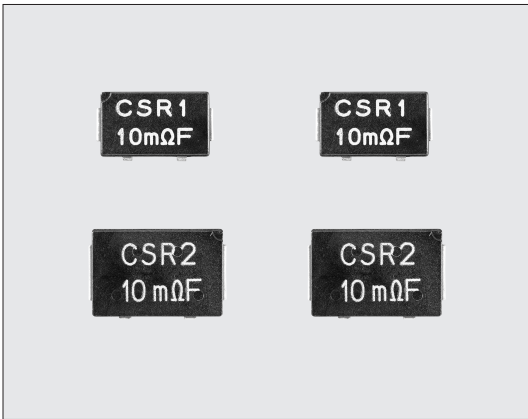


CSR 片式电流检测元件 Chip Current Sensing Resistors

电流检测电阻器
Current Detecting Chip Resistors



外观颜色: 黑色 Coating color: Black

■ 特点 Features

- 带有电流端子与电压端子（Kelvin端子）的4端子结构的电流检测用贴片电阻器。
- 在超低电阻的情况下，实现高精度电阻值。
- 在PCB板焊接后，实现阻值允许偏差也能达到D（±0.5%）或者F（±1.0%）。
- 电阻温度系数优异。（±50×10⁻⁶/K）。
- 使用符合UL94 V-0要求的阻燃性树脂。
- 可以适用于回流焊、波峰焊和烙铁焊。
- 端子不含铅的产品，是适用于欧盟RoHS。
- Current sensing chip resistors of 4-terminal construction with current terminals and voltage (KELVIN) terminals.
- Despite ultra low resistance, high resistance accuracy is realized.
- No change in resistance value after soldering to a circuit board, even for D (±0.5%) or F (±1.0%) class.
- Excellent T.C.R. achieved (±50×10⁻⁶/K)
- Flame retardant type resin is used. (UL94 V-0)
- Suitable for reflow, flow and iron solderings.
- Products with lead free termination meet EU-RoHS requirements.

■ 参考标准 Reference Standards

IEC 60115-1
JIS C 5201-1

■ 用途 Applications

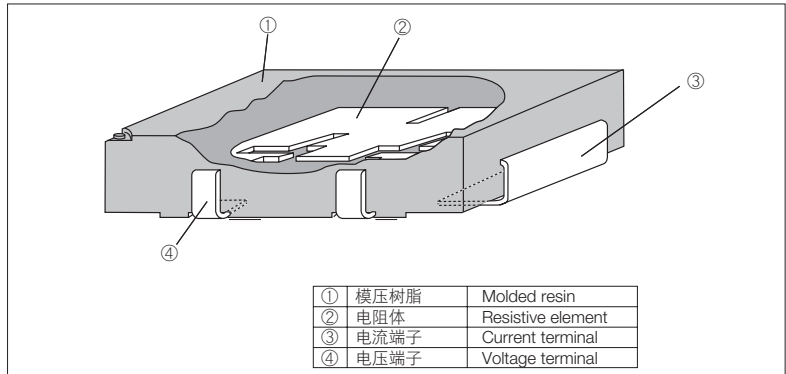
- 电动汽车 Electric automobiles
- 工业机器人 Industrial robots

■ 额定值 Ratings

型号 Type	额定功率 Power Rating	电阻值范围 Resistance Range (Ω)	阻值允许偏差 Resistance Tolerance	电阻温度系数 T.C.R. (×10 ⁻⁶ /K)	规定周围温度 Rated Ambient Temperature	使用温度范围 Operating Temp. Range	编带和包装数/卷 Taping & Q'ty/Reel (pcs)
							TE
CSR1	1W	5m~50m (E12)	D:±0.5%, F:±1.0%	±50	+70°C	-55°C~+125°C	1,000
CSR2	2W		F:±1.0%				

额定电压是√额定功率×公称电阻值所算出的值。
Rated voltage = √Power Rating × Resistance value.

■ 结构图 Construction



■ 品名构成 Type Designation

实例 Example

品种 Product Code	额定功率 Power Rating	端子表面材质 Terminal Surface Material	二次加工 Taping	公称电阻值*1 Nominal Resistance	阻值允许偏差 Resistance Tolerance
CSR	1 2	T: Sn (L: Sn/Pb)	TE: Plastic embossed CSR1: 10*12mm pitch BK: Bulk	4 digits	D: ±0.5% F: ±1%

※1

电阻值范围 (Ω) Resistance Value	4位显示 4 digits
5m~8.2m	5L00~8L20
10m~50m	10L0~50L0

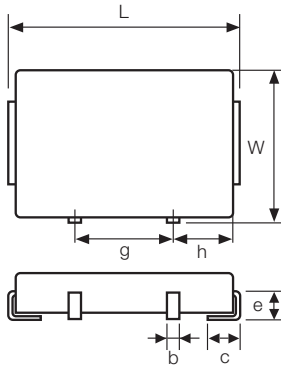
端子表面不含铅的产品成为标准。
欲知关于此产品含有的环境负荷物质详情（除EU-RoHS以外），请与我们联系。
编带细节请参考卷末附录C。

The terminal surface material lead free is standard.

Contact us when you have control request for environmental hazardous material other than the substance specified by EU-RoHS.

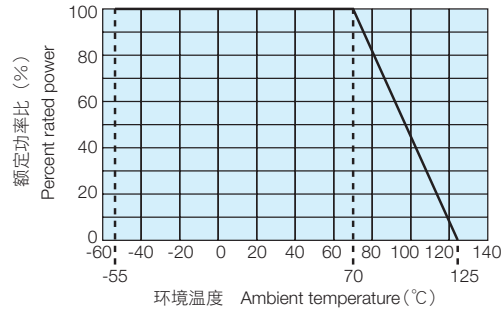
For further information on taping, please refer to APPENDIX C on the back pages.

外形尺寸 Dimensions



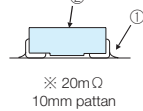
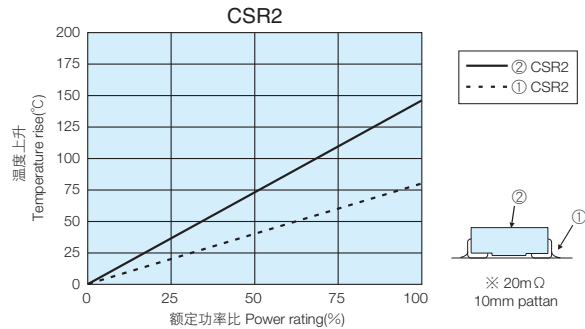
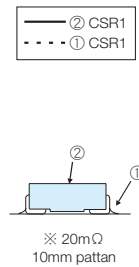
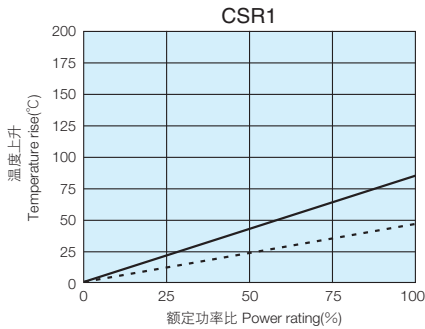
尺寸 Dimensions (mm)	型号 Type	
	CSR1	CSR2
L±0.5	10.8	12.8
W±0.3	6.2	8.2
t±0.2	2.1	3.1
a±0.3	3.0	5.0
b±0.2	0.8	1.0
c±0.5	1.4	2.0
d±0.5	1.2	2.0
e±0.3	1.3	2.2
f±0.3	1.3	2.2
g±0.1	5.0	6.0
h±0.1	2.5	3.0
Weight (g) Net/1,000pcs.	320	690

负荷减轻特性曲线 Derating Curve



在环境温度70℃以上使用时，应按照上图负荷减轻特性曲线，减小额定功率。
For resistors operated at an ambient temperature of 70°C or above, a power rating shall be derated in accordance with the above derating curve.

温度上升 Temperature Rise



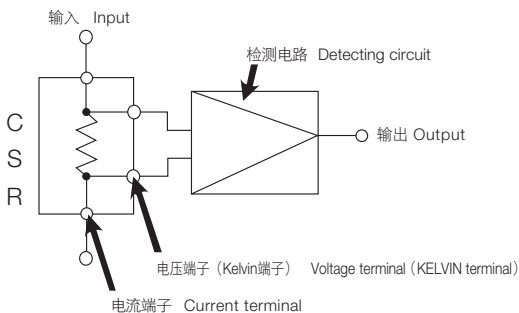
关于温度上升，是以我公司的测定条件下测得的。由于使用状况、使用基板的不同，数值会发生变化，因此，在使用之前，请向我们咨询。

Regarding the temperature rise, the value of the temperature varies per conditions and board for use since the temperature is measured under our measuring conditions. Please refer to us before use.

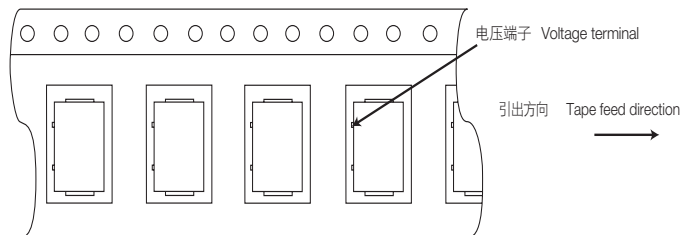
性能 Performance

试验项目 Test Items	标准值 Performance Requirements ΔR±%		试验方法 Test Methods
	保证值 Limit	代表值 Typical	
电阻值 Resistance	在规定的允许偏差内 Within specified tolerance	-	25°C
电阻温度系数 T.C.R.	在规定的值以内 Within specified T.C.R.	-	+25°C/+125°C
过载 (短时间) Overload (Short time)	1	1	额定功率×5倍施加5秒钟 Rated power ×5 for 5s
耐焊接热 Resistance to soldering heat	1	1	260°C±5°C, 10s±1s
温度突变 Rapid change of temperature	1	0.5	-55°C (30min.) / +125°C (30min.) 500 cycles
耐湿负荷 Moisture resistance	2	0.5	40°C±2°C, 90%~95%RH, 1000h 1.5小时ON、0.5小时OFF的周期 1.5h ON/0.5h OFF cycle
在70℃时的耐久性 Endurance at 70°C	1	0.5	70°C±2°C, 1000h 1.5小时ON、0.5小时OFF的周期 1.5h ON/0.5h OFF cycle
低温放置 Low temperature exposure	0.5	0.25	-55°C, 1h
高温放置 High temperature exposure	0.5	0.25	+125°C, 100h

应用范例 Example For Circuit



编带方向 Taping Direction



使用注意事项 Precautions for Use

- 当将电阻器用于分路电阻的场合，在设计电路图时请考虑周围电感的电磁感应效应。
- In case of using the low ohm resistors as shunt resistors, please lay out a pattern considering the electromagnetic induction with surrounding inductors.

本样本手册中记载的产品规格如有变更，恕不一一奉告。订购以及使用之前，请仔细确认规格表的内容。
用于车载设备、医疗设备、航空设备以及其它涉及人身安全、或可能引起重大损失的设备上时，请务必事先与我公司联系。这些产品在这类用途中出现故障或失灵可能导致人身事故或严重损坏。
Specifications given herein may be changed at any time without prior notice. Please confirm technical specifications before you order and/or use.
Contact our sales representatives before you use our products for applications including automobiles, medical equipment and aerospace equipment.
Malfunction or failure of the products in such applications may cause loss of human life or serious damage.