

# Detector Switch Low-profile One-way Operation Type

SPVP Series



Long 2mm travel and 1.2mm thickness low profile structure.

## Detector

Push

Slide

Rotary

Encoders

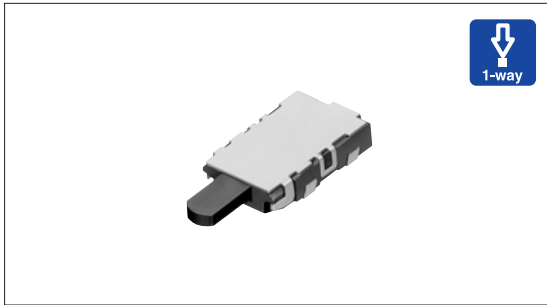
Power

Dual-in-line  
Package Type

Multi Control  
Devices

TACT Switch™

Custom-  
Products



## Features

- A low profile of only 1.2mm from PC board mounting surface.
- Reflow solderable.
- Two-sided sliding-contact point structure for high-contact reliability

## Applications

- For detecting mechanisms in digital still cameras, DVD players/recorders, digital camcorders, portable audio players and various electronic devices
- For detection for pickup to read TOC

## Typical Specifications

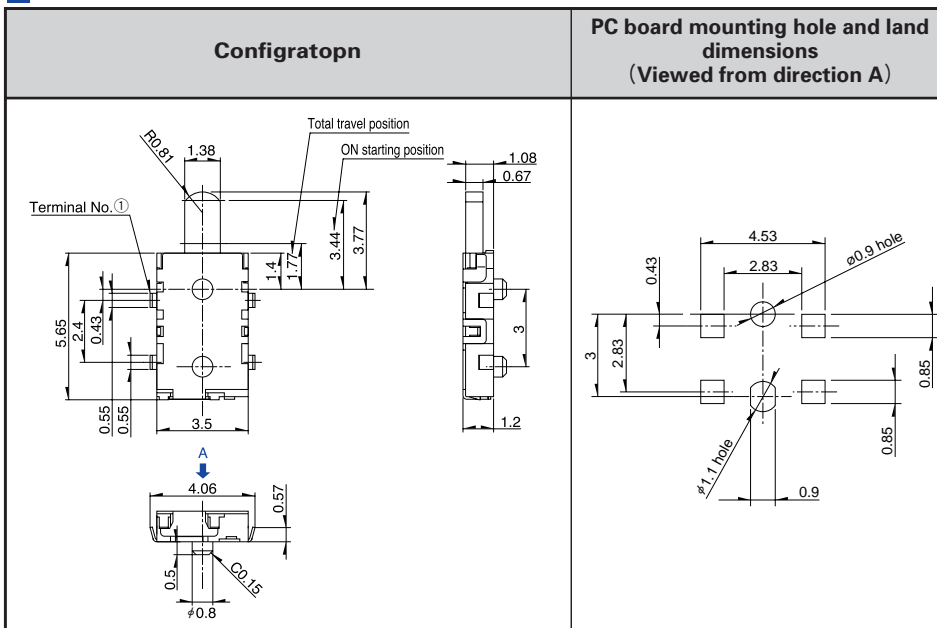
Items		Specifications
Rating (max.) / (min.) (Resistive load)		1mA 5V DC/100 $\mu$ A 3V DC
Contact resistance (Initial /After operating life)		5 $\Omega$ max./10 $\Omega$ max.
Operating force		0.55N max.
Operating life	Without load	50,000cycles
	With load	50,000cycles (1mA 5V DC)

## Product Line

Poles	Positions	Terminal type	Location lug	Product No.
1	1	For PC board (Reflow)	With	SPVP110100
			Without	SPVP120100

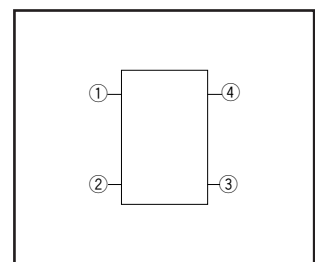
## Dimensions

Unit:mm

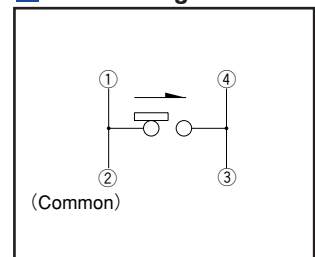


## Terminal Layout

(Viewed from direction A)



## Circuit Diagram



## Note

Above dimensions indicate "with location lug" version.

Refer to P.68 for product specifications.  
Refer to P.71 for taping package specifications.

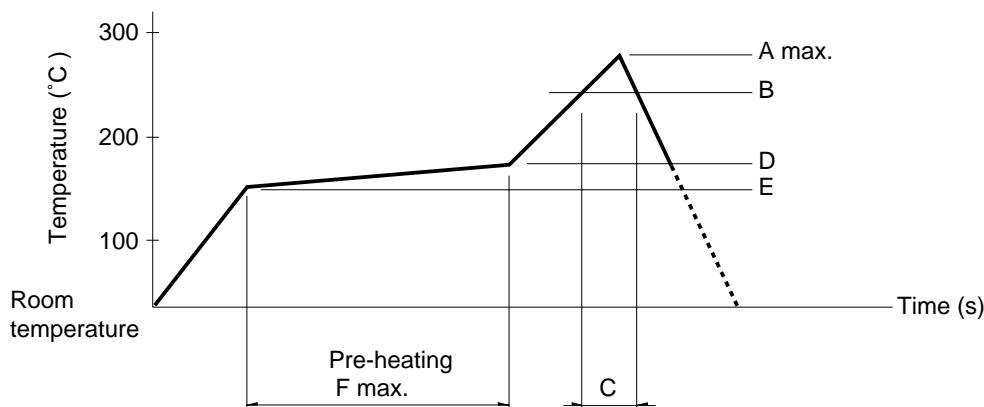
## Product Specifications

Series		SPVP	SPVC1	SPVN	SPVS	SPVG	SSCW	SPVQ5	SPVL	SPVQ1	SPVQ3	SPVQ4	SPVQ6	SSCN
Detector	Operating temperature range	-40°C to +85°C												
	Rating (max.) (Resistive load)	1mA 5V DC	10mA 16V DC	1mA 5V DC	50mA 20V DC	0.1A 12V DC			1mA 5V DC	0.1A 12V DC				
Push	Electrical performance	Initial contact resistance	5 Ω max.	1 Ω max.	2 Ω max.	500mΩ max.			2 Ω max.	500mΩ max.				
Slide		Insulation resistance	100MΩ min. 100V DC				100MΩ min. 250V DC	100MΩ min. 500V DC	100MΩ min. 100V DC	100MΩ min. 500V DC				
Rotary		Voltage proof	100V AC for 1minute				250V AC for 1minute	500V AC for 1minute	100V AC for 1minute	500V AC for 1minute				
Encoders	Mechanical performance	Terminal strength	0.5N for 1minute	3N for 1minute	0.5N for 1minute			1N for 1minute			3N for 1minute			
Power		Actuator strength	5N	10N	5N	10N	20N		5N	20N			10N	
Dual-in-line Package Type		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											
Multi Control Devices	Resistance to soldering heat	Manual soldering	350±5°C, 3s max.	300±10°C, 3 <sup>+1</sup> <sub>-0</sub> s	350±5°C, 3s max.			350±5°C, 3s max.	300±10°C, 3 <sup>+1</sup> <sub>-0</sub> s					
TACT Switch™		Dip soldering		260±5°C, 3s max.					260±5°C, 5±1s					
Custom-Products		Reflow soldering	Please see P.70	—	Please see P.70			—	Please see P.70	—				
Durability	Operating life without load	50,000 cycles 10 Ω max.	25,000 cycles 2 Ω max.	50,000 cycles 5 Ω max.	100,000 cycles 1 Ω max.	300,000 cycles 1 Ω max.	50,000 cycles 5 Ω max.	300,000 cycles 1 Ω max.	300,000 cycles or 1,200,000 cycles 1 Ω max.	300,000 cycles 1 Ω max.	100,000 cycles 1 Ω max.	100,000 cycles 1 Ω max.		
	Operating life with load	(1mA 5V DC) 50,000cycles 10 Ω max.	(10mA 16V DC) 25,000cycles 2 Ω max.	(1mA 5V DC) 50,000cycles 5 Ω max.	(50mA 20V DC) 100,000cycles 1 Ω max.	(0.1A 12V DC) 100,000cycles 1 Ω max.	(0.1A 12V DC) 300,000cycles 1 Ω max.	(1mA 5V DC) 50,000cycles 5 Ω max.	(0.1A 12V DC) 300,000cycles 1 Ω max.	(0.1A 12V DC) 300,000cycles or 1,200,000cycles 1 Ω max.	(0.1A 12V DC) 300,000cycles 1 Ω max.	(0.1A 12V DC) 100,000cycles 1 Ω max.		
Environmental performance	Cold	-20±2°C for 96h			-40±2°C for 96h	-40±2°C for 500h		-20±2°C for 96h	-40±2°C for 500h					
	Dry heat	85±2°C for 96h				85±2°C for 500h			85±2°C for 96h	85±2°C for 500h				
	Damp heat	40±2°C, 90 to 95%RH for 96h				60±2°C, 90 to 95%RH for 500h			40±2°C, 90 to 95%RH for 96h	60±2°C, 90 to 95%RH for 500h				

## 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  $\phi$  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.

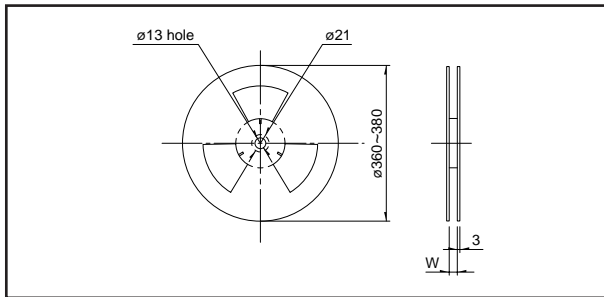
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# Taping Specifications

## 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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