Automotive Low Resistance Thick Film Chip Resistors -CS

汽车级低阻厚膜晶片电阻-CS系列

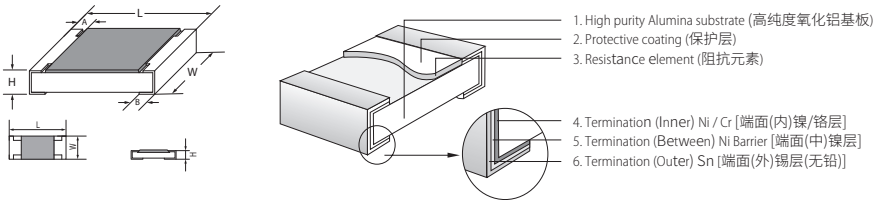
UNI-ROYAL 厚聲集團

ROYALOHM www.royalohm.com

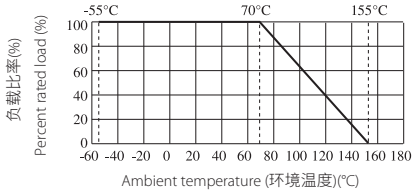
Feature (特性)

- Ultra-low Value 超低阻值
- Low Temperature Coefficient 低温度系数
- Suitable for reflow & wave soldering 适合波峰焊及回流焊
- Application: Power supply 应用于电源
- AEC-Q200 Qualified

Figures (型状)



Derating Curve & Specification (降功率曲线及性能)



Type 类型	Dielectirc Withstanding Voltage 绝缘耐压	Operating Temperature 工作温度范围
CS02	100V	-55°C~155°C
CS03	300V	-55°C~155°C
CS05	500V	-55°C~155°C
CS06	500V	-55°C~155°C
CS07	500V	-55°C~155°C
CS10	500V	-55°C~155°C
CS11	500V	-55°C~155°C
CS12	500V	-55°C~155°C

Type 类型	Size 尺寸	Power Rating 额定功率	L(mm)	W(mm)	H(mm)	A(mm)	B(mm)	Resistance Range 阻值范围 1% & 5%	T.C.R. 温度系数
CS02	0402 (1005)	1/8W	1.00±0.10	0.50±0.05	0.35±0.05	0.20±0.10	0.25±0.10	50mΩ~1Ω	50mΩ≤R<100mΩ: ±700 ppm/°C 100mΩ≤R≤1Ω: ±200 ppm/°C
CS03	0603 (1608)	1/5W	1.60±0.10	0.80±0.10	0.45±0.10	0.30±0.20	0.30±0.20	10mΩ~1Ω	10mΩ≤R<15mΩ: ±1500ppm/°C 15mΩ ≤R<20mΩ: ±1000ppm/°C 20mΩ≤R<30mΩ: ±800 ppm/°C 30mΩ≤R<33mΩ: ±600 ppm/°C 33mΩ≤R≤50mΩ: ±400 ppm/°C 50mΩ<R≤0.1Ω: ±300 ppm/°C 0.1Ω<R≤1Ω: ±200 ppm/°C
CS05	0805 (2012)	1/4W	2.00±0.15	1.25 +0.15 - 0.10	0.55±0.10	0.40±0.20	0.40±0.20	10mΩ~1Ω	10mΩ≤R≤15mΩ: ±800 ppm/°C 15mΩ<R≤25mΩ: ±600 ppm/°C 25mΩ<R≤50mΩ: ±400 ppm/°C 50mΩ<R≤0.2Ω: ±200 ppm/°C 0.2Ω<R≤1Ω: ±100 ppm/°C
CS06	1206 (3216)	1/3W	3.10±0.15	1.55 +0.15 - 0.10	0.55±0.10	0.45±0.20	0.45±0.20	10mΩ~1Ω	10mΩ≤R<15mΩ: ±700ppm/°C 15mΩ≤R≤30mΩ: ±400ppm/°C 30mΩ<R≤50mΩ: ±300ppm/°C 50mΩ<R≤0.1Ω: ±200ppm/°C 0.1Ω<R≤1Ω: ±150ppm/°C
CS07	1210 (3225)	1/2W	3.10±0.10	2.60±0.20	0.55±0.10	0.50±0.25	0.50±0.20	10mΩ~1Ω	10mΩ≤R<15mΩ: ±500ppm/°C 15mΩ≤R<20mΩ: ±400ppm/°C 20mΩ≤R≤50mΩ: ±300ppm/°C 50mΩ<R≤1Ω: ±100ppm/°C
CS10	2010 (5025)	3/4W	5.00±0.10	2.50±0.20	0.55±0.10	0.60±0.25	0.50±0.20	10mΩ~1Ω	10mΩ≤R<15mΩ: ±600ppm/°C 15mΩ≤R<20mΩ: ±500ppm/°C 20mΩ≤R≤30mΩ: ±300ppm/°C 30mΩ<R≤50mΩ: ±200ppm/°C 50mΩ<R≤0.1Ω: ±150ppm/°C 0.1Ω<R≤1Ω: ±100ppm/°C
CS11	1812 (4532)	3/4W	4.50±0.20	3.20±0.20	0.55±0.20	0.50±0.20	0.80±0.30	10mΩ~1Ω	10mΩ≤R<20mΩ: ±500ppm/°C 20mΩ≤R<50mΩ: ±400ppm/°C 50mΩ≤R≤0.1Ω: ±200ppm/°C 0.1Ω<R≤1Ω: ±100ppm/°C
CS12	2512 (6432)	1W	6.35±0.10	3.20±0.20	0.55±0.10	0.60±0.25	0.80±0.30	10mΩ~1Ω	10mΩ≤R<15mΩ: ±600ppm/°C 15mΩ≤R<20mΩ: ±400ppm/°C 20mΩ≤R≤30mΩ: ±300ppm/°C 30mΩ<R≤50mΩ: ±200ppm/°C 50mΩ<R≤0.1Ω: ±150ppm/°C 0.1Ω<R≤1Ω: ±100ppm/°C

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Performance Specifications (性能)

Test Item 试验项目	Reference standard 参考标准	Test Methods 试验方法	Evaluation Criteria 判定标准
Pre- and Post-Stress ElectricalTest (Short time Overload) 短時间过负荷	AEC-Q200 TEST 1 IEC60115 4.13	2.5x Rated voltage or Max. Overload Voltage whichever is lower for 5 seconds, then check the resistance. 2.5 倍额定电压或最大过负荷电压 (取其低者), 持续 5 秒钟 , 然后测阻值。	±1%: ±(1.0%+0.005Ω) ±5%: ±(2.0%+0.005Ω)
Biased Humidity 偏置湿度	AEC-Q200 TEST 7 MIL-STD-202 Method 103	1000 hours 85°C/85%RH. Note: Specified conditions:10% of operating power. Measurement at 24±4 hours after test conclusion. 在温度 85 °C，湿度 85% 的条件下放置 1000 小时。 注意 : 指定条件 : 工作功率的 10%，试验结束后 24±4 小时内进行测试。	±1%: ±(1.0%+0.005Ω) ±5%: ±(3.0%+0.005Ω)
Operational Life 工作寿命	AEC-Q200 TEST 8 MIL-STD-202 Method 108	1,000 hours at 125°C, applied de-rated (36%) power of continuous working voltage, 1.5 hours on, 0.5 hour off. 125°C 下 36% 的额定功率 , 1.5 小时 ON, 0.5 小时 OFF, 1000H.	±1%: ±(1.0%+0.005Ω) ±5%: ±(3.0%+0.005Ω)
Soldering Heat 耐焊接热	AEC-Q200 TEST 15 MIL-STD-202 Method 210	Condition B No pre-heat of samples. Note: Single Wave Solder - Procedure 2 for SMD and Procedure 1 for Leaded with solder within 1.5mm of device body. 条件 B，样品不进行预热。注意 : 单一波峰焊 - 表面贴装元件按程序 2: 引脚产品按程序 1 进行焊接，浸入器件本体的 1.5mm 的深度	±(1.0%+0.005Ω)
Solderability 可焊性	AEC-Q200 TEST 18 J-STD-002	SMD. Electrical test not required. Magnification 50 X. Conditions: 1. Baking 4 hours@155°C dry heat, dipping @ 245±3°C for 5±0.5 second. 2. Steam aging 8 hours, dipping @ 260±3°C for 30±0.5 second. 表面贴装元件 , 不需要电气测试 . 放大倍数 50 倍 . 测试条件 : 1. 155°C 干噪 4H 后 , 245°C 5±0.5 秒浸锡 . 2. 8H 蒸汽后 , 260±3°C 30±0.5 秒浸锡 .	Coverage must be over 95%.
Board Flex 弯曲	AEC-Q200 TEST 21 AEC-Q200-005	Bending 3mm(CS02-CS05)/2mm(CS06-CS12)for 60±5sec 弯曲 3mm(CS02-CS05)/2mm(CS06-CS12) 保持 60±5 秒	±(1.0%+0.005Ω)

* CS07 size in 0.75W 0.1~1Ω 100PPM/°C could be provided specially (* CS07 0.75W 0.1~1Ω 100PPM/°C 可特别提供)

Ordering Procedure (Example: CS12 1W 5% 22mΩ T/R-4000)

订购方式 (例如: CS12 1W 5% 22mΩ T/R-4000)

C S 1 2 1 W J 0 2 2 L T 4 E

Product Type (产品类型):
Fill-in 4 digits with the Chip resistor type as follow (填四位数表示产品类型):
CS02, CS03, CS05, CS06, CS07, CS10, CS11, CS12

Wattage (功率):
Fill-in 2 digits with the codes as follow (用下列代码填二位数):
W8=1/8W W4=1/4W
W5=1/5W W3=1/3W
W2=1/2W 07 = 3/4W
1W=1W

Tolerance (公差):
F = ±1%
J = ±5%

Resistance Value (阻值):
5% (E-24 series):
the 1st digit is "0", the 2nd & 3rd digits are for the significant figures of the resistance and the 4th indicate the number of zeros following;
5% 产品 (E-24 系列阻值):
第 1 位数是 0，第 2、3 位数表示阻值的有效数，第 4 位表示有几个 0;

1%(E-24, E-96 series):
the 1st to 3rd digits are for the significant figures of the resistance and the 4th indicate the number of zeros following.
1% 产品 (E-24, E-96 系列阻值):
第 1-3 位数表示阻值的有效数，第 4 位数表示有几个 0
The following numbers and the letter codes is to be usedto indicate the number of zeros in the 11th digit:
以下数字及字母用来表示第11位数有几个0:
$0=10^0$ $1=10^1$ $2=10^2$ $3=10^3$ $4=10^4$ $5=10^5$ $6=10^6$
$J=10^{-1}$ $K=10^{-2}$ $L=10^{-3}$ $M=10^{-4}$ $N=10^{-5}$ $P=10^{-6}$

Packing Qty. (包装数量):
4=4,000pcs,
5=5,000pcs
C=10,000pcs
D=20,000pcs

Special Feature (特征):
E = Lead Free (standard)
(无铅标准品)

Packing Type (包装类型):
T = T/R
(编带 / 卷带)
B = Bulk in Poly bag
(散装 / 袋装)

Remark: For more details, please check page 152, Part No. System. 注：更多细节详见 P152标准料号系统。