

# Detector Switch Low-profile Two-way Operation Type

SPVN Series



Low-profile type with thickness of 1mm.

## Detector

Push

Slide

Rotary

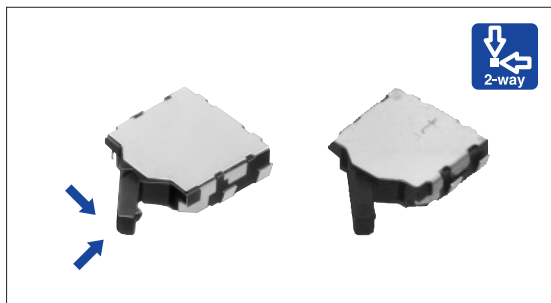
Encoders

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)		2 Ω max./5 Ω max.
Operating force		0.35N max.
Operating life	Without load	50,000cycles
	With load	50,000cycles (1mA 5V DC)

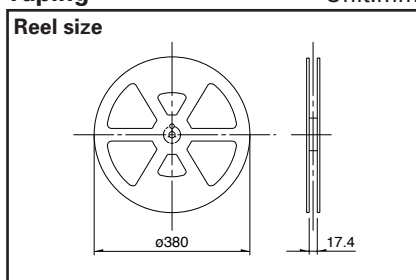
## Product Line

Poles	Positions	Terminal type	Lever length	Operating direction	Location lug	Minimum order unit (pcs)	Product No.	Drawing No.
1	1	For PC board (Reflow)	Standard	Right	With	20,000	SPVN110101	1
					Without		SPVN120101	
				Left	With		SPVN210101	2
					Without		SPVN220101	
			Long	Right	With		SPVN310100	3
					Without		SPVN320100	
				Left	With		SPVN410100	4
					Without		SPVN420100	

## Packing Specifications

### Taping

Unit:mm



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

### Note

Please place purchase orders per minimum order unit N (integer).



Automotive  
Use

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**Dimensions**

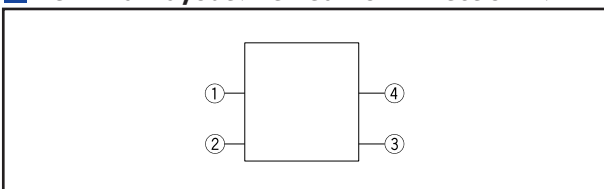
Unit:mm

No.	Photo	Style	PC board mounting hole and land dimensions (Viewed from direction A)
1			
2			
3			
4			

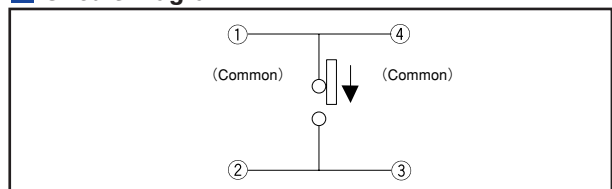
**Note**

Above dimensions indicate "with location lug" versions.















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



**Circuit Diagram**



## List of Varieties (General-purpose Type)

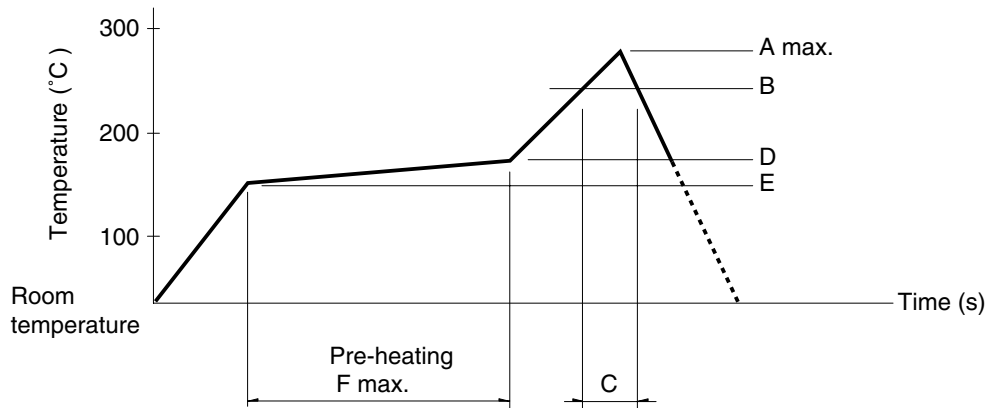
Series	General-purpose Type						
	SSCT	SSCF	SSCM	SPVP	SPVC1	SPVN	SPVS
<b>Detector</b>							
<b>Photo</b>							
<b>Push</b>							
<b>Slide</b>							
<b>Rotary</b>							
<b>Encoders</b>							
<b>Power</b>							
<b>Dual-in-line Package Type</b>							
<b>TACT Switch™</b>							
<b>Custom-Products</b>							
<b>Operation type</b>							
<b>Operating temperature range</b>	-40°C to +85°C		-10°C to +60°C		-40°C to +85°C		
<b>Automotive use</b>	●	●	—	●	●	●	●
<b>Rating (max.) (Resistive load)</b>	0.1A 12V DC		1mA 5V DC		10mA 16V DC	1mA 5V DC	
<b>Rating (min.) (Resistive load)</b>	50μA 3V DC			100μA 3V DC	50μA 3V DC		
<b>Electrical performance</b>	<b>Initial contact resistance</b>	200mΩ max.	100mΩ max.	2Ω max.	5Ω max.	1Ω max.	2Ω max.
	<b>Insulation resistance</b>	100MΩ min. 250V DC	100MΩ min. 100V DC				
	<b>Voltage proof</b>	250V AC for 1 minute	100V AC for 1 minute				
<b>Mechanical performance</b>	<b>Terminal strength</b>	3N for 1 minute	5N for 1 minute	0.5N for 1 minute		3N for 1 minute	0.5N for 1 minute
	<b>Actuator strength</b>	20N	10N	2N	5N	10N	5N
<b>Durability</b>	<b>Operating life without Load</b>	10,000cycles 500mΩ max.	50,000cycles 200mΩ max.	50,000cycles 5Ω max.	50,000cycles 10Ω max.	25,000cycles 2Ω max.	50,000cycles 5Ω max.
	<b>Operating life with Load</b>	(0.1A 12V DC) 10,000cycles 500mΩ max.	(0.1A 12V DC) 50,000cycles 300mΩ max.	(1mA 5V DC) 50,000cycles 5Ω max.	(1mA 5V DC) 50,000cycles 10Ω max.	(10mA 16V DC) 25,000cycles 2Ω max.	(1mA 5V DC) 50,000cycles 5Ω max.
<b>Environmental performance</b>	<b>Cold</b>	-40±2°C for 500h		-20±2°C for 96h	-40±2°C for 500h		
	<b>Dry heat</b>	85±2°C for 500h		85±2°C for 96h	85±2°C for 500h		
	<b>Damp heat</b>	60±2°C, 90 to 95%RH for 500h	60±2°C, 90 to 95%RH for 96h	40±2°C, 90 to 95%RH for 96h	60±2°C, 90 to 95%RH for 500h		
<b>Dimensions (mm)</b>	<b>W</b>	12.5	11	5	3.5	6.3	3.8
	<b>D</b>	5	5.8	4	5.65	7.4	3.6
	<b>H</b>	11.5	12.4	1.5	1.2	2.8	1
<b>Soldering</b>	<b>Manual soldering</b>	350±5°C, 3s max.	350±10°C, 3 <sup>+1</sup> <sub>0</sub> s	350±5°C, 3s max.		350 <sup>+10</sup> <sub>-5</sub> °C, 3 <sup>+1</sup> <sub>0</sub> s	350±5°C, 3s max.
	<b>Dip soldering</b>	260±5°C, 5±1s		—		260±5°C, 3s max.	—
	<b>Reflow soldering</b>	—		Please see P.102		—	Please see P.102
<b>Number of poles</b>	1						
<b>Operation force</b>	0.7±0.3N	0.7N max.	0.35N max.	0.55N max.	0.85N max.	0.35N max.	
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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



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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, 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.