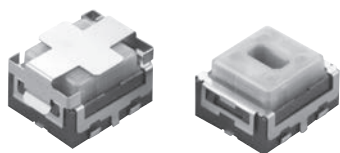


Hollow type supporting designs such as LED illumination.



### Typical Specifications

Items	Specifications
Rating (max.) / (min.) (Resistive load)	1mA 5V DC / 50 $\mu$ A 3V DC
Contact resistance (Initial/After operating life)	200m $\Omega$ max. / 500m $\Omega$ max.
Operating forces	2.16N
Operating life	30,000cycles (1mA 5V DC)

### Product Line

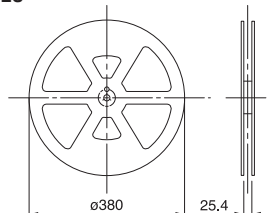
Total travel (mm)	Poles	Ground terminal	Minimum order unit (pcs.)		Product No.
			Japan	Export	
1.1	1	Without	1,200	4,800	SPEG110100
		With			SPEG120100

### 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		
1,200	2,400	4,800	24	428 × 413 × 172

### Dimensions

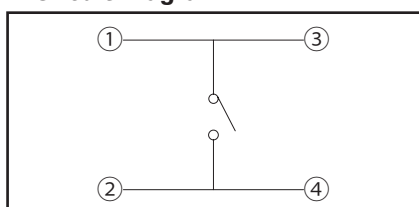
Unit:mm

Style	PC board mounting hole dimensions
	<p><b>In case of using ground terminal</b></p> <p><b>In case of not using ground terminal</b></p>

### Note

Above dimensions indicate "with ground terminal" version.























### Circuit Diagram



Refer to P.137 for soldering conditions.

# Push Switches

## List of Varieties

Series		Horizontal					Vertical			
		SPPJ3	SPPJ2	SPUJ※1	SPUP※1	SPUN	SPUN <sup>medium current</sup> ※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 22.7		24 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 2	2.5		—	1.7	—
Total travel (mm)		3.5		3	2.5 3	3.5		1.1	1.7	1 1.6
Number of poles		1 2	2	2 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										
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
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- Push Switches Cautions . . . . . 138

## Notes

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

Detector

Slide

Push

Rotary

Encoders

Power

Dual-in-line  
Package Type

TACT Switch™

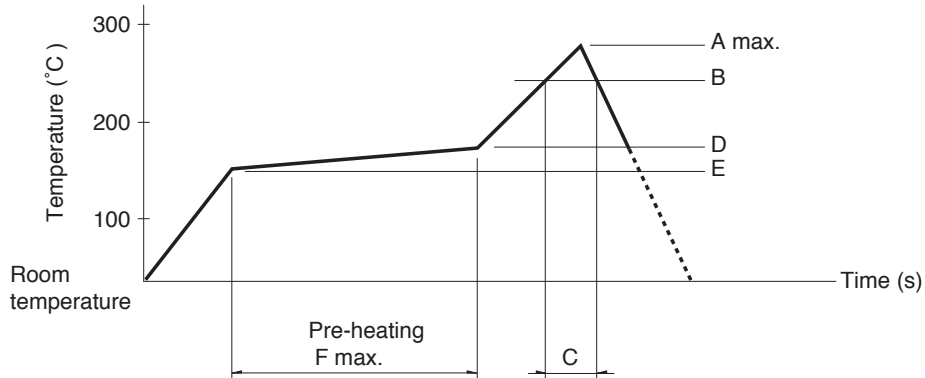
Horizontal  
Type

Vertical  
Type

## 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 (°C) 3s max.	B (°C)	C (s)	D (°C)	E (°C)	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°C	3+1/0s
SPED2, SPED4	350±5°C	3±1s
SPEJ	350±5°C	4s max.
SPEG, SPPH2, SPEF	350±10°C	3s max.
SPEH	350°C max.	3s max.
SPUJ, SPUP	300±5°C	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°C max.	60s max.	260±5°C	5±1s
SPUN	100°C max.	60s max.	260±5°C	10±1s
SPUJ, SPUP, SPPH2, SPPH4	—		260±5°C	5±1s
SPPJ2, SPPH1, SPED2, SPED4, SPEF	—		260±5°C	10±1s

Detector

Slide

Push

Rotary

Encoders

Power

Dual-in-line  
Package Type

TACT Switch™

Horizontal  
Type

Vertical  
Type