

# Detector Switch Low-profile Tri-directional Operation Type

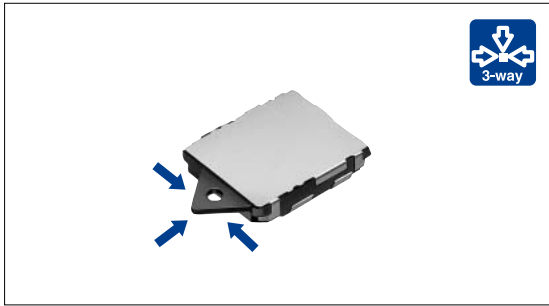
SPVL Series



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

## Detector

- Push
- Slide
- Rotary
- Encoders
- Power



## Typical Specifications

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

Dual-in-line  
Package Type

TACT Switch™

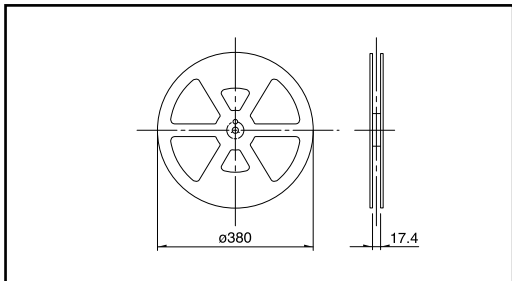
Custom-  
Products

## 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

## Taping Specifications (Taping Packaging)

Reel Size Unit:mm



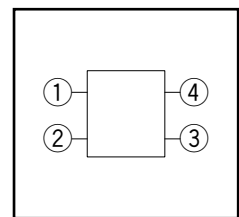
Number of packages( pcs. )			Tape width ( mm )
1 reel	1 case /Japan	1 case /export packing	
5,000	10,000	20,000	16

## Dimensions

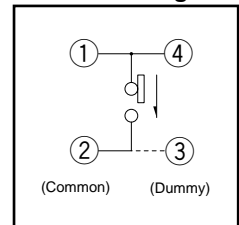
Unit:mm

Style	PC board mounting hole and land dimensions ( Viewed from direction A )

## Terminal Layout ( Viewed from Direction A )




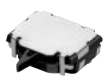




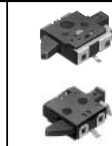
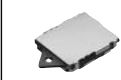








## Circuit Diagram



## Notes

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

## List of Varieties ( General-purpose Type )

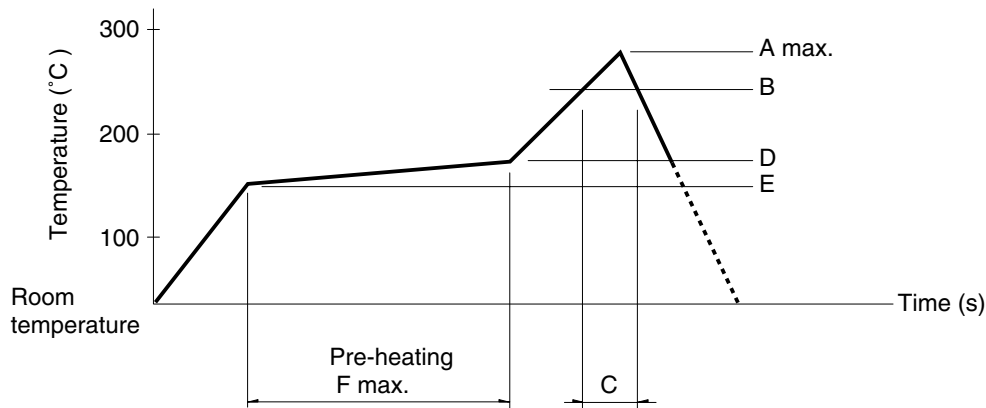
Series	General-purpose Type								
	SSCF	SSCM	SPVP	SPVC1	SPVN	SPVS	SPVG	SPVL	
<b>Detector</b> Photo									
<b>Operation type</b>	 2-way	 2-way	 1-way	 1-way	 2-way	 2-way	 2-way	 3-way	
<b>Operating temperature range</b>	-40 to +85	-10 to +60	-40 to +85						
<b>Rating (max.) (Resistive load)</b>	0.1A 12V DC	1mA 5V DC		10mA 16V DC	1mA 5V DC		50mA 20V DC	1mA 5V DC	
<b>Rating (min.) (Resistive load)</b>	50μA 3V DC		100μA 3V DC	50μA 3V DC			100μA 3V DC	50μA 3V DC	
<b>Electrical performance</b>	Initial contact resistance	100m max.	2 max.	5 max.	1 max.	2 max.		500m max.	2 max.
	Insulation resistance	100M min. 100V DC							
	Voltage proof	100V AC for 1 minute							
<b>Mechanical performance</b>	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
<b>Durability</b>	Operating life without Load	50,000cycles 200m max.	50,000cycles 5 max.	50,000cycles 10 max.	25,000cycles 2 max.	50,000cycles 5 max.		100,000cycles 1 max.	50,000cycles 5 max.
	Operating life with Load	(0.1A 12V DC) 50,000cycles 300m max.	(1mA 5V DC) 50,000cycles 5 max.	(1mA 5V DC) 50,000cycles 10 max.	(10mA 16V DC) 25,000cycles 2 max.	(1mA 5V DC) 50,000cycles 5 max.		(50mA 20V DC) 100,000cycles 1 max.	(1mA 5V DC) 50,000cycles 5 max.
<b>Environmental performance</b>	Cold	-20 ± 2 for 96h						-40 ± 2 for 96h	-20 ± 2 for 96h
	Dry heat	85 ± 2 for 96h							
	Damp heat	40 ± 2 , 90 to 95%RH for 96h							
<b>Dimensions (mm)</b>	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
<b>Soldering</b>	Manual soldering	350 ± 10 , 3 <sup>+1</sup> / <sub>0</sub> s	350 ± 5 , 3s max.		350 ± 10 , 3 <sup>+1</sup> / <sub>0</sub> s	350 ± 5 , 3s max.			
	Dip soldering	260 ± 5 , 5 ± 1s			260 ± 5 , 3s max.				
	Reflow soldering	Please see P.79				Please see P.79			
<b>Number of poles</b>	1								
<b>Operation force</b>	0.7N max.	0.35N max.	0.55N max.	0.85N max.	0.35N max.		0.4N max.	0.35N max.	
<b>Page</b>	46	48	49	50	51	53	55	60	

Detector Switches Soldering Conditions .....	79
Detector Switches Cautions .....	80

## 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 CA (K) or CC (T) at soldering portion (copper foil surface). A heat resisting tape should be used for fixed measurement.
3. Temperature profile



**Detector**

Push

Slide

Rotary

Encoders

Power

Dual-in-line  
Package Type

TACT Switch™

Custom-  
Products

Series( Reflow type )	A( ) 3s max.	B( )	C(s)	D( )	E( )	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.