

规格书

SPECIFICATION FOR APPROVAL

产品名称：____陶瓷贴合金电阻 CSM 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

地址：深圳市福田区华强北路华强广场 A 座 16 楼

规格如有更改，恕不另行通知

2025/A

| 陶瓷贴合金电阻 CSM 系列

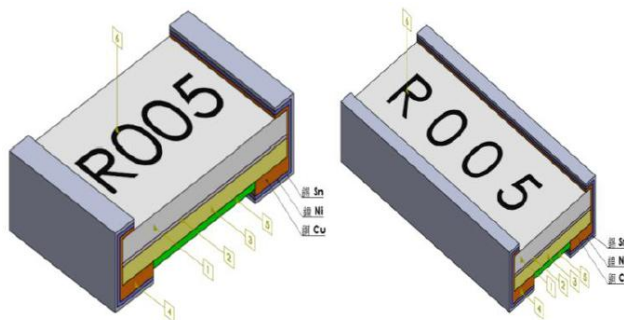
摘要 Resume >>>

Low Resistance / TCR / EMF (only for MnCu)/Inductance
低电阻/TCR/EMF (仅适用于 MnCu) /电感

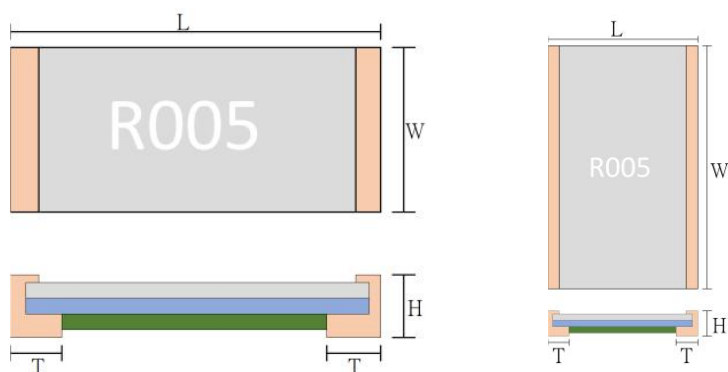
Excellent long term stability
良好的长期稳定性

结构图 Construction >>>

- ① 底层：氧化铝陶瓷
Substrate : Alumina Ceramic
- ② 粘合层：环氧树脂
Adhesive : Epoxy
- ③ 电阻体：铜合金
Resistive element : Cu – alloy
- ④ 端电极：铜镍锡
Terminal electrode : Sn、Ni、Cu
- ⑤ 保护层：阻燃环氧树脂，符合 UL-94-V0 要求
Protective coating : Flame-retardant epoxy, meets UL- 94-V0 requirements(green)
- ⑥ 标记涂层：阻燃环氧树脂，符合 UL-94-V0 要求
Marking coating : Flame-retardant epoxy, meets UL- 94-V0 requirements (black)



尺寸 Dimensions >>>



Size 规格	Power Rating 额定功率	Resistance Range 阻值范围	L (mm)	W (mm)	H (mm)	T (mm)
0603	1/2W	5mΩ	1.60±0.25	0.80±0.25	0.65±0.20	0.50±0.20
		6~50mΩ				0.40±0.20
0805	3/4W	4~270mΩ	2.00±0.25	1.20±0.25	0.65±0.20	0.50±0.20
1206	1W	4~700mΩ	3.20±0.25	1.60±0.25	0.65±0.20	0.68±0.30
2010	1.5W	2~3mΩ	5.08±0.25	2.54±0.25	0.65±0.20	2.10±0.30
		4~500mΩ				0.70±0.30
2512	2W	2mΩ	6.40±0.30	3.20±0.30	0.75±0.20	1.65±0.30
		3mΩ			0.75±0.20	1.65±0.30
		4~560mΩ			0.65±0.20	1.05±0.30
3921	4W	10~50mΩ	11.10±0.30	5.10±0.30	0.65±0.30	2.36±0.30

陶瓷贴合金电阻 CSM 系列

4527	5W	10~50mΩ	11.60±1.0	7.10±1.0	0.65±0.30	2.70±0.40
0508	1W	1~100mΩ	1.35±0.20	2.10±0.20	0.65±0.20	0.43±0.20
0612	1.5W	1mΩ	1.60±0.25	3.20±0.25	0.65±0.20	0.50±0.30
		2~100mΩ				0.40±0.20
0815	2W	1~20mΩ	2.20±0.20	3.80±0.20	0.65±0.20	0.61±0.20
1020	2W	1~9mΩ	2.50±0.30	5.00±0.30	0.65±0.20	0.65±0.20
1225	3W	1~100mΩ	3.20±0.30	6.40±0.30	0.65±0.20	0.60±0.20
2139	5W	1~100mΩ	5.10±0.40	11.10±0.30	0.65±0.30	0.90±0.30

型号名称 Part Numbering >>>

CSM	10	6432(2512)	LR005	F	T	S
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	Power 功率
CSM : 陶瓷贴合金	10	1608 (0603) 2012 (0805) 3216 (1206) 5025 (2010) 6432 (2512) 3921 4527 0508 0612 0815 1020 1225 2139	LR005:5mΩ LR020:20mΩ LR150:150mΩ	D=±0.5% F=±1% G=±2%	T:Taping Reel T: 编带 B:Bulk B: 散装	Z:5 W H:4 W R:3 W S:2 W N:1 W A:1.5W Q:3/4W U:1/2W

标准规格表 Stand Electrical Specifications>>>

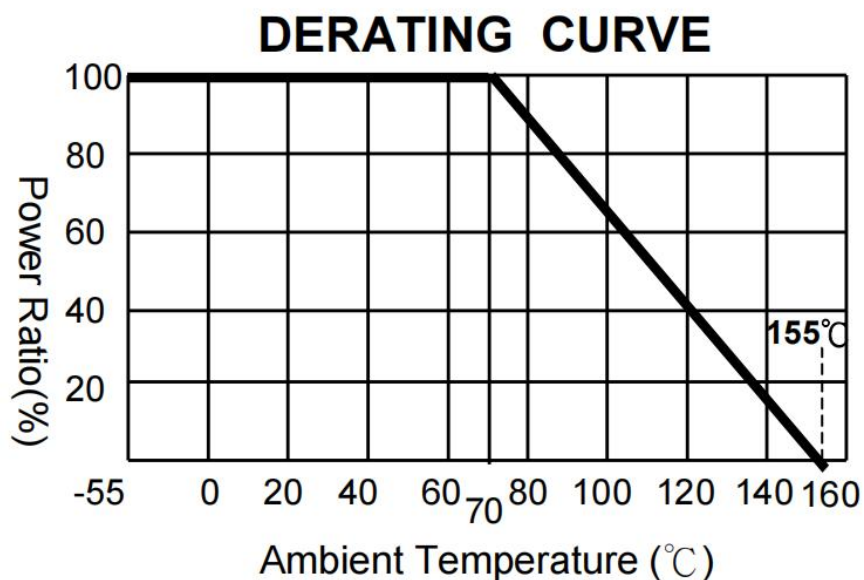
Type 型号	Item 项目	Power Rating 额定功率	Max Working Current 最大工作电流(A)	Resistance Range 阻值范围			TCR 温度系数 (PPM/°C)
				±0.5%	±1%	±2%	
0603	1/2W		√(P/R)	---	5mΩ~9mΩ	---	±75
			√(P/R)	10mΩ~50mΩ		---	±50
0805	3/4W		√(P/R)	---	4mΩ~9mΩ	---	±75
			√(P/R)	10mΩ~270mΩ		---	±50
1206	1W		√(P/R)	---	4mΩ~9mΩ	---	±75
			√(P/R)	10mΩ~700mΩ		---	±50
2010	1.5W		√(P/R)	---	2mΩ~9mΩ	---	±100
			√(P/R)	10mΩ~500mΩ		---	±50
2512	2W		√(P/R)	---	2mΩ~9mΩ	---	±75
			√(P/R)	10mΩ~560mΩ		---	±50
3921	4W		√(P/R)	10mΩ~50mΩ		---	±50
4527	5W		√(P/R)	10mΩ~50mΩ		---	±50
0508	1W		√(P/R)	---	---	1mΩ	±100
			√(P/R)	---	2mΩ~9mΩ	---	±100
			√(P/R)	10mΩ~100mΩ		---	±50

陶瓷贴合金电阻 CSM 系列

0612	1.5W	$\sqrt{P/R}$	---	---	1m Ω	± 100
		$\sqrt{P/R}$	---	2m $\Omega \sim 9m\Omega$	---	± 100
		$\sqrt{P/R}$	10m $\Omega \sim 100m\Omega$		---	± 50
0815	2W	$\sqrt{P/R}$	---	---	1m Ω	± 100
		$\sqrt{P/R}$	---	2m $\Omega \sim 9m\Omega$	---	± 100
		$\sqrt{P/R}$	10m $\Omega \sim 20m\Omega$		---	± 50
1020	2W	$\sqrt{P/R}$	---	1m $\Omega \sim 9m\Omega$	---	± 100
1225	3W	$\sqrt{P/R}$	---	1m $\Omega \sim 9m\Omega$	---	± 100
		$\sqrt{P/R}$	10m $\Omega \sim 100m\Omega$		---	± 50
2139	5W	$\sqrt{P/R}$	---	1m $\Omega \sim 9m\Omega$	---	± 100
		$\sqrt{P/R}$	10m $\Omega \sim 100m\Omega$		---	± 50

◆Operating Temp.Range 操作温度范围：0603 ~ 2139：-55 ~ 155℃

功率衰减曲线图 Derating 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
Temperature Coefficient 温度系数	As Spec. 参考规格表	At 25 / -55℃ and 25℃ /+125℃, 25℃ is the reference temperature 25℃为参考温度
Short Time Overload 短时间过负载	$\pm(1.0\%+0.5m\Omega)$	The number of rated power are as follows: 2.5 times of rated power for 5 seconds. 额定功率的 2.5 倍，持续 5 秒。
High Temperature Exposure 高温储存	$\pm(1.0\%+0.5m\Omega)$	At 155℃ for 1000 hours. 在+155℃下持续 1000 小时
Low Temperature operation 低温储存	$\pm(1.0\%+0.5m\Omega)$	At -55℃ for 1000 hours 在-55℃下持续 1000 小时
Resistance to Soldering Heat 耐焊接热	$\pm(1.0\%+0.5m\Omega)$	260±5℃ for 10 seconds 260±5℃锡炉中，持续 10 秒
Damp Heat with Load 耐湿负荷	$\pm(2\%+0.5m\Omega)$	40±2℃,90~95%R.H.,RCWV for 1000hrs with 1.5hrs"ON" and 0.5hrs"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
Rapid Change of Temperature 冷热冲击	$\pm(1.0\%+0.5m\Omega)$	-55℃ to +155℃,100 cycles -55℃至+155℃，100 个循环
Operational Life 工作寿命	$\pm(2\%+0.5m\Omega)$	70±2℃,RCWV for 1000hrs with 1.5hrs"ON"and 0.5hrs"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
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
Mechanical Shock 机械振动	$\pm(1.0\%+0.5m\Omega)$	a =50G , t =11ms, 5 times shock a =50G , t =11ms, 5 次冲击
Board Flex 端子弯曲	$\pm(1.0\%+0.5m\Omega)$	Bending once 2mm for 10 seconds 弯曲一次，每次 2mm，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℃±5℃ 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℃±5℃ 相对湿度：25%~75%RH

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