

2.8×3.5×height 1.5mm compact detector switch
detects from both vertical and horizontal directions



■ 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		0.4N max.
Operating life	Without load	50,000cycles
	With load	50,000cycles (1mA 5V DC)

■ Product Line

Poles	Positions	Terminal type	Frame	Location lug	Minimum order unit (pcs)		Product No.
					Japan	Export	
1	1	For PC board (Reflow)	Without terminal	With	3,000	12,000	SPVM110100
				Without			SPVM110200

■ Packing Specifications

Taping

Number of packages (pcs.)			Tape width (mm)	Export package measurements (mm)
1 reel	1 case /Japan	1 case /export packing		
3,000	6,000	12,000	16	417×409×139

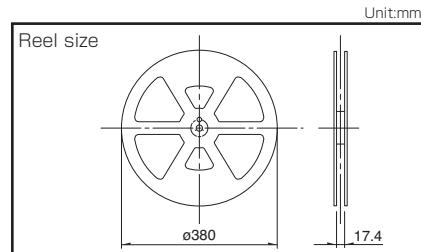
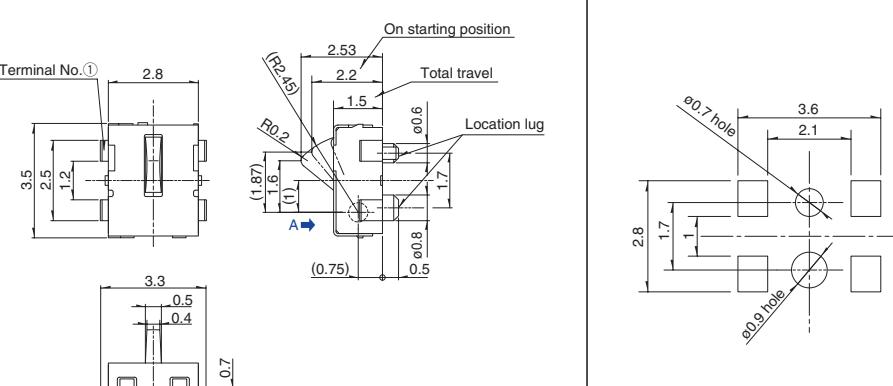
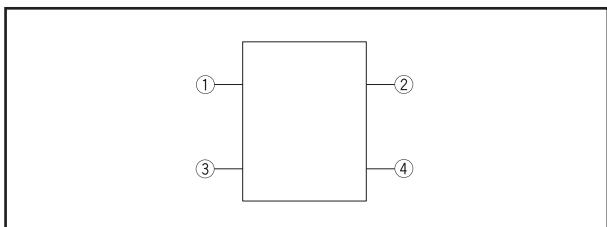


Photo	Style	PC board mounting hole and land dimensions (Viewed from direction A)
	With boss	

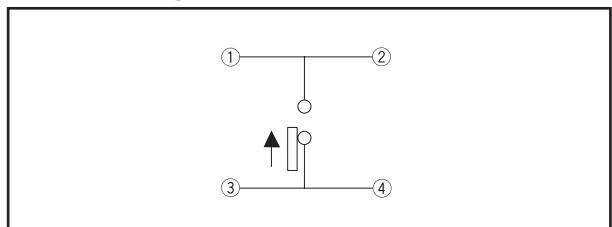
Note

Dimensions drawing is for type with location lugs.

■ Terminal Layout (Viewed from Direction A)



■ Circuit Diagram



Detector Switches

List of Varieties

Series		General-purpose Type					
		SPVS	SPVN	SPVT	SPVM	SPVR	SPVE
Photo							
Operation type		Two-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°C to +85°C					
Automotive use							—
Life cycle (availability)		 3	 3	 3	 3	 3	 3
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	
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	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°C 96h					
	Dry heat	85°C 96h					
	Damp heat	40°C, 90 to 95%RH 96h					
Operation force		0.35N max.		0.4N max.		0.35N max.	0.3N max.
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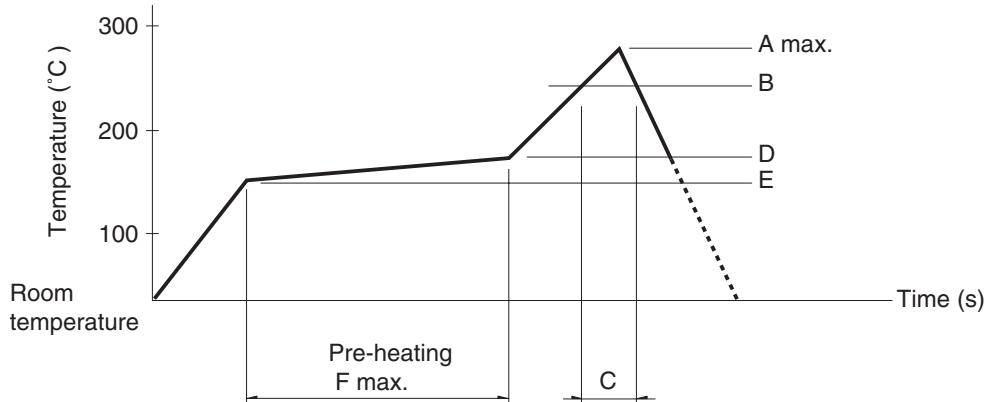
Note

- Indicates applicability to all products in the series.

Detector Switches Soldering Conditions

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)				
SPPB	250		40							
SPPW8			35							
SPVE	260		230				40	180	150	120
SPVL										
SPVM										
SPVN										
SPVR										
SPVS										
SPVT										
SSCM										
SSCQ										
SPVQC, SPVQE	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, SPPW8, SSCQ, SSCM, SPVL, SSCT, SPVQC, SPVQE	$350 \pm 5^\circ\text{C}$	3s max.
SPVQ1, SPVQ3, SPVQ6, SPVQ7, SPVQ8, SPVQ9, SSCN, SPVQA	$300 \pm 10^\circ\text{C}$	$3 + 1 / 0\text{s}$
SPPB (Reflow)	$300 \pm 5^\circ\text{C}$	5s max.
SSCF, SPPB (For Lead, Dip)	$350 \pm 10^\circ\text{C}$	$3 + 1 / 0\text{s}$

■ Reference for Dip Soldering (For PC board terminal types)

Series	Items		Dip soldering	
	Preheating temperature	Preheating time	Soldering temperature	Duration of immersion
SSCT, SPVQ1, SPVQ3, SPVQ6, SPVQ7, SPVQ8, SPVQ9, SPVQA	$100 \pm 10^\circ\text{C}$	60s max.	$260 \pm 5^\circ\text{C}$	$5 \pm 1\text{s}$
SPPW8, SPPB	100°C max.	60s max.	$255 \pm 5^\circ\text{C}$	$5 \pm 1\text{s}$
SSCF		—	$260 \pm 5^\circ\text{C}$	$5 \pm 1\text{s}$

Detector	Slide	Push	Push
SPVE	SPVQ1, SPVQ3, SPVQ6, SPVQ7, SPVQ8, SPVQ9, SPVQA	SSCT, SPVQ1, SPVQ3, SPVQ6, SPVQ7, SPVQ8, SPVQ9, SPVQA	SSCF
SPVL	SPVQ1, SPVQ3, SPVQ6, SPVQ7, SPVQ8, SPVQ9, SPVQA	SSCT, SPVQ1, SPVQ3, SPVQ6, SPVQ7, SPVQ8, SPVQ9, SPVQA	SSCF
SPVM	SPVQ1, SPVQ3, SPVQ6, SPVQ7, SPVQ8, SPVQ9, SPVQA	SSCT, SPVQ1, SPVQ3, SPVQ6, SPVQ7, SPVQ8, SPVQ9, SPVQA	SSCF
SPVN	SPVQ1, SPVQ3, SPVQ6, SPVQ7, SPVQ8, SPVQ9, SPVQA	SSCT, SPVQ1, SPVQ3, SPVQ6, SPVQ7, SPVQ8, SPVQ9, SPVQA	SSCF
SPVR	SPVQ1, SPVQ3, SPVQ6, SPVQ7, SPVQ8, SPVQ9, SPVQA	SSCT, SPVQ1, SPVQ3, SPVQ6, SPVQ7, SPVQ8, SPVQ9, SPVQA	SSCF
SPVS	SPVQ1, SPVQ3, SPVQ6, SPVQ7, SPVQ8, SPVQ9, SPVQA	SSCT, SPVQ1, SPVQ3, SPVQ6, SPVQ7, SPVQ8, SPVQ9, SPVQA	SSCF
SPVT	SPVQ1, SPVQ3, SPVQ6, SPVQ7, SPVQ8, SPVQ9, SPVQA	SSCT, SPVQ1, SPVQ3, SPVQ6, SPVQ7, SPVQ8, SPVQ9, SPVQA	SSCF
SSCM	SPVQ1, SPVQ3, SPVQ6, SPVQ7, SPVQ8, SPVQ9, SPVQA	SSCT, SPVQ1, SPVQ3, SPVQ6, SPVQ7, SPVQ8, SPVQ9, SPVQA	SSCF
SSCQ	SPVQ1, SPVQ3, SPVQ6, SPVQ7, SPVQ8, SPVQ9, SPVQA	SSCT, SPVQ1, SPVQ3, SPVQ6, SPVQ7, SPVQ8, SPVQ9, SPVQA	SSCF
SPPB	SPVQ1, SPVQ3, SPVQ6, SPVQ7, SPVQ8, SPVQ9, SPVQA	SSCT, SPVQ1, SPVQ3, SPVQ6, SPVQ7, SPVQ8, SPVQ9, SPVQA	SSCF
SPPW8	SPVQ1, SPVQ3, SPVQ6, SPVQ7, SPVQ8, SPVQ9, SPVQA	SSCT, SPVQ1, SPVQ3, SPVQ6, SPVQ7, SPVQ8, SPVQ9, SPVQA	SSCF
SPVQC, SPVQE	SPVQ1, SPVQ3, SPVQ6, SPVQ7, SPVQ8, SPVQ9, SPVQA	SSCT, SPVQ1, SPVQ3, SPVQ6, SPVQ7, SPVQ8, SPVQ9, SPVQA	SSCF

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