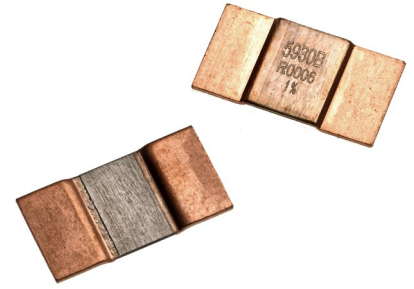


Low Resistance Metal Alloy Power Resistors

LRMAP5930

Features:

- Resistance range 0.1mΩ to 3mΩ
- Excellent long-term stability
- High power rating up to 15W
- Current sensing for power electronics
- AEC-Q200 qualified



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

Electrical Data

		LRMAP5930								
Alloy type		A	B				D	C		
Resistance value	mΩ	0.1	0.2	0.3	0.5	0.6	0.5	1	2	3
Power rating, P _{r140} ¹	W	10	10	7	6	5	7	6	4	3
Power rating, P _{rts70} ²	W	15	15	10	8	8	10	9	7	5
Overload rating (5s) ¹	W	50	50	35	30	25	35	30	20	15
Continuous pulse energy	J	15	19	13	7.5	6	19	13	6.5	4.6
Internal thermal impedance, R _{thi}	°C/W	3	3	4	6	6	4	7	13	20
Resistance tolerance	%	1								
TCR (20 to 60°C)	ppm/°C	±350	±100		±75			±50		
Thermal EMF	μV/°C	<2								
Inductance	nH	<3								
Ambient temperature	°C	-55 to +170								

Note 1: Mounted on FR4 board. See Thermal Data and Mounting section for details.

Note 2: Mounted on thermal substrate. See Thermal Data and Mounting section for details.

Physical Data

Dimensions in mm and weight in g												
Value	Alloy	L ±0.3	L1 +0.2 -0.3	H +0.3 -0.2	A max	D +0.1 -1	B ±0.1	T1 nom	T nom	Wt. nom		
R0001	A	15	3.7	7.75	1	4.2	0.5	1.42	1.42	1.46		
R0002	B		5					0.94	0.94	1.44		
R0003										0.56	0.56	0.96
R0005										0.56	0.56	0.57
R0006										0.46	0.46	0.47
R0005	D		4.4					1.42	1.57	1.25		
R001	C		5					0.91	0.91	0.88		
R002										0.7	0.44	0.61
R003										0.5	0.31	0.43

The technical drawing illustrates the physical dimensions of the resistor. The top view shows a rectangular body with a central shaded rectangular area. Dimensions labeled include L (total length), L1 (length of the central area), B (width of the central area), and D (width of the body). A dimension of 0.5 J is indicated for the central area's width. The side view shows the profile of the resistor, with dimensions A (height of the body), H (height of the central area), and J (thickness of the body). Terminal dimensions T and T1 are also shown, indicating the width of the leads.

Marking

The component is laser marked with “5930”, alloy type, ohmic value and tolerance.

Solvent Resistance

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

Construction

The component is formed from a continuous band of E-beam welded (EBW) precision resistive strip. Various alloys are used based on the resistance value.

General Note

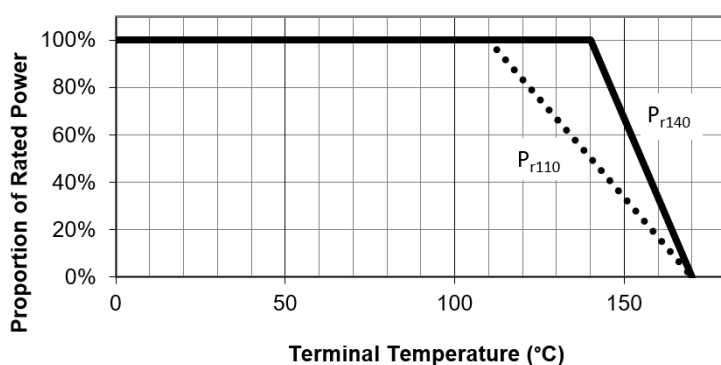
TT Electronics reserves the right to make changes in product specification without notice or liability.
All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

Performance Data

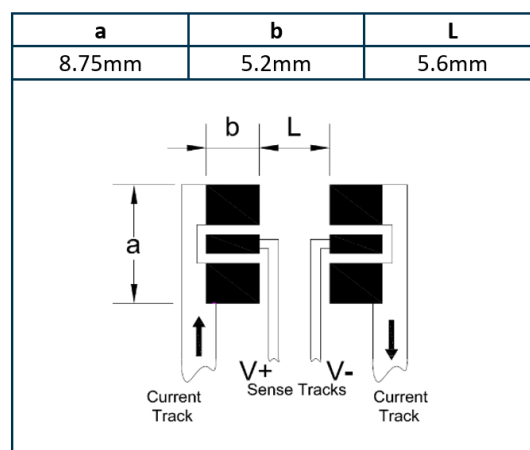
Test	Method	$\pm\Delta R\%$	
		Typical	Maximum
Load life stability	2000 hours, rated power, $T_{\text{terminal}} = 110^\circ$	0.3	0.5
	2000 hours, rated power, $T_{\text{terminal}} = 140^\circ$	0.7	1
Short term overload	5 seconds, 5 x rated power	0.3	1
High temperature exposure	1000 hours, $T_A = 125^\circ\text{C}$, unpowered	0.4	1
Mechanical shock	100g, 6ms, half-sine (MIL-STD-202 Method 213)	0.1	0.2
Biased humidity	1000 hours, 85°C , 85%RH, 10% of rated power	0.2	0.5
Moisture resistance	MIL-STD-202 method 106	0.1	0.5
Temperature cycle	1000 cycles, -55°C to 125°C , 15 minutes dwell	0.1	0.5
Resistance to solder heat	$260 \pm 5^\circ\text{C}$, $10 \pm 1\text{s}$ (MIL-STD-202 Method 210)	0.2	0.5
Vibration	10-2000Hz, 5g, 20 min, 12 cycles/axis, 3 axes (MIL-STD-202 Method 204)	0.1	0.2
Low temperature storage	1000 hours, -55°C	0.1	0.2
Resistance to solvents	MIL-STD-202 Method 215	No damage	
Solderability	J-STD-002	>95% coverage	

Thermal Data & Mounting

Temperature Derating

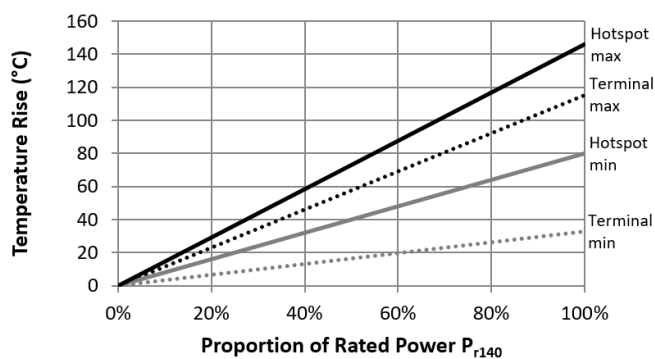


Nominal Mounting Pad Dimensions

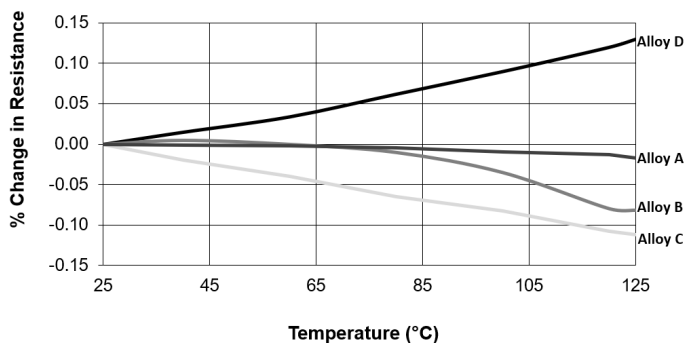


Typical Temperature Rise

(mounted on FR4 board)

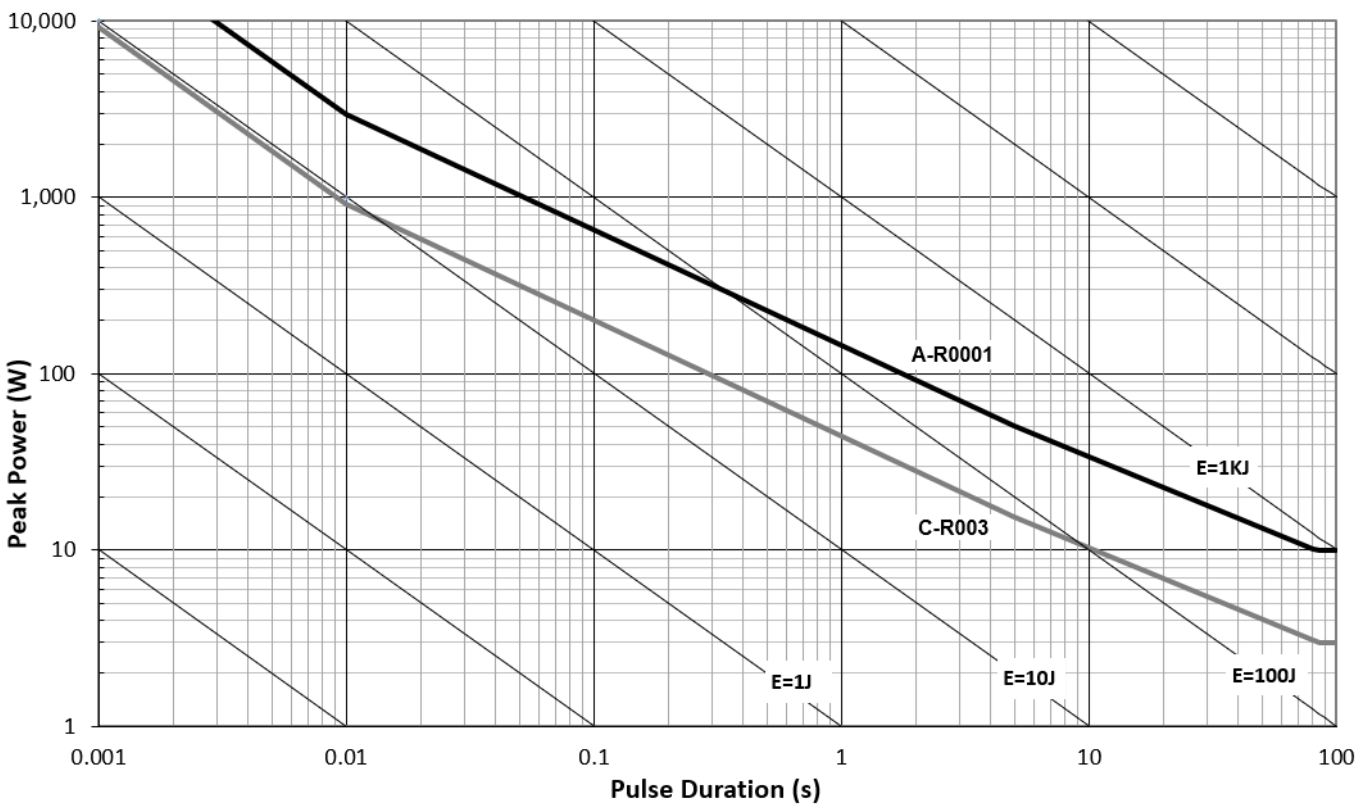


Typical Resistance-Temperature Characteristics



Pulse and Overload Performance

Single Pulse Power Curve



Measurement

Resistance testing for the LRMAP5930 is performed on the underside of the copper contacts using the following method.

Measurement current	$\geq 2\text{m}\Omega$: 1A 0.2 to $1\text{m}\Omega$: 3A 0.1 $\text{m}\Omega$: 5A	
Probe spacing along component length	13.2mm	
Probe spacing across component width	3.65mm	
Probe tip diameter	$\leq 0.5\text{mm}$	

Soldering

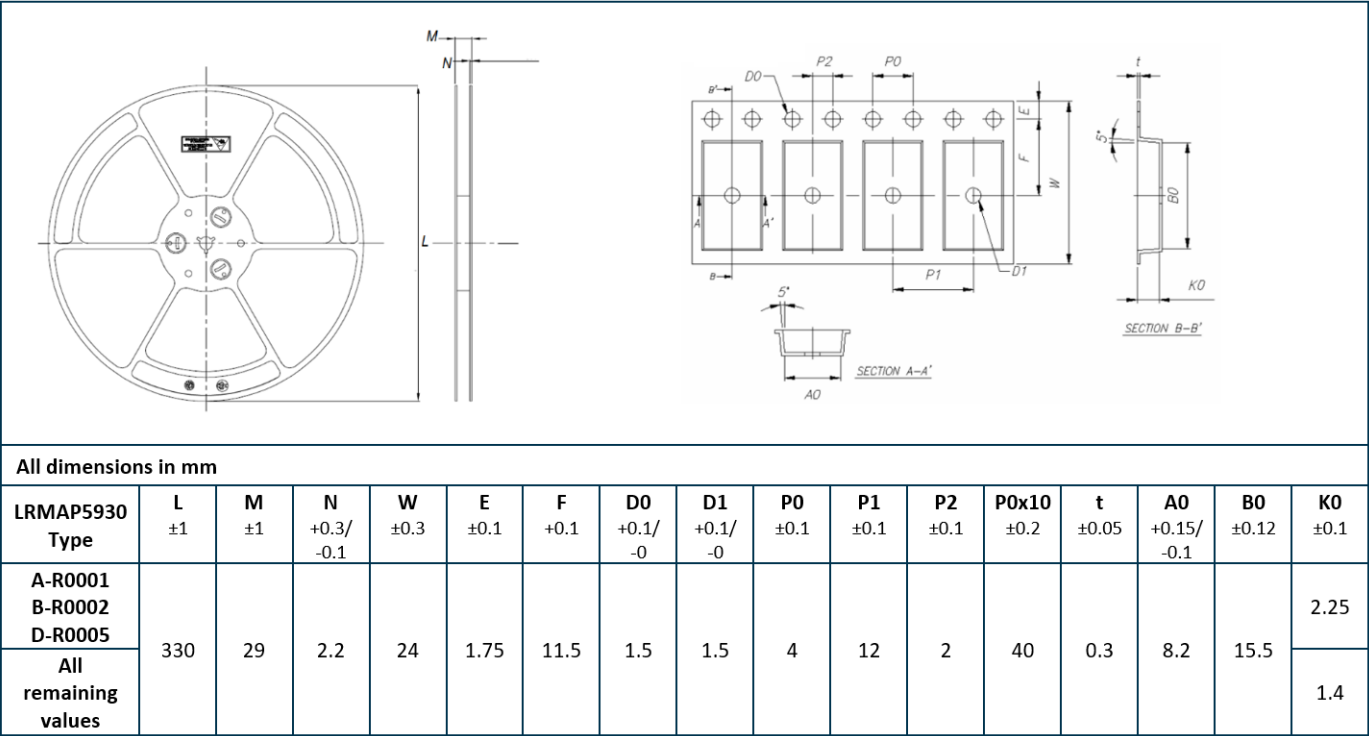
LRMAP5930 series resistors are suitable for IR reflow soldering. The recommended reflow profile for Pb-free soldering, for example using SAC387 alloy (Sn 95.5%, Ag 3.8%, Cu 0.7%), is as follows:

Pre-heat: 30s to 45s at 180°C
Soldering: 20s to 40s at 210°C
Peak: 260°C

LRMAP5930

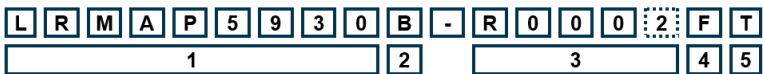
Packaging

LRMAP5930 resistors are packed in 24mm tape, 2000 pieces per reel.



Ordering Procedure

Example: LRMAP5930B-R0002FT (0.2 milliohms ±1%, Pb-free)



1 Type	2 Alloy	3 Value	4 Tolerance	5 Packing
LRMAP5930	A B C D	4 / 5 characters R = ohms	F = ±1%	T = plastic tape, 2000/reel