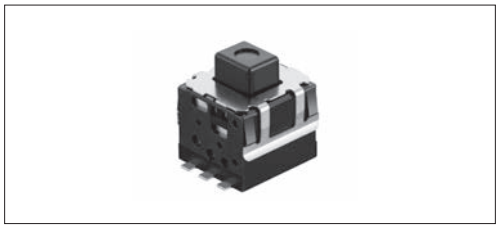
# SPEJ

## Compact Momentary Type

Two poles and two contact points, Comfortable momentary operation with click feel.



### Typical Specifications

| Items | Specifications |
|---|---|
| Rating (max.) (Resistive load) | 0.2A 14V DC |
| Contact resistance (Initial /After operating life) | 150mΩ max. / 150mΩ max. |
| Operating forces | 3.5±0.7N |
| Operating life | 10,000cycles (0.2A 14V DC) |

### Product Line

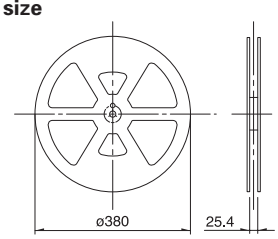
| Travel (mm) | Poles | Positions | Minimum order unit (pcs.) | | Product No. |
|---|---|---|---|---|---|
| | | | Japan | Export | |
| 1.7 | 2 | 2 | 500 | 2,000 | SPEJ110100 |

### Packing Specifications

Taping

Unit:mm

Reel size

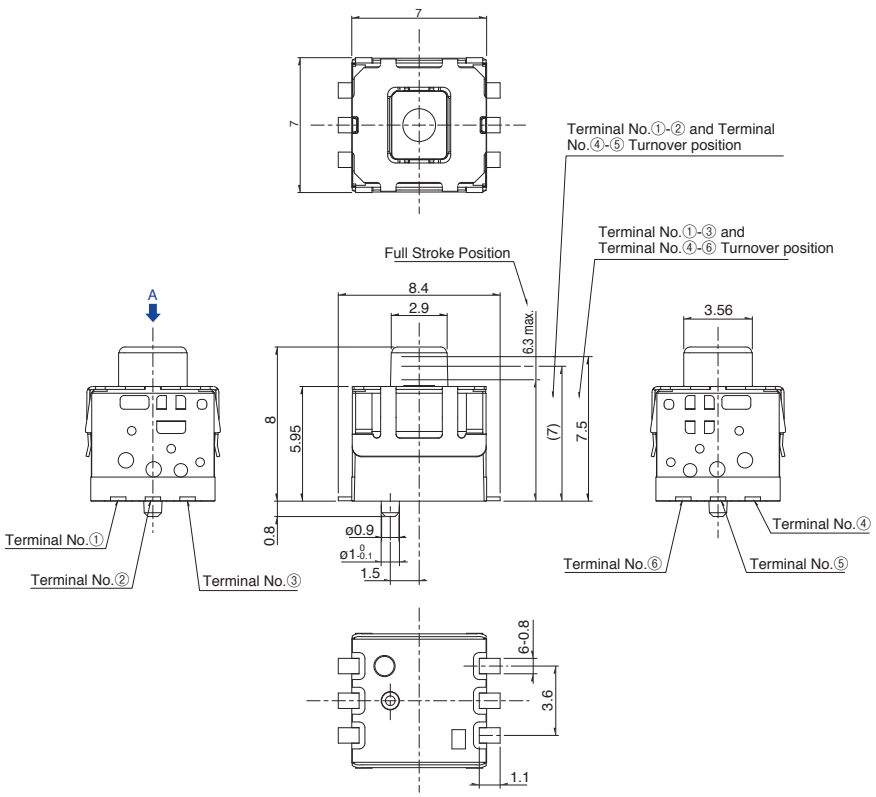



| Number of packages (pcs.) | | | Tape width (mm) | Export package measurements (mm) |
|---|---|---|---|---|
| 1 reel | 1 case / Japan | 1 case / export packing | | |
| 500 | 1,000 | 2,000 | 24 | 404 × 397 × 140 |

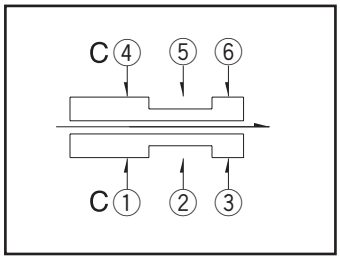
### Dimensions

Unit:mm

Style

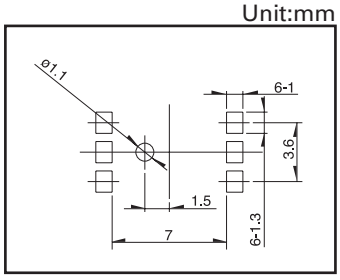



### Circuit Diagram (Viewed from Direction A)




### Recommend Pattern

Unit:mm



Refer to **P.137** for soldering conditions.

# Push Switches

## ■ List of Varieties

| Series | | | Horizontal | | | | | | Vertical | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SPPJ3 | SPPJ2 | SPUJ※1 | SPUP※1 | SPUN | SPUN medium current※1 | SPEG | SPEJ | SPEH |
| Photo | | |  |  |  |  |  |  |  |  |  |
| Dimensions (mm) | W | | 5 or 6.6 | 7.2 | 7.5 | | 10 | | 7.2 | 7 | 6 |
| | D | | 12 | | 15.2<br>22.7 | | 24<br>36 | | 8.39 | 7 | 6 |
| | H | | 8.3 | 9.6 | 8.8 | 10.3 | 13 | | 3.5 | 5.95 | 5 |
| Travel (mm) | | | 2.5 | | 2 | 1.5<br>2 | 2.5 | | — | 1.7 | — |
| Total travel (mm) | | | 3.5 | | 3 | 2.5<br>3 | 3.5 | | 1.1 | 1.7 | 1<br>1.6 |
| Number of poles | | | 1<br>2 | 2 | 2<br>4 | | | | 1 | 2 | 1 |
| Operating temperature range | | | −40°C to +85°C | −10°C to +60°C | | | | | | −40°C to +85°C | −40°C to +90°C |
| Automotive use | | | ● | ● | — | — | — | — | — | ● | ● |
| Life cycle | | | ★3 | ★3 | ★3 | ★1 | ★3 | ★3 | ★3 | ★3 | ★3 |
| Rating (max.) (Resistive load) | | | 0.2A 30V DC | | 0.1A 30V DC | | | 1A 25V DC | 1mA 5V DC | 0.2A 14V DC | 50mA 16V DC |
| Rating (min.) (Resistive load) | | | 50μA 3V DC | | | | | 1A 25V DC | 50μA 3V DC | — | 10μA 1V DC |
| Durability | Operating life without load | | 10,000cycles 40mΩ max. | | | | 30,000cycles 40mΩ max. | 100,000cycles 40mΩ max. | 30,000cycles 500mΩ max. | 10,000cycles 150mΩ max. | 100,000cycles 400mΩ max. |
| | Operating life with load (at max. rated load) | | 10,000cycles 40mΩ max. | | | | | 5,000cycles 40mΩ max. | 30,000cycles 500mΩ max. | 10,000cycles 150mΩ max. | 100,000cycles 400mΩ max. |
| Electrical performance | Initial contact resistance | | 20mΩ max. | | | | | | 200mΩ max. | 150mΩ max. | 200mΩ max. |
| | Insulation resistance | | 100MΩ min. 500V DC | | | | | | 3MΩ min. 100V DC | 100MΩ min. 500V DC | 100MΩ min. 100V DC |
| | Voltage proof | | 500V AC for 1minute | | | | | | 100V AC for 1minute | 500V AC for 1minute | 250V AC for 1minute |
| Mechanical performance | Terminal strength | | 5N for 1minute | | | | | | 0.5N for 1minute | — | — |
| | Actuator strength | Operating direction | 50N | 30N | 50N | | | | | 49N | 50N |
| | | Pulling direction | — | — | 50N | | | | — | — | — |
| Environmental performance | Cold | | −40±2°C for 96h | −20±2°C for 96h | | | | | | −40±2°C for 500h | −40±2°C for 1000h |
| | Dry heat | | 85±2°C for 96h | | | | | | | 85±2°C for 500h | 90±2°C for 1000h |
| | Damp heat | | 40±2°C, 90 to 95%RH for 96h | | | | | | | 60±2°C, 90 to 95% RH for 500h | 60±2°C, 90 to 95%RH for 1000h |
| Page | | | 115 | 117 | 119 | 120 | 122 | 122 | 124 | 125 | 126 |



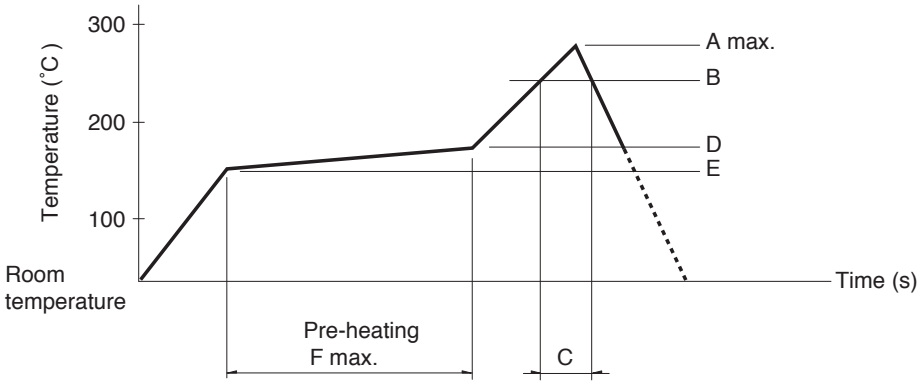
**Notes**

1. ※1. The operating temperature range for automotive applications can be raised upon request. Please contact us for details.
2. ● indicates applicability to all products in the series.

# Push Switches 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




| Series (Reflow type) | A (℃) 3s max. | B (℃) | C (s) | D (℃) | E (℃) | F (s) |
|---|---|---|---|---|---|---|
| SPEG | 260 | 230 | 40 | 180 | 150 | 120 |
| SPEJ | | | | | | |
| SPEF | | | | | | |
| SPEH | | | | | | |

**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.

## Reference for Hand Soldering

| Series | Soldering temperature | Soldering time |
|---|---|---|
| SPPJ3, SPPJ2, SPUN, SPPH4, SPPH1 | 350±5℃ | 3+1/0s |
| SPED2, SPED4 | 350±5℃ | 3±1s |
| SPEJ | 350±5℃ | 4s max. |
| SPEG, SPPH2, SPEF | 350±10℃ | 3s max. |
| SPEH | 350℃ max. | 3s max. |
| SPUJ, SPUP | 300±5℃ | 3+1/0s |

## Reference for Dip Soldering

(For PC board terminal types)

| Series | Items | | Dip soldering | |
|---|---|---|---|---|
| | Preheating temperature | Preheating time | Soldering temperature | Duration of immersion |
| SPPJ3 | 100℃ max. | 60s max. | 260±5℃ | 5±1s |
| SPUN | 100℃ max. | 60s max. | 260±5℃ | 10±1s |
| SPUJ, SPUP, SPPH2, SPPH4 | ——— | | 260±5℃ | 5±1s |
| SPPJ2, SPPH1, SPED2, SPED4, SPEF | ——— | | 260±5℃ | 10±1s |