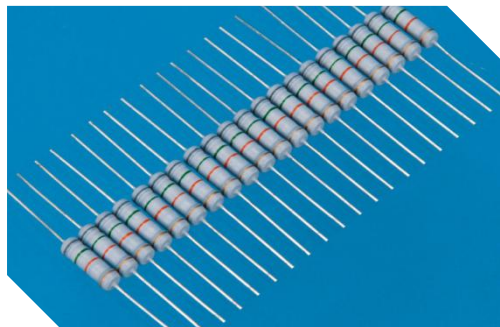




特点 FEATURES

低阻值

LOW RESISTANCE VALUE

不燃性绝缘涂装

FLAME RETARDANT COATING WITH
NON-FLAMABLE PAINT.

环保无铅产品

RoHS COMPLIANT/LEAD-FREE AVAILABLE

标准误差: $\pm 1\%$ 、 $\pm 2\%$ 、 $\pm 5\%$.

STANDARD TOLERANCES:

$\pm 1\%$ 、 $\pm 2\%$ 、 $\pm 5\%$

低感抗

Low impedance

应用 Apply

各种交、直流电子电路

Various AC and DC electronic circuits

适用于各种电子产品中要求功率大且要求
无感抗电路中, 特别是高频电路等。

In the areas of application: applicable to
all kinds of electronic products required power
and require no impedance circuit, especially
in high frequency circuit, etc

编号 PART NUMBER

<u>NKNP</u>	<u>3WS</u>	<u>1R0</u>	<u>J</u>	<u>I</u>	<u>73</u>	<u>CU</u>
(1)	(2)	(3)	(4)	(5)	(6)	(7)

(1) 类型 Type

NKNP 无感绕线电阻器

(2) 功率 RatedPower

1/2WS=0.5WS

2WS=2WS

5WS=5WS

1/2W = 0.5W

2W = 2W

5W=5W

1WS = 1WS

3WS= 3WS

6W=6W

1W=1W

3W=3W

S 代表小型化功率

(3) 阻值 Resistance value

E24 & E96 & E192 Series

Example:

0R01=0.01 Ω 0R1=0.1 Ω 1R5=1.5 Ω 10R = 10 Ω , 100R = 100 Ω ,

(4) 精度 Tolerance

F= $\pm 1\%$ G= $\pm 2\%$ J= $\pm 5\%$

(5) 成品型态 Finished form

T: 编带 Box Pack B: 散装 Bulk M: M Type MK: MK Type

MB: MB Type F: FK Type FK: FK Type FKK: FKK Type

(6) 编带间距尺寸 (T Type) Braid spacing size

52= 52mm ± 1.5 mm 63= 63mm ± 1.5 mm 73= 73mm ± 1.5 mm

83=83mm ± 1.5 mm 93=63mm ± 1.5 mm

(7) 引线材质 Lead material

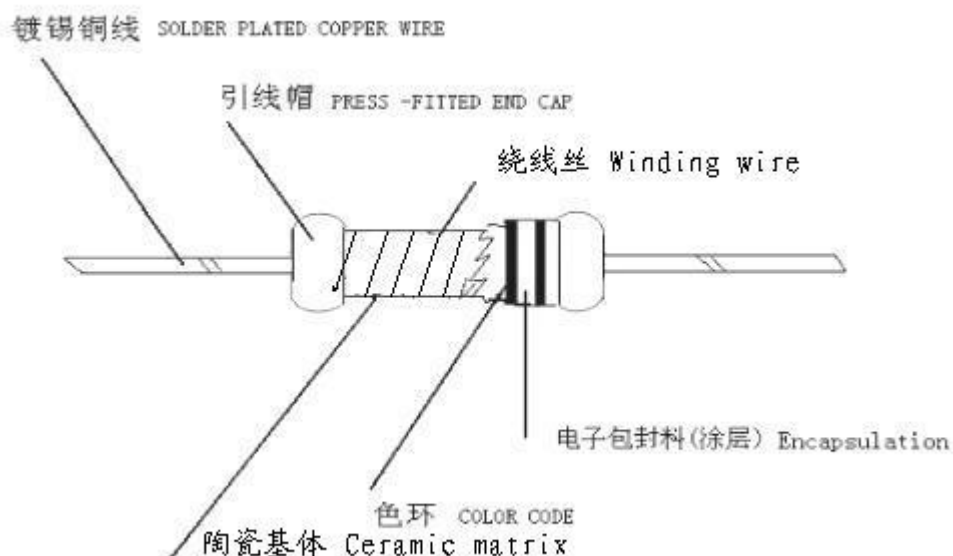
CU=镀锡铜线

Tinned copper wire

CP=镀锡铜包钢(铁)

Tinned copper-clad steel

结构图 CONSTRUCTION



REMARK: 底漆颜色 COATING COLOR: 灰色 Grey 或者 OR 绿色 GREEN

主要技术指标 MAIN SPECIFICATION

表一

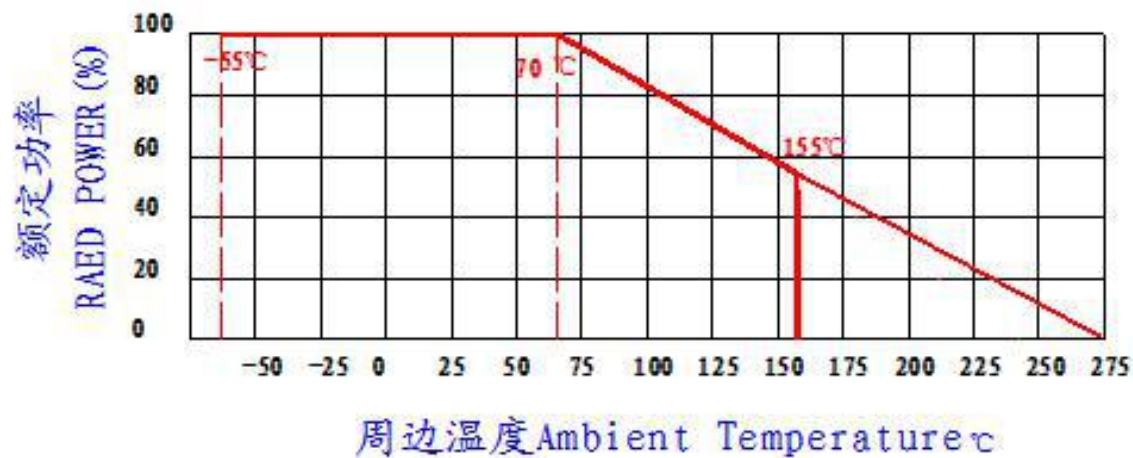
型号 Type	最大工作电压 MAX WORKING	最大负荷电压 MAX OVERLOAD	额定功率 Rated Power at 70℃	电阻范围 RESISTANCE VALUE RANGE	绝缘耐压 Dielectric withstanding	工作温度范围 Operating Temp. Range
NKNP1/2W	$U = \sqrt{P \times R}$	$V = 4XU$	1/2W	$0.1\Omega - 10\Omega$	200V	$-55^{\circ}\text{C} \sim +275^{\circ}\text{C}$
NKNP1W / 1WS			1W/1WS	$0.011\Omega - 50\Omega$	200V	
NKNP2W / 2WS			2W/2WS	$0.011\Omega - 100\Omega$	250V	
NKNP3W / 3WS			3W/3WS	$0.01\Omega - 200\Omega$	250V	
NKPN5W/5WS			5W/5WS	$0.01\Omega - 300\Omega$	250V	

降功耗曲线 DERATING CURVE

额定功率 POWER RATING

额定功率的定义为在环境温度 70℃ 最大输出功率。当环境温度超过 70℃，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℃. when the ambient temperature exceeds 70℃, The rated power decreases according to the curve below



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.

产品特性 Product characteristics

项目 Item	规格值 Performance	试验方法 (依据 JIS C 5202) Test methods (Conform to JIS C 5202)
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温度系数 Temperature coefficient	PPM≤300PPM	5.2 项参照 Comply with 5.2 $\text{PPM}/^{\circ}\text{C} = \frac{R - R_0}{R_0} * \frac{10^6}{T - T_0}$ R = Measured resistance (Ω) at T T °C 电阻实测值 (Ω) R ₀ = Measured resistance (Ω) at T ₀ T ₀ °C 电阻实测值 (Ω) T = Measured test temperature(°C) 测试温度的实测值 (室温+100°C) T ₀ = Measured base temperature(°C) 基准温度的实测值(室温)
短时间过负荷 Short time overload	±(2%+0.05Ω)以内。 不得有机械的损伤。 within ±(2%+0.05Ω) No evidence of mechanical damage.	5.5 项参照 Comply with 5.5 额定电压 X 2.5 倍, 5 秒。 不可超过最高过负荷电压(见表-1) Rated voltage X 2.5 times, 5s But not to exceed maximum overload voltage. (See table-1)
耐电压 Dielectric withstanding voltage	无电弧放电、烧损及绝缘破坏等异状。 No evidence of flashover mechanical damage, arcing or insulation breakdown.	5.7 项参照 Comply with 5.7 常压, 置于 V 型槽方法。 施加个别规定之交流电压 60 秒。(见表-1) Constant pressure, V-block method Resistor shall be tested at AC potential respectively for 60 seconds.(See table-1)
断续过负荷 Pulse overload	±(2%+0.05Ω)以内。 within ±(2%+0.05Ω)	5.8 项参照 Comply with 5.8 额定电压 X 4 倍, 1000 回 (1 秒 ON, 25 秒 OFF)。 不可超过最高断续电压(见表-1) Rated voltage X 3 times, 1000 cyc.(1s ON, 25s OFF) But not to exceed maximum pulse voltage.(See table-1)
端子强度 Terminal strength	端子不得断裂及松弛。 No evidence of mechanical damage.	6.1 项参照 Comply with 6.1 引张强度: 25N(2.5Kgf),保持 10 秒。 Tensile strength: 25N(2.5kgf), for 10 seconds. 扭转强度: 360°交互回转 5 次。 Torsional strength: Rotated through 360°, 5 rotations.
焊锡耐热性 Resistance to soldering heat	±(0.5%+0.05Ω)以内。 不得有机械的损伤。 within ±(0.5%+0.05Ω) No evidence of mechanical damage.	6.4 项参照 Comply with 6.4 350±10°C, 3±0.5 秒 或 260±5°C, 10±1 秒, 试验后放置 3 小时。 350±10°C, 3±0.5s or 260±5°C, 10±1s, After test leave for 3h.
焊锡附着性 Solderability	导线至少 95%以上新锡覆盖。 Covered with new solder by 95% at least.	6.5 项参照 Comply with 6.5 焊锡温度: 245±5°C。 浸锡时间: 5±0.5 秒。 Test temperature of solder: 245 ± 5°C Dipping time in solder: 5 ± 0.5s
温度循环 Temperature cycle	±(2%+0.05Ω)以内。 不得有机械的损伤。 within ±(5%+0.05Ω) No evidence of mechanical damage.	7.4 项参照 Comply with 7.4 低温侧: -55±3°C: 30 分钟, 室温: 2~3 分钟 高温侧: +155±2°C: 30 分钟, 室温: 2~3 分钟 5 次 Low side: -55 ± 3°C: 30min, Room temp.: 2 to 3min High side: +155 ± 2°C: 30min, Room temp.: 2 to 3min 5 cycles

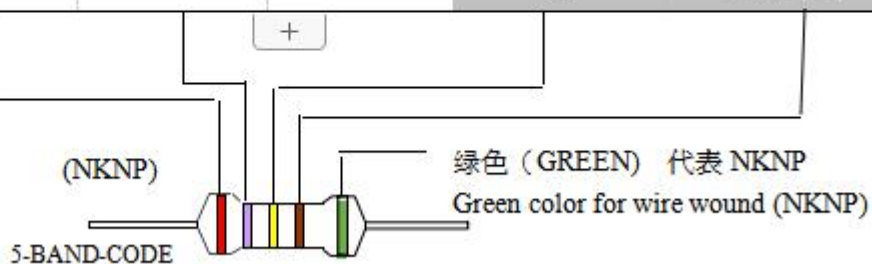


耐湿负荷寿命 Load life in humidity	$\pm(5\%+0.05\Omega)$ 以内。 within $\pm(5\%+0.05\Omega)$	7.9 项参照 Comply with 7.9 40 $\pm$ 2℃, 湿度 90~95%, 1000 小时 1/10 定格电压 (90 分钟 ON, 30 分钟 OFF) 40 $\pm$ 2℃, 90 to 95%RH, 1000h 1/10 Rated voltage (90 min ON, 30 min OFF)
负荷寿命 Load life	$\pm(5\%+0.05\Omega)$ 以内。 within $\pm(5\%+0.05\Omega)$	7.10 项参照 Comply with 7.10 70 $\pm$ 3℃, 1000 小时 定格电压 (90 分钟 ON, 30 分钟 OFF) 70 $\pm$ 3℃, 1000h Rated voltage (90 min ON, 30 min OFF)

色环标示 Marking



COLOR	1st BAND	2nd BAND	3rd BAND	MULTIPLIER (倍数 10^n)	TOLERANCE (精度)
BLACK	0	0	0	10^0	
BROWN	1	1	1	10^1	$\pm 1\%$ (F)
RED	2	2	2	10^2	$\pm 2\%$ (G)
ORANGE	3	3	3	10^3	
YELLOW	4	4	4	10^4	
GREEN	5	5	5	10^5	$\pm 0.5\%$ (D)
BLUE	6	6	6	10^6	$\pm 0.25\%$ (C)
VIOLET	7	7	7	10^7	$\pm 0.1\%$ (B)
GREY	8	8	8	10^8	$\pm 0.05\%$ (A)
WHITE	9	9	9	10^9	
GOLD				10^{-1}	$\pm 5\%$ (J)
SILVER				10^{-2}	$\pm 10\%$ (K)



备注：如小数后有 3 位数，则省去绿色，第一道色用黑色。

如 0.027 5% 色环标示：黑红紫银金

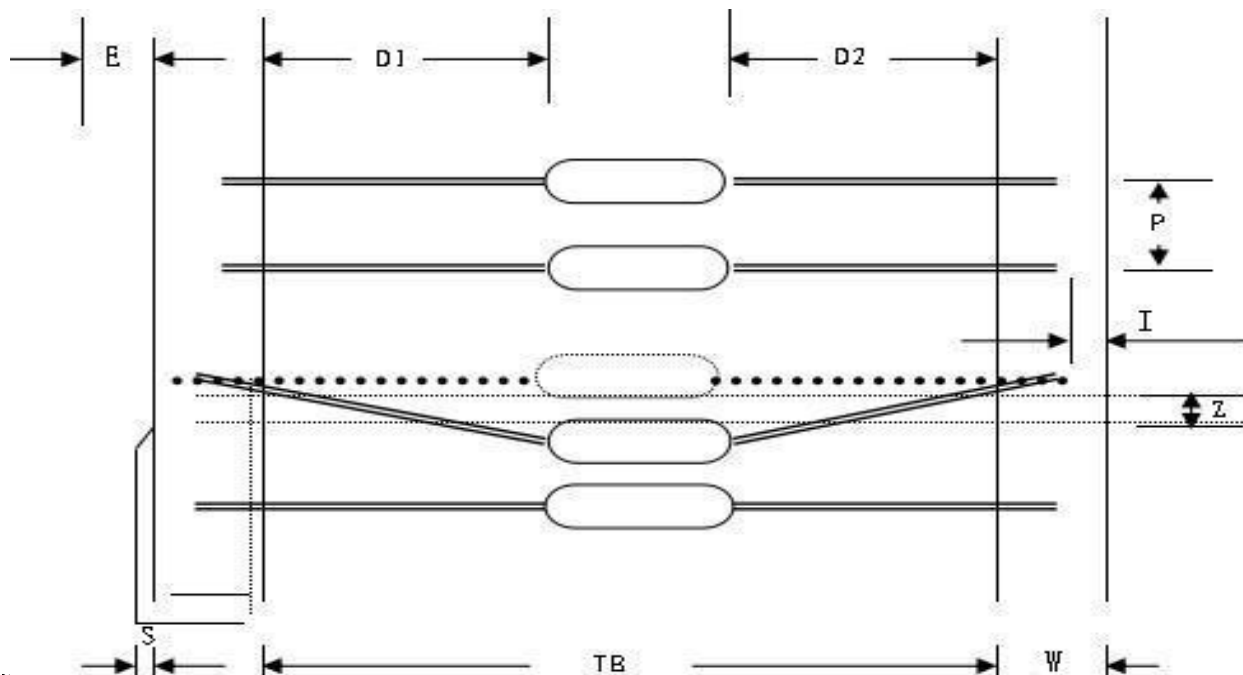


B 型尺寸 Dimension (B TYPE) 单位(Unit): mm



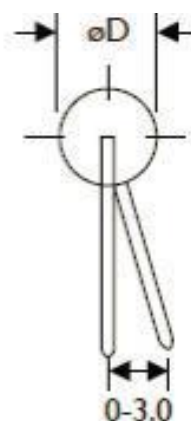
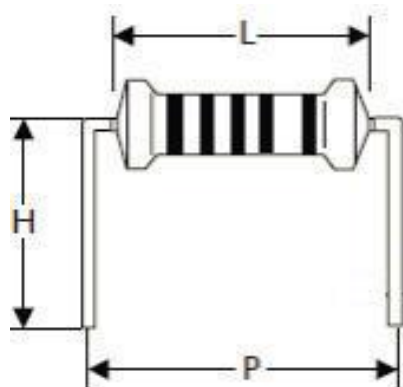
TYPE		L	Φ D	H	Φ d		PULLING(Kg)
					铜 (cu)	铁 (cp)	
1/2W / 1WS	T52	9.0±1.0	3.5±0.5	26±2.0	0.56±0.05	0.50±0.05	2.5Kg-30S
1W / 2WS	T52	11.0±1.0	4.5±0.5	25±2.0	0.65±0.05	0.60±0.05	3Kg-30S
	T63	11.0±1.0	4.5±0.5	31±2.0	0.65±0.05	0.60±0.05	3Kg-30S
	T73	11.0±1.0	4.5±0.5	34±2.0	0.65±0.05	0.60±0.05	3Kg-30S
2W / 3WS	T63	15.0±1.0	5.0±0.5	29±2.0	0.75±0.05	0.70±0.05	5Kg-30S
	T73	15.0±1.0	5.0±0.5	35±2.0	0.75±0.05	0.70±0.05	5Kg-30S
3W / 5WS	T63	17.0±1.0	6.0±0.5	27±2.0	0.75±0.05	0.70±0.05	5Kg-30S
	T73	17.0±1.0	6.0±0.5	32±2.0	0.75±0.05	0.70±0.05	5Kg-30S
5W/5WS	T73	24.0±1.0	8.0±1.0	28±2.0	0.75±0.05	0.70±0.05	5Kg-30S

编带尺寸 Taping Dimension (TB TYPE) 单位(Unit): mm



WATTS	Type	TB	P±0.5	W±0.5	(D1-D2) MAX	E MAX	Z MAX	S MAX	(l) MAX
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	10	6	0.8	0	1.4	0.8	3.2
5W/5WS	T 73	73±1.5	10	6	0.8	0	1.4	0.8	3.2

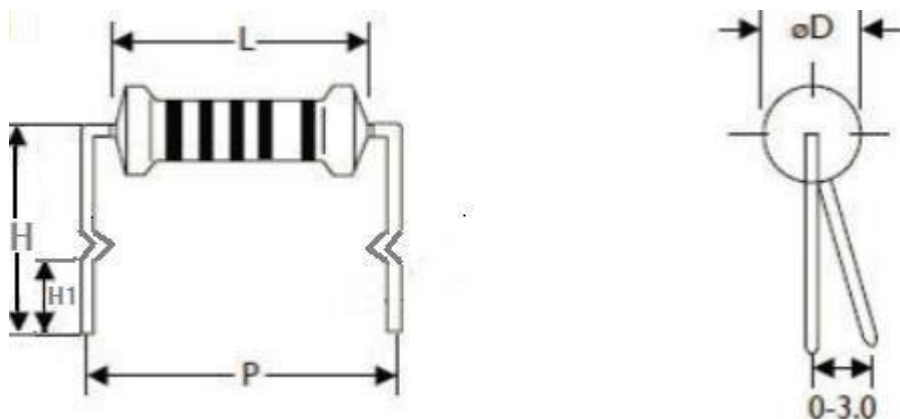
M 型尺寸 M - TYPE 单位(Unit): mm



功率 WATTS	尺寸 DIMENSIONS(mm)			
	L	P±1	H±1	ΦD
1/2W / 1WS	9.0±1.0	13	10	3.5±0.5
1W / 2WS	11.0±1.0	15	13	4.5±0.5
2W / 3WS	15.0±1.0	20	15	5.0±0.5
3W / 5WS	17.0±1.0	23	15	6.0±0.5
5W	24.0±1.0	33	15	8.0±1.0

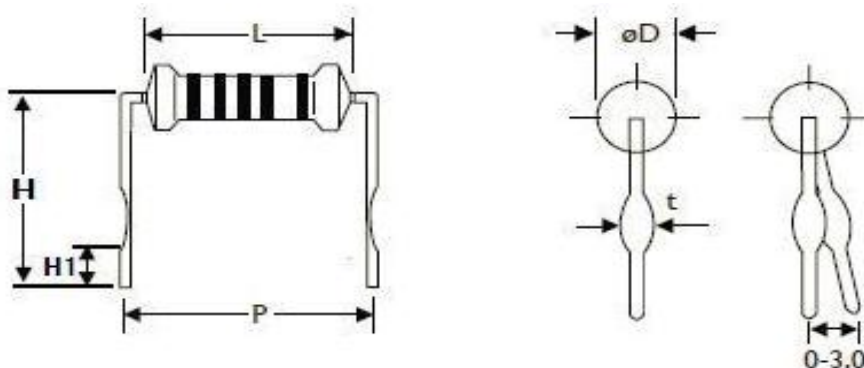


MK 型尺寸 MK- TYPE 单位(Unit): mm



功率 WATTS	尺寸 DIMENSIONS(mm)				
	L	P±1	H±1	H1±0.5	ΦD
1/2W / 1WS	9.0±1.0	15	10	5	3.5±0.5
1W / 2WS	11.0±1.0	15.5	11	3.6	4.5±0.5
2W / 3WS	15.0±1.0	20	11	3.6	5.0±0.5
3W / 5WS	17.0±1.0	23	10.6	3.6	6.0±0.5
5W	24.0±1.0	27	13	5	8.0±1.0

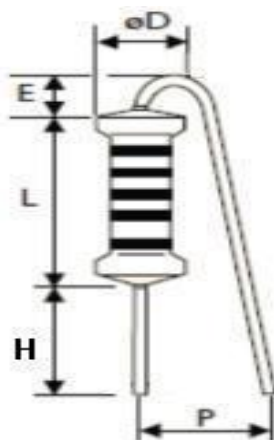
MB 型尺寸 MB- TYPE 单位(Unit): mm



功率 WATTS	尺寸 DIMENSIONS(mm)				
	L	P±1	H±1	H1±0.5	ΦD
1/2W / 1WS	9.0±1.0	13	13	3.6	3.5±0.5
1W / 2WS	11.0±1.0	16	11	3.6	4.5±0.5
2W / 3WS	15.0±1.0	20	13.6	3.6	5.0±0.5
3W / 5WS	17.0±1.0	23	13	5	6.0±0.5

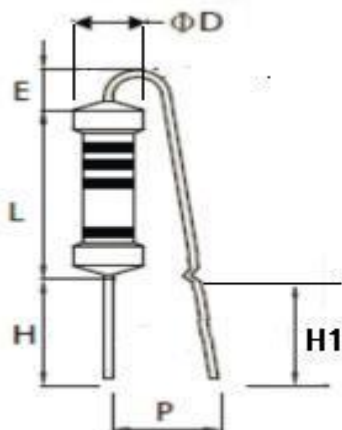


F 型尺寸 F- TYPE 单位(Unit): mm



功率 WATTS	尺寸 DIMENSIONS(mm)				
	L	P±2	H±0.5	E Max	ΦD
1/2W / 1WS	9.0±1.0	8	5/3.6	3.5	3.5±0.5
1W / 2WS	11.0±1.0	8	5/3.6	3.5	4.5±0.5
2W / 3WS	15.0±1.0	10	5/3.6	3.5	5.0±0.5
3W / 5WS	17.0±1.0	12	5/3.6	3.5	6.0±0.5

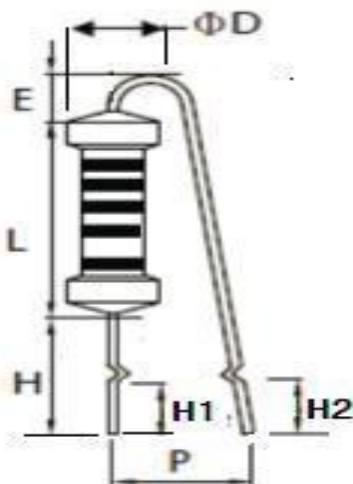
FK 型尺寸 FK- TYPE 单位(Unit): mm



功率 WATTS	尺寸 DIMENSIONS(mm)					
	L	P±2	H ±0.5	H1±0.8	E Max	ΦD
1W / 2WS	11.0±1.0	7	5/3.6	5/3.6	3.5	4.5±0.5
2W / 3WS	15.0±1.0	7	5/3.6	5/3.6	3.5	5.0±0.5
3W / 5WS	17.0±1.0	10	5/3.6	5/3.6	3.5	6.0±0.5



FKK 型尺寸 FKK- TYPE 单位(Unit): mm



功率 WATTS	尺寸 DIMENSIONS(mm)						
	L	P±2	H ±1	H1±0.5	H2±0.8	E Max	ΦD
1W / 2WS	11.0±1.0	7	10	3.6	3.6	3.5	4.5±0.5
2W / 3WS	15.0±1.0	7	10	3.6	3.6	3.5	5.0±0.5

包装 PACKING

标签规格 LABEL SPECIFICATION

- 1) . 型号及功率 TYPE、WATTS
- 2) . 电阻值和误差 RESISTOR VALUE AND TOLERANCE
- 3) . 数量 QUANTITY
- 4) . 生产批号 LOT NO



包装数量 Packing quantity

Unit: BOX / Kpcs

TYPE QTY	1/2W	1W	2W	3W	5W
T52	2.5	1	NA	NA	NA
T63	NA	1	1	0.5	0.25
T73	NA	1	1	0.5	0.25
T93	NA	NA	NA	NA	0.25
B	5	4	3	2	0.5
F	5	4	3	2	NA
M	5	4	3	2	1
MB	NA	4	3	2	NA
MK	NA	4	3	2	NA