



RLS Series 0mΩ (JUMPER) (Halogen-Free)

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| Document No | TRLS-060S100A |
| Issued date | 2019/12/05 |
| page | 1/8 |

1. Scope :

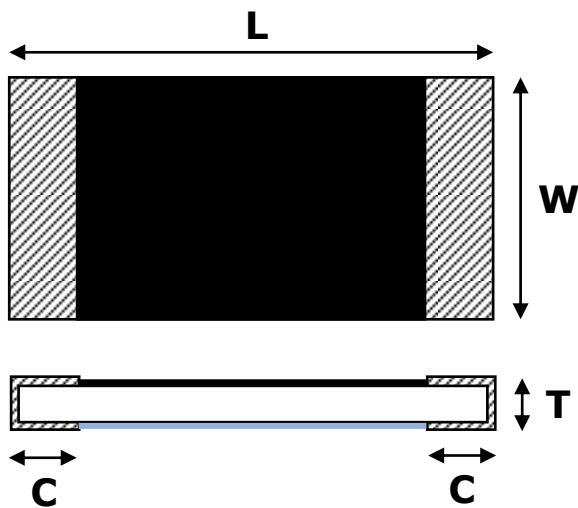
This specification applied to the products of Lead-Free current sensing resistor of metal foil for Lead-Free RLS 0603 manufactured by TA-I TECHNOLOGY CO.,LTD.

2. Type Designation :



| Series No. | Tolerance | Packaging | Power | Resistance |
|------------|-----------|-----------|-----------|--------------|
| 06→0603 | J = ± 5% | T=Paper | A= 0.25 W | R000 ≤ 0.5mΩ |

3. Dimension :



3.1 Marking
For 0603: No Marking.

| Series | L | W | C | T |
|--------|-----------|-----------|-----------|-----------|
| RLS06 | 1.60±0.10 | 0.80±0.10 | 0.40±0.20 | 0.70±0.20 |

UNIT : mm



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| | |
|-------------|---------------|
| Document No | TRLS-060S100A |
| Issued date | 2019/12/05 |
| page | 2/8 |

4. Features:

| Series | Size | Power (W) | Resistance Value | Operation Temperature Range | Max Rated Current | TCR |
|--------|------|-----------|------------------|-----------------------------|-------------------|-------------|
| RLS06 | 0603 | 0.25 | ≤0.5 mΩ | -55°C ~+155°C | 22.36 (A) | 3800 ppm/°C |

5. Reliability Tests:

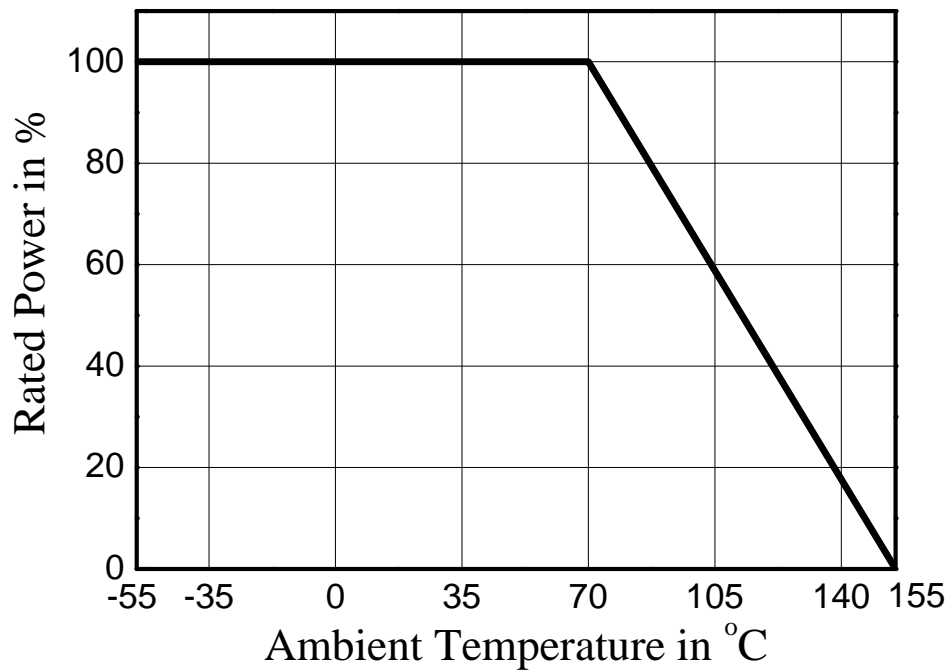
| Test Items | Reference standard | Condition of Test | Test Limits |
|---------------------------------------|---|---|--|
| Temperature Coefficient of Resistance | IEC60115-1-4.8 JIS-C5201-4.8 | +25°C ~ +125°C | Refer 4.0 |
| Load Life | IEC60115-1-4.25.1 JIS-C5201-4.25.1 | 1000hours at rated power, 70°C, 1.5hours "ON", 0.5hour "OFF" | ≤0.5 mΩ |
| Short Time Overload | IEC60115-1-4.13 JIS-C5201-4.13 | 5 X rated power for 5s | ≤0.5 mΩ |
| Moisture no Load | IEC60115-1- 4.24.2.1a) JIS-C5201- 4.24.2.1a) | 85°C , 85%RH, 1000hrs | ≤0.5 mΩ |
| Temperature cycle | IEC60115-1-4.19 JIS-C5201-4.19 | -55°C & +155°C, 100cycle, 15min per extreme condition | ≤0.5 mΩ |
| Resistance to Soldering Heat | IEC60115-1-4.18 JIS-C5201-4.18 | 260±5°C for 10±1 sec | ≤0.5 mΩ |
| Solderability | IEC60115-1-4.17 JIS-C5201-4.17 | 245±5°C , 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-C5201-4.23.2 | 155°C , 1000hrs | ≤0.5 mΩ |
| Low Temperature Storage | IEC60115-1- 4.23.4 JIS-C5201-4.23.4 | -55°C , 1000hrs | ≤0.5 mΩ |
| Substrate Bending | IEC60115-1-4.33 JIS-C5201-4.33 | Bending width 2mm | ≤0.5 mΩ |
| Insulation Resistance | IEC60115-1-4.6 JIS-C5201-4.6 | 100V DC for 1 minute | >100 MΩ |



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| | |
|-------------|---------------|
| Document No | TRLS-060S100A |
| Issued date | 2019/12/05 |
| page | 3/8 |

5.1 Derating Curve



5.2 Rated Current & Voltage

The rated Current and Voltage are calculated by the following formula:

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

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

I: Rated Current(I)

V: Rated Voltage(V)

P: Rated Power(W)

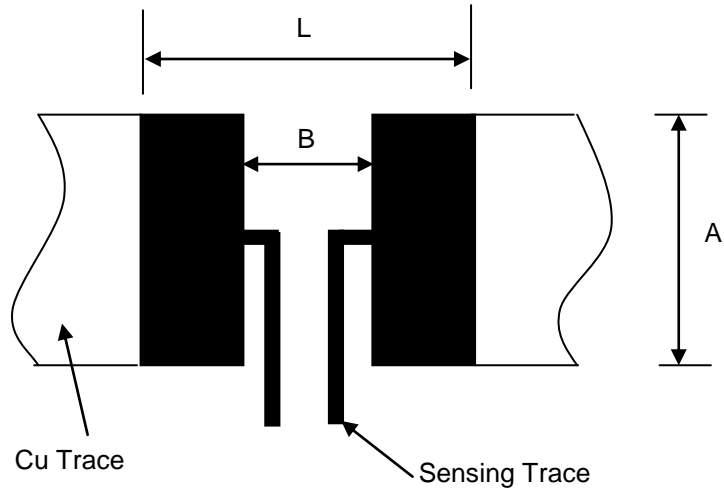
R: Resistance Value(Ω)



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| | |
|-------------|---------------|
| Document No | TRLS-060S100A |
| Issued date | 2019/12/05 |
| page | 4/8 |

6. Recommended Solder Pad Dimension



Unit: mm

| Series | A | L | B |
|--------|-----|-----|-----|
| RLS06 | 1.0 | 2.8 | 0.6 |

Note: *The copper foil minimum thickness of PCB needs 3 oz



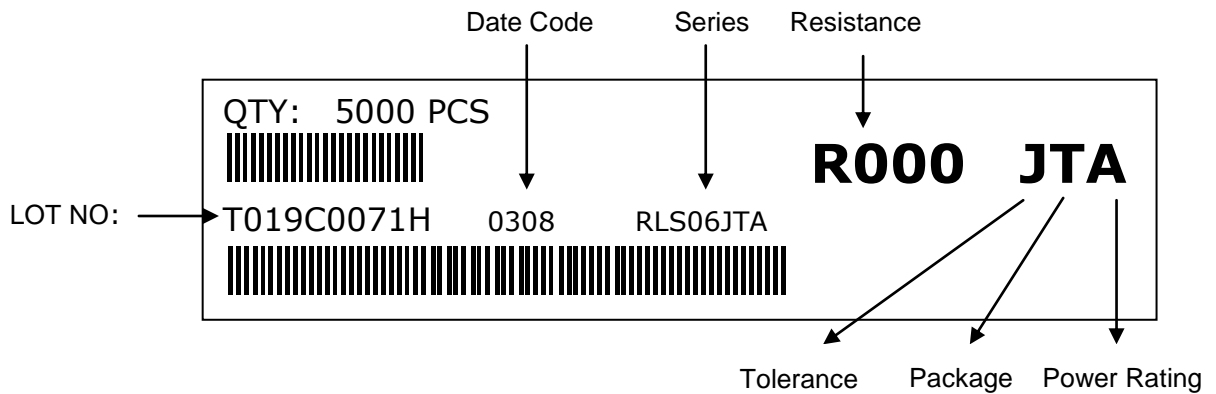
RLS Series 0mΩ (JUMPER) (Halogen-Free)

| | |
|-------------|---------------|
| Document No | TRLS-060S100A |
| Issued date | 2019/12/05 |
| page | 5/8 |

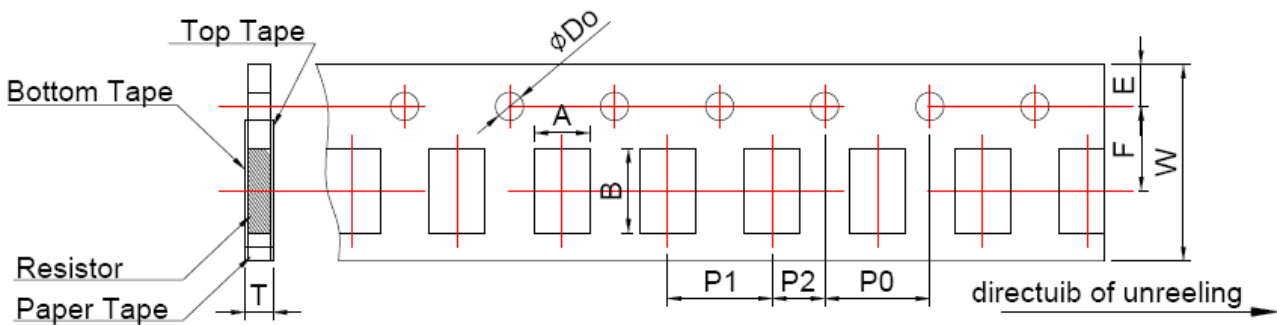
7. Number of Package:

| | |
|----------------|-------|
| Series | RLS06 |
| Pieces/Package | 5000 |

8. Label:



9. Packaging



Tape packaging dimension

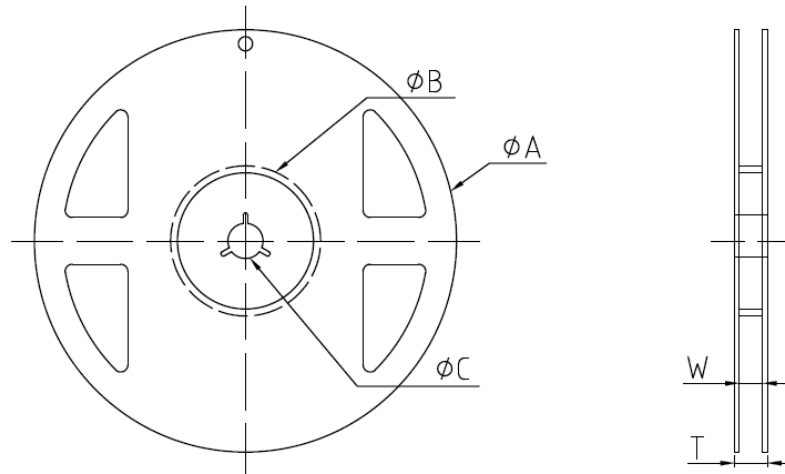
| Packing | Type | A | B | W | F | E | P1 | P2 | P0 | D0 | T |
|------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Paper Tape | RLS06 | 1.10 | 1.90 | 8.00 | 3.50 | 1.75 | 4.00 | 2.00 | 4.00 | 1.55 | 0.85 |
| Tolerance | | ±0.15 | ±0.20 | ±0.20 | ±0.05 | ±0.10 | ±0.10 | ±0.10 | ±0.10 | ±0.10 | ±0.10 |



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| | |
|-------------|---------------|
| Document No | TRLS-060S100A |
| Issued date | 2019/12/05 |
| page | 6/8 |

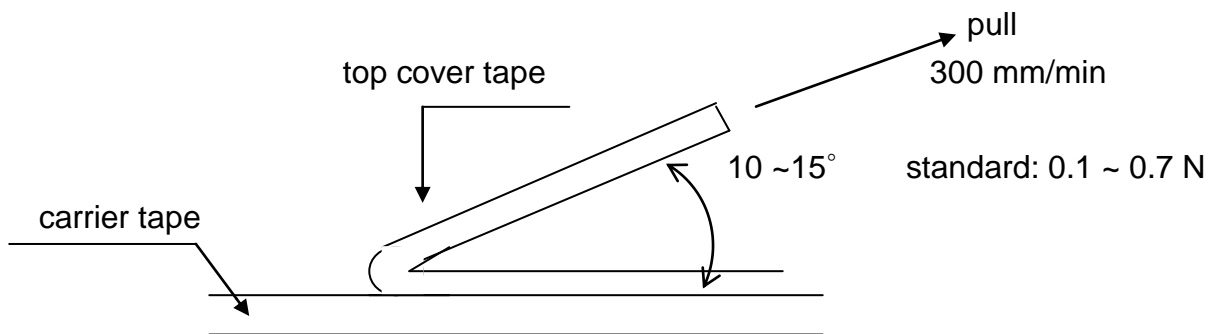
10. Reel Specification



| Series | φ A | φ B | φ C | W | T |
|--------|----------|---------|----------|---------|----------|
| RLS06 | 178 ±2.0 | 60 ±1.0 | 13.0±1.0 | 9.0±1.0 | 11.4±1.0 |

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:

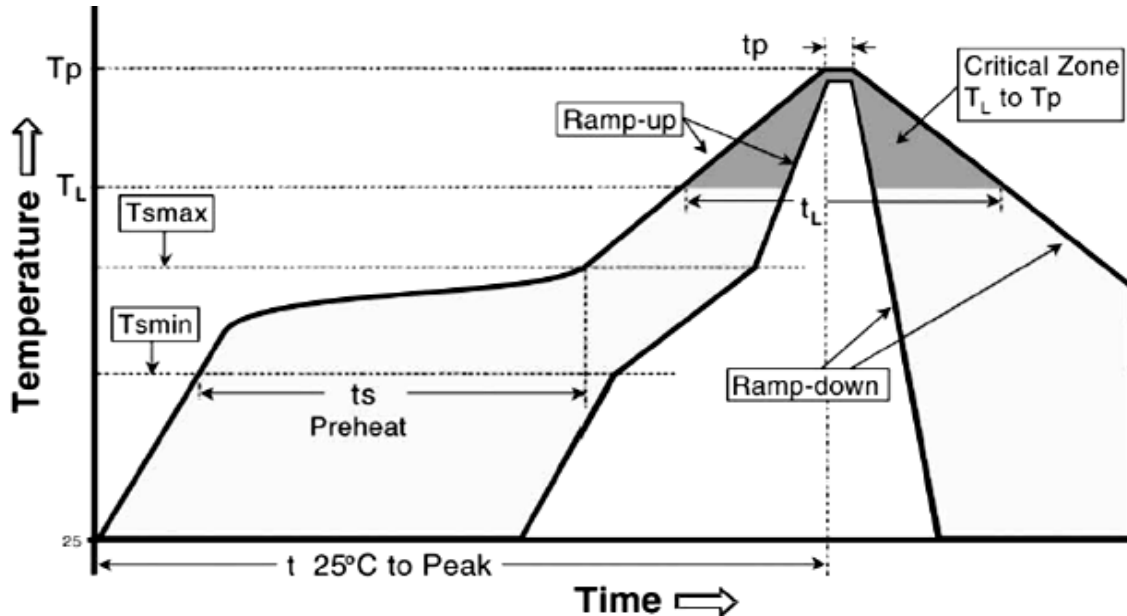
2 years from manufacturing date.



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|-------------|---------------|
| Document No | TRLS-060S100A |
| Issued date | 2019/12/05 |
| page | 7/8 |

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



Alloyed Re-flow times : 3 times

Remark : To avoid discoloration phenomena of chip on terminal electrodes, please use N2 Re-flow furnace .

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

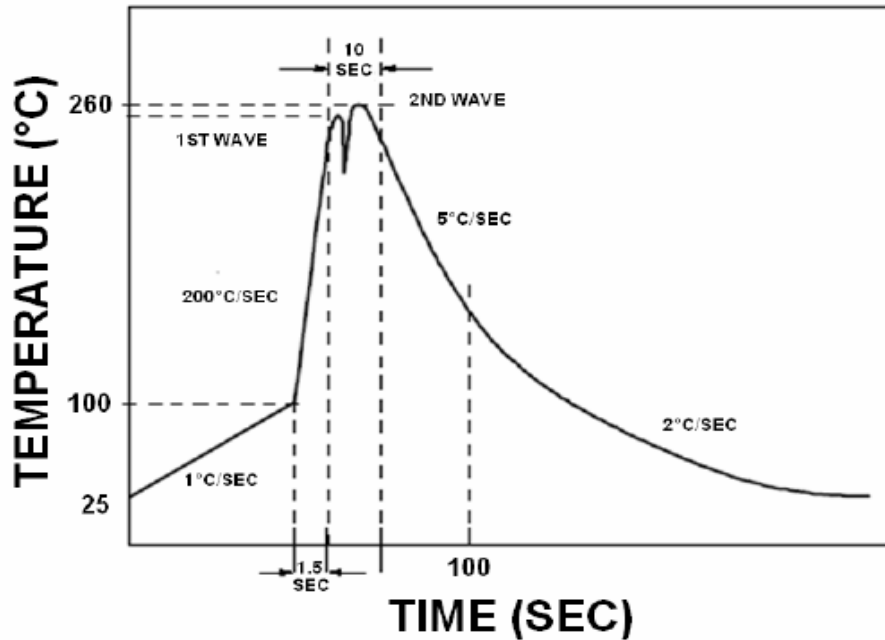
| Profile Feature | Lead (Pb)-Free Assembly |
|---|-----------------------------------|
| Average ramp-up rate (T _{smax} to T _p) | 3°C / second max. |
| Preheat - Temperature Min (T _{smin}) - Temperature Max (T _{smax}) - Time (T _{smin} to T _{smax}) (t _s) | 150°C 200°C 60 -150 seconds |
| Time maintained above : - Temperature (T _L) - Time (T _L) | 217°C 60-120 seconds |
| Peak Temperature (T _p) | 260°C |
| Time within $\begin{matrix} +0 \\ -5 \end{matrix}$ °C of actual Peak Temperature (t _p) ² | 10 seconds |
| Ramp-down Rate | 6°C/second max. |
| Time 25°C to Peak Temperature | 8mimutes max. |



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|-------------|---------------|
| Document No | TRLS-060S100A |
| Issued date | 2019/12/05 |
| page | 8/8 |

15. Recommend Wave-Solder profile : (solder : Sn96.5 / Ag3 / Cu0.5)



16. 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.