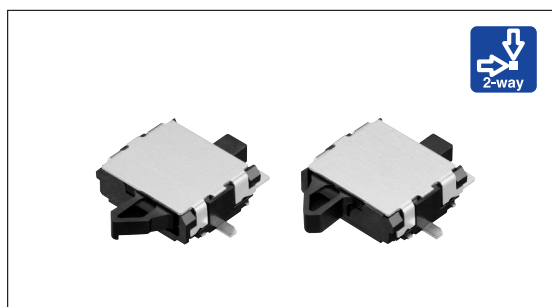


Detector Switch 1.9mm-Thick Two-way Operation Type

SPVT Series

Surface mount type, two-way detection with body thickness of 1.9mm



Typical Specifications

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

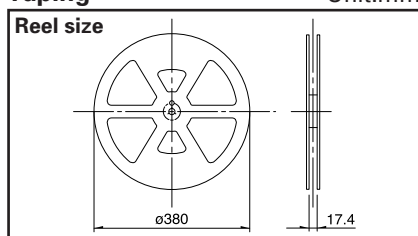
Product Line

Poles	Positions	Terminal type	Operating direction	Location lug	Side terminal	Minimum order unit (pcs)	Product No.	Drawing No.
1	1	For PC board (Reflow)	Right	With	With both sides.	10,000	SPVT110102	1
					With a right side.		SPVT130101	2
					With a left side.		SPVT120101	3
					Without		SPVT140101	4
				Without	With both sides.		SPVT110201	1
					With a right side.		SPVT130201	2
					With a left side.		SPVT120201	3
					Without		SPVT210101	5
			Left	With	With both sides.		SPVT230101	6
					With a right side.		SPVT220102	7
					With a left side.		SPVT240101	8
				Without	Without		SPVT210201	5
					With both sides.		SPVT230201	6
					With a right side.		SPVT220201	7

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).

Detector

Push

Slide

Rotary

Encoders

Power

Dual-in-line
Package Type

TACT Switch™

Custom-
Products



Automotive
Use

Detector Switch 1.9mm-Thick Two-way Operation Type | SPVT Series

Dimensions

Unit:mm

No.	Style	PC board mounting hole and land dimensions (Viewed from direction A)
<p>Detector</p> <p>Push</p> <p>Slide</p> <p>Rotary</p> <p>Encoders</p> <p>Power</p> <p>Dual-in-line Package Type</p>	<p>On starting position (horizontal direction), operating force measurement position</p> <p>On Starting position (horizontal direction)</p> <p>On starting position (vertical direction)</p> <p>Center of rotation</p> <p>Total travel</p> <p>Dimensions: 6.5, 4.7, 1.2, 2.8 (0.1), 0.26, 1.51, 2.3, 3.2, 1.05, 5.2 (2.94), 1.3, 7.45, 3.5, 2.06, 1, 1.9, 1.7, 1.2, 0.5, 1.1, 2.5, 1.9, 1.7, 1.2, 0.5, 1.1, 2.5, 1.9, 1.7, 1.2, 0.5, 1.1, 2.5</p>	<p>Dimensions: 2.5, 1.6, 4.5, 2.8, 1.2, 6.1, 1.1, 2.5, 6, 2.5, 1.7, 1.1, 2.5, 6.1, 1.1, 2.5, 2.5, 1.6, 4.5, 2.8, 1.2, 6.1, 1.1, 2.5, 6, 2.5, 1.7, 1.1, 2.5</p> <p>Mounting holes: $\phi 1.1$ hole, $\phi 1.3$ hole</p>
<p>TACT Switch™</p> <p>Custom-Products</p>	<p>On starting position (horizontal direction), operating force measurement position</p> <p>On Starting position (horizontal direction)</p> <p>On starting position (vertical direction)</p> <p>Center of rotation</p> <p>Total travel</p> <p>Dimensions: 6.5, 4.7, 1.2, 2.8 (0.1), 0.26, 1.51, 2.3, 3.2, 1.05, 5.2 (2.94), 1.3, 3.73, 3.5, 2.06, 1, 1.9, 1.7, 1.2, 0.5, 1.1, 2.5, 1.9, 1.7, 1.2, 0.5, 1.1, 2.5, 1.9, 1.7, 1.2, 0.5, 1.1, 2.5</p>	<p>Dimensions: 2.5, 1.6, 4.5, 2.8, 1.2, 6.1, 1.1, 2.5, 6, 2.5, 1.7, 1.1, 2.5, 6.1, 1.1, 2.5, 2.5, 1.6, 4.5, 2.8, 1.2, 6.1, 1.1, 2.5, 6, 2.5, 1.7, 1.1, 2.5</p> <p>Mounting holes: $\phi 1.1$ hole, $\phi 1.3$ hole</p>
<p>Automotive Use</p>	<p>On starting position (horizontal direction), operating force measurement position</p> <p>On Starting position (horizontal direction)</p> <p>On starting position (vertical direction)</p> <p>Center of rotation</p> <p>Total travel</p> <p>Dimensions: 6.5, 4.7, 1.2, 2.8 (0.1), 0.26, 1.51, 2.3, 3.2, 1.05, 5.2 (2.94), 1.3, 3.73, 3.5, 2.06, 1, 1.9, 1.7, 1.2, 0.5, 1.1, 2.5, 1.9, 1.7, 1.2, 0.5, 1.1, 2.5, 1.9, 1.7, 1.2, 0.5, 1.1, 2.5</p>	<p>Dimensions: 2.5, 1.6, 4.5, 2.8, 1.2, 6.1, 1.1, 2.5, 6, 2.5, 1.7, 1.1, 2.5, 6.1, 1.1, 2.5, 2.5, 1.6, 4.5, 2.8, 1.2, 6.1, 1.1, 2.5, 6, 2.5, 1.7, 1.1, 2.5</p> <p>Mounting holes: $\phi 1.1$ hole, $\phi 1.3$ hole</p>
	<p>On starting position (horizontal direction), operating force measurement position</p> <p>On Starting position (horizontal direction)</p> <p>On starting position (vertical direction)</p> <p>Center of rotation</p> <p>Total travel</p> <p>Dimensions: 6.5, 4.7, 1.2, 2.8 (0.1), 0.26, 1.51, 2.3, 3.2, 1.05, 5.2 (2.94), 1.3, 3.73, 3.5, 2.06, 1, 1.9, 1.7, 1.2, 0.5, 1.1, 2.5, 1.9, 1.7, 1.2, 0.5, 1.1, 2.5, 1.9, 1.7, 1.2, 0.5, 1.1, 2.5</p>	<p>Dimensions: 2.5, 1.6, 4.5, 2.8, 1.2, 6.1, 1.1, 2.5, 6, 2.5, 1.7, 1.1, 2.5, 6.1, 1.1, 2.5, 2.5, 1.6, 4.5, 2.8, 1.2, 6.1, 1.1, 2.5, 6, 2.5, 1.7, 1.1, 2.5</p> <p>Mounting holes: $\phi 1.1$ hole, $\phi 1.3$ hole</p>

Detector

Push

Slide

Rotary

Encoders

Power

Dual-in-line
 Package Type

TACT Switch™

Custom-
 Products



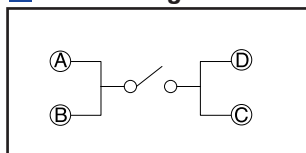
Automotive
 Use

Dimensions

Unit:mm

No.	Style	PC board mounting hole and land dimensions (Viewed from direction A)
5	<p>On starting position (horizontal direction), operating force measurement position</p> <p>On starting position (vertical direction)</p> <p>On Starting position (horizontal direction)</p> <p>0.26</p> <p>1.9</p> <p>1.7</p> <p>1.2</p> <p>0.5</p> <p>3.2</p> <p>5.2</p> <p>(2.94)</p> <p>2.3</p> <p>1.05</p> <p>(0.1)</p> <p>2.0</p> <p>2.8</p> <p>1.2</p> <p>4.7</p> <p>6.5</p> <p>1</p> <p>3.5</p> <p>5.6</p> <p>7.45</p> <p>1.3</p> <p>Center of rotation</p> <p>Total travel</p> <p>1.9</p> <p>1.7</p> <p>1.2</p> <p>0.5</p> <p>1</p> <p>2.5</p> <p>2.5</p> <p>9</p> <p>5.6</p> <p>1.9</p> <p>1.2</p> <p>6</p> <p>2.5</p> <p>6</p> <p>6.1</p> <p>1.1</p> <p>1.7</p> <p>2.5</p> <p>2.5</p> <p>ø1.1hole</p> <p>ø1.3hole</p>	
6	<p>On starting position (horizontal direction), operating force measurement position</p> <p>On starting position (vertical direction)</p> <p>On Starting position (horizontal direction)</p> <p>0.26</p> <p>1.9</p> <p>1.7</p> <p>1.2</p> <p>0.5</p> <p>3.2</p> <p>5.2</p> <p>(2.94)</p> <p>2.3</p> <p>1.05</p> <p>(0.1)</p> <p>0.6</p> <p>2.8</p> <p>1.2</p> <p>4.7</p> <p>6.5</p> <p>1</p> <p>3.5</p> <p>5.6</p> <p>3.73</p> <p>1.3</p> <p>Center of rotation</p> <p>Total travel</p> <p>1.9</p> <p>1.7</p> <p>1.2</p> <p>0.5</p> <p>1</p> <p>2.5</p> <p>2.5</p> <p>4.5</p> <p>2.8</p> <p>1.6</p> <p>1.2</p> <p>6</p> <p>2.5</p> <p>6</p> <p>6.1</p> <p>1.1</p> <p>1.7</p> <p>2.5</p> <p>2.5</p> <p>ø1.1hole</p> <p>ø1.3hole</p>	
7	<p>On starting position (horizontal direction), operating force measurement position</p> <p>On starting position (vertical direction)</p> <p>On Starting position (horizontal direction)</p> <p>0.26</p> <p>1.9</p> <p>1.7</p> <p>1.2</p> <p>0.5</p> <p>3.2</p> <p>5.2</p> <p>(2.94)</p> <p>2.3</p> <p>1.05</p> <p>(0.1)</p> <p>0.6</p> <p>2.8</p> <p>1.2</p> <p>4.7</p> <p>6.5</p> <p>1</p> <p>3.5</p> <p>5.6</p> <p>3.73</p> <p>1.3</p> <p>Center of rotation</p> <p>Total travel</p> <p>1.9</p> <p>1.7</p> <p>1.2</p> <p>0.5</p> <p>1</p> <p>2.5</p> <p>2.5</p> <p>4.5</p> <p>2.8</p> <p>1.6</p> <p>1.2</p> <p>6</p> <p>2.5</p> <p>6</p> <p>6.1</p> <p>1.1</p> <p>1.7</p> <p>2.5</p> <p>2.5</p> <p>ø1.1hole</p> <p>ø1.3hole</p>	
8	<p>On starting position (horizontal direction), operating force measurement position</p> <p>On starting position (vertical direction)</p> <p>On Starting position (horizontal direction)</p> <p>0.26</p> <p>1.9</p> <p>1.7</p> <p>1.2</p> <p>0.5</p> <p>3.2</p> <p>5.2</p> <p>(2.94)</p> <p>2.3</p> <p>1.05</p> <p>(0.1)</p> <p>2.8</p> <p>1.2</p> <p>4.7</p> <p>6.5</p> <p>1</p> <p>3.5</p> <p>5.6</p> <p>1.3</p> <p>Center of rotation</p> <p>Total travel</p> <p>1.9</p> <p>1.7</p> <p>1.2</p> <p>0.5</p> <p>1</p> <p>2.5</p> <p>2.5</p> <p>2.5</p> <p>6</p> <p>6.1</p> <p>1.1</p> <p>1.7</p> <p>2.5</p> <p>2.5</p> <p>ø1.1hole</p> <p>ø1.3hole</p>	

Circuit Diagram



Note

Above dimensions indicate "with location lug" versions.

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

- Detector
- Push
- Slide
- Rotary
- Encoders
- Power
- Dual-in-line Package Type
- TACT Switch™
- Custom-Products

Series	General-purpose Type				Water-proof Type			
	SPVT	SPVL	SSCW	SPVQ5	SPVQ1	SPVQ3	SPVQ4H	
Photo								
Operation type					 			
Operating temperature range	-40°C to +85°C							
Automotive use	●	●	●	●	●	●	●	
Rating (max.) (Resistive load)	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 5V DC or 1mA 5V DC	1mA 5V DC	
Electrical performance	Initial contact resistance	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 1 minute Applicable to product with wire	Wire strength 30N for 1 minute	
	Actuator strength	10N	5N	20N				
Durability	Operating life without Load	100,000cycles 1Ω max.	50,000cycles 5Ω max.	100,000cycles 1Ω max.	300,000cycles 1Ω max.		300,000cycles 1Ω max.	
	Operating life with Load	(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 1Ω max.	
Environmental performance	Cold	-40±2°C for 500h						
	Dry heat	85±2°C for 500h						
	Damp heat	40±2°C, 90 to 95%RH for 500h	60±2°C, 90 to 95%RH for 500h					
Dimensions (mm)	W	5.6	5.55	13.1	13.8	13.3	13	19
	D	6.5	6.6	11.35		5.8		6
	H	1.9	1	5.3	5.8	8	8.35	11.9
Soldering	Manual soldering	350±5°C, 3s max.			—————		300±10°C, 3 ⁺ 1s	
	Dip soldering	—————			—————		260±5°C, 5±1s	
	Reflow soldering	Please see P.97			—————			
Number of poles	1							
Operation force	0.4N max.	0.35N max.	1N max.	2N max.	2N max. 5.9N max.	3N max.		
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- Detector Switches Cautions98

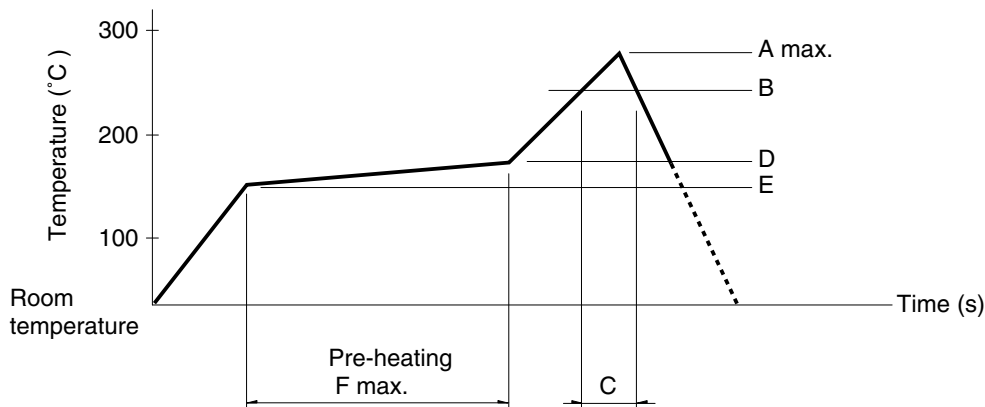
Note

●marks in "Available for automotive use" indicate that all of the series products can work at the operating temperature range from -40°C to +85°C.

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									
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, surface 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.

- Detector
- Push
- Slide
- Rotary
- Encoders
- Power
- Dual-in-line Package Type
- TACT Switch™
- Custom-Products