



# 承 认 书

## APPROVAL SHEET

客户名称: \_\_\_\_\_

CUSTOMER

品 名: 网络电阻器

PARTNAME NETWORK RESISTOR

A \* \* \*

B \* \* \*

C \* \* \*

D \* \* \*

E \* \* \*

规 格:

F \* \* \*

G \* \* \*

H \* \* \*

SPECIFICATION

T \* \* \*

版 本 号: P-4.4

VERSION

日 期:

DATE

制 造			客 户		
APPROVAL			APPROVAL		
拟制	审核	确认	检验	审核	批准



修改记录			
REVISION RECORD			
VER	MINUTE OF CHANGES	CHECKER	RELEASE DATE
P-4.3	1) 变更 3.0 型号规格表示办法 2) 变更 5.0 可耐焊试验方法 3) 增加 6.3 标签 4) 增加 9.0 环保情况说明 5) 增加 10.0 附件 (SGS 报告)	方菲	2006-02-23
P-4.4	1) 删除 10.0 附件 (SGS 报告)	温宇肇	2006-08-16



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网络电阻器 Network Resistor	版本号 version of: P-4.4
4~14P 引线系列 SIP series	DH06-08-16

1.0 概述 Summary

网络电阻器，主要生产的型号包括 4-14P。其特点是：

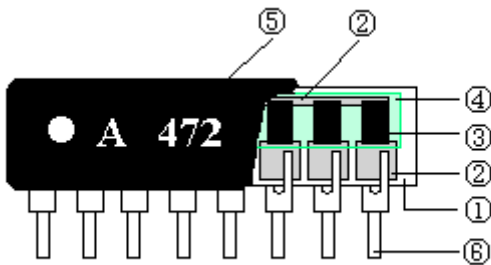
the pin numeral of network resistor are 4 to 14, and the features are as below:

- \*小型化、高密度组装 miniature , and density assembly.
- \*电性能稳定，可靠性高 stable electrical capability , high reliability
- \*可得到不同电阻值组合 combinations of different ohm value are available

产品广泛应用于计算机、通讯、工业自动化、航天航空、军事、数字电视、数字音响及消费类电子等领域。 The application for the chip resistor are wildy in computer, communication, industry automatization, aviation, military, digital TV, digital acoustics and consume electronics, etc.

2.0 结构及尺寸 Structure And Dimensions

2.1 结构 Structure



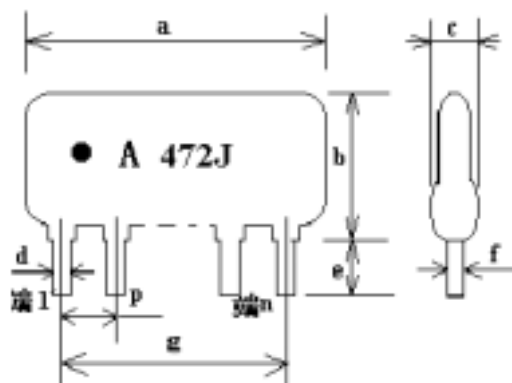
注：第一脚从白色圆点处开始  
the first pin begin from the white dot.

陶瓷基片 Ceramic Substrate	三氧化二铝 Al <sub>2</sub> O <sub>3</sub>
电极 Inner Electrode	银-钯电极 Ag/Pd
电阻体 Resistive Element	氧化钌 Ruthenium
一次玻璃体 1 <sup>st</sup> Glass Coating	玻璃釉 Glass
外包封 Protective Coating	树脂 Resin
引脚 Lead Pin	锡 Sn



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2.2 尺寸 Dimensions



代号 code	常规尺寸 normal spec		特殊尺寸 special spec	
a	2.54 × (n-1)+2.54max		1.778 × (n-1)+3.2max	
b	A、B、C、D、E、F、G、H Circuit Symbol	5.08max	A、B、C、D、E、F、G、H Circuit Symbol	5.08max
	T型电路 Circuit Symbol T	8.50max	T型电路 Circuit Symbol T	8.50max
c	3.00max		3.00max	
d	0.50 ± 0.1		0.50 ± 0.1	
e	3.50 ± 0.5		3.50 ± 0.5	
f	0.25 ± 0.1		0.30 ± 0.1	
g	2.54 × (n-1) ± 0.3		1.778 × (n-1) ± 0.3	
p	2.54 ± 0.1		1.778 ± 0.1	



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### 2.3 等效电路 equivalent circuit

代号 symbol	等效电路 equivalent circuit	代号 symbol	等效电路 equivalent circuit
A	 $R1=R2= \dots =Rn$	B	 $R1=R2= \dots =Rn$
C	 $R1=R2= \dots =Rn$	D	 $R1=R2= \dots =Rn$
E	 $R1=R2$ 或 $R1 \neq R2$	F	 $R1=R2$ 或 $R1 \neq R2$
G	 $R1=R2= \dots =Rn$	H	 $R1=R2$ 或 $R1 \neq R2$
T	 $R2=2R1$ 或 $R2 \neq 2R1$		

### 2.4 产品外观 Appearance

2.3.1 网络电阻器外包封体保护覆盖完好且难以脱落；

the protective coating should be entirely and don't fade easily.

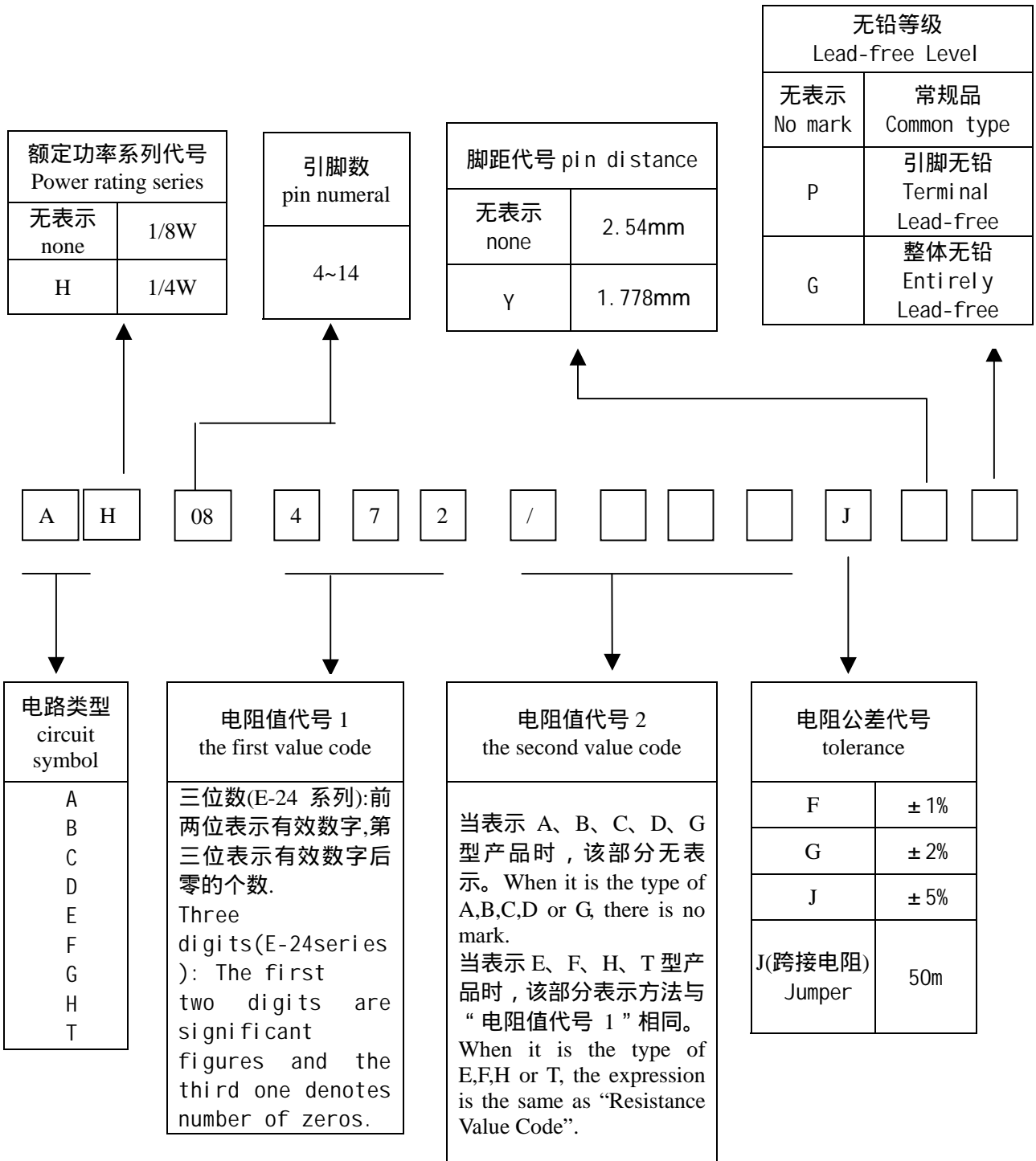
2.3.2 网络电阻器引脚无变色；the lead pin should avoid discoloration

2.3.3 标记可辨 the mark is readable.



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3.0 型号规格表示办法 Explanation to the Part Number





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3.1 标记表示方法 the explanation for the resistance value marking

IEC E-24 系列电阻值对照表

IEC E-24 Series Resistance Cross-reference List

E-24 系列( E-24 series)

(  $\times 10^n$  )

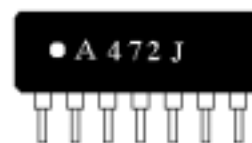
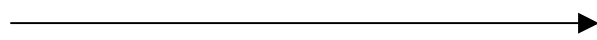
(单位 unit : 1 、 10 、 100 、 1K 、 10K 、 100K 、 1M )

表 一(table one)

1.0	1.5	2.2	3.3	4.7	6.8
1.1	1.6	2.4	3.6	5.1	7.5
1.2	1.8	2.7	3.9	5.6	8.2
1.3	2.0	3.0	4.3	6.2	9.1

例 for example :

A、B、C、D、G 型 :



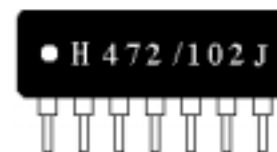
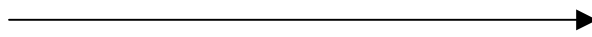
白色“ ”表示第一个脚 the first pin begin from the white dot ;

“A”表示电路型号 ; “A” to express the circuit type,

“472”表示电阻值代号 ; “472” to express the value code

“J”表示电阻公差代号 ; “J” to express the tolerance.

E、F、H、T 型 :



“472”表示 R1 的电阻值代号 ; the “472” to express the first value code

“102”表示 R<sub>2</sub>的电阻值代号 ; the “102” to express the second value code

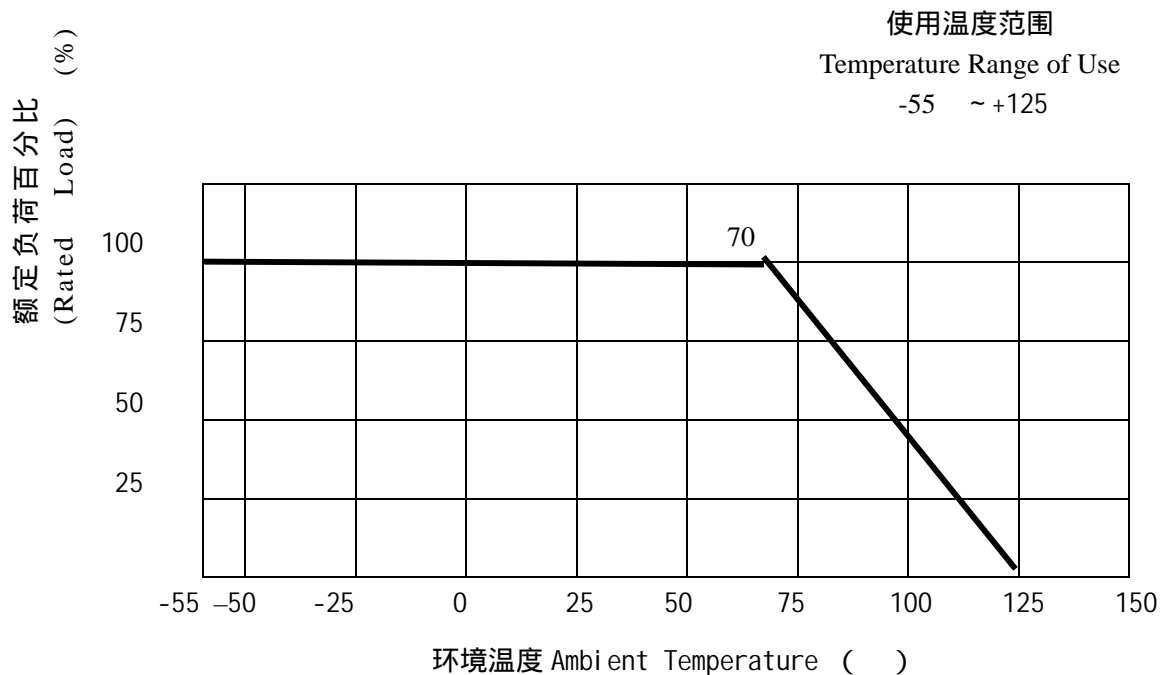
其他与上同 and other expression is the same as above.





网络电阻器 Network Resistor		版本号 version of: P-4.4
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4.0 电气性能 Performance Specification		
项 目 Item	规 格 specification	
额定功率 Rated Power	常规功率 normal power	特殊功率 special power
	1/8W	1/4W
	注：当使用环境温度超过 70 时应按“负荷下降曲线”(见下图)降负荷 Remark: When used at ambient temperature over 70 , the load power should be reduced as “Power Derating Curve” shown below.	
最大工作电压 Max. Voltage	200V	
最大过负载电压 Max. Overload Voltage	280V	
跨接电阻额定电流 rated current for chip jumper	2A	
电阻公差 Tolerance	± 1% , ± 2% , ± 5%(跨接电阻 Chip Jumper: 50 m )	
阻值范围 Resistance Range	阻值范围 Resistance Range	系列 Series
	0 (跨接电阻 Chip Jumper) 1.0 ~ 10M	E-24 系列
使用温度范围 Temperature Range of Use	-55~+125	
额定温度 Rated Temperature	+70	

负荷下降曲线 Power Derating Curve





网络电阻器 Network Resistor		版本号 version of: P-4.4	
4~14P 引线系列 SIP series		DH06-08-16	
5.0 可靠性 Reliability Data			
项目 item	标准 specification		试验方法 test method (JIS C 5202)
	网络电阻器 network resistor	跨接电阻 jumper	
电阻温度系数 Resistance Temperature Coefficient	电阻值 Resistance	电阻温度系数代号 T.C.R code	测定范围 Measured Between -55 ~ +125
	1 R<10 1M <R 10M	± 250PPM/	
	10 R 1M	± 100PPM/	
短时间过负载 Short Time Overload	无可见损伤 No visual damage		对电阻器施加 2.5 倍额定电压, 或最大过负载电压 (取最小值), 持续 5 秒, apply 2.5 times rated voltage or the max. overload voltage(choose the small one) for 5 seconds.
	R ± (2.0%R+0.05 )	R 50 m	
封装绝缘阻抗 insulation resistance to protective coating	100M Min		施加 500V DC Apply 500V DC
封装绝缘耐电压 protective coating insulation with standing Voltage	无弧光、燃烧以及本体被击穿现象 No arc, inflammation and damage		施加 500V DC 保持 1 min Apply 500V DC for 1min
可焊性 Solderability	可焊面积 95%. 95% Cover Min		240 ± 5    2 ± 0.5 S
耐焊接热 Resistance to Soldering Heat	无可见损伤 No Mechanical Damage		270 ± 5 , 10 ± 1S
	R ± (1.0%R+0.05 )	R 50m	
耐溶剂性 Resistance to Solvent	无可见损伤 No Mechanical Damage		浸入三氯乙烯 10 ± 1 小时 dip in solvent for 10 ± 1 hours.
	R ± (1.0%R+0.1 )	R 50m	
阻燃性 Resistance to Inflammation	V-0		UL-94



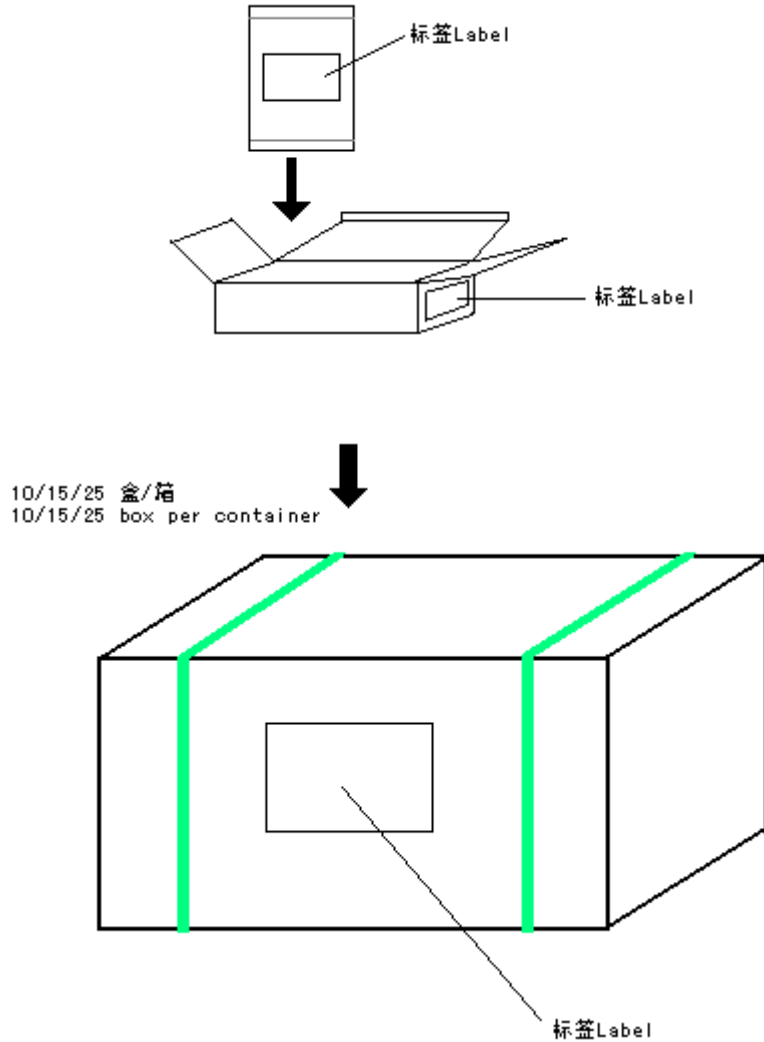
网络电阻器 Network Resistor		版本号 version of: P-4.4	
4~14P 引线系列 SIP series		DH06-08-16	
项目 item	标准 specification		试验方法 test method  (JIS C 5202)
	网络电阻器 network resistor	跨接电阻 jumper	
振动试验 Vibration	无可见损伤 No Mechanical Damage		10HZ 55HZ 10HZ 1min 内完成, 振幅 1.55mm, 按上述方法在 X、Y、Z 三方向各振动 2 小时。 10HZ 55HZ 10HZ within 1 min. swing: 1.55mm, and three directions for X、Y、Z for 2 hours
	R $\pm (1.0\%R+0.05)$	R 50m	
引线强度 Pin Strength	无可见损伤 No Mechanical Damage		将引线焊接在网络电阻的受试引出端后, 以 10 mm/s 的速度施加拉力到 500 克止。Pulling with speed of 10mm/s and the force should be 500g
	R $\pm (1.0\%R+0.05)$	R 50m	
抗弯强度 Bending Strength	无可见损伤 No Mechanical Damage		端子线末端负重 0.5kg, 使电阻器本体与端子线弯成 90°, 保持 5S, 为一循环, 做两循环。Force with 0.5kg on the lead pin, between the resistor and the lead pin is 90 degree for 5S as one cycle. total 2 cycles
温度循环 Temperature Cycling	无可见损伤 No Mechanical Damage		-55 $\pm 3$ (30min) ~ 25 $\pm 3$ (15 min) ~ 125 $\pm 3$ (30min) 为 1 个循环, 共五个循环。 -55 $\pm 3$ (30min) 25 $\pm 3$ (15min) 125 $\pm 3$ (30min) as one cycle, total 5 cycles
	R $\pm$ $(1.0\%R+0.05)$	R 50m	
稳态湿热 Humidity (steady state)	无可见损伤 No Mechanical Damage		电阻器在温度为 40 $\pm 2$ , 湿度 90~95% 湿热试验箱内维持 1000 小时。 exposed at 40 $\pm 2$ and 90-95%RH for 1000 hours
	R $\pm (3.0\%R+0.1)$	R 100m	
70 耐久性 Load life at 70	无可见损伤 No Mechanical Damage		70 $\pm 2$ , 1000 h, 期间以 1.5 小时通, 0.5 小时断施加额定电压, exposed at 70 $\pm 2$ , apply rated voltage with 1.5h "ON", 0.5h "OFF", duration: 1000hours
	R $\pm (3.0\%R+0.1)$	R 100m	
上限类别温度耐久性 Endurance at Upper Temperature	无可见损伤 No Mechanical Damage		电阻器在温度为 125 $\pm 2$ 试验箱内维持 1000 小时。Exposed at 125 $\pm 2$ for 1000h
	R $\pm (3.0\%R+0.1)$	R 100m	



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6.0 包装 Package

6.1 包装形式 Packaging style



6.2 包装数量 packaging quantity

产品脚数 pin numeral	袋装数量 Qty in plastic bag	盒装数量 Qty in inner box	箱内数量 Qty in case
4~5pins	200pcs	10 袋/盒	10 盒/箱
6~12pins	200pcs	5 袋/盒	15 盒/箱
13~14pins	200pcs	3 袋/盒	25 盒/箱

注：因数量不足时，以空盒填充。if the quantity is not enough , fill up with empty box .



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6.3 标签 Label

袋装标签 label on the plastic bag

- |                           |                             |                        |
|---------------------------|-----------------------------|------------------------|
| 1. 风华型号规格 fenghua Part No | (2. 客户物料号 customer part No. | 3. 客户订单号 customer P/O) |
| 4. 数量 quantity            | 5. 公称阻值 resistance          | 6. 额定功率 rated power    |
| 7. 出厂日期 delivery date     | 8. 生产批号 Lot No.             | 9. 电阻值误差 tolerance     |
| 10. QC 印章 QC marking      | 11. GP 印章 GP marking        |                        |

内箱标签 label on inner box

- |                           |                             |                        |
|---------------------------|-----------------------------|------------------------|
| 1. 风华型号规格 fenghua Part No | (2. 客户物料号 customer part No. | 3. 客户订单号 customer P/O) |
| 4. 数量 quantity            | 5. 公称阻值 resistance          | 6. 额定功率 rated power    |
| 7. 出厂日期 delivery date     | 8. 生产批号 Lot No.             | 9. 电阻值误差 tolerance     |
| 10. QC 印章 QC marking      | 11. GP 印章 GP marking        |                        |

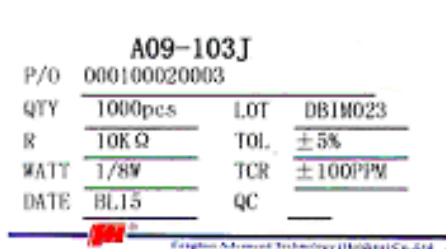
外箱标签 label on outer packaging box

- |                            |                      |                      |
|----------------------------|----------------------|----------------------|
| 1. 客户名称 customer name      | 2. 合同编号 contract No. | 3. 产品名称 product name |
| 4. 风华型号规格 fenghua part NO. | 5. 数量 quantity       | 6. 箱号 case No.       |
| 7. 制造者名称 maker name        | 8. QC 印章 QC marking  | 10. GP 印章 GP marking |

注: ( )部分可按客户要求而定. Remark :the content with bracket could be designed according to customers' requirement.

无铅引脚排阻的标签识别方法：在对于无铅引脚的产品，会在袋装标签、内外箱标签分别上增加“GP”印章作为识别，见如下图样：

Identification method for labels: there would be GP markings on both of the inner and outer packaging labels as an identification for the lead-free the pin product.



( 锡铅引脚 )  
(label for Sn/Pb the pin )



( 无铅引脚 )  
(label for Sn the pin)



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<p>7.0 贮存方法 Storage Methods:</p> <p>贮存条件: 温度 5 ~ 35 , 相对湿度 45% ~ 70%.</p> <p>Storage Conditions: T : 5 ~ 35 , RH : 45% ~ 70%.</p> <p>避免存放于有腐蚀性气体的环境。</p> <p>Avoiding storage in place full of corrosive gas.</p> <p>8.0 使用注意事项 Precautions for use</p> <p>建议在符合以上贮存条件下 12 个月内使用 ,</p> <p>the products are suggested to be used within twelve months when received, and the storage condition mentioned above should be followed.</p> <p>请您盖章确认后, 将复印件御返我司, 如三个月后未御返我司, 我们将视做默认接受。</p> <p>Be sure to return a copy to our company after stamping your company acceptance, if no copy returned after three months, we would judge that you shall receive and accept this approval sheet.</p> <p>如承认书有任何变更, 之前的版本自动作废。</p> <p>If there are any amendment, the former version shall become invalid.</p> <p>9.0 环保情况说明 Environmental Protection Statement</p> <p>产品符合 RoHS 指令 Compliant with RoHS Directive</p> <p>不含有 RoHS 禁止的 Cd-Hg-PBB-PBDE-Cr6 五种有害物质</p> <p>Free from Cd-Hg-PBB-PBDE-Cr6 that banned in the RoHS Directive.</p> <p>引脚无铅 (Pb 100ppm)</p> <p>The pin finish of the network resistor has been lead-free. (Pb 100ppm)</p> <p>[说明: 网络电阻器引脚为无铅, 但本体中所使用的玻璃材料中含有的铅由于业界技术水平的限制, 所以本体中(包括电极、电阻体、一次玻璃)仍然含有一定的铅。但这部分铅属于 RoHS 豁免范畴“<u>在阴极射线管、电子元件和荧光显像管中的玻璃中的铅</u>”, 所以, 我们的产品是符合 RoHS 指令的。</p> <p>At present, the pin finish of the network resistor has been lead-free, but the lead which contain in the resistor body (including electrode, resistive element, 1st glass coating) still exist for the alternative technology is not established. And the lead in the glass material of electronic components are exempt from abolish that stated in the RoHS directive, so the our product is compliant with RoHS directive.</p>	