

# Detector Switch

## Low-profile Two-way Operation Type

### SPVN Series



Low-profile type with thickness of 1mm.



#### Typical Specifications

Items		Specifications
Rating (max.) / (min.) (Resistive load)		1mA 5V DC/50 $\mu$ A 3V DC
Contact resistance (Initial /After operating life)		2 $\Omega$ max./5 $\Omega$ max.
Operating force		0.35N max.
Operating life	Without load	50,000cycles
	With load	50,000cycles (1mA 5V DC)

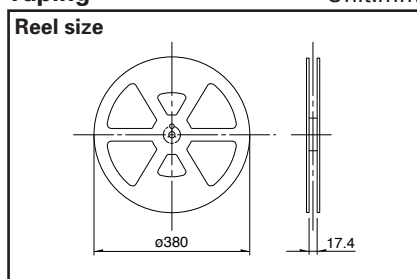
#### Product Line

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

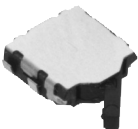
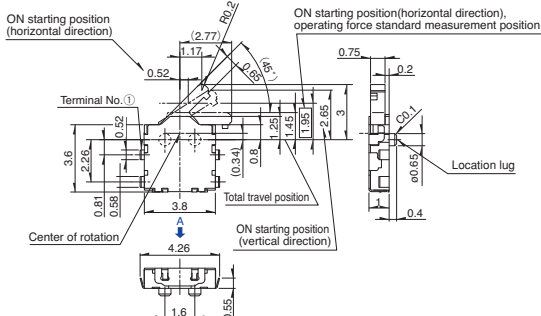

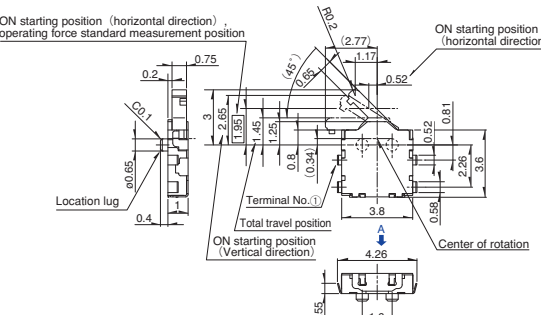

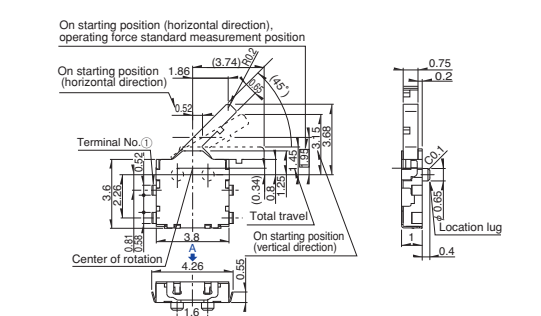
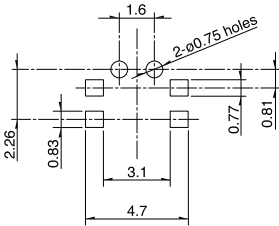
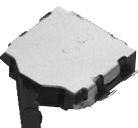
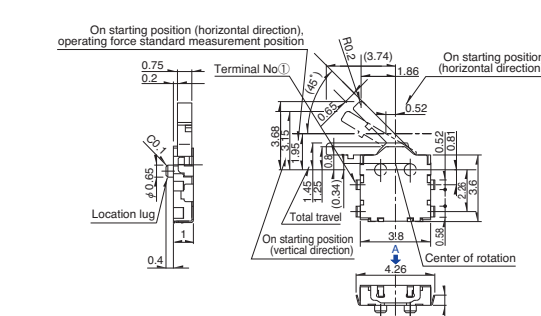
Please place purchase orders per minimum order unit N (integer).



Automotive Use

### Dimensions

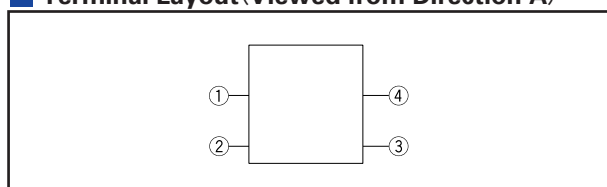
Unit:mm

No.	Photo	Style	PC board mounting hole and land dimensions (Viewed from direction A)
1		 <p>ON starting position (horizontal direction)</p> <p>ON starting position (horizontal direction), operating force standard measurement position</p> <p>Terminal No. ①</p> <p>Center of rotation</p> <p>ON starting position (vertical direction)</p> <p>Total travel position</p> <p>Location lug</p>	
2		 <p>ON starting position (horizontal direction), operating force standard measurement position</p> <p>ON starting position (horizontal direction)</p> <p>Terminal No. ①</p> <p>Center of rotation</p> <p>ON starting position (vertical direction)</p> <p>Total travel position</p> <p>Location lug</p>	
3		 <p>On starting position (horizontal direction), operating force standard measurement position</p> <p>On starting position (horizontal direction)</p> <p>Terminal No. ①</p> <p>Center of rotation</p> <p>On starting position (vertical direction)</p> <p>Total travel</p> <p>Location lug</p>	 <p>2-<math>\phi</math>0.75 holes</p>
4		 <p>On starting position (horizontal direction), operating force standard measurement position</p> <p>On starting position (horizontal direction)</p> <p>Terminal No. ①</p> <p>Center of rotation</p> <p>On starting position (vertical direction)</p> <p>Total travel</p> <p>Location lug</p>	

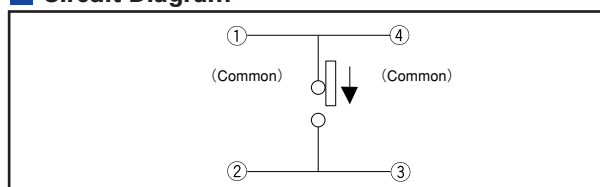
### Note

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	SPVN	SPVS
Photo							
Operation type							
Operating temperature range		-40℃ to +85℃		-10℃ to +60℃	-40℃ to +85℃		
Automotive use							
Rating(max.) (Resistive load)		0.1A 12V DC		1mA 5V DC			
Rating(min.) (Resistive load)		50μA 3V DC			100μA 3V DC	50μA 3V DC	
Electrical performance	Initial contact resistance	200mΩ max.	100mΩ max.	2Ω max.	5Ω max.	2Ω max.	
	Insulation resistance	100MΩ min. 250V DC	100MΩ min. 100V DC				
	Voltage proof	250V AC for 1 minute	100V AC for 1 minute				
Mechanical performance	Terminal strength	3N for 1 minute	5N for 1 minute	0.5N for 1 minute			
	Actuator strength	20N	10N	2N	5N		
Durability	Operating life without Load	10,000cycles 500mΩ max.	50,000cycles 300mΩ max.	50,000cycles 5Ω max.	50,000cycles 10Ω max.	50,000cycles 5Ω max.	
	Operating life with Load	(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.	(1mA 5V DC) 50,000cycles 5Ω max.	
Environmental performance	Cold	-40±2℃ for 500h		-20±2℃ for 96h	-40±2℃ for 500h		
	Dry heat	85±2℃ for 500h		85±2℃ for 96h	85±2℃ for 500h		
	Damp heat	60±2℃, 90 to 95%RH for 500h		40±2℃, 90 to 95%RH for 96h	60±2℃, 90 to 95%RH for 500h		
Dimensions (mm)	W	12.5	11	5	3.5	3.8	3.5
	D	5	5.8	4	5.65	3.6	3.3
	H	11.5	12.4	1.5	1.2	1	
Soldering	Manual soldering	350±5℃, 3s max.	350±10℃, 3 <sup>+1</sup> <sub>-0</sub> s	350±5℃, 3s max.			
	Dip soldering	260±5℃, 5±1s					
	Reflow soldering			Please see P.97			
Number of poles		1					
Operation force		0.7±0.3N	0.7N max.	0.35N max.	0.55N max.	0.35N max.	
Page		59	60	62	63	64	66

## Detector

Push

Slide

Rotary

Encoders

Power

Dual-in-line  
Package Type

TACT Switch™

Custom-  
Products

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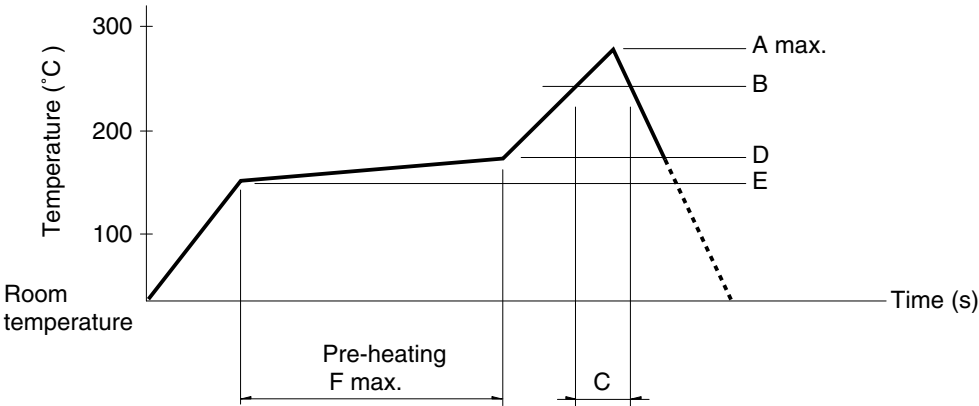
## Note

● 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			
SPPW8		200	20			
SPVE	260	230	40	180	150	120
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.