



## 一. 品名 TYPE NAME

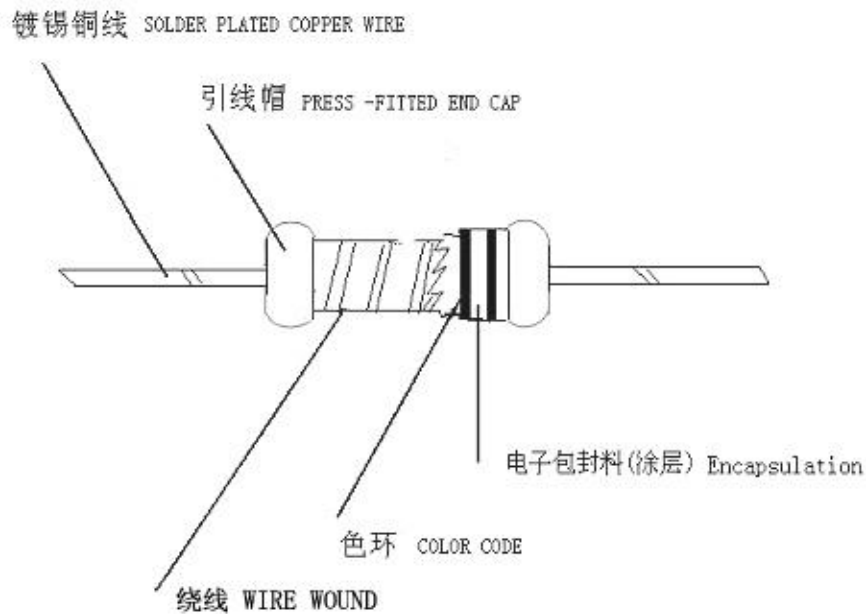
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依据其种类，分别标明型号、额定功耗、标称阻值、精度、和形状。

According to the types of power rated, resistor value, tolerance and shapes.

FKNP	1/4W-5W	8R2	±5%	TB\B\F\MB\MK
Type	Wattage	Nominal resistance	tolerance	shape
型号	额定功率	标称阻值	误差	包装形式

## 二. 绕线电阻器结构图 WIRE WOUND RESISTOR CONSTRUCTION



**REMARK:** 底漆颜色 COATING COLOR : 灰色 (GREY)

## 三. 特点 FEATURES

- 正常时，具备电阻功能。  
Function as a resistor in normal condition.
- 异常时，对于超负荷迅速熔断，保护回路。  
Quick fusing protects circuit from excessive overload.
- 低阻值. Low resistance value.
- 不燃性绝缘涂装. Flame retardant coating.
- 环保无铅产品  
RoHS compliant / lead-free available.



## 四. 主要技术指标 MAIN SPECIFICATION

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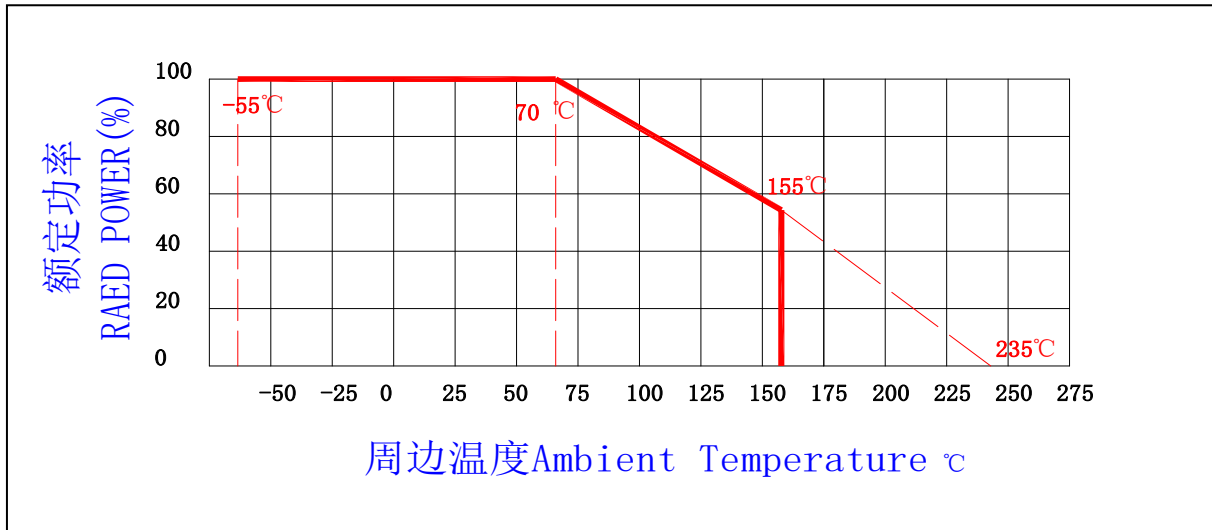
表一

型号 Type	最大工作电压 MAX WORKING	最大负荷电压 MAX OVERLOAD	额定功率 Rated Power at 70 °C	电阻范围 RESISTANCE	绝缘耐压 Dielectric withstanding
FKNP1/4W	200V	400V	1/4W	0.1R-20R	250V
FKNP 1/2W /1WS	350V	500V	1/2W	0.1Ω—100Ω	300V
FKNP 1W / 2WS	500V	700V	1W	0.1Ω—150Ω	350V
FKNP 2W / 3WS	700V	800V	2W	0.1Ω—150Ω	350V
FKNP 3W / 5WS	800V	1000V	3W	0.1Ω—200Ω	500V
FKNP 5W	850V	1200V	5W	0.1Ω—200Ω	500V

### 1. 额定功率 POWER RATING

额定功率的定义为在环境温度 70°C 最大输出功率。当环境温度超过 70°C，额定功率按下图曲线递减。

Power rating is defined as maximum power rating continuously applied under ambient temperature at 70°C. when the ambient temperature exceeds 70°C, The rated power decreases according to the curve below.



### 2. 额定电压 RATED VOLTAGE

额定电压为交流或直流电压（频率为 50Hz 或 60Hz）额定电压计算方式为：

Rated voltage is defined as the DC or AC (effective Value at commercial frequency example 50 C/S, 60 C/S), Voltage when rated power is applied and can be calculated By the following:

$$V = \sqrt{P \times R}$$

V = RATED VOLTAGE

P = RATED POWER (WATTS)

R = NOMINAL RESISTANCE VALUE (OHM)

When the calculated rated voltage exceeds the Maximum usable voltage flue



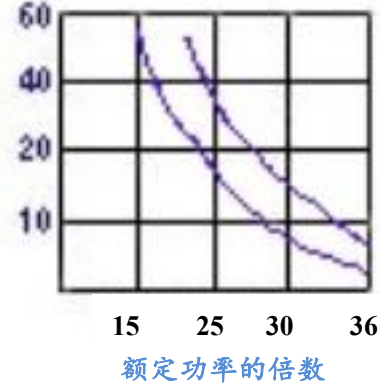
shown in CHART, the Maximum usable voltage is defined as the voltage According to the power-decreasing curve shown in CHART.

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## 五. 熔断特性

最大熔断功率 Max Fusing Power	最大熔断时间 Max Fusing time
Rated Power × 36	60 sec

熔断时间



## 注意 Caution

1. 熔断曲线只代表熔断趋势，并不代表实际熔断时间，熔断时间会随阻值和功率不同有变化，但一定是在 60 秒时间内熔断！

**Fuse curve only represent fusing tendency, does not represent the actual melting time, melting time will change with different resistance and power have, but must be in the 60 seconds time fuse**

2. 熔断倍率和熔断时间也可以按客户要求来定制，如无要求就按我司以上要求制作。

**The fuse and fuse time can also be customized according to customer's requirement, if no requirement is made according to the above requirements.**

3. 当订货时，敝公司首先提供样品，确认是否符合贵公司的要求条件，再确定规格。

**Specification will be drawn out, after the samples being confirmed to meet the end user's requirement.**

## 六. 产品性能 PERFORMANCE

项目 ITEM	性能及验收标准 PERFORMANCE AND QUALITY ACCEPTANCE	测试方法 (JIS C 5202) TEST METHOD (JIS C 5202)
温度系数 Resistance to temperature coefficient	PPM ≤ 300PPM	$\text{PPM}/^{\circ}\text{C} = \frac{R - R_0}{R_0} * \frac{10^6}{T - T_0}$ <p>R = Measured resistance (Ω) at T T °C 电阻实测值 (Ω) R<sub>0</sub> = Measured resistance (Ω) at T<sub>0</sub> T<sub>0</sub> °C 电阻实测值 (Ω) T = Measured test temperature (°C) 测试温度的实测值 T<sub>0</sub> = Measured base temperature (°C) 基准温度的实测值</p>



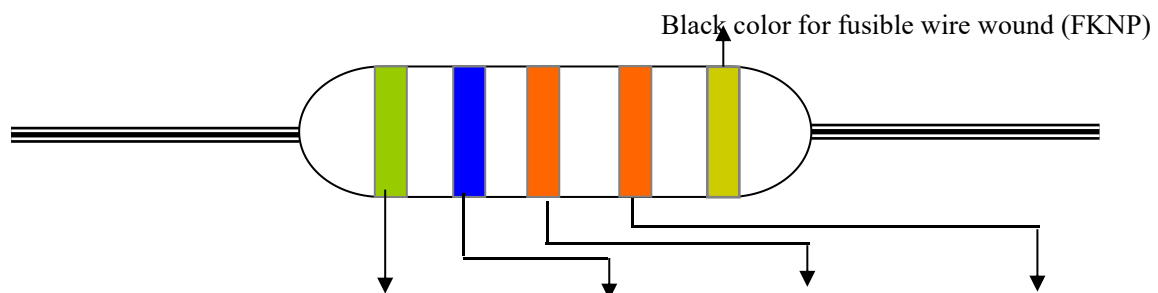
<p>短时负荷 Short time overload</p>	<p><math>\leq \pm(2\%R + 0.05\text{ohm})</math> Shall be no mechanical breakage 无破损（外观正常）</p>	<p>2.5 倍额定电压（交流或直流），5 秒 AC or DC voltage 2.5times the rated Voltage for 5 seconds .</p>
<p>耐电压 Voltage endurance</p>	<p>No breakdown or flashover 无击穿或飞弧</p>	<p>将电阻放于“V”形槽内，参照表一电压，保持一分钟。 Place the resistor in the "V" slot and hold for one minute, as shown in Table 1. .</p>
<p>端子强度 Terminal strength</p>	<p>内外部无损伤 Shall be no mechanical breakage</p>	<p>施加 3.5KG 30S 的拉力 Pull test apply 3.5KG force to the lead in the direction of lead axis for 30±5 seconds.</p>
<p>耐焊性 Heat resistively against soldering</p>	<p><math>\leq \pm(2\%R + 0.05\text{ohm})</math> Shall be no mechanical breakage 无破损（外观正常）</p>	<p>将电阻引出端浸入 350℃ ± 10℃ 的锡中，深度离电阻体 3±0.05mm，时间 3.5±0.5 秒。放置一小时再测试。 Dip the lead in to a solder bath having a temperature of 350 °C ± 10°C up to 3±0.05mm from the body of the resistor and hold it for 3.5 ± 0.5seconds leave the resistor ,at room temperature 1 hours after ,then Measure.</p>
<p>寿命试验 Load life test</p>	<p><math>\leq \pm(5\%R + 0.05\text{ohm})</math> Shall be no mechanical breakage 无破损（外观正常）</p>	<p>在 70℃ 的环境中施加额定电压，1 小时通，0.5 小时断 1000 小时。 In the constant temperature chamber 70 °C ,apply rated voltage for 1 hour and shut voltage for 0.5 hour and repeat this cycle for 1000 hours,</p>
<p>上锡效果 Solder ability</p>	<p><math>\geq 95\%</math></p>	<p>浸入 260℃±5℃ 的锡槽中，时间 5± 0.5 秒。 Dip the lead in to a solder bath having a temperature of 260°C±5°C. Time:5± 0.5seconds.</p>



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<p>湿度负荷试验 Humidity load test</p>	<p><math>\leq \pm (5\% R + 0.1\text{ohm})</math> Shall be no mechanical breakage 无破损（外观正常）</p>	<p>温度在 <math>40^{\circ}\text{C} \pm 2^{\circ}\text{C}</math>，相对湿度 90 - 95% 室内，用额定电压 1.5 小时开和关闭电压 0.5 小时，重复这个周期 1000 小时，离开 1 小时后在室温下测试。 In temperature chamber <math>40^{\circ}\text{C} \pm 2^{\circ}\text{C}</math>，relative humidity 90 - 95%, Apply rated voltage 1.5 hour and shut voltage 0.5 hour repeat this cycle for 1000 hours, leave in room temperature for 1 hour after test,</p>
<p>耐振性 Vibration</p>	<p>Shall be no mechanical breakage 无破损（外观正常）</p>	<p>设置振动频率在 10HZ - 55HZ 10HZ/秒 1.5mm 的幅度, 在 1 分钟更换频率的。振动三个方向, 在 3 小时内完成。 set a resistor at the vibration table and vibrate 10HZ—55HZ 10HZ/s. with 1.5mm amplitude in 1 min. when the change of frequency shall be completed uniformly. the vibration shall apply to 3 directions, vertical and horizontal to the axis of resistor each for 3h.</p>
<p>上限类别温度耐久性 Endurance at upper-limit temperature</p>	<p><math>\leq \pm (5\%R + 0.1 \Omega)</math></p>	<p>在 <math>125^{\circ}\text{C}</math> 温度下，持续时间 1000H At <math>125^{\circ}\text{C}</math> temperature, duration of 1000h</p>

### 七. 标示 Marking fusible



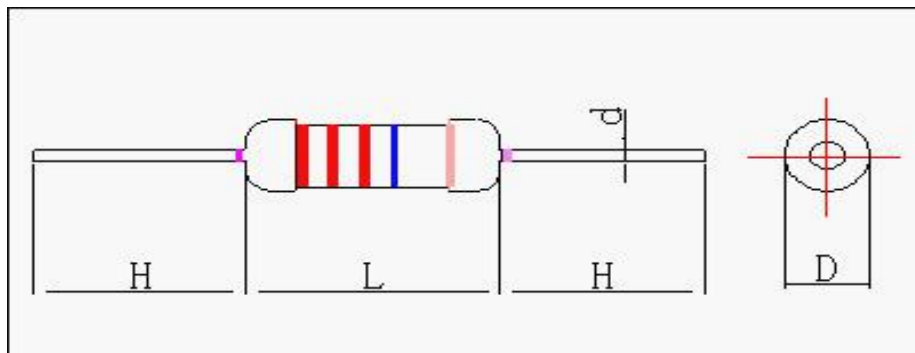
Color	1 st Band	2 nd Band	3 th Band	Tolerance
Black 黑	0	0	$10^0$	
Brown 棕	1	1	$10^1$	$\pm 1\% (F)$
Red 红	2	2	$10^2$	$\pm 2\% (G)$
Orange 橙	3	3	$10^3$	
Yellow 黄	4	4	$10^4$	
Green 绿	5	5	$10^5$	$\pm 0.5\% (D)$
Blue 蓝	6	6	$10^6$	$\pm 0.25\% (C)$



Violet 紫	7	7	$10^7$	$\pm 0.1\%$ (B)
Grey 灰	8	8	$10^8$	$\pm 0.05\%$ (A)
White 白	9	9	$10^9$	
Gold 金			$10^{-1}$	$\pm 5\%$ (J)
Silver 银			$10^{-2}$	$\pm 10\%$ (K)

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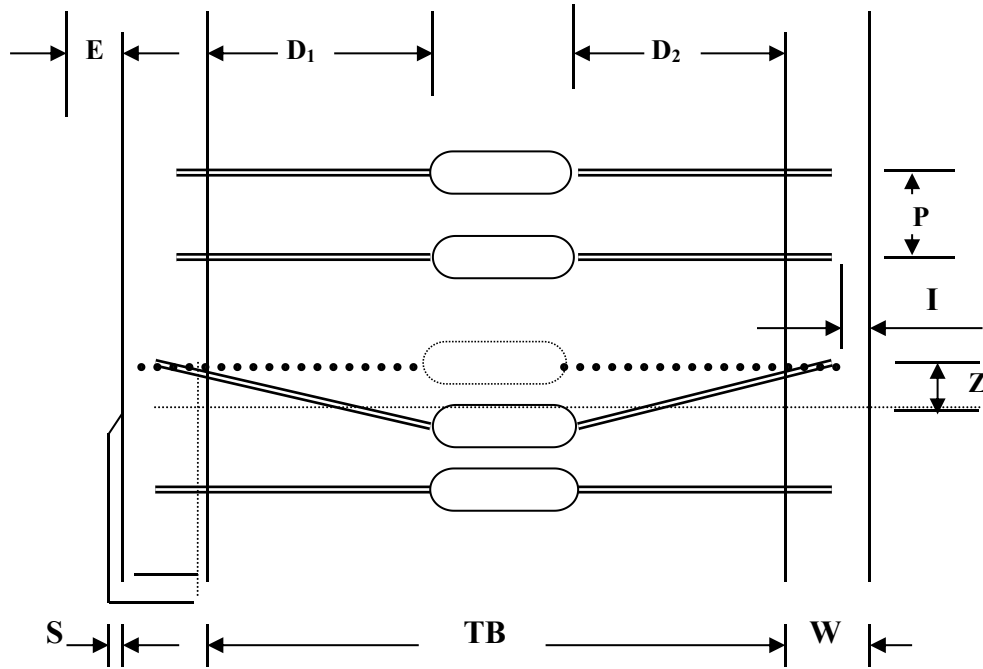
### 八. B 型尺寸 Dimension (B)



Unit: m/m

TYPE	L	D	H	d	PULLING(Kg)	
1/4W / 1/2WS	6.0±0.5	2.3±0.3	27±2.0	0.45±0.05	2.5Kg-30S	
1/2W / 1WS	9.0±1.0	3.5±0.5	26±2.0	0.56±0.05	2.5Kg-30S	
1W / 2WS	T52	11.0±1.0	4.5±0.5	25±2.0	0.65±0.05	3Kg-30S
	T63	11.0±1.0	4.5±0.5	31±2.0	0.65±0.05	3Kg-30S
	T73	11.0±1.0	4.5±0.5	34±2.0	0.65±0.05	3Kg-30S
2W / 3WS	T63	15.0±1.0	5.0±0.5	29±2.0	0.70±0.05	5Kg-30S
	T73	15.0±1.0	5.0±0.5	33±2.0	0.70±0.05	5Kg-30S
3W / 5WS	T63	17.0±1.0	6.0±0.5	27±2.0	0.70±0.05	5Kg-30S
	T73	17.0±1.0	6.0±0.5	32±2.0	0.70±0.05	5Kg-30S
5W	24.0±1.0	8.0±1.0	28±2.0	0.75±0.05	5Kg-30S	

### 九. 编带尺寸 Taping Dimension (TB)



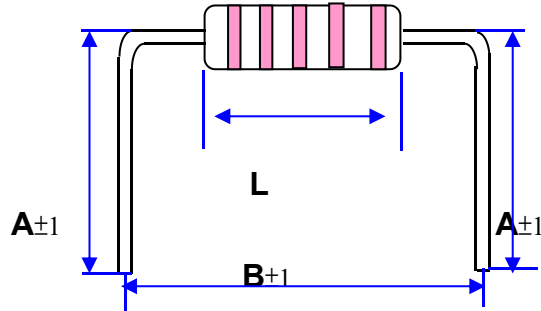
WATTS	Type	TB	P±0.5	W±0.5	(D1-D2) MAX	E MAX	Z MAX	S MAX	(I) MAX
1/4W / 1/2WS	T 52	52±1.5	5	6	0.8	0	1.2	0.8	3.2
1/2W / 1WS	T 52	52±1.5	5	6	0.8	0	1.2	0.8	3.2
1W / 2WS	T52	52±1.5	5	6	0.8	0	1.4	0.8	3.2
	T 63	63±1.5	5	6	0.8	0	1.4	0.8	3.2
	T 73	73±1.5	5	6	0.8	0	1.4	0.8	3.2
2W / 3WS	T63	63±1.5	5	6	0.8	0	1.4	0.8	3.2
	T 73	73±1.5	5	6	0.8	0	1.4	0.8	3.2
3W / 5WS	T 73	73±1.5	10	6	0.8	0	1.4	0.8	3.2
	T63	63±1.5	5	6	0.8	0	1.4	0.8	3.2
5W	T 73	73±1.5	10	6	0.8	0	1.4	0.8	3.2

Unit: m/m

## 十. 成型尺寸 FORMED DIMENSIONS



1. M - TYPE



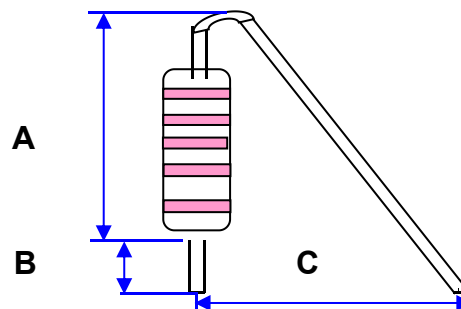
DIMENSIONS 尺寸表示方法：“A × B × A”

WATTS	DIMENSIONS(mm)		
	L	B±1	A±1
1/4W / 1/2WS	6.0±0.3	10	10
1/2W / 1WS	9.0±0.5	13	10
1W / 2WS	11.0±1.0	15	13
2W / 3WS	15.0±1.0	20	15
3W / 5WS	17.0±1.0	23	15
5W	24.0±1.0	33	15

**Remark:** A、B 尺寸客户可要求而定.

A, B size customers may request.

2. F - TYPE



DIMENSIONS：“A × B × C”

WATTS	DIMENSIONS(mm)		
	A	B±1	C±2
1/4W / 1/2WS	9±0.5	5	10
1/2W / 1WS	13±0.5	5	12





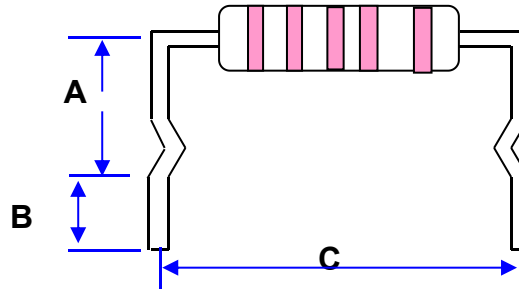
1W / 2WS	16±1	5	15
2W / 3WS	20±1	5	17
3W / 5WS	24±1	5	20

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**Remark:** A、B、C 尺寸客户可要求而定。

A, B, C size customers may request.

### 3. MK - TYPE



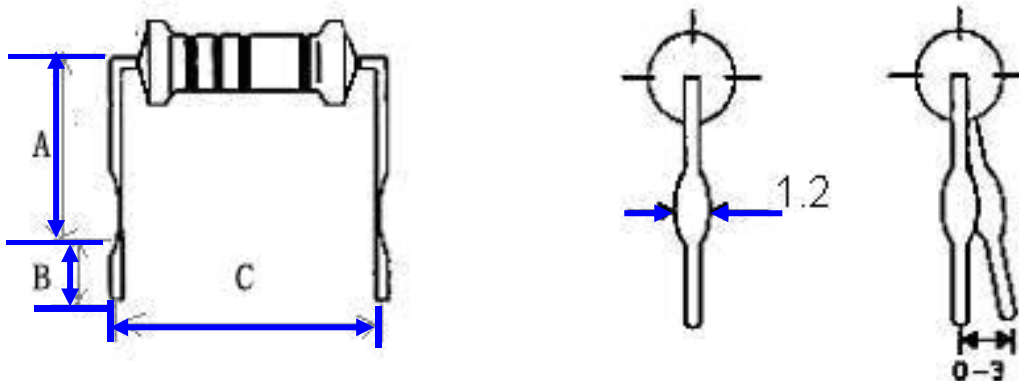
**DIMENSIONS:** “ A × B × C ”

WATTS	DIMENSIONS(mm)		
	A±1	B±1	C±1
1/2W / 1WS	10	5	15
1W / 2WS	10	5	15
2W / 3WS	10	5	20
3W / 5WS	10	5	23
5W	13	5	27

**Remark:** A、B、C 尺寸客户可要求而定。

A, B, C size customers may request.

### 4. MB - TYPE



**DIMENSIONS:** “ A × B × C ”

WATTS	DIMENSIONS(mm)		
	A±1	B±1	C±1
1/2W / 1WS	10	5	15
1W / 2WS	10	5	15



2W / 3WS	10	5	20
3W / 5WS	10	5	23
5W	13	5	27

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**Remark:** A、B、C 尺寸客户可要求而定.

A、B、Csize customers may request.

## 十一. 包装 PACKING

### 1. 标签规格 LABEL SPECIFICATION

- |                                   |       |
|-----------------------------------|-------|
| 1) . TYPE、WATTS                   | 规格及功率 |
| 2) . RESISTOR VALUE AND TOLERANCE | 阻值及误差 |
| 3) . QUANTITY                     | 数量    |
| 4) . LOT NO.                      | 生产批号  |

### 2. 包装数量 Packing quantity

Unit: BOX / Kpcs

TYPE QTY	1/4W	1/2W	1W	2W	3W	5W
T52	5	2.5	1	NA	NA	NA
T63	NA	NA	1	1	0.5	0.25
T73	NA	NA	1	1	0.5	0.25
B	10	5	4	3	2	1
F	10	5	4	3	2	1
M	10	5	4	3	2	1
MB	NA	NA	4	3	2	1
MK	NA	NA	4	3	2	1



附加说明: Additional instructions:

1、产品存放条件 product storage conditions

a 电阻器应存放在干燥、通风的环境条件下, 产品不得受阳光直接照射;

Resistor should be stored in dry and ventilated environment conditions, the product shall not be affected by direct sunlight;

b 电阻器存放环境应无酸、碱、硫化等具有腐蚀气氛的环境中; Resistor to deposit environment should be no acid, alkali corrosion, sulfide, etc have atmosphere environment;

c 产品存储时间不得超过两年。Product storage time may not exceed two years .

2、产品使用补充说明 Products use added

a 产品功率负荷, 遵循额定功率降功耗曲线负荷; Product power load, follow the rated power drop curve of load power consumption;

b 工作电压按额定电压计算公式计算 (额定电压值受最大工作电压限制)  
Rated voltage at rated voltage calculation formula being limited by the maximum working voltage (working voltage value)

$$V = \sqrt{P \times R}$$

式中:

V =额定电压 (伏特) rated voltage (volt)

P =额定功率(瓦特) rated power (watts)

R =标称电阻值(欧姆) nominal resistance (ohms)



东莞市晴远电子有限公司  
Dongguan Qing Yuan Electronic Co., Ltd

易熔绕线电阻器 WIRE WOUND RESISTOR (FKNP)

REV: 00

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