



富捷科技

Product Datasheet

产品规格说明书

FMB Series

Thin-film chip Resistance

薄膜合金贴片电阻器

安徽省富捷电子科技有限公司

ANHUI FOJAN ELECTRONICS TECHNOLOGY CO., LTD

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薄膜合金贴片电阻器

Thin-film chip Resistance

FMB Series



特点 (Features)

- 散热性能好
- 用于电流检测的低电流, 高精度电阻
- 大电极 (全系列)
- 适用于高功率散热
- 无铅, 符合 RoHS、Reach 要求
- Good performance for Heat Dissipation
- Low Resistance and High Accuracy Resistor for Current Detection
- Large Electrode (All series)
- High Purity Alumina Substrate for High Power Dissipation
- Pb-free to Meet RoHS、Reach Requirements

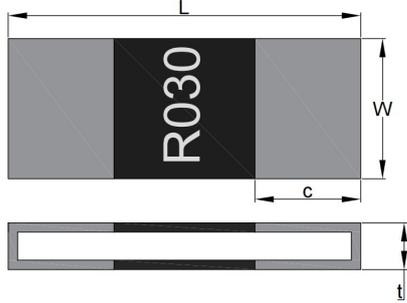
应用 (Application)

- DC-DC 转换器, 电池组, 充电, 适配器
- 便携式仪器(PDA 和手机)
- 电压调节模块(VRM)
- 开关电源
- 电源管理应用
- DC-DC Converter , Battery Pack, Charge, Adaptor
- Portable Instruments (PDA and Cell Phone)
- Voltage Regulation Module (VRM)
- Switching Power Supply
- Power Management Applications

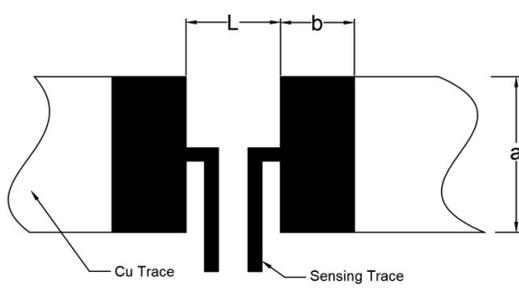
产品料号 (Parts Number Explanation) 示例: FMB251WFR010TM

FMB 系列	25 尺寸	1W 功率	F 公差	R010 字码	T 包装别	M 材质	特殊型
FMB	06:0603 08:0805 12:1206 20:2010 25:2512	02:0.25W 05:0.5W 07:0.75W 1W: 1W	F:±1% G:±2% J:±5%	R005=5mΩ R010=10mΩ R0065=6.5mΩ	T: 7 inch reel R:13 inch reel B:Bulk	M: Metal	Blank: none L: large electrode
Type	Size	Power	Tolerance	Resistance	Packaging	Termination	Special Case

尺寸 (Dimension)

尺寸 Dimension					单位 (unit) : mm
型别 (Type)	L	W	C	t	
0603	1.6±0.20	0.9±0.20	0.47±0.20	0.5±0.20	
0805	2.0±0.20	1.3±0.20	0.55±0.30	0.62±0.20	
1206	3.1±0.20	1.6±0.20	1.1±0.30	0.62±0.20	
2010	5.0±0.20	2.6±0.20	1.8±0.20	0.62±0.20	
2512	6.3±0.20	3.2±0.20	2.0±0.20	0.65±0.20	

推荐焊盘尺寸 (Recommended Pad Dimension)

焊盘尺寸 Pad Dimension					单位 (unit) : mm
型别 (Type)	阻值范围 Resistance Range (mΩ)	a	b	L	
0603	10~91	1.4±0.2	1.3±0.2	0.7±0.2	
0805	10~91	1.7±0.2	1.3±0.2	0.7±0.2	
1206	10~91	2.5±0.2	2.2±0.2	0.7±0.2	
2010	10~91	3.5±0.2	2.6±0.2	1.0±0.2	
2512	10~91	4.2±0.2	3.3±0.2	1.0±0.2	

■ 电气特性 (Electrical characteristics)

型别 Type	额定功率 Power Rating at P70 (W)	T.C.R. (PPM/°C)	阻值范围 Resistance Range (mΩ)	精度 Tolerance (%)	使用温度范围 Operating Temperature (°C)
0603	0.25	±200	10~20	±1%, ±2%, ±5%	-55°C~155°C
		±100	21~91		
0805	0.5	±200	10~20	±1%, ±2%, ±5%	-55°C~155°C
		±100	21~91		
1206	0.5	±200	10~20	±1%, ±2%, ±5%	-55°C~155°C
		±100	21~91		
2010	0.75	±200	10~20	±1%, ±2%, ±5%	55°C~155°C
		±100	21~91		
2512	1	±200	10~20	±1%, ±2%, ±5%	55°C~155°C
		±100	21~91		

如有非标准品的需求,请联系我们的业务部门 For non-standard parts, please contact our sales dept.

■ 印字标识 (Marking)

a. The decimal point of Ω is indicated by the character "R".

E.g.,

R005=5mΩ; R010=10mΩ;

For 0603: No Marking.

a. 以“R”字指示 Ω 的小数点的位置

例:

R005=5mΩ; R010=10mΩ;

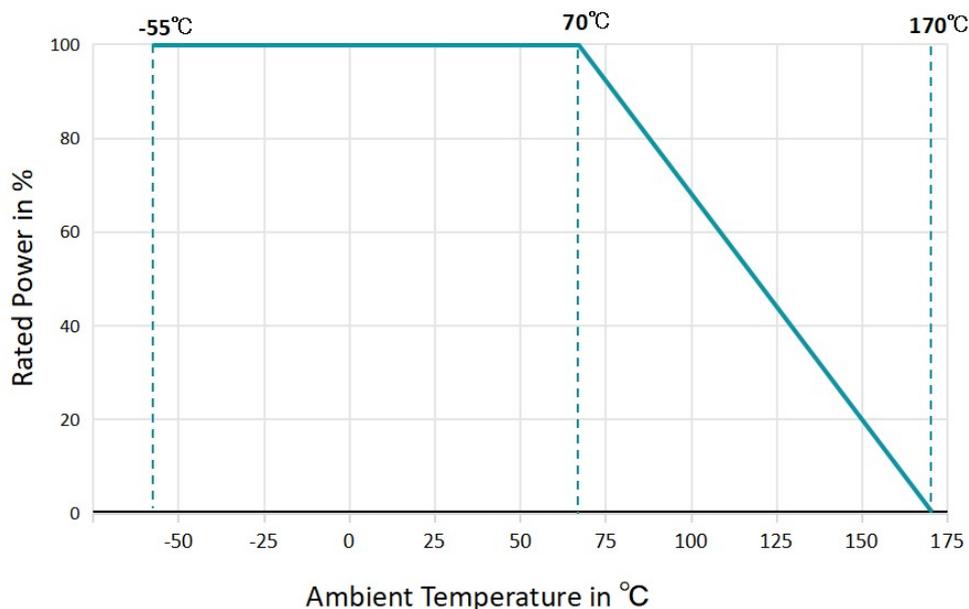
0603 系列: 不印字

■ 性能 (Performance)

Test Items 测试项目	Reference 依据标准	Conditions of Test 测试条件	Test Limits 测试结果
Temperature Coefficient of Resistance 温度系数	IEC60115-1-4.8 JIS-C5201-1-4.8	Measuring points 25°C and 125°C, reference point +25°C 测量点 25°C和 125°C, 参考点 25°C	见 电气特性 As Electrical characteristics
Short time overload 短时过载	IEC60115-1-4.13 JIS-C5201-1-4.13	5 X rated power for 5s 5 倍额定功率,5 秒	< ±1%
Biased Humidity 高温高湿	MIL-STD-202 Method 103	10% Rated power at 85°C, RH:85%, 1000Hrs,Measurement at 24hrs after test conclusion. 10%额定功率, 85°C, 相对湿度: 85%, 1000 小时, 测试结束后 24 小时测量。	< ±1%

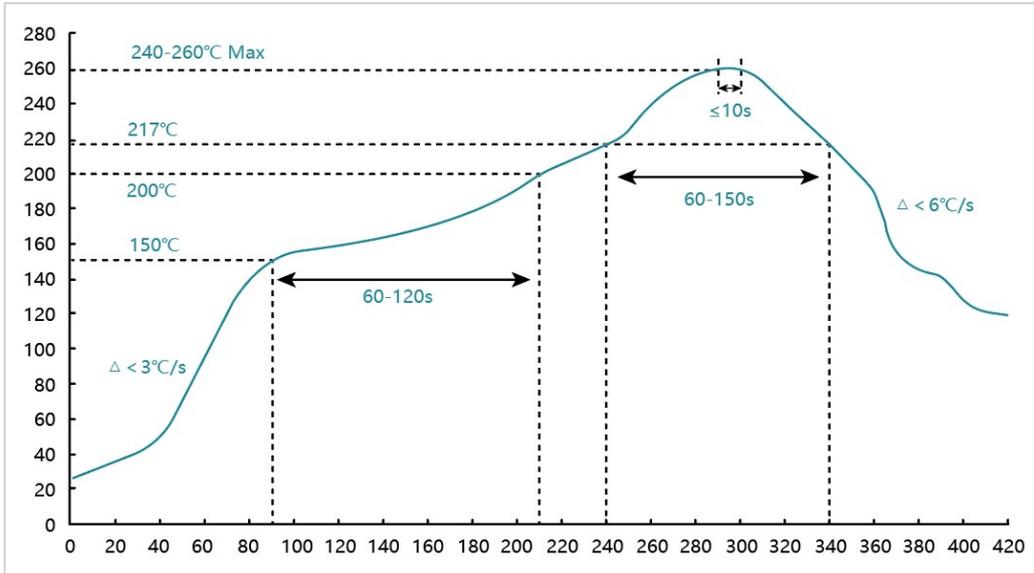
Load Life 负载寿命	IEC60115-1-4.25.1 JIS-C5201-1-4.25.1	1000 h at +70 °C, 1.5 h "ON" , 0.5 h "OFF" , Measurement at 24hrs after test conclusion. 1000 小时, +70 °C, 1.5 小时"开启", 0.5 小时"关闭", 测试结束后 24 小时测量。	< ±2%
Resistance to Soldering Heat 耐焊接热	IEC60115-1-4.18 JIS-C5201-1-4.18	T=260±5°C solder,10±1 sec dwell 260±5°C焊接, 停留 10±1 秒。	< ±0.5%
Mechanical Shock 机械冲击	MIL-STD-202 Method 213	100g's, Normal duration is 6ms, half sine shock pulse 正正弦波,峰值加速度 100g's,脉冲持续 6ms,三轴六向 各 3 次。	< ±1%
Board Flex 板弯曲试验	IEC60115-1-4.33 JIS-C5201-1-4.33	Min 2mm deflection ,60sec. 2mm,保持时间 60s	< ±1%
Thermal Shock 冷热冲击	IEC60115-1-4.19 JIS-C5201-1-4.19	-55°C/+155°C. Note: Number of cycles required-1000, Maximum transfer time-20 seconds, Dwell time-15 minutes. -55°C,15 分钟~常温<20 秒~+155°C,15 分钟,1000 个 循环	< ±1%
Solderability 可焊性	IEC60115-1-4.17 JIS-C5201-1-4.17	Dip the terminal in a flux and then dip into a soldering bath at 245±5°C for3±0.5sec 沾助焊剂后浸入锡炉, 锡炉温度 245±5°C, 时间 3±0.5 秒。	> 95% area covered > 95%面积上锡

■ 功率衰减曲线 (Derating Curve)

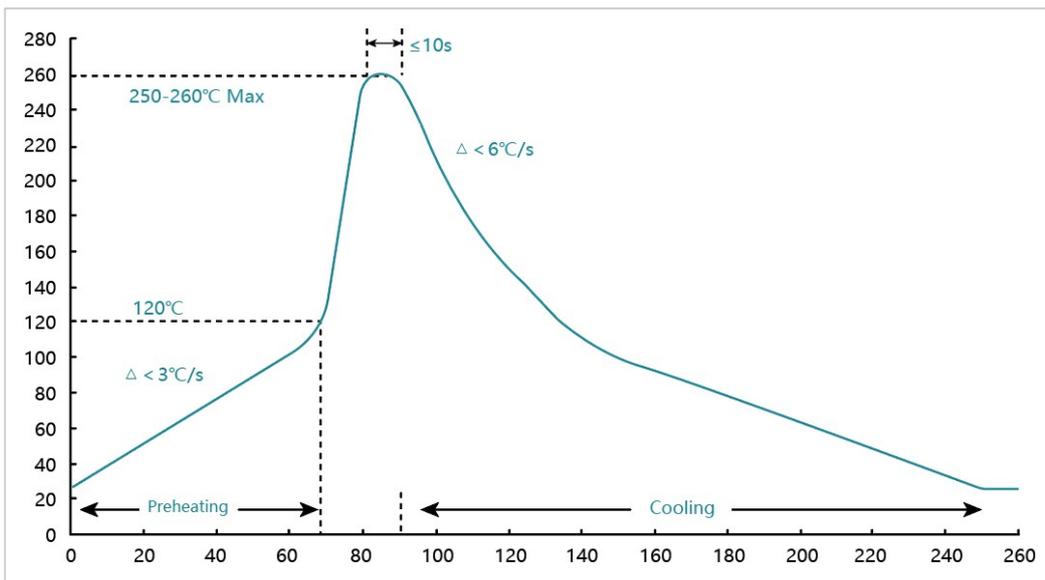


■ 焊接 (soldering)

- 建议回流焊曲线 (Recommend reflow soldering profile)



- 建议波峰焊曲线 (Recommend wave soldering profile)

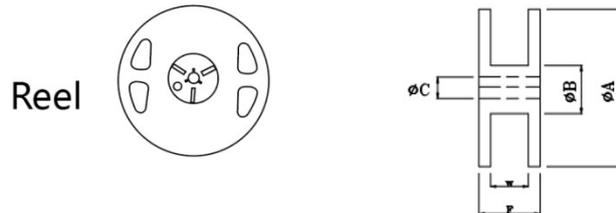


- 手工焊温度 (hand soldering temperature)

烙铁温度 350±10°C 3 秒之内, 避免烙铁接触电阻本体

The iron temperature is 350±10°C, hand soldering time less than 3S. Avoid solder iron tip direct touch the components body

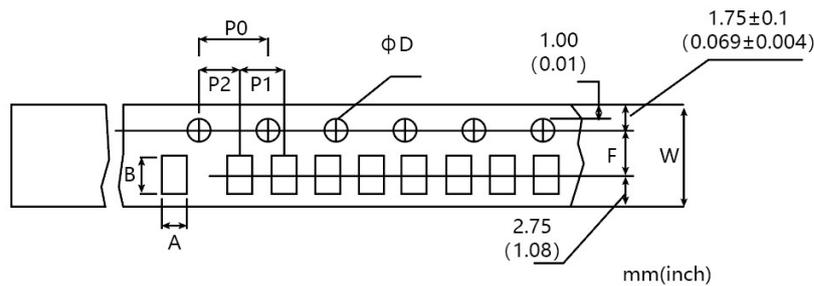
■ 包装规格 (Tapping Specification)



-卷盘尺寸 (Reel dimension)

Type	Size	Unit	A	B	C	F	W
0603	7"	5K/Reel	178±2.0	60.0±1.0	13.5±0.5	11.4±1.0	9.00±0.5
0805	7"	4K/Reel	178±2.0	60.0±1.0	13.5±1.0	11.4±1.0	9.00±0.5
1206	7"	4K/Reel	178±2.0	60.0±1.0	13.5±1.0	11.4±1.0	9.00±0.5
2010	7"	4K/Reel	178±2.0	60.0±1.0	13.5±1.0	15.4±2.0	13.0±1.0
2512	7"	4K/Reel	178±2.0	60.0±1.0	13.5±1.0	15.4±2.0	13.0±1.0

-包装尺寸 (packing dimension)



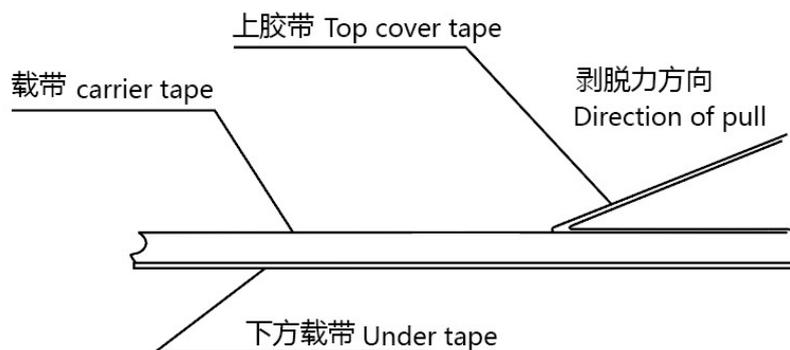
Unit: mm

Type	A	B	D	F	P0	P1	P2	W
0603	1.10±0.20	1.90±0.20	1.50±0.10	3.50±0.05	4.00±0.10	4.00±0.10	2.00±0.05	8.0±0.20
0805	1.60±0.20	2.40±0.20	1.50±0.10	3.50±0.05	4.00±0.10	4.00±0.10	2.00±0.05	8.0±0.20
1206	2.00±0.20	3.60±0.20	1.50±0.10	3.50±0.05	4.00±0.10	4.00±0.10	2.00±0.05	8.0±0.20
2010	2.80±0.20	5.30±0.20	1.50±0.10	5.50±0.05	4.00±0.10	4.00±0.10	2.00±0.05	12.0±0.10
2512	3.60±0.20	6.90±0.20	1.50±0.10	5.50±0.05	4.00±0.10	4.00±0.10	2.00±0.05	12.0±0.10

■ 上胶带剥离力测试 (Peel force of top cover tape)

上胶带以 200mm/分钟的速度，沿 165~180 度角的方向进行剥离，如下图所示。纸带的剥离力范围为 10g~70g；载带的剥离力范围 30~100g。

The top cover tape is pulled at a speed of 200 mm/min with the angle between the tape during peel and the direction of unreeling maintained at 165 to 180 degree as following picture. The peel force of paper carrier tape shall be 0.1N to 0.7N(10 to 70 g), the peel force of plastic carrier tape shall be 0.3N to 1N (30 to 100 g)



■ 合金电阻器使用说明 (Alloy Resistor Instructions for use)

本产品以下特殊环境下应用，性能可能会受到影响：

(Application of the products in a special environment can deteriorate product performance) :

1. 高温；
High temperature
2. 有海风或腐蚀性气体，包括氯气，硫化氢，氨气，二氧化硫，二氧化氮等；
Near the sea ,or corrosive gas, such as Cl₂,H₂S,NH₃,SO₂,and NO₂,etc;
3. 各种类型的液体，包括水，油，化学品，有机溶剂的使用；
Unverified liquids, such as water,oil,chenical or organic solvent;
4. 在用树脂或其他涂层材料密封产品的情况下使用；
Unverified resin or paint to cover products;
5. 焊接后使用不洁焊剂或使用水或水溶性清洁剂清洗产品
Products should be washed with soluble cheaner even if non cleaning flux.

- 储存 / 搬运条件 (Storage / Carry conditions)

1. 储存温度 25±5°C Temperature: 25±5°C
2. 湿度 30~70%RH Humidity: 30~70%RH
3. 储存期限: 先进先出, 2年 Storage life: 2years FIFO
4. 存放和搬运时，请保持盒子的正确方向。严禁跌落在箱体上，否则可能损坏产品电极或本体
Please hold box correct orientation when storing and carrying.It is strictly prohibited to fall on the box.
otherwise the product electrode or body may be damaged.

