

# DATASHEET

**Product Name**   **Cement Heating Fixed Resistors**

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**Part Name**   **PRWS 3W Series**

**File No.**   **DIP-SP-065**

## **Uniroyal Electronics Global Co., Ltd.**

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## 1. Scope:

- 1.1 This datasheet is the characteristics of Cement Heating Fixed Resistors manufactured by UNI-ROYAL.
- 1.2 Double resistor design, high calorific value, high power, strong pressure resistance
- 1.3 For electrical mosquito repeller
- 1.4 For fragrance diffuser
- 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 Arc porcelain shell Fixed resistor, these 4 digits are to indicate the product type .

Example: PRWS=PRWS- type

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

- 2.2.1 For power of 1 watt to 16 watt ,the 5<sup>th</sup> digit will be a number or a letter code and the 6<sup>th</sup> digit will be the letters of W.

Example: 3W=3W;

- 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% ; K=±10%

- 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”or “P”to denote Wire-wound type or Power Film type respectively of the Cement Fixed Resistor product. 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: P722=7.2KΩ

0=10<sup>0</sup> 1=10<sup>1</sup> 2=10<sup>2</sup> 3=10<sup>3</sup> 4=10<sup>4</sup> 5=10<sup>5</sup> 6=10<sup>6</sup> J=10<sup>-1</sup> K=10<sup>-2</sup> L=10<sup>-3</sup> M=10<sup>-4</sup>

- 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

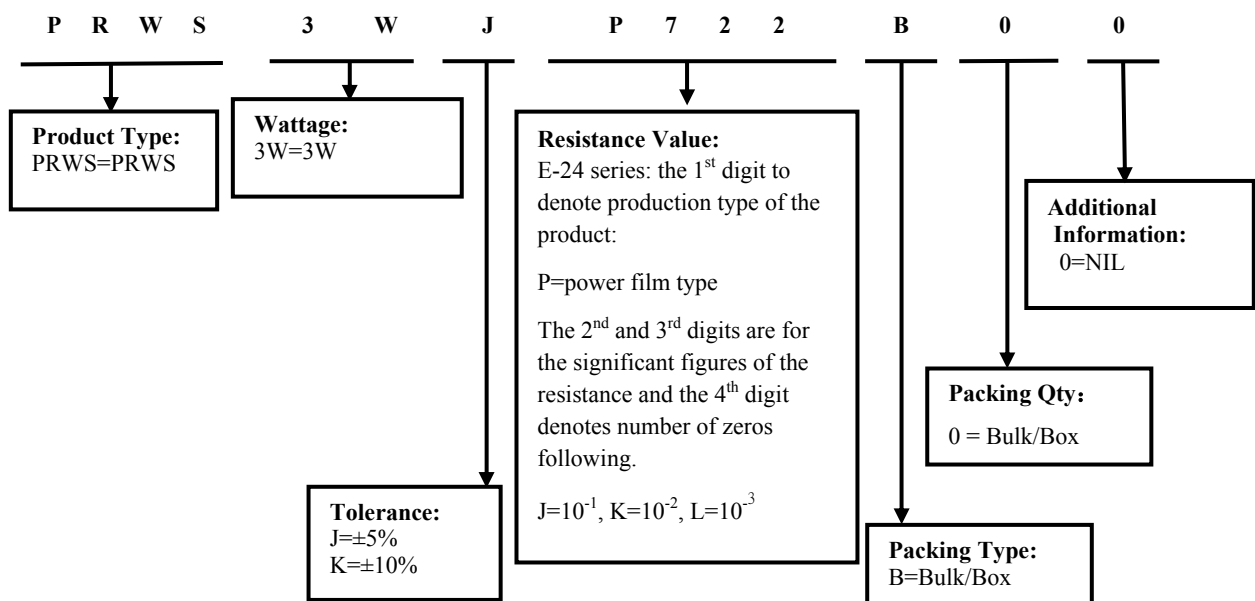
- 2.5.2 The 13<sup>th</sup> digit is normally to indicate the Packing Quantity, This digit should be filled with “0”for theCemen products with “Bulk/Box” packing requirements.

- 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

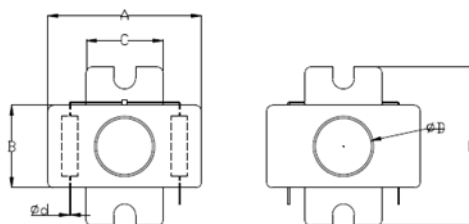
Example: 0= standard product

## 3. Ordering Procedure

(Example: PRWS 3W ±5% 7.2KΩ B/B )



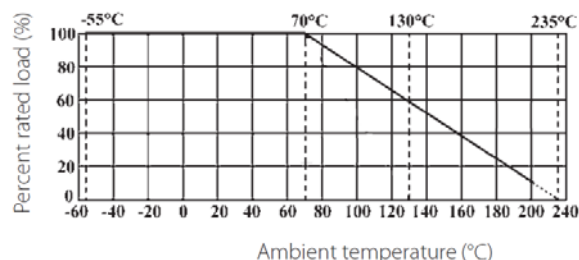
## 4. Dimension (Unit: mm)



Type	A±0.2	B±0.2	C±0.2	φ D±0.5	E±0.5	Ød±0.05	Tolerance	Resistance Range
PRWS 3W	28.5	17	13.7	10	33	0.75	±5% & ±10%	6K8~14K

## 5. Derating Curve

Resistors shall have a power rating based on continuous load operation at an ambient temperature from -55°C to 70°C. For temperature in excess of 70°C, the load shall be derate as shown in figure 1



### 5.1 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)

## 6. Performance Specification

Characteristic	Limits	Test Method (GB/T5729&JIS-C-5201&IEC60115)
Temperature Coefficient	±350PPM/°C	4.8 Natural resistance changes per temp. Degree centigrade $\frac{R_2 - R_1}{R_1(t_2 - t_1)} \times 10^6 \text{ (PPM/°C)}$ 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> : Test temperature (-55°C or 125°C)
Short-time overload	ΔR/R: ±(5%+0.05Ω) 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 Resistors shall be clamped in the trough of a 90°metallic V-block and shall be tested at AC potential respectively specified in the above list for 60-70 seconds. for cement fixed resistors the testing voltage is 1000V.

Solderability	95% coverage Min.	4.17 The area covered with a new, smooth, clean, shiny and continuous surface free from concentrated pinholes. Temperature of solder: $245 \pm 3^{\circ}\text{C}$ ; Dwell time in solder: 2~3 seconds.
Rapid change of temperature	$\Delta R/R: \pm(2.0\% + 0.05 \Omega)$ and no mechanical damage.	4.19 30 min at $-55^{\circ}\text{C}$ and 30 min at $155^{\circ}\text{C}$ ; 100 cycles.
Load life in humidity	$\Delta R/R: \pm(5.0\% \pm 0.05 \Omega)$ and no mechanical damage.	4.24 Resistance change after 1000 hours (1.5 hours “ON” , 0.5 hours “OFF” ) at RCWV or Max.Working Voltage whichever less in a humidity test chamber controlled at $40 \pm 2^{\circ}\text{C}$ and $93\% \pm 3\% \text{RH}$ .
Load life	$\Delta R/R: \pm(5.0\% \pm 0.05 \Omega)$ and no mechanical damage.	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.

## 7. Note

- 7.1 UN-ROYAL recommend the storage condition temperature:  $15^{\circ}\text{C} \sim 35^{\circ}\text{C}$ , humidity :25%~75%.  
(Put condition for individual product)  
Even under UNI-ROYAL recommended storage condition, solderability of products over 1 year old. (Put condition for each product) many be degraded.
- 7.2 Store / transport cartons in the correct direction, which is indicated on a carton as a symbol.  
Otherwise bent leads may occur due to excessive stress applied when dropping of a carton.
- 7.3 Product performance and soldered connections may deteriorate if the products are stored in the following places:
- Storage in high Electrostatic
  - Storage in direct sunshine 、rain and snow or condensation
  - Where the products are exposed to sea winds or corrosive gases, including  $\text{Cl}_2$ ,  $\text{H}_2\text{S}$ ,  $\text{NH}_3$ ,  $\text{SO}_2$ ,  $\text{NO}_2$ .

## 8. Record

Version	Description of amendment	Page	Date	Amended by	Checked by
1	First issue of this specification	1~4	Jul.06, 2023	Fucong Liu	Haiyan Chen