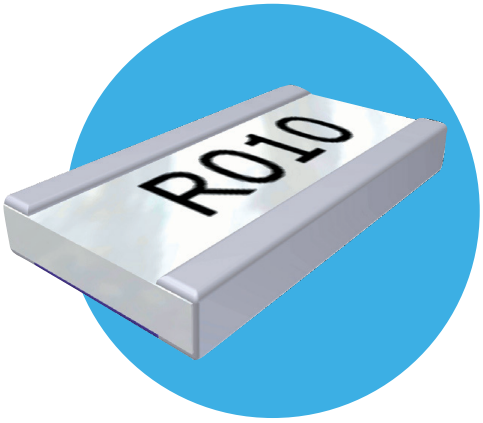
Resistors

OBSOLETE

Low Range 3 Watt Mil Chip Resistor

LRF3W Series



- Tolerances to ±1%
- 3 Watt @70°C power dissipation in a compact 1225 package
- Resistance range from 0.003 to 1.000Ω
- Ideal for high current sensing applications
- Standard Sn/Pb and Pb-free (matte Sn) terminations available

All Pb-free parts comply with EU Directive 2011/65/EU (RoHS2)

IRC's LRF3W-MIL series combines high power capabilities, small chip size, very low resistance and high reliability to handle your current sensing needs. The LRF3W-MIL utilizes high reliability thick film materials and the uninterrupted 2 pad termination on the long sides maximizes the thermal trasport path, improving reliability. Precise measurements can be achieved even at very low values using the specified kelvin pad layout (see Physical Data).

Electrical Data

Resistance Range(Ω)	Absolute TCR (ppm/°C)	Available Absolute Tolerances	Rated Power @ 70°C (W)	Voltage Rating (V)	Operating Temperature Range	Termination
0.003 - 0.005	±500	±10%	3.0*	$\sqrt{P \times R}$	-55°C to +150°C	matte Sn or 60/40 Sn/Pb
0.006 - 0.009	±250	±5%, ±10%				
0.010 - 1.000	±100	±1%, ±2%, ±5%, ±10%				

*Note: 3-Watt rating achieved with 500mm [2] Copper pad area around each termination pad. Maximum current is 25 amps.

Environmental Data

Environmental Test	Test Method	Specification	
		Maximum	Typical
Thermal Shock	MIL-STD-202 Method 107 Condition F, -65°C to +150°C	±0.25% (+1.0mΩ)	±0.05% (+1.0mΩ)
Short-time Overload	5 Seconds, 3X Rated Power Maximum 25 Amps	±0.50% (+0.5mΩ)	±0.01% (+0.5mΩ)
High Temperature Exposure	MIL-PRF-55342 100 Hours, 150°C, No Power	±0.50% (+0.5mΩ)	±0.10% (+0.5mΩ)
Load Life	1000 Hours, 70°C, Rated Power	±1.00% (+0.5mΩ)	±0.20% (+0.5mΩ)
Moisture Resistance	MIL-STD-202 Method 106	±0.50% (+0.5mΩ)	±0.10% (+0.5mΩ)
Low Temperature Operation	MIL-PRF-55342	±0.25% (+0.5mΩ)	±0.05% (+0.5mΩ)
Resistance To Solder Heat	MIL-STD-202 Method 210	±0.25% (+1.0mΩ)	±0.05% (+1.0mΩ)
Solderability	MIL-PRF-55342	≥ 95% Coverage	

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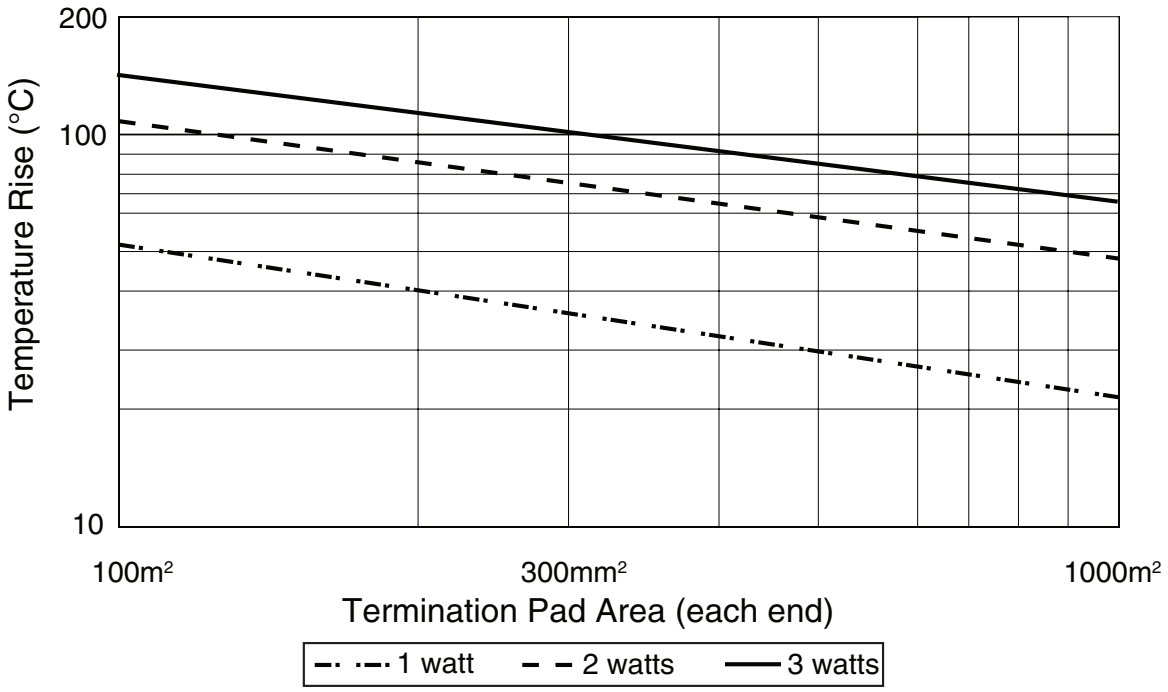
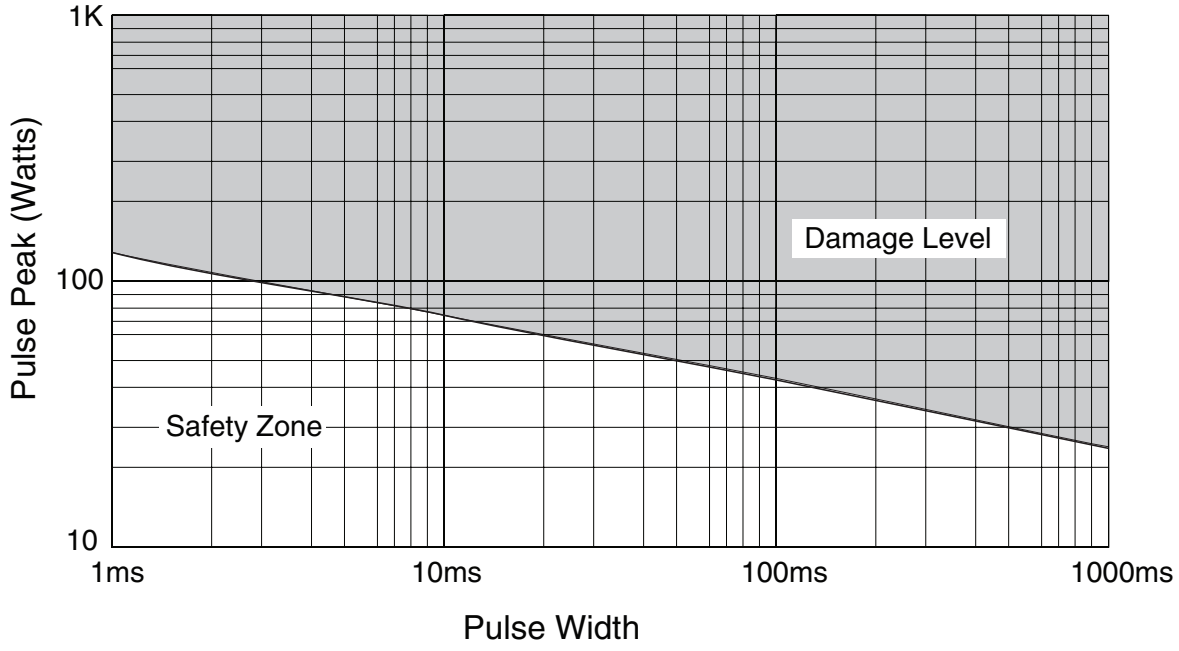
Temperature Rise vs Pad Area



Pulse Power Limit



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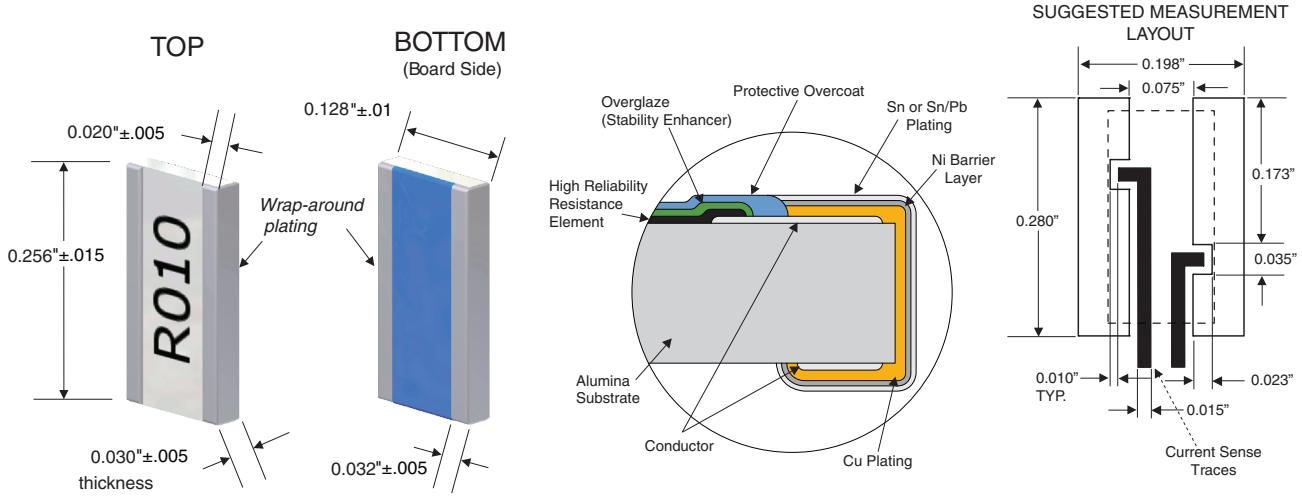
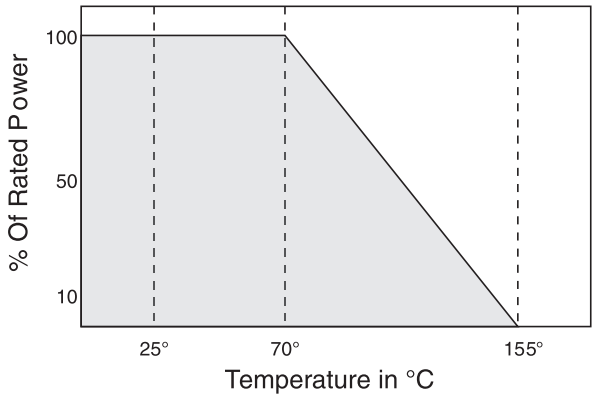
Physical Data



To achieve 3-Watt power rating, the copper pad area of each side must be a minimum of 500mm² .

Power Derating Curve



Ordering Data

Prefix LRC - LRF3WLF - MIL - R020 - F

Model
LRF3W = 3 watt chip with standard Sn/Pb termination
LRF3WLF = 3 watt chip with Pb-free (matte Sn) termination

MIL Designator

Resistance Code
4-Digit resistance code
Example: R050 = 0.050 ; R005 = 0.005

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

For additional information or to discuss your specific requirements, please contact our Applications Team using the contact details below.