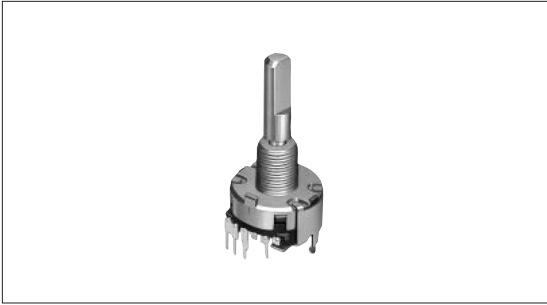


EC20A/RK203 Series



Has heavy rotation torque, a comfortable operation feel, and can be used as an encoder or potentiometer.



Features

- Good operational feel.
- A round shape and low-profile are suitable for design with illumination.
- With push switch type. (1.5mm-travel)
- Incremental type.
- Fully compatible with an encoder or a potentiometer.

Applications

- Car air conditioner controls such as temperature, fan and mode controls. Various controls for devices in automotive
- Controllers for image / sound devices etc.

Typical Specifications

Items	Specifications
Rating	0.5mA 5V DC
Operating life	30,000 cycles

Products Line

Operating section	Length of operating section (mm)	Detent torque (mN·m)	Number of detent	Resolution	Operating direction	Travel of push-on switch (mm)	Minimum packing unit (pcs.)	Products No.
Flat	30	40±20	18	18	Vertical	1.5	400	EC20A1824401

Notes

1. Ask us for models without a push switch.
2. Ask us for potentiometer types and absolute encoder types.

Dimensions

Unit:mm

Style	PC board mounting hole dimensions (Viewd from mounting face)

Products Specifications

Items			EC11B	EC11E/EC11G		EC111	EC20A
			Horizontal type	Vertical type	Vertical type Reflow type	Vertical type Self-return switch	
Operating temperature range			−30 to +85℃				−30 to +80℃
Maximum operating current (Resistive load)			10mA				0.5mA
Electrical performance	Rating		10mA 5V DC				0.5mA 5V DC
	Output signal		Output of A and B signals, proportionate to phase difference			Self-return switch	Output of A and B signals, proportionate to phase difference
	Insulation resistance		100MΩ min. 250V DC				10MΩ min. 50V DC
	Voltage proof		300V AC				50V AC
Mechanical performance	Rotational torque (without click feeling)		—	7 ⁺³ _{−4} mN・m		3 to 30mN・m	—
	Detent torque		12±7mN・m	10±7mN・m	6±4mN・m	—	40±20mN・m
	Push-pull strength		100N				
	Resistance to soldering heat	Manual soldering	350℃ max. 3s max.				
		Dip soldering	260±5℃, 5±1s		—	260±5℃, 5±1s	
		Reflow soldering	—		Please see P.212	—	
Durability	Rotational life		15,000 cycles				30,000 cycles
Environmental performance	Cold		−40±3℃ for 240h				
	Dry heat		85±3℃ for 240h				
	Damp heat		60±2℃, 90 to 95%RH for 240h				

Push-on Switch Specifications

Items	EC11B		EC11E/EC111/EC11G		EC20A
Switch circuit · the number of contact	Single pole and single throw (Push-on)				
Travel of switch	0.5 ^{+0.4} _{-0.3} mm	1.5±0.5mm	0.5±0.3mm	1.5±0.5mm	
Operating force of switch	6±3N	5±2N	6 ^{+2.5} ₋₂ N	4±2N	
Rating	DC 16V 0.5A (1mA 16V DC min. ratings)				
Contact resistance	100mΩ for initial period; 200mΩ after rotational life				
Operating life	25,000 times min.	20,000 times min.			

Products Specifications

Output Wave

EC11B	EC11E/EC11G		EC111	EC20A																
Horizontal type	Vertical type	Vertical type Reflow type	Vertical type Self-return switch																	
<div><div><p>EC11B, EC11E, EC11G 30 detents, 15 pulse</p><p>Detent stability point CW direction</p></div><div><p>EC11B 20 detents, 20 pulse</p><p>Detent stability point CW direction</p></div></div> <p>The stable detent position cannot be identified in phase B.</p> <div><p>EC11E 18 detents 9 pulse EC11E 36 detents 18 pulse</p><p>Detent stability point CW direction</p></div>				<div><p>CCW 0° CW</p></div> <table><tr><th>Shaft rotational Direction</th><th>Signal</th><th>Output</th></tr><tr><td rowspan="2">Clockwise</td><td>A (Terminal A—C)</td><td></td></tr><tr><td>B (Terminal B—C)</td><td></td></tr><tr><td rowspan="2">Counter-clockwise</td><td>A (Terminal A—C)</td><td></td></tr><tr><td>B (Terminal B—C)</td><td></td></tr><tr><td colspan="2"></td><td>The broken line shows Detent stability position</td></tr></table>	Shaft rotational Direction	Signal	Output	Clockwise	A (Terminal A—C)		B (Terminal B—C)		Counter-clockwise	A (Terminal A—C)		B (Terminal B—C)				The broken line shows Detent stability position
Shaft rotational Direction	Signal	Output																		
Clockwise	A (Terminal A—C)																			
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Counter-clockwise	A (Terminal A—C)																			
	B (Terminal B—C)																			
		The broken line shows Detent stability position																		

Detector

Push

Slide

Rotary

Encoders

Power

Dual-in-line
Package TypeMulti Control
Devices

TACT Switch™

Custom-
Products

Sliding Noise

EC11B	EC11E/EC11G		EC111	EC20A
Horizontal type	Vertical type	Vertical type Reflow type	Vertical type Self-return switch	
<p>$V_1=V_2=1.5V$ max.</p> <p>Measurement condition : Rotation speed 360°/s t : Masking time to avoid chattering</p> <p>At R = 5kΩ Chattering : 2ms max. Bounce : 2ms max.</p>				<p>$V_1=V_2=1.5V$ max.</p> <p>Measurement condition : Rotation speed 360°/s t : Masking time to avoid chattering</p> <p>At R = 5kΩ Chattering : 8ms max. Bounce : 5ms max.</p>

Incremental
TypeAbsolute
Type