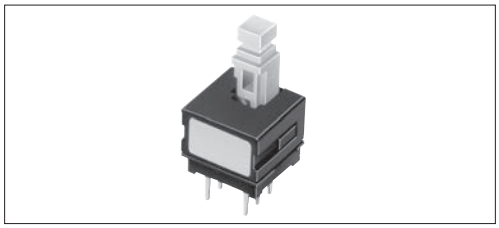
SPPH1

1.5mm-travel Vertical Type

Vertical push switch with two types of knob available.



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	10,000cycles
	With load	10,000cycles (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.) Japan	Minimum order unit (pcs.) Export	Product No.	Drawing No.
Non shorting	1.5	2.5	PC board	2	Standard	$2^{+1}_{-0.7}$N	Latching	Straight	100	4,000	SPPH110800	1
							Momentary				SPPH110300	
					Short		Latching				SPPH120400	2
							Momentary				SPPH120100	
					Standard		Latching	Snap-in			SPPH130400	1
							Momentary				SPPH130100	
					Short		Latching				SPPH140300	2
							Momentary				SPPH140100	
					Standard	$3^{+1}_{-0.7}$N	Latching	Straight			SPPH110900	1
								Snap-in			SPPH130500	
					Short						SPPH140400	2

Note

Other varieties are also available. Please inquire.

Packing Specifications

Bulk

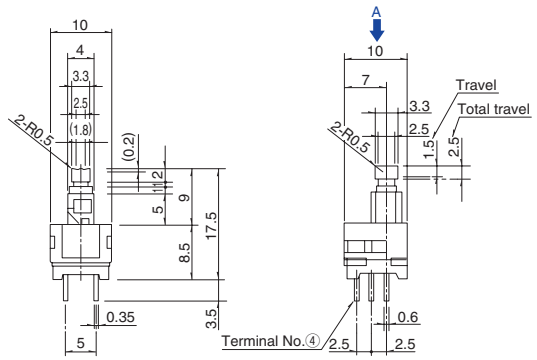
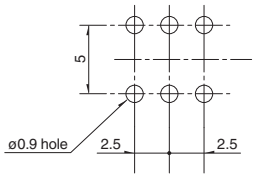
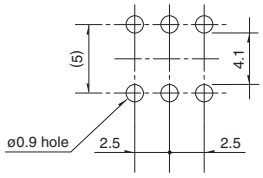
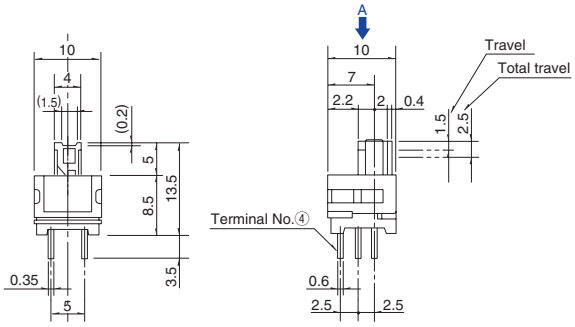
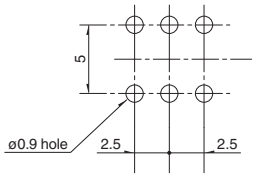
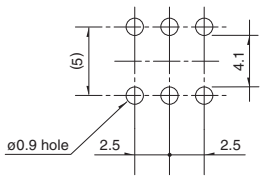
Number of packages (pcs.)		Export package measurements (mm)
1 case / Japan	1 case / export packing	
800	4,000	400 × 270 × 290

ALPS

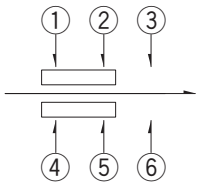
Refer to **P.137** for soldering conditions.

Dimensions

Unit:mm

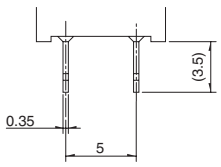
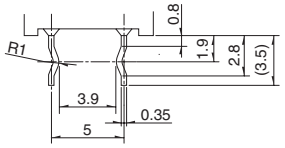
No.	Style	PC board mounting hole dimensions (Viewed from the direction A)	
		Straight terminal	Snap-in terminal
1			 Thickness of PC board t=1.6mm
2			 Thickness of PC board t=1.6mm

Circuit Diagram (Viewed from Direction A)



Terminal Configuration

Unit:mm

Straight terminal	Snap-in terminal
	

■ 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℃ to +60℃			−40℃ to +85℃			−40℃ to +95℃		
Automotive use			—	—	●	●	●	●	●	●	●
Life cycle			★3	★3	★3	★3		★3	★3	★3	★3
Rating (max.) (Resistive load)			0.1A 12V DC	0.1A 30V DC		1A 14.5V DC			2A 14.5V DC		
Rating (min.) (Resistive load)			—	—	50μA 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			3M Ω 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℃ for 96h			−40±2℃ for 96h					
	Dry heat		85±2℃ for 96h					105±2℃ for 192h			
	Damp heat		40±2℃, 90 to 95%RH for 96h								
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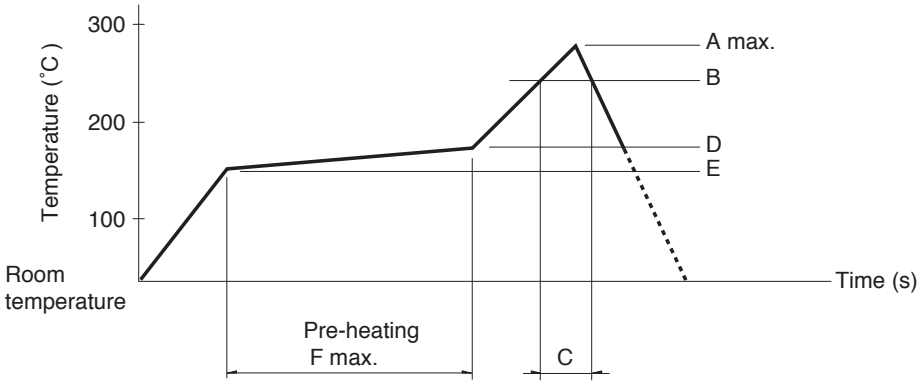
● Push Switches Cautions 138

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