# 超高功率合金采样电阻-ULR系列

Ultra high power current sensing resistors – ULR Series

业展电子 YEZHAN ELECTRONICS

## 特征 Features

| | |
|---|---|
| 精度±5%、±2%、±1%和±0.5% | Tolerance ±5%,±2% ,±1% and ±0.5% |
| 使用温度-65℃~170℃ | Operating Temperature range -65℃~170℃ |
| 额定功率1.5~7W | 1.5~7W Rated power |
| 高散热 | Excellent heat exchange |
| 符合RoHS 要求 | RoHS Compliant |
| 符合AEC-Q200 | AEC-Q200 qualified |

## 应用范围 Applications

| | |
|---|---|
| 混合动力应用的电流传感器 | Current sensor for power hybrid applications |
| 汽车电子的控制系统 | ECU of automotive |
| 电源模块 | Power modules |
| 变频器 | Frequency converters |
| 开关式电源 | Switch mode power supplies |

## 订购信息 Ordering information

| ULR | 2817 | M | R010 | F | R | A | |
|---|---|---|---|---|---|---|---|
| 类型 Type | 尺寸 Size | 材料 Material | 阻值 Resistance | 精度 Tolerance | 温漂 TCR | 包装 Packing | 特殊 Special |
| ULR | 2817<br>2512<br>...<br>0805 | M:Manganin<br>S:CuMnSn | R010:10mΩ<br>1R00:1Ω | D:±0.5%<br>F:±1%<br>G:±2%<br>J:±5% | R:±50 | A:Tape<br>B:Bulk | 00~99 |

## 说明 Notice

适用范围 Scope

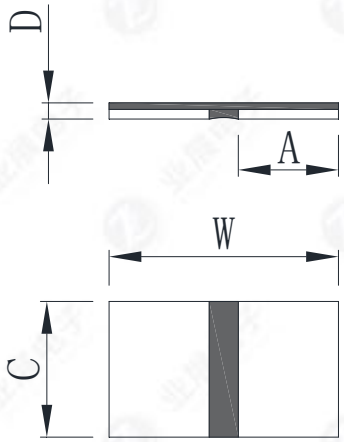
本承认书适用于深圳市业展电子有限公司 制造之[超高功率合金采样电阻]。
This specification is available for Ultra high power alloy sensing resistors manufactured by Shenzhen Yezhan Electronics Co., Ltd.

标准试验状态 Standard measuring conditions

温度 5~35℃、相对湿度45~85%给予判定。
Measurement was accepted under the condition of 5~35℃ with a relative Humidity of 45~85%.

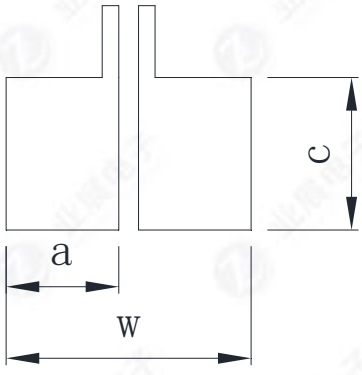
## 产品尺寸和PCB板布局
## Product dimensions and PCB-layout

(Unit：mm)




| Type | Size | W (mm) | A (mm) | C (mm) | D (mm) |
|---|---|---|---|---|---|
| ULR | 2817 | 7.1±0.2 | 3.2±0.2 | 4.2±0.2 | 0.5±0.1 |
| | 2512 | 6.3±0.2 | 2.8±0.2 | 3.1±0.2 | 0.5±0.1 |
| | 2010 | 5.0±0.2 | 2.15±0.2 | 2.5±0.2 | 0.5±0.1 |
| | 1225 | 3.2±0.2 | 1.25±0.2 | 6.4±0.2 | 0.5±0.1 |
| | 1206 | 3.2±0.2 | 1.25±0.2 | 1.6±0.2 | 0.5±0.1 |
| | 0805 | 2.0±0.2 | 0.85±0.2 | 1.2±0.2 | 0.3±0.1 |

| Solder pad type | w | c | a |
|---|---|---|---|
| 2817 | 7.4 | 4.6 | 3.4 |
| 2512 | 6.8 | 3.5 | 3.1 |
| 2010 | 5.4 | 2.8 | 2.4 |
| 1225 | 3.5 | 6.8 | 1.5 |
| 1206 | 3.5 | 2 | 1.5 |
| 0805 | 2.9 | 1.8 | 1.2 |



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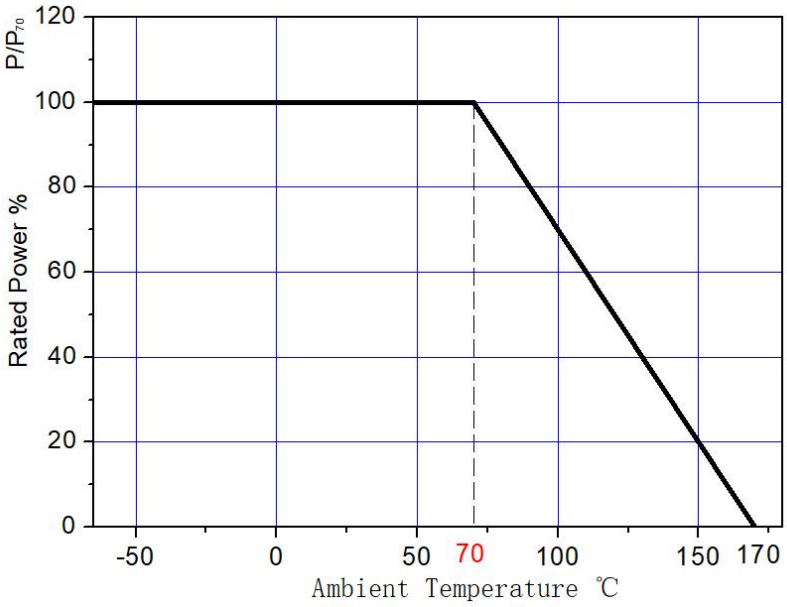
## 技术参数 Technical Date

| Size | Element Material | Resistance Value Range (mΩ) | *Resistance Values Currently Available (mΩ) | TCR (ppm/℃) | P70 ℃ (W) |
|---|---|---|---|---|---|
| 2817 | S | 5~10 | 5、10、20、50、75、100、680、820、1000、1200、1500 | ±50 | 7 |
| | M | 10~1000 | | | |
| 2512 | S | 5~10 | 5、8、10、20、22、25、75、150、330、680 | ±50 | 5 |
| | M | 10~1000 | | | |
| 2010 | S | 5~10 | Developing | ±50 | 4 |
| | M | 10~200 | | | |
| 1225 | M | 4~50 | 5、16、20、27 | ±50 | 5 |
| 1206 | S | 5~10 | 50 | ±50 | 3 |
| | M | 10~120 | | | |
| 0805 | S | 5~8 | Developing | ±50 | 1.5 |
| | M | 8~100 | | | |

TCR（ppm/℃）：Test was conducted from 20℃ to 120℃ while 20℃ worked as the reference.
*：Other values may be available, Please consult the Yezhan sales team.

## 工作特性 Performance data

降功率曲线 Power Derating



## 耐久性测试 Endurance Test

| Iterms | Additional Requirements | Reference | Limits |
|---|---|---|---|
| Operational Life | Condition D Steady State TA=125℃ at rated power. | MIL-STD-202 Method 108 | ±1% |
| High Temperature Exposure | 1000hrs.@T=170℃.Unpowered. | MIL-STD-202 Method 108 | ±1% |
| Biased Humidity | 1000hrs 85℃/85%RH。Note:Specified conditions:10% of operating power. | MIL-STD-202 Method 103 | ±0.5% |
| Moisture Resistance | t=24hrs/cycle.Note: Steps 7a & 7b not required. Unpowered. | MIL-STD-202 Method 106 | ±0.1% |
| Temperature Shock | 1000X(-55°C to +150°C) | MIL-STD-202Method107G | 0.3% |
| Solderability | 245℃±5℃,5s±0.5s | J-STD-002C | 95% Coverage Minimum |
| Short Time Overload | 3×Rated power for 5s | MIL-STD-202 Method 301 | ±0.5% |
| Resistance to Soldering Heat | 260℃±5℃，10s±1s | MIL-STD-202 Method 210 | ±0.3% |
| Mechanical Shock | 1) Pulse waveform: Half-Sine pulse.<br>2) Accelerate peak: 100g.<br>3) Pulse duration: 6ms.<br>4) Orientation & Shock time: ±X, ±Y, ±Z; 3 times each orientation, total 18 times | MIL-STD-202H Method 213 | ±0.1% |
| Vibration | Test from 10-2000 Hz.<br>5 g's for 20 min, 12 cycles each of 3 orientations. | MIL-STD-202 Method 204 | ±0.1% |
| ESD | 1) Direct Contact (DC): ±6kV;<br>2) Air Discharge (AD): ±12kV, ±16kV, ±25kV; | AEC-Q200-002 REV-B, | ±0.5% |
| Board Flex | 1) PCB board size(H×W×T): 100mm ×40mm ×1.6mm.<br>2) Deformation displacement: 2mm.<br>3) Duration: 60 (+5) s. | AEC-Q200-005 REV A, | ±0.5% |
| Flame Retardance | 1) Test current: 100%, 115%, 130%, 150% (rated current).<br>2) Test duration: 1h.<br>The following constitutes a failure:<br>1) A flame over 3.0 seconds duration;<br>2) An explosion;<br>3) A temperature above 350℃ sustained for over 10 seconds. | AEC-Q200-001 REV B | >10s for 350℃ |
| Resistance to Solvents | 1) Solvent a: 1 part (by volume) of isopropyl alcohol reagent grade and 3 parts (by volume) of a mixture of 80% (by volume) of kerosene and 20% (by volume) ethylbenzene.<br>2) Solvent c: 9 parts (by volume) of D-limonene and 1 part of surfactant.<br>3) Solvent d: 42 parts (by volume) of water 1 part (by volume) of propylene glycol monomethyl ether 1 part (by volume) of monoethanolamine. | MIL-STD-202H Method 215 | There was no missing, faded, smeared, blurred, or shifted (dislodged) with the marks.<br>There was no crack, separation, crazing, swelling, softening, degradation on the samples. |

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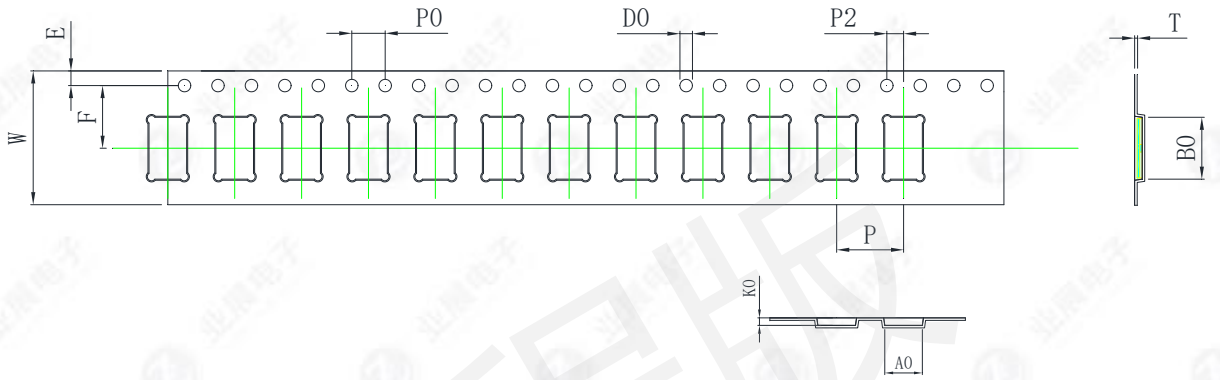
## 印字标识 Marking

R010F　　R010：10mΩ( Value阻值)
F：±1%(Tolerance精度 )

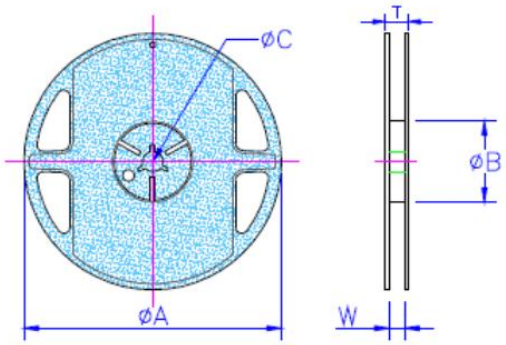
Note：0805 Size no mark.

## 包装 Packaging

载带规格尺寸
Embossed plastic Tape Specifications　　(Unit：mm)




| Size | A0 ±0.1 | B0 ±0.1 | W ±0.3 | E ±0.1 | F ±0.1 | P ±0.1 | P0 ±0.1 | P2 ±0.1 | D0 ±0.1 | K0 ±0.1 | T ±0.1 | Quantity (pcs) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2817 | 4.5 | 7.4 | 16 | 1.75 | 7.5 | 8 | 4 | 2 | 1.5 | 0.9 | 0.3 | 1500 |
| 2512 | 3.4 | 6.6 | 16 | 1.75 | 7.5 | 8 | 4 | 2 | 1.5 | 0.9 | 0.3 | 3000 |
| 2010 | 2.8 | 5.3 | 16 | 1.75 | 7.5 | 8 | 4 | 2 | 1.5 | 0.9 | 0.3 | 3000 |
| 1225 | 3.4 | 6.6 | 16 | 1.75 | 7.5 | 8 | 4 | 2 | 1.5 | 0.9 | 0.3 | 3000 |
| 1206 | 1.9 | 3.5 | 16 | 1.75 | 7.5 | 4 | 4 | 2 | 1.5 | 0.9 | 0.3 | 3000 |
| 0805 | 1.5 | 2.3 | 8 | 1.75 | 3.5 | 4 | 4 | 2 | 1.5 | 0.6 | 0.3 | 5000 |




| Size | 2817 | 2512 | 2010 | 1225 | 1206 | 0805 |
|---|---|---|---|---|---|---|
| φA | 178 | 178 | 178 | 178 | 178 | 178 |
| φB | 60 | 60 | 60 | 60 | 60 | 60 |
| φC | 13 | 13 | 13 | 13 | 13 | 13 |
| W | 16.5 | 16.5 | 16.5 | 16.5 | 16.5 | 9 |
| T | 21 | 21 | 21 | 21 | 21 | 12.5 |

## 版本信息 Version History

| 版本 Version | 日期 Date | 修订描述 Description of amendment | 拟定 Draft | 审核 Checked |
|---|---|---|---|---|
| A1.0 | 04-July-2023 | 工程版首版发行 | 邹文鉴 | 胡紫阳 |
| A1.1 | 18-Feb-2025 | 变更包装数量、变更阻值范围 | 程子鹏 | 曾庆煜 |