

Typical Specifications

| Items | | Specifications |
|---|--------------|--------------------------|
| Rating (max.)/(min.) (Resistive load) | | 1mA 5V DC / 50μA 3V DC |
| Contact resistance (Initial / After operating life) | | 2Ω max. / 5Ω max. |
| Operating force | | 0.35N max. |
| Operating life | Without load | 50,000cycles |
| | With load | 50,000cycles (1mA 5V DC) |

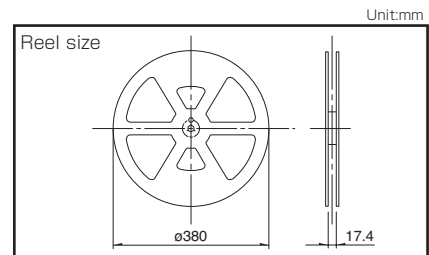
Product Line

| Poles | Positions | Terminal type | Lever length | Operating direction | Location lug | Minimum order unit (pcs) | | Product No. | Drawing No. | | |
|-------|-----------|-----------------------|--------------|---------------------|--------------|--------------------------|--------|-------------|-------------|------------|---|
| | | | | | | Japan | Export | | | | |
| 1 | 1 | For PC board (Reflow) | Standard | Right | With | 5,000 | 20,000 | SPVN110107 | 1 | | |
| | | | | | Without | | | | | SPVN120104 | |
| | | | | Left | With | | | SPVN210106 | 2 | | |
| | | | | | Without | | | | | SPVN220103 | |
| | | | Long | Right | With | | | SPVN310101 | 3 | | |
| | | | | | Without | | | | | SPVN320101 | |
| | | | | Left | With | | | | | SPVN410101 | 4 |
| | | | | | Without | | | | | | |

Packing Specifications

Taping

| Number of packages (pcs.) | | | Tape width (mm) | Export package measurements (mm) |
|---------------------------|---------------|------------------------|-----------------|----------------------------------|
| 1 reel | 1 case /Japan | 1 case /export packing | | |
| 5,000 | 10,000 | 20,000 | 16 | 417×409×139 |



Dimensions

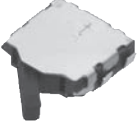
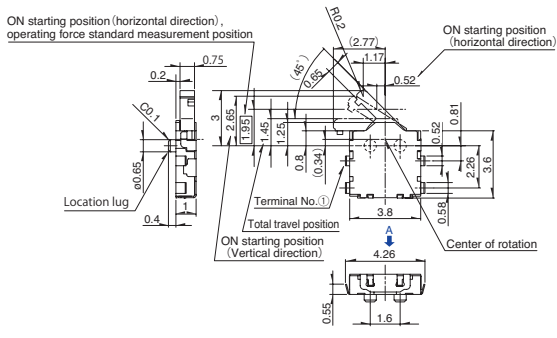
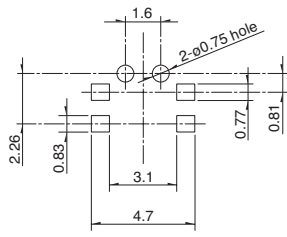
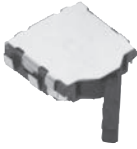
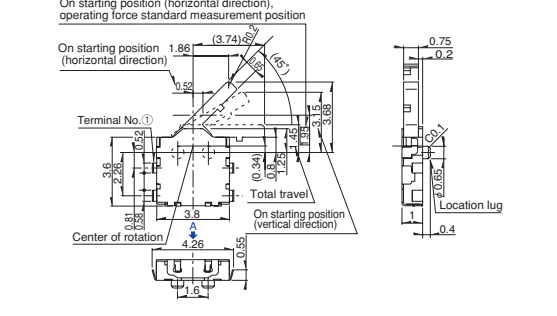

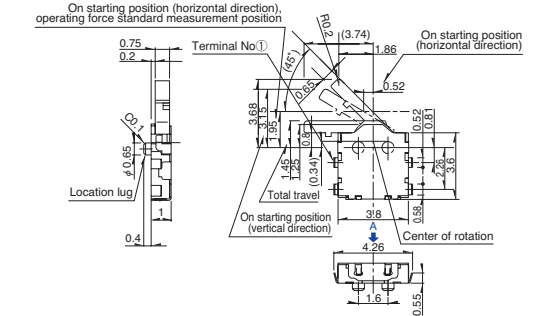
| No. | Photo | Style | PC board mounting hole and land dimensions (Viewed from direction A) |
|-----|-------|-------|--|
| 1 | | | |

Refer to P.73 for soldering conditions.

SPVN Low-profile Two-way Operation Type

■ Dimensions

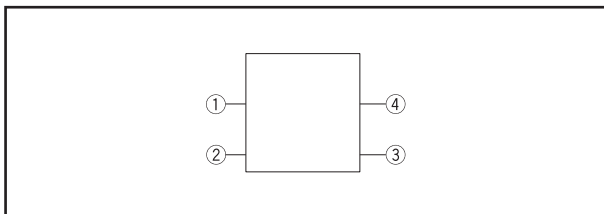
Unit:mm

| No. | Photo | Style | PC board mounting hole and land dimensions (Viewed from direction A) |
|-----|---|--|---|
| 2 | <p>Left operation type with boss</p>  |  <p>ON starting position (horizontal direction), operating force standard measurement position</p> <p>ON starting position (horizontal direction)</p> <p>Location lug</p> <p>Terminal No.①</p> <p>Total travel position</p> <p>ON starting position (Vertical direction)</p> <p>Center of rotation</p> |  |
| 3 | <p>Right operation type with boss</p>  |  <p>On starting position (horizontal direction), operating force standard measurement position</p> <p>On starting position (horizontal direction)</p> <p>Terminal No.①</p> <p>Total travel</p> <p>Center of rotation</p> <p>Location lug</p> | |
| 4 | <p>Left operation type with boss</p>  |  <p>On starting position (horizontal direction), operating force standard measurement position</p> <p>Terminal No.①</p> <p>Location lug</p> <p>Total travel</p> <p>On starting position (vertical direction)</p> <p>Center of rotation</p> | |

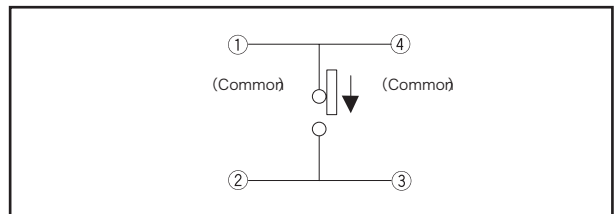
Note

Dimensions drawing is for type with location lugs.

■ Terminal Layout (Viewed from Direction A)

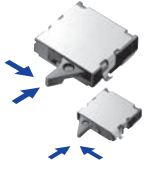
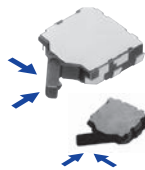
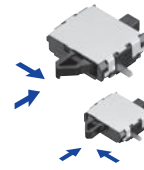


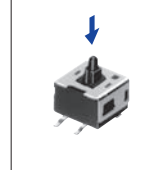








■ Circuit Diagram



Detector Switches

List of Varieties

| Series | | General-purpose Type | | | | | |
|--------------------------------|---|---|---|---|--|---|---|
| | | SPVS | SPVN | SPVT | SPVM | SPVR | SPVE |
| Photo | |  |  |  |  |  |  |
| Operation type | | Two-way | | | | | One-way |
| Dimensions (mm) | W | 3.5 | 3.8 | 5.6 | 2.8 | 3.6 | 3.4 |
| | D | 3.3 | 3.6 | 4.7 | 3.5 | 4.2 | 3 |
| | H | 1 | | 1.9 | 1.5 | 1.2 | 2.3 |
| Operating temperature range | | -40°C to +85°C | | | | | -10°C to +60°C |
| Automotive use | | ● | ● | ● | ● | ● | — |
| Life cycle (availability) | |  |  |  |  |  |  |
| Poles / Positions | | 1/1 | | | | | |
| Rating (max.) (Resistive load) | | 1mA 5V DC | | 50mA 20V DC | 1mA 5V DC | | 0.1A 30V DC |
| Rating (min.) (Resistive load) | | 50μA 3V DC | | 100μA 3V DC | 50μA 3V DC | 100μA 3V DC | 50μA 3V DC |
| Durability | Operating life without load | 50,000cycles 5Ω max. | | 100,000cycles 1Ω max. | 50,000cycles 5Ω max. | | 50,000cycles 1Ω max. |
| | Operating life with load Rating (max.) (Resistive load) | 50,000cycles 5Ω max. | | 100,000cycles 1Ω max. | 50,000cycles 5Ω max. | | 50,000cycles 1Ω max. |
| Electrical performance | Initial contact resistance | 2Ω max. | | 500mΩ max. | 2Ω max. | 3Ω max. | 500mΩ max. |
| | Insulation resistance | 100MΩ min. 100V DC | | | | | |
| | Voltage proof | 100V AC for 1 minute | | | | | |
| Mechanical performance | Terminal strength | 0.5N for 1minute | | | 1N for 1minute | 0.5N for 1minute | |
| | Actuator strength | 5N | | 10N | 5N | 2N | 5N |
| Environmental performance | Cold | -40°C 96h | | | | | -20°C 96h |
| | Dry heat | 85°C 96h | | | | | |
| | Damp heat | 40°C, 90 to 95%RH 96h | | | | | |
| Operation force | | 0.35N max. | | 0.4N max. | | 0.35N max. | 0.3N max. |
| Page | | 16 | 19 | 21 | 24 | 26 | 27 |

| | |
|--|----|
| Detector Switches Soldering Conditions | 73 |
| Detector Switches Cautions | 74 |

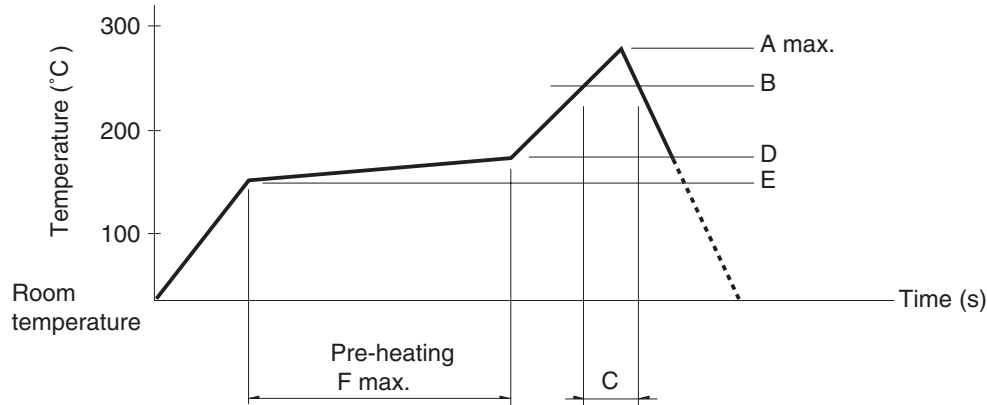
Note

- Indicates applicability to all products in the series.

Detector 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 (s) | D (°C) | E (°C) | F (s) |
|----------------------|----------------|--------|-------|--------|--------|-------|
| SPPB | 250 | 230 | 40 | 180 | 150 | 120 |
| SPPW8 | | | 35 | | | |
| SPVE | 260 | | 40 | | | |
| SPVL | | | | | | |
| SPVM | | | | | | |
| SPVN | | | | | | |
| SPVR | | | | | | |
| SPVS | | | | | | |
| SPVT | | | | | | |
| SSCM | | | | | | |
| SSCQ | 250 | | | | | |
| SPVQC, SPVQE | | | | | | |

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, surface 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 |
|--|-----------------------|----------------|
| SPVS, SPVN, SPVT, SPVM, SPVR, SPVE, SPPW8, SSCQ, SSCM, SPVL, SSCT, SPVQC, SPVQE | 350±5°C | 3s max. |
| SPVQ1, SPVQ3, SPVQ6, SPVQ7, SPVQ8, SPVQ9, SSCN, SPVQA | 300±10°C | 3 + 1 / 0s |
| SPPB (Reflow) | 300±5°C | 5s max. |
| SSCF, SPPB (For Lead, Dip) | 350±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 |
| SSCT, SPVQ1, SPVQ3, SPVQ6, SPVQ7, SPVQ8, SPVQ9, SPVQA | 100±10°C | 60s max. | 260±5°C | 5±1s |
| SPPW8, SPPB | 100 °C max. | 60s max. | 255±5°C | 5±1s |
| SSCF | — | | 260±5°C | 5±1s |

Detector
Slide
Push
Rotary
Power
Dual-In-line Package Type
General-purpose Type
Water-proof Type
Fast Switching Type