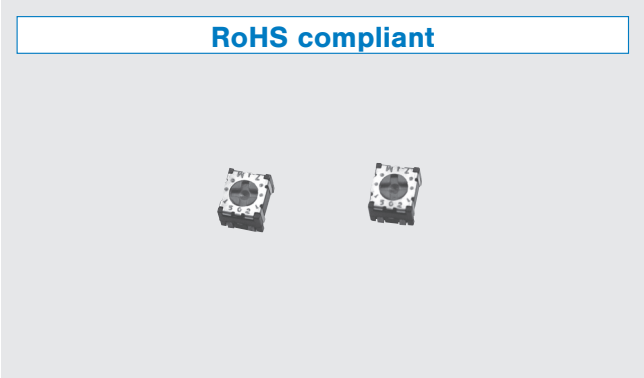


SURFACE MOUNT CERMET TRIMMERS (SINGLE TURN)

ST-2



FEATURES

- RoHS compliant
- Compact and low-profile □2 mm single turn type
- Sealed construction
- Resin materials are UL Recognized 94V-0 or 94V-1 equivalent

| INTERNAL STRUCTURE |                   |                             |
|--------------------|-------------------|-----------------------------|
|                    |                   |                             |
| Part name          |                   | Material                    |
| ①                  | Housing           | Epoxy                       |
| ②                  | Rotor             | PPS (Polyphenylenesulphide) |
| ③                  | Wiper             | Stainless steel (SUS 304)   |
| ④                  | Terminal #2       | Copper alloy, Sn-Cu-plated  |
| ⑤                  | Terminal #1, #3   |                             |
| ⑥                  | Cover             | Stainless steel (SUS 304)   |
| ⑦                  | Substrate         | Ceramic                     |
| ⑧                  | Pin               | Blass, Sn-plated            |
| ⑨                  | “O” ring          | Silicone rubber             |
| ⑩                  | Terminations      | Ag-Pd cermet                |
| ⑪                  | Resistive element | RuO <sub>2</sub> cermet     |

PART NUMBER DESIGNATION

ST-2

T

A

100Ω

(101)

Series name

Form of packaging

T : Taping (Reel)

Blank : Bulk in plastic bag

Resistance code

Resistance value

Product shape (Shape of terminal)

A : J-hook (Top adjustment)

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

# ST-2

## 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-2TA            | ST-2A         |
| Pieces in package   |                   | 500 pcs./reel     | 100 pcs./pack |

### 〈Nominal resistance values〉

|       |       |        |        |        |      |       |
|-------|-------|--------|--------|--------|------|-------|
| 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 |       |

Fig.1

- ※ 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 version is not sold separately and must be purchased in reel units.

### ELECTRICAL CHARACTERISTICS

|                            |                                              |
|----------------------------|----------------------------------------------|
| Nominal resistance range   | 100 Ω ~ 1 MΩ                                 |
| Resistance tolerance       | ± 20 %                                       |
| Power ratings              | 0.1 W (70 °C) 0 W (125 °C)                   |
| Resistance law             | Linear law (B)                               |
| Maximum input voltage      | DC50 V or power rating, whichever is smaller |
| Maximum wiper current      | Within power ratings ( $I = \sqrt{P/R}$ A )  |
| Effective electrical angle | 240 ° (1 turn)                               |
| End resistance             | 1 % or 2 Ω, whichever is greater             |
| C.R.V.                     | 2 % or 3 Ω, whichever is greater             |
| Operating temp. range      | −55 ~ 125 °C                                 |
| Temp. coefficient          | ± 150 10 <sup>6</sup> /°C                    |
| Insulation resistance      | 1000 MΩ minimum (DC500 V)                    |
| Dielectric strength        | AC500 V, 60 s                                |
| Net weight                 | Approx. 0.032 g                              |

### MECHANICAL CHARACTERISTICS

|                   |                                                       |
|-------------------|-------------------------------------------------------|
| Mechanical angle  | 270 ° (1 turn)                                        |
| Operating torque  | 5 mN·m {51 gf·cm} maximum                             |
| Stop strength     | 8 mN·m {78.4 gf·cm} minimum                           |
| Rotational life   | 50 cycles [ $\Delta R/R \leq \pm (2 \Omega + 5 \%)$ ] |
| Thrust to rotor   | 3 N {0.31 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

# ST-2

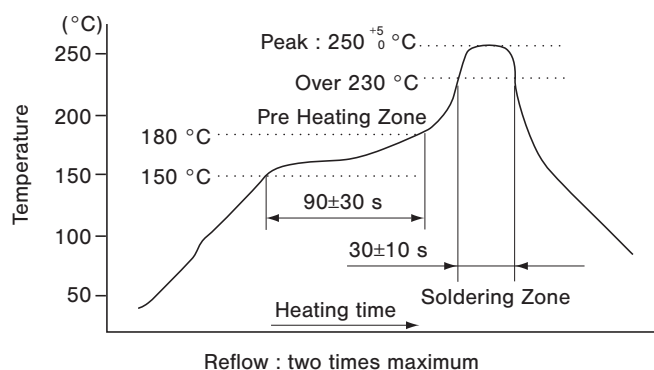
## SURFACE MOUNT TRIMMERS

### ENVIRONMENTAL CHARACTERISTICS

| Test item           | Test conditions                                                                                                                                                                                | Specifications                                |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|
| Thermal shock       | -65 ~ 125 °C<br>(0.5 h), 5 cycles                                                                                                                                                              | [ $\Delta R/R \leq 2\%$<br>[S.S. $\leq 2\%$ ] |
| Humidity            | -10 ~ 65 °C (Relative humidity<br>80 ~ 98 %), 10 cycles, 240 h                                                                                                                                 | [ $\Delta R/R \leq 2\%$ ]                     |
| Shock               | 981 m/s <sup>2</sup> , 6 ms<br>6 directions for 3 times each                                                                                                                                   | [ $\Delta R/R \leq 2\%$<br>[S.S. $\leq 1\%$ ] |
| Vibration           | Amplitude 1.52 mm or<br>Acceleration 196 m/s <sup>2</sup> ,<br>10 ~ 2000 Hz, 3 directions, 12 times each                                                                                       |                                               |
| Load life           | 70 °C, 0.1 W<br>1000 h                                                                                                                                                                         | [ $\Delta R/R \leq 3\%$<br>[S.S. $\leq 1\%$ ] |
| Low temp. operation | -55 °C, 2 h                                                                                                                                                                                    | [ $\Delta R/R \leq 2\%$<br>[S.S. $\leq 2\%$ ] |
| High temp. exposure | 125 °C, 250 h                                                                                                                                                                                  | [ $\Delta R/R \leq 3\%$<br>[S.S. $\leq 2\%$ ] |
| Immersion seal      | 85 °C, 60 s                                                                                                                                                                                    | No leaks<br>(No continuous bubbles)           |
| Soldering heat      | Reflow Peak temperature : 255 °C<br>(Please refer to the profile below)<br><br>Flow soldering :<br>260 ± 3 °C, 5 ~ 6 s,<br>two times maximum<br><br>Manual soldering :<br>350 ± 10 °C, 3 ~ 4 s | [ $\Delta R/R \leq \pm 1\%$ ]                 |

$\Delta R/R$  : Change in total resistance  
S.S. : Setting stability

### <Reflow profile for soldering heat evaluation>

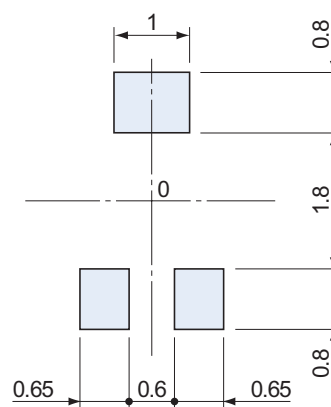


### MAXIMUM INPUT RATINGS

| Nominal resistance values (Ω) | Resistance code | Maximum input voltage (V) | Maximum wiper current (mA) |
|-------------------------------|-----------------|---------------------------|----------------------------|
| 100                           | 101             | 3.16                      | 31.6                       |
| 200                           | 201             | 4.47                      | 22.4                       |
| 500                           | 501             | 7.07                      | 14.1                       |
| 1 k                           | 102             | 10.0                      | 10.0                       |
| 2 k                           | 202             | 14.1                      | 7.1                        |
| 5 k                           | 502             | 22.3                      | 4.5                        |
| 10 k                          | 103             | 31.6                      | 3.2                        |
| 20 k                          | 203             | 44.7                      | 2.2                        |
| 50 k                          | 503             | 50.0                      | 1.0                        |
| 100 k                         | 104             | 50.0                      | 0.5                        |
| 200 k                         | 204             | 50.0                      | 0.25                       |
| 500 k                         | 504             | 50.0                      | 0.1                        |
| 1 M                           | 105             | 50.0                      | 0.05                       |

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

(Unit : mm)



Note) The zero point is the center of mounting.

# ST-2

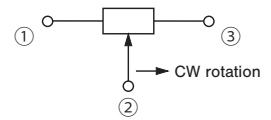
## SURFACE MOUNT TRIMMERS

### OUTLINE DIMENSIONS

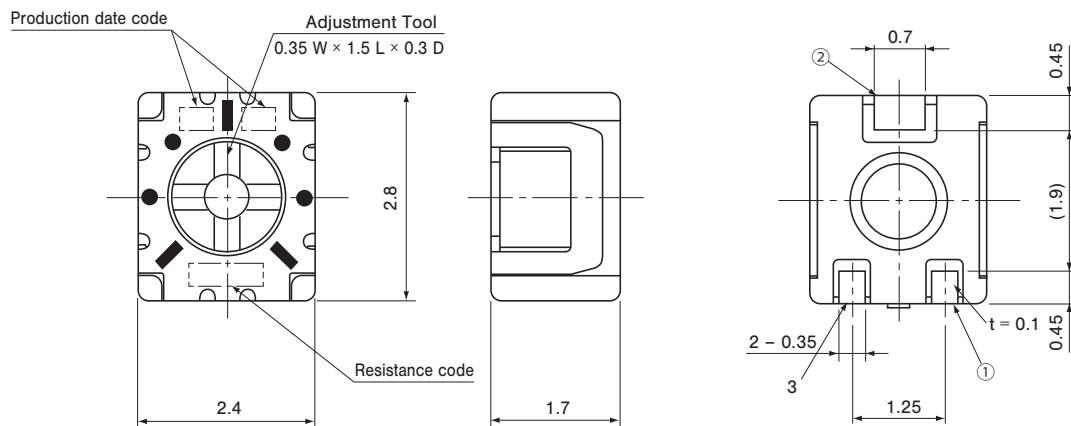
#### ST-2A

##### Top adjustment

Unless otherwise specified, tolerance :  $\pm 0.3$  (Unit : mm)



※ Note the terminal position.

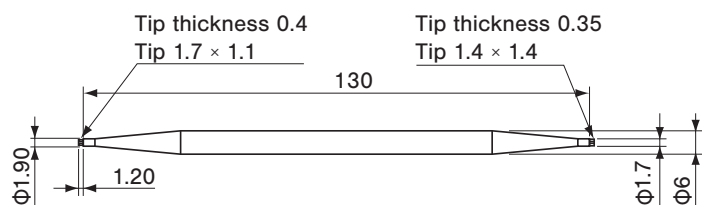


### ST-2/ST-32 ADJUSTMENT TOOL

● Compliant with two models (ST-2/ST-32)

| Recommended models |      |
|--------------------|------|
| ST-32              | ST-2 |

Material : Polyoxymethylene



For ST-32

For ST-2

### Recommended screwdrivers for use

| Manufacturer  | Model |
|---------------|-------|
| ENGINEER INC. | DA-54 |

※ Note : Please do not use the tool for purposes other than adjustment of electronic components.

# ST-2

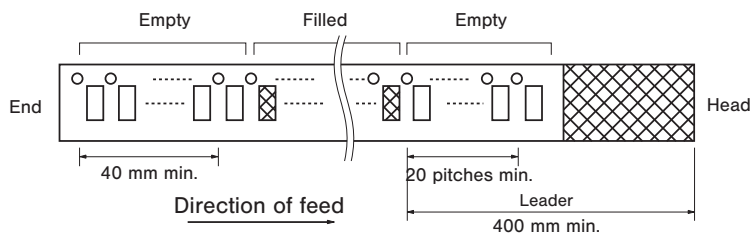
## SURFACE MOUNT TRIMMERS

### 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.
- 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 diagrams below.

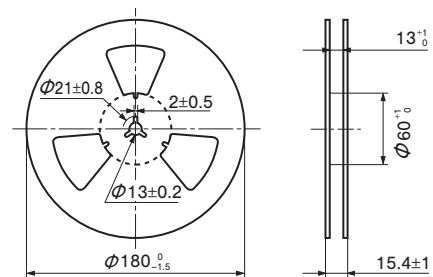
#### EMBOSSED TAPE DIMENSIONS



#### REEL DIMENSIONS

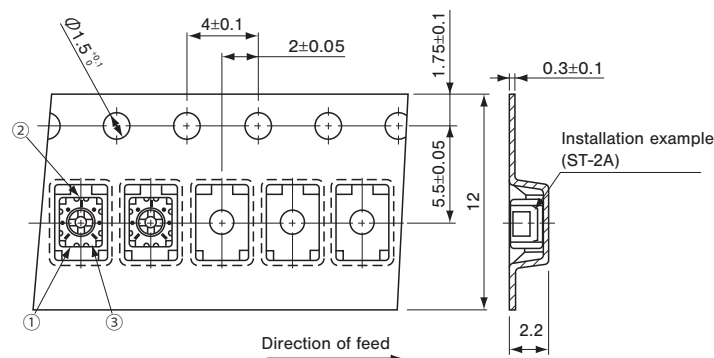
(Conforms to JIS C 0806-3)

(In accordance with EIAJ ET-7200A)



(Unit: mm)

#### ST-2TA



#### <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.