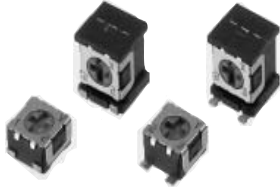


Surface Mount Cermet Trimmers (single turn)



FEATURES

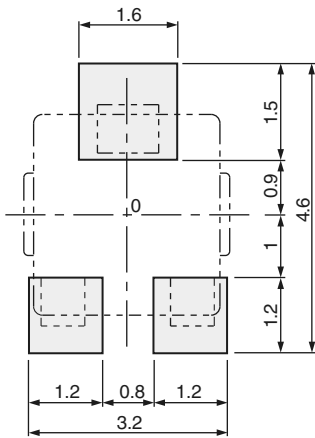
- Lead (Pb)-free soldering, Cadmium-free
- Top and side adjustment styles
- Rotor with a cross slot for ease of adjustment
- Leaded terminals provide strong adhesive strength against P.C.B. bending
- J-hook, Gull wing and leaded terminal configurations
- Sealed / Washable
- RoHS compliant



DIMENSIONS in millimeters

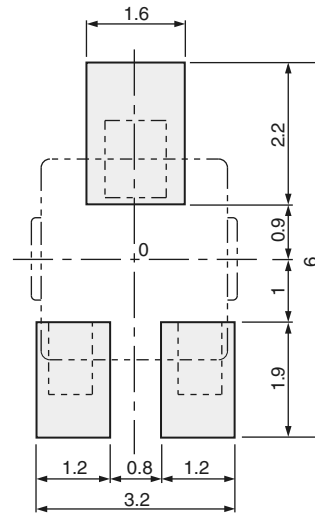
RECOMMENDED P.C.B. PAD OUTLINE DIMENSIONS

ST-32A, G, EA, EG



For reflow soldering

ST-32B, H, EB, EH



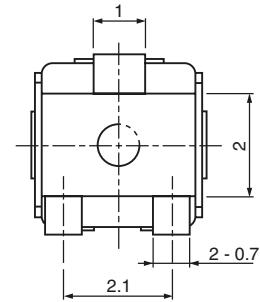
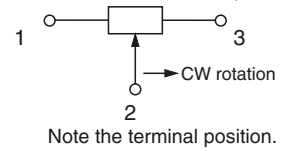
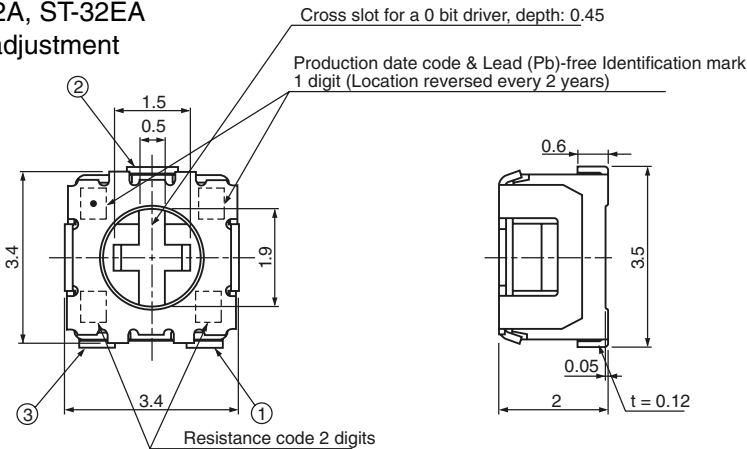
(Unit: mm)

Note) The zero point is the center of mounting.

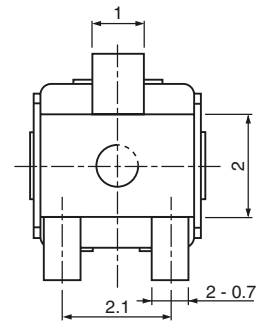
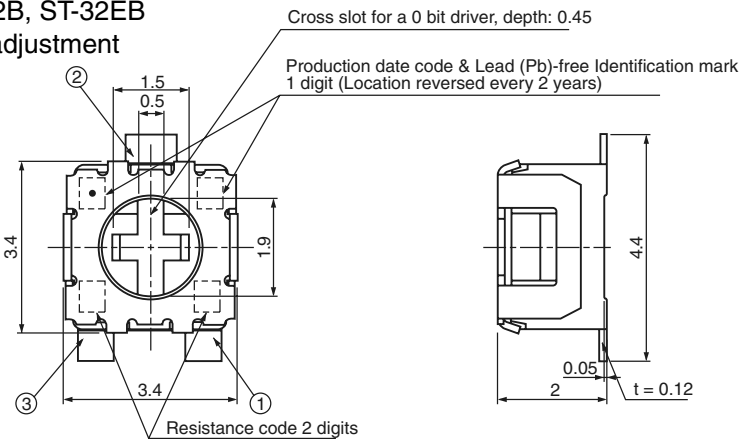
DIMENSIONS in millimeters
OUTLINE DIMENSIONS

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

ST-32A, ST-32EA
Top adjustment



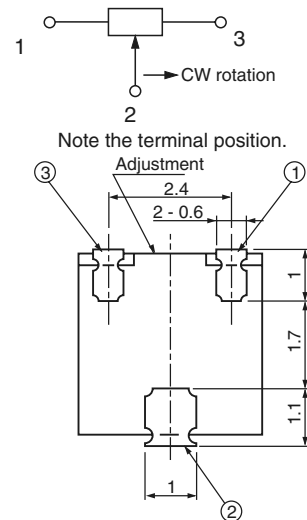
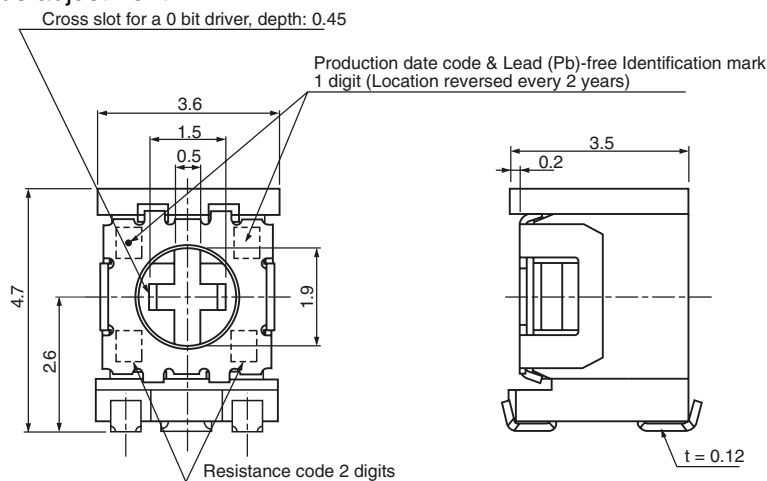
ST-32B, ST-32EB
Top adjustment



Specifications are subject to change without notice. Specifications in this catalog are for reference. The formal specification sheets will be submitted upon request.

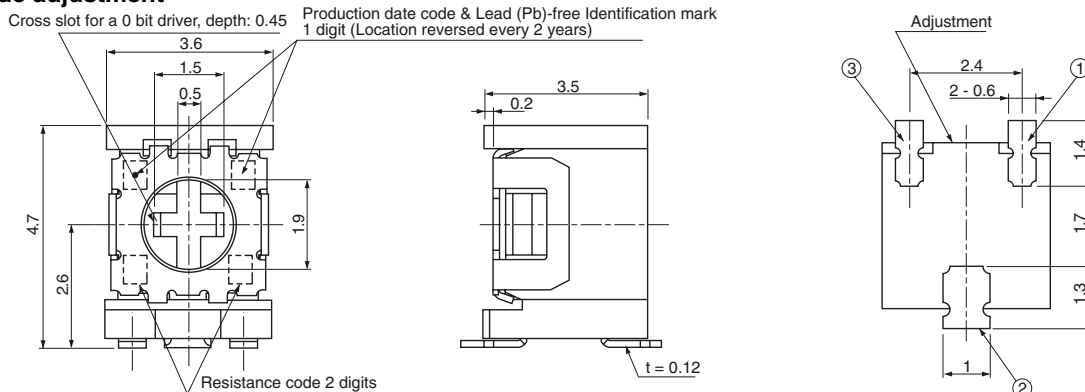
ST-32G, ST-32EG
Side adjustment

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



DIMENSIONS in millimeters

ST-32H, ST-32EH
Side adjustment



PACKAGING SPECIFICATIONS

Taping packaging specifications

Taping version is packaged in 500 pcs. per reel.

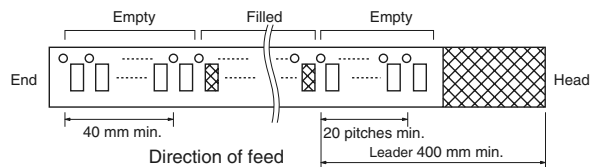
Orders will be accepted for units of 500 pcs., i.e., 500, 1000, 1500 pcs., etc.

ST-32TA, ETA, TB and ETB versions are boxed with 4 reels (2000 pcs.). ST-32TG, ETG, TH 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

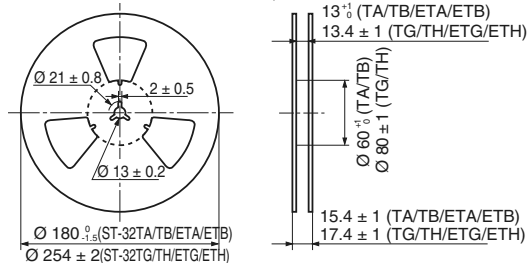


REEL DIMENSIONS

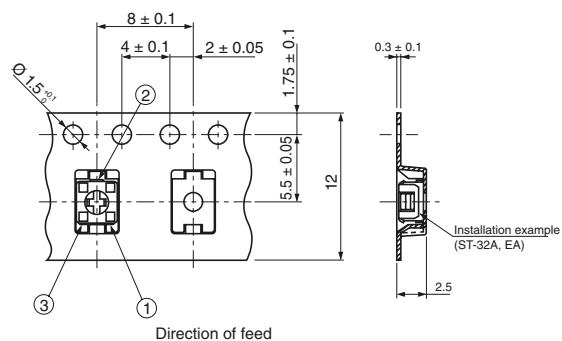
(Conforms to JIS C 0806-3)

(Unit: mm)

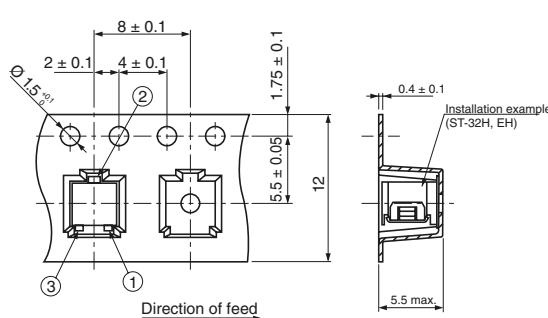
(In accordance with EIAJ ET-7200A)



ST-32TA, TB, ETA, ETB



ST-32TG, TH, ETG, ETH



Vinyl bag packaging specifications

Unit of bulk in vinyl bag packaging is 100 pcs. per pack.

Boxing of bulk in vinyl bags is performed with 500 pcs. per box.

Specifications are subject to change without notice. Specifications in this catalog are for reference. The formal specification sheets will be submitted upon request.

MECHANICAL SPECIFICATIONS

- Mechanical turn** 250 ° (1 turn)
- Operating torque** 5 mN m {51 gf cm} maximum
- Stop Strength** 20 mN m {204 gf cm} minimum
- Rotational life** 100 cycles
[$\Delta R/R \leq \pm (2 \Omega + 3 \%)$]
- Thrust to rotor** 5 N {0.51 kgf} minimum
- Solderability** Sn-Pb: 235 °C, 2 s
Sn-Cu (Lead (Pb)-free): 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

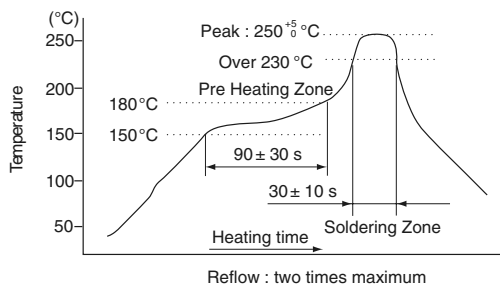
ELECTRICAL CHARACTERISTICS

| | |
|----------------------------|---|
| Nominal resistance range | 10 Ω ~ 2 MΩ |
| Resistance tolerance | ± 20 % |
| Power ratings | 0.125 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. 0.05 g (ST-32A, B, EA, EB) Approx. 0.11 g (ST-32G, H, EG, EH) |

ENVIRONMENTAL SPECIFICATIONS

| Test item | Test conditions | Specifications |
|---------------------------|---|--|
| Thermal shock | - 65 ~ 125 °C (0.5 h), 5 cycles | [$\Delta R/R \leq 2 \%$] [S.S. ≤ 1 %] |
| Humidity | - 10 ~ 65 °C (Relative humidity 80 ~ 98 %), 10 cycles, 240 h | [$\Delta R/R \leq 2 \%$] |
| Shock | 981 m/s ² , 6 ms 6 directions for 3 times each | [$\Delta R/R \leq 1 \%$] [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, 0.125 W, 1000 h | [$\Delta R/R \leq 3 \%$] [S.S. ≤ 1 %] |
| Low temperature operation | - 55 °C, 2 h | [$\Delta R/R \leq 2 \%$] [S.S. ≤ 2 %] |
| High temperature exposure | 125 °C, 250 h | [$\Delta R/R \leq 3 \%$] [S.S. ≤ 2 %] |
| Immersion seal | 85 °C, 60 s | No leaks (No continuous bubbles) |
| Soldering heat | Sn-Pb 260 °C, 10 s or 215 °C, 35 s S-Cu Flow: 260 °C ± 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 | [$\Delta R/R \leq 1 \%$] |

Reflow profile for soldering heat evaluation

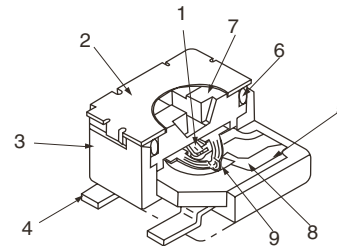


| MAXIMUM INPUT RATINGS | | | |
|--|-----------------|---------------------------|----------------------------|
| Nominal resistance values (Ω) | Resistance code | Maximum input voltage (V) | Maximum wiper current (mA) |
| 10* | 11 | 1.00 | 100 |
| 20* | 21 | 1.58 | 79.1 |
| 50 | 51 | 2.50 | 50.0 |
| 100 | 12 | 3.53 | 35.4 |
| 200 | 22 | 5.00 | 25.0 |
| 300 | 32 | 6.12 | 20.4 |
| 500 | 52 | 7.91 | 15.8 |
| 1 k | 13 | 11.2 | 11.2 |
| 2 k | 23 | 15.8 | 7.91 |
| 3 k | 33 | 19.4 | 6.45 |
| 5 k | 53 | 25.0 | 5.00 |
| 10 k | 14 | 35.4 | 3.54 |
| 20 k | 24 | 50.0 | 2.50 |
| 30 k | 34 | 61.2 | 2.04 |
| 50 k | 54 | 79.1 | 1.58 |
| 100 k | 15 | 112 | 1.12 |
| 200 k | 25 | 158 | 0.79 |
| 500 k | 55 | 200 | 0.40 |
| 1 M | 16 | 200 | 0.20 |
| 2 M | 26 | 200 | 0.10 |

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

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

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



| LIST OF PART NUMBERS | | | | | |
|----------------------|-------------------|-----------------|------------------------|---------------|------------------------|
| Adjustment position | Shape of terminal | Form of packing | | | |
| | | Taping (reel) | | Vinyl bag | |
| | | Sn-Pb | Sn-Cu (Lead (Pb)-free) | Sn-Pb | Sn-Cu (Lead (Pb)-free) |
| Top adjustment | A (J-hook) | ST-32TA | ST-32ETA | ST-532A | ST-32EA |
| | B (Gull-wing) | ST-32TB | ST-32ETB | ST-32B | ST-32EB |
| Side adjustment | G (J-hook) | ST-32TG | ST-32ETG | ST-32G | ST-32EG |
| | H (Gull-wing) | ST-32TH | ST-32ETH | ST-32H | ST-32EH |
| Pieces in package | | 500 pcs./reel | | 100 pcs./reel | |

| FIG. 1: NOMINAL RESISTANCE VALUES | | | | | | |
|-----------------------------------|----------------|----------------|----------------|---------------|---------------|---------------|
| 10 Ω * | 20 Ω * | 50 Ω | 100 Ω | 200 Ω | 300 Ω | 500 Ω |
| 1 k Ω | 2 k Ω | 3 k Ω | 5 k Ω | 10 k Ω | 20 k Ω | 30 k Ω |
| 50 k Ω | 100 k Ω | 200 k Ω | 500 k Ω | 1 M Ω | 2 M Ω | - |

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

* 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.



ORDERING INFORMATION

| ST-32 | | T | A | 204 |
|-------------|---|---|-----------------------------------|-----------------|
| SERIES NAME | TERMINAL PIN | FORM OF PACKAGING | PRODUCT SHAPE (SHAPE OF TERMINAL) | RESISTANCE CODE |
| | Blank: Sn-Pb E: Sn-Cu (Lead (Pb)-free) | T: Taping (Reel) Blank: Bulk in vinyl bags | A, G: J-hook B, H: Gull wing | |

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