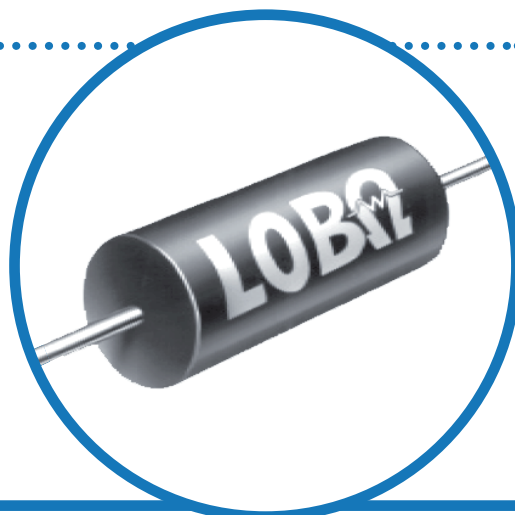


# Low Resistance Metal Element Resistor

## LOB Series

- Low TCR
- High stability over life
- Tolerances from  $\pm 1\%$  to  $\pm 5\%$
- Ultra low resistance values ( $0.005 \Omega$  to  $0.1 \Omega$ )
- Inherently non-inductive ( $\leq 0.02 \mu\text{H}$  @  $0.5 \text{ MHz}$ )
- Available in 1W, 3W, and 5W rated packages
- Lead free RoHS compliant construction available



### DESCRIPTION:

The LOB Series power precision metal element resistors feature resistance values down to  $0.005 \Omega$  with virtually no inductance. Available in 1, 3, and 5 watt rated axial leaded packages, these resistors are compatible with automatic insertion equipment.

### APPLICATIONS:

- Switchmode and linear power supplies
- Automotive current-sensing circuits
- Instrumentation
- Regulators

### CONSTRUCTION:

The LOB Series resistors feature tinned copper leads welded directly to a low-temperature coefficient resistance element in a highly automated proprietary process. The leaded resistor elements are then encapsulated in a molding compound.

## Specifications

| Style | Continuous Power Dissipation<br>@ 25°C in free air (watts) | Overload Power<br>for 5 seconds (watts) | Maximum Working<br>Voltage (volts) | Maximum Storage<br>Temperature (°C) |
|-------|------------------------------------------------------------|-----------------------------------------|------------------------------------|-------------------------------------|
| LOB-1 | 1                                                          | 5                                       | $\sqrt{1 \times R}$                | 175                                 |
| LOB-3 | 3                                                          | 15                                      | $\sqrt{3 \times R}$                | 175                                 |
| LOB-5 | 5                                                          | 25                                      | $\sqrt{5 \times R}$                | 175                                 |

\*Power Dissipation - The maximum wattage rating depends upon the amount of heat which can be transferred to the surroundings while not exceeding the maximum element temperature. Ambient air temperature, velocity of cooling air, thermal resistance of heat, and the temperature of surrounding objects will affect this transfer, and must be taken into account when selecting a resistor.

## Environmental Testing

| Test Parameters         | MIL-STD 202 | MAX $\% \Delta R$ *    | Unit          |
|-------------------------|-------------|------------------------|---------------|
| Load Life (2,000 hours) | Method 108  | $\pm 1\%$              | $\% \Delta R$ |
| Thermal Shock           | Method 107  | $\pm 1\%$              | $\% \Delta R$ |
| Vibration               | Method 204  | $\pm 0.5\%$            | $\% \Delta R$ |
| Mechanical Shock        | Method 213  | $\pm 0.5\%$            | $\% \Delta R$ |
| Dielectric Strength     | Method 301  | $\pm 0.5\%$ @ 1000 VAC | $\% \Delta R$ |
| Insulation Resistance   | Method 302  | $> 10^{10}$ @ 100 VDC  | Ohms          |

\* $\pm 0.0005$  ohm allowance for test/contact error.

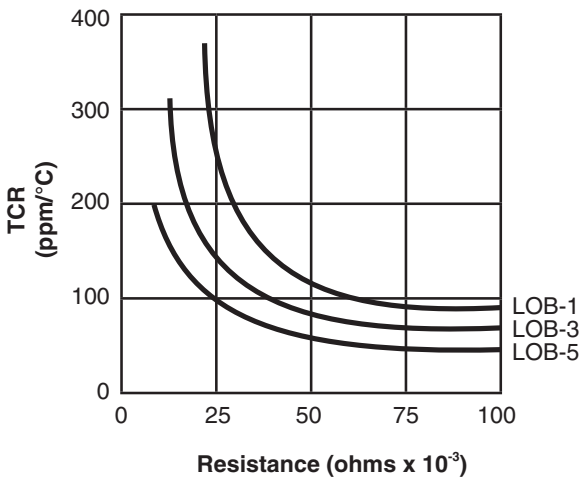
### General Note

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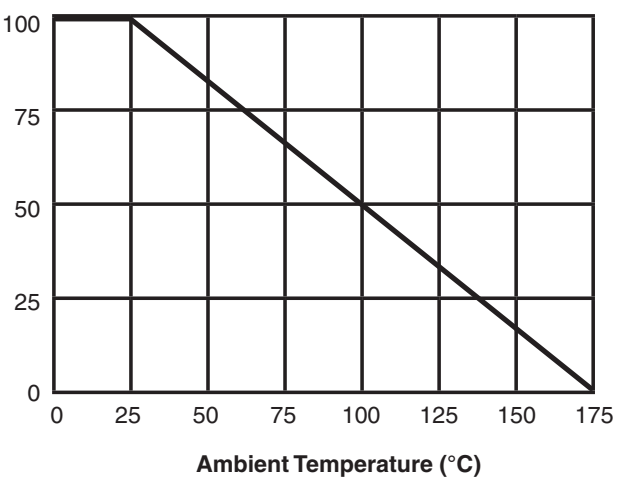
Physical Data

| Dimensions (Inches (mm)) |                                   |                                   |                   |                                   |                                   |
|--------------------------|-----------------------------------|-----------------------------------|-------------------|-----------------------------------|-----------------------------------|
| Style                    | L                                 | D                                 | C                 | I                                 | d                                 |
| LOB-1                    | 0.390 ± 0.010<br>(9.9 ± 0.3)      | 0.140 ± 0.008<br>(3.6 ± 0.2)      | 1.31<br>(33.274)  | 1.50 ± 0.125<br>(38.1 ± 3.2)      | 0.0305 ± 0.002<br>(0.813 ± 0.051) |
| LOB-3                    | 0.560 ± 0.010<br>(14.224 ± 0.254) | 0.2100 ± 0.010<br>(5.334 ± 0.254) | 1.31<br>(33.274)  | 1.375 ± 0.125<br>(34.925 ± 3.175) | 0.0305 ± 0.002<br>(0.813 ± 0.051) |
| LOB-5                    | 0.920 ± 0.010<br>(23.368 ± 0.254) | 0.330 ± 0.010<br>(8.382 ± 0.254)  | 1.670<br>(42.418) | 1.250 ± 0.125<br>(31.750 ± 3.175) | 0.040 ± 0.002<br>(1.016 ± 0.051)  |

Temperature Coefficient of Resistance vs. Resistance Value



Power Derating Percentage vs. Free Air Ambient Temperature:



## Ordering Data

To order, specify style, resistance value, and package type as in the following example:

|                                                 |        |       |       |    |    |
|-------------------------------------------------|--------|-------|-------|----|----|
| Sample Part No. ....                            | LOB-3  | R010  | F     | LF | LT |
| IRC Type .....                                  |        |       |       |    |    |
| LOB-1 (1 watt)                                  |        |       |       |    |    |
| LOB-3 (3 watt)                                  |        |       |       |    |    |
| LOB-5 (5 watt)                                  |        |       |       |    |    |
| Resistance Value .....                          |        |       |       |    |    |
| 0.005Ω                                          | 0.02Ω  | 0.04Ω | 0.08Ω |    |    |
| 0.01Ω                                           | 0.025Ω | 0.05Ω | 0.1Ω  |    |    |
| 0.015Ω                                          | 0.03Ω  | 0.07Ω |       |    |    |
| Tolerance .....                                 |        |       |       |    |    |
| J = 5%, H = 3%, F = 1%                          |        |       |       |    |    |
| Lead-Free RoHS Compliant .....                  |        |       |       |    |    |
| Packaging .....                                 |        |       |       |    |    |
| LT = Lead Tape (preferred)                      |        |       |       |    |    |
| LOB-1 = 3,500 pcs.                              |        |       |       |    |    |
| LOB-3 = 1,250 pcs.                              |        |       |       |    |    |
| LOB-5 = 800 pcs.                                |        |       |       |    |    |
| BLK = Bulk Pack, 500/box (non-preferred option) |        |       |       |    |    |

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