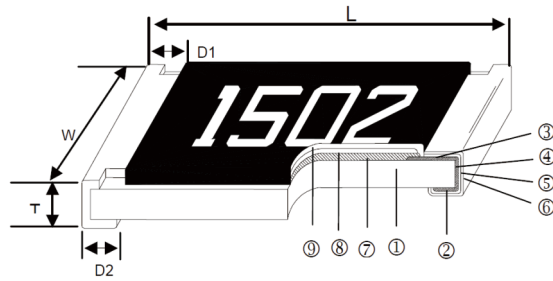


## 普通厚膜贴片电阻(RR) Thick Film Chip Resistor

### ■ Resume 摘要

Small size and light weight/Highly reliable multilayer electrode construction/Compatible with all soldering process.  
体积小, 重量轻, 高可靠度多层电极结构, 适合所有焊接工艺。

### ■ Construction 结构图



- ① Alumina Substrate 陶瓷基板(氧化铝基板)
- ② Bottom Electrode(Ag) 下导电极(银)
- ③ Top Electrode(Ag-Pd) 上导电极(银-钯)
- ④ Edge Electrode(NiCr) 侧导电极(镍-铬)
- ⑤ Barrier Layer(Ni) 电镀介质层(镍)
- ⑥ External Electrode(Sn) 外部端电极(锡)
- ⑦ Resistor Layer(RuO<sub>2</sub>/Ag) 电阻层(氧化钌/银)
- ⑧ Primary Overcoat(Glass) 基层密封层(玻璃)
- ⑨ Secondary Overcoat(Epoxy) 第二层密封层(树脂)

### ■ Dimensions 尺寸

Size 规格	L	W	T	D <sub>1</sub>	D <sub>2</sub>
01005	0.40±0.03	0.20±0.03	0.13±0.05	0.10±0.05	0.10±0.05
0201	0.60±0.03	0.30±0.03	0.23±0.03	0.10±0.05	0.15±0.05
0402	1.00±0.10	0.50±0.05	0.35±0.05	0.20±0.10	0.25±0.10
0603	1.60±0.10	0.80±0.15	0.45±0.10	0.30±0.20	0.30±0.20
0805	2.00±0.15	1.25±0.15	0.55±0.10	0.45±0.20	0.40±0.20
1206	3.10±0.15	1.55±0.15	0.55±0.10	0.45±0.20	0.45±0.20
1210	3.10±0.10	2.60±0.15	0.55±0.10	0.50±0.25	0.60±0.20
1812	4.50±0.20	3.20±0.20	0.55±0.20	0.50±0.20	0.60±0.30
2010	5.00±0.10	2.50±0.15	0.55±0.10	0.60±0.25	0.60±0.30
2512	6.35±0.10	3.20±0.15	0.55±0.10	0.60±0.25	0.60±0.30
*2512	6.35±0.10	3.20±0.15	1.10±0.10	0.60±0.25	1.80±0.20

### ■ Part Numbering 型号名称

RR	3216 (1206)	L182	J	T	O
Product Type 产品类型	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
RR	0402 (01005) 0603 (0201) 1005 (0402) 1608 (0603) 2012 (0805) 3216 (1206) 3225 (1210) 4532 (1812) 5025 (2010) 6432 (2512)	±5% L182:1.8KΩ L1R3:1.3Ω LR001:1mΩ ±1%及以下 L1801:1.8KΩ L1R30:1.3Ω LR001:1mΩ	D=±0.5% F=±1% J=±5%	T: Taping Reel 卷装 B: Bulk 散装	R: 3W 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

■ Standard Electrical Specifications 标准规格表

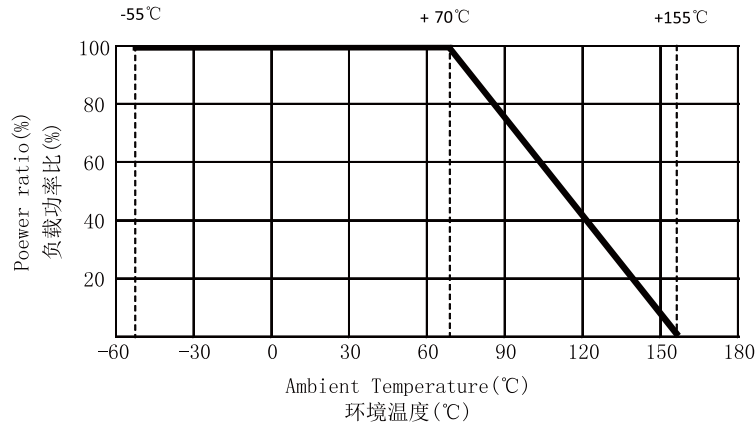
Item 项目 Type 型号	Power Rating 额定功率	Operating Temp. Range 操作温度范围	Max. Operating Voltage 最大工作电压	Max. Overload Voltage 最大负载电压	Resistance Range 阻值范围			TCR 温度系数 (PPM/°C)	Rated Current of Jumper 零欧姆电阻额定电流	Max.O. verload Current of Jumper 零欧姆电阻最大过负荷电流
					±0.5%	±1%	±5%			
01005	1/32W	-55~155°C	15V	30V	0 Ω, 10 Ω~10M Ω			± 400	0.5A	1A
0201	1/20W	-55~155°C	25V	50V	0 Ω, 1 Ω~10M Ω			± 200	0.5A	1A
0402	1/16W *1/10W *1/8W	-55~155°C	50V	100V	0 Ω, 1 Ω~10 Ω			± 400	1A	2A
					11 Ω~100 Ω			± 200		
					102 Ω~100M Ω			± 100		
0603	1/10W *1/5W *1/4W	-55~155°C	50V	100V	0 Ω, 1 Ω~10 Ω			± 400	1A	2A
					11 Ω~100 Ω			± 200		
					102 Ω~100M Ω			± 100		
0805	1/8W *1/3W	-55~155°C	150V	300V	0 Ω, 1 Ω~10 Ω			± 400	2A	5A
					11 Ω~100 Ω			± 200		
					102 Ω~100M Ω			± 100		
1206	1/4W *1/3W *1/2W	-55~155°C	200V	400V	0 Ω, 1 Ω~10 Ω			± 400	2A	10A
					11 Ω~100 Ω			± 200		
					102 Ω~100M Ω			± 100		
1210	1/2W *3/4W	-55~155°C	200V	400V	0 Ω, 1 Ω~10 Ω			± 400	2A	10A
					11 Ω~100 Ω			± 200		
					102 Ω~100M Ω			± 100		
1812	1/2W *3/4W	-55~155°C	200V	400V	0 Ω, 1 Ω~10 Ω			± 400	2A	10A
					11 Ω~100 Ω			± 200		
					102 Ω~10M Ω			± 100		
2010	3/4W *1W	-55~155°C	200V	400V	0 Ω, 1 Ω~10 Ω			± 400	2A	10A
					11 Ω~100 Ω			± 200		
					102 Ω~100M Ω			± 100		
2512	1W *2W	-55~155°C	200V	400V	0 Ω, 1 Ω~10 Ω			± 400	2A	10A
					11 Ω~100 Ω			± 200		
					102 Ω~100M Ω			± 100		
2512	*3W	-55~155°C	250V	500V	1 Ω~10M Ω			± 200	/	/

\*:High Power升功率

■ TC50 Electrical Specifications ± 50PPM/°C规格表

Item 项目 Type 型号	Power Rating 额定功率	Operating Temp. Range 操作温度范围	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)
					±0.1%	±0.25%	±0.5%	±1%	
0402	1/16W	-55~155°C	50V	100V	/				± 50
0603	1/10W	-55~155°C	75V	150V	10 Ω~1M Ω	10 Ω~10M Ω			± 50
0805	1/8W	-55~155°C	150V	300V					± 50
1206	1/4W	-55~155°C	200V	400V					± 50
1210	1/3W	-55~155°C	200V	400V					± 50
2010	3/4W	-55~155°C	200V	400V					± 50
2512	1W	-55~155°C	250V	500V					± 50
									± 50

■ Derating Curve 功率衰减曲线图



■ Environmental Characteristics 信赖性试验项目

Item 项目	Requirement 条件			Test Method 测试方法
	±1% 及以下	±5%	Jumper 跳线	
Temperature Coefficient of Resistance(T.C.R.) 温度系数(T.C.R.)	As Spec. 参考规格表			-55°C~+125°C, 25°C is the refence temperature 参考温度
Short Time Overload 短时间过负载	±(1.0%+0.1Ω)	±(2.0%+0.1Ω)	<50mΩ	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
Insulation Resistance 绝缘阻抗	≥1G			Max.Overload voltage for 1 minute 施加最大负载电压1分钟
Endurance 负载寿命	±(3.0%+0.10Ω)		<50mΩ	70 ± 2°C,RCWV for 1000 hrs with 1.5 hrs"ON" and 0.5 hrs "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	±(2.0%+0.10Ω)	±(3.0%+0.10Ω)	<50mΩ	40 ± 2°C,90~95%R.H.,RCWV for 1000 hrs with 1.5 hrs"ON" and 0.5 hrs "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
Dry Heat 耐热性试验	±(1.0%+0.05Ω)		<50mΩ	at +125/+155°C for 1000hrs 置于+125/+155°C 温度中, 共1000小时
Bending Strength 弯折强度测试	±(1.0%+0.05Ω)		<50mΩ	Bending once for 5 seconds 2010,2512 sizes: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 其它尺寸 :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 抗焊锡热	±(1.0%+0.05Ω)		<50mΩ	260 ± 5°C for 10 seconds 260 ± 5°C 锡炉中,持续10 秒
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
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
Rapid Change of Temperature 冷热冲击	±(1.0%+0.05Ω)		<50mΩ	-55°C to+155°C 5 cycles -55°C to+155°C 5 次

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.  
 Storage Temperature:25 ± 3°C; Humidity < 80%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= $\sqrt{P/R}$   
 ■ 储存温度:25 ± 3°C; 湿度 < 80%RH  
 ■ 依据标准:IEC 60115-1,60068-2-58;JIS-C 5201-1