

规格书

SPECIFICATION FOR APPROVAL

产品名称: 抗静电厚膜贴片电阻 ESD 系列

产品规格: 全系列

制作	核准	审核
马鑫	胡梓秋	方齐炜

供应商: 深圳市美隆电子有限公司

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TEL: 0755-82533555

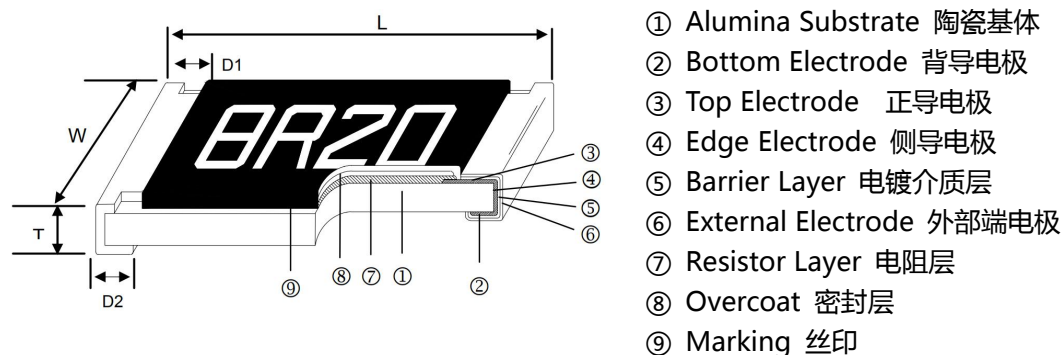
FAX: 0755-82533444

| 抗静电厚膜贴片电阻 ESD 系列

摘要 Resume >>>

- Anti-Electro Static Discharge 抗静电
- Suitable for reflow & wave soldering 适合波峰焊与回流焊
- Application Medical Devices, Industrial Controls, AV adapter, Flash lamp of camera, Automotive Industry, Outdoor Equipments
适用于医疗器械、工业控制、电源适配器、照相机的闪光灯、汽车工业及户外设备等

结构图 Construction >>>



尺寸 Dimensions >>>

类型 Type		0201	0402	0603	0805	1206	1210
尺寸 Dimension	L(mm)	0.60±0.03	1.00±0.10	1.60±0.10	2.00±0.15	3.10±0.15	3.10±0.10
	W(mm)	0.30±0.03	0.50±0.05	0.80±0.10	1.25 +0.15/-0.10	1.55 +0.15/-0.10	2.60±0.20
	T(mm)	0.23±0.03	0.35±0.05	0.45±0.10	0.50±0.10	0.55±0.10	0.55±0.10
	D1(mm)	0.10±0.05	0.20±0.10	0.30±0.20	0.40±0.20	0.45±0.20	0.50±0.25
	D2(mm)	0.15±0.05	0.25±0.10	0.30±0.20	0.40±0.20	0.45±0.20	0.50±0.20

型号名称 Part Numbering >>>

ESD	01	3216(1206)	L1001	F	T
Product Type 产品型号	Production line code 产线代码	Resistor Size 电阻规格	Resistance 阻值	Resistance Tolerance 阻值公差	Packing Code 包装形式
ESD : 抗静电厚膜贴片电阻	01	0603 (0201) 1005 (0402) 1608 (0603) 2012 (0805) 3216 (1206) 3225 (1210)	±5% L105:1MΩ L102:1KΩ L1R0:1Ω ±1%及以下 L1004:1MΩ L1001:1KΩ L1R00:1Ω	F=±1% J=±5%	T:Taping Reel T: 编带 B: Bulk B: 散装

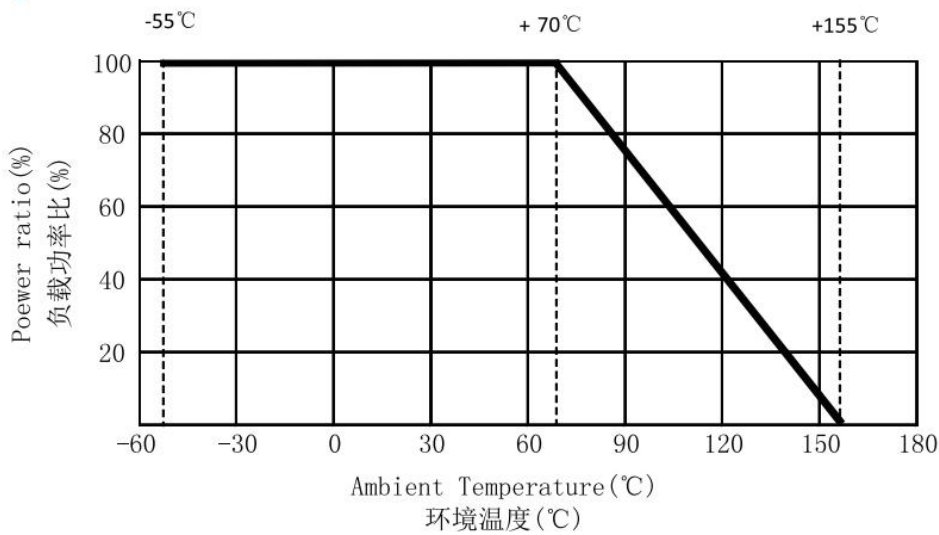
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标准规格表 Stand Electrical Specifications>>>

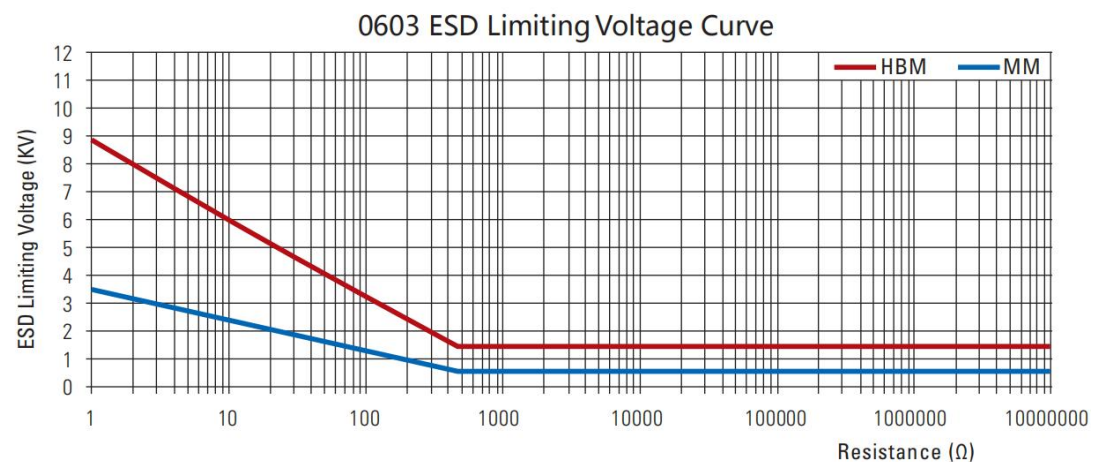
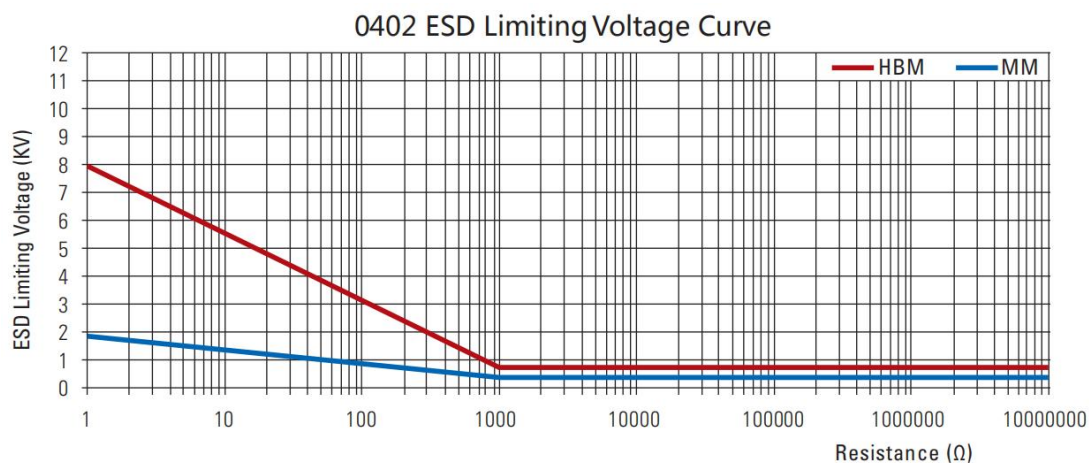
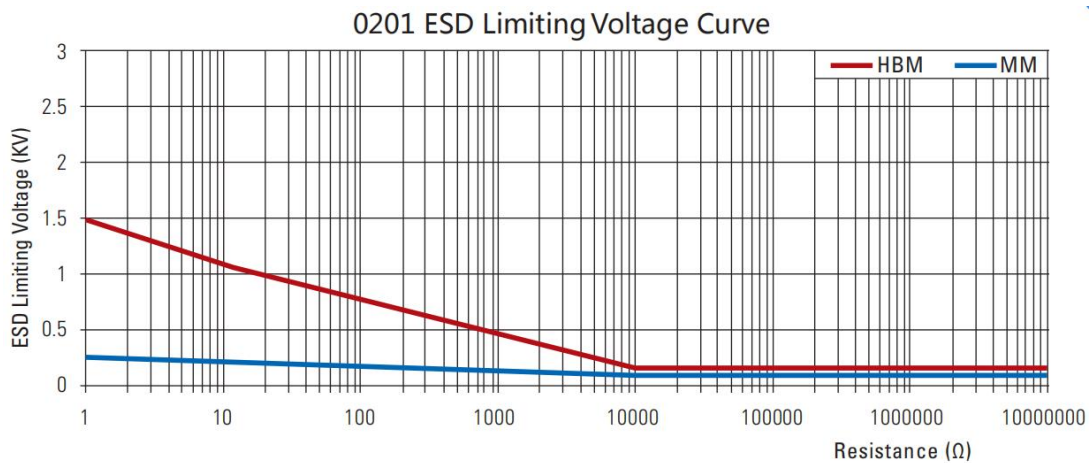
Item Type 项目 型号	Power Rating 额定功率	Max. Operating Voltage 最大工作电压	Max. Overload Voltage 最大负载电压	Resistance Range 阻值范围		TCR 温度系数 (PPM/°C)
				±1%	±5%	
0201	1/20W	25V	50V	1Ω-10MΩ	1Ω-10MΩ	1Ω < R ≤ 10Ω: ±400 10Ω < R ≤ 10MΩ: ±200
0402	1/16W	50V	100V	1Ω-10MΩ	1Ω-10MΩ	1Ω ≤ R ≤ 10Ω: ±200 10Ω < R ≤ 10MΩ: ±100
0603	1/4W	150V	200V	1Ω-10MΩ	1Ω-10MΩ	1Ω ≤ R ≤ 10Ω: ±200 10Ω < R ≤ 10MΩ: ±100
0805	2/5W	200V	400V	1Ω-10MΩ	1Ω-10MΩ	1Ω ≤ R ≤ 10Ω: ±200 10Ω < R ≤ 10MΩ: ±100
1206	2/3W	500V	1000V	1Ω-10MΩ	1Ω-10MΩ	1Ω ≤ R ≤ 10Ω: ±200 10Ω < R ≤ 10MΩ: ±100
1210	1/2W	800V	1500V	1Ω-10MΩ	1Ω-10MΩ	1Ω ≤ R ≤ 10Ω: ±200 10Ω < R ≤ 10MΩ: ±100

◆Operating Temp.Range 操作温度范围：0201~1210：-55~155℃

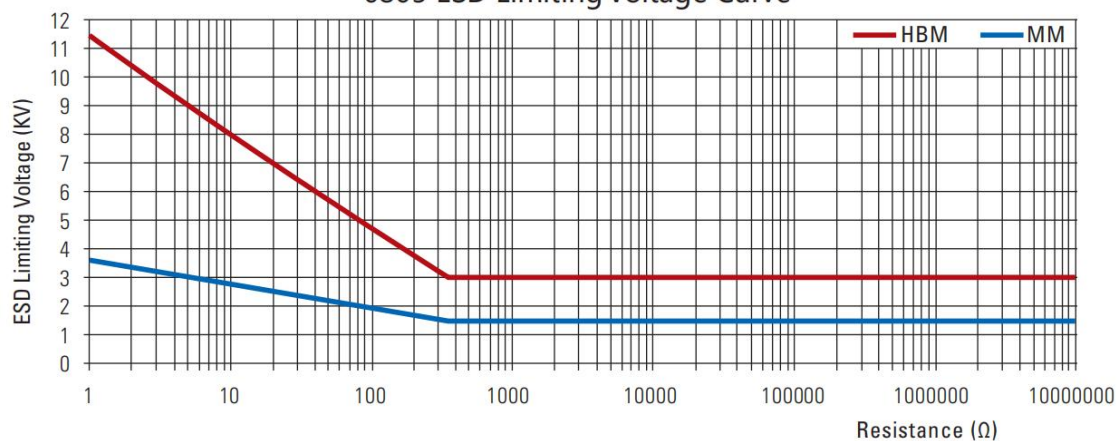
功率衰减曲线图 Derating Curve>>>



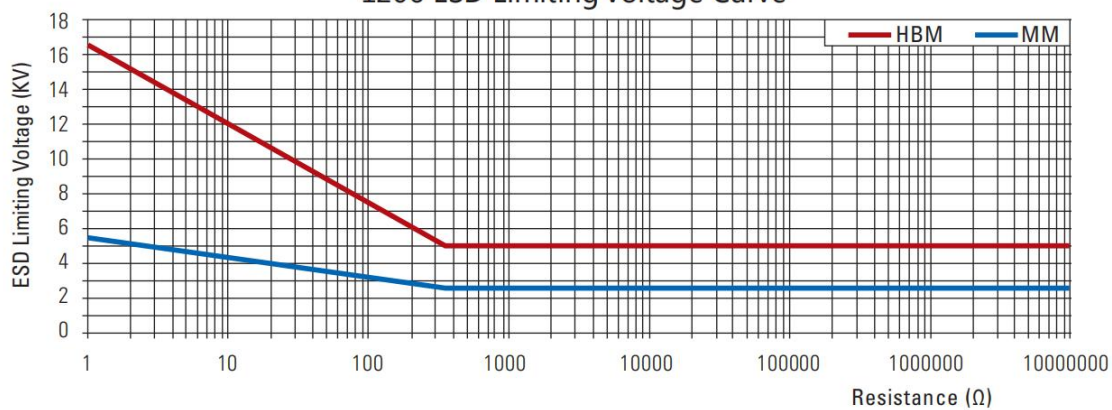
抗静电曲线 ESD Limiting Voltage Curve>>> -----



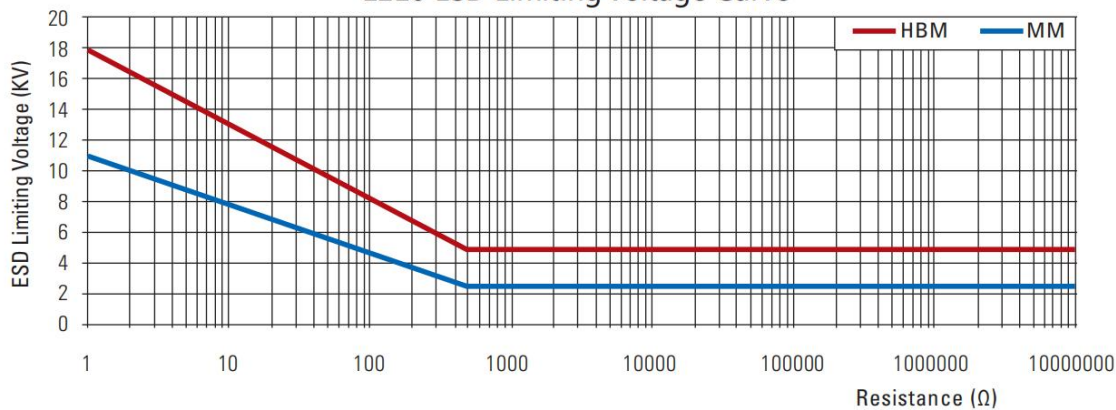
0805 ESD Limiting Voltage Curve



1206 ESD Limiting Voltage Curve



1210 ESD Limiting Voltage Curve



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信赖性试验项目 Environmental Characteristics >>>-----

Item 项目	Requirement 条件		Test Method 测试方法
	±1% & 及以下	±5%	
Operational Life 工作寿命	±(1%+0.10Ω)	±(3%+0.10Ω)	1,000 hours at 125°C, applied de-rated (36%) power of continuous working voltage, 1.5 hours on, 0.5 hour off. 125°C 下 36% 的额定功率, 1.5 小时 ON, 0.5 小时 OFF, 1000H.
Temperature Coefficient 温度系数	As Spec. 参考规格表		At 25 / -55°C and 25°C / +125°C, 25°C is the reference temperature 25°C 为参考温度
Short Time Overload 短时间过载	±(1.0%+0.10Ω)	±(2.0%+0.10Ω)	RCWV*2.5 or Max. Overload voltage whichever is lower for 5 seconds, 2 seconds for high power series 额定电压的 2.5 倍或最大负载电压 5 秒, 提升功率系列 2 秒
External Visual 外观目检	No Mechanical Damage 无机械损坏		Electrical test not required. Inspect device construction, marking and workmanship 不需要电气测试。检查设备的结构、标记和工艺
Resistance to Solvent 耐溶剂性	Marking Unsmearred 丝印不模糊		Add Aqueous wash chemical – OKEM Clean or equivalent. Do not use banned solvents. 添加水洗化学品-OKEM 清洁或同等物质。不要使用被禁止的溶剂。
Terminal strength 端子强度	No broken 无破损		0201, 0402: 5N; others: 17.7N, 60±1 seconds.
High Temperature Exposure 高温储存	±(1.0%+0.10Ω)	±(3.0%+0.10Ω)	1000 hrs. @ T=155°C. Unpowered. Measurement at 24±4 hours after test conclusion 155°C 下放置 1000h, 不加载功率, 试验结束 24±4 小时后进行测试。
Temperature cycling 温度循环	±(0.5%+0.05Ω)	±(1.0%+0.05Ω)	1000 Cycles (-55°C to +155°C). Measurement at 24±2 hours after test conclusion. -55°C ~ +155°C, 循环 1000 次, 试验结束 24±4 小时后进行测试。
Biased Humidity 偏置湿度	±(1.0%+0.10Ω)	±(3.0%+0.10Ω)	1000 hours 85°C/85%RH. Note: Specified conditions: 10% of operating power. Measurement at 24±4 hours after test conclusion. 在温度 85°C, 湿度 85% 的条件下放置 1000 小时。注意: 指定条件: 工作功率的 10%, 试验结束后 24±4 小时内进行测试。
Mechanical Shock 机械冲击	±(1.0%+0.10Ω)	±(2.0%+0.10Ω)	Wave Form: Tolerance for half sine shock pulse. Peak value is 100g's. Normal duration (D) is 6ms, velocity 12.3ft/s 100Hz. 测试: 正弦脉冲, 峰值: 100g, 正常持续时间: 6ms, 速度为 12.3ft/s 100Hz。
Vibration 振动	±(1.0%+0.10Ω)	±(2.0%+0.10Ω)	5g's for 20min., 12 cycles each of 3 orientations 10-2000Hz 5g's 持续时间为 20 分钟, 3 次 10-2000Hz 的定向, 共 12 次循环
ESD test ESD 试验	±(1.0%+0.05Ω)		AEC-Q200-002 HBM: 100PF 1K5 1Cycle MM: 200PF 0E 1Cycle Note: ESD Voltage Refer to 4.0 HBM: 100pF, 1.5kΩ, 1 个循环 MM: 200pF, 0Ω, 1 个循环 注: ESD 电压参考 4.0
Solderability 焊锡性	95% min. coverage 导体爬锡面积大于 95%		245±5°C for 3 seconds 245±5°C 锡炉中, 持续 3 秒

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Flammability 易燃性	No ignition of the tissue paper or Scorching or the pinewood board 不会引燃纸张或引起松木板的烧焦	V-0 or V-1 are acceptable. Electrical test not required 可接受 V-0 或 V-1. 不做电性测试
Board Flex 弯曲	$\pm(1.0\%+0.05\Omega)$	Bending 2mm, 10 seconds. 弯曲 2mm, 10 秒
Flame Retardance 阻燃性	No flame 无明火	Only requested, when voltage/power will increase the surface temp to 350°C. Apply voltage from 9V to 32V. No flame; No explosion. 仅在电压/功率导致表面温度升高至 350°C 时要求进行 测试。电压范围为 9V 至 32V。无明火；无爆炸。
Resistance to Soldering Heat 耐焊接热	$\pm(1.0\%+0.05\Omega)$	260 $\pm$ 5°C for 10 seconds 260 $\pm$ 5°C 锡炉中，持续 10 秒

Operating Voltage= $\sqrt{P \cdot R}$ or Max. Operating Voltage listed above, whichever is lower.

Overload Voltage= $2.5 \cdot \sqrt{P \cdot R}$ or Max. Overload Voltage listed above, whichever is lower.

RCWV (Rated Continuous Working Voltage) = $\sqrt{P \cdot R}$ or Max. Operating Voltage whichever is lower.

environmental conditions for electrical performance measurement, Temperature : 25°C $\pm$ 5°C Humidity: 25%~75%RH

Reference Standards: IEC 60115-1, 60068-2-58 ; JIS-C 5201-1

■ RCWV (额定持续工作电压) = $\sqrt{P \cdot R}$ 或者较小的最大操作电压.

操作电压 = $\sqrt{P \cdot R}$, 过负载电压 = $2.5 \cdot \sqrt{P \cdot R}$, 操作电流 = $\sqrt{P/R}$

■ 电性能测量的环境条件：温度：25°C $\pm$ 5°C 相对湿度：25%~75%RH

■ 依据标准：IEC 60115-1, 60068-2-58 ; JIS-C 5201-1