

Detector Switch

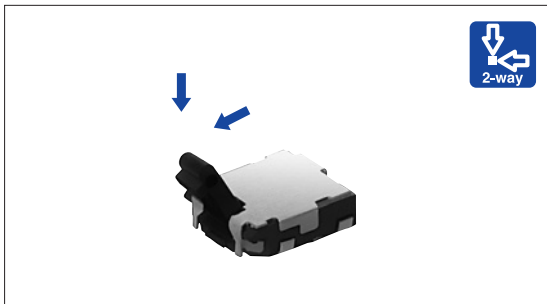
Low-profile Lever Type

SPVR Series



Low profile, height of 1.2mm, long travel type.

- Detector
- Push
- Slide
- Rotary
- Encoders
- Power
- Dual-in-line Package Type
- Multi Control Devices
- TACT Switch™
- Custom-Products



Features

- Detectable from both horizontal and vertical direction.
- Through-operation available.
- A small and thin 3.6×4.2×1.2mm size structure.
- Reflow solderable.
- Two-sided sliding-contact point structure for high-contact reliability.

Applications

- For detecting mechanisms in digital still cameras, digital camcorders, portable audio, car AV equipment and various electronic devices
- For detecting lids in digital still cameras, personal digital assistants, and notebook PCs

Typical Specification

Items		Specifications
Rating (max.) / (min.) (Resistive load)		1mA 5V DC/100μA 3V DC
Contact resistance (Initial /After operating life)		3Ω 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	Total travel (mm)	Terminal type	Location lug	Product No.
1	1	1.93	For PC board (Reflow)	With	SPVR110100
				Without	SPVR120100

Refer to P.67 for product specifications.
Refer to P.71 for taping package specifications.

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Dimensions

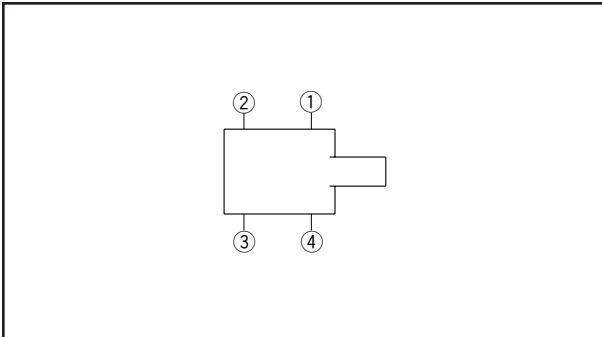
Unit:mm

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

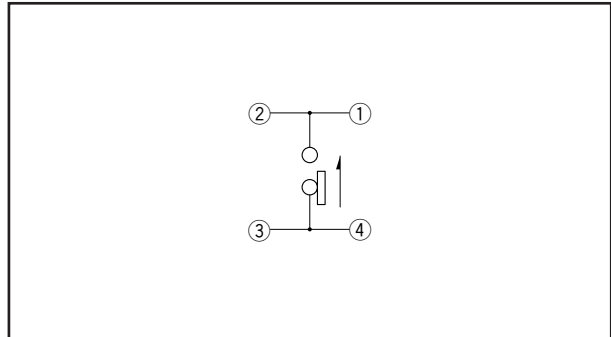
Note

Above dimensions indicate "with location lug" version.

Terminal Layout (Viewed from Direction A)



Circuit Diagram



Product Specifications

Items		Series										
		SPPB	SPVE	SPPW8	SPVM	SPVR	SPVF	SSCU	SSCT	SSCF	SSCM	
Operating temperature range		-40°C to +85°C	-10°C to +60°C		-40°C to +85°C		-10°C to +60°C	-40°C to +85°C			-10°C to +60°C	
Rating (max.) (Resistive load)		0.1A 30V DC			1mA 5V DC			0.1A 12V DC			1mA 5V DC	
Electrical performance	Initial contact resistance	1 Ω max.	500mΩ max.	1 Ω max.	2 Ω max.	3 Ω max.	500mΩ max.	70mΩ max.	20mΩ max.	100mΩ max.	2 Ω max.	
	Insulation resistance	100MΩ min. 100V DC						100MΩ min. 250V DC		100MΩ min. 100V DC		
	Voltage proof	100V A for 1minute						250V AC for 1minute		100V AC for 1minute		
Mechanical performance	Terminal strength	3N for 1minute	0.5N for 1minute	3N for 1minute	1N for 1minute	0.5N for 1minute	3N for 30 s	3N for 1minute		5N for 1minute	0.5N for 1minute	
	Actuator strength	10N	5N	10N	5N	2N	1N	5N	10N		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°C, 5s max.	350±5°C, 3s max.				300±10°C, 3 ⁺¹ / ₀ s	350±5°C, 3s max.	350±10°C, 3 ⁺¹ / ₀ s	350±5°C, 3s max.	
		Dip soldering	260±5°C, 5±1s		255±5°C, 5±1s			245±5°C, 5±1s		260±5°C, 5±1s		
Reflow soldering		Please see P.70						—————			Please see P.70	
Durability	Operating life without load	50,000 cycles 2 Ω max.	50,000 cycles 1 Ω max.	100,000 cycles 2 Ω max.	50,000 cycles 5 Ω max.		100,000 cycles 1 Ω max.	10,000 cycles 100mΩ max.	10,000 cycles 40mΩ max.	50,000 cycles 200mΩ max.	50,000 cycles 5 Ω max.	
	Operating life with load	(0.1A 30V DC) 50,000cycles 2 Ω max.	(0.1A 30V DC) 50,000cycles 1 Ω max.	(0.1A 30V DC) 100,000cycles 2 Ω max.	(1mA 5V DC) 50,000cycles 5 Ω max.		(1mA 5V DC) 100,000cycles 1 Ω max.	(0.1A 12V DC) 10,000cycles 150mΩ max.	(0.1A 12V DC) 10,000cycles 60mΩ max.	(0.1A 12V DC) 50,000cycles 300mΩ max.	(1mA 5V DC) 50,000cycles 5 Ω max.	
Environmental performance	Cold	-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										

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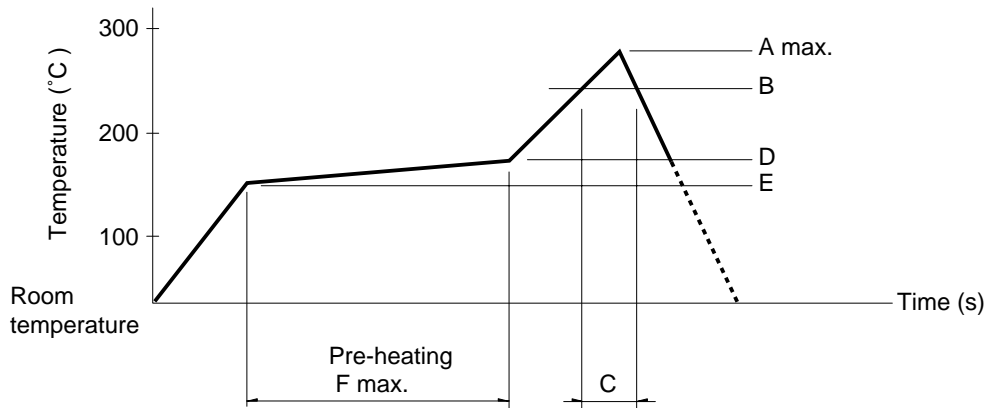
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Soldering Conditions

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			
SPPW8		200	20			
SPVE	260	230	40	180	150	120
SPVG						
SPVL						
SPVM						
SPVN						
SPVP						
SPVR						
SPVS						
SSCM						
SPPY5						

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. Soldering conditions differ depending on reflow soldering machines. Prior verification of soldering condition is highly recommended.

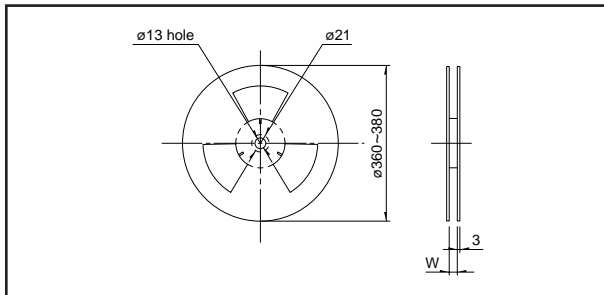
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Taping Specifications

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			
SPPW81	h = 6.1 (Reflow)	1,000	2,000	4,000	12.4	12	
	h = 6.55 (Reflow)						
	h = 7.6 (Reflow)	850	1,700	3,400			
SPVE	Standard	h=3.8	2,800	5,600	22,400	16.4	16
		h=4.1					
		h=4.8	2,200	4,400	17,600		
		h=5.2	2,000	4,000	16,000		
		h=5.5					
	Low-profile	h=3.3	2,800	5,600	22,400		
SPVG		2,500	5,000	10,000	44.4	44	
SPVL		5,000	10,000	20,000			
SPVM		3,000	6,000	12,000			
SPVN		5,000	10,000	20,000			
SPVP		4,500	9,000	18,000			
SPVR		2,500	5,000	10,000			
SPVS		5,000	10,000	20,000			
SSCM		3,000	6,000	12,000			
SPPY5		550	1,650	3,300			

Note

Please place purchase orders for taping products per minimum package units (1 reel or a case).

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