

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 μ A 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)

Detector

Push

Slide

Rotary

Encoders

Power

Dual-in-line
Package Type

TACT Switch™

Custom-
Products

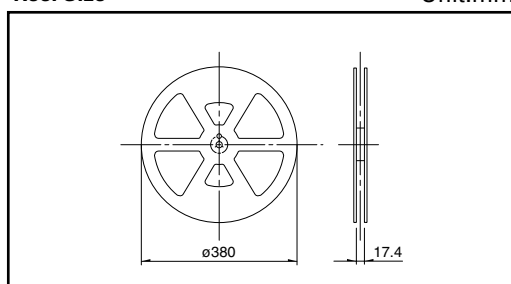
Product Line

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	

Taping Specifications (Taping Packaging)

Reel Size

Unit:mm



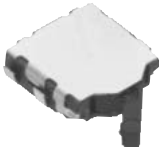
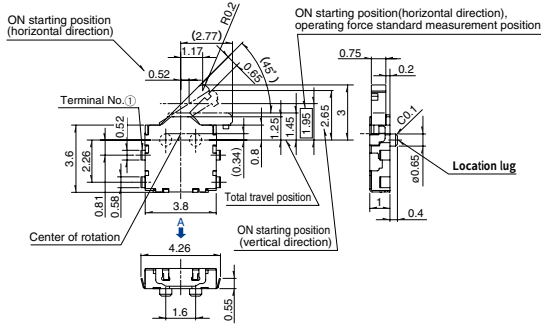
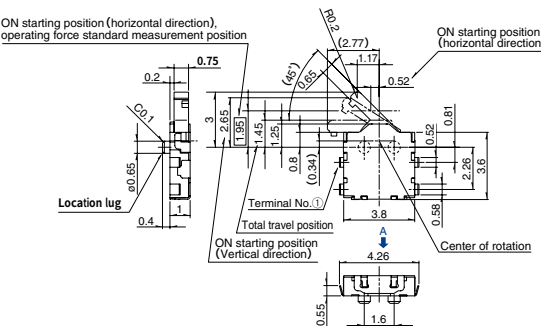
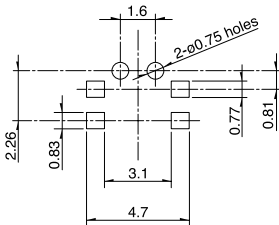
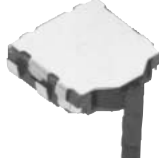
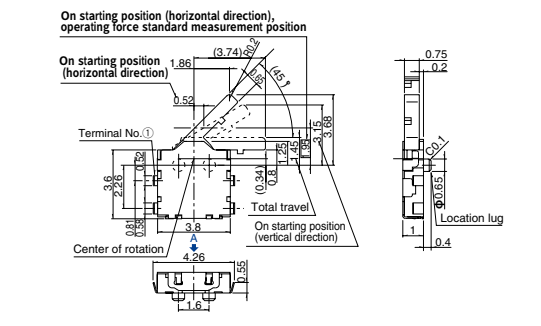
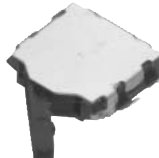
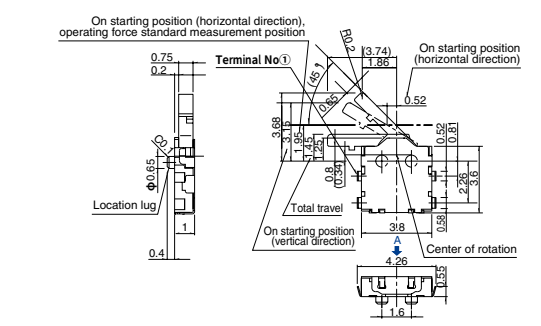
Number of packages (pcs.)			Tape width (mm)
1 reel	1 case /Japan	1 case /export packing	
5,000	10,000	20,000	16

Note

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

Dimensions

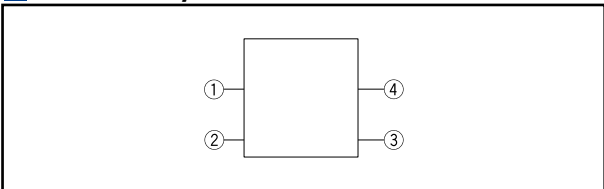
Unit:mm

No.	Photo	Style	PC board mounting hole and land dimensions (Viewed from direction A)
1		 ON starting position (horizontal direction) ON starting position (horizontal direction), operating force standard measurement position Terminal No.① Total travel position Center of rotation ON starting position (vertical direction) Location lug	
2		 ON starting position (horizontal direction), operating force standard measurement position ON starting position (horizontal direction) Terminal No.① Total travel position ON starting position (vertical direction) Center of rotation Location lug	 2-ϕ0.75 holes
3		 On starting position (horizontal direction), operating force standard measurement position On starting position (horizontal direction) Terminal No.① Total travel Center of rotation On starting position (vertical direction) Location lug	
4		 On starting position (horizontal direction), operating force standard measurement position On starting position (horizontal direction) Terminal No.① Total travel On starting position (vertical direction) Center of rotation Location lug	

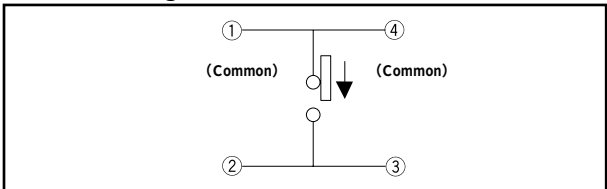
Note

Above dimensions indicate "with location lug" versions.

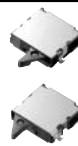
Terminal Layout (Viewed from Direction A)



Circuit Diagram



List of Varieties (General-purpose Type)

Series		General-purpose Type								
		SSCF	SSCM	SPVP	SPVC1	SPVN	SPVS	SPVG	SPVL	
Photo										
Operation type										
Operating temperature range		-40°C to +85°C	-10°C to +60°C	-40°C to +85°C						
Rating (max.) (Resistive load)		0.1A 12V DC	1mA 5V DC		10mA 16V DC	1mA 5V DC		50mA 20V DC	1mA 5V DC	
Rating (min.) (Resistive load)		50μA 3V DC		100μA 3V DC	50μA 3V DC		100μA 3V DC	50μA 3V DC		
Electrical performance	Initial contact resistance	100mΩ max.	2Ω max.	5Ω max.	1Ω max.	2Ω max.		500mΩ max.	2Ω max.	
	Insulation resistance	100MΩ min. 100V DC								
	Voltage proof	100V AC for 1 minute								
Mechanical performance	Terminal strength	5N for 1 minute	0.5N for 1 minute		3N for 1 minute	0.5N for 1 minute		1N for 1 minute		
	Actuator strength	10N	0.5N	5N	10N	5N		10N	5N	
Durability	Operating life without Load	50,000cycles 200mΩ max.	50,000cycles 5Ω max.	50,000cycles 10Ω max.	25,000cycles 2Ω max.	50,000cycles 5Ω max.		100,000cycles 1Ω max.	50,000cycles 5Ω max.	
	Operating life with Load	(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.		(50mA 20V DC) 100,000cycles 1Ω max.	(1mA 5V DC) 50,000cycles 5Ω 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								
Dimensions (mm)		W	11	5	3.5	6.3	3.8	3.5	5.5	5.55
		D	5.8	4	5.65	7.4	3.6	3.3	6.5	6.6
		H	12.4	1.5	1.2	2.8	1		2	1
Soldering	Manual soldering	350±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	—		260±5°C, 3s max.	—				
	Reflow soldering	—	Please see P.79		—	Please see P.79				
Number of poles		1								
Operation force		0.7N max.	0.35N max.	0.55N max.	0.85N max.	0.35N max.		0.4N max.	0.35N max.	
Page		46	48	49	50	51	53	55	60	

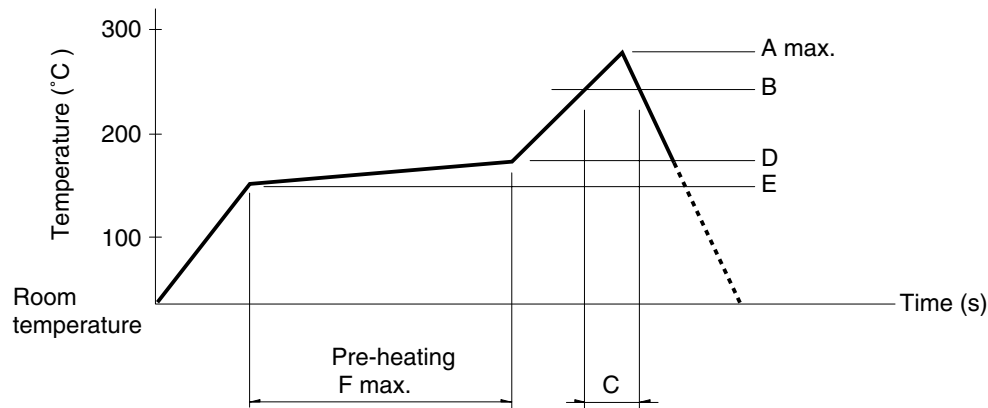
● Detector Switches Soldering Conditions79

● Detector Switches Cautions80

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	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.