



MELF 系列

柱状(表面贴装)精密金属膜电阻

Power: 1/4W ~3W, Resistance: 0.1Ω - 10MΩ

Tolerance: ±0.1%-±5%,T.C.R:±5ppm/℃ - ±100 ppm/℃

特点:Pecularity

Option i :精度可低至±0.1% Accuracy can be as low as ±0.1%

Option ii : 极低TCR可达±5 PPM/℃ Extremely low TCR down to ±5 PPM/℃

Option iii: 符合无铅ROSH产品Compliant with lead-free ROSH products

应用领域: Application field

Option i :万用表、精密测试仪Multimeter, precision tester

Option ii : 点火系统、烟雾特测系统 Ignition system, smoke measurement system

Option iii:汽车雷达、充电桩、电源 Car radar,charging pile, power supply

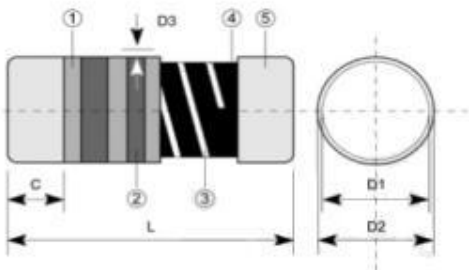
Option iiiii: 电信、医疗、美容仪器设备 Telecommunications, medical, beauty equipmen



MELF晶圆精密金属膜电阻器采用先进的薄膜技术，使用耐溶剂之环氧树脂涂料，高绝缘之安全特性是大多数领域的理想选择，符合现代专业电子产品的可靠性和稳定性，广泛应用于汽车、电信和医疗等领域。

MELF wafer precision metal film resistors with advanced film technology and high insulation safety features using solvent-resistant epoxy resin coatings are ideal for most fields, in line with the reliability and stability of modern professional electronic products, and are widely used in automotive, telecommunications and medical fields.

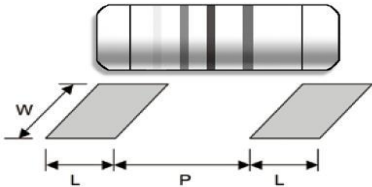
外形尺寸及结构 Overall dimensions and structure



序号NO	材料名称 Name	材质 material
1	封装料Encapsulating	绝缘环氧树脂涂料Epoxy resin
2	色 环 Color ring	涂料 coating
3	切割线 Cutting line	---
4	瓷 棒 Porcelain stick	金属皮膜 Metal Film
5	帽 子 cap	镀铜镀锡铁帽 Copper tinned iron cap

型号 Type	尺寸描述 (mm) Dimension				
	L	D1	D2	D3 Max	C Min
MELF0204	3.5±0.2	1.1±0.1	1.3±0.2	0.08	0.5
MELF0207	5.9±0.2	1.7±0.1	2.1±0.2	0.10	0.8
MELF0309	8.6±0.2	2.5±0.1	3.1±0.2	0.15	1.2
MELF0411	10.7±0.2	3.7±0.2	4.0±0.2	0.2	1.8

建议贴装焊接尺寸。 Recommended mounting weld size



型号TYPE	尺寸Dimension(mm)					
	波峰焊接Crest welding			回流焊接Reflow welding		
	W(mm)	L(mm)	P(mm)	W(mm)	L(mm)	P(mm)
MELF0204	1.8	1.4	1.6	1.7	1.2	1.6
MELF0207	2.6	2.0	2.8	2.6	2.0	3.0
MELF0309	3.6	3.0	4.0	3.8	2.8	4.0
MELF0411	5.0	4.0	7.0	5.2	4.2	7.0

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部件编号和产品描述 Part number and product description

MELF	0309	100R	F	D	S	D
产品型号 Type MELF: 柱状贴片金 属膜	尺寸 (D×L) Dimension 0204: 3.5*1.3 0207: 5.9*2.1 0309: 8.6*3.1 0411:10.7*4.0	电阻值 Resistance 0R10:0.1Ω 10R0:10Ω 100R:100Ω 1K00:1KΩ	阻值精度 tolerance B:±0.1% D:±0.5% F:±1% G:±2% J:±5%	功率 (W) Power A : 0.125 B : 0.25 C : 0.4 F: 0.5 D : 1 E : 2 G: 3	功率范围方式 Power mode 空empty: 标体 Nominal S : 小型化 mini SS : 超小型 subminiature	TCR(PPM/°C) A:±5 B: ±10 N: ±15 C: ±25 D: ±50 E: ±100

技术参数 Technical parameters

规格 type	MELF 0204	MELF 0207	MELF 0309	MELF 0411
项目 item				
功率范围 (70℃) Power range	0.125W、0.25WS、 0.4WSS	0.25W、0.5WS、1WSS	0.5W、1WS、2WSS	1W、2WS、3WSS
绝缘电压 (DC) Insulation voltage	200V	250V	350V	400V
最大工作电压 MAX WORKING	300V	500V	700V	800V
电阻值范围 (Ω) RESISTANCE VALUE RANGE	0.1-10M	0.1-10M	0.1-10M	0.1-10M
温度系数TCR(PPM/°C)	±5, ±10, ±15, ±25, ±50, ±100	±5, ±10, ±15, ±25, ± 50, ±100	±5, ±10, ±15, ±25, ± 50, ±100	±5, ±10, ±15, ±25, ±50, ±100
阻值允差范围 tolerance	B:±0.1%、D:±0.5%、F:±1%、G:±2%、J:±5%			
工作温度范围 Operating temperature range	-55℃ ~+155℃			

阻值&温度系数 Resistance value & temperature coefficient

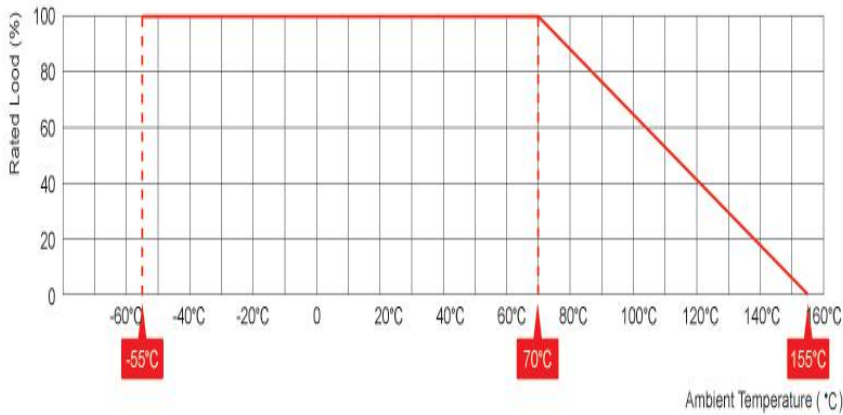
表一

电阻值范围 (Ω) RESISTANCE VALUE RANGE	0R1-0R99	1R-150K	151K-681K	681K-1M	1M1-10M
温度系数TCR(PPM/°C)	±100PPM	±5PPM-±100PPM	±10PPM - ±100PPM	±50PPM-±100PPM	±100PPM
阻值允差范围 tolerance	F:±1%、G:±2%、J:±5% B:±0.1%、D:±0.5%、F:±1%、G:±2%、J:±5%				

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额定功率曲线图 Rated power diagram



额定电压计算方式: Calculation method of

$$V = \sqrt{P \times R}$$

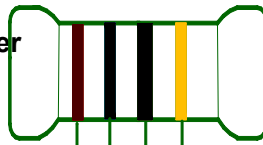
V = 额定电压 (V) RATED
P = 额定功率 (W) RATED
R = 标称阻值 (Ω) NOMINAL

电气性能及试验要求Electrical performance and test requirements

项目 ITEM	测试方法(JIS C 5202) TEST METHOD(JIS C 5202)	性能及验收标准 PERFORMANCE AND QUALITYACCEPTANCE
电阻值Resistance value	AT 25 °C	精度范围内Within the tolerance
短时过载 Short time overload	2.5倍V额（交流或直流），5秒。 AC or DC voltage 2.5times the rated Voltage for 5 seconds	$\Delta R \leq \pm (0.5\%R + 0.05 \Omega)$
上锡效果 Solder abilit	260°C ± 5°C的锡槽，5S ± 0.5S Tin bath at 260°C ± 5°C, 5 seconds ± 0.5 seconds	≥95%
耐电压 Dielectric withstanding voltage	V型槽方法，施加规定之直流电压60秒。(见表-1) The V-shaped slot method applies the specified DC voltage for 60 seconds. (See Table -1)	无击穿、破损等异状 No abnormal conditions such as breakdown or damage
耐焊热 Leaching	350°C ± 5°C 锡槽，3S ± 0.5S Tin bath at 350°C ± 5°C, 3 seconds ± 0.5 seconds	$\Delta R \leq \pm (0.5\%R + 0.05 \Omega)$
TCR	$PPM/^{\circ}C = \frac{R - R_0}{R_0} \times \frac{10^6}{T - T_0}$ R = Measured resistance (Ω) at T T °C 电阻实测值 (Ω) R0 = Measured resistance (Ω) at T0 T0 °C 电阻实测值 (Ω) T = Measured test temperature(°C) 试验温度的实测值 T0 = Room temperature(°C) 室温	温度系数TCR: 符合规定值 Temperature coefficient TCR Conform to the specified value
70°C耐久性Load life tes	在70°C的环境中施加额定电压，1.5小时通，0.5小时断1000小时 AT 70°C, Apply rated voltage, 1.5h ON, 0.5h OFF, For 1000 hours.	$\Delta R \leq \pm (1\%R + 0.05 \Omega)$
湿度负荷 Humidity load	40°C ± 2°C，湿度90 - 95%加1/10额定电压 1.5小时通 0.5小时断，持续1000小时。 40°C ± 2°C; 90 - 95%; Apply 1/10 rated voltage; 1.5h ON, 0.5h OFF, For 1000 hours.	$\Delta R \leq \pm (1\%R + 0.05 \Omega)$

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电阻值标志Resistance value marker

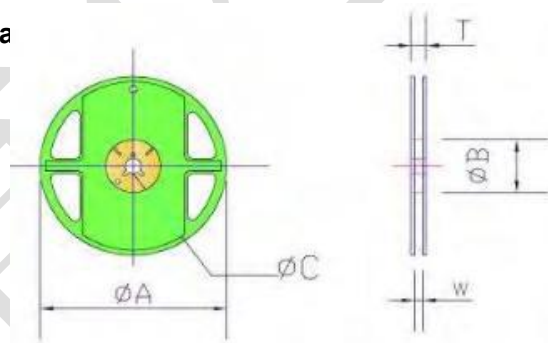


颜色 Color	第1数字 First digit	第2数 Second digit	第3数 Second digit	乘数 Malutiplier
黑Black	0	0	0	100
棕Brown	1	1	1	101
红Red	2	2	2	102
橙Orange	3	3	3	103
黄Yellow	4	4	4	104
绿Green	5	5	5	105
蓝Blue	6	6	6	106
紫Violet	7	7	7	107
灰Gray	8	8	8	108
白White	9	9	9	109
金Gold	—	—	—	10 ⁻¹
银Silver	—	—	—	10 ⁻²
无Plain	—	—	—	—

备注：有特殊要求可以标示五色环 Note: If there are special requirements, a five-color ring can be marked

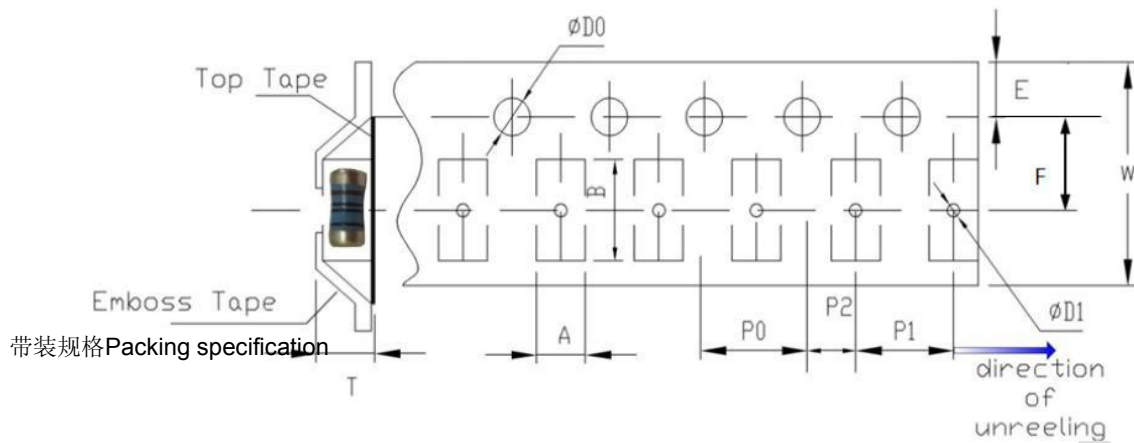
包装数量、尺寸Package qua

卷轴规格Reel size



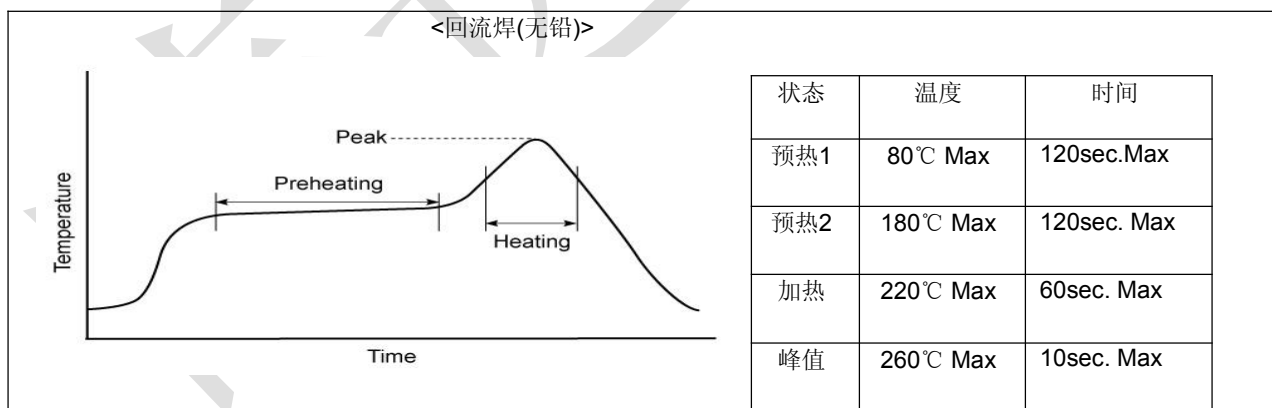
规格 TYPE	φA (mm)	φB (mm)	φC (mm)	W	T	包装数量 (pcs)
MELF0204	178±1.5	60+0.1	13±0.5	9±0.5	12.±0.50	3000
MELF0207	330±1.5	60+0.1	13±0.5	17±0.5	15.5±0.5	2000
MELF0309	330±1.5	100+0.1	13±0.5	17±0.5	19±0.5	2500
MELF0411	330±2	90±2	13±0.5	24±1	28.5±1	2000

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规格type	尺寸(mm)Dimension				
	A	B	W	E	F
MELF0204	1.5 ± 0.1	3.65 ± 0.1	8.0 ± 0.1	1.75 ± 0.1	5.25 ± 0.1
MELF0207	2.6 ± 0.1	6.2 ± 0.1	12.0 ± 0.3	1.75 ± 0.1	7.0 ± 0.1
MELF0309	4.2 ± 0.1	9.0 ± 0.1	16.0 ± 0.3	1.75 ± 0.1	8.8 ± 0.1
MELF0411	4.4 ± 0.2	11.3 ± 0.2	24.0 ± 0.3	1.75 ± 0.1	11.5 ± 0.1
	P0	P1	P2	$\phi D0$	T
MELF0204	4.0 ± 0.1	4.0 ± 0.1	2.0 ± 0.1	1.5 ± 0.1	0.25 ± 0.1
MELF0207	4.0 ± 0.1	4.0 ± 0.1	2.0 ± 0.1	1.5 ± 0.1	0.25 ± 0.1
MELF0309	4.0 ± 0.1	8.0 ± 0.1	2.0 ± 0.1	1.5 ± 0.1	0.30 ± 0.1
MELF0411	4.0 ± 0.1	12.0 ± 0.1	2.0 ± 0.1	1.5 ± 0.1	0.35 ± 0.1

使用回流焊接工艺条件: Use reflow welding process conditions



备注: 以上焊接条件仅作参考, 以客户实际使用焊接为准, 如有特殊要求焊接条件, 请与QY沟通。

Note: The above welding conditions are for reference only. The actual welding conditions used by the customer shall prevail. If there are any special requirements for welding conditions, please communicate with QY.

储存环境: Storage environment

温度 $18^{\circ}\text{C} \sim 28^{\circ}\text{C}$, 相对湿度 $\leq 60\% \text{RH}$ The temperature is 18°C to 28°C , and the relative humidity is less than or equal to 60%RH

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