



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

| | |
|-------------|---------------|
| Document No | TRLP-250S011C |
| Issued date | 2016/10/11 |
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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 :

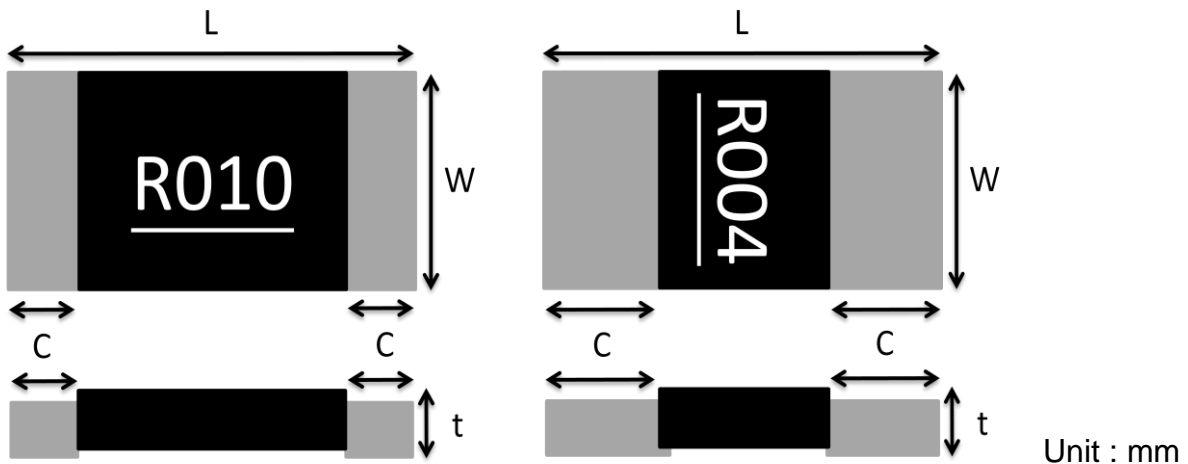
| <u>R</u> L <u>P</u> Item | <u>2</u> 5 Series No. | <u>E</u> Resistance tolerance | <u>E</u> Packaging | <u>C</u> Power rating | <u>M</u> Metal | <u>R</u> 0 <u>1</u> 0 Resistance |
|-----------------------------|--------------------------|----------------------------------|-----------------------|--------------------------------|-------------------|-------------------------------------|
| | 25:2512 (6432) | F:±1% G:±2% J:±5% | E: Embossed Tape | C=1W D=1.5W E=2W G=3W | M=Mn/Cu | e.g : R010=10mΩ |

3. Construction and Dimension :

3.1 Construction:



3.2 Dimension:



| 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 Over Coating : molding Compound UL-94V-0 grade |
| | | | 0.9±0.2(R>4mΩ) | | |



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4. Features:

| | |
|---------------------------------------|---|
| Type | RLP25 |
| Power Rating | $1\text{ m}\Omega \leq R \leq 60\text{m}\Omega$ (1W、1.5W、2W、3W) |
| Resistance Value | 1 mΩ~60mΩ |
| Operation Temperature Range | -55℃~+170℃ |
| Temperature Coefficient of Resistance | ±50ppm/℃ |
| Tolerance | ±1%,±2%,±5% |
| Insulation Resistance | Over 100MΩ |
| Maximum Working Current(I) | $(P/R)^{1/2}$ |

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℃ | Refer 4.0 |
| High Temperature Exposure(Storage) | MIL-STD-202 Method 108 | T=125℃,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℃ to 125℃),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℃,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℃ 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-1are acceptable, Electrical test not required | |



5.1 Derating Curve



5.2 Rated Current

The rated voltage is calculated by the following Formula:

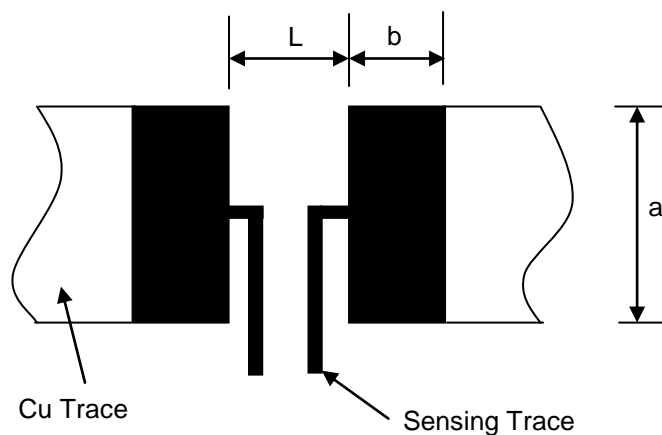
$$I = \sqrt{P \div R}$$

I:Rated Current(I)

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



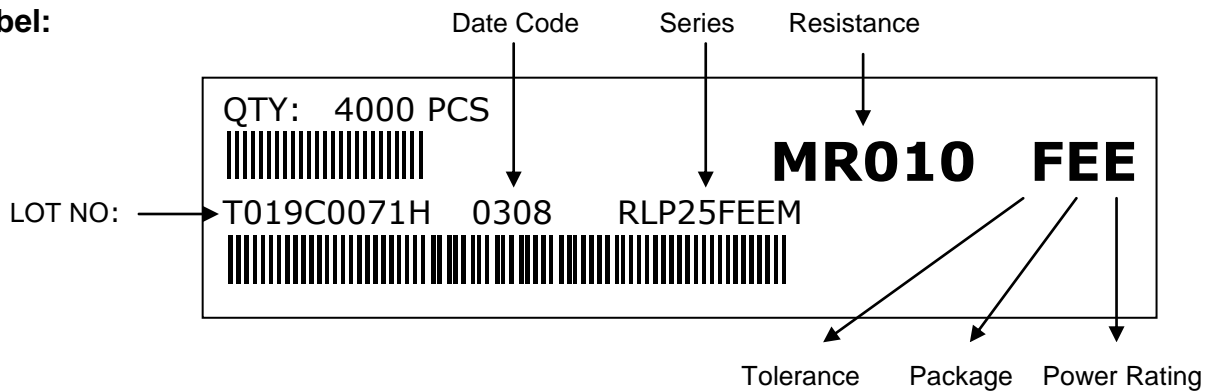
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7. Number of Package:

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 | φ 1.5 (+0.1/-0) | 1.2±0.15 |



10. Reel Specification



| Series | ϕA | ϕB | ϕC | W | T |
|--------|---------------------------------|----------|----------|----------|----------|
| RLP 25 | 180 ⁺⁰ ₋₃ | 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:

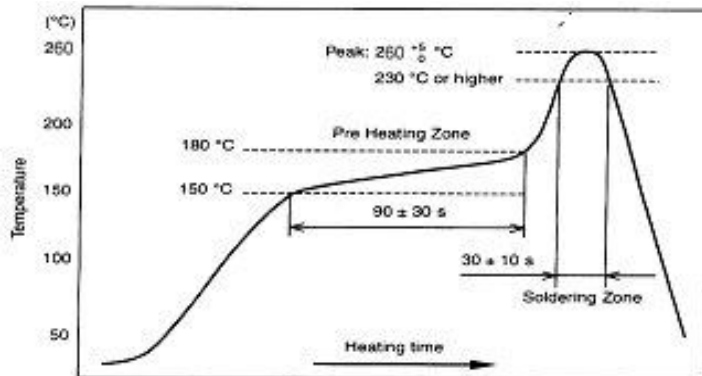
2 years from manufacturing date.



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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, $90 \pm 30 \text{ sec}$

Soldering zone : $230 \text{ }^\circ\text{C}$ or higher , $30 \pm 10 \text{ sec}$

Iron Solder: $350 \pm 10 \text{ }^\circ\text{C}$, $3 + 1 / - 0 \text{ sec}$

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.

16. Manufacturing Country & City :

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