

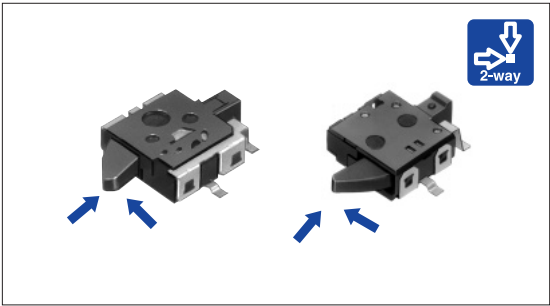
Detector Switch

2mm-thick Two-way Operation Type

SPVG Series



A surface mountable two-way operation detector switch with 2mm height.



Typical Specifications

Items		Specifications
Rating (max.) / (min.) (Resistive load)		50mA 20V DC/100μA 3V DC
Contact resistance (Initial /After operating life)		500mΩ max./1 Ω max.
Operating force		0.4N max.
Operating life	Without load	100,000cycles
	With load	100,000cycles (50mA 20V DC)

Detector

Push

Slide

Rotary

Encoders

Power

Dual-in-line
Package Type

TACT Switch™

Custom-
Products

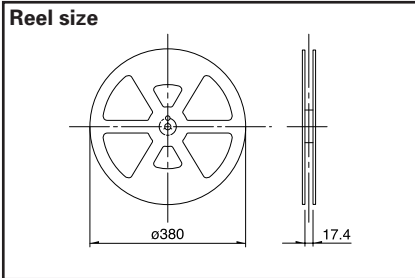
Product Line

Poles	Positions	Terminal type	Lever length	Operating direction	Location lug	Side terminal	Minimum order unit (pcs)	Product No.	Drawing No.
1	1	For PC board (Reflow)	Standard	Right	With	With both sides.	10,000	SPVG110301	1
						With a right side.		SPVG111500	2
					Without	With a left side.		SPVG111400	3
						Without		SPVG120302	4
				Left	With	With both sides.		SPVG130200	1
						With a right side.		SPVG210302	5
					Without	With a left side.		SPVG211200	6
						Without		SPVG211300	7
			Short	Right	With	With both sides.		SPVG220300	8
						Without		SPVG230200	5
					Without	With both sides.		SPVG310300	9
						Without		SPVG320200	10
				Left	With	With both sides.		SPVG330200	9
						Without		SPVG410300	11
					Without	With both sides.		SPVG420200	12
						Without		SPVG430200	11

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		
2,500	5,000	10,000	16	417×409×139

Note

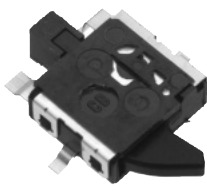
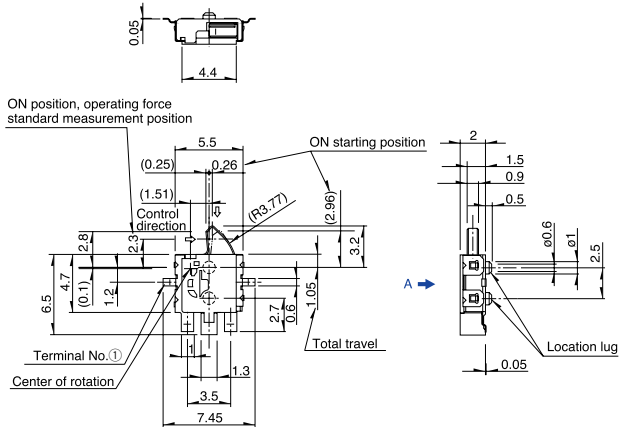
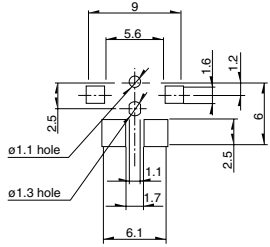
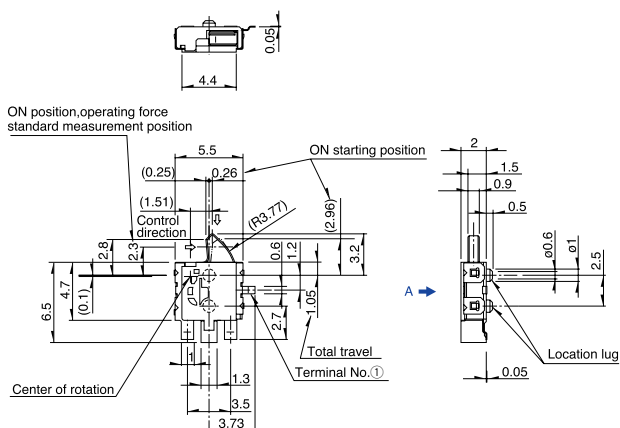
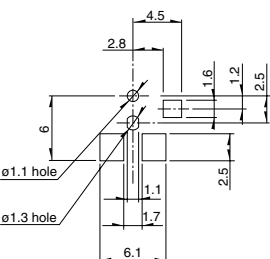
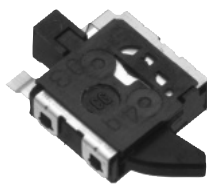
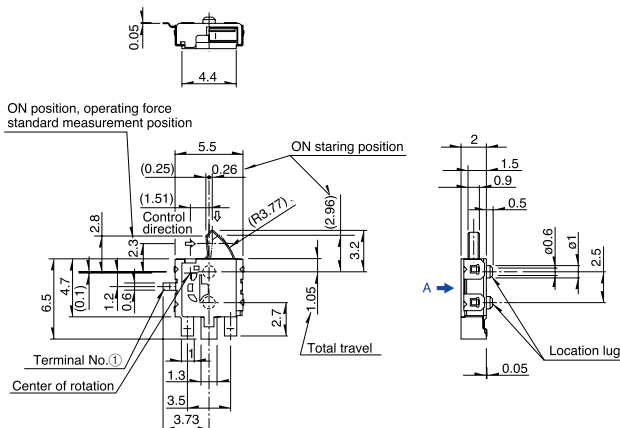
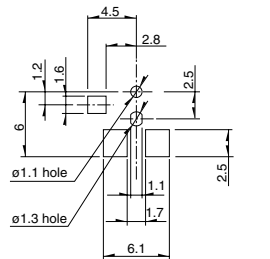
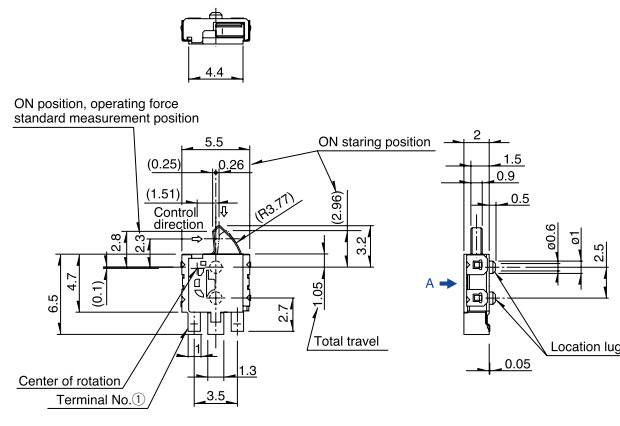
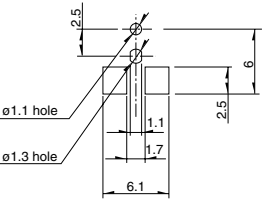
Please place purchase orders per minimum order unit N (integer).



Automotive
Use

Dimensions

Unit:mm

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

Detector

Push

Slide

Rotary

Encoders

Power

Dual-in-line
Package Type

TACT Switch™

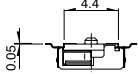
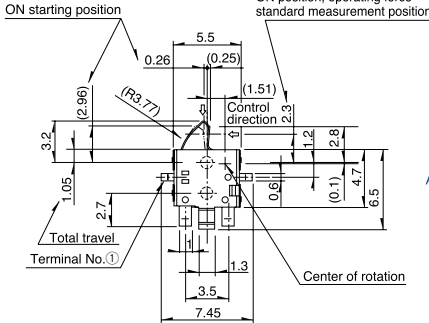
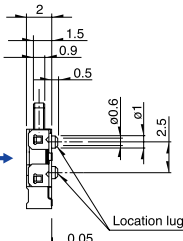
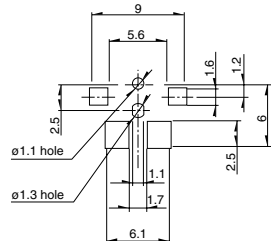
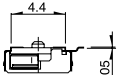
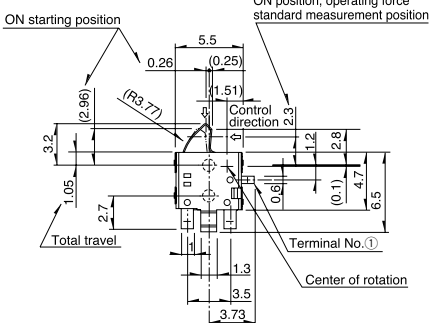
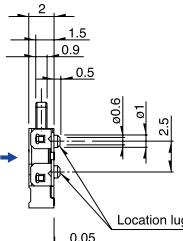
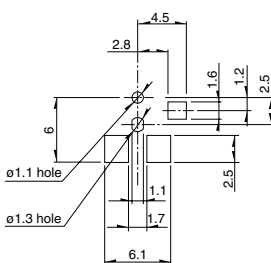
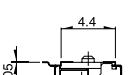
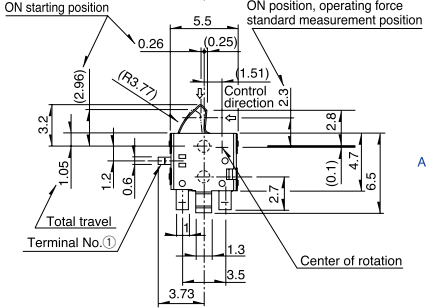
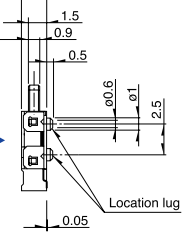
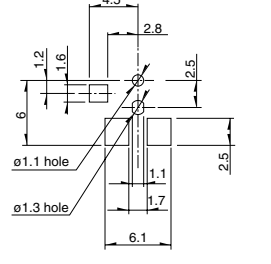
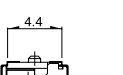
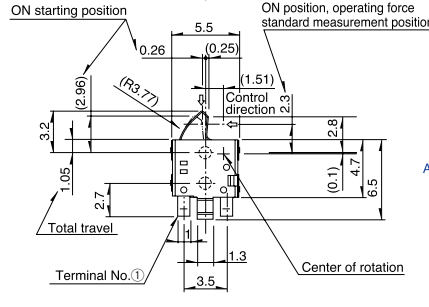
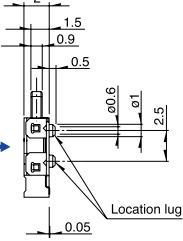
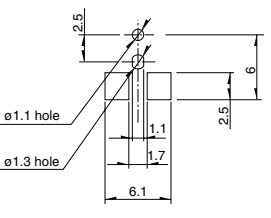
Custom-
Products



Automotive
Use

Dimensions

Unit:mm

No.	Photo	Style	PC board mounting hole and land dimensions (Viewed from direction A)
5		  	
6		  	
7		  	
8		  	

Detector

Push

Slide

Rotary

Encoders

Power

Dual-in-line
Package Type

TACT Switch™

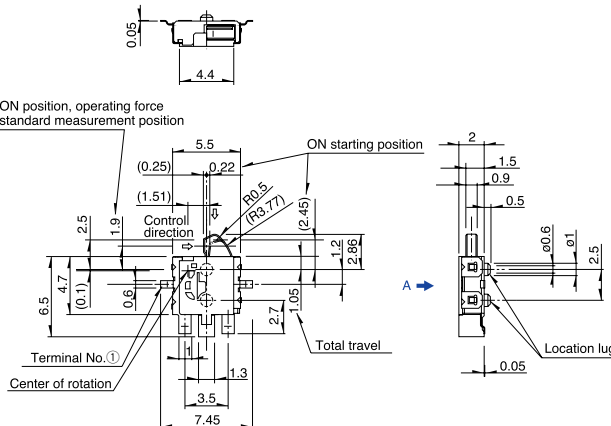
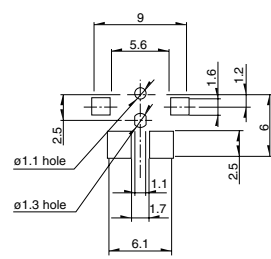
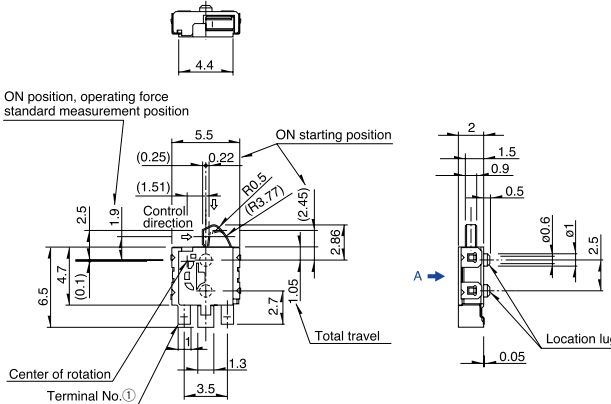
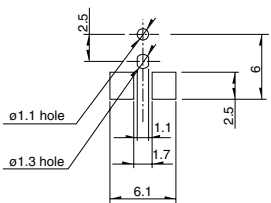
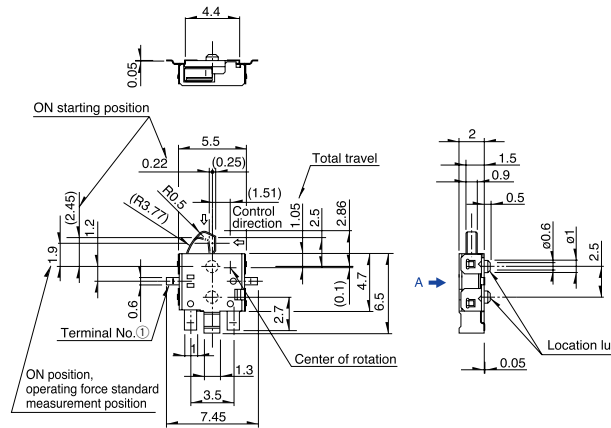
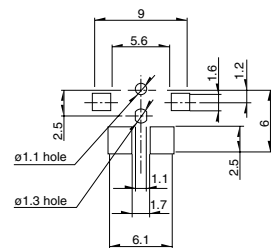
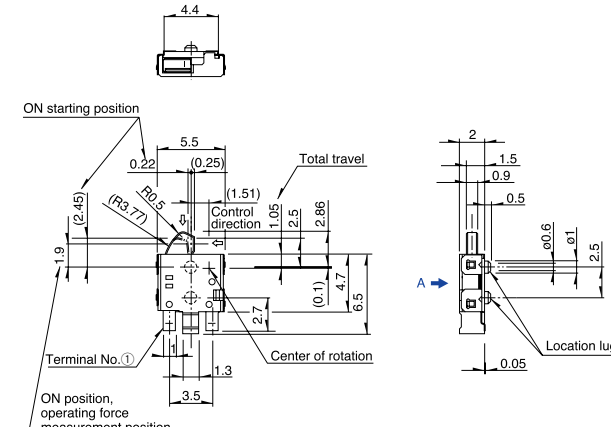
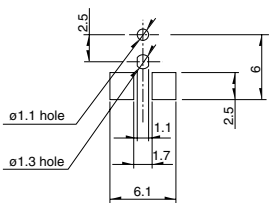
Custom-
Products



Automotive
Use

Dimensions

Unit:mm

No.	Photo	Style	PC board mounting hole and land dimensions (Viewed from direction A)
9		 ON position, operating force standard measurement position ON starting position Control direction Terminal No.① Center of rotation Total travel Location lug	 PC board mounting hole and land dimensions (Viewed from direction A)
10		 ON position, operating force standard measurement position ON starting position Control direction Terminal No.① Center of rotation Total travel Location lug	 PC board mounting hole and land dimensions (Viewed from direction A)
11		 ON starting position ON position, operating force standard measurement position Control direction Terminal No.① Center of rotation Total travel Location lug	 PC board mounting hole and land dimensions (Viewed from direction A)
12		 ON starting position ON position, operating force measurement position Control direction Terminal No.① Center of rotation Total travel Location lug	 PC board mounting hole and land dimensions (Viewed from direction A)

Note

Above dimensions indicate "with location lug" versions.

Detector

Push

Slide

Rotary

Encoders

Power

Dual-in-line
Package Type

TACT Switch™

Custom-
Products



Terminal Layout (Viewed from Direction A)

Drawing No. : 1, 5, 9, 11	Drawing No. : 2, 6
Drawing No. : 3, 7	Drawing No. : 4, 8, 10, 12

Circuit Diagram

Drawing No. : 1, 5, 9, 11	Drawing No. : 2, 3, 6, 7
Drawing No. : 4, 8, 10, 12	

List of Varieties (General-purpose Type / Water-proof Type / Telephone-hook Type)

Series		General-purpose Type					Water-proof Type		
		SPVT	SPVG	SPVL	SSCW	SPVQ5	SPVQ1	SPVQ3	
Photo									
Operation type							 	 	
Operating temperature range		-40℃ to +85℃							
Automotive use									
Rating (max.) (Resistive load)		1mA 5V DC	50mA 20V DC	1mA 5V DC	0.1A 12V DC				
Rating (min.) (Resistive load)		100μA 3V DC		50μA 3V DC	100μA 3V DC	50μA 3V DC		50μA 3V DC or 1mA 5V DC	
Electrical performance	Initial contact resistance	2Ω max.	500mΩ max.	2Ω max.	500mΩ max.				
	Insulation resistance	100MΩ min. 100V DC			100MΩ min. 250V DC	100MΩ min. 500V DC			
	Voltage proof	100V AC for 1 minute			250V AC for 1 minute	500V AC for 1 minute			
Mechanical performance	Terminal strength	0.5N for 1 minute		1N for 1 minute	—————		3N for 1 minute Wire strength 30N for 1minute		
	Actuator strength	10N		5N	20N				
Durability	Operating life without Load	100,000cycles 5Ω max.	100,000cycles 1Ω max.	50,000cycles 5Ω max.	100,000cycles 1Ω max.	300,000cycles 1Ω max.		300,000cycles or 1,200,000cycles 1Ω max.	
	Operating life with Load	(1mA 5V DC) 100,000cycles 5Ω max.	(50mA 20V DC) 100,000cycles 1Ω max.	(1mA 5V DC) 50,000cycles 5Ω max.	(0.1A 12V DC) 100,000cycles 1Ω max.	(0.1A 12V DC) 300,000cycles 1Ω max.		(0.1A 12V DC) 300,000cycles or 1,200,000 1Ω max.	
Environmental performance	Cold	-40±2℃ for 96h	-40±2℃ for 500h						
	Dry heat	85±2℃ for 96h	85±2℃ for 500h						
	Damp heat	40±2℃, 90 to 95%RH for 96h	60±2℃, 90 to 95%RH for 500h						
Dimensions (mm)		W	5.6	5.5	5.55	13.1	13.8	13.3	13
		D	6.5	6.5	6.6	11.35		5.8	
		H	1.9	2	1	5.3	5.8	8	8.35
Soldering	Manual soldering	350±5℃, 3s max.			—————		300±10℃, 3 ⁺¹ ₀ s		
	Dip soldering	—————					260±5℃, 5±1s		
	Reflow soldering	Please see P.102			—————				
Number of poles		1							
Operation force		0.4N max.		0.35N max.	1N max.	2N max.	2N max. 5.9N max.	3N max.	
Page		71	74	79	80	81	82	86	

Detector

Push

Slide

Rotary

Encoders

Power

Dual-in-line
Package Type

TACT Switch™

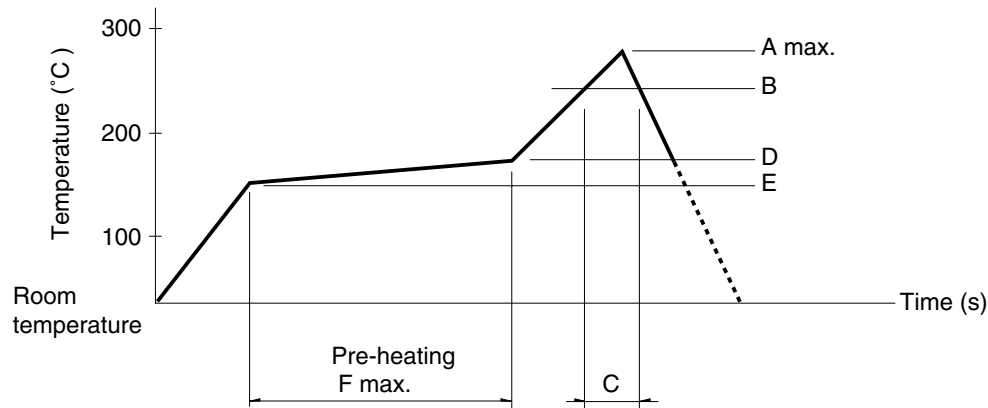
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Products

- 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

TACT Switch™

Custom-
Products

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						
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.