

Data Sheet

Customer:

Product: Low Ohm (Metal Strip) Chip Resistor – LRP Series

Size: 2512

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Low Ohm (Metal Strip) Chip Resistor- LRP Series

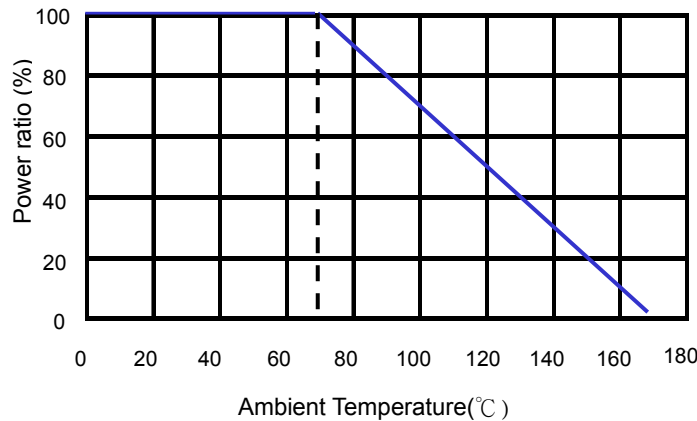
■ Features

- High power rating up to 3 Watts
- Low TCR down to ± 50 PPM/ $^{\circ}\text{C}$
- Resistance values from 7m to 100m ohm
- Customized resistance available

■ Applications

- NB (for Power Management)
- MB (for Power Management)
- SWPS (DC-DC Converter, Charger, Adaptor)
- Monitor (for Power Management)

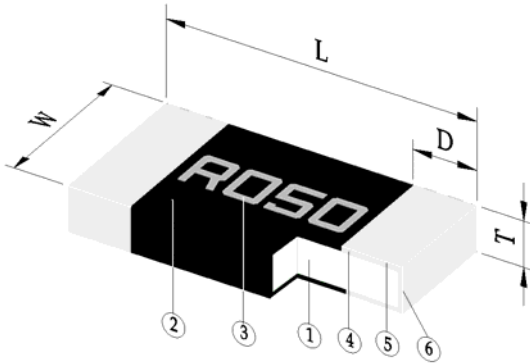
■ Derating Curve



■ Part Numbering

| LRP | 12 | F | T | D | S | R015 |
|--------------|------------------|--|----------------|--------------------------------|-------------------------|---|
| Product Type | Dimensions (L×W) | Resistance Tolerance | Packaging Code | TCR (PPM/ $^{\circ}\text{C}$) | Power Rating | Resistance |
| | 12: 2512 | D: $\pm 0.5\%$ F: $\pm 1\%$ J: $\pm 5\%$ | T: Taping Reel | D: ± 50 W: ± 75 | R: 3W S: 2W T: 1W | R015: 0.015Ω R050: 0.05Ω |

Construction



| | |
|---------------|----------------------|
| ① Alloy Plate | ④ Internal Electrode |
| ② Overcoat | ⑤ Barrier Layer |
| ③ Marking | ⑥ Solder Plating |

Dimensions

| Type | Size (Inch) | L (mm) | W (mm) | T (mm) | D (mm) |
|-------|-------------|-----------|-----------|-----------|-----------|
| LRP12 | 2512 | 6.40±0.25 | 3.20±0.25 | 0.70±0.20 | 0.90±0.30 |

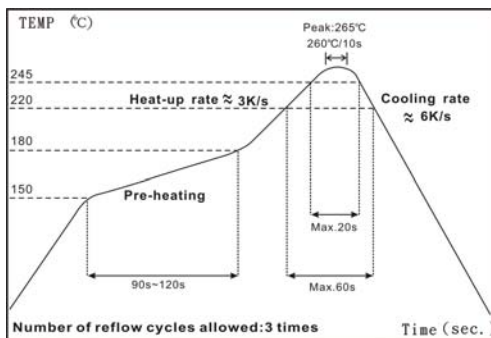
Electrical Specifications

| Type | Item | Power Rating at 70°C | Operating Temp. Range | Resistance Range (mΩ) | | | TCR (PPM/°C) |
|--------------|------------|----------------------|-----------------------|--|-----|-----|--------------|
| | | | | ±0.5% | ±1% | ±5% | |
| LRP12 (2512) | 1W, 2W, 3W | | -55 ~ +170°C | 7, 8, 9, 10, 12, 15, 18, 20, 22, 25, 30, 33, 35, 39, 40, 47, 50, 60, 68, 70, 75, 80, 82, 90, 91, 100 | | | ±75 |
| | | | | 15, 18, 20, 22, 25, 30, 33, 35, 39, 40, 47, 50, 60, 68, 70, 75, 80, 82, 90, 91, 100 | | | ±50 |

Operating Current = $\sqrt{P/R}$, Operating Voltage = $\sqrt{P \cdot R}$

■ Viking is capable of manufacturing the optional spec based on customer's requirement.

Soldering Condition(Reflow soldering only)



IR Reflow Soldering

- (1) Time of IR reflow soldering at maximum temperature point 260°C : 10s
- (2) Time of soldering iron at maximum temperature point 410°C : 5s

■ Environmental Characteristics

| Item | Requirement | Test Method |
|--|-------------------|---|
| Temperature Coefficient of Resistance (T.C.R.) | As Spec. | IEC60115-1 4.8 JIS-C-5201-1 4.8 -55°C~+125°C, 25°C is the reference temperature |
| Short Time Overload | ±1.0% | IEC60115-1 4.13 JIS-C-5201-1 4.13 5*rated power for 5 seconds |
| Insulation Resistance | ≥10G | IEC60115-1 4.6 JIS-C-5201-1 4.13 100V DC for 1 minute |
| Endurance | ±1.0% | IEC60115-1 4.25 JIS-C-5201-1 4.25.1 70±2°C, rated power for 1000 hrs with 1.5 hrs "ON" and 0.5 hr "OFF" |
| Biased Humidity | ±1.0% | MIL-STD-202 Method 103 1000 hrs 85°C/85%RH 10% of operating power |
| Dry Heat | ±1.0% | IEC60115-1 4.23.2 JIS-C-5201-1 4.23.2 at +170°C for 1000 hrs |
| Bending Strength | ±1.0% | JIS-C-5201-1 4.33 IEC-60115-1 4.33 Bending width 2mm once for 5 seconds |
| Solderability | 95% min. coverage | JIS-C-5201-1 4.17 IEC-60115-1 4.17 245±5°C for 3 seconds |
| Resistance to Soldering Heat | ±0.5% | JIS-C-5201-1 4.18 IEC-60115-1 4.18 260±5°C for 10 seconds |
| Rapid Change of Temperature | ±1.0% | JIS-C-5201-1 4.19 IEC-60115-1 4.19 -55°C to +155°C, 5 cycles |
| Low Temperature Storage | ±1.0% | IEC60115-1 4.23.4 JIS-C-5201-1 4.23.4 at -55°C for 2 hrs |

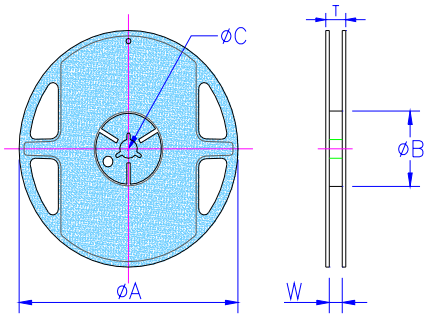
RCWV(Rated Continuous Working Voltage)= $\sqrt{P \cdot R}$ or Max. Operating Voltage whichever is lower.

■ Storage Temperature: 15~28°C; Humidity < 80%RH

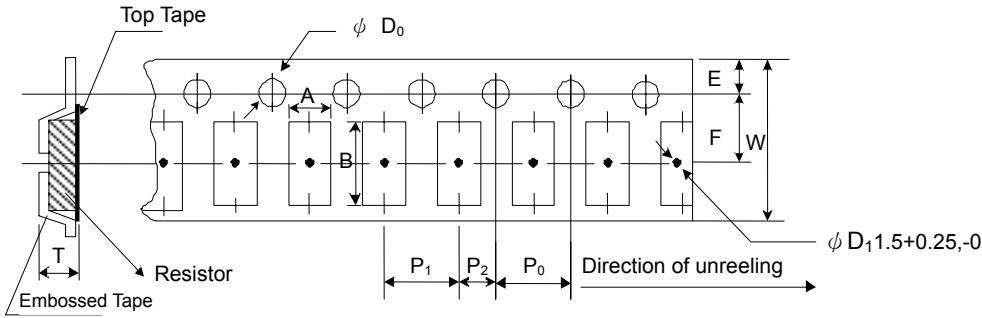
■Packaging

Reel Specifications & Packaging Quantity

| Type | Packaging Quantity | Tape Width | Reel Diameter | ΦA (mm) | ΦB (mm) | ΦC (mm) | W (mm) | T (mm) | |
|-------|--------------------|------------|---------------|---------|-------------|---------|----------|----------|----------|
| LRP12 | Embossed | 4K | 12mm | 7 inch | 178.5+/-1.5 | 60±1.0 | 13.0±0.5 | 13.0±1.0 | 15.5±0.5 |

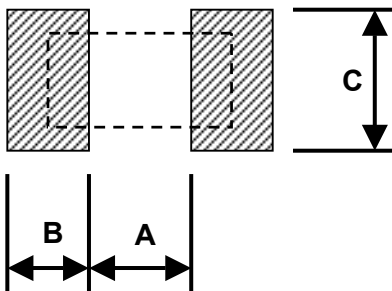


Embossed Plastic Tape Specifications



| Type | A (mm) | B (mm) | W (mm) | E (mm) | F (mm) | P ₀ (mm) | P ₁ (mm) | P ₂ (mm) | ΦD ₀ (mm) | T (mm) |
|-------|-----------|-----------|-----------|-----------|----------|---------------------|---------------------|---------------------|----------------------|--------|
| LRP12 | 3.50±0.10 | 6.70±0.10 | 12.0±0.30 | 1.75±0.10 | 5.5±0.05 | 4.00±0.10 | 4.00±0.10 | 2.00±0.05 | 1.50+0.1, -0 | 1.20+0 |

■Recommend Land Pattern



| Type | A (mm) | B (mm) | C (mm) |
|-------|--------|--------|--------|
| LRP12 | 4.00 | 2.00 | 3.50 |

*FR4 copper board, 100 μ m of copper pad thickness

REVISION HISTORY

| REVISION | DATE | CHANGE NOTIFICATION | DESCRIPTION |
|------------|--------------|---------------------|---|
| Version A | Apr 30, 2015 | - | - First issue of this specification |
| Version A1 | Jul 30, 2015 | - | - Add 0.5% Resistance Range |
| Version A2 | Nov 27, 2015 | - | - Change TCR75 ppm Resistance Range 10mR~100mR →7mR~100mR |
| Version A3 | Jul 15, 2016 | - | - Remove Material Description - Modify Storage Temperature |