

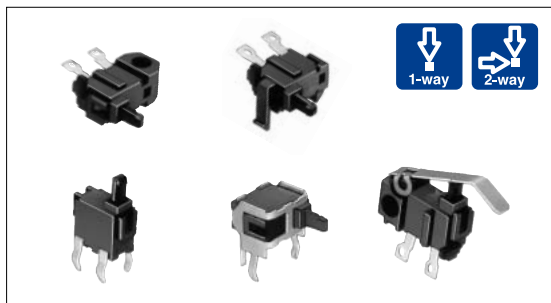
# Detector Switch General-purpose Type

SPPB Series



A wide variety of detector switches available for various Digital AV devices.

- Detector
- Push
- Slide
- Rotary
- Encoders
- Power



## Typical Specifications

| Items                                                   |              | Specifications               |
|---------------------------------------------------------|--------------|------------------------------|
| Rating (max. ) (min. )<br>( Resistive load )            |              | 0.1A 30V DC/50 $\mu$ A 3V DC |
| Contact resistance<br>( Initial /After operating life ) |              | 1 max./2 max.                |
| Operating force                                         |              | 0.35N max.                   |
| Operating life                                          | Without load | 50,000cycles                 |
|                                                         | With load    | 50,000cycles( 0.1A 30V DC )  |

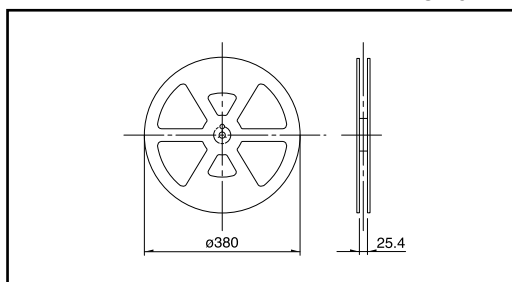
## Product Line

| Poles | Positions  | Operating part shape    | Operating direction | Terminal type           | Packaging style | Minimum order unit ( pcs ) | Product No. | Drawing No. |    |
|-------|------------|-------------------------|---------------------|-------------------------|-----------------|----------------------------|-------------|-------------|----|
| 1     | 1          | Push                    | Horizontal          | Lead                    | Bulk            | 10,000                     | SPPB110300  | 1           |    |
|       |            |                         |                     |                         |                 |                            | SPPB120200  | 2           |    |
|       |            |                         |                     |                         |                 |                            | SPPB310400  | 7           |    |
|       |            | Actuator A              | Horizontal          | Lead                    |                 | Bulk                       | 5,000       | SPPB320100  | 8  |
|       |            |                         |                     |                         |                 |                            |             | SPPB1A0100  | 3  |
|       |            |                         |                     |                         |                 |                            |             | SPPB1A0101  | 4  |
|       |            | Actuator C              | Horizontal          | Lead                    |                 | Bulk                       | 5,000       | SPPB2A0100  | 5  |
|       |            |                         |                     |                         |                 |                            |             | SPPB2A0101  | 6  |
|       |            |                         |                     |                         |                 |                            |             | SPPB512300  | 9  |
|       |            | Push                    | Vertical            | For PC board ( Dip )    | Bulk            | 10,000                     | SPPB610400  | 13          |    |
|       |            |                         |                     |                         |                 |                            | SPPB620300  | 14          |    |
|       |            |                         |                     |                         |                 |                            | SPPB5A0100  | 10          |    |
|       |            | Actuator A              | Horizontal          | For PC board ( Dip )    |                 | Bulk                       | 5,000       | SPPB6A0100  | 15 |
|       |            |                         |                     |                         |                 |                            |             | SPPB6A0400  | 16 |
|       |            |                         |                     |                         |                 |                            |             | SPPB530701  | 11 |
|       |            | Push                    | Vertical            | For PC board ( Reflow ) |                 | Taping                     | 6000        | SPPB530601  | 12 |
|       |            |                         |                     |                         |                 |                            |             | SPPB630101  | 17 |
|       |            |                         |                     |                         |                 |                            |             | SPPB640201  | 18 |
| Push  | Horizontal | For PC board ( Reflow ) | Taping              | 2400                    | SPPB630101      |                            | 17          |             |    |
|       |            |                         |                     |                         | SPPB640201      |                            | 18          |             |    |
|       |            |                         |                     |                         | SPPB640201      |                            | 18          |             |    |

## Taping Specifications (Taping Packaging)

Reel Size

Unit:mm



| Product No.              | Number of packages( pcs. ) |               |                        | Tape width ( mm ) |
|--------------------------|----------------------------|---------------|------------------------|-------------------|
|                          | 1 reel                     | 1 case /Japan | 1 case /export packing |                   |
| SPPB530701               | 1,500                      | 3,000         | 6,000                  | 24                |
| SPPB530601               | 600                        | 1,200         | 2,400                  |                   |
| SPPB630601<br>SPPB640201 | 1,300                      | 2,600         | 5,200                  |                   |

## Note

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

**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 dimensions (Viewed from direction A) |
| 1          |       | <p>ON starting position<br/>Total travel position<br/>Actuator position</p> | <p>Actuator position<br/>M2×0.4<br/>ø1.3 hole</p>           |
| 2          |       | <p>ON starting position<br/>Total travel position<br/>Actuator position</p> | <p>Actuator position<br/>M2×0.4<br/>ø1.3 hole</p>           |
| 3          |       | <p>ON starting position<br/>Total travel position<br/>Actuator position</p> | <p>Actuator position<br/>M2×0.4<br/>ø1.3 hole</p>           |
| 4          |       | <p>ON starting position<br/>Total travel position<br/>Actuator position</p> | <p>Actuator position<br/>M2×0.4<br/>ø1.3 hole</p>           |

Dimensions

Unit:mm

Detector

Push

Slide

Rotary

Encoders

Power

Dual-in-line  
 Package Type

TACT Switch™

Custom-  
 Products

| No. | Photo | Style             | PC board mounting hole dimensions<br>(Viewed from direction A) |
|-----|-------|-------------------|----------------------------------------------------------------|
| 5   |       | <p>Actuator C</p> |                                                                |
| 6   |       | <p>Actuator C</p> |                                                                |
| 7   |       | <p>Push</p>       |                                                                |
| 8   |       | <p>Push</p>       |                                                                |

Detector

Push

Slide

Rotary

Encoders

Power


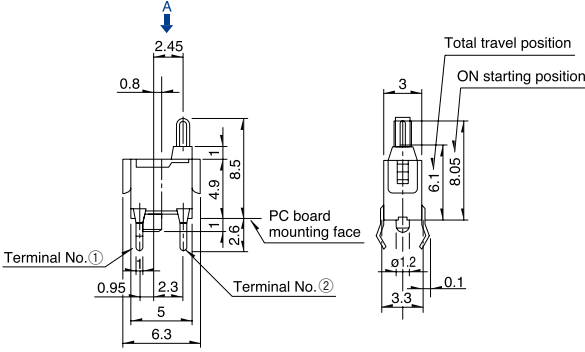
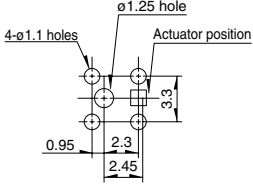

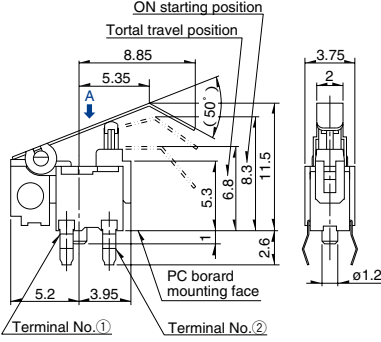
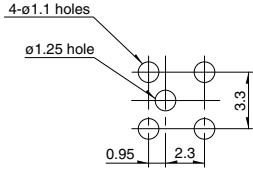

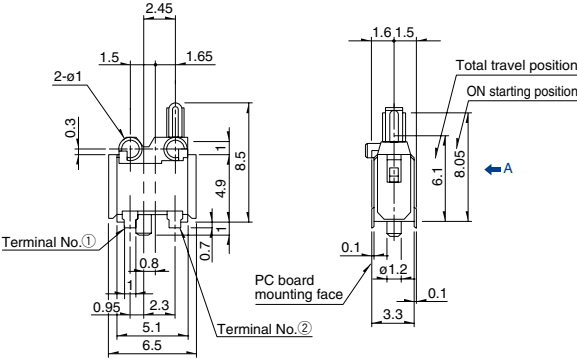
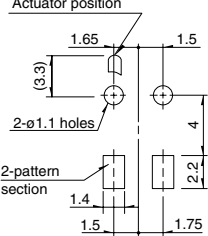

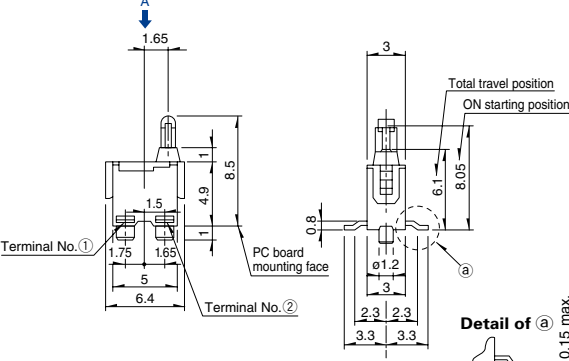
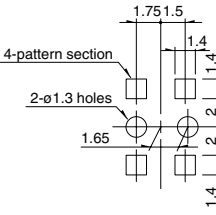
Dual-in-line  
Package Type

TACT Switch™

Custom-  
Products

Dimensions

Unit:mm


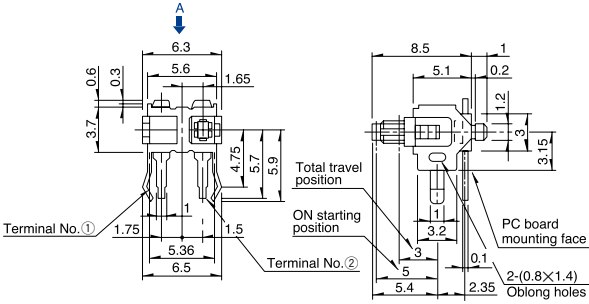
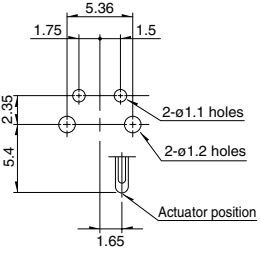

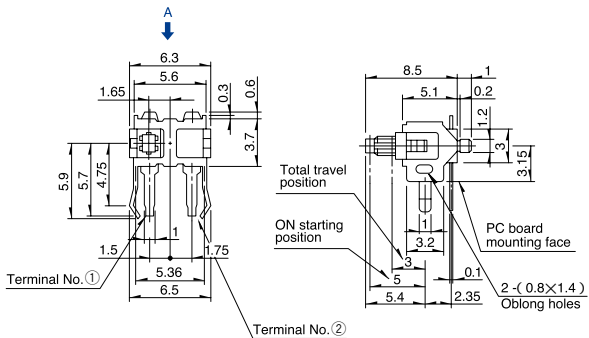
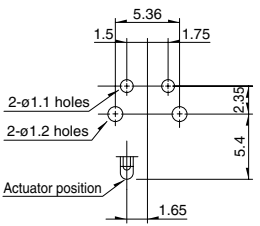
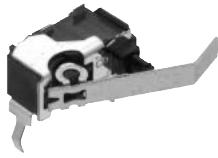
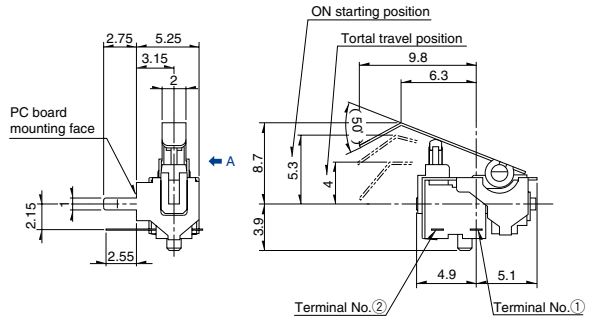
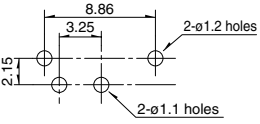
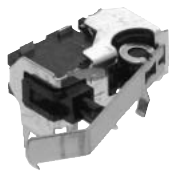
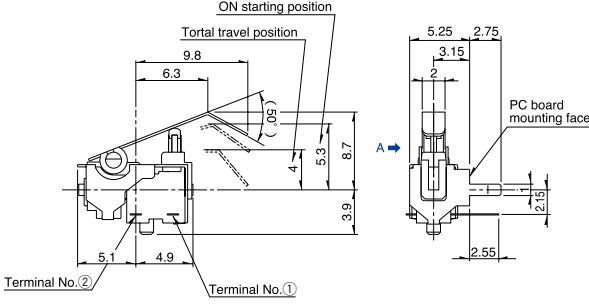
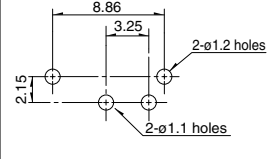
| No. | Photo                                                                               | Style                                                                                | PC board mounting hole and land dimensions (Viewed from direction A)                  |
|-----|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| 9   |    |    |    |
| 10  |   |    |   |
| 11  |  |  |  |
| 12  |  |  |  |

# Detector Switch

## General-purpose Type | SPPB Series

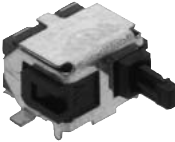
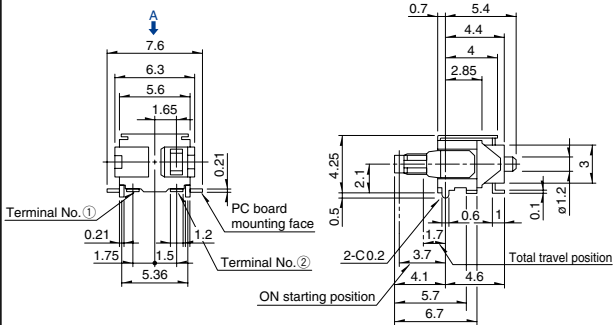
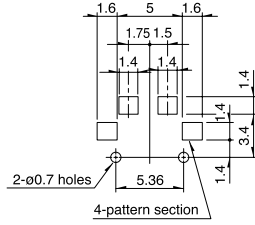

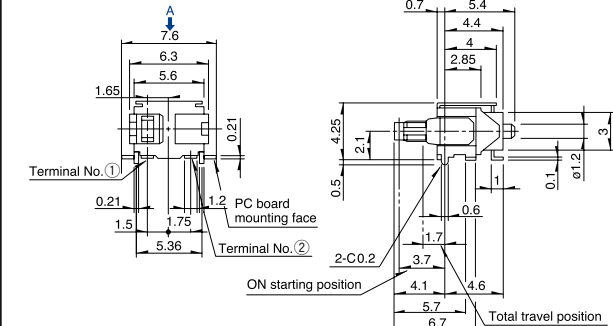
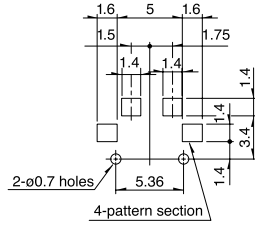
### Dimensions

Unit:mm

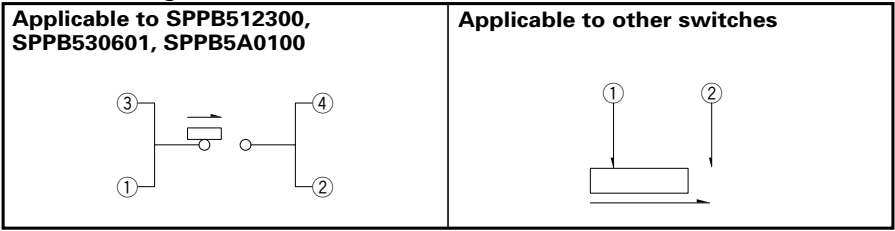
| No.                                                                                                                                                                    | Photo                                                                                                | Style                                                                                                         | PC board mounting hole and land dimensions (Viewed from direction A)                  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| <p><b>Detector</b></p> <p>Push</p> <p>Slide</p> <p>Rotary</p> <p>Encoders</p> <p>Power</p> <p>Dual-in-line Package Type</p> <p>TACT Switch™</p> <p>Custom-Products</p> | <p><b>13</b></p>    | <p><b>Push</b></p>          |    |
|                                                                                                                                                                        | <p><b>14</b></p>   | <p><b>Push</b></p>         |   |
|                                                                                                                                                                        | <p><b>15</b></p>  | <p><b>Actuator A</b></p>  |  |
|                                                                                                                                                                        | <p><b>16</b></p>  | <p><b>Actuator A</b></p>  |  |

**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 (Viewed from direction A)                 |
| 17           |   |   |   |
| 18           |  |  |  |

■ Circuit Diagram (Viewed from Direction A)



## List of Varieties ( General-purpose Type )

| Series                         | General-purpose Type                                                                                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |  |
|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|
|                                | SPPB                                                                                                                                                                   | SPVE                                                                              | SPPW8                                                                             | SPVM                                                                              | SPVR                                                                               | SPVF                                                                                | SSCU                                                                                | SSCT                                                                                |  |
| Photo                          |                                                                                       |  |  |  |  |  |  |  |  |
| Operation type                 | <br> |  |  |  |   |  |  |  |  |
| Operating temperature range    | -40 to +85                                                                                                                                                             | -10 to +60                                                                        |                                                                                   | -40 to +85                                                                        |                                                                                    | -10 to +60                                                                          | -40 to +85                                                                          |                                                                                     |  |
| Rating (max.) (Resistive load) | 0.1A 30V DC                                                                                                                                                            |                                                                                   |                                                                                   | 1mA 5V DC                                                                         |                                                                                    |                                                                                     | 0.1A 12V 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                                                                                                                                             | 1 max.                                                                            | 500m max.                                                                         | 1 max.                                                                            | 2 max.                                                                             | 3 max.                                                                              | 500m max.                                                                           | 70m max. 20m max.                                                                   |  |
|                                | Insulation resistance                                                                                                                                                  | 100M min. 100V DC                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     | 100M min. 250V DC                                                                   |  |
|                                | Voltage proof                                                                                                                                                          | 100V AC for 1 minute                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     | 250V AC for 1 minute                                                                |  |
| Mechanical performance         | Terminal strength                                                                                                                                                      | 3N for 1 minute                                                                   | 0.5N for 1 minute                                                                 | 3N for 1 minute                                                                   | 1N for 1 minute                                                                    | 0.5N for 1 minute                                                                   | 3N for 30s                                                                          | 3N for 1 minute                                                                     |  |
|                                | Actuator strength                                                                                                                                                      | 10N                                                                               | 5N                                                                                | 10N                                                                               | 5N                                                                                 | 2N                                                                                  | 1N                                                                                  | 5N 10N                                                                              |  |
| Durability                     | Operating life without Load                                                                                                                                            | 50,000cycles 2 max.                                                               | 50,000cycles 1 max.                                                               | 100,000cycles 2 max.                                                              | 50,000cycles 5 max.                                                                |                                                                                     | 100,000cycles 1 max.                                                                | 10,000cycles 100m max. 40m max.                                                     |  |
|                                | Operating life with Load                                                                                                                                               | (0.1A 30V DC) 50,000cycles 2 max.                                                 | (0.1A 30V DC) 50,000cycles 1 max.                                                 | (0.1A 30V DC) 100,000cycles 2 max.                                                | (1mA 5V DC) 50,000cycles 5 max.                                                    |                                                                                     | (1mA 5V DC) 100,000cycles 1 max.                                                    | (0.1A 12V DC) 10,000cycles 150m max. 60m 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                                                                                                                                                                      | 6.3                                                                               | 3.4                                                                               | 5                                                                                 | 2.8                                                                                | 3.6                                                                                 | 9                                                                                   | 11 12.5                                                                             |  |
|                                | D                                                                                                                                                                      | 3                                                                                 |                                                                                   | 4                                                                                 | 3.5                                                                                | 4.2                                                                                 | 3.5                                                                                 | 5.8 5                                                                               |  |
|                                | H                                                                                                                                                                      | 4.9                                                                               | 2.3                                                                               |                                                                                   | 1.5                                                                                | 1.2                                                                                 | 4.5                                                                                 | 7 11.5                                                                              |  |
| Soldering                      | Manual soldering                                                                                                                                                       | 300 ± 5 , 5s max.                                                                 |                                                                                   | 350 ± 5 , 3s max.                                                                 |                                                                                    |                                                                                     | 300 ± 10 , 3 ± 1s 350 ± 5 , 3s max.                                                 |                                                                                     |  |
|                                | Dip soldering                                                                                                                                                          | 260 ± 5 , 5 ± 1s                                                                  |                                                                                   | 255 ± 5 , 5 ± 1s                                                                  |                                                                                    | 245 ± 5 , 5 ± 1s                                                                    |                                                                                     | 260 ± 5 , 5 ± 1s                                                                    |  |
|                                | Reflow soldering                                                                                                                                                       | Please see P.79                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |  |
| Number of poles                | 1                                                                                                                                                                      |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 1.2                                                                                 | 1                                                                                   |                                                                                     |  |
| Operation force                | 0.35N max.                                                                                                                                                             | 0.3N max.                                                                         |                                                                                   | 0.4N max.                                                                         | 0.35N max.                                                                         | 0.3N max.                                                                           | 0.5N max.                                                                           | 0.7 ± 0.3N                                                                          |  |
| Page                           | 28                                                                                                                                                                     | 34                                                                                | 36                                                                                | 38                                                                                | 40                                                                                 | 41                                                                                  | 44                                                                                  | 45                                                                                  |  |

Detector

Push

Slide

Rotary

Encoders

Power

Dual-in-line Package Type

TACT Switch™

Custom-Products

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 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**

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Slide

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Custom-  
Products

| Series( Reflow type ) | A( )<br>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.



Компания «Океан Электроники» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Поставка оригинальных импортных электронных компонентов напрямую с производств Америки, Европы и Азии, а так же с крупнейших складов мира;
- Широкая линейка поставок активных и пассивных импортных электронных компонентов (более 30 млн. наименований);
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Помощь Конструкторского Отдела и консультации квалифицированных инженеров;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Компания «Океан Электроники» является официальным дистрибьютором и эксклюзивным представителем в России одного из крупнейших производителей разъемов военного и аэрокосмического назначения «JONHON», а так же официальным дистрибьютором и эксклюзивным представителем в России производителя высокотехнологичных и надежных решений для передачи СВЧ сигналов «FORSTAR».



## JONHON

«JONHON» (основан в 1970 г.)

Разъемы специального, военного и аэрокосмического назначения:

(Применяются в военной, авиационной, аэрокосмической, морской, железнодорожной, горно- и нефтедобывающей отраслях промышленности)

«FORSTAR» (основан в 1998 г.)

ВЧ соединители, коаксиальные кабели,  
кабельные сборки и микроволновые компоненты:

(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).



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