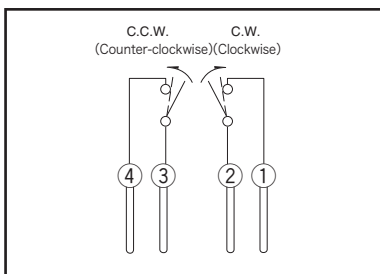
SRBM 6-position Horizontal Type

Dimensions Single-shaft Type

Unit:mm

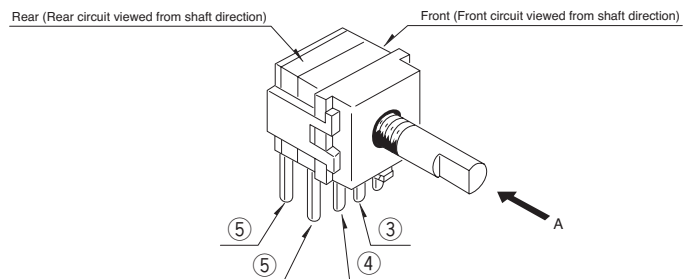
| No. | Style | PC board mounting hole dimensions (Viewed from direction A) |
|-----|--------------------------|--|
| 1 | Rotary switch | |
| 2 | Pulse switch | |

Pulse Switch Circuit Diagram



C.W. : ①② ON during changeover only
 C.C.W. : ③④ ON during changeover only

Rotary Switch Circuit Diagram (Viewed from Direction A of Below Diagram)



| 2 to 4-position | | 5-position ※ 1 | | 6-position ※ 2 | |
|-----------------|-------|----------------|-------|----------------|-------|
| Rear | Front | Rear | Front | Rear | Front |
| | | | | | |

Notes

- For position 2 to 4, 1 section consists of 2-pole.
- For position 5 and 6, 1 section consists of 1-pole.
 - ※ 1: Circuit steps are position 2 to 5 at front and position 1 to 4 at rear. (External wiring to common terminal is required.)
 - ※ 2: Circuit steps are position 3 to 6 at front and position 1 to 4 at rear. (External wiring to common terminal is required.)

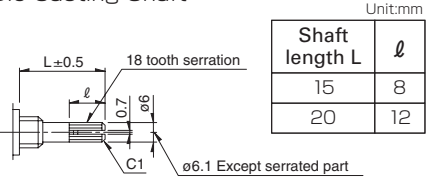
Dummy Terminals

| | | | | | |
|---------------------|-----|---|---|---|---|
| Number of positions | 2 | 3 | 4 | 5 | 6 |
| Front | ④ ⑤ | ⑤ | — | — | — |
| Rear | ③ ④ | ④ | — | — | — |

18-tooth Serration Shaft

The shaft shows the position in which it is turned fully counterclockwise.

Die Casting Shaft

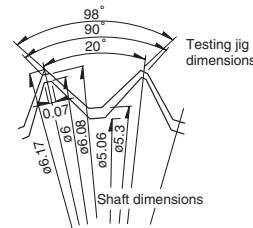


Unit:mm

| Shaft length L | l |
|----------------|----|
| 15 | 8 |
| 20 | 12 |

Details About Serration

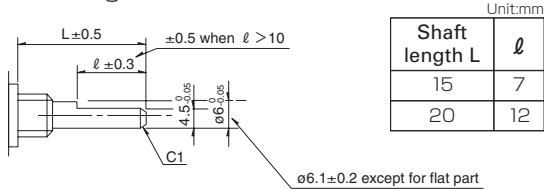
- (1) The mold dimensions of standard serration and the dimensions of test jigs are as shown in the figure at left.
- (2) Position of the serration bottom
When the shaft is turned fully counterclockwise, the position of the serration bottom is on the AA line.
- (3) Slitting angle
The slitting angle (position) is not specified.



Flat Shaft

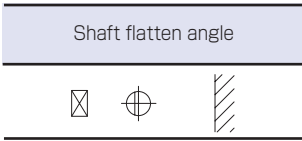
The shaft shows the position in which it is turned fully counterclockwise.

Die Casting Shaft



Unit:mm

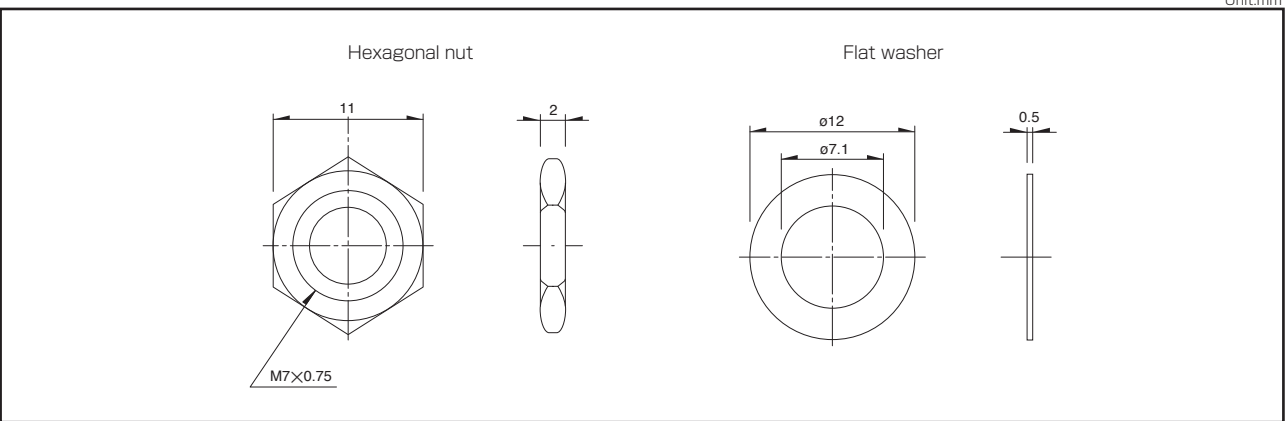
| Shaft length L | l |
|----------------|----|
| 15 | 7 |
| 20 | 12 |



Note














SRBM Series are based on p (printed terminal direction).

Attached Parts



Rotary Switches

List of Varieties

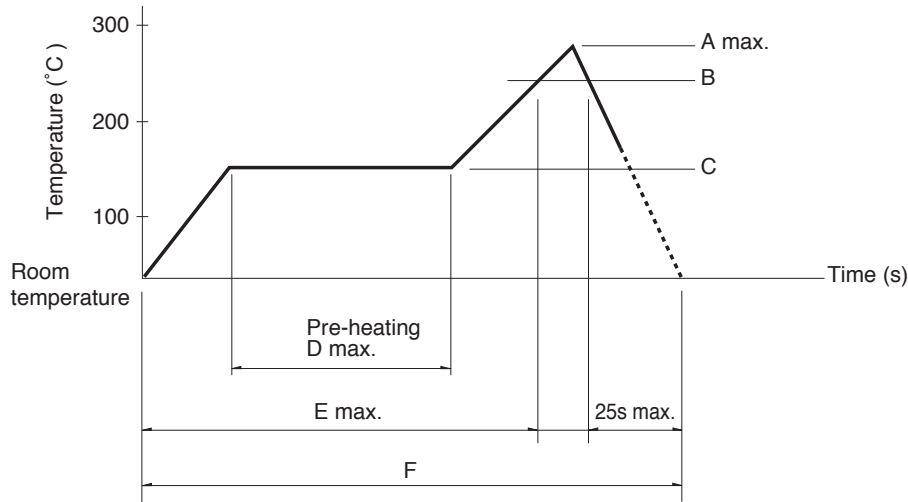
| Series | SRBD | SRBQ | | SRBM | | SRBV | SRRM | SRRN | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|--|--|---|---|--|---------------------------|-------------------------------|--|---------------------------|--|---------------------------|-------------------------------|----|------|----|---------|-----|----|-----|----|----|------|----|----------------------|-----|----|-----|----|----|------|----|-----------------------|-----|----|-----|----|----|------|----|--|--|--|--|--|----|-----|----------|--|--|--|--|--|
| | | Insertion | Reflow type | Rotary | Pulse | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Photo |  |  |  |  | |  |  |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Angle of throw | 36° | 40±3° | | 30±3° | 18±3° | 30±3° | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Number of poles | 1 | | 1, 2 | | 1 | | 1, 2, 3, 4 | 2, 3, 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Rotational torque | 13±5mN·m | 6±3mN·m 13±5mN·m | | 40±20mN·m 15±7mN·m | | 30±15mN·m | 80±30mN·m (Shorting) 70±30mN·m (Non shorting) | 70±30mN·m | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dimensions (mm) | W | 10 | 11.4 | | 10 | | 16.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | D | | 12.4 | | 12.5 | | 18.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | H | | 3.5 | | 11 | | 7.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Operating temperature range | -25°C to +85°C | -10°C to +60°C | | -30°C to +85°C | | -10°C to +85°C | -10°C to +60°C | -30°C to +65°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Automotive use | — | — | | — | | — | — | — | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Life cycle |  |  | |  | |  |  |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Rating (max.)/(min.) (Resistive load) | 1mA 5V DC 50µA 3V DC | 0.1A 16V DC 50µA 3V DC | | | | 0.3A 16V DC 50µA 3V DC | | 0.25A 30V DC 50µA 3V DC | 0.15A 12V DC 50µA 3V DC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Durability | Operating life without load | 10,000 cycles 250mΩ max. | 10,000 cycles 100mΩ max. | | 30,000 cycles 100mΩ max. | | 10,000 cycles 100mΩ max. | 10,000 cycles 40mΩ max. | 10,000 cycles 70mΩ max. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Operating life with load Load: as rating | 10,000 cycles 250mΩ max. | 10,000 cycles 100mΩ max. | 10,000 cycles 150mΩ max. | | | 10,000 cycles 60mΩ max. | 10,000 cycles 100mΩ max. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Electrical performance | Initial contact resistance | 200mΩ max. | 50mΩ max. | | | | 20mΩ max. | 50mΩ max. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Insulation resistance | 100MΩ min. 100V DC | | | | | 100MΩ min. 500V DC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Voltage proof | 100V AC for 1minute | | | | | 500V AC for 1minute | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mechanical performance | Terminal strength | 3N for 1minute | 5N for 1minute | | | | 10N for 1minute | 5N for 1minute | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Actuator strength | Operating direction | — | — | 0.5N·m | — | 0.6N·m | 1N·m | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Pulling direction | 50N | 20N | 100N | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Wobble of actuator | Load at the tip of shaft SRRM, SRBM, SRRN: 5N, SRBQ, SRBV: 1N The below table shows for SRRM, SRBM, SRRN The below table shows for SRBQ The below table shows for SRBV | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Measuring position from mounting surface</th> <th>Shaft wobble (max. value)</th> <th>Applicable mounting dimension</th> <th>Distance from mounting surface to the tip of shaft</th> <th>Shaft wobble (max. value)</th> <th>Measuring position from mounting surface</th> <th>Shaft wobble (max. value)</th> <th>Applicable mounting dimension</th> </tr> </thead> <tbody> <tr> <td>10</td> <td>0.17</td> <td>15</td> <td>below 5</td> <td>0.5</td> <td>10</td> <td>0.2</td> <td>15</td> </tr> <tr> <td>15</td> <td>0.25</td> <td>20</td> <td>above 5 and below 10</td> <td>0.9</td> <td>15</td> <td>0.3</td> <td>20</td> </tr> <tr> <td>20</td> <td>0.35</td> <td>25</td> <td>above 10 and below 15</td> <td>1.2</td> <td>20</td> <td>0.4</td> <td>25</td> </tr> <tr> <td>25</td> <td>0.42</td> <td>30</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>30</td> <td>0.5</td> <td>above 35</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p style="text-align: right;">Unit:mm</p> | | | | | | | | | Measuring position from mounting surface | Shaft wobble (max. value) | Applicable mounting dimension | Distance from mounting surface to the tip of shaft | Shaft wobble (max. value) | Measuring position from mounting surface | Shaft wobble (max. value) | Applicable mounting dimension | 10 | 0.17 | 15 | below 5 | 0.5 | 10 | 0.2 | 15 | 15 | 0.25 | 20 | above 5 and below 10 | 0.9 | 15 | 0.3 | 20 | 20 | 0.35 | 25 | above 10 and below 15 | 1.2 | 20 | 0.4 | 25 | 25 | 0.42 | 30 | | | | | | 30 | 0.5 | above 35 | | | | | |
| Measuring position from mounting surface | Shaft wobble (max. value) | Applicable mounting dimension | Distance from mounting surface to the tip of shaft | Shaft wobble (max. value) | Measuring position from mounting surface | Shaft wobble (max. value) | Applicable mounting dimension | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | 0.17 | 15 | below 5 | 0.5 | 10 | 0.2 | 15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15 | 0.25 | 20 | above 5 and below 10 | 0.9 | 15 | 0.3 | 20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 | 0.35 | 25 | above 10 and below 15 | 1.2 | 20 | 0.4 | 25 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25 | 0.42 | 30 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 30 | 0.5 | above 35 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Environmental performance | Cold | -40°C 500h | -20°C 96h | -40°C 96h | | -20°C 96h | | -40°C 96h | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Dry heat | 85°C 500h | 85°C 96h | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Damp heat | 60°C, 90 to 95%RH 500h | 40°C, 90 to 95%RH 96h | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Page | 143 | 145 | 147 | 150 | 152 | 155 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Rotary Switches Soldering Conditions 158
 Rotary Switches Cautions 159

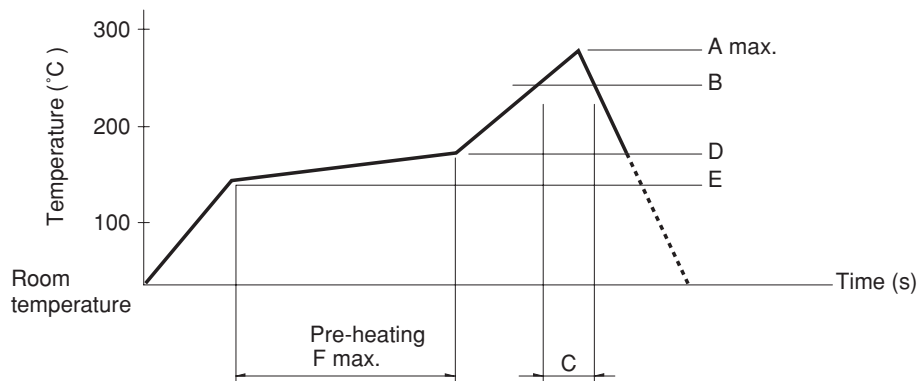
Rotary Switches Soldering Conditions

Example of Reflow Soldering Condition

1. Heating method: Double heating method with infrared heater.
2. Temperature measurement: Thermocouple $\phi 0.1$ to 0.2 CA (K) or CC (T) at soldering portion (copper foil surface). A heat resisting tape should be used for fixed measurement.
3. Temperature profile



| Series (Reflow type) | A (°C) 3s max. | B (°C) | C (°C) | D (s) | E (s) | F (s) |
|----------------------|-------------------|--------|--------|-----------|-------|-------|
| SRBQ | 250 | 200 | 150±5 | 80 to 100 | — | — |



| Series (Reflow type) | A (°C) 3s max. | B (°C) | C (s) | D (°C) | E (°C) | F (s) |
|----------------------|-------------------|--------|-------|--------|--------|-------|
| SRBD | 260 | 230 | 40 | 180 | 150 | 120 |

- Notes**
1. The condition mentioned above is the temperature on the mounting surface of a PC board. There are cases where the PC board's temperature greatly differs from that of the switch, depending on the PC board's material, size, thickness, etc. The above-stated conditions shall also apply to switch surface temperatures.
 2. Soldering conditions differ depending on reflow soldering machines. Prior verification of soldering condition is highly recommended.

Reference for Hand Soldering

| Series | Soldering temperature | Soldering time |
|-------------------------------------|-----------------------|----------------|
| SRBQ, SRBM, SRBV, SRRM, SRRN | 350±10°C | 3+1/0s |
| SRBQ (Reflow type) | 350±5°C | 3s max. |

Reference for Dip Soldering

(For PC board terminal types)

| Series | Items | | Dip soldering | |
|-------------------------|------------------------|-----------------|-----------------------|-----------------------|
| | Preheating temperature | Preheating time | Soldering temperature | Duration of immersion |
| SRBM | 100°C max. | 60s max. | 260±5°C | 5s max. |
| SRBV, SRRM, SRRN | — | — | 260±5°C | 10±1s |
| SRBQ | — | — | 260±5°C | 5±1s |