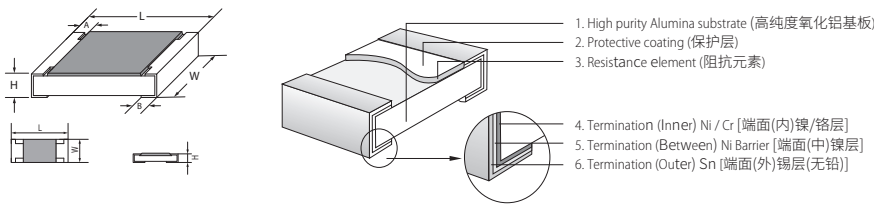


### Feature (特性)

- 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, Digital CATV Receiver, Meter. 应用于GPS、移动电话、PDA、机顶盒、仪表

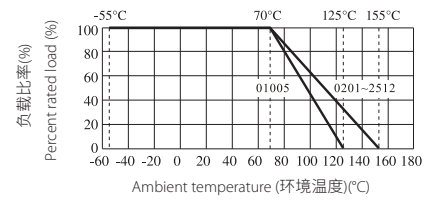


### Figures (形状)



### 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 最大工作电压          | 15V        | 25V        | 50V        | 75V        | 150V       | 200V       | 200V       | 200V       | 200V       | 200V       |
| Max. Overload Voltage 最大过负荷电压        | 30V        | 50V        | 100V       | 150V       | 300V       | 400V       | 500V       | 500V       | 500V       | 500V       |
| Dielectric withstanding Voltage 绝缘耐压 | -          | -          | 100V       | 300V       | 500V       | 500V       | 500V       | 500V       | 500V       | 500V       |
| Operating Temperature 工作温度范围         | -55~+125°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 尺寸 (mm)                            | L     | 0.40±0.02 | 0.60±0.03 | 1.00±0.10 | 1.60±0.10 | 2.00±0.15                              | 3.10±0.15                              | 3.10±0.10 | 4.50±0.20 | 5.00±0.10 | 6.35±0.10 |
|  | W     | 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     | 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±0.10 | 0.55±0.10 | 0.55±0.10 |
|  | A     | 0.10±0.03 | 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     | 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 零欧姆电阻阻值           | <50mΩ |           |           |           |           |  |  |           |           |           |           |
| Rated Current of Jumper 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 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 额定功率                                  | 1/32W      | 1/20W    | 1/16W       | 1/10W        | 1/8W            | 1/4W         | 1/4W          | 1/3W | 1/2W       | 3/4W    | 1W      |
| Resistance Range of 0.5%(E-96) 0.5% 的阻值范围 (E-96)   | -          | -        | 1Ω~10MΩ     | 1Ω~10MΩ      | 1Ω~10MΩ         | -            | 1Ω~10MΩ       | -    | 1Ω~10MΩ    | 1Ω~10MΩ | 1Ω~10MΩ |
| Resistance Range of 1%,2%(E-96) 1%,2% 的阻值范围 (E-96) | 10Ω ~ 10MΩ | 1Ω~ 10MΩ | 0.01Ω~ 10MΩ | 0.1Ω≤R <10MΩ | 0.01Ω ≤R <0.1 Ω | 0.1Ω≤R <10MΩ | 0.01Ω≤R <0.1Ω |      | 0.01Ω~10MΩ |         |         |
| Resistance Range of 5%(E-24) 5% 的阻值范围 (E-24)       |            | 1Ω~10MΩ  | 0.01Ω~ 10MΩ | 0.1Ω≤R <10MΩ | 0.01Ω ≤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)

- No marking on resistor body due to tiny size in 01005, 0201 and 0402 series.  
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 = 15000Ω = 15KΩ



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



2372 = 23700Ω = 23.7KΩ



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                |
|---------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|------------------|------------------|------------------|
| Power 幂 | 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):



1.96KΩ = 196 × 10<sup>1</sup> Ω = 29B



12.4Ω = 124 × 10<sup>-1</sup> = 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



122 = 1200 = 1.2 KΩ



680 = 68Ω

### Performance Specifications (性能)

|                                 |        |  |  |
|---------------------------------|--------|--|--|
| Temperature coefficient         | 温度系数   | 01005: $1\Omega \leq R < 10\Omega$ : $-200 \sim +600 \text{ppm}/^\circ\text{C}$                | 0603: $0.01\Omega \leq R \leq 0.03\Omega$ : $\pm 1500 \text{PPM}/^\circ\text{C}$ |
|                                 |        | $10\Omega \leq R < 100\Omega$ : $\pm 300 \text{ppm}/^\circ\text{C}$                            | $0.03\Omega < R \leq 0.05\Omega$ : $\pm 1000 \text{PPM}/^\circ\text{C}$          |
| Short-time overload             | 短时间过负荷 | $100\Omega \leq R \leq 10\text{M}\Omega$ : $\pm 200 \text{ppm}/^\circ\text{C}$                 | $0.05\Omega < R < 1\Omega$ : $\pm 800 \text{PPM}/^\circ\text{C}$                 |
|                                 |        | 0201: $1\Omega \leq R \leq 10\Omega$ : $-100 \sim +350 \text{ppm}/^\circ\text{C}$              | $1\Omega \leq R \leq 10\Omega$ : $\pm 200 \text{PPM}/^\circ\text{C}$             |
| Insulation resistance           | 绝缘电阻   | $> 10\Omega$ : $\pm 200 \text{ppm}/^\circ\text{C}$   | $> 10\Omega$ : $\pm 100 \text{PPM}/^\circ\text{C}$                               |
|                                 |        | 0402: $1\Omega \leq R \leq 10\Omega$ : $\pm 200 \text{ppm}/^\circ\text{C}$                     | 0805, 1206, 1210, 1812, 2010, 2512:  |
| Dielectric withstanding voltage | 绝缘耐压   | $> 10\Omega$ : $\pm 100 \text{ppm}/^\circ\text{C}$   | $0.01\Omega \leq R \leq 0.015\Omega$ : $\pm 1500 \text{ppm}/^\circ\text{C}$      |
|                                 |        | No evidence of flashover, mechanical damage, arcing or insulation breakdown<br>无击穿, 飞弧及可见机械性损伤 | $0.015\Omega < R \leq 0.03\Omega$ : $\pm 1000 \text{ppm}/^\circ\text{C}$         |
| Terminal bending                | 端子弯曲   | $\pm 1.0\% + 0.05\Omega$   | $0.03\Omega < R < 1\Omega$ : $\pm 800 \text{ppm}/^\circ\text{C}$                 |
| Soldering heat                  | 耐焊接热   | $\pm 1.0\% + 0.05\Omega$   | $1\Omega \leq R \leq 10\Omega$ : $\pm 200 \text{ppm}/^\circ\text{C}$             |
| Solderability                   | 可焊性    | Coverage must be over 95%.   | $> 10\Omega$ : $\pm 100 \text{ppm}/^\circ\text{C}$                               |
| Rapid change of temperature     | 温度快速变化 | $\pm 5\%, \pm 2\%: \pm(2.0\% + 0.05\Omega)$  |  |
| Humidity (Steady State)         | 恒定湿热   | $\pm 1\%, \pm 0.5\%: \pm(1.0\% + 0.05\Omega)$  |  |
|                                 |        | $01005 \pm 5\% \pm 1\%: \pm(2.0\% + 0.05\Omega)$   |  |
| Load life in humidity           | 湿度寿命   | $\pm 5\%, \pm 2\%: \pm(3.0\% + 0.05\Omega)$  |  |
|                                 |        | $\pm 1\%, \pm 0.5\%: \pm(1\% + 0.05\Omega)$  |  |
| Load life                       | 负载寿命   | $01005: \pm(3.0\% + 0.05\Omega)$   |  |
|                                 |        | $\pm 5\%, \pm 2\%: \pm(3.0\% + 0.05\Omega)$  |  |

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)

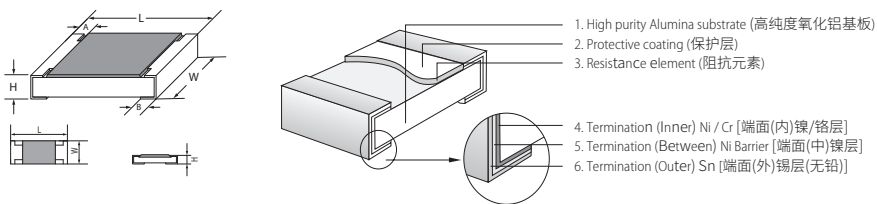


Remark: For more details, please check page 152, Part No. System. 注: 更多细节详见 P152 标准料号系统。

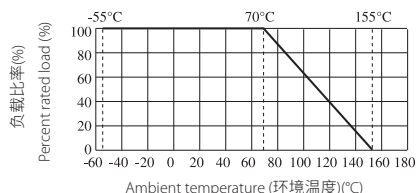
### Feature (特性)

- High Resistance 高阻值
- Suitable for reflow & wave soldering 适合波峰焊与回流焊
- 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)



### 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 Rating 额定功率 | 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%+0.05Ω)   |
| Terminal bending 端子弯曲                | ±(1.0%+0.05Ω)   |
| Solderability 可焊性                    | Coverage must be over 95%.  |
| 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)   |
| Rapid change of temperature 温度快速变化   | ±(1.0%+0.05Ω)   |
| Load Life in humidity 湿度寿命           | ±(3.0%+0.05Ω)   |
| Load life 负载寿命                       | ±(3.0%+0.05Ω)   |
| Humidity (steady state) 恒定湿热         | ±(3.0%+0.05Ω)   |
| Insulation resistance 绝缘电阻           | ≥1,000 MΩ   |

### New/Old Part No. (新旧料号对照)

| New Part.no 新料号       | Old Part.no 旧料号                             |
|-----------------------|---|
| <b>0603WAJ****T5E</b> | 0603SAJ****T5E /0603WGJ****T5E              |
| <b>0805W8****T5E</b>  | 0805S8****T5E /0805WA****T5E                |
| <b>1206W4****T5E</b>  | 1206S4****T5E /1206W8****T5E                |
| <b>1210W2****T5E</b>  | 1210U2****T5E /1210S3****T5E /1210W4****T5E |
| <b>181207****T4E</b>  | 1812W2****T4E                               |
| <b>201007****T4E</b>  | 201034****T4E /2010W2****T4E                |

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