

# Detector Switch General-purpose Type

SPPB Series



A wide variety of detector switches available for various devices.

## Detector

Push

Slide

Rotary

Encoders

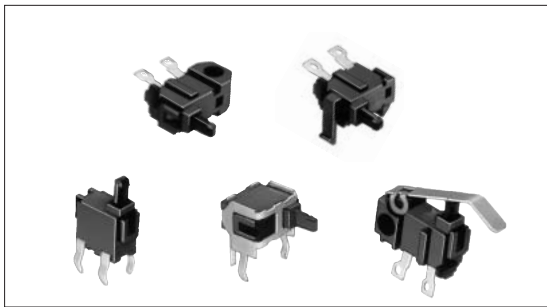
Power

Dual-in-line  
Package Type

Multi Control  
Devices

TACT Switch™

Custom-  
Products



## Features

- Compact detector switch with smooth switching action (0.35N max.) and long life.
- Available in a wide variety of mounting methods, operating methods, etc.
- Reflow solderable type also available (SPPB53, SPPB63, SPPB64).
- Reflow solderable type can be packaged and delivered in carrier taping.

## Applications

- For detecting the insertion of media, including DVD players, CD-ROMs and FDDs
- For detection mechanisms in mini component stereos, CD players, car audio systems, and laser printer
- For main body detection of the charger of mobile phone and digital still cameras

## Typical Specifications

Items		Specifications
Rating (max.) / (min.) (Resistive load)		0.1A 30V DC / 50μA 3V DC
Contact resistance (Initial performance / After lifetime)		1Ω max. / 2Ω max.
Operating force		0.35N max.
Operating life	Without load	50,000 cycles
	With load	50,000 cycles (0.1A 30V DC)


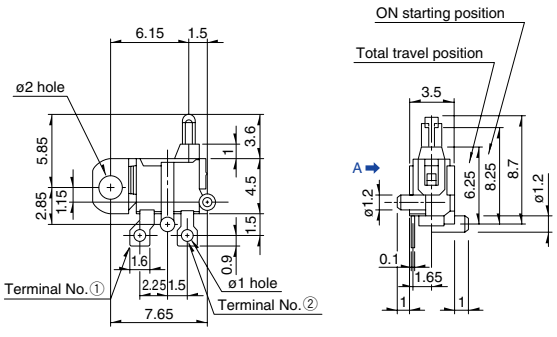
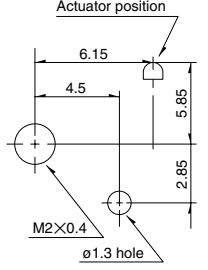

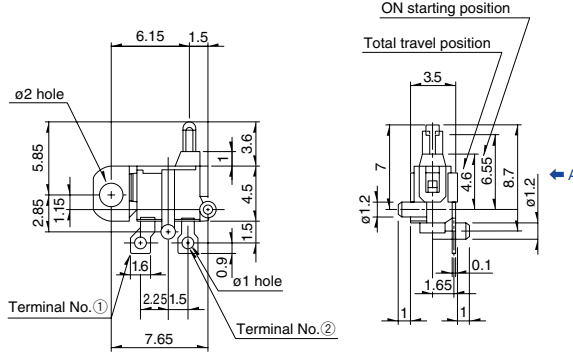
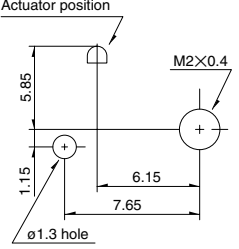

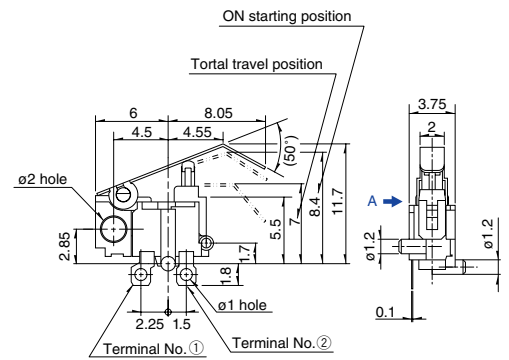
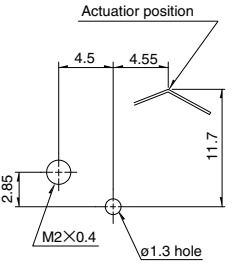
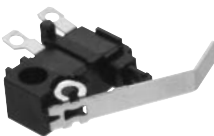
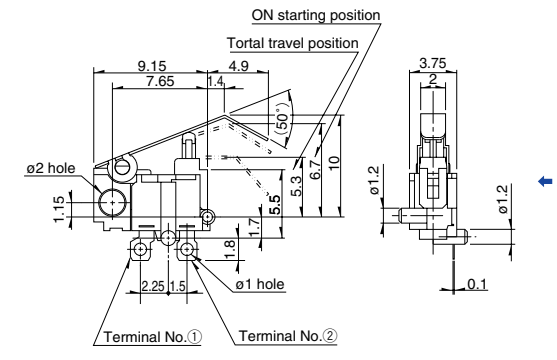
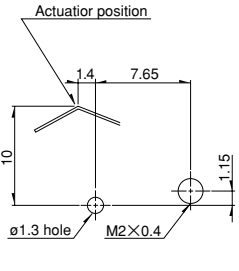
## Products Line

Poles	Positions	Operation mode	Operating direction	Terminal style	Packaging style	Products No.	Drawing No.
1	1	Push	Horizontal	Lead	Bulk	SPPB110300	1
						SPPB120200	2
						SPPB310400	7
		SPPB320100				8	
		SPPB1A0100				3	
		SPPB1A0101				4	
		Actuator A	Vertical	For PC board (Dip)		SPPB2A0100	5
						SPPB2A0101	6
						SPPB512300	9
		Actuator C	Horizontal	For PC board (Dip)	SPPB610400	13	
					SPPB620300	14	
					SPPB5A0100	10	
		Push	Horizontal	For PC board (Reflow)	SPPB6A0100	15	
					SPPB6A0400	16	
					SPPB530701	11	
		Actuator A	Vertical	For PC board (Reflow)	SPPB530601	12	
					SPPB630101	17	
					SPPB640201	18	
Push	Horizontal	For PC board (Reflow)					

For other specifications, see P.69  
For specifications for the taping package, see P.73

Dimensions

Unit:mm

No.	Photo	Style	PC board mounting hole dimensions (Viewed from direction A)
1			
2			
3			
4			

Detector

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Rotary

Encoders

Power

Dual-in-line  
Package Type


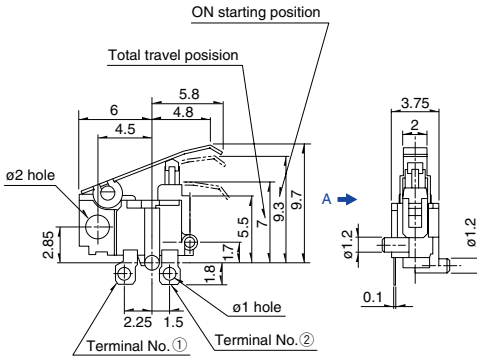
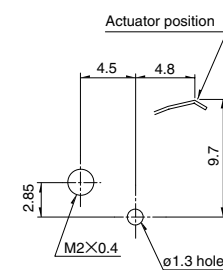
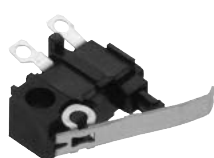
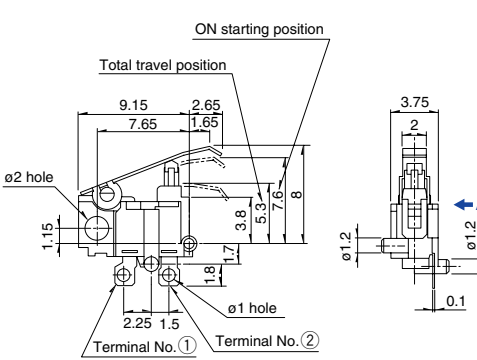
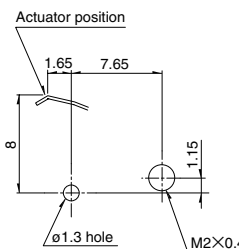

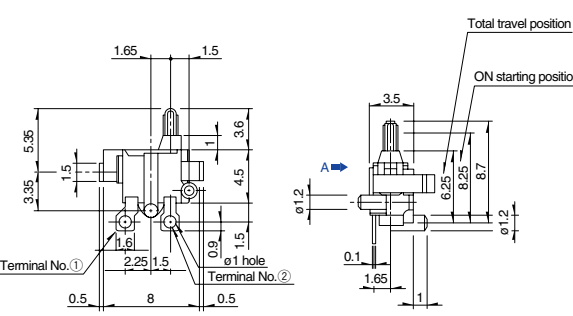
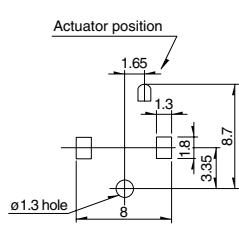

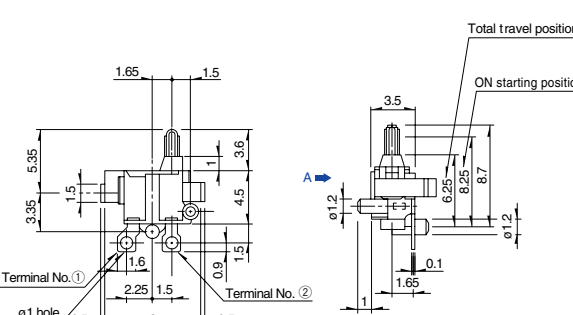
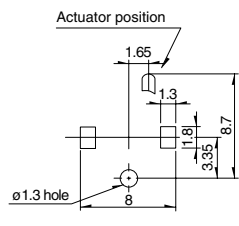
Multi Control  
Devices

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Products

### Dimensions

Unit:mm

No.	Photo	Style	PC board mounting hole dimensions (Viewed from direction A)
5		 <p>ON starting position Total travel position ø2 hole 2.85 6 4.5 5.8 4.8 7 5.5 9.3 9.7 1.8 1.7 5.3 0.1 ø1 hole Terminal No. ① Terminal No. ② 3.75 2 ø1.2 ø1.2</p>	 <p>Actuator position 4.5 4.8 2.85 M2X0.4 ø1.3 hole 9.7</p>
6		 <p>ON starting position Total travel position ø2 hole 1.15 9.15 7.65 2.65 1.65 3.8 7.6 8 1.8 1.7 5.3 0.1 ø1 hole Terminal No. ① Terminal No. ② 3.75 2 ø1.2 ø1.2</p>	 <p>Actuator position 1.65 7.65 8 ø1.3 hole M2X0.4 1.15</p>
7		 <p>Total travel position ON starting position 1.65 1.5 3.35 5.35 1.5 4.5 3.6 1.6 0.9 1.5 ø1 hole Terminal No. ① Terminal No. ② 2.25 1.5 0.5 8 0.5 3.5 3.5 6.25 8.25 8.7 0.1 1.65 1 ø1.2 ø1.2</p>	 <p>Actuator position 1.65 1.3 1.8 8.7 3.35 ø1.3 hole 8</p>
8		 <p>Total travel position ON starting position 1.65 1.5 3.35 5.35 1.5 4.5 3.6 1.6 0.9 1.5 ø1 hole Terminal No. ① Terminal No. ② 2.25 1.5 0.5 8 0.5 3.5 3.5 6.25 8.25 8.7 0.1 1.65 1 ø1.2 ø1.2</p>	 <p>Actuator position 1.65 1.3 1.8 8.7 3.35 ø1.3 hole 8</p>

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### Dimensions

Unit:mm

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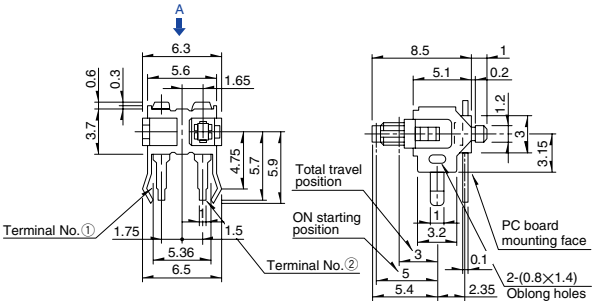
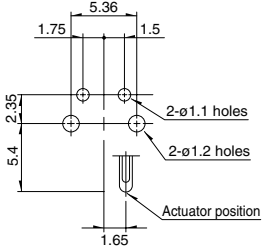

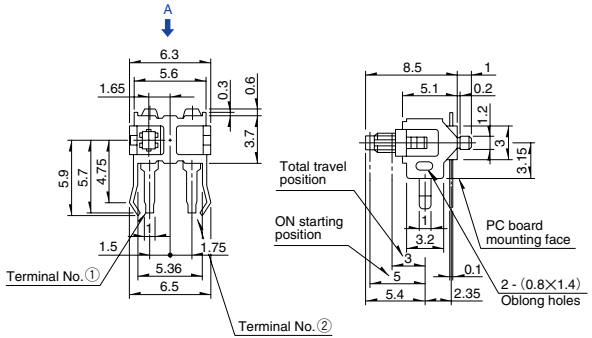
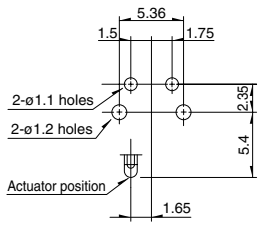
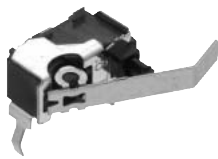
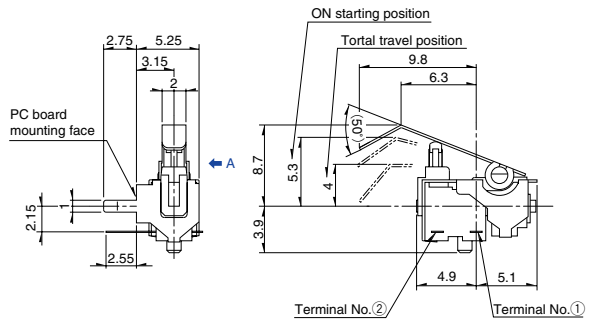
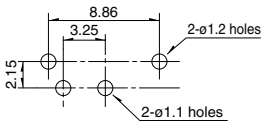
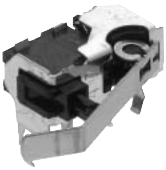
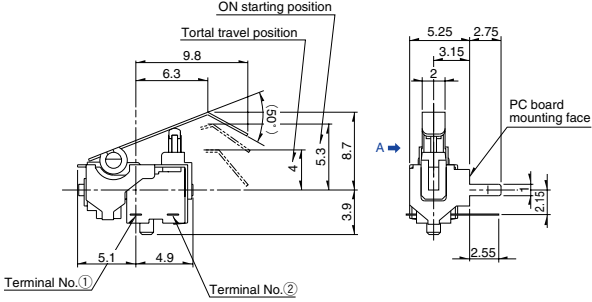
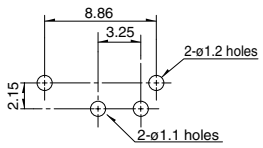
Power

Dual-in-line  
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Multi Control  
Devices


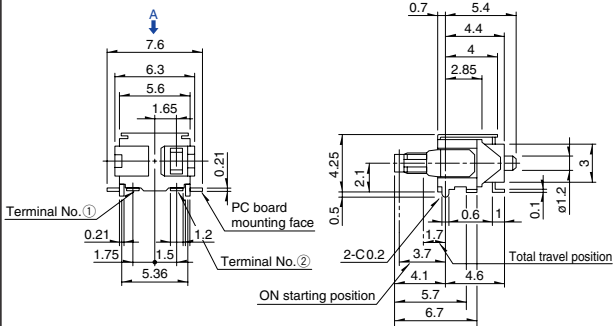
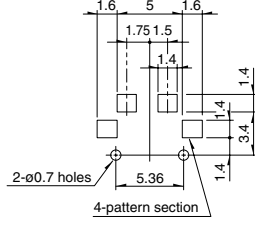

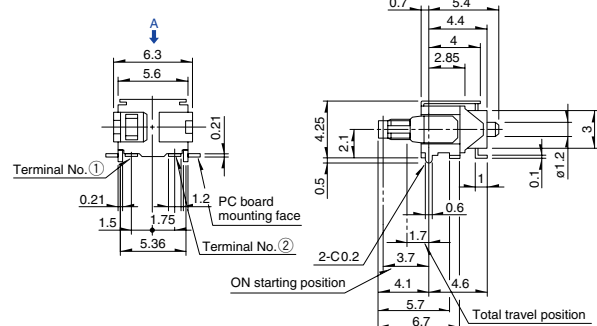
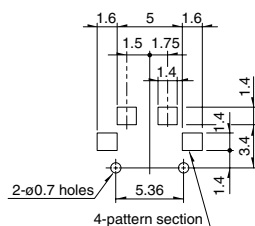
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No.	Photo	Style	PC board mounting hole dimensions (Viewed from direction A)
13			
14			
15			
16			

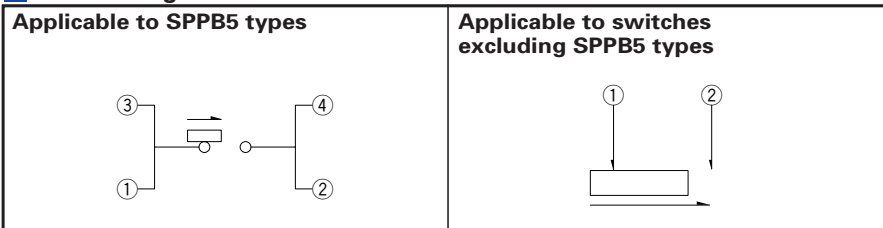
Dimensions

Unit:mm

No.	Photo	Style	PC board mounting hole dimensions (Viewed from direction A)
17			
18			

- Detector
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Circuit Diagram (Viewed from Direction A)



# Products Specifications

Items		Series										
		SPPB	SPVE	SPPW8	SPVM	SPVR	SPVF	SSCU	SSCT	SSCF	SSCM	
Operating temperature range		-10°C to +60°C										
Rating (max.) (Resistive load)		0.1A 30V DC			1mA 5V DC			0.1A 12V DC			1mA 5V DC	
Electrical performance	Initial contact resistance	1 Ω max.	500mΩ max.	1 Ω max.	2 Ω max.	3 Ω max.	500mΩ max.	70mΩ max.	20mΩ max.	100mΩ max.	2 Ω max.	
	Insulation resistance	100MΩ min. 100V DC					100MΩ min. 250V DC		100MΩ min. 100V DC			
	Voltage proof	100V AC for 1 min.					250V AC for 1 min.		100V AC for 1 min.			
Mechanical performance	Robustness of terminal	3N for 1 min.	0.5N for 1 min.	3N for 1 min.	1N for 1 min.	0.5N for 1 min.	3N for 30 s	3N for 1 min.		5N for 1 min.	0.5N for 1 min.	
	Robustness of actuator	10N	5N	10N	5N	2N	1N	5N	10N		0.5N	
	Vibration	10 to 55 to 10Hz/min., the amplitude is 1.5mm for all the frequencies, in the 3 direction of X, Y and Z for 2 hours respectively										
	Resistance to soldering heat	Manual soldering	300±5°C, 5s max.	350±5°C, 3s max.				300±10°C, 3 <sup>+1</sup> <sub>-0</sub> s	350±5°C, 3s max.	350±10°C, 3 <sup>+1</sup> <sub>-0</sub> s	350±5°C, 3s max.	
		Dip soldering	260±5°C, 5±1s	—	255±5°C, 5±1s	—		245±5°C, 5±1s max.	—	260±5°C, 5±1s		—
Reflow soldering		Please see P.72					—				Please see P.72	
Durability	Operating life without load	50,000 cycles 2 Ω max.	50,000 cycles 1 Ω max.	100,000 cycles 2 Ω max.	50,000 cycles 5 Ω max.		100,000 cycles 1 Ω max.	10,000 cycles 100mΩ max.	10,000 cycles 40mΩ max.	50,000 cycles 200mΩ max.	50,000 cycles 5 Ω max.	
	Operating life with load	(0.1A 30V DC) 50,000 cycles 2 Ω max.	(0.1A 30V DC) 50,000 cycles 1 Ω max.	(0.1A 30V DC) 100,000 cycles 2 Ω max.	(1mA 5V DC) 50,000 cycles 5 Ω max.		(1mA 5V DC) 100,000 cycles 1 Ω max.	(0.1A 12V DC) 10,000 cycles 150mΩ max.	(0.1A 12V DC) 10,000 cycles 60mΩ max.	(0.1A 12V DC) 50,000 cycles 300mΩ max.	(1mA 5V DC) 50,000 cycles 5 Ω max.	
Environmental performance	Cold	-20±2°C for 96h					-40±2°C for 96h	-20±2°C for 96h				
	Dry heat	85±2°C for 96h										
	Damp heat	40±2°C, 90 to 95%RH for 96h										

Detector

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Power

Dual-in-line Package Type

Multi Control Devices

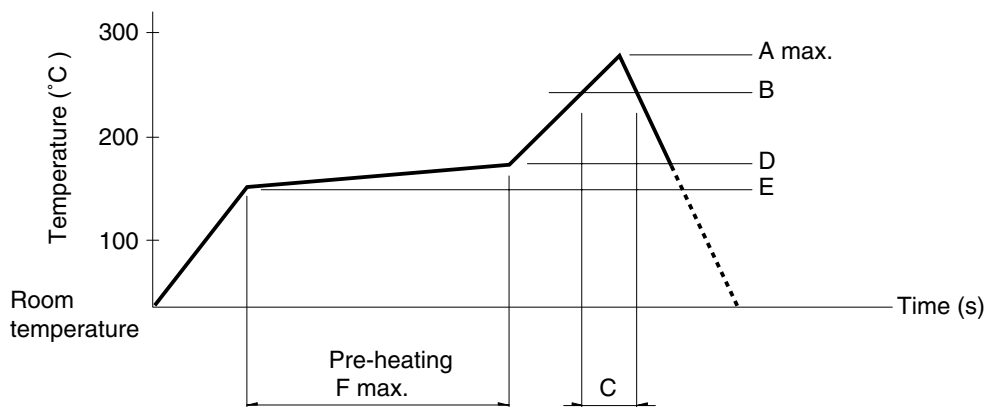
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Custom-Products

## 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			
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. As the conditions vary some how depending on the kind of reflow soldering equipment, please make sure you have the right one before use.

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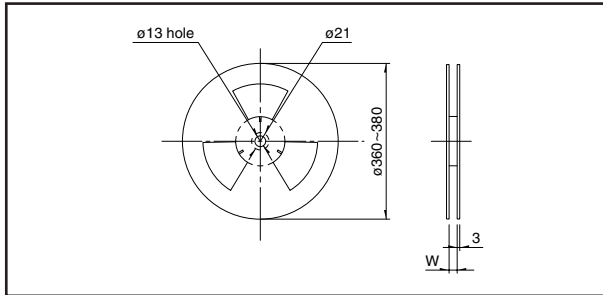


# Taping Specifications

## Taping Packaging

Reel Size

Unit:mm



Series		Number of packages (pcs.)			Reel width W (mm)	Tape width (mm)
		1 reel	1 case/ domestic	1 case/ export packing		
SPPB	53 (Horizontal)	1,500	3,000	6,000	24.4	24
	53 (Vertical)	600	1,200	2,400		
	63, 64	1,300	2,600	5,200		
SPPW81	h = 6.1 (Reflow)	1,000	2,000	4,000	12.4	12
	h = 6.55 (Reflow)					
	h = 7.6 (Reflow)	850	1,700	3,400		
SPVE	Standard	h=3.8	2,800	5,600	16.4	16
		h=4.1				
		h=4.8	2,200	4,400		
		h=5.2	2,000	4,000		
		h=5.5				
	Low-profile	h=3.3	2,800	5,600		
SPVG		2,500	5,000	10,000	44.4	44
SPVL		5,000	10,000	20,000		
SPVM		3,000	6,000	12,000		
SPVN		5,000	10,000	20,000		
SPVP		4,500	9,000	18,000		
SPVR		2,500	5,000	10,000		
SPVS		5,000	10,000	20,000		
SSCM		3,000	6,000	12,000		
SPPY5		550	1,650	3,300		

### Note

Order products in N minimum packing units (1 reel or 1 case).

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