



Customer  
(客户) : \_\_\_\_\_

Part No.  
(客户料号) : \_\_\_\_\_ KNP \_\_\_\_\_

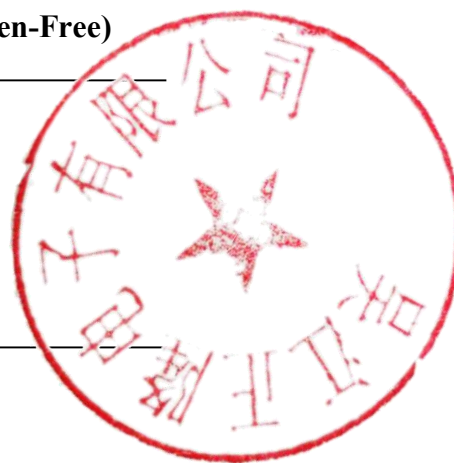
## 承 认 书

### SPECIFICATION FOR APPROVAL

Description  
(说明) : **Wire-wound Resistors**  
(绕线电阻器)  
\_\_\_\_\_

ZHENGLONG Series  
(正隆系列) : **KNP Series (Halogen-Free)**  
\_\_\_\_\_

Part No.  
(客户料号) : \_\_\_\_\_ KNP \_\_\_\_\_



贵公司承认印  
Approval Signatures/Sealsz

Customer(客户)		<b>RVE:</b>	<b>A</b>
Request for your Approval ( <input checked="" type="checkbox"/> New <input type="checkbox"/> Engineering Change ) (承认事由)		Date (日期)	
( <input checked="" type="checkbox"/> 新料件 <input type="checkbox"/> 工程变更 )			

**RECOGNITION**

(序言)

We are indebted to you for your examination of our products and are pleased to state that our insulated, fixed Wire-wound resistors.

(在此很荣幸能向贵公司介绍本公司的产品：绕线电阻器)

The fixed Metal oxide film resistor is a medium power component specifically designed for applications where a highly reliability is required.

(固定型金属氧化皮膜电阻器是一中功率型的电阻组件，本组件是针对高信赖度电路应用要求所设计的电阻组件)

Specification(说明):

1. Kind of Resistor : Fixed Wire-wound Resistor **KNP**series

(1. 电阻类型：固定型绕线电阻器**KNP**系列 )

2. Type, Rated Power, Resistance & Tolerance:

(2. 种类，额定功率，阻值，精密度 )

Code No. (客户料号)	Rated Power (额定功率)	Resistance (阻值)	Tolerance (精密度)	Packing (包装)	Remarks (备注)
	1/2W~1WS	0.1Ω~560Ω	±1%	T52	RoHS
	1W~2WS	0.1Ω~820Ω	±1%	T63	RoHS
	2W~3WS	0.1Ω~1KΩ	±1%	T63	RoHS
	3W~5WS	0.1Ω~1.5KΩ	±1%	T63	RoHS
	1/2W~1WS	0.05Ω~800Ω	±2&±5%	T52	RoHS
	1W~2WS	0.05Ω~1KΩ	±2&±5%	T63	RoHS
	2W~3WS	0.03Ω~1.5KΩ	±2&±5%	T63	RoHS
	3W~5WS	0.03Ω~2KΩ	±2&±5%	T63	RoHS

3. Resistance Value and Voltage: see Table 1.

(3. 阻值与额定电压：参阅表格1.)

4. Wattage of Ambient Temperature: see Fig 1.

(4. 常温下的额定功率：参阅图 1)

5. Dimensions : see Fig2,5,6 and table 3,7,8.

(5. 电阻尺寸：参阅图2,5,6. 和表格3,7,8)

6. Coating : Flame proof

(6. 涂装：防火涂料)

Additional(加注)

We appreciate your wish to entrust us with further business and we are confident that the excellent quality of the resistor dispatched will prove a strong inducement in this direction.

(非常感激敝司可能有机会对贵公司提供服务，相信敝司坚持的质量一定能满足贵公司严格的要求)

<b>Draftsman</b> (初稿)	<b>Authorized By</b> (审核)	WUJIANG ZHENGLONG ELECTRONICS CO., LTD. 吴江正隆电子有限公司
张佩	张佩	





Product Specification (产品型别) : <b>KNP</b>	<b>RVE:</b>	<b>A</b>
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Items (項次)	Contents (内容)
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2). Rated voltage (额定电压)

Rated voltage is the D.C. or rms A.C. maximum voltage at ambient temperature from -55 °C to 70 °C. rated voltage shall be determined from the following formula. (额定电压的定义为：当使用环境温度范围在-55 °C to 70 °C时，电阻可承受的最高直流电压或是交流电压的最高均方根值。其计算公式如下：)

If Rated voltage is over maximum operational voltage, then rated voltage is equal to maximum operational voltage on table 1. (当根据下列公式计算出的额定电压高于表 1 的最高正常使用电压时，则额定电压将以表-1 的最高正常使用电压为准)

$$V = \sqrt{P(W) \times R(\Omega)}$$

Rated voltage (额定电压)      rated wattage (额定功率)      nominal resistance (额定电阻值)

4. Nominal resistance (额定阻值)

Nominal resistance are that following basic value multiplied by 10<sup>-1</sup>, 10<sup>0</sup>, 10<sup>1</sup>, 10<sup>2</sup>, 10<sup>3</sup>, 10<sup>4</sup>, 10<sup>5</sup> 额定阻值为将表-2 的基准值乘以右列倍数)

table 2. (表-2)

E - 24	basic value
	1.0、1.1、1.2、1.3、1.5、1.6、1.8、 2.0、2.2、2.4、2.7、 3.0、3.3、3.6、3.9、 4.3、4.7、 5.1、5.6、 6.2、6.8、 7.5、 8.2、 9.1

5. Dimensions and Constructions (尺寸/结构)

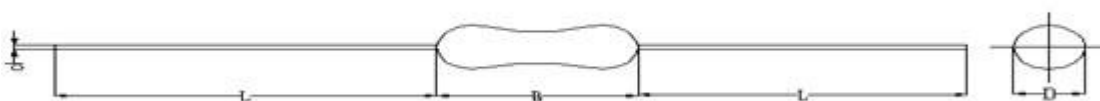


Fig.2. (圖-2)

1). mensions (尺寸)

Table 3. (表-3) (mm)

Rated power	B	D	L	d
1/2W, 1WS	9.0±0.5	4±1	(52T)25.5±1	0.50±0.05
1W, 2WS	11±1	5±1	(63T)29.7±2	0.70±0.05
2W, 3WS	15±1	5.5±1	(63T)27.7±2	0.70±0.05
3W, 5WS	17±1	6.5±1	(63T)27±2	0.74±0.05

Product Specification 產品型別) : KNP	RVE:	A
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Items(項次)	Contents (內容)
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2)Construction  
(结构图)

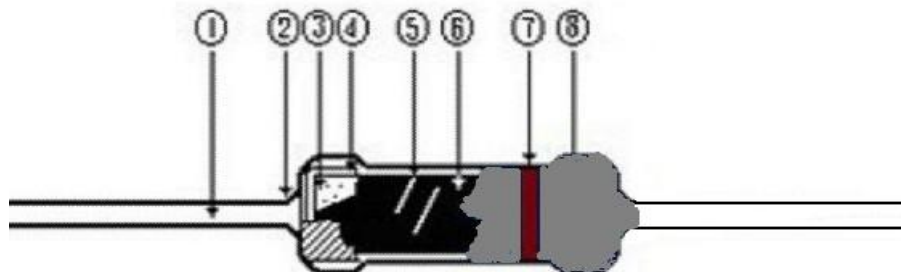


Fig.3. (图-3)

Table.4 (表 4-组成部份)

No.	Parts (组成)	Material (材料)
1	lead wire (端子线)	tin plated copper wire (镀锡铜线)
2	contact of cap and lead wire (铁帽与端线的连接点)	welding (高压放电点焊接)
3	ceramic base (陶瓷棒)	aluminum oxide ceramic of the kind (氧化铝)
4	Cap (铁帽)	tin plated iron base (镀锡铁片)
5	-----	-----
6	Wire-wound (绕线)	Alloy wire 合金线
7	Color code (色环)	Color Code(色环):1/2W~ 5WS
8	Insulation coat (绝缘涂料)	Silicon Resin(硅脂) Coating Code (涂料色) Grey: For normal size (灰色: 常规尺寸) Green: For small size (绿色: 小型化尺寸)

Product Specification (产品型别品名): <b>KNP</b>	<b>RVE:</b>	<b>A</b>
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Items (項次)	Contents (内容)
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3).Marking

1/2W~ 5WS Color Code : (色碼表示)

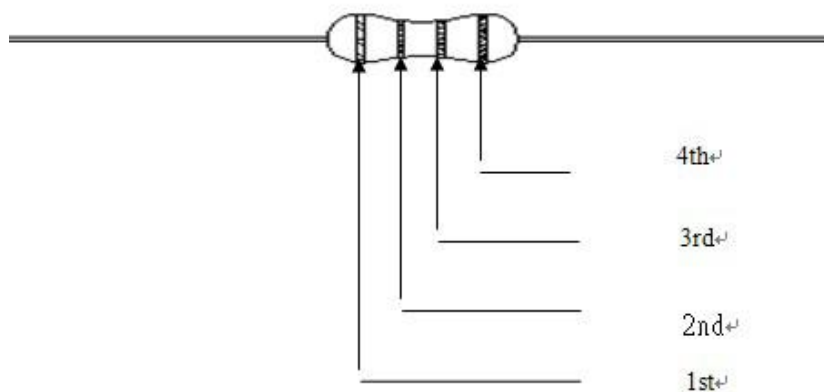


Fig.4.(圖-4)

Table.5.(表 5-色環表示)

color	1st ,	2nd	3rd	4th
black	0	0	$10^0$	--
brown	1	1	$10^1$	$\pm 1\%$
red	2	2	$10^2$	$\pm 2\%$
orange	3	3	$10^3$	--
yellow	4	4	$10^4$	--
green	5	5	$10^5$	--
blue	6	6	$10^6$	--
purple	7	7	$10^7$	--
grey	8	8	$10^8$	--
white	9	9	$10^9$	--
gold	--	--	$10^{-1}$	$\pm 5\%$
silver	--	--	$10^{-2}$	$\pm 10\%$

4).Out looking  
(外观)

There is no unusual evidence affects the characteristics of resistors with the over coat and lead wires.  
(电阻体和端子线外观无明显异状)

Product Specification (產品型別品名) : KNP		RVE:	A	
Items (項次)	Contents (內容)			
6.Characteristics and test methods	Characteristics and test methods are shown in table 6. Characteristics. (电气特性与对应的测试方法如表-6)			
	table 6. Characteristics (表-6 电气特性)			
	No.	Items (項次)	Characteristics (电气特性)	Test methods (测试方法)
	1	Resistance Value (电阻值)	Class J ( $\pm 5\%$ )	JIS C -5202 (5.1 項) classification of applied A
	2	Temperature coefficient of resistance (温度系数)	20 $\Omega$ 以下: $\pm 350$ PPM/ $^{\circ}\text{C}$ 20 $\Omega$ 以上: $\pm 400$ PPM/ $^{\circ}\text{C}$	JIS C -5202(5.2 項) measured at room temperature and room temperature+100 $^{\circ}\text{C}$
	3	Short-time Overload (短时间过负荷)	resistance change Within $\pm(2\% + 0.1 \Omega)$ (阻值变化范围)	JIS C -5202(5.5 項) (rated voltage $\times 2.5$ or Max. overload voltage (Whichever Less)for 5 seconds)
	4	Endurance (under damp and load ) (高温高湿负荷寿命)	resistance change within $\pm(5.0\% + 0.1\Omega)$ (阻值变化范围)	JIS C -5202 (7.9 項) 1)Rated voltage test temperature.40 $^{\circ}\text{C} \pm 2^{\circ}\text{C}$ 2) relative humidity 90% - 95 % 3) duration 1,000 hours
	5	Endurance ( rated load ) (负荷寿命实验)	resistance change within $\pm(5.0\% + 0.1\Omega)$ (阻值变化范围)	JIS C -5202 (7.10 項) 1) Rated voltage or max.work voltage test(Whichever Less ) test temperature70 $^{\circ}\text{C} \pm 3^{\circ}\text{C}$ 2) duration 1,000 hours
	6	Resistance to soldering heat (焊锡耐热实验)	resistance change within $\pm(1\% + 0.1 \Omega)$ (阻值变化范围)	JIS C -5202 (6.4 項) 1)temp. of solder 350 $^{\circ}\text{C} \pm 10^{\circ}\text{C}$ 2)duration of immersion 3.0 s $\pm 0.5$ s
	7	Solder ability (可焊锡性实验)	95 % (min) coverage (覆盖率 95%(最少))	JIS C -5202 (6.5 項) 1) temp. of solder 235 $^{\circ}\text{C} \pm 5^{\circ}\text{C}$ 2) duration of immersion 5 s $\pm 0.5$ s 3) preparation not applicable
8	Temperature cycling (温度循环实验)	resistance change within $\pm(1\%+0.1\Omega)$ (阻值变化范围)	JIS C -5202 (7.4 項) 1) Test temp. -55 $^{\circ}\text{C} \sim +155^{\circ}\text{C}$ number of 5 cycles	



Product Specification (产品型别品名): <b>KNP</b>		<b>RVE:</b>	<b>A</b>
Items (项次)	Contents (内容)		
Table6 . Characteristics ( continued ) (表-6 电气特性 (续))			
No.	Items (项次)	Characteristics (电气特性)	Test methods (测试方法)
9	Resistance to damp. Heat (耐高温高湿)	resistance change within $\pm(5\%+0.1\ \Omega)$ (阻值变化范围)	JIS C -5202 (7.5 项) 1) test temp. $40^{\circ}\text{C} \pm 2^{\circ}\text{C}$ 2) relative humidity 90 % to 95 % 3) duration 1000 hours
10	Resistance to Solvent (耐溶剂)	No Deterioration of coatings and Markings	JIS C -5202 (6.9 项) IPA for I min.with ultrasonic
11	Tensile strength (拉力强度)	Neither breakage of the lead wire nor loosening of termination (无端线断裂或端面松脱之现象发生)	JIS C -5202(6.1 项) 1)Direct load for 10sec.in the direction of the terminal leads 2) $\geq 2.5\text{kg}(24.5\text{N});10\text{s}$

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Items (项次)	Contents (内容)
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7.1 Taping  
(贴带)

Dimension and form of taping are shown in Fig.5 and table 7  
(贴带的尺寸和造型分别叙述如: 图-5, 表-7)

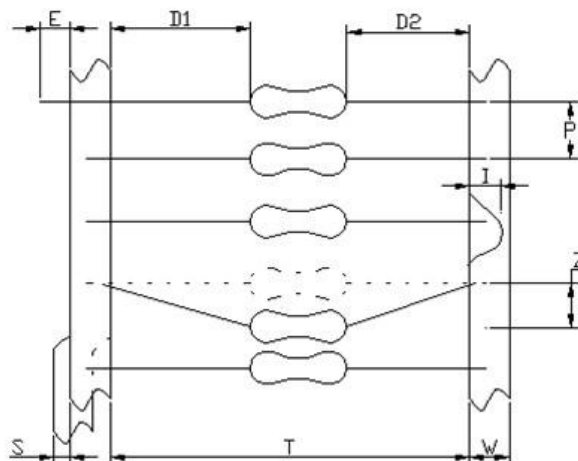


Fig.5 Taping

table 7

Unit: mm

Rated Power e	Type	T	P ±0.5	W ±0.5	D <sub>1</sub> —D <sub>2</sub> Max	E Max	Z Max	S Max	I Min
1/2W,1WS	T—52	52±1.5	5	6	1.2	0	1.2	0.8	3.2
1W, 2WS	T-63	63±1.5	5	6	1.4	0	1.2	0.8	3.2
2W,3WS	T-63	63±1.5	10	6	1.4	0	1.2	0.8	3.2
3W,5WS	T-63	63±1.5	10	6	1.4	0	1.2	0.8	3.2

Product Specification (产品型别品名): <b>KNP</b>		<b>RVE:</b>	<b>A</b>
Items (项次)	Contents (内容)		
8.Packaging quantity (包装数)	Rated power (额定功率)	Box (pcs) (盒装(支))	Forming(pcs) (成型(支))
			----
	1/2W,1WS	1000	----
	1W,2WS	1000	500
	2W,3WS	1000	----
	3W,5WS	500	----
9.The others (其它)	This specification can be revised by the agreement between the customer and the manufacture, in case of necessity to revise the standard of this specification. (在经过客户与敝司协商同意下, 本承认书的标准可予以变更)		
10.Doubt (疑问)	If any doubt about this specification occurred, it will be clarified by the discussion between the customer and the manufacture. (对本承认书之任何疑问可经由客户与敝司之讨论解决之)		
11.Revision (修订)	This specification will be revised by the discussion and consent between the customer and the manufacture. (本承认书可经由客户与敝司之讨论后予以修订)		
12.Notes (备注)	1)Storage condition (储存条件) It is desirable that the resistors are stored in the ambient temperature from 0 °C to 30 °C and relative humidity under 65 %. High humidity, dust, harmful gas, for example hydrogen chloride and sulfuric gas should be avoided. Please do not store the resistors for a long time, use the resistors within a year after the deliver. (电阻体的恰当储存条件为 0 °C 至 30 °C 同时相对湿度低于 65 %. 高湿,灰尘和有害气体, 好比 盐酸气, 硫酸气 都需避免接触电阻体. 电阻请勿储存过久,建议在收料 2 年内使用)		
	2)Power derating (功率递减) For the long term stability of the application, power should be derated obdiently according to the power derating curve. (为了维持电阻体在使用中的长期稳定性,使用功率递减方式需确实遵守功率递减曲线)		
	3)Resistor positioning (电阻体的位置) When the resistors are placed around other electric parts, the minimum space should be kept above 5 mm. (电阻体与其它电子组件最好距离 0.5 公分)		

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Items (项次)	Contents (内容)		
	<p>4)Soldering (焊锡)            During the process of soldering, the effect of heat caused by the soldering should be kept as little as possible. The suggested condition is under 260 °C and within 7 s.            (在焊锡过程中, 为了避免高温影响电阻体, 所以受热时间最好越短越好. 建议条件为 260 °C, 7 秒钟)</p> <p>5)Shock to the resistors (对电阻体进行冲撞)            When the resistors are subject to mechanical shock, the resistors might be broken. This is quite likely in the automatic insertion machine. Please adjust the machine accordingly.(当电阻体受到冲撞时, 电阻体可能会断裂. 这在自动插件时可能发生. 如有类似情形发生, 请调整自动插件机的力量)            Also do not drop the resistors from a high ground. (请勿将电阻体从高处坠落)</p> <p>6)Forming (造型)            During the forming process, the resistor body and the welding point should not be subjected to too much stress.            (在造型时, 电阻体和焊点必须避免过大的受力)</p> <p>7) 2010-01-01 Import low halogen products, and conform to the requirements of the hazard substances control            (2010-01-01 导入低卤产品, 及符合危害物质管控要求)</p> <p>8) The product conforms RoHS            (产品符合 RoHS)</p>		

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