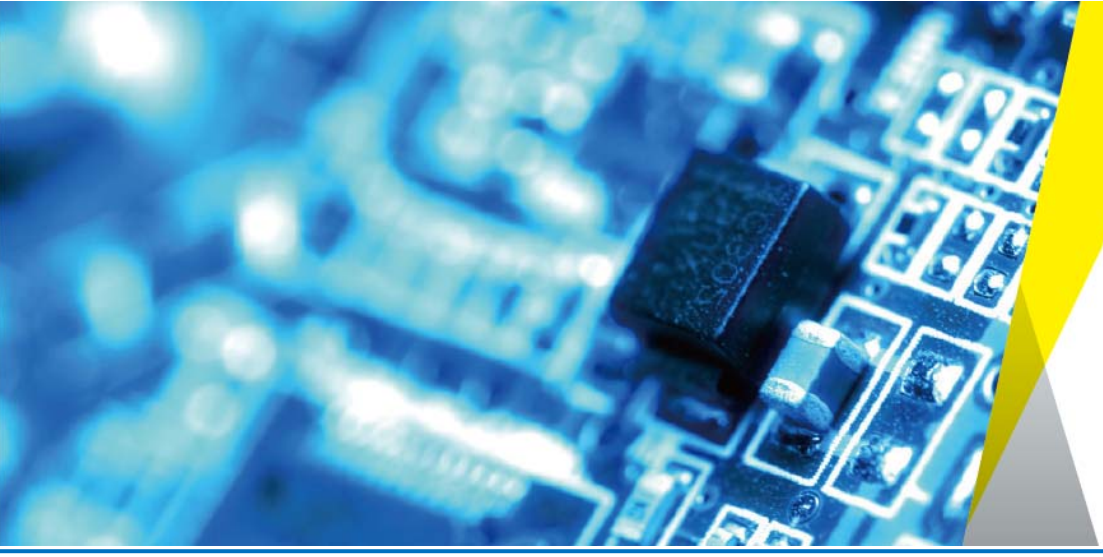


DATASHEET

Product Name	**High Power Flat Wire-wound Fixed Resistors**
Part Name	**KNHB Series**
File No.	**DIP-SP-056**

Uniroyal Electronics Global Co., Ltd.

88 Longteng Road, Economic & Technical Development Zone, Kunshan, Jiangsu, China

Tel +86 512 5763 1411 / 22 /33

Email marketing@uni-royal.cn

Manufacture Plant Uniroyal Electronics Industry Co., Ltd.

Aeon Technology Corporation

Royal Electronic Factory (Thailand) Co., Ltd.

Royal Technology (Thailand) Co., Ltd.

1. Scope

1.1 This datasheet is the characteristics of High Power Flat Wire-wound Fixed Resistors manufactured by UNI-ROYAL.
1.2 All materials are inorganic and non-flammable
1.3 Can withstand High Voltage pulse in short-time
1.4 Can use in single or in-piles
1.5 Application: Charging or discharging resistance of electrical equipment such as elevator
1.6 Compliant with RoHS directive.
1.7 Halogen free requirement.

2. Part No. System

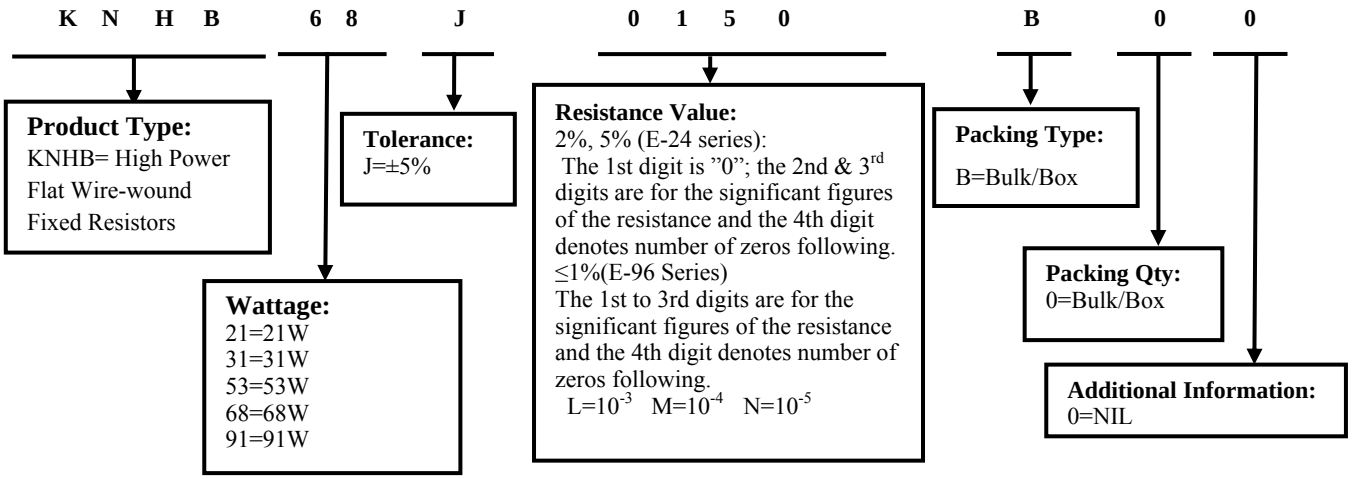
The standard Part No. includes 14 digits with the following explanation:
2.1 High Power Flat Wire-wound Fixed Resistors the 1st to 4rd digits are to indicate the product type.
Example: KNHB= High Power Flat Wire-wound Fixed Resistors
2.2 5th~6th digits:
2.2.1 This is to indicate the wattage or power rating. To dieting the size and the numbers,
The following codes are used; and please refer to the following chart for detail:

Wattage	21	31	53	68	91
Normal Size	21W	31W	53W	68W	91W

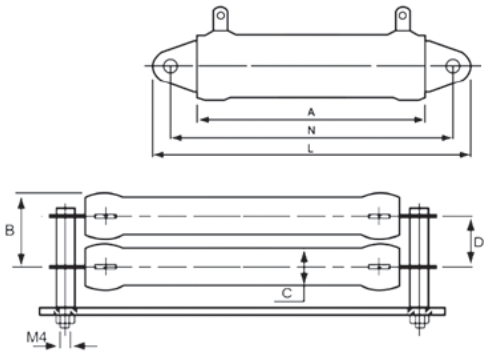
2.3 The 7th digit is to denote the Resistance Tolerance. The following letter code is to be used for indicating the standard Resistance Tolerance.
J=±5% K= ±10%
2.4 The 8th to 11th digits is to denote the Resistance Value.
2.4.1 For the standard resistance values of E-24 series, the 8th digit is "0" ,the 9th & 10th digits are to denote the significant figures of the resistance and the 11th digit is the zeros following;
For the standard resistance values of E-96 series, the 8th digit to the 10th digits is to denote the significant figures of the resistance and the 11th digit is the zeros following.
2.4.2 The following number s and the letter codes are to be used to indicate the number of zeros in the 11th digit:
0=10^0 1=10^1 2=10^2 3=10^3 4=10^4 5=10^5 6=10^6 J=10^{-1} K=10^{-2} L=10^{-3} M=10^{-4} N=10^{-5} P=10^{-6}
2.4.3 The 12th, 13th & 14th digits.
The 12th digit is to denote the Packaging Type with the following codes:
B=Bulk /Box
2.4.4 Current Sense Resistors, The 13th digit should be filled with "0"
2.4.5 Current Sense Resistors, The 14th digit should be filled with "0"

3. Ordering Procedure

(Example: KNHB 68W ±5% 15Ω B/B)



4. Dimension

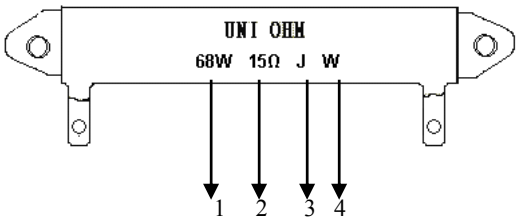


Unit:mm

Type	A±2	B±1	C±0.5	D±1	L±1	N±2
KNHB21W	32	19	12	14	68	51
KNHB31W	51	19	12	14	87	70
KNHB53W	90	19	12	14	126	109
KNHB68W	120	19	12	14	156	140
KNHB91W	153	19	12	14	189	173

***Remark: For further information, please contact our sales team.**

5. Resistor marked

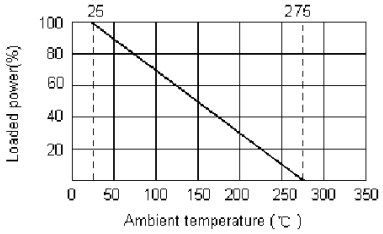


1. Wattage Rate
2. Nominal Resistance Value
3. Resistance Tolerance. J: ± 5%
   K: ± 10%
4. Pattern: M: Power Film
   W: Wire Wound

Color of marking: Black Ink

Note：The marking code shall be prevailed in kind!

6. Derating Curve



6.1Voltage rating:

Resistors shall have a rated direct-current (DC) continuous working voltage or an approximate sine-wave root-mean-square (RMS) alternating-current (AC) continuous working voltage at commercial-line frequency and waveform corresponding to the power rating, as determined from the following formula:

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

Where: RCWV = rated dc or RMS ac continuous working voltage at commercial-line frequency and waveform (VOLT.)

P = power rating (WATT.)

R= nominal resistance (OHM)

7. Performance Specification

Characteristic	Limits	Test method (GB/T 5729&JIS-C-5201&IEC60115-1)
Temperature Coefficient	±350PPM/℃	4.8 Natural resistance changes per temp. Degree centigrade $\frac{R_2-R_1}{R_1(t_2-t_1)} \times 10^6$ (PPM/℃) R_1: Resistance Value at room temperature （t_1）; R_2: Resistance at test temperature （t_2） t_1: +25°C or specified room temperature t_2: Test temperature（-55℃or 125℃）
Short-time Over load	Resistance change rate is: ±(5%+0.05Ω)max. With no evidence of mechanical damage.	4.13 permanent resistance changes after the application of a potential of 2.5 times RCWV or the max. Overload voltage respectively specified in the above list, whichever less for 5 seconds.
Solder ability	95% coverage min.	4.17the area covered with a new, smooth, clean, shiny and continuous surface free from concentrated pinholes. Test temp. Of solder:245℃±5℃ dwell time in solder: 3+0.5/-0 seconds.
Humidity (steady state)	Resistance change rate is: ±(5%+0.05Ω)max. With no evidence of mechanical damage.	4.24 temporary resistance changes after a 240 hours exposure in a humidity test chamber controlled at 40℃±20℃ and 90 to 95% relative humidity.
Load life	Resistance change rate is: ±(5%+0.05Ω)max. With no evidence of mechanical damage.	7.10 Permanent Resistance change after 1000 hours operating at RCWV or Max.Working Voltage whichever less with duty cycle of 1.5 hours “ON” ，0.5 hour “OFF” at 25±2℃ ambient.

8. Note

8.1. UNI-ROYAL recommend products store in warehouse with temperature between 15 to 35℃ under humidity between 25 to 75%RH.

Even under storage conditions recommended above, solder ability of products will be degraded stored over 1 year old.

8.2. Cartons must be placed in correct direction which indicated on carton, otherwise the reel or wire will be deformed.

8.3. Storage conditions as below are inappropriate:

a. Stored in high electrostatic environment

b. Stored in direct sunshine, rain, snow or condensation.

c. Exposed to sea wind or corrosive gases, such as Cl_2, H_2S, NH_3, SO_2, NO_2, Br etc.

9. Record

Version	Description	Page	Date	Amended by	Checked by
1	First version	1~4	Apr.15, 2019	Haiyan Chen	Yuhua Xu
2	Modify the temperature coefficient test conditions	4	Nov.08, 2022	Haiyan Chen	Yuhua Xu
3	Modify the load life test conditions	4	Sep.30, 2024	Haiyan Chen	Yuhua Xu