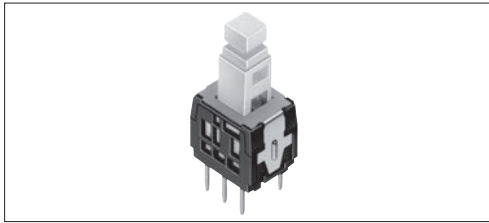


Easy to use mid-size vertical type push switch.



■ Typical Specifications

Items	Specifications
Rating (max.) / (min.) (Resistive load)	0.1A 30V DC / 50 μ A 3V DC
Contact resistance (Initial performance)	100m Ω max.
Operating force	2 $\pm$ 1N
Operating life with load	10,000cycles (0.1A 30V DC)

■ Product Line

Changeover timing	Travel (mm)	Total travel (mm)	Mounting method	Poles	Operation	Terminal type	Location lug	Minimum order unit (pcs.)		Product No.
								Japan	Export	
Non shorting	2.2	3	PC board	2	Latching	Straight	With	100	6,000	SPPH410100
					Momentary		Without			SPPH410200
					Latching	Snap-in	With			SPPH420100
					Momentary		Without			SPPH430100
										SPPH430200

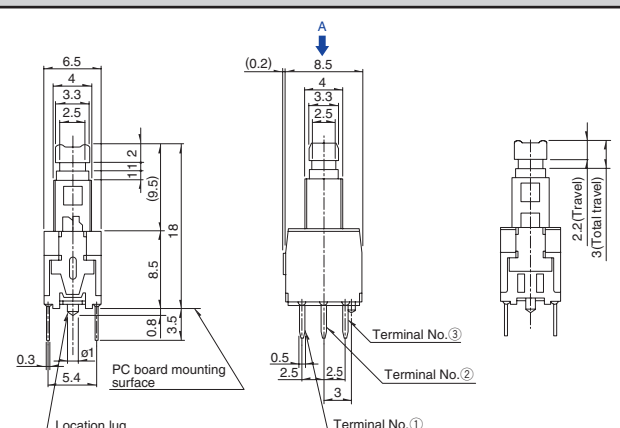
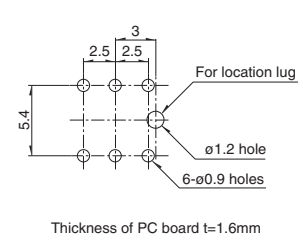
Note Other varieties are also available. Please inquire.

 ■ Packing Specifications
 Bulk

Number of packages (pcs.)		Export package measurements (mm)
1 case / Japan	1 case / export packing	
1,200	6,000	400 × 270 × 290

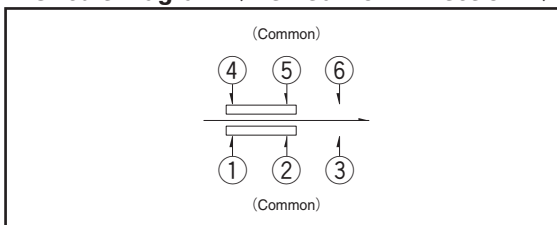
■ Dimensions

Unit:mm

Style	PC board mounting hole dimensions (Viewed from the direction A)
	 Thickness of PC board t=1.6mm

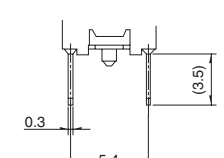
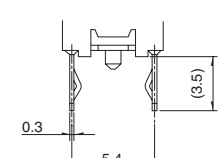
Note Dimensions drawing is for type with location lugs.

■ Circuit Diagram (Viewed from Direction A)



■ Terminal Configuration

Unit:mm

Straight terminal	Snap-in terminal
	

Push Switches

List of Varieties

Series		Vertical								
		SPPH2	SPPH4	SPPH1	SPEF		SPED2	SPED3	SPED4	SPED5
Photo										
Dimensions (mm)	W	6	6.5	10	9.4		14			13.5
	D	6.5	8.5	10	9		16.8	18		18.2
	H	6.5	8.5		6.9		18.3	16.97	13.1	18
Travel (mm)		1	2.2	1.5	1.5		—	—	—	—
Total travel (mm)		1.5	3	2.5	2.7		4.5	3.8		
Number of poles		2			1		2	1		
Operating temperature range		−10°C to +60°C			−40°C to +85°C			−40°C to +95°C		
Automotive use		—	—							
Life cycle										
Rating (max.) (Resistive load)		0.1A 12V DC	0.1A 30V DC		1A 14.5V DC			2A 14.5V DC		
Rating (min.) (Resistive load)		—	—	50 μA 3V DC			—	—	—	—
Durability	Operating life without load	10,000cycles 50mΩ max.	10,000cycles 100mΩ max.	10,000cycles 40mΩ max.	—	—	—	—	—	—
	Operating life with load (at max. rated load)	10,000cycles 50mΩ max.	10,000cycles 100mΩ max.	10,000cycles 40mΩ max.	30,000cycles 100mΩ max.					
Electrical performance	Initial contact resistance	30mΩ max.	100mΩ max.	20mΩ max.	100mΩ max.					
	Insulation resistance	100MΩ min. 500V DC			3MΩ min. 100V DC		3MΩ min. 500V DC			
	Voltage proof	500V AC for 1minute			100V AC for 1minute					
Mechanical performance	Terminal strength	5N for 1minute			—	—	—	—	—	Wire strength 30N
	Actuator strength	Operating direction	30N	50N	90N		90N	98N	90N	98N
		Pulling direction	—	10N	—	30N		—	—	—
Environmental performance	Cold	−20±2°C for 96h			−40±2°C for 96h					
	Dry heat	85±2°C for 96h					105±2°C for 192h			
	Damp heat	40±2°C, 90 to 95%RH for 96h								
Page		127	129	130	132	132	134	135	135	135

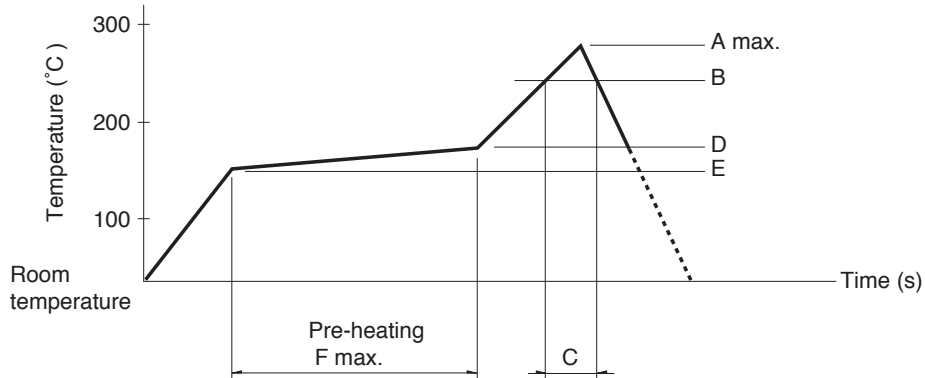
- Push Switches Soldering Conditions 137
- Push Switches Cautions 138

Note ● 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 ϕ 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