

ULR Series

Metal Element Current Sense Resistor



IRC Wire and Film Technologies Division

- Designed for current sense circuits in power electronics systems
- Power ratings from 1W to 3W in 2512 chip sizes
- Resistance range from 0.5mΩ to 10mΩ
- Low TCR and inductance
- Higher wattage devices feature PCB clearance gap to maximize thermal performance



Specifications

IRC Type	Coating ¹	Power rating at 80°C (Watts)	Standard resistance values (Ohms) ²	TCR (±ppm/°C)	Tolerance (±%)	Dielectric Withstanding Voltage (Volts)
ULR-1	Black	1.0	0.0005, 0.00075, 0.001, 0.0015, 0.002	50	1, 5	200V
			0.0025, 0.003, 0.0035	150		
			0.004, 0.0045, 0.005, 0.0055	100		
			0.006, 0.007	75		
ULR-2	Black	2.0	0.0005, 0.00075, 0.001, 0.0015, 0.002	50	1, 5	200V
	Green	2.0	0.007, 0.008, 0.009, 0.01	50		
ULR-25	Green	2.5	0.0035, 0.004, 0.0045, 0.005, 0.0055, 0.006	50	1, 5	200V
ULR-3	Green	3.0	0.0005, 0.00075	100	1, 5	200V
			0.001, 0.0015, 0.002	50		
			0.0025, 0.003	75		

Notes

¹ Color of coating indicates solder compatibility. Black = wave or IR reflow soldering; Green = IR reflow solder only.

² Non-standard resistance values available (contact factory). For resistance values above 0.01Ω, please refer to our LRC/LRF Series.

Environmental Performance

Test	
Short term overload (5x rated power for 5 seconds)	$\Delta R/R \leq \pm 0.5\% + 0.5m\Omega$ (black); $\Delta R/R \leq \pm 1\%$ (green)
Load at rated power (1000 hours cyclic load @ 70°C)	$\Delta R/R \leq \pm 1\% + 0.5m\Omega$ (black); $\Delta R/R \leq \pm 1\%$ (green)
Temperature cycling (-55°C to +150°C; 100 cycles)	$\Delta R/R \leq \pm 0.5\% + 0.5m\Omega$ (black); $\Delta R/R \leq \pm 1\%$ (green)
Dry heat (+155°C, no load; 96 hours)	$\Delta R/R \leq \pm 1\% + 0.5m\Omega$ (black); $\Delta R/R \leq \pm 1\%$ (green)
Resistance to solder heat; (260°C for 10 seconds)	$\Delta R/R \leq \pm 0.5\% + 0.5m\Omega$ (black); $\Delta R/R \leq \pm 1\%$ (green)
Solderability (235°C for 2 seconds)	Minimum 95% coverage
Resistance to solvents	No deterioration of protective coating or marking
Operating temperature	-55°C to +170°C

General Note

IRC reserves the right to make changes in product specification without notice or liability. All information is subject to IRC's own data and is considered accurate at time of printing.

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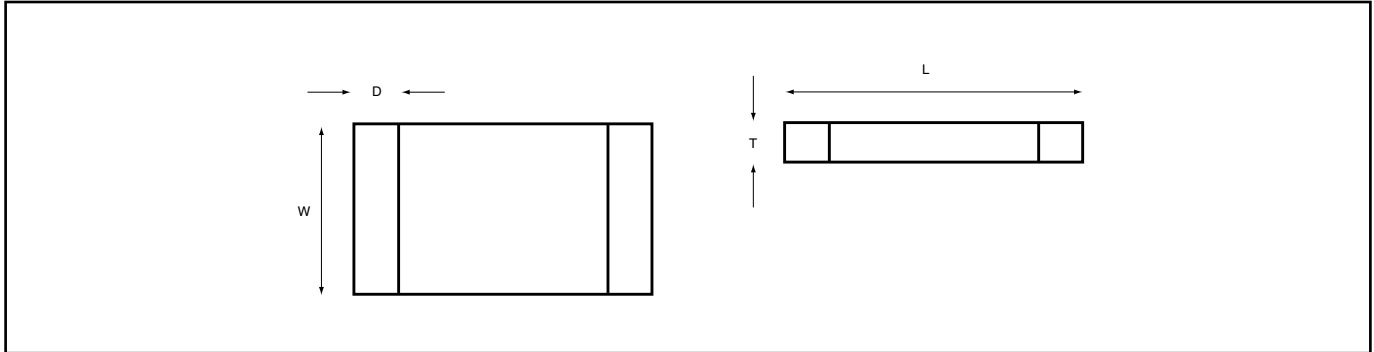
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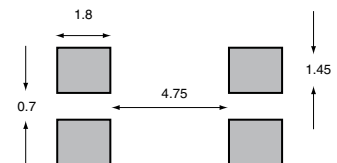
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Dimensions (mm)

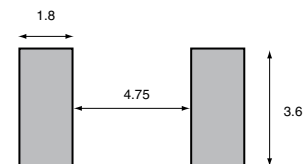


IRC Type	Coating	Resistance Value (mΩ)	L	W	T	D
ULR-3	Green	0.5, 0.75	6.35	3.18	1.00	1.93
ULR-2	Green	1.0 - 10	6.35	3.18	0.60	1.93
ULR-25						
ULR-3						
ULR-1	Black	0.5	6.35	3.18	1.40	1.30
ULR-2						
ULR-1	Black	0.75	6.35	3.18	1.00	1.30
ULR-2						
ULR-1	Black	0.1	6.35	3.18	0.80	1.30
ULR-2						
ULR-1	Black	0.15	6.35	3.18	0.65	1.30
ULR-2						
ULR-1	Black	0.2	6.35	3.18	0.50	1.30
ULR-2						
ULR-1	Black	0.25	6.35	3.18	1.00	1.30
ULR-1	Black	0.3	6.35	3.18	0.70	1.30
ULR-1	Black	0.35	6.35	3.18	0.71	1.30
ULR-1	Black	0.4	6.35	3.18	0.60	1.30

Recommended Solder Pad Layout



4-wire pad layout
(recommended for precision current sensing)



2-wire pad layout

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Ordering Information

Specify type, resistance, tolerance, RoHS-Compliance and packaging. This example is for a Metal Element Current Sense Resistor, 1-watt, 0.25Ω resistor.

Sample Part No. **ULR 1** **R250** **F** **LF** **SLT**

IRC Type _____

Power rating _____
(See specs table)

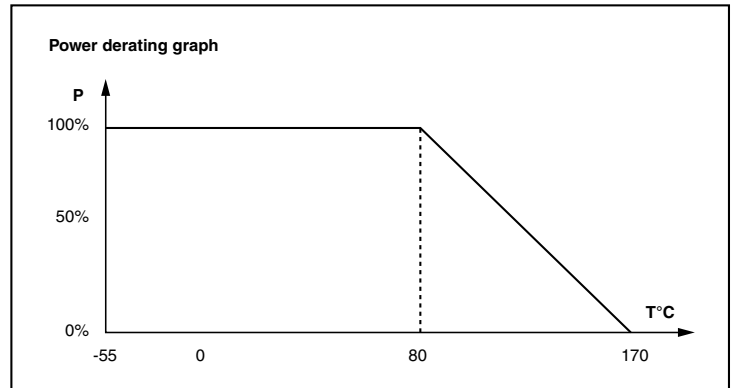
Resistance Value (EIA 4-digit code) _____
(>100Ω - "R" is used to designate decimal)
Example:
0.25Ω = R250

Tolerance (EIA format) _____
F = ±1%
J = ±5%

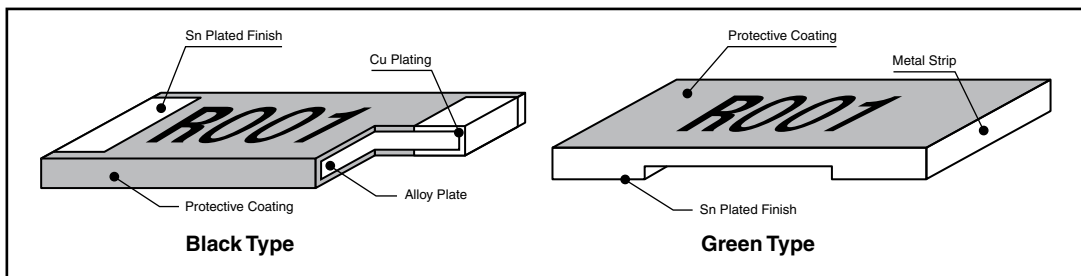
RoHS- compliance _____
LF = RoHS compliant construction

Packaging _____
SLT = Standard lead tape

Performance Curve



Construction



Black Type

A low TCR resistance alloy plate with plated connection bands is protectively coated and numerically marked with the resistance value. This version has standard plated connections and is suitable for wave or IR reflow soldering processes.

Green Type

A low TCR alloy plate is grooved to set the final resistance. The lower faces are solder plated for connections, and the top surface is protectively coated and numerically marked with the resistance value. This part is **ONLY** suitable for IR reflow soldering processes.

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