



UNI-ROYAL
厚聲集團

APPROVAL SHEET

Customer Name **COMPOLINK LTD.**
Product Name **Wire-Wound Fixed Resistors**
Part Name **KNP 2W Series**
Part No. **KNP02WJ0***A10**
File No. **COMP-02-001**

Customer Verification		Supplier	
☐ Approved ☐ Not approved		Prepared by	陈海燕
Approved by		Checked by	陈海燕
		Approved by	陈海燕

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 approve sheet is the characteristics of Wire-Wound Fixed Resistors manufactured by UNI-ROYAL.
- 1.2 Excellent flame retardant 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 Wire-Wound Fixed Resistors type, the 1st to 3rd digits are to indicate the product type and 4th digit is the special feature.

Example:

KNP= Wire-Wound Fixed Resistors type.

- 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	2
Normal Size	2W

- 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%

- 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 number of 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 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=10⁰ 1=10¹ 2=10² 3=10³ 4=10⁴ 5=10⁵

6=10⁶ J=10⁻¹ K=10⁻² L=10⁻³ M=10⁻⁴

- 2.5 The 12th, 13th & 14th digits.

- 2.5.1 The 12th digit is to denote the Packaging Type with the following codes:

A=Tape/Box

- 2.5.2 The 13th digit is normally to indicate the Packing Quantity of Tape/Box & Tape/Reel packaging types. The following letter code is to be used for some packing quantities:

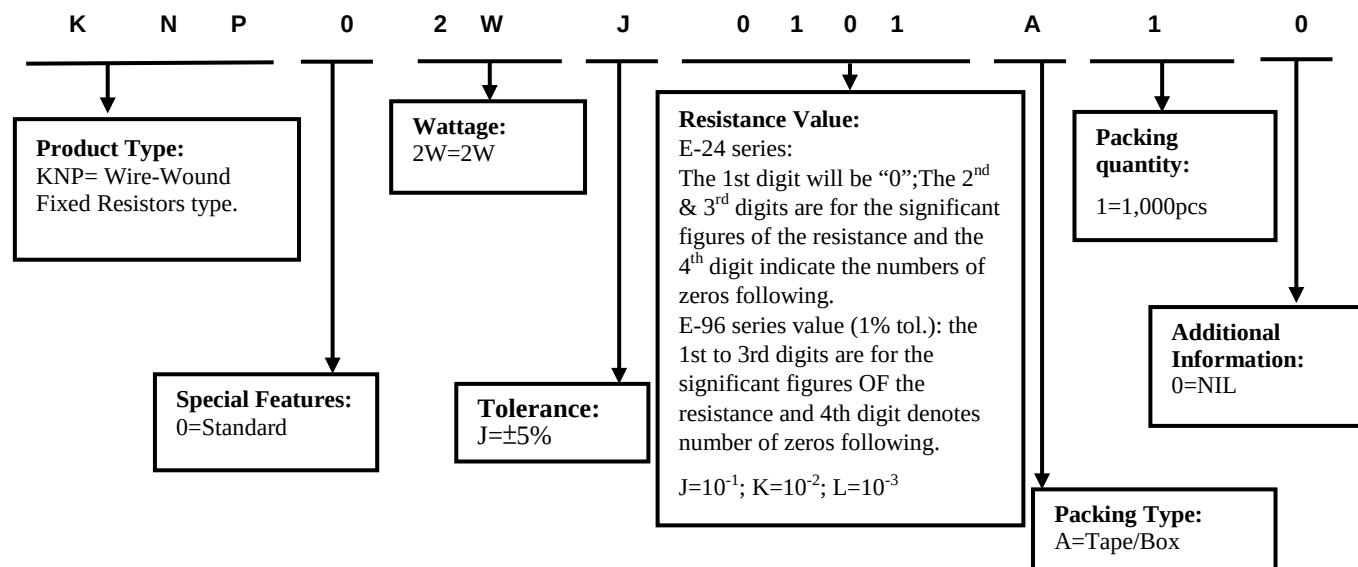
1=1000pcs

- 2.5.3 For some items, the 14th digit alone can use to denote special features of additional information with the following codes:

0=NIL

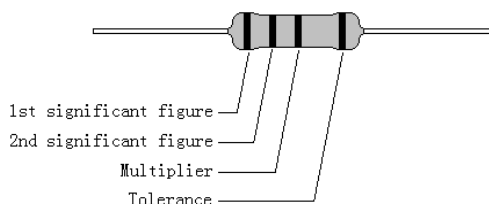
3. Ordering Procedure

(Example: KNP 2W ±5% 100 Ω T/B-1000)



4. Marking

Resistors shall be marked with color coding
Colors shall be in accordance with JIS C 0802

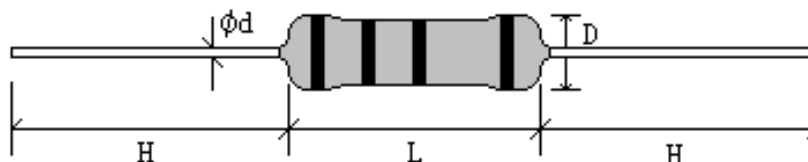


4.1 Label:

Label shall be marked with following items:

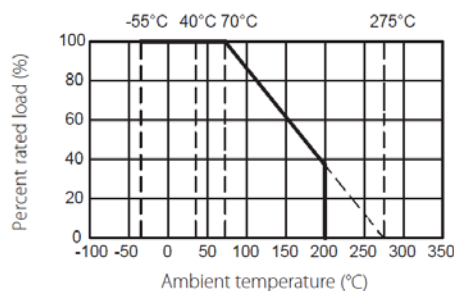
- (1) Type and style
- (2) Nominal resistance
- (3) Resistance tolerance
- (4) Quantity
- (5) Lot number
- (6) PPM

5. Ratings & Dimension



Type	Dimension(mm)					Tolerance	Resistance Range
	D±1	L±1	d±0.05	H±3	PT		
KNP 2W	5.5	15.5	0.70	28	64	±5%	0.01Ω~3.0KΩ

6. Derating Curve



6.1 Voltage rating:

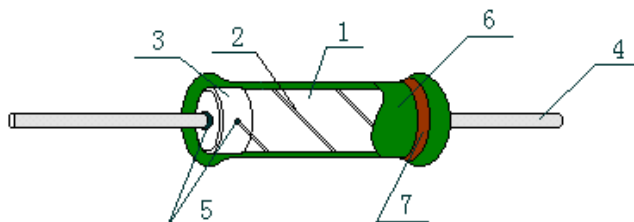
Resistors shall have a rated direct-current (DC) continuous working voltage or an approximate sine-wave root-mean-square (RMS) alternating-current (AC) continuous working voltage at commercial-line frequency and waveform corresponding to the power rating, as determined from the following formula:

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

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

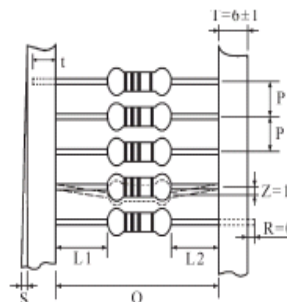
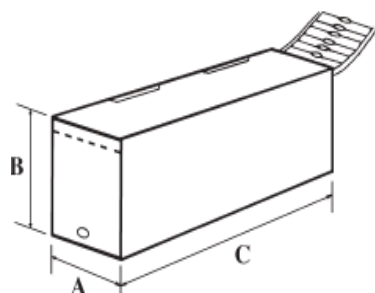
No.	Name	Raw materials
1	Basic body	Rod Type Ceramics
2	Resistor	Ni-Cr Alloys
3	End cap	Steel (Tin Plated iron Surface)
4	Lead wire	Tin solder coated copper wire
5	Joint	By welding
6	Coating	Normal size & Insulated Non-Flame Paint Color: Deep Green
7	Marking	Epoxy Resin

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_1 : Resistance Value at room temperature (t_1) ; R_2 : Resistance at test temperature (Upper limit temperature or Lower limit temperature) t_1 : $+25^\circ\text{C}$ or specified room temperature t_2 : Upper limit temperature or Lower limit temperature test temperature
Short-Time Overload	$\Delta R/R \leq \pm(2\%+0.05\Omega)\text{Max}$, with no evidence of mechanical damage	4.13 Permanent resistance change after the application of a potential of 2.5 times rcwv for 5 seconds.
Terminal strength	No evidence of mechanical damage	4.16 Direct load: Resistance to a 2.5 kg direct load for 10 seconds in the direction of the longitudinal axis of the terminal leads. Twist test: Terminal leads shall be bent through 90° at a point of about 6mm from the body of the resistor and shall be rotated through 360° about the original axis of the bent terminal in alternating direction for a total of 3 rotations.
Resistance to soldering heat	Resistance change rate is: $\pm(1\%+0.05\Omega)$ Max. With no evidence of mechanical damage	4.18 Permanent resistance change when leads immersed to a point 2.0-2.5mm from the body in $260^\circ\text{C} \pm 5^\circ\text{C}$ solder for 10 ± 1 seconds.
Solderability	95% Coverage Min.	4.17 The area covered with a new, smooth, clean, shiny and continuous surface free from concentrated pinholes. Temperature of solder: $245^\circ\text{C} \pm 3^\circ\text{C}$ Dwell time in solder: 2~3seconds.
Load life in humidity	Resistance change rate is: $\pm(5\%+0.05\Omega)$ Max.. With no evidence of mechanical damage.	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 $40^\circ\text{C} \pm 2^\circ\text{C}$ and 90 to 95% relative humidity.

Load life	Resistance change rate is: $\pm(5\%+0.05\Omega)$ Max.. With no evidence of mechanical damage.	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 70°C $\pm 2^\circ\text{C}$ ambient.
Low Temperature Storage	Resistance change rate is: $\pm(5\%+0.05\Omega)$ Max.. With no evidence of mechanical damage.	IEC 60068-2-1 (Aa) Lower limit temperature , for 2H.
High Temperature Exposure	Resistance change rate is: $\pm(5\%+0.05\Omega)$ Max.. With no evidence of mechanical damage.	MIL-STD-202 108A Upper limit temperature , for 16H.
Rapid change of temperature	Resistance change rate is: $\pm(2\%+0.05\Omega)$ Max. With no evidence of mechanical damage.	4.19 30 min at -55 °C and 30 min at 155°C; 100 cycles.

9. Packing



*L1-L2=1.0 Max.
ZW: 0
**S=0.5 Max.
PT-26: 0.8 Max.

Dimension of T/B (mm)

Part No.	O	P	A ± 5	B ± 5	C ± 5	Qty/Box
KNP 2W	64 ± 5	10 ± 0.5	90	119	255	1,000pcs

10. Note

10.1 UNI-ROYAL recommend the storage condition temperature: 15°C~35°C, humidity :25%~75%.

(Put condition for individual product).

Even under UNI-ROYAL recommended storage condition, solderability of products over 1 year old. (Put condition for each product) may be degraded.

10.2 Store / transport cartons in the correct direction, which is indicated on a carton as a symbol.

Otherwise bent leads may occur due to excessive stress applied when dropping of a carton.

10.3 Product performance and soldered connections may deteriorate if the products are stored in the following places:

- Storage in high Electrostatic.
- Storage in direct sunshine 、rain and snow or condensation.
- Where the products are exposed to sea winds or corrosive gases, including Cl₂, H₂S 、NH₃, SO₂, NO₂.

11. Record

Version	Description	Page	Date	Amended by	Checked by
1	First version	1~5	Apr.28, 2022	Haiyan Chen	Yuhua Xu