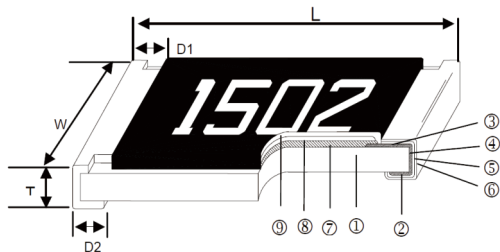


薄膜电流检测贴片电阻(TCS)Thin Film Current Sensing Chip Resistor

■ Resume 摘要

Thin film process/High power rating up to 3 Watts/Tight tolerance down to  $\pm 0.5\%$ /Extremely low TCR down to  $\pm 50\text{PPM}$ /Resistance values from  $50\text{m}\Omega$  to  $1\Omega$   
 薄膜工艺，最大额定功率（3 Watts），高精度（ $\pm 0.5\%$ ），极低温度系数（ $\pm 50\text{PPM}$ ），阻值范围（ $50\text{m}\Omega\sim 1\Omega$ ）

■ 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(NiCr) 电阻层(镍-铬)
- ⑧ Overcoat(Epoxy) 密封层(树脂)
- ⑨ Marking 丝印

■ Dimensions 尺寸

Size 规格	L	W	T	D <sub>1</sub>	D <sub>2</sub>
0402	1.00 ± 0.05	0.50 ± 0.05	0.32 ± 0.10	0.25 ± 0.10	0.20 ± 0.10
0603	1.60 ± 0.10	0.80 ± 0.10	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	0.30 ± 0.20	0.40 ± 0.25
1206	3.05 ± 0.15	1.55 ± 0.15	0.55 ± 0.10	0.50 ± 0.30	0.40 ± 0.25
2010	5.00 ± 0.20	2.45 ± 0.15	0.60 ± 0.15	0.60 ± 0.30	0.50 ± 0.25
2512	6.35 ± 0.20	3.15 ± 0.15	0.60 ± 0.10	0.60 ± 0.30	0.55 ± 0.25

■ Part Numbering 型号名称

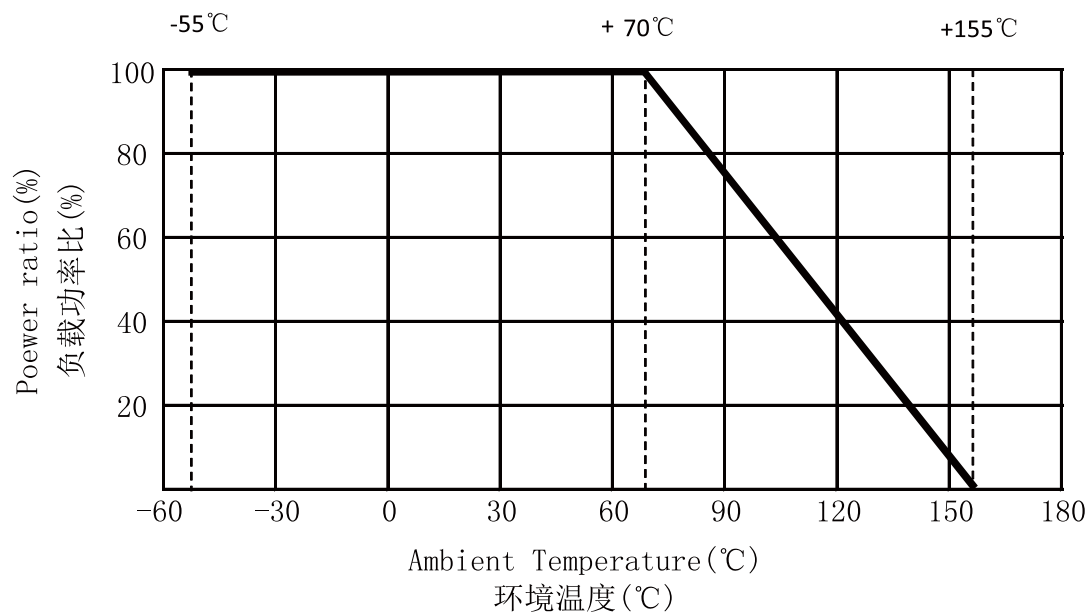
TCS	6432 ( 2512 )	LR100	D	T	R
Product Type 产品型号	Resistor Size 电阻规格	Resistance 阻值	Resistance Tolerance 阻值公差	Packing Code 包装形式	High Power 升功率
TCS	1005 ( 0402 ) 1608 ( 0603 ) 2012 ( 0805 ) 3216 ( 1206 ) 5025 ( 2010 ) 6432 ( 2512 )	LR100:0.1 $\Omega$ LR010:0.01 $\Omega$ LR001:1m $\Omega$	D= $\pm 0.5\%$ F= $\pm 1\%$	T: Taping Reel 卷装 B: Bulk 散装	R : 3W

## ■ 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	Resistance Range 阻值范围		TCR 温度系数 (PPM/°C)
			± 0.5%	± 1%	
0402	1/16W	-55~155°C	500mΩ ~1000mΩ		± 50 ± 100
0603	1/10W	-55~155°C	200mΩ ~300mΩ		± 100
			301mΩ ~1000mΩ		± 50
0805	1/8W	-55~155°C	200mΩ ~300mΩ		± 100
			301mΩ ~1000mΩ		± 50
1206	1/4W	-55~155°C	/	50mΩ ~100mΩ	± 200
			101mΩ ~300mΩ		± 100
			301mΩ ~1000mΩ		± 50
2010	3/4W	-55~155°C	50mΩ ~100mΩ		± 200
			101mΩ ~300mΩ		± 100
			301mΩ ~1000mΩ		± 50
2512	1W	-55~155°C	50mΩ ~100mΩ		± 200
			101mΩ ~300mΩ		± 100
			301mΩ ~1000mΩ		± 50
2512	*3W	-55~155°C	100mΩ ~1000mΩ		± 100

\*:High Power升功率

## ■ 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
Temperature Coefficient of Resistance(T.C.R.) 温度系数(T.C.R.)	As Spec. 参考规格表	-55℃~+125℃, 25℃ is the refence temperature 参考温度
Short Time Overload 短时间过负载	± 1 %	RCWV*2.5 or Max.Overload voltage whichever is lower for 5 seconds 额定电压的2.5倍或最大负载电压5秒
Insulation Resistance 绝缘阻抗	≥ 1000MΩ	Apply 100Vdc for 1 minute 施加1分钟电压 100V <sub>dc</sub>
Endurance 负载寿命	± 1 %	70 ± 2℃,RCWV for 1000 hrs with 1.5 hrs"ON" and 0.5 hrs "OFF" 70 ± 2℃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	± 0.5%	40 ± 2℃,90~95%R.H.,RCWV for 1000 hrs with 1.5 hrs"ON" and 0.5 hrs "OFF" 在温度40 ± 2℃,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	As Spec. 参考规格表	Bending amplitude 3mm for 10 seconds 施力下压深度3毫米, 持续10秒
Solderability 焊锡性	95% min. coverage 导体爬锡面积大于95%	245 ± 5℃ for 3 seconds 245 ± 5℃锡炉中,持续3秒
Resistance to Soldering Heat 抗焊锡热	± 0.5%	260 ± 5℃ for 10 seconds 260 ± 5℃锡炉中,持续10 秒
Dielectric Withstand Voltage 耐电压	By Type 根据型号	Apply Max.Overload Voltage for 1 minute 最大操作电压*1.42倍, 持续1 分钟
Thermal Shock 热冲击	0.5%	-55℃ to +155℃ 5 cycles -55℃ to +155℃ 5 次
Low Temperature Operation 低温操作	0.5%	1 hour, -65℃ followed by 45 minutes of RCWV 在45分钟RCWV之后, 再在-65℃温度下持续1小时

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℃; 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℃; 湿度 < 80%RH

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