



THICK FILM CHIP RESISTOR

CR Series

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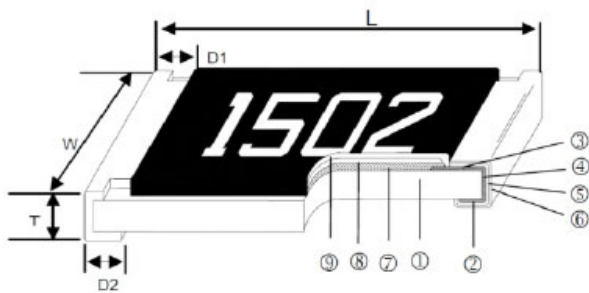
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Thick Film Chip Resistors 普通厚膜贴片电阻(CR)

Feature 特性

Small size & light weight 短小轻薄
Highly reliable multilayer electrode construction 高可靠度多层电极结构
Compatible with all soldering process 适合所有焊接工艺

Construction 结构图



- ① Alumina Substrate

② Bottom Electrode(Ag)

③ Top Electrode(Ag-Pd)

④ Edge Electrode(NiCr)

⑤ Barrier Layer(Ni)

⑥ External Electrode(Sn)

⑦ Resistor Layer(RuO2/Ag)

⑧ Primary Overcoat(Glass)

⑨ Secondary Overcoat(Epoxy)
- 陶瓷基板(氧化铝基板)

下导电电极(银)

上导电电极(银-钯)

侧导电电极(镍-铬)

电镀介质层(镍)

外部端电极(锡)

电阻层(氧化钌/银)

基层密封层(玻璃)

第二层密封层(树脂)

Dimensions 尺寸

Unit:mm

Size 规格	L	W	T	D1	D2
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	0.50±0.20
1812	4.50±0.20	3.20±0.20	0.55±0.20	0.50±0.20	0.50±0.20
2010	5.00±0.10	2.50±0.15	0.55±0.10	0.60±0.25	0.50±0.20
2512	6.35±0.10	3.20±0.15	0.55±0.10	0.60±0.25	0.50±0.20

Part Numbering 型号名称

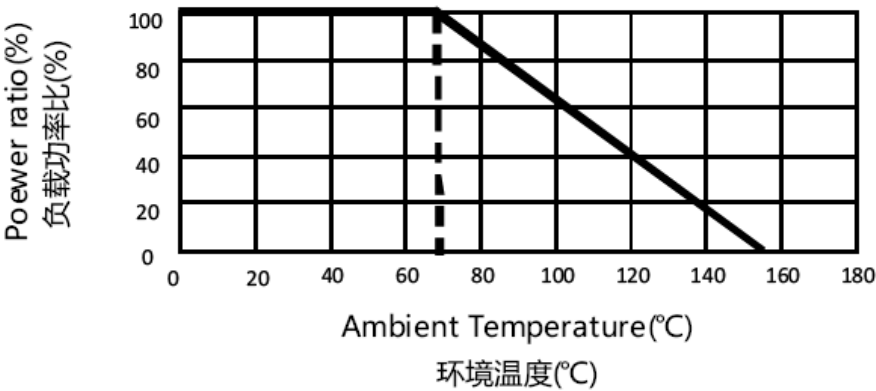
CR	3216(1206)	L182	J	T	O
Product Type 产品型号	Resistor Size 电 阻规格	Resistance 阻值	Resistance Tolerance 阻值公差	Packing Code 包装形式	High Power 升功率
	0402(01005) 0603(0201) 1005(0402) 1608(0603) 2012(0805) 3216(1206) 3225(1210) 4532(1812) 5025(2010) 6432(2512)	5% L182:1.8KΩ L1R3:1.3 Ω LR001:1mΩ 1% L1801:1.8KΩ L1R30:1.3 Ω LR001:1m Ω	F=1% J=5%	T: Taping Reel 卷装 B: Bulk 散装	S : 2W N : 1W Q : 3/4W U : 1/2W O : 1/3W V : 1/4W W : 1/8W

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)
					1%	5%	
01005	1/32W	-55~125°C	15V	30V	0Ω,10Ω~1MΩ		±300
0201	1/20W	-55~125°C	25V	50V	0Ω,1Ω~10MΩ		±200
0402	1/16W *1/8W	-55~155°C	50V	100V	0Ω,1Ω~10Ω		±400
					11Ω~100Ω		±200
					102Ω~100MΩ		±100
0603	1/10W *1/4W	-55~155°C	50V	100V	0Ω,1Ω~10Ω		±400
					11Ω~100Ω		±200
					102Ω~100MΩ		±100
0805	1/8W *1/3W	-55~155°C	150V	300V	0Ω,1Ω~10Ω		±400
					11Ω~100Ω		±200
					102Ω~100MΩ		±100
1206	1/4W *1/3W *1/2W	-55~155°C	200V	400V	0Ω,1Ω~10Ω		±400
					11Ω~100Ω		±200
					102Ω~100MΩ		±100
1210	1/2W *3/4W	-55~155°C	200V	400V	0Ω,1Ω~10Ω		±400
					11Ω~100Ω		±200
					102Ω~100MΩ		±100
1812	1/2W *3/4W	-55~155°C	200V	400V	0Ω,1Ω~10Ω		±400
					11Ω~100Ω		±200
					102Ω~100MΩ		±100
2010	3/4W *1W	-55~155°C	200V	400V	0Ω,1Ω~10Ω		±400
					11Ω~100Ω		±200
					102Ω~100MΩ		±100
2512	1W *2W	-55~155°C	200V	400V	0Ω,1Ω~10Ω		±400
					11Ω~100Ω		±200
					102Ω~100MΩ		±100

*:Ultra High Power 超大功率

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% & Below ±1% 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 -55°C~+125°C, 25°C的参考温度
Short Time Overload 短时间过负载	±(1.0%+0.05Ω)	±(2.0%+0.05Ω)	<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	≥10G			Max.Overload voltage for 1 minute 施加最大负载电压1分钟
Endurance 负载寿命	±(1.0%+0.10Ω)	±(2.0%+0.10Ω)	<100mΩ	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	±(1.0%+0.10Ω)	±(2.0%+0.10Ω)	<100mΩ	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)	±(1.5%+0.10Ω)	<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)	±(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	±(0.5%+0.05Ω)	±(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% 导体各面溶蚀区域≤5% Total leaching area≤10% 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	±(0.5%+0.05Ω)	±(1.0%+0.05Ω)	<50mΩ	-55°C to +155°C 5 cycles -55°C to +155°C 5次
Operating Voltage=√(P*R) or Max.Operating Voltage listed above,whichever is lower. Overload Voltage=2.5*√(P*R) or Max.Overload Voltage listed above,whichever is lower. RCWV(Rated Continuous Working Voltage)=√(P*R) or Max. Operating Voltage whichever is lower. ■Reference Standards:IEC 60115-1,60068-2-58;JIS-C 5201-1 操作电压=√(P*R), 过负载电压=2.5*√(P*R),操作电流=√(P/R) ■依据标准:IEC 60115-1,60068-2-58;JIS-C 5201-1				