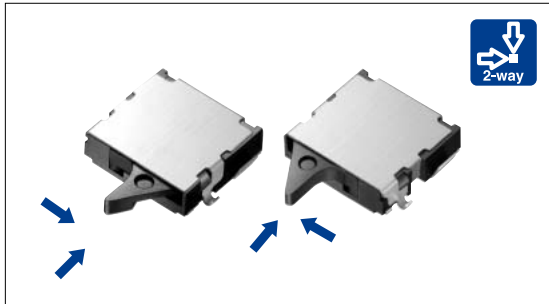


Detector Switch Compact Two-way Operation Type

SPVS Series



A circuit variation of Normal Open and Normal Close.



Typical Specifications

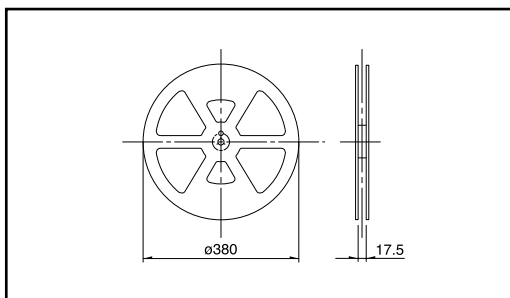
| Items | Specifications |
|--|----------------------|
| Rating (max.) (min.) (Resistive load) | 1mA 5V DC/50μA 3V DC |
| Operating force | 0.35N max. |
| Total travel | 1.55mm |
| Operating life | 50,000cycles |

Product Line

| Poles | Positions | Terminal type | Lever shape | Operating direction | Circuit | Location lug | Minimum order unit (pcs) | Product No. | Drawing No. |
|-------|-----------|--------------------------|-------------|---------------------|---------|--------------|--------------------------|-------------|-------------|
| 1 | 1 | For PC board (Reflow) | Standard | Right | N/O | With | 20,000 | SPVS310100 | 1 |
| | | | | | N/O | Without | | SPVS310200 | |
| | | | | | N/C | With | | SPVS320100 | 2 |
| | | | | | N/C | Without | | SPVS320200 | |
| | | | | Left | N/O | With | | SPVS410100 | 3 |
| | | | | | N/O | Without | | SPVS410200 | |
| | | | | | N/C | With | | SPVS420100 | 4 |
| | | | | | N/C | Without | | SPVS420200 | |
| | | | Long | Right | N/C | With | | SPVS360100 | 5 |
| | | | | | N/C | Without | | SPVS360200 | |

Taping Packaging

Reel Size Unit:mm



| Number of packages (pcs.) | | | Tape width (mm) |
|-----------------------------|----------------|-------------------------|-------------------|
| 1 reel | 1 case / Japan | 1 case / export packing | |
| 5,000 | 10,000 | 20,000 | 16 |

Note

Please place purchase orders per minimum order unit (integer).

Dimensions

Unit:mm

| No. | Style | PC board mounting hole and land dimensions (Viewed from direction A) |
|-----|------------------------------------|--|
| 1 | <p>Right operation type</p> | |

Dimensions

Unit:mm

Detector

Push

Slide

Rotary

Encoders

Power

Dual-in-line
Package Type

TACT Switch™

Custom-
Products

| No. | Style | PC board mounting hole and land dimensions (Viewed from direction A) |
|-----|------------------------------------|---|
| 2 | <p>Right operation type</p> | |
| 3 | <p>Left operation type</p> | |
| 4 | <p>Left operation type</p> | |
| 5 | <p>Right operation type</p> | |

Note

Above dimensions indicate "with location lug" versions.


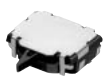














Circuit Diagram

| Control direction | Push ON (N/O) | Push OFF (N/C) |
|-------------------|---------------------|-----------------------|
| Right | <p>Drawing No.1</p> | <p>Drawing No.2,5</p> |
| Left | <p>Drawing No.3</p> | <p>Drawing No.4</p> |

Terminal Layout (Viewed from Direction A)

| Control direction | Push ON (N/O) Push OFF (N/C) |
|-------------------|---------------------------------|
| Right | <p>Drawing No.1,2,5</p> |
| Left | <p>Drawing No.3,4</p> |

List of Varieties (General-purpose Type)

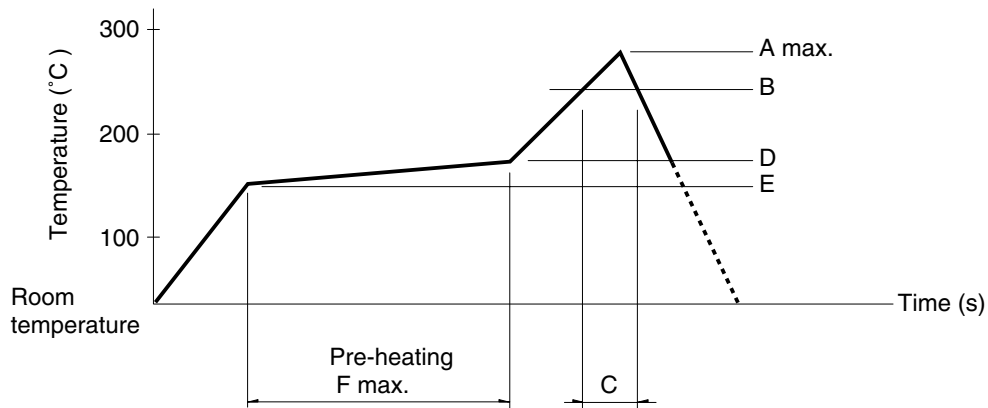
| Series | General-purpose Type | | | | | | | | |
|---------------------------------------|---|---|---|---|--|---|---|---|------------------------------------|
| | SSCF | SSCM | SPVP | SPVC1 | SPVN | SPVS | SPVG | SPVL | |
| Detector Photo |  |  |  |  |  |  |  |  | |
| Operation type |  2-way |  2-way |  1-way |  1-way |  2-way |  2-way |  2-way |  3-way | |
| Operating temperature range | -40 to +85 | -10 to +60 | -40 to +85 | | | | | | |
| Rating (max.) (Resistive load) | 0.1A 12V DC | 1mA 5V DC | | 10mA 16V DC | 1mA 5V DC | | 50mA 20V DC | 1mA 5V DC | |
| Rating (min.) (Resistive load) | 50μA 3V DC | | 100μA 3V DC | 50μA 3V DC | | | 100μA 3V DC | 50μA 3V DC | |
| Electrical performance | Initial contact resistance | 100m max. | 2 max. | 5 max. | 1 max. | 2 max. | | 500m max. | 2 max. |
| | Insulation resistance | 100M min. 100V DC | | | | | | | |
| | Voltage proof | 100V AC for 1 minute | | | | | | | |
| Mechanical performance | Terminal strength | 5N for 1 minute | 0.5N for 1 minute | | 3N for 1 minute | 0.5N for 1 minute | | 1N for 1 minute | |
| | Actuator strength | 10N | 0.5N | 5N | 10N | 5N | | 10N | 5N |
| Durability | Operating life without Load | 50,000cycles 200m max. | 50,000cycles 5 max. | 50,000cycles 10 max. | 25,000cycles 2 max. | 50,000cycles 5 max. | | 100,000cycles 1 max. | 50,000cycles 5 max. |
| | Operating life with Load | (0.1A 12V DC) 50,000cycles 300m max. | (1mA 5V DC) 50,000cycles 5 max. | (1mA 5V DC) 50,000cycles 10 max. | (10mA 16V DC) 25,000cycles 2 max. | (1mA 5V DC) 50,000cycles 5 max. | | (50mA 20V DC) 100,000cycles 1 max. | (1mA 5V DC) 50,000cycles 5 max. |
| Environmental performance | Cold | -20 ± 2 for 96h | | | | | | -40 ± 2 for 96h | -20 ± 2 for 96h |
| | Dry heat | 85 ± 2 for 96h | | | | | | | |
| | Damp heat | 40 ± 2 , 90 to 95%RH for 96h | | | | | | | |
| Dimensions (mm) | W | 11 | 5 | 3.5 | 6.3 | 3.8 | 3.5 | 5.5 | 5.55 |
| | D | 5.8 | 4 | 5.65 | 7.4 | 3.6 | 3.3 | 6.5 | 6.6 |
| | H | 12.4 | 1.5 | 1.2 | 2.8 | 1 | | 2 | 1 |
| Soldering | Manual soldering | 350 ± 10 , 3 ⁺¹ / ₀ s | 350 ± 5 , 3s max. | | 350 ± 10 , 3 ⁺¹ / ₀ s | 350 ± 5 , 3s max. | | | |
| | Dip soldering | 260 ± 5 , 5 ± 1s | | | 260 ± 5 , 3s max. | | | | |
| | Reflow soldering | Please see P.79 | | | | Please see P.79 | | | |
| Number of poles | 1 | | | | | | | | |
| Operation force | 0.7N max. | 0.35N max. | 0.55N max. | 0.85N max. | 0.35N max. | | 0.4N max. | 0.35N max. | |
| Page | 46 | 48 | 49 | 50 | 51 | 53 | 55 | 60 | |

| | |
|--|----|
| Detector Switches Soldering Conditions | 79 |
| Detector Switches Cautions | 80 |

Soldering Conditions

Example of Reflow Soldering Condition

1. Heating method: Double heating method with infrared heater.
2. Temperature measurement: Thermocouple 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



Detector

Push

Slide

Rotary

Encoders

Power

Dual-in-line
Package Type

TACT Switch™

Custom-
Products

| Series(Reflow type) | A() 3s max. | B() | C(s) | D() | E() | F(s) |
|-----------------------|-----------------|------|------|------|------|------|
| SPPB | 250 | 230 | 40 | | | |
| SPPW8 | | 200 | 20 | | | |
| SPVE | 260 | 230 | 40 | 180 | 150 | 120 |
| SPVG | | | | | | |
| SPVL | | | | | | |
| SPVM | | | | | | |
| SPVN | | | | | | |
| SPVP | | | | | | |
| SPVR | | | | | | |
| SPVS | | | | | | |
| SSCM | | | | | | |
| SPPY5 | | | | | | |

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.