

# SPPH1 1.5mm-travel Vertical Type

Vertical push switch with two types of knob available



Detector

Slide

Push

Rotary

Power

Dual-in-line  
Package Type

Horizontal  
Type

Vertical  
Type



## Typical Specifications

Items		Specifications
Rating (max.)/(min.) (Resistive load)		0.1A 30V DC / 50μA 3V DC
Contact resistance (Initial/After operating life)		20mΩ max. / 40mΩ max.
Operating force		Refer to the products line
Operating life	Without load	10,000 cycles
	With load	10,000 cycles (0.1A 30V DC)

## Product Line

Changeover timing	Travel (mm)	Total travel (mm)	Mounting method	Poles	knob style	Operating force	Operation	Terminal type	Minimum order unit (pcs.)		Product No.	Drawing No.			
									Japan	Export					
Non shorting	1.5	2.5	PC board	2	Standard	$2^{+1}_{-0.7}$ N	Latching	Straight	800	4,000	SPPH110800	1			
							Momentary								
							Latching								
							Momentary								
					Short		Standard	Latching					Snap-in	SPPH120400	2
								Momentary							
								Latching							
								Momentary							
					Standard	Short	$3^{+1}_{-0.7}$ N	Latching	Straight	SPPH130400	1				
								Momentary							
								Latching							
								Momentary							
Short	Standard	Latching	Snap-in	SPPH130100	2										
						Momentary									
						Latching									
						Momentary									
Standard	Short	$3^{+1}_{-0.7}$ N	Latching	Straight	SPPH110900	1									
							Momentary								
Short	Standard	Latching	Snap-in	SPPH140300	2										
						Momentary									
Standard	Short	$3^{+1}_{-0.7}$ N	Latching	Snap-in	SPPH140100	2									
							Momentary								
Short	Standard	Latching	Snap-in	SPPH110900	1										
						Momentary									
Short	Standard	Latching	Snap-in	SPPH130500	1										
						Momentary									
Short	Standard	Latching	Snap-in	SPPH140400	2										
						Momentary									

## Packing Specifications

Bulk

Number of packages (pcs.)		Export package measurements (mm)
1 case / Japan	1 case / export packing	
800	4,000	400×270×290

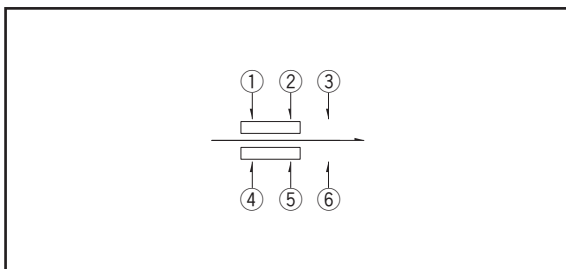
Refer to P.130 for soldering conditions.

■ Dimensions

Unit:mm

No.	Style	PC board mounting hole dimensions (Viewed from the direction A)	
1		<p><b>Straight terminal</b></p>	<p><b>Snap-in terminal</b></p>
2		<p><b>Straight terminal</b></p>	<p><b>Snap-in terminal</b></p>









■ Circuit Diagram (Viewed from Direction A)



■ Terminal Configuration

Unit:mm

Straight terminal	Snap-in terminal

Series		Vertical				
		SPEH	SPEJ	SPPH4	SPPH1	
Photo						
Dimensions (mm)	W	6	7	6.5	10	
	D	6	7	8.5	10	
	H	5	5.95	8.5		
Travel (mm)		—	—	2.2	1.5	
Total travel (mm)		1.6	1.7	3	2.5	
Number of poles		1	2			
Operating temperature range		-40°C to +90°C	-40°C to +85°C	-10°C to +60°C		
Automotive use		●	●	—	●	
Life cycle						
Rating (max.) (Resistive load)		50mA 16V DC	0.2A 14V DC	0.1A 30V DC		
Rating (min.) (Resistive load)		10μA 1V DC	—	50μA 3V DC		
Durability	Operating life without load	100,000cycles 400mΩ max.	10,000cycles 150mΩ max.	10,000cycles 100mΩ max.	10,000cycles 40mΩ max.	
	Operating life with load (at max. rated load)	100,000cycles 400mΩ max.	10,000cycles 150mΩ max.	10,000cycles 100mΩ max.	10,000cycles 40mΩ max.	
Electrical performance	Initial contact resistance	200mΩ max.	150mΩ max.	100mΩ max.	20mΩ max.	
	Insulation resistance	100MΩ min. 100V DC	100MΩ min. 500V DC			
	Voltage proof	250V AC for 1minute	500V AC for 1minute			
Mechanical performance	Terminal strength	—	—	5N for 1minute		
	Actuator strength	Operating direction	50N	49N	30N	50N
		Pulling direction	—	—	10N	—
Environmental performance	Cold	-40°C 1000h	-40°C 500h	-20°C 96h		
	Dry heat	90°C 1000h	85°C 500h	85°C 96h		
	Damp heat	60°C, 90 to 95%RH 1000h	60°C, 90 to 95%RH 500h	40°C, 90 to 95%RH 96h		
Page		119	120	121	122	

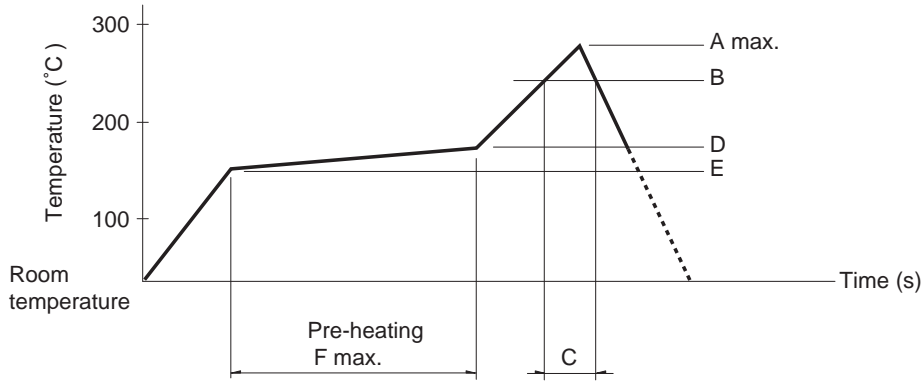
Push Switches Soldering Conditions	130
Push Switches Cautions	131

#### 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