

**UNI-ROYAL**  
厚聲集團

# DATA SHEET

**Product Name** Wire-wound Fixed Resistors

---

**Part Name** KNH0、KNHA Series

**File No** DIP-SP-009

## 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](mailto: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 Wire-wound Fixed Resistors manufactured by UNI-ROYAL
- 1.2 Excellent flame tetardant coating
- 1.3 Too low or too high ohmic value can be supplied on a case to basis
- 1.4 Non-inductive type available

## 2. Part No. System

The standard Part No. includes 14 digits with the following explanation:

- 2.1 Coated type, the 1<sup>st</sup> to 3<sup>rd</sup> digits are to indicate the product type and 4<sup>th</sup> digit is the special feature.

Example: KNH0=KNH0

- 2.2 5<sup>th</sup>~6<sup>th</sup> digits:

This is to indicate the wattage or power rating. To dieting the size and the numbers,

- 2.3 For power of 1 watt to 16 watt, the 5<sup>th</sup> digit will be a number or a letter code and the 6<sup>th</sup> digit will be the letters of W, S or U.

- 2.4 For power of 20watt to 99 watt, the 5<sup>th</sup> digit and 6<sup>th</sup> are indicate the wattage or power rating.

Example: 20=20W ; 60=60W

- 2.5 The 7<sup>th</sup> is to denote the Resistance Tolerance. The following letter code is to be used for indicating the standard Resistance Tolerance.

J=±5% K= ±10%

- 2.6 The 8<sup>th</sup> to 11<sup>th</sup> digits is to denote the Resistance Value.

- 2.6.1 For the standard resistance values of E-24 series, the 8<sup>th</sup> digit is "0", the 9<sup>th</sup> & 10<sup>th</sup> digits are to denote the significant figures of the resistance and the 11<sup>th</sup> digit is the number; For the standard resistance values of E-96 series, the 8<sup>th</sup> digit to the 10<sup>th</sup> digits is to denote the significant figures of the resistance and the 11<sup>th</sup> digit is the zeros following.

- 2.6.2 The following number s and the letter codes are to be used to indicate the number of zeros in the 11<sup>th</sup> digit:

J=10<sup>-1</sup> 0=10<sup>0</sup> 1=10<sup>1</sup> 2=10<sup>2</sup> 3=10<sup>3</sup>

- 2.7 The 12<sup>th</sup>, 13<sup>th</sup> & 14<sup>th</sup> digits.

- 2.7.1 The 12<sup>th</sup> digit is to denote the Packaging Type with the following codes:

A=Tape/Box (Ammo pack) B=Bulk/Box

T=Tape/Reel P=Tape/Box of PT-26 products

- 2.7.2 The 13<sup>th</sup> digit is normally to indicate the Packing Quantity of Tape/Box & Tape/Reel packaging types. Using "0" to indicate the Bulk packaging types, the following letter codes is to be used for some packing quantities:

A=500pcs B=2500pcs C=10000pcs

D=20000pcs G=25000pcs H=50000pcs

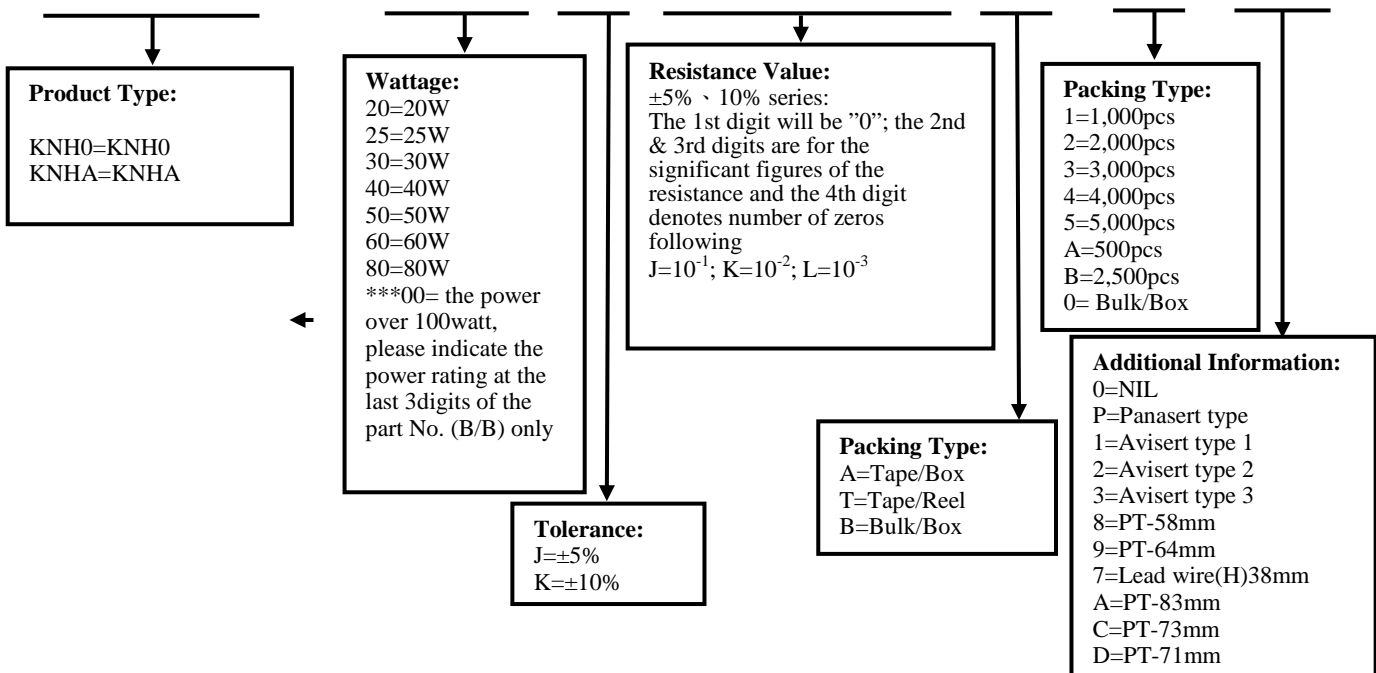
- 2.7.3 For some items, the 14<sup>th</sup> digit alone can use to denote special features of additional information with the following codes or standard product

Example: 0= standard product

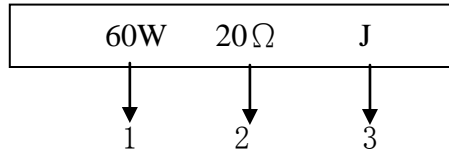
## 3. Ordering Procedure

(Example: KNH0 60W ±5% 20Ω)

**K N H 0                      6 0                      J                      0 2 0 0                      B                      0                      0**



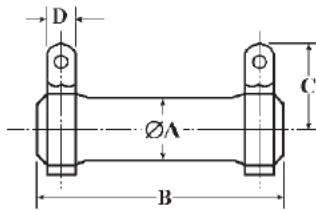
**4. Marking**



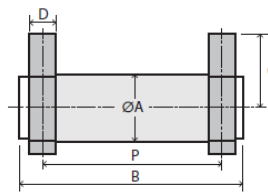
- 1. Wattage Rate
  - 2. Nominal Resistance Value
  - 3. Resistance Tolerance. J: ± 5% K: ± 10%
- Color of marking: Black Ink

**5. Ratings & Dimension**

KNH0 Type:

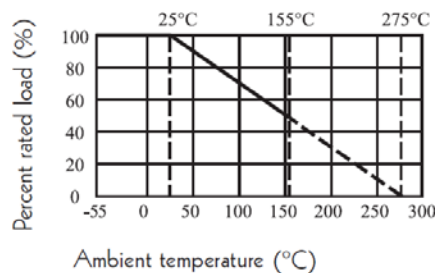


KNHA Type:



Type	Dimension(mm)				Tolerance	Resistance Range
	A±1.5	B±1.5	C±3.0	D±1.0		
KNH0 20W	19	50	19	5	±5% 、 ±10%	0.4Ω~10KΩ
KNH0 25W	19	60	19	5	±5% 、 ±10%	0.4Ω~10KΩ
KNH0 30W	19	75	19	5	±5% 、 ±10%	0.5Ω~15KΩ
KNH0 40W	19	90	19	5	±5% 、 ±10%	0.6Ω~20KΩ
KNH0 50W	31	75	31	8	±5% 、 ±10%	3Ω~25KΩ
	28					
KNH0 60W	31	90	31	8	±5% 、 ±10%	3Ω~30KΩ
	28					
KNH0 80W	31	115	31	8	±5% 、 ±10%	3Ω~40KΩ
	28					
KNH0 100W	31	140	31	8	±5% 、 ±10%	3Ω~50KΩ
	28					
KNHA 25W	21	41	24	5	±5% 、 ±10%	0.4Ω~10KΩ
KNHA 30W	21	42	24	5	±5% 、 ±10%	0.4Ω~10KΩ

**6. Derating Curve**



**6.1 Voltage rating:**

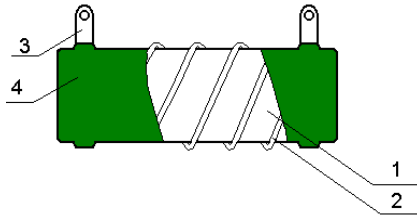
Resistors shall have a rated direct-current (DC) continuous working voltage or an approximate sine-wave root-mean-square (RMS) alternating-current (AC) continuous working voltage at commercial-line frequency and waveform corresponding to the power rating, as determined from the following formula:

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

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. Structure



No.	Name	Material
1	Basic body	Ceramics rod
2	Resistor	Alloy wire
3	Terminal lead	Iron ring
4	Coating	Insulated resin

## 8. Performance Specification

Characteristic	Limits	Test Methods (GB/T5729&JIS-C-5201&IEC60115-1)
Temperature Coefficient	$\geq 20\Omega$ : $\pm 300\text{PPM}/^\circ\text{C}$ $< 20\Omega$ : $\pm 400\text{PPM}/^\circ\text{C}$	4.8 Natural resistance changes per temp. Degree centigrade $\frac{R_2 - R_1}{R_1(t_2 - t_1)} \times 10^6 \text{ (PPM}/^\circ\text{C)}$ R <sub>1</sub> : Resistance Value at room temperature ( t <sub>1</sub> ) ; R <sub>2</sub> : Resistance at test temperature ( t <sub>2</sub> ) t <sub>1</sub> : +25°C or specified room temperature t <sub>2</sub> : Test temperature ( -55°C or 125°C )
Short-time overload	Resistance change rate must be in $\pm(2\%+0.05\Omega)$ , and no mechanical damage.	4.13 Permanent resistance change after the application of a potential of 2.5 times rcwv for 5 seconds.
Resistance to soldering heat	Resistance change rate must be in $\pm(1\%+0.05\Omega)$ , and no mechanical damage.	4.18 Permanent resistance change when leads immersed to a point 2.0-2.5mm from the body in 260°C $\pm$ 5°C solder for 10 $\pm$ 1 seconds.
Solderability	95% coverage min.	4.17 The area covered with a new, smooth, clean, shiny and continuous surface free from concentrated pinholes. Test temp. Of solder:245°C $\pm$ 3°C Dwell time in solder: 2~3seconds.
Rapid change of temperature	Resistance change rate must be in $\pm(1\%+0.05\Omega)$ , and no mechanical damage.	4.19 30 min at -55 °C and 30 min at 155°C; 100 cycles.
Load life in humidity	$\Delta R/R$ : $\pm(5\%+0.05\Omega)$	7.9 resistance change after 1,000 hours (1.5 hours “on”,0.5 hour “off”) at RCWV in a humidity test chamber controlled at 40°C $\pm$ 2 °C and 90 to 95% relative humidity.
Load life	$\Delta R/R$ : $\pm(5\%+0.05\Omega)$	4.25.1 permanent resistance change after 1,000 hours operating at RCWV with duty cycle of 1.5 hours “on”, 0.5 hour “off” at 25 °C $\pm$ 2°C ambient.
Low Temperature Storage	$\Delta R/R$ : $\pm(5\%+0.05\Omega)$	IEC 60068-2-1 (Aa) Lower limit temperature , for 2H.
High Temperature Exposure	$\Delta R/R$ : $\pm(5\%+0.05\Omega)$	MIL-STD-202 108A Upper limit temperature , for 16H.

**9. Label**

Label shall be marked with following items:

- (1) Type and style
- (2) Nominal resistance
- (3) Resistance tolerance
- (4) Quantity
- (5) Lot number
- (6) PPM

Example:

CEMENT RESISTORS	
WATT: 60W	VAL: 20Ω
Q'TY: 100	TOL: 5%
LOT: 4021548	PPM:

**10. Note**

- 10.1. UNI-ROYAL recommend products store in warehouse with temperature between 15 to 35°C 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.
- 10.2. Cartons must be placed in correct direction which indicated on carton, otherwise the reel or wire will be deformed.
- 10.3. 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<sub>2</sub>, H<sub>2</sub>S, NH<sub>3</sub>, SO<sub>2</sub>, NO<sub>2</sub>, Br etc.

**11. Record**

Version	Description	Page	Date	Amended by	Checked by
1	First version	1~5	Mar.20, 2018	Haiyan Chen	Nana Chen
2	Modify characteristic	4	Feb.19, 2019	Haiyan Chen	Yuhua Xu
3	Modify the temperature coefficient test conditions	4	Oct.28, 2022	Haiyan Chen	Yuhua Xu

© Uniroyal Electronics Global Co., Ltd. All rights reserved. Specification herein will be changed at any time without prior notice