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# **DIRECT**

## **Electronics Tech.**

### **(LRB)**

# **Low Ohmic Open Air Resistor**

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**▶ Product Introduction**

**Direct's open-air, low inductance, low ohmic resistor is alternative current shunts.**

**Features :**

- Low inductance.
- High stability open-air style.
- Precision alloys resistive element.
- Lead (Pb)-free and RoHS compliant.
- Standard tolerance  $\pm 3\%$ ,  $\pm 5\%$ ,  $\pm 10\%$ .
- Radial leads, low resistance value  $2\text{ m}\Omega \sim 50\text{ m}\Omega$ .

**Applications :**

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

Developed for current sensing and shunt applications, Direct's LRB series of bare element resistors have a precision alloys (Ni-Cu) element welded construction. Built-in stand-offs and standard spacing makes for easy mounting.

The bare metal element design allows for maximum cooling via airflow, forcing less heat into the PCB. The flameproof construction offers values down to  $2\text{ m}\Omega$  with low inductance. Customer can specify resistance range designed to satisfy challenging and specific technical requirements.



These factors make the LRB Series an outstanding choice for all types of high current power supplies and power applications requiring a robust part that is impervious to most environmental stresses. The device is ideal for current limited, current balance, and sampling sense in power supplier. It takes on the capability of high overload, and the function easily welding and non-inductance as well.

The Open Air (LRB) Low Ohmic Value Resistor is available in bulk packaging and is RoHS compliant and lead free. For non-standard technical requirements and special applications, please contact us with your specific needs, or link to Direct official website "[Current Sensing Resistors](#)" for more information.



► **LRB Dimensions**

**Dimensions (Unit: mm) (LRB)**

| RM (mm) | H Max. (mm) | B Max. (mm) | Ø (mm) | L1 (mm) |
|---------|-------------|-------------|--------|---------|
| 5 ~ 50  | 20          | 1           | 5 ~ 29 | 3±0.5   |

  

LRB Dimensions (Unit: mm)

Current Sensing Open Air Resistors (LRB) Dimensions

► **Specification**

**Specification (LRB)**

| Type   | Diameter Ø (mm) | Rated Current (A) | Resistance Range (mΩ) | Tolerance (%)               | Temperature Coefficient (ppm/°C) | Temperature Range (°C) |
|--------|-----------------|-------------------|-----------------------|-----------------------------|----------------------------------|------------------------|
| LRB-05 | 0.5             | 2.5               | 20~50                 | ±3%(H)<br>±5%(J)<br>±10%(K) | ±50 ~ ±100                       | -55 ~ +85              |
| LRB-06 | 0.6             | 3.0               | 20~50                 |                             |                                  |                        |
| LRB-07 | 0.7             | 4.0               | 20~50                 |                             |                                  |                        |
| LRB-08 | 0.8             | 4.5               | 20~50                 |                             |                                  |                        |
| LRB-09 | 0.9             | 5.0               | 10~50                 |                             |                                  |                        |
| LRB-10 | 1.0             | 5.5               | 10~30                 |                             |                                  |                        |
| LRB-11 | 1.1             | 6.0               | 5~20                  |                             |                                  |                        |
| LRB-12 | 1.2             | 7.0               | 5~20                  |                             |                                  |                        |
| LRB-13 | 1.3             | 7.5               | 5~20                  |                             |                                  |                        |
| LRB-14 | 1.4             | 8.0               | 5~20                  |                             |                                  |                        |
| LRB-15 | 1.5             | 9.0               | 5~20                  |                             |                                  |                        |
| LRB-16 | 1.6             | 9.5               | 5~15                  |                             |                                  |                        |
| LRB-18 | 1.8             | 11                | 3~10                  |                             |                                  |                        |
| LRB-20 | 2.0             | 12                | 2~8                   |                             |                                  |                        |
| LRB-23 | 2.3             | 14                | 2~8                   |                             |                                  |                        |
| LRB-25 | 2.5             | 17                | 2~5                   |                             |                                  |                        |
| LRB-29 | 2.9             | 21                | 2~5                   |                             |                                  |                        |



## Order Codes

### Order Codes (LRB)

| LRB         | - | 08         | 05     | R005                | K     | P                    |             |              |      |   |      |
|-------------|---|------------|--------|---------------------|-------|----------------------|-------------|--------------|------|---|------|
| Part Number |   | Diameter Ø |        | Leads Pitch RM (mm) |       | Resistance Value (Ω) | Tolerance % | Package-Code |      |   |      |
| LRB         |   | 05         | 0.5 mm | 05                  | 5 mm  | R005                 | 0.005Ω      | H            | ±3%  | P | Bulk |
|             |   | 06         | 0.6 mm | 10                  | 10 mm | R02                  | 0.02Ω       | J            | ±5%  |   |      |
|             |   | 07         | 0.7 mm | 15                  | 15 mm | R05                  | 0.05Ω       | K            | ±10% |   |      |
|             |   | 08         | 0.8 mm | 20                  | 20 mm |                      |             |              |      |   |      |
|             |   | 09         | 0.9 mm | 25                  | 25 mm |                      |             |              |      |   |      |
|             |   | 10         | 1.0 mm | 30                  | 30 mm |                      |             |              |      |   |      |
|             |   | 11         | 1.1 mm | 35                  | 35 mm |                      |             |              |      |   |      |
|             |   | 12         | 1.2 mm | 40                  | 40 mm |                      |             |              |      |   |      |
|             |   | 13         | 1.3 mm | 45                  | 45 mm |                      |             |              |      |   |      |
|             |   | 14         | 1.4 mm | 50                  | 50 mm |                      |             |              |      |   |      |
|             |   | 15         | 1.5 mm |                     |       |                      |             |              |      |   |      |
|             |   | 16         | 1.6 mm |                     |       |                      |             |              |      |   |      |
|             |   | 17         | 1.7 mm |                     |       |                      |             |              |      |   |      |
|             |   | 18         | 1.8 mm |                     |       |                      |             |              |      |   |      |
|             |   | 20         | 2.0 mm |                     |       |                      |             |              |      |   |      |
|             |   | 23         | 2.3 mm |                     |       |                      |             |              |      |   |      |
|             |   | 25         | 2.5 mm |                     |       |                      |             |              |      |   |      |
|             |   | 29         | 2.9 mm |                     |       |                      |             |              |      |   |      |



## ► 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  $0.005\Omega$ , 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.

