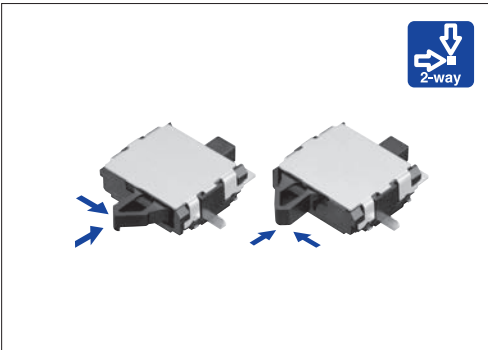


Surface mount type, two-way detection with body thickness of 1.9mm



Typical Specifications

Items		Specifications
Rating (max.)/(min.) (Resistive load)		50mA 20V DC / 100μA 3V DC
Contact resistance (Initial / After operating life)		500mΩ max. / 1Ω max.
Operating force		0.4N max.
Operating life	Without load	100,000cycles
	With load	100,000cycles (50mA 20V DC)

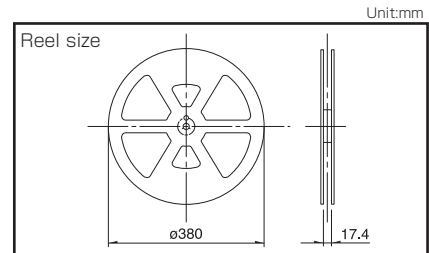
Product Line

Poles	Positions	Terminal type	Operating direction	Location lug	Side terminal	Minimum order unit (pcs)		Product No.	Drawing No.
						Japan	Export		
1	1	For PC board (Reflow)	Right	With	With both sides	2,500	10,000	SPVT110102	1
					With a right side			SPVT130101	2
					With a left side			SPVT120101	3
					Without			SPVT140101	4
				Without	With both sides			SPVT110201	1
					With a right side			SPVT130201	2
					With a left side			SPVT120201	3
					Without			SPVT210101	5
			Left	With	With a right side			SPVT230101	6
					With a left side			SPVT220102	7
					Without			SPVT240101	8
				Without	With both sides			SPVT210201	5
					With a right side			SPVT230201	6
					With a left side			SPVT220201	7

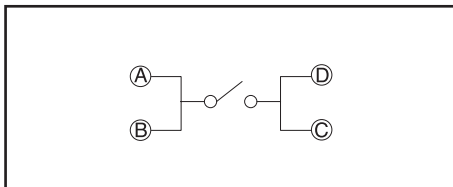
Packing Specifications

Taping

Number of packages (pcs.)			Tape width (mm)	Export package measurements (mm)
1 reel	1 case /Japan	1 case /export packing		
2,500	5,000	10,000	16	417×409×139



Circuit Diagram



Detector
Slide
Push
Rotary
Power
Dual-in-line Package Type
General-purpose Type
Water-proof Type
Fast Switching Type

■ Dimensions

Unit:mm

No.	Style	PC board mounting hole and land dimensions (Viewed from direction A)
1	<p>With boss</p> <p>On starting position (horizontal direction) On starting position (horizontal direction), operating force measurement position On starting position (vertical direction) Center of rotation Total travel</p> <p>Dimensions: 6.5, 4.7, 1.2, 2.8 (0.1), 0.26, 1.51, 2.3, 3.2, 1.05, 5.2 (2.94), 1.3, 3.5, 5.6, 7.45, 1.9, 1.7, 1.2, 0.5, 2.5, 2.5, 2.5, 1.1, 1.7, 6.1, 1.1, 1.2</p>	<p>Dimensions: 2.5, 4.5, 2.8, 1.6, 1.2, 6, 2.5, 2.5, 1.1, 1.7, 6.1, 1.1, 1.2, phi 1.1hole, phi 1.3hole</p>
2	<p>With boss</p> <p>On starting position (horizontal direction) On starting position (horizontal direction), operating force measurement position On starting position (vertical direction) Center of rotation Total travel</p> <p>Dimensions: 6.5, 4.7, 1.2, 2.8 (0.1), 0.26, 1.51, 2.3, 3.2, 0.6, 1.05, 5.2 (2.94), 1.3, 3.5, 5.6, 3.73, 1.9, 1.7, 1.2, 0.5, 2.5, 2.5, 2.5, 1.1, 1.7, 6.1, 1.1, 1.2</p>	<p>Dimensions: 2.5, 4.5, 2.8, 1.6, 1.2, 6, 2.5, 2.5, 1.1, 1.7, 6.1, 1.1, 1.2, phi 1.1hole, phi 1.3hole</p>
3	<p>With boss</p> <p>On starting position (horizontal direction) On starting position (horizontal direction), operating force measurement position On starting position (vertical direction) Center of rotation Total travel</p> <p>Dimensions: 6.5, 4.7, 1.2, 2.8 (0.1), 0.26, 1.51, 2.3, 3.2, 1.05, 5.2 (2.94), 1.3, 3.5, 5.6, 3.73, 1.9, 1.7, 1.2, 0.5, 2.5, 2.5, 2.5, 1.1, 1.7, 6.1, 1.1, 1.2</p>	<p>Dimensions: 2.5, 4.5, 2.8, 1.6, 1.2, 6, 2.5, 2.5, 1.1, 1.7, 6.1, 1.1, 1.2, phi 1.1hole, phi 1.3hole</p>
4	<p>With boss</p> <p>On starting position (horizontal direction) On starting position (horizontal direction), operating force measurement position On starting position (vertical direction) Center of rotation Total travel</p> <p>Dimensions: 6.5, 4.7, 1.2, 2.8 (0.1), 0.26, 1.51, 2.3, 3.2, 1.05, 5.2 (2.94), 1.3, 3.5, 5.6, 1.9, 1.7, 1.2, 0.5, 2.5, 2.5, 2.5, 1.1, 1.7, 6.1, 1.1, 1.2</p>	<p>Dimensions: 2.5, 4.5, 2.8, 1.6, 1.2, 6, 2.5, 2.5, 1.1, 1.7, 6.1, 1.1, 1.2, phi 1.1hole, phi 1.3hole</p>

■ Dimensions

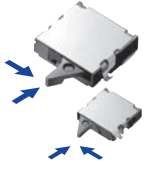
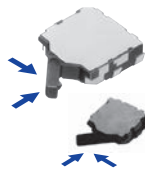
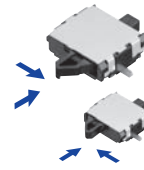


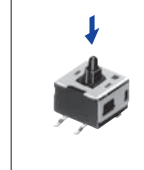






Unit:mm

No.	Style	PC board mounting hole and land dimensions (Viewed from direction A)
5	<p>With boss</p> <p>On starting position (horizontal direction), operating force measurement position</p> <p>On starting position (vertical direction)</p> <p>On Starting position (horizontal direction)</p>	
6	<p>With boss</p> <p>On starting position (horizontal direction), operating force measurement position</p> <p>On starting position (vertical direction)</p> <p>On Starting position (horizontal direction)</p>	
7	<p>With boss</p> <p>On starting position (horizontal direction), operating force measurement position</p> <p>On starting position (vertical direction)</p> <p>On Starting position (horizontal direction)</p>	
8	<p>With boss</p> <p>On starting position (horizontal direction), operating force measurement position</p> <p>On starting position (vertical direction)</p> <p>On Starting position (horizontal direction)</p>	

Note
Dimensions drawing is for type with location lugs.

Detector Switches

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°C to +85°C					-10°C to +60°C
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°C 96h					-20°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.
Page		16	19	21	24	26	27

Detector Switches Soldering Conditions	73
Detector Switches Cautions	74

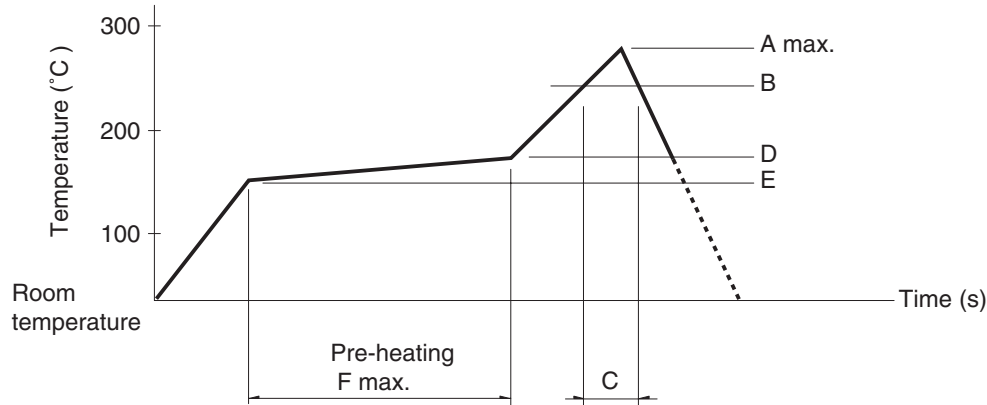
Note
 ● Indicates applicability to all products in the series.

Detector
 Slide
 Push
 Rotary
 Power
 Dual-in-line Package Type
 General-purpose Type
 Water-proof Type
 Fast Switching Type

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	230	40	180	150	120
SPPW8			35			
SPVE	260		40			
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±5°C	3s max.
SPVQ1, SPVQ3, SPVQ6, SPVQ7, SPVQ8, SPVQ9, SSCN, SPVQA	300±10°C	3 + 1 / 0s
SPPB (Reflow)	300±5°C	5s max.
SSCF, SPPB (For Lead, Dip)	350±10°C	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, SPVQ1, SPVQ3, SPVQ6, SPVQ7, SPVQ8, SPVQ9, SPVQA	100±10°C	60s max.	260±5°C	5±1s
SPPW8, SPPB	100 °C max.	60s max.	255±5°C	5±1s
SSCF	—		260±5°C	5±1s