

Typical Specifications

| Items | Specifications |
|--|--------------------------------|
| Rating (max.)/(min.) (Resistive load) | 0.1A 30V DC / 50 μ A 3V DC |
| Contact resistance (Initial performance) | 100m Ω max. |
| Operating force | 2 \pm 1N |
| Operating life with load | 10,000 cycles (0.1A 30V DC) |

Product Line

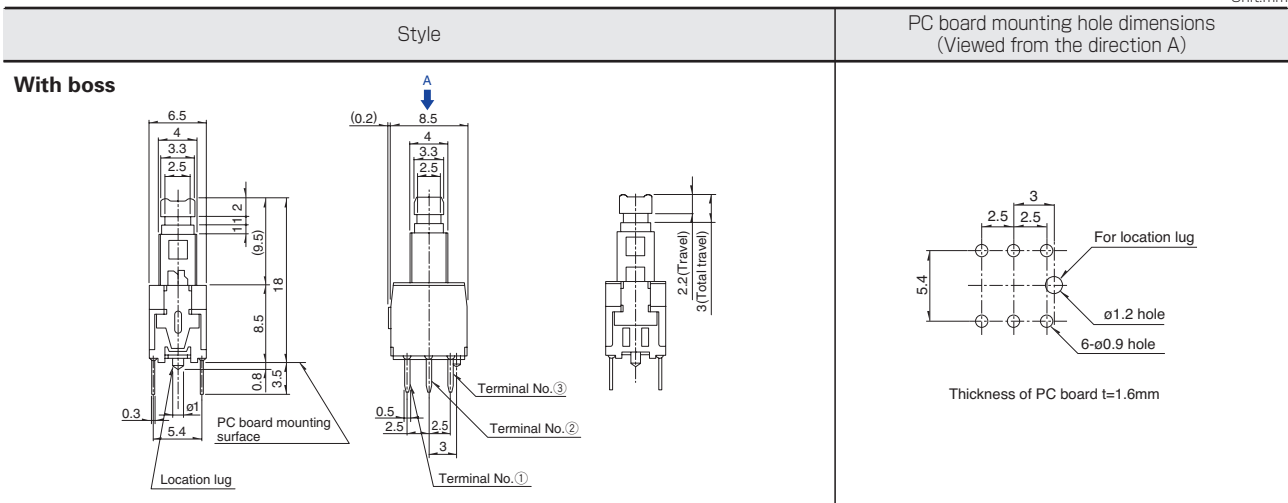
| Changeover timing | Travel (mm) | Total travel (mm) | Mounting method | Poles | Operation | Terminal type | Location lug | Minimum order unit (pcs.) | | Product No. |
|-------------------|-------------|-------------------|-----------------|-------|-----------|---------------|--------------|---------------------------|------------|-------------|
| | | | | | | | | Japan | Export | |
| Non shorting | 2.2 | 3 | PC board | 2 | Latching | Straight | With | 100 | 6,000 | SPPH410100 |
| | | | | | Momentary | | | | | SPPH410200 |
| | | | | | Latching | Snap-in | With | | | SPPH420100 |
| | | | | | Momentary | | | | | SPPH430100 |
| | | | | | | | | | SPPH430200 | |

Packing Specifications

Bulk

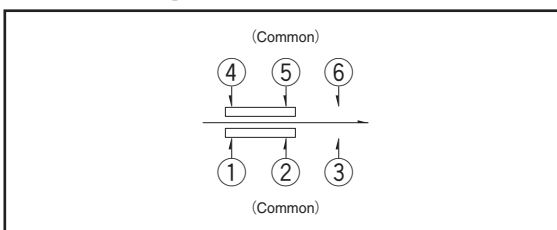
| Number of packages (pcs.) | | Export package measurements (mm) |
|---------------------------|-------------------------|----------------------------------|
| 1 case / Japan | 1 case / export packing | |
| 1,200 | 6,000 | 400 \times 270 \times 290 |

Dimensions

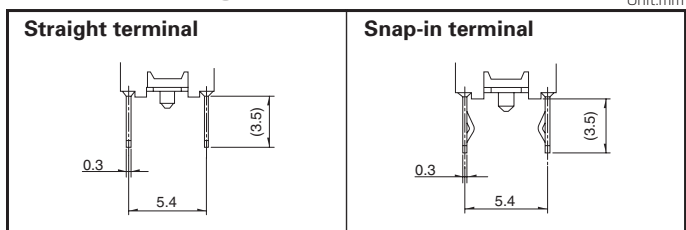


Note Dimensions drawing is for type with location lugs.

Circuit Diagram (Viewed from Direction A)















Terminal Configuration



Push Switches

List of Varieties

| Series | | Vertical | | | | | | |
|--------------------------------|---|---|---|---|--|---|---|-----|
| | | SPEH | SPEG | SPEJ | SPPH2 | SPPH4 | SPPH1 | |
| Photo | |  |  |  |  |  |  | |
| Dimensions (mm) | W | 6 | 7.19 | 7 | 6 | 6.5 | 10 | |
| | D | 6 | 8.39 | 7 | 6.5 | 8.5 | 10 | |
| | H | 5 | 3.5 | 5.95 | 6.5 | 8.5 | | |
| Travel (mm) | | — | — | 1.7 | 1 | 2.2 | 1.5 | |
| Total travel (mm) | | 1.6 | 1.1 | 1.7 | 1.5 | 3 | 2.5 | |
| Number of poles | | 1 | 1 | 2 | 2 | | | |
| Operating temperature range | | -40°C to +90°C | -10°C to +60°C | -40°C to +85°C | -10°C to +60°C | | | |
| Automotive use | | ● | — | ● | — | — | ● | |
| Life cycle | |  |  |  |  |  |  | |
| Rating (max.) (Resistive load) | | 50mA 16V DC | 1mA 5V DC | 0.2A 14V DC | 0.1A 12V DC | 0.1A 30V DC | | |
| Rating (min.) (Resistive load) | | 10μA 1V DC | 50μA 3V DC | — | 50μA 3V DC | | | |
| Durability | Operating life without load | 100,000 cycles 400mΩ max. | 30,000 cycles 500mΩ max. | 10,000 cycles 150mΩ max. | 10,000 cycles 50mΩ max. | 10,000 cycles 100mΩ max. | 10,000 cycles 40mΩ max. | |
| | Operating life with load (at max. rated load) | 100,000 cycles 400mΩ max. | 30,000 cycles 500mΩ max. | 10,000 cycles 150mΩ max. | 10,000 cycles 50mΩ max. | 10,000 cycles 100mΩ max. | 10,000 cycles 40mΩ max. | |
| Electrical performance | Initial contact resistance | 200mΩ max. | 200mΩ max. | 150mΩ max. | 30mΩ max. | 100mΩ max. | 20mΩ max. | |
| | Insulation resistance | 100MΩ min. 100V DC | 3MΩ min. 100V DC | 100MΩ min. 500V DC | 100MΩ min. 500V DC | | | |
| | Voltage proof | 250V AC for 1minute | 100V AC for 1minute | 500V AC for 1minute | 500V AC for 1minute | | | |
| Mechanical performance | Terminal strength | — | 0.5N for 1minute | — | 5N for 1minute | | | |
| | Actuator strength | Operating direction | 50N | | 49N | 30N | | 50N |
| | | Pulling direction | — | — | — | — | 10N | — |
| Environmental performance | Cold | -40°C 1,000h | -20°C 96h | -40°C 500h | -20°C 96h | | | |
| | Dry heat | 90°C 1,000h | 85°C 96h | 85°C 500h | 85°C 96h | | | |
| | Damp heat | 60°C, 90 to 95% RH 1,000h | 40°C, 90 to 95% RH 96h | 60°C, 90 to 95% RH 500h | 40°C, 90 to 95%RH 96h | | | |
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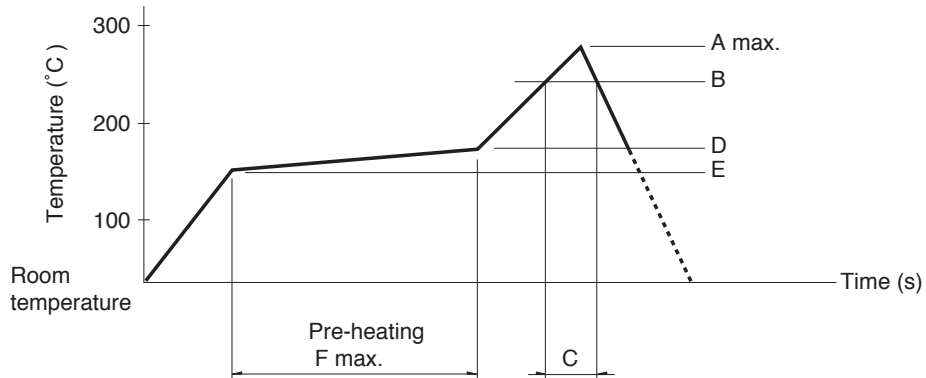
| | |
|------------------------------------|-----|
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Note
● Indicates applicability to all products in the series.

Push Switches Soldering Conditions

Example of Reflow Soldering Condition

1. Heating method: Double heating method with infrared heater.
2. Temperature measurement: Thermocouple ϕ 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 (s) | D (°C) | E (°C) | F (s) |
|----------------------|-------------------|--------|-------|--------|--------|-------|
| SPEG | 260 | 230 | 40 | 180 | 150 | 120 |
| SPEJ | | | | | | |
| SPEF | | | | | | |
| SPEH | | | | | | |

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 |
|---|-----------------------|----------------|
| SPPJ3, SPPJ2, SPUN, SPPH4, SPPH1 | 350±10°C | 3+1/0s |
| SPED2, SPED4 | 350±10°C | 3±0.5s |
| SPEJ | 350±10°C | 4s max. |
| SPEG, SPEF | 350±5°C | 3s max. |
| SPEH, SPPH2 | 350°C max. | 3s max. |
| SPUJ | 300±10°C | 3+1/0s |

Reference for Dip Soldering

(For PC board terminal types)

| Series | Items | | Dip soldering | |
|---|------------------------|-----------------|-----------------------|-----------------------|
| | Preheating temperature | Preheating time | Soldering temperature | Duration of immersion |
| SPPJ3 | 100°C max. | 60s max. | 260±5°C | 5±1s |
| SPUN | 100°C max. | 60s max. | 260±5°C | 10±1s |
| SPUJ, SPPH2, SPPH4 | — | — | 260±5°C | 5±1s |
| SPPJ2, SPPH1, SPED2, SPED4, SPEF | — | — | 260±5°C | 10±1s |