

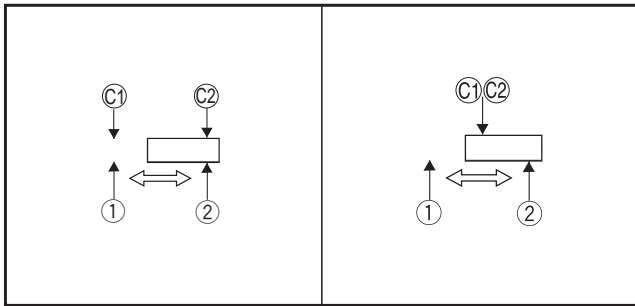


■ Dimensions

Unit:mm

No.	Style
2	

■ Circuit Diagram














Note

Factory setting for contact points can be either 1 or 2.

Detector  
Slide  
Push  
Rotary  
Power  
Dual-in-line Packages Type  
Horizontal Type  
Vertical Type

# Push Switches

## List of Varieties

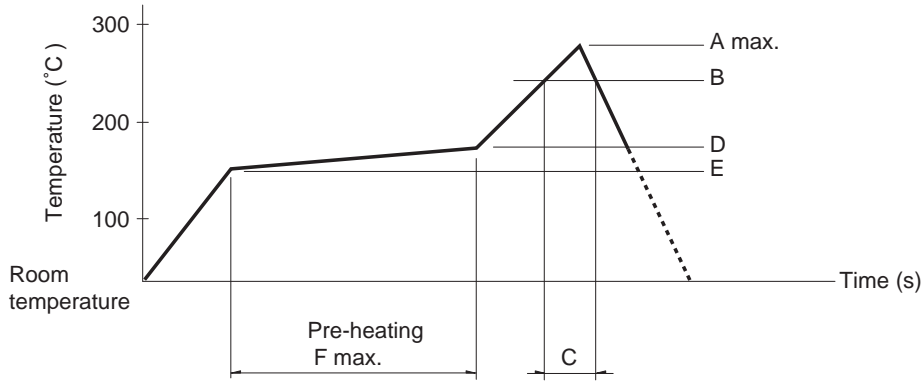
Series		Vertical					
		SPEF		SPED2	SPED3	SPED4	SPED5
Photo							
Dimensions (mm)	W	9.4		14		13.5	
	D	9		16.8	18		18.2
	H	6.9		18.3	13.2	13.17	14.3
Travel (mm)		1.5		—	—	—	—
Total travel (mm)		2.7		4.5	3.8		
Number of poles		1		1 2	1		
Operating temperature range		-40°C to +85°C			-40°C to +95°C		
Automotive use		●	●	●	●	●	●
Life cycle							
Rating (max.) (Resistive load)		1A 14.5V DC			2A 14.5V DC		
Rating (min.) (Resistive load)		50μA 3V DC		—	—	—	—
Durability	Operating life without load	—	—	—	—	—	—
	Operating life with load (at max. rated load)	30,000 cycles 100mΩ max.					
Electrical performance	Initial contact resistance	100mΩ max.					
	Insulation resistance	3MΩ min. 100V DC			3MΩ min. 500V DC		
	Voltage proof	100V AC for 1minute					
Mechanical performance	Terminal strength	—	—	—	—	—	Wire strength 30N
	Actuator strength	Operating direction			98N	90N	98N
		Pulling direction			30N	—	—
Environmental performance	Cold	-40°C 96h					
	Dry heat	85°C 96h		85°C 96h (Connector type) 105°C 192h (Dip type)	105°C 192h		
	Damp heat	40°C, 90 to 95%RH 96h					
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**Note**  
 ● Indicates applicability to all products in the series.

## Example of Reflow Soldering Condition

1. Heating method: Double heating method with infrared heater.
2. Temperature measurement: Thermocouple  $\phi$  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



Series (Reflow type)	A (°C) 3s max.	B (°C)	C (s)	D (°C)	E (°C)	F (s)
<b>SPEJ</b>	260	230	40	180	150	120
<b>SPEF</b>						
<b>SPEH</b>						

### 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
<b>SPPJ3, SPPJ2, SPUN, SPUJ, SPPH4, SPPH1</b>	350±10°C	3+1/0s
<b>SPED2, SPED4</b>	350±10°C	3±0.5s
<b>SPEJ</b>	350±10°C	4s max.
<b>SPEF</b>	350±5°C	3s max.
<b>SPEH</b>	350°C max.	3s max.

## Reference for Dip Soldering

(For PC board terminal types)

Series	Items		Dip soldering	
	Preheating temperature	Preheating time	Soldering temperature	Duration of immersion
<b>SPPJ3</b>	100°C max.	60s max.	260±5°C	5±1s
<b>SPUN</b>	100°C max.	60s max.	260±5°C	10±1s
<b>SPUJ, SPPH4</b>	—	—	260±5°C	5±1s
<b>SPPJ2, SPPH1, SPED2, SPED4, SPEF</b>	—	—	260±5°C	10±1s