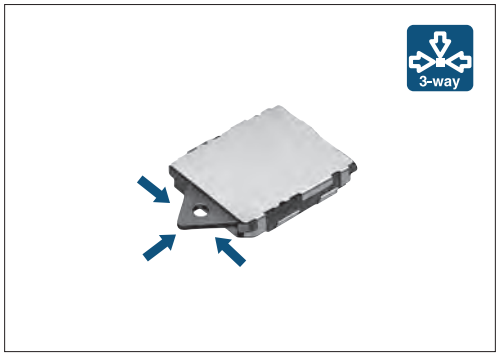
SPVL Low-profile Tri-directional Operation Type

Flexible and thin 1mm height detector switch with a large operational range of 180 degrees



Typical Specifications

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

Product Line

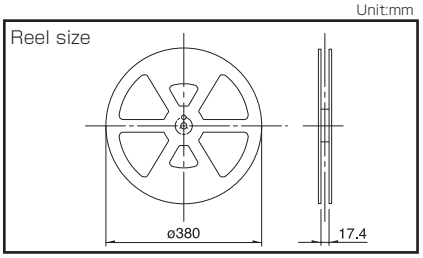
Poles	Positions	Terminal type	Location lug	Minimum order unit (pcs.)		Product No.
				Japan	Export	
1	1	For PC board (Reflow)	With	5,000	20,000	**SPVL110102**
			Without			**SPVL120101**

Packing Specifications

Taping

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

Unit:mm

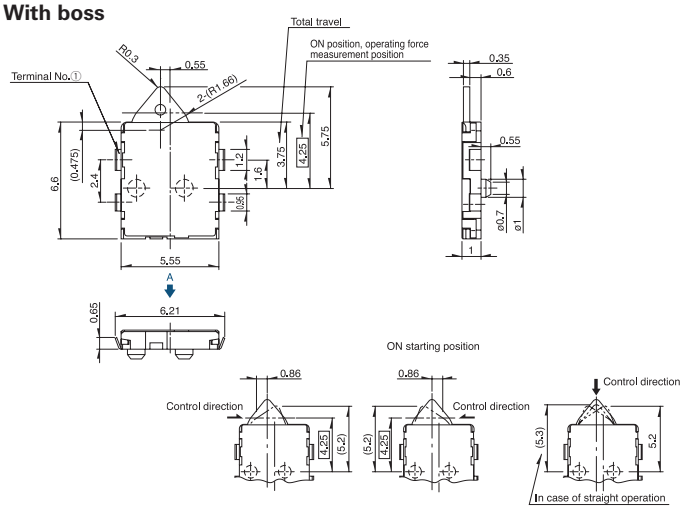


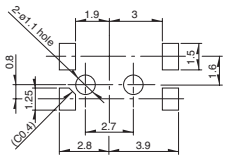
Dimensions

Unit:mm

Style	PC board mounting hole and land dimensions (Viewed from direction A)

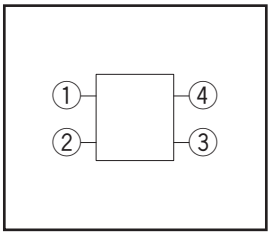
With boss



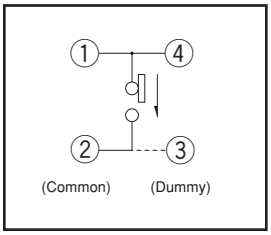


Terminal Layout

(Viewed from Direction A)



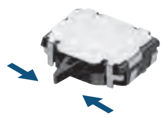
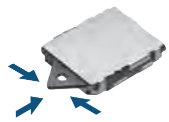
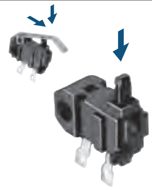
Circuit Diagram



Notes

Dimensions drawing is for type with location lugs.

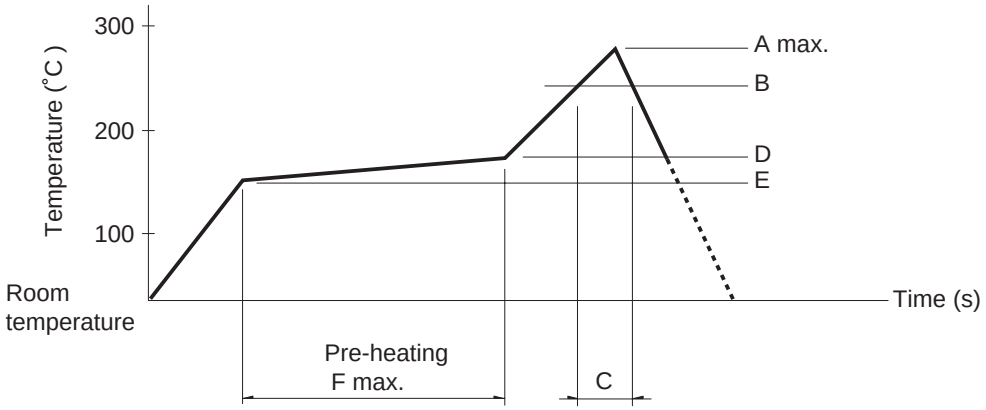
Refer to P.68 for soldering conditions.

Series		General-purpose Type			
		SSCQ	SSCM	SPVL	SPPB
Photo					
Operation type		Two-way Two-direction type	Two-way	Three-way	One-way Two-way
Dimensions (mm)	W	3.8	5	5.55	6.3
	D	3.6	4	6.6	3
	H	0.9	1.5	1	4.9
Operating temperature range		−10℃ to +60℃		−40℃ to +85℃	
Automotive use		—	—	●	●
Life cycle (availability)					
Poles / Positions		1 / Two-direction type: 2-position each side	1/2	1/1	
Rating (max.) (Resistive load)		1mA 5V DC			0.1A 30V DC
Rating (min.) (Resistive load)		50μA 3V DC			
Durability	Operating life without load	50,000cycles 5Ω max.			50,000cycles 2Ω max.
	Operating life with load Rating (max.) (Resistive load)	50,000cycles 5Ω max			50,000cycles 2Ω max.
Electrical performance	Initial contact resistance	2Ω max.			1Ω 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	3N for 1minute
	Actuator strength	1N	2N	5N	10N
Environmental performance	Cold	−20℃ 96h		−40℃ 500h	
	Dry heat	85℃ 96h		85℃ 500h	
	Damp heat	40℃, 90 to 95%RH 96h		60℃, 90 to 95%RH 500h	
Operation force		0.35N max.			
Page		29	30	31	32

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