

# EC09E 9mm Size Metal Shaft Type

A compact 9.5mm size and round shape contribute to save space



Encoders

Metal Shaft

Insulated Shaft

Through Shaft Type

Ring Type



## Typical Specifications

Items	Specifications
Rating	10mA 5V DC
Operating life	15,000 cycles
Operating temperature range	-40°C to +85°C

## Product Line

Shaft configuration	Length of the shaft (mm)	Detent torque (mN·m)	Number of detent	Number of pulse	Push-on switch	Travel of push-on switch (mm)	Minimum order unit (pcs.)		Product No.	Drawing No.
							Japan	Export		
Flat	15	8±5	30	15	Without	—	700	1,400	<b>EC09E1520407</b>	1
	20				With	0.5			<b>EC09E1524417</b>	2
					1.5	<b>EC09E1524418</b>				

### Note

Shaft design and other features are customizable.

## Packing Specifications

Tray

Number of packages (pcs.)		Export package measurements (mm)
1 case /Japan	1 case /export packing	
700	1,400	529×374×213

## Dimensions

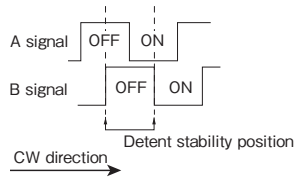
Unit:mm

No.	Photo	Style	PC board mounting hole dimensions (Viewed from mounting side)
1		<p>D and E terminals are dummy terminals</p>	
2		<p>Switch travel 0.5 or 1.5</p>	

Refer to P.245 for switch specifications.  
Refer to P.275 for soldering conditions.

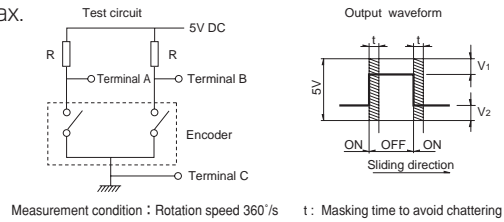
**Output Wave**

Detent stability position cannot be specified for B signal.



**Sliding Noise**

$V_1=V_2=2.5V$  max.



Measurement condition : Rotation speed 360°/s t : Masking time to avoid chattering

At  $R = 5k\Omega$   
Chattering : 5ms max. Bounce : 2ms max.

**9mm Size Metal Shaft Type / Switch Specifications**

Switch type	Momentary push switch	
Contact arrangement	Single pole and single throw (Push-on)	
Travel (mm)	0.5±0.3	1.5±0.5
Operating force	6 ± 2 <sup>5</sup> N	4±2N
Operating life	10,000 times	
Electrical performance	Rating	10mA 5V DC (1mA 5V DC min. ratings)
	Contact resistance	100mΩ max. for initial period, 200mΩ max. after operating life.
	Insulation resistance	100MΩ min. 250V DC
	Voltage proof	300V AC for 1 minute or 360V AC for 1 second

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# Encoders

## List of Varieties

Type		Metal shaft																			
		9mm size		11mm size																	
Series		EC09E		EC11E		EC11N		EC11M		EC111											
Photo																					
Output		Incremental (Two phase A and B )								Self-return switch											
Shaft types		Single-shaft																			
Control part orientation		Vertical																			
Number of pulse / Number of detent		15/30		9/18 15/30 18/36		15/30		15/30 15/without		—											
Features		—		—		—		Less shaft wobble		—											
Dimensions (mm)		W		9.5		11.7															
		D		12						13											
		H		4.5								5									
Operating temperature range		-40°C to +85°C																			
Operating life		15,000 cycles																			
Automotive use		●		●		●		●		●											
Life cycle (availability)																					
Electrical performance		Rating		10mA 5V DC																	
		Max./min. operating current (Resistive load)		10mA /1mA																	
		Insulation resistance		100MΩ min. 250V DC																	
		Voltage proof		300V AC for 1 minute or 360V AC for 1s		300V AC for 1 minute or 360V AC for 2s															
Mechanical performance		Rotational torque (Without detent)		—		—		8.5±5mN·m		3 to 30mN·m											
		Detent torque		8±5mN·m		10±7mN·m				12±7mN·m		—									
		Push-pull strength		100N																	
Shaft configuration		Flat		Flat, Slotted, Serrated		Flat		Serrated		Flat, Slotted, Serrated											
Terminal type		Insertion																			
Switch Specifications		Switch type		Push-on switch																	
		Contact arrangement		Single pole and single throw (Push-on)																	
		Travel (mm)		0.5±0.3		1.5±0.5		0.5±0.3		1.5±0.5		0.5±0.35		0.5±0.3		1.5±0.5					
		Operating force (N)		6 $\pm$ $\frac{2.5}{2}$		4±2		6 $\pm$ $\frac{2.5}{2}$		4±2		6 $\pm$ $\frac{2.5}{2}$		4±2		5±2		6 $\pm$ $\frac{2.5}{2}$		4±2	
		Rating		10mA 5V DC (1mA 5V DC min. ratings)		0.1A 5V DC (500μA 5V DC min. ratings)															
		Contact resistance		100mΩ max. for initial period; 200mΩ max. after operating life.																	
		Operating life		10,000 times				20,000 times													
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### Notes

- Indicates applicability to all products in the series.