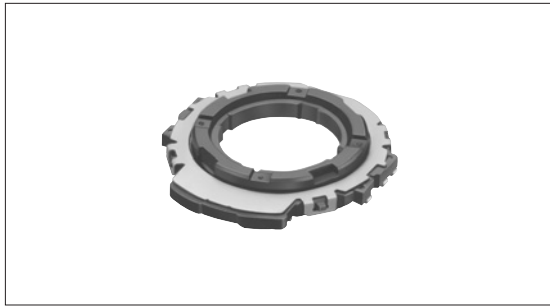


Encoder Low-profile and Hollow Shaft Surface Mount Type SRGP40 Series



Surface mount encoder with 1.55mm height $\phi 9.23\text{mm}$ contribute in space saving



Features

- Low-profile type with 1.5mm height.
- TACT Switch™ SKRH series and SKRN series can be adapted into the $\phi 9.23\text{mm}$ hollow center.
- Reflow solderable.

Applications

- For menu and data scrolling in portable audio, digital still cameras and personal digital assistants
- For DVD players/recorders, notebook PCs and mobile phones

Detector

Push

Slide

Rotary

Encoders

Power

Dual-in-line
Package Type

Multi Control
Devices

TACT Switch™

Custom-
Products

Incremental
Type

Absolute
Type

Typical Specifications

Items		Specifications
Rating (max.)/(min.) (Resistive load)		1mA 5V DC/50 μ A 3V DC
Output voltage		1V max. at 1mA 5V DC (Resistive load)
Operating life	Without load	100,000cycles
	With load	100,000cycles

Product Line

Detent torque (mN·m)	Number of detent	Number of pulse	Soldering	Minimum packing unit (pcs.)	Product No.
2 \pm 1	24	12	Reflow	800	SRGP400100
3.5 \pm 1					SRGP400200

Dimensions

Unit:mm

Style	Recommended pattern for (All tolerance shall be ± 0.05)
<p>Technical drawing of the SRGP40 encoder showing dimensions and electrical characteristics. The drawing includes a top view, a side view, and a cross-section A-A. Dimensions include: 17.5, 9.7, 8.9, 2-2, 2-1.2, 2.15, 0.55, 2.15, 6, 2.15, R10, 10, 12.8, 12, 0.72, 0.95, 1.55, 0.2, 12.5, $\phi 10.7$, $\phi 9.23$, 6-0.7, 2.2, 2-$\phi 1.5$, 0.15, 0.5, 9.85, 8.2, 19.1, 14.4, 12.5, 2.75, 1.55, 1.15, 0.05, $\phi 1.6$.</p> <p>Ground term.</p> <p>Phase difference of code portion</p> <p>(30°) CW (15°) CCW Detent position</p> <p>① ON OFF ② ON OFF</p> <p>T1 T2 T3 T4 T</p> <p>T1, T3 = 1/4T \pm 1/8T T2, T4 = Phase difference shall not be reversed</p>	<p>Recommended soldering pattern for the SRGP40 encoder. The pattern shows a circular arrangement of four soldering points with dimensions: 19.1, 14.4, 12.5, 2.75, 1.55, 1.15, 0.05, $\phi 1.6$.</p>

Refer to P.213 for product specifications.
Refer to P.215 for taping package specifications.

Product Specifications

Type		SRGP30※	SRGP40	EC21A	SRGP20	EC28A	SRGPWJ	
Items								
Operating temperature range		-10°C to +60°C			-40°C to +85°C			
Rating		10mA 5V DC	1mA 5V DC	10mA 5V DC				
Electrical performance	Output voltage	1V max. at 5V DC, 1mA (resistive load) 		2.5V max. at 5V DC, 1mA (resistive load)	1V max. at 5V DC, 1mA (resistive load) 	2.5V max. at 5V DC, 1mA (resistive load)	1V max. at 5V DC, 1mA (resistive load) 	
	Insulation resistance	100MΩ min. 100V DC		100MΩ min. 250V DC	100MΩ min. 100V DC	100MΩ min. 250V DC	100MΩ min. 100V DC	
	Voltage proof	100V AC for 1minute		300V AC for 1minute	100V AC for 1minute	300V AC for 1minute	100V AC for 1minute	
Mechanical performance	Detent torque		5±2.5mN·m	2±1mN·m 3.5±1mN·m	16±7mN·m	7±3mN·m	12±7mN·m 20±10mN·m	13±4mN·m 6.5±4mN·m
	Terminal strength		—————		5N for 1minute			
	Actuator strength	Pushing direction	20N		100N	40N	100N	40N
		Pulling direction	20N		100N	40N	100N	40N
	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	350±5°C, 3s max.	350±10°C, 3 ⁺ 1s	350°C max, 3s max	350±10°C, 3 ⁺ 1s	350°C max, 3s max	350±10°C, 3 ⁺ 1s
Dip soldering		—————		260±5°C, 5±1s				
Reflow soldering		Please see P.215						
Durability	Operating life without load	50,000cycles	100,000cycles	50,000cycles				
	Operating life with load	50,000cycles	100,000cycles	50,000cycles				
Environmental performance	Cold	-40±2°C for 96h	-20±2°C for 96h	-40±2°C for 240h	-20±2°C for 96h	-40±2°C for 240h	-20±2°C for 96h	
	Dry heat	85±2°C for 96h		85±2°C for 240h	85±2°C for 96h	85±2°C for 240h	85±2°C for 96h	
	Damp heat	40±2°C, 90 to 95%RH for 96h		60±2°C, 90 to 95% RH for 240h	40±2°C, 90 to 95% RH for 96h	60±2°C, 90 to 95% RH for 240h	40±2°C, 90 to 95% RH for 96h	

Detector

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Slide

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Multi Control Devices

TACT Switch™

Custom-Products

Incremental Type

Absolute Type

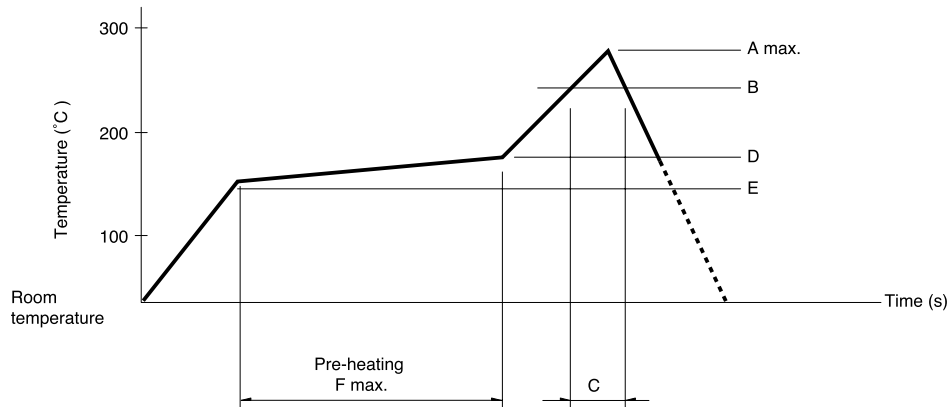
Note

※ The operating temperature range for automotive applications can be raised upon request. Please contact us for requirements of this kind.

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) Max	B (°C)	C (s)	D (°C)	E (°C)	F (s)
SRGP30	240	230	20	150	150	120
SRGP40	260		40	180		

Notes

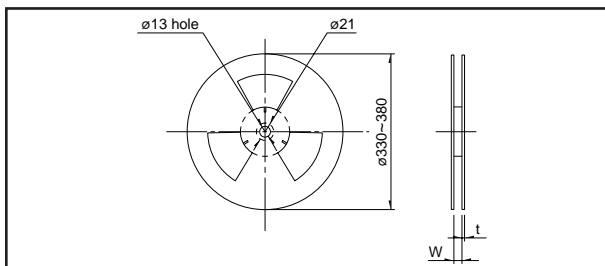
1. The condition mentioned above is the temperature on the mounting surface of a PC board. There are cases where the PC board's temperature greatly differs from that of the switch, depending on the PC board's material, size, thickness, etc. The above-stated conditions shall also apply to switch surface temperatures.
2. Soldering conditions differ depending on reflow soldering machines. You are requested to verify the soldering conditions thoroughly beforehand.

Taping Specifications

Taping Packaging

Reel Size

Unit:mm



Note

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

Series	Number of packages (pcs.)			Reel width W (mm)	Reel thickness t (mm)	Tape width (mm)
	1 reel	1 case / domestic	1 case / export packing			
SRGP30	400	800	1,600	32.4	3	32
SRGP40	800	1,600	3,200			

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