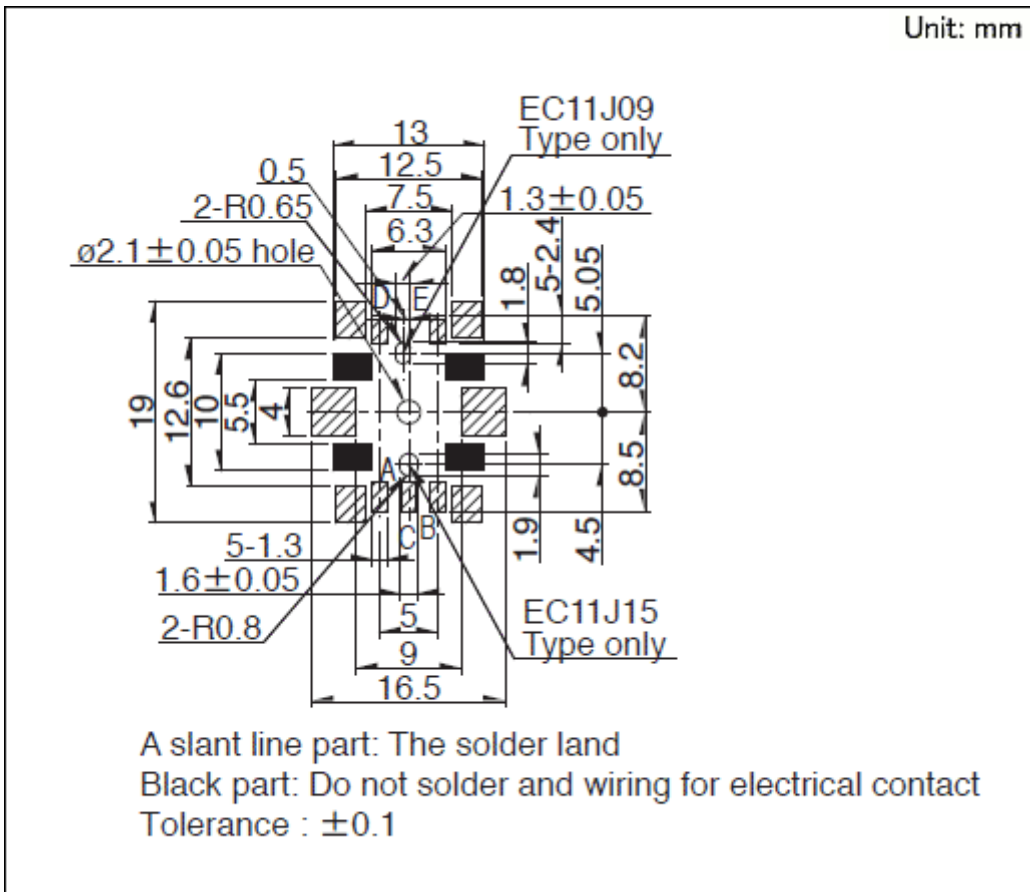




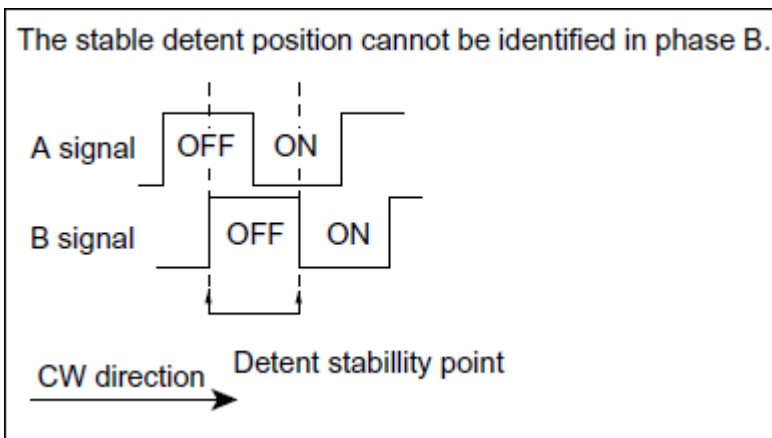
## 11mm Size Metal Shaft Type EC11 Series

Structure		Reflow
Actuator configuration		Flat
Actuator length		20mm
Number of detent		30
Number of pulse		15
Push-on switch		With
Travel of push-on switch		1.5mm
Operating life		100,000 cycles
Operating temperature range		-40°C to +85°C
Electrical performance	Ratings	10mA 5V DC
	Output signal	Two phase A and B
	Max./min. operating current(Resistive load)	10mA/1mA
	Insulation resistance	100MΩ min. 250V DC
	Voltage proof	300V AC for 1 minute or 360V AC for 1s
Mechanical performance	Detent torque	12±5mN·m (Initial) 10±4mN·m (After reflow)
	Push-pull strength	100N
Push-on switch specifications	Contact arrangement	Single pole single throw (Push-on)
	Travel	1.5±0.5mm
	Operating force	4±2N
	Rating	0.1A 5V DC (1mA 5V DC min. ratings)
	Contact resistance (Initial)	100mΩ max./200mΩ max.

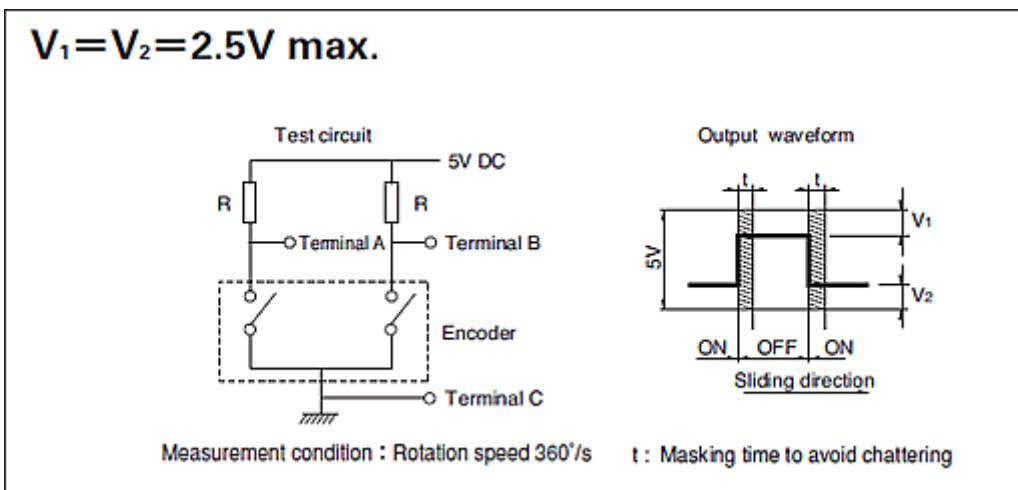




Output Wave



Sliding Noise



At R=5kΩ Chattering: 3ms max. Bounce: 2ms max.

## Packing Specifications

### Tray

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

## Soldering Conditions

### Example of Reflow Soldering Condition

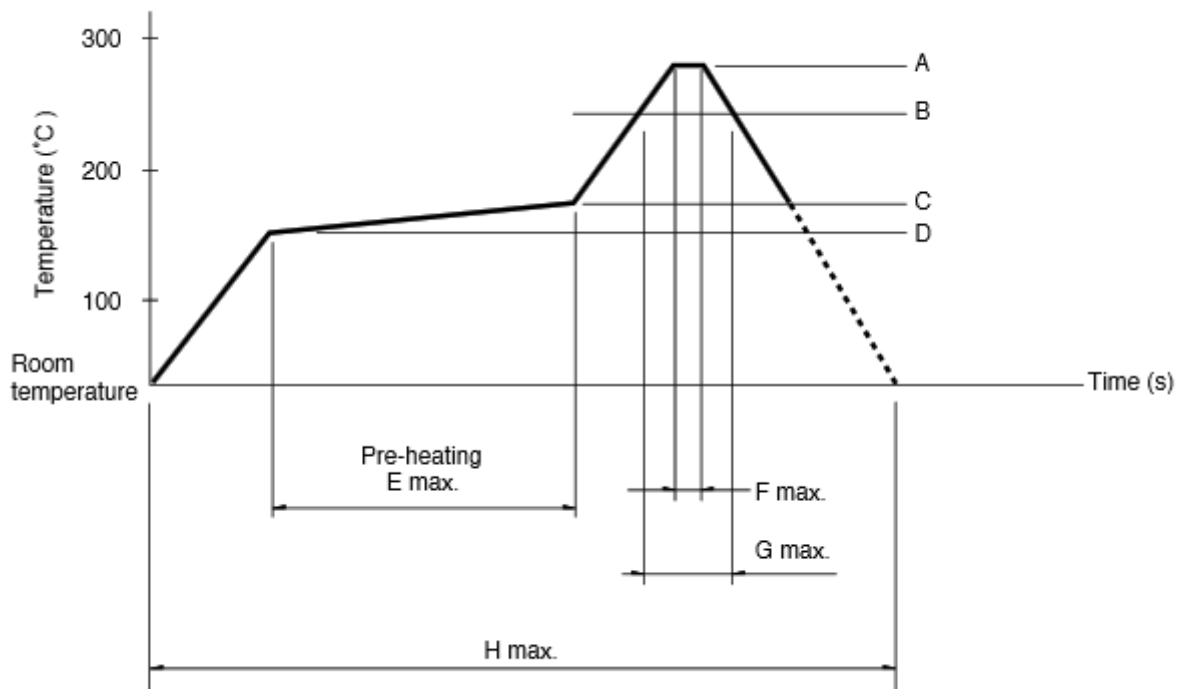
1. Heating method

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



A	B	C	D	E	F	G	H	No. of reflows
260°C	230°C	180°C	150°C	2 min.max.	3s	40s	4 min.max.	2 time max.

(1)When using an infrared reflow oven, solder may sometimes not be applied. Be sure to use a hot air reflow oven or a type that uses infrared rays in combination with hot air.

(2)The temperatures given above are the maximum temperatures at the terminals of the potentiometer when employing a hot air reflow method. The temperature of the PC board and the surface temperature of the potentiometer may vary greatly depending on the PC board material, its size and thickness. Ensure that the surface temperature of the potentiometer does not rise to 250°C or greater.

(3)Conditions vary to some extent depending on the type of reflow bath used. Be sure to give due consideration to this prior to use.

## Reference for Hand Soldering

Tip temperature	350±10°C max.
Soldering time	3(+1, 0)s
No. of solders	2 time

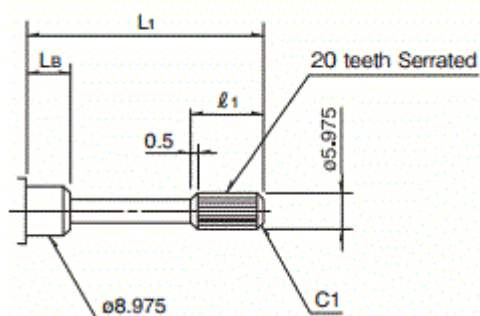
## Product Varieties

### Single-shaft Type

#### 1) Knurled Type

Unit : mm

Style (Shaft diameter : φ5.975)



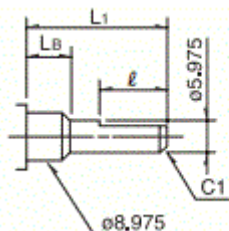
#### ● Detailed dimensions

$L_1$	$L_B$	$l_1$
15	7	5
20	10	6

#### 2) Flat Type

Unit : mm

Style (Shaft diameter : φ5.975)



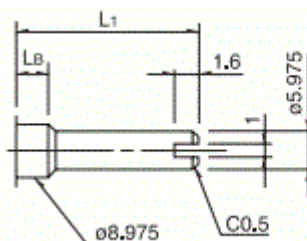
#### ● Detailed dimensions

$L_1$	$L_B$	$l$
15	7	5
20	10	7

#### 3) Slotted Type

Unit : mm

Style (Shaft diameter : φ5.975)



#### ● Detailed dimensions

$L_1$	$L_B$
15	7
20	10

Notes are common to this series/models.

1. This site catalog shows only outline specifications. When using the products, please obtain formal specifications for supply.
2. Please place purchase orders per minimum order unit (integer).
3. Products other than those listed in the above chart are also available. Please contact us for details.
4. This products can be used in vehicles.

Although these products are designed to perform over a wide operating temperature range, please ensure that you receive and read the formal delivery specifications before use.