

Encoder 11mm Size Metal Shaft Reflow Type

EC11J Series



Compact and highly reliable type available in many varieties.



Typical Specifications

Items	Specifications
Rating	10mA 5V DC
Operating life	100,000cycles 500,000cycles 1,000,000cycles
Operating temperature range	-40°C to +85°C

Product Line

Structure	Actuator configuration	Actuator length (mm)	Torque (mN·m)	Number of detent	Number of pulse	Push-on switch	Travel of push-on switch (mm)	Operating life (cycles)	Minimum order unit (pcs.)	Product No.	Drawing No.
Reflow	Flat	20	12±5	18	9	Without	—	100,000	600	EC11J0920402	1
										EC11J1520402	
				18	9	With	0.5			100,000	2
				30	15	With	1.5			100,000	2
				18	9	Without	—	500,000		1	
											EC11J0925403
				30	15	Without	—			500,000	1
				18	9	With	0.5			500,000	2
				30	15	With	1.5	500,000		2	
											EC11J1520602
				18	9	Without	—	1,000,000		1	
											EC11J0924602
				30	15	Without	—			1,000,000	1
				18	9	With	0.5			1,000,000	2
				30	15	With	1.5	1,000,000		2	
											EC11J1525602
				18	9	Without	—	1,000,000		1	
											EC11J0920802
30	15	Without	—	1,000,000	1						
						EC11J1520803					
18	9	With	0.5	1,000,000	2						
						EC11J0924802					
30	15	With	1.5	1,000,000	2						
						EC11J1524802					
18	9	Without	—	1,000,000	1						
						EC11J0925802					
30	15	Without	—	1,000,000	1						
						EC11J1525802					

Notes

- The operating temperature range for automotive applications can be raised upon request. Please contact us for details.
- Please place purchase orders per minimum order unit N (integer).

Packing Specifications

Tray

Number of packages (pcs.)		Export package measurements (mm)
1 case /Japan	1 case /export packing	
300	600	369 × 283 × 263

Detector

Push

Slide

Rotary

Encoders

Power

Dual-in-line Package Type

TACT Switch™

Custom-Products

Metal Shaft

Insulated Shaft

Hollow Shaft

Ring Type


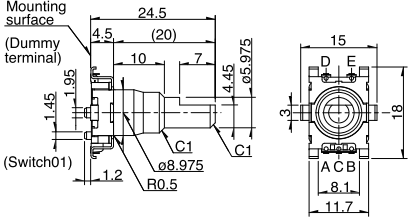
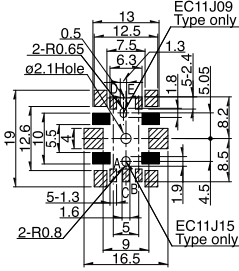
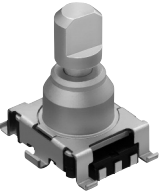
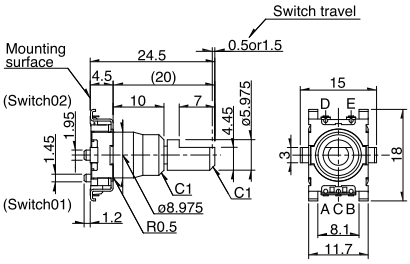
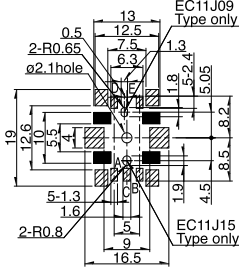


Automotive Use

Refer to P.212 for product varieties.
Refer to P.217 for product specifications.
Refer to P.212 for soldering conditions.

Dimensions

Unit:mm

No.	Photo	Style	PC board mounting hole dimensions (Viewed from mounting side)
1			 <p>EC11J09 Type only EC11J15 Type only</p> <p>PC board mounting detail A slant line part hows the solder land black part: Do not solder and wiring for electrical contact</p>
2			 <p>EC11J09 Type only EC11J15 Type only</p> <p>PC board mounting detail A slant line part hows the solder land black part: Do not solder and wiring for electrical contact</p>

Detector

Push

Slide

Rotary

Encoders

Power

Dual-in-line
 Package Type

TACT Switch™

Custom-
 Products

Metal
 Shaft

Insulated
 Shaft

Hollow
 Shaft

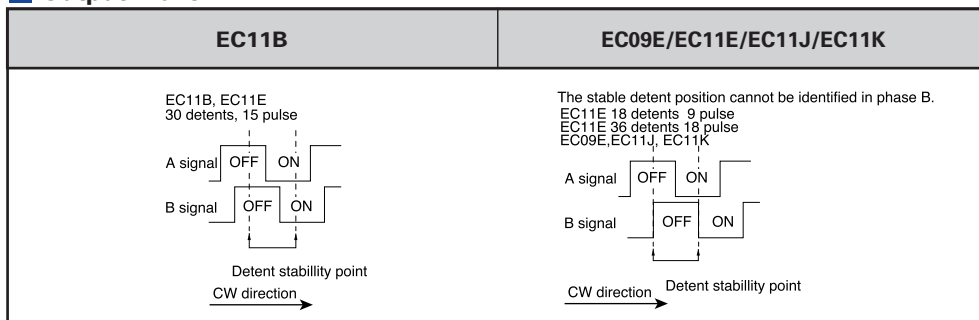
Ring
 Type



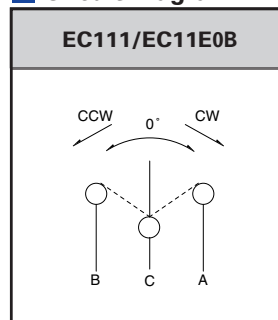
Automotive
 Use

Product Specifications

Output Wave



Circuit Diagram



Detector

Push

Slide

Rotary

Encoders

Power

Dual-in-line
Package Type

TACT Switch™

Custom-
Products

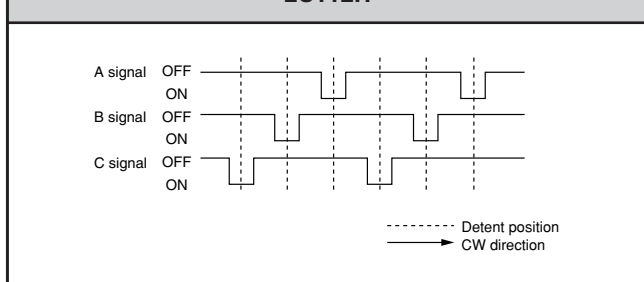
Metal
Shaft

Insulated
Shaft

Hollow
Shaft

Ring
Type

EC11EH

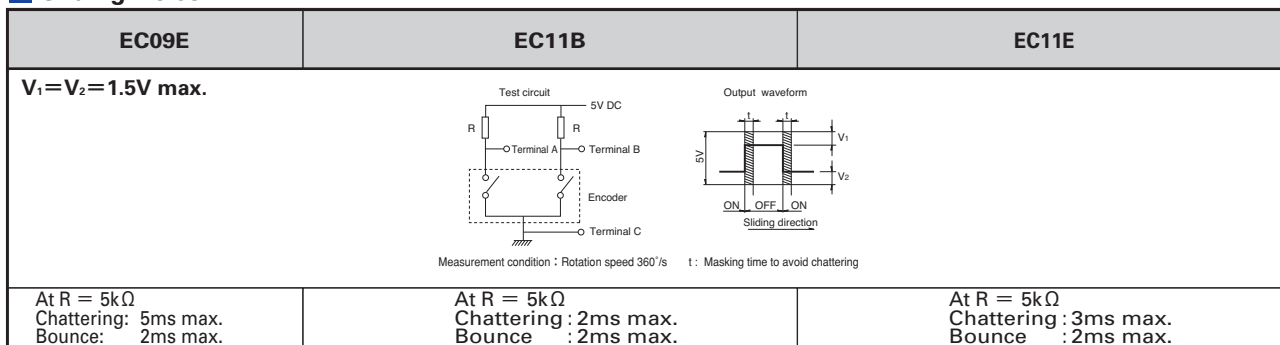


EC20A

Shaft rotational Direction	Signal	Output
Clockwise	A (Terminal A-C)	OFF ON
	B (Terminal B-C)	OFF ON
Counter-clockwise	A (Terminal A-C)	OFF ON
	B (Terminal B-C)	OFF ON

The dotted lines indicate detent positions

Sliding Noise



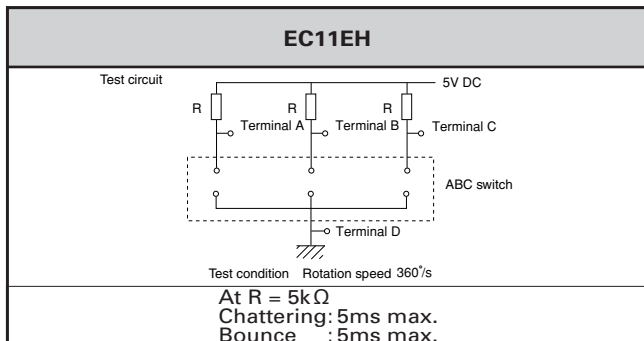
Metal
Shaft

Insulated
Shaft

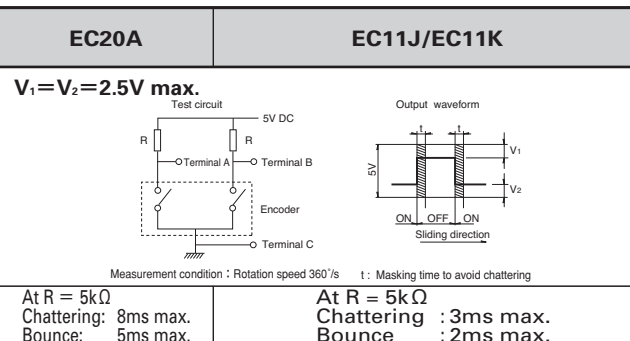
Hollow
Shaft

Ring
Type

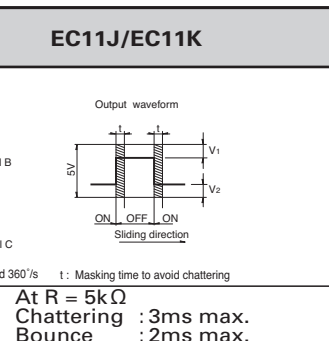
EC11EH



EC20A



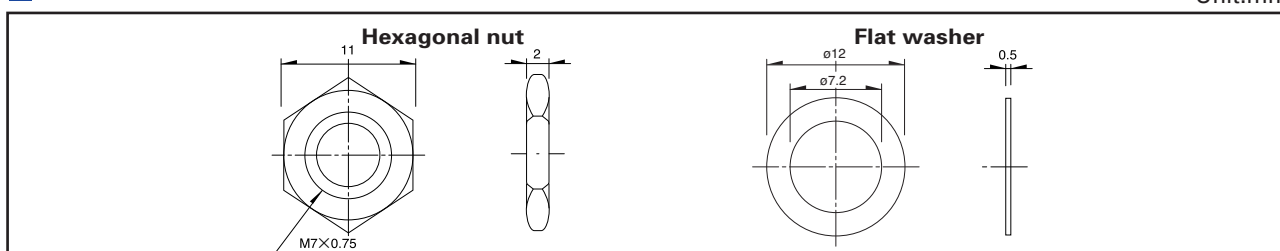
EC11J/EC11K



Attached Parts





EC11B Series

Unit:mm



Automotive
Use

List of Varieties

Type	Metal shaft			
	11mm size		20mm size	
Series	EC11K	EC11J	EC20A/RK203	EM20B
Photo				
Output	Incremental			
Outline specifications	Shaft types	Single-shaft		
	Operating direction	Vertical		
	Number of pulse/ Number of detent	9/18 15/30	18/18	40/40
	Push switch (Travel mm)	Without With (0.5, 1.5)	Without With (1.5)	Without With (0.5)
	Optional function	—————		Display function
Dimensions (mm)	W	11.7		20
	D	12	14.2	19.2
	H	4.5		10
Soldering	Manual soldering	350°C max. 3s max.		
	Dip soldering	260±5°C, 3±1s	—————	260±5°C, 5±1s
	Reflow soldering	—————	Please see P.212	—————
Operating temperature range	-40°C to +85°C		-10°C to +70°C	
Automotive use	○	○	○	—
Maximum operating current (Resistive load)	10mA			—
Electrical performance	Output signal	Output of A and B signals, proportionate to phase difference		V _A : +4.0V min. V _O : 0.5V max. (I _{sink} =5mA)
	Output wave	Please see P.217		
	Output phase	—————		
	Sliding noise	Please see P.217		
	Insulation resistance	100MΩ min. 250V DC	10MΩ min. 50V DC	100MΩ min. 250V DC
	Voltage proof	300V AC for 1minute	50V AC for 1minute	300V AC for 1minute
Mechanical performance	Rotational torque	—————		7mN·m max.
	Detent torque	12±5mN·m	40±20mN·m	8±5mN·m
	Push-pull strength	100N		
Environmental performance	Cold	-40±2°C for 240h	-40±3°C for 240h	-30±3°C for 240h
	Dry heat	85±2°C for 240h	85±3°C for 240h	80±3°C for 240h
	Damp heat	60±2°C, 90 to 95% RH for 240h	60±3°C, 90 to 95%RH for 240h	40±2°C, 90 to 95%RH for 240h
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Push-on Switch Specifications

Items	EC11K/EC11J	EC20A	EM20B
Contact arrangement	Single pole and single throw (Push-on)		
Travel (mm)	0.5±0.3	1.5±0.5	0.5 ^{+0.4} _{-0.3}
Operating force (N)	5±2	4±2	6±3
Rating	0.1A 5V DC	0.5A 16V DC (1mA 16V DC min. ratings)	0.1A 5V DC
Contact resistance	100mΩ for initial period; 200mΩ after operating life		
Operating life	1,000,000 times min.	100,000 times min.	20,000times min.

Note

○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.

Detector

Push

Slide

Rotary

Encoders

Power

Dual-in-line
Package Type

TACT Switch™

Custom-
ProductsMetal
ShaftInsulated
ShaftHollow
ShaftRing
Type

Product Varieties

Shaft Dimensions

1. Single-shaft Type

1) Knurled Type

Unit:mm

Configuration (Shaft diameter: $\phi 6$)

Detailed dimensions

L ₁	L _B	l ₁	S ₁
15	5	6	7
20	10	6	7

2) Flat Type

Unit:mm

Configuration (Shaft diameter: $\phi 5.975$)

Detailed dimensions

L ₁	L _B	l
15	7	5
20	10	7

3) Slotted Type

Unit:mm

Configuration (Shaft diameter: $\phi 5.975$)

Detailed dimensions

L ₁	L _B
15	7
20	10

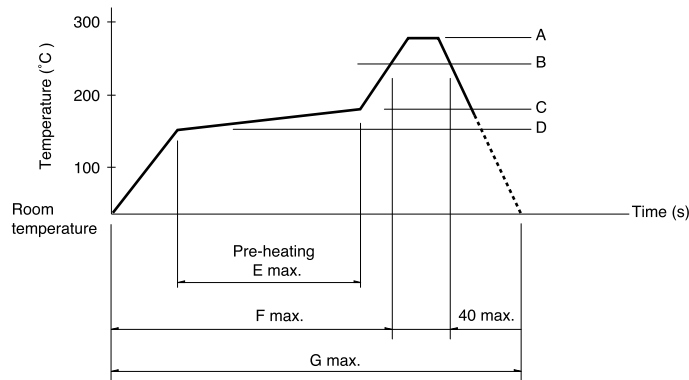
Notes

- The highlighted figures in shaft types refer to Product Specifications in P.215.
- Products other than those listed in the above chart are also available. Please contact us for details

Soldering Conditions

Example of Reflow Soldering Condition

- Heating method: Double heating method with infrared heater.
- 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.
- Temperature profile



Series (Reflow type)	A (°C) 3s max.	B (°C)	C (°C)	D (°C)	E (s)	F (s)	G (s)
EC11J	260	230	180	150	120	—	240

Notes

- 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.
- Soldering conditions differ depending on reflow soldering machines. You are requested to verify the soldering conditions thoroughly beforehand.

Detector

Push

Slide

Rotary

Encoders

Power

Dual-in-line
Package Type

TACT Switch™

Custom-
Products

Metal
Shaft

Insulated
Shaft

Hollow
Shaft

Ring
Type

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