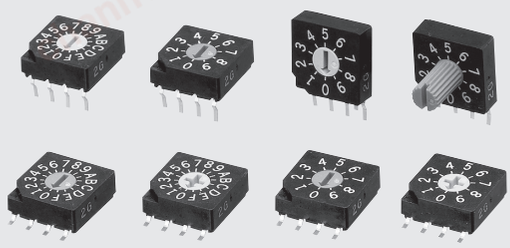
chanhvinh.com

# ROTARY CODED SWITCHES SC-1000/2000

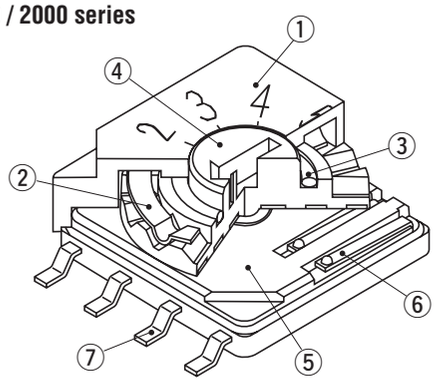
**RoHS compliant**



## 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

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




| Part name | | Material | Flammability |
|---|---|---|---|
| ① | Housing | Polyphenylenesulphide | UL94V-0 |
| ② | Metallic spring | Stainless (SUS 301) | — |
| ③ | "O" ring | Silicone rubber | UL94HB |
| ④ | Insert rotor | Rotor : Polyamide<br>Pattern : Copper alloy, Gold-plated | UL94V-0 |
| ⑤ | Base | Polyphenylenesulphide | UL94V-0 |
| ⑥ | Contact | Copper alloy, Gold-plated | — |
| ⑦ | Terminal pin | | |

## PART NUMBER DESIGNATION

S C - 1 0 1 0 T B

Series name

No. of positions
1 : 16 positions
2 : 10 positions

Shape of rotor
0 : Without knob (Minus slot)
1 : With knob (with extended shaft)
2 : Without knob (Cross slot)

Code format
1 : Real code (Rotor color Yellow)
3 : Complementary code (Rotor color Red)

Setting position
0 : Top setting
1 : Side setting

Form of packaging
T : Taping (Gull wing type only)
W : Tray packaging
Blank : Bulk in plastic bag

Shape of terminal
B : Gull wing (Top setting type only)
Blank : Through hole pin (Snap-in terminal pin)

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

chanhvinh.com

# 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) | Pieces in package |
|---|---|---|---|---|---|
| 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 |
| Side setting (Through hole pin) | Without knob (Minus slot) | Plastic bag | SC-2011 | SC-2031 | 25 pcs./pack |
| | | Tray packaging | SC-2011W | SC-2031W | 50 pcs./tray |
| | 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 |
| Top setting (Gull wing) | 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 |
| | Without knob (Cross slot) | Plastic bag | SC-2210B | SC-2230B | 25 pcs./pack |
| | | Tray packaging | 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) | Pieces in package |
|---|---|---|---|---|---|
| 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 |
| Side setting (Through hole pin) | Without knob (Minus slot) | Plastic bag | SC-1011 | SC-1031 | 25 pcs./pack |
| | | Tray packaging | SC-1011W | SC-1031W | 50 pcs./tray |
| | 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 |
| Top setting (Gull wing) | 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 |
| | Without knob (Cross slot) | Plastic bag | 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.

chanhvinh.com

# SC-1000/2000
## ROTARY CODED SWITCHES

## STANDARD SPECIFICATIONS

| | |
|---|---|
| Circuit type | BCD (Real code, complementary code)<br>BCH (Real code, complementary code) |
| Operating temperature range | — 40 ~ 85 °C |
| Storage temperature range | |
| Sealing | Washable<br>※ Please refer to page 150,151 |
| Net weight | 0.63 g<br>Without knob Top setting<br>0.73 g<br>With knob Top setting<br>0.76 g<br>Without knob Side setting<br>0.86 g<br>With knob Side setting |

## 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<br>(Please refer to the profile below.)<br>Manual soldering :<br>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 :<br>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

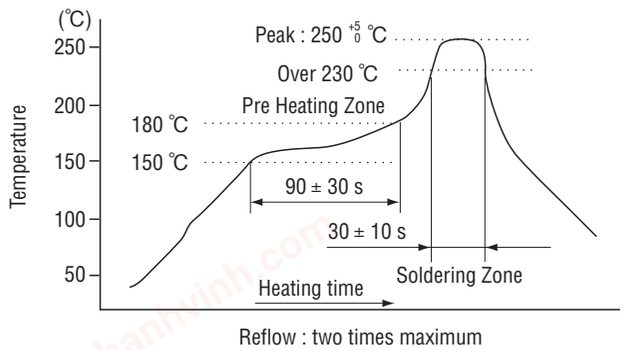
## ELECTRICAL CHARACTERISTICS

| | |
|---|---|
| Contact rating<br>Non-switching<br>Switching<br>Minimum | DC50 V 100 mA<br>DC5 V 100 mA<br>DC20 mV 1 μA |
| Contact resistance | 100 m Ω maximum |
| Insulation resistance | 1000 M Ω (DC100 V) minimum |
| Dielectric strength | AC250 V, 60 s |

## ENVIRONMENTAL CHARACTERISTICS

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

### 〈Reflow profile for soldering heat evaluation〉




Reflow : two times maximum

chanhvinh.com

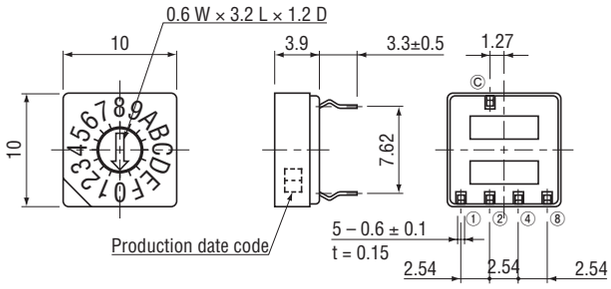
# SC-1000/2000
## ROTARY CODED SWITCHES

## ■ OUTLINE DIMENSIONS

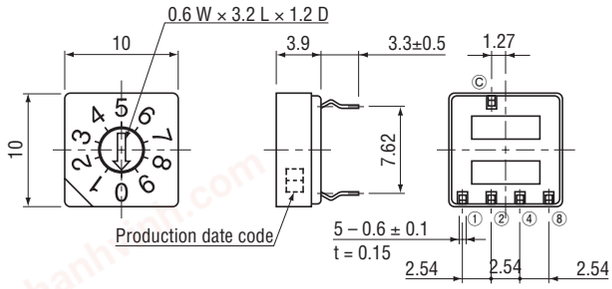
Unless otherwise specified, tolerance: ± 0.3 (Unit: mm)

### <Through hole pin, Top setting>

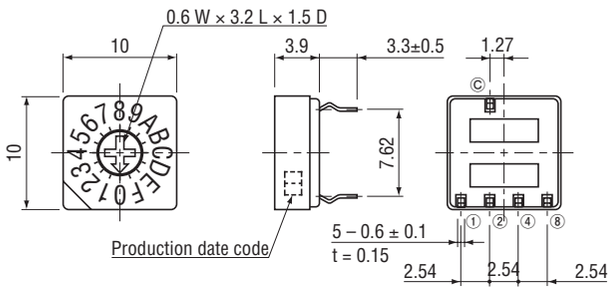
● SC-1010 (Real code)
● SC-1030 (Complementary code)



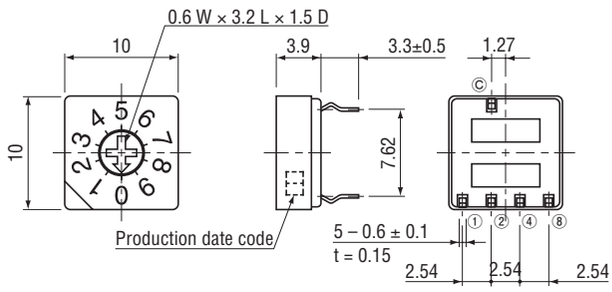

● SC-2010 (Real code)
● SC-2030 (Complementary code)



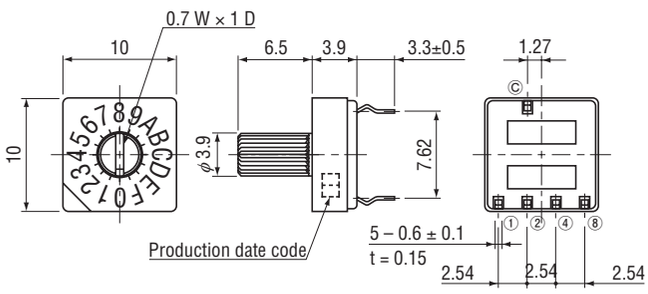

● SC-1210 (Real code)
● SC-1230 (Complementary code)



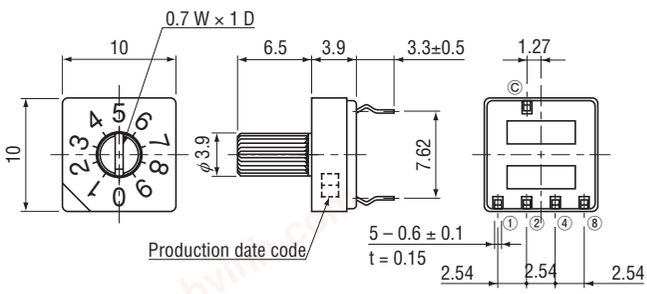

● SC-2210 (Real code)
● SC-2230 (Complementary code)




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




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



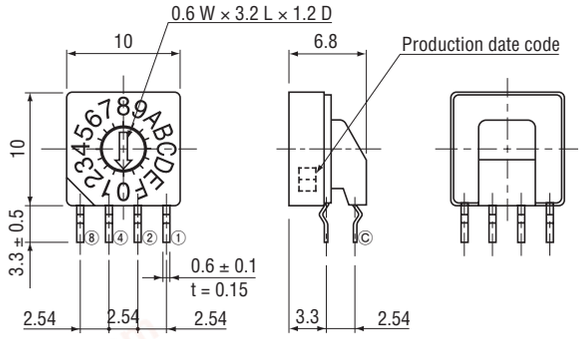
chanhvinh.com

# SC-1000/2000
## ROTARY CODED SWITCHES

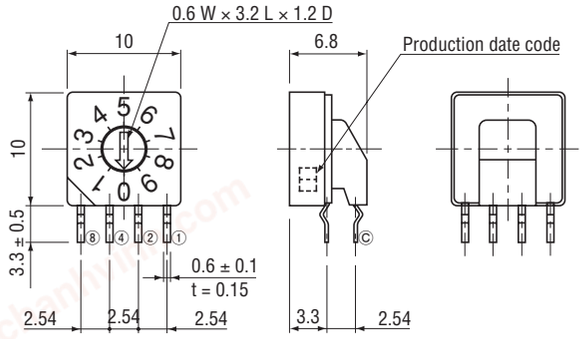
## OUTLINE DIMENSIONS

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

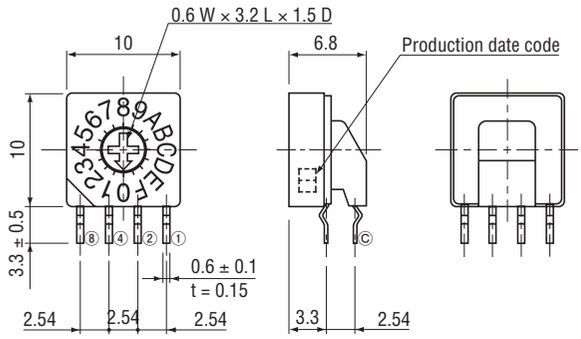
● SC-1011 (Real code)
● SC-1031 (Complementary code)



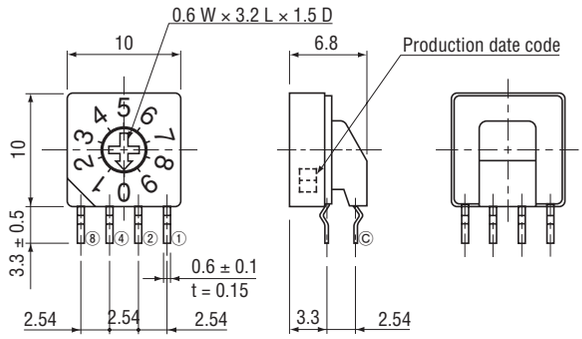

● SC-2011 (Real code)
● SC-2031 (Complementary code)



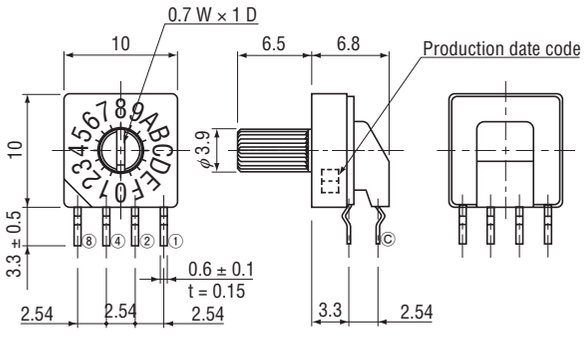

● SC-1211 (Real code)
● SC-1231 (Complementary code)



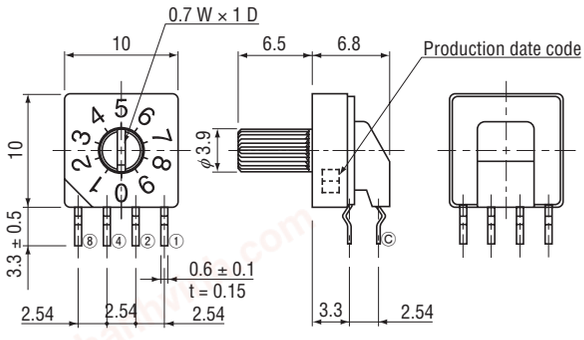

● SC-2211 (Real code)
● SC-2231 (Complementary code)




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




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



chanhvinh.com

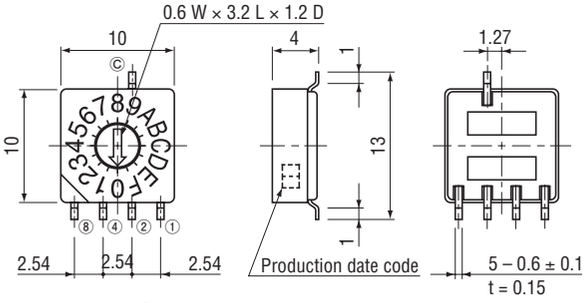
# SC-1000/2000
## ROTARY CODED SWITCHES

## ■ OUTLINE DIMENSIONS

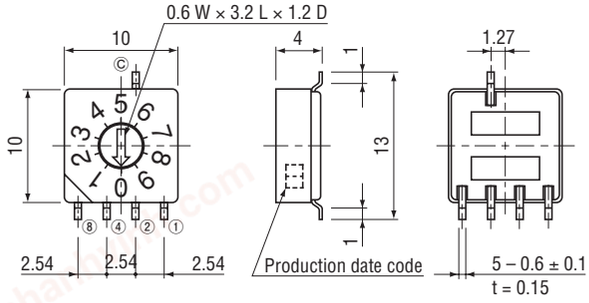
Unless otherwise specified, tolerance: ± 0.3 (Unit: mm)

### <Gull wing, Top setting>

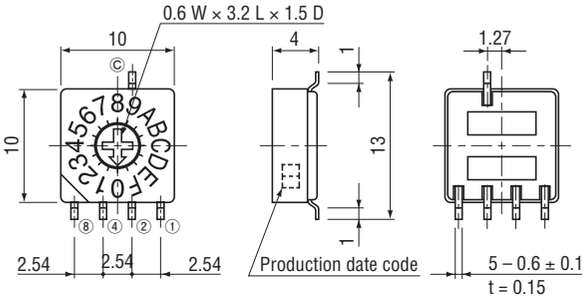
● SC-1010B (Real code)
● SC-1030B (Complementary code)



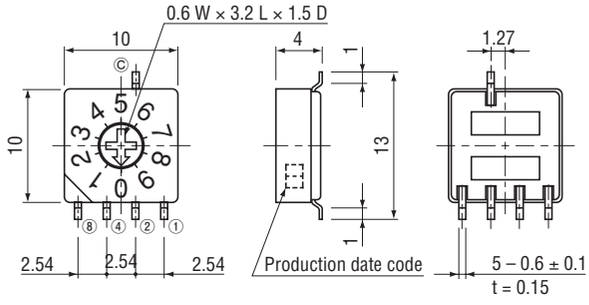

● SC-2010B (Real code)
● SC-2030B (Complementary code)




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

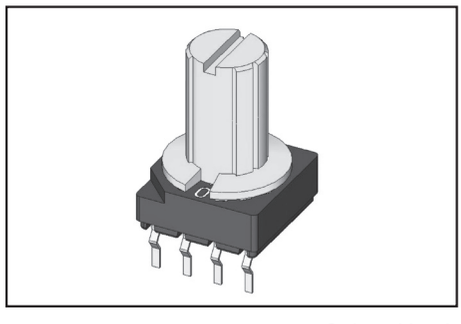



● SC-2210B (Real code)
● SC-2230B (Complementary code)

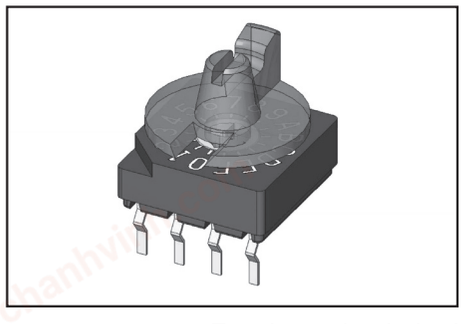



## ■ VARIOUS KNOBS

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

chanhvinh.com

# SC-1000/2000
## ROTARY CODED SWITCHES

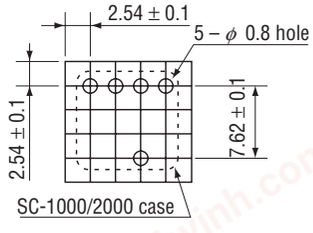
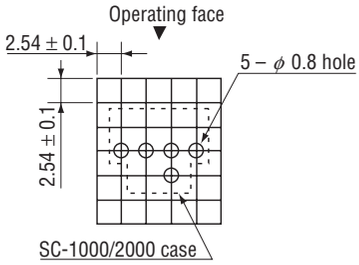
## ■ CODE FORMAT

| 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 | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● |
| | Complementary code | $\overline{8}$ | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | | |
| | | $\overline{4}$ | ● | ● | ● | ● | | | | | ● | ● | ● | ● | | | | |
| | | $\overline{2}$ | ● | ● | | | ● | ● | | | ● | ● | | | ● | ● | | |
| | | $\overline{1}$ | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● | |

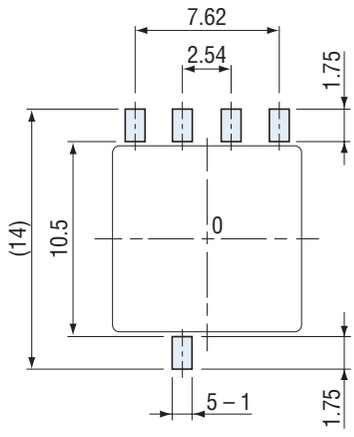
● ···Contact closed

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

(Unit: mm)

| | Top setting | Side setting |
|---|---|---|
| Terminal pin layout (Bottom view) | Real code: 8 4 2 1, C<br>Complementary code: $\overline{8}$ $\overline{4}$ $\overline{2}$ $\overline{1}$, C | Operating face of real code: 8 4 2 1, C<br>Operating face of complementary code: $\overline{8}$ $\overline{4}$ $\overline{2}$ $\overline{1}$, C |
| P.C.B. dimensions (Bottom view) |  |  |

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



chanhvinh.com

# SC-1000/2000
## ROTARY CODED SWITCHES

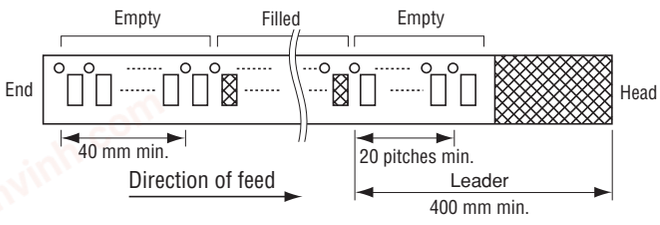
## ■ PACKAGING SPECIFICATIONS

### <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:

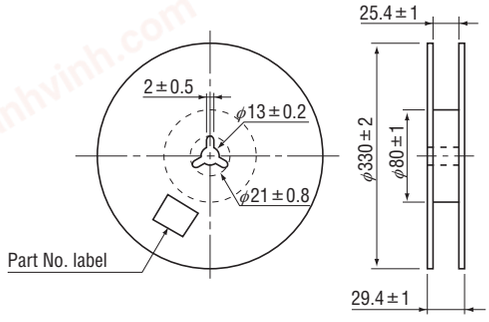
### ● Embossed tape dimensions




### ● Reel dimensions

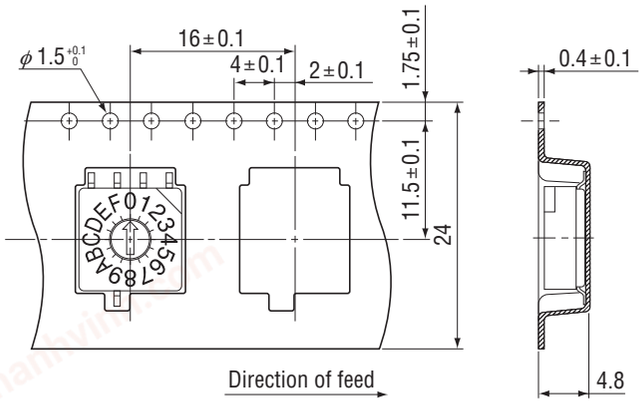
(Unit: mm)

**(In accordance with EIAJ ET-7200A)**




(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.

### <Bulk pack specifications>

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