

规格书

SPECIFICATION FOR APPROVAL

产品名称： 普通抗浪涌贴片电阻 PWR 系列

产品规格： 全系列

制作	核准	审核
詹熔基	莫茵	方齐炜

供应商：深圳市美隆电子有限公司

地址：深圳市福田区华强北路华强广场 A 座 16 楼

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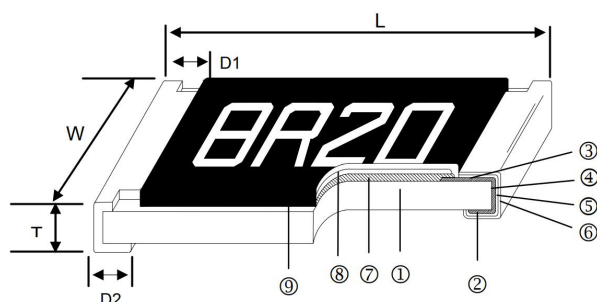
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摘要 Resume >>>

- Superior Anti-Surge Voltage performance. 优越的抗浪涌电压特性
- Automatic Equipment Controller 自动化设备控制器
- Medical Equipment 医疗设备
- Outdoor Electronic Applications 户外电子应用

结构图 Construction >>>



- ① Alumina Substrate 陶瓷基体
- ② Bottom Electrode 背导电电极
- ③ Top Electrode 正导电电极
- ④ Edge Electrode 侧导电电极
- ⑤ Barrier Layer 电镀介质层
- ⑥ External Electrode 外部端电极
- ⑦ Resistor Layer 电阻层
- ⑧ Overcoat 密封层
- ⑨ Marking 丝印

尺寸 Dimensions >>>

类型 Type		0402	0603	0805	1206
尺寸 Dimension	L(mm)	1.00±0.05	1.60±0.10	2.00±0.10	3.10±0.10
	W(mm)	0.50±0.05	0.80±0.10	1.25±0.10	1.55±0.10
	T(mm)	0.30±0.05	0.45±0.10	0.50±0.10	0.55±0.10
	D1(mm)	0.20±0.10	0.30±0.20	0.35±0.20	0.50±0.25
	D2(mm)	0.20±0.10	0.30±0.20	0.40±0.20	0.50±0.20
类型 Type		1210	2010	2512	2512(2W)
尺寸 Dimension	L(mm)	3.10±0.10	5.00±0.10	6.35±0.10	6.35±0.20
	W(mm)	2.60±0.15	2.50±0.15	3.10±0.15	3.15±0.15
	T(mm)	0.55±0.10	0.55±0.10	0.55±0.10	0.60±0.10
	D1(mm)	0.50±0.25	0.60±0.25	0.60±0.25	0.60±0.25
	D2(mm)	0.50±0.20	0.50±0.20	0.50±0.20	0.60±0.20

型号名称 Part Numbering >>>

PWR	04	3216(1206)	L1001	F	T	U*
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	High Power 升功率
PWR : 高精密抗浪涌贴片电阻	04	1005 (0402) 1608 (0603) 2012 (0805) 3216 (1206) 3225 (1210) 5025 (2010) 6432 (2512)	±5% L105:1MΩ L102:1KΩ L1R0:1Ω ±1%及以下 L1004:1MΩ L1001:1KΩ L1R00:1Ω	D=±0.5% F=±1% J=±5%	T:Taping Reel T: 编带 B:Bulk B: 散装	S:2W N:1W Q:3/4W U:1/2W O:1/3W V:1/4W P:1/5W W:1/8W X:1/10W

◆U* : High Power 升功率 (非升功率不加备注)

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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)
				±0.5%	±1%	±5%	
0603	1/10W	50V	100V	10Ω-1MΩ	1Ω-1MΩ	1Ω-1MΩ	1Ω≤R≤294Ω:±200 294Ω<R≤1MΩ:±100
0805	1/8W	150V	300V	10Ω-20MΩ	1Ω-20MΩ	1Ω-20MΩ	1Ω≤R≤294Ω:±200 294Ω<R≤20MΩ:±100
1206	1/3W	200V	400V	10Ω-20MΩ	1Ω-20MΩ	1Ω-20MΩ	1Ω≤R≤20Ω:±200 20Ω<R≤20MΩ:±100
1210	1/2W	200V	400V	10Ω-20MΩ	1Ω-20MΩ	1Ω-20MΩ	1Ω≤R≤20Ω:±200 20Ω<R≤20MΩ:±100
2010	3/4W	400V	800V	10Ω-20MΩ	1Ω-20MΩ	1Ω-20MΩ	1Ω≤R≤20Ω:±200 20Ω<R≤20MΩ:±100
2512	1.5W	500V	1000V	10Ω-20MΩ	1Ω-20MΩ	1Ω-20MΩ	1Ω≤R≤20Ω:±200 20Ω<R≤20MΩ:±100

◆Operating Temp.Range 操作温度范围：0603~2512：-55~155℃

高功率厚膜晶片电阻器 High-Power Thick Film Chip Resistors>>>-----

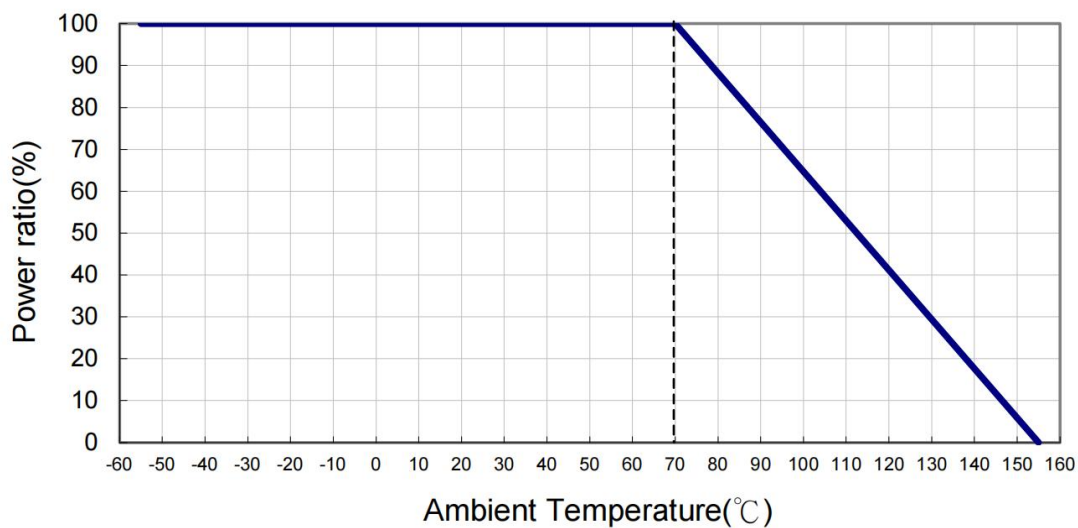
Item Type 项目 型号	Power Rating 额定功率	Max. Operating Voltage 最大工作电压	Max. Overload Voltage 最大负载电压	Resistance Range 阻值范围			TCR 温度系数 (PPM/°C)
				±0.5%	±1%	±5%	
0402	1/5W	50V	100V	100Ω-1MΩ	1Ω-1MΩ	1Ω-1MΩ	1Ω≤R≤20Ω:±300 20Ω<R≤1MΩ:±100
0603	1/4W	75V	150V	10Ω-1MΩ	1Ω-10MΩ	1Ω-10MΩ	1Ω≤R≤294Ω:±200 294Ω<R≤1MΩ:±100
0805	2/5W	150V	300V	10Ω-1MΩ	1Ω-1MΩ	1Ω-1MΩ	1Ω≤R≤294Ω:±200 294Ω<R≤1MΩ:±100
	1/2W*	400V	600V	10Ω-1MΩ	1Ω-1MΩ	1Ω-1MΩ	1Ω≤R≤294Ω:±200 294Ω<R≤1MΩ:±100
1206	1/2W	200V	400V	10Ω-1MΩ	1Ω-10MΩ	1Ω-10MΩ	1Ω≤R≤20Ω:±200 20Ω<R≤1MΩ:±100
	3/4W*	500V	1000V	10Ω-1MΩ	1Ω-1MΩ	1Ω-1MΩ	1Ω≤R≤20Ω:±200 20Ω<R≤1MΩ:±100
1210	3/4W	200V	400V	10Ω-1MΩ	1Ω-10MΩ	1Ω-10MΩ	1Ω≤R≤20Ω:±200 20Ω<R≤1MΩ:±100
2010	1W	400V	800V	10Ω-1MΩ	1Ω-1MΩ	1Ω-1MΩ	1Ω≤R≤20Ω:±200 20Ω<R≤1MΩ:±100
2512	2W*	500V	1000V	10Ω-200KΩ	1Ω-200KΩ	1Ω-200KΩ	1Ω≤R≤10Ω:±350 10Ω<R≤200Ω:±100

◆Operating Temp.Range 操作温度范围：0603~2512：-55~155℃

◆*: Ultra High Power: double side printed resistor element 超高功率：双面印刷电阻器元件

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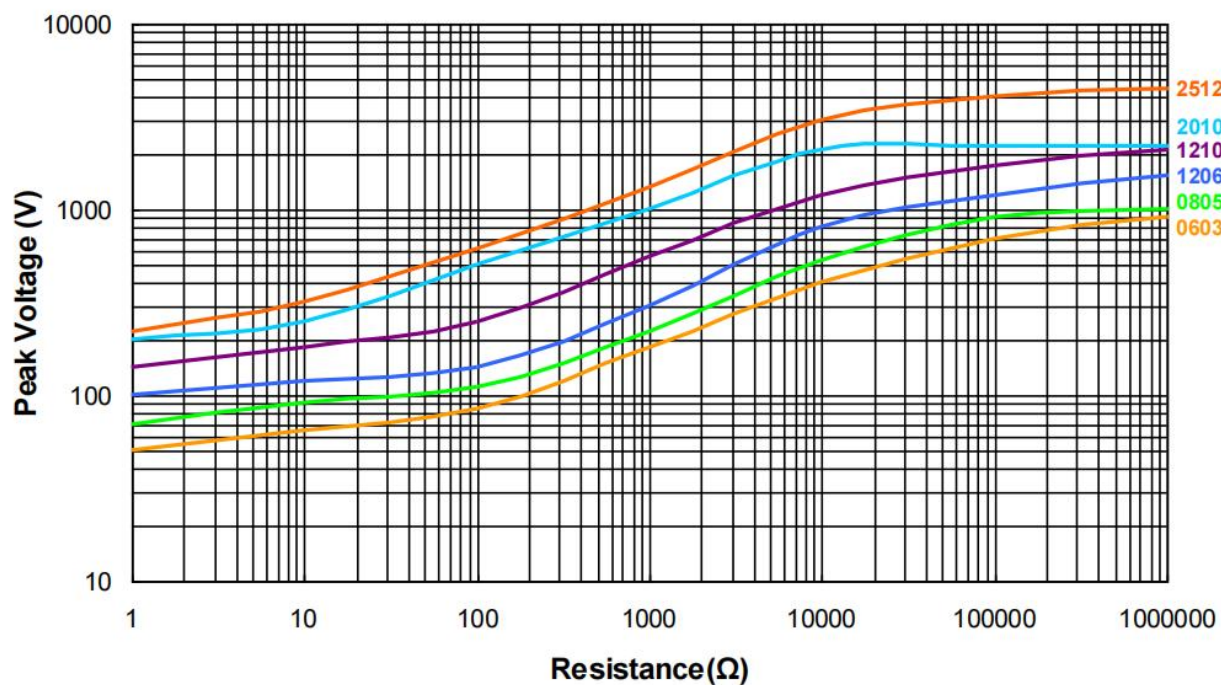
功率衰减曲线图 Derating Curve>>>



雷电冲击 Lightning Surge>>>

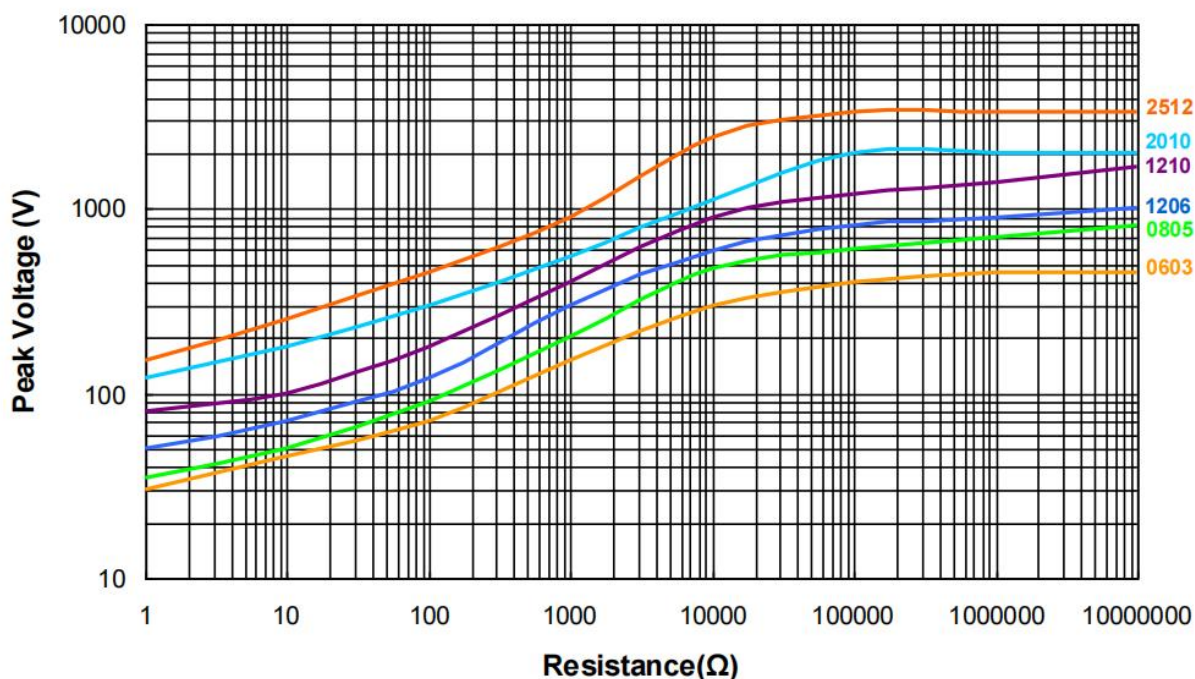
Resistors are tested in accordance with IEC 60115-1 using both 1.2/50us and 10/700 pulse shapes. The limit of acceptance is a shift in resistance of less than 1% from the initial value.

PWR Series 1.2/50us Lightning Surge



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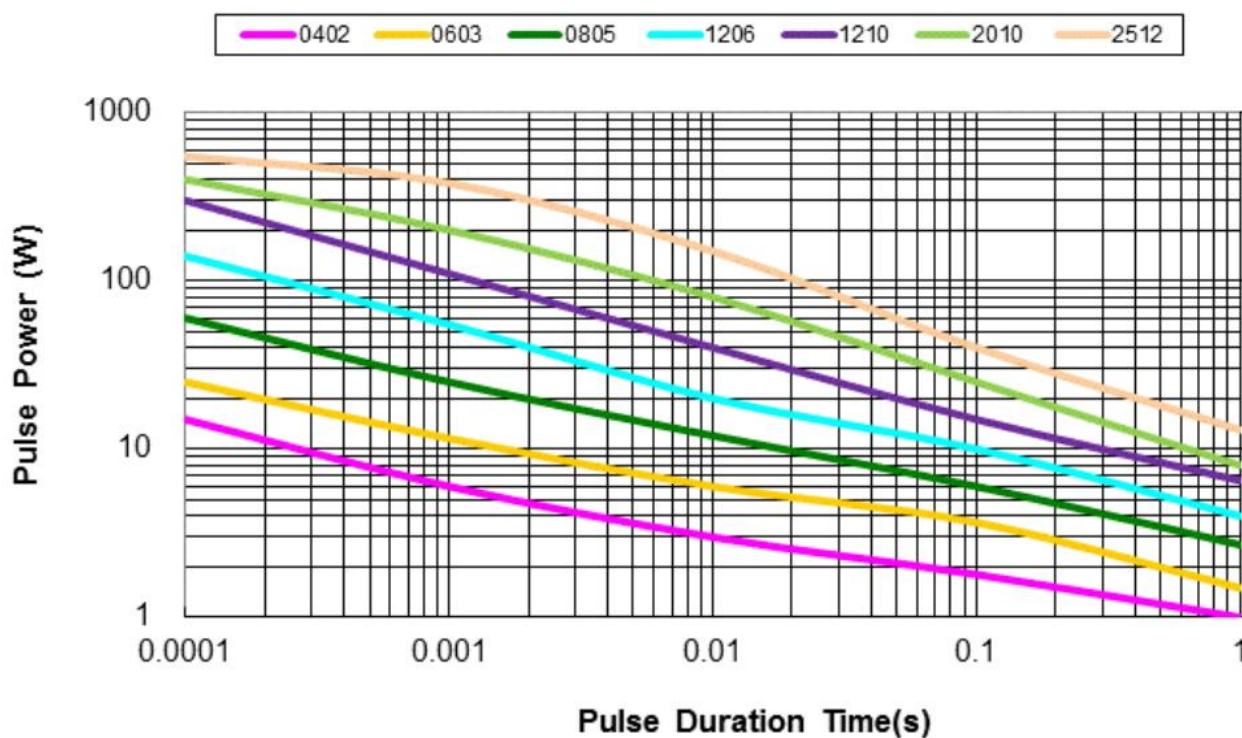
PWR Series 10/700us Lightning Surge



脉冲耐受能力 Pulse withstanding capacity >>> -----

The limit of acceptance was a shift in resistance of less than 1% from the initial value. The power applied was subject to the restrictions of the maximum permissible impulse voltage graph shown.

PWR Series Single Pulse(100 Ohm)

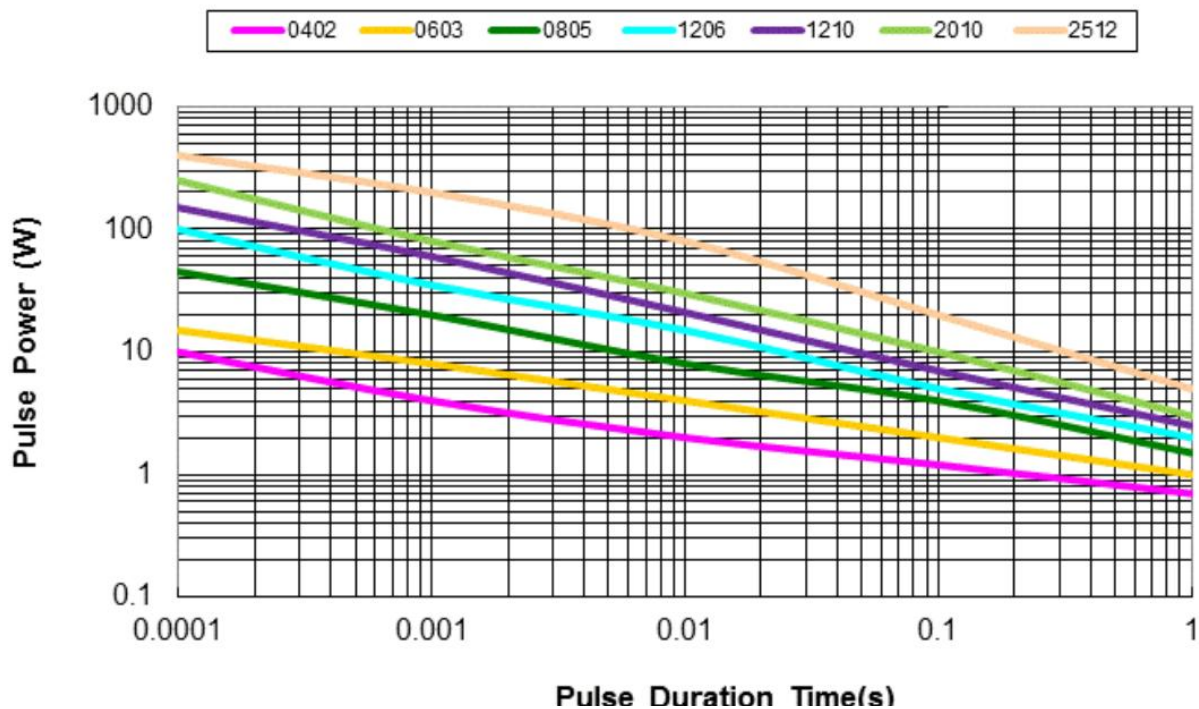


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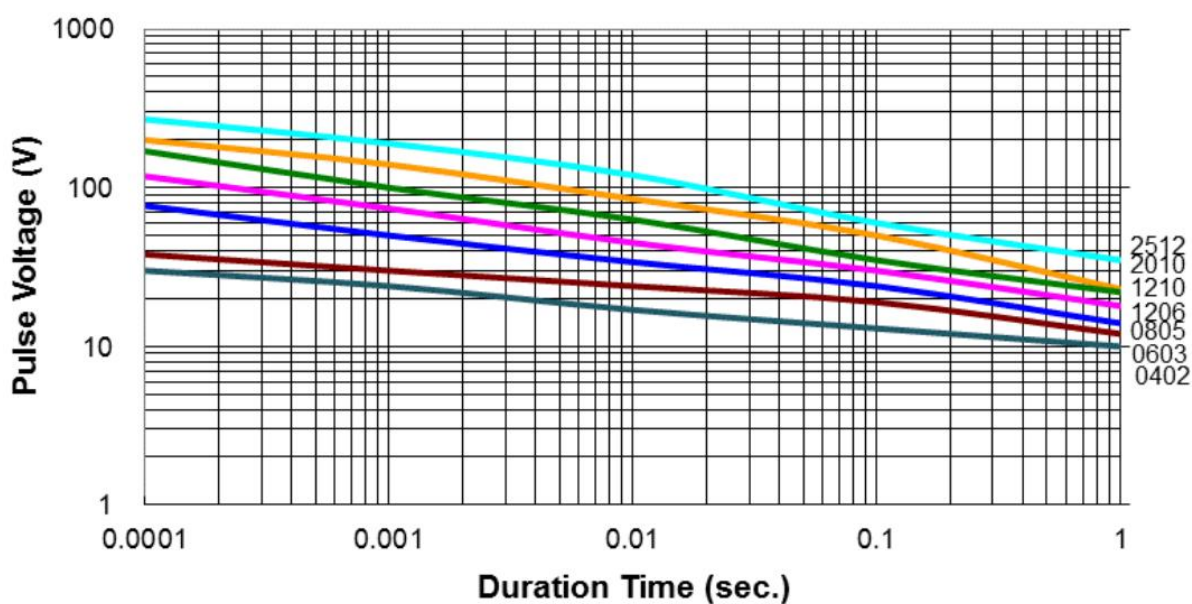
连续耐冲 Continuous Pulse>>>

The continuous load graph was obtained by applying repetitive rectangular pulses where the pulse period was adjusted so that the average power dissipated in the resistor was equal to its rated power at 70 °C. Again the limit of acceptance was a shift in resistance of less than 1% from the initial value.

PWR Series Continuous Pulse(100 Ohm)



PWR Series Pulse Voltage(100 Ohm)



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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% and Below ±1% 及以下	±5%	
Temperature Coefficient (T.C.R.) 温度系数(T.C.R.)	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 短时间过负载	$\pm(1.0\%+0.10\Omega)$		RCWV*2.5 or Max.Overload voltage whichever is lower for 5 seconds,2seconds 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
Insulation Resistor 绝缘阻抗	$\geq 10G$		Max.Overload voltage for 1 minute 施加最大负载电压 1 分钟
Endurance 负载寿命	$\pm(1.0\%+0.10\Omega)$		70±2°C,RCWV for 1000hrs with 1.5hrs" ON" and 0.5hrs" OFF" 70±2°C温度中施加额定电压, 1.5 小时"开", 0.5 小时 "关", 共 1000 小时
Damp Heat with Load 耐湿负荷	$\pm(0.5\%+0.05\Omega)$ Ultra High Power : $\pm(1\%+0.05\Omega)$ 超高功率: $\pm(1\%+0.05\Omega)$		40±2°C,90~95%R.H.,RCWV for 1000hrs with 1.5hrs" ON" and 0.5hrs" OFF" 在温度 40±2°C,相对湿度 90~95%环境中施加额定电压, 1.5 小时"开", 0.5 小时 "关", 共 1000 小时
Bending Strength 弯折强度测试	$\pm(1.0\%+0.05\Omega)$		Bending once for 5 seconds 2010,2512sizes:2mm Other sizes:3mm 产品焊在测试板上,中央施力下压 5 秒 下压深度: 2010、2512 : 2 毫米 其他尺寸: 3 毫米
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
Resistance to Soldering Heat 抗焊接热	$\pm(0.5\%+0.05\Omega)$		260±5°C for 10 seconds 260±5°C锡炉中,持续 10 秒
Rapid Change of Temperature 冷热冲击	$\pm(0.5\%+0.05\Omega)$		55°C to +155°C 5 cycles -55°C to +155°C 5 次
Dry Heat 干热	$\pm(0.5\%+0.05\Omega)$		at +155°C for 1000 hrs 在+155°C下持续 1000 小时
Leaching 溶蚀测试	Individual leaching area≤5% Total leaching area≤10% 导体各面溶蚀区域≤5% 导体总面积溶蚀区域≤10%		260±5°C for 30 seconds 260±5°C锡炉中,持续 30 秒

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Voltage Proof 耐电压	No breakdown or flashover 无击穿或跳火现象	1.42 times Max.Operating Voltage for 1 minute 最大操作电压*1.42 倍，持续 1 分钟
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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 : $25^{\circ}\text{C} \pm 5^{\circ}\text{C}$ 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： $25^{\circ}\text{C} \pm 5^{\circ}\text{C}$ 相对湿度：25%~75%RH

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