

DATASHEET

Product Name **High Voltage Non Inductive Resistance**

Part Name **MGRN Series**

File No. **DIP-SP-087**

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1. Scope

- 1.1 This datasheet is the characteristics of High Voltage Non Inductive Resistance manufactured by UNI-ROYAL.
- 1.2 Compliant with RoHS directive.
- 1.3 Halogen free requirement.

2. Part No. System

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

2.1 1st~3th codes: Product type. E.g.: MGR=Metal Glaze Film Fixed Resistors

2.2 The 4th digit is to denote the Special Features: N= Non-Inductive and High Voltage

2.3 5th~6th digits:

2.3.1 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:

Wattage	8	AW
Normal Size	8W	10W

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= $\pm 5\%$

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;

2.4.3 The following number s and the letter codes are to be used to indicate the number of zeros in the 11th digit:

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

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

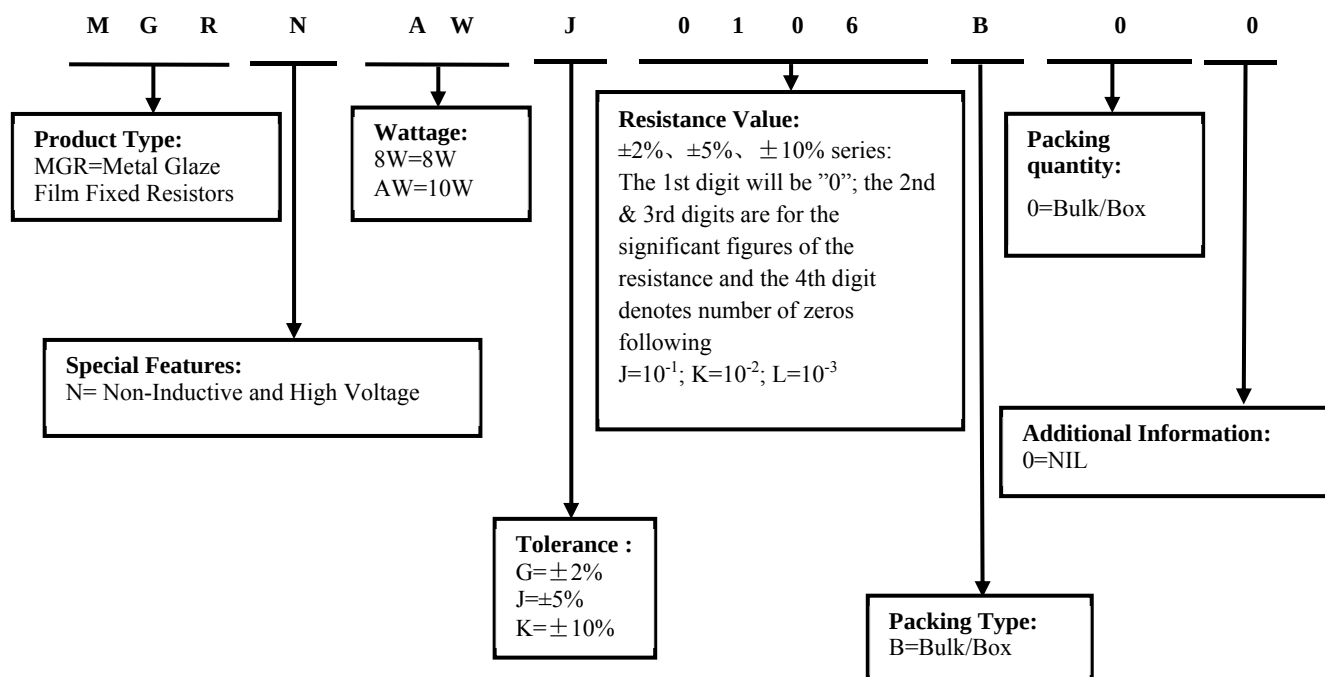
2.5.1 The 12th digit is to denote the Packaging Type with the following codes: B=Bulk/Box

2.5.2 The 13th digit is normally to indicate the Packing Quantity of Tape/Reel packaging types. The following letter code is to be used for some packing quantities: 0=Bulk/Box

2.5.3 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: MGRN 10W $\pm 5\%$ 10M Ω)



4. Dimension (Unit: mm)



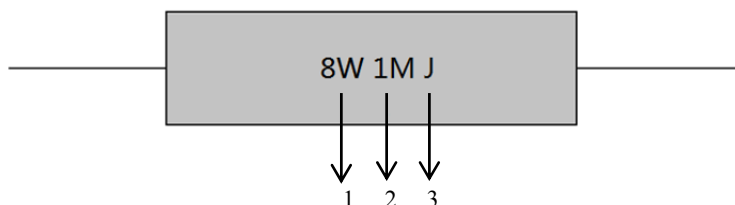
Type	$L \pm 1$	$D \pm 1$	$H \pm 2$	$\Phi d \pm 0.05$
MGRN 8W	51	8	35	1.0
MGRN 10W	115	8	35	1.0

5. Ratings

Type	Power Rating	Tolerance	Max. Working Voltage	Max. Overload Voltage	Resistance Range	Color of primer
MGRN	8W	$\pm 2\%$ 、 $\pm 5\%$ 、 $\pm 10\%$	20kV	20kV	1M Ω ~ 500M Ω	Sky Blue
MGRN	10W	$\pm 2\%$ 、 $\pm 5\%$ 、 $\pm 10\%$	35kV	50kV	1M Ω ~ 500M Ω	Sky Blue

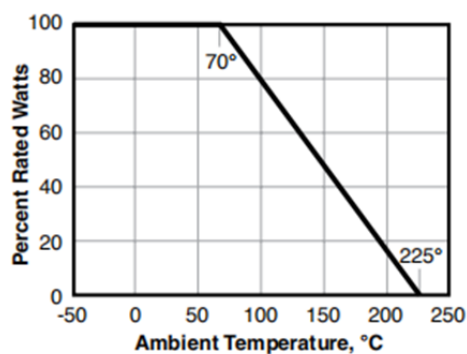
6. Marking

Example:



1. Wattage Rating
2. Resistance Value
3. Resistance Tolerance. J: $\pm 5\%$

7. Derating Curve



8. Performance Specification

Characteristic	Limits	Test Method (GB/T5729&JIS-C-5201&IEC60115-1)
Temperature Coefficient	$\pm 200 \text{ PPM}/^{\circ}\text{C}$	Natural resistance changes per temp. Degree centigrade $\frac{R_2 - R_1}{R_1(t_2 - t_1)} \times 10^6 \text{ (PPM}/^{\circ}\text{C})$ R_1 : Resistance Value at room temperature (t_1) ; R_2 : Resistance at room temperature +100 $^{\circ}\text{C}$ (t_2) t_1 : +100 $^{\circ}\text{C}$ room temperature Test temperature: Room temperature (t_1) ; Room temperature +100 $^{\circ}\text{C}$ (t_2)
Short-time overload	$\Delta R/R: \pm(3\%+0.05\Omega)$	4.13 Permanent resistance change after the application of a potential of 1.5 times RCWV or Max. Overload Voltage whichever less for 5seconds.
Insulation resistance	$\geq 1,0000 \text{ M}\Omega$	Test voltage : 500 $\pm$ 50VDC ; test the resistance value after 1 minute.
Dielectric withstanding voltage	No visible mechanical damage	Apply 1000V for 60~70S
Rapid change of temperature	$\Delta R/R: \pm(3\%+0.05\Omega)$	4.19 30 min at -55 $^{\circ}\text{C}$ and 30 min at 155 $^{\circ}\text{C}$,100 cycles
Solderability	Coverage must be over 95%.	The area covered with a new, smooth, clean, shiny and continuous surface free from concentrated pinholes. Test temp. Of solder: 245 $^{\circ}\text{C} \pm 3^{\circ}\text{C}$ Dwell time in solder: 2~3seconds.
Humidity (Steady state)	$\Delta R/R: \pm(3\%+0.05\Omega)$	4.24 Temporary resistance change after 240 hours exposure in a humidity test chamber controlled at 40 $\pm$ 2 $^{\circ}\text{C}$ and 90~95%RH relative humidity
Load Life	$\Delta R/R: \pm(3\%+0.05\Omega)$	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 70 $\pm$ 2 $^{\circ}\text{C}$ ambient.

9. Note

- 9.1. UNI-ROYAL recommend products store in warehouse with temperature between 15 to 35 $^{\circ}\text{C}$ 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	1~4	Aug.08,2023	Haiyan Chen	Yuhua Xu