

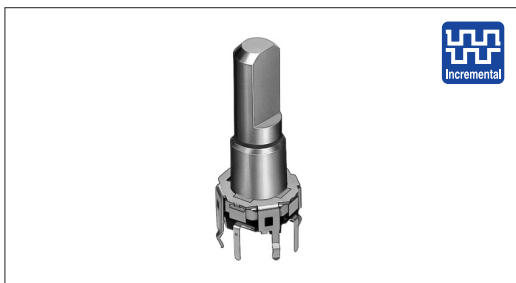
# Encoder 9mm Size Metal Shaft Type

EC09E Series



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

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



## Typical Specifications

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

## Product Line

Actuator configuration	Actuator length (mm)	Detent torque (mN·m)	Number of detent	Number of pulse	Operating direction	Push-on switch	Travel of push-on switch (mm)	Minimum order unit (pcs.)	Product No.	Drawing No.
Flat	15	8±5	30	15	Vertical	Without	—	1,400	EC09E1520406	1
	20					With	0.5		EC09E1524405	2
							1.5		EC09E1524404	

## Packing Specifications

### Tray

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

- Metal Shaft
- Insulated Shaft
- Hollow Shaft
- Ring Type

## Dimensions

Unit:mm

No.	Photo	Style	PC board mounting hole dimensions (Viewed from mounting face)
1			
2			

## Notes

- Products other than those listed in the above chart are also available. Please contact us for details.
- Please place purchase orders per minimum order unit N (integer).



Automotive Use

## List of Varieties

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

Type	Metal shaft							
	9mm size		11mm size					
Series	EC09E	EC11B	EC11E		EC111	EC11EH		
Photo								
Output	Incremental				Self-return switch	ABC switch		
Outline specifications	Shaft types	Single-shaft			Dual-shaft	Single-shaft		
	Operating direction	Vertical	Horizontal		Vertical			
	Number of pulse/ Number of detent	15/30		9/18 15/30 18/36	—	6×ABC/18 10×ABC/30		
	Push switch (Travel mm)	Without/With (0.5, 1.5)						
	Optional functions	—			Push-lock mechanism Without detent		—	
	Changeover angle	—				17 to 40°	—	
Dimensions (mm)	W	9.5	11.7					
	D		13.8	12		13	12	
	H	4.5	5.5	4.5	8.5	5	4.5	
Soldering	Manual soldering	350°C max. 3s max.						
	Dip soldering	260±5°C, 3±1s		260±5°C, 5±1s				
Operating temperature range	-40°C to +85°C							
Automotive use	○ ○ ○ ○ ○							
Maximum operating current (Resistive load)	10mA							
Electrical performance	Output signal	Output of A and B signals, proportionate to phase difference			Self-return switch	Three phase A, B and C		
	Output wave	Please see P.217						
	Sliding noise	Please see P.217						
	Insulation resistance	100MΩ min. 250V DC						
	Voltage proof	300V AC for 1minute						
Mechanical performance	Rotational torque	—		7± <sup>3</sup> / <sub>4</sub> mN·m	—	3~30mN·m		—
	Detent torque	8±5mN·m	12±7mN·m	10±7mN·m		—	10±7mN·m	
	Push-pull strength	100N						
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						
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**Metal Shaft**  
Insulated Shaft  
Hollow Shaft  
Ring Type

### Push-on Switch Specifications

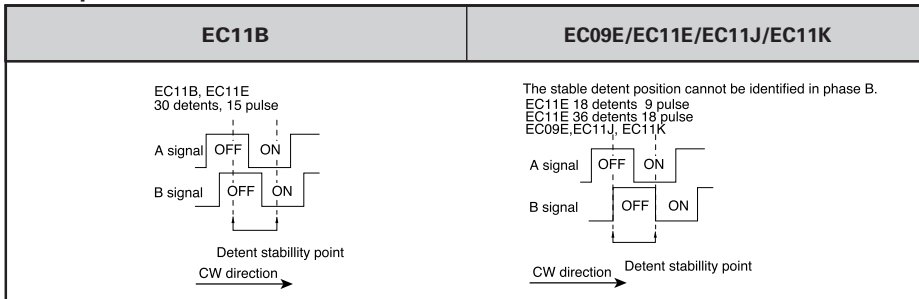
Items	EC09E		EC11B		EC11E		EC111		EC11EH	
Contact arrangement	Single pole and single throw (Push-on)									
Travel (mm)	0.5±0.3	1.5±0.5	0.5± <sup>0.4</sup> / <sub>0.3</sub>	1.5±0.5	0.5±0.3	1.5±0.5 8±0.8※	0.5±0.3	1.5±0.5	0.5±0.3	1.5±0.5
Operating force (N)	6± <sup>2.5</sup> / <sub>2</sub>	4±2	6±3	5±2	6± <sup>2.5</sup> / <sub>2</sub>	4±2 8 max. ※	6± <sup>2.5</sup> / <sub>2</sub>	4±2	6± <sup>2.5</sup> / <sub>2</sub>	4±2
Rating	10mA 5V DC		0.1A 5V DC (500μA 5V DC min. ratings)		0.1A 5V DC (500μA 5V DC min. ratings) 0.5A 12V DC ※		0.1A 5V DC (500μA 5V DC min. ratings)			
Contact resistance	100mΩ max. for initial period; 200mΩ max. after operating life.									
Operating life	10,000times min.		25,000 times min.	20,000 times min.	20,000times min. 10,000times min.※		20,000times min.			

#### Notes

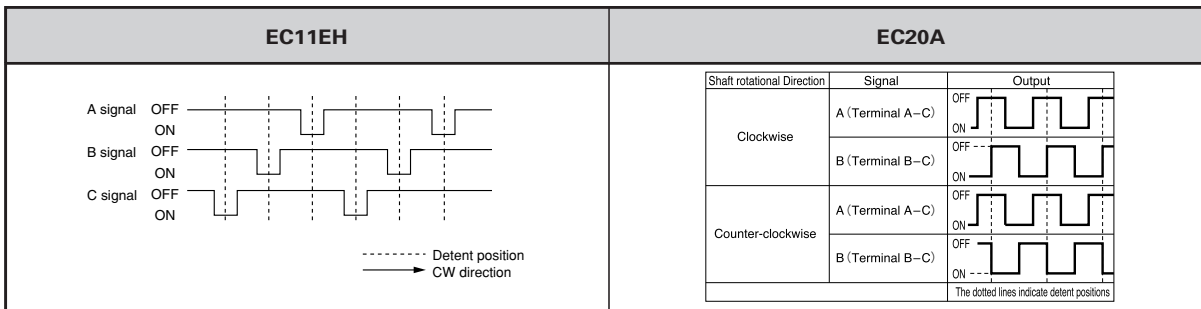
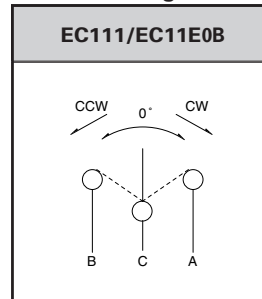
- ※marked specification is only applicable to EC11E152U402.
- marks in "Available for automotive use" indicate that some of the series products can work at the operating temperature range from -40°C to +85°C.

# Product Specifications

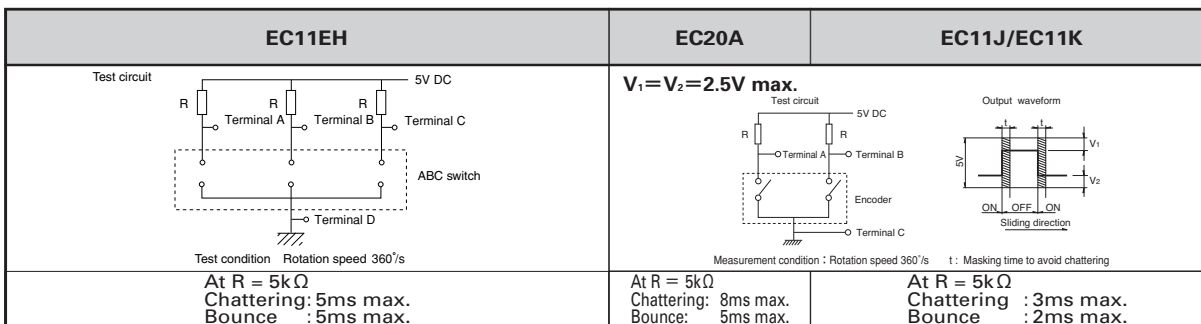
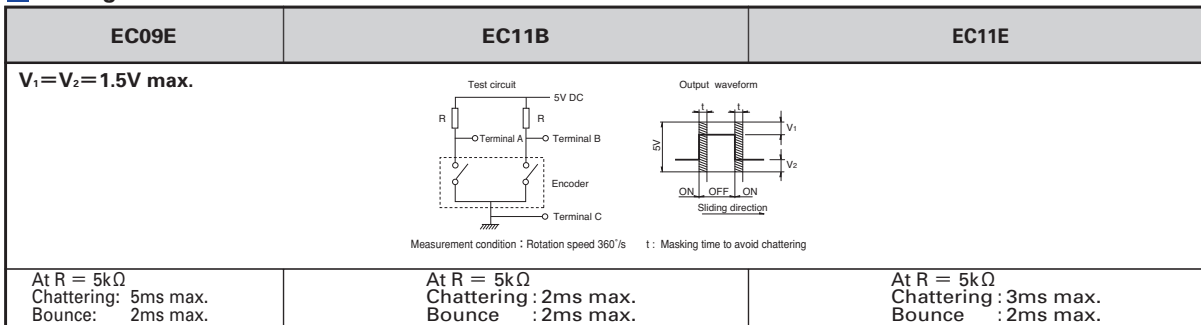
## Output Wave



## Circuit Diagram



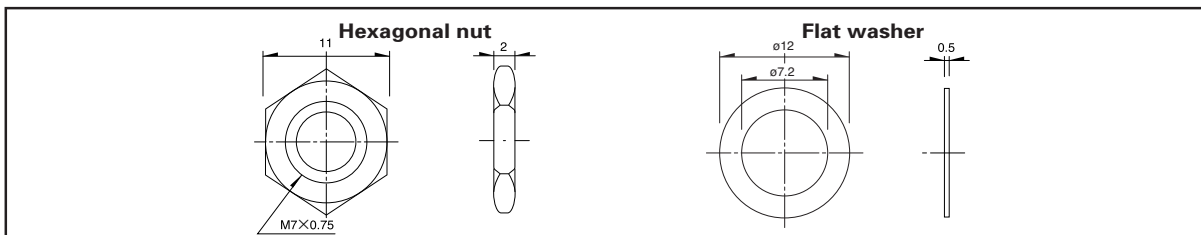
## Sliding Noise



# Attached Parts

## EC11B Series

Unit:mm



Automotive Use