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DIRECT

Electronics Tech.

(LRP) Metal Strip Chip High Power Low Ohmic Resistor

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▶ Product Introduction**Things go better with Direct (LRP) high power metal strip resistors.****Features :**

- Customized Resistance Available.
- Low TCR $\pm 50\text{PPM}/^\circ\text{C}$, $\pm 75\text{PPM}/^\circ\text{C}$.
- High power rating from 1 Watts to 3 Watts
- Low resistance values from $7\text{m}\Omega$ to $100\text{m}\Omega$.
- Without Laser Trimmed with very low inductance.

Applications :

- For NB power management.
- For MB power management.
- For Monitor power management.
- SWPS: DC-DC converter, Charger, Adaptor.

(LRP) Low ohm metal strip resistors from Direct Electronics offer a wide range of high-power current sensing applications including power management of NB, MB and monitor, automotive, shunts and power amplifiers, DC-DC converter and charger, test & measurement instruments, linear power supplies and switching.

(LRP) Design for applications that require high power handling (Up to 3W) and low resistance values from $7\text{m}\Omega$ to $100\text{m}\Omega$ and come with a range of advantages including a wide temperature range and a varied choice of wide range package sizes 2512 with high current capability.

Direct (LRP) is aiming for very high power-to-footprint size ratio, excellent frequency response and very low inductance in a solid metal nickel-chrome or manganese-copper allow resistive element with Low TCR $\pm 50\text{PPM}/^\circ\text{C}$. Also, (LRP) is ideal for all types of voltage division, current sensing and pulse applications.

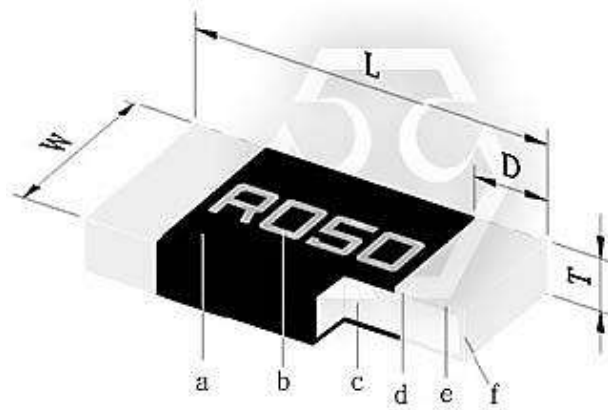
For more power metal strip chip low ohm resistors, please link to Direct official website "[Current Sense Resistors](#)". Contact us with your specific needs.



► **Construction & Dimensions**

Dimensions Chip 2512 (LRP)

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



Chip 2512 Dimensions (LRP)

Construction (LRP)

a	b	c	d	e	f
Overcoat	Marking	Alloy Plate	Internal Electrode	Barrier Layer	Solder Plating

- Notice: DIRECT is capable of manufacturing the optional spec based on customer's requirement.



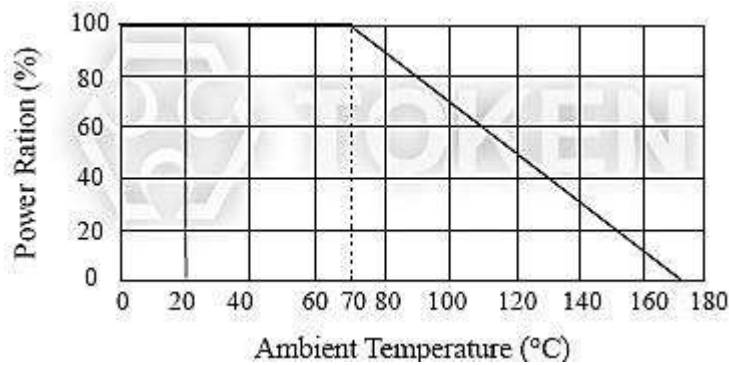
Electrical Specification

Electrical Specifications Chip 2512 (LRP)

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

- Operating Current $I = \sqrt{(P / R)}$ Operating Voltage $V = \sqrt{P * R}$. or Max. Operating voltage whichever is lower.
- Direct is capable of manufacturing the optional spec based on customer's requirement.

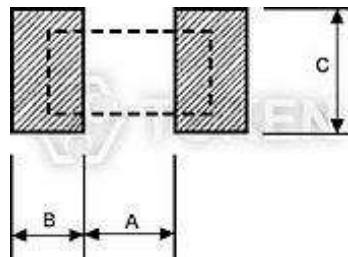
Derating Curve (LRP)



(LRP) Power Derating Curve

Recommend Land Pattern (LRP)

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



Recommend Land Pattern

- FR4 copper board, 100μm of copper pad thickness.



► **Reel & Tape**

Packing Quantity & Reel Specifications (LRP)

Type	Packaging Quantity	Tape Width	Reel Diameter	ΦA (mm)	ΦB (mm)	ΦC (mm)	W (mm)	T (mm)
LRP12	Embossed 4,000 pcs	12 mm	7 inch	178.0±1.5	60.0±1.0	13.0±0.5	13.0±1.0	15.5±0.5

Reel Specifications Dimensions

Emboss Plastic Tape Specifications (LRP)

Type	A (mm)	B (mm)	W (mm)	E (mm)	F (mm)	P ₀ (mm)	P ₁ (mm)	P ₂ (mm)	ΦD ₀ (mm)	ΦD ₁ (mm)	T
LRP12	3.50±0.10	6.70±0.10	12.0±0.30	1.75±0.10	5.5±0.05	4.0±0.10	4.0±0.10	2.0±0.05	1.50±0.10	1.50±0.25	1.2±0.15

Low Ohm Metal Strip (LRP) Emboss Plastic Tape Specifications

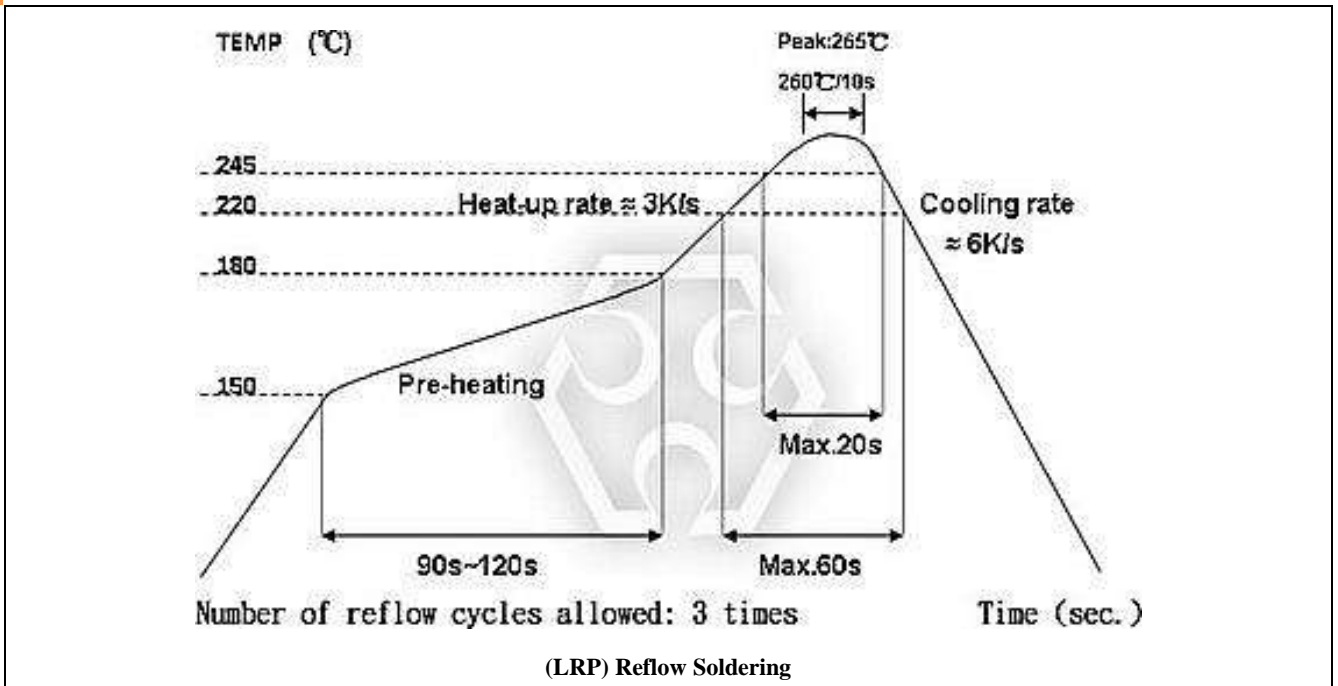
Notice:

1. The cumulative tolerance of 10 sprocket hole pitch is ±0.2mm.
2. Carrier camber shall be not more than 1mm per 100mm through a length of 250mm.
3. A & B measured 0.3mm from the bottom of the packet.
4. t measured at a point on the inside bottom of the packet to the top surface of the carrier.
5. Pocket position relative to sprocket hole is measured as the true position of the pocket and not the pocket hole.



► **Reflow Soldering**

Soldering Condition (Reflow soldering only) (LRP)



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



► Environmental Characteristics

Environmental Characteristics (LRP)

Item	Requirement	Test Method
Thermal Shock	±1%	IEC-60115-1 4.19 JIS-C-5201-1 4.19 -55°C ~ 155°C, 5 cycles
Short Time Overload	±1%	IEC60115-1 4.13 JIS-C-5201-1 4.13 5*rated power for 5 seconds
Low Temperature Storage	±1%	IEC-60115-1 4.23.4 JIS-C-5201-1 4.23.4 at-55°C for 1000 hrs
Biased Humidity	±1%	MIL-STD-202 Method 103 1000 hrs 85°C/85% RH 10% of operating power
Bending Strength	±1%	IEC-60115-1 4.33 JIS-C-5201-1 4.33 Bending width 2mm once for 5 seconds
Endurance	±1%	IEC60115-1 4.25 JIS-C-5201-1 4.25.1 70±2°C, RCWV for 1000 hrs with 1.5 hrs “ON” and 0.5 hrs “OFF”
Dry Heat	±1%	IEC60115-1 4.23.2 JIS-C-5201-1 4.23.2 at +170°C for 1000 hrs
Resistance to Soldering Heat	±0.5%	IEC-60115-1 4.18 JIS-C-5201-1 4.18 260±5°C, for 10 seconds
Insulation Resistance	>100MΩ	IEC60115-1 4.6 JIS-C-5201-1 4.13 100V DC for 1 minute
Solderability	95% min coverage	IEC-60115-1 4.17 JIS-C-5201-1 4.17 245±5°C for 3 seconds
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)

- Rated continuous Working Voltage (RCWV) = $\sqrt{\text{Power Rating} \times \text{Resistance Value } (\Omega)}$ or Max. Operating voltage whichever is lower.
- Storage Temperature: 25±3°C; Humidity < 80%RH;



Order Codes

Order Codes (LRP)

LRP	12	F	TR	D	S	R050	
Product Type	Dimensions (L×W)(mm)	Resistance Tolerance (%)	Package	TCR (PPM/°C)	Power Rating(W)	Resistance (Ω)	Marking
	12 EIA2512	D ±0.5 F ±1 J ±5	TR Taping Reel	D ±50 W ±75	T 1 S 2 R 3	R015 0.015 R050 0.05	No Marking

General Information

Your Current Options - Direct Current Sense

As the world becomes more and more technology-driven, the uses for current sensing components will continue to increase. The need for even lower resistance value ranges is already becoming evident, as is the need for these resistors to handle more power. The industry-wide trend is the emergence of smaller and smaller products.

Direct Electronics offers a wide variety of current sensing products from the industry to military standards, such as current sense in Thin-Film / Thick-Film Technology, Bare Element Resistors, and Open Air Shunts. This enables Direct to present an astounding number of possible solutions for any circuit design needs.

Applications of Current Detecting Components

Direct's TCS and CS Series unique form factor provides automotive designers with several advantages. Both TCS and CS Series are ideal for applications involving window lift motors, fuel pump systems, seat belt pretensioners, and pulse width modulator feedback.

The wider resistive element and lower resistance enables higher current to pass through the device. Direct's LRC ultra low Ohmic metal strip chip series provides the inherent ability to flex slightly and offers stress relief during extreme temperature cycling on typical or metal substrates. This LRC series is suitable for switch power supply applications (DC-DC Converter, Charger, and Adaptor) and power management of monitor.

The open air design of bare element resistor LRA and LRB Series provide a far cooler operation by allowing more air flow under the resistive element to keep excess heat from being transmitted to the PC board. They are suitable for high power AC/DC detection of power supply circuit.

Direct axial moulded BWL series provides power rating up to 10 watts and lower resistance 0.005Ω, is ideal for all types of current sensing applications including switching and linear power supplies, instruments and power amplifiers.

Direct standard current sensing components can be replacement for Vishay, IRC, Ohmite, KOA, Yageo devices with fast delivery and more competitive price. Contact us with your specific needs.

