

Metal Alloy Long Terminal Resistor

Description

- Metal Alloy Long Terminal Low-Resistance Resistor
- Low thermal EMF
- Low TCR
- Low inductance

Applications

- Battery pack
- Inverter/Converter
- Consumer electronics
- Laptops

Part number

MLR 06 A 1 R001 F 1
【1】 【2】 【3】 【4】 【5】 【6】 【7】

- 【1】** Series Name: Metal alloy Long terminal Resistor.
【2】 Chip Size: 06: 0612
【3】 Terminals: A:2 terminals , B:4 terminals
【4】 Power Rating: D=0.75W, E=0.5W, F=0.25W, 1=1W, 2=2W
【5】 Resistance Code: R001: 1mΩ , 1M50:1.5mΩ
【6】 Resistance Precision: F:±1%
【7】 Marking Code: 1:No marking 2: Marking

Electrical Characteristics

Part number	Power Rating at 70°C (W)	Resistance Range (mΩ)	TCR (ppm/°C)	Resistance Tolerance (%)	Rating Current	Operation Temperature Range
MLR06A	1	1~2	±70	±1.0	(P/R) ^{1/2}	-55°C ~+150°C
		3~25	±50			

Note: P=Rating Power ; R=Resistance Value

Physical Dimensions

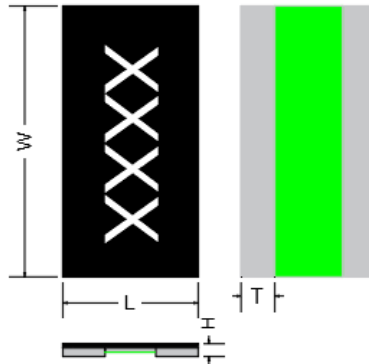


Fig.1

Unit: mm

Part number	L	W	H	T
MLR06A1R001F	1.60±0.20	3.20±0.20	Max 0.40	0.40±0.15
MLR06A11M50F~R025F	1.60±0.20	3.20±0.20	Max 0.35	0.40±0.15

Marking Instructions

MLR06A is marked with four digit(Ref to Fig.1). We have two different ways of marking:

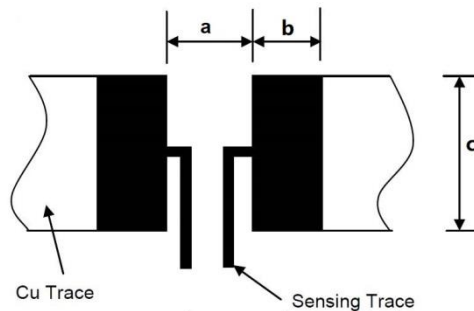
a. “R” designates the decimal location in ohms, e.g.

1mΩ : R001; 10mΩ : R010;

b. “m” designates the decimal location in milliohms, e.g.

0.5mΩ : 0m50; 5.5mΩ : 5m50;

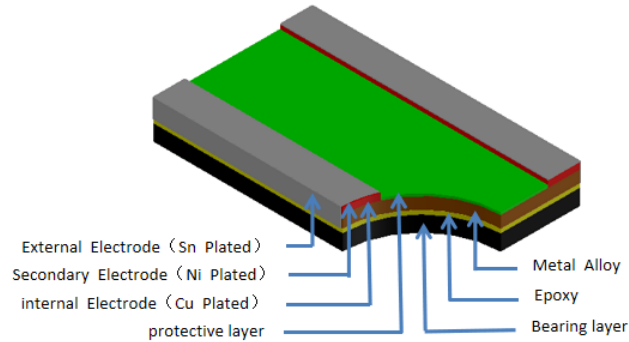
Recommended Solder Pad Layout



Unit: mm

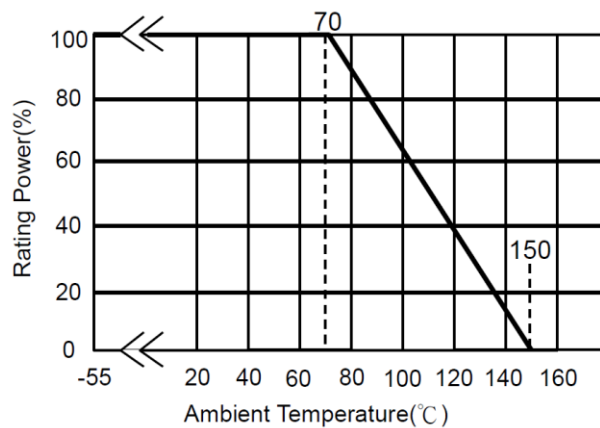
Part number	a	b	c
MLR06A	0.60	1.00	3.50

Construction

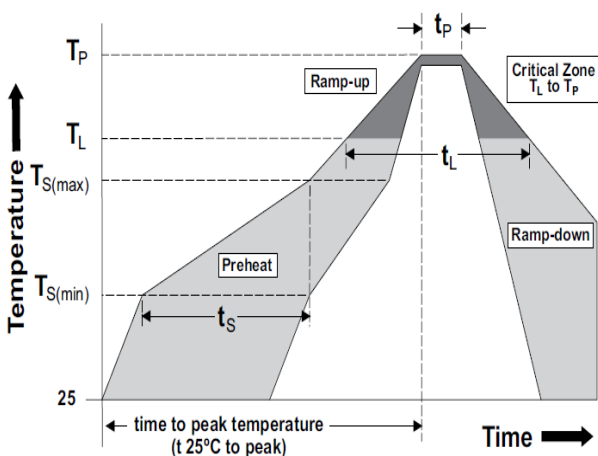


Power Derating Curve

For resistors operated in ambient temperatures 70°C, power rating shall be derated in according with the curve below:



Recommended Solder Curve



Reflow Condition		Pb – Free assembly
Pre heat	- Temperature Min ($T_{S(min)}$)	150°C
	- Temperature Max ($T_{S(max)}$)	200°C
	- Time (Min to Max) (t_s)	60 – 120 secs
Average ramp up rate (Liquidus Temp (T_L) to peak)		5°C/second max
$T_{S(max)}$ to T_L - Ramp-up Rate		5°C/second max
Reflow	- Temperature (T_L) (Liquidus)	217°C
	- Temperature (t_L)	60 – 150 seconds
Peak Temperature (T_P)		260°C
Time within 5°C of actual peak Temperature (t_p)		20 – 40 seconds
Ramp-down Rate		5°C/second max
Time 25°C to peak Temperature (T_P)		8 minutes Max.
Wave Soldering		Not applicable
Hand Soldering		350°C, 5 seconds max.

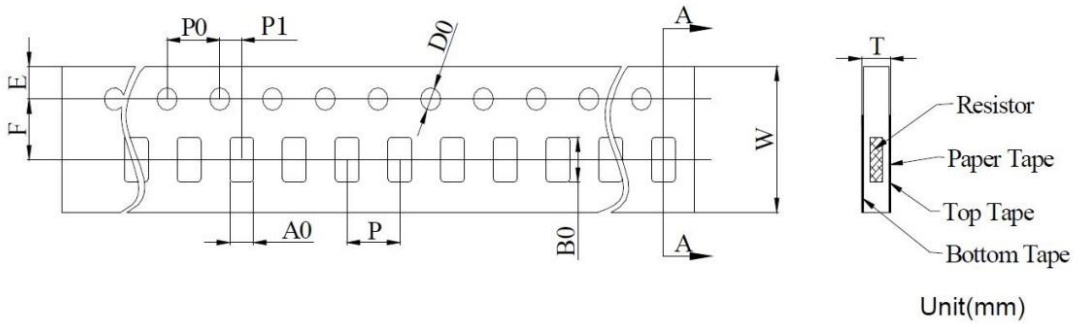
Product Characteristics

Item	Test condition/ Methods	Limited	Standard								
Temperature coefficient of resistance	$TCR = (R - R_0) / R_0 (T_2 - T_1) \times 10^6$ R ₀ : resistance of room temperature R: resistance of 125°C T ₁ : Room temperature T ₂ : Temperature at 125°C	Refer to Spec	MIL-STD-202 Method 304								
Short time Overload	Applied Overload for 5 seconds, then measure its resistance variance rate. (Test condition refer to below):	≤±1.0%	IEC60115-1 4.13								
	<table border="1"> <thead> <tr> <th>Type</th> <th>Resistance(mΩ)</th> <th>Rated power</th> </tr> </thead> <tbody> <tr> <td rowspan="2">0612</td> <td>1 ≤ R ≤ 10</td> <td>4 times</td> </tr> <tr> <td>10 < R ≤ 25</td> <td>3 times</td> </tr> </tbody> </table>			Type	Resistance(mΩ)	Rated power	0612	1 ≤ R ≤ 10	4 times	10 < R ≤ 25	3 times
	Type			Resistance(mΩ)	Rated power						
0612	1 ≤ R ≤ 10	4 times									
	10 < R ≤ 25	3 times									
Resistance to Soldering Heat	260°C ± 5°C time: 12sec ± 0.5sec	≤±0.5%	MIL-STD-202 Method 210								
Solderability	Temperature of Solder: 245 ± 5°C Dipping time: 3 ± 0.5s	Solder coverage over 95%	IEC60115-1 4.17								
Temperature Cycling	-55°C (15min)/+150°C (15min), 300 cycles	≤±1.0%	MIL-STD-202 Method 107G								
Low temperature Storage	-55°C for 1000hours, No power	≤±1.0%	IEC60115-1 4.23.4								
High Temperature Storage	150°C for 1000hours, No power	≤±1.0%	IEC60115-1 4.25								
Bias Humidity	+85°C, 85% RH, 10% bias, 1000hours	≤±1.0%	MIL-STD-202 Method 103								
Vibration	The frequency varies from 10HZ to 55HZ and return to 10HZ, shall be transferred in 1 min. Amplitude : 1.5mm, 3 directions, and 12 hours	≤±0.5%	MIL-STD-202 Method 201								
Operational life	70°C ± 2°C, 1000 hours, at rated power 1.5 hours "ON", 0.5 hours "OFF"	≤±1.0%	MIL-STD-202 Method 108								
Moisture resistance	MIL-STD-202, method 106, No power, 7b not required	≤±0.5%	MIL-STD-202 Method 106								

Note : Measurement at 24 ± 4 hours after test conclusion for all reliability tests-parts.

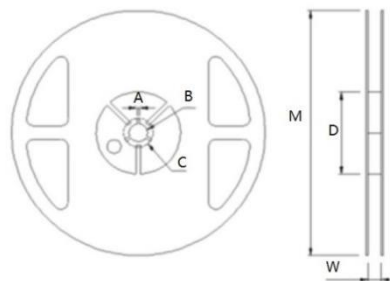
Packaging

Tape Dimensions



Type	MLR06A
A0	2.00±0.20
B0	3.60±0.20
E	1.75±0.10
F	3.50±0.05
W	8.00±0.20
P0	4.00±0.10
P	4.00±0.10
P1	2.00±0.05
D0	1.50±0.10
T	0.55±0.20

Reel Dimensions



Unit: mm

Type	M	W	A	B	C	D
7 inch reel	178.0±2.0	8.4+0.5/-0	2.0±0.5	13.2±0.5	17.70±0.5	60.0±1.0

Quantity of Package

Type	MLR06A
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Quantity(pcs)	5000
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Storage

The temperature condition must be controlled less than 40°C, The R.H. must be controlled less than 75%. Store in accordance with this requirement, and the validity period is two years after the date of manufacture.

Please avoid the mentioned harsh environment below when storing to ensure product performance and its' weldability. Places exposed to sea breeze or other corrosive gas, such as Cl₂, H₂S, NH₃, SO₂ and NO₂.

When the product is moved and stored, please ensure the correct orientation of the box. Do not drop or squeeze the box. Otherwise, the electrode or the body of the product may be damaged.