

# DATASHEET

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<b>Product Name</b>	<b>Radial Terminal Type</b>
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<b>Part Name</b>	<b>PRVB Series</b>
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<b>File No.</b>	<b>DIP-SP-041</b>
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Kunshan Foss Electronic material Co., Ltd.  
Royal Electronic Factory (thailand) co., ltd

## 1. Scope:

- 1.1 This datasheet is the characteristics of Radial Terminal Type-PRVB Series Resistors manufactured by UNI-ROYAL.
- 1.2 Self-Extinguishing.
- 1.3 Extremely small & sturdy mechanically safe.
- 1.4 Excellent flame & moisture resistance
- 1.5 Too low or too high values on Wire-wound & Power-film type can be supplied on a case to case basis.
- 1.6 Compliant with RoHS directive.
- 1.7 Halogen free requirement.

## 2. Part No. System

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

### 2.1 1<sup>th</sup>~4<sup>th</sup> digits

This is to indicate the Chip Resistor. Example: PRVB= Radial Terminal Type-PRVB Series Resistors

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

1W~16W ( $\geq 1W$ )

Wattage	3	5	7	10	15
Normal Size	3W	5W	7W	AW	FW

### 2.2.1 For power rating 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: 5W=5W

### 2.2.2 For power rating between 20 watt to 99 watt, the 5<sup>th</sup> and the 6<sup>th</sup> digit will show the whole numbers of the power rating itself

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.

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> to 11<sup>th</sup> please refer to point a) of item 4.

Example:

W12J=1.2Ω W12I=120Ω P503=50KΩ

### 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

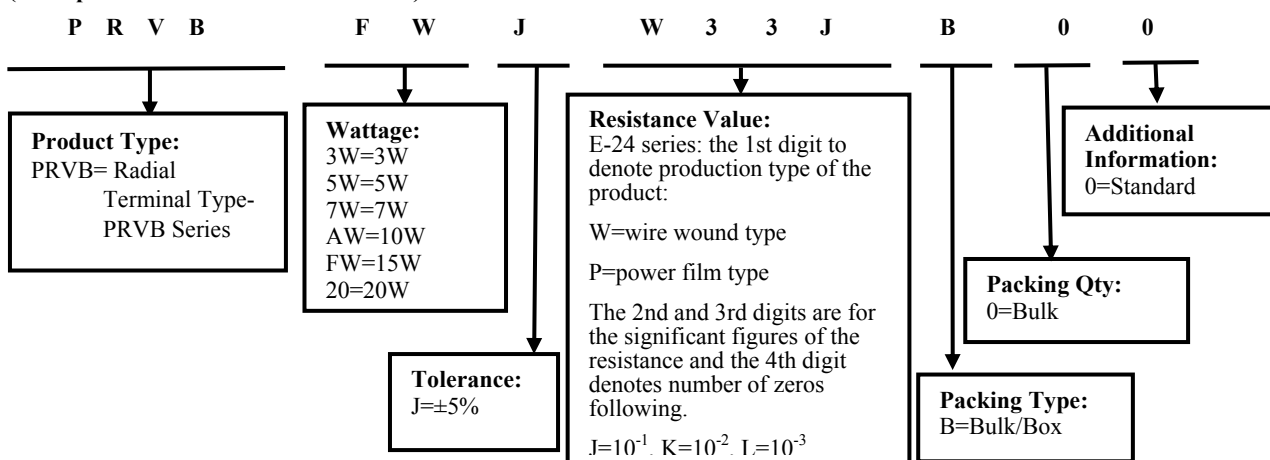
#### 2.5.2 The 13<sup>th</sup> digit is normally to indicate the Packing Quantity, This digit should be filled with “0” for the Cement products with “Bulk/Box” packing requirements.

#### 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

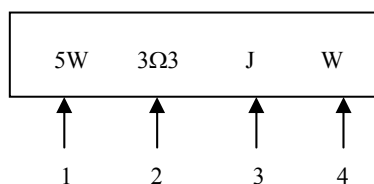
Example: 0= standard product

## 3. Ordering Procedure

(Example: PRVB 15W ±5% 3.3Ω B/B)



## 4. Marking



Code description and regulation:

1. Wattage Rating
2. Nominal Resistance Value
3. Resistance Tolerance. J:  $\pm 5\%$  ; K:  $\pm 10\%$
4. Pattern:

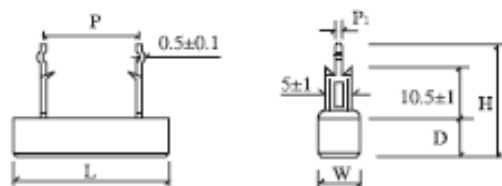
M: Power film

W: Wire wound

Color of marking: Black Ink

Note: The marking code shall be prevailed in kind!

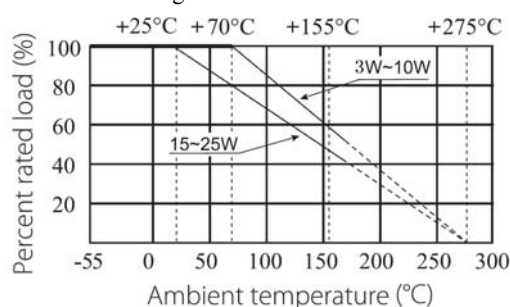
## 5. Dimension



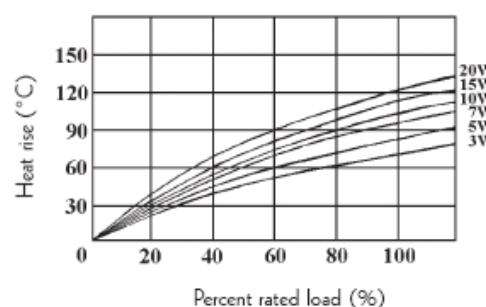
Type	Dimension(mm)						Resistance Range	
	W±1	D±1	L±1	P±1	P1±0.2	H±1	Wire Wound	Power Film
PRVB 3W	10	9	22	9.5	1.3	25	0.1Ω-47Ω	48Ω-150KΩ
PRVB 5W	10	9	27/25	15/9.5	1.3	25	0.1Ω-120Ω	121Ω-200KΩ
PRVB 7W	10	9	35	22	1.3	25	0.1Ω-560Ω	561Ω-200KΩ
PRVB 10W	10	9	48	35/32	1.3	25	1Ω-820Ω	821Ω-200KΩ
PRVB 15W	12.5	11.5	48	32	1.5	27.5	1Ω-1KΩ	1.1KΩ-200KΩ
PRVB 20W	12.5	13.5	63	42	1.5	29.5	1Ω-1.2KΩ	1.3KΩ-200KΩ

## 6. Derating Curve

Derating curve:



Heat rise chart:



### 6.1 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)

## 7. Performance Specification

Characteristic	Limits	Test Methods (GB/T5729&JIS-C-5201&IEC60115-1)
Temperature Coefficient	$\geq 20\Omega$ : $\pm 350\text{PPM}/^{\circ}\text{C}$ max.. $< 20\Omega$ : $\pm 400\text{PPM}/^{\circ}\text{C}$ max..	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> : Test temperature (-55°C or 125°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 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.
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°C solder for 10 $\pm$ 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°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.
Humidity (Steady state)	Resistance change rate must be in $\pm(5\%+0.05\Omega)$ , and no mechanical damage.	4.24 Temporary resistance change after 240 hours exposure in a humidity test chamber controlled at 40 $\pm$ 2°C and 90~95%RH relative humidity
Load life in humidity	For Wire-wound: $\Delta R/R$ : $\pm 5\%$ For Power film range: $< 100\text{K}\Omega$ $\Delta R/R$ : $\pm 5\%$ $\geq 100\text{K}\Omega$ $\Delta R/R$ : $\pm 10\%$	7.9 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°C and 93% $\pm$ 3% RH.
Load life	For Wire-wound: $\Delta R/R$ : $\pm 5\%$ For Power film range: $< 100\text{K}\Omega$ $\Delta R/R$ : $\pm 5\%$ $\geq 100\text{K}\Omega$ $\Delta R/R$ : $\pm 10\%$	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 25 $\pm$ 2°C or 70 $\pm$ 2°C ambient.
Low Temperature Storage	For Wire-wound: $\Delta R/R$ : $\pm 5\%$ For Power film range: $< 100\text{K}\Omega$ $\Delta R/R$ : $\pm 5\%$ $\geq 100\text{K}\Omega$ $\Delta R/R$ : $\pm 10\%$	IEC 60068-2-1 (Aa) Lower limit temperature , for 2H.
High Temperature Exposure	For Wire-wound: $\Delta R/R$ : $\pm 5\%$ For Power film range: $< 100\text{K}\Omega$ $\Delta R/R$ : $\pm 5\%$ $\geq 100\text{K}\Omega$ $\Delta R/R$ : $\pm 10\%$	MIL-STD-202 108A Upper limit temperature , for 16H.

**8. Note**

- 8.1. 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.
- 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:
- Stored in high electrostatic environment
  - Stored in direct sunshine, rain, snow or condensation.
  - 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.

**9. Record**

Version	Description	Page	Date	Amended by	Checked by
1	First version	1~5	Mar.20, 2018	Haiyan Chen	Nana Chen
2	Modify characteristic	4~5	Feb.26, 2019	Haiyan Chen	Yuhua Xu
3	Modify characteristic	4	Nov.20,2020	Song Nie	Yuhua Xu
4	Modify the temperature coefficient test conditions	4	Nov.07, 2022	Haiyan Chen	Yuhua Xu
5	1.Modify derating curve 2.Modify the load life test conditions	3 5	Sep.27, 2024	Haiyan Chen	Yuhua Xu

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