

# 厚聲集團

*Uni-Royal*

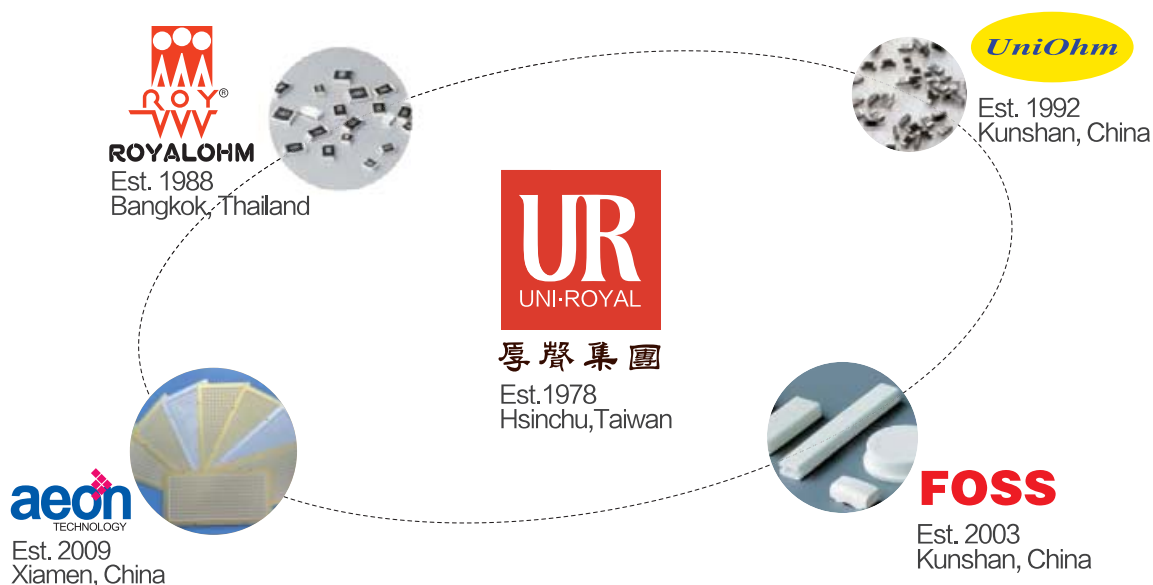
以产品和服务成为电子制造业卓越的全球供货商。  
做客户、企业成员、合作伙伴的尊敬企业。



2017 ~ 2018 .....



# 厚聲電阻



## Our Mission :

By providing reliable products and services for customers, business members and partners to create greatest value.

## 我们的使命：

通过提供可信赖的产品和服务，为顾客、企业成员和合作伙伴创造价值。

## Our vision :

Become an outstanding global supplier of products and services to the electronics manufacturing industry, as a respected enterprises to customer, corporate members and partners.

## 我们的愿景：

以产品和服务成为电子制造业卓越的全球供货商。  
做客户、企业成员、合作伙伴的尊敬企业。



## 昆山厚声电子工业总部 (Kunshan HQ)

Uni-Royal Group is the world's leading chip resistor and dip resistor industry leader, founded in 1978 in Hsinchu, Taiwan. With more than 38 years of development and experience, the global electronics industry has a deep insight and innovative leadership capabilities. Uni-Royal has a complete R&D team in Taiwan, Kunshan, Xiamen, Shenzhen and Southeast Asia (Thailand), manufacturing plants and sales teams all over the world in the global marketing service network. Group's four famous brands: ROYALOHM, UNIOHM, FOSS, AEON, has become the world's industry customers most preferred, and reliable passive components of the important suppliers and preferred partners.

Uni-Royal has qualified in the ISO9001, ISO14001, TL9000 and TS16949 and other international quality system certification, products and services are widely used in the global electronics industries markets, chips, computers, civil and military and many other high-tech fields. In the past 38 years, the global economy continues to develop, scientific modernization, especially the rapid development of the electronics industry applications. Uni-Royal has always been to leading-edge technology, with the excellent products and industry-leading solutions. Providing the world's many well-known industry customers, for the electronic device-related products and services in full range of needs.

厚声集团是全球晶片电阻与插件电阻行业的领导者，1978年始创于台湾新竹。凭借逾三十八年的发展历程与经验，对全球电子行业拥有着深刻的行业洞察与创新领导的能力。厚声在台湾、昆山、厦门、深圳与东南亚（泰国）拥有完善的电阻研发团队、制造工厂及遍布全球的销售团队和营销服务网络。集团旗下四大著名品牌：ROYALOHM、UNIOHM、FOSS、AEON，已成为全球行业客户的首选，且备受信赖的被动元器件的重要供货商及首选合作伙伴。

厚声先后获得 ISO9001、ISO14001、TL9000 与 TS16949 等多项国际体系认证，产品广泛应用于全球电子——微电子、计算机、民用与军工等众多高科技领域。在过去的三十八年中，随着全球经济的不断发展、现代化的科技更替、特别是电子领域日新月异的应用革新，厚声始终以前沿的技术、出色的产品和领先的解决方案，向全球众多行业知名企业提供全方位的产品和服务。





### Uni-Royal Group Growth

- 1978 (Hsinchu, Taiwan) Taiwan Uniroyal Electronics Industry Co., Ltd
- 1988 (Bangkok, Thailand) Royal Electronic Factory (Thailand) Co., Ltd.
- 1992 (Kunshan, China) Kunshan Uniroyal Electronics Industry Co., Ltd
- 2003 (Kunshan Optical Park) Kunshan Foss electronic materials
- 2004 to 2005 (Shenzhen, China) point of sale: Shenzhen Royal Electronics, Shenzhen Nanying Electronics
- 2005 (Kunshan High-tech Zone) Kunshan Uniroyal Electronics Industry Co., Ltd
- 2009 (Xiamen Xiangan) Aeon technology (Xiamen)
- 2014 (Kunshan, China) Kunshan Uniroyal Optoelectronics technology
- 2016 (Kunshan, China) Sales HQ: Uniroyal International Trade (Kunshan), Xiamen Branch, Shenzhen Branch

### 厚声集团成长

- 1978 年 (台湾新竹) 台湾厚声电子工业
- 1988 年 (泰国曼谷) 泰国厚声电子工业
- 1992 年 (中国昆山) 昆山厚声电子工业
- 2003 年 (昆山光电园) 福仕电子材料
- 2004 年 ~2005 年 (中国深圳) 销售点: 深圳市泰伸科技、深圳市南瀛电子
- 2005 年 (昆山高新区) 昆山厚声电子科技
- 2009 年 (厦门翔安) 翔声科技 (厦门)
- 2014 年 (中国昆山) 昆山厚声光电科技
- 2016 年 (中国昆山) 销售总公司: 厚声国际贸易 (昆山)、厦门分公司、深圳分公司

泰国一厂 (Thailand 1988)

厦门厂 (Xiamen 2009)



昆山福仕厂 (Kunshan 2003)

泰国二厂 (Thailand 2015)



## Resistor

Resistors are used in all electronic circuits to limit current. Uni-royal production of the resistance products include thin-film, thick-film, metal oxide film, carbon film and winding technology of a single (discrete) resistors, cement-type high-power resistors and various special areas of custom resistors.

## 电阻器

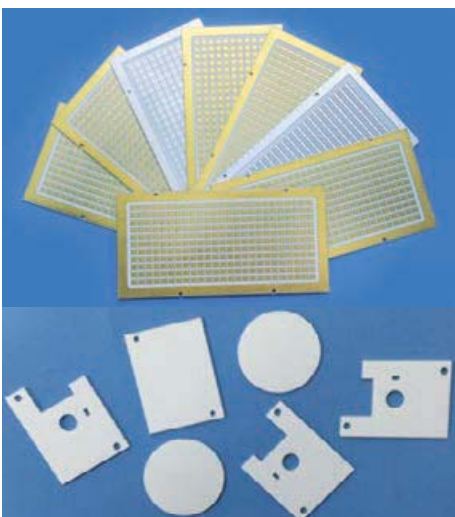
电阻器被用于所有的电子电路中来限制电流。厚声生产的电阻产品包括薄膜、厚膜、金属氧化物膜、碳膜和绕线技术的单个（分立）电阻器、水泥型大功率电阻器与各类特殊领域客制化电阻器。

## Ceramic Materials

The world's major manufacturers of high-quality materials suppliers, product including the resistance of the end products and semi-finished products; ceramic parts, cement resistance products shell; white porcelain rods, all kinds of traditional dip resistance matrix; component rods, other materials, film rods, tin-plated cap; all kinds of traditional dip resistor semi-finished products.

## 陶瓷材料

全球各大电阻厂商的优质材料供货商，产品包括电阻产品前段工艺和半成品；陶瓷件、水泥电阻产品外壳；白瓷棒、各类传统插件电阻基体；组分棒、各类传统插件电阻半成品；其他材料、着膜棒、镀锡铁帽、压帽白棒等。



To provide high-quality high-precision ceramic substrate to meet the consumer industry trends and high-end application requirements, used in high-end lighting industry, indoor and outdoor display and special lighting and other industries.

提供优质高精度陶瓷散热基板，满足消费行业发展趋势和高端应用需求，应用于高端照明行业、室内外显示屏及特殊照明等行业。



### High-Precision Thin Film Chip Resistors-TC

The product uses precision thin film sputtering technology, By sputtering of high purity alloy target , the film structure is very compact & Ion arraying regular, With the excellent temperature stability and noise coefficient, high reliability, products can be widely used for medical equipment, precision measurement equipment, communication and precision industrial control equipment.

#### 高精度薄膜晶片电阻器

产品采用精密薄膜溅射技术，电阻层采用高纯度合金靶材溅射而成，膜层结构致密，离子间排列有规则，具有良好的温度稳定性及噪音系数、可靠性高，产品可广泛应用于医疗器材、精密测量仪器、通讯及精密工业控制设备中。

### Anti-Sulfurized Thick Film Chip Resistors – NS

The resistor uses precision thick film printing technology; through the material and manufacture special process, the product has excellent corrosion resistance and anti-sulfurized performance, the product can be widely used in automotive electronics, petrochemical instrument, mining machinery, farm equipment and electronic equipment containing high sulfide gas zone.

#### 抗硫化厚膜晶片电阻器

电阻采用精密厚膜印刷技术，通过特殊的材料及制做工艺，使产品具有极好的耐腐蚀性能及抗硫化性能，产品可广范应用于汽车电子，石化仪表，矿山机械，农场设备及含高硫化气体区域的电子设备。



A series of resistive networks and arrays in which multiple resistors are packaged together are also fabricated. Non-linear resistors for voltage rise due to temperature and voltage variations, as well as variable resistors, including potentiometers, Position sensors and electromagnetic encoders.

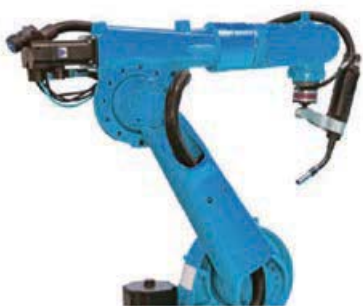
厚声生产将多个电阻封装在一起的电阻网络及排列电阻，另外还生产用于抑制由于温度和电压变化导致电压增高的非线性电阻器，以及可变电阻器，包括电位器、调整器、位置传感器和电磁编码器。

### High-Voltage Thick Film Chip Resistors-HV

The resistor uses precision thick film printing technology, By the special product design and manufacturing process, have superior to voltage performance, Superior Max. working voltage is more than 2 times normal thick film chip, Could save SMT cost & size, and can effectively reduce the size of the final equipment .

#### 高压厚膜晶片电阻器

电阻采用精密厚膜印刷技术，通过特有的产品设计及制做工艺，使产品具有极好的耐高压性能，耐高压特性是常规厚膜产品的 2 倍多，可减小电路板的安装空间及节约产品成本，同时可有效降低设备的最终尺寸。



### Metal Strip Current Sensing Chip Resistors - MS

The products uses photolithography technology allowing patterns to be transfer on the substrate. The resistor layer uses metal alloy which provides excellent temperature stability and temperature coefficient of 30PPM/°C or even lower. This enables the product to be widely used for precision current dividing circuit and power management applications.

#### 金属带电流检测片式电阻器

产品采用黄光影像转移技术，在陶瓷基板上形成电阻路，具有极好的温度稳定性，温度系数 30PPM/°C，甚至可以做到更低，产品可广范用于电流检测电路及电源管理电路中。



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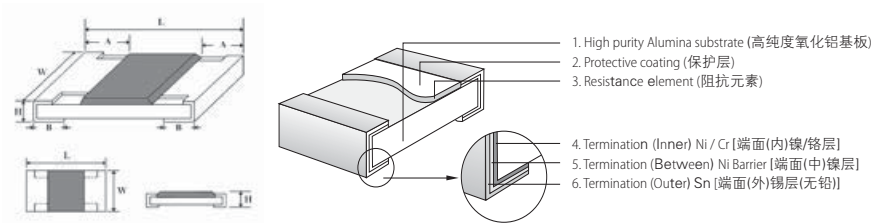
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| Metal Film Capped Ceramic Rod 金属膜组帽棒   | MFC、MFD  | 150  |
| Metal Oxide Film Capped Ceramic Rod 金属氧化膜组帽棒   | MOC、MOD  | 152  |
| Metal Glaze Capped Ceramic Rod 玻璃釉膜组帽棒   | MGC、MGD  | 154  |
| Chemical Nickel - Plating Film Capped Ceramic Rod 化学沉积膜组帽棒                             | CNC、CND  | 156  |
| Zero ohm Copper Plated Rod 瓷棒镀铜膜   | ZOC  | 158  |
| Zero ohm-Tinned Iron Rod 0Ω 镀锡铁棒   | TOEO   | 158  |
| Tin-Plated Steel Cap 铁帽  | TOC  | 160  |
| Ceramic Case 瓷壳  | CKO、CGO  | 161  |
| <b>LED Ceramic Substrate LED 陶瓷基板</b>  |  |      |
| Thin-Film Ceramic Substrate - DPC 薄膜陶瓷基板   | 114.3*114.3mm*0.25/0.28/0.38/0.5/1.0mm             | 165  |
| Thick-Film Ceramic Substrate- DPC 厚膜陶瓷基板   | 114.3x114.3x0.5mm                                  | 168  |

### Feature (特性)

- Small size & light weight 短小轻薄
- Reduction of assembly costs and matching with placement machine.  
可降低装置成本及配合机器组装
- Suitable for both wave & re-flow soldering. 适合波峰焊与回流焊
- Applications: Navigator (GPS), Mobile Phone, Telecom, PDA, Setbox, Meter.  
应用于GPS, 移动电话, PDA, 机顶盒, 仪表

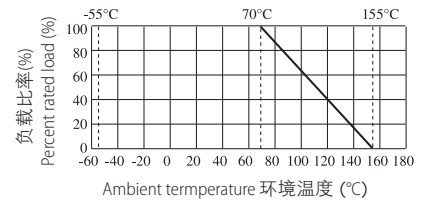


### Figures (形状)



### Derating Curve & Specification

#### 降功率曲线及性能



| Type 类型                                 | 01005      | 0201       | 0402       | 0603       | 0805       | 1206       | 1210       | 1812       | 2010       | 2512       |
|---|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Size 尺寸                                 | 0402       | 0603       | 1005       | 1608       | 2012       | 3216       | 3225       | 4532       | 5025       | 6432       |
| Max. Working Voltage<br>最大工作电压          | 15V        | 25V        | 50V        | 75V        | 150V       | 200V       | 200V       | 200V       | 200V       | 200V       |
| Max. Overload Voltage<br>最大过负荷电压        | 30V        | 50V        | 100V       | 150V       | 300V       | 400V       | 500V       | 500V       | 500V       | 500V       |
| Dielectric withstanding Voltage<br>绝缘耐压 | -          | -          | 100V       | 300V       | 500V       | 500V       | 500V       | 500V       | 500V       | 500V       |
| Operating Temperature<br>工作温度范围         | -55~+155°C | -55~+155°C | -55~+155°C | -55~+155°C | -55~+155°C | -55~+155°C | -55~+155°C | -55~+155°C | -55~+155°C | -55~+155°C |

| Type 类型   | 01005 | 0201      | 0402      | 0603      | 0805      | 1206                                   | 1210                                   | 1812      | 2010      | 2512      |           |
|---|-------|-----------|-----------|-----------|-----------|--|--|-----------|-----------|-----------|-----------|
| Dimension<br>尺寸                                 | L(mm) | 0.40±0.02 | 0.60±0.03 | 1.00±0.10 | 1.60±0.10 | 2.0±0.15                               | 3.10±0.15                              | 3.10±0.10 | 4.50±0.20 | 5.00±0.10 | 6.35±0.10 |
|   | W(mm) | 0.20±0.02 | 0.30±0.03 | 0.50±0.05 | 0.80±0.10 | 1.25 <sup>+0.15</sup> <sub>-0.10</sub> | 1.55 <sup>+0.15</sup> <sub>-0.10</sub> | 2.60±0.20 | 3.20±0.20 | 2.50±0.20 | 3.20±0.20 |
|   | H(mm) | 0.13±0.02 | 0.23±0.03 | 0.35±0.05 | 0.45±0.10 | 0.55±0.10                              | 0.55±0.10                              | 0.55±0.10 | 0.55±0.20 | 0.55±0.10 | 0.55±0.10 |
|   | A(mm) | 0.10±0.05 | 0.10±0.05 | 0.20±0.10 | 0.30±0.20 | 0.40±0.20                              | 0.45±0.20                              | 0.50±0.25 | 0.50±0.20 | 0.60±0.25 | 0.60±0.25 |
|   | B(mm) | 0.10±0.03 | 0.15±0.05 | 0.25±0.10 | 0.30±0.20 | 0.40±0.20                              | 0.45±0.20                              | 0.50±0.20 | 0.50±0.20 | 0.50±0.20 | 0.50±0.20 |
| Resistance Value of Jumper<br>零欧姆电阻阻值           | <50mΩ |           |           |           |           |  |  |           |           |           |           |
| Rated Current of Jumper<br>零欧姆电阻额定电流            | 0.5A  | 0.5A      | 1A        | 1A        | 2A        | 2A                                     | 2A                                     | 2A        | 2A        | 2A        |           |
| Max. Overload Current of Jumper<br>零欧姆电阻最大过负荷电流 | 1A    | 1A        | 2A        | 2A        | 5A        | 10A                                    | 10A                                    | 10A       | 10A       | 10A       |           |

| Type 类型   | 01005      | 0201     | 0402       | 0603         | 0805            | 1206         | 1210          | 1812       | 2010 | 2512 |      |    |
|---|------------|----------|------------|--------------|-----------------|--------------|---------------|------------|------|------|------|----|
| Power Rating at 70°C<br>功率                            | 1/32W      | 1/20W    | 1/16W      | 1/10W        | 1/8W            | 1/4W         | 1/4W          | 1/3W       | 1/2W | 3/4W | 3/4W | 1W |
| Resistance Range of 0.5%(E-96)<br>0.5% 的阻值范围 (E-96)   | -          | -        | 1Ω~10MΩ    |              |                 |              |               |            |      |      |      |    |
| Resistance Range of 1%,2%(E-96)<br>1%,2% 的阻值范围 (E-96) | 10Ω ~ 10MΩ | 1Ω~ 10MΩ | 0.1Ω~ 10MΩ | 0.1Ω≤R< 10MΩ | 0.02Ω ≤R< 0.1 Ω | 0.1Ω≤R< 10MΩ | 0.01Ω≤R< 0.1Ω | 0.01Ω~10MΩ |      |      |      |    |
| Resistance Range of 5%(E-24)<br>5% 的阻值范围 (E-24)       | 1Ω~10MΩ    |          | 0.1Ω~ 10MΩ | 0.1Ω≤R< 10MΩ | 0.02Ω ≤R< 0.1 Ω | 0.1Ω≤R< 10MΩ | 0.01Ω≤R< 0.1Ω | 0.01Ω~10MΩ |      |      |      |    |

### Marking on the Resistors Body (电阻本体字码标示)

- For 01005, 0201, 0402 size, no marking on the body due to the small size of the resistor.  
01005, 0201, 0402因电阻本体太小，故本体无标示字码
- ±5% tolerance product: the marking is 3 digits, the first 2 digits are the significant of the resistance and the 3rd digit denotes number of zeros following.  
±5%公差产品字码是三位数，前二位是阻值的有效数，第三位表示有几个0
- 0805, 1206, 1210, 2010, 2512 ≤±1%: the marking is 4 digits, the first 3 digits are the significant of the resistance and the 4th digit denotes number of zeros following.  
0805, 1206, 1210, 2010, 2512 ≤±1%公差产品字码有四位数字，前三位是阻值的有效数，第四位表示有几个0
- Standard E-96 series values of 0603 ≤±1%: due to the small size of the resistor's body, 3 digits marking will be used to indicate the accurate resistance value by using the following Multiplier & Resistance Code.  
0603 ≤±1%公差 E-96系列标准阻值，因电阻本体太小，采用三位阻值代码（数字）及下列指数代码（字母）配合来指明标准的阻值。



$153 = 15000\Omega = 15K\Omega$



Below 10Ω: 6R8 = 6.8Ω  
10Ω 以下标示: 6R8 = 6.8Ω



$2372 = 23700\Omega = 23.7K\Omega$



Below 10Ω: 3R24 = 3.24Ω  
10Ω 以下标示: 3R24 = 3.24Ω

### Multiplier Code (for 0603 ≤±1% marking) [指数码 (0603≤±1% 标示)]

| Code 代码       | A               | B               | C               | D               | E               | F               | G               | H               | X                | Y                | Z                |
|---------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|------------------|------------------|------------------|
| Multiplier 指数 | 10 <sup>0</sup> | 10 <sup>1</sup> | 10 <sup>2</sup> | 10 <sup>3</sup> | 10 <sup>4</sup> | 10 <sup>5</sup> | 10 <sup>6</sup> | 10 <sup>7</sup> | 10 <sup>-1</sup> | 10 <sup>-2</sup> | 10 <sup>-3</sup> |

### Standard E-96 series Resistance Value code (for 0603 ≤±1% marking) [E-96系列标准阻值代码 (对0603≤±1%的字码)]

| Value 阻值 | Code 代码 | Value 阻值 | Code 代码 | Value 阻值 | Code 代码 | Value 阻值 | Code 代码 | Value 阻值 | Code 代码 | Value 阻值 | Code 代码 |
|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|
| 100      | 01      | 147      | 17      | 215      | 33      | 316      | 49      | 464      | 65      | 681      | 81      |
| 102      | 02      | 150      | 18      | 221      | 34      | 324      | 50      | 475      | 66      | 698      | 82      |
| 105      | 03      | 154      | 19      | 226      | 35      | 332      | 51      | 487      | 67      | 715      | 83      |
| 107      | 04      | 158      | 20      | 232      | 36      | 340      | 52      | 499      | 68      | 732      | 84      |
| 110      | 05      | 162      | 21      | 237      | 37      | 348      | 53      | 511      | 69      | 750      | 85      |
| 113      | 06      | 165      | 22      | 243      | 38      | 357      | 54      | 523      | 70      | 768      | 86      |
| 115      | 07      | 169      | 23      | 249      | 39      | 365      | 55      | 536      | 71      | 787      | 87      |
| 118      | 08      | 174      | 24      | 255      | 40      | 374      | 56      | 549      | 72      | 806      | 88      |
| 121      | 09      | 178      | 25      | 261      | 41      | 383      | 57      | 562      | 73      | 825      | 89      |
| 124      | 10      | 182      | 26      | 267      | 42      | 392      | 58      | 576      | 74      | 845      | 90      |
| 127      | 11      | 187      | 27      | 274      | 43      | 402      | 59      | 590      | 75      | 866      | 91      |
| 130      | 12      | 191      | 28      | 280      | 44      | 412      | 60      | 604      | 76      | 887      | 92      |
| 133      | 13      | 196      | 29      | 287      | 45      | 422      | 61      | 619      | 77      | 909      | 93      |
| 137      | 14      | 200      | 30      | 294      | 46      | 432      | 62      | 634      | 78      | 931      | 94      |
| 140      | 15      | 205      | 31      | 301      | 47      | 442      | 63      | 649      | 79      | 953      | 95      |
| 143      | 16      | 210      | 32      | 309      | 48      | 453      | 64      | 665      | 80      | 976      | 96      |

### So the resistance value are marked as the following examples (阻值标示如下):



$1.96K\Omega = 196 \times 10^1 \Omega = 29B$



$12.4\Omega = 124 \times 10^{-1} = 10X$

- Standard E-24 and not belong to E-96 series values (≤±1%) of 0603 size: the marking is the same as 5% tolerance but marking as underline.  
0603≤±1%公差，在标准 E-24 系列中，但不属 E-96 系列的阻值，标示和5%的公差相同，但是在字码下多加一条线



$\underline{122} = 1200 = 1.2 K\Omega$



$\underline{680} = 68\Omega$



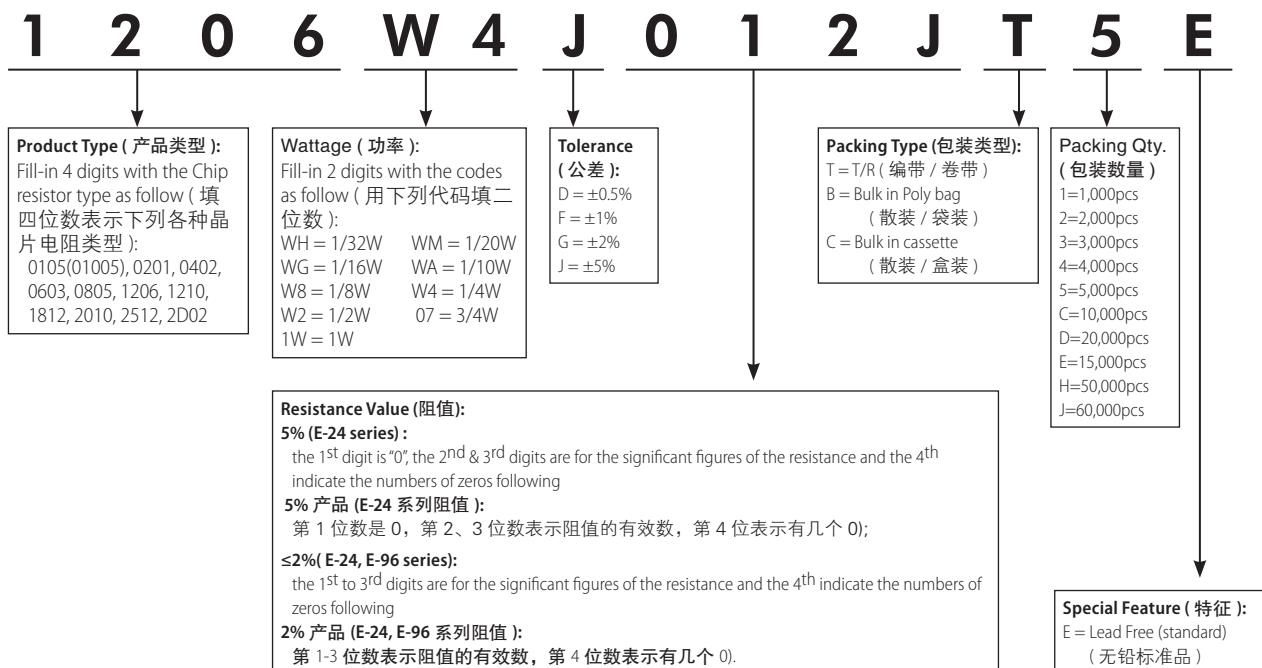
### Performance Specifications (性能)

|                                 |        |  |   |
|---------------------------------|--------|--|---|
| Temperature coefficient         | 温度系数   | 01005: $1\Omega \leq R \leq 10\Omega$ : $\pm 600\text{ppm}/^\circ\text{C}$<br>$10\Omega < R \leq 100\Omega$ : $\pm 400\text{ppm}/^\circ\text{C}$<br>$> 100\Omega$ : $\pm 250\text{ppm}/^\circ\text{C}$ | 0805: $0.02\Omega < R \leq 0.030\Omega$ : $\pm 1000\text{ppm}/^\circ\text{C}$<br>$0.03\Omega < R < 1\Omega$ : $\pm 800\text{ppm}/^\circ\text{C}$<br>$1\Omega \leq R \leq 10\Omega$ : $\pm 400\text{ppm}/^\circ\text{C}$<br>$> 10\Omega$ : $\pm 100\text{ppm}/^\circ\text{C}$  |
|                                 |        | 0201: $1\Omega \leq R \leq 10\Omega$ : $-100 \sim +350\text{ppm}/^\circ\text{C}$<br>$> 10\Omega$ : $\pm 200\text{ppm}/^\circ\text{C}$  | 1206,1210,1812,2010,2512:<br>$0.01\Omega \leq R \leq 0.015\Omega$ : $\pm 1500\text{ppm}/^\circ\text{C}$<br>$0.015\Omega < R \leq 0.03\Omega$ : $\pm 1000\text{ppm}/^\circ\text{C}$<br>$0.03\Omega < R < 1\Omega$ : $\pm 800\text{ppm}/^\circ\text{C}$<br>$1\Omega \leq R \leq 10\Omega$ : $\pm 400\text{ppm}/^\circ\text{C}$<br>$> 10\Omega$ : $\pm 100\text{ppm}/^\circ\text{C}$ |
| Short-time overload             | 短时间过负荷 | $\pm 5\%$ , $\pm 2\%$ : $\pm(2.0\% + 0.1\Omega)$ Max(最大).<br>$\pm 1\%$ , $\pm 0.5\%$ : $\pm(1.0\% + 0.1\Omega)$ Max(最大).   |   |
| Insulation resistance           | 绝缘电阻   | $\geq 1,000\text{ M}\Omega$  |   |
| Dielectric withstanding voltage | 绝缘耐压   | No evidence of flashover, mechanical damage, arcing or insulation breakdown<br>无击穿, 飞弧及可见机械性损伤   |   |
| Terminal bending                | 端子弯曲   | $\pm(1.0\% + 0.05\Omega)$ Max(最大).   |   |
| Soldering heat                  | 耐焊接热   | $\pm(1.0\% + 0.05\Omega)$ Max(最大).   |   |
| Solderability                   | 可焊性    | Min. 95% coverage (最少 95% 覆盖率)   |   |
| Temperature cycling             | 温度循环   | $\pm 5\%$ , $\pm 2\%$ : $\pm(1.0\% + 0.05\Omega)$ Max(最大).<br>$\pm 1\%$ , $\pm 0.5\%$ : $\pm(0.5\% + 0.05\Omega)$ Max(最大).   |   |
| Humidity (Steady State)         | 恒定湿热   | $\pm 5\%$ , $\pm 2\%$ : $\pm(3.0\% + 0.1\Omega)$ Max(最大).<br>$\pm 1\%$ , $\pm 0.5\%$ : $\pm(0.5\% + 0.1\Omega)$ Max(最大).   |   |
| Load life in humidity           | 湿度寿命   | $\pm 5\%$ , $\pm 2\%$ : $\pm(3.0\% + 0.1\Omega)$ Max(最大).<br>$\pm 1\%$ , $\pm 0.5\%$ : $\pm(1\% + 0.1\Omega)$ Max(最大).   |   |
| Load life                       | 负载寿命   | $\pm 5\%$ , $\pm 2\%$ : $\pm(3.0\% + 0.1\Omega)$ Max(最大).<br>$\pm 1\%$ , $\pm 0.5\%$ : $\pm(1\% + 0.1\Omega)$ Max(最大).   |   |

• The values which are not of standard E-24 series (2% & 5%) and not of E-96 series (1%) could be offered on a case to case basis.  
阻值如不在 E-24 系列 (2% & 5%) 及 E-96 系列 (1%) 可特别提供

### Ordering Procedure (Example: 1206 1/4W 5% 1.2 $\Omega$ T/R-5000)

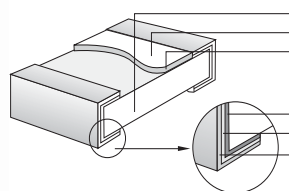
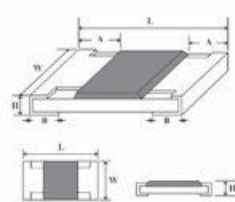
订购方式 (例如: 1206 1/4W 5% 1.2  $\Omega$  T/R-5000)



### Feature (特性)

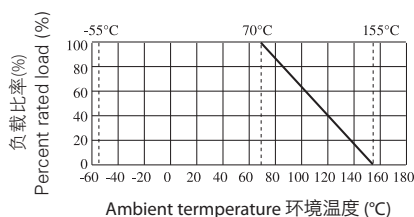
- High Resistance 高阻值
- Suitable for reflow & wave soldering  
适合波峰焊与回流焊
- Application AV adapters, LCD back-light camera strobe etc. 适用于AV适配器, LCD背光电路, 照相机快门等.

### Figures (型状)



1. High purity Alumina substrate 高纯度氧化铝基板
2. Protective coating 保护层
3. Resistance element 阻抗元素
4. Termination (Inner) Ni / Cr 端面(内)镍/铬层
5. Termination (Between) Ni Barrier 端面(中)镍层
6. Termination (Outer) Sn 端面(外)锡层(无铅)

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



| Type 类型 | Max Working Voltage 最大工作电压 | Max Overload Voltage 最大过负荷电压 | Dielectric Withstanding Voltage 绝缘耐压 | Operating Temperature Range 工作温度范围 |
|---------|----------------------------|------------------------------|--------------------------------------|------------------------------------|
| 0603    | 75V                        | 150V                         | 300V                                 | -55~+155°C                         |
| 0805    | 150V                       | 300V                         | 500V                                 |                                    |
| 1206    | 200V                       | 400V                         | 500V                                 |                                    |
| 1210    | 200V                       | 500V                         | 500V                                 |                                    |

| Type 类型 | Size 尺寸 | Power (功率) (70°C) | L (mm)    | W (mm)                                 | H (mm)    | A (mm)    | B (mm)    | Resistance Range (阻值范围) 5% (E24) |
|---------|---------|-------------------|-----------|--|-----------|-----------|-----------|----------------------------------|
| 0603    | 1608    | 1/10W             | 1.60±0.10 | 0.80±0.10                              | 0.45±0.10 | 0.30±0.20 | 0.30±0.20 | 10M~100M                         |
| 0805    | 2012    | 1/8W              | 2.00±0.15 | 1.25 <sup>+0.15</sup> <sub>-0.10</sub> | 0.55±0.10 | 0.40±0.20 | 0.40±0.20 |                                  |
| 1206    | 3216    | 1/4W              | 3.10±0.15 | 1.55 <sup>+0.15</sup> <sub>-0.10</sub> | 0.55±0.10 | 0.45±0.20 | 0.45±0.20 |                                  |
| 1210    | 3225    | 1/2W              | 3.10±0.10 | 2.60±0.20                              | 0.55±0.10 | 0.50±0.25 | 0.50±0.20 |                                  |

### Performance Specification (性能)

|                                 |        |   |
|---------------------------------|--------|---|
| Temperature coefficient         | 温度系数   | ±200ppm/°C  |
| Short time overload             | 短时间过负荷 | ±(2.0%+0.1Ω) Max (最大)   |
| Terminal bending                | 端子弯曲   | ±(1.0%+0.05Ω)   |
| Solderability                   | 可焊性    | Min 95% coverage (最少 95% 覆盖率)   |
| Dielectric withstanding voltage | 绝缘耐压   | No evidence of flashover, mechanical damage, arcing or insulation breakdown (无击穿, 飞弧及可见机械性损伤) |
| Soldering heat                  | 耐焊接热   | ±(1.0%+0.05Ω) Max (最大)  |
| Temperature cycling             | 温度循环   | ±(1.0%+0.05Ω) Max (最大)  |
| Load Life in humidity           | 湿度寿命   | ±(3.0%+0.1Ω) Max (最大)   |
| Load life                       | 负载寿命   | ±(3.0%+0.1Ω) Max (最大)   |
| Humidity (steady state)         | 恒定湿热   | ±(3.0%+0.1Ω) Max (最大)   |
| Insulation resistance           | 绝缘电阻   | ≥1,000 MΩ   |

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