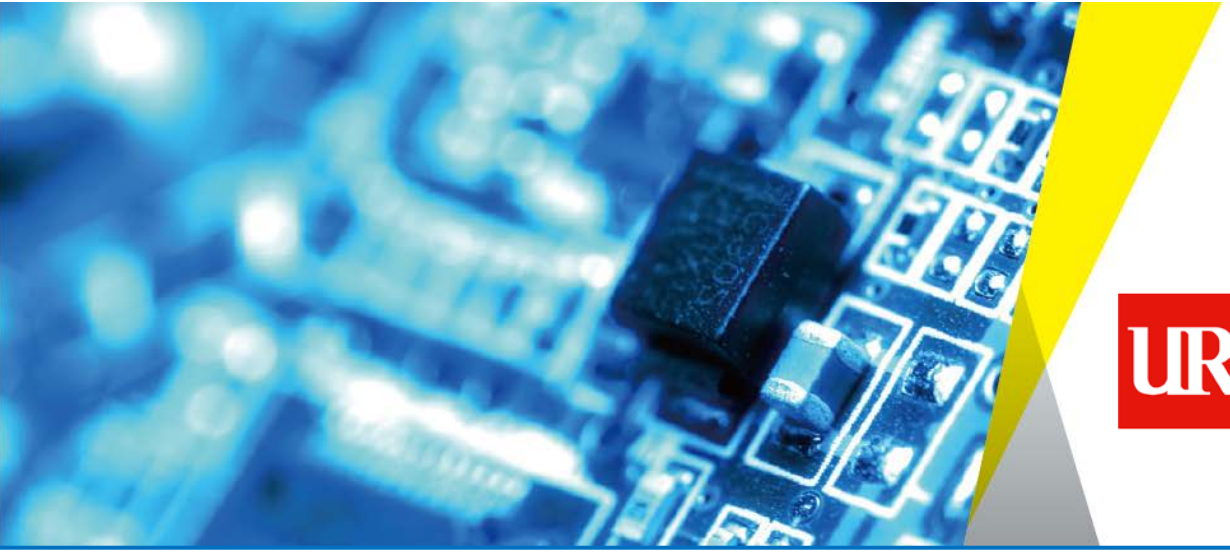

DATA SHEET

Product Name **Power Flat Alloy Resistors**

Part Name **PFAS Series**

File No. **DIP-SP-033**

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1. Scope

1.1 This datasheet is the characteristics of Power Flat Alloy Resistors manufactured by UNI-ROYAL.

1.2 Low inductance

1.3 Safety flameroof construction

1.4 Thin lightweight body save the PCB space considerably

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: PFAS=PFAS-type

2.2 5th~6th digits:

2.2.1 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.
Example: 2W=2W、3W=3W，5W=5W、AW=10W

2.3The 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 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;

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 12th, 13th & 14th digits.

2.5.1The 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 of Tape/Box & Tape/Reel packaging types. Using "0" to indicate the Bulk packaging types, the following letter codes is to be used for some packing quantities:

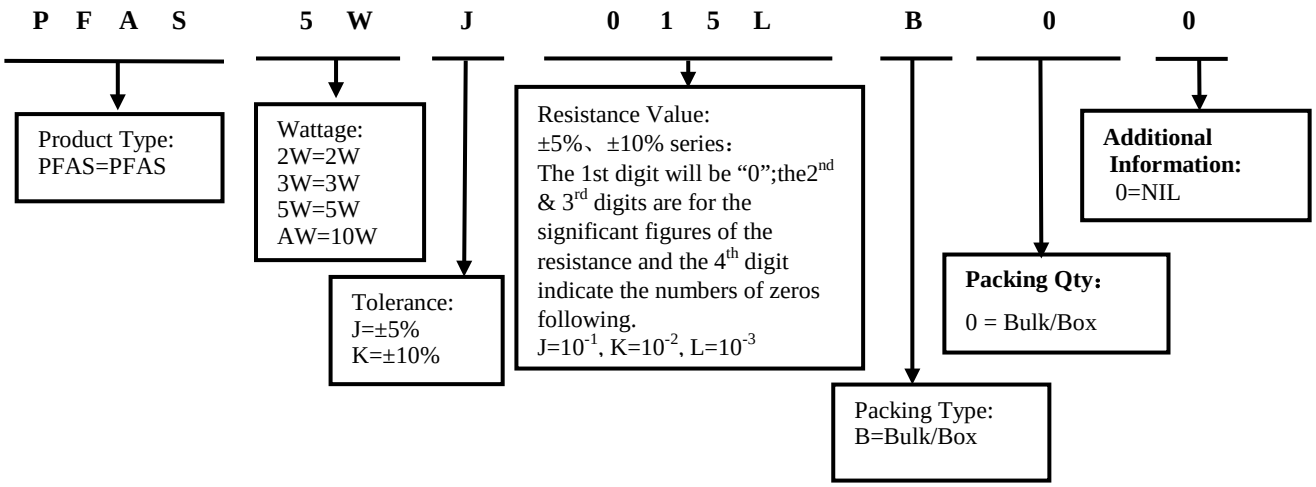
A=500pcs B=2500pcs C=10000pcs D=20000pcs G=25000pcs H=50000pcs

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

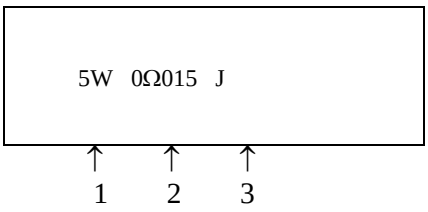
3. Ordering Procedure

(Example: PFAS 5W ±5% 0.015Ω B/B)



4. Marking:

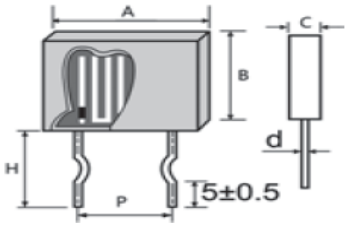
Example:



Code description and regulation:

1. Wattage Rate
2. Nominal Resistance Value
3. Resistance Tolerance. J: ± 5%
   K: ± 10%

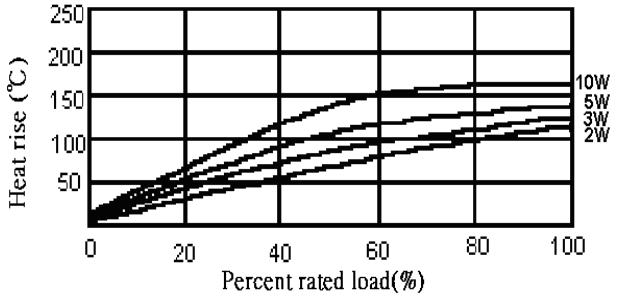
5. Ratings & Dimension



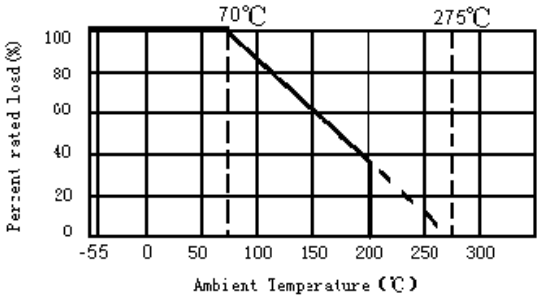
Type	Dimension(mm)						Tolerance	Resistance Range
	A±1.0	B±1.0	C±0.5	d±0.05	P±1.0	H±1		
PFAS 2W	13.0	8.5	5.0	0.75	9 & 10	13	±5%、±10%	0.01Ω~1Ω
PFAS 3W	14.0	13.5	5.0	0.75			±5%、±10%	0.01Ω~1Ω
PFAS 5W	14.0	18.0	5.0	0.75			±5%、±10%	0.01Ω~1Ω
PFAS 10W	26.0	18.0	5.0	0.75	20		±5%、±10%	0.01Ω-3.3Ω

6. Derating Curve

Heat rise chart



Derating curve



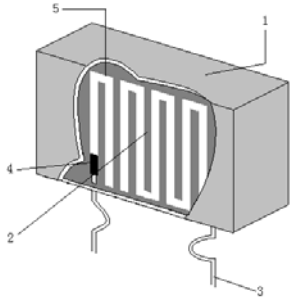
6.1 Voltage rating:

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	Material Generic Name
1	Ceramic case	Steatite
2	Cement	SiO_2
3	Terminal	Copper wire Platted with tin
4	Weld point	/
5	Alloy ribbon	Ni & Cr

8. Performance Specification

Characteristic	Limits	Test Methods (GB/T5729&JIS-C-5201&IEC60115-1)
Temperature Coefficient	0.01Ω~0.1Ω Please contact uniohm ≥0.1Ω: ≦±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（-55℃or 125℃）
Short-time overload	Resistance change rate must be in ΔR/R≤±(2%+0.05Ω) , and no mechanical damage.	4.13 Permanent resistance change after the application of a potential of 2.5 times rcwv for 5 seconds.
Dielectric withstanding voltage	2000V	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.
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.
Resistance to soldering heat	Resistance change rate must be in ΔR/R≤±(1%+0.05Ω), and no 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.
Resistance to solvent	No deterioration of protective coating and markings	4.29 Speciments shall be immersed in a bath of sopropanol completely for 3 minutes with ultrasonic.
Solderability	95% coverage Min.	4.17 The area covered with a new, smooth, clean, shiny and continuous surface free from concentrated pinholes. Test temp. Of solder:245℃±3℃ Dwell time in solder: 2~3seconds.
Humidity (Steady state)	Resistance change rate must be in ΔR/R≤±(5%+0.05Ω), and no mechanical damage.	4.24 Temporary resistance change after a 240 hours exposure in a humidity test chamber controlled at 40℃± 2℃ and 90 to 95% relative humidity.
Load life in humidity	Resistance change rate must be in ΔR/R≤±(5%+0.05Ω), and no 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℃±2℃ and 90 to 95% relative humidity.

Load life	Resistance change rate must be in ΔR/R≤±(5%+0.05Ω), and no 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.
Low Temperature Storage	Resistance change rate must be in ΔR/R≤±(5%+0.05Ω), and no mechanical damage.	IEC 60068-2-1 (Aa) Lower limit temperature ，for 2H.
High Temperature Exposure	Resistance change rate must be in ΔR/R≤±(5%+0.05Ω), and no mechanical damage.	MIL-STD-202 108A Upper limit temperature ，for 16H.

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	Mar.20, 2018	Haiyan Chen	Nana Chen
2	Modify characteristic	4~5	Feb.26, 2019	Haiyan Chen	Yuhua Xu
3	Modify characteristic	5	Nov.20,2020	Song Nie	Yuhua Xu
4	Modify the temperature coefficient test conditions	4	Nov.07, 2022	Haiyan Chen	Yuhua Xu