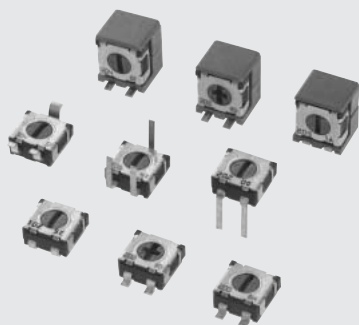


SURFACE MOUNT CERMET TRIMMERS (SINGLE TURN) **ST-4**

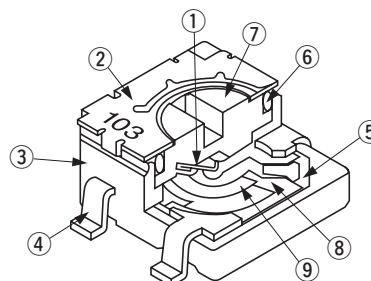
RoHS compliant



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 A-328)
- Stopper structure prevents terminal pin from being open.
- Cross slot rotor suitable for automatic adjustment

INTERNAL STRUCTURE



| | Part name | Material | Flammability |
|---|-------------------|----------------------------|--------------|
| ① | Wiper | Multi metal alloy | — |
| ② | Cover | Stainless steel (SUS 304) | |
| ③ | Housing | Epoxy | UL-94V-0 |
| ④ | Terminal pin | Copper alloy, Sn-Cu-plated | — |
| ⑤ | Base element | Ceramic | |
| ⑥ | “O” ring | Silicone rubber | UL-94HB |
| ⑦ | Rotor | Polyphenylenesulphide | UL-94V-0 |
| ⑧ | Electrode | Ag-Pd cermet | — |
| ⑨ | Resistive element | RuO ₂ cermet | |

PART NUMBER DESIGNATION

| | | | | | | | | | |
|--|--|--|--|-----------------------------------|--|--|--|--|--|
| S T - 4 E T A 2 0 0 Ω (2 0 1) | | | | | | | | | |
| Series name (minus slot) | | | | Resistance code | | | | | |
| Terminal pin | | | | Resistance value | | | | | |
| E : Sn-Cu (Lead-free) | | | | Product shape (Shape of terminal) | | | | | |
| Form of packaging | | | | A, G : J-hook | | | | | |
| T : Taping (Reel) | | | | B, D, H : Gull wing | | | | | |
| Blank : Bulk in plastic bag | | | | C, F : Through hole pins | | | | | |

| | | | | | | | | | |
|--|--|--|--|-----------------------------------|--|--|--|--|--|
| S T - 4 2 E T A 2 0 0 Ω (2 0 1) | | | | | | | | | |
| Series name (cross slot) | | | | Resistance code | | | | | |
| Terminal pin | | | | Resistance value | | | | | |
| E : Sn-Cu (Lead-free) | | | | Product shape (Shape of terminal) | | | | | |
| Form of packaging | | | | A, G : J-hook | | | | | |
| T : Taping (Reel) | | | | B, D, H : Gull wing | | | | | |
| Blank : Bulk in plastic bag | | | | C, F : Through hole pins | | | | | |

※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 |

印の型式、公称抵抗値は受注生産となります。

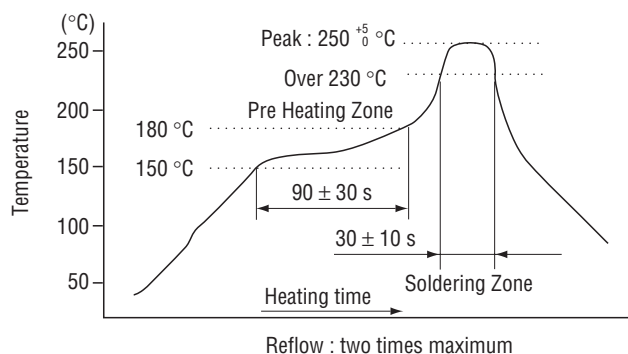
The products indicated by ➡ mark are manufactured upon receipt of order basis.

※ ⊖ 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 | |
| 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

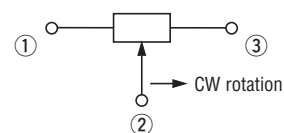
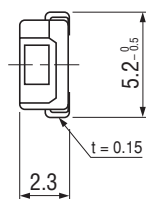
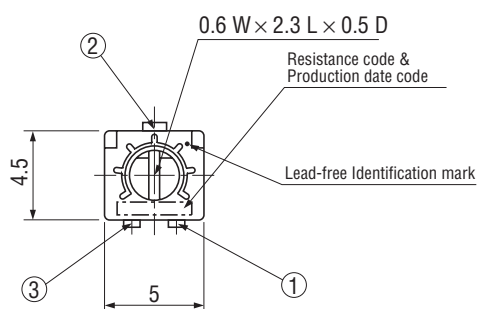
ST-4

SURFACE MOUNT TRIMMERS

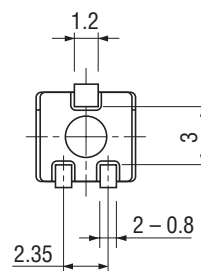
OUTLINE DIMENSIONS

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

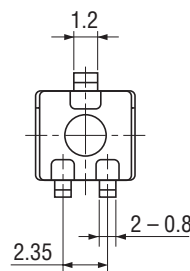
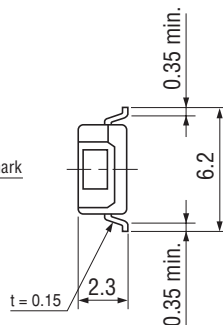
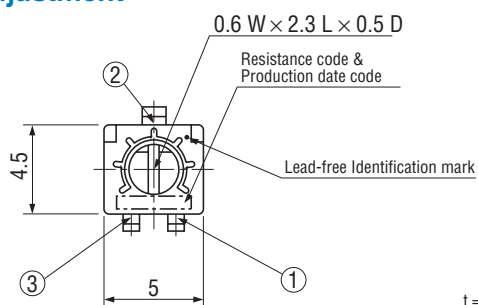
ST-4EA Top adjustment



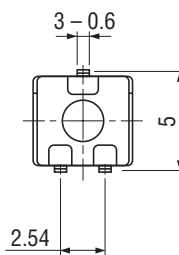
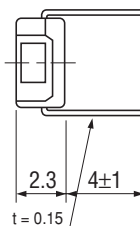
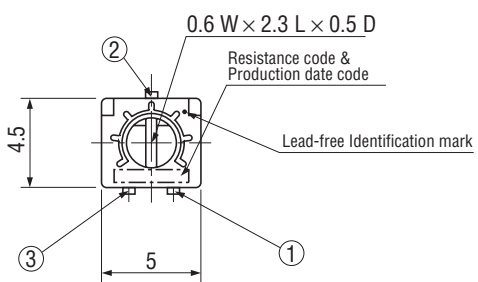
※Note the terminal position.



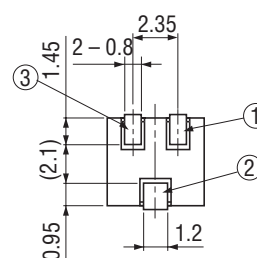
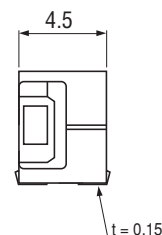
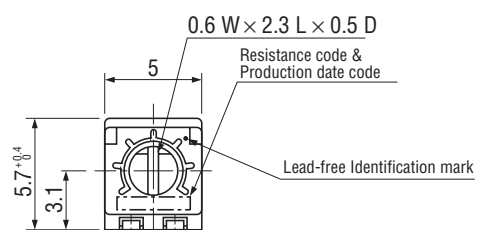
ST-4EB Top adjustment



ST-4EC Top adjustment



ST-4EG Side adjustment



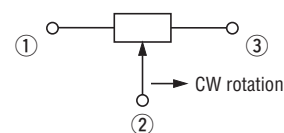
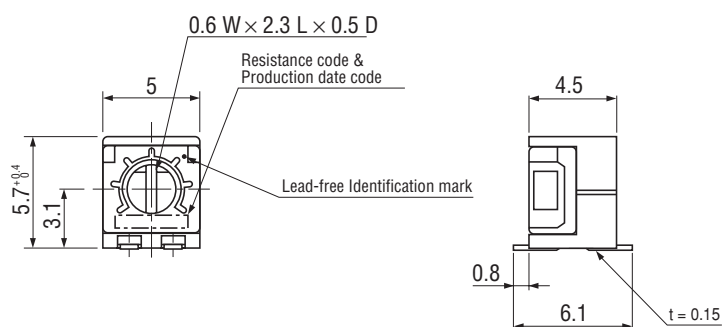
ST-4

SURFACE MOUNT TRIMMERS

OUTLINE DIMENSIONS

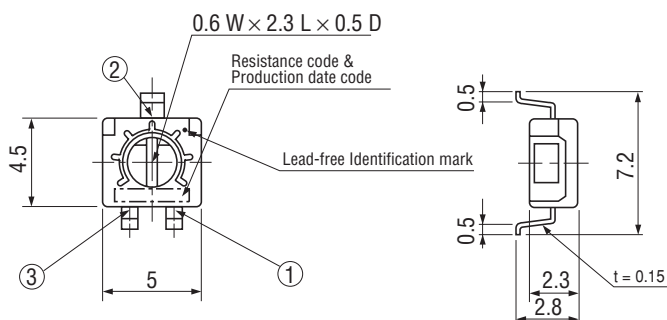
Unless otherwise specified, tolerance : ± 0.3 (Unit: mm)

ST-4EH Side adjustment



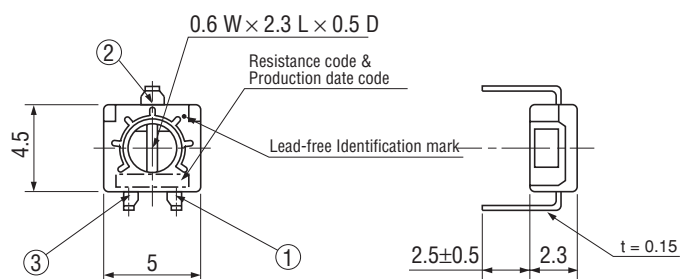
※Note the terminal position.

ST-4ED Rear adjustment



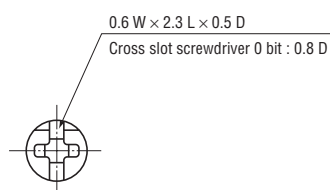
< Semi-standard products >

ST-4EF Rear adjustment



< Semi-standard products >

ST-42E CROSS SLOT DIMENSION



ST-4

SURFACE MOUNT TRIMMERS

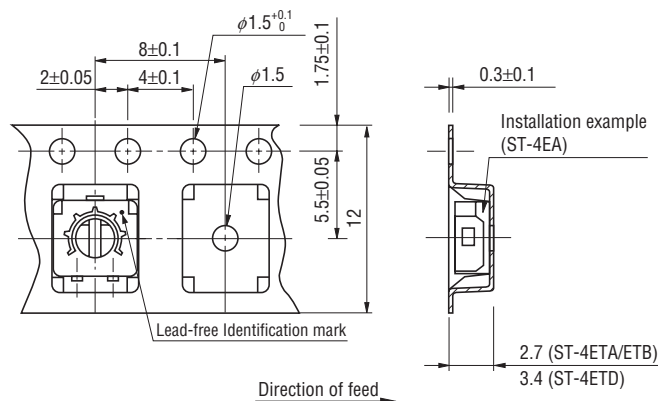
PACKAGING SPECIFICATIONS

<Taping packaging specifications>

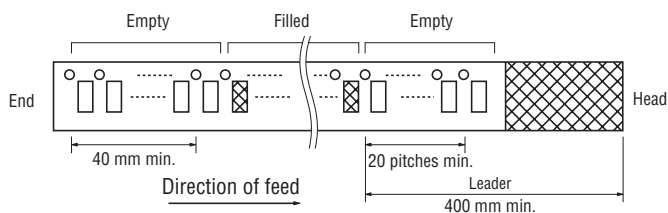
- Taping version is packaged in 500 pcs. per reel.
 Orders will be accepted for units of 500 pcs., i.e., 500, 1000, 1500 pcs., etc.
- ST-4ETA, ETB and ETD versions are boxed with 4 reels (2000 pcs.).
 ST-4ETG and ETH versions are boxed with one reel (500 pcs.).

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

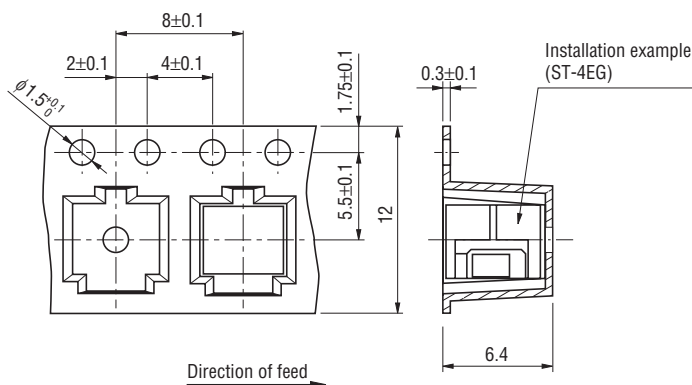
● ST-4ETA/ETB/ETD



● EMBOSSED TAPE DIMENSIONS



● ST-4ETG/ETH

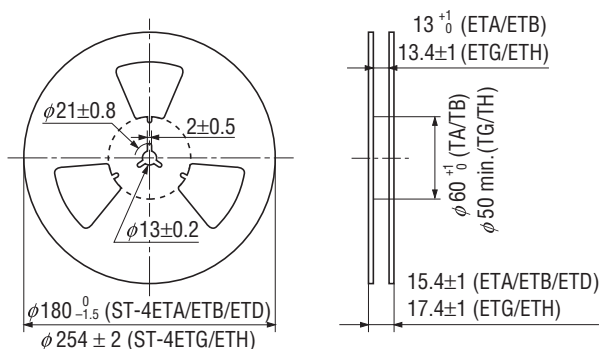


● REEL DIMENSIONS

(Conforms to JIS C 0806-3)

(In accordance with EIAJ ET-7200A)

(Unit: mm)



<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.