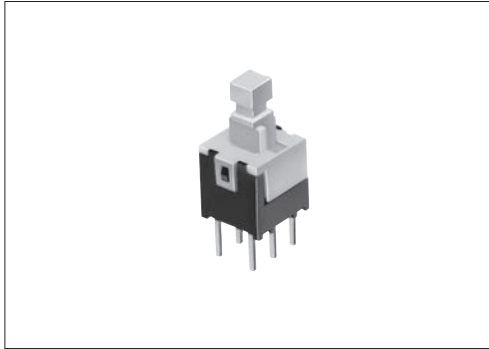


1 mm short travel



■ Typical Specifications

Items		Specifications
Rating (max.)/(min.) (Resistive load)		0.1A 12V DC / 50 μ A 3V DC
Contact resistance (Initial/ After operating life)		30m Ω max. / 50m Ω max.
Operating force		2 $\pm$ 1N
Operating life	Without load	10,000 cycles
	With load	10,000 cycles (0.1A 12V DC)

■ Product Line

Changeover timing	Travel (mm)	Total travel (mm)	Mounting method	Poles	Knob style	Operation	Terminal type	Minimum order unit (pcs.)		Product No.	Drawing No.
								Japan	Export		
Non shorting	1	1.5	PC board	2	Standard	Latching	Straight	100	10,000	SPPH210100	1
						Momentary				SPPH210500	
						Latching	Snap-in			SPPH260100	2
						Momentary				SPPH230500	1
					Short	Latching				SPPH240100	3
						Momentary				SPPH240300	

■ Packing Specifications

Bulk

Number of packages (pcs.)		Export package measurements (mm)
1 case / Japan	1 case / export packing	
2,000	10,000	400×270×290

ALPS

Refer to P.138 for soldering conditions.

Detector

Slide

Push

Rotary

Power

Dual-In-line
Package Type

Horizontal
Type

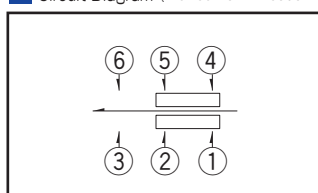
Vertical
Type

Dimensions

Unit:mm

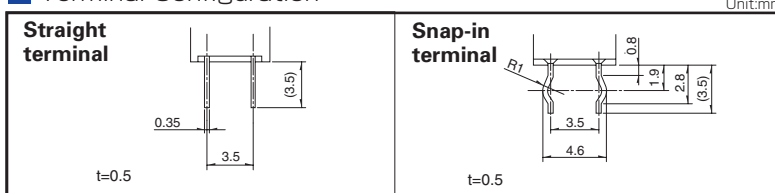
No.	Style	PC board mounting hole dimensions (Viewed from the direction A)
1		Straight terminal Snap-in terminal
2		Snap-in terminal
3		Snap-in terminal

Circuit Diagram (Viewed from Direction A)



Terminal Configuration

Unit:mm



Detector	Series		Vertical						
			SPEH	SPEG	SPEJ	SPPH2	SPPH4	SPPH1	
Slide	Photo								
	Dimensions (mm)	W	6	7.19	7	6	6.5	10	
		D	6	8.39	7	6.5	8.5	10	
Push		H	5	3.5	5.95	6.5	8.5		
		Travel (mm)		—	—	1.7	1	2.2	1.5
Rotary	Total travel (mm)		1.6	1.1	1.7	1.5	3	2.5	
	Number of poles		1	1	2	2			
Power	Operating temperature range		−40℃ to +90℃	−10℃ to +60℃	−40℃ to +85℃	−10℃ to +60℃			
	Automotive use			—		—	—		
Dual-In-line Package Type	Life cycle								
	Rating (max.) (Resistive load)		50mA 16V DC	1mA 5V DC	0.2A 14V DC	0.1A 12V DC	0.1A 30V DC		
	Rating (min.) (Resistive load)		10μA 1V DC	50μA 3V DC	—	50μA 3V DC			
Horizontal Type	Durability	Operating life without load	100,000 cycles 400mΩ max.	30,000 cycles 500mΩ max.	10,000 cycles 150mΩ max.	10,000 cycles 50mΩ max.	10,000 cycles 100mΩ max.	10,000 cycles 40mΩ max.	
		Operating life with load (at max. rated load)	100,000 cycles 400mΩ max.	30,000 cycles 500mΩ max.	10,000 cycles 150mΩ max.	10,000 cycles 50mΩ max.	10,000 cycles 100mΩ max.	10,000 cycles 40mΩ max.	
Vertical Type	Electrical performance	Initial contact resistance		200mΩ max.	200mΩ max.	150mΩ max.	30mΩ max.	100mΩ max.	20mΩ max.
		Insulation resistance		100MΩ min. 100V DC	3MΩ min. 100V DC	100MΩ min. 500V DC	100MΩ min. 500V DC		
		Voltage proof		250V AC for 1minute	100V AC for 1minute	500V AC for 1minute	500V AC for 1minute		
	Mechanical performance	Terminal strength		—	0.5N for 1minute	—	5N for 1minute		
		Actuator strength	Operating direction	50N		49N	30N		50N
			Pulling direction	—	—	—	—	10N	—
	Environmental performance	Cold		−40℃ 1,000h	−20℃ 96h	−40℃ 500h	−20℃ 96h		
		Dry heat		90℃ 1,000h	85℃ 96h	85℃ 500h	85℃ 96h		
		Damp heat		60℃, 90 to 95% RH 1,000h	40℃, 90 to 95% RH 96h	60℃, 90 to 95% RH 500h	40℃, 90 to 95%RH 96h		
Page			124	125	126	127	129	130	

Push Switches Soldering Conditions	138
Push Switches Cautions	139

Note

● Indicates applicability to all products in the series.

Detector

Slide

Push

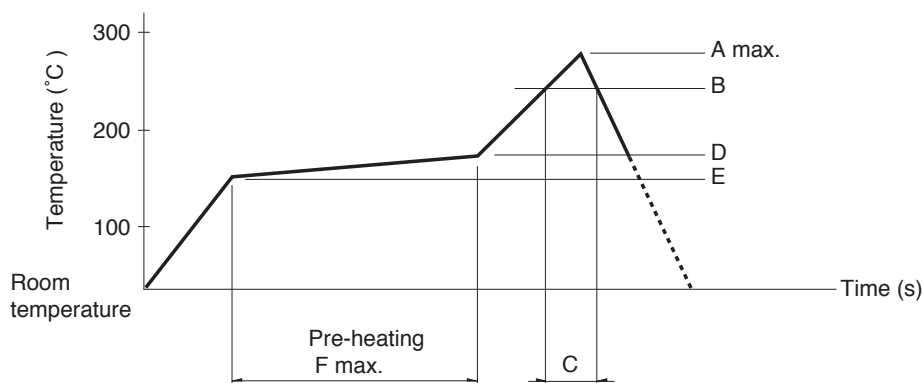
Rotary

Power

Dual-in-line
Package TypeHorizontal
TypeVertical
Type

■ Example of Reflow Soldering Condition

1. Heating method: Double heating method with infrared heater.
2. Temperature measurement: Thermocouple ϕ 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)
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±10°C	3+1/0s
SPED2, SPED4	350±10°C	3±0.5s
SPEJ	350±10°C	4s max.
SPEG, SPEF	350±5°C	3s max.
SPEH, SPPH2	350°C max.	3s max.
SPUJ	300±10°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, SPPH2, SPPH4	—	—	260±5°C	5±1s
SPPJ2, SPPH1, SPED2, SPED4, SPEF	—	—	260±5°C	10±1s