



Lead-Free Current Sensing Resistors RLM Series

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1. Scope :

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

2. Type Designation :

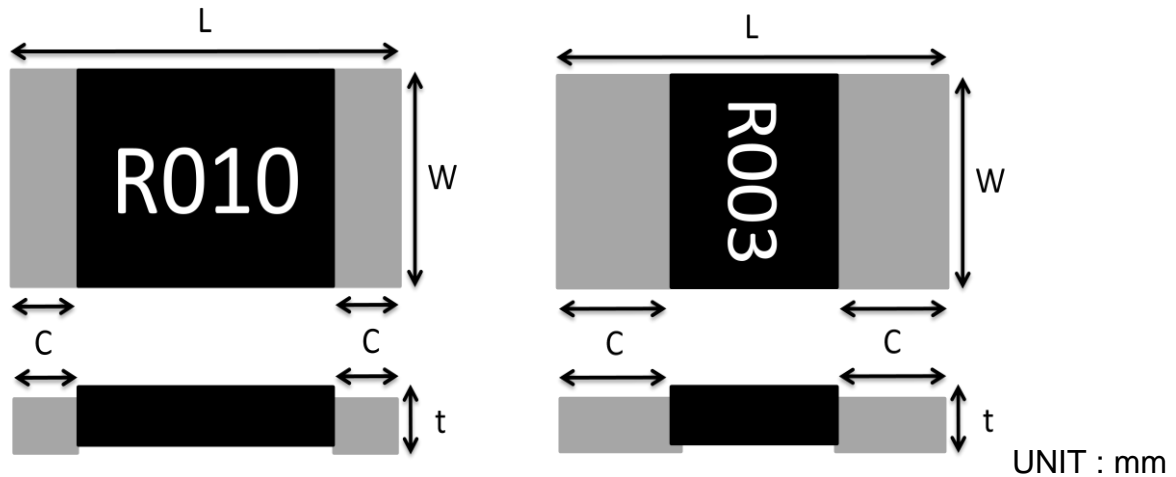
| <u>RLM</u> Item | <u>20</u> Series No | <u>F</u> Resistance tolerance | <u>E</u> Packaging | <u>C</u> Power Rating | <u>R010</u> Resistance |
|--------------------|------------------------|----------------------------------|-----------------------|------------------------------------|---------------------------|
| | 20:2010 (5025) | F:±1% G:±2% J:±5% | E: Embossed Tape | I=3/4W D=3/2W S=1/2W C=1W | e.g : R010=10mΩ |

3. Construction and Dimension :

3.1 Construction:



3.2 Dimension:



| Style | L | W | C | T | Material |
|-------|---------|---------|----------------|------------|--|
| RLM20 | 5.0±0.2 | 2.5±0.2 | 1.5±0.3(≤3mΩ) | 0.60 ±0.20 | Strip : Alloy Over Coating : Polymer Compound UL-94V-0 grade |
| | | | 0.6±0.3(R>3mΩ) | | |



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4. Features:

| | |
|---------------------------------------|---------------------|
| Type | RLM20 |
| Power Rating | 3/2W、3/4W、1/2W、1W |
| Resistance Value | 2~50mΩ |
| Operation Temperature Range | -55℃~+170℃ |
| Temperature Coefficient of Resistance | ±50ppm/℃ |
| Tolerance | ±1%,±2%,±5% |
| Insulation Resistance | Over 100MΩ |
| Maximum Working Voltage(V) | $(P \cdot R)^{1/2}$ |

5. Reliability Tests :

| Test Items | Reference standard | Condition of Test | Test Limits |
|---------------------------------------|--|---|--|
| Temperature Coefficient of Resistance | IEC60115-1 4.8 JIS C 5201-1 4.8 | +25℃ ~ +125℃ | Refer 4.0 |
| Load Life | IEC60115-1 4.25.1 JIS C 5201-1 4.25.1 | 1000hours at rated power, 70℃, 1.5hours "ON", 0.5hour "OFF" | < ±1% |
| Short Time Overload | IEC60115-1 4.13 JIS C 5201-1 4.13 | 5 X rated power for 5s | < ±0.5% |
| Moisture no Load | IEC60115-1 4.24.2.1a) JIS C 5201-1 4.24.2.1a) | 85℃, 85%RH, 1000hrs | < ±1% |
| Temperature cycle | IEC60115-1 4.19 JIS C 5201-1 4.19 | -55℃ & +155℃, 300cycle, 15min per extreme condition | < ±1% |
| Resistance to Soldering Heat | IEC60115-1 4.18 JIS C 5201-1 4.18 | 260±5℃ for10±1 sec | < ±0.5% |
| Solderability | IEC60115-1 4.17 JIS C 5201-1 4.17 | 245±5℃, 2±0.5sec | At least 95% of surface area of electrode shall be covered with new solder |
| High Temperature Exposure | IEC60115-1 4.23.2 JIS C 5201-1 4.23.2 | 170℃, 1000hrs | < ±1% |
| Low Temperature Storage | IEC60115-1 4.23.4 JIS C 5201-1 4.23.4 | -55℃, 1000hrs | <±0.5% |
| Substrate Bending | IEC60115-1 4.33 JIS C 5201-1 4.33 | Bending width 2mm | < ±1% |
| Insulation Resistance | IEC60115-1 4.6 JIS C 5201-1 4.6 | 100V DC for 1 minute | >100 MΩ |



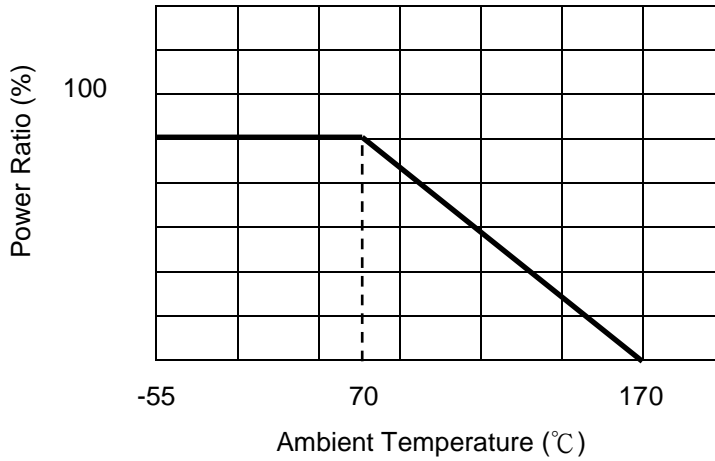
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5.1 Derating Curve



5.2 Rated Voltage

The rated voltage is calculated by the following formula:

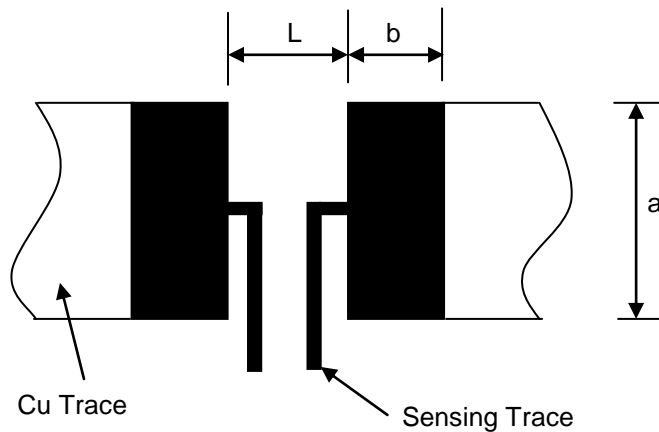
$$V = \sqrt{P \times R}$$

V: Rated Voltage(V)

P: Rated Power(W)

R: Resistance Value(Ω)

6. Recommended Solder Pad Dimension



| Resistance Range (Ω) | a | b | L |
|-------------------------------|---------------|---------------|---------------|
| 0.002-0.003 | 3.4 \pm 0.2 | 3.5 \pm 0.2 | 2.0 \pm 0.2 |
| 0.004-0.050 | 3.4 \pm 0.2 | 1.5 \pm 0.2 | 3.5 \pm 0.2 |

Unit: mm



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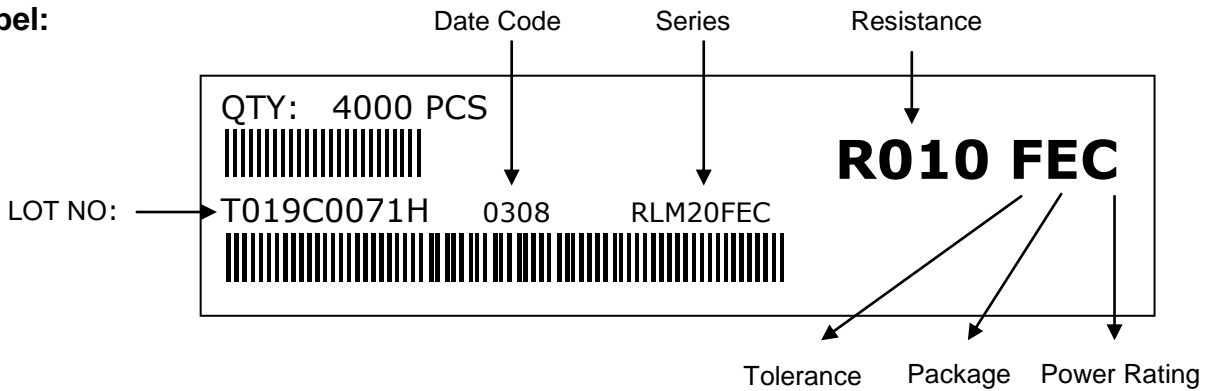
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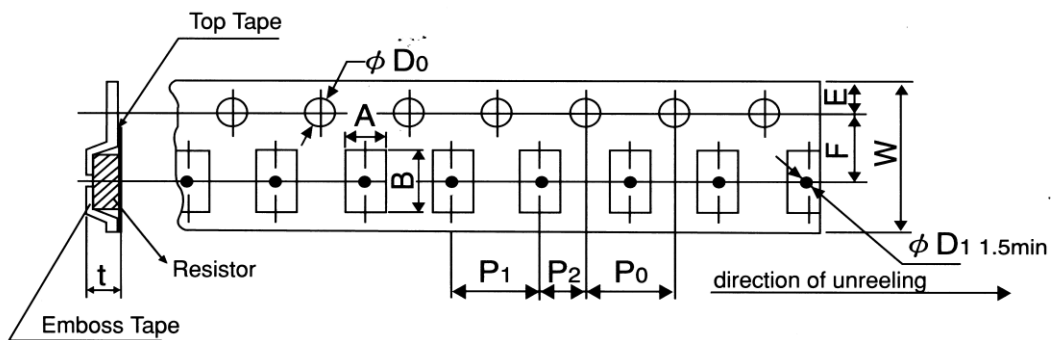
7. Number of Package:

4000 Pieces / package

8. Label:



9. Taping



| Packing | Type | A | B | W | F | E | P ₁ | P ₂ | P ₀ | D ₀ | T |
|---------|-------|---------|---------|--------|----------|----------|----------------|----------------|----------------|----------------------|-----------|
| Emboss | RLM20 | 2.8±0.2 | 5.3±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) | 0.85±0.15 |

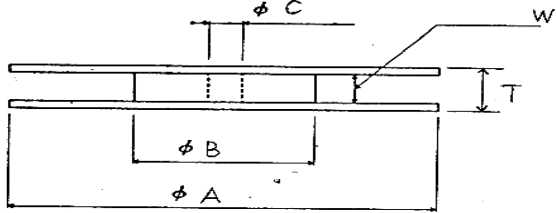
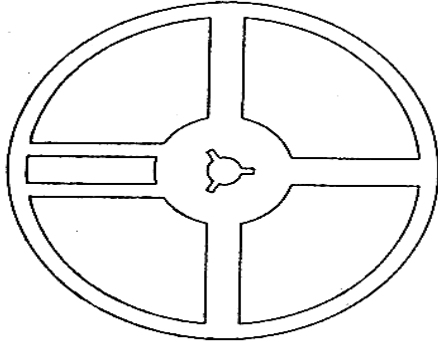
Unit: mm



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10. Reel Specification

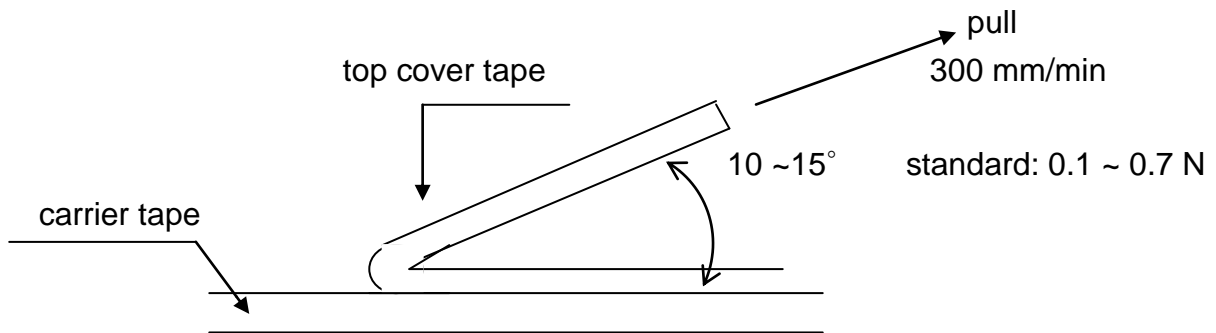


| Series | ϕA | ϕB | ϕC | W | T |
|--------|-----------------|----------------|----------------|----------------|----------------|
| RLM 20 | 178.0 \pm 2.0 | 60.0 \pm 1.0 | 13.0 \pm 1.0 | 13.0 \pm 1.0 | 15.5 \pm 1.0 |

Unit: mm

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:

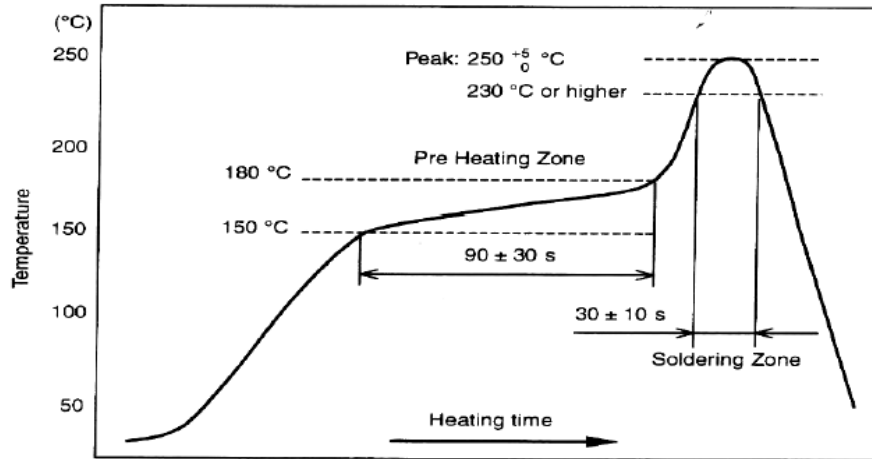
2 years from manufacturing date.



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



Peak : 260^{+5}_{-5} °C , 10 ± 1 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.

16. Manufacturing Country & City :

TA-I TECHNOLOGY CO., LTD. (Taiwan– Tao Yuan)

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(3) FORTUNE TASK RESISTOR FACTORY (China – Dongguan)

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(4) TAI OHM ELECTRONICS (M) SDN. BHD. (Malaysia – Penang)

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[RN16T26800F](#) [RM12FTN7503](#) [RMS10JT512](#) [RMS12FT22R1](#) [RMS10FT2000](#) [RMS10FT1504](#) [RLM25JEER007](#) [RM10FTN1202](#)
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