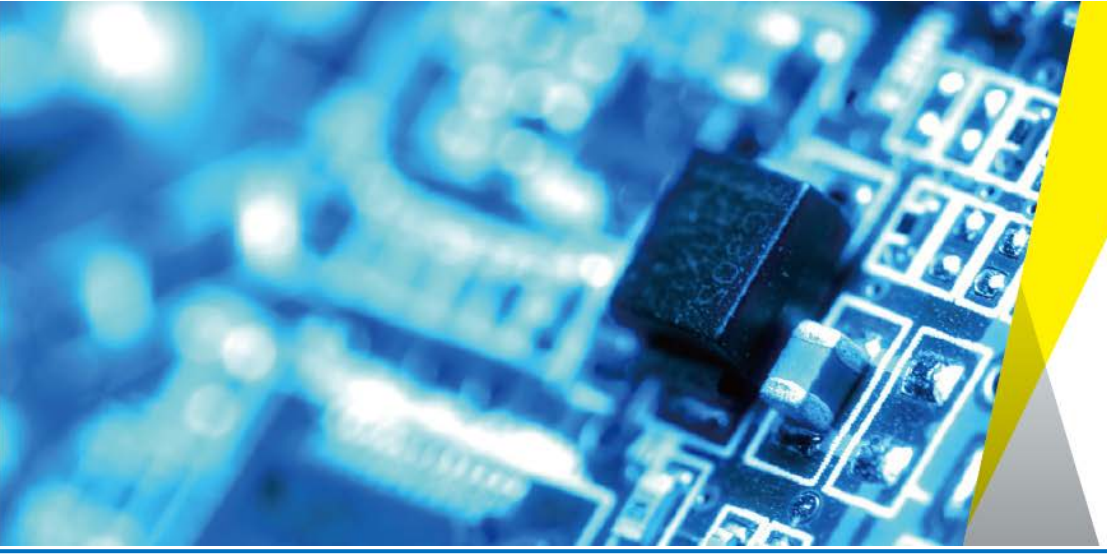

DATA SHEET

Product Name	**Cemented wire wound tubular fixed resistors**
Part Name	**GRM1 500W ±5% 22Ω**
Part No.	**GRM100J0220500**
File No.	**DIP-SP-093**

Uniroyal Electronics Global Co., Ltd.

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	Aeon Technology Corporation
	Royal Electronic Factory (Thailand) Co., Ltd.
	Royal Technology (Thailand) Co., Ltd.

1. Scope

1.1 This datasheet is the characteristics of Cemented wire wound tubular fixed resistors manufactured by UNI-ROYAL.

2. Part No. System

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

2.1 The 1st to 4rd digits are to indicate the product type.

Example: GRM1= GRM1

2.2 5th~6th digits:

2.2.1 For power rating of 100W and over, the 5th & the 6th digits will be indicated with “00”and the actual wattage being indicated at the last 3 digits (12th~14th) of the part No.

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%

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

2.4.1For the standard resistance values of E-24 series, the 8th digit is “0”,the 9th & 10th digit are to denote the significant figures of the resistance and the 11th digit is the numbers of zeros following.

Example:

0220=22Ω

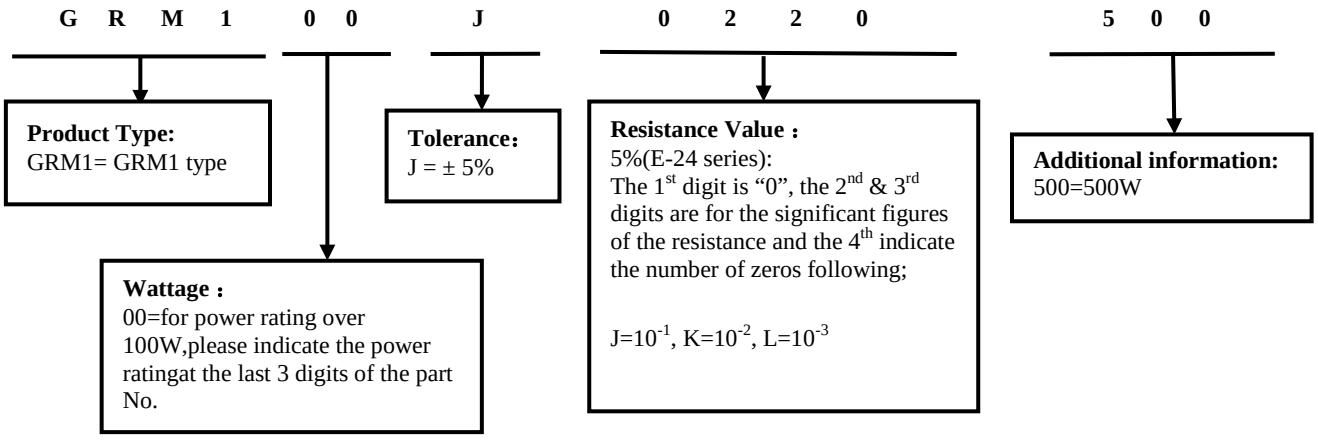
2.5 The 12th, 13th & 14th digits.

2.5.1 for power rating over 100 watt, please indicate the power rating at the last 3 digits of the part no.

Example: 500=500W

3. Ordering Procedure

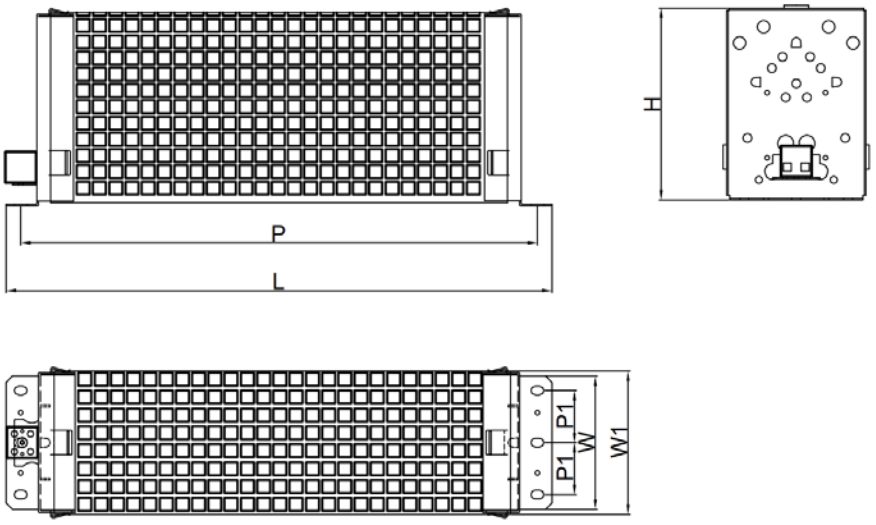
(Example: GRM1 500W 5% 22Ω B/B)



4. Rating

Type	Power (25℃)	Tolerance	Resistance	Max Working Voltage	Operating Temperature
GRM1	500W	±5%	22 Ω	104V	-55~+275℃

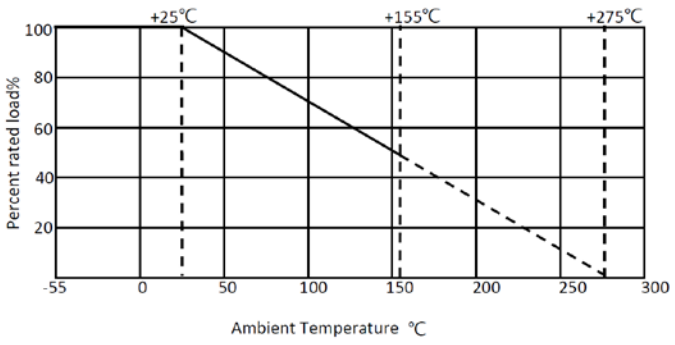
5. Dimension



Unit : mm

Type	L±2	P±2	W±1	W1±1	H±1	P1±1
GRM1	341	323	82	88	118	32

6. Derating Curve



7. Performance Specification

Characteristic	Limits	Test method (GB/T 5729&JIS-C-5201&IEC60115-1)
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/℃) R_1: Resistance value at room temperature R_2: Resistance value at room temperature +100℃ t_1: Room temperature t_2: Room temperature +100℃
Short-time overload	Resistance change rate is: ±(5%+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 or Max. Overload Voltage whichever less for 5 seconds.
Rapid change of temperature	ΔR/R ≤ ±(5%+0.05 Ω） with no evidence of mechanical damage	4.19 30 min at -55 °C and 30 min at 155℃; 100 cycles.
Load life	ΔR/R ≤ ±(5%+0.05 Ω） with no evidence of mechanical damage	4.25.1 Permanent resistance change after 1,000 hours operating at RCWV with duty cycle 1.5 hours “ON”, 0.5 hour “OFF” at 25℃±2℃ ambient.

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 Cl_2, H_2S, NH_3, SO_2, NO_2, etc.

9. Record

Version	Description	Page	Date	Amended by	Checked by
1	First version	1~4	Jul.11, 2023	Haiyan Chen	Yuhua Xu
2	Modify the dimension	3	Apr.02, 2024	Haiyan Chen	Yuhua Xu