

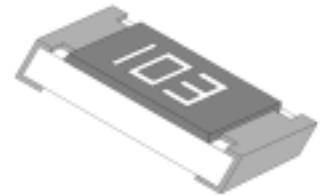


## 常规厚膜片式固定电阻器

### GENERAL CHIP FIXED RESISTOR

#### ■ 特长 Features

- 体积小、重量轻
  - 适应再流焊与波峰焊
  - 电性能稳定，可靠性高
  - 装配成本低，并与自动装贴设备匹配
  - 机械强度高、高频特性优越
  - 符合 RoHS 指令要求
- Miniature and light weight.
  - Suit for reflow and wave flow solder.
  - Stable electrical capability, high reliability.
  - Low assembly cost, suit for automatic SMT equipment.
  - Superior mechanical and frequency characteristics.
  - According with RoHS standard



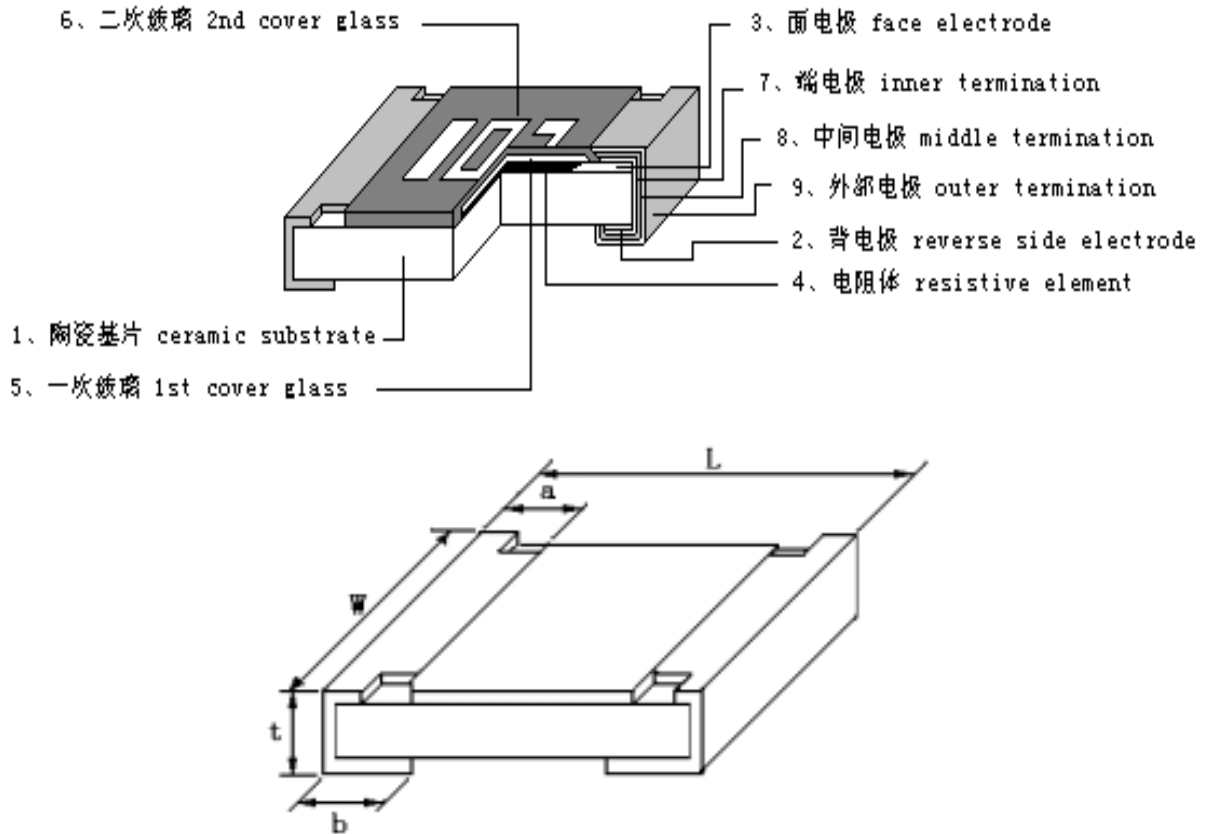
#### ■ 品名构成 Type Designation

例 Example





■ 结构及规格尺寸 Construction and dimension



单位 Unit: mm

型号 Type	L	W	t	a	b
0201	0.60±0.05	0.30±0.05	0.23±0.05	0.10±0.05	0.15±0.05
0402	1.00±0.10	0.50±0.10	0.30±0.10	0.20±0.10	0.25±0.10
0603	1.60±0.15	0.80±0.15	0.40±0.10	0.30±0.20	0.30±0.20
0805	2.00±0.20	1.25±0.15	0.50±0.10	0.40±0.20	0.40±0.20
1206	3.20±0.20	1.60±0.15	0.55±0.10	0.50±0.20	0.50±0.20
1210	3.20±0.20	2.50±0.20	0.55±0.10	0.50±0.20	0.50±0.20
1812	4.50±0.20	3.20±0.20	0.55±0.10	0.50±0.20	0.50±0.20
2010	5.00±0.20	2.50±0.20	0.55±0.10	0.60±0.20	0.60±0.20
2512	6.40±0.20	3.20±0.20	0.55±0.10	0.60±0.20	0.60±0.20



## ■产品外观 Appearance

1. 电阻器表面二次玻璃体保护膜覆盖完好且难以脱落, 表面平整。

The surface of resistor is covered with Protective Coating which hard to fade, and the surface of coating should avoid unevenness.

2. 电阻器引出端电极覆盖均匀、镀层较难脱落, 且平整、无裂痕、针孔、变色。

The terminal part is covered equable, the plating is hard to fade, and should avoid unevenness, flaw, pinhole and discoloration.

3. 电阻器芯片无裂痕、标志可辨。

With a clear mark, the resistor body is crack-free.

## ■参考标准 Reference Standard

GB/T 5729-2003

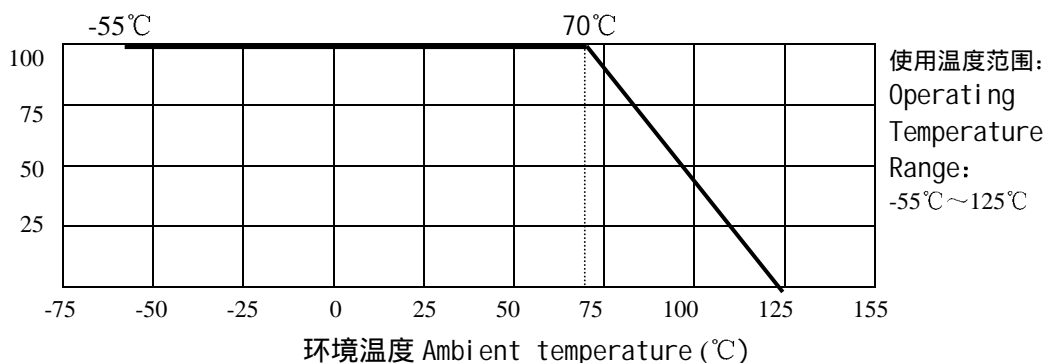
GB/T 9546-1995

JIS C 5223-1995

JIS C 5201-1998

JIS C 5202-1990

## ■负荷下降曲线 Derating Curve



当电阻使用的环境温度超过 70°C 时, 其额定负荷(额定电压)按上述曲线下降。

For resistors operated in ambient over 70°C, rated load(power rating) shall be derated in accordance with the above figure.



## ■ 额定值 Ratings

项目 Item		0201	0402	0603	0805	1206	1210	1812	2010	2512
额定功率 Power Rating	常规功率系列 Normal Power Series	1/20W	1/16W	1/16W	1/10W	1/8W	1/4W	1/2W	1/2W	1W
	提升功率系列 Upgraded Power Series	/	/	1/10W	1/8W	1/4W	1/3W	/	3/4W	/
最大工作电压 (V) Max. Working Voltage		25	50	50	150	200	200	200	200	200
最大过负荷电压 (V) Max. Overload Voltage		50	100	100	300	400	400	400	400	400
电阻温度系数 Resistance Temperature Coefficient		10 Ω ≤ R ≤ 1M Ω : ±200ppm/°C 1 Ω ≤ R < 10 Ω, 1M Ω < R ≤ 10M Ω : ±400ppm/°C			10 Ω ≤ R ≤ 1M Ω : ±100ppm/°C 1 Ω ≤ R < 10 Ω, 1M Ω < R ≤ 10M Ω : ±250ppm/°C					
阻值范围 Resistance Range		1 Ω ~ 10M Ω E-24、E-96 系列								
阻值误差精度 Resistance Tolerance		±5%、±10%	1 Ω ~ 10M Ω : ±1%、±2%、±5%、±10% (10 Ω ~ 1M Ω : ±0.5%)		1 Ω ~ 10M Ω : ±1%、±2%、±5%、±10% (10 Ω ~ 1M Ω : ±0.5%)			±1% ±2% ±5% ±10%		
使用温度范围 Operating Temperature Range		-55°C ~ +125°C								
额定温度 Rated Temperature		+70°C								

注：额定电压 =  $\sqrt{\text{额定功率} \times \text{标称电阻值}}$  或最大工作电压两者中的较小值。

Note: Rated Voltage =  $\sqrt{\text{Power Rating} \times \text{Resistance Value}}$  or Max. Working Voltage, whichever is lower.

## ■ 特性 Characteristics

项目 Item	标准 Specifications	测试方法 (JIS C 5202 标准) Test Methods (JIS C 5202)
端头强度 Bending Strength	无可见损伤 No mechanical damage $\Delta R \leq \pm (1.0\%R + 0.05 \Omega)$	弯曲速度 (Speed): 1mm/s 弯曲距离 (Bending Distance): 0201、0402、0603、0805、1206、1210: 3mm; 1812、2010、2512: 1mm
电阻温度系数 T.C.R	在规定值内 within specified T.C.R	测定范围: -55°C ~ +125°C Measure between -55°C ~ +125°C
温度循环 Temperature Cycling	无可见损伤 No mechanical damage $\Delta R \leq \pm (1.0\%R + 0.05 \Omega)$	-55°C (30分钟) ~ 常温 (5分钟) ~ 125°C (30分钟) 5个循环 -55°C (30min) ~ normal temperature (5min) ~ 125°C (30min) 5 cycles
短时间过负载 Short Time Overload	无可见损伤 No mechanical damage $\Delta R \leq \pm (2.0\%R + 0.05 \Omega)$	2.5倍额定电压或最大过负荷电压 (取最小者) 保持5秒 2.5 × Rated voltage or Max. Overload Voltage whichever is lower for 5 seconds



续上表

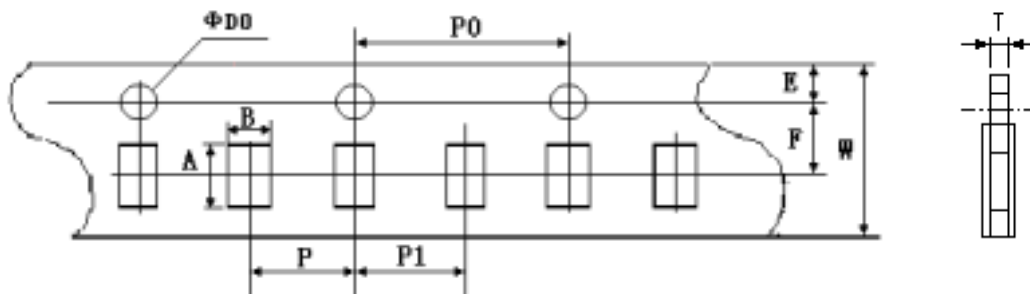
稳态湿热 Steady state humidity	无可见损伤 No mechanical damage $\Delta R \leq \pm (3.0\%R + 0.1 \Omega)$	40°C ± 2°C 90%~95%RH 1000 小时 40°C ± 2°C 90%~95%RH 1000h
70°C耐久性 Load Life	无可见损伤 No mechanical damage $\Delta R \leq \pm (3.0\%R + 0.1 \Omega)$	70°C ± 2°C, 1000 小时, 额定电压通 1.5 小时/断 0.5 小时 70°C ± 2°C, 1000h, Rated voltage 1.5h on/0.5h off
上限类别温度耐 久性 Endurance at upper temperature	无可见损伤 No mechanical damage $\Delta R \leq \pm (3.0\%R + 0.1 \Omega)$	125°C ± 2°C 1000h
耐溶剂性 Resistance to Solvent	无可见损伤 No mechanical damage $\Delta R \leq \pm (1.0\%R + 0.05 \Omega)$	浸入三氯乙烯 10h ± 1h Dip in chloroethylene for 10h ± 1h.
绝缘电阻 Insulation Resistance	1000MΩ Min	在电极与基片间施加 100V 直流电压, 保持 1 分钟, 然后测绝缘电阻值。 Apply DC 100V between substrate and termination for 1 minute, then check insulation resistance.
耐焊接热 Resistance to Soldering Heat	无可见损伤 No mechanical damage $\Delta R \leq \pm (1.0\%R + 0.05 \Omega)$	260°C ± 5°C 10s ± 1s
可焊性 Solderability	可焊面积 ≥ 95% 95% Cover Min	235°C ± 5°C 2s ± 0.5s
附着力 Adhesion	外观无可见损伤 No mechanical damage	施加力 5N 10s ± 1s Applying 5N 10s ± 1s

## ■ 包装 Packaging

### ● 编带包装 Tape and reel

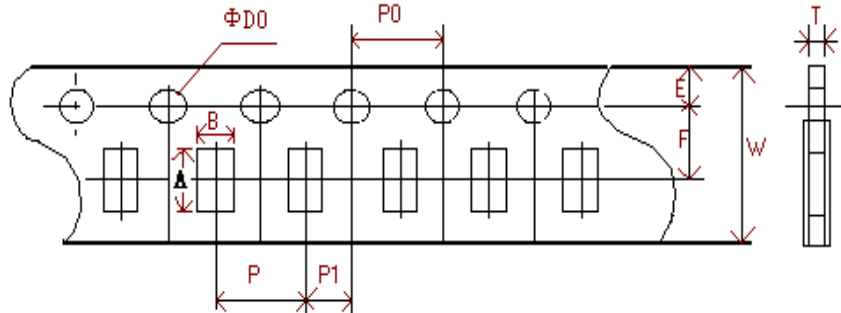
#### \* 纸带编带 Paper taping

0201、0402:





0603、0805、1206、1210:



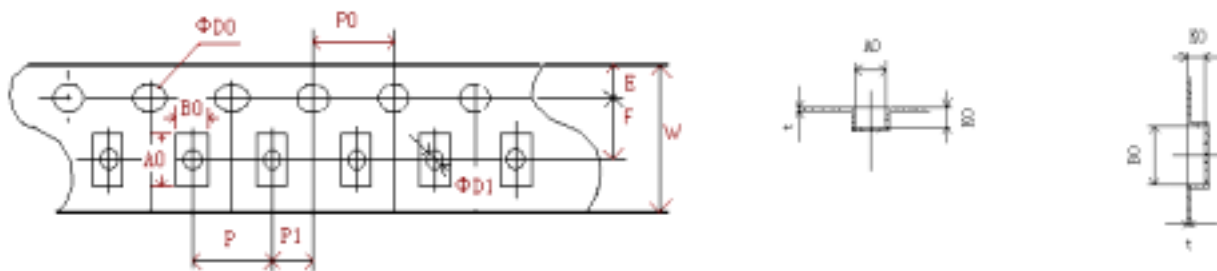
单位 unit: mm

型号 Type	A	B	W	F	E
0201	$0.70 \pm 0.1$	$0.40 \pm 0.1$	$8.0 \pm 0.20$	$3.5 \pm 0.05$	$1.75 \pm 0.1$
0402	$1.20 \pm 0.1$	$0.70 \pm 0.1$	$8.0 \pm 0.20$	$3.5 \pm 0.05$	$1.75 \pm 0.1$
0603	$1.85 \pm 0.1$	$1.10 \pm 0.1$	$8.0 \pm 0.20$	$3.5 \pm 0.05$	$1.75 \pm 0.1$
0805	$2.35 \pm 0.1$	$1.65 \pm 0.1$	$8.0 \pm 0.20$	$3.5 \pm 0.05$	$1.75 \pm 0.1$
1206	$3.50 \pm 0.2$	$1.90 \pm 0.2$	$8.0 \pm 0.20$	$3.5 \pm 0.05$	$1.75 \pm 0.1$
1210	$3.50 \pm 0.2$	$2.80 \pm 0.2$	$8.0 \pm 0.20$	$3.5 \pm 0.05$	$1.75 \pm 0.1$

单位 unit: mm

型号 Type	P	P0	P1	D0	T
0201	$2.0 \pm 0.05$	$4.0 \pm 0.1$	$2.0 \pm 0.05$	$1.5 \pm 0.1$	0.5Max
0402	$2.0 \pm 0.05$	$4.0 \pm 0.1$	$2.0 \pm 0.05$	$1.5 \pm 0.1$	0.6Max
0603	$4.0 \pm 0.1$	$4.0 \pm 0.1$	$2.0 \pm 0.05$	$1.5 \pm 0.1$	$0.60 \pm 0.1$
0805	$4.0 \pm 0.1$	$4.0 \pm 0.1$	$2.0 \pm 0.05$	$1.5 \pm 0.1$	$0.75 \pm 0.1$
1206	$4.0 \pm 0.1$	$4.0 \pm 0.1$	$2.0 \pm 0.05$	$1.5 \pm 0.1$	$0.75 \pm 0.1$
1210	$4.0 \pm 0.1$	$4.0 \pm 0.1$	$2.0 \pm 0.05$	$1.5 \pm 0.1$	$0.75 \pm 0.1$

\* 塑料带编带 Embossed tapping





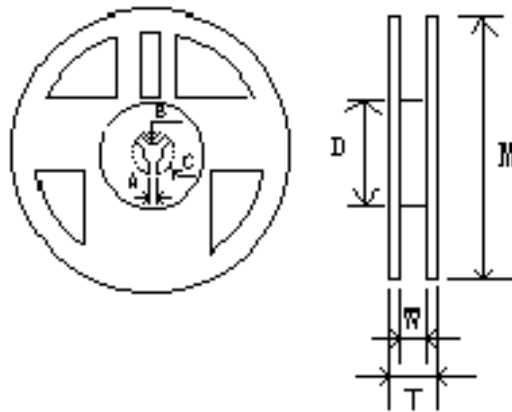
单位 unit: mm

型号 Type	A0	B0	W	F	E	t
1812	4.80±0.10	3.40±0.10	12.00±0.10	5.50±0.10	1.75±0.10	0.25±0.05
2010	5.45±0.10	2.77±0.10	12.00±0.10	5.50±0.10	1.75±0.10	0.24±0.05
2512	6.73±0.10	3.40±0.10	12.00±0.10	5.50±0.10	1.75±0.10	0.24±0.05

单位 unit: mm

型号 Type	P	P0	P1	D0	D1	K0
1812	4.00±0.10	4.00±0.10	2.00±0.05	1.55±0.10	1.50±0.10	1.00±0.10
2010	4.00±0.10	4.00±0.10	2.00±0.05	1.50+0.10/-0	1.50±0.10	0.84±0.10
2512	4.00±0.10	4.00±0.10	2.00±0.05	1.50+0.10/-0	1.50±0.10	0.81±0.10

\* 卷盘 Reel



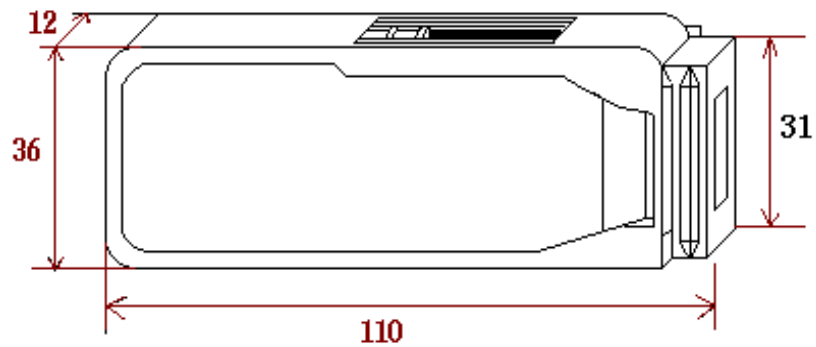
单位 unit: mm

型号 Type	M	W	T	A	B	C	D
0201	178 ±2.0	9.5 ±1.0	12.5 ±1.5	2.0 ±0.5	13.0 ±0.5	21.0 ±0.5	58.0 ±2.0
0402							
0603							
0805							
1206							
1210	178 ±2.0	13.0 ±0.5	15.5 ±1.5	2.0 ±0.5	13.0 ±0.5	21.0 ±0.5	57.0 ±2.0
1812							
2010							
2512	±2.0	±0.5	±1.5	±0.5	±0.5	±0.5	±2.0



\*塑料盒包装 Bulk case

单位 unit: mm



●包装数量 Packaging quantity

包装方法 Packaging style	编带 Tape and reel			塑料盒 Bulk case						塑料袋散装 Bulk		
	0201 0402	0603 0805 1206 1210	1812 2010 2512	0201 0402	0603	0805	1206	1210 2010	1812 2512	0201 0402	0603 0805 1206	1210 1812 2010 2512
数量 (PCS) Quantity	10000	5000	4000	50000	25000	10000	5000	1500	1000	≤50000	≤10000	≤4000