

DATASHEET

Product Name **High Power Wire-wound Iron-Case Resistors**

Part Name **HAWF Series**

File No. **DIP-SP-059**

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1. Scope

- 1.1 This datasheet is the characteristics of High Power Wire-wound Iron-Case Resistors manufactured by UNI-ROYAL.
- 1.2 High Power Wire-wound Flat Aluminum Shell Fixed Resistors
- 1.3 Easy to assembled on PCB
- 1.4 Application: Power supply of frequency converter
- 1.5 Compliant with RoHS directive.
- 1.6 Halogen free requirement.

2. Part No. System

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

- 2.1 High Power Wire-wound Iron-Case Resistors the 1st to 4th digits are to indicate the product type.

Example: HAWF= High Power Wire-wound Iron-Case Resistors

- 2.2 5th ~6th digits:

- 2.2.1 The 5th & 6th digits will show the connector style.

Example: A0=Terminal Type; B0=Cable Type.

- 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 5%&10% 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;

- 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

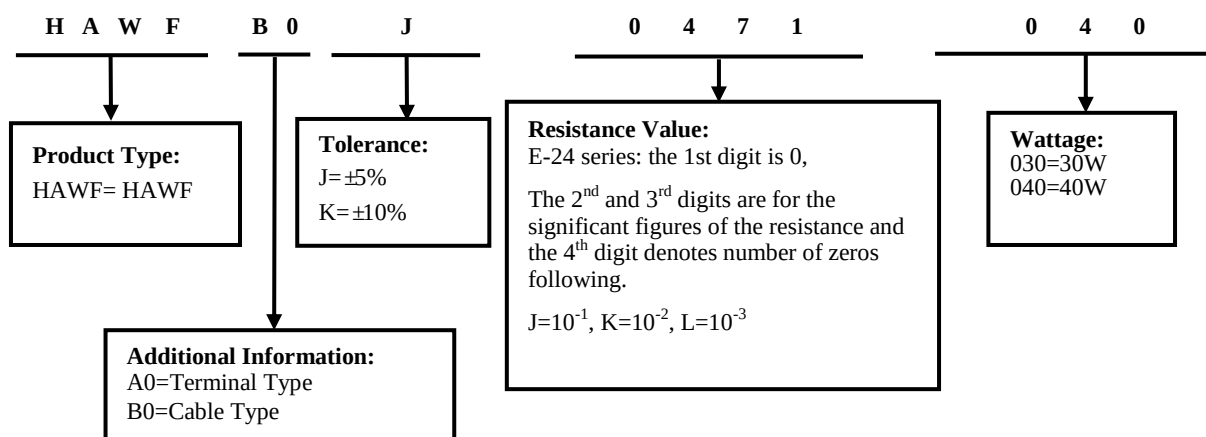
- 2.5 The 12th ~14th digits.

- 2.5.1 The 12th to the 14th digits are to denote the actual wattage of the products.

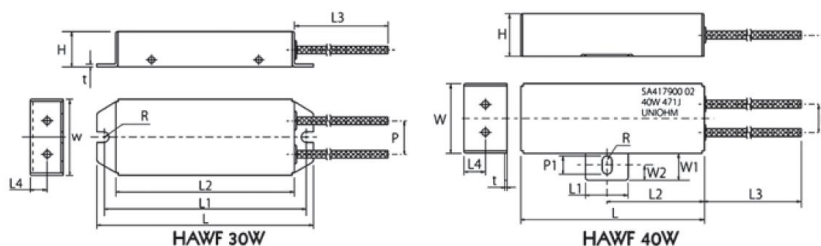
Example: 030 = 30W 040 = 40W

3. Ordering Procedure

(Example: HAWF 40W ±5% 470 Ω B/B)



4. Dimension



Unit: mm

Type	L±1	W±1	H±1	L1±1
HAWF 30W	97	32	15	90.5
HAWF 40W	85	32	20	20

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

5. Resistor marked

1 — SA417900 02
 2 — 40W 471J
 3 — UNIOHM

Code description and regulation:

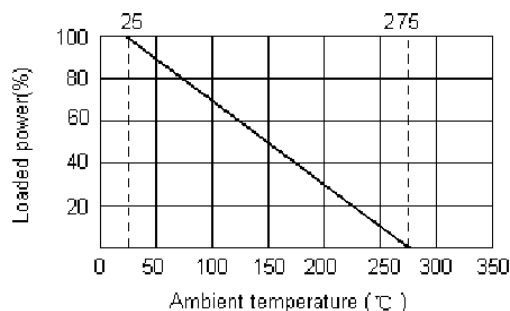
1. Part No. of Customer : SA417900 02

2. Type: Power rating: 40W, Resistance: 470Ω, Tolerance: ±5%

3. Mark: UNIOHM

Note : The marking code shall be prevailed in kind!

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. Performance Specification

Characteristic	Limits	Test method (GB/T 5729&JIS-C-5201&IEC60115-1)
Temperature Coefficient	$\pm 260 \text{ PPM}/^{\circ}\text{C}$ Max	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 (t_2) t_1 : +25 $^{\circ}\text{C}$ or specified room temperature t_2 : Test temperature (-55 $^{\circ}\text{C}$ or 125 $^{\circ}\text{C}$)
Short-time overload	Resistance change rate is: $\pm(2\% + 0.05\Omega)$ Max. With no evidence of mechanical damage.	4.13 Permanent resistance change after the application of a potential of 2.5 times RCWV or Max.Overload Votage whichever less for 5 seconds.
Surface temperature	Temperature: $\leq 315^{\circ}\text{C}$ Resistance change rate is: $\pm(1\% + 0.05\Omega)$ Max	Rate voltage for 30 minutes
Dielectric withstanding voltage	No evidence of flashover mechanical damage, arcing or insulation break down. Resistance change rate is: $\pm(1\% + 0.05\Omega)$ Max	4.7In resistors between the shell and alloy applied voltage AC2500V (5mA) for 60 seconds
Insulation Resistance	Insulation Resistance $> 100\text{M}\Omega$	4.6 The measuring voltage shall be at 500V DC.
Strength of resistor	With no evidence of mechanical damage	49N for 10 ± 1 seconds
Vibration	With no evidence of mechanical damage Resistance change rate is: $\pm(1\% + 0.05\Omega)$ Max	Frequency varied 10Hz $\rightarrow$ 55Hz $\rightarrow$ 10Hz in 1 min, the amplitude is 1.5mm, 3 directions (X/Y/Z) for every 2h
High Temperature Exposure	The mark have no evidence of damage	315 $\pm 5^{\circ}\text{C}$ for 2h and then place 1~2h
Thermal Shock	With no evidence of mechanical damage Resistance change rate is: $\pm(2\% + 0.05\Omega)$ Max	Load rated voltage , -30 $^{\circ}\text{C}$, 30 minutes
Humidity (Steady State)	The mark have no evidence of damage Resistance change rate is: $\pm(2\% + 0.05\Omega)$ Max Insulation Resistance $\geq 2.5\text{M}\Omega(\text{DC}500\text{V})$	Resistance change after 500 hours in a humidity test chamber controlled at 40 $^{\circ}\text{C} \pm 2^{\circ}\text{C}$ and 90 to 95% relative humidity and apply DC100V between lead and shell
Load life in humidity	The mark have no evidence of damage Resistance change rate is: $\pm(3\% + 0.05\Omega)$ Max	Resistance change after 1000 hours (1.5 hours “ON” , 0.5 hours “OFF”) at RCWV or Max.Working Voltage whichever less in a humidity test chamber controlled at 40 $\pm 2^{\circ}\text{C}$ and 93% $\pm 3\%$ RH.
Load life	The mark have no evidence of damage Resistance change rate is: $\pm(5\% + 0.05\Omega)$ Max	4.25.1 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 $\pm 2^{\circ}\text{C}$ ambient.
Flame retardant	No burning	1~6 times rated voltage for 2h

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 Cl₂, H₂S, NH₃, SO₂, NO₂, Br etc.

9. Record

Version	Description	Page	Date	Amended by	Checked by
1	First version	1~5	Apr.16, 2019	Haiyan Chen	Yuhua Xu
2	Modify the load life test conditions	4	Sep.28, 2024	Haiyan Chen	Yuhua Xu
3	Modify the ordering procedure	2	Dec.31, 2024	Haiyan Chen	Yuhua Xu

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