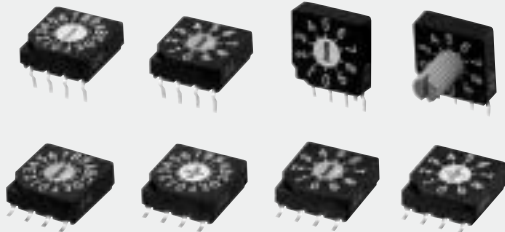


ROTARY CODED SWITCHES

# SC-1000/2000

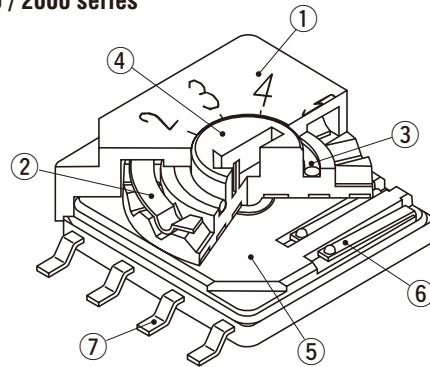
RoHS compatible



## FEATURES

- Lead-free soldering
- 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

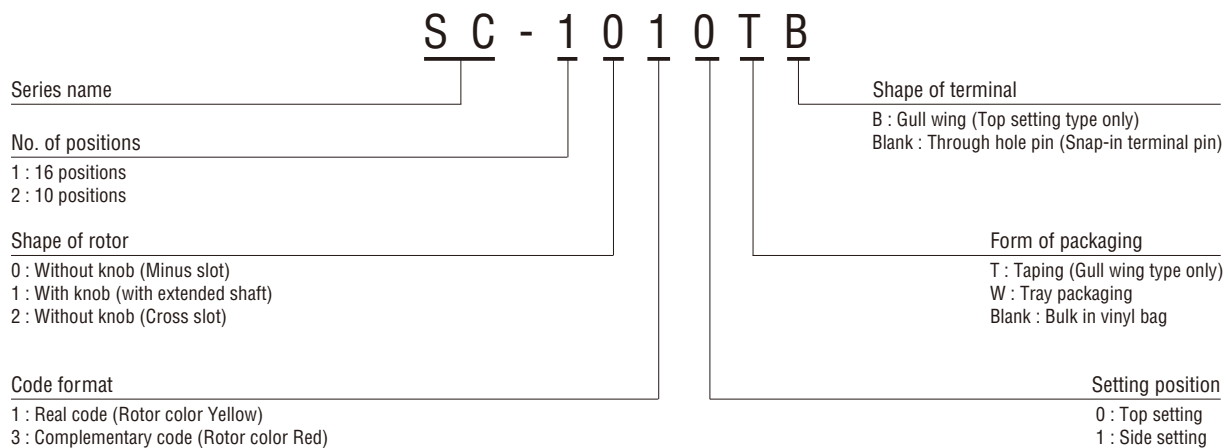
### INTERNAL STRUCTURE SC-1000 / 2000 series



Part name	Material	Flammability
① Housing	PPS (Polyphenylenesulphide)	UL-94V-0
② Metallic spring	Stainless (SUS 301)	—
③ "O" ring	Silicone rubber	UL-94HB
④ Insert rotor	Rotor : PA (Polyamide) Pattern : Copper alloy, Gold-plated	UL-94V-0
⑤ Base	PPS (Polyphenylenesulphide)	UL-94V-0
⑥ Contact	Copper alloy, Gold-plated	—
⑦ Terminal pin		

CFCs, Halon, Carbon tetrachloride and designated bromic flame retardant PBBs and PBBs are not used in our products.

## PART NUMBER DESIGNATION



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

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

**LIST OF PART NUMBERS**

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

Shape of rotor		Form of packaging	Binary coded hexadecimal		Pieces in package
			Real code (Rotor : Color Yellow)	Complementary code (Rotor : Color Red)	
Top setting (Through hole pin)	Without knob (Minus slot)	Vinyl pack	SC-1010	SC-1030	25 pcs./pack
		Tray packaging	SC-1010W	SC-1030W	50 pcs./tray
	With knob	Vinyl pack	SC-1110	SC-1130	25 pcs./pack
		Tray packaging	SC-1110W	SC-1130W	50 pcs./tray
	Without knob (Cross slot)	Vinyl pack	SC-1210	SC-1230	25 pcs./pack
		Tray packaging	SC-1210W	SC-1230W	50 pcs./tray
Side setting (Through hole pin)	Without knob (Minus slot)	Vinyl pack	SC-1011	SC-1031	25 pcs./pack
		Tray packaging	SC-1011W	SC-1031W	50 pcs./tray
	With knob	Vinyl pack	SC-1111	SC-1131	25 pcs./pack
		Tray packaging	SC-1111W	SC-1131W	50 pcs./tray
	Without knob (Cross slot)	Vinyl pack	SC-1211	SC-1231	25 pcs./pack
		Tray packaging	SC-1211W	SC-1231W	50 pcs./tray
Top setting (Gull wing)	Without knob (Minus slot)	Vinyl pack	SC-1010B	SC-1030B	25 pcs./pack
		Tray packaging	SC-1010WB	SC-1030WB	50 pcs./tray
		Taping	SC-1010TB	SC-1030TB	500 pcs./reel
	Without knob (Cross slot)	Vinyl pack	SC-1210B	SC-1230B	25 pcs./pack
		Tray packaging	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 temperature range	-25 ~ 85 °C
Storage temperature range	
Sealing	Non washable
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

## ■ ELECTRICAL CHARACTERISTICS

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

## ■ MECHANICAL CHARACTERISTICS

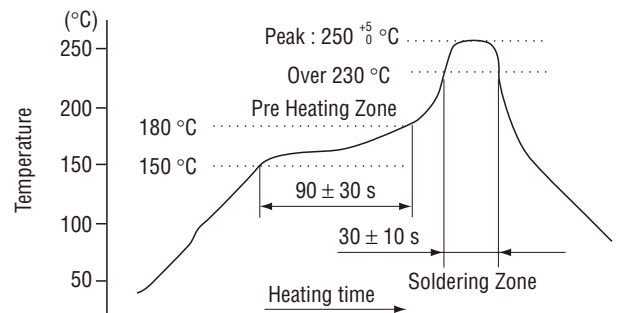
No. of positions	16 (SC-1000), 10 (SC-2000)
Adjustment torque	4 ~ 20 mN·m {41 ~ 204 gf·cm}
Stepping angle	22.5° (SC-1000), 36° (SC-2000)
Terminal strength (Through hole pin only)	10 N {1.02 kgf} minimum
Stop strength (With knob only)	10 N {1.02 kgf}, 10 s
Solderability	245 ± 3 °C, 2 ~ 3 s
Soldering heat	Gull wing Reflow : Peak temperature 255 °C (Please refer to the profile below.) Manual soldering : 350 ± 10 °C, 3 ~ 4 s
	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

## ■ 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 (Steady state)	40 °C, Relative humidity 90 ~ 95 %, 240 h
Load life	20000 steps DC5 V, 100 mA
High temperature exposure	85 °C, 96 h
Low temperature exposure	-25 °C, 96 h
Thermal shock	-25 (0.5 h) ~ 85 °C (0.5 h), 5 cycles

### Reflow profile for soldering heat evaluation



Reflow : two times maximum

# SC-1000/2000 ROTARY CODED SWITCHES

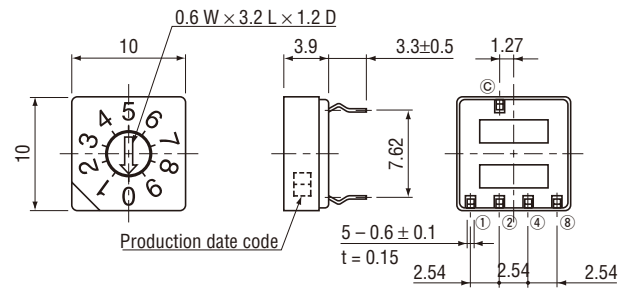
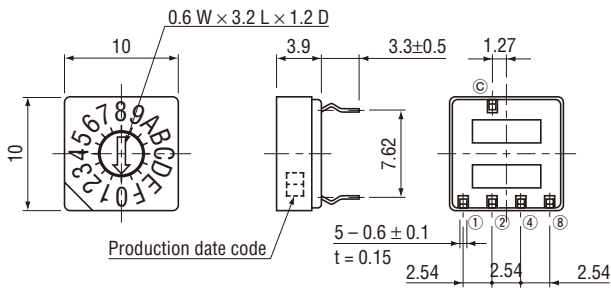
## OUTLINE DIMENSIONS

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

### <Through hole pin, Top setting>

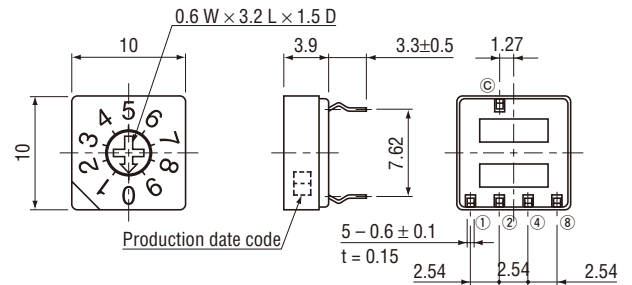
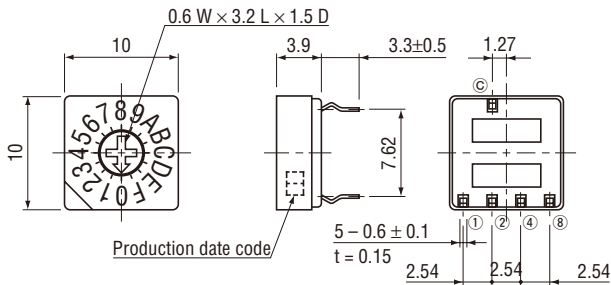
- SC-1010 (Real code)
- SC-1030 (Complementary code)

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



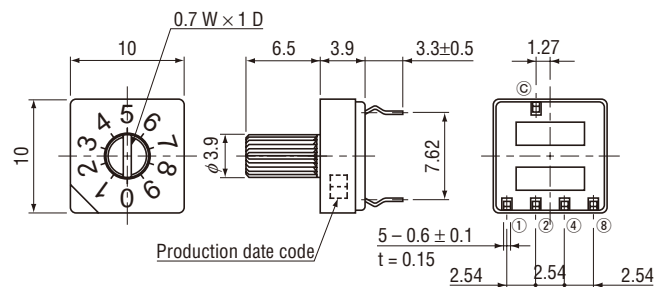
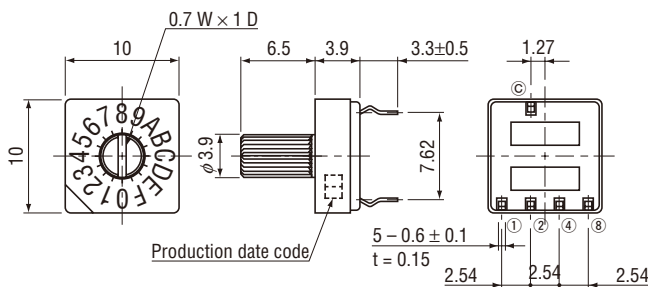
- SC-1210 (Real code)
- SC-1230 (Complementary code)

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



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

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



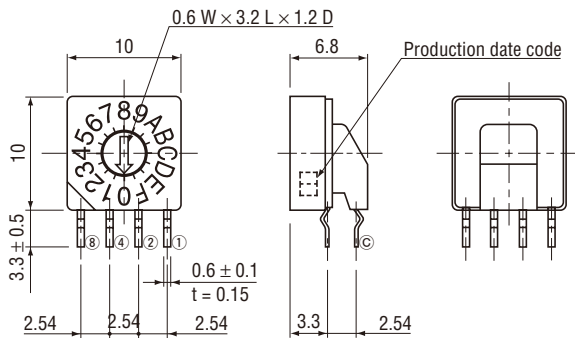
# SC-1000/2000 ROTARY CODED SWITCHES

## OUTLINE DIMENSIONS

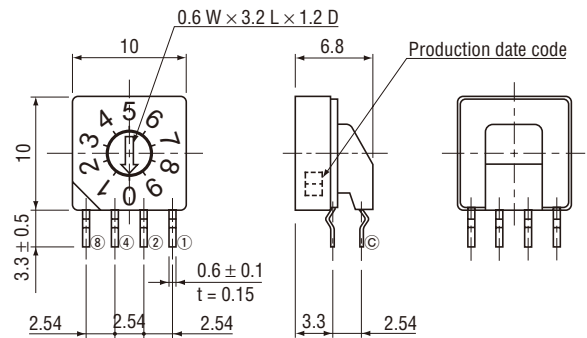
Unless otherwise specified, tolerance:  $\pm 0.3$  (Unit: mm)

### <Through hole pin, Side setting>

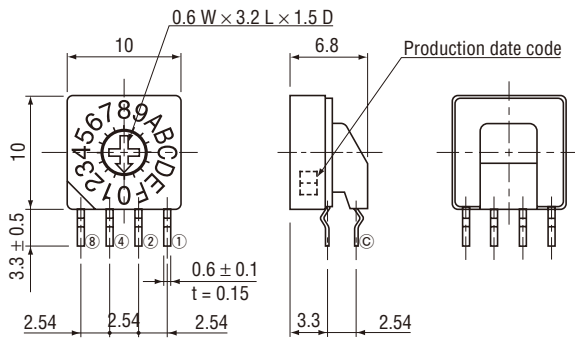
- SC-1011 (Real code)
- SC-1031 (Complementary code)



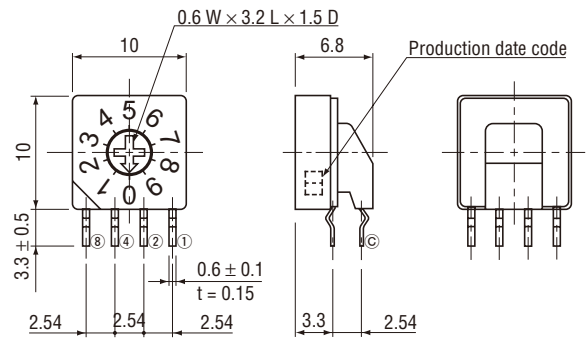
- SC-2011 (Real code)
- SC-2031 (Complementary code)



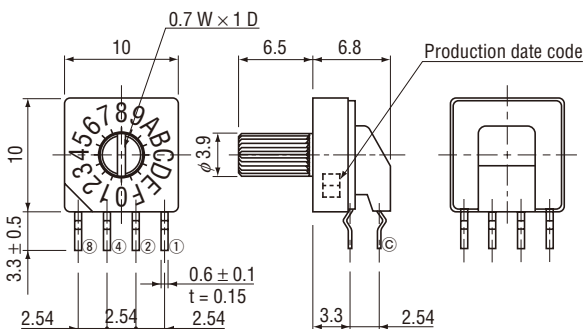
- SC-1211 (Real code)
- SC-1231 (Complementary code)



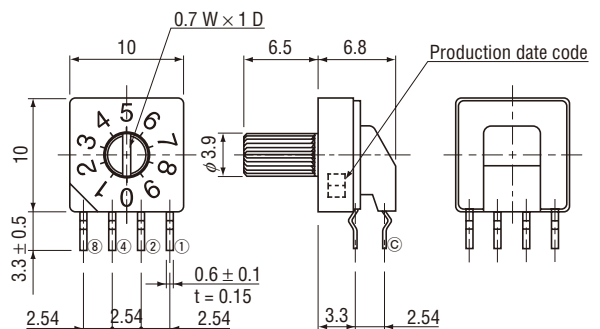
- SC-2211 (Real code)
- SC-2231 (Complementary code)



- SC-1111 (Real code)
- SC-1131 (Complementary code)



- SC-2111 (Real code)
- SC-2131 (Complementary code)



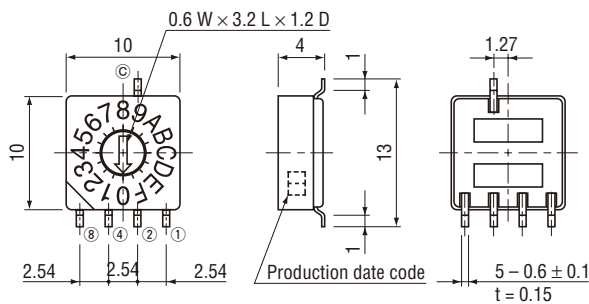
# SC-1000/2000 ROTARY CODED SWITCHES

## OUTLINE DIMENSIONS

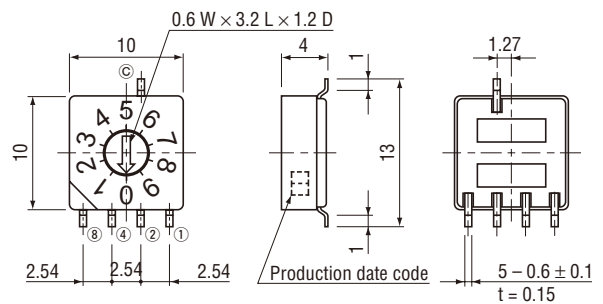
Unless otherwise specified, tolerance:  $\pm 0.3$  (Unit: mm)

### <Gull wing, Top setting>

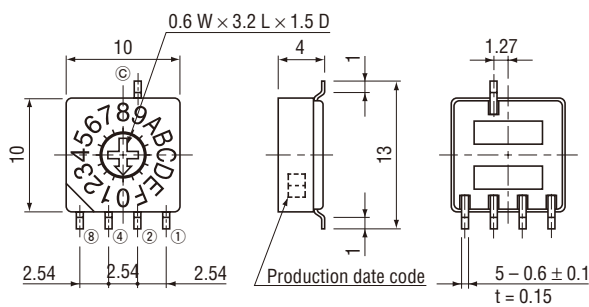
- SC-1010B (Real code)
- SC-1030B (Complementary code)



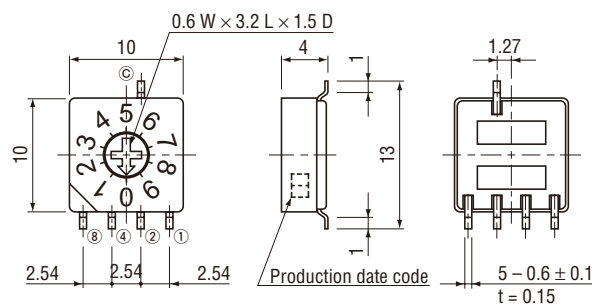
- SC-2010B (Real code)
- SC-2030B (Complementary code)



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



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



# 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			●	●			●	●			●	●			●
	Complementary code	8	●	●	●	●	●	●	●	●							
		4	●	●	●	●					●	●	●	●			
		2	●	●			●	●			●	●			●	●	
	1	●		●		●				●				●		●	
	1	●		●		●		●		●		●		●		●	

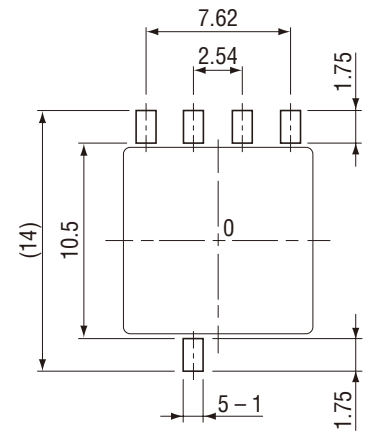
● ... Contact closed

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

(Unit: mm)

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

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



# SC-1000/2000 ROTARY CODED SWITCHES

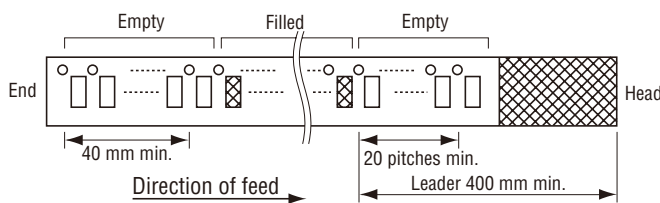
## ■ PACKAGING SPECIFICATIONS

### <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 dia-diagrams below:

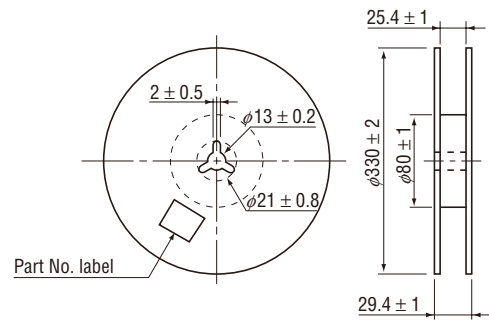
### ● Embossed tape dimensions



### ● Reel dimensions

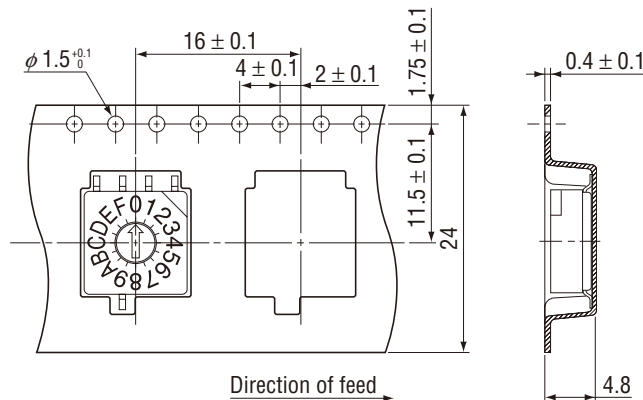
(In accordance with EIAJ ET-7200A)

(Unit: mm)



(Unit: mm)

(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.

### <Vinyl pack specifications>

- The smallest unit of bulk in vinyl bag packaging is 10 pcs. per pack. Orders will be accepted for unit of minimum 10 pcs., i.e., 10, 20, 30 pcs. , etc.
- Boxing of bulk in vinyl bags is performed with 25 pcs. (standard 50 pcs.) per box.