Four-terminal Open Air Resistors

Token's Open Air Four-terminal resistors (LRD) tackle current sensing applications

Preview

Always preferred in current sense applications, Token's LRD Series range is available in the 1W, 3W, 5W, 7W and 10W packages, resistance values down to 0.001 ohm, with tolerances as tight as 0.50% and TCRs of 50ppm standard.

The Kelvin (four-terminal) configuration enables current to be applied through two opposite terminals and a sensing voltage to be measured across the other two terminals, eliminating the resistance and temperature coefficient of the terminals for a more accurate current measurement.

With up to 10W power rating and TCRs as low as 50ppm/°C, the LRD Series resistors deliver excellent performance, making them ideal for a variety of applications. The resistor is constructed using a low-resistance, low-inductance, high-impulse proprietary metal element that gives the device its extended power and temperature ratings.

Continually upgrading its resistors to take advantage of modern technologies and manufacturing methods, Token is now able to offer complete ranges of products which meet the RoHS requirements and in addition to detailing these, the component selector also provides designers with a comprehensive selection of application notes.

The LRD devices can be manufactured to custom length/width for use as a current shunt. Token will also produce outside these specifications to meet customer requirements. Contact us with your specific needs.

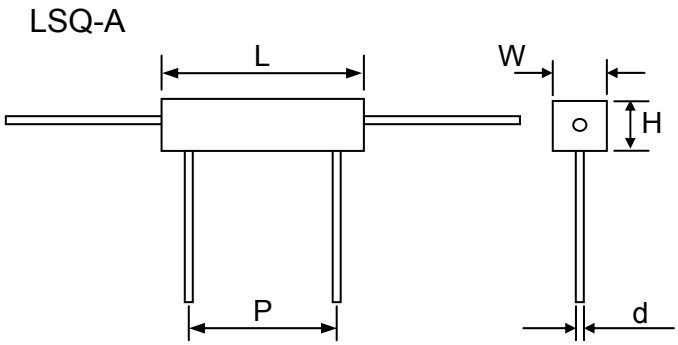
Features

- Low inductance.
- 4 leads for Kelvin connection.
- Decimal marked, silicone coated.
- Tinned copper terminal for easy soldering.
- Radial, self-supporting, design is ideal for PC board mounting.

Applications

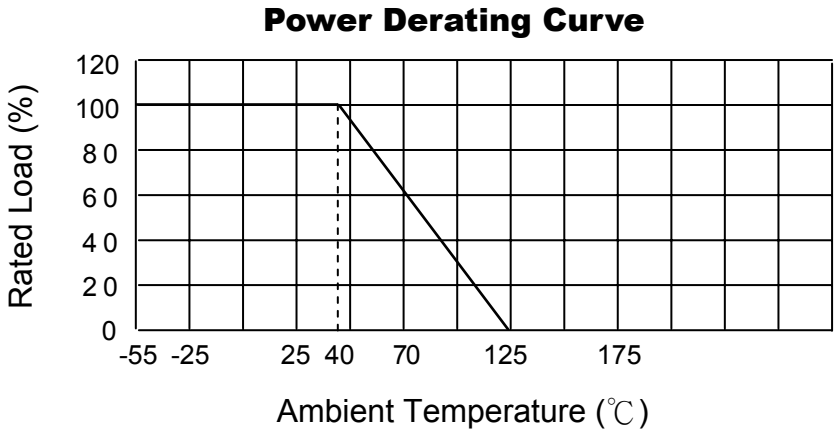
- Surge/Pulse Applications.
- Current Sensing Application.
- Feed Back & Motor Control.
- High Precision Measurement Instrumentation.

Specification & Dimensions (Unit: mm)



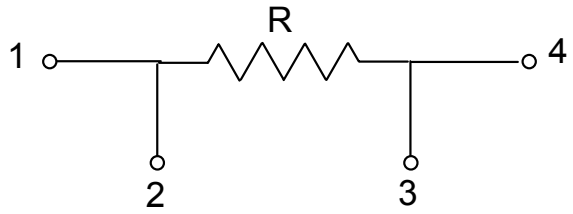
Type	Rating Wattage	Resistance Range (mΩ)	Tolerance (%)	TCR (ppm/°C)
LRD-1	1W	1 ~ 10 mΩ	D(±0.5%) F(±1%) G(±2%) J(±5%)s	±50 ppm/°C ±100 ppm/°C
LRD-3	3W	1 ~ 10 mΩ		
LRD-5	5W	0.5 ~ 5 mΩ		
LRD-7	7W	0.3 ~ 3 mΩ		
LRD-10	10W	0.1 ~ 1 mΩ		

Power Derating Curve



Characteristic Specification

KELVIN ELECTRICAL CONNECTION



TERMINALS 2 & 3 CURRENT TRACES.
TERMINALS 1 & 4 SENSE TRACES.

Test Items	Test Method	Specification
Operating Temperature Range		-55°C ~ 125°C
Maximum Working Voltage		(P40°C x R)1/2
Terminal Tensile Strength	50N, 10s	ΔR≤±1.0%R
Withstand Voltage	1000V, 1 Min.	No damage on the appearance.
Short Time Overload	5 times rated power, 5s	ΔR≤±4.0%R
Thermal Shock	-55°C~+125°C, 5 cycles, 30 min.	ΔR≤±5.0%R
Load Life	70°C, 1000h 1.5 hours on, 0.5 hours off.	ΔR≤±5.0%R

How to Order

LRD	5	R005	F	P
❶	❷	❸	❹	❺

❶ Part Number: LRD

❷ Rated power

Code	Rated power
1	1 Watt
3	3 Watt
5	5 Watt
7	7 Watt
10	10 Watt

❸ Resistance Value (Ω)

Code	Resistance Value (Ω)
R005	0.005Ω
R05	0.05Ω
R1	0.1Ω

❹ Tolerance %

Code	Tolerance %
D	±0.5%
F	±1%
G	±2%
J	±5%

❺ Package-Code

Code	Package-Code
P	Bulk

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