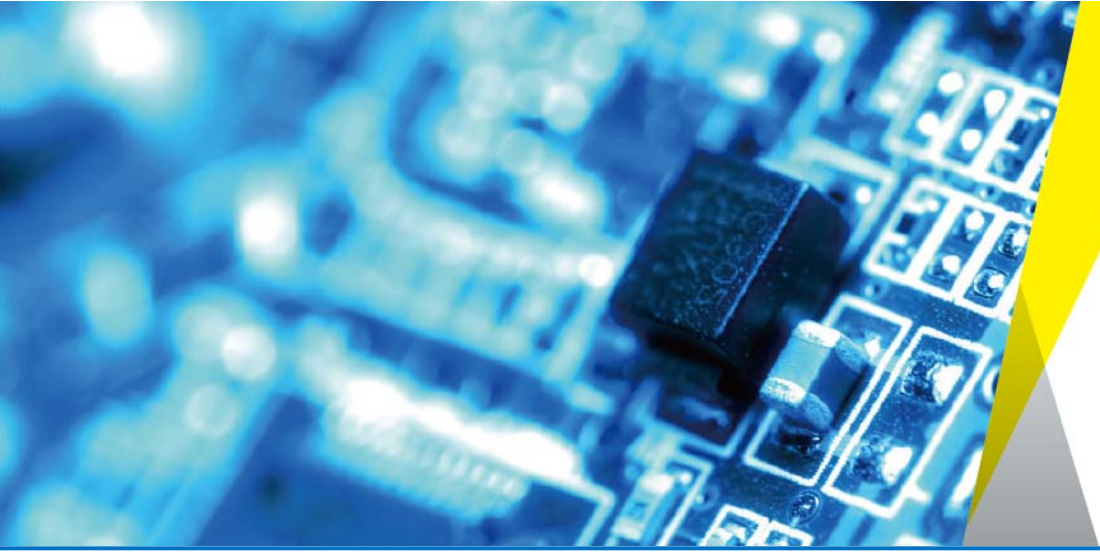

DATASHEET

Product Name	**High Power Wire-Wound Aluminum Case Resistors**
Part Name	**HCWR Series**
File No.	**DIP-SP-089**

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1. Scope

1.1 This datasheet is the characteristics of High Power Wire-Wound Aluminum Case Resistors manufactured by UNI-ROYAL..
1.2 Anti-vibration, high stability.
1.3 Excellent transient current impact capability, suitable for the start of the inverter under harsh conditions.
1.4 Application :Frequency Conversion Equipment , such as Elevator ,Freezer, Crane， Lift etc.
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 1^{th} ~4^{th} digits

This is to indicate the Chip Resistor. Example: HCWR= HCWR

2.2 5^{th} ~6^{th} digits:

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

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

2.3 The 7^{th} 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 8^{th} to 11^{th} digits is to denote the Resistance Value.

2.4.1 For the standard resistance values of 5%&10% series, the8^{th} digit is "0",the 9^{th} & 10^{th} digits are to denote the significant figures of the resistance and the 11^{th} 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:

$0=10^0$ $1=10^1$ $2=10^2$ $3=10^3$ $4=10^4$ $5=10^5$ $6=10^6$ $J=10^{-1}$ $K=10^{-2}$ $L=10^{-3}$ $M=10^{-4}$

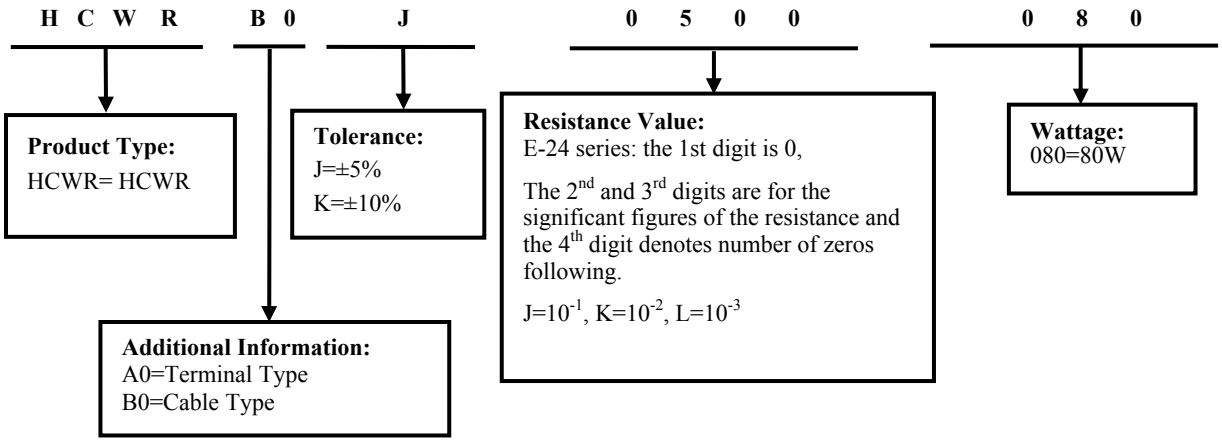
2.5 The 12^{th} ~14^{th} digits.

2.5.1 The 12^{th} to the 14^{th} digits are to denote the actual wattage of the products.

Example: 080 = 80W

3. Ordering Procedure

(Example: HCWR 80W ±5% 50Ω B/B)



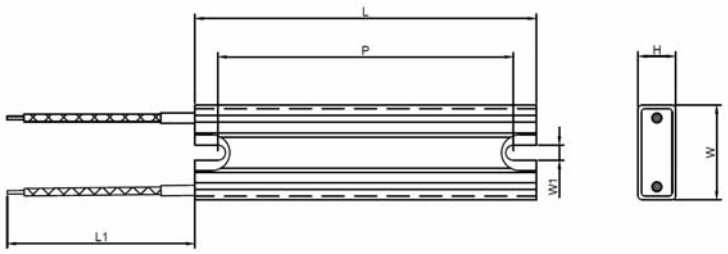
4. Marking

Example:

Code description and regulation:
1.Power rating 80W, resistance 50 Ω
resistance tolerance J=±5%

***** Note：The marking code shall be prevailed in kind!**

5. Dimension (Unit: mm)

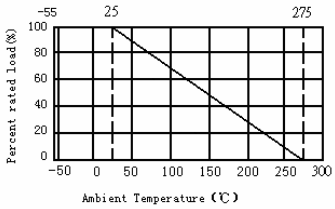


Type	Power Rating	A±10	B±1	L±1	C±0.5	H±1	W±1	Resistance Value
HCWR	80W	250	86.5	100	4.5	11	27.5	0.1Ω~200Ω

6. Derating Curve

Resistors shall have a power rating based on continuous load operation at an ambient temperature from -55℃ to 25℃. For temperature in excess of 25℃, the load shall be derated as shown in figure 1

Figure 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 commercial-line frequency and waveform (Volt.)
P = power rating (WATT.) R = nominal resistance (OHM)
In no case shall the rated DC or RMS AC continuous working voltage be greater than the applicable maximum value.
The overload voltage is 2.5 times RCWV or Max. Overload voltage whichever is less

7. Performance Specification

Characteristic	Limits	Test Methods (GB/T5729&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（+125℃）
Short-time overload	Resistance change rate must be in ±(5%+0.05Ω) , and no mechanical damage.	4.13 Permanent resistance change after the application of a potential of DC 10 times rated power for 5 seconds.
Insulation resistance	≥100MΩ	4.6 Applying test voltage 500VDC , 1 minute
Humidity (Steady state)	Resistance change rate must be in ±(5%+0.05Ω) , and no mechanical damage.	7.9 Resistance change after 240 hours without load in a humidity test chamber controlled at 40℃±2℃ and 90 to 95% relative humidity.
Load life	Resistance change rate must be in ±(5%+0.05Ω) , and no mechanical damage.	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±2℃ ambient.
Low Temperature Storage	Resistance change rate must be in ±(5%+0.05Ω) , and no mechanical damage.	IEC 60068-2-1 (Aa) -55℃，for 2H.
High Temperature Exposure	Resistance change rate must be in ±(5%+0.05Ω) , and no mechanical damage.	MIL-STD-202 108A +155℃ ，for 16H.

8. Precaution for storage/Transportation

8.1. UNI-ROYAL recommend the storage condition temperature: 15℃~35℃, 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.

8.2. 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.

8.3. Product performance and soldered connections may deteriorate if the products are stored in the following places:
a. Storage in high Electrostatic.
b. Storage in direct sunshine、rain and snow or condensation.
c. Where the products are exposed to sea winds or corrosive gases, including Cl_2, H_2S, NH_3, SO_2, NO_2.

9. Record

Version	Description	Page	Date	Amended by	Checked by
1	First version	1~4	Aug.09, 2023	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.30, 2024	Haiyan Chen	Yuhua Xu