

9mm Size Metal Shaft Encoder

EC09E Series

A compact 9.5mm size and round shape reduced the mounting surface.

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



Car Use

Features

- Compact size and round shape requires 50 % less mounting surface than our conventional products (11mm size encoder series).
- Round shape enables various designs for illuminated functions.
- Compact size of 9.5 mm delivers high resolution, 15 pulse/30 detent.
- Also available with push switch (0.5mm or 1.5mm travel) and without push switch.
- Incremental type.

Applications

- Level controls for car audio and car navigation system. Various controls for devices in automotive
- Controls for image/sound devices, including DVD players, mini component stereos, CD players and portable audio players

Typical Specifications

Items	Specifications
Rating	10mA 5V DC
Operating life	15,000 cycles

Products Line

Operating section	Length of operating section (mm)	Detent torque (mN·m)	Number of detent	Resolution	Operating direction	Push-on switch	Travel of push-on switch (mm)	Minimum packing unit (pcs.)	Products No.	Drawing No.
Flat	20	8±5	30	15	Vertical	Without	—	700	EC09E1520402	1
						With	0.5		EC09E1524405	2
							1.5		EC09E1524404	

Note

Additional products other than listed above are also available. Contact our Sales Department for other products.

For other detailed specifications, see P.178

Dimensions

Unit:mm

No.	Style	PC board mounting hole dimensions (Viewed from mounting face)
1	<p>Without switch type</p>	
2	<p>With push-on switch (travel 0.5/1.5mm)</p>	

Power

Push

Slide

Rotary

Encoders

Detector

Dual-in-line
Package Type

Multi Control
Devices

TACT

Custom-
Products

Incremental
Type

Absolute
Type

Products Specifications

Items	9mm size metal shaft encoders			
	EC09E	RK097		
Power	Operating temperature range			
Push	-30°C to +85°C			
Slide	-30°C to +70°C			
Rotary	Maximum operating current (Resistive load)			
Encoders	10mA			
Detector	Rating			
Dual-in-line Package Type	10mA 5V DC			
Multi Control Devices	1mA 5V DC			
TACT	Output signal			
Custom-Products	Output of A and B signals, proportionate to phase difference			
Electrical performance	Output wave			
	Sliding noise			
	$V_1 = V_2 = 1.5V$ max. Measurement condition : Rotation speed 360°/s t : Masking time to avoid chattering			
	At R = 5 kΩ			
	Chattering : 5ms max. Bounce : 2ms max.			
At R = 5 kΩ				
Chattering : 5ms max. Bounce : 5ms max.				
Insulation resistance		100MΩ min. 250V DC		
Voltage proof		300V AC		
Mechanical performance	Rotational torque		—	
	Detent torque		8±5 mN · m	
	Push-pull strength		100N	
	Resistance to soldering heat	Manual soldering	300°C max. 3s max.	
		Dip soldering	260±5°C, 3±1s	
Reflow soldering		—		
Durability	Rotational life		15,000 cycles	
Environmental performance	Cold		-40±3°C for 240h	
	Dry heat		85±3°C for 240h	
	Damp heat		60±2°C, 90 to 95%RH for 240h	

Push-on Switch Specifications

Items	9mm size metal shaft encoders			
	EC09E		RK097	
Switch circuit · the number of contact	Single pole and single throw (Push-on)			
Travel of switch	0.5±0.3mm	1.5±0.5mm	0.5 ^{+0.7} _{-0.3} mm	1.5±0.5mm
Operating force of switch	6 ^{+2.5} ₋₂ N	4±2N	4 ⁺⁴ ₋₂ N	5±2N
Rating	10mA 5V DC		10mA 12V DC	
Contact resistance	100mΩ for initial period; 200mΩ after rotational life.			
Operating life	10,000 times min.			20,000 times min.