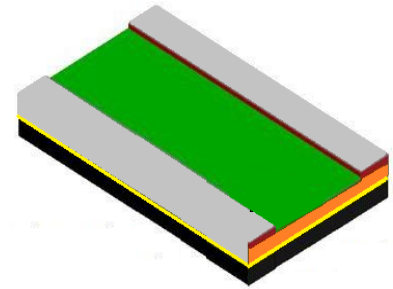


**■ Features**

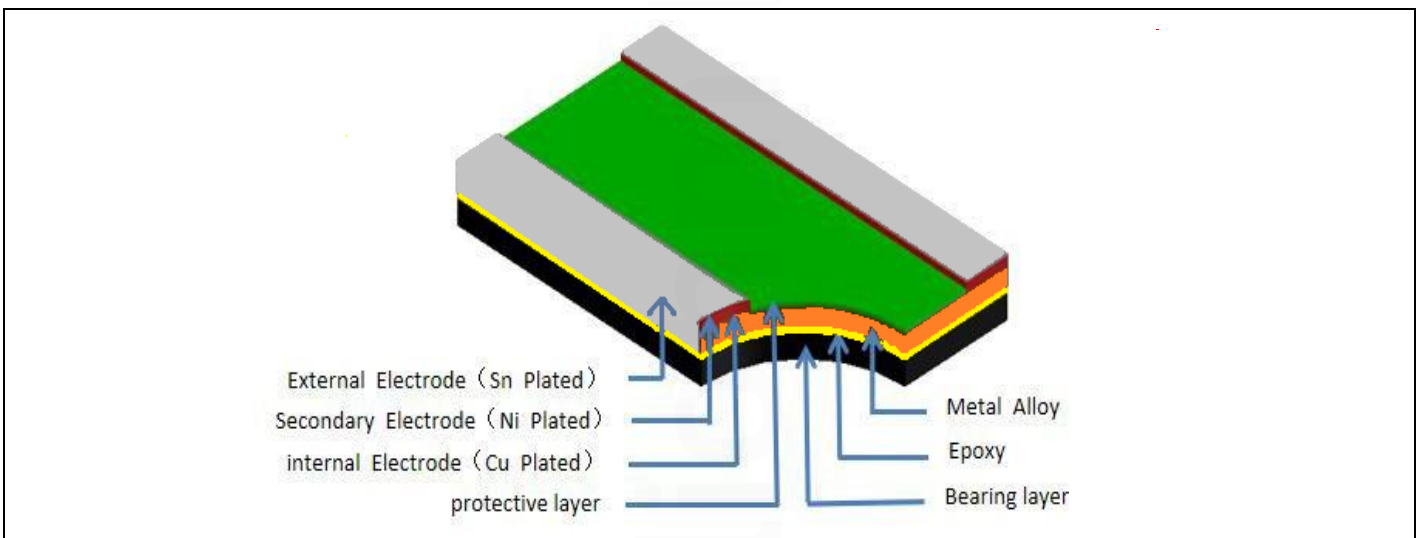
- Metal Alloy Long Terminal Low-Resistance Resistor
- Low thermal EMF
- Low TCR
- Low inductance


**■ Features**

- Battery pack
- Inverter/Converter
- Consumerelectronics Notebook

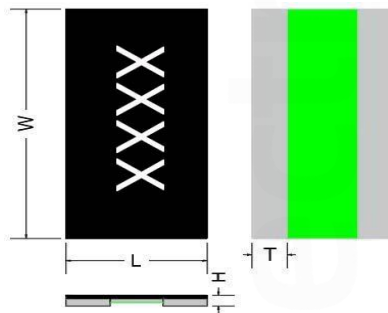
**■ Standard Electrical Specifications**

Size	Power Rating at 70°C(W)	Resistance Range (mΩ)	TCR (ppm/°C)	Resistance Tolerance (%)	Rating Current	Operation Temperature Range
0612	1	1~2	±70	0.5% ;1% ;5%	(P/R) <sup>1/2</sup>	-55°C~+150°C
0612	1	3~25	±50			
0508	1	1~2	±100			
0508	1	3~10	±70			

**■ Construction**


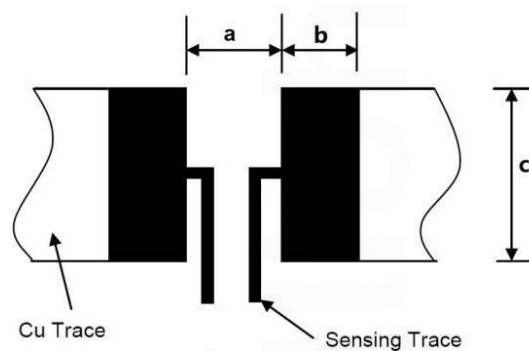
**Part number**

Ho	JLR	0612	1W	5mR	1%
makers	Series	Dimension	Power	Resistance	Tolerance
Ho	JLR	0612 0508	1W	5mΩ=R005	±0.5% ±1% ±5%

**Dimensions (mm)**


Unit : mm

Size	Resistance	L	W	H	T
0612	1mΩ	1.60±0.20	3.20±0.20	Max 0.40	0.40±0.15
0612	1.5mΩ~25 mΩ	1.60±0.20	3.20±0.20	Max 0.35	0.40±0.15
0508	1mΩ	1.26±0.20	2.06±0.20	Max 0.40	0.35±0.15
0508	1.5mΩ~10 mΩ	1.26±0.20	2.06±0.20	Max 0.35	0.35±0.15

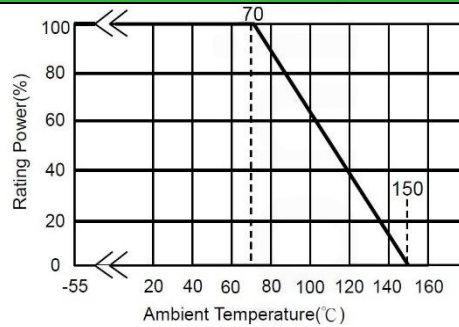
**Recommended Solder Pad Layout**


Unit : mm

Size	a	b	c
HoJLR0612	0.80	1.0	3.50
HoJLR0508	0.50	0.9	2.30

### ■ Power Derating Curve

For resistors operated in ambient over 70°C, rated load (rated power) shall be derated in accordance with the above figure.



### ■ Rated Current

The rated Current is calculated by the following formula:

$$I = \sqrt{P/R}$$

I = Rating current (A)

P= Rating Power (W)

R= Resistance(Ω)

### ■ Marking Format

For 0612 Size is marked with four digit. We have two different ways of marking :

- “ R ” designates the decimal location in ohms, e.g. 1mΩ : R001; 10mΩ : R010;
- “ m ” designates the decimal location in milliohms, e.g. 0.5mΩ : 0m50; 5.5mΩ : 5m50;

For 0508 Size is marked with three digit. We have two different ways of marking :

- “ R ” designates the decimal location in ohms, e.g. 1mΩ : 001; 10mΩ : 010
- “ m ” designates the decimal location in milliohms, e.g. 0.5mΩ : 0m5; 1.5mΩ : 1 m5

**■ Reliability test item < Electrical Performance >**

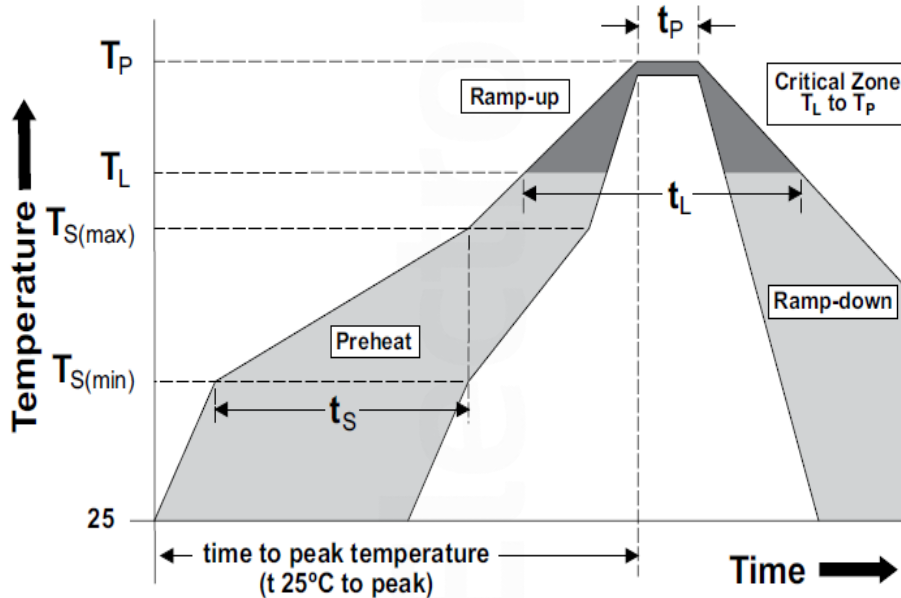
Item	Test condition/ Methods	Limited	Standard											
<b>Temperature coefficient of resistance</b>	$TCR = (R-R_0)/R_0(T_2-T_1) \times 10^6$ R <sub>0</sub> : resistance of room temperature R: resistance of 125℃ ; T <sub>1</sub> : Room temperature T <sub>2</sub> : Temperature at 125℃	Refer to Spec	MIL-STD-202 Method 304											
<b>Short time Overload</b>	Applied Overload for 5 seconds , then measure its resistance variance rate. (Test condition refer to below): 0603 for 3 times  <table border="1" data-bbox="363 645 1086 835"> <thead> <tr> <th>Type</th> <th>Resistance(mΩ)</th> <th>Power rating</th> </tr> </thead> <tbody> <tr> <td rowspan="2">0612</td> <td>1≤R≤10</td> <td>4 times</td> </tr> <tr> <td>10 &lt; R≤25</td> <td>3 times</td> </tr> <tr> <td>0508</td> <td>1≤R≤10</td> <td>3 times</td> </tr> </tbody> </table>	Type	Resistance(mΩ)	Power rating	0612	1≤R≤10	4 times	10 < R≤25	3 times	0508	1≤R≤10	3 times	≤±1.0%	IEC60115-1 4.13
Type	Resistance(mΩ)	Power rating												
0612	1≤R≤10	4 times												
	10 < R≤25	3 times												
0508	1≤R≤10	3 times												
<b>Resistance to Soldering Heat</b>	260℃± 5℃ time: 12sec± 0.5sec	≤±0.5%	MIL-STD-202 Method 210											
<b>Solderability</b>	Temperature of Solder: 245±5℃ Dipping time:3±0.5s	Solder coverage over 95%	IEC60115-1 4.17											
<b>Temperature Cycling</b>	-55℃ (15min)/+150℃(15min), 300 cycles	≤±1.0%	MIL-STD-202											
<b>Low temperature Storage</b>	-55℃ for 1000hours, No power	≤±1.0%	IEC60115-1 4.23.4											
<b>High Temperature Storage</b>	150℃ for 1000hours, No power	≤±1.0%	IEC60115-1 4.25											
<b>Bias Humidity</b>	+85℃, 85% RH, 10%bias, 1000hours	≤±1.0%	MIL-STD-202											
<b>Vibration</b>	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											
<b>Operational life</b>	70℃± 2℃, 1000 hours, at rated power 1.5 hours "ON", 0.5 hours "OFF"	≤±1.0%	Method 201											
<b>Moisture resistance</b>	MIL-STD-202,method106, No power, 7b not required	≤±0.5%	MIL-STD-202											

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

**Recommend Soldering Method:**

This is for recommendation, please customer perform adjustment according to actual application

\*Recommend solder paste: 96.5Sn/3.0Ag/0.5Cu

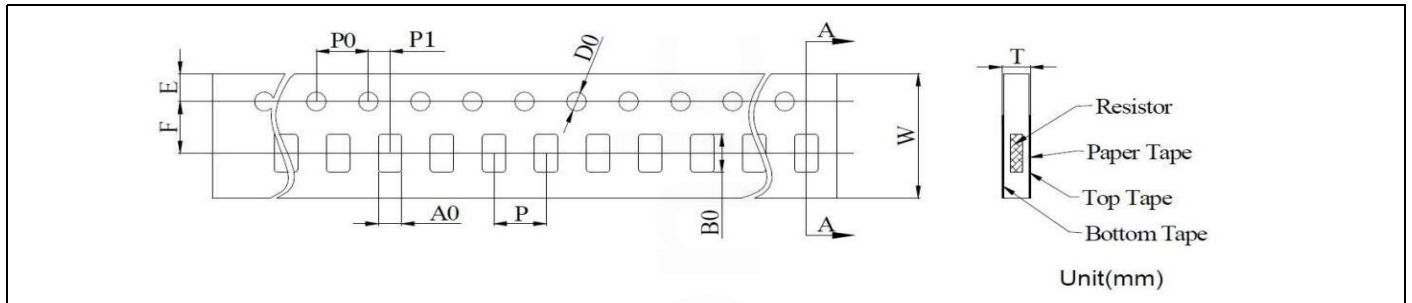
**IR Reflow-Soldering Profile**


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 – 180 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
	- Time ( $t_L$ )	60 – 150 seconds
Peak Temperature ( $T_P$ )		260°C
Time within 5°C of actual peak Temperature ( $t_p$ )		10 – 30 seconds
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature ( $T_P$ )		8 minutes Max.
Wave Soldering		260°C, 10 seconds max.
Hand Soldering		350°C, 5 seconds max.

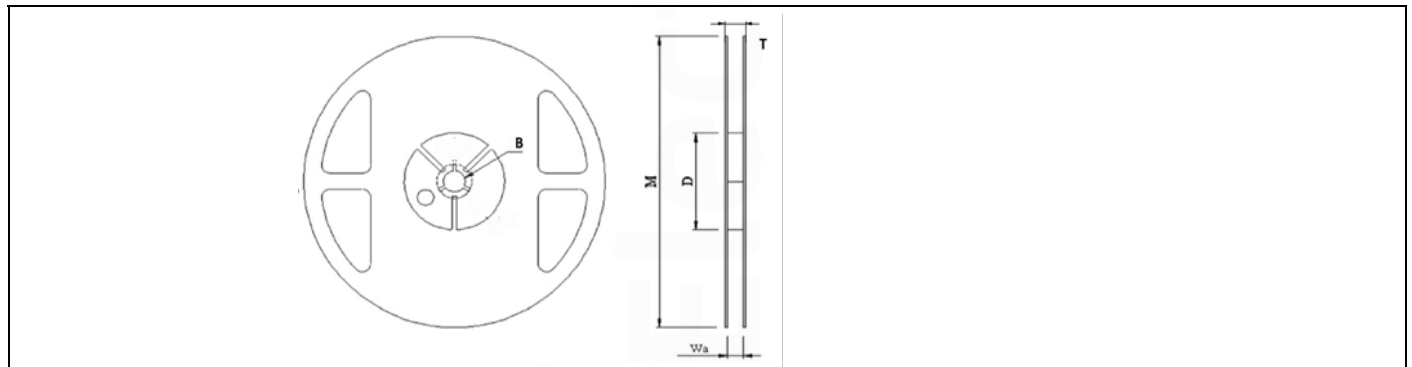
Recommended IR Reflow Soldering Profile MEET J-STD-020D

**Soldering Iron:**

Temperature 350°C ± 10°C, dwell time shall be less than 3 sec.

**■ Taping specification**


Size	A	B	W	F	E	P1	P0	P	D0	T
0612	2.0±0.2	3.6±0.2	8±0.2	3.5±0.05	1.75±0.1	2.0±0.05	4±0.1	4±0.05	Φ 1.55±0.1	0.55±0.2
0508	1.66±0.2	2.46±0.2	8±0.2	3.5±0.05	1.75±0.1	2.0±0.05	4±0.1	4±0.05	Φ 1.55±0.1	0.55±0.2

**■ Reel Dimensions**


M	A	B	C	W	D	Quantity (pcs)
178±2	2±0.5	13.2±0.5	17.7±0.5	8.4+0.5/0	60±1	5000

**■ Operation and Processing Precautions:**

- ① Handle with care when printing circuit board (PCB) is divided or fixed on support body, because bending of printing circuit board (PCB) mounting will make mechanical stress for resistors..
- ② Make sure the power rating is under the limit when using the resistor. When power rating is over the limit, the resistor will be overloaded. There might be machinery damage due to the climbing temperature..
- ③ Avoid damage to the edge of resistor and protective layer caused by mechanical stress.