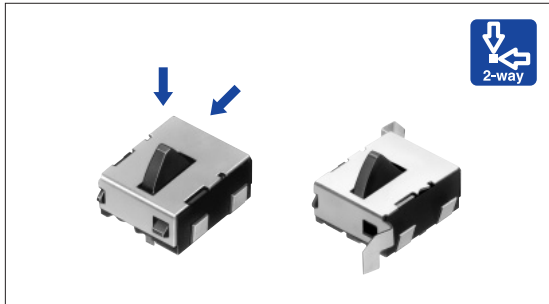


Detector Switch Compact Two-way Operation Type

SPVM Series



3.5×2.8×height 1.5mm compact detector switch detects from both vertical and horizontal direction.



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		0.4N max.
Operating life	Without load	50,000cycles
	With load	50,000cycles (1mA 5V DC)

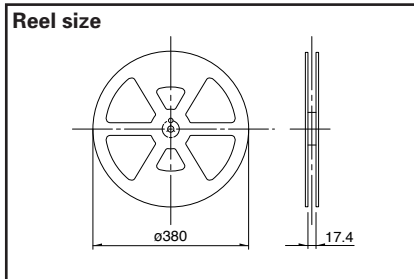
Product Line

Poles	Positions	Terminal type	Housing	Location lug	Minimum order unit (pcs)	Product No.	Drawing No.
1	1	For PC board (Reflow)	Without terminal	With	12,000	SPVM110100	1
				Without		SPVM110200	
			With terminal	With		SPVM210100	2
				Without		SPVM210200	

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		
3,000	6,000	12,000	16	417×409×139

Notes

- When applying the soldered frame terminals as earth terminals, place No.3 and No.4 terminals on the same ground.
- Please place purchase orders per minimum order unit N (integer).

Detector

Push

Slide

Rotary

Encoders

Power

Dual-in-line
Package Type

TACT Switch™


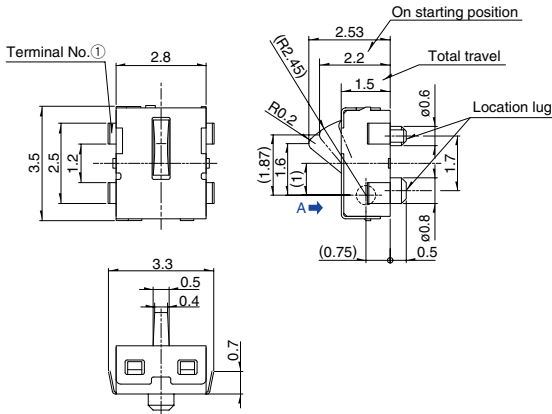
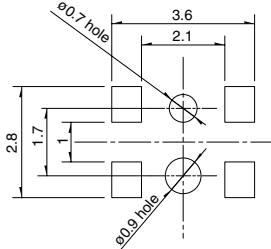
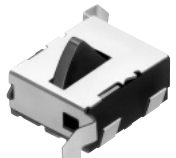
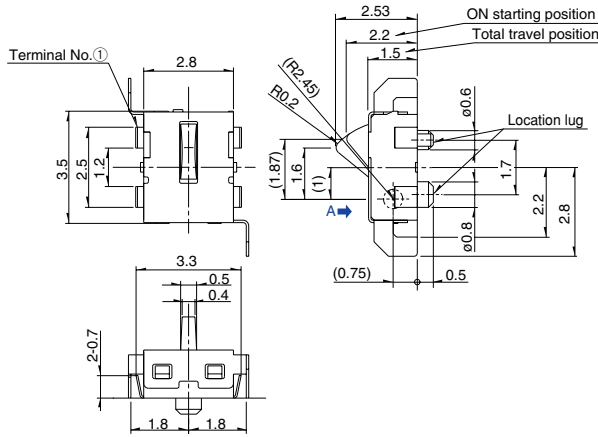
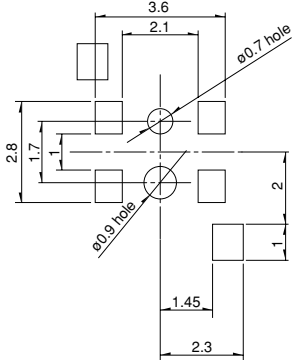
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Products



Automotive
Use

Dimensions

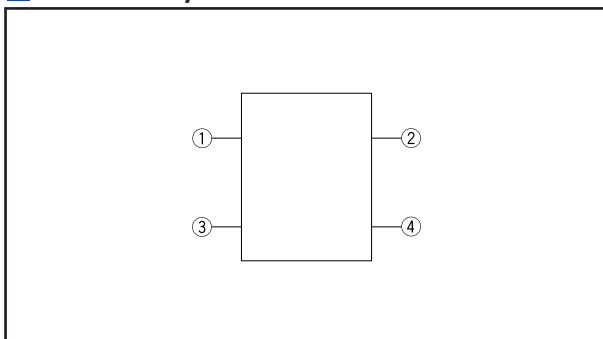
Unit:mm

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

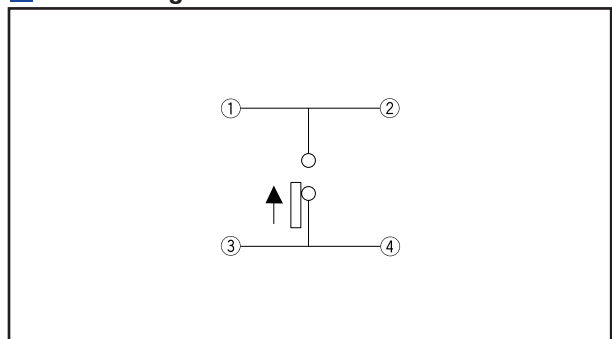
Note

Above dimensions indicate "with location lug" versions.

Terminal Layout (Viewed from Direction A)



Circuit Diagram



Detector

Push

Slide

Rotary

Encoders

Power

Dual-in-line
Package Type















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Automotive
Use

List of Varieties (General-purpose Type)

Series	General-purpose Type							
	SPPB	SPVE	SPPW8	SPVM	SPVR	SPVF	SSCU	
Photo								
Operation type								
Operating temperature range	-40°C to +85°C	-10°C to +60°C		-40°C to +85°C		-10°C to +60°C	-40°C to +85°C	
Automotive use	●	—	—	●	●	—	●	
Rating (max.) (Resistive load)	0.1A 30V DC			1mA 5V DC			0.1A 12V 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	1Ω max.	500mΩ max.	1Ω max.	2Ω max.	3Ω max.	500mΩ max.	70mΩ max.
	Insulation resistance	100MΩ min. 100V DC						100MΩ min. 250V DC
	Voltage proof	100V AC for 1 minute						250V AC for 1 minute
Mechanical performance	Terminal strength	3N for 1 minute	0.5N for 1 minute	3N for 1 minute	1N for 1 minute	0.5N for 1 minute	3N for 30s	3N for 1 minute
	Actuator strength	10N	5N	10N	5N	2N	1N	5N
Durability	Operating life without Load	50,000cycles 2Ω max.	50,000cycles 1Ω max.	100,000cycles 2Ω max.	50,000cycles 5Ω max.		100,000cycles 1Ω max.	10,000cycles 100mΩ max.
	Operating life with Load	(0.1A 30V DC) 50,000cycles 2Ω max.	(0.1A 30V DC) 50,000cycles 1Ω max.	(0.1A 30V DC) 100,000cycles 2Ω max.	(1mA 5V DC) 50,000cycles 5Ω max.		(1mA 5V DC) 100,000cycles 1Ω max.	(0.1A 12V DC) 10,000cycles 100mΩ max.
Environmental performance	Cold	-40±2°C for 500h	-20±2°C for 96h		-40±2°C for 500h		-40±2°C for 96h	-40±2°C for 500h
	Dry heat	85±2°C for 500h	85±2°C for 96h		85±2°C for 500h		85±2°C for 96h	85±2°C for 500h
	Damp heat	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		40±2°C, 90 to 95%RH for 96h	60±2°C, 90 to 95%RH for 500h
Dimensions (mm)	W	6.3	3.4	5	2.8	3.6	9	11
	D	3		4	3.5	4.2	3.5	5.8
	H	4.9	2.3		1.5	1.2	4.5	7
Soldering	Manual soldering	300±5°C, 5s max.	350±5°C, 3s max.				300±10°C, 3 ⁺¹ ₋₀ s	350±5°C, 3s max.
	Dip soldering	255±5°C, 5±1s	—	255±5°C, 5±1s	—		245±5°C, 5±1s	—
	Reflow soldering	Please see P.102						—
Number of poles	1					1.2	1	
Operation force	0.35N max.	0.3N max.		0.4N max.	0.35N max.	0.3N max.	0.5N max.	
Page	44	50	52	54	56	57	60	

Detector

Push

Slide

Rotary

Encoders

Power

Dual-in-line Package Type

TACT Switch™

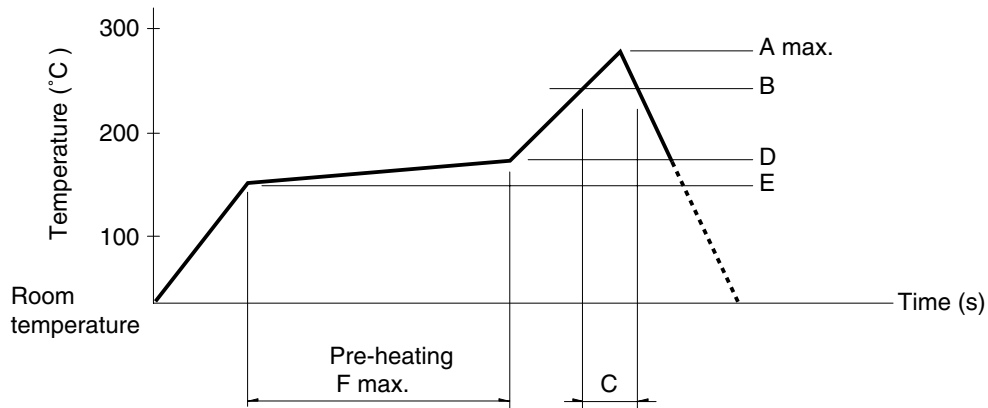
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- Detector Switches Soldering Conditions102
- Detector Switches Cautions103

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



Detector

Push

Slide

Rotary

Encoders

Power

Dual-in-line
Package Type

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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.