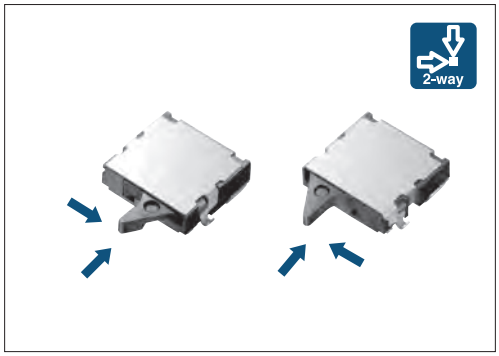
SPVS Compact Two-way Operation Type

A circuit variation of Normal Open and Normal Close



Typical Specifications

Items		Specifications
Rating (max.)/(min.) (Resistive load)		1mA 5V DC / 50μA 3V DC
Contact resistance (Initial / After operating life)		2Ω max. / 5Ω max.
Operating force		0.35N max.
Operating life	Without load	50,000cycles
	With load	50,000cycles (1mA 5V DC)

Product Line

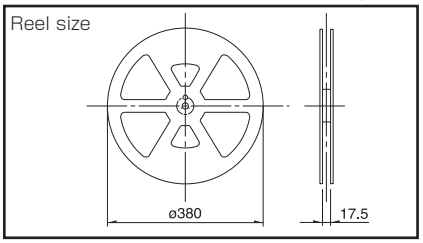
Poles	Positions	Terminal type	Lever length	Operating direction	Circuit	Location lug	Flame leg	Minimum order unit (pcs.) Japan	Minimum order unit (pcs.) Export	Product No.	Drawing No.
1	1	For PC board (Reflow)	Standard	Right	N / O	With	With	5,000	20,000	**SPVS310100**	1
						Without				**SPVS310200**	
					N / C	With				**SPVS320100**	2
						Without				**SPVS320200**	
				Left	N / O	With				**SPVS410100**	3
						Without				**SPVS410200**	
					N / C	With				**SPVS420100**	4
						Without				**SPVS420200**	
			Long	Right		With				**SPVS360100**	5
						Without				**SPVS360200**	

Packing Specifications

Taping

Number of packages (pcs.) 1 reel	1 case /Japan	1 case /export packing	Tape width (mm)	Export package measurements (mm)
5,000	10,000	20,000	16	417×409×139

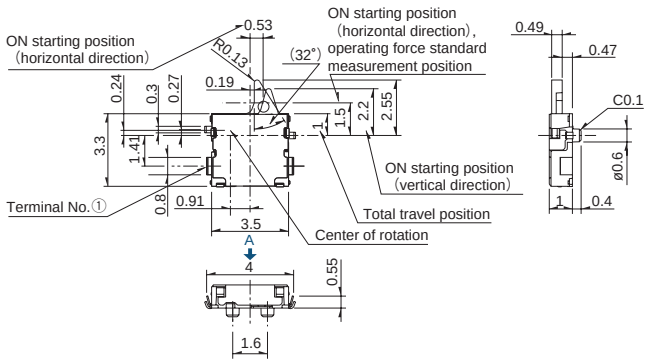
Unit:mm

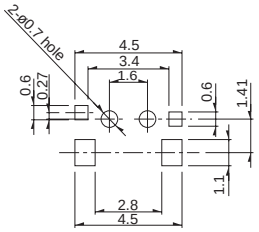


Dimensions

Unit:mm

No.	Style	PC board mounting hole and land dimensions (Viewed from direction A)
1	**Right operation type with boss**	



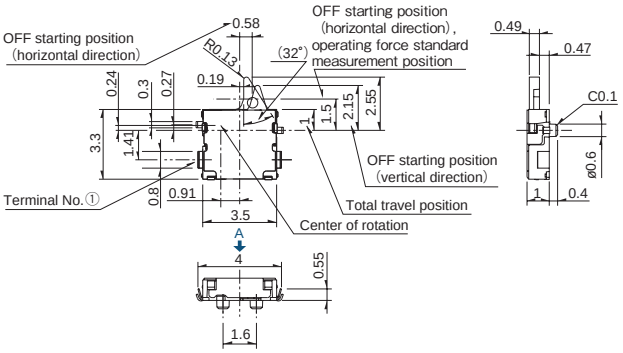
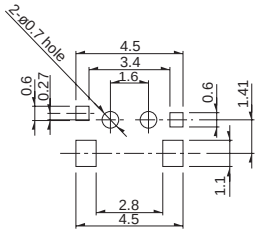
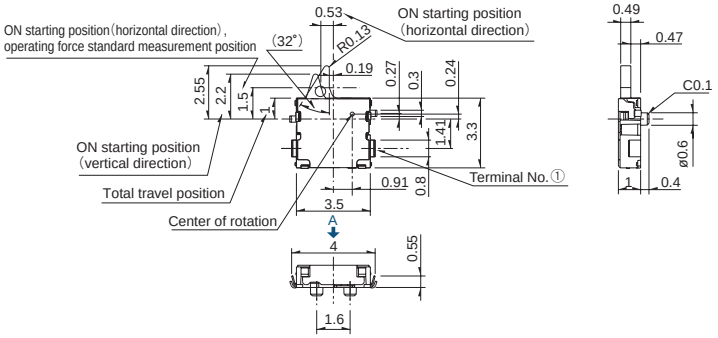
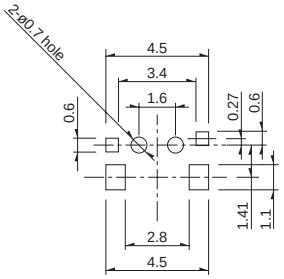
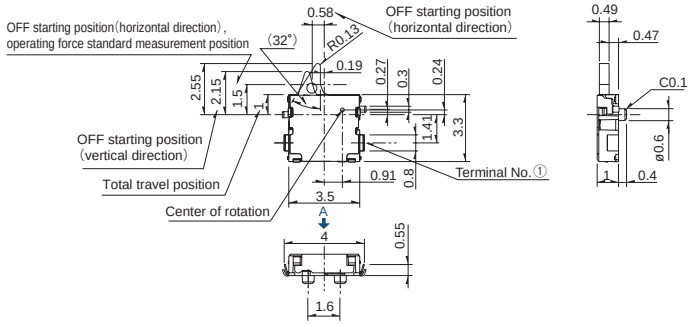
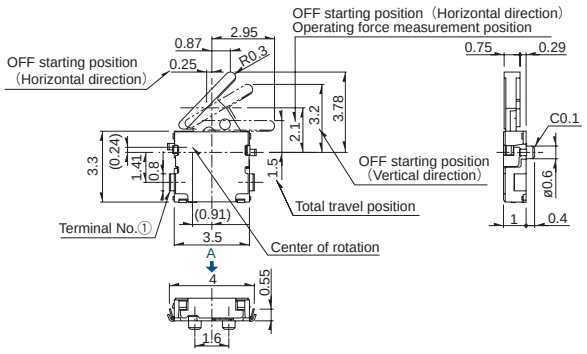
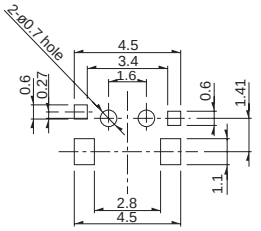


ALPSALPINE

Refer to P.68 for soldering conditions.

Dimensions

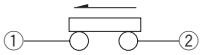
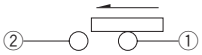
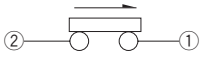
Unit:mm

No.	Style	PC board mounting hole and land dimensions (Viewed from direction A)
2	**Right operation type with boss** 	
3	**Left operation type with boss** 	
4	**Left operation type with boss** 	
5	**Right operation type with boss** 	

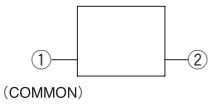
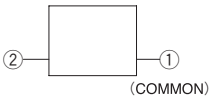
Note

Dimensions drawing is for type with location lugs.

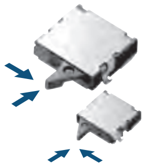
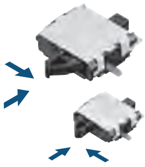
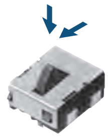
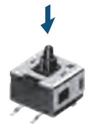
Circuit Diagram

Control direction	Push ON (N/O)	Push OFF (N/C)
Right	**Drawing No.1** 	**Drawing No.2, 5** 
Left	**Drawing No.3** 	**Drawing No.4** 

Terminal Layout (Viewed from Direction A)

Control direction	Push ON (N/O) Push OFF (N/O)
Right	**Drawing No.1, 2, 5** 
Left	**Drawing No.3, 4** 

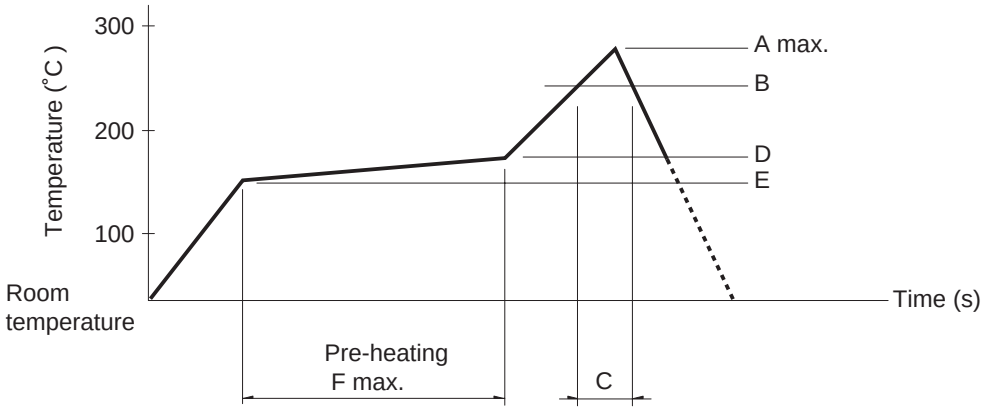
List of Varieties

Series		General-purpose Type					
		SPVS	SPVN	SPVT	SPVM	SPVR	SPVE
Photo							
Operation type		Two-way					One-way
Dimensions (mm)	W	3.5	3.8	5.6	2.8	3.6	3.4
	D	3.3	3.6	4.7	3.5	4.2	3
	H	1		1.9	1.5	1.2	2.3
Operating temperature range		−40℃ to +85℃					−10℃ to +60℃
Automotive use		●	●	●	●	●	—
Life cycle (availability)							
Poles / Positions		1/1					
Rating (max.) (Resistive load)		1mA 5V DC		50mA 20V DC	1mA 5V DC		0.1A 30V DC
Rating (min.) (Resistive load)		50µA 3V DC		100µA 3V DC	50µA 3V DC	100µA 3V DC	50µA 3V DC
Durability	Operating life without load	50,000cycles 5Ω max.		100,000cycles 1Ω max.	50,000cycles 5Ω max.		50,000cycles 1Ω max.
	Operating life with load Rating (max.) (Resistive load)	50,000cycles 5Ω max.		100,000cycles 1Ω max.	50,000cycles 5Ω max.		50,000cycles 1Ω max.
Electrical performance	Initial contact resistance	2Ω max.		500mΩ max.	2Ω max.	3Ω max.	500mΩ max.
	Insulation resistance	100MΩ min. 100V DC					
	Voltage proof	100V AC for 1 minute					
Mechanical performance	Terminal strength	0.5N for 1minute			1N for 1minute	0.5N for 1minute	
	Actuator strength	5N		10N	5N	2N	5N
Environmental performance	Cold	−40℃ 96h					−20℃ 96h
	Dry heat	85℃ 96h					
	Damp heat	40℃, 90 to 95%RH 96h					
Operation force		0.35N max.		0.4N max.		0.35N max.	0.3N max.
Page		16	19	21	24	26	27

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 φ0.1 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 (℃) 3s max.	B (℃)	C (s)	D (℃)	E (℃)	F (s)
SPPB	250	230	40	180	150	120
SPVE	260					
SPVL						
SPVM						
SPVN						
SPVR						
SPVS						
SPVT						
SSCM						
SSCQ						
SPVQC	250					

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, surface 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
SPVS, SPVN, SPVT, SPVM, SPVR, SPVE, SSCQ, SSCM, SPVL, SSCT, SPVQC	350±5℃	3s max.
SPVQ3, SPVQ6, SPVQ7, SPVQ8, SPVQ9, SSCN, SPVQA	300±10℃	3 +1 / 0s
SPPB (Reflow)	300±5℃	5s max.
SSCF, SPPB (For Lead, Dip)	350±10℃	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
SSCT, SPVQ3, SPVQ6, SPVQ7, SPVQ8, SPVQ9, SPVQA	100±10℃	60s max.	260±5℃	5±1s
SPPW8, SPPB	100 ℃ max.	60s max.	255±5℃	5±1s
SSCF	—		260±5℃	5±1s