ASIA AKITA

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ASIA AKITA ELECTRONIC TECHNOLOGY（SHENZHEN）CO., LTD

WIRE WOUND RESISTORS,FLAMEPROOF/RESIN PAINT**Specification： KNF 2W 10R J H 221 1A P5S**

RESISTOR SPECIFICATION

MADE PRODUCT：

ASIA AKITA ELECTRONIC TECHNOLOGY （SHENZHEN）CO., LTD

USE PRODUCT：

立创

APPROVED	REVIEWED	PRODUCED
唐立纶		肖明艳

APPROVED	REVIEWED	PRODUCED

STAMPER
达冠秋田電子科技（深圳）有限公司 2025.12.24 文件管制专用章

STAMPER

WIRE WOUND RESISTORS, FLAMEPROOF/RESIN PAINT

1. Applicable Scope:

This standard specification is for use in consumer electronics, computers, telecommunications, control instruments...etc.

2. Part Number:

It is composed by Type, Rated Wattage, Nominal Resistance, Tolerance, Special Wire, Standard Operating Temperature, Max Working Current, Pitch and Tubing e.g.

KNF	2W	10R	J	H	221	1A	P5	S
Type	Rated Wattage	Nominal Resistance	Tolerance	Special Wire	Standard Operating Temperature	Max Working Current	Pitch	Tubing

2.1 Type :

Wire wound resistors, combined together a thermal fuse are called "KNF".

2.2 Rated Wattage:

Shown by "W", such as 2W.

2.3 Nominal Resistance:

Ω is its unit, which be in accordance with JIS-C6409 article 6 (EIA RS-196A) series.

Letter "10R" indicates resistance value 10**Ω**.

2.4 Tolerance:

It is measured by Bridge-method at room temperature and expressed by a capital letter.
J=±5%.

2.5 Special Wire:

Letter "H" indicates special wire.

2.6 Standard Operating Temperature:

Letter "221" indicates Standard Operating Temperature. 221=221℃

2.7 Max Working Current:

Letter "1A" indicates Max Working Current 1A.

2.8 Pitch:

Letter "P5" indicates 5mm pitch.

2.9 Tubing:

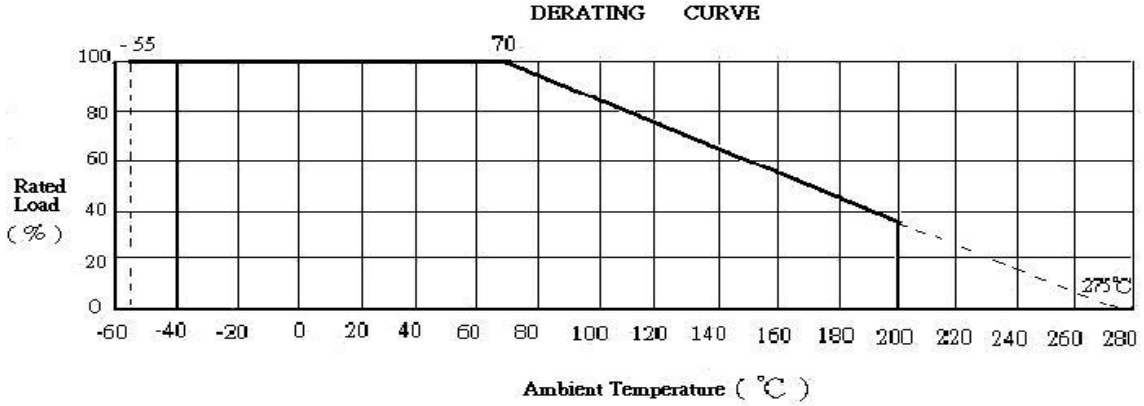
Letter "S" indicates with heat shrink tube.

No letter (blank) indicates without heat shrink tube.

Remark: KNF Series Resistors are RoHS Compliant.

3. Rated Power:

Rated power is the value of Max load power specified at the ambient temperature of 70℃, and shall meet the functions of electrical and mechanical performance. When the ambient temperature surpasses above mentioned temperature, the value declines as per following DERATING CURVE.



3.1 Rated Voltage:

It is calculated through the following formula:

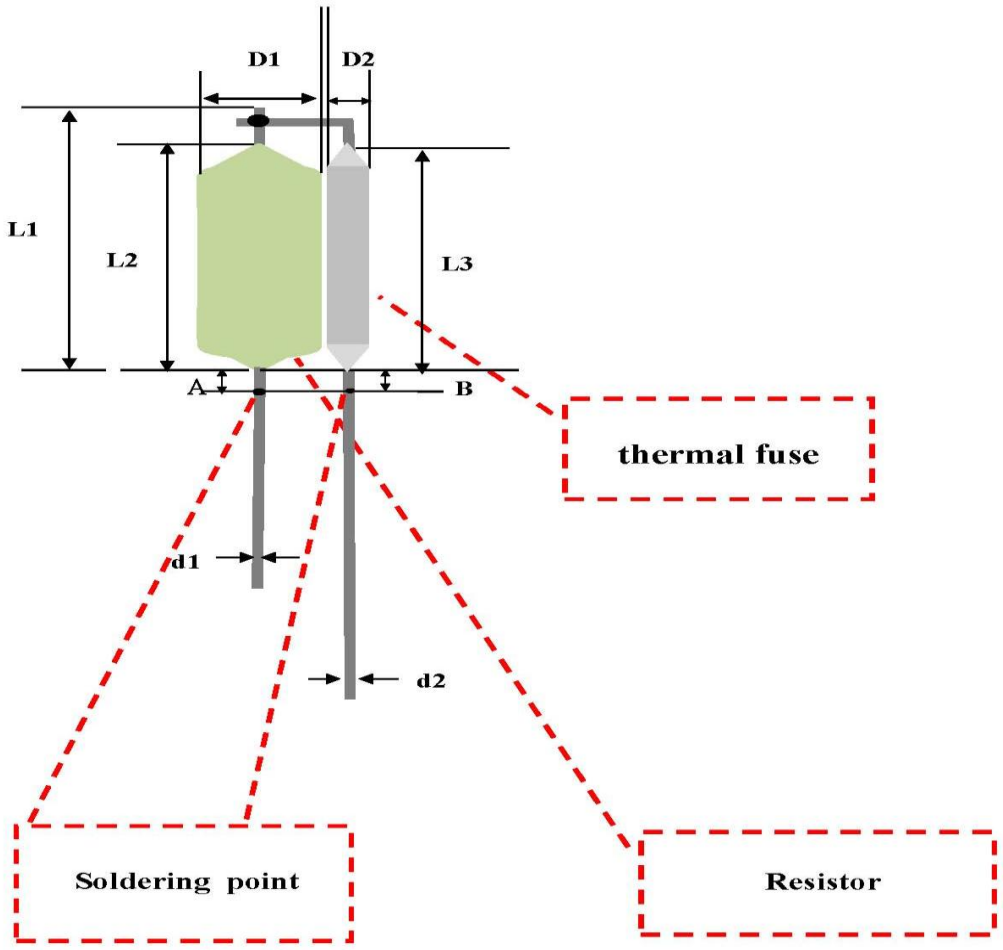
$$E = \sqrt{PXR}$$

where E: rated voltage (V)
P: rated power (W)
R: total nominal resistance (Ω)

However, in case the voltage calculated exceeds the maximum load voltage, such the maximum load voltage shall be regarded as its rated voltage, means whichever less.

4. Dimension and structure:

4.1 Dimension for KNF 2W 10R J H 221 1A:

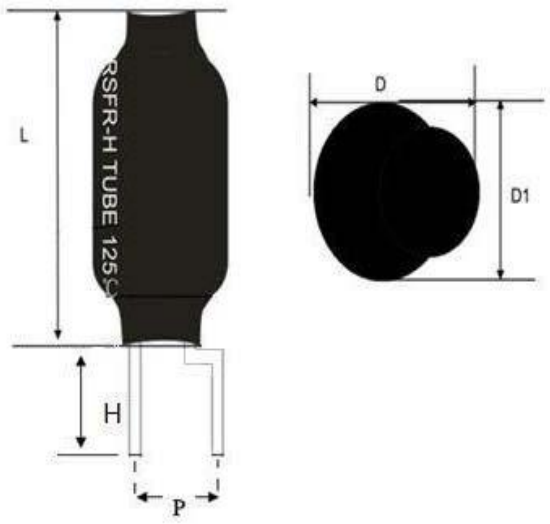


Dimension (mm)								
L1	L2±1	L3±1	D1±0.5	D2	d1±0.1	d2±0.1	A	B
13.9 Max.	11.5	7	5	2.6 Max.	0.7	0.5	1 Min.	1 Min.

※Resistance Value Measured at 25℃:10Ω

※Permissible I^2t value:≧0.4 A^2s

4.2 Dimension for KNF 2W 10R J H 221 1A P5 S:



Dimension (mm)				
L	D±1	D1±1	H±0.5	P±0.5
13.9 Max.	8	5	3	5

4.3 Structure:

4.3.1 Ceramic Rod:

It is made of alumina ceramic of the kind.

4.3.2 Terminal:

Terminal is to be firmly connected with resistors element, both electrically and mechanically, and allow easy soldering.

4.3.3 Coating:

Coating is done by green flameproof paint (resistant to 800℃)or Silicon Resin which is solid enough to be free from looseness, crack and easy breakage. It is also resistant to cleaning and industrial solvents.

4.3.4 Marking:

Marking is made on resistors surface, by five color coding; 1st, 2nd, 3rd: nominal resistance, 4th: tolerance, 5th: orange color band for special wire.

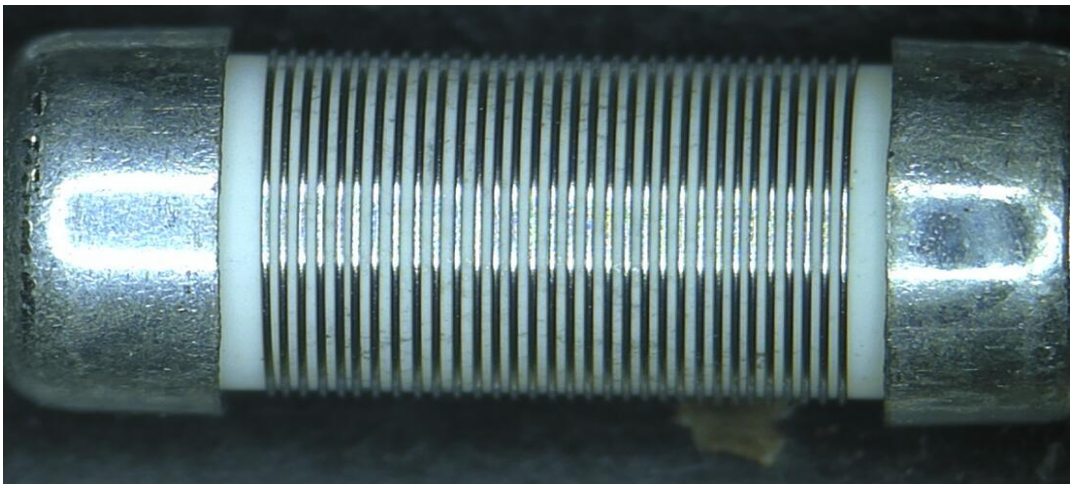
4.3.5 Thermal fuse:

Rated Functioning Temperature(℃)	CUT-OFF Temperature(℃)	Holding Temperature(℃)	Max. Temperature(℃) Limit	Max. Working Voltage	Max. Working Current
221	213～220	188	250	250V	1 A

4.3.6 Resistance Wire:

It is made of special alloy with excellent anti-surge performance.

Value	Diameter of winding wire	Turns of Wire (turns)
10Ω	0.1mm±0.01mm	32±2



4.3.7 Tubing:

The resistor is covered with heat shrink tube, which is a flexible, flame retardant, irradiated crosslinked, heat shrinkable, modified polyolefin tubing that is recognized by Underwriters Laboratories(UL) Subject 224 as 125℃, 300V rated.

5. Operating Temperature Range: -55℃～200℃

6. Mechanical Performance:

6.1 Terminal tensile:

To fix the resistor body, a static load of 1kg.is to be gradually applied into the terminal for 10 seconds without causing any looseness and fall.

6.2 Twist withstand:

To bend the lead wire at the point of about 6mm from resistor body to 90˚, then catch the wire at 1.2 ±0.4mm apart from the bent point end and turn it (clockwise) by 360 degrees perpendicular to the resistor axis at speed of 10 seconds per turn, and do the same counterclockwise again which constitute a whole turn. Repeat the turn 2 times without causing any break and looseness.

7. Electrical Performance:

7.1 Resistance Temperature Coefficient:

It shall be within ＋4000ppm/℃.

T.C (ppm/℃) = 〔(R2－R1)÷R1〕×〔1÷(T2－T1)〕×10^6

where R1: resistance value at room temperature R2: resistance value at test temp.

T1: room temp. (usu. 25℃) T2: test temp. (about 75℃)

7.2 Short Time Over Load:

When the resistors are applied 10 times as much as rated power for 5 seconds continuously, it shows no evidence of arc, flame...etc. Removing the voltage and place the resistors to the normal condition for 30 minutes, the resistance value change rate between pre-and-post test shall be within ±2%. （ $E=\sqrt{PX10XR}$ ）

7.3 Insulation Character :

Resistors are located in a V-shaped metal trough. Using the DC 100V megger instrument 2 poles to clutch either side of lead wires and metal trough, measuring the Insulation Resistance which shall be over 1000MΩ.

7.4 Voltage Withstanding:

Resistors are located in a V-shaped metal trough. Applying AC 350V for one minute and should find no physical damage to the resistors, such as arc, char...etc.

7.5 Load Life:

The resistors arrayed are sent into the 70℃ oven, applying rated voltage at the cycle of 1.5 hours ON, 0.5 hour OFF for 1000^{+48}_{-0} hours in total. Then, after removing the voltage, take the resistors out of the oven and left under normal temp. for one hour cooling. The resistance value change rate between pre-and-post test shall be within ±3%.

7.6 Moisture-proof Load Life:

The resistors arrayed are placed into a constant temp./humidity oven at the temp. of 40 ±2℃ and the humidity of 90～95%, then 1/10 DC rated power is applied for 1.5 hours and cut off for 0.5 hour. The similar cycle will be repeated for 1000^{+48}_{-0} hours in total (including cut-off time). Then remove the voltage, taking the resistors out of the oven and leaving them at room temp. for one hour. The resistance value change rate between pre-and-post test shall be within ±3%. There also shall be no evidence of remarkable change on appearance, and the marking shall not be illegible.

7.7 Solder-ability:

The leads with flux are dipped in a melted solder of 235 ±5℃ for 2 seconds, more than 95% of the circumference of the lead wires shall be covered with solder.

7.8 Resistance to Soldering Heat:

7.8.1 The leads of resistor are dipped to 1mm from the body in a melted solder of 350 ±10℃ for 3.5 ±0.5 seconds, Then remove the resistors and leaving them at room temp. for one hour. The resistance value change rate between pre-and-post test shall be within ±1%.

7.8.2 The leads of thermal fuse are dipped to 1mm from the body in a melted solder of 350 ±10℃ for 3.5 ±0.5 seconds, Then remove the resistors and leaving them at room temp. for one hour. The resistance value change rate between pre-and-post test shall be within ±1%.

7.9 Nonflammability:

The resistors are applied the power of 16 times the rated wattage for 5 min. and shall not get flame.

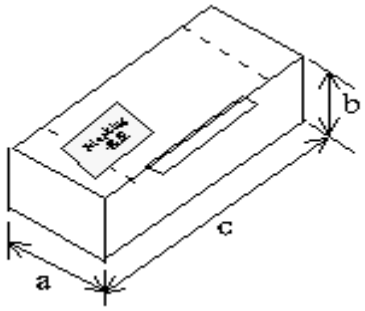
7.10 Surge Withstanding:

The resistors are designed to withstand 4kV, 1.2/50μs pulse according to IEC61000-4-5, The resistance value change rate between pre-and-post test shall be within ±5%.

7.11 Fusing Characteristics:

When DC current is 0.6A, the resistors will be open within 60S.

8. Bulk Packing:



Unit: mm

QTY PER BOX	a	b	c
2000 pcs	155	75	265