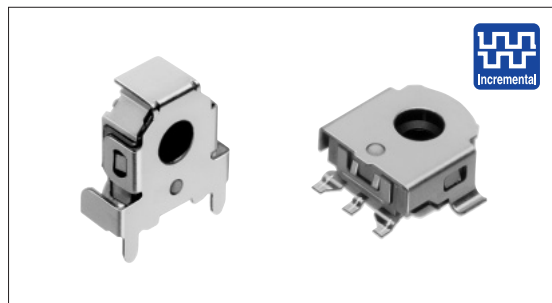


Encoder 5mm Size Hollow Shaft Type

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
Operating temperature range	-30°C to +85°C

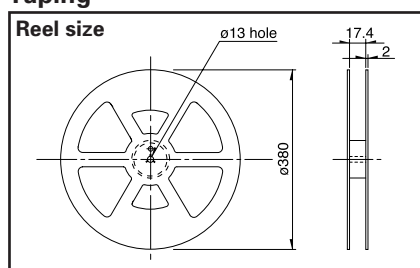
Product Line

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

Packing Specifications

Taping

Unit:mm



Product No.	Number of packages (pcs.)			Tape width (mm)	Export package measurements (mm)
	1 reel	1 case /Japan	1 case /export packing		
EC05E12202	1,000	4,000	8,000	16	410×485×246
EC05E12204	2,000	8,000	16,000		

Note

1. Please place purchase orders for taping products per minimum order unit(1 reel or 1 case).
2. Please place purchase orders per minimum order unit N (integer).


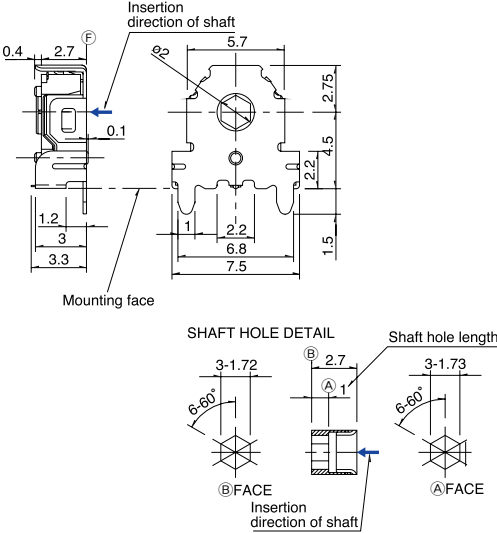
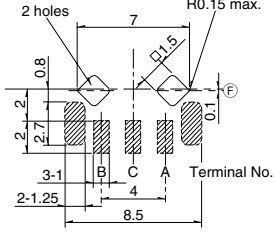

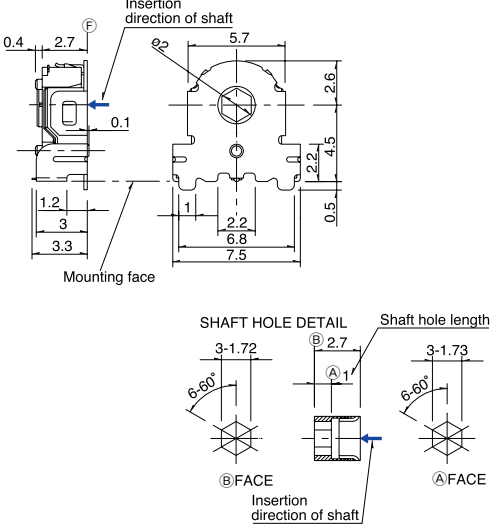
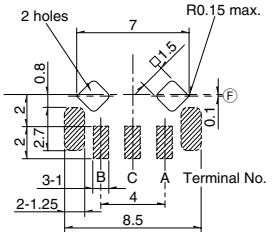

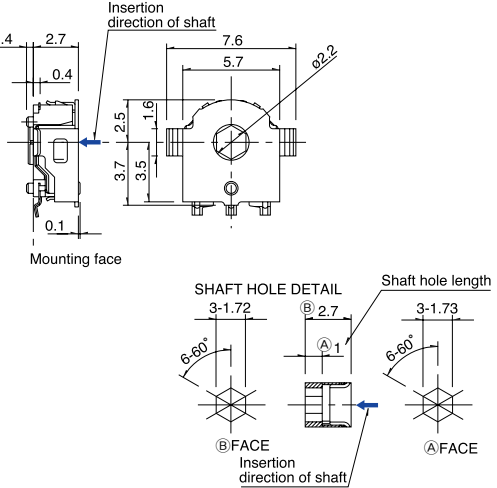
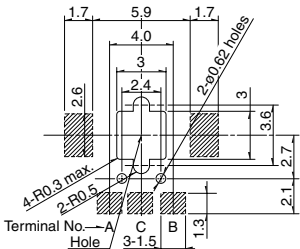
Refer to P.226 for soldering conditions.

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

Incremental Type
Absolute Type

Dimensions




Unit:mm

No.	Photo	Style	PC board mounting hole dimensions (Viewed from mounting side, shaded area indicated soldering land)
1			
2			
3			

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

- Incremental Type
- Absolute Type

List of Varieties

Type	Hollow shaft		Magnetic	
	5mm size	10mm size	20mm size	
Series	EC05E	EC10E	EM20B	
Photo				
Output	Incremental			
Outline specifications	Shaft types	Hollow shaft		Single-shaft
	Operating direction	Vertical/Horizontal	Horizontal	Vertical
	Number of pulse/ Number of detent	12/12	12/24	40/40
	Push switch (Travel mm)	Without		Without/With(0.5)
	Optional functions	_____		Display function
	Changeover angle	_____		
Dimensions (mm)	W	5.7	9.8	20
	D	2.7	4.4	22.25
	H	7.3	12.6	13
Soldering	Manual soldering	350°C max. 3s max.		
	Dip soldering	—	260±5°C, 3±1s	260°C max. 3s max.
Operating temperature range	Please see P.226			
Maximum operating current (Resistive load)	-30°C to +85°C		-10°C to +70°C	
Electrical performance	Output signal	0.55mA	1mA	—
	Output phase	Output of A and B signals, proportionate to phase difference		V _{HI} : +4.0V min. V _{LO} : 0.5V max. (I _{sink} =5mA)
	Sliding noise	_____		A,B (Square wave)
	Insulation resistance	50MΩ min. 50V DC		100MΩ min. 250V DC
	Voltage proof	50V AC for 1minute		300V AC for 1minute
Mechanical performance	Rotational torque	_____		7mN·m max.
	Detent torque	1.6±1.3mN·m	5±3mN·m	8±5mN·m
	Push-pull strength	_____		100N
	Vibration	_____		
Environmental performance	Cold	-40±3°C for 240h		-30±3°C for 240h
	Dry heat	85±3°C for 240h		80±3°C for 240h
	Damp heat	40±2°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	EM20B
Contact arrangement	Single pole and single throw (Push-on)
Travel (mm)	0.5 ^{+0.4} / _{-0.3}
Operating force (N)	6±3
Rating	0.1A 5V DC
Contact resistance	100mΩ max for initial period;200mΩ max after operating life
Operating life	25,000times min.

- Encoders Attached Parts220,234
- Encoders Cautions235, 236

Note

※ The operating temperature range for automotive applications can be raised upon request. Please contact us for details.

Detector

Push

Slide

Rotary

Encoders

Power

Dual-in-line
Package Type

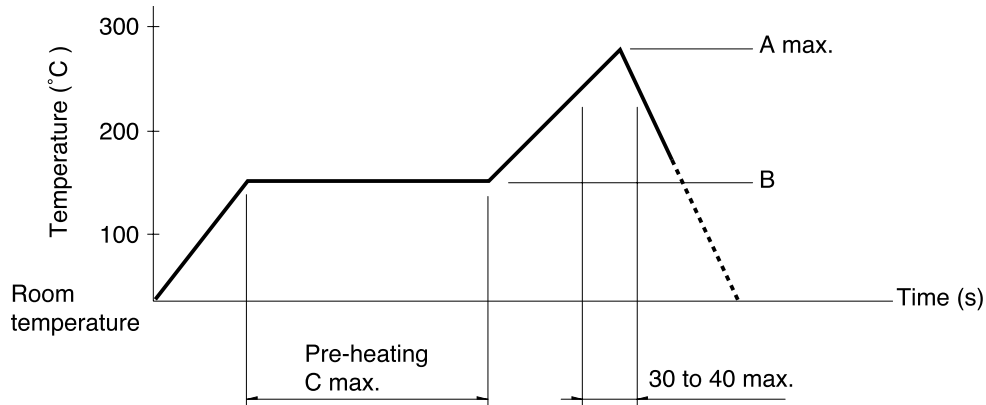
TACT Switch™

Custom-
ProductsIncremental
TypeAbsolute
Type

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 ϕ 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 (°C) 3s max.	B (°C)	C (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