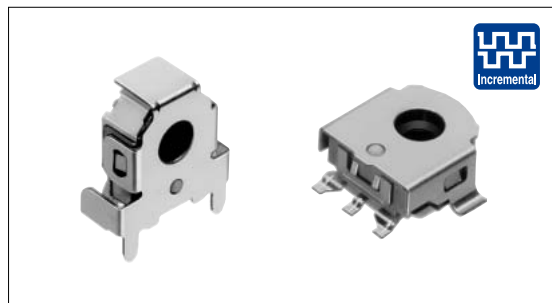


# Encoder 5mm Size Hollow Shaft Type

EC05E Series



A compact 12-pulse hollow shaft encoder adopting Alps DRUMCODE™ technology.



## Typical Specifications

Items	Specifications
Rating	0.55mA 5V DC
Operating life	100,000cycles

Detector

Push

Slide

Rotary

Encoders

Power

Dual-in-line  
Package Type

TACT Switch™

Custom-  
Products

Incremental  
Type

Absolute  
Type

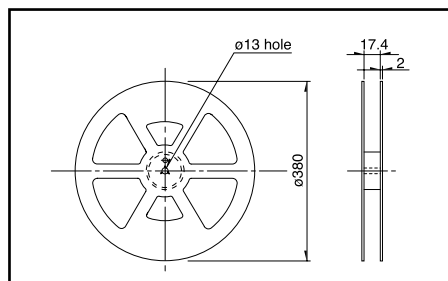
## Product Line

Detent torque (mN·m)	Number of detent	Number of pulse	Operating direction	Mount height (mm)	Minimum order unit (pcs.)	Product No.	Drawing No.
1.6 ± 1.3	12	12	Horizontal	4.5	1,000	EC05E1220202	1
						EC05E1220203	2
			Vertical	—	2,000	EC05E1220401	3

## Taping Specification (Taping Packaging)

Reel Size


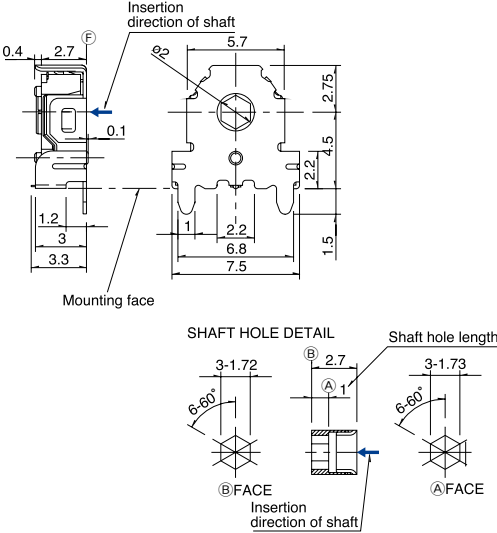
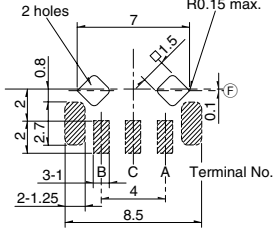

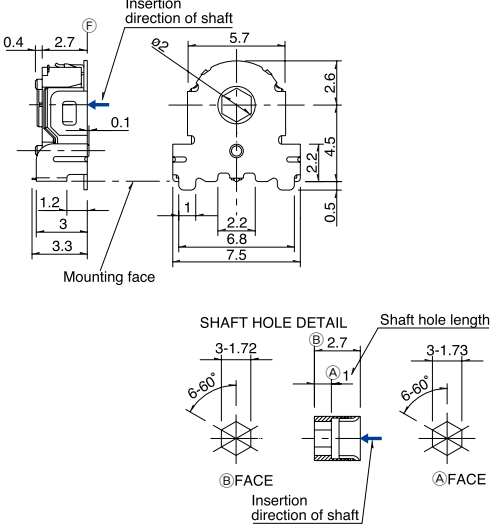
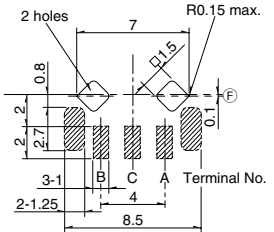

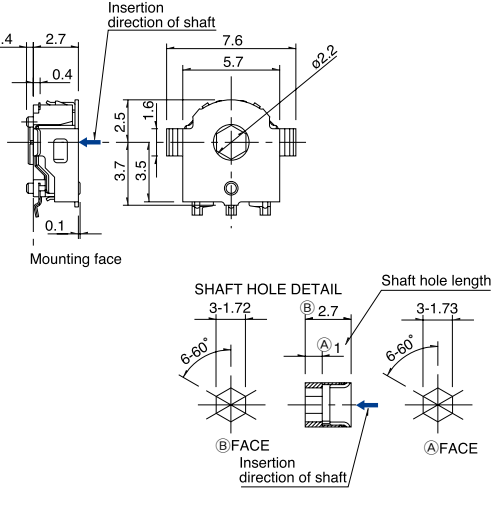
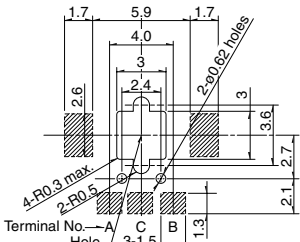
Unit:mm







Product No.	Number of packages ( pcs. )			Tape width ( mm )
	1 reel	1 case /Japan	1 case /export packing	
EC05E12202	1,000	4,000	8,000	16
EC05E12204	2,000	8,000	16,000	

Dimensions

Unit:mm

No.	Photo	Style	PC board mounting hole dimensions (Viewed from mounting side, shaded area indicated soldering land)
1	<p>Horizontal type</p> 		
2	<p>Horizontal type</p> 		
3	<p>Vertical type</p> 		

## List of Varieties

Type	Hollow shaft		Magnetic				
	5mm size	10mm size	11mm size	20mm size			
Series	EC05E	EC10E	EM11B	EM20B			
Detector							
Push							
Slide	Incremental						
Rotary Encoders Power Dual-in-line Package Type TACT Switch™ Custom-Products	Outline specifications	Shaft types		Single-shaft			
		Operating direction		Vertical			
		Number of pulse/ Number of detent		12/12	12/24	16/16	40/40
		Push switch (Travel mm)		Without		With( 0.5 )	Without/With( 0.5 )
		Optional functions				Display function	
		Changeover angle					
Dimensions (mm)	W	5.7	9.8	10.8	20		
	D	2.7	12.6	11	22.25		
	H	6.5	4.4	7.5	13		
Soldering	Manual soldering	350 max. 3s max.					
	Dip soldering	—	260 ± 5 , 3 ± 1s	260 max. 3s max.			
	Reflow soldering	Please see P.189					
Operating temperature range	- 30 to + 85			-10 to + 70			
Maximum operating current( resistive load)	0.55mA	1mA	V <sub>HI</sub> : + 4.0V min. V <sub>LO</sub> : 0.5V max. ( Isink=5mA )				
Incremental Type Absolute Type	Electrical performance	Output signal		Output of A and B signals, proportionate to phase difference			
		Output type		A,B( Square wave )			
		Instulation resistance		Incremental			
		Voltage proof		50M min. 50V DC	100M min. 100V DC	100M min. 250V DC	
Mechanical performance	Rotational torque		7mN·m max.				
	Detent torque		1.6 ± 1.3mN·m	5 ± 3mN·m	10 ± 5mN·m		
	Push-pull strength		100N				
Environmental performance	Cold		- 40 ± 3 for 240h	- 40 ± 3 for 96h	- 30 ± 3 for 240h		
	Dry heat		85 ± 3 for 240h	85 ± 3 for 96h	80 ± 3 for 240h		
	Damp heat		40 ± 2 , 90 to 95%RH for 240h	40 ± 2 , 90 to 95%RH for 96h	40 ± 2 , 90 to 95%RH for 240h		
Page	195	198	199	200			

### Push-on Switch Specifications

Items	EM11B	EM20B
Contact arrangement	Single pole and single throw( Push-on )	
Travel( mm )	0.5 <sup>+ 0.3</sup> <sub>- 0.2</sub>	0.5 <sup>+ 0.4</sup> <sub>- 0.3</sub>
Operating force ( N )	5.5 ± 3	6 ± 3
Rating	5mA 5V DC ( 50mA 12V DC )	
Contact resistance	500m max for initial period;5 max after operating life	100m max for initial period;200m max after operating life
Operating life	1,000,000times min.	25,000times min.

Encoders Attached Parts .....	209
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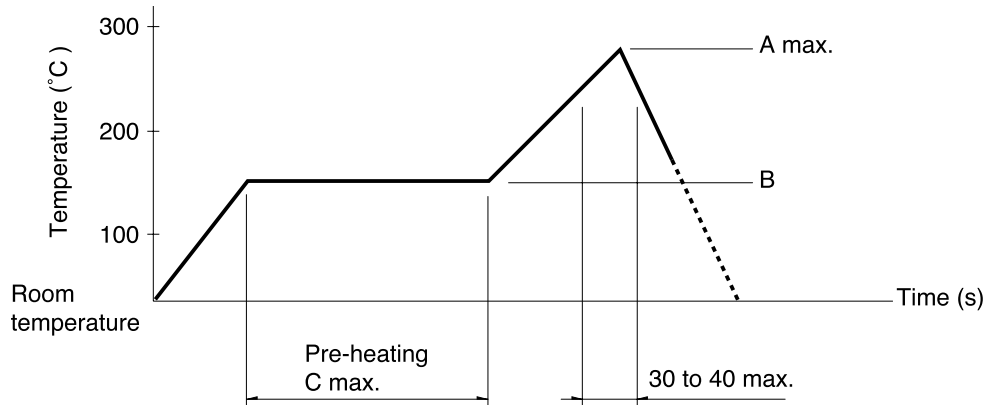
### Note

※ The operating temperature range for automotive applications can be raised upon request. Please contact us for requirements of this kind.

## Soldering Conditions

### Example of Reflow Soldering Condition

1. Heating method: Double heating method with infrared heater.
2. Temperature measurement: Thermocouple 0.1 to 0.2 CA (K) or CC (T) at soldering portion (copper foil surface). A heat resisting tape should be used for fixed measurement.
3. Temperature profile



Series (Reflow type)	A ( ) 3s max.	B ( )	α (s)
EC05E	260	100max.	60max.

### Notes

1. 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.
2. Soldering conditions differ depending on reflow soldering machines. Prior verification of soldering condition is highly recommended.

Detector

Push

Slide

Rotary

Encoders

Power

Dual-in-line  
Package Type

TACT Switch™

Custom-  
ProductsIncremental  
TypeAbsolute  
Type