

Detector Switch Low-profile Tri-directional Operation Type

SPVL Series



Flexible and thin 1mm height detector switch with a large operational range of 180 degrees.

Detector

Push

Slide

Rotary

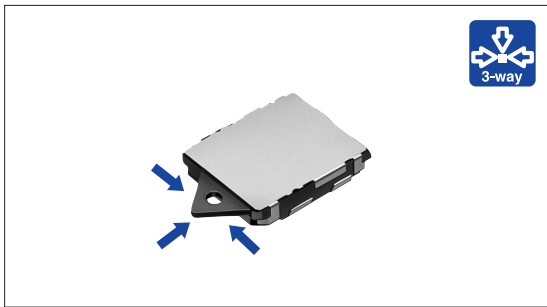
Encoders

Power

Dual-in-line
Package Type

TACT Switch™

Custom-
Products



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

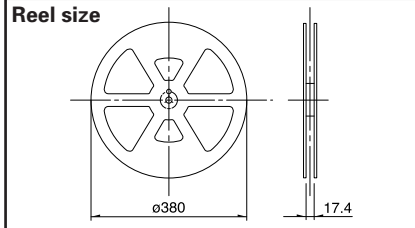
Poles	Positions	Terminal type	Location lug	Minimum order unit (pcs)	Product No.
1	1	For PC board (Reflow)	With	20,000	SPVL110100
			Without		SPVL120100

Packing Specifications

Taping

Unit:mm

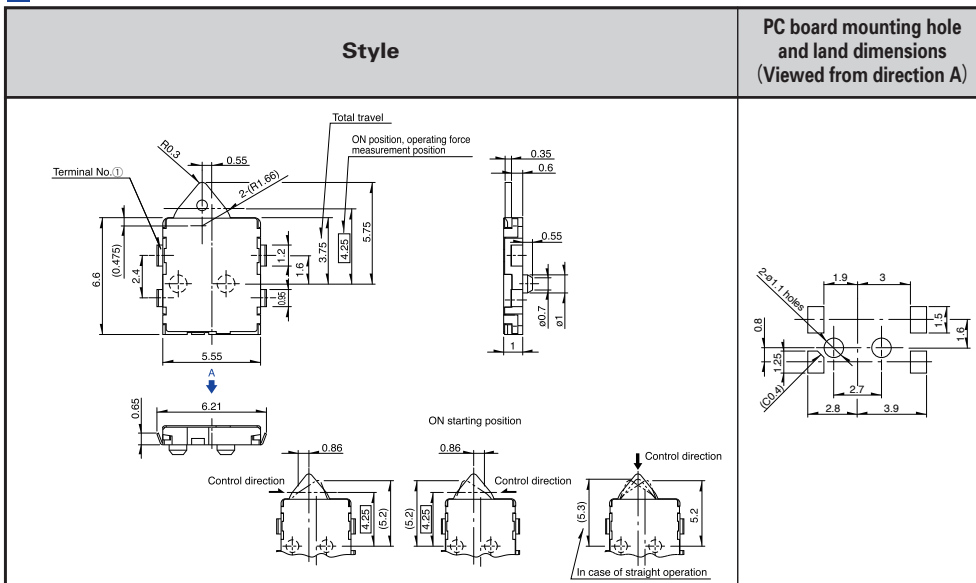
Reel size



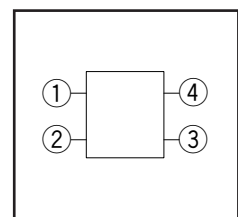
Number of packages (pcs.)			Tape width (mm)	Export package measurements (mm)
1 reel	1 case /Japan	1 case /export packing		
5,000	10,000	20,000	16	417 × 409 × 139

Dimensions

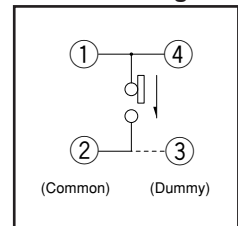
Unit:mm



Terminal Layout (Viewed from Direction A)



Circuit Diagram



Notes

- Above dimensions indicate "with Location lug" version.
- Please place purchase orders per minimum order unit N (integer).



Automotive
Use

Refer to P.97 for soldering conditions.

List of Varieties (General-purpose Type / Water-proof Type)

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

Series	General-purpose Type				Water-proof Type			
	SPVT	SPVL	SSCW	SPVQ5	SPVQ1	SPVQ3	SPVQ4H	
Photo								
Operation type					 			
Operating temperature range	-40°C to +85°C							
Automotive use	●	●	●	●	●	●	●	
Rating (max.) (Resistive load)	50mA 20V DC	1mA 5V DC	0.1A 12V DC					
Rating (min.) (Resistive load)	100μA 3V DC	50μA 3V DC	100μA 3V DC	50μA 3V DC		50μA 5V DC or 1mA 5V DC	1mA 5V DC	
Electrical performance	Initial contact resistance	500mΩ max.	2Ω max.	500mΩ max.				
	Insulation resistance	100MΩ min. 100V DC		100MΩ min. 250V DC	100MΩ min. 500V DC			
	Voltage proof	100V AC for 1 minute		250V AC for 1 minute	500V AC for 1 minute			
Mechanical performance	Terminal strength	0.5N for 1 minute	1N for 1 minute	—————		3N for 1 minute Wire strength 30N for 1 minute Applicable to product with wire	Wire strength 30N for 1 minute	
	Actuator strength	10N	5N	20N				
Durability	Operating life without Load	100,000cycles 1Ω max.	50,000cycles 5Ω max.	100,000cycles 1Ω max.	300,000cycles 1Ω max.		300,000cycles or 1,200,000cycles 1Ω max.	
	Operating life with Load	(50mA 20V DC) 100,000cycles 1Ω max.	(1mA 5V DC) 50,000cycles 5Ω max.	(0.1A 12V DC) 100,000cycles 1Ω max.	(0.1A 12V DC) 300,000cycles 1Ω max.		(0.1A 12V DC) 300,000cycles or 1,200,000 cycles 1Ω max.	
Environmental performance	Cold	-40±2°C for 500h						
	Dry heat	85±2°C for 500h						
	Damp heat	40±2°C, 90 to 95%RH for 500h	60±2°C, 90 to 95%RH for 500h					
Dimensions (mm)	W	5.6	5.55	13.1	13.8	13.3	13	19
	D	6.5	6.6	11.35		5.8		6
	H	1.9	1	5.3	5.8	8	8.35	11.9
Soldering	Manual soldering	350±5°C, 3s max.			—————		300±10°C, 3 ⁺ 1s	
	Dip soldering	—————			—————		260±5°C, 5±1s	
	Reflow soldering	Please see P.97			—————			
Number of poles	1							
Operation force	0.4N max.	0.35N max.	1N max.	2N max.	2N max. 5.9N max.	3N max.		
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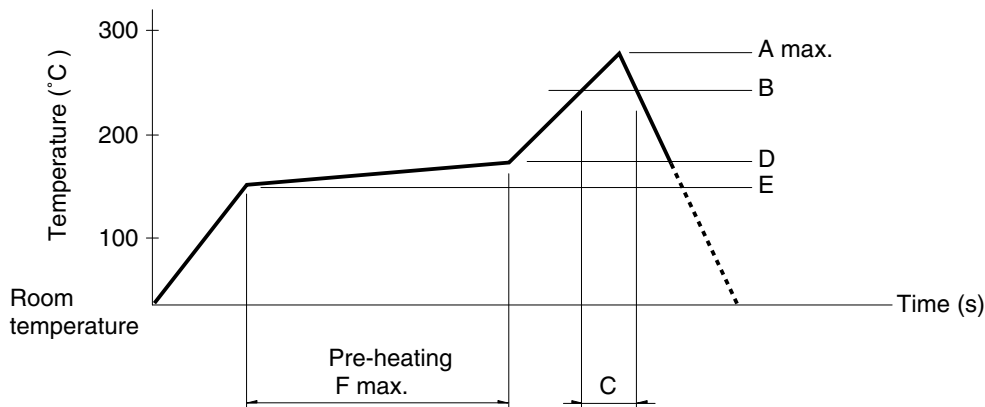
Note

●marks in "Available for automotive use" indicate that all of the series products can work at the operating temperature range from -40°C to +85°C.

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			
SPPW8		200	20						
SPVE	260	230	40						
SPVG									
SPVL									
SPVM									
SPVN									
SPVP									
SPVR									
SPVS									
SPVT									
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, 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.

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