



江西沁龙科技有限公司

合金电流侦测片式电阻

产 品 规 格 书

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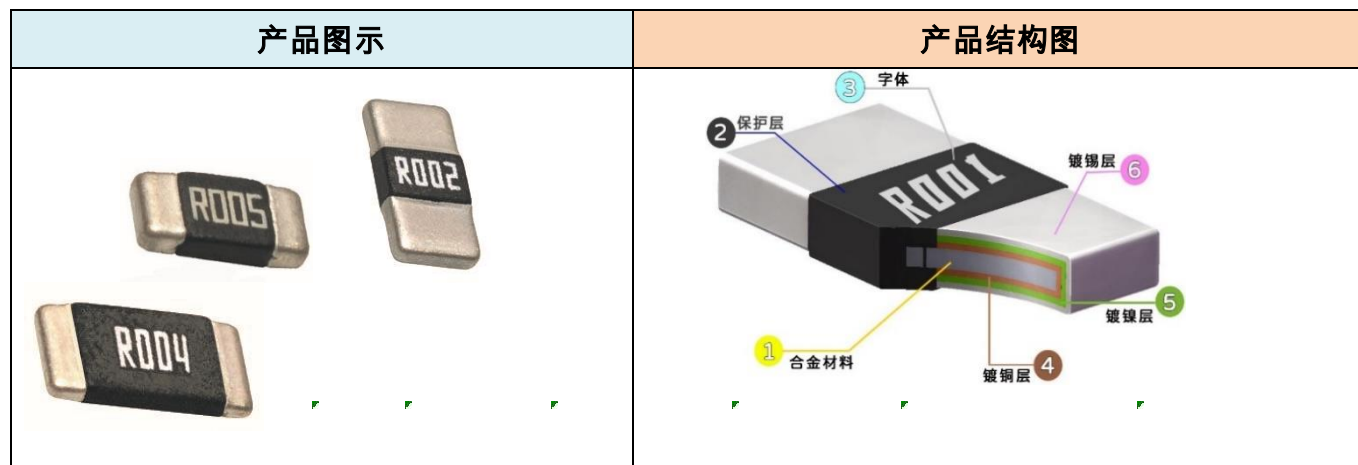
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合金电流侦测片式电阻

METAL ALLOY CURRENT SENSING CHIP RESISTOR

● 产品图示与特点 Product Illustrations and Features



产品特点	应用领域	
■厚实的铜材质导体 ■金属化的材质	■ 电池管理系统(BMS)	■ 电流感测与分压
■超长期的稳定性 ■无卤素无铅符合 RoHS	■ 新能源汽车 ■ 充电桩	■ 电源供应器 ■ LED 应用
■稳定的材料 ■卓越的信赖性	■ 充电器 ■ 智能家居	■ 电动工具 ■ 大型家电
■高额定功率 ■超低的温飘(好的 TCR)	■ 消费性电子 ■ 主机板	■ 锂电保护 ■ 清洁家电

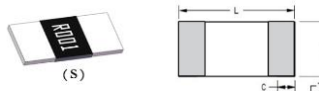
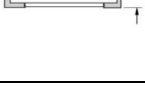
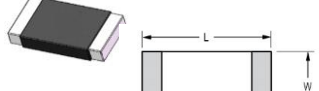
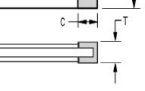

● 品名构成 Type Designation

Single Chip Resistor

<u>CM</u>	<u>2512</u>	<u>F</u>	<u>N</u>	<u>R001</u>	<u>B</u>	<u>3</u>	<u>S</u>
1	2	3	4	5	6	7	8
1	2	3	4	5	6	7	8
Series Name	Size	Rseistance Tolerance	Material	Rseistance	Packing style	Rated Power	备注
CM 合金电 流侦测电阻	1206 2512 HP12 (2512 高功率)	D=±0.5% F=±1% G=±2% J=±5%	N=合金 M=MnCu K=Karma	R001=1mΩ R010=10mΩ R100=100mΩ R200=200mΩ	P=Paper Tape B=Embossed Plastic V=bulk (散料)	A=1/2W 1=1W 2=2W 3=3W	S:宽电极 M : 印字+下划线 U : 印字+上划线 P : 印字定制 SM : 宽电极印字 +下划线 SU : 宽电极印字+ 上划线

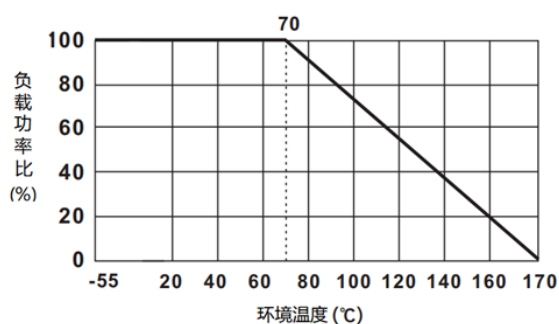
*高功率产品含散热片结构

● 规格尺寸 Dimensions

产品尺寸图			产品尺寸 (mm)			
型别	分类	图示	L	W	C	T
CM2512**(S)	合金电阻		6.4±0.2	3.2±0.2	2.10±0.25	0.9±0.2
CMHP12**(S)	高功率合金电阻		6.4±0.2	3.2±0.2	2.10±0.25	0.9±0.2
CM2512**	合金电阻		6.4±0.2	3.2±0.2	0.95±0.25	0.9±0.2
CMHP12**	高功率合金电阻		6.4±0.2	3.2±0.2	0.95±0.25	0.9±0.2
CM1206**	合金电阻		3.2±0.2	1.6±0.2	0.50±0.30	0.7±0.15

● 负荷下降曲线 Derating Curve

工作温度范围 (Operating Temperature Range) : -55°C~+170°C.



当电阻在高于 70°C 的周围环境中工作时, 最大负载功率应该按照以上曲线减少。

When the resistor is operating in an ambient environment above 70 °C, the maximum load power should be reduced according to the above curve.

备注:

※ 额定电流计算公式 (The rated current is calculated by the following formula) :

$$I = \sqrt{P / R}$$

I : 额定电流 (Rated current) (A)

P : 额定功率 (Rated Power) (W)

R : 电阻阻值 (Resistance) (ohm)

※ 如果计算出的电流超过此型别的最大工作电流, 则此型别的最大工作电流为此电阻的额定电流。

In case the value calculated by the formula exceed the maximum working current as above table, the maximum working current shall be regarded as rated current.

● 标准电气规范

型别	最高额定功率 (W)	温度系数 TCR (ppm/° C)	使用温度范围 (° C)	阻值范围 (mΩ)	精度(%)
CM1206**	0.5	±50	-55~+170	101 ~200	±1%(F), ±2%(G), ±5%(J)
CM1206**	1	±50	-55~+170	1~100	±1%(F), ±2%(G), ±5%(J)
CM2512**	2	±50	-55~+170	1~10	±1%(F), ±2%(G), ±5%(J)
CM2512**S	2	±50	-55~+170	1~4	±1%(F), ±2%(G), ±5%(J)
CMHP12**	2	±50	-55~+170	101~500	±1%(F), ±2%(G), ±5%(J)
CMHP12**	3	±50	-55~+170	1~100	±1%(F), ±2%(G), ±5%(J)
CMHP12**S	3	±50	-55~+170	1~4	±1%(F), ±2%(G), ±5%(J)

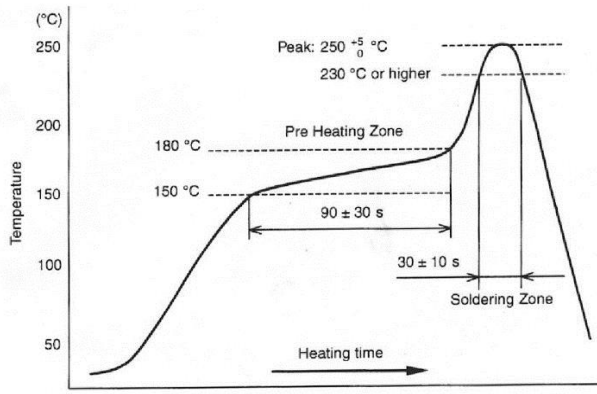
● 信赖性测试 Reliability Test Methods

测试项目 Test Item	测试方法 Test Methods	测试条件 Test Conditions	规格 Specification
温度系数 Temperature Coefficient	IEC60115-1 4.8	$TCR = (R - R_0) / (t - t_0) R_0 \times 10^6 \text{ (ppm)}$ R_0 电阻在室温下的阻值 (resistance at room temperature) R 电阻在+125℃或+155℃下的阻值 (resistance at +125℃ or +155℃) t_0 室温 (room temperature) t 测试温度 (test temperature +125℃ or +155℃)	请参考特性规格表， Please refer to the Spec.
高温储存 High Temperature Exposure	MIL-STD-202 Method 108	125℃下放置 1000H，试验结束 24±4 小时后量测试验前后阻值变化率。 1000 hrs. @T=125℃. Measure the variation of resistance at 24±4 hours after test conclusion. $\Delta R\% = \frac{R_2 - R_1}{R_1} * 100\%$ $R_1 = \text{试验前阻值 (resistance before test)}$ $R_2 = \text{试验后阻值 (resistance after test)}$	< ±1%
低温储存 Low Temperature operation	IEC60115-1 4.23.4	-55℃下放置 1000 小时后，静置 1 小时以上量测试验前后阻值变化率。1000hours. @T=-55℃. Measure the variation of resistance at 1 hour after test conclusion. $\Delta R\% = \frac{R_2 - R_1}{R_1} * 100\%$ $R_1 = \text{试验前阻值 (resistance before test)}$ $R_2 = \text{试验后阻值 (resistance after test)}$	< ±1%
温度循环 Temperature cycling	JESD22 Method JA-104	-55℃/+125℃各 30min，循环 1000 次，试验结束 24±4 小时后量测试验前后阻值变化率。 1000Cycles (-55℃ to +125℃) 30min Measurement at 24±4 hours after test conclusion. Measure the variation of resistance at 24±4 hours after test conclusion. $\Delta R\% = \frac{R_2 - R_1}{R_1} * 100\%$ $R_1 = \text{试验前阻值 (resistance before test)}$ $R_2 = \text{试验后阻值 (resistance after test)}$	< ±1%

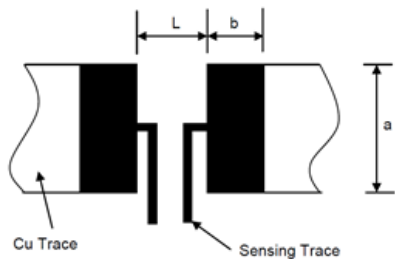
● 信赖性测试 Reliability Test Methods

测试项目 Test Item	测试方法 Test Methods	测试条件 Test Conditions	规格 Specification
短时间过负荷 Short-time overload	IEC60115-1 4.13	<p>加载 5 倍的额定功率，时间 5 秒后测量试验前后的阻值变化率。</p> <p>Applied 5.0 times of rated power for 5 second. Measure the variation of resistance.</p> $\Delta R\% = \frac{R_2 - R_1}{R_1} * 100\%$ <p>R1 = 试验前阻值(resistance before test) R2 = 试验后阻值(resistance after test)</p>	< ±1%
耐湿特性 Biased Humidity	MIL-STD-202 METHOD 103	<p>加载 10% 额定功率，85℃/85%RH, 通电 1.5 小时，断电 0.5 小时；, 试验结束 24±4 小时后进行测试</p> <p>1000 hours 85℃/85%RH. 1.5hours on and 0.5 hour off.</p> <p>Note: Specified conditions: 10% of operating power.</p> <p>Measurement at 24±4 hours after test conclusion.</p> $\Delta R\% = \frac{R_2 - R_1}{R_1} * 100\%$ <p>R1 = 试验前阻值(resistance before test) R2 = 试验后阻值(resistance after test)</p>	< ±1%
负荷寿命 Operational life	MIL-STD-202 METHOD 108	<p>电阻放入恒温箱中，温度 70±2℃，通电额定电流 1.5 小时，断电 0.5 小时；重复通断电至试验时间 1000⁺⁴⁸/₋₀ 小时。量测试验前后阻值变化率。</p> <p>Put the specimen in a chamber at 70±2℃ temperature , and applied rated currernt for 1.5H and rested for 0.5H repeatedly till total test time is 1000⁺⁴⁸/₋₀ .. Measure the variation of resistance.</p> $\Delta R\% = \frac{R_2 - R_1}{R_1} * 100\%$ <p>R1 = 试验前阻值(resistance before test) R2 = 试验后阻值(resistance after test)</p>	< ±1%

● 信赖性测试 Reliability Test Methods

测试项目 Test Item	测试方法 Test Methods	测试条件 Test Conditions	规格 Specification
焊锡性 Solderability	J-STD-002B test B	沾助焊剂后浸入锡炉，锡炉温度 245±5℃，时间 2~3 秒 Dip the terminal in a flux and then dip into a soldering bath at 245±5℃ for 2~3sec.	最少 95% 面积上锡 (Min 95% coverage)
抗焊锡热 Resistance to soldering heat	IEC60115-1 4.18	沾助焊剂后浸入锡炉，锡炉温度 260±5℃，时间 10±1 秒，测量试验前后的阻值变化率。 Dip the terminal in a flux and then dip into a soldering bath at 260±5℃ for 10±1sec. Measure the variation of resistance. $\Delta R\% = \frac{R_2 - R_1}{R_1} * 100\%$ R1 = 试验前阻值(resistance before test) R2 = 试验后阻值(resistance after test)	< ±1%
回流焊 IR Reflow-Soldering Profile	参考右图		焊锡无异常
负荷寿命 Operational life	MIL-STD-202 METHOD 108	电阻放入恒温箱中，温度 125±3℃，通 36% 电额定功率 1.5 小时，断电 0.5 小时；重复通断电至试验时间 1000 ⁺⁴⁸ / ₋₀ 小时。量测试验前后阻值变化率。 Put the specimen in a chamber at 125±3℃ temperature, and applied 36% rated power for 1.5H and rested for 0.5H repeatedly till total test time is 1000 ⁺⁴⁸ / ₋₀ .. Measure the variation of resistance. $\Delta R\% = \frac{R_2 - R_1}{R_1} * 100\%$ R1 = 试验前阻值(resistance before test) R2 = 试验后阻值(resistance after test)	< ±1%
端子弯曲 Terminal Bending	IEC60115-1 4.32	弯曲 2mm，60 秒，量测试验前后阻值变化率。 Min 2mm deflection, 60sec. Measure the variation of resistance. Measure the variation of resistance.	< ±1%

■ 推荐焊盘尺寸 Recommend Solder Pad Size




单位: mm

型别Dimensions	阻值范围 Resistance Range	a	b	L
CM1206**	$R \geq 1 \text{ m}\Omega$	1.80 ± 0.1	2.3 ± 0.1	1.0 ± 0.1
CM2512**S	$R \leq 4 \text{ m}\Omega$	4.0 ± 0.1	3.1 ± 0.1	1.3 ± 0.1
CM2512**	$R \geq 2 \text{ m}\Omega$	4.0 ± 0.1	2.1 ± 0.1	4.1 ± 0.1
CMHP12**S	$R \leq 4 \text{ m}\Omega$	4.0 ± 0.1	3.1 ± 0.1	1.3 ± 0.1
CMHP12**	$R \geq 2 \text{ m}\Omega$	4.0 ± 0.1	2.1 ± 0.1	4.1 ± 0.1

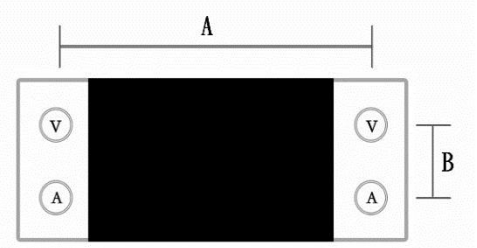
■ 字码标示(Marking on the Resistor's Body)

$\pm 0.5\%$, $\pm 1\%$, $\pm 2\%$, $\pm 5\%$ 的产品, 以四字码标示, 第一位字码 R 标示 10^{-3} , 后三位表示阻值的有效数字。

$\pm 5\%$, $\pm 1\%$, $\pm 2\%$, $\pm 5\%$ tolerance product: the marking is 4 digits, The first letter 'R' denotes 10^{-3} , The other three digits declare resistance.

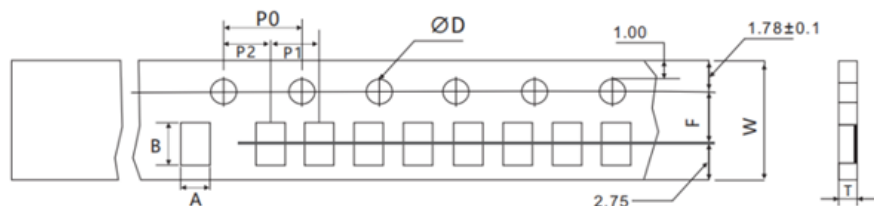
字码表示 < 正面印字, 4 码表示 > CM2512** / CM2512**(S) / CMHP12** / CMHP12**(S)		
系列	功率	字码图示
CM2512**	2W	
CM2512**(S)/, CMHP12**(S)	2W/3W	
CMHP12**	3W (可代 2W)	
CM1206**	1/2W, 1W	

*CM1206 ** 同中央 2W/3W 图示印字; EX: R005=5mΩ; R001= 1mΩ

阻值量测点			
	Umit: mm		
	型别	A	B
阻值检测机标准量测位置 <4 线式, 量测背面电极>	CM1206**	2.60 ± 0.25	0.90 ± 0.25
	CM2512**	5.60 ± 0.25	2.00 ± 0.25
	CMHP12**	5.60 ± 0.25	2.00 ± 0.25

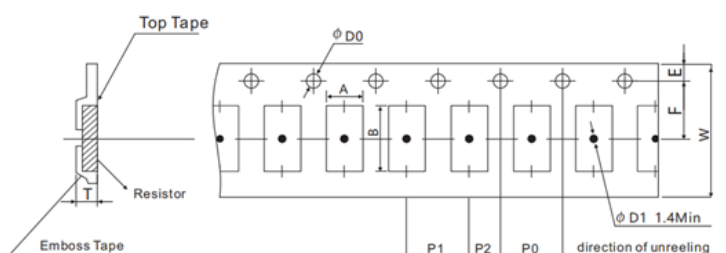
■ 包装 Packaging

● 纸带尺寸 Tape Specification



单位: mm

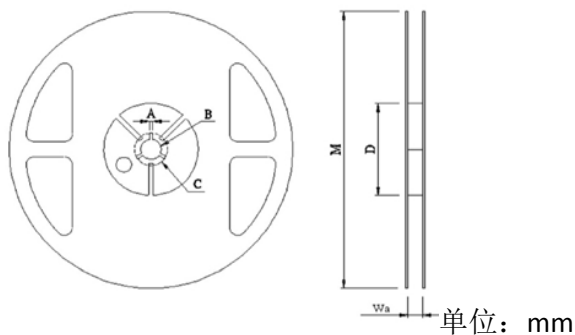
Packing	Type	A	B	ØD	F	P0	P1	P2	W	T
Paper Tape	CM1206	2.0±0.20	3.6±0.20	1.50± $\begin{smallmatrix} 0.1 \\ 0.0 \end{smallmatrix}$	3.50±0.05	4.00±0.10	4.00±0.10	2.00±0.1	8.00±0.20	0.81±0.10



单位: mm

Packing	Type	A	B	W	F	E	P ₀	P ₁	P ₂	ØD ₀	T
Emboss	CM2512 CMHP12	3.60±0.20	6.90±0.20	12.0±0.20	5.50±0.05	1.75±0.1	4.00±0.1	4.00±0.10	2.0±0.1	1.50± $\begin{smallmatrix} 0.1 \\ 0.0 \end{smallmatrix}$	1.20±0.15

● 卷盘 Reel



单位: mm

尺寸 Dimensions	A	B	C	D	M	W
CM1206	2.00±0.5	13.50±0.50	21.00±0.50	60.00±1.00	178±2.00	9.00±0.50
CM2512/HP12	2.00±0.5	13.50±0.50	21.00±0.50	80.00±1.00	178±2.00	13.80±0.50

● 包装数量 Packaging Quantity

包装方法 Packaging style	编带 Tape & reel		塑料袋散装 Case	
型号 Type	CM1206	CM2512/HP12	CM1206	CM2512/HP12
数量 Quantity(pcs)	5000	4000	≤10000	≤4000

■ 工作和储存温度 Operation and Storage Temperature

	MIN	MAX
Operate Temperature 工作温度	-55°C	70°C
Storage Temperature 储存温度	5°C	30°C
Storage Humidity 储存湿度	40%	80%
Shelf Life 保存期限	2 Years 2年	

■ 片式电阻器使用说明 Chip Resistor Instructions for Use

- 本产品在以下特殊环境下应用，性能可能会受到影响：
 - 1、在各种类型的液体，包括水、油、化学品、有机溶剂的使用。
 - 2、在户外直接暴露在阳光的地方，或在灰尘多的地方使用。
 - 3、在产品暴露的地方，有海风或腐蚀性气体，包括氯气、硫化氢、氨气、二氧化硫、二氧化氮等。
 - 4、在产品暴露于静电或电磁波的地方使用。
 - 5、在产生热量的部件、塑料线或其它易燃物品附近使用。
 - 6、在用树脂或其他涂层材料密封产品的情况下使用。
 - 7、焊接后使用不洁焊料或使用水或水溶性清洗剂清洗产品。
- Application of the products in a special environment can deteriorate product performance:
 - 1、Use in various types of liquid, including water, oils, chemicals, and organic solvents.
 - 2、Use outdoors where the products are exposed to direct sunlight, or in dusty places.
 - 3、Use in places where the products are exposed to sea winds or corrosive gases, including Cl₂, H₂S, NH₃, SO₂, and NO₂ etc.
 - 4、Use in places where the products are exposed to static electricity or electromagnetic waves.
 - 5、Use in proximity to heat-producing components, plastic cords, or other flammable items.
 - 6、Use involving sealing or coating the products with resin or other coating materials.
 - 7、Use involving unclean solder or use of water or water-soluble cleaning agents for cleaning after soldering.

- 产品使用注意事项

- 1、避免采用超过正常额定功率的功率，超过额定功率的稳能负载条件下可能会对产品性能和可靠性产生负面影响。
- 2、用镊子拿起产品时要小心，有可能会将保护或电阻体夹碎。
- 3、手动安装产品时，烙铁头勿触碰产品。。

- Precautions on use of products

- 1、 Avoid applying power exceeding normal rated power, exceeding the power rating under steady-state loading condition may negatively affect product performance and reliability.
- 2、 Be careful when pick up the products with tweezers. There may be a care that the overcoat or the body can be chipped.
- 3、 Soldering tip shall not touch the product when install product manually.

