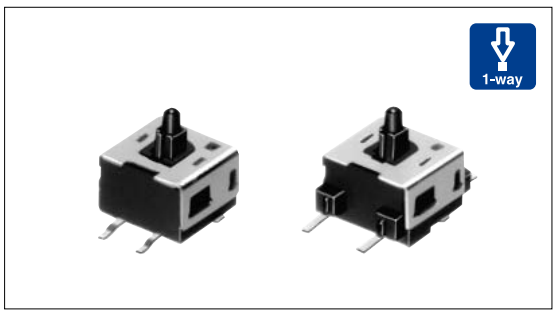
Detector Switch
Compact One-way Operation Type
SPVE Series

RoHS compliant

Applicable for use in compact digital devices. One of the smallest detector switches in the industry with a size of 3.4×3.0mm.



Typical Specifications

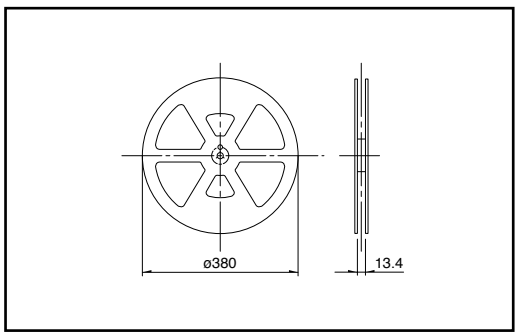
Items		Specifications
Rating (max.)/(min.) (Resistive load)		0.1A 30V DC/50μA 3V DC
Contact resistance (Initial /After operating life)		500mΩ max./1Ω max.
Operating force		0.3N max.
Operating life	Without load	50,000cycles
	With load	50,000cycles (0.1A 30V DC)

Product Line

Poles	Positions	Terminal type	Slider height (mm)	ON start position (mm)	Total travel (mm)	Mounting method	Location lug	Minimum order unit (pcs)	Product No.	Drawing No.
1	1	For PC board (Reflow)	h=3.8	h_1=3.5	h_2=2.5	Standard	Without	22,400	SPVE110100	1
							With		SPVE110600	
			h=4.1	h_1=3.8	h_2=2.9		Without		SPVE110401	
							With		SPVE110801	
			h=4.8	h_1=4.5	h_2=3.6		Without	17,600	SPVE110200	
							With		SPVE110900	
			h=5.2	h_1=4.9	h_2=4.0			16,000	SPVE111300	
			h=5.5	h_1=5.2	h_2=4.3				SPVE111200	
			3.3	3.0	2.0	Low-profile	——	22,400	SPVE210100	2

Taping Specifications (Taping Packaging)

Reel Size Unit:mm



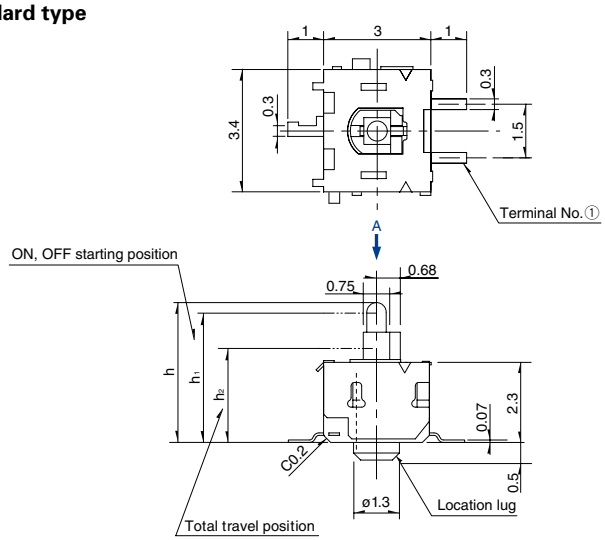
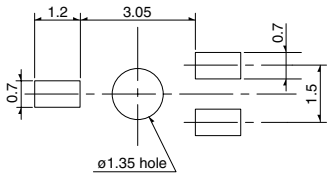
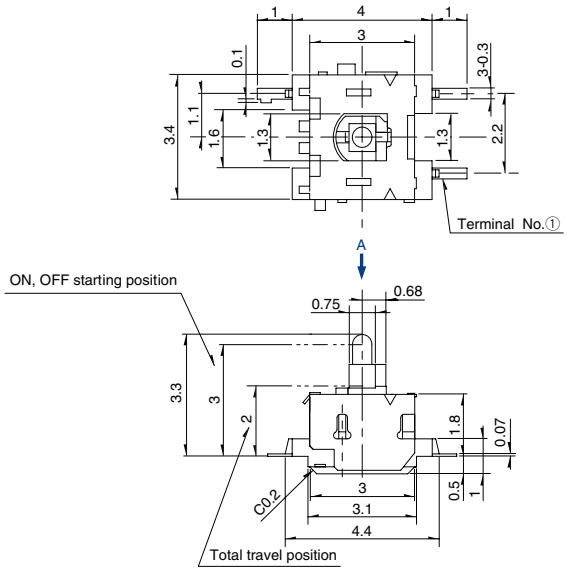
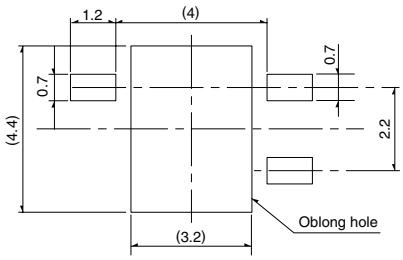
Series		Number of packages (pcs.) 1 reel	1 case /Japan	1 case /export packing	Tape width (mm)
Standard	h=3.8	2,800	5,600	22,400	12
	h=4.1				
	h=4.8	2,200	4,400	17,600	
	h=5.2	2,000	4,000	16,000	
	h=5.5				
Low-profile	h=3.3	2,800	5,600	22,400	

Notes

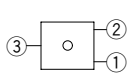
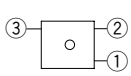
1. Standard type dimensions indicate "with location lug" version.
2. Products other than those listed in the above chart are also available. Please contact us for details.
3. Please place purchase orders per minimum order unit (integer).

Dimensions

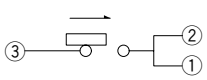
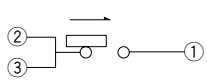
Unit:mm

No.	Style	PC board mounting hole and land dimensions (Viwewd from direction A)
1	**Standard type** 	**Reflow pattem** 
2	**Low-profile type** 	

Terminal Layout (Viewed from Direction A)

Standard type	Low-profile type
	

Circuit Diagram

Standard type	Low-profile type
	

List of Varieties (General-purpose Type)

Series			General-purpose Type							
			SPPB	SPVE	SPPW8	SPVM	SPVR	SPVF	SSCU	SSCT
Photo										
Operation type			1-way / 2-way	1-way	1-way	2-way	2-way	2-way	2-way	2-way
Operating temperature range			-40℃ to +85℃	-10℃ to +60℃		-40℃ to +85℃		-10℃ to +60℃	-40℃ to +85℃	
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.	20mΩ 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	10N
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.	10,000cycles 40mΩ 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 150mΩ max.	(0.1A 12V DC) 10,000cycles 60mΩ max.
Environmental performance	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							
Dimensions (mm)		W	6.3	3.4	5	2.8	3.6	9	11	12.5
		D	3		4	3.5	4.2	3.5	5.8	5
		H	4.9	2.3		1.5	1.2	4.5	7	11.5
Soldering	Manual soldering		300±5℃, 5s max.	350±5℃, 3s max.				300±10℃, 3^{+1}_{0}s	350±5℃, 3s max.	
	Dip soldering		260±5℃, 5±1s	—	255±5℃, 5±1s	—		245±5℃, 5±1s	—	260±5℃, 5±1s
	Reflow soldering		Please see P.79					—		
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.	0.7±0.3N
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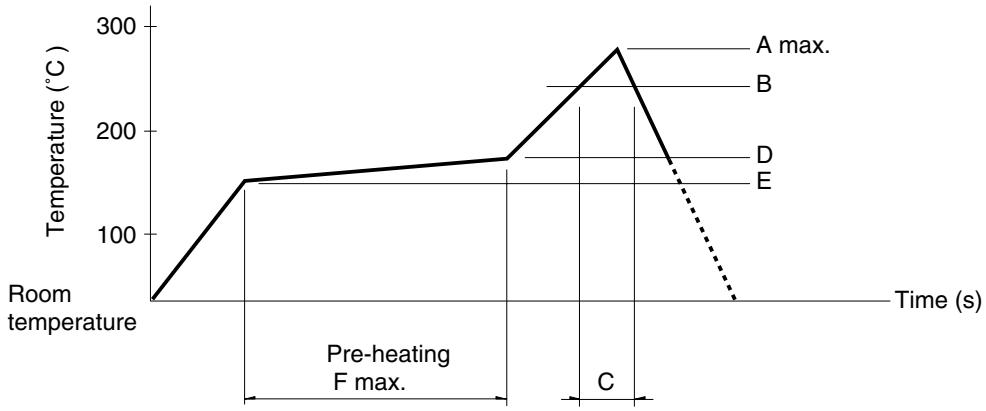
Soldering Conditions

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	180	150	120
SPPW8		200	20			
SPVE	260	230	40			
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.