

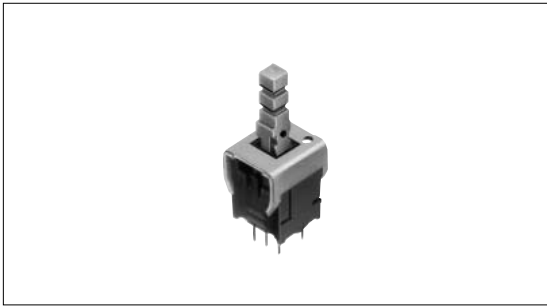
# Push Switch 2.5mm-travel Vertical Type

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## SPEC Series



**Vertical type, widely applicable to home and industrial electronic equipment.**



## ■ Typical Specifications

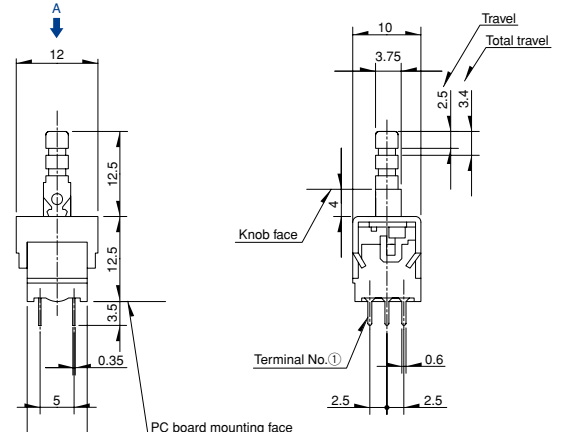
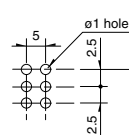
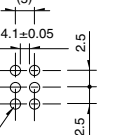
| Items                                                 |              | Specifications                      |
|-------------------------------------------------------|--------------|-------------------------------------|
| Rating (max.)/(min.)<br>(Resistive load)              |              | 0.1A 30V DC/50 $\mu$ A 3V DC        |
| Contact resistance<br>(Initial /After operating life) |              | 30m $\Omega$ max./50m $\Omega$ max. |
| Operating force                                       |              | 2 $\pm$ 1N                          |
| Operating life                                        | Without load | 10,000cycles                        |
|                                                       | With load    | 10,000cycles (0.1A 30V DC)          |

## ■ Product Line

| Changeover timing | Travel (mm) | Total travel (mm) | Rating | Mounting method | Poles | Operation | Terminal type | Minimum order unit (pcs.) | Product No. |
|-------------------|-------------|-------------------|--------|-----------------|-------|-----------|---------------|---------------------------|-------------|
| Non shorting      | 2.5         | 3.4               | —      | PC board        | 2     | Latching  | Straight      | 2.000                     | SPEC121100  |
|                   |             |                   |        |                 |       |           | Snap-in       |                           | SPEC121300  |

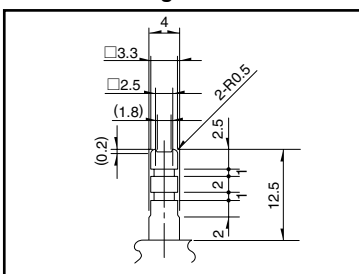
## ■ Dimensions

Unit:mm

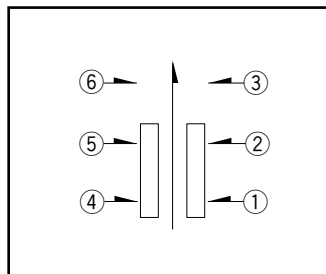
| Style                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | PC board mounting hole dimensions<br>(Viewed from the direction A)                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  <p>Technical drawing showing the PC board mounting assembly. The front view (left) shows a total width of 12, a mounting hole diameter of 5, and a distance of 8.8 from the bottom edge to the center of the mounting hole. The side view (right) shows a total height of 12.5, a terminal height of 3.5, and a terminal width of 0.35. The terminal is labeled "Terminal No. ①". The mounting face is labeled "PC board mounting face". The terminal has a "Knob face" and a "Travel" dimension of 10. The total travel is 3.75. The terminal has a "Travel" dimension of 2.5 and a "Total travel" dimension of 3.4. The terminal has a "Travel" dimension of 2.5 and a "Total travel" dimension of 3.4. The terminal has a "Travel" dimension of 2.5 and a "Total travel" dimension of 3.4.</p> | <p><b>Straight terminal</b></p>  <p>Technical drawing showing the straight terminal. The terminal has a width of 5 and a mounting hole diameter of 1. The terminal has a width of 2.5 and a mounting hole diameter of 1. The terminal has a width of 2.5 and a mounting hole diameter of 1.</p> | <p><b>Snap-in terminal</b></p>  <p>Technical drawing showing the snap-in terminal. The terminal has a width of 5 and a mounting hole diameter of 1. The terminal has a width of 2.5 and a mounting hole diameter of 1. The terminal has a width of 2.5 and a mounting hole diameter of 1. The thickness of the PC board is <math>t=1.6\text{mm}</math>.</p> |

### Actuator Configuration at Front Edge

Unit:mm



**Circuit Diagram  
(Viewed from Direction A)**



## ■ Terminal Configuration

Unit:mm

The image shows two technical drawings of terminals. The left drawing is labeled "Straight terminal" and shows a side view of a terminal with a width of 8.8, a central slot width of 5, and a slot depth of 0.35. The right drawing is labeled "Snap-in terminal" and shows a side view of a terminal with a width of 8.8, a central slot width of 5, and a slot depth of 0.35. It also shows a top view with dimensions 0.8, 1.9, 2.8, and (3.5), and a radius R1.

## Notes

1. Products other than those listed in the above chart are also available. Please contact us for details.
2. Please place purchase orders per minimum order unit (integer).

Refer to **P.107** for knobs.

## Detector

## Push

## Slide

## Rotary

## Encoders

## Power

Dual-in-line  
Package Type

TACT Switch™

## Custom-Products

Horizontal  
Type

### Vertical Type

## List of Varieties

| Series                         |                                            | SPPH4                                                                             | SPPH1                                                                             | SPEC                                                                              | SPED2                                                                             | SPED3                                                                             | SPED4                                                                              | SPED5                                                                               | SPEF                                                                                |                                                                                     |
|--------------------------------|--------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Photo                          |                                            |  |  |  |  |  |  |  |  |  |
| Travel (mm)                    |                                            | 2.2                                                                               | 1.5                                                                               | 2.5                                                                               | —                                                                                 |                                                                                   |                                                                                    |                                                                                     | 1.5                                                                                 |                                                                                     |
| Total travel (mm)              |                                            | 3                                                                                 | 2.5                                                                               | 3.4                                                                               | 4.5                                                                               | 3.8                                                                               |                                                                                    |                                                                                     | 2.7                                                                                 |                                                                                     |
| Number of poles                |                                            | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 1                                                                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| Dimensions (mm)                | W                                          | 8.5                                                                               | 10                                                                                | 12                                                                                | 14                                                                                |                                                                                   |                                                                                    | 13.5                                                                                | 9.4                                                                                 |                                                                                     |
|                                | D                                          | 6.5                                                                               | 10                                                                                |                                                                                   | 16.8                                                                              | 18                                                                                |                                                                                    | 18.2                                                                                | 9                                                                                   |                                                                                     |
|                                | H                                          | 8.5                                                                               |                                                                                   | 12.5                                                                              | 26.7                                                                              | 20.7                                                                              |                                                                                    |                                                                                     | 6.9                                                                                 |                                                                                     |
| Operating temperature range    |                                            | −10℃ to +60℃                                                                      |                                                                                   | −40℃ to +85℃                                                                      |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| Rating (max.) (Resistive load) |                                            | 0.1A 30V DC                                                                       |                                                                                   |                                                                                   |                                                                                   | 1A 14.5V DC                                                                       |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| Rating (min.) (Resistive load) |                                            | 50μA 3V DC                                                                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| Electrical performance         | Initial contact resistance                 | 100mΩ max.                                                                        | 20mΩ max.                                                                         | 30mΩ max.                                                                         | 100mΩ max.                                                                        |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
|                                | Insulation resistance                      | 100MΩ min. 500V DC                                                                |                                                                                   |                                                                                   |                                                                                   | 3MΩ min. 500V DC                                                                  |                                                                                    |                                                                                     | 3MΩ min. 100VDC                                                                     |                                                                                     |
|                                | Voltage proof                              | 500V AC for 1minute                                                               |                                                                                   |                                                                                   |                                                                                   | 100V AC for 1minute                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| Mechanical performance         | Terminal strength                          | 5N for 1minute                                                                    |                                                                                   | 3N for 1minute                                                                    | —————                                                                             |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
|                                | Actuator strength                          | Operating direction                                                               | 30N                                                                               | 50N                                                                               |                                                                                   |                                                                                   |                                                                                    | 90N                                                                                 |                                                                                     |                                                                                     |
|                                |                                            | Pulling direction                                                                 | 10N                                                                               | —                                                                                 | 50N                                                                               | —————                                                                             |                                                                                    |                                                                                     | 30N                                                                                 |                                                                                     |
| Durability                     | Operating life without load                | 10,000cycles 100mΩ max.                                                           | 10,000cycles 40mΩ max.                                                            | 10,000cycles 50mΩ max.                                                            | 30,000cycles 100mΩ max.                                                           |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
|                                | Operating life without load Load:as rating |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| Environmental performance      | Cold                                       | −20±2℃ for 96h                                                                    |                                                                                   |                                                                                   |                                                                                   | −40±2℃ for 96h                                                                    |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
|                                | Dry heat                                   | 85±2℃ for 96h                                                                     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
|                                | Damp heat                                  | 40±2℃, 90 to 95%RH for 96h                                                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| Soldering                      | Manual soldering                           | 350±10℃ 3 <sup>+1</sup> <sub>0</sub> s                                            |                                                                                   |                                                                                   | 350±10℃ 3±0.5s ※3                                                                 | —                                                                                 | 350±10℃ 3±0.5s                                                                     | —                                                                                   | 350±5℃ 3s max.                                                                      |                                                                                     |
|                                | Dip soldering                              | 260±5℃ 5±1s                                                                       | 260±5℃ 10±1s                                                                      | 260℃ max. 5s max.                                                                 | 260±5℃ 10±1s ※3                                                                   | —                                                                                 | 260±5℃ 10±1s                                                                       | —                                                                                   | 260±5℃10±1s ※4                                                                      |                                                                                     |
|                                | Reflow soldering                           | —————                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     | Please see P.108                                                                    |                                                                                     |
| Page                           |                                            | 98                                                                                | 99                                                                                | 101                                                                               | 102                                                                               | 103                                                                               |                                                                                    |                                                                                     | 105                                                                                 |                                                                                     |

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## Notes

- ※3. Applicable to SPED220200 (PC board type) only.
- ※4. Applicable to SPEF110100 only.

Detector

Push

Slide

Rotary

Encoders

Power

Dual-in-line  
Package Type

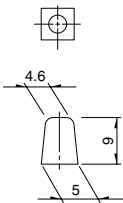
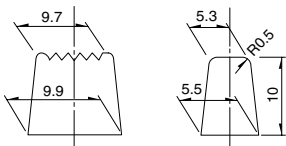
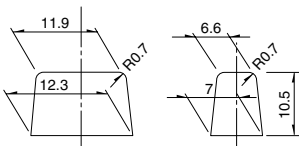
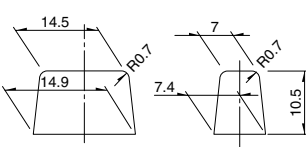
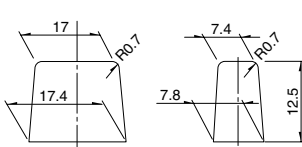
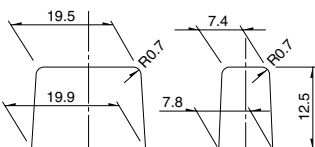
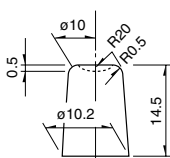
TACT Switch™

Custom-  
ProductsHorizontal  
TypeVertical  
Type

## Attached Parts

Please specify required knob.

Unit:mm

| Knob outline drawing                                                                                                                  | Variety               |                                  | Series                        |
|---------------------------------------------------------------------------------------------------------------------------------------|-----------------------|----------------------------------|-------------------------------|
|                                                                                                                                       | Color                 | Model                            |                               |
|                                                      | Black<br>Red<br>White | UJ206022<br>UJ206020<br>UJ206026 | SPPJ3<br>SPUJ                 |
| <b>Key pitch 10mm</b><br><br><b>Square knob</b>      |                       | 4093-1<br>4093-2<br>4093-3       | SPPJ2<br>SPUP<br>SPUN<br>SPEC |
| <b>Key pitch 12.5mm</b><br><br><b>Square knob</b>    |                       | UE201011<br>UE201012<br>UE201013 |                               |
| <b>Key pitch 15mm</b><br><br><b>Square knob</b>     |                       | UE202011<br>UE202012<br>UE202013 |                               |
| <b>Key pitch 17.5mm</b><br><br><b>Square knob</b>  |                       | UE203011<br>UE203012<br>UE203013 |                               |
| <b>Key pitch 20mm</b><br><br><b>Square knob</b>    |                       | UE204011<br>UE204012<br>UE204013 |                               |
| <b>Round knob</b>                                  |                       | UE200011<br>UE200012<br>UE200013 |                               |

Detector

Push

Slide

Rotary

Encoders

Power

Dual-in-line  
Package Type

TACT Switch™

Custom-  
ProductsHorizontal  
TypeVertical  
Type

### Note

We recommend the use of adhesive to secure the knob when mounting onto switches.

