



**UNI-ROYAL**  
厚聲集團

# DATA SHEET

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

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**Part Name** PRMS Series

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

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Royal Technology (Thailand) Co., Ltd.

## 1. Scope

- 1.1 This data sheet 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

## 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 3 digits, the 4<sup>th</sup> digit will be “0”

Example: PRMS=PRMS type

2.2 5<sup>th</sup>~6<sup>th</sup> digits:

2.2.1 The 5<sup>th</sup> and 6<sup>th</sup> digit will be a number or a letter code.

Example: 20=20W

2.3 The 7<sup>th</sup> digit is to denote the Resistance Tolerance. The following letter code is to be used for indicating the standard Resistance Tolerance.

Example: J=±5%

2.4 The 8<sup>th</sup> to 11<sup>th</sup> digits is to denote the Resistance Value.

2.4.1 For Cement Fixed Resistors the 8<sup>th</sup> 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 9<sup>th</sup> & 10<sup>th</sup> digits are to denote the significant figures of the resistance and the 11<sup>th</sup> digit is the number of zeros following

Example: W100=10Ω

2.5 The 12<sup>th</sup>, 13<sup>th</sup> & 14<sup>th</sup> digits.

2.5.1 The 12<sup>th</sup> digit is to denote the Packaging Type with the following codes:

B=Bulk/Box

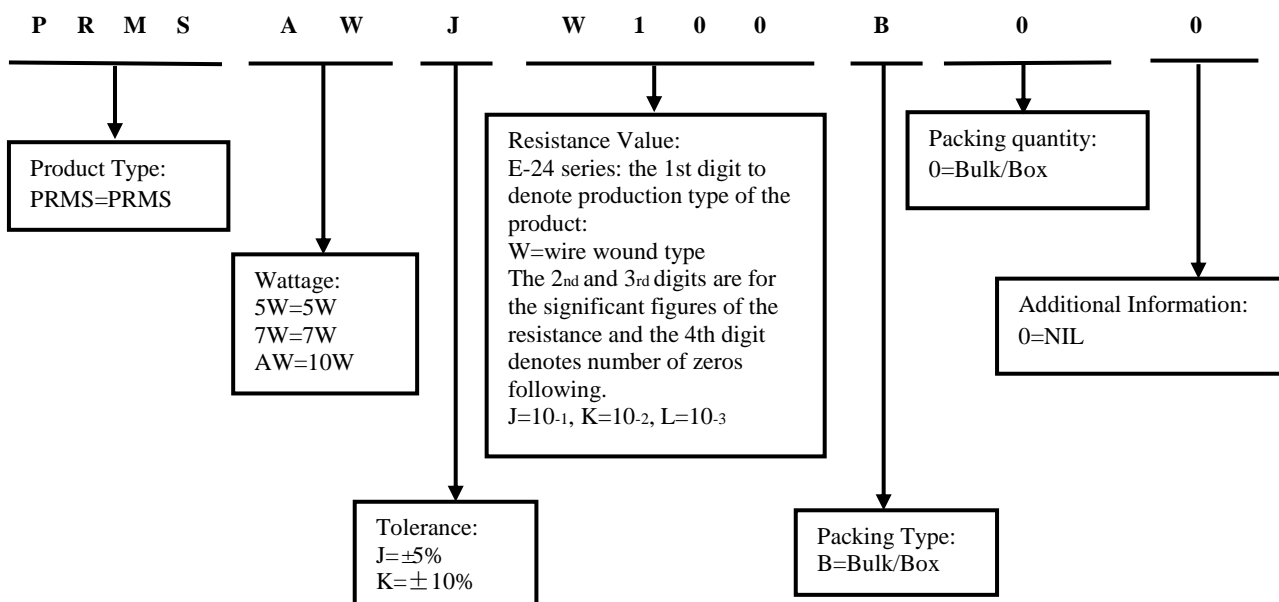
2.5.2 The 13<sup>th</sup> digit is normally to indicate the Packing Quantity, This digit should be filled with “0” for the Cement products with “Bulk/Box” packing requirements.

2.5.3 For some items, the 14<sup>th</sup> digit alone can use to denote special features of additional information with the following codes or standard product

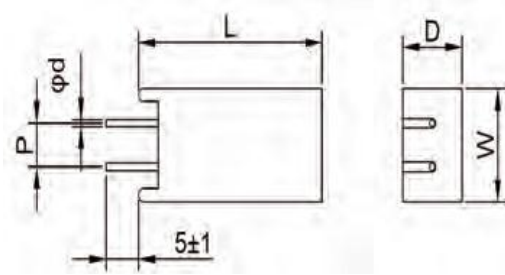
Example: 0= standard product

## 3. Ordering Procedure

(Example: PRMS 10W ±5% 10Ω B/B)

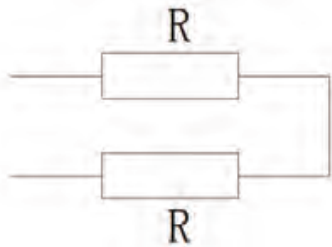


4. Dimension (unit: mm)



Type	W±1	D±1	L±1	P±1	Φd±0.05
PRMS 5W	13	9	25	5	0.75
PRMS 7W	13	9	38	5	0.75
PRMS 10W	16	12	35	7.5	0.75

5. Circuit Diagram



6. Ratings

Type	Power Rating	Tolerance	Max. Working Voltage	Max. Overload Voltage	Resistance Range
PRMS	5W	±5%、±10%	350V	700V	0.1Ω~2K Ω
PRMS	7W	±5%、±10%	500V	1000V	0.1Ω~2K Ω
PRMS	10W	±5%、±10%	700V	1400V	0.1Ω~4K Ω

7. Marking

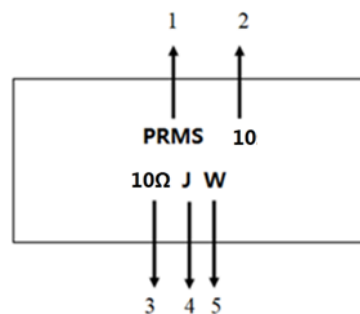
Example:

Code description and regulation:

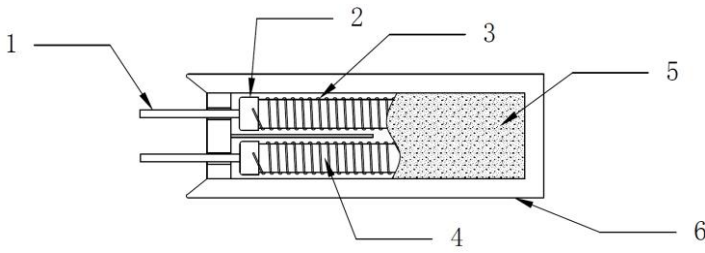
1. Product type
2. Wattage Rating. 20=20W
3. Nominal Resistance Value.
4. Resistance Tolerance. J: ± 5%
5. Pattern: W: Wire-wound

Color of marking: Black Ink

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

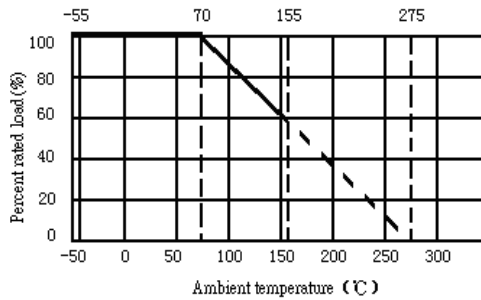


**8. Structure**



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:

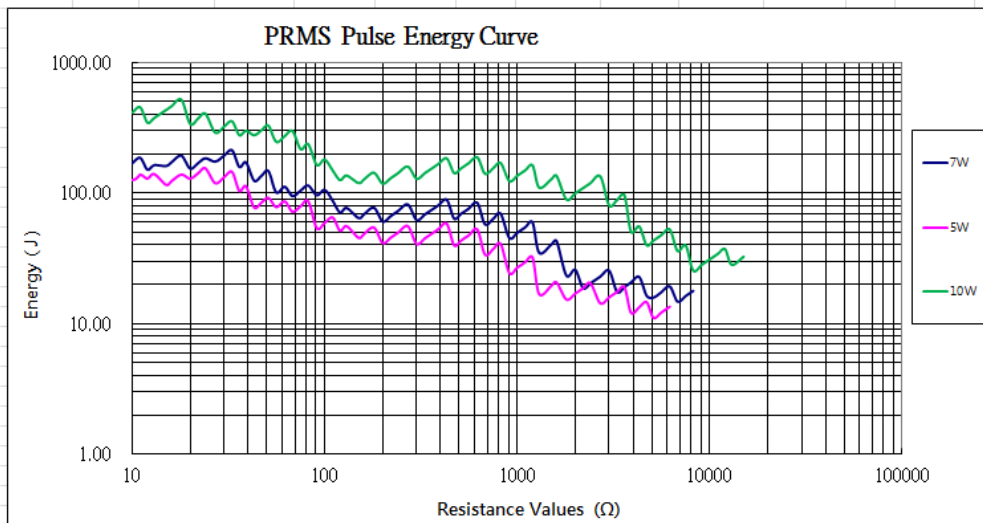
$$RCWV = \sqrt{P \times R}$$

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	$\leq 20\Omega : \pm 400\text{PPM}/^\circ\text{C}$ $\geq 20\Omega : \pm 350\text{PPM}/^\circ\text{C}$	4.8 Natural resistance changes per temp. Degree centigrade $\frac{R_2 - R_1}{R_1(t_2 - t_1)} \times 10^6 \text{ (PPM}/^\circ\text{C)}$ R <sub>1</sub> : Resistance Value at room temperature (t <sub>1</sub> ) ; R <sub>2</sub> : Resistance at test temperature (t <sub>2</sub> ) t <sub>1</sub> : +25 °C or specified room temperature t <sub>2</sub> : 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 Voltage 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±5°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 ±3°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 ±2°C and 93% ±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 25°C ±2°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:
  - 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<sub>2</sub>, H<sub>2</sub>S, NH<sub>3</sub>, SO<sub>2</sub>, NO<sub>2</sub>, Br, etc.

## 13. Record

Version	Description	Page	Date	Amended by	Checked by
1	First version	1~5	Aug.08, 2023	Haiyan Chen	Yuhua Xu