

# DATA SHEET

**Product Name** Radial Terminal Type-PRVA Series Resistors

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**Part Name** PRVA Series

## Uniroyal Electronics Global Co., Ltd.

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Uniroyal Electronics Global Co.,Ltd Shenzhen Branch  
Aeon Technology Corporation  
Uniroyal Electronics Global Co.,Ltd Xiamen Branch  
Kunshan Foss Electronic material Co., Ltd.

Brands *RoyalOhm* *UniOhm*



### 1. Scope

- 1.1 This specification for approve relates to the Radial Terminal Type-PRVA 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.

### 2. Part No. System

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

#### 2.1 1th ~4th digits

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

#### 2.2 5th~6th digits:

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

Wattage	1	2	3	5	7	8	9	10	15
Normal Size	1W	2W	3W	5W	7W	8W	9W	AW	FW

2.2.1 For power rating of 1 watt to 16watt, 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 7th digit is to denote the Resistance Tolerance. The following letter code is to be used for indicating the standard Resistance Tolerance.

F=±1% G=±2% J=±5% K=±10%

2.4 The 8th to 11th 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 12th, 13th & 14th digits.

2.5.1 The 12th digit is to denote the Packaging Type with the following codes:

B=Bulk/Box

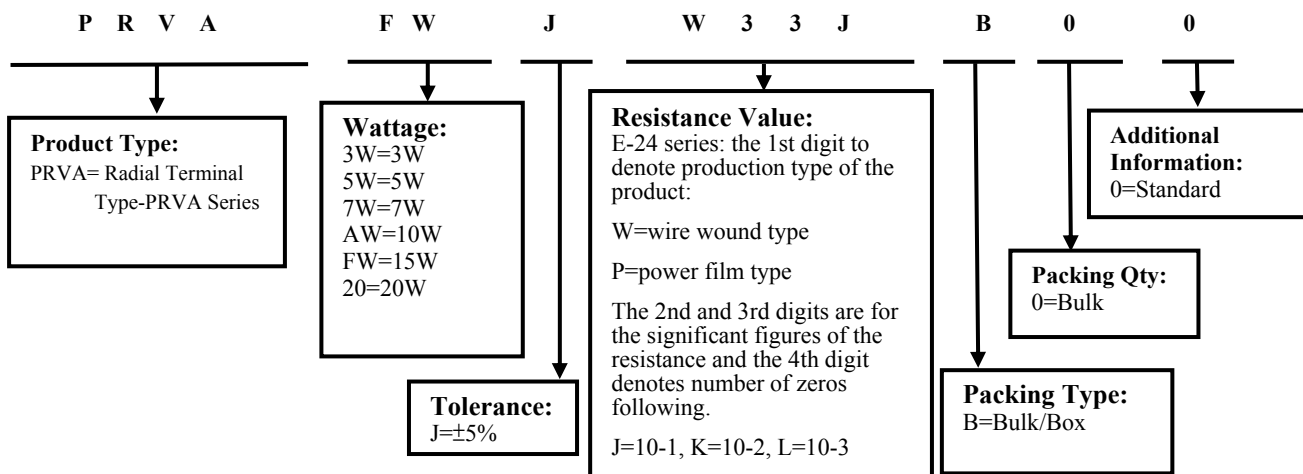
2.5.2 The 13th digit is normally to indicate the Packing Quantity, This digit should be filled with “0” for the Cement products with “Bulk/Box” packing requirements.

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: PRVA 15W ±5% 3.3Ω B/B)



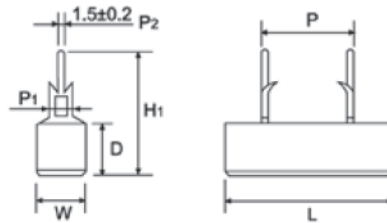
**4. Marking**


Code description and regulation:

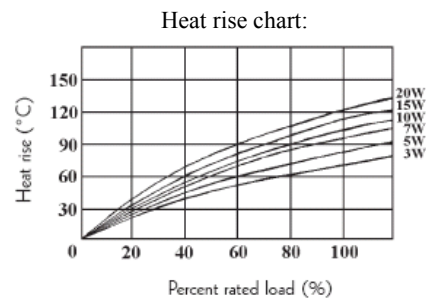
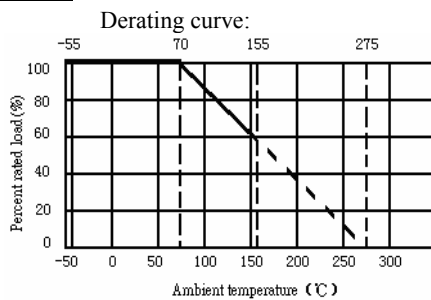
1. Wattage Rating
2. Nominal Resistance Value
3. Resistance Tolerance. J: ± 5% ; K: ± 10%
4. Pattern:

M: Power film  
W: Wire wound

Color of marking: Black Ink

**5. Dimension**


Type	Dimension(mm)						Resistance Range	
	W±1	D±1	L±1	P±1	P1±0.2	H±1	Wire Wound	Power Film
PRVA 3W	10	9	22	9.5	1.3	25	0.1Ω-47Ω	48Ω-150KΩ
PRVA 5W	10	9	27/25	15/9.5	1.3	25	0.1Ω-120Ω	121Ω-200KΩ
PRVA 7W	10	9	35	22	1.3	25	0.1Ω-560Ω	561Ω-200KΩ
PRVA 10W	10	9	48	35/32	1.3	25	1Ω-820Ω	821Ω-200KΩ
PRVA 15W	12.5	11.5	48	32	1.5	24	1Ω-1KΩ	1.1KΩ-200KΩ
PRVA 20W	12.5	13.5	63	42	1.5	26	1Ω-1.2KΩ	1.3KΩ-200KΩ

**6. Derating Curve**

**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 Method (GB/T5729&JIS-C-5201&IEC60115)
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 $\frac{R_2 - R_1}{R_1(t_2 - t_1)} \times 10^6 \text{ (PPM}/^\circ\text{C)}$ $\frac{R_3 - R_1}{R_1(t_3 - t_1)} \times 10^6 \text{ (PPM}/^\circ\text{C)}$ R <sub>1</sub> : Resistance Value at room temperature ( t <sub>1</sub> ) ; R <sub>2</sub> : Resistance Value at upper limit temperature $\pm 2^\circ\text{C}$ ( t <sub>2</sub> ) R <sub>3</sub> : Resistance Value at lower limit temperature $\pm 3^\circ\text{C}$ ( t <sub>3</sub> ) Test pattern : Room temperature : ( t <sub>1</sub> ) Upper limit temperature : ( t <sub>2</sub> ) Lower limit temperature : ( t <sub>3</sub> )
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 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 $260^\circ\text{C}\pm 5^\circ\text{C}$ 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: $245^\circ\text{C}\pm 3^\circ\text{C}$ 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.
Rapid change of temperature	For Wire-wound: $\Delta R/R$ : $\pm 5\%$ For Power film range: $< 100\text{K}\Omega$ $\Delta R/R$ : $\pm 5\%$ $\geq 100\text{K}\Omega$ $\Delta R/R$ : $\pm 10\%$	4.19 30 min at lower limit temperature and 30 min at upper limit temperature , 5 cycles.
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 $40\pm 2^\circ\text{C}$ 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 1,000 hours (1.5 hours "ON", 0.5 hour "OFF") at RCWV in a humidity test chamber controlled at $40^\circ\text{C}\pm 2^\circ\text{C}$ and 90 to 95% relative humidity.
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 1,000 hours operating at RCWV with duty cycle of 1.5 hours "ON", 0.5 hour "OFF" at $70^\circ\text{C}\pm 2^\circ\text{C}$ ambient.

Low Temperature Storage	For Wire-wound: $\Delta R/R: \pm 5\%$ For Power film range: < 100K $\Omega$ $\Delta R/R: \pm 5\%$ $\geq 100K\Omega$ $\Delta R/R: \pm 10\%$	4.23.4 Lower limit temperature , for 2H.
High Temperature Exposure	For Wire-wound: $\Delta R/R: \pm 5\%$ For Power film range: < 100K $\Omega$ $\Delta R/R: \pm 5\%$ $\geq 100K\Omega$ $\Delta R/R: \pm 10\%$	4.23.2 Upper limit temperature , for 16H.

## 8. Precaution for storage/Transportation

- 8.1. UNI-ROYAL recommend the storage condition temperature: 15°C~35°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) may be degraded.
- 8.2. 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.
- 8.3. 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 Cl<sub>2</sub>, H<sub>2</sub>S, NH<sub>3</sub>, SO<sub>2</sub>, NO<sub>2</sub>.

## 9. Record

Version	Description of amendment	Page	Date	Amended by	Checked by
1	First issue of this specification	1~5	Mar.20, 2018	Chen Haiyan	Chen Nana

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

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Example: 5W=5W

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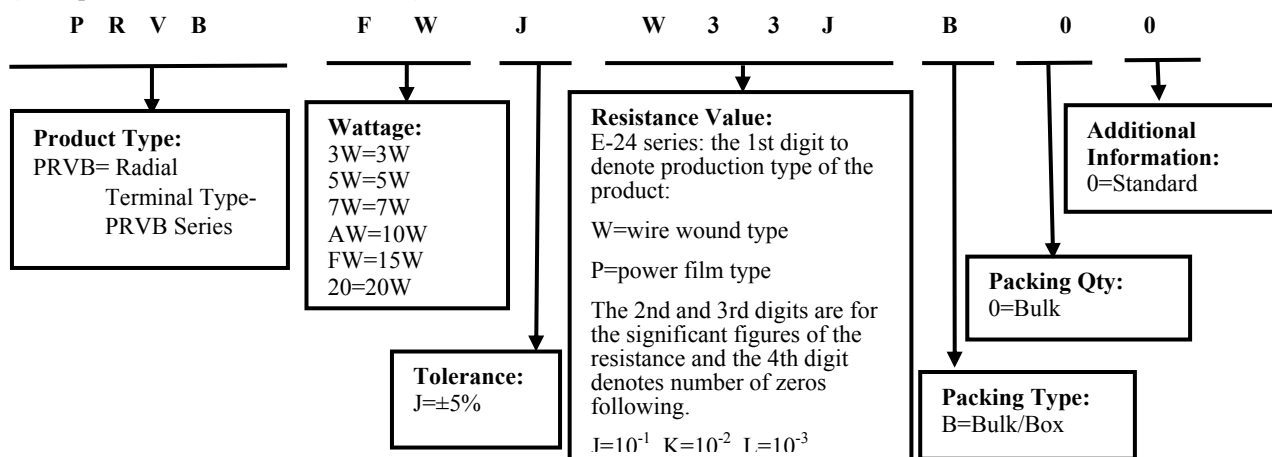
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Example: 0= standard product

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(Example: PRVB 15W ±5% 3.3Ω B/B)



**4. Marking**



Code description and regulation:

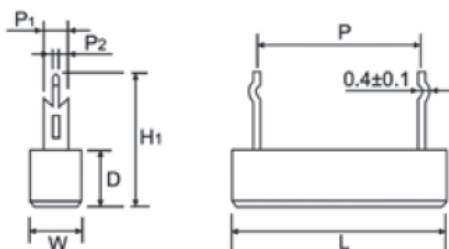
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2. Nominal Resistance Value
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Pattern:

- M: Power film
- W: Wire wound

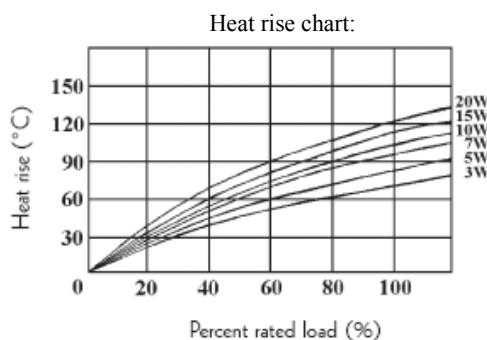
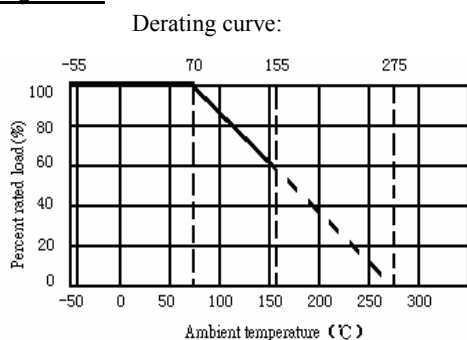
Color of marking: Black Ink

**5. Dimension**



Type	Dimension(mm)						Resistance Range	
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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:

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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**

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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 $\frac{R_2-R_1}{R_1(t_2-t_1)} \times 10^6 \text{ (PPM}/^\circ\text{C)} \quad \frac{R_3-R_1}{R_1(t_3-t_1)} \times 10^6 \text{ (PPM}/^\circ\text{C)}$ R <sub>1</sub> : Resistance Value at room temperature ( t <sub>1</sub> ) ; R <sub>2</sub> : Resistance Value at upper limit temperature $\pm 2^\circ\text{C}$ ( t <sub>2</sub> ) R <sub>3</sub> : Resistance Value at lower limit temperature $\pm 3^\circ\text{C}$ ( t <sub>3</sub> ) Test pattern : Room temperature : ( t <sub>1</sub> ) Upper limit temperature : ( t <sub>2</sub> ) Lower limit temperature : ( t <sub>3</sub> )
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 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.
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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: $245^\circ\text{C}\pm 3^\circ\text{C}$ 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.
Rapid change of temperature	For Wire-wound: $\Delta R/R$ : $\pm 5\%$ For Power film range: $< 100\text{K}\Omega$ $\Delta R/R$ : $\pm 5\%$ $\geq 100\text{K}\Omega$ $\Delta R/R$ : $\pm 10\%$	4.19 30 min at lower limit temperature and 30 min at upper limit temperature , 5 cycles.
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 $40\pm 2^\circ\text{C}$ 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 1,000 hours (1.5 hours “ON”, 0.5 hour “OFF”) at RCWV in a humidity test chamber controlled at $40^\circ\text{C}\pm 2^\circ\text{C}$ and 90 to 95% relative humidity.
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 1,000 hours operating at RCWV with duty cycle of 1.5 hours “ON”, 0.5 hour “OFF” at $70^\circ\text{C} \pm 2^\circ\text{C}$ ambient.

Low Temperature Storage	For Wire-wound: $\Delta R/R: \pm 5\%$ For Power film range: $< 100K\Omega \Delta R/R: \pm 5\%$ $\geq 100K\Omega \Delta R/R: \pm 10\%$	4.23.4 Lower limit temperature , for 2H.
High Temperature Exposure	For Wire-wound: $\Delta R/R: \pm 5\%$ For Power film range: $< 100K\Omega \Delta R/R: \pm 5\%$ $\geq 100K\Omega \Delta R/R: \pm 10\%$	4.23.2 Upper limit temperature , for 16H.

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**9. Record**

Version	Description of amendment	Page	Date	Amended by	Checked by
1	First issue of this specification	1~5	Mar.20, 2018	Chen Haiyan	Chen Nana

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