



Detector

Slide

Push

Rotary

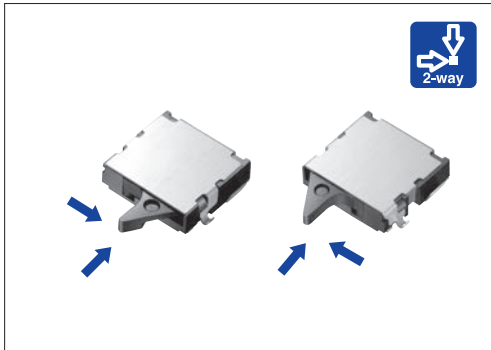
Power

Dual-in-line  
Package Type

General-  
purpose Type

Water-proof  
Type

Fast Switching  
Type



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)

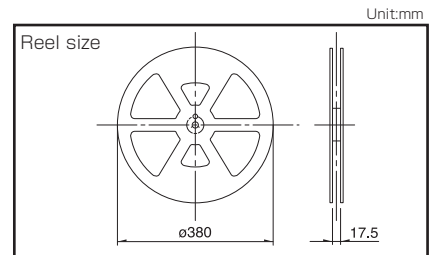
Product Line

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

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



Dimensions

No.	Style	PC board mounting hole and land dimensions (Viewed from direction A)
1	<p><b>Right operation type with boss</b></p>	

Dimensions

Unit:mm

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

Note

Dimensions drawing is for type with location lugs.

Detector

Slide

Push

Rotary

Power

Dual-in-line  
Package Type

General-  
purpose Type

Water-proof  
Type

Fast Switching  
Type

**Circuit Diagram**

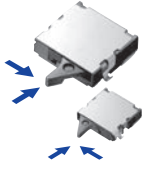
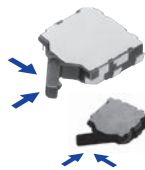
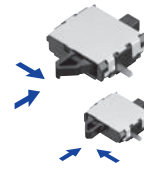


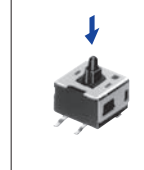






Control direction	Push ON (N/O)	Push OFF (N/C)
Right	<b>Drawing No.1</b> 	<b>Drawing No.2, 5</b> 
Left	<b>Drawing No.3</b> 	<b>Drawing No.4</b> 

**Terminal Layout (Viewed from Direction A)**

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

# 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

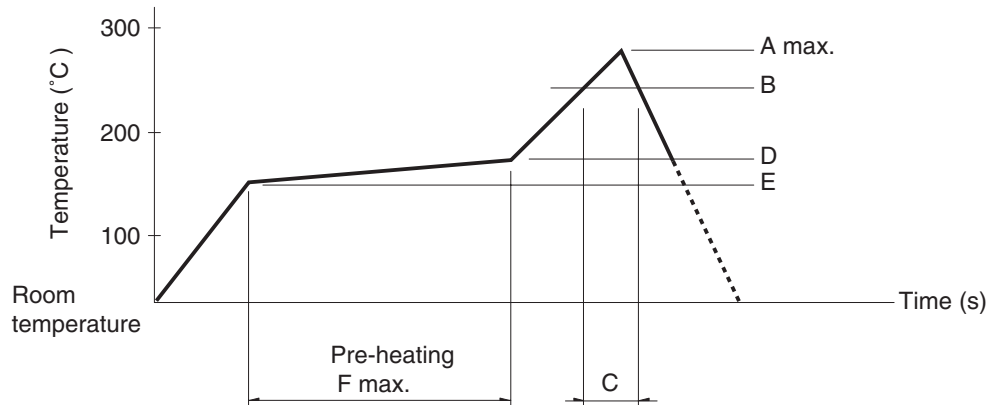
**Note**  
 ● Indicates applicability to all products in the series.

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)
<b>SPPB</b>	250	230	40	180	150	120
<b>SPPW8</b>			35			
<b>SPVE</b>	260		40			
<b>SPVL</b>						
<b>SPVM</b>						
<b>SPVN</b>						
<b>SPVR</b>						
<b>SPVS</b>						
<b>SPVT</b>						
<b>SSCM</b>						
<b>SSCQ</b>	250					
<b>SPVQC, SPVQE</b>						

### 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
<b>SPVS, SPVN, SPVT, SPVM, SPVR, SPVE, SPPW8, SSCQ, SSCM, SPVL, SSCT, SPVQC, SPVQE</b>	350±5°C	3s max.
<b>SPVQ1, SPVQ3, SPVQ6, SPVQ7, SPVQ8, SPVQ9, SSCN, SPVQA</b>	300±10°C	3 +1 / 0s
<b>SPPB (Reflow)</b>	300±5°C	5s max.
<b>SSCF, SPPB (For Lead, Dip)</b>	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
<b>SSCT, SPVQ1, SPVQ3, SPVQ6, SPVQ7, SPVQ8, SPVQ9, SPVQA</b>	100±10°C	60s max.	260±5°C	5±1s
<b>SPPW8, SPPB</b>	100 °C max.	60s max.	255±5°C	5±1s
<b>SSCF</b>	—		260±5°C	5±1s