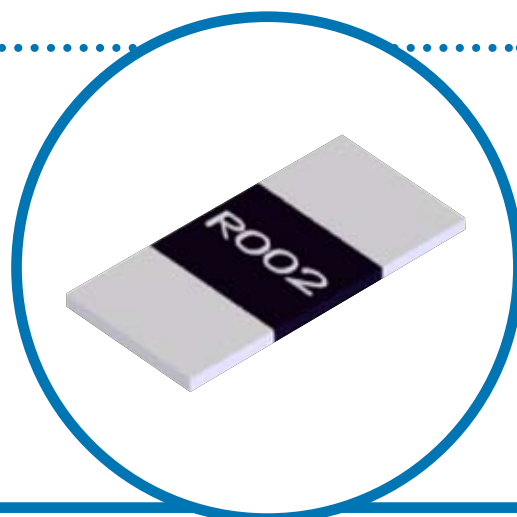


Low Resistance Metal Alloy Resistor

LRMA Series

- Resistance range 1 to 100mΩ
- High temperature operation to 170°C
- Low thermal EMF version
- High power version
- Current sensing for power electronics
- RoHS compliant & halogen free



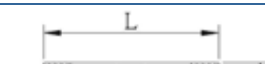
Electrical Data

LRMA Version		T (Standard)	P (Power)
Size		2512	2512
Power rating @70°C	W	≤R01: 2, >R01: 1	3
Overload rating (5s)	W	≤R01: 10, >R01: 5	15
Resistance range	mΩ	1 to 50	3 to 100
Standard values ¹	mΩ	1, 1.5, 2, 3, 4, 5, 7, 8, 9, 10, 11, 12, 15, 18, 20, 25, 30, 33, 40, 50	3, 5, 10, 11, 15, 20, 25, 30, 40, 50, 80, 100
Resistance tolerance	%	1, 5	
TCR (25 to 125°C)	ppm/°C	>R01: ±75 >R001 & ≤R01: ±100,	R001: ±275
Ambient temperature	°C	-55 to 170	
Insulation resistance	MΩ	>100	
Element alloy		Cu-Ni or Mn-Cu	
Coating		Black	

LRMA Version		M (Low thermal EMF)	N (Inverse)
Size		1206 2512	0815
Power rating @70°C	W	1 ≤R02: 2, >R02: 1	1 ²
Overload rating (5s)	W	5 ≤R02: 10, >R02: 5	5
Resistance range	mΩ	5 to 30 5 to 40	1 to 30
Standard values ¹	mΩ	5, 10, 15, 20, 25, 30 5, 10, 20, 30, 40	1, 6, 8, 10, 15, 20, 25, 30
Resistance tolerance	%	1, 5	
TCR (25 to 125°C)	ppm/°C	>R01: ±75, ≤R01: ±100	±100
Ambient temperature		-55 to 170°C	
Insulation resistance	MΩ	>100	
Element alloy		Mn-Cu	Cu-Ni
Coating		Black Green	Black

Notes: 1. Non-standard values may be available for high volume requirements. 2. Requires 300mm² copper pad & trace area

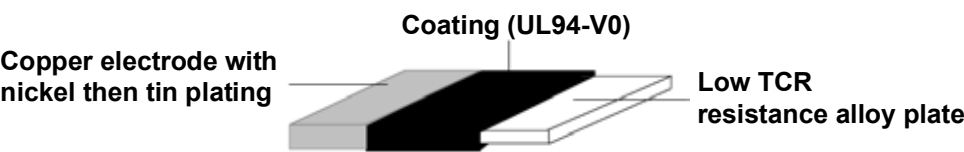
Physical Data (All dimensions in mm and nominal weight in g)

Size	L	W	C	t	Wt	
1206	3.2 ±0.2	1.6 ±0.2	0.5 ±0.3	0.6 ±0.2	18.3	
0815	2.1 ±0.25	3.75 ±0.3	0.5 ±0.2	0.7 ±0.2	14.1	
2512 ≤R002	6.4 ±0.2	3.2 ±0.2	2.0 ±0.2	0.65 ±0.25	57 to 63	
2512 >R002			0.9 ±0.2			

General Note

TT electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT electronics' own data and is considered accurate at time of going to print.

Construction



Marking

The components are marked with ohmic value, e.g. “R002” = 2mΩ, “R010” = 10 mΩ.

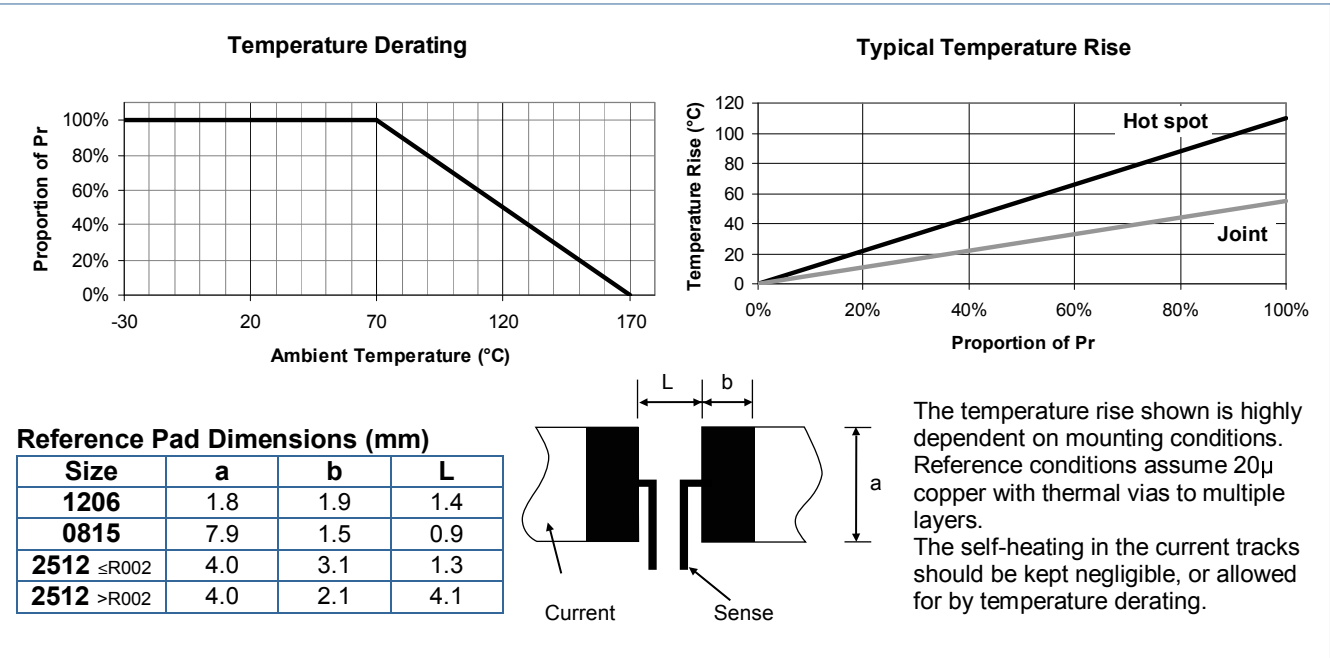
Solvent Resistance

The component is resistant to all normal industrial cleaning solvents suitable for printed circuits.

Performance Data

		Maximum (%)	Typical (%)
Load at rated power (cyclic load, 1000 hours at 70°C)	±ΔR	1	0.3
Short term overload (5 x rated power for 5s)	±ΔR	0.5	0.15
Humidity (1000 hours, 85°C, 85%RH)	±ΔR	0.5	0.15
Temperature cycle (-40 to +125°C, 1000 cycles, 15 minute dwell)	±ΔR	0.5	0.15
Resistance to solder heat (260°C ±5°C for 20s ±1s)	±ΔR	0.5	0.3
Solderability (245°C ±5°C for 2s ±0.5s)		>95% coverage	
Dry heat (1000 hours at 170°C)	±ΔR	0.5	0.3
Low temperature storage (1000 hours at -55°C)	±ΔR	0.5	0.15
Substrate bending (board 1.6mm, fulcrum spacing 90mm, deflection 2mm)	±ΔR	0.5	0.3
Insulation resistance (1 minute @ 100Vdc)		>100M	

Thermal Performance & Mounting



General Note

TT electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT electronics’ own data and is considered accurate at time of going to print.

Packaging

Size	Tape	A	B	W	F	E	P ₁	P ₂	P ₀	ΦD ₀	t	ΦA	ΦB	ΦC	Wr	Tr
1206	Paper	2.0 ±0.15	3.6 ±0.2	8.0 ±0.2	3.5 ±0.05	1.75 ±0.1	4.0 ±0.1	2.0 ±0.05	4.0 ±0.1	1.5 +0.1/-0	0.84 ±0.1	178 ±0.2	60 ±1	13 ±1	9 ±1	11.5 ±1
0815	Emboss	2.6 ±0.2	4.5 ±0.2	12 ±0.2	5.5 ±0.1	1.75 ±0.1	4.0 +0.1	2.0 ±0.2	4.0 ±0.1	1.55 ±0.05	1.1 ±0.1	178 ±0.2	60 ±1	13 ±1	13 ±1	15.4 ±2
2512	Emboss	3.6 ±0.2	6.9 ±0.2	12 ±0.2	5.5 ±0.05	1.75 ±0.1	4.0 ±0.1	2.0 ±0.05	4.0 ±0.05	1.5 +0.1/-0	0.85 ±0.15	178 ±0.2	60 ±1	13 ±1	13 ±1	15.4 ±2

Storage

Conditions: 5°C to 35°C and 40% to 75%RH
Shelf life: 2 years from manufacture

Processing

LRMA series resistors are suitable for both wave and IR reflow soldering. The recommended reflow profile for Pb-free SAC305 alloy (Sn 96.5%, Ag 3%, Cu 0.5%) soldering is as follows:

Pre-heat: 60s to 120s at 150°C to 180°C
Soldering: 20s to 40s at ≥230°C
Peak: 5s at 250°C to 255°C

Ordering Procedure

Example: LRMA low thermal EMF version in 2512 size and at 10 milliohms and 1% tolerance packed in tape.

LRMA M 2512 - R 01 F T 4

Type _____

Version _____

T	P	M	N
---	---	---	---

Size _____

Value (use IEC62 code) _____

Tolerance (use IEC62 code) _____

F	1%
J	5%

Packing _____

T5	Tape	1206	5000/reel	Standard
T4		0815, 2512	4000/reel	

General Note

TT electronics reserves the right to make changes in product specification without notice or liability.
All information is subject to TT electronics' own data and is considered accurate at time of going to print.