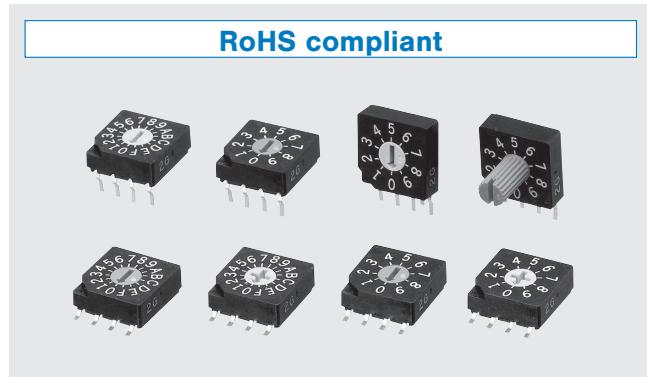


# ROTARY CODED SWITCHES **SC-1000/2000**



## ■ FEATURES

- RoHS compliant
- Fine click with metallic spring
- Low profile of 3.9 mm makes perfect for high density board mounting applications
- Gold plated contact provides excellent reliability
- Cross and minus slot are available
- Terminal pin arrangement 4-1
- Resin material is UL Recognized 94V-0

**INTERNAL STRUCTURE  
SC-1000 / 2000 series**

Part name	Material
(1) Housing	Polyphenylenesulfide
(2) Metallic	Stainless (SUS 301)
(3) "O" ring	Silicone rubber
(4) Insert rotor	Rotor : Polyamide Pattern : Copper alloy, Gold-plated
(5) Base	Polyphenylenesulfide
(6) Contact	Copper alloy, Gold-plated
(7) Terminal pin	

## ■ PART NUMBER DESIGNATION

<u>S</u>	<u>C</u>	<u>-</u>	<u>1</u>	<u>0</u>	<u>1</u>	<u>0</u>	<u>T</u>	<u>B</u>
Series name							Shape of terminal	
No. of positions							B : Gull wing (Top setting type only) Blank : Through hole pin (Snap-in terminal pin)	
1 : 16 positions 2 : 10 positions								
Shape of rotor							Form of packaging	
0 : Without knob (Minus slot) 1 : With knob (with extended shaft) 2 : Without knob (Cross slot)							T : Taping (Gull wing type only) W : Tray packaging Blank : Bulk in plastic bag	
Code format							Setting position	
1 : Real code (Rotor color Yellow) 3 : Complementary code (Rotor color Red)							0 : Top setting 1 : Side setting	

※ Please refer to the **LIST OF PART NUMBERS** when placing orders.

# SC-1000/2000 ROTARY CODED SWITCHES

## ■ LIST OF PART NUMBERS

### ● Binary coded decimal

Shape of rotor		Form of packaging	Real code (Rotor : Color Yellow)	Complementary code (Rotor : Color Red)	Packaging quantity
Top setting (Through hole pin)	Without knob (Minus slot)	Plastic bag	SC-2010	SC-2030	25 pcs./pack
		Tray packaging	SC-2010W	SC-2030W	50 pcs./tray
	With knob	Plastic bag	SC-2110	SC-2130	25 pcs./pack
		Tray packaging	SC-2110W	SC-2130W	50 pcs./tray
	Without knob (Cross slot)	Plastic bag	SC-2210	SC-2230	25 pcs./pack
		Tray packaging	SC-2210W	SC-2230W	50 pcs./tray
	Without knob (Minus slot)	Plastic bag	SC-2011	SC-2031	25 pcs./pack
		Tray packaging	SC-2011W	SC-2031W	50 pcs./tray
Side setting (Through hole pin)	With knob	Plastic bag	SC-2111	SC-2131	25 pcs./pack
		Tray packaging	SC-2111W	SC-2131W	50 pcs./tray
	Without knob (Cross slot)	Plastic bag	SC-2211	SC-2231	25 pcs./pack
		Tray packaging	SC-2211W	SC-2231W	50 pcs./tray
	Without knob (Minus slot)	Plastic bag	SC-2010B	SC-2030B	25 pcs./pack
		Tray packaging	SC-2010WB	SC-2030WB	50 pcs./tray
	Taping		SC-2010TB	SC-2030TB	500 pcs./reel
			SC-2210B	SC-2230B	25 pcs./pack
Top setting (Gull wing)	Without knob (Cross slot)	Plastic bag	SC-2210WB	SC-2230WB	50 pcs./tray
		Taping	SC-2210TB	SC-2230TB	500 pcs./reel

### ● Binary coded hexadecimal

Shape of rotor		Form of packaging	Real code (Rotor : Color Yellow)	Complementary code (Rotor : Color Red)	Packaging quantity
Top setting (Through hole pin)	Without knob (Minus slot)	Plastic bag	SC-1010	SC-1030	25 pcs./pack
		Tray packaging	SC-1010W	SC-1030W	50 pcs./tray
	With knob	Plastic bag	SC-1110	SC-1130	25 pcs./pack
		Tray packaging	SC-1110W	SC-1130W	50 pcs./tray
	Without knob (Cross slot)	Plastic bag	SC-1210	SC-1230	25 pcs./pack
		Tray packaging	SC-1210W	SC-1230W	50 pcs./tray
	Without knob (Minus slot)	Plastic bag	SC-1011	SC-1031	25 pcs./pack
		Tray packaging	SC-1011W	SC-1031W	50 pcs./tray
Side setting (Through hole pin)	With knob	Plastic bag	SC-1111	SC-1131	25 pcs./pack
		Tray packaging	SC-1111W	SC-1131W	50 pcs./tray
	Without knob (Cross slot)	Plastic bag	SC-1211	SC-1231	25 pcs./pack
		Tray packaging	SC-1211W	SC-1231W	50 pcs./tray
	Without knob (Minus slot)	Plastic bag	SC-1010B	SC-1030B	25 pcs./pack
		Tray packaging	SC-1010WB	SC-1030WB	50 pcs./tray
	Taping		SC-1010TB	SC-1030TB	500 pcs./reel
			SC-1210B	SC-1230B	25 pcs./pack
Top setting (Gull wing)	Without knob (Cross slot)	Plastic bag	SC-1210WB	SC-1230WB	50 pcs./tray
		Taping	SC-1210TB	SC-1230TB	500 pcs./reel

※ Verify the above part numbers when placing orders.

※ Taping and tray version can be supplied only in reel or tray units.

# SC-1000/2000

## ROTARY CODED SWITCHES

### ■ STANDARD SPECIFICATIONS

Circuit type	BCD (Real code, complementary code) BCH (Real code, complementary code)
Operating temp. range	- 40 ~ 85 °C
Storage temp. range	
Sealing	Washable ※ Please refer to page 149,150
Net weight	Without knob Top setting 0.63 g With knob Top setting 0.73 g Without knob Side setting 0.76 g With knob Side setting 0.86 g

### ■ MECHANICAL CHARACTERISTICS

No. of positions	16 (SC-1000), 10 (SC-2000)
Adjustment torque	4 ~ 20 mN·m {41 ~ 204 gf·cm}
Stepping angle	22.5° (SC-1000), 36° (SC-2000)
Terminal strength (Through hole pin only)	10 N {1.02 kgf} minimum
Stop strength (With knob only)	10 N {1.02 kgf}, 10 s
Solderability	245 ± 3 °C, 2 ~ 3 s
	Reflow : Peak temperature 255 °C (Please refer to the profile below.) Manual soldering : 350 ± 10 °C, 3 ~ 4 s
Soldering heat	Through hole pin Flow : 260 ± 3 °C as the temperature in a pot of molten solder, immersion from head of terminal to backside of board 5 ~ 6 s, two times maximum Manual soldering : 380 ± 10 °C, 3 ~ 4 s
Shear (Gull wing only)	5 N {0.51 kgf} 10 s
Substrate bending (Gull wing only)	Width 90 mm, bend 3 mm, 5 s, 1 time
Pull-off strength (Gull wing only)	5 N {0.51 kgf} 10 s

{ } : Reference only

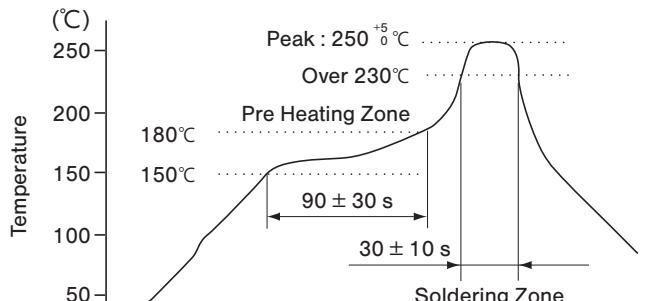
### ■ ELECTRICAL CHARACTERISTICS

Contact rating Non-switching Switching Minimum	DC50 V 100 mA DC5 V 100 mA DC20 mV 1 µA
Contact resistance	100 mΩ maximum
Insulation resistance	1000 MΩ (DC100 V) minimum
Dielectric strength	AC250 V, 60 s

### ■ ENVIRONMENTAL CHARACTERISTICS

Vibration	Amplitude 1.5 mm or Acceleration 98 m/s <sup>2</sup> , 10-500-10 Hz, 3 directions for 2 h each
Shock	490 m/s <sup>2</sup> , 11 ms 6 directions for 3 times each
Humidity	Resistance load DC50V 100mA 40 °C, Relative humidity 90 ~ 95 %, 240 h
Load life	20000 steps DC5 V, 100 mA
High temp. exposure	85 °C, 96 h
Low temp. exposure	-40 °C, 96 h
Thermal shock	-40 (0.5 h) ~ 85 °C (0.5 h), 5 cycles
Solvent resistance (Dipping)	Solvent : IPA (Isopropyl alchol) Temperature : 23 ± 5 °C Time : 5 ± 0.5 minutes

#### 〈Reflow profile for soldering heat evaluation〉



# SC-1000/2000 ROTARY CODED SWITCHES

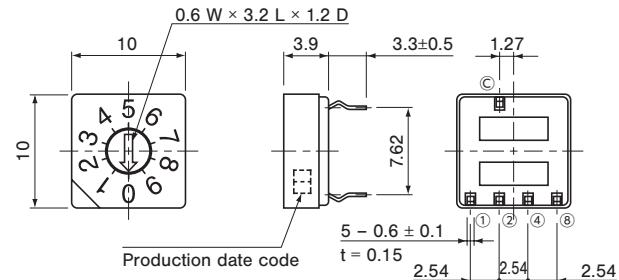
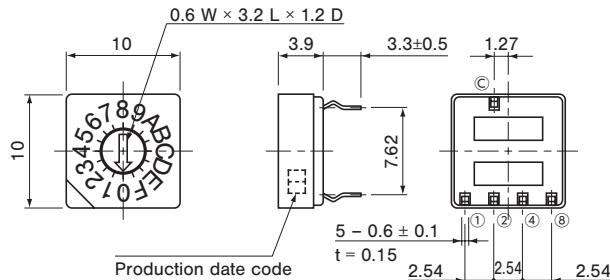
## ■ OUTLINE DIMENSIONS

### <Through hole pin, Top setting>

- SC-1010 (Real code)
- SC-1030 (Complementary code)

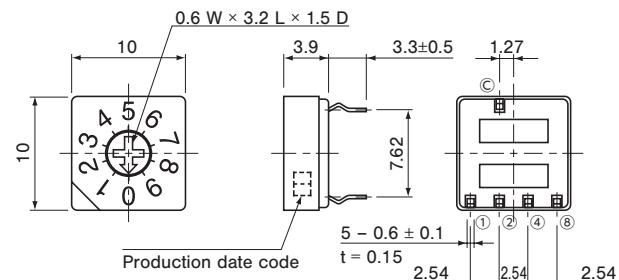
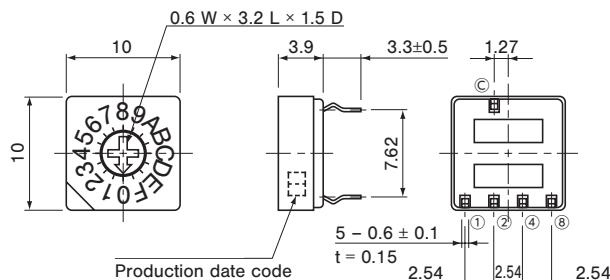
Unless otherwise specified, tolerance:  $\pm 0.3$  (Unit: mm)

- SC-2010 (Real code)
- SC-2030 (Complementary code)



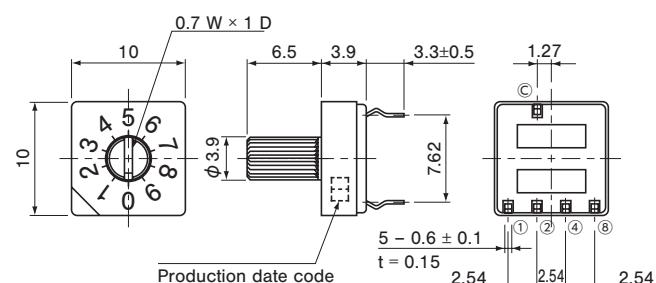
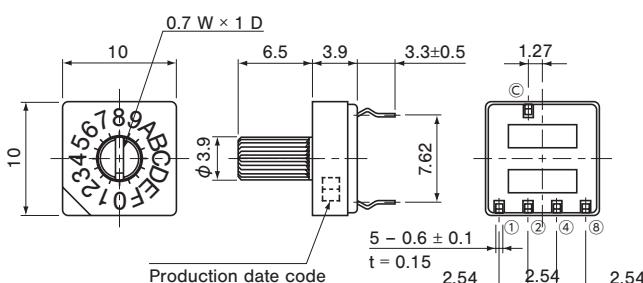
- SC-1210 (Real code)
- SC-1230 (Complementary code)

- SC-2210 (Real code)
- SC-2230 (Complementary code)



- SC-1110 (Real code)
- SC-1130 (Complementary code)

- SC-2110 (Real code)
- SC-2130 (Complementary code)



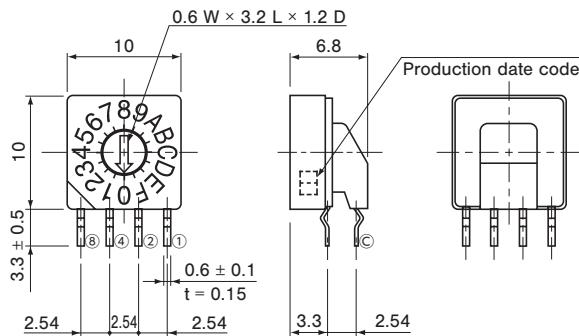
# SC-1000/2000

## ROTARY CODED SWITCHES

### ■ OUTLINE DIMENSIONS

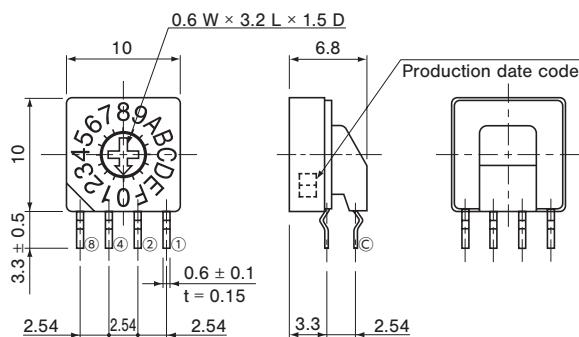
#### ● SC-1011 (Real code)

#### ● SC-1031 (Complementary code)



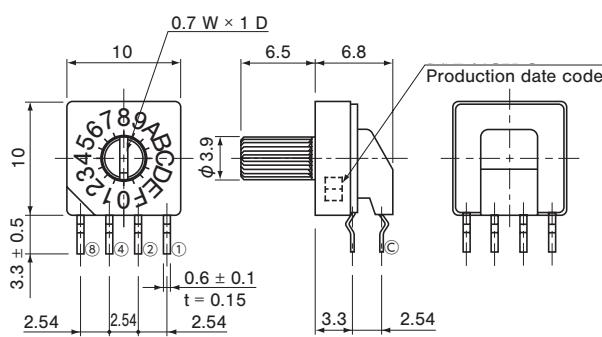
#### ● SC-1211 (Real code)

#### ● SC-1231 (Complementary code)



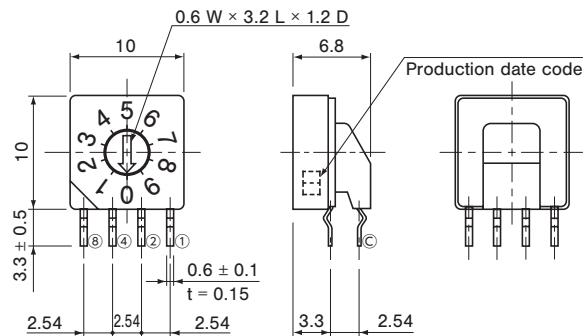
#### ● SC-1111 (Real code)

#### ● SC-1131 (Complementary code)



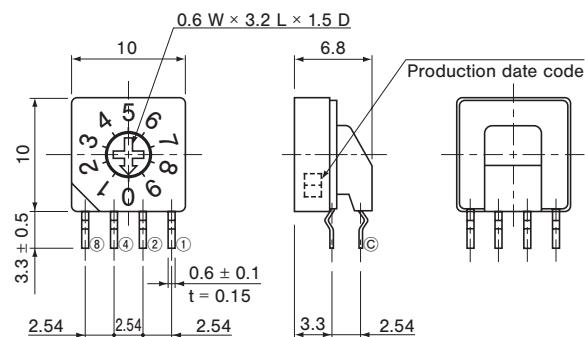
#### ● SC-2011 (Real code)

#### ● SC-2031 (Complementary code)



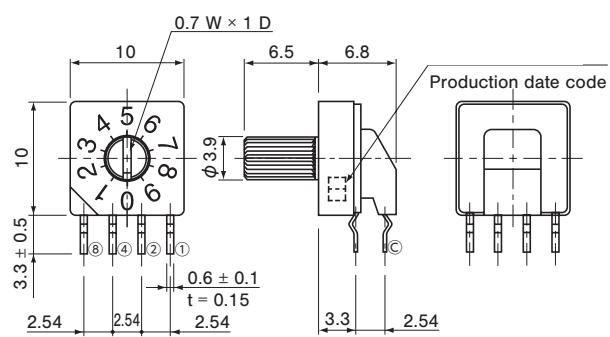
#### ● SC-2211 (Real code)

#### ● SC-2231 (Complementary code)



#### ● SC-2111 (Real code)

#### ● SC-2131 (Complementary code)



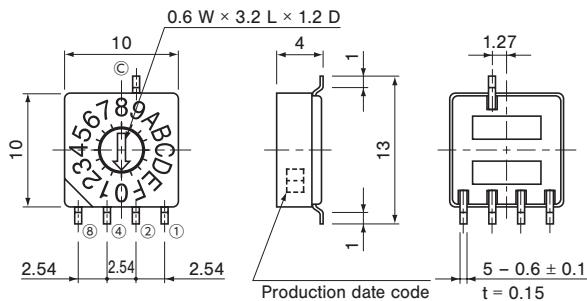
Unless otherwise specified, tolerance: ± 0.3 (Unit: mm)

# SC-1000/2000 ROTARY CODED SWITCHES

## ■ OUTLINE DIMENSIONS

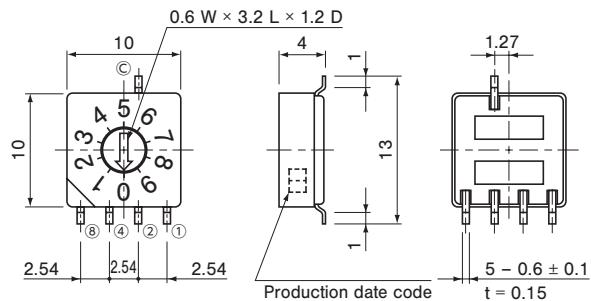
### <Gull wing, Top setting>

- SC-1010B (Real code)
- SC-1030B (Complementary code)

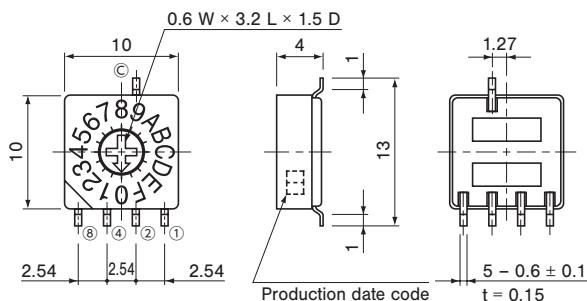


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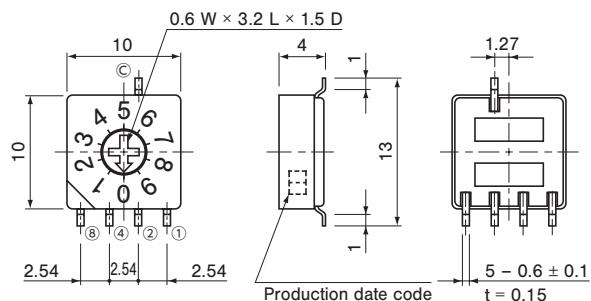
- SC-2010B (Real code)
- SC-2030B (Complementary code)



- SC-1210B (Real code)
- SC-1230B (Complementary code)



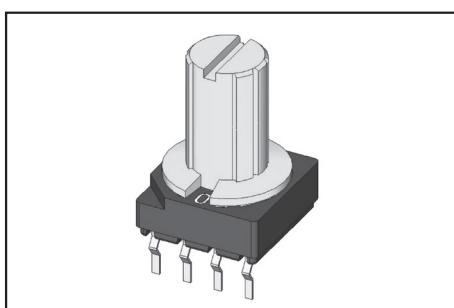
- SC-2210B (Real code)
- SC-2230B (Complementary code)



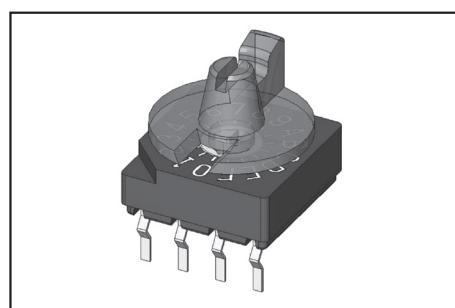
## ■ VARIOUS KNOBS

Yellow, red, white, gray and transparent knob, and translucent thumbwheel type are available as a semi standard item.

(Switches with knob are not washable)



Colored knob



Translucent thumbwheel

※ Knob can't be detached due to being fixed. Simple knob can't be sold.

# SC-1000/2000

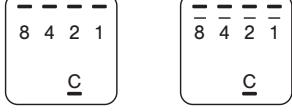
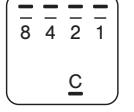
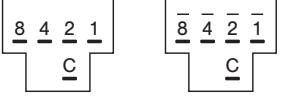
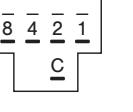
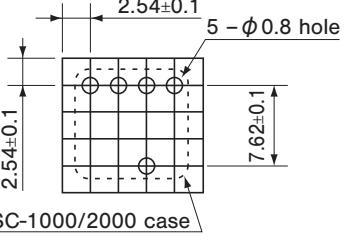
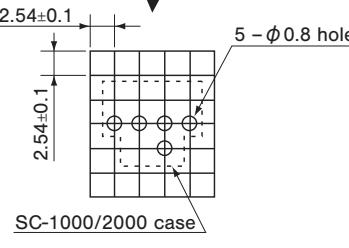
## ROTARY CODED SWITCHES

### CODE FORMAT

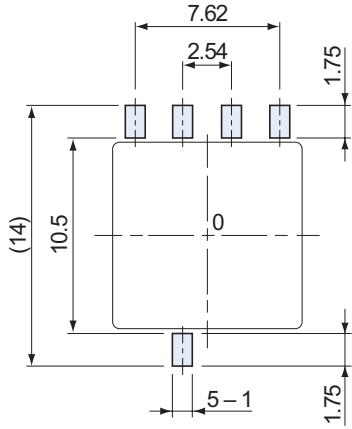
No. of positions		SC-1000 series (16 positions)															
		SC-2000 series (10 positions)															
Position		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Code	Real code	8								●	●	●	●	●	●	●	
		4				●	●	●	●			●	●	●	●	●	
		2		●	●			●	●			●	●		●	●	
		1	●		●		●		●		●		●	●		●	
Code	Complementary code	$\bar{8}$	●	●	●	●	●	●	●								
		$\bar{4}$	●	●	●	●					●	●	●	●			
		$\bar{2}$	●	●			●	●			●	●		●	●		
		$\bar{1}$	●		●		●		●		●		●		●		

### TERMINAL CONNECTION / P.C.B. THROUGH HOLE DIMENSIONS

(Unit: mm)

	Top setting	Side setting
Terminal pin layout (Bottom view)	Real code  Complementary code 	Operating face of real code  Operating face of complementary code 
P.C.B. dimensions (Bottom view)	 SC-1000/2000 case	 SC-1000/2000 case

### RECOMMENDED P.C.B. PAD OUTLINE DIMENSIONS



# SC-1000/2000

## ROTARY CODED SWITCHES

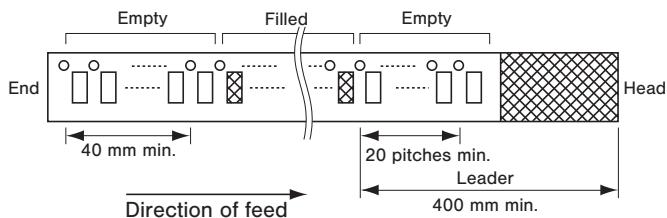
### ■ PACKAGING SPECIFICATIONS

#### <Taping packaging specifications>

- Taping version is packaged in 500 pcs. per reel.  
Orders will be accepted for units of 500 pcs., i.e., 500, 1000, 1500 pcs., etc.
- Taping version is boxed with one reel (500 pcs.).

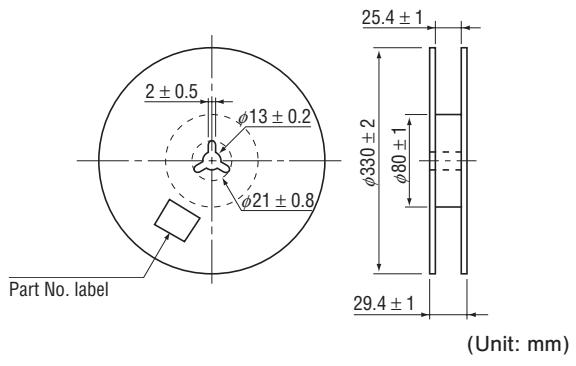
Maximum number of consecutive missing pieces = 2  
Leader length and reel dimension are shown in the diagrams below:

#### ● Embossed tape dimensions

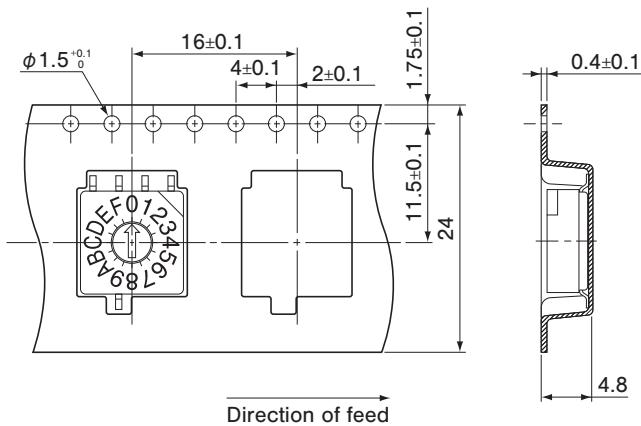


#### ● Reel dimensions

(In accordance with EIAJ ET-7200A)



(In accordance with EIAJ RC-1009B)



#### <Tray packaging specifications>

- Tray version is packaged in 50 pcs. per tray. Orders will be accepted for units of 50 pcs., i.e., 50, 100, 150 pcs. etc.
- Tray version is boxed with 10 trays.

#### <Bulk pack specifications>

- Boxing of bulk pack in a plastic bag is performed with 25 pcs. (standard 50 pcs.) per box.