

Detector Switch

Water-proof Type

SPVQ3 Series



Long stroke type which can be pushed without an actuator.

Detector

Push

Slide

Rotary

Encoders

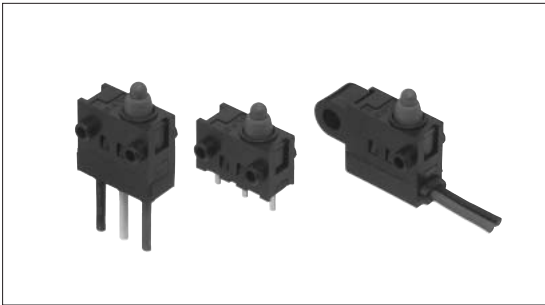
Power

Dual-in-line
Package Type

Multi Control
Devices

TACT Switch™

Custom-
Products



Features

- The double-sided sliding contact structure of our original clip type ensures applications best suited for minute electrical reas while assuring greater contact reliability.
- The actuator can be operated vertically or at an angle.
- The operation life can correspond 1,000,000 cycles.
- Free from mechanical operating noises, thus ensuring superb silent operation.

Applications

- Detection of in-car mechanical drives (door operations, trunk/back door operations, and shift lever positions)
- Detection of mechanical drives in home electric appliances to be used in surrounding wet areas

Typical Specifications

Items		Specifications	
Rating (max.) / (min.) (Resistive load)		0.1A 12V DC/50 μ A 3V DC	
Voltage drop (Initial performance/After lifetime)		0.2V max./0.3V max.	
Operating force		Push type	
		1 \pm 0.5N	
Operating life		Normal type	Long life type
	Without load	300,000 cycles	1,000,000 cycles
	With load	300,000 cycles (0.1A 12V DC)	1,000,000 cycles (0.1A 12V DC)

For other specifications, see P.70

Products Line

Operating life	Poles	Positions	Changeover timing	Operating mode	Terminal style	Main body form	Products No.	Drawing No.
300,000 cycles	1	2	Non shorting	Push	For PC board	Normal	SPVQ380400	1
						Boss in the right	SPVQ380300	
						Boss in the left	SPVQ380200	
						Boss in the both sides	SPVQ380100	
					Solder terminal	Boss in the right	SPVQ380700	2
						Boss in the left	SPVQ380600	
						Boss in the both sides	SPVQ380500	
					Right angle	Boss in the right	SPVQ380900	3
		Left angle			Boss in the left	SPVQ380800	4	
		With wire (Downwards)			With a screw hole	SPVQ36-1※	5	
					Boss in the right	SPVQ36-2※		
					Boss in the left	SPVQ36-3※		
					Boss in the both sides	SPVQ36-4※		
		With wire (Right side)			With a screw hole	SPVQ36-5※	7	
					Boss in the right	SPVQ36-6※		
					Boss in the left	SPVQ36-7※		
Boss in the both sides	SPVQ36-8※							
With wire (Left side)	Boss in the right	SPVQ36-9※	9					
	Boss in the left	SPVQ36-A※						
	Boss in the both sides	SPVQ36-B※						
1,000,000 cycles	1	2	Non shorting	Push	For PC board	Normal	SPVQ340400	1
						Boss in the right	SPVQ340300	
						Boss in the left	SPVQ340200	
						Boss in the both sides	SPVQ340100	
					Solder terminal	Boss in the right	SPVQ340700	2
						Boss in the left	SPVQ340600	
						Boss in the both sides	SPVQ340500	
					Right angle	Boss in the right	SPVQ340900	3
		Left angle			Boss in the left	SPVQ340800	4	
		With wire (Downwards)			With a screw hole	SPVQ32-1※	5	
					Boss in the right	SPVQ32-2※		
					Boss in the left	SPVQ32-3※		
					Boss in the both sides	SPVQ32-4※		
		With wire (Right side)			With a screw hole	SPVQ32-5※	7	
					Boss in the right	SPVQ32-6※		
					Boss in the left	SPVQ32-7※		
Boss in the both sides	SPVQ32-8※							
With wire (Left side)	Boss in the right	SPVQ32-9※	9					
	Boss in the left	SPVQ32-A※						
	Boss in the both sides	SPVQ32-B※						
1,000,000 cycles	1	1	Non shorting	Push	For PC board	Normal	SPVQ320400	1
						Boss in the right	SPVQ320300	
						Boss in the left	SPVQ320200	
						Boss in the both sides	SPVQ320100	
					Solder terminal	Boss in the right	SPVQ320700	2
						Boss in the left	SPVQ320600	
						Boss in the both sides	SPVQ320500	
					Right angle	Boss in the right	SPVQ320900	3
		Left angle			Boss in the left	SPVQ320800	4	
		With wire (Downwards)			With a screw hole	SPVQ32-1※	5	
					Boss in the right	SPVQ32-2※		
					Boss in the left	SPVQ32-3※		
					Boss in the both sides	SPVQ32-4※		
		With wire (Right side)			With a screw hole	SPVQ32-5※	7	
					Boss in the right	SPVQ32-6※		
					Boss in the left	SPVQ32-7※		
Boss in the both sides	SPVQ32-8※							
With wire (Left side)	Boss in the right	SPVQ32-9※	9					
	Boss in the left	SPVQ32-A※						
	Boss in the both sides	SPVQ32-B※						

Notes

1. This unit cannot be used in the water.
2. ※ When the length and color of leads are not specified, the length is 250mm and the color is decided by our discretion from Red, Black or Yellow.
3. ※ For downward wire type (SPVQ36-1~36-4, SPVQ32-1~32-4), the switch has three wires when the circuit type is not specified.
4. ※ For the type with wire (tapping out at the side), be sure to specify the circuit (N.O. or N.C.), which shall be an N.O. circuit unless the circuit is specified.

Dimensions

Unit:mm

Detector

Push

Slide

Rotary

Encoders

Power

Dual-in-line
Package Type

Multi Control
Devices

TACT Switch™

Custom-
Products

No.	Style
1	<p>Terminal No.③-① ON starting point Terminal No.③-② OFF starting point Free position Operating force measurement position Total travel position PC board mounting face Terminal No.① Terminal No.② Terminal No.③ 0.9 2.3 5 5 13 4.35 4 3.3 6.1 (6.4) 8.4 8.7 9.1 5.8 0.5</p>
2	<p>Terminal No.③-① ON starting point Terminal No.③-② OFF starting point Free position Operating force measurement position Total travel position Terminal No.① Terminal No.② Terminal No.③ 7.45 4.35 4 1.5 1.2 2.2 2.3 4.35 4.35 13 6.1 (6.4) 8.4 8.7 9.1 5.8 0.5</p>
3	<p>Terminal No.③-① ON starting point Terminal No.③-② OFF starting point Free position Operating force measurement position Total travel position Terminal No.① Terminal No.② Terminal No.③ 0.9 5 5 2.3 4.15 4 6.1 (6.4) 8.4 8.7 9.1 5.8 6 0.5 (2.6) PC board mounting face</p>
4	<p>Terminal No.③-① ON starting point Terminal No.③-② OFF starting point Free position Operating force measurement position Total travel position Terminal No.③ Terminal No.② Terminal No.① 0.9 2.3 5 5 4.15 4 6.1 (6.4) 8.4 8.7 9.1 5.8 6 0.5 (2.6) PC board mounting face</p>

※Refer to "Styles" in Page 60 for positions of bosses.

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Dimensions

Unit:mm

No.	Style
5	
6	<p style="text-align: right;">※Refer to "Styles" in Page 60 for positions of bosses.</p>
7	
8	<p style="text-align: right;">※Refer to "Styles" in Page 60 for positions of bosses.</p>

Detector

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Power

Dual-in-line
Package Type

Multi Control
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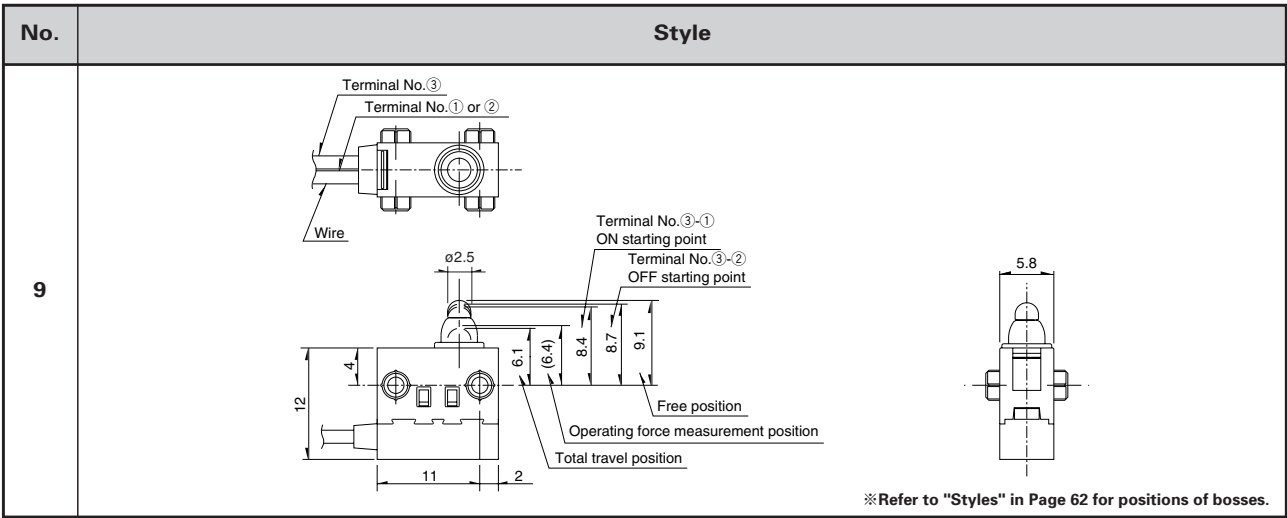
TACT Switch™

Custom-
Products

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

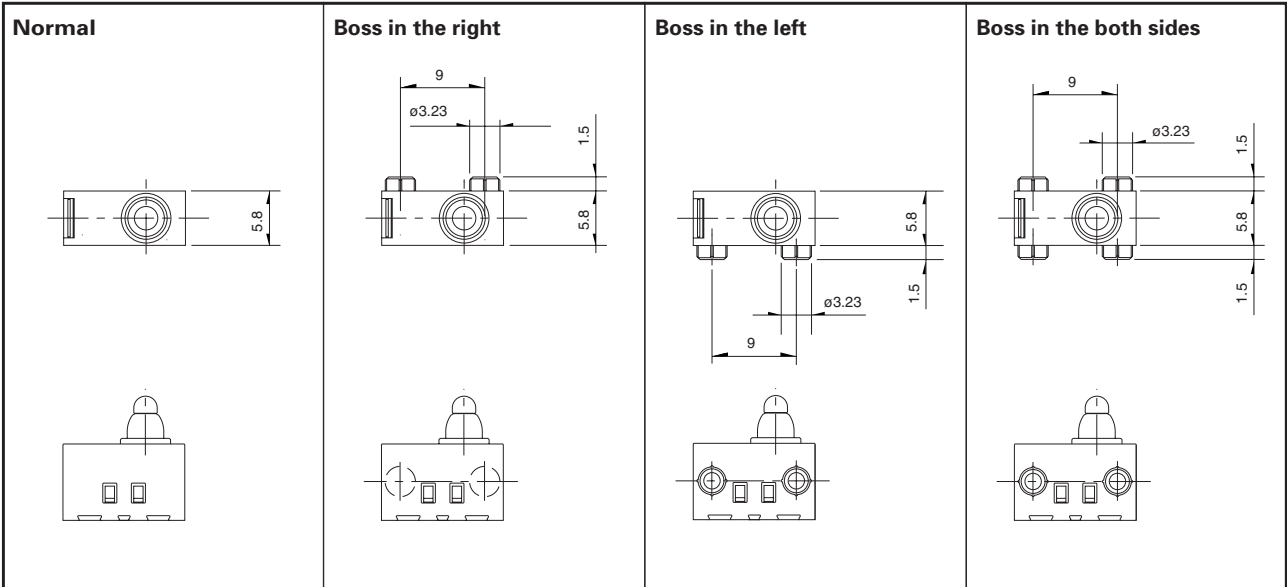
Dimensions

Unit:mm

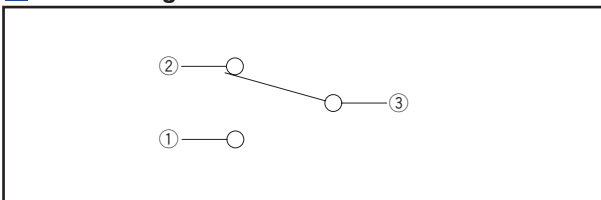


Styles

Unit:mm



Circuit Diagram



Products Specifications

Items		Series											
		SPVP	SPVC1	SPVN	SPVS	SPVG	SSCW	SPVL	SPVQ1	SPVQ3	SPVQ4	SSCN	
Detector	Operating temperature range	-10°C to +60°C					-40°C to +85°C	-10°C to +60°C	-40°C to +85°C				
	Rating (max.) (Resistive load)	1mA 5V DC	10mA 16V DC	1mA 5V DC		50mA 20V DC	0.1A 12V DC	1mA 5V DC	0.1A 12V DC				
Push	Electrical performance	Initial contact resistance		5 Ω max.	1 Ω max.	2 Ω max.		500mΩ max.		2 Ω max.		500mΩ max.	
Slide		Insulation resistance		100MΩ min. 100V DC				100MΩ min. 250V DC	100MΩ min. 100V DC	100MΩ min. 500V DC			
Rotary		Voltage proof		100V AC for 1 min.				250V AC for 1 min.	100V AC for 1 min.	500V AC for 1 min.			
Encoders	Mechanical performance	Robustness of terminal		0.5N for 1 min.	3N for 1 min.	0.5N for 1 min.		—	1N for 1 min.	3N for 1 min.			
Power		Robustness of actuator		5N	10N	5N	10N	20N	5N	20N		10N	
Dual-in-line Package Type		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									
Multi Control Devices	Resistance to soldering heat	Manual soldering		350±5°C, 3s max.	350±10°C, 3 ⁺¹ s	350±5°C, 3s max.		—	350±5°C, 3s max.	300±10°C, 3 ⁺¹ s			
TACT Switch™		Dip soldering		—	260±5°C, 3s max.	—		—		260±5°C, 5±1s		—	
Custom-Products		Reflow soldering		Please see P.72	—	Please see P.72		—	Please see P.72	—			
Durability	Operating life without load		50,000 cycles 10Ω max.	25,000 cycles 2Ω max.	50,000 cycles 5Ω max.		100,000 cycles 1Ω max.		50,000 cycles 5Ω max.	300,000 cycles 1Ω max.	300,000 cycles or 1,000,000 cycles 1Ω max.	300,000 cycles 1Ω max.	100,000 cycles 1Ω max.
	Operating life with load		(1mA 5V DC) 50,000 cycles 10Ω max.	(10mA 16V DC) 25,000 cycles 2Ω max.	(1mA 5V DC) 50,000 cycles 5Ω max.		(50mA 20V DC) 100,000 cycles 1Ω max.	(0.1A 12V DC) 100,000 cycles 1Ω max.	(1mA 5V DC) 50,000 cycles 5Ω max.	(0.1A 12V DC) 300,000 cycles 1Ω max.	(0.1A 12V DC) 300,000 cycles or 1,000,000 cycles 1Ω max.	(0.1A 12V DC) 300,000 cycles 1Ω max.	(0.1A 12V DC) 100,000 cycles 1Ω max.
Environmental performance	Cold		-20±2°C for 96h				-40±2°C for 96h	-40±2°C for 500h	-20±2°C for 96h	-40±2°C for 500h			
	Dry heat		85±2°C for 96h				85±2°C for 500h		85±2°C for 96h	85±2°C for 500h			
	Damp heat		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				