

# Low Ohmic Open Air Resistors

## Low Ohmic Open Air (LRA) Resistors Feature Longer Thermal Path

### ▶ Preview

Token's current sense LRA open air resistors are expected to gain wide acceptance in the worldwide market as a result of increased thermal management capabilities.

The LRA Series is designed for applications requiring the transfer of heat away from circuits and solder joints. Available in various values, it is specified for current sensing, feedback, current detection, super low inductance, as well as surge and pulse applications.

The hot spot on the LRA resistor is approximately 0.2 degrees higher than on a typical metal strip chip resistor. This results in an increased thermal path for the LRA, reducing heat transfer into the solder joints and circuits.

The flameproof LRA Series resistors are constructed of a wire resistive element with welded copper leads to prevent solder wicking, which can change the device's resistance value in the circuit by as much as 30%. Because of this, the device is ideal for thermally harsh environments, including automotive and aerospace applications, as well as enclosed, poorly ventilated circuits in applications such as laptop computers.

The LRA Open Air Series feature a reduced pitch, or spacing between the leads on the circuit board (with a corresponding increase in the board mounted profile), when compared to the standard Token LRB Series devices.

The LRA resistors are rated for 1W or 1.5W at 70°C, with resistance values from 0.1Ω to 0.003Ω and tolerances down to ±1%. Operating temperature range is -50°C to 300°C. The LRA Series is available in bulk packaging in 200 increments.

Token will also produce devices outside these specifications to meet customer requirements. A lead-free RoHS-compliant version is available, as is a non-inductive version for high frequency applications. Contact us with your specific needs.



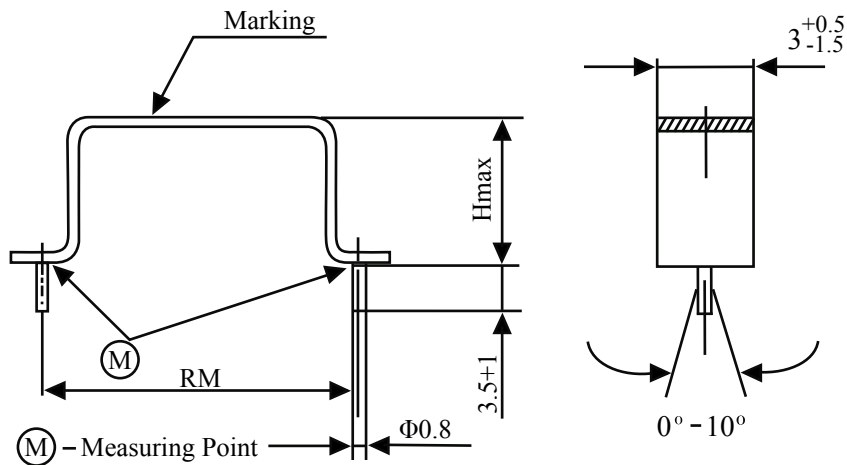
### ▶ Features

- Radial leads.
- Non-inductance.
- Solderable Copper Leads.
- Lead (Pb)-free and RoHS compliant.
- ±1%, ±3%, ±5%, ±10% standard tolerance.
- High stability bare metal element open air style.

### ▶ Applications

- High power AC/DC detection.
- Automotive, Feedback System.
- Residual Battery Power Detection.
- Inverter and Switching Power Supplies
- CPU Drive Control, Power Tool Motor controls.
- Power Supply Shunt, Current Detective, and Current Sensing.

## ► Dimensions (Unit: mm)



Type	H max.	RM
LRA350-009	6.5	10
LRA351-009	10.5	
LRA352-009	17.0	
LRA351-010	8.0	15
LRA352-010	14.5	
LRA352-010	16.1±1.0	14.5±1.0
LRA352-010	17.1±1.0	14.5±1.0
LRA352-011	12.0	20

- Construction:
1. The resistive elements consist of a flat metal-band.
  2. Spot welded Cu-terminals ensure high stability of contacts.
  3. Thus, this construction results in a non inductive of both high stability and overload capacity.

## ► Packing Specification

Type	Packaging	Pieces	Pack.-Code
LRA350-009	Bulk	200pcs	Bulk
LRA351-009 LRA351-010	Bulk	200pcs	Bulk
LRA352-010 LRA352-011	Bulk	200pcs	Bulk

## ▶ Characteristic Specification

Type	LRA	350-009	351-009 351-010	352-009 352-010 352-011
Power rating P70	W	0.5	1.0	1.5
Resistance range	Ω	R003~R051	R004~R068	R006~R10
E-series		E24≥R010		
Tolerances	%	±1, ±3, ±5, ±10		
Temperature coefficient	PPM	+200~+1200		
Max. Cont. working voltage	VRMS	For all styles		
Insulation voltage (1min.)	VRMS	Non insulated		
Insulation resistance	Ω	Non insulated		
Derating, linear	°C	70~300(0W)		
Climatic category		55/200/56		
Temperature range	°C	-50~300		
Thermal resistance	KW-1	200	100	70
Failure rate (Total , max, 60% conf. lev.)	10-9 * h-1	Ca.10, Depends on value		
Endurance (P70, 70,1000h)	[ ]%	±3.0		
Damp heat ,steady state(40°C,93% r.h.,56d)	[ ]%	±0.5		
Climatic sequence	[ ]%	±0.5		
Terminal strength	[ ]%	±0.5		
Terminal tensile strengths	N	30		
Resistance to soldering heat ( 260°C,10s )	[ ]%	±0.2 typ.		
Solder ability	s	2.5 Flow time, solder globule test IEC 60068-2-20-T		
Making		Value imprinted		

## ▶ How to Order

LRA351-009

①

R024

②

J

③

Bulk

④

### ① Part Number

### ② Resistance Value (Ω)

Code	Resistance Value
R020	0.020Ω
R022	0.022Ω
R024	0.024Ω
R100	0.100Ω

### ③ Tolerance

Code	Tolerance
F	±1%
G	±2%
J	±5%
K	±10%

### ④ Pack. -Code

Code	
p	Bulk

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