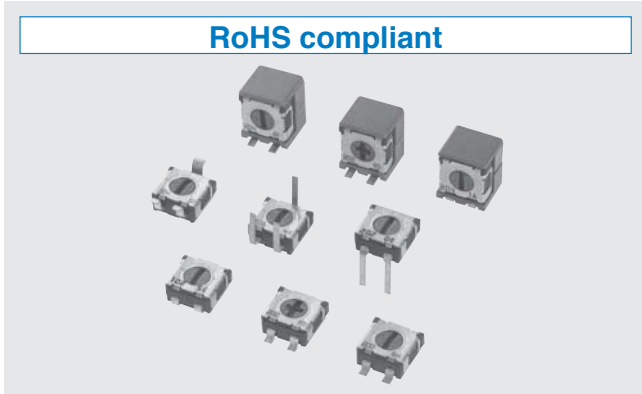
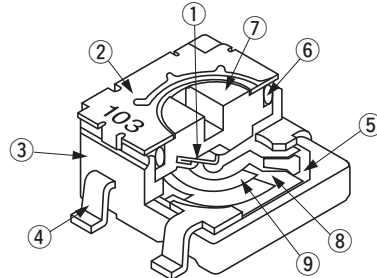


RoHS compliant



INTERNAL STRUCTURE

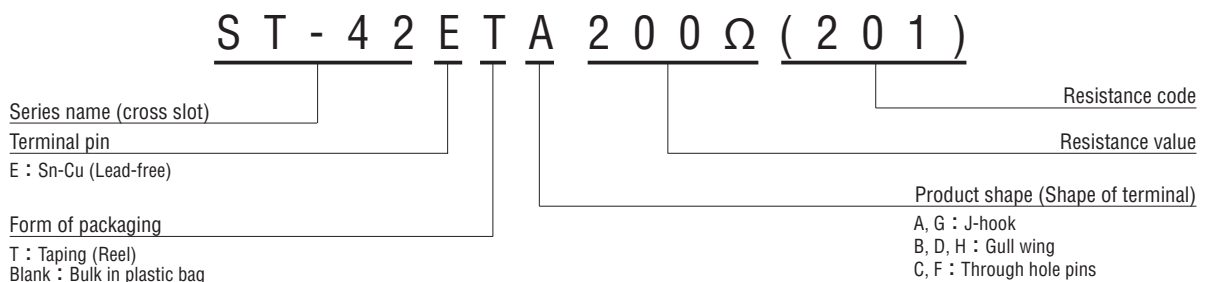
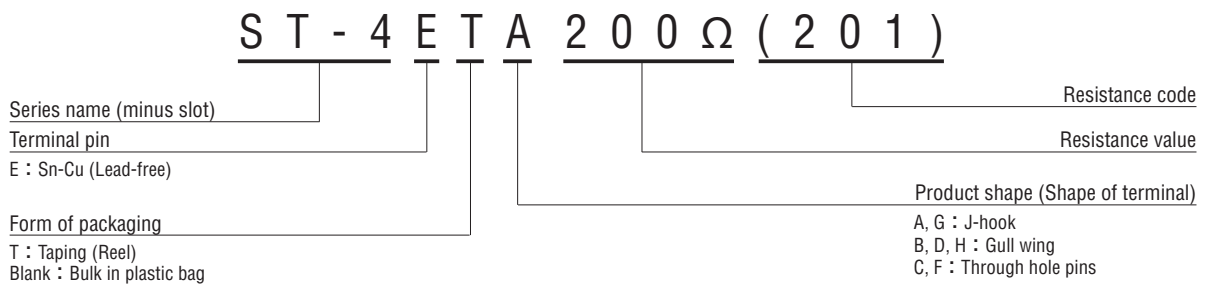


| | Part name | Material | Flammability |
|---|-------------------|----------------------------|--------------|
| ① | Wiper | Multi metal alloy | — |
| ② | Cover | Stainless steel (SUS 304) | |
| ③ | Housing | Epoxy | UL94V-0 |
| ④ | Terminal pin | Copper alloy, Sn-Cu-plated | — |
| ⑤ | Base element | Ceramic | |
| ⑥ | “O” ring | Silicone rubber | UL94HB |
| ⑦ | Rotor | Polyphenylenesulphide | UL94V-0 |
| ⑧ | Electrode | Ag-Pd cermet | — |
| ⑨ | Resistive element | RuO ₂ cermet | |

FEATURES

- RoHS compliant
- Wide variety (7 types) to choose from
- Automatic mounting is possible (Taping)
- Flow/reflow soldering is possible
- Sealed construction (Washable: Refer to page 750.)
- Stopper structure prevents terminal pin from being open.
- Cross slot rotor suitable for automatic adjustment

PART NUMBER DESIGNATION



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

ST-4

SURFACE MOUNT TRIMMERS

LIST OF PART NUMBERS

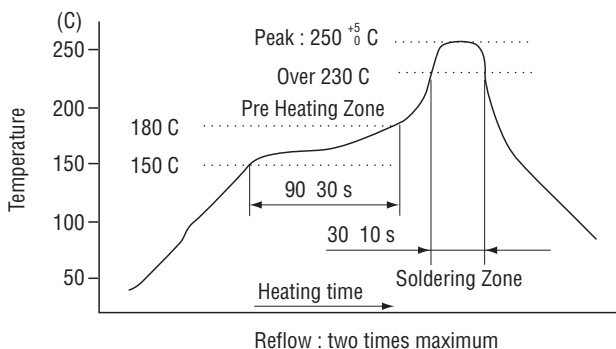
| Adjustment position | Shape of terminal | Form of packaging | |
|---------------------|-----------------------|-------------------|---------------|
| | | Taping (reel) | Plastic bag |
| Top adjustment | A (J-hook) | ST-4/42ETA | ST-4/42EA |
| | B (Gull wing) | ST-4/42ETB | ST-4/42EB |
| | C (Through hole pins) | | ST-4/42EC |
| Rear adjustment | D (Gull wing) | ⊕ ST-4/42ETD | ⊕ ST-4/42ED |
| | F (Through hole pins) | | ⊕ ST-4/42EF |
| Side adjustment | G (J-hook) | ST-4/42ETG | ST-4/42EG |
| | H (Gull wing) | ST-4/42ETH | ST-4/42EH |
| Pieces in package | | 500 pcs./reel | 100 pcs./pack |

The products indicated by ⊕ mark are manufactured upon receipt of order basis.
 ※ ⊖ slot : ST-4E □, ⊕ slot : ST-42E □

ELECTRICAL CHARACTERISTICS

| | |
|----------------------------|---|
| Nominal resistance range | 10 Ω ~ 2 MΩ |
| Resistance tolerance | ± 20 % |
| Power ratings | 0.25 W (70 °C) 0 W (125 °C) |
| Resistance law | Linear law (B) |
| Maximum input voltage | DC200 V or power rating, whichever is smaller |
| Maximum wiper current | 100 mA or power rating, whichever is smaller |
| Effective electrical angle | 210° (1 turn) |
| End resistance | 1 % or 2 Ω, whichever is greater |
| C.R.V. | 1 % or 3 Ω, whichever is greater |
| Operating temp. range | -55 ~ 125 °C |
| Temp. coefficient | 10 Ω ~ 50 Ω : ± 250 10 ⁻⁶ /°C maximum 100 Ω ~ 2 MΩ : ± 100 10 ⁻⁶ /°C maximum |
| Insulation resistance | 1000 MΩ minimum (DC500 V) |
| Dielectric strength | AC500 V, 60 s |
| Net weight | Approx. 0.12 g (ST-4EA, EB, EC, ED, EF) Approx. 0.22 g (ST-4EG, EH) |

Reflow profile for soldering heat evaluation>



<Nominal resistance values>

| | | | | | | | | |
|--------|--------|-------|--------|--------|--------|------|------|------|
| ⊕ 10 Ω | ⊕ 20 Ω | 50 Ω | 100 Ω | 200 Ω | 500 Ω | 1 kΩ | 2 kΩ | 5 kΩ |
| 10 kΩ | 20 kΩ | 50 kΩ | 100 kΩ | 200 kΩ | 500 kΩ | 1 MΩ | 2 MΩ | |

Fig. 1

⊕ : Not manufactured

※ The above part numbers are all available with the respective combination of <Nominal resistance values> (Fig. 1).

※ Verify the above part numbers when placing orders.

※ Taping specification is not sold separately and must be purchased in reel units.

※ Cross slot available : ST-42E □

MECHANICAL CHARACTERISTICS

| | |
|-------------------|--------------------------------------|
| Mechanical angle | 240° (1 turn) |
| Operating torque | 10 mN·m {102 gf·cm} maximum |
| Stop strength | 30 mN·m {306 gf·cm} minimum |
| Rotational life | 100 cycles [Δ R/R ≤ ± (2 Ω + 3 %)] |
| Thrust to rotor | 5 N {0.51 kgf} minimum |
| Solderability | 245 ± 3 °C, 2 ~ 3 s |
| Shear (Adhesion) | 5 N {0.51 kgf} 10 s |
| Substrate bending | Width 90 mm, bend 3 mm, 5 s, 1 time |
| Pull-off strength | 5 N {0.51 kgf} 10 s |

{ } : Reference only

ENVIRONMENTAL CHARACTERISTICS

| Test item | Test conditions | Specifications |
|---------------------|--|-----------------------------------|
| Thermal shock | -65 ~ 125 °C (0.5 h), 5 cycles | [Δ R/R ≤ 2 %] [S.S. ≤ 1 %] |
| Humidity | -10 ~ 65 °C (80 ~ 98 %), 10 cycles, 240 h | [Δ R/R ≤ 2 %] |
| Shock | 981 m/s ² , 6 ms 6 directions for 3 times each | [Δ R/R ≤ 1 %] [S.S. ≤ 1 %] |
| Vibration | (Amplitude) 1.52 mm or (Acceleration) 196 m/s ² , 10 ~ 2000 Hz, 3 directions, 12 times each | [Δ R/R ≤ 1 %] [S.S. ≤ 1 %] |
| Load life | 70 °C, 0.25 W 1000 h | [Δ R/R ≤ 3 %] [S.S. ≤ 1 %] |
| Low temp. operation | -55 °C, 2 h | [Δ R/R ≤ 2 %] [S.S. ≤ 2 %] |
| High temp. exposure | 125 °C, 250 h | [Δ R/R ≤ 3 %] [S.S. ≤ 2 %] |
| Immersion seal | 85 °C, 60 s | No leaks (No continuous bubbles) |
| Soldering heat | 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 Reflow : Peak temperature 255 °C (Please refer to the profile below.) Manual soldering : 350 ± 10 °C, 3 ~ 4 s | [Δ R/R ≤ 1 %] |

Δ R/R : Change in total resistance
 S.S. : Setting stability

ST-4

SURFACE MOUNT TRIMMERS

MAXIMUM INPUT RATINGS

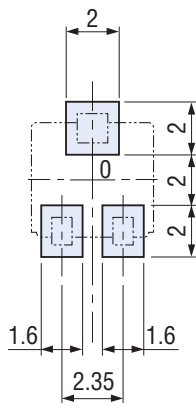
| Nominal resistance values (Ω) | Resistance code | Maximum input voltage (V) | Maximum wiper current (mA) |
|--|-----------------|---------------------------|----------------------------|
| ↻ 10 | 100 | 1.00 | 100 |
| ↻ 20 | 200 | 2.00 | 100 |
| 50 | 500 | 3.53 | 70.7 |
| 100 | 101 | 5.00 | 50.0 |
| 200 | 201 | 7.07 | 35.4 |
| 500 | 501 | 11.2 | 22.4 |
| 1 k | 102 | 15.8 | 15.8 |
| 2 k | 202 | 22.4 | 11.2 |
| 5 k | 502 | 35.4 | 7.07 |
| 10 k | 103 | 50.0 | 5.00 |
| 20 k | 203 | 70.7 | 3.54 |
| 50 k | 503 | 112 | 2.24 |
| 100 k | 104 | 158 | 1.58 |
| 200 k | 204 | 200 | 1.00 |
| 500 k | 504 | 200 | 0.40 |
| 1 M | 105 | 200 | 0.20 |
| 2 M | 205 | 200 | 0.10 |

The products indicated by ↻ mark are manufactured upon receipt of order basis.

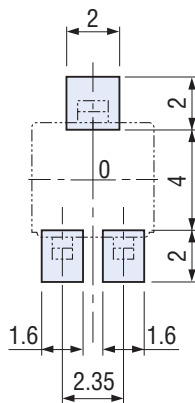
RECOMMENDED P.C.B. PAD OUTLINE DIMENSIONS

(Unit: mm)

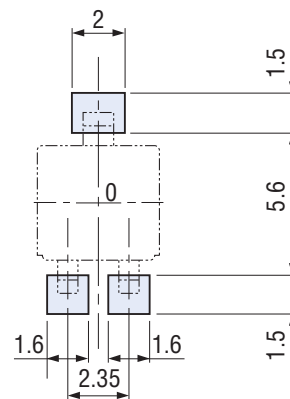
● ST-4EA



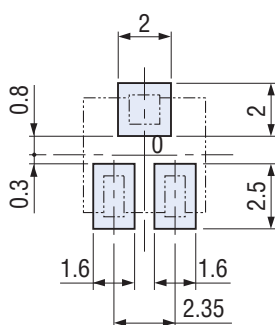
● ST-4EB



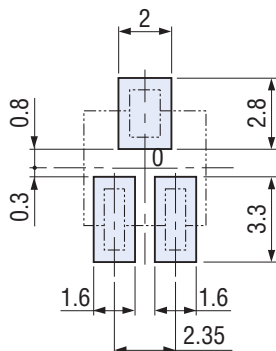
● ST-4ED



● ST-4EG



● ST-4EH



Note) The zero point is the center of mounting.

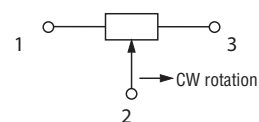
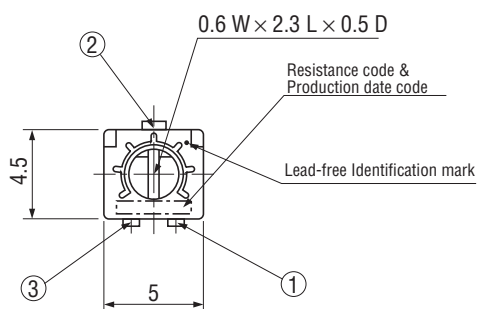
ST-4

SURFACE MOUNT TRIMMERS

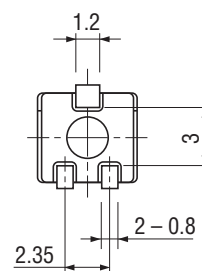
OUTLINE DIMENSIONS

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

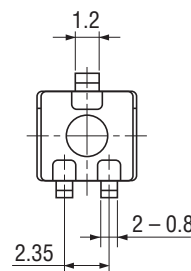
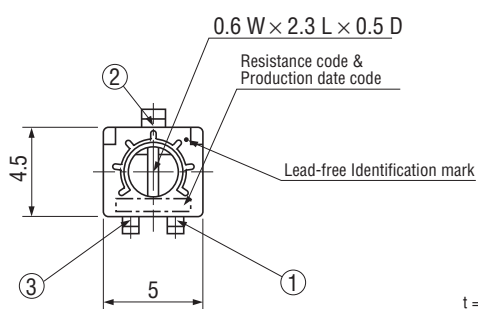
ST-4EA Top adjustment



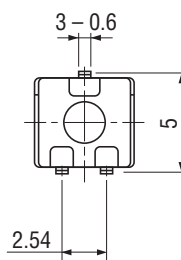
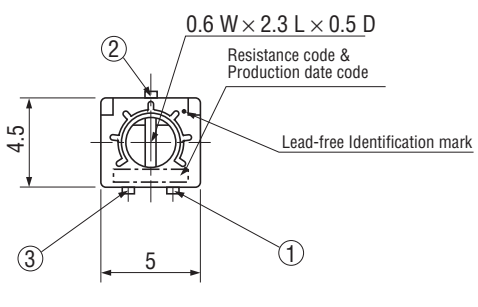
※Note the terminal position.



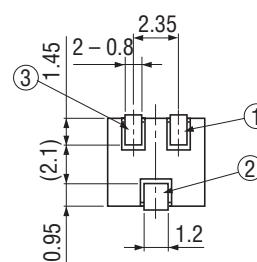
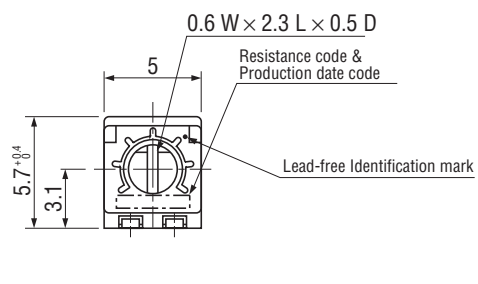
ST-4EB Top adjustment



ST-4EC Top adjustment



ST-4EG Side adjustment



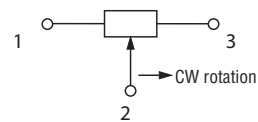
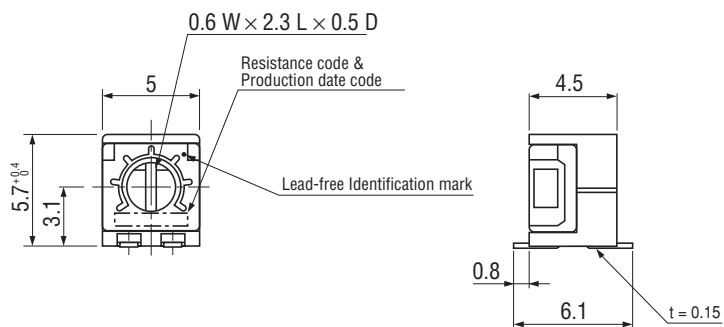
ST-4

SURFACE MOUNT TRIMMERS

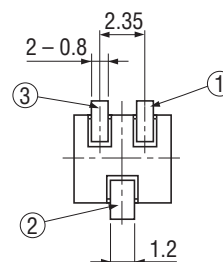
OUTLINE DIMENSIONS

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

● ST-4EH Side adjustment

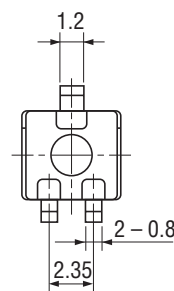
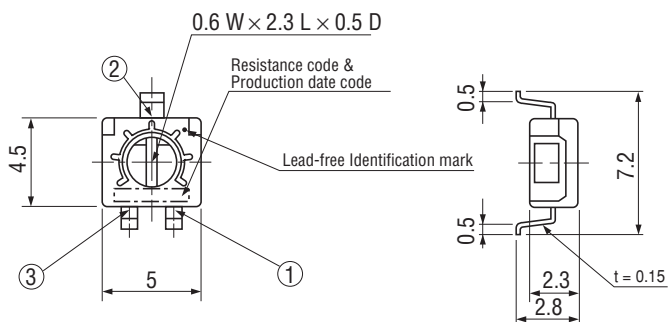


※Note the terminal position.



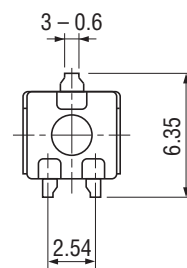
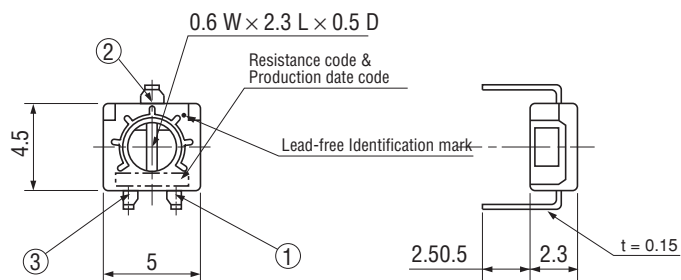
● ST-4ED Rear adjustment

< Semi-standard products >

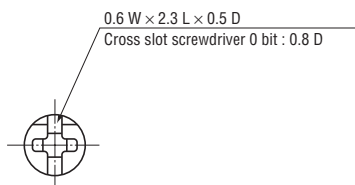


● ST-4EF Rear adjustment

< Semi-standard products >



● ST-42E + CROSS SLOT DIMENSION



ST-4

SURFACE MOUNT TRIMMERS

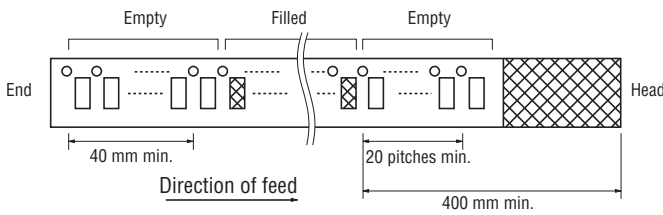
PACKAGING SPECIFICATIONS

<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.
- ST-4ETA, ETB and ETD versions are boxed with 4 reels (2000 pcs.).
ST-4ETG and ETH versions are boxed with one reel (500 pcs.).

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

EMBOSED TAPE DIMENSIONS

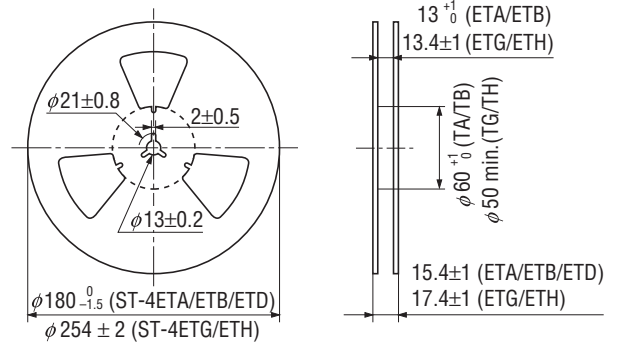


REEL DIMENSIONS

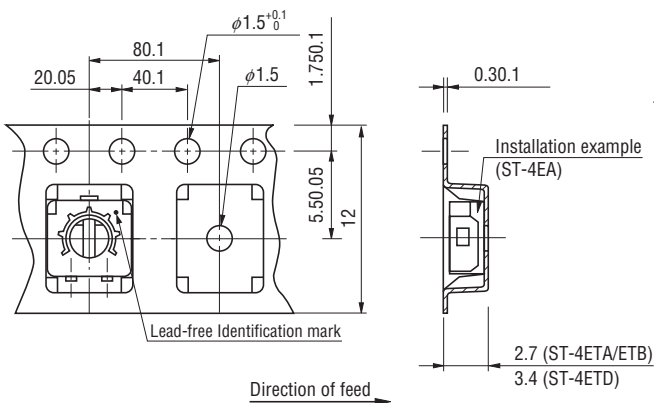
(Conforms to JIS C 0806-3)

(In accordance with EIAJ ET-7200A)

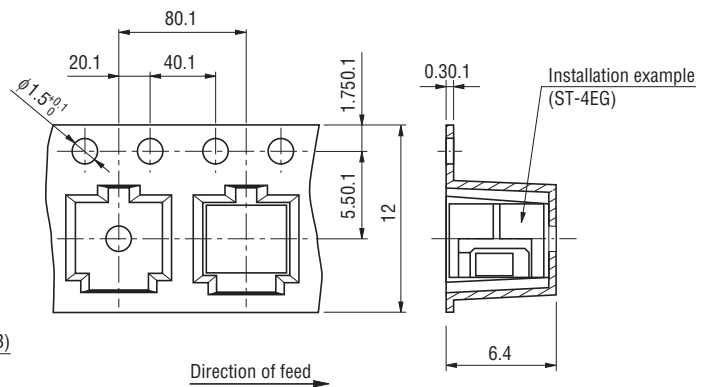
(Unit: mm)



ST-4ETA/ETB/ETD



ST-4ETG/ETH



<Bulk pack specifications>

- Unit of bulk in a plastic bag is 100 pcs. per pack.
- Boxing of bulk in a plastic bag is performed with 500 pcs. per box.

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[MC6CX1A502X001](#) [7286R100L.25](#) [7286R20KL.25](#) [73JB100<](#) [6638S-1-103](#) [404R1KL1.0](#)