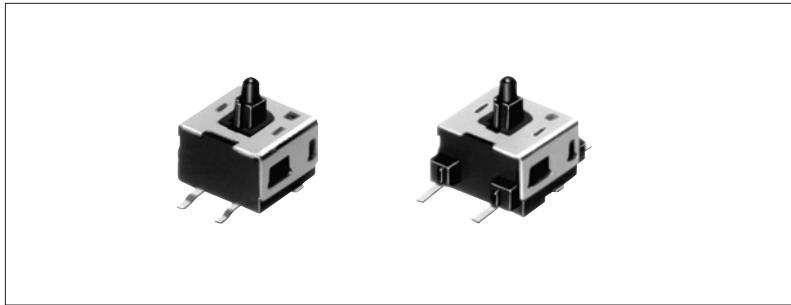


Compact Type Detector Switch

SPVE Series

Miniaturized to world smallest (3.4 × 3.0 mm) and suitable for digital media.



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 12V 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	Total travel	Mounting method	Location lug	Minimum packing unit (pcs.)	Products No.	Drawing No.
1	1	For PC board (Reflow)	h = 3.8	h ₁ = 3.5	h ₂ = 2.5	Standard	Without	2,800	SPVE110100	1
							With		SPVE110600	
			Without	SPVE110401						
			With	SPVE110801						
			h = 4.1	h ₁ = 3.8	h ₂ = 2.9		Without	2,200	SPVE110200	
							With		SPVE110900	
			h = 4.8	h ₁ = 4.5	h ₂ = 3.6		With	2,000	SPVE111300	
									SPVE111200	
h = 5.2	h ₁ = 4.9	h ₂ = 4.0	h = 5.5	h ₁ = 5.2	h ₂ = 4.3	Low-profile	—	2,800	SPVE210100	2
									SPVE210200	
h = 3.3	h ₁ = 3.0	h ₂ = 2.0	h = 4.75	h ₁ = 4.45	h ₂ = 3.35	Low-profile	—	2,000	SPVE210100	2
									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.300
For specifications for the taping package, see P.303

Power

Push

Slide

Rotary

Encoders

Jog Shuttle

Telephone hook

Detector

Vibration Sensors

Dual-in-line Package Type

Multi Control Devices

TACT

Dimensions

Unit : mm

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

Terminal Layout (Viewed from Direction A)

Standard type	Low-profile type

Circuit Diagram

Standard type	Low-profile type

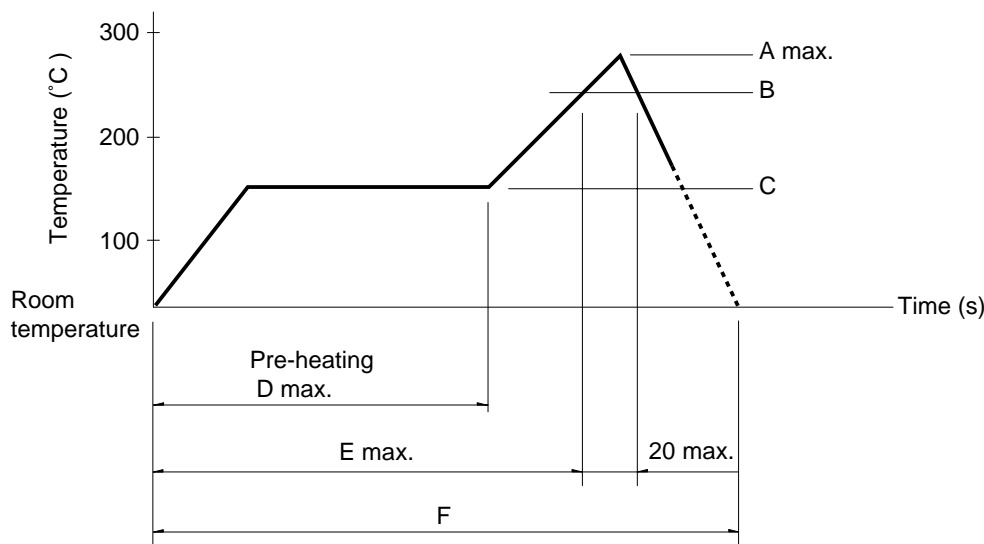
Products Specifications

Items		Series	SPPB	SPVE	SPPW8	SPVM	SPVF	SSCU	SSCT	SPVP
Power	Operating temperature range		-10°C to +60°C							
	Rating (max.) (Resistive load)		0.1A 30V DC	0.1A 12V DC	0.1A 30V DC	1mA 5V DC		0.1A 12V DC		1mA 5V DC
Push	Electrical performance	Initial contact resistance	1Ω max.	500mΩ max.	1Ω max.	2Ω max.	500mΩ max.	70mΩ max.	20mΩ max.	5Ω max.
Slide		Insulation resistance	100MΩ min. 100V DC				100MΩ min. 250V DC		100MΩ min. 100V DC	
Rotary		Voltage proof	100V AC for 1 min.				250V AC for 1 min.		100V AC for 1 min.	
Encoders	Mechanical performance	Robustness of terminal	3N for 1 min.	0.5N for 1 min.	3N for 1 min.	1N for 1 min.	3N for 30 s	3N for 1 min.		0.5N for 1 min.
Jog Shuttle		Robustness of actuator	10N	5N	10N	5N	1N	5N	10N	5N
Telephone-hook		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							
Detector	Resistance to soldering heat	Solderability	230±5°C, 3±0.5s							
		Manual soldering	300±5°C, 5s max.	350±5°C, 3s max.	350±10°C, 3 ⁺¹ ₀ s	350±5°C, 3s max.	300±10°C, 3 ⁺¹ ₀ s	350±10°C, 3 ⁺¹ ₀ s		350±5°C, 3s max.
		Dip soldering	260±5°C, 5±1s	—	255±5°C, 5±1s	—	260±5°C, 5±1s	—	260±5°C, 5±1s	—
Vibration Sensors	Durability	Reflow soldering	Please see P.300				—		Please see P.302	
Dual-in-line Package Type		Operating life without load	50,000 cycles 2Ω max.	50,000 cycles 1Ω max.	100,000 cycles 2Ω max.	50,000 cycles 5Ω max.	100,000 cycles 1Ω max.	10,000 cycles 100mΩ max.	10,000 cycles 40mΩ max.	50,000 cycles 10Ω max.
Multi Control Devices		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) 100,000 cycles 1Ω max.	(0.1A 12V DC) 10,000 cycles 150mΩ max.	(0.1A 12V DC) 10,000 cycles 60mΩ max.	(1mA 5V DC) 50,000 cycles 10Ω max.
TACT	Environmental performance	Cold	-20±2°C for 96h	-25±2°C for 96h	-20±2°C for 96h		-40±2°C for 96h	-20±2°C for 96h		
		Dry heat	85±2°C for 96h							
		Damp heat	40±2°C, 90 to 95%RH for 96h							

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 (°C)	D (s)	E (s)	F (s)
SPPB	250	200	150	120	—	—
SPVE	240	230				
SPPW8	250	200				
SPVM						
SPVP						
SPVN	230	240				
SPVG						
SPVL						
SSCM						

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.

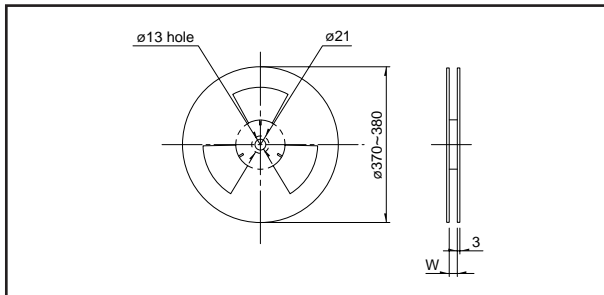
- Power
- Push
- Slide
- Rotary
- Encoders
- Jog Shuttle
- Telephone-hook
- Detector**
- Vibration Sensors
- Dual-in-line Package Type
- Multi Control Devices
- TACT

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	12.4	12	
		h=4.1					
		h=4.8	2,200	4,400			
		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	4,000	24.4	24	
	h = 6.55 (Reflow)						
	h = 7.6 (Reflow)	850	1,700	3,400			
SPVM		3,000	6,000	12,000	16.4	16	
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			

Note

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

Power

Push

Slide

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Telephone-hook

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TACT