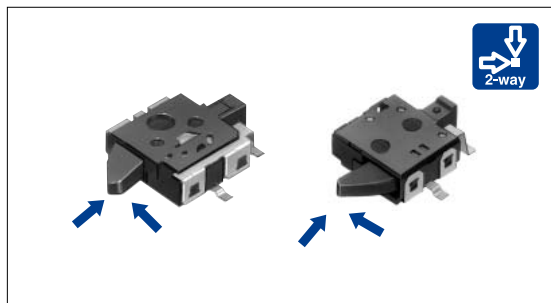


# Detector Switch 2mm-thick Two-way Operation Type

## SPVG Series



A surface mountable two-way operation detector switch with 2mm height.



### Typical Specifications

| Items                                                 |              | Specifications                     |
|-------------------------------------------------------|--------------|------------------------------------|
| Rating (max.)/(min.)<br>(Resistive load)              |              | 50mA 20V DC/100 $\mu$ A 3V DC      |
| Contact resistance<br>(Initial /After operating life) |              | 500m $\Omega$ max./1 $\Omega$ max. |
| Operating force                                       |              | 0.4N max.                          |
| Operating life                                        | Without load | 100,000cycles                      |
|                                                       | With load    | 100,000cycles (50mA 20V DC)        |

### Detector

Push

Slide

Rotary

Encoders

Power

Dual-in-line  
Package Type

TACT Switch™

Custom-  
Products

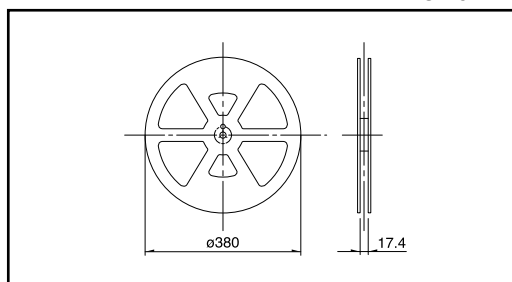
### Product Line

| Poles | Positions | Terminal type         | Lever length | Operating direction | Location lug | Side terminal      | Minimum order unit (pcs) | Product No. | Drawing No. |
|-------|-----------|-----------------------|--------------|---------------------|--------------|--------------------|--------------------------|-------------|-------------|
| 1     | 1         | For PC board (Reflow) | Standard     | Right               | With         | With both sides.   | 10,000                   | SPVG110301  | 1           |
|       |           |                       |              |                     |              | With a right side. |                          | SPVG111500  | 2           |
|       |           |                       |              |                     | Without      | With a left side.  |                          | SPVG111400  | 3           |
|       |           |                       |              |                     |              | Without            |                          | SPVG120302  | 4           |
|       |           |                       |              | Left                | With         | With both sides.   |                          | SPVG130200  | 1           |
|       |           |                       |              |                     |              | With a right side. |                          | SPVG210302  | 5           |
|       |           |                       |              |                     | Without      | With a left side.  |                          | SPVG211200  | 6           |
|       |           |                       |              |                     |              | Without            |                          | SPVG211300  | 7           |
|       |           |                       | Short        | Right               | With         | With both sides.   |                          | SPVG220300  | 8           |
|       |           |                       |              |                     |              | Without            |                          | SPVG230200  | 5           |
|       |           |                       |              |                     | Without      | With both sides.   |                          | SPVG310300  | 9           |
|       |           |                       |              |                     |              | Without            |                          | SPVG320200  | 10          |
|       |           |                       |              | Left                | With         | With both sides.   |                          | SPVG330200  | 9           |
|       |           |                       |              |                     |              | Without            |                          | SPVG410300  | 11          |
|       |           |                       |              |                     | Without      | With both sides.   |                          | SPVG420200  | 12          |
|       |           |                       |              |                     |              | Without            |                          | SPVG430200  | 11          |

### Taping Specifications (Taping Packaging)

Reel Size

Unit:mm



| Number of packages (pcs.) |               |                        | Tape width (mm) |
|---------------------------|---------------|------------------------|-----------------|
| 1 reel                    | 1 case /Japan | 1 case /export packing |                 |
| 2,500                     | 5,000         | 10,000                 | 16              |

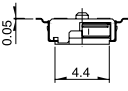
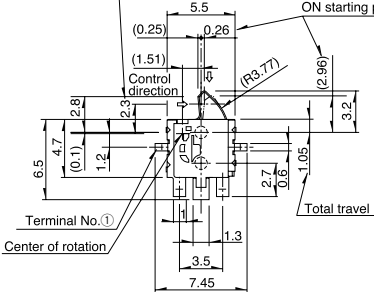
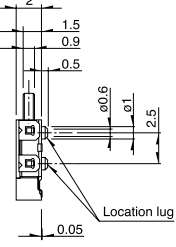
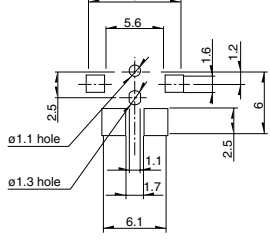
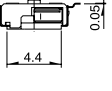
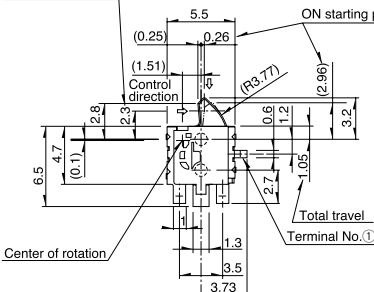
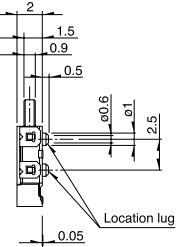
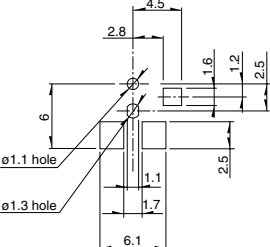
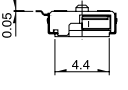
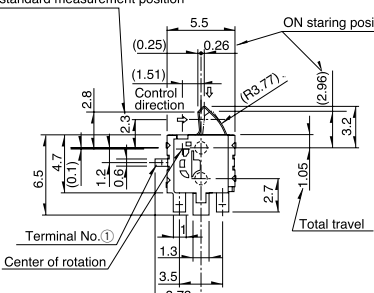
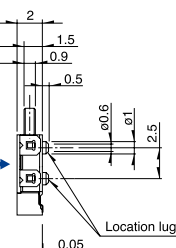
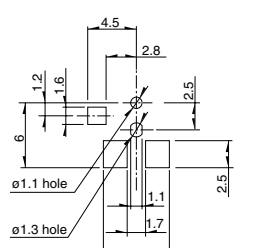
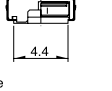
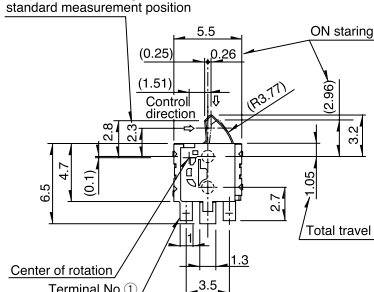
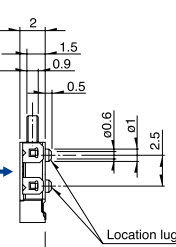
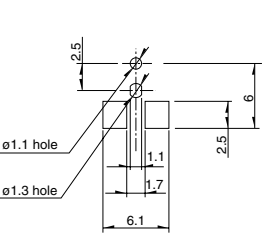
### Note

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

# Detector Switch 2mm-thick Two-way Operation Type | SPVG Series

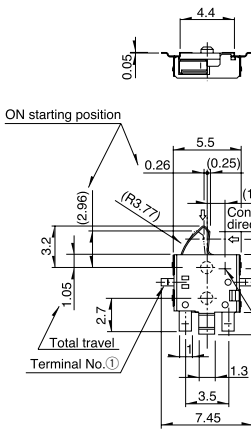
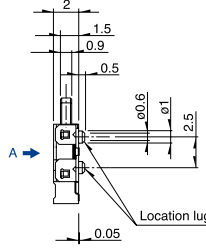
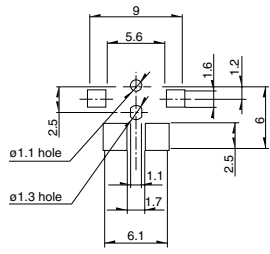
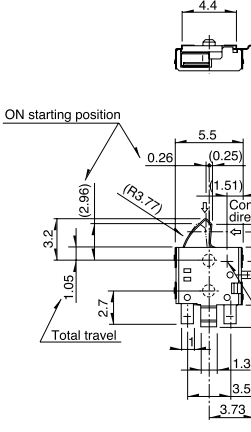
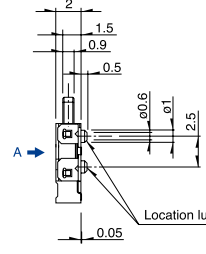
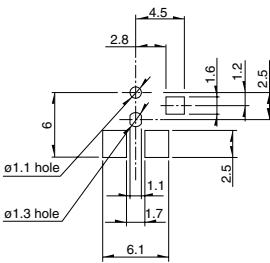
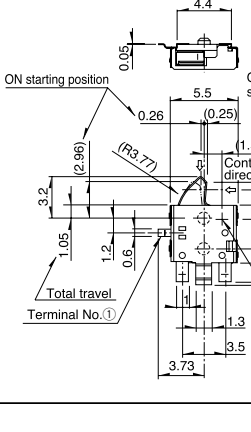
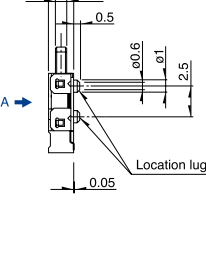
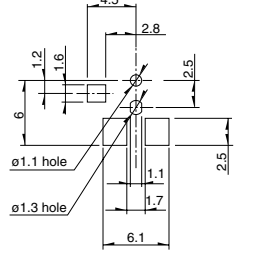
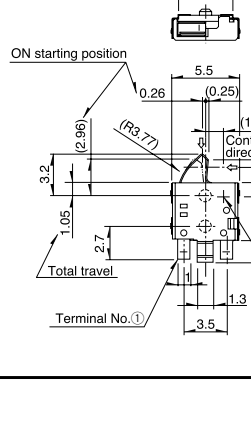
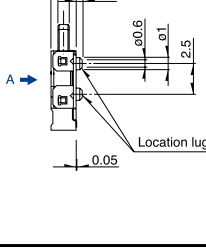
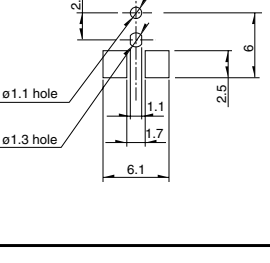
## Dimensions

Unit:mm

| No. | Photo                                                                               | Style                                                                                                                                                                                                                                                                                                                                                                          | PC board mounting hole and land dimensions<br>(Viewed from direction A)               |
|-----|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| 1   |    |  <p>ON position, operating force standard measurement position</p>  <p>ON starting position</p>  <p>Location lug</p>       |    |
| 2   |    |  <p>ON position, operating force standard measurement position</p>  <p>ON starting position</p>  <p>Location lug</p>     |   |
| 3   |  |  <p>ON position, operating force standard measurement position</p>  <p>ON starting position</p>  <p>Location lug</p> |  |
| 4   |  |  <p>ON position, operating force standard measurement position</p>  <p>ON starting position</p>  <p>Location lug</p> |  |

## Dimensions

Unit:mm

| No. | Photo                                                                               | Style                                                                                                                                                                    | PC board mounting hole and land dimensions<br>(Viewed from direction A)               |
|-----|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| 5   |    |       |    |
| 6   |   |     |   |
| 7   |  |   |  |
| 8   |  |   |  |

## Detector

## Push

## Slide

## Rotary

## Encoders

## Power

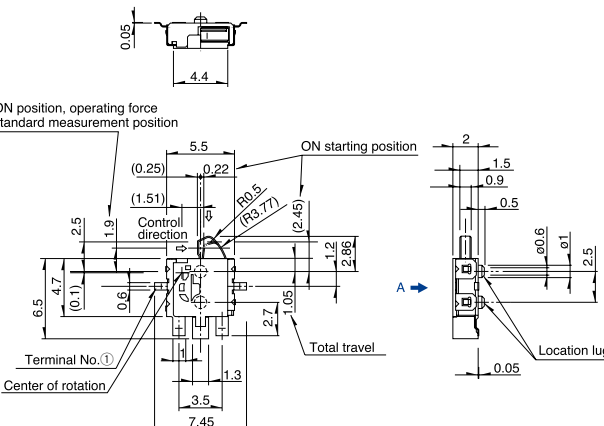
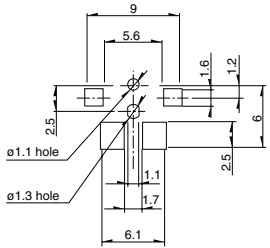
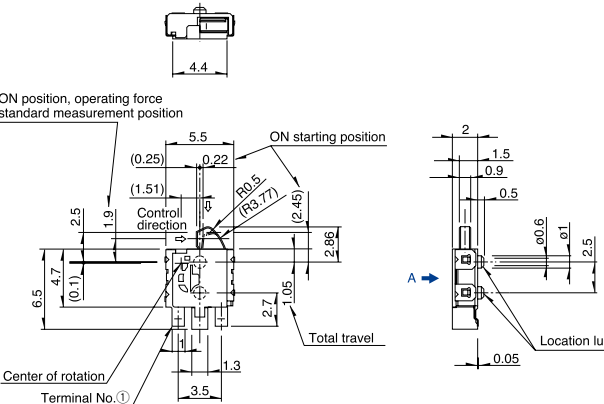
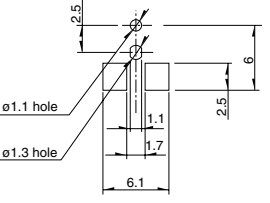
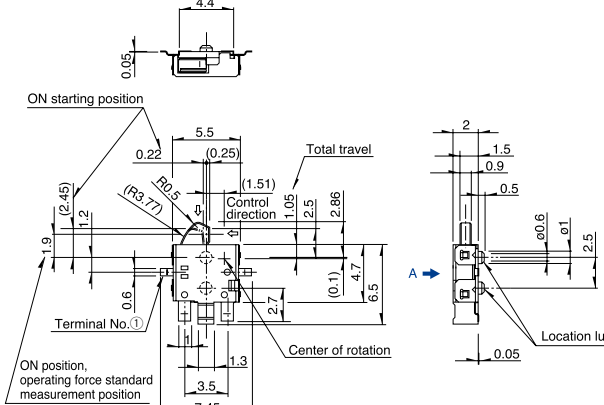
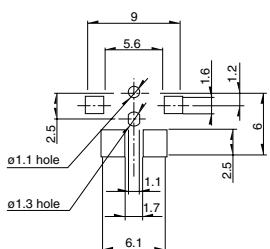
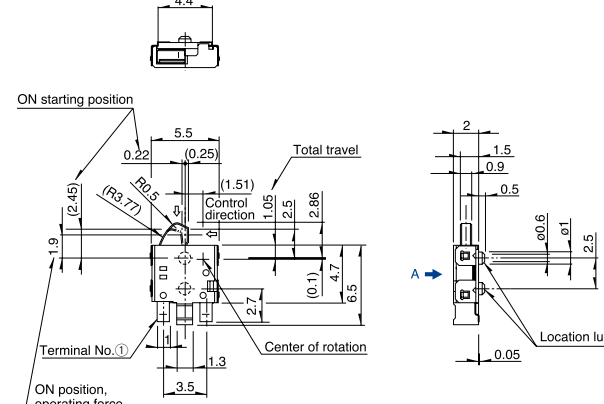
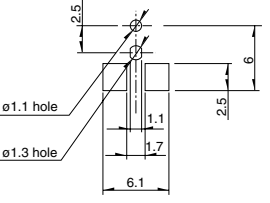
Dual-in-line  
Package Type

TACT Switch™

## Custom-Products

**Dimensions**

Unit:mm

| No. | Photo                                                                               | Style                                                                                                                                                                                                                                                                                              | PC board mounting hole and land dimensions<br>(Viewed from direction A )                                                                                          |
|-----|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9   |    |  <p>ON position, operating force standard measurement position</p> <p>ON starting position</p> <p>Control direction</p> <p>Terminal No.①</p> <p>Center of rotation</p> <p>Total travel</p> <p>Location lug</p>   |  <p>PC board mounting hole and land dimensions (Viewed from direction A)</p>   |
| 10  |   |  <p>ON position, operating force standard measurement position</p> <p>ON starting position</p> <p>Control direction</p> <p>Terminal No.①</p> <p>Center of rotation</p> <p>Total travel</p> <p>Location lug</p>  |  <p>PC board mounting hole and land dimensions (Viewed from direction A)</p>  |
| 11  |  |  <p>ON starting position</p> <p>ON position, operating force standard measurement position</p> <p>Control direction</p> <p>Terminal No.①</p> <p>Center of rotation</p> <p>Total travel</p> <p>Location lug</p> |  <p>PC board mounting hole and land dimensions (Viewed from direction A)</p> |
| 12  |  |  <p>ON starting position</p> <p>ON position, operating force standard measurement position</p> <p>Control direction</p> <p>Terminal No.①</p> <p>Center of rotation</p> <p>Total travel</p> <p>Location lug</p> |  <p>PC board mounting hole and land dimensions (Viewed from direction A)</p> |

**Note**

Above dimensions indicate "with location lug" versions.

Detector

Push

Slide

Rotary

Encoders

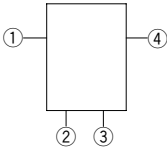
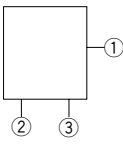
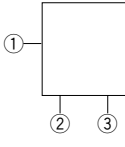
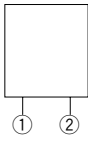
Power

Dual-in-line  
Package Type

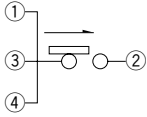
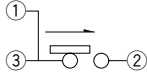
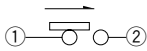
TACT Switch™

Custom-  
Products

Terminal Layout (Viewed from Direction A)

|                                                                                                                    |                                                                                                                       |
|--------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| <p>Drawing No. : 1, 5, 9, 11</p>  | <p>Drawing No. : 2, 6</p>          |
| <p>Drawing No. : 3, 7</p>         | <p>Drawing No. : 4, 8, 10, 12</p>  |

Circuit Diagram

|                                                                                                                       |                                                                                                                     |
|-----------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| <p>Drawing No. : 1, 5, 9, 11</p>    | <p>Drawing No. : 2, 3, 6, 7</p>  |
| <p>Drawing No. : 4, 8, 10, 12</p>  |                                                                                                                     |

## List of Varieties (General-purpose Type)

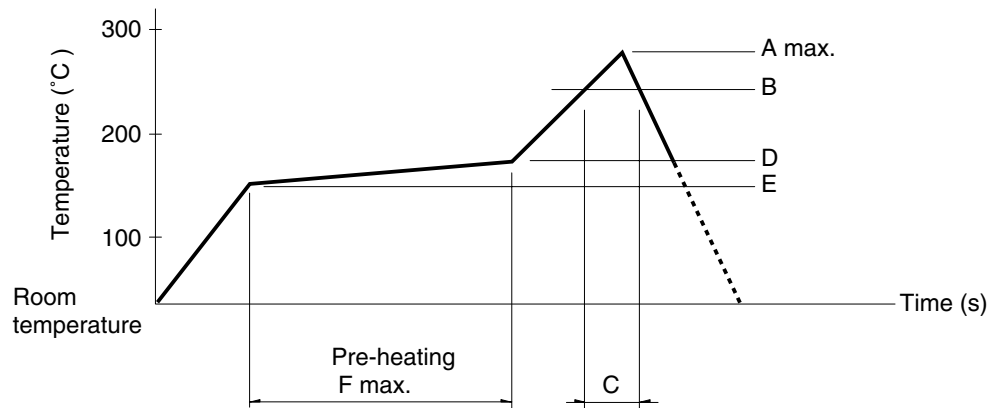
| Series                         |                             | General-purpose Type                         |                                     |                                      |                                              |                                     |             |                                        |                                     |      |
|--------------------------------|-----------------------------|----------------------------------------------|-------------------------------------|--------------------------------------|----------------------------------------------|-------------------------------------|-------------|----------------------------------------|-------------------------------------|------|
|                                |                             | SSCF                                         | SSCM                                | SPVP                                 | SPVC1                                        | SPVN                                | SPVS        | SPVG                                   | SPVL                                |      |
| Photo                          |                             |                                              |                                     |                                      |                                              |                                     |             |                                        |                                     |      |
| Operation type                 |                             |                                              |                                     |                                      |                                              |                                     |             |                                        |                                     |      |
| Operating temperature range    |                             | -40°C to +85°C                               | -10°C to +60°C                      | -40°C to +85°C                       |                                              |                                     |             |                                        |                                     |      |
| 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  | 100mΩ max.                                   | 2Ω max.                             | 5Ω max.                              | 1Ω max.                                      | 2Ω max.                             |             | 500mΩ max.                             | 2Ω max.                             |      |
|                                | Insulation resistance       | 100MΩ 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<br>200mΩ max.                   | 50,000cycles<br>5Ω max.             | 50,000cycles<br>10Ω max.             | 25,000cycles<br>2Ω max.                      | 50,000cycles 5Ω max.                |             | 100,000cycles<br>1Ω max.               | 50,000cycles<br>5Ω max.             |      |
|                                | Operating life with Load    | (0.1A 12V DC)<br>50,000cycles 300mΩ max.     | (1mA 5V DC)<br>50,000cycles 5Ω max. | (1mA 5V DC)<br>50,000cycles 10Ω max. | (10mA 16V DC)<br>25,000cycles 2Ω max.        | (1mA 5V DC)<br>50,000cycles 5Ω max. |             | (50mA 20V DC)<br>100,000cycles 1Ω max. | (1mA 5V DC)<br>50,000cycles 5Ω max. |      |
| Environmental performance      | Cold                        | -20±2°C for 96h                              |                                     |                                      |                                              |                                     |             | -40±2°C for 96h                        | -20±2°C for 96h                     |      |
|                                | Dry heat                    | 85±2°C for 96h                               |                                     |                                      |                                              |                                     |             |                                        |                                     |      |
|                                | Damp heat                   | 40±2°C, 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°C,<br>3 <sup>+1</sup> <sub>-0</sub> s | 350±5°C, 3s max.                    |                                      | 350±10°C,<br>3 <sup>+1</sup> <sub>-0</sub> s | 350±5°C, 3s max.                    |             |                                        |                                     |      |
|                                | Dip soldering               | 260±5°C,<br>5±1s                             | —                                   |                                      | 260±5°C,<br>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  $\phi$  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 (°C)<br>3s max. | B (°C) | C (s) | D (°C) | E (°C)           | 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                | 240               |        | 20    | 150    | Room temperature | 180   |

#### 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.

Компания «Life Electronics» занимается поставками электронных компонентов импортного и отечественного производства от производителей и со складов крупных дистрибьюторов Европы, Америки и Азии.

С конца 2013 года компания активно расширяет линейку поставок компонентов по направлению коаксиальный кабель, кварцевые генераторы и конденсаторы (керамические, пленочные, электролитические), за счёт заключения дистрибьюторских договоров

Мы предлагаем:

- Конкурентоспособные цены и скидки постоянным клиентам.
- Специальные условия для постоянных клиентов.
- Подбор аналогов.
- Поставку компонентов в любых объемах, удовлетворяющих вашим потребностям.
- Приемлемые сроки поставки, возможна ускоренная поставка.
- Доставку товара в любую точку России и стран СНГ.
- Комплексную поставку.
- Работу по проектам и поставку образцов.
- Формирование склада под заказчика.
- Сертификаты соответствия на поставляемую продукцию (по желанию клиента).
- Тестирование поставляемой продукции.
- Поставку компонентов, требующих военную и космическую приемку.
- Входной контроль качества.
- Наличие сертификата ISO.

В составе нашей компании организован Конструкторский отдел, призванный помогать разработчикам, и инженерам.

Конструкторский отдел помогает осуществить:

- Регистрацию проекта у производителя компонентов.
- Техническую поддержку проекта.
- Защиту от снятия компонента с производства.
- Оценку стоимости проекта по компонентам.
- Изготовление тестовой платы монтаж и пусконаладочные работы.



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