Low Resistance Metal Alloy High Power Resistors

LRMAH2512

Features:

- Resistance range 0.2mΩ to 10mΩ
- Power rating up to 6W
- Robust welded construction
- Low inductance
- Zero-ohm jumper version
- AEC-Q200 qualified

All parts are Pb-free and comply with EU Directive 2011/65/EU amended by (EU) 2015/863 (RoHS3)

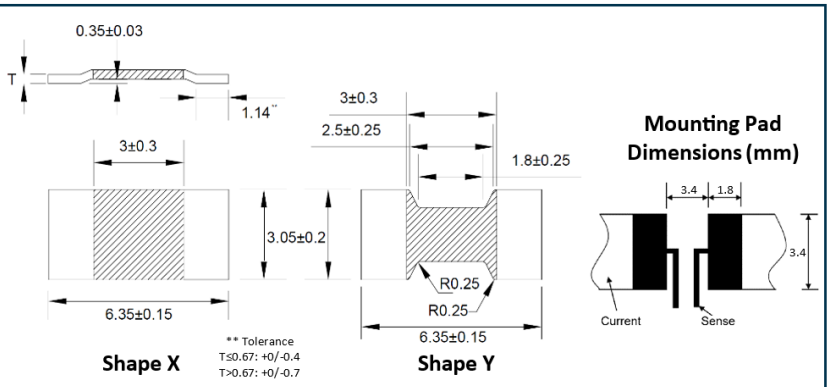
Electrical Data

		LRMAH2512											
Resistance value	mΩ	0.2 (L20)	0.3 (L30)	0.5 (L50)	0.7 (L70)	1 (1L0)	1.3 (1L3)	2 (2L0)	3 (3L0)	4 (4L0)	5 (5L0)	6.8 (6L8)	10 (10L)
Thermal impedance, R_{thi}	°C/W	4		7	10	12	15	17	20	25	40	55	65
Power rating, P_{r70} [1]	W	6					5		4	3	2.5	2	1.5
Power rating, P_{r100} [2]	W	3							2		1.5		1
Alloy		E		B				C					
TCR of resistive alloy	ppm/°C	±20						0 to -35					
TCR of resistor (+20 to +60°C)	ppm/°C	±150	±100	±75		±50							
Extended TCR (-55 to +170°C)	ppm/°C	±225	±175	±120		±100		±50					
Resistance tolerance	%	1											
Inductance	nH	<2											
Ambient temperature range	°C	-55 to +170											
Current rating, zero-ohm (0L0)	A	100											
Residual resistance, zero-ohm (0L0)	µΩ	≤65											

Note 1: Mounted on thermal substrate where the ambient temperature is limited to 70°C – see Ambient Temperature Derating graph for details.
Note 2: Mounted on FR4 board where the terminal temperature is limited to 110°C for 0.5% stability after 2000 hours or to 140°C for 1% stability after 2000 hours – see Terminal Temperature Derating graph for details.

Physical Data

Dimensions in mm and weight in mg				
Value	**Alloy**	**T** ±0.1	**Shape**	**Wt.** nom.
0L0	(Z = Cu)	0.42	X	73
L20	E	1		161
L30		0.95		152
L50	B	0.85		137
L70		0.61		101
1L0		0.42		70
1L3		0.33		56
2L0	C	0.67		102
3L0		0.45		70
4L0		0.33		52
5L0			Y	44
6L8				43
10L				41



Marking

Values up to and including 4L0 are laser marked with ohmic value (e.g. 1L0 is marked “R001”). Parts with higher values are unmarked.

Solvent Resistance

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

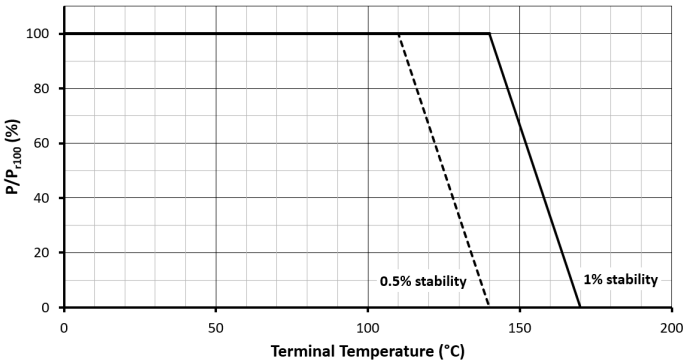
Construction

LRMAH2512 is formed from a continuous band of E-beam welded precision resistive strip. The alloys used depend on the ohmic value.

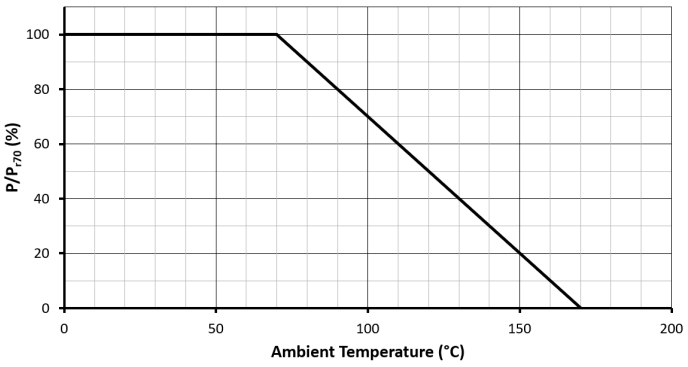
Performance Data

Test	Methods	Reference	ΔR
Load life	2000 hours, cyclic load at T_A =125°C, rated power per P_{r70} Temperature Derating graph below	MIL-STD-202 Method 108	±1%
Short Term Overload	5 × P_{r100} for 5 s	--	±1%
High Temperature Exposure	2000 hours, T_A=170°C, unpowered	MIL-STD-202 Method 108	±1%
Low Temperature Storage	-65°C for 24hrs	--	±0.2%
Temperature Cycle	1000 cycles, -55°C to 150°C, 30 minutes dwell	JESD22 Method JA-104	±0.5%
Biased Humidity	1000 hours, 85°C/85%RH, 10% of P_{r100}	MIL-STD-202 Method 103	±0.5%
Vibration	10 - 2000Hz, 5g, 20min, 12 cycles/axis x 3 axes	MIL-STD-202 Method 204	±0.2%
Mechanical Shock	100g, 6ms, half-sine	MIL-STD-202 Method 213	±0.2%
Resistance to Solder Heat	260 ± 5°C, 10 ± 1s	MIL-STD-202 Method 210	±0.5%
Solderability	235 ± 5°C, 2 ± 0.5s	J-STD-002	>95% coverage
Resistance to Solvents	Clean with aqueous chemical	MIL-STD-202 Method 215	No damage

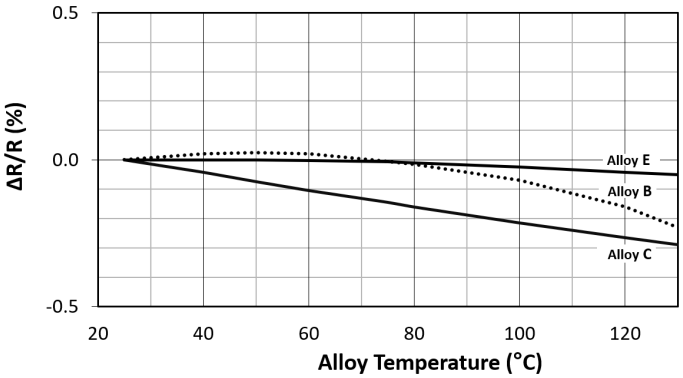
Terminal Temperature Derating (P_{r100})



Ambient Temperature Derating (P_{r70})

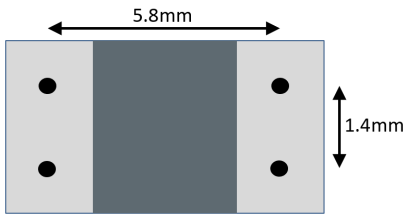


Typical Temperature Characteristic



Value Measurement

Unmounted LRMAH2512 resistors are measured using 4-terminal probes on the lower side of the chip, centred on the chip and at the spacings shown below.

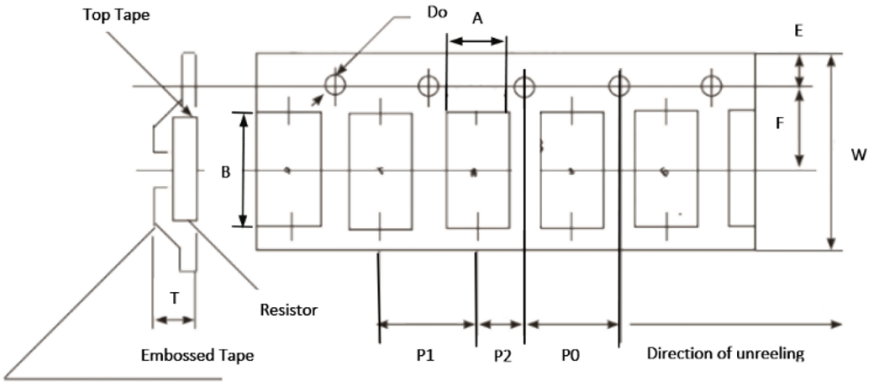


Soldering

LRMAH2512 series resistors are suitable for IR reflow soldering. The recommended reflow profile for Pb-free soldering, for example using SAC387 alloy (Sn 95.5%, Ag 3.8%, Cu 0.7%), is as follows:

Pre-heat: 60 to 180s at 150 to 200°C
Soldering: 60s to 150s above 217°C
Peak: 260°C

Packaging



All dimensions in mm (tolerances are ±0.1 unless otherwise stated)

Size	A	B	W	E	F	P_0	P_1	P_2	D_0	T	Reel dia.
2512	3.35	6.65	12	1.75	5.5	4	8	2	1.5	1.8	330

Ordering Procedure

Examples: LRMAH2512B-L50FT5 (0.5 milliohm ±1%, Pb-free)
LRMAH2512Z-0L0T5 (zero-ohm link, Pb-free)

L	R	M	A	H	2	5	1	2	B	-	L	5	0	F	T	5
L	R	M	A	H	2	5	1	2	Z	-	0	L	0		T	5
1									2		3			4	5	

1 Type	2 Alloy	3 Value	4 Tolerance	5 Packing
LRMAH2512	B	3 characters L = milliohms 0L0 = zero-ohm	F = ±1%	T5 = plastic tape, 5000/reel
	C		Omit for zero-ohm	
	E			
	Z			