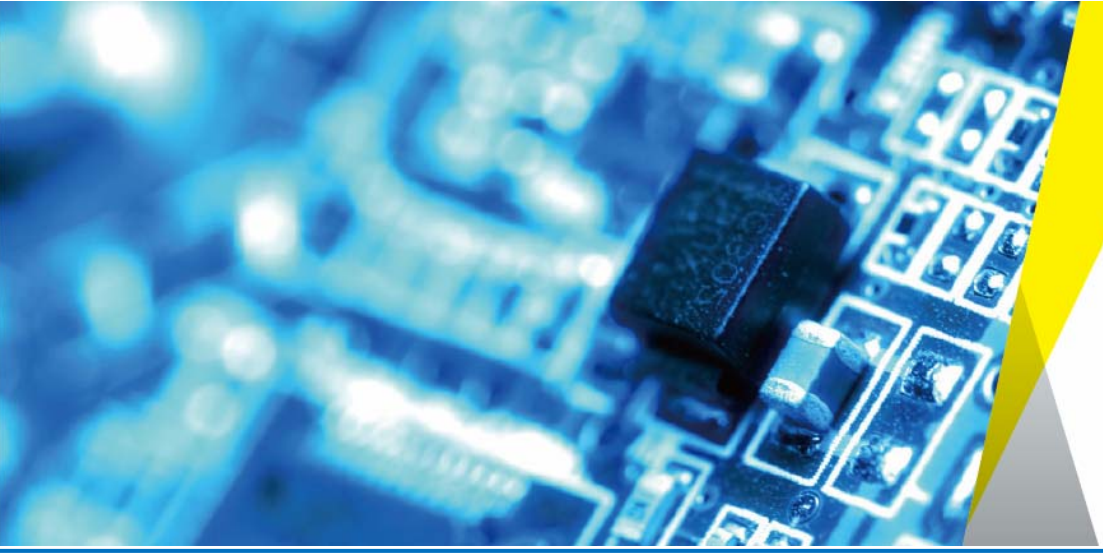


DATA SHEET

Product Name **Lead Type Cement Fixed Resistors**

Part Name **PHF Series**

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 (kunshan) co., ltd.
Uniroyal Electronics Industry Co., Ltd.
Uniroyal Electronics Global Co.,Ltd Shenzhen Branch
Aeon Technology Corporation
Uniroyal Electronics Global Co.,Ltd Xiamen Branch
Kunshan Foss Electronic material Co., Ltd.

Brands ***RoyalOhm*** ***UniOhm***

1. Scope:

1.1 This specification for approve relates to the Lead Type Cement Fixed Resistors manufactured by UNI-ROYAL.

1.2 Square porcelain tube

1.3 Excellent insulation and moisture resistance

1.4 Winding process，good resistance to load

1.5Application ： power supply of frequency converter

2. Part No. System

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

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

Example: PHF= Lead Type Cement Fixed Resistors

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:

W=Normal Size “1”~“G”to denotes“1”~“16”as Hexadecimal:

1W~16W (≧1W)

Wattage	1	2	3	5	7	8	9	10	15
Normal Size	1W	2W	3W	5W	7W	8W	9W	AW	FW
Small Size	1S	2S	3S	5S	7S	8S	9S	AS	FS

2.2.2 For power of 1 watt to 16 watt, the 5th digit will be a number or a letter code and the 6th digit will be the letters of W, S or U.

Example: 1W=1W; 3W=3W

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.

F=±1% G=±2% 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 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:

$0=10^0$ $1=10^1$ $2=10^2$ $3=10^3$ $4=10^4$ $5=10^5$

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

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

The 12th 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

2.4.4 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.

2.4.5 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: PHF1 5W ±5% 82KΩ B/B)

P H F 1 | **5 W** | **J** | **P 8 2 3** | **B** | **0** | **0**

Product Type:
Cement Fixed Resistors
PHF1=PHF1
PHF2=PHF2
PHF3=PHF3

Wattage:
4W=4W
5W=5W
7W=7W
9W=9W
BW=11W

Tolerance:
J=±5%
K=±10%

Resistance Value:
The 1st digit to denote production type of the product:

The 2nd and 3rd digits are for the significant figures of the resistance and the 4th digit denotes number of zeros following.

Packing Type:
B=Bulk/Box

Packing quantity:
0=For Bulk/Box packing

Note:
0=Standard

4. Marking

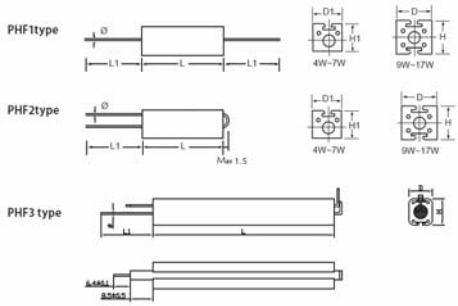
5W 82K J M

↓ 1 ↓ 2 ↓ 3 ↓ 4

Code description and regulation:

1. Wattage rating
2. Nominal resistance value
3. Resistance tolerance. J: ± 5%
   K: ± 10%
4. Metal Oxide Film Fixed Resistor
   Color of marking:
   . Code marking with black ink

5. Ratings & Dimension



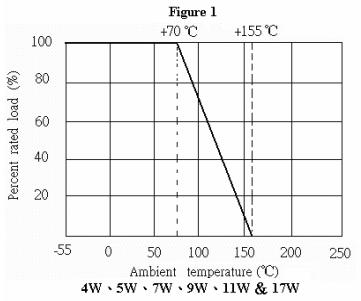
Unit: mm

Type	H±0.5	H1±0.5	D±0.5	D1±0.5	L	Resistance Range
PHF1/PHF2 4W	-	8.5	-	7.5	20±1	1Ω~1KΩ
PHF1/PHF2 5W	-	8.5	-	7.5	25±1	1Ω~2.2KΩ
PHF1/PHF2 7W	-	9.5	-	7.5	38±1	1Ω~6.2KΩ
PHF1/PHF2 9W	10	/	9	-	38±1	1Ω~6.2KΩ
PHF1/PHF2/ PHF3 11W	10	/	9	-	50±1	1Ω~6.2KΩ
PHF1/PHF2/ PHF3 17W	10	/	9	-	75±2	1Ω~10KΩ

6. Derating Curve

Resistors shall have a power rating based on continuous full load operation at an ambient temperature of 70°c. For temperature in excess of 70 ℃, the load shall be derated as shown in the figure 1.

Figure 1



4W、5W、7W、9W、11W & 17W

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)

In no case shall the rated dc or RMS ac continuous working voltage be greater than the applicable maximum value.

7. Type Designation

The type designation shall be in the following form:
Example:

PHF1	5W	J	82KΩ
Type	Style	Resistance Tolerance	Nominal Resistance

8. Performance Specification

Characteristic	Limits	Test method (GB/T5729&JIS-C-5201&IEC60115)
Temperature Coefficient	±350 PPM/℃	4.8 Natural resistance changes per temp. Degree centigrade $\frac{R_2-R_1}{R_1(t_2-t_1)} \times 10^6$ (PPM/℃) $\frac{R_3-R_1}{R_1(t_3-t_1)} \times 10^6$ (PPM/℃) R_1: Resistance Value at room temperature （t_1）; R_2: Resistance Value at upper limit temperature ± 2℃（t_2） R_3 : Resistance Value at lower limit temperature ± 3℃（t_3） Test pattern： Room temperature：（t_1） Upper limit temperature：（t_2） Lower limit temperature ：（t_3）
Short-time Over load	Resistance change rate is: ±(3%+0.05Ω)max. With no evidence of mechanical damage.	4.13 permanent resistance changes after the application of a potential of 2.5 times RCWV or the max. Overload voltage respectively specified in the above list, whichever less for 5 seconds.
Dielectric withstanding voltage	No evidence of flashover, mechanical damage, arcing or insulation breaks down.	4.7 resistors shall be clamped in the trough of a 90°metallic v-block and shall be tested at ac potential respectively for 60+10/-0 seconds. Voltage: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.
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	Resistance change rate is±(5%+0.05Ω)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℃ ± 2℃ ambient.
Rapid change of temperature	Resistance change rate is±(5%+0.05Ω)max. With no evidence of mechanical damage.	4.19 30 min at lower limit temperature and 30 min at upper limit temperature, 5 cycles.
Low Temperature Storage	Resistance change rate is±(5%+0.05Ω)max. With no evidence of mechanical damage.	4.23.4 Lower limit temperature, for 2H.
High Temperature Exposure	Resistance change rate is±(5%+0.05Ω)max. With no evidence of mechanical damage.	4.23.2 Upper limit temperature , for 16H.

9. Note

9.1 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.

9.2 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.

9.3 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_3 NH_3, SO_2, NO_2.

10. Record

Version	Description of amendment	Page	Date	Amended by	Checked by
1	First issue of this specification	1~5	Mar.20, 2018	Chen Haiyan	Chen Nana

Uniroyal Electronics Global Co., Ltd. , all rights reserved. Spec. herein would be changed at any time without prior notice.