



HoLR 封体合金电阻 D系列规格书

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|------|------------|
| 系列号 | HoLR |
| 修订日期 | 2020-03-26 |
| 版本号 | Ho-A1 |

规格书 Specification

制造商:深圳市毫欧电子有限公司

适用: 本规格书适用于深圳市毫欧电子有限公司封体合金电阻系列选型
包含: 1206D、2512D、2725D、2728D、4527D、4527DS系列。

产品特点 Features:

- 合金芯片, 封体工艺, 焊接性能良好
- 高可靠性, 高过载能力, 产品精度高。
- 使用温度范围较宽无感型设计
- 电阻温度系数 $TCR \times 10^{-6}/^{\circ}C \leq 25-50ppm$
- 符合 ROHS 要求和无卤要求

产品名称 Product Name

封体合金电阻

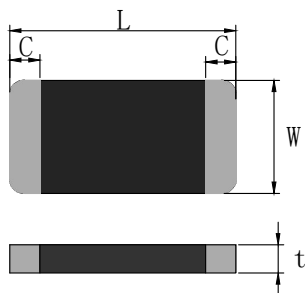
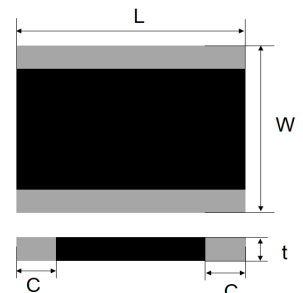
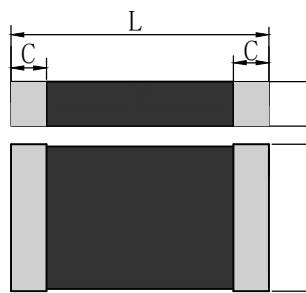
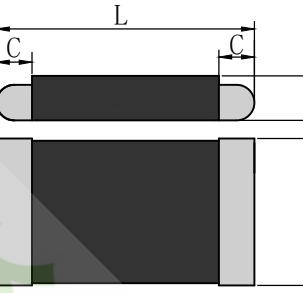
产品型号 Product number

| Ho | LR | 2725D | 4W | 3mR | 1% |
|---------|-------|-----------|-------|-----------|---------------------|
| 制造商 | 产品系列 | 封装 | 额定功率 | 阻值 | 精度 |
| Ho 毫欧电子 | LR 合金 | 1206D | 1W、2W | 0~10mR | ±0.5% ±1% ±5% |
| | | 2512D | 3.5W | 0.25~1mR | |
| | | | 2W、3W | 0.25~62mR | |
| | | 2725D | 4W | 0.2~3mR | |
| | | 2728D | 4W | 4~50mR | |
| | | 4527D | 5W | 0.5~120mR | |
| 4527DS | 7W | 0.5~100mR | | | |



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产品尺寸 Product Size

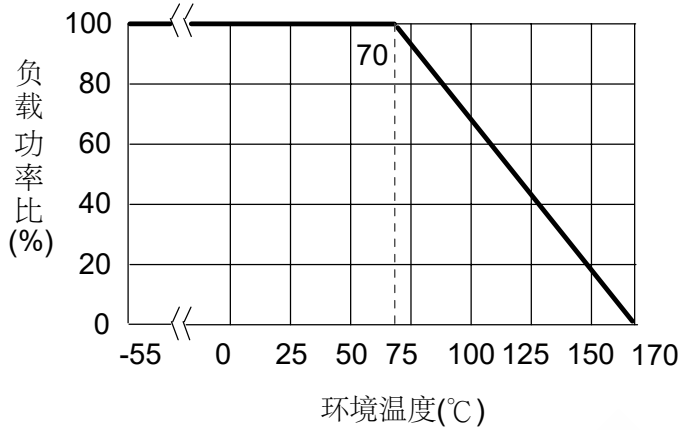
|  <p>1206D 2512D</p> | |  <p>2725D 2728D</p> | | | | |
|--|---|---|-----------------|-----------------|-----------------|----------------|
|  <p>4527D</p> | |  <p>4527DS</p> | | | | |
| 型号 | 功率 | 阻值 | 尺寸 (mm) | | | |
| | | | L | W | C | t |
| 1206D | 1W、2W | 0mR | 3.15 ± 0.25 | 1.65 ± 0.25 | 0.6 ± 0.25 | 0.6 ± 0.25 |
| | | 1mR 2mR | | | 1.2 ± 0.25 | |
| | | 3mR | | | 0.8 ± 0.25 | |
| | | 4~10mR | | | 0.6 ± 0.25 | |
| 2512D | 3.5W | 0.25~1mR | 6.4 ± 0.25 | 3.2 ± 0.25 | 2.2 ± 0.25 | 0.8 ± 0.25 |
| | 2W、3W | 0.25、0.5mR | | | 1.72 ± 0.25 | |
| | | 1mR~4mR | | | 1.5 ± 0.25 | |
| | | 5mR~62mR | | | 0.85 ± 0.25 | |
| 2725D | 4W | 0.2mR、0.25mR | 6.8 ± 0.25 | 6.5 ± 0.25 | 1.7 ± 0.25 | 1.2 ± 0.10 |
| | | 0.5~2mR | | | 1.2 ± 0.25 | |
| | | 3mR | | | 1.0 ± 0.25 | |
| 2728D | 4W | 4~50mR | 7.2 ± 0.25 | 6.8 ± 0.25 | 1.1 ± 0.25 | 1.0 ± 0.25 |
| 4527D | 5W | 0.5~10mR | 11.5 ± 0.25 | 6.85 ± 0.25 | 2.2 ± 0.25 | 1.9 ± 0.25 |
| | | 15~120mR | | | 1.8 ± 0.25 | |
| 4527DS | 7W | 0.5~100mR | 11.6 ± 0.3 | 6.6 ± 0.5 | 1.6 ± 0.5 | 2 ± 0.35 |
| 备注 | 此系列产品按车规级产品开发的具有抗硫化的特性，采用两端电极和电阻芯片焊接工艺，合金电阻都是合金芯片在里面表面涂层比较薄，容易出现边缘细微缺口，产生外观轻微瑕疵现象，对产品性能无影响。 | | | | | |

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■ 功率曲线 Power curve

操作温度范围 -55 ~ +170 °C，当电阻温度达到 70°C时，降功率示意图



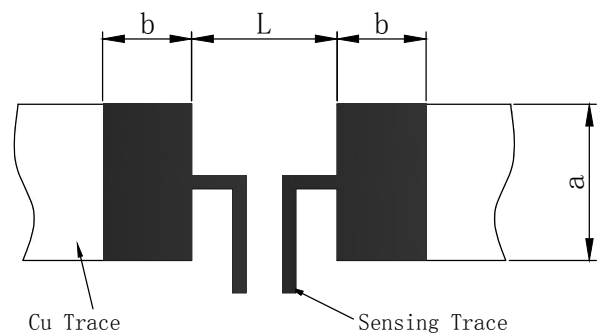
■ 额定电流计算公式 The rated current is calculated by the following Formu

I : Rated Current (A)
 P: Rated Power (W)
 R: Resistance Value (Ω)

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

■ 建议焊盘尺寸 Recommended Solder Pad Dimension

| 型号 | 阻值 | 尺寸 (mm) | | |
|--------|--------------|---------|------|------|
| | | a | b | L |
| 1206D | 0R, 4~10mR | 2.35 | 1.3 | 1.25 |
| | 1mR、2mR | | 1.9 | 0.2 |
| | 3mR | | 1.5 | 0.85 |
| 2512D | 0.25~1 | 4.0 | 3.15 | 1.15 |
| | 0.25~0.5 | | 2.57 | 2.11 |
| | 1~4 | | 2.35 | 2.55 |
| | 5~62 | | 1.7 | 3.85 |
| 2725D | 0.2mR、0.25mR | 7.8 | 2.7 | 2.1 |
| | 0.5~2mR | | 2.2 | 3.1 |
| | 3mR | | 2.0 | 3.5 |
| 2728D | 4~50mR | 8.2 | 2.1 | 3.6 |
| 4527D | 0.5~10mR | 8.05 | 3.2 | 5.9 |
| | 15~120mR | | 2.8 | 6.7 |
| 4527DS | 0.5~100mR | 7.8 | 2.6 | 7.2 |

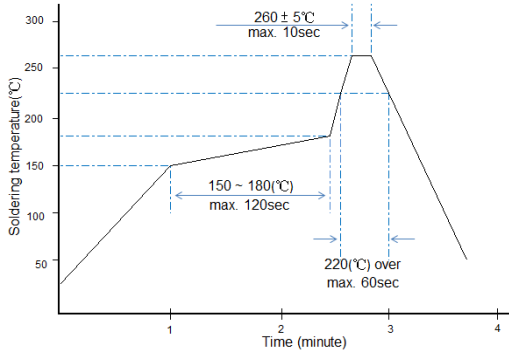


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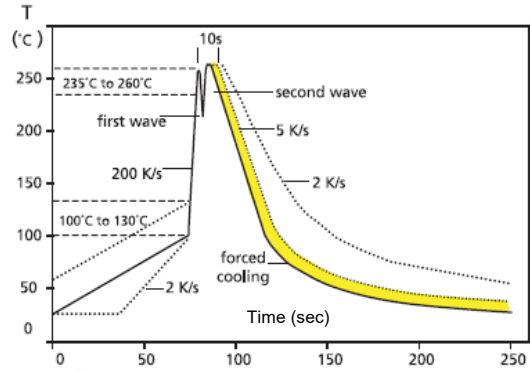
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■ 建议焊接参数 / Recommended Customer Soldering Parameters

- 1、The solderability of the components with surface adhesion will be tested at 245 ° C / 3 seconds.
- 2、Soldering iron: temperature 350 ° C ± 10 ° C , residence time less than 3 seconds.

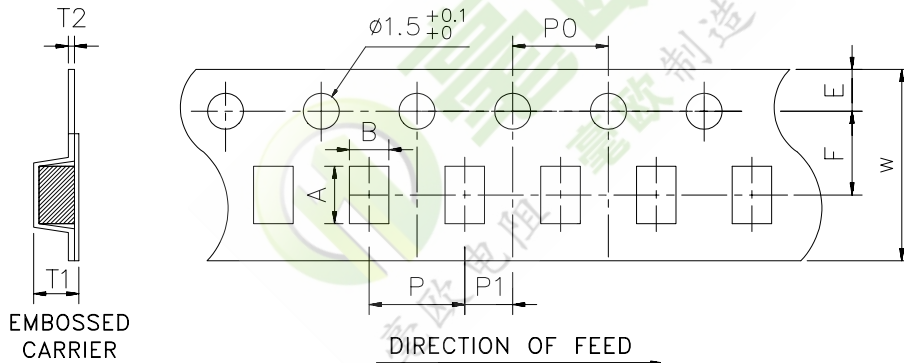


回流焊曲线图



波峰焊曲线图

■ 彩带尺寸 Ribbon size(Unit:mm)



单位: mm

| 项目 型号 | A | B | W | E | F | T1 | T2 | P | P0 | P1 |
|----------|-----------|------------|-----------|-----------|-----------|-------------|------------|-----------|----------|----------|
| 1206D | 3.5±0.20 | 1.90± 0.20 | 8.0±0.15 | 1.75±0.10 | 3.5±0.10 | 1.08 ±0.10 | 0.24 ±0.05 | 4.0±0.10 | 4.0±0.10 | 2.0±0.10 |
| 2512D | 6.9±0.20 | 3.60± 0.20 | 12.0±0.15 | 1.75±0.10 | 5.5±0.10 | 1.20 ±0.10 | 0.24 ±0.05 | 4.0±0.10 | 4.0±0.10 | 2.0±0.10 |
| 2725D | 7.15±0.20 | 6.95± 0.20 | 12.0±0.15 | 1.75±0.10 | 5.5±0.10 | 1.450 ±0.10 | 0.25 ±0.05 | 8.0±0.10 | 4.0±0.10 | 2.0±0.10 |
| 2728D | 7.15±0.20 | 7.70± 0.20 | 12.0±0.15 | 1.75±0.10 | 5.5±0.10 | 1.450 ±0.10 | 0.25 ±0.05 | 12.0±0.10 | 4.0±0.10 | 2.0±0.10 |
| 4527D | 12.0±0.20 | 7.40± 0.20 | 24.0±0.15 | 1.75±0.10 | 11.5±0.10 | 2.30±0.10 | 0.30 ±0.10 | 12.0±0.10 | 4.0±0.10 | 2.0±0.10 |
| 4527DS | 12.0±0.20 | 7.40± 0.20 | 24.0±0.15 | 1.75±0.10 | 11.5±0.10 | 2.30±0.10 | 0.30 ±0.10 | 12.0±0.10 | 4.0±0.10 | 2.0±0.10 |

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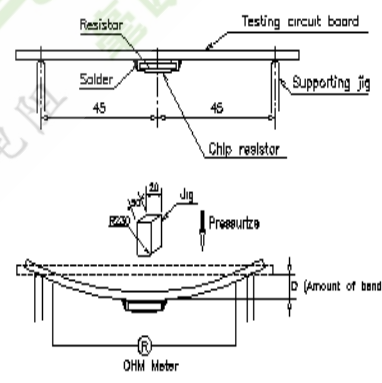
■ 可靠性测试 Reliability Tests

| Test Items | Reference standard | Condition of Test | Test Limits |
|---------------------------------------|--|--|--|
| Temperature Coefficient of Resistance | IEC60115-1 4.8 JIS C 5201-1 4.8 | +25℃~ +125℃ | Refer to product feature description |
| Load Life | IEC60115-1 4.25.1 JIS C 5201-1 4.25.1 | Put the micro resistance of the metal plate in the oven at 70 ± 2 ℃, apply the rated current, turn it on for 90 minutes, turn it off for 30 minutes, take it out for 1000 hours, and then measure the change of resistance value after standing for more than 60 minutes | ≡ ±1% No damage to appearance |
| Short Time Overload | IEC60115-1 4.13 JIS C 5201-1 4.13 | 5 X rated power for 5s | ≡ ±0.5% |
| Bias Humidity | IEC60115-1 4.24.2.1a) JIS C 5201-1 4.24.2.1a) | Place the micro resistance of the metal plate in a constant humidity and constant temperature circulator with 85 ℃ ± 5 ℃ / 85 ± 5% RH, apply the rated current, turn on for 90 minutes and turn off for 30 minutes, take out the micro resistance and let it stand for more than 60 minutes, and then measure the change rate of resistance value. | ≡ ±0.5% No damage to appearance |
| Temperature cycle | IEC60115-1 4.19 JIS C 5201-1 4.19 | The micro resistance of the metal plate is put into the hot and cold circulation machine, The temperature is -55℃ +155℃ , 300cycle, 15min per extreme condition | ≡ ±0.5% |
| Resistance to Soldering Heat | JIS C 5201-1 4.18 | Immerse the metal plate micro resistance in a tin furnace at 260 ± 5 ℃ for 10 ± 1s, take it out and stand for more than 60 minutes, and then measure the change rate of resistance value | ≡ ±0.5% No damage to appearance |
| Solderability | IEC60115-1 4.17 JIS C 5201-1 4.17 | The microresistance of the metal plate was immersed in the furnace at 245 ± 5 ℃ for 3 ± 1 seconds, and then it was taken out and placed under a microscope to observe the solder area. | At least 95% of surface area of electrode shall be covered with new solder |

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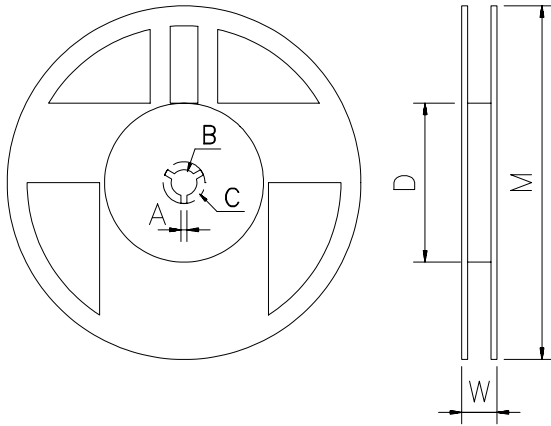
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■ 可靠性测试 Reliability Tests

| Test Items | Reference standard | Condition of Test | Test Limits |
|---------------------------|--------------------------------------|--|---|
| High Temperature Exposure | JIS C 5201-1 4.23.2 | The micro resistance of the metal plate was placed in the oven at $170 \pm 5 \text{ }^{\circ}\text{C}$ for 1000 hours, and then the resistance change rate was measured after standing for more than 1 hour. | $\leq \pm 1\%$ No damage to appearance |
| Low Temperature Storage | JIS C 5201-1 4.23.4 | Low temperature storage put the metal plate micro resistance in a constant temperature box at $-55 \pm 2 \text{ }^{\circ}\text{C}$ for 1000 hours, and then measure the change rate of resistance value after standing for more than 60 minutes | $\leq \pm 0.5\%$ No damage to appearance |
| Substrate Bending | IEC60115-1 4.33 JIS C 5201-1 4.33 | The wafer is resistance welded into a bending test plate, placed on a bending tester, and applied force on the center of the test plate to measure the resistance change rate under load. Pressing depth (d): 2mm  | $\leq \pm 0.5\%$ There is no damage, side guide falling off and body fracture. |
| Insulation Resistance | IEC60115-1 4.6 JIS C 5201-1 4.6 | Place the micro resistance of the metal plate on the fixture, apply 100VDC to the positive and negative electrodes for one minute, and measure the insulation resistance between the electrode and the protective layer and between the electrode and the substrate (substrate) | $\geq 10^9 \Omega$ |

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■ 卷轴规格 Reel Specification


| Type | W | M | A | B | C | D |
|--------|----------|-------|-------|--------|--------|------|
| 1206D | 9+0.5 | 178±1 | 2.5±1 | 13.5±1 | 17.7±1 | 60±2 |
| 2512D | 16.2+0.5 | 178±1 | 2.5±1 | 13.5±1 | 17.7±1 | 60±2 |
| 2725D | 16.2+0.5 | 178±1 | 2.5±1 | 13.5±1 | 17.7±1 | 60±2 |
| 2728D | 16.2+0.5 | 178±1 | 2.5±1 | 13.5±1 | 17.7±1 | 60±2 |
| 4527D | 27.5+0.5 | 178±1 | 2.0±1 | 13.5±1 | 16.5±1 | 57±2 |
| 4527DS | 27.5+0.5 | 178±1 | 2.0±1 | 13.5±1 | 16.5±1 | 57±2 |

■ 包装方式 Packing

| 型号 | 包装数量 |
|--------|---------|
| 1206D | 4000PCS |
| 2512D | 4000PCS |
| 2725D | 1000PCS |
| 2728D | 1000PCS |
| 4527D | 500PCS |
| 4527DS | 500PCS |

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[SR731ERTTP2R0J](#) [SR731ERTTP4R7J](#) [SR731ERTTP9R1J](#) [SR731ERTTP1R0J](#) [SR731ERTTP2R2J](#) [SR731ERTTP5R1J](#) [SR731ERTTP6R8J](#)
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