

# Compact One-way Operation Type Detector Switch

SPVE Series

One of the minimum size class of products in the industry with a size 3.4×3.0 mm appropriate for use in compact digital equipment.

Power

Push

Slide

Rotary

Encoders

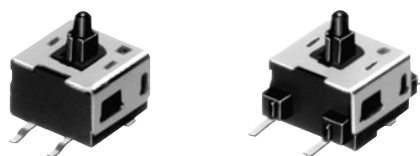
Detector

Dual-in-line  
Package Type

Multi Control  
Devices

TACT

Custom-  
Products



## Features

- Miniaturized for space saving design.
- Double-sided sliding contact offers superior reliability.
- Reflow solderable.

## Applications

- For detecting batteries in DSCs and LCDs
- For detecting the position of lids in mobile phones and laptop computers
- For detecting media in portable CD/MD players and 1/2 inch FDDs

## Typical Specifications

Items		Specifications
Rating (max.) (Resistive load)		0.1A 30V DC
Contact resistance (Initial performance/After lifetime)		500mΩ max./1Ω max.
Operating force		0.3N max.
Operating life	Without load	50,000 cycles
	With load	50,000 cycles (0.1A 12V DC)

## Products Line

Poles	Positions	Terminal style	Slider height (mm)	ON start position (mm)	Total travel (mm)	Mounting method	Location lug	Minimum packing unit (pcs.)	Products No.	Drawing No.
1	1	For PC board (Reflow)	h=3.8	h <sub>1</sub> =3.5	h <sub>2</sub> =2.5	Standard	Without	2,800	SPVE110100	1
							With		SPVE110600	
			h=4.1	h <sub>1</sub> =3.8	h <sub>2</sub> =2.9		Without		SPVE110401	
							With		SPVE110801	
			h=4.8	h <sub>1</sub> =4.5	h <sub>2</sub> =3.6		Without	2,200	SPVE110200	
							With		SPVE110900	
			h=5.2	h <sub>1</sub> =4.9	h <sub>2</sub> =4.0	Low-profile	—	2,000	SPVE111300	
			h=5.5	h <sub>1</sub> =5.2	h <sub>2</sub> =4.3				SPVE111200	
			h=3.3	h <sub>1</sub> =3.0	h <sub>2</sub> =2.0			2,800	SPVE210100	2
			h=4.75	h <sub>1</sub> =4.45	h <sub>2</sub> =3.35			2,000	SPVE210200	

## Notes

1. The dimensions indicates the standard type with a locating lug.
2. Additional switches not included in the above list are also available. Contact us for details.

For other detailed specifications, see **P.303**  
For specifications for the taping package, see **P.307**

## ■ Dimensions

Unit:mm

No.	Style	PC board mounting hole dimensions
1	<b>Standard type</b>	<b>Reflow pattern</b>
2	<b>Low-profile type</b>	

## ■ Terminal Layout (Viewed from Direction A)

Standard type	Low-profile type

## ■ Circuit Diagram

Standard type	Low-profile type

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# Products Specifications

Series		SPPB	SPVE	SPPW8	SPVM	SPVR	SPVP	SPVN	SPVG	SPVL	SSCM	
Items												
Operating temperature range		-10℃ to +60℃										
Rating (max.) (Resistive load)		0.1A 30V DC	0.1A 12V DC	0.1A 30V DC	1mA 5V DC				50mA 20V DC	1mA 5V DC		
Electrical performance	Initial contact resistance	1 Ω max.	500mΩ max.	1 Ω max.	2 Ω max.	3 Ω max.	5 Ω max.	2 Ω max.	500mΩ max.	2 Ω max.		
	Insulation resistance	100MΩ min. 100V DC										
	Voltage proof	100V AC for 1 min.										
Mechanical performance	Robustness of terminal	3N for 1 min.	0.5N for 1 min.	3N for 1 min.	1N for 1 min.	0.5N for 1 min.				1N for 1 min.	0.5N for 1 min.	
	Robustness of actuator	10N	5N	10N	5N	2N	5N		10N	5N	0.5N	
	Vibration		10 to 55 to 10Hz/min., the amplitude is 1.5mm for all the frequencies, in the 3 direction of X, Y and Z for 2 hours respectively									
	Resistance to soldering heat	Manual soldering	300±5℃, 5s max.	350±5℃, 3s max.								
		Dip soldering	260±5℃, 5±1s	—	255±5℃, 5±1s	—						
		Reflow soldering	Please see P.306									
Durability	Operating life without load	50,000 cycles 2Ω max.	50,000 cycles 1Ω max.	100,000 cycles 2Ω max.	50,000 cycles 5Ω max.		50,000 cycles 10Ω max.	50,000 cycles 5Ω max.	100,000 cycles 1Ω max.	50,000 cycles 5Ω max.		
	Operating life with load	(0.1A 30V DC) 50,000 cycles 2Ω max.	(0.1A 12V DC) 50,000 cycles 1Ω max.	(0.1A 30V DC) 100,000 cycles 2Ω max.	(1mA 5V DC) 50,000 cycles 5Ω max.		(1mA 5V DC) 50,000 cycles 10Ω max.	(1mA 5V DC) 50,000 cycles 5Ω max.	(50mA 20V DC) 100,000 cycles 1Ω max.	(1mA 5V DC) 50,000 cycles 5Ω max.		
Environmental performance	Cold	-20±2℃ for 96h	-25±2℃ for 96h	-20±2℃ for 96h					-40±2℃ for 96h	-20±2℃ for 96h		
	Dry heat	85±2℃ for 96h										
	Damp heat	40±2℃, 90 to 95%RH for 96h										

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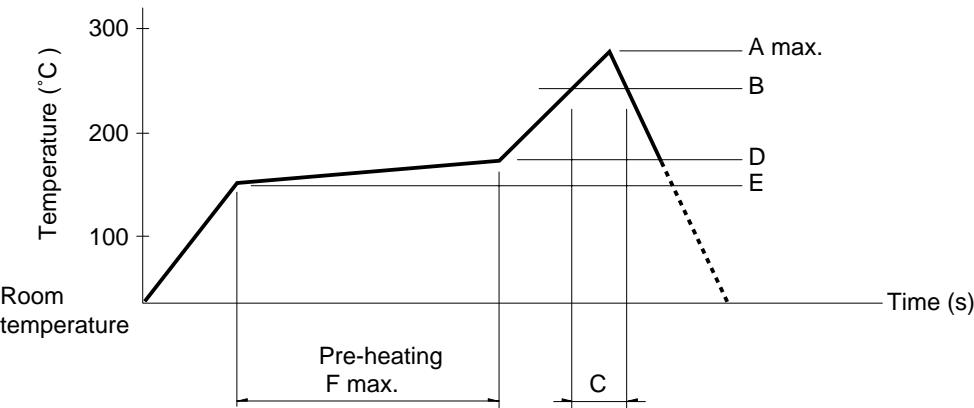
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Soldering Conditions

Example of Reflow Soldering Condition

1. Heating method: Double heating method with infrared heater.
2. Temperature measurement: Thermocouple 0.1 to 0.2 ϕ 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
SPVE	260					
SPPW8	250	200	20			
SPVM	260	230	40			
SPVR						
SPVP						
SPVN						
SPVG						
SPVL						
SSCM						
SPPY5	240		20	150	Room Temperature	180

Notes

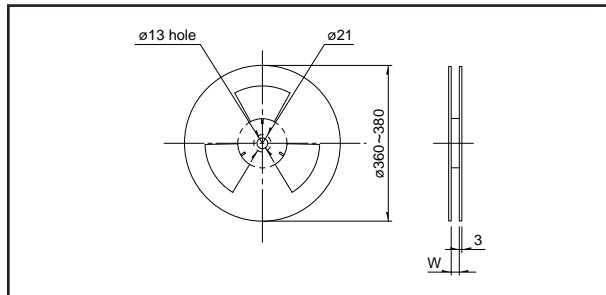
1. The condition mentioned above is the temperature on the mounting surface of a PC board. There are cases where the PC board's temperature greatly differs from that of the switch, depending on the PC board's material, size, thickness, etc. The above-stated conditions shall also apply to switch surface temperatures.
2. As the conditions vary some how depending on the kind of reflow soldering equipment, please make sure you have the right one before use.

# Taping Specifications

## Taping Packaging

Reel Size

Unit:mm



Series			Number of packages (pcs.)			Reel width W (mm)	Tape width (mm)
			1 reel	1 case／domestic	1 case／export packing		
SPPB	53 (Horizontal)		1,500	3,000	6,000	24.4	24
	53 (Vertical)		600	1,200	2,400		
	63, 64		1,300	2,600	5,200		
SPVE	Standard	h=3.8	2,800	5,600	22,400	12.4	12
		h=4.1					
		h=4.8	2,200	4,400	17,600		
		h=5.2	2,000	4,000			
		h=5.5					
	Low-profile	h=3.3	2,800	5,600	22,400		
		h=4.75	2,000	4,000	16,000		
	SPPW81	h = 6.1 (Reflow)		1,000	2,000		
h = 6.55 (Reflow)							
h = 7.6 (Reflow)		850	1,700	3,400			
SPVM			3,000	6,000	12,000	16.4	16
SPVR			2,500	5,000	10,000		
SPVP			4,500	9,000	18,000		
SPVN			5,000	10,000	20,000		
SPVG			2,500	5,000	10,000		
SPVL			5,000	10,000	20,000		
SSCM			3,000	6,000	12,000		
SPPY5			550	1,650	3,300	44.4	44

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### Note

Order products in N minimum packing units (1 reel or 1 case).