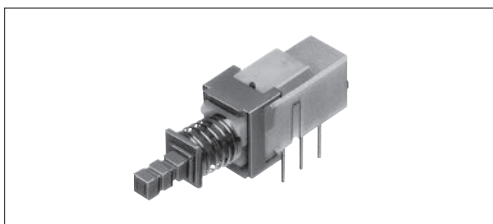


- Detector
- Slide
- Push**
- Rotary
- Encoders
- Power
- Dual-in-line Package Type
- TACT Switch™



Typical Specifications

Items		Specifications	
		Standard	Medium-current
Rating (max.) / (min.) (Resistive load)		0.1A 30V DC 50μA 3V DC	1A 25V DC
Contact resistance (Initial /After operating life)		20mΩ max. / 40mΩ max.	
Operating forces	2-poles	2±1N	3±1.5N
	4-poles	2.5±1N	4±2N
Operating life	Without load	30,000cycles	10,000cycles
	With load	10,000cycles (0.1A 30V DC)	5,000cycles (1A 25V DC)

Product Line

Changeover timing	Travel (mm)	Total travel (mm)	Rating	Mounting method	Poles	Operation	Terminal type	Minimum order unit (pcs.)		Product No.			
								Japan	Export				
Non shorting	2.5	3.5	Standard	PC board	2	Latching	Straight	250	1,250	SPUN191400			
							Snap-in			SPUN191600			
							Momentary			Straight	SPUN190900		
										Snap-in	SPUN191000		
			Medium-current		2	Latching	Straight	250	1,250	SPUN192600			
							Snap-in			SPUN194900			
							4			Straight	140	700	SPUN194700
										Snap-in			SPUN194900
4	Latching	Straight	250	1,250	SPUN192800								
		Snap-in			SPUN19C400								

- Notes**
- Other varieties are also available. Please inquire.
  - Please contact us for automotive use.

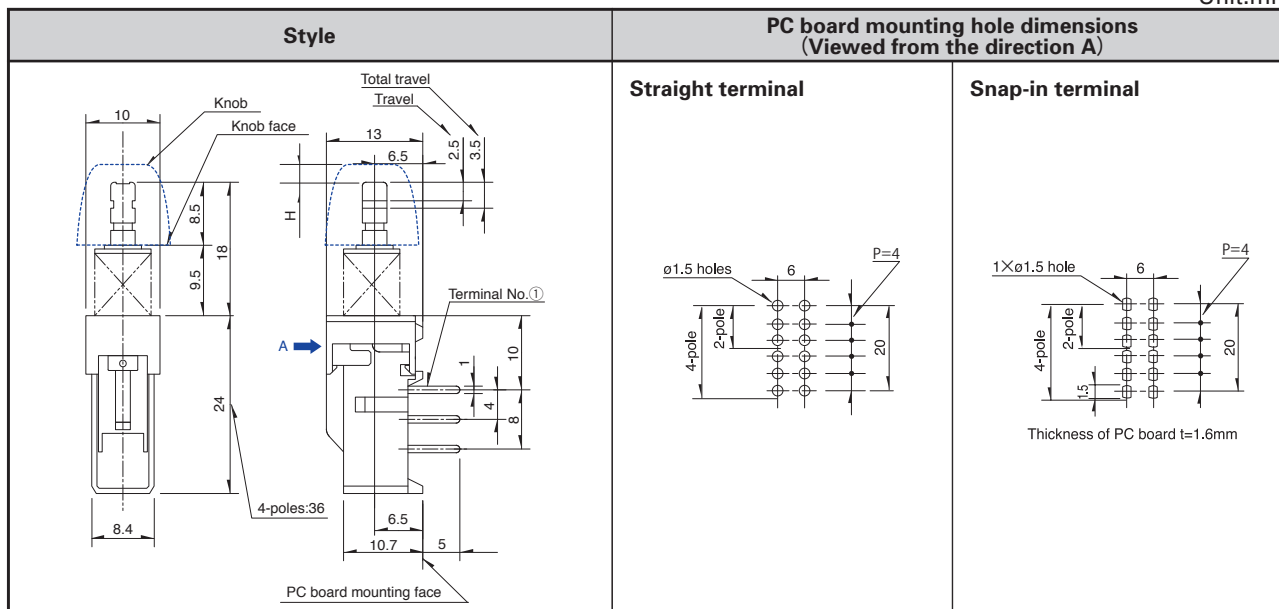
Packing Specifications

Bulk

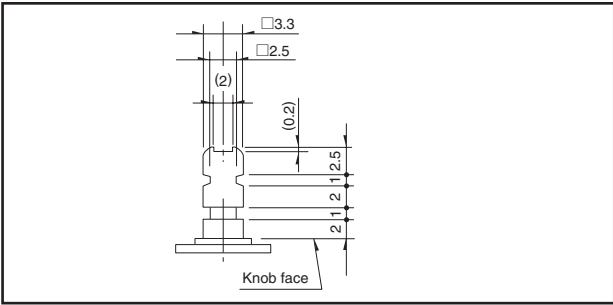
Product No.	Number of packages (pcs.)		Export package measurements (mm)
	1 case / Japan	1 case / export packing	
SPUN190900, SPUN191000 SPUN191400, SPUN191600 SPUN192600, SPUN192800	250	1,250	400 × 270 × 290
SPUN194700, SPUN194900 SPUN19C400	140	700	

Dimensions

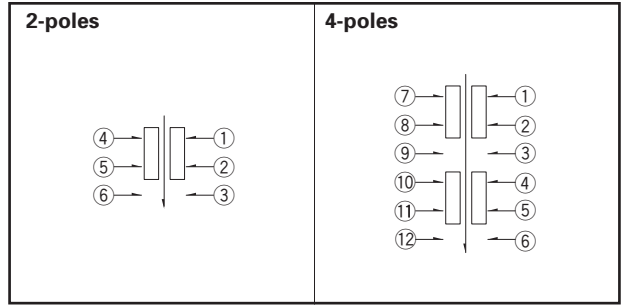
Unit:mm



**Actuator Configuration at Front Edge** Unit:mm



**Circuit Diagram (Viewed from Direction A)**



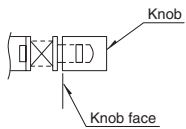
**Attached Parts** Please specify required knob.

Unit:mm

Knob outline drawing	Model	Knob attachment height (H)
<p><b>Square knob</b></p>	<p>Color:Black</p> <p><b>UE201011</b></p>	(2)
<p><b>Round knob</b></p>	<p>Color:Black</p> <p><b>UE200011</b></p>	(6)

**Notes**

1. We recommend the use of adhesive to secure the knob when mounting onto switches.
2. We recommend the use of adhesive to secure the knob when mounting onto switches.



Detector

Slide

**Push**

Rotary

Encoders

Power

Dual-in-line  
Package Type



















TACT Switch™

**Horizontal  
Type**

**Vertical  
Type**

# Push Switches

## List of Varieties

Series		Horizontal					Vertical			
		SPPJ3	SPPJ2	SPUJ※1	SPUP※1	SPUN	SPUN <sup>medium current</sup> ※1	SPEG	SPEJ	SPEH
Photo										
Dimensions (mm)	W	5 or 6.6	7.2	7.5		10		7.2	7	6
	D	12		15.2 22.7		24 36		8.39	7	6
	H	8.3	9.6	8.8	10.3	13		3.5	5.95	5
Travel (mm)		2.5		2	1.5 2	2.5		—	1.7	—
Total travel (mm)		3.5		3	2.5 3	3.5		1.1	1.7	1 1.6
Number of poles		1 2	2	2 4				1	2	1
Operating temperature range		-40°C to +85°C		-10°C to +60°C				-40°C to +85°C		-40°C to +90°C
Automotive use		●	●	—	—	—	—	—	●	●
Life cycle										
Rating (max.) (Resistive load)		0.2A 30V DC		0.1A 30V DC		1A 25V DC		1mA 5V DC	0.2A 14V DC	50mA 16V DC
Rating (min.) (Resistive load)		50μA 3V DC				1A 25V DC		50μA 3V DC	—	10μA 1V DC
Durability	Operating life without load	10,000cycles 40mΩ max.			30,000cycles 40mΩ max.	100,000cycles 40mΩ max.	30,000cycles 500mΩ max.	10,000cycles 150mΩ max.	100,000cycles 400mΩ max.	
	Operating life with load (at max. rated load)	10,000cycles 40mΩ max.					5,000cycles 40mΩ max.	30,000cycles 500mΩ max.	10,000cycles 150mΩ max.	100,000cycles 400mΩ max.
Electrical performance	Initial contact resistance	20mΩ max.					200mΩ max.	150mΩ max.	200mΩ max.	
	Insulation resistance	100MΩ min. 500V DC					3MΩ min. 100V DC	100MΩ min. 500V DC	100MΩ min. 100V DC	
	Voltage proof	500V AC for 1minute					100V AC for 1minute	500V AC for 1minute	250V AC for 1minute	
Mechanical performance	Terminal strength	5N for 1minute					0.5N for 1minute	—	—	
	Actuator strength	Operating direction	50N	30N	50N			49N	50N	
		Pulling direction	—	—	50N			—	—	
Environmental performance	Cold	-40±2°C for 96h	-20±2°C for 96h					-40±2°C for 500h	-40±2°C for 1000h	
	Dry heat	85±2°C for 96h						85±2°C for 500h	90±2°C for 1000h	
	Damp heat	40±2°C, 90 to 95%RH for 96h						60±2°C, 90 to 95%RH for 500h	60±2°C, 90 to 95%RH for 1000h	
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### Notes

1. ※1. The operating temperature range for automotive applications can be raised upon request. Please contact us for details.
2. ● indicates applicability to all products in the series.

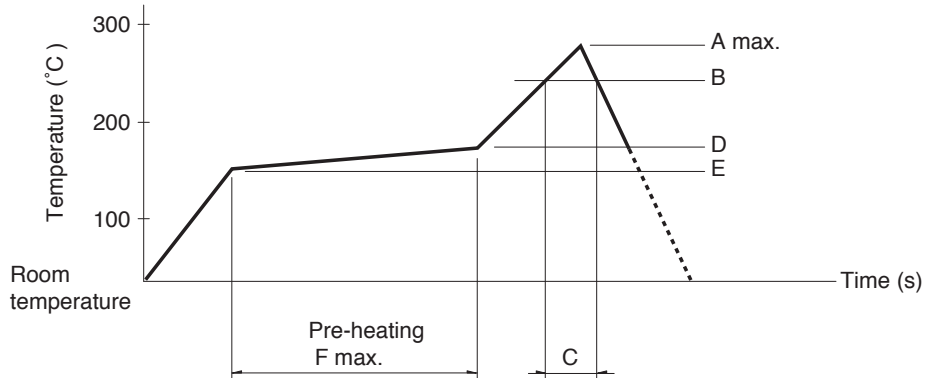
Detector  
Slide  
Push  
Rotary  
Encoders  
Power  
Dual-in-line Package Type  
TACT Switch™

Horizontal Type  
Vertical Type

## Push Switches 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  $\phi$  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)
SPEG	260	230	40	180	150	120
SPEJ						
SPEF						
SPEH						

### 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.

### Reference for Hand Soldering

Series	Soldering temperature	Soldering time
SPPJ3, SPPJ2, SPUN, SPPH4, SPPH1	350 $\pm$ 5°C	3+1/0s
SPED2, SPED4	350 $\pm$ 5°C	3 $\pm$ 1s
SPEJ	350 $\pm$ 5°C	4s max.
SPEG, SPPH2, SPEF	350 $\pm$ 10°C	3s max.
SPEH	350°C max.	3s max.
SPUJ, SPUP	300 $\pm$ 5°C	3+1/0s

### Reference for Dip Soldering

(For PC board terminal types)

Series	Items		Dip soldering	
	Preheating temperature	Preheating time	Soldering temperature	Duration of immersion
SPPJ3	100°C max.	60s max.	260 $\pm$ 5°C	5 $\pm$ 1s
SPUN	100°C max.	60s max.	260 $\pm$ 5°C	10 $\pm$ 1s
SPUJ, SPUP, SPPH2, SPPH4	—		260 $\pm$ 5°C	5 $\pm$ 1s
SPPJ2, SPPH1, SPED2, SPED4, SPEF	—		260 $\pm$ 5°C	10 $\pm$ 1s

Detector

Slide

Push

Rotary

Encoders

Power

Dual-in-line  
Package Type

TACT Switch™

Horizontal  
Type

Vertical  
Type