BOURNS®

MSF Series

Four-Terminal Shunt Power Resistors



*RoHS COMPLIANT

Features

- Radial, self-supporting, PC board mounting
- Four-terminal Kelvin measurement design
- Power rating: 5 W
- Maximum current: 100 A
- Operating temp. range: -55 °C to +275 °C
- TCR: ±100 ppm/°C
- Flame-resistant coating
- RoHS compliant*

Applications

- Battery management systems (BMS)
- Power supplies and power conversion equipment
- Industrial motor controls
- Current monitoring circuits
- Welding equipment
- Energy storage systems
- Industrial automation and control systems

Sustainability

- Small size reduces material use
- High pallet density for lower CO_2 emissions
- Corrosion-resistant for longevity
- High efficiency, low power loss

Product Overview

The MSF Series features a four-terminal Kelvin design that minimizes measurement errors caused by lead resistance, delivering accurate current sensing in power conversion, battery management, motor control, welding equipment, and industrial power systems. Constructed using a Manganin® resistance element welded to OFHC copper terminals and protected by a flame-resistant high-temperature silicone coating, these resistors provide outstanding thermal stability and rugged environmental performance.

How to Order

MSF 2L - 0R001 F 1

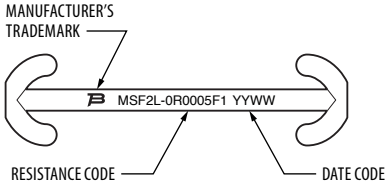
Model
- MSF2
- MSF2L

Resistance Code
- "R" represents the decimal point (Example: 0R001 = 0.001 Ω)

Tolerance Code
- D = ±0.5 %
- F = ±1 %
- G = ±2 %
- H = ±3 %
- J = ±5 %
- K = ±10 %

Internal Use

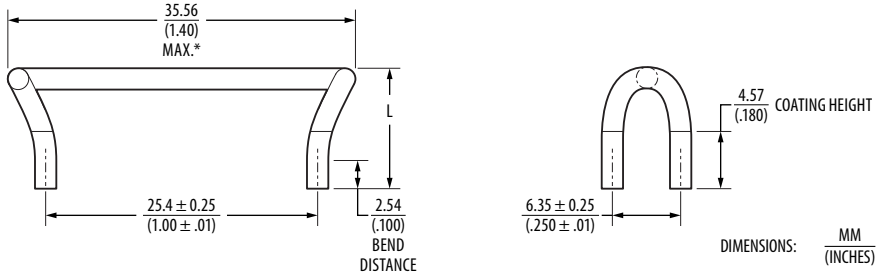
Typical Part Marking



Electrical Specifications

Bourns Part Number	Power Rating (W)	Maximum Current (A)	Resistance Range (mΩ)
MSF-2	5	100	0.5 to 5
MSF-2L			

Product Dimensions



*Depending on wire length, leads can be bent outwards or inwards to meet the 1-inch lead spacing.

Model	L Dimension
MSF-2	11.43 (.450) MAX.
MSF-2L	11.94 ~ 14.22 (.470 ~ .560)

Contact Information

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*RoHS Directive 2015/863, Mar 31, 2015 and Annex.

Specifications are subject to change without notice. Users should verify actual device performance in their specific applications.

"Manganin" is a registered trademark of Isabellenhütte Heusler GmbH & Co. KG.

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BOURNS®

MSF Series

Four-Terminal Shunt Power Resistors



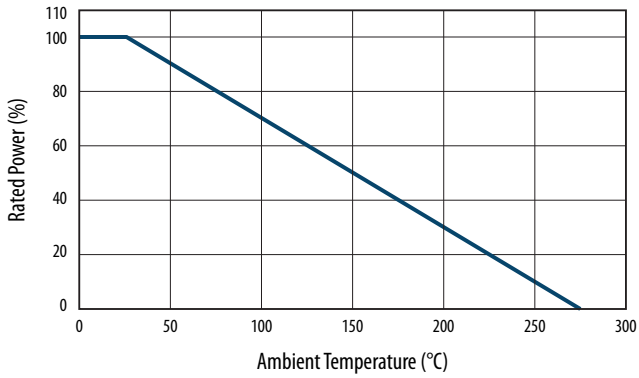
*RoHS COMPLIANT

Performance Characteristics

Specification	Value
Tolerances	±0.5 % to ±10 % standard
Temperature Coefficient (0 °C to +85 °C)	±100 ppm/°C*
Temperature Range	-55 °C to +275 °C
Maximum Working Voltage	√ (P x R)
Dielectric Strength	1000 VAC
Construction	Manganin® resistance wire element with welded OFHC copper U-leads, flame-resistant high-temperature silicone coating, trivalent finish

*Other TCR values available. Contact Bourns.

Power Derating Curve



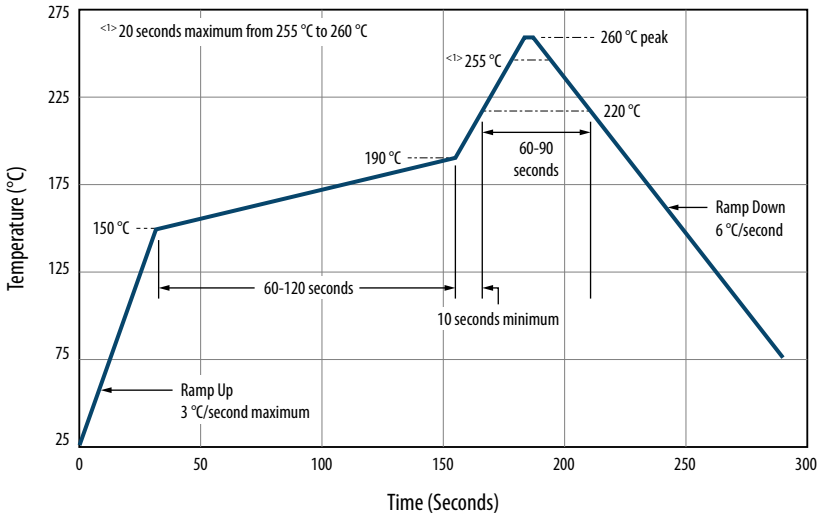
Environmental Performance

Specification (MIL-STD 202)	ΔR
Dielectric	±0.5 % + 0.05 Ω
Load Life	±1.5 %
TCR (25°C, 0°C, 85°C)	±100 ppm/°C
Storage	±0.5 % + 0.05 Ω
High Temperature Exposure	±1.5 % + 0.05 Ω
Moisture Resistance	±1.1 % + 0.05 Ω
Thermal Shock	±0.5 % + 0.05 Ω
5X Overload (5 s)	±0.5 % + 0.05 Ω
Solderability (J-STD-002E Table 4-8)	Passed
Resistance to Soldering Heat	±0.5 %
Shock	±0.5 % + 0.05 Ω
Vibration	±0.5 % + 0.05 Ω

Packaging Quantities

Bourns Model Number	Bulk Quantity (pcs.)
MSF-2	100
MSF-2L	100

Soldering Profile



REV. 10/26

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