

DATASHEET

Product Name **High Surge Radial Type Cement Fixed Resistors**

Part Name **PRMS Series**

File No. **DIP-SP-088**

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1. Scope

- 1.1 This datasheet is the characteristics of Radial Type Cement Fixed Resistors manufactured by UNI-ROYAL.
- 1.2 Self-extinguishing
- 1.3 Extremely small & sturdy mechanically safe
- 1.4 Excellent flame & moisture resistance
- 1.5 Compliant with RoHS directive.
- 1.6 Halogen free requirement.

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: PRMS=PRMS type

- 2.2 5th~6th digits:

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

Example: 5W=5W; 7W=7W; AW=10W; FW=15W

- 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= $\pm 5\%$

- 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=10 Ω

- 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

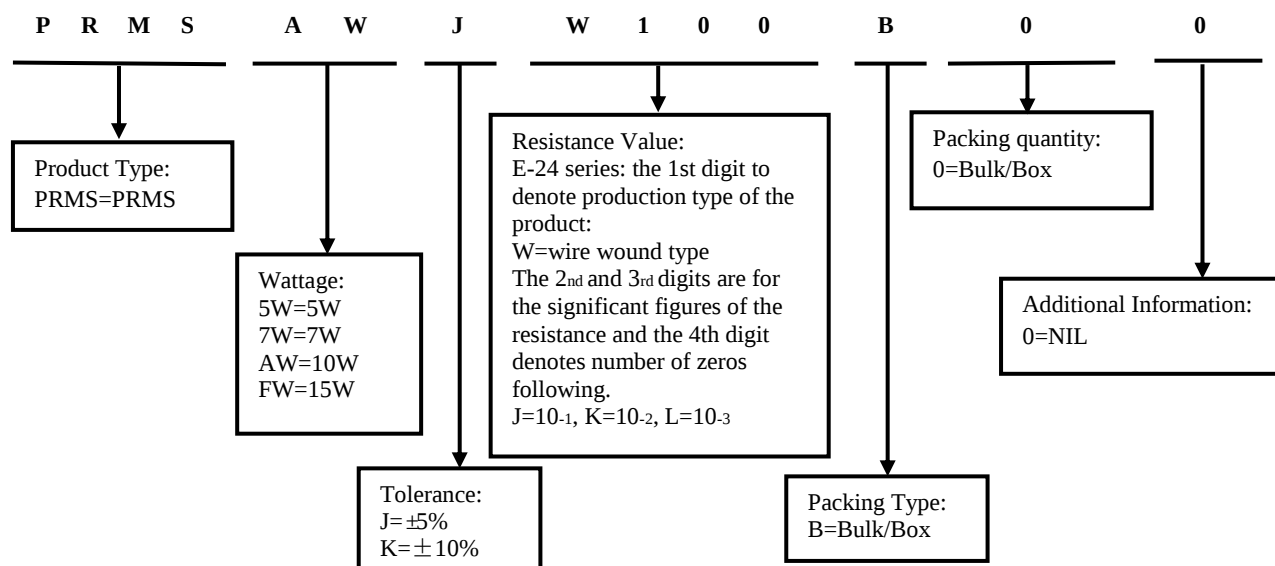
- 2.5.2 The 13th digit is normally to indicate the Packing Quantity, This digit should be filled with "0"for the Cement products with "Bulk/Box" packing requirements.

- 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

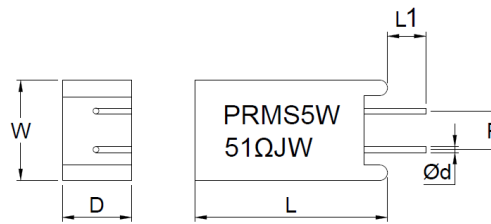
Example: 0= standard product

3. Ordering Procedure

(Example: PRMS 10W $\pm 5\%$ 10 Ω B/B)

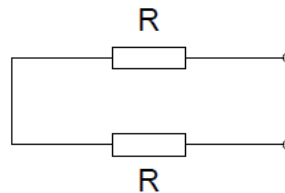


4. Dimension (unit: mm)



Type	W±1	D±1	L±1	L1±1	P±1	Φ d±0.05
PRMS 5W	13.5	9	25	5	5	0.75
PRMS 7W	15	9	38	10	7.5	0.75
PRMS 10W	16	12	38	10	7.5	0.75
PRMS 15W	21	11	37.5	5	9.5	1.0

5. Circuit Diagram



6. Ratings

Type	Power Rating	Tolerance	Max. Working Voltage	Max. Overload Voltage	Resistance Range
PRMS	5W	±5%、±10%	350V	700V	1.5Ω~2KΩ
PRMS	7W	±5%、±10%	500V	1000V	1.8Ω~2KΩ
PRMS	10W	±5%、±10%	700V	1400V	2.7Ω~4KΩ
PRMS	15W	±5%、±10%	700V	1400V	2.0Ω~2KΩ

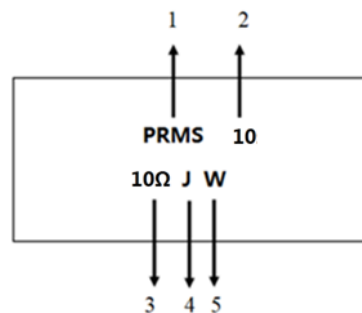
7. Marking

Example:

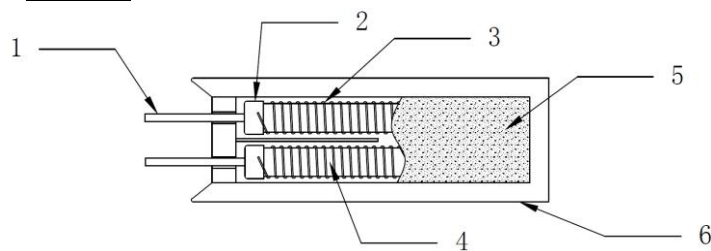
Code description and regulation:

1. Product type
2. Wattage Rating. 20=20W
3. Nominal Resistance Value.
4. Resistance Tolerance. J: ± 5%
5. Pattern: W: Wire-wound
Color of marking: Black Ink

(Note : The marking code shall be prevailed in kind!)

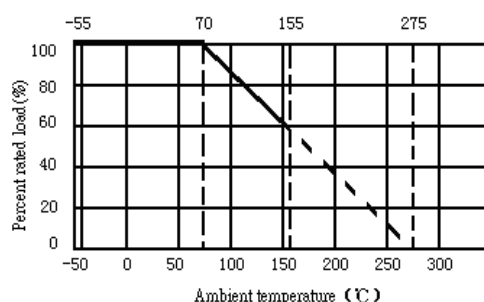


8. Structure



No.	Name
1	Lead Wire
2	End Cap
3	Alloy wire
4	Ceramics Rod
5	Cement paste
6	Ceramic Case

9. 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:

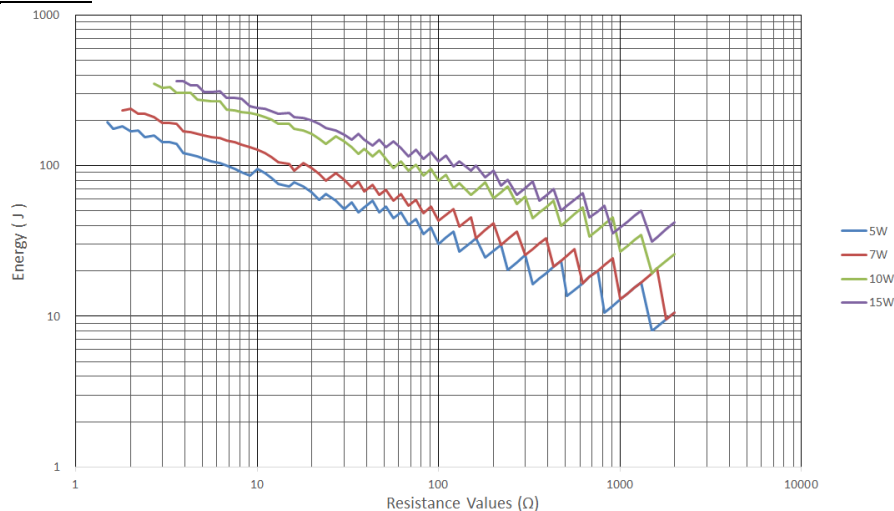
$$RCWV = \sqrt{P \times R}$$

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)

10. Curve of Pulse Duration



11. Performance Specification

Characteristic	Limits	Test Methods (GB/T5729&JIS-C-5201&IEC60115-1)
Temperature Coefficient	$<20\Omega : \pm 400\text{PPM}/^{\circ}\text{C}$ $\geq 20\Omega : \pm 350\text{PPM}/^{\circ}\text{C}$	4.8 Natural resistance changes per temp. Degree centigrade $\frac{R_2 - R_1}{R_1(t_2 - t_1)} \times 10^6 (\text{PPM}/^{\circ}\text{C})$ $\frac{R_1(t_2 - t_1)}{R_1(t_2 - t_1)} :$ 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 : Room temperature +100°C
Short-time overload	Resistance change rate must be in: $\pm(5\%+0.05\Omega)$, and no mechanical damage.	4.13 Permanent resistance change after the application of a potential of 2.5 times RCWV or Max.Overload Votage whichever less for 5 seconds.
Dielectric withstanding voltage	No evidence of flashover mechanical damage, arcing or insulation break down.	4.7 Apply 1000VAC for 60 seconds.
Resistance to soldering heat	Resistance change rate must be in $\pm(1\%+0.05\Omega)$, and no mechanical damage.	4.18 Permanent resistance change when leads immersed to a point 2.0-2.5mm from the body in 260°C $\pm 5^{\circ}\text{C}$ solder for 10 ± 1 seconds.
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°C $\pm 3^{\circ}\text{C}$ Dwell time in solder: 2~3seconds.
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.
Load life in humidity	$\Delta R/R \leq \pm(5\%+0.05\Omega)$	7.9 Resistance change after 1,000 hours (1.5 hours “ON”, 0.5 hour “OFF”) at RCWV or Max. Working Voltage whichever less in a humidity test chamber controlled at 40°C $\pm 2^{\circ}\text{C}$ and 93% $\pm 3\%$ relative humidity.
Load life	$\Delta R/R \leq \pm(5\%+0.05\Omega)$	4.25.1 Permanent resistance change after 1,000 hours operating at RCWV or Max. Working Voltage whichever less with duty cycle of 1.5 hours “ON”, 0.5 hour “OFF” at 70°C $\pm 2^{\circ}\text{C}$ ambient.

12. Note

- 9.1. UNI-ROYAL recommend products store in warehouse with temperature between 15 to 35°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:
- Stored in high electrostatic environment
 - Stored in direct sunshine, rain, snow or condensation.
 - Exposed to sea wind or corrosive gases, such as Cl₂, H₂S, NH₃, SO₂, NO₂, Br, etc.

13. Record

Version	Description	Page	Date	Amended by	Checked by
1	First version	1~5	Aug.08, 2023	Haiyan Chen	Yuhua Xu
2	1.Modify the dimension and resistance range 2.Modify the curve of pulse duration	4	May.25, 2024	Haiyan Chen	Yuhua Xu
3	Add the 15W size	3	Oct.25, 2025	Haiyan Chen	Yuhua Xu

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