RoHS compliant

FEATURES
- RoHS compliant
- Rotor with a cross slot for ease of adjustment
- Leaded terminals provide strong as adhesive strength against P.C.B. bending
- J-hook, Gull wing and leaded terminal configurations
- Sealed (Washable: Refer to page 698.)

PART NUMBER DESIGNATION

S T - 3 2 E T A 1 0 0 Ω (1 2)

Series name
Terminal pin
E : Sn-Cu (Lead-free)
Form of packaging
T : Taping (Reel)
Blank : Bulk in plastic bag

Resistance code
Resistance value
Product shape (Shape of terminal)
A, G : J-hook
B, H : Gull wing

INTERNAL STRUCTURE

<table>
<thead>
<tr>
<th>Part name</th>
<th>Material</th>
<th>Flammability</th>
</tr>
</thead>
<tbody>
<tr>
<td>① Wiper</td>
<td>Multi metal alloy</td>
<td></td>
</tr>
<tr>
<td>② Cover</td>
<td>Stainless steel (SUS 304)</td>
<td></td>
</tr>
<tr>
<td>③ Housing</td>
<td>Epoxy</td>
<td>UL94V-0</td>
</tr>
<tr>
<td>④ Terminal pin</td>
<td>Copper alloy, Sn-Cu-plated</td>
<td></td>
</tr>
<tr>
<td>⑤ Base element</td>
<td>Ceramic</td>
<td></td>
</tr>
<tr>
<td>⑥ “O” ring</td>
<td>Silicone rubber</td>
<td>UL94HB</td>
</tr>
<tr>
<td>⑦ Rotor</td>
<td>Polyphenylenesulphide</td>
<td>UL94V-0</td>
</tr>
<tr>
<td>⑧ Electrode</td>
<td>Ag-Pd cermet</td>
<td></td>
</tr>
<tr>
<td>⑨ Resistive element</td>
<td>RuO₂ cermet</td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Adjustment position</th>
<th>Shape of terminal</th>
<th>Form of packaging</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top adjustment</td>
<td>A (J-hook)</td>
<td>ST-32ETA</td>
</tr>
<tr>
<td></td>
<td>B (Gull wing)</td>
<td>ST-32EB</td>
</tr>
<tr>
<td>Side adjustment</td>
<td>G (J-hook)</td>
<td>ST-32ETG</td>
</tr>
<tr>
<td></td>
<td>H (Gull wing)</td>
<td>ST-32ETH</td>
</tr>
</tbody>
</table>

Pieces in package: 500 pcs./reel, 100 pcs./pack

NOMINAL RESISTANCE VALUES

<table>
<thead>
<tr>
<th>Resistance Values</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 Ω</td>
<td>20 Ω</td>
</tr>
<tr>
<td>50 Ω</td>
<td>100 Ω</td>
</tr>
<tr>
<td>200 Ω</td>
<td>300 Ω</td>
</tr>
<tr>
<td>500 Ω</td>
<td>1 kΩ</td>
</tr>
<tr>
<td>2 kΩ</td>
<td>3 kΩ</td>
</tr>
<tr>
<td>5 kΩ</td>
<td>10 kΩ</td>
</tr>
<tr>
<td>20 kΩ</td>
<td>30 kΩ</td>
</tr>
<tr>
<td>50 kΩ</td>
<td>100 kΩ</td>
</tr>
<tr>
<td>200 kΩ</td>
<td>500 kΩ</td>
</tr>
<tr>
<td>1 MΩ</td>
<td>2 MΩ</td>
</tr>
<tr>
<td>5 MΩ</td>
<td></td>
</tr>
</tbody>
</table>

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 Ω/°C maximum 100 Ω ~ 2 MΩ: ± 100 Ω/°C maximum
- Insulation resistance: 1000 MΩ minimum (DC500 V)
- Dielectric strength: AC500 V, 60 s
- Net weight: Approx. 0.05 g (ST-32EA, EB) Approx. 0.11 g (ST-32EG, EH)

MECHANICAL CHARACTERISTICS

- Mechanical angle: 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 [△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

ENVIRONMENTAL CHARACTERISTICS

- Test item: Test conditions: Specifications
  - Thermal shock: −65 ~ 125 °C (0.5 h), 5 cycles [△R/R = ± 2 %] [S.S. = 1 %]
  - Humidity: −10 ~ 65 °C (80 ~ 98 %), 10 cycles, 240 h [△R/R = ± 2 %]
  - Shock: 981 m/s², 6 ms 6 directions for 3 times each [△R/R = ± 1 %] [S.S. = 1 %]
  - Vibration: (Amplitude) 1.52 mm or (Acceleration) 196 m/s², 60 ~ 2000 Hz, 3 directions, 12 times each [△R/R = ± 1 %] [S.S. = 1 %]
  - Load life: 70 °C, 0.125 W, 1000 h [△R/R = ± 3 %] [S.S. = 2 %]
  - Low temp. operation: −55 °C, 2 h [△R/R = ± 3 %] [S.S. = 2 %]
  - High temp. exposure: 125 °C, 250 h [△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.) [△R/R = ± 1 %] [S.S. = 1 %]

REFLOW PROFILE FOR SOLDERING HEAT EVALUATION

- Reflow: two times maximum

Symbols:
- △R/R: Change in total resistance
- S.S.: Setting stability

Fig. 1

The products indicated by A mark are manufactured upon receipt of order basis.
The part numbers on the left 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.
## MAXIMUM INPUT RATINGS

<table>
<thead>
<tr>
<th>Nominal resistance values (Ω)</th>
<th>Resistance code</th>
<th>Maximum input voltage (V)</th>
<th>Maximum wiper current (mA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>→ 10</td>
<td>11</td>
<td>1.00</td>
<td>100</td>
</tr>
<tr>
<td>20</td>
<td>21</td>
<td>1.58</td>
<td>79.1</td>
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<td>50</td>
<td>51</td>
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<td>100</td>
<td>12</td>
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<td>35.4</td>
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<tr>
<td>500</td>
<td>52</td>
<td>7.91</td>
<td>15.8</td>
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<tr>
<td>1 k</td>
<td>13</td>
<td>11.2</td>
<td>11.2</td>
</tr>
<tr>
<td>2 k</td>
<td>23</td>
<td>15.8</td>
<td>7.91</td>
</tr>
<tr>
<td>3 k</td>
<td>33</td>
<td>19.4</td>
<td>6.45</td>
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<tr>
<td>5 k</td>
<td>53</td>
<td>25.0</td>
<td>5.00</td>
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<tr>
<td>10 k</td>
<td>14</td>
<td>35.4</td>
<td>3.54</td>
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<tr>
<td>20 k</td>
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<td>30 k</td>
<td>34</td>
<td>61.2</td>
<td>2.04</td>
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<td>54</td>
<td>79.1</td>
<td>1.58</td>
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<tr>
<td>100 k</td>
<td>15</td>
<td>112</td>
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<td>200 k</td>
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<td>200</td>
<td>0.40</td>
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<tr>
<td>1 M</td>
<td>16</td>
<td>200</td>
<td>0.20</td>
</tr>
<tr>
<td>2 M</td>
<td>26</td>
<td>200</td>
<td>0.10</td>
</tr>
</tbody>
</table>

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

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

- **ST-32EA, EG**
- **ST-32EB, EH**

(Units: mm)

For reflow soldering

Note: The zero point is the center of mounting.
ST-32
SURFACE MOUNT TRIMMERS

■ OUTLINE DIMENSIONS

● ST-32EA
  Top adjustment

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

Cross slot for a 0 bit driver, depth: 0.45
Production date code & Lead-free Identification mark
1 digit (Location reversed every 2 years)

Resistance code 2 digits

● ST-32EB
  Top adjustment

Cross slot for a 0 bit driver, depth: 0.45
Production date code & Lead-free Identification mark
1 digit (Location reversed every 2 years)

Resistance code 2 digits
OUTLINE DIMENSIONS

ST-32
SURFACE MOUNT TRIMMERS

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

ST-32EG
Side adjustment

Cross slot for a 0 bit driver, depth : 0.45
Production date code & Lead-free Identification mark
1 digit (Location reversed every 2 years)

Resistance code 2 digits

ST-32EH
Side adjustment

Cross slot for a 0 bit driver, depth : 0.45
Production date code & Lead-free Identification mark
1 digit (Location reversed every 2 years)

Resistance code 2 digits

Note the terminal position.
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-32ETA, ETB versions are boxed with 4 reels (2000 pcs.). ST-32ETG, 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.

EMBOSSED TAPE DIMENSIONS

(REEL DIMENSIONS

(Conforms to JIS C 0806-3)
(In accordance with EIAJ ET-7200A)

[Unit: mm]

ST-32ETA, ETB

ST-32ETG, 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.