



**High Power Current Sensing Resistors RLP Series  
( Halogen-Free )  
AEC-Q 200-Ver D qualified**

|             |               |
|-------------|---------------|
| Document No | TRLP-250S008F |
| Issued date | 2016/10/11    |
| page        | 1/6           |

**1. Scope :**

This specification applied to the products of current sensing resistor of metal foil for Lead-Free RLP series manufactured by TA-I TECHNOLOGY CO.,LTD.

**2. Type Designation :**

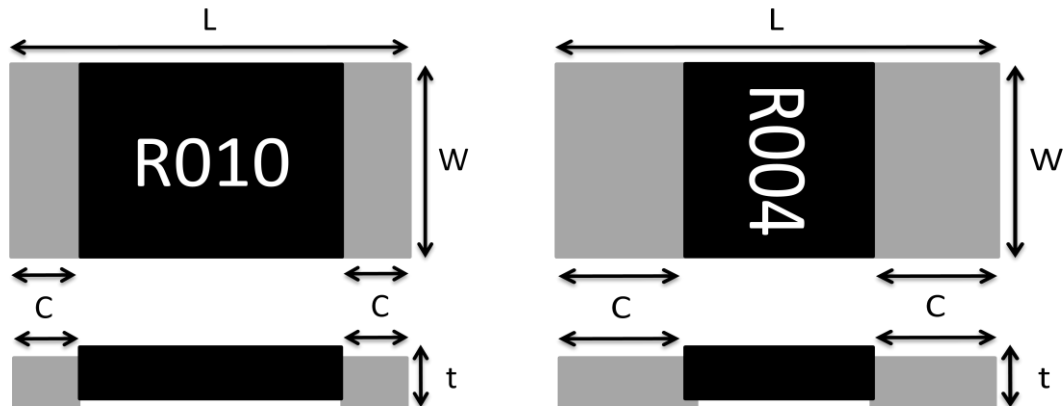
| <u>RLP</u><br>Item | <u>25</u><br>Series No. | <u>E</u><br>Resistance tolerance | <u>E</u><br>Packaging | <u>C</u><br>Power rating       | <u>R010</u><br>Resistance                      |
|--------------------|-------------------------|----------------------------------|-----------------------|--------------------------------|--|
|                    | 25:2512<br>(6432)       | F:±1%<br>G:±2%<br>J:±5%          | E: Embossed Tape      | C=1W<br>D=1.5W<br>E=2W<br>G=3W | e.g :<br>R010=10mΩ<br>R100=100mΩ<br>R500=500mΩ |

**3. Construction and Dimension :**

**3.1 Construction:**



**3.2 Dimension:**



Unit : mm

| Style | L       | W       | C              | T         | Material   |
|-------|---------|---------|----------------|-----------|--|
| RLP25 | 6.4±0.2 | 3.2±0.2 | 2.0±0.2(≤4mΩ)  | 0.7 ±0.20 | Strip : Alloy<br>Over Coating : Polymer<br>Compound UL-94V-0 grade |
|       |         |         | 0.9±0.2(R>4mΩ) |           |  |



**High Power Current Sensing Resistors RLP Series  
( Halogen-Free )  
AEC-Q 200-Ver D qualified**

|             |               |
|-------------|---------------|
| Document No | TRLP-250S008F |
| Issued date | 2016/10/11    |
| page        | 2/6           |

**4. Features:**

|                                       |   |
|---------------------------------------|---|
| Type                                  | RLP25   |
| Power Rating                          | 1 mΩ < R ≤ 100mΩ (1W、1.5 W、2 W、3W)<br>100 mΩ < R ≤ 500mΩ (1W、1.5 W、2 W) |
| Resistance Value                      | 1mΩ < R ≤ 500mΩ   |
| Operation Temperature Range           | -55°C ~ +170°C  |
| Temperature Coefficient of Resistance | ±50ppm/°C   |
| Tolerance                             | ±1%, ±2%, ±5%   |
| Insulation Resistance                 | 100 Meg Ohms Minimum  |
| Maximum Working Current (A)           | (P/R) <sup>1/2</sup>  |

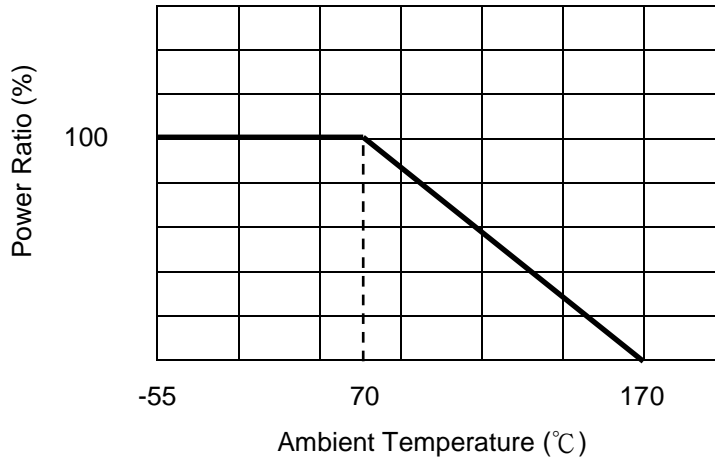
Note: 2&3watts total Solder pad and trace size of 300mm

**5. Reliability Tests :**

| Test Items                            | Reference              | Condition of Test   | Test Limits |
|---------------------------------------|------------------------|---|-------------|
| Temperature Coefficient of Resistance | IEC60115-1 4.8         | +25 ~ 125°C   | Refer 4.0   |
| High Temperature Exposure(Storage)    | MIL-STD-202 Method 108 | T=125°C, 1000hrs, Measurement at 24hrs after test conclusion.                             | < ±1%       |
| Low temperature operation             | IEC60115-1 4.23.4      | -55 °C for 45 min   | < ±0.5%     |
| Temperature Cycling                   | JESD22 Method JA-104   | 1000Cycle (-55°C to 125 °C), Measurement at 24hrs after test conclusion.                  | < ±0.5%     |
| Short time overload                   | IEC60115-1 4.13        | 5 X rated power for 5s  | < ±0.5%     |
| Biased Humidity                       | MIL-STD-202 Method 103 | 10% Rated voltage at 85 °C, RH:85% , 1000Hrs, Measurement at 24hrs after test conclusion. | < ±0.5%     |
| Operation life                        | MIL-STD-202 Method 108 | 1000 h at +70 °C, 1.5 h "ON", 0.5 h "OFF"   | < ±1%       |
| Resistance to Soldering Heat          | IEC60115-1 4.18        | T=260+/-5°C solder, 10+/-1 sec dwell  | < ±0.5%     |
| Mechanical Shock                      | MIL-STD-202 Method 213 | 100g's , Normal duration is 6ms , half sine shock pulse                                   | < ±0.5%     |
| Resistance to vibration               | MIL-STD-202 Method 204 | 5g's for 20min. 12cycles, 10-2000Hz   | <±0.5%      |
| Board Flex                            | AEC-Q200-005           | Min 2mm deflection , 60sec.   | < ±0.5%     |
| Flammability                          | UL-94                  | V-0 or V-1 are acceptable, Electrical test not required                                   |             |



### 5.1 Derating Curve



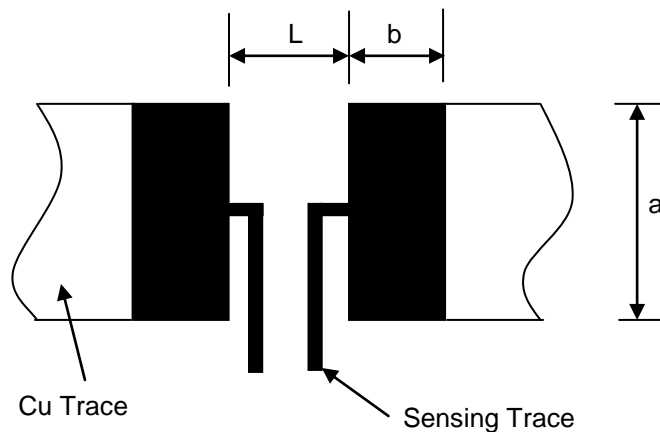
### 5.2 Rated Current

The rated current is calculated by the following Formula:

$$I = \sqrt{P/R}$$

I : Rated Current (A)  
P: Rated Power (W)  
R: Resistance Value (Ω)

### 6. Recommended Solder Pad Dimension



| Resistance Range (Ω) | a   | b   | L   |
|----------------------|-----|-----|-----|
| R > 0.004            | 4.0 | 2.1 | 4.1 |
| R ≤ 0.004            | 4.0 | 3.1 | 1.3 |

Unit: mm



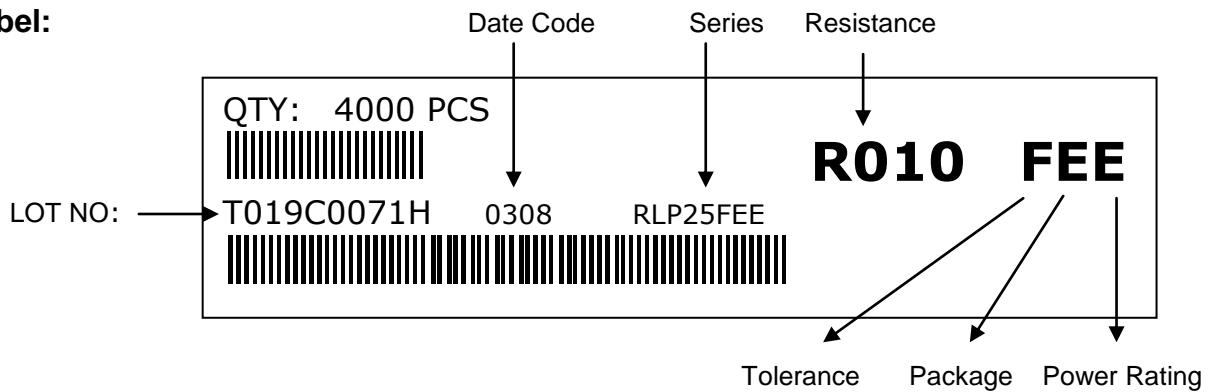
High Power Current Sensing Resistors RLP Series  
( Halogen-Free )  
AEC-Q 200-Ver D qualified

|             |               |
|-------------|---------------|
| Document No | TRLP-250S008F |
| Issued date | 2016/10/11    |
| page        | 4/6           |

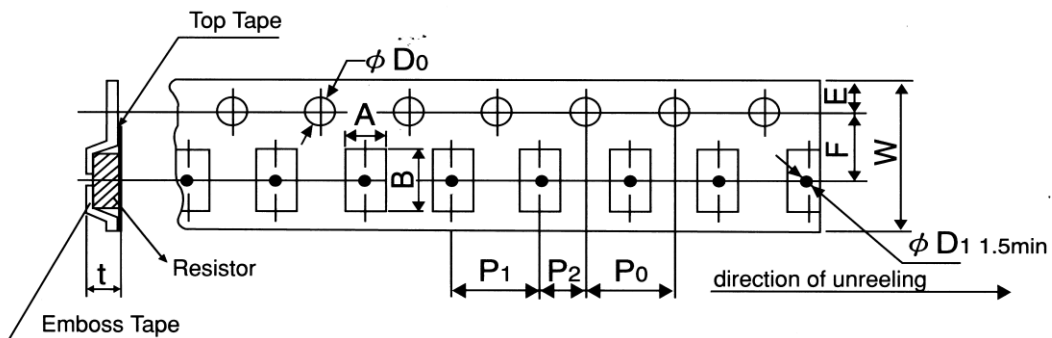
7. Number of Package:

4000 Pieces / package

8. Label:



9. Taping



| Packing | Type  | A       | B       | W       | F        | E        | $P_1$   | $P_2$    | $P_0$    | $D_0$                   | t        |
|---------|-------|---------|---------|---------|----------|----------|---------|----------|----------|-------------------------|----------|
| Emboss  | RLP25 | 3.6±0.2 | 6.9±0.2 | 12.±0.2 | 5.5±0.05 | 1.75±0.1 | 4.0±0.1 | 2.0±0.05 | 4.0±0.05 | $\phi 1.5$<br>(+0.1/-0) | 1.2±0.15 |



High Power Current Sensing Resistors RLP Series  
( Halogen-Free )  
AEC-Q 200-Ver D qualified

|             |               |
|-------------|---------------|
| Document No | TRLP-250S008F |
| Issued date | 2016/10/11    |
| page        | 5/6           |

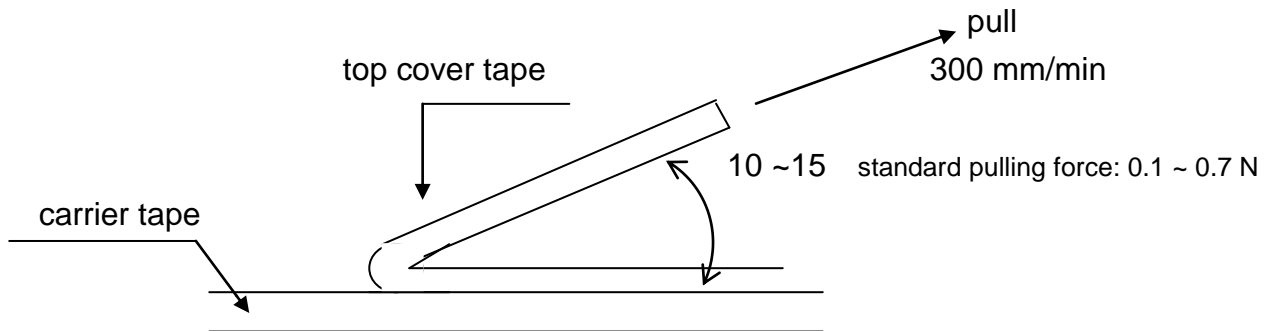
### 10. Reel Specification



| Series | $\phi A$                        | $\phi B$ | $\phi C$ | W        | T        |
|--------|---------------------------------|----------|----------|----------|----------|
| RLP 25 | 180 <sup>+0</sup> <sub>-3</sub> | 60 ±1.0  | 13.0±1.0 | 13.0±1.0 | 15.4±2.0 |

### 11. Peeling Strength of Top Cover Tape

Test Condition: 0.1 to 0.7 N at a peel-off speed of 300 mm / min.



### 12. Storage Conditions:

Temperature: 5°C ~35°C, Humidity: 40%~75%

### 13. Shelf Life:

2 years from manufacturing date.



High Power Current Sensing Resistors RLP Series  
( Halogen-Free )  
AEC-Q 200-Ver D qualified

|             |               |
|-------------|---------------|
| Document No | TRLP-250S008F |
| Issued date | 2016/10/11    |
| page        | 6/6           |

**14. Recommend IR – Reflow profile:** (solder: Sn96.5 / Ag3 / Cu0.5)



**Peak :**  $260 \begin{matrix} +5 \\ -0 \end{matrix} \text{ } ^\circ\text{C}$  , 5 sec

**Pre – heat zone :** 150 to 180 °C , 90±30 sec

**Soldering zone :** 230°C or higher , 30±10 sec

**Iron Solder:** 350±10°C , 3+1/-0 sec

**15. ECN**

Engineering Change Notice: The customer will be informed with ECN if there is significant modification on the characteristics and materials described in approval sheet.