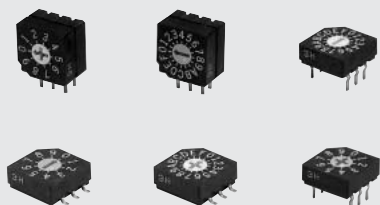


ROTARY CODED SWITCHES **SD-1000/2000**

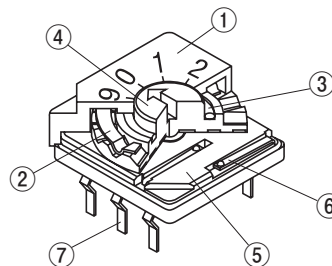
RoHS compliant



FEATURES

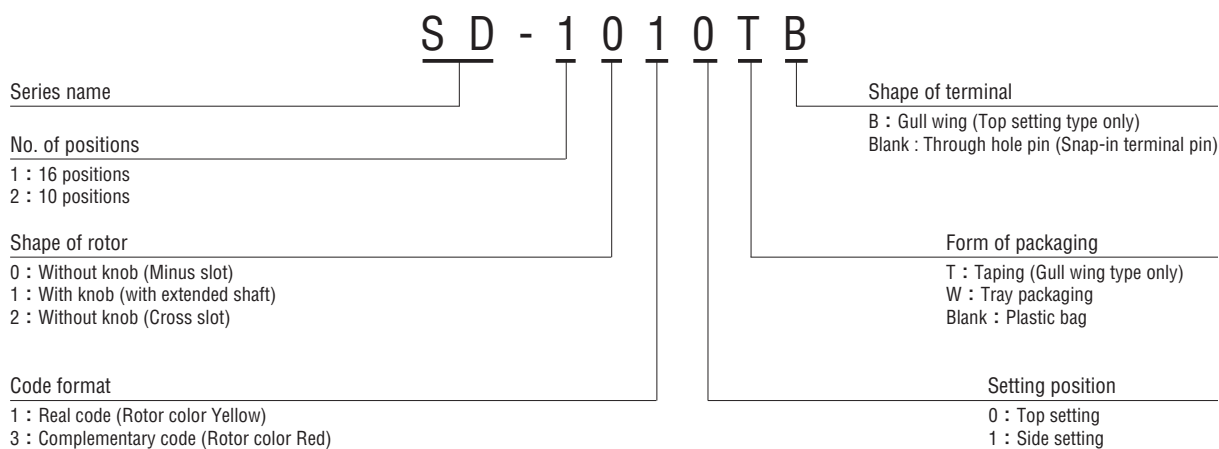
- RoHS compliant
- Fine click with metallic spring
- Low profile of 3.9 mm makes perfect for high density board mounting applications
- Gold plated contact provides excellent reliability
- Cross and minus slot are available
- Terminal pin arrangement 3-3

INTERNAL STRUCTURE SD-1000 / 2000 series



| Part name | Material | Flammability |
|-------------------|--|--------------|
| ① Housing | PPS(Polyphenylenesulphide) | UL-94V-0 |
| ② Metallic spring | Stainless (SUS 301) | — |
| ③ "0" 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 | | |

PART NUMBER DESIGNATION



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

SD-1000/2000 ROTARY CODED SWITCHES

LIST OF PART NUMBERS

● Binary coded decimal

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

● Binary coded hexadecimal

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

SD-1000/2000 ROTARY CODED SWITCHES

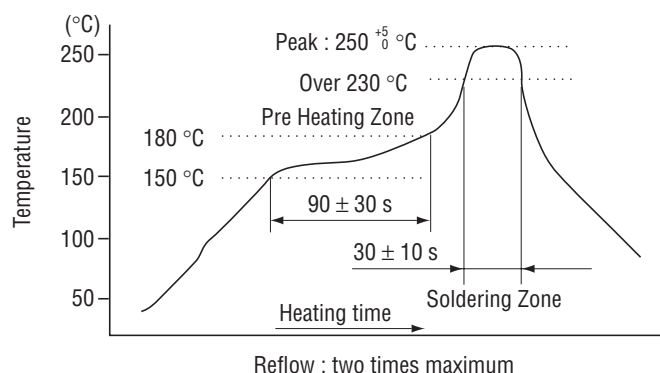
STANDARD SPECIFICATIONS

| | |
|-----------------------------|--|
| Circuit type | BCD (Real code, complementary code) BCH (Real code, complementary code) |
| Operating temperature range | -40 ~ 85 °C |
| Storage temperature range | |
| Sealing | Non washable |
| Net weight | Without knob Top setting 0.65 g With knob Top setting 0.76 g Without knob Side setting 0.95 g With knob Side setting 1.05 g |

ENVIRONMENTAL CHARACTERISTICS

| | |
|---------------------------|---|
| Vibration | Amplitude 1.5 mm or Acceleration 98 m/s ² , 10-500-10 Hz, 3 directions for 2 h each |
| Shock | 490 m/s ² , 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 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 |

Reflow profile for soldering heat evaluation >



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 (SD-1000), 10 (SD-2000) | |
| Adjustment torque | 4 ~ 25 mN·m {41 ~ 255 gf·cm} | |
| Stepping angle | 22.5° (SD-1000), 36° (SD-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

SD-1000/2000 ROTARY CODED SWITCHES

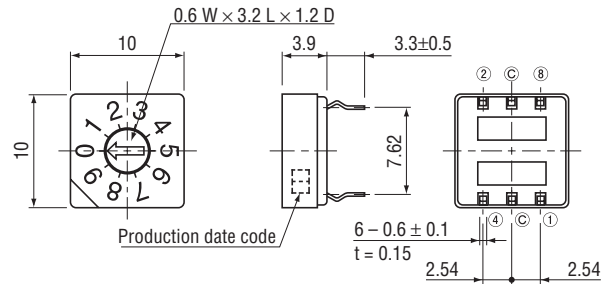
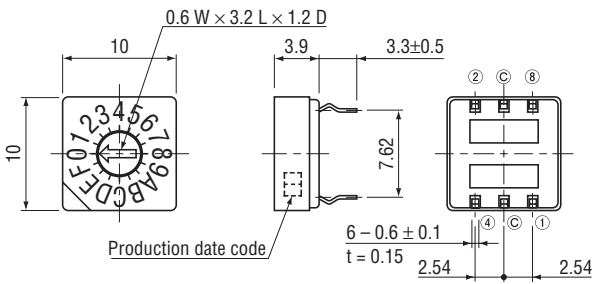
OUTLINE DIMENSIONS

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

<Through hole pin, Top setting>

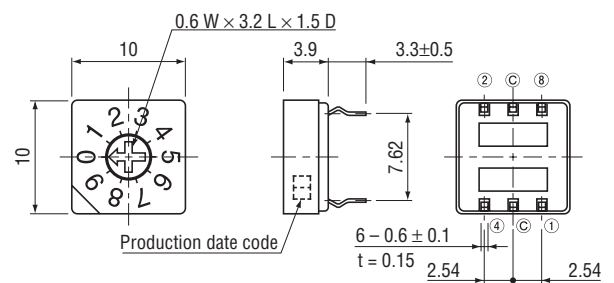
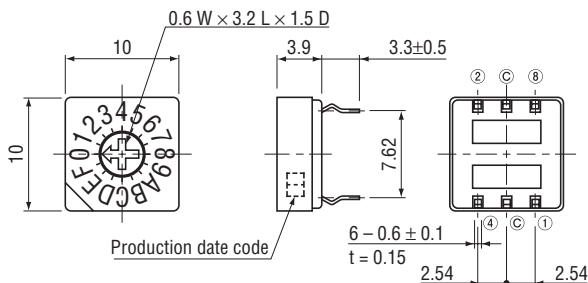
- SD-1010 (Real code)
- SD-1030 (Complementary code)

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



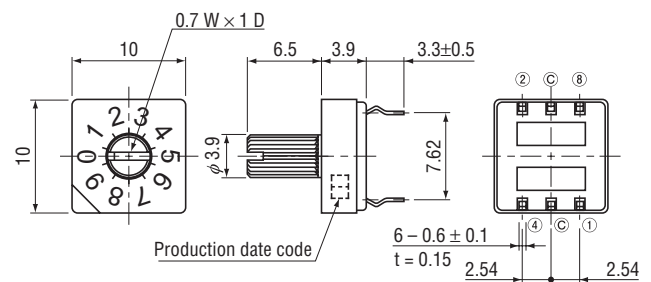
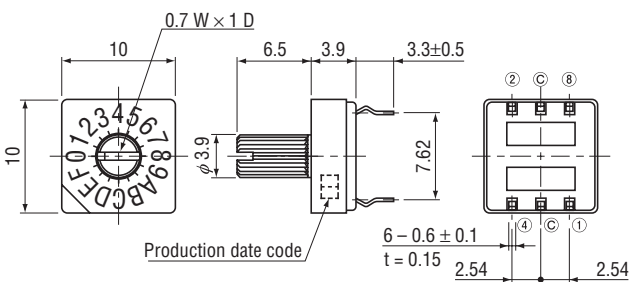
- SD-1210 (Real code)
- SD-1230 (Complementary code)

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



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

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



SD-1000/2000

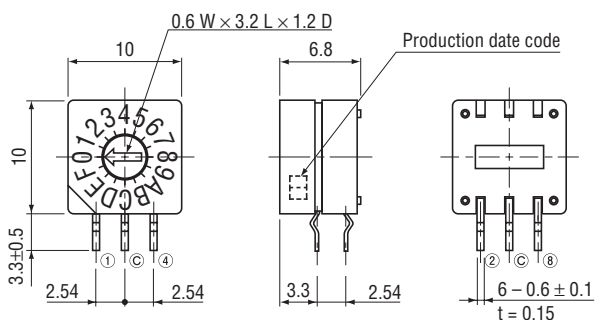
ROTARY CODED SWITCHES

OUTLINE DIMENSIONS

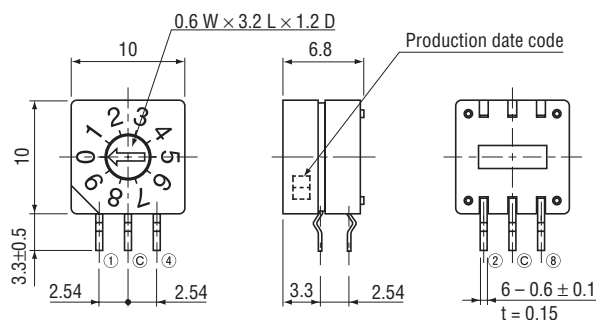
Unless otherwise specified, tolerance: ± 0.3 (Unit: mm)

<Through hole pin, Side setting>

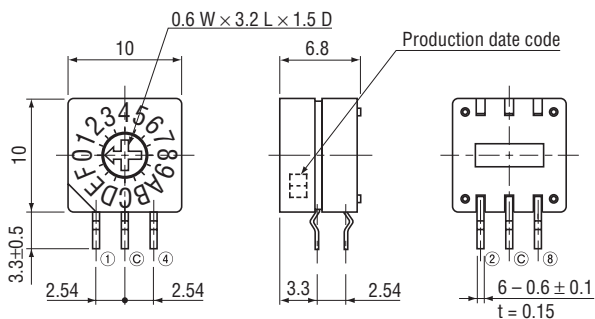
- SD-1011 (Real code)
- SD-1031 (Complementary code)



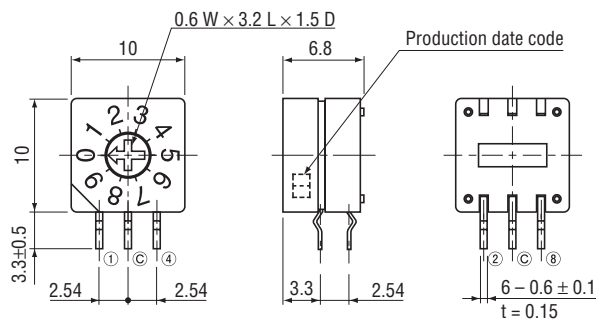
- SD-2011 (Real code)
- SD-2031 (Complementary code)



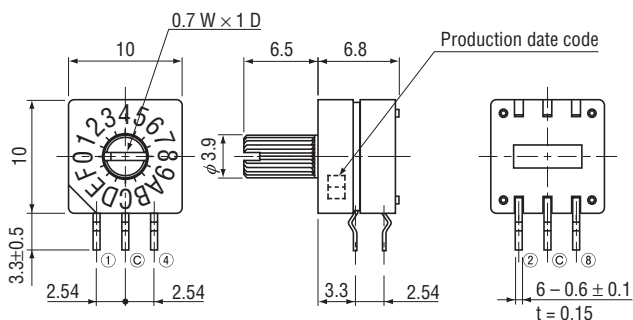
- SD-1211 (Real code)
- SD-1231 (Complementary code)



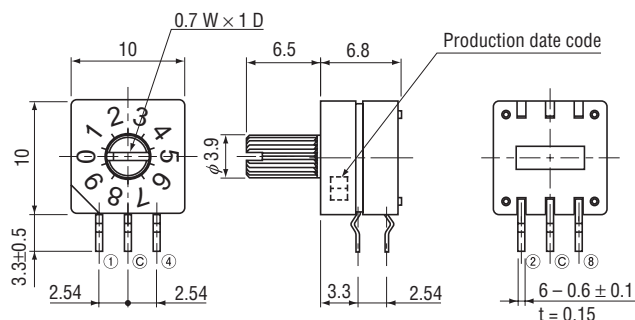
- SD-2211 (Real code)
- SD-2231 (Complementary code)



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



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



SD-1000/2000

ROTARY CODED SWITCHES

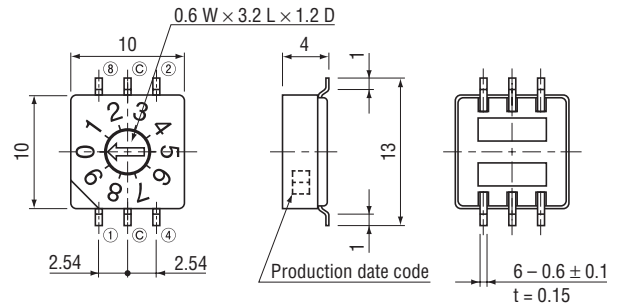
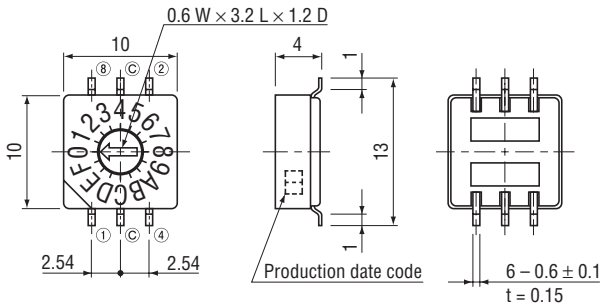
OUTLINE DIMENSIONS

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

<Gull wing, Top setting>

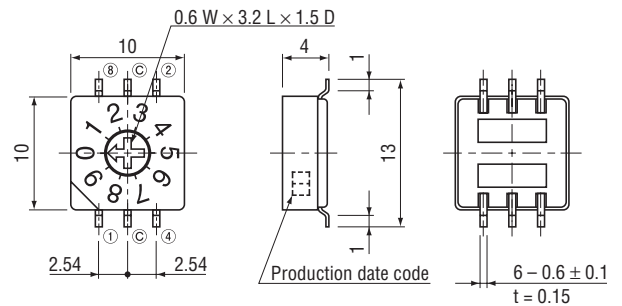
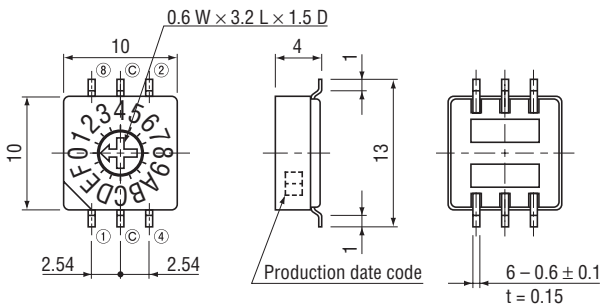
- SD-1010B (Real code)
- SD-1030B (Complementary code)

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



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

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



SD-1000/2000 ROTARY CODED SWITCHES

CODE FORMAT

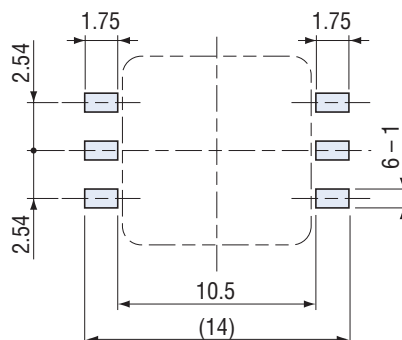
| No. of positions | | SD-1000 series (16 positions) | | | | | | | | | | | | | | | |
|------------------|--------------------|-------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SD-2000 series (10 positions) | | | | | | | | | | A | B | C | D | E | F |
| 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 | 8 | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | |
| | | 4 | ● | ● | ● | ● | | | | | ● | ● | ● | ● | | | |
| | | 2 | ● | ● | | | ● | ● | | | ● | ● | | | ● | ● | |
| | | 1 | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● |

● ...Contact closed

TERMINAL CONNECTION / P.C.B. THROUGH HOLE DIMENSIONS (Unit: mm)

| | 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) | | |

RECOMMENDED P.C.B. PAD OUTLINE DIMENSIONS



SD-1000/2000 ROTARY CODED SWITCHES

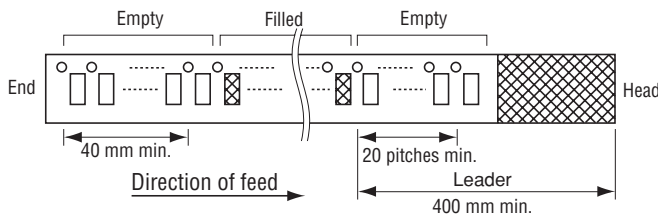
PACKAGING SPECIFICATIONS

<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.).

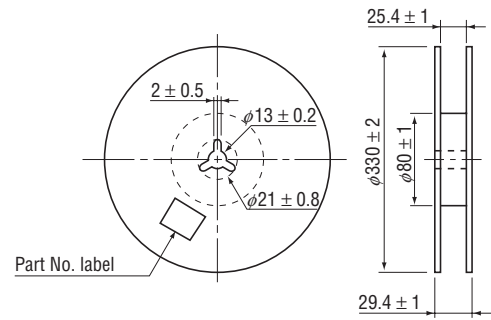
Maximum number of consecutive missing pieces=2
 Leader length and reel dimension are shown in the dia-grams below:

● Embossed tape dimensions



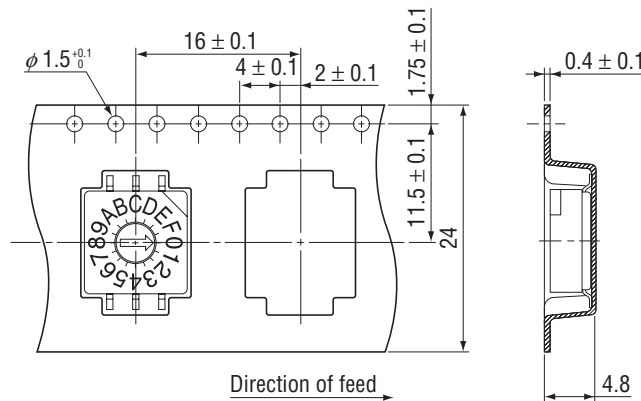
● Reel dimensions

(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 in a plastic bag is performed with 25 pcs. (standard 50 pcs.) per box.