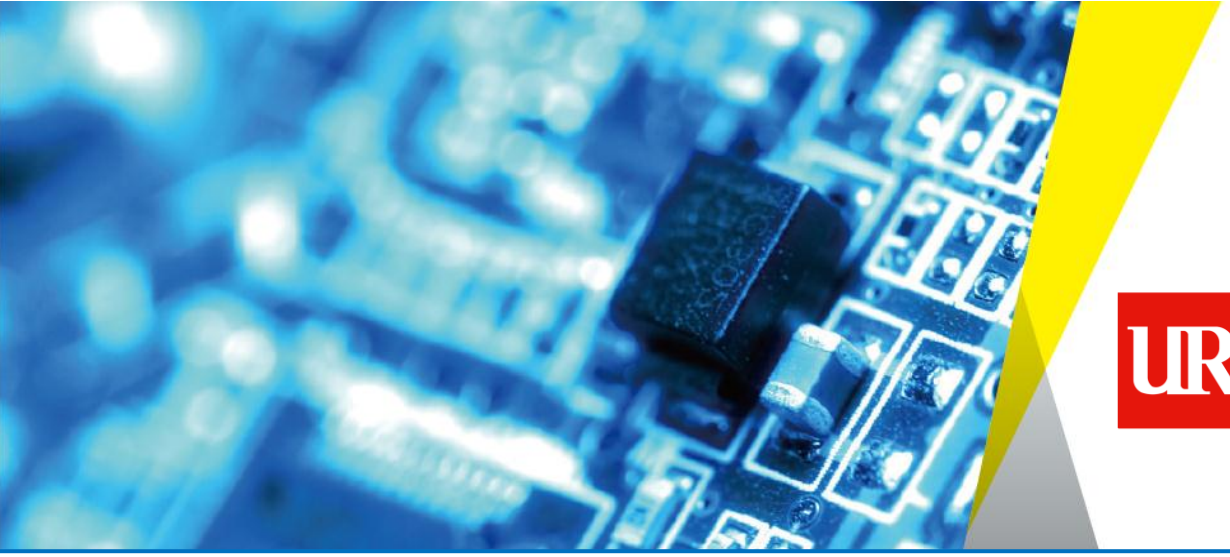


DATA SHEET

Product Name	**Vertical Type Shrapnel Fuse Resistors**
Part Name	**PHF 2W Series**
File No.	**DIP-SP-091**

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 data sheet is the characteristics of Vertical Type Shrapnel Fuse Resistors manufactured by UNI-ROYAL.

1.2 Elastic sheet metal, solder dot fuse, reliable circuit cut off function

1.3 Elastic sheet metal, solder dot fuse, reliable circuit cut off function

1.4 Application: Over temperature protection of industrial power supply

2. Part No. System

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

2.1 For Cement Fixed Resistors, these 4 digits are to indicate the product type but if the product type has only 3digits, the 4th digit will be "0"

Example: PHF0=PHF0 type

2.2 5th~6th digits:

2.2.1 The 5th and 6th digit will be a number or a letter code.

Example: 2W=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.

Example: J=±5% K=±10%

2.4 The 8th to 11th digits is to denote the Resistance Value.

2.4.1 For Cement Fixed Resistors the 8th digits will be coded with "W" to denote Wire-wound type respectively of the Cement Fixed Resistor product.

2.4.2 E-24 series in 2% & 5% & 10% tolerance, the 9th & 10th digits are to denote the significant figures of the resistance and the 11th digit is the number of zeros following

Example: W100=10Ω

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

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

B=Bulk/Box

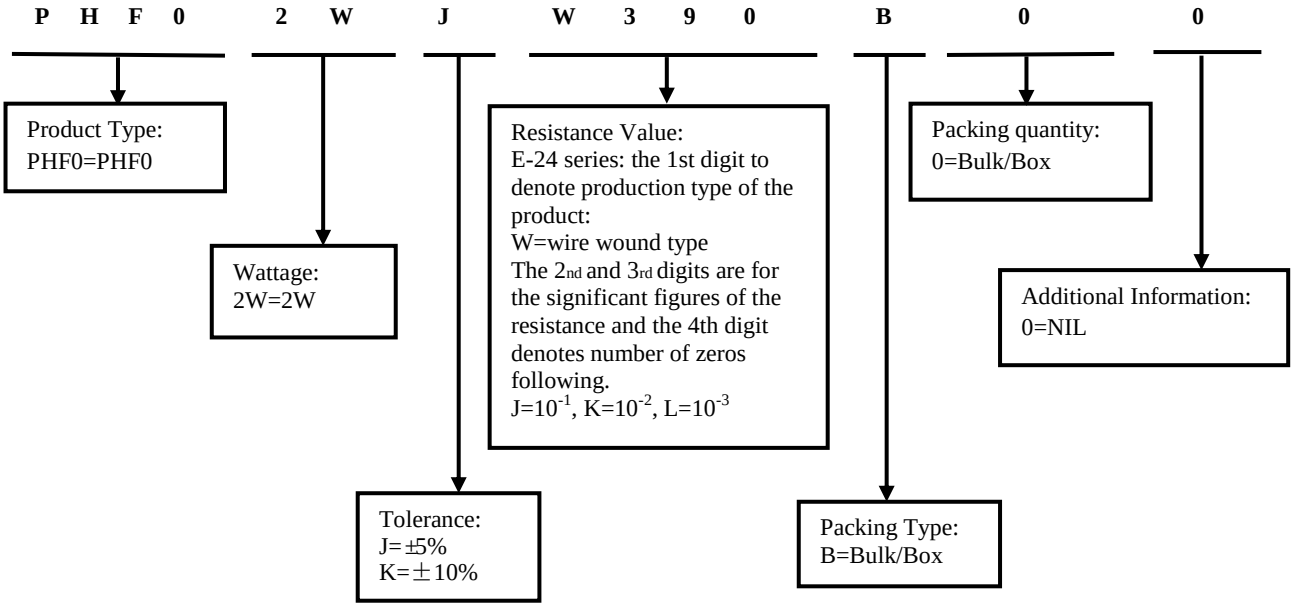
2.5.2 The 13th digit is normally to indicate the Packing Quantity, This digit should be filled with "0"for the Cement products with "Bulk/Box" packing requirements.

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

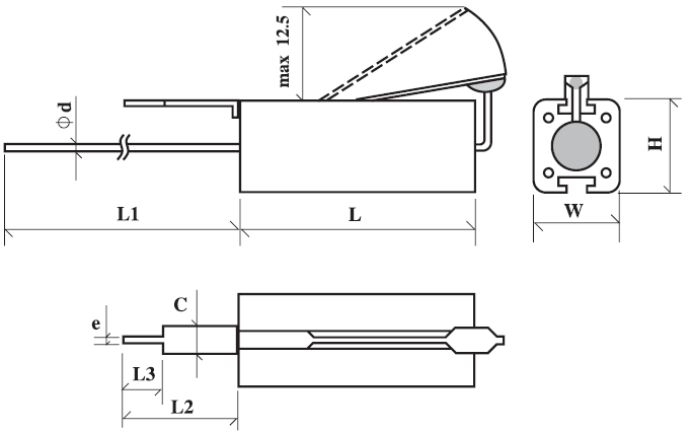
Example: 0= standard product

3. Ordering Procedure

(Example: PHF0 2W ±5% 39Ω B/B)

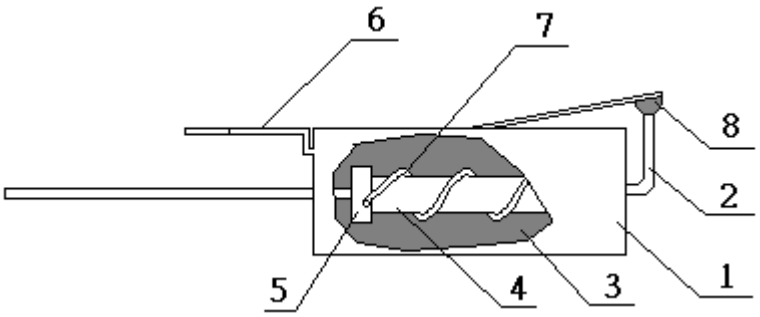


4. Dimension (unit： mm)



Type	Dimension(mm)									Tolerance	Resistance Range
	L ±1.0	W ±1.0	H ±1.0	L1 ±3.0	L2 ±1.5	L3 ±0.5	C ±0.1	e ±0.1	Φd ±0.05		
PHF0 2W	25.0	9.0	10.0	38.0	13.0	4.5	3.0	0.9	0.75	±5% ±10%	1Ω ~ 470Ω

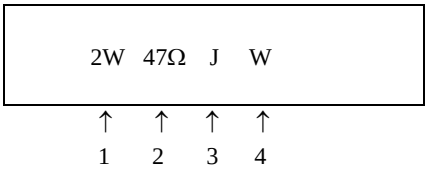
5. Structure



No.	Name	material generic name
1	Ceramic Case	Al_2O_3CaO
2	Lead	Copper Wire
3	Filling Materials	SiO_2
4	Basic body	Rod Type Ceramics
5	End cap	Steel (Tin Plated iron Surface)
6	Sheet metal	P-Cu Alloys
7	Resistor	Alloys
8	Welding spot	Solder

6. Marking

Example:



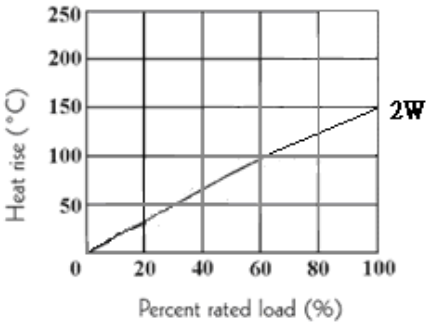
Code description and regulation:

1. Wattage Rating
2. Nominal Resistance Value
3. Resistance Tolerance. J: ± 5%
4. Pattern: W: Wire wound

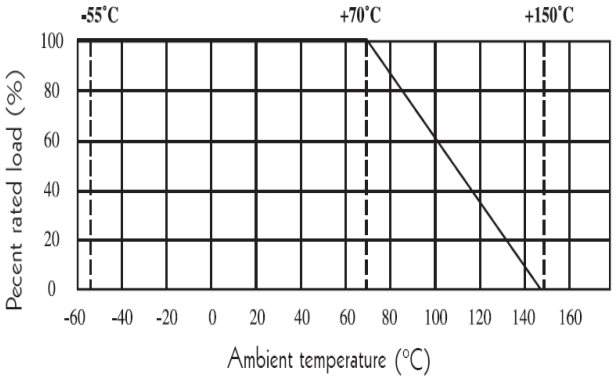
Color of marking: Black Ink

7. Derating Curve

Heat rise chart:



Derating curve:



9.1 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)

8. Performance Specification

Characteristic	Limits	Test Methods (GB/T5729&JIS-C-5201&IEC60115-1)
Temperature Coefficient	±350PPM/℃Max.	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 ℃ or specified room temperature t_2: Room temperature +100℃
Short-time overload	Resistance change rate is: ±(3%+0.05Ω) 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.
Dielectric withstanding voltage	No evidence of flashover mechanical damage, arcing or insulation break down.	4.7 Resistors shall be clamped in the trough of a 90°metallic V-block and shall be tested at AC potential respectively specified in the above list for 60-70 seconds. For cement fixed resistors the testing voltage is 2000V.
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.
Cut-Off Temperature	Resistance must be off	When the temperature of the resistor surface is 150±20℃,the resistor Cut-Off .
Resistance to soldering heat	Resistance change rate is: ±(1%+0.05Ω) 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℃±5℃ solder for 10±1 seconds.
Load life	±(5%+0.05Ω)	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℃ ±2℃ ambient.

9. Note

9.1. 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.

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

9.3. 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.

10. Record

Version	Description	Page	Date	Amended by	Checked by
1	First version	1~5	Aug.15, 2023	Haiyan Chen	Yuhua Xu