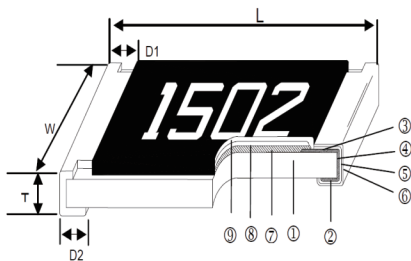


汽车级防硫化贴片电阻 (ASA) Automotive Grade Anti-Sulfurated Chip Resistor

■ **Resume 摘要**

Special construction to prevent sulfuration in a sulfur containing environment/AEC-Q200 Compliance.
可防止在含硫环境下硫化的特殊结构,符合AEC-Q200。

■ **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(RuO₂/Ag) 电阻层(氧化钌/银)
- ⑧ Primary Overcoat(Glass) 基层密封层(玻璃)
- ⑨ Secondary Overcoat(Epoxy) 第二层密封层(树脂)

■ **Dimensions 尺寸**

| Size 规格 | L | W | T | D ₁ | D ₂ |
|---------|-----------|-----------|-----------|----------------|----------------|
| 0201 | 0.60±0.03 | 0.30±0.03 | 0.23±0.03 | 0.15±0.05 | 0.15±0.05 |
| 0402 | 1.00±0.05 | 0.50±0.05 | 0.35±0.05 | 0.20±0.10 | 0.25±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 | 0.35±0.20 | 0.40±0.20 |
| 1206 | 3.10±0.15 | 1.55±0.15 | 0.55±0.10 | 0.50±0.25 | 0.50±0.25 |
| 1210 | 3.10±0.10 | 2.60±0.20 | 0.55±0.10 | 0.50±0.25 | 0.50±0.20 |
| 2010 | 5.00±0.10 | 2.50±0.15 | 0.55±0.10 | 0.60±0.25 | 0.50±0.20 |
| 2512 | 6.35±0.10 | 3.10±0.15 | 0.55±0.10 | 0.60±0.25 | 0.50±0.20 |

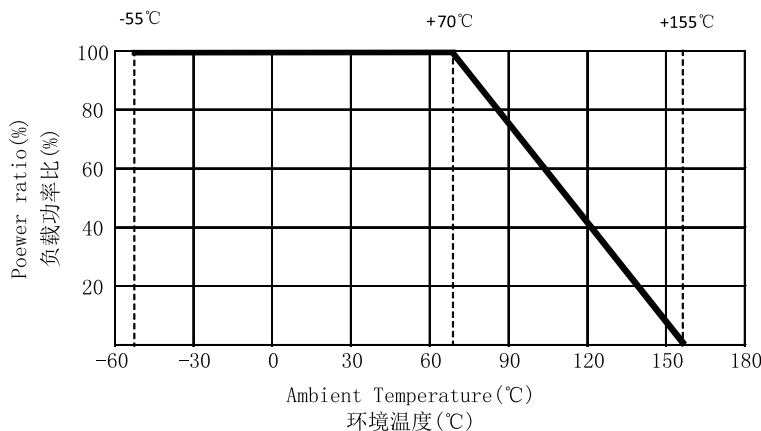
■ **Part Numbering 型号名称**

| ASA | 1005 (0402) | L1R00 | F | T |
|----------------------|--|--|---------------------------------|---------------------------------------|
| Product Type 产品类型 | Resistor Size 电阻规格 | Resistance 阻值 | Resistance Tolerance 阻值公差 | Packing Code 包装形式 |
| ASA | 0603 (0201) 1005 (0402) 1608 (0603) 2012 (0805) 3216 (1206) 3225 (1210) 5025 (2010) 6432 (2512) | ± 5% L182:1.8K Ω L1R3:1.3 Ω LR001:1m Ω ± 1% 及以下 L1801:1.8K Ω L1R30:1.3 Ω LR001:1m Ω | D= ± 0.5% F= ± 1% J= ± 5% | T: Taping Reel 卷装 B: Bulk 散装 |

■ **Standard Electrical Specifications 标准规格表**

| Item Type 项目 型号 | Power Rating 额定功率 | Operating Temp. Range 操作温度范围 | Max. Operating Voltage 最大工作电压 | Max. Overload Voltage 最大负载电压 | Resistance Range 阻值范围 | | | TCR温度系数 (PPM/°C) |
|-----------------------|----------------------|---------------------------------|----------------------------------|---------------------------------|--------------------------|-----------|-------|---------------------|
| | | | | | ± 0.5% | ± 1% | ± 5% | |
| 0201 | 1/20W | -55~125°C | 25V | 50V | / | 1 Ω~10M Ω | | ± 200 |
| 0402 | 1/16W | -55~155°C | 50V | 100V | 1 Ω~9.76 Ω | | ± 200 | |
| | | | | | 10 Ω~1M Ω | | ± 100 | |
| | | | | | 1.02M Ω~10M Ω | | ± 200 | |
| 0603 | 1/10W | -55~155°C | 50V | 100V | 1 Ω~9.76 Ω | | ± 400 | |
| | | | | | 10 Ω~1M Ω | | ± 200 | |
| | | | | | 1.02M Ω~10M Ω | | ± 200 | |
| 0805 | 1/8W | -55~155°C | 150V | 300V | 1 Ω~9.76 Ω | | ± 400 | |
| | | | | | 10 Ω~1M Ω | | ± 200 | |
| | | | | | 1.02M Ω~10M Ω | | ± 200 | |
| 1206 | 1/4W | -55~155°C | 200V | 400V | 1 Ω~9.76 Ω | | ± 400 | |
| | | | | | 10 Ω~1M Ω | | ± 200 | |
| | | | | | 1.02M Ω~10M Ω | | ± 200 | |
| 1210 | 1/3W | -55~155°C | 200V | 400V | 1 Ω~9.76 Ω | | ± 400 | |
| | | | | | 10 Ω~1M Ω | | ± 200 | |
| | | | | | 1.02M Ω~10M Ω | | ± 200 | |
| 2010 | 3/4W | -55~155°C | 200V | 400V | 1 Ω~9.76 Ω | | ± 200 | |
| | | | | | 10 Ω~1M Ω | | ± 100 | |
| | | | | | 1.02M Ω~10M Ω | | ± 200 | |
| 2512 | 1W | -55~155°C | 250V | 500V | 1 Ω~9.76 Ω | | ± 200 | |
| | | | | | 10 Ω~1M Ω | | ± 100 | |
| | | | | | 1.02M Ω~10M Ω | | ± 200 | |

■ **Derating Curve 功率衰减曲线图**



■ Environmental Characteristics 信赖性试验项目

| Item 项目 | 条件 | | | Test Method 测试方法 |
|---|--|---------------|--------|---|
| | ±1% & 及以下 | ±5% | 跳线 | |
| Temperature Coefficient of Resistance(T.C.R.) 温度系数(T.C.R.) | As Spec. 参考规格表 | | | -55°C~+125°C, 25°C is the reference temperature 参考温度 |
| Short Time Overload 短时间过负载 | ±(1.0%+0.1Ω) | ±(2.0%+0.1Ω) | <50mΩ | RCWV*2.5 or Max.Overload voltage whichever is lower for 5 seconds,2 seconds for high power series 额定电压的2.5倍或最大负载电压5秒,提升功率系列2秒 |
| Insulation Resistance 绝缘阻抗 | ≥10G | | | Max.Overload voltage for 1 minute 施加最大负载电压1分钟 |
| Endurance 负载寿命 | ±(2.0%+0.10Ω) | ±(3.0%+0.10Ω) | <100mΩ | 70±2°C,RCWV for 1000 hrs with 1,5 hrs"ON" and 0,5 hrs "OFF" 70±2°C温度中施加额定电压,1.5小时"开",0.5小时"关",共1000小时 |
| Biased Humidity 湿度偏差 | ±(2.0%+0.10Ω) | ±(3.0%+0.10Ω) | <100mΩ | 1000 hrs 85°C/85%RH 10% of operating power 工作功率1000小时 |
| High Temperature Exposure 高温暴露测试 | ±(1.0%+0.05Ω) | ±(1.5%+0.10Ω) | <50mΩ | at +125/+155°C for 1000hrs 置于+125/+155°C 温度中,共1000小时 |
| Bending Strength 弯折强度测试 | ±(1.0%+0.05Ω) | ±(1.0%+0.05Ω) | <50mΩ | Bending once for 5 seconds 2010,2512 sizes:2mm Other sizes:3mm 产品在测试板上,中央施力下压5秒 下压深度:2010,2512 :2毫米 其它尺寸 :3毫米 |
| Solderability 焊锡性 | 95% min. coverage 导体爬锡面积大于95% | | | 245±5°C for 3 seconds 245±5°C锡炉中,持续3秒 |
| Resistance to Soldering Heat 抗焊锡热 | ±(0.5%+0.05Ω) | ±(1.0%+0.05Ω) | <50mΩ | 260±5°C for 10 seconds 260±5°C锡炉中,持续10秒 |
| Voltage Proof 耐电压 | No breakdown or flashover 无击穿或跳火现象 | | | 1.42 times Max.Operating Voltage for 1 minute 最大操作电压*1.42倍,持续1分钟 |
| Leaching 溶蚀测试 | Individual leaching area ≤5% Total leaching area ≤10% 导体各面溶蚀区域≤5% 导体总面积溶蚀区域≤10% | | | 260±5°C for 30 seconds 260±5°C锡炉中,持续30秒 |
| Temperature Cycling 温度循环 | ±(0.5%+0.05Ω) | ±(1.5%+0.05Ω) | <50mΩ | -55° C to +125° C, 1000 cycles -55° C to +125° C, 循环1000次 |
| Mechanical Shock 机械冲击 | ±(0.25%+0.05Ω) | ±(1.0%+0.05Ω) | <50mΩ | Wave Form: Tolerance for half sine shock pulse. 波形: 半个正弦冲击脉冲的精度 Peak value is 100g 's. Normal duration (D) is 6. 峰值为100g 's, 正常为6. |
| Vibration 振动 | ±(0.5%+0.05Ω) | ±(1.0%+0.05Ω) | <50mΩ | 5 g ' s for 20 min., 12 cycles each of 3 orientations,10-2000 Hz 5g's持续时间为20分钟,3次10-2000Hz的定向,共12次循环 |
| ESD 静电释放 | ±(1%+0.05Ω) | | | Human body, 2KV 人体, 2KV |
| Flame Retardance 阻燃性 | Not flame 不产生火焰 | | | Temperature sensing at 500 °C, voltage power subjected to 32VDC current clamped up to 500ADC and decreased in 1.0VDC/hour. 感应温度在500 °C, 电压需为32VDC上升到500ADC, 然后降为1.01.0VDC/小时 |
| Resistance to solvents 耐溶剂性 | Markin Unsmearcdg 丝印不模糊 | | | Add Aqueous wash chemical - OKEM Clean or equivalent. Do not use banned solvents. 添加液体洗涤剂-OKEM清洗或其他等同溶剂。不可使用禁用溶剂 |
| Terminal strength 端子强度 | No broken 不产生断裂 | | | Force of 1.8kg for 60 seconds. 使用相当于1.8kg的压力,持续60秒 |
| Flammability 易燃性 | No ignition of the tissue paper or scorching or the pinewood board 不会引燃纸张或引起松木板的灼热 | | | V-0 or V-1 are acceptable. Electrical test not required. 可接受V-0或V-1。不要求做电性测试 |
| Sulfur Test 硫测试 | ±(0.5%+0.05Ω) | ±(0.5%+0.05Ω) | <50mΩ | 1000ppm H2S, 50 ± 2°C, 91%-93% R.H.,no power rating for 1000hrs 置于1000ppmH2S, 50 ± 2°C, 91%-93% R.H.无额定功率下1000小时 |
| Rapid Change of temperature 冷热冲击 | ±(0.5%+0.05Ω) | ±(1.0%+0.05Ω) | <50mΩ | -55° C to +155° C, 5 cycles -55° C to +155° C, 循环5次 |

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°C;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°C; 湿度 < 80%RH
 ■ 依据标准:IEC 60115-1,60068-2-58;JIS-C 5201-1