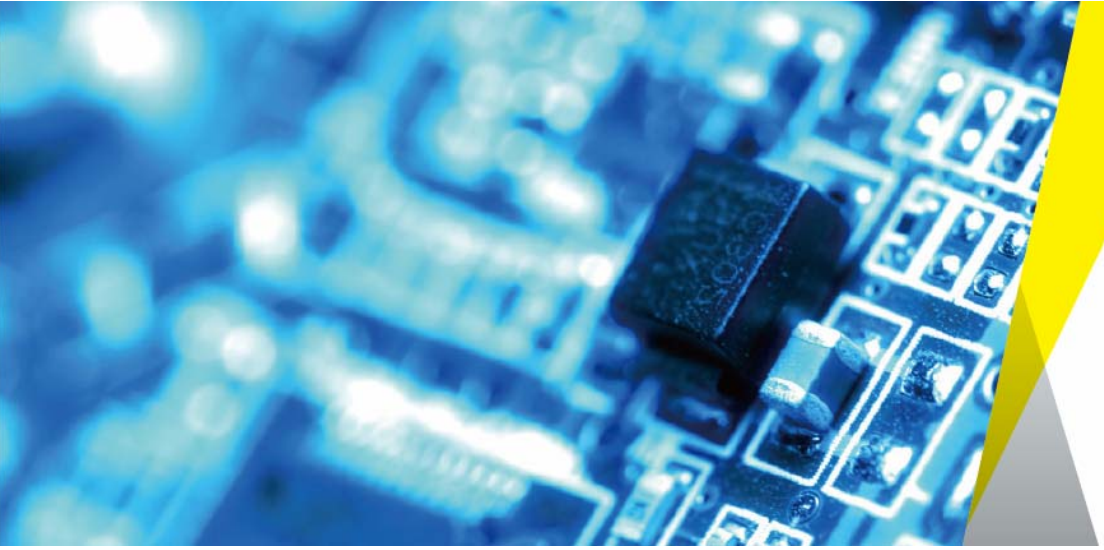


DATA SHEET

Product Name **Radial Terminal Type Cement Fixed Resistors**

Part Name **PRT Series**

Uniroyal Electronics Global Co., Ltd.

88 Longteng Road, Economic & Technical Development Zone, Kunshan, Jiangsu, China

Tel +86 512 5763 1411 / 22 /33

Email marketing@uni-royal.cn

Manufacture Plant Uniroyal Electronics Industry (kunshan) co., ltd.
Uniroyal Electronics Industry Co., Ltd.
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

This specification for approve relates Power Radial Terminal Type Cement Fixed Resistors manufactured by UNI-ROYAL.

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: PRT0=PRT type

2.2 5th~6th digits:

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

Example: 40=40W

2.2.2 For power rating between20 watt to 99 watt, the 5th and the 6th digits will show the whole numbers of the power rating itself.

Example: 40=40W 75=75W

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 8th 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 9th to 11th please refer to point a) of item 4.

Example: W12J=1.2Ω W120=12Ω P273=27KΩ

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

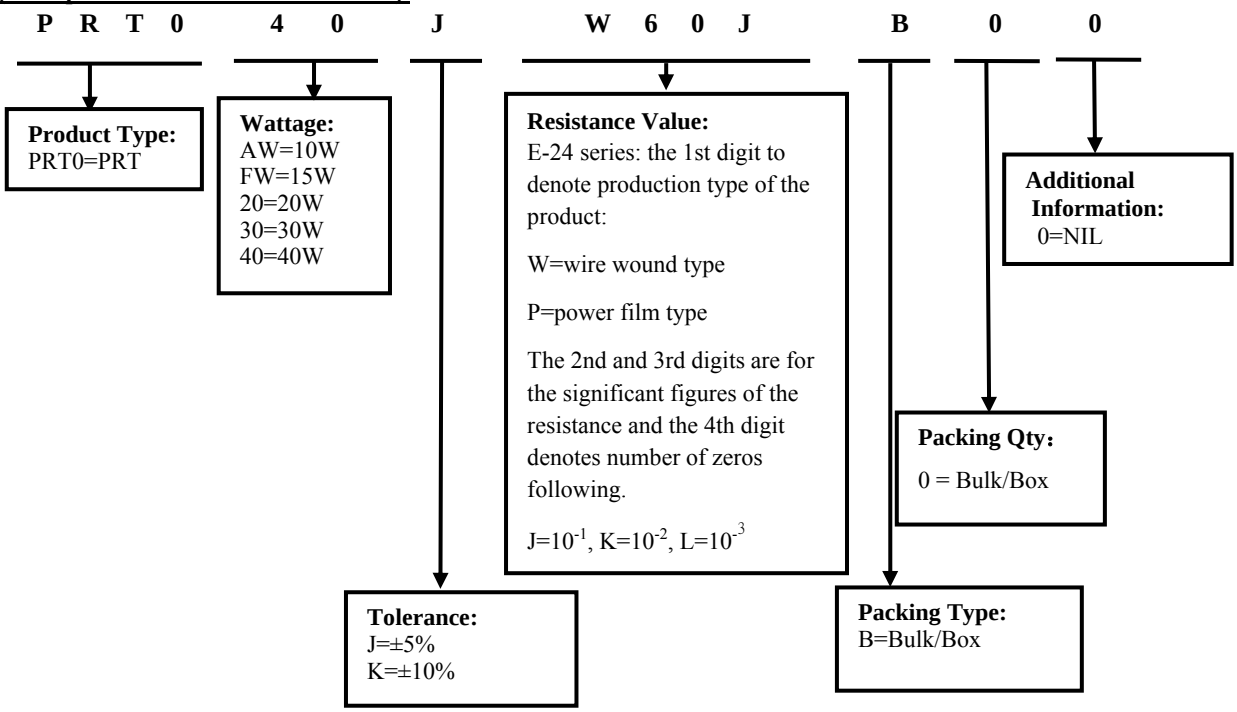
2.5.2 The 13th digit is normally to indicate the Packing Quantity, This digit should be filled with "0"for the Cement products with "Bulk/Box"packing requirements.

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

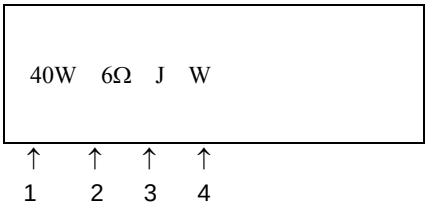
3. Ordering Procedure

(Example: PRT 40W ±5% 6Ω B/B)



4. Marking

Example:

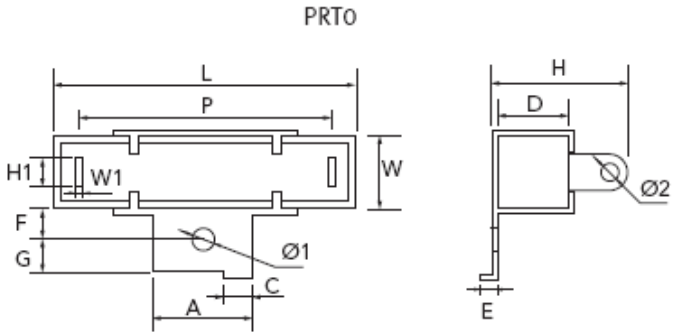


Code description and regulation:

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

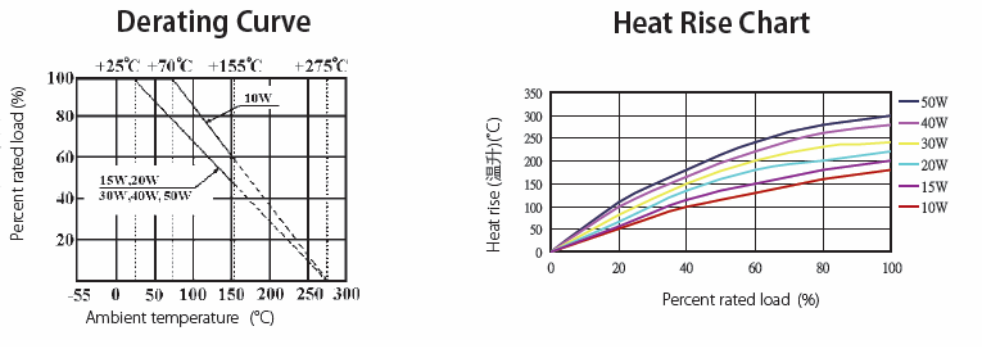
5. Ratings & Dimension



2.1 Dimension (mm):

Type Dimension	PRT 10W	PRT 15W	PRT 20W	PRT 30W	PRT 40W	PRT 50W
W±1.0mm	10	12.5	12.5	19	19	19
D±1.0mm	9	11.5	13.5	19	19	19
L±1.5mm	48	48	63	75	90	90
P±1.0mm	32	32	44	54	70	70
H±1.0mm	18	21	21	32	32	32
A±0.5mm	12	12	12	18	18	18
H1±0.4mm	5.5	6.2	6.2	7.6	7.6	7.6
C±0.5mm	3	3	3	3	3	3
F±0.5mm	8.7	8.0	10	9.5	9.5	9.5
G±0.5mm	5	6	6	7.5	7.5	7.5
E±1.0mm	3	3	3	4	4	4
Ø1±0.2mm	4.1	4.1	4.1	4.1	4.1	4.1
Ø2±0.2mm	2.5	2.5	2.5	3.2	3.2	3.2
W1±0.08mm	0.5	0.5	0.5	0.5	0.5	0.5

6. Derating Curve



6.1 Voltage rating:

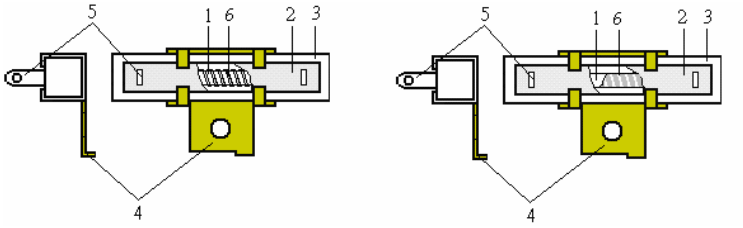
Resistors shall have a rated direct-current (DC) continuous working voltage or an approximate sine-wave root-mean-square (RMS) alternating-current (AC) continuous working voltage at commercial-line frequency and waveform corresponding to the power rating, as determined from the following formula:

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. Structure



No.	Name	Material Generic Name
1	Body	Al_2O_3
2	Filling materials	SiO_2
3	Ceramic case	Al_2O_3 CaO
4	Bracket	Iron
5	Terminal lug	Steel(tin plated iron surface)
6	Resistance element	Power Film: Metal Oxide Film Wire-Wound: Alloy Wire

8. Performance Specification

Characteristic	Limits	Test Method (GB/T5729&JIS-C-5201&IEC60115)
Temperature Coefficient	≧20Ω: ±350PPM/℃max.. ＜20Ω: ±400PPM/℃max..	4.8 Natural resistance changes per temp. Degree centigrade $\frac{R_2-R_1}{R_1(t_2-t_1)} \times 10^6$ (PPM/℃) $\frac{R_3-R_1}{R_1(t_3-t_1)} \times 10^6$ (PPM/℃) R_1: Resistance Value at room temperature （t_1）; R_2: Resistance Value at upper limit temperature ± 2℃（t_2） R_3 : Resistance Value at lower limit temperature ± 3℃（t_3） Test pattern： Room temperature：（t_1） Upper limit temperature：（t_2） Lower limit temperature ：（t_3）
Short-time overload	Resistance change rate is: ±(5%+0.05Ω)Max. With no evidence of	4.13 Permanent resistance change after the application of a potential of 2.5 times rcwv for 5 seconds.

	mechanical damage.	
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.
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.
Resistance to soldering heat	Resistance change rate is: ±(1%+0.05Ω) Max. With no evidence of mechanical damage	4.18 Permanent resistance change when leads immersed to a point 2.0-2.5mm from the body in 260℃±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℃±3℃ Dwell time in solder: 2~3seconds.
Rapid change of temperature	For Wire-wound: ΔR/R: ±5% For Power film range: ＜100KΩ ΔR/R: ±5% ≧100KΩ ΔR/R: ±10%	4.19 30 min at lower limit temperature and 30 min at upper limit temperature, 5 cycles.
Humidity (Steady state)	Resistance change rate is: ±(5%+0.05Ω)Max. With no evidence of mechanical damage.	4.24 Temporary resistance change after 240 hours exposure in a humidity test chamber controlled at 40±2℃ and 90~95%RH relative humidity
Load life in humidity	For Wire-wound: ΔR/R: ±5% For Power film range: ＜100KΩ ΔR/R: ±5% ≧100KΩ ΔR/R: ±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 ℃±2℃ and 90 to 95% relative humidity.
Load life	For Wire-wound: ΔR/R: ±5% For Power film range: ＜100KΩ ΔR/R: ±5% ≧100KΩ ΔR/R: ±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 ℃±2℃ ambient.
Low Temperature Storage	For Wire-wound: ΔR/R: ±5% For Power film range: ＜100KΩ ΔR/R: ±5% ≧100KΩ ΔR/R: ±10%	4.23.4 Lower limit temperature，for 2H.
High Temperature Exposure	For Wire-wound: ΔR/R: ±5% For Power film range: ＜100KΩ ΔR/R: ±5% ≧100KΩ ΔR/R: ±10%	4.23.2 Upper limit tempearture , for 16H.

9. Note

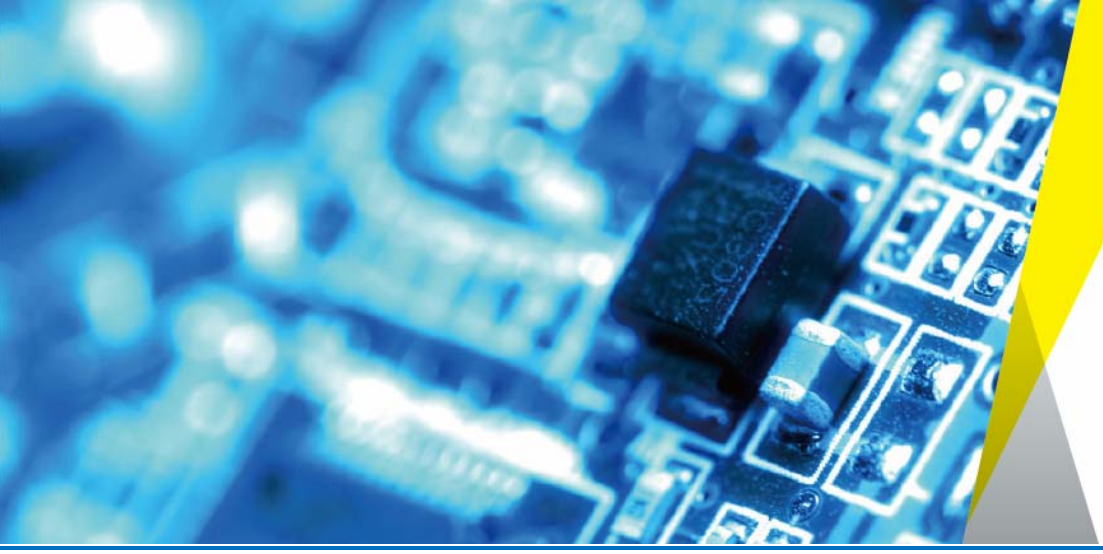
9.1 UNI-ROYAL recommend the storage condition temperature: 15℃~35℃, humidity :25%~75%.
(Put condition for individual product)
Even under UNI-ROYAL recommended storage condition, solderability of products over 1 year old.
(Put condition for each product) may be degraded.

9.2 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.

9.3 Product performance and soldered connections may deteriorate if the products are stored in the following places:
a. Storage in high Electrostatic
b. Storage in direct sunshine、rain and snow or condensation
c. Where the products are exposed to sea winds or corrosive gases, including Cl_2, H_2S_3 NH_3, SO_2, NO_2.

10. Record

Version	Description of amendment	Page	Date	Amended by	Checked by
1	First issue of this specification	1~6	Mar.20, 2018	Chen Haiyan	Chen Nana



DATA SHEET

Product Name **Radial Terminal Type Cement Fixed Resistors**

Part Name **PRTA Series**

Uniroyal Electronics Global Co., Ltd.

88 Longteng Road, Economic & Technical Development Zone, Kunshan, Jiangsu, China

Tel +86 512 5763 1411 / 22 /33

Email marketing@uni-royal.cn

Manufacture Plant Uniroyal Electronics Industry (kunshan) co., ltd.
Uniroyal Electronics Industry Co., Ltd.
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***

1.0 Scope

This specification for approve relates Power Radial Terminal Type Cement Fixed Resistors manufactured by UNI-ROYAL.

2. Explanation of 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: PRTA=PRTA type

2.2 5th~6th digits:

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

Example: 40=40W

2.2.2 For power rating between20 watt to 99 watt, the 5th and the 6th digits will show the whole numbers of the power rating itself.

Example: 40=40W 75=75W

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 8th 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 9th to 11th please refer to point a) of item 4.

Example: W12J=1.2Ω W120=12Ω P273=27KΩ

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

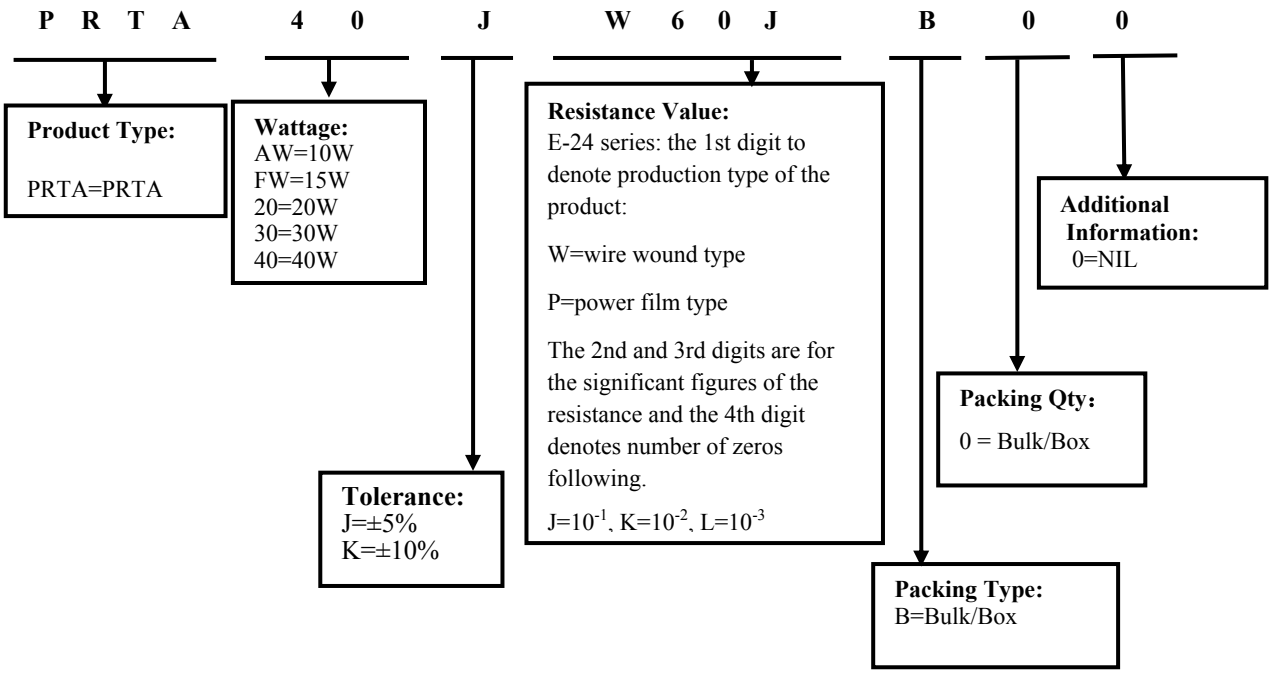
2.5.2 The 13th digit is normally to indicate the Packing Quantity, This digit should be filled with "0"for the Cement products with "Bulk/Box"packing requirements.

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

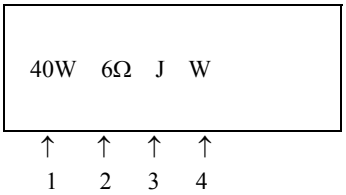
3. Ordering Procedure

(Example: PRTA 40W ±5% 6Ω B/B)



4. Marking

Example:

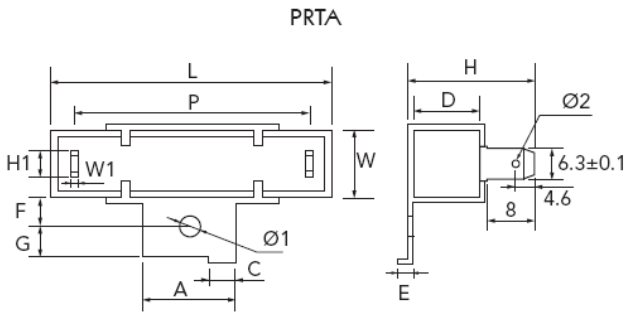


Code description and regulation:

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. Ratings & Dimension



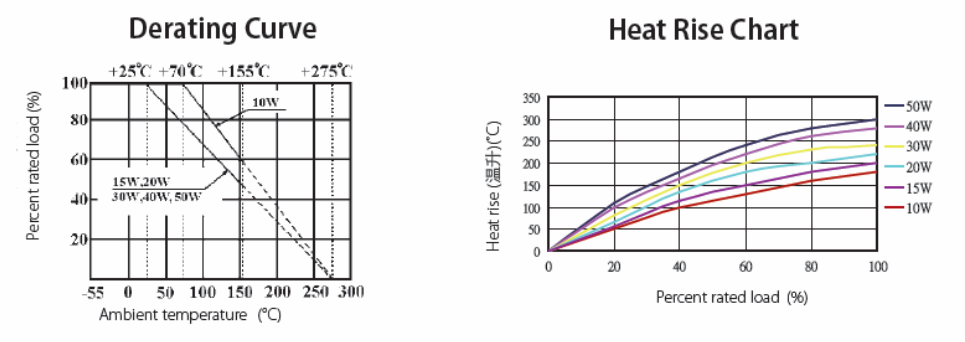
5.1 Dimension (mm):

Type Dimension	PRTA 10W	PRTA 15W	PRTA 20W	PRTA 30W	PRTA 40W	PRTA 50W
W±1.0mm	10	12.5	12.5	19	19	19
D±1.0mm	9	11.5	13.5	19	19	19
L±1.5mm	48	48	63	75	90	90
P±1.0mm	32	32	44	54	70	70
H±1.0mm	19	23.5	25	30	30	30
A±0.5mm	12	12	12	18	18	18
H1±0.4mm	8.0	7.6	7.6	7.6	8.0	8.0
C±0.5mm	3	3	3	3	3	3
F±0.5mm	8.7	8.0	10	9.5	9.5	9.5
G±0.5mm	5	6	6	7.5	7.5	7.5
E±1.0mm	3	3	3	4	4	4
Ø1±0.2mm	4.1	4.1	4.1	6.0	6.0	6.0
Ø2±0.2mm	1.6	1.6	1.6	1.6	1.6	1.6
W1±0.08mm	0.8	0.8	0.8	0.8	0.8	0.8

5.2 Resistance Range：

Type	PRTA 10W	PRTA 15W	PRTA 20W	PRTA 30W	PRTA 40W	PRTA 50W
Wire-wound	1Ω~820Ω	1Ω~1KΩ	2Ω~1.2KΩ	3Ω~1.5KΩ	6Ω~1.5KΩ	6Ω~1.5KΩ
Power Film	821Ω~200KΩ	1.1KΩ~200KΩ	1.3KΩ~200KΩ	/	/	/

6. Derating Curve



6.1 Voltage rating:

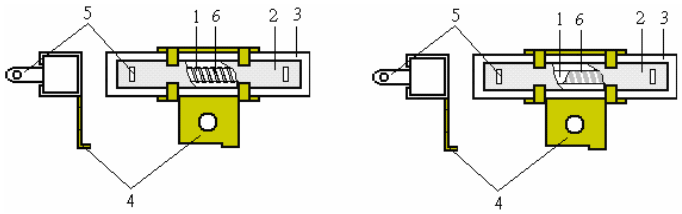
Resistors shall have a rated direct-current (DC) continuous working voltage or an approximate sine-wave root-mean-square (RMS) alternating-current (AC) continuous working voltage at commercial-line frequency and waveform corresponding to the power rating, as determined from the following formula:

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

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. Structure



No.	Name	Material Generic Name
1	Body	Al_2O_3
2	Filling materials	SiO_2
3	Ceramic case	Al_2O_3 CaO
4	Bracket	Iron
5	Terminal lug	Steel(tin plated iron surface)
6	Resistance element	Power Film: Metal Oxide Film
		Wire-Wound: Alloy Wire

8. Performance Specification

Characteristic	Limits	Test Method (GB/T5729&JIS-C-5201&IEC60115)
Temperature Coefficient	≧20Ω: ±350PPM/℃max.. ＜20Ω: ±400PPM/℃max..	4.8 Natural resistance changes per temp. Degree centigrade $\frac{R_2-R_1}{R_1(t_2-t_1)} \times 10^6$ (PPM/℃) $\frac{R_3-R_1}{R_1(t_3-t_1)} \times 10^6$ (PPM/℃) R_1: Resistance Value at room temperature （t_1）; R_2: Resistance Value at upper limit temperature ± 2℃（t_2） R_3 : Resistance Value at lower limit temperature ± 3℃（t_3） Test pattern： Room temperature：（t_1） Upper limit temperature：（t_2） Lower limit temperature ：（t_3）
Short-time overload	Resistance change rate is: ±(5%+0.05Ω)Max. With no evidence of 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.
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.
Resistance to soldering heat	Resistance change rate is: ± (1%+0.05Ω) Max. With no evidence of mechanical damage	4.18 Permanent resistance change when leads immersed to a point 2.0-2.5mm from the body in 260℃±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℃±3℃ Dwell time in solder: 2~3seconds.
Rapid change of temperature	For Wire-wound: ΔR/R: ±5% For Power film range: ＜100KΩ ΔR/R: ±5% ≧100KΩ ΔR/R: ±10%	4.19 30 min at lower limit temperature and 30 min at upper limit temperature, 5 cycles.
Humidity (Steady state)	Resistance change rate is: ±(5%+0.05Ω)Max. With no evidence of mechanical damage.	4.24 Temporary resistance change after 240 hours exposure in a humidity test chamber controlled at 40±2℃ and 90~95%RH relative humidity
Load life in humidity	For Wire-wound: ΔR/R: ±5% For Power film range: ＜100KΩ ΔR/R: ±5% ≧100KΩ ΔR/R: ±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 ℃±2℃ and 90 to 95% relative humidity.
Load life	For Wire-wound: ΔR/R: ±5% For Power film range: ＜100KΩ ΔR/R: ±5% ≧100KΩ ΔR/R: ±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 ℃±2℃ ambient.
Low Temperature Storage	For Wire-wound: ΔR/R: ±5% For Power film range: ＜100KΩ ΔR/R: ±5% ≧100KΩ ΔR/R: ±10%	4.23.4 Lower limit temperature, for 2H.
High Temperature Exposure	For Wire-wound: ΔR/R: ±5% For Power film range: ＜100KΩ ΔR/R: ±5% ≧100KΩ ΔR/R: ±10%	4.23.2 Upper limit tempearture , for 16H.

9. Note

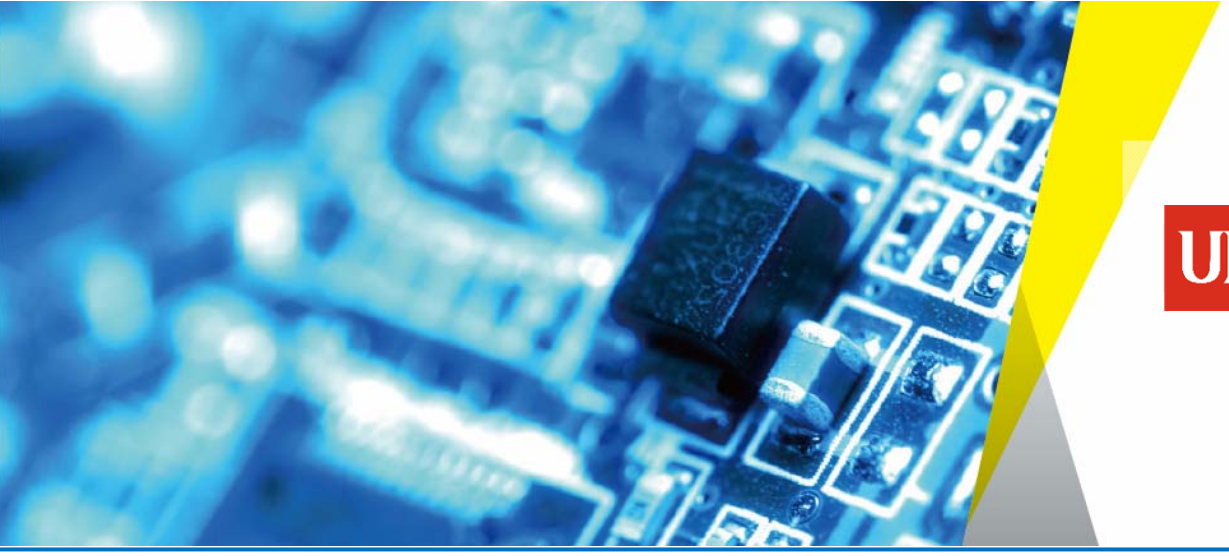
9.1 UNI-ROYAL recommend the storage condition temperature: 15℃~35℃, humidity :25%~75%.
(Put condition for individual product)
Even under UNI-ROYAL recommended storage condition, solderability of products over 1 year old.
(Put condition for each product) may be degraded.

9.2 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.

9.3 Product performance and soldered connections may deteriorate if the products are stored in the following places:
a. Storage in high Electrostatic
b. Storage in direct sunshine、rain and snow or condensation
c. Where the products are exposed to sea winds or corrosive gases, including Cl_2, H_2S_3 NH_3, SO_2, NO_2.

10. Record

Version	Description of amendment	Page	Date	Amended by	Checked by
1	First issue of this specification	1~6	Mar.20, 2018	Chen Haiyan	Chen Nana



DATA SHEET

Product Name **Radial Terminal Type Cement Fixed Resistors**

Part Name **PRU Series**

Uniroyal Electronics Global Co., Ltd.

88 Longteng Road, Economic & Technical Development Zone, Kunshan, Jiangsu, China

Tel +86 512 5763 1411 / 22 /33

Email marketing@uni-royal.cn

Manufacture Plant Uniroyal Electronics Industry (kunshan) co., ltd.
Uniroyal Electronics Industry Co., Ltd.
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

This specification for approve relates Power Radial Terminal Type Cement Fixed Resistors manufactured by UNI-RPYAL.

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: PRU0=PRU type

2.2 5th~6th digits:

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

Example: AW=10W

2.2.2 For power rating between20 watt to 99 watt, the 5th and the 6th digits will show the whole numbers of the power rating itself.

Example: 40=40W 75=75W

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 8th 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 9th to 11th please refer to point a) of item 4.

Example: W60J=6Ω W120=12Ω P273=27KΩ

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

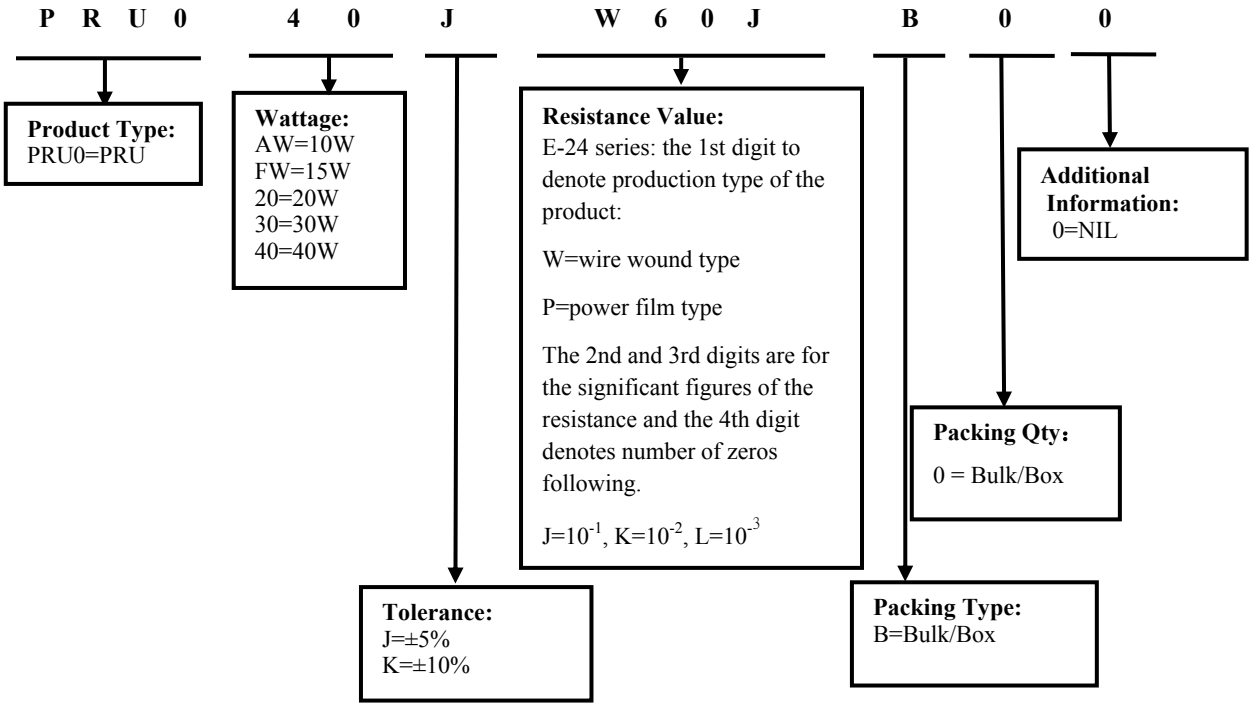
2.5.2 The 13th digit is normally to indicate the Packing Quantity, This digit should be filled with "0"for the Cement products with "Bulk/Box"packing requirements.

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

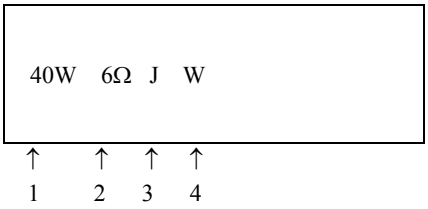
3. Ordering Procedure

(Example: PRU 40W ±5% 6Ω B/B)



4. Marking

Example:

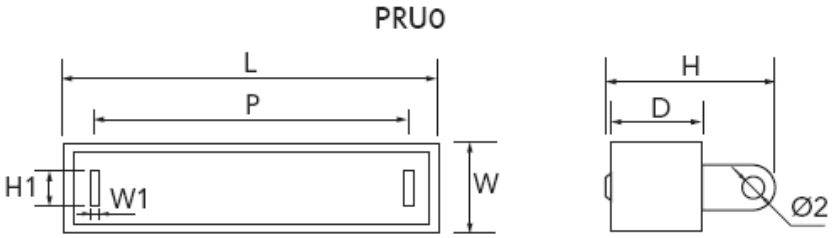


Code description and regulation:

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. Ratings & Dimension



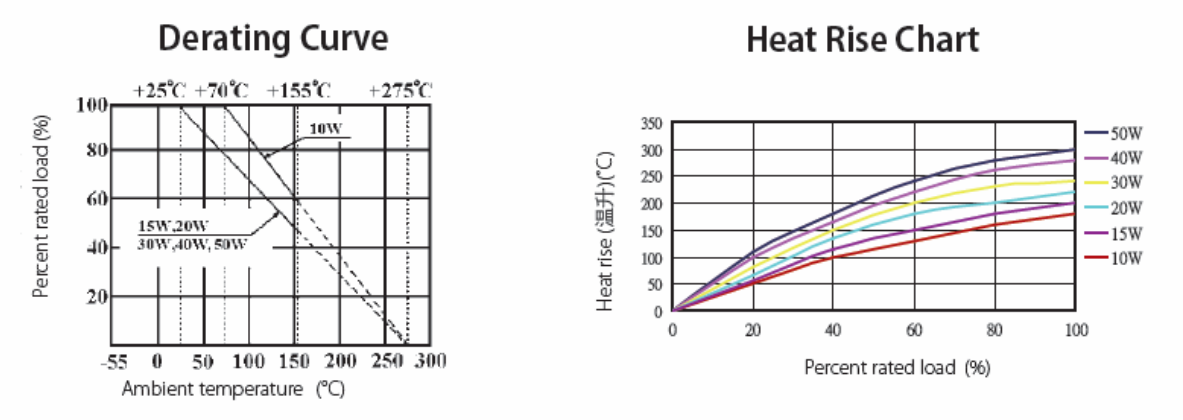
5.1 Dimension (mm):

Type Dimension	PRU 10W	PRU 15W	PRU 20W	PRU 30W	PRU 40W	PRU 50W
W±1.0mm	10	12.5	12.5	19	19	19
D±1.0mm	9	11.5	13.5	19	19	19
L±1.5mm	48	48	63	75	90	90
P±1.0mm	32	32	44	54	70	70
H±1.0mm	18	21	21	32	32	32
A±0.5mm	12	12	12	18	18	18
H1±0.4mm	5.5	6.2	6.2	7.6	7.6	7.6
C±0.5mm	3	3	3	3	3	3
F±0.5mm	8.7	8.0	10	9.5	9.5	9.5
G±0.5mm	5	6	6	7.5	7.5	7.5
E±1.0mm	3	3	3	4	4	4
Ø1±0.2mm	4.1	4.1	4.1	4.1	4.1	4.1
Ø2±0.2mm	2.5	2.5	2.5	3.2	3.2	3.2
W1±0.08mm	0.5	0.5	0.5	0.5	0.5	0.5

5.2 Resistance Range：

Type	PRU 10W	PRU 15W	PRU 20W	PRU 30W	PRU 40W	PRU 50W
Wire-wound	1Ω~820Ω	1Ω~1KΩ	2Ω~1.2KΩ	3Ω~1.5KΩ	6Ω~1.5KΩ	6Ω~1.5KΩ
Power Film	821Ω~200KΩ	1.1KΩ~200KΩ	1.3KΩ~200KΩ	/	/	/

6.0 Derating Curve



6.1 Voltage rating:

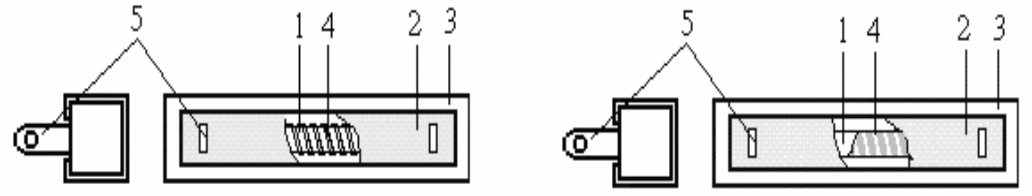
Resistors shall have a rated direct-current (DC) continuous working voltage or an approximate sine-wave root-mean-square (RMS) alternating-current (AC) continuous working voltage at commercial-line frequency and waveform corresponding to the power rating, as determined from the following formula:

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. Structure



No.	Name	Material Generic Name
1	Body	Al_2O_3
2	Filling materials	SiO_2
3	Ceramic case	Al_2O_3 CaO
4	Bracket	Iron
4	Resistance element	Power Film: Metal Oxide Film
		Wire-Wound: Alloy Wire
5	Terminal lug	Steel(tin plated iron surface)

8. Performance Specification

Characteristic	Limits	Test Method (GB/T5729&JIS-C-5201&IEC60115)
Temperature Coefficient	≧20Ω: ±350PPM/℃max.. ＜20Ω: ±400PPM/℃max..	4.8 Natural resistance changes per temp. Degree centigrade $\frac{R_2-R_1}{R_1(t_2-t_1)} \times 10^6$ (PPM/℃) $\frac{R_3-R_1}{R_1(t_3-t_1)} \times 10^6$ (PPM/℃) R_1: Resistance Value at room temperature （t_1）; R_2: Resistance Value at upper limit temperature ± 2℃（t_2） R_3 : Resistance Value at lower limit temperature ± 3℃（t_3） Test pattern： Room temperature：（t_1） Upper limit temperature：（t_2） Lower limit temperature ：（t_3）
Short-time overload	Resistance change rate is: ±(5%+0.05Ω)Max. With no evidence of 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.
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.
Resistance to soldering heat	Resistance change rate is: ± (1%+0.05Ω) Max. With no evidence of mechanical damage	4.18 Permanent resistance change when leads immersed to a point 2.0-2.5mm from the body in 260℃±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℃±3℃ Dwell time in solder: 2~3seconds.
Rapid change of temperature	For Wire-wound: ΔR/R: ±5% For Power film range: ＜100KΩ ΔR/R: ±5% ≧100KΩ ΔR/R: ±10%	4.19 30 min at lower limit temperature and 30 min at upper limit temperature, 5 cycles.
Humidity (Steady state)	Resistance change rate is: ±(5%+0.05Ω)Max. With no evidence of mechanical damage.	4.24 Temporary resistance change after 240 hours exposure in a humidity test chamber controlled at 40±2℃ and 90~95%RH relative humidity
Load life in humidity	For Wire-wound: ΔR/R: ±5% For Power film range: ＜100KΩ ΔR/R: ±5% ≧100KΩ ΔR/R: ±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℃±2℃ and 90 to 95% relative humidity.
Load life	For Wire-wound: ΔR/R: ±5% For Power film range: ＜100KΩ ΔR/R: ±5% ≧100KΩ ΔR/R: ±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℃±2℃ ambient.
Low Temperature	For Wire-wound: ΔR/R: ±5% For Power film range:	4.23.4 Lower limit temperature, for 2H.

Storage	＜100KΩ ΔR/R: ±5% ≧100KΩ ΔR/R: ±10%	
High Temperature Exposure	For Wire-wound: ΔR/R: ±5% For Power film range: ＜100KΩ ΔR/R: ±5% ≧100KΩ ΔR/R: ±10%	4.23.2 Upper limit tempearture , for 16H.

9. Note

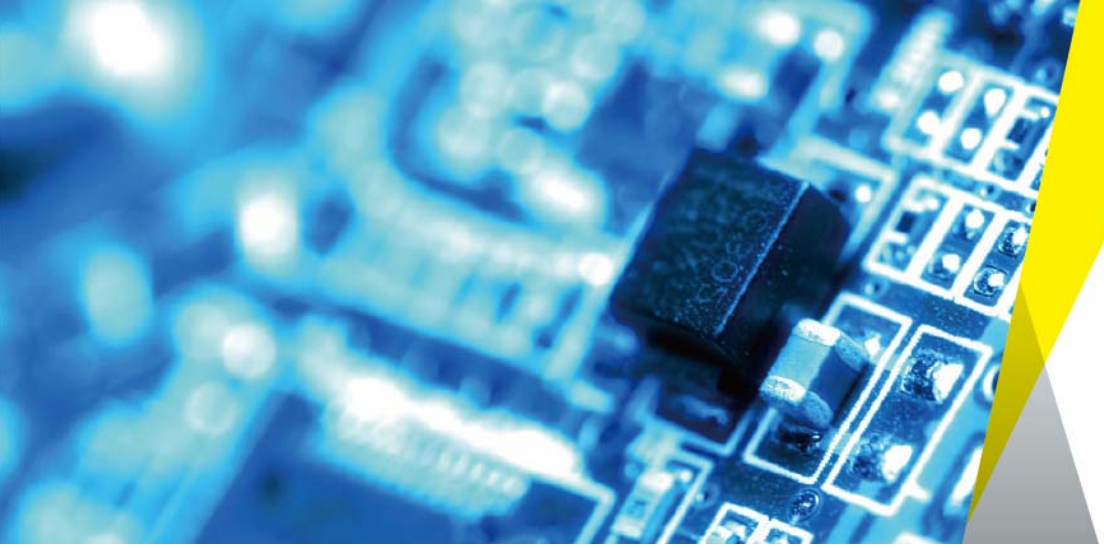
9.1 UNI-ROYAL recommend the storage condition temperature: 15℃~35℃, humidity :25%~75%.
(Put condition for individual product)
Even under UMI-ROYAL recommended storage condition, solderability of products over 1 year old.
（Put condition for each product) may be degraded.

9.2 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.

9.3 Product performance and soldered connections may deteriorate if the products are stored in the following places:
a. Storage in high Electrostatic
b. Storage in direct sunshine、rain and snow or condensation
c. Where the products are exposed to sea winds or corrosive gases, including Cl_2, H_2S_3 NH_3, SO_2, NO_2.

10. Record

Version	Description of amendment	Page	Date	Amended by	Checked by
1	First issue of this specification	1~6	Mar.20, 2018	Chen Haiyan	Chen Nana



DATA SHEET

Product Name **Radial Terminal Type Cement Fixed Resistors**

Part Name **PRUA Series**

Uniroyal Electronics Global Co., Ltd.

88 Longteng Road, Economic & Technical Development Zone, Kunshan, Jiangsu, China

Tel +86 512 5763 1411 / 22 /33

Email marketing@uni-royal.cn

Manufacture Plant Uniroyal Electronics Industry (kunshan) co., ltd.
Uniroyal Electronics Industry Co., Ltd.
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

This specification for approve relates to Radial Terminal Type Cement Fixed Resistors manufactured by UNI-ROYAL.

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: PRUA=PRUA type

2.2 5th~6th digits:

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

Example: 40=40W

2.2.2 For power rating between20 watt to 99 watt, the 5th and the 6th digits will show the whole numbers of the power rating itself.

Example: 40=40W 75=75W

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 8th 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 9th to 11th please refer to point a) of item 4.

Example: W12J=1.2Ω W120=12Ω P273=27KΩ

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

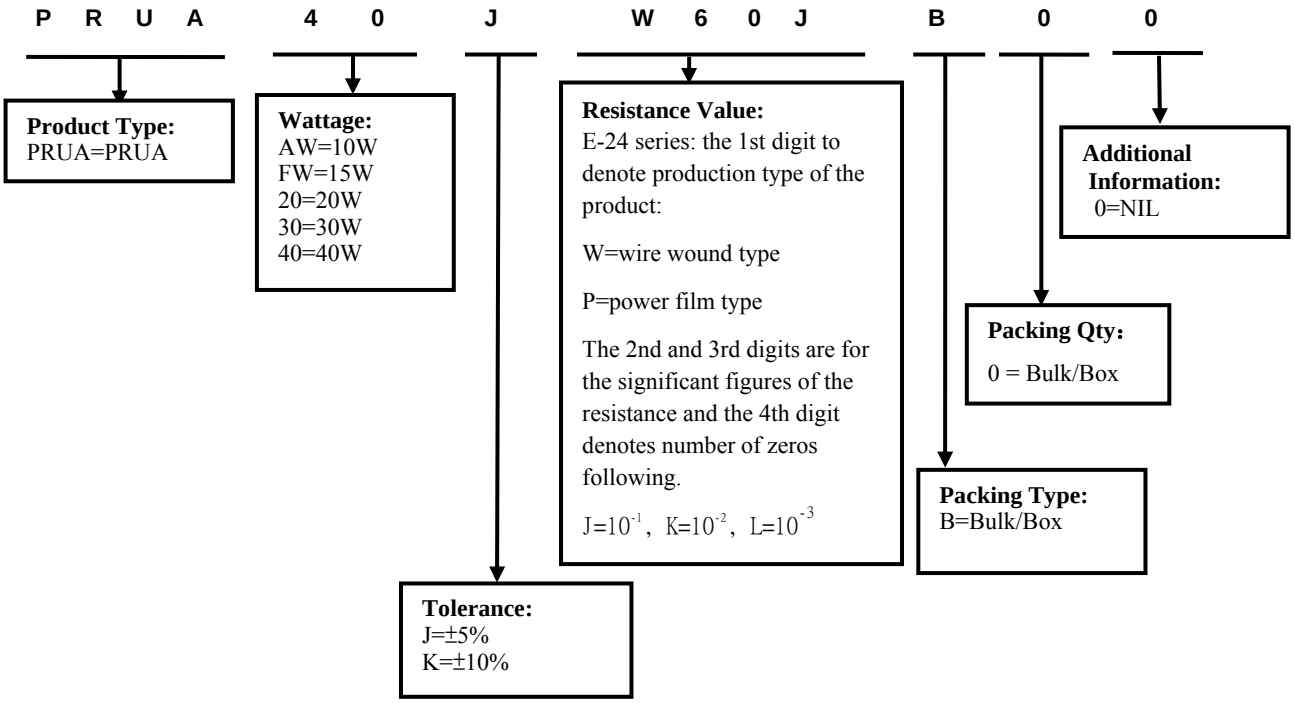
2.5.2 The 13th digit is normally to indicate the Packing Quantity, This digit should be filled with "0"for the Cement products with "Bulk/Box"packing requirements.

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

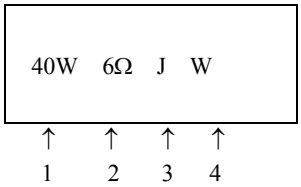
3. Ordering Procedure

(Example: PRUA 40W ±5% 6Ω B/B)



4. Marking

Example:



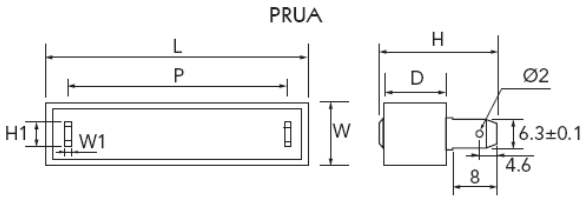
Code description and regulation:

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: (Unit:mm)

5.1Dimension:(mm)

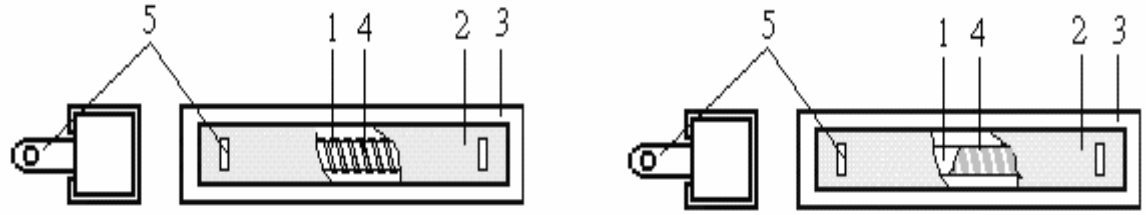


WATTS	W± 1.0mm	D± 1.0mm	L± 1.5mm	P± 1.0mm	H± 1.0mm	A± 0.5mm	H1± 0.4mm	C± 0.5mm	F± 0.5mm	G± 0.5mm	E± 1.0mm	Ø1± 0.2mm	Ø2± 0.2mm	W1± 0.08mm
10W	10	9	48	32	19	12	8.0	3	8.7	5	3	4.1	1.6	0.8
15W	12.5	11.5	48	32	23.5	12	7.6	3	8.0	6	3	4.1	1.6	0.8
20W	12.5	13.5	63	44	25	12	7.6	3	10	6	3	4.1	1.6	0.8
30W	19	19	75	54	30	18	7.6	3	9.5	7.5	4	6.0	1.6	0.8
40W	19	19	90	70	30	18	8.0	3	9.5	7.5	4	6.0	1.6	0.8
50W	19	19	90	70	30	18	8.0	3	9.5	7.5	4	6.0	1.6	0.8

5.2 Ratings:

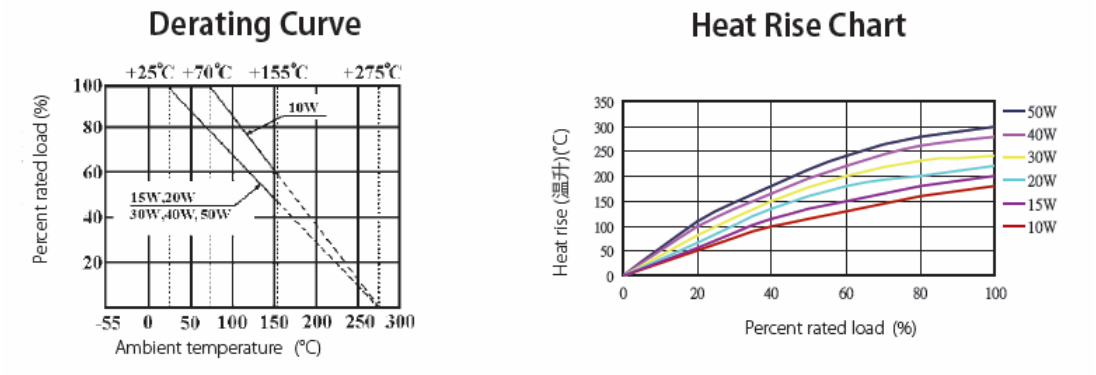
STYLE	Wire-wound	Power Film
10W	1Ω~820Ω	821Ω~200KΩ
15W	1Ω~1KΩ	1.1KΩ~200KΩ
20W	2Ω~1.2KΩ	1.3KΩ~200KΩ
30W	3Ω~1.5KΩ	/
40W	6Ω~1.5KΩ	/
50W	6Ω~1.5KΩ	/

6. Construction



No.	Name	Material Generic Name
1	Body	Al_2O_3
2	Filling materials	SiO_2
3	Ceramic case	Al_2O_3 CaO
4	Bracket	Iron
4	Resistance element	Power Film: Metal Oxide Film
		Wire-Wound: Alloy Wire
5	Terminal lug	Steel(tin plated iron surface)

7. Derating Curve



7.1 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)

8. Performance Specification

Characteristic	Limits	Test Method (GB/T5729&JIS-C-5201&IEC60115)
Temperature Coefficient	≧20Ω: ±350PPM/℃max.. ＜20Ω: ±400PPM/℃max..	4.8 Natural resistance changes per temp. Degree centigrade $\frac{R_2-R_1}{R_1(t_2-t_1)} \times 10^6$ (PPM/℃) $\frac{R_3-R_1}{R_1(t_3-t_1)} \times 10^6$ (PPM/℃) R_1: Resistance Value at room temperature （t_1）; R_2: Resistance Value at upper limit temperature ± 2℃（t_2） R_3 : Resistance Value at lower limit temperature ± 3℃（t_3） Test pattern： Room temperature：（t_1） Upper limit temperature：（t_2） Lower limit temperature ：（t_3）

Short-time overload	Resistance change rate is: ±(5%+0.05Ω)Max. With no evidence of 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.
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.
Resistance to soldering heat	Resistance change rate is: ± (1%+0.05Ω) Max. With no evidence of mechanical damage	4.18 Permanent resistance change when leads immersed to a point 2.0-2.5mm from the body in 260℃±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℃±3℃ Dwell time in solder: 2~3seconds.
Rapid change of temperature	For Wire-wound: ΔR/R: ±5% For Power film range: ＜100KΩ ΔR/R: ±5% ≧100KΩ ΔR/R: ±10%	4.19 30 min at lower limit temperature and 30 min at upper limit temperature, 5 cycles.
Humidity (Steady state)	Resistance change rate is: ±(5%+0.05Ω)Max. With no evidence of mechanical damage.	4.24 Temporary resistance change after 240 hours exposure in a humidity test chamber controlled at 40±2℃ and 90~95%RH relative humidity.
Load life in humidity	For Wire-wound: ΔR/R: ±5% For Power film range: ＜100KΩ ΔR/R: ±5% ≧100KΩ ΔR/R: ±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 ℃±2℃ and 90 to 95% relative humidity.
Load life	For Wire-wound: ΔR/R: ±5% For Power film range: ＜100KΩ ΔR/R: ±5% ≧100KΩ ΔR/R: ±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 ℃±2℃ ambient.
Low Temperature Storage	For Wire-wound: ΔR/R: ±5% For Power film range: ＜100KΩ ΔR/R: ±5% ≧100KΩ ΔR/R: ±10%	4.23.4 Lower limit temperature, for 2H.
High Temperature Exposure	For Wire-wound: ΔR/R: ±5% For Power film range: ＜100KΩ ΔR/R: ±5% ≧100KΩ ΔR/R: ±10%	4.23.2 Upper limit temperature , for 16H.

9. Precaution for storage/Transportation

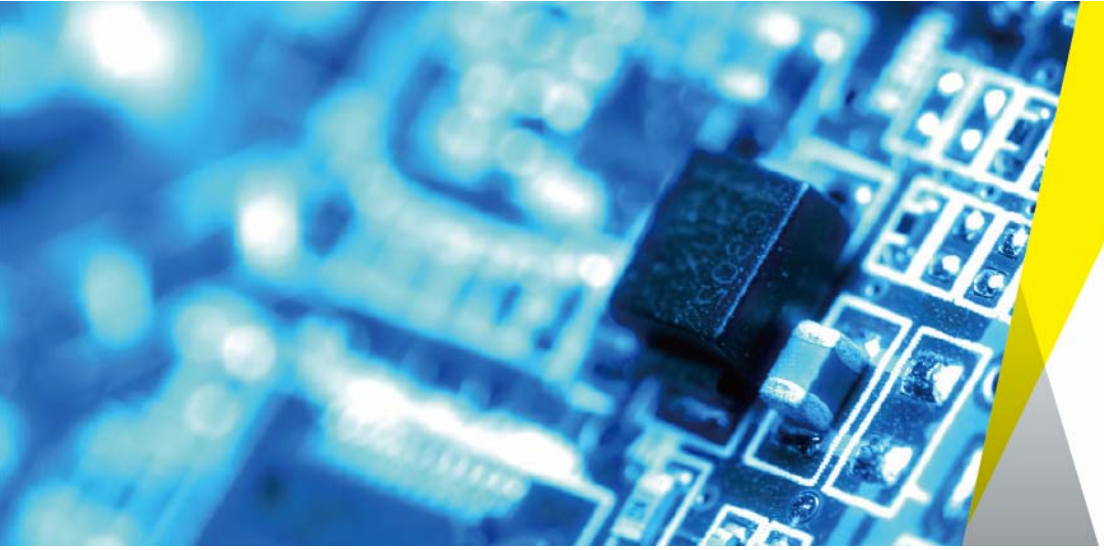
9.1 UNI-ROYAL recommend the storage condition temperature: 15℃~35℃, humidity :25%~75%.
(Put condition for individual product)
Even under UNI-ROYAL recommended storage condition, solderability of products over 1 year old.
(Put condition for each product) may be degraded.

9.2 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.

9.3 Product performance and soldered connections may deteriorate if the products are stored in the following places:
a. Storage in high Electrostatic
b. Storage in direct sunshine、rain and snow or condensation
c. Where the products are exposed to sea winds or corrosive gases, including Cl_2, H_2S_3 NH_3, SO_2, NO_2.

10. 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



DATA SHEET

Product Name **Radial Terminal Type Cement Fixed Resistors**

Part Name **PRUB Series**

Uniroyal Electronics Global Co., Ltd.

88 Longteng Road, Economic & Technical Development Zone, Kunshan, Jiangsu, China

Tel +86 512 5763 1411 / 22 /33

Email marketing@uni-royal.cn

Manufacture Plant Uniroyal Electronics Industry (kunshan) co., ltd.
Uniroyal Electronics Industry Co., Ltd.
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

This specification for approve relates Power Radial Terminal Type Cement Fixed Resistors manufactured by UNI-ROYAL.

2. Explanation of 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: PRT0=PRT type

2.2 5th~6th digits:

For power rating between20 watt to 99 watt, the 5th and the 6th digits will show the whole numbers of the power rating itself.

Example: 50=50W

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 8th 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 9th to 11th please refer to point a) of item 4.

Example: W250=25Ω W500=50Ω

2.5 The 12th, 13th & 14th digits.

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

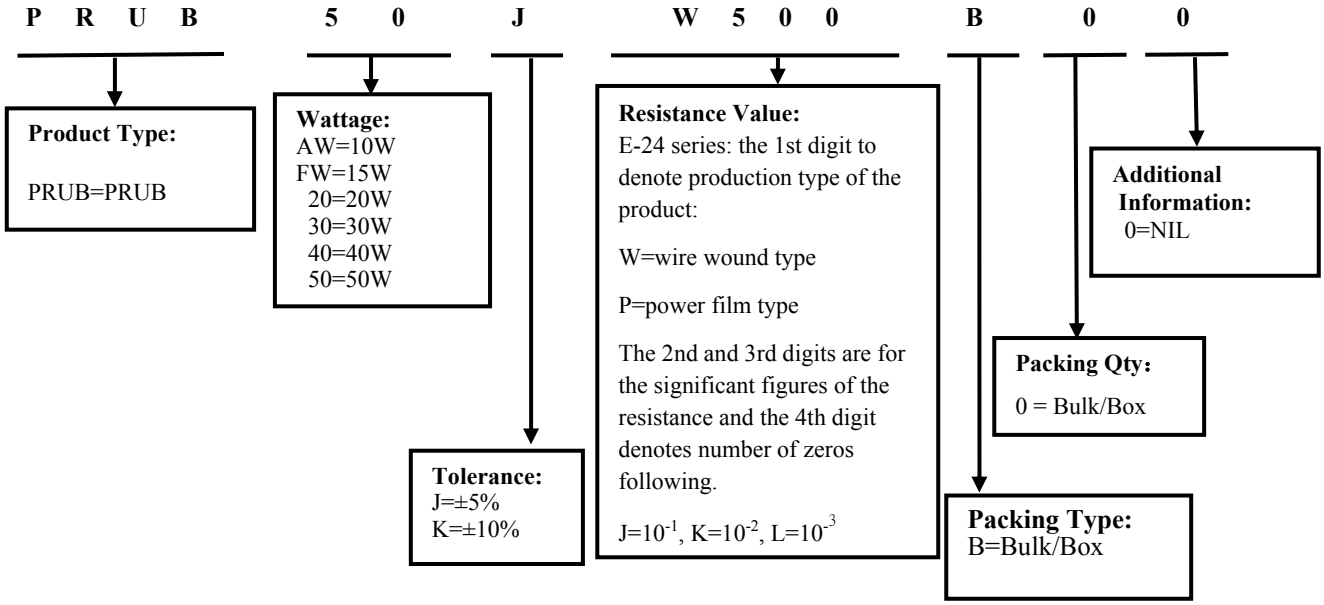
B=Bulk/Box

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

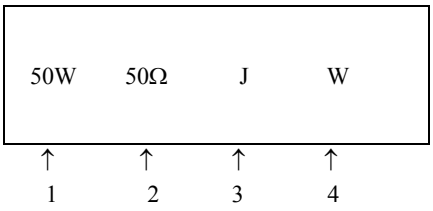
Example: 0= standard product

3. Ordering Procedure: (Example:PRUB 50W ±5% 50Ω B/B))



4. Marking

Example:

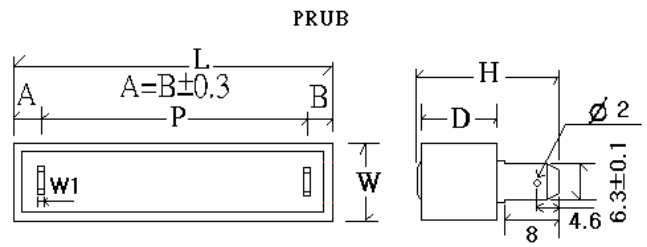


Code description and regulation:

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

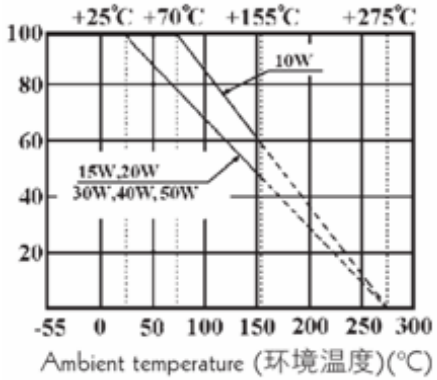
5. Ratings & Dimension



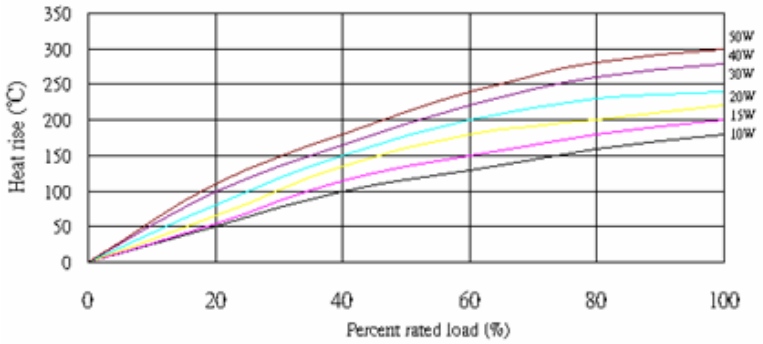
Type	Dimension(mm)							Resistance Range	
	W +0.5/-1.0	D±1	L +0.5/-1.0	P±0.3	H±1	Ø±0.2	W1±0.08	Wire-wound	Power Film
PRUB 10W	10	9	48	32	19	1.6	0.8	1Ω~820Ω	821Ω~200KΩ
PRUB 15W	12.5	11.5	48	32	23.5	1.6	0.8	1Ω~1KΩ	1.1KΩ~200KΩ
PRUB 20W	12.5	13.5	63	44	25	1.6	0.8	2Ω~1.2KΩ	1.3KΩ~200KΩ
PRUB 30W	19	19	75	54	30	1.6	0.8	3Ω~1.5KΩ	/
PRUB 40W	19	19	90	68	30	1.6	0.8	6Ω~1.5KΩ	/
PRUB 50W	19	19	90	68	30	1.6	0.8	6Ω~1.5KΩ	/

6. Derating Curve

Derating Curve：



Heat Rise Char:



6.1 Voltage rating:

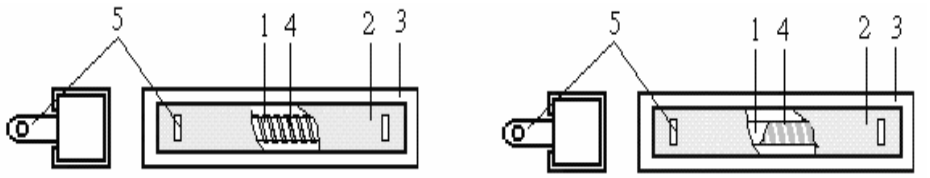
Resistors shall have a rated direct-current (DC) continuous working voltage or an approximate sine-wave root-mean-square (RMS) alternating-current (AC) continuous working voltage at commercial-line frequency and waveform corresponding to the power rating, as determined from the following formula:

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

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. Structure



No.	Name	Material Generic Name
1	Body	Al_2O_3
2	Filling materials	SiO_2
3	Ceramic case	Al_2O_3 CaO
4	Bracket	Iron
4	Resistance element	Power Film: Metal Oxide Film
		Wire-Wound: Alloy Wire
5	Terminal lug	Steel(tin plated iron surface)

8. Performance Specification

Characteristic	Limits	Test Method (GB/T5729&JIS-C-5201&IEC60115)
Temperature Coefficient	≧20Ω: ±350PPM/℃max.. ＜20Ω: ±400PPM/℃max..	4.8 Natural resistance changes per temp. Degree centigrade $\frac{R_2-R_1}{R_1(t_2-t_1)} \times 10^6$ (PPM/℃) $\frac{R_3-R_1}{R_1(t_3-t_1)} \times 10^6$ (PPM/℃) R_1: Resistance Value at room temperature （t_1）; R_2: Resistance Value at upper limit temperature ± 2℃（t_2） R_3 : Resistance Value at lower limit temperature ± 3℃（t_3） Test pattern： Room temperature：（t_1） Upper limit temperature：（t_2） Lower limit temperature ：（t_3）
Short-time overload	Resistance change rate is: ±(5%+0.05Ω)Max. With no evidence of 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.
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.
Resistance to soldering heat	Resistance change rate is: ±(1%+0.05Ω) Max. With no evidence of mechanical damage	4.18 Permanent resistance change when leads immersed to a point 2.0-2.5mm from the body in 260℃±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℃±3℃ Dwell time in solder: 2~3seconds.
Rapid change of temperature	For Wire-wound: ΔR/R: ±5% For Power film range: ＜100KΩ ΔR/R: ±5% ≧100KΩ ΔR/R: ±10%	4.19 30 min at lower limit temperature and 30 min at upper limit temperature, 5 cycles.
Humidity (Steady state)	Resistance change rate is: ±(5%+0.05Ω)Max. With no evidence of mechanical damage.	4.24 Temporary resistance change after 240 hours exposure in a humidity test chamber controlled at 40±2℃ and 90~95%RH relative humidity.
Load life in humidity	For Wire-wound: ΔR/R: ±5% For Power film range: ＜100KΩ ΔR/R: ±5% ≧100KΩ ΔR/R: ±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 ℃±2℃ and 90 to 95% relative humidity.
Load life	For Wire-wound: ΔR/R: ±5% For Power film range: ＜100KΩ ΔR/R: ±5% ≧100KΩ ΔR/R: ±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 ℃±2℃ ambient.
Low Temperature Storage	For Wire-wound: ΔR/R: ±5% For Power film range: ＜100KΩ ΔR/R: ±5% ≧100KΩ ΔR/R: ±10%	4.23.4 Lower limit temperature, for 2H.
High Temperature Exposure	For Wire-wound: ΔR/R: ±5% For Power film range: ＜100KΩ ΔR/R: ±5% ≧100KΩ ΔR/R: ±10%	4.23.2 Upper limit temperature , for 16H.

9. Note

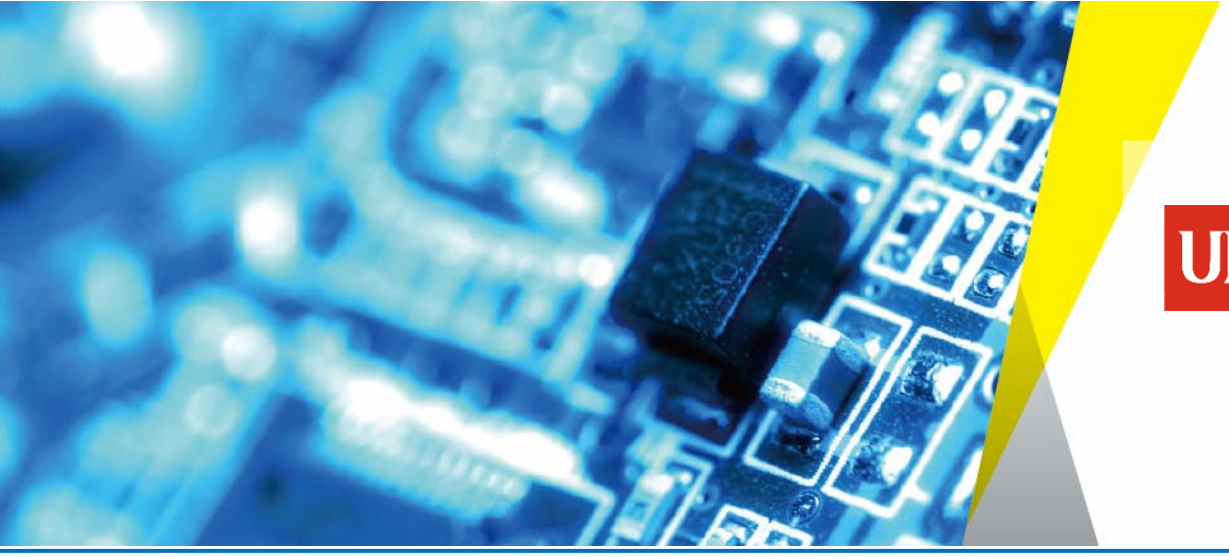
9.1 UNI-ROYAL recommend the storage condition temperature: 15℃~35℃, humidity :25%~75%.
(Put condition for individual product)
Even under UNI-ROYAL recommended storage condition, solderability of products over 1 year old.
(Put condition for each product) may be degraded.

9.2 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.

9.3 Product performance and soldered connections may deteriorate if the products are stored in the following places:
a. Storage in high Electrostatic
b. Storage in direct sunshine、rain and snow or condensation
c. Where the products are exposed to sea winds or corrosive gases, including Cl_2, H_2S_3 NH_3, SO_2, NO_2.

10. Record

Version	Description of amendment	Page	Date	Amended by	Checked by
1	First issue of this specification	1~6	Mar.20, 2018	Chen Haiyan	Chen Nana



DATA SHEET

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

Part Name **PRVA Series**

Uniroyal Electronics Global Co., Ltd.

88 Longteng Road, Economic & Technical Development Zone, Kunshan, Jiangsu, China

Tel +86 512 5763 1411 / 22 /33

Email marketing@uni-royal.cn

Manufacture Plant Uniroyal Electronics Industry (kunshan) co., ltd.
Uniroyal Electronics Industry Co., Ltd.
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 (≧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 1watt to 16watt, the 5th digit will be a number or a letter code and the 6th digit will be the letters of W.
Example: 5W=5W

2.2.2 For power rating between20 watt to 99 watt, the 5th and the 6th 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 8th 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 9th to 11th please refer to point a) of item 4.
Example:
W12J=1.2Ω W121=120Ω P503=50KΩ

2.5 The 12th, 13th & 14th digits.

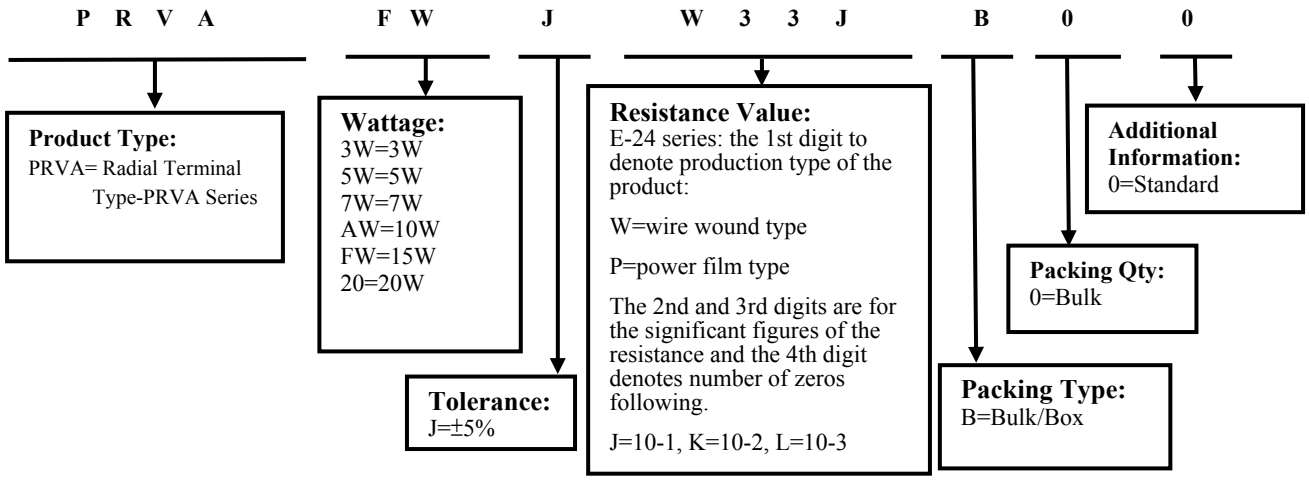
2.5.1 The 12th digit is to denote the Packaging Type with the following codes:
B=Bulk/Box

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.

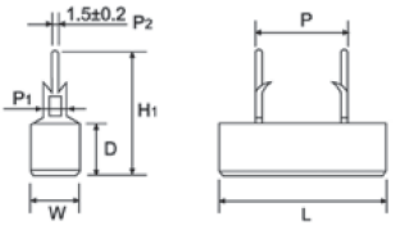
Pattern:

M: Power film

W: Wire wound

Color of marking: Black Ink

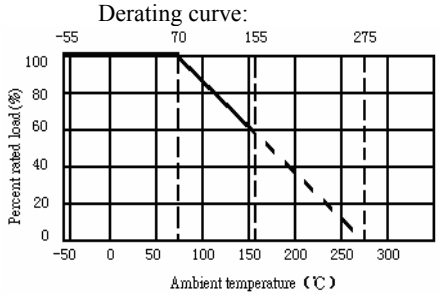
5. Dimension



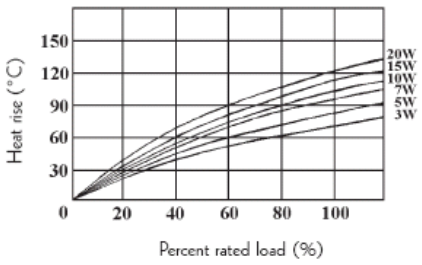
Type	Dimension(mm)						Resistance Range	
	W±1	D±1	L±1	P±1	P1±0.2	H±1	Wire Wound	Power Film
PRVA 3W	10	9	22	9.5	1.3	25	0.1Ω-47Ω	48Ω-150KΩ
PRVA 5W	10	9	27/25	15/9.5	1.3	25	0.1Ω-120Ω	121Ω-200KΩ
PRVA 7W	10	9	35	22	1.3	25	0.1Ω-560Ω	561Ω-200KΩ
PRVA 10W	10	9	48	35/32	1.3	25	1Ω-820Ω	821Ω-200KΩ
PRVA 15W	12.5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

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 Method (GB/T5729&JIS-C-5201&IEC60115)
Temperature Coefficient	≧20Ω: ±350PPM/℃max.. ＜20Ω: ±400PPM/℃max..	4.8 Natural resistance changes per temp. Degree centigrade $\frac{R_2-R_1}{R_1(t_2-t_1)} \times 10^6$ (PPM/℃) $\frac{R_3-R_1}{R_1(t_3-t_1)} \times 10^6$ (PPM/℃) R_1: Resistance Value at room temperature （t_1）; R_2: Resistance Value at upper limit temperature ± 2℃（t_2） R_3 : Resistance Value at lower limit temperature ± 3℃（t_3） Test pattern： Room temperature：（t_1） Upper limit temperature：（t_2） Lower limit temperature ：（t_3）
Short-time overload	Resistance change rate must be in ±(5%+0.05Ω) , 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 ± (1%+0.05Ω), and no mechanical damage.	4.18 Permanent resistance change when leads immersed to a point 2.0-2.5mm from the body in 260℃±5℃ 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℃±3℃ 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: ΔR/R: ±5% For Power film range: ＜100KΩ ΔR/R: ±5% ≧100KΩ ΔR/R: ±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 ±(5%+0.05Ω) , and no mechanical damage.	4.24 Temporary resistance change after 240 hours exposure in a humidity test chamber controlled at 40±2℃ and 90~95%RH relative humidity
Load life in humidity	For Wire-wound: ΔR/R: ±5% For Power film range: ＜100KΩ ΔR/R: ±5% ≧100KΩ ΔR/R: ±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℃±2℃ and 90 to 95% relative humidity.
Load life	For Wire-wound: ΔR/R: ±5% For Power film range: ＜100KΩ ΔR/R: ±5% ≧100KΩ ΔR/R: ±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℃ ±2℃ ambient.

Low Temperature Storage	For Wire-wound: ΔR/R: ±5% For Power film range: ＜100KΩ ΔR/R: ±5% ≧100KΩ ΔR/R: ±10%	4.23.4 Lower limit temperature，for 2H.
High Temperature Exposure	For Wire-wound: ΔR/R: ±5% For Power film range: ＜100KΩ ΔR/R: ±5% ≧100KΩ ΔR/R: ±10%	4.23.2 Upper limit temperature ，for 16H.

8. Precaution for storage/Transportation

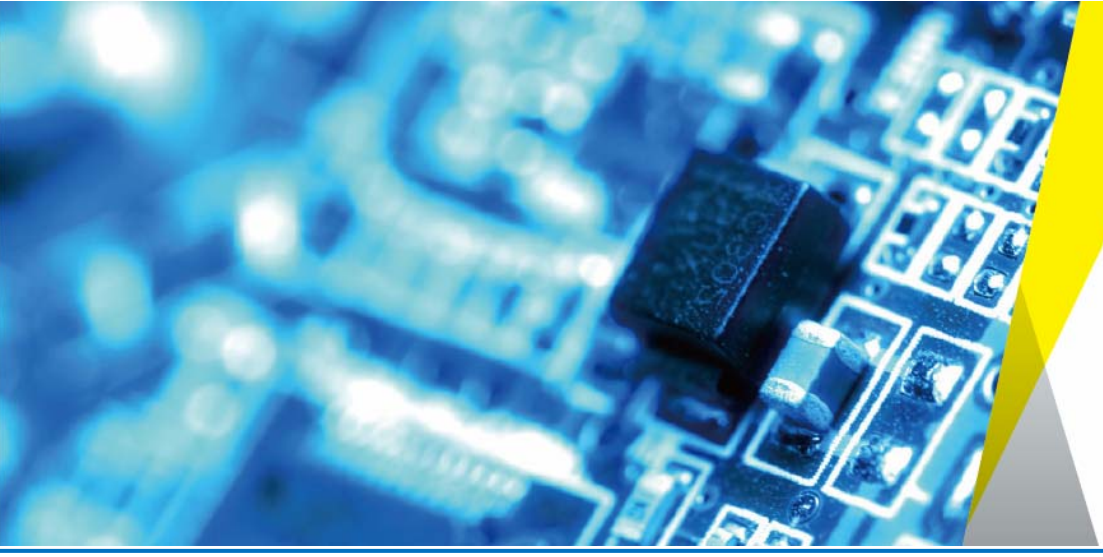
8.1. UNI-ROYAL recommend the storage condition temperature: 15℃~35℃, humidity :25%~75%.
(Put condition for individual product).Even under UNI-ROYAL recommended storage condition, solderability of products over 1 year old.
(Put condition for each product) may be degraded.

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:
a. Storage in high Electrostatic.
b. Storage in direct sunshine、rain and snow or condensation.
c. Where the products are exposed to sea winds or corrosive gases, including Cl_2, H_2S_3 NH_3, SO_2, NO_2.

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



DATA SHEET

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

Part Name **PRVB Series**

Uniroyal Electronics Global Co., Ltd.

88 Longteng Road, Economic & Technical Development Zone, Kunshan, Jiangsu, China

Tel +86 512 5763 1411 / 22 /33

Email marketing@uni-royal.cn

Manufacture Plant Uniroyal Electronics Industry (kunshan) co., ltd.
Uniroyal Electronics Industry Co., Ltd.
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-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.

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: PRVB= Radial Terminal Type-PRVB Series Resistors

2.2 5th~6th digits:

1W~16W (≧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 1watt to 16watt, the 5th digit will be a number or a letter code and the 6th digit will be the letters of W.

Example: 5W=5W

2.2.2 For power rating between20 watt to 99 watt, the 5th and the 6th 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 8th 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 9th to 11th please refer to point a) of item 4.

Example:

W12J=1.2Ω W121=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

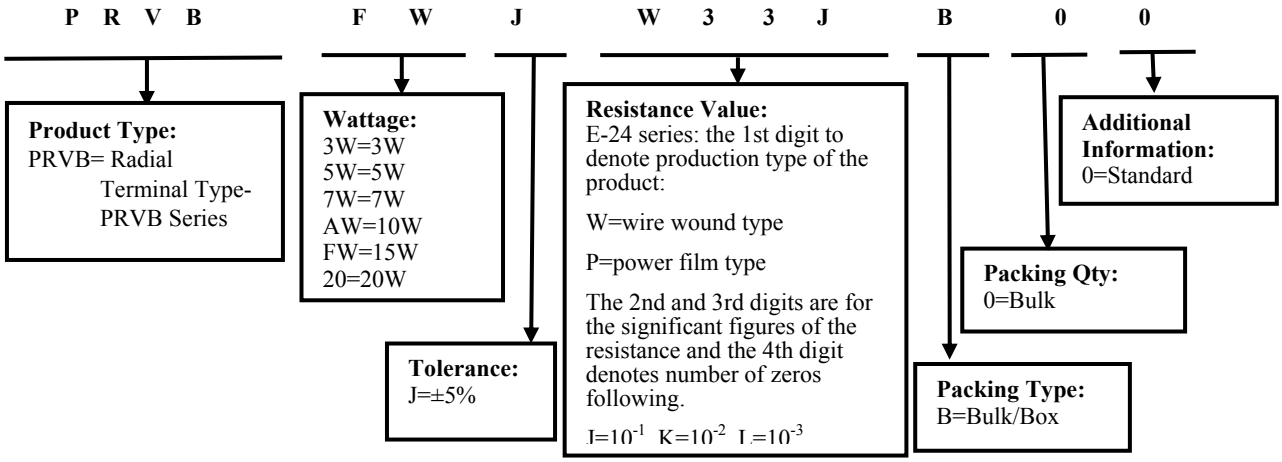
2.5.2 The 13th digit is normally to indicate the Packing Quantity, This digit should be filled with "0"for the Cement products with "Bulk/Box"packing requirements.

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

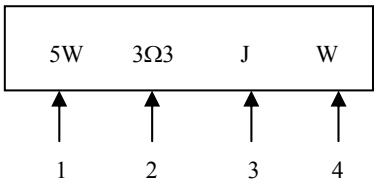
Example: 0= standard product

3. Ordering Procedure

(Example: PRVB 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.

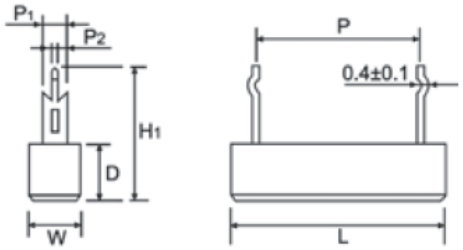
Pattern:

M: Power film

W: Wire wound

Color of marking: Black Ink

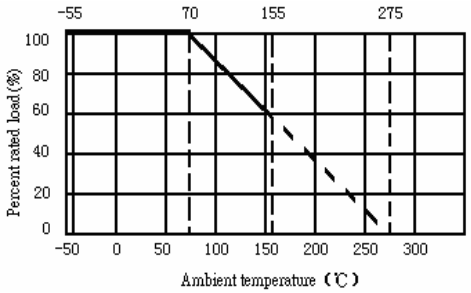
5. Dimension



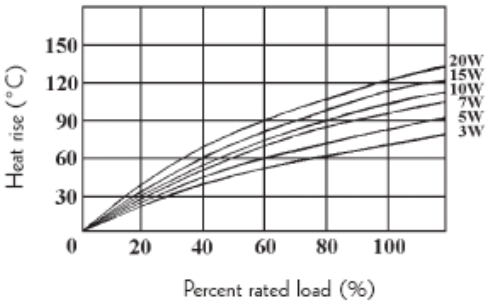
Type	Dimension(mm)						Resistance Range	
	W±1	D±1	L±1	P±1	P1±0.2	H±1	Wire Wound	Power Film
PRVB 3W	10	9	22	9.5	1.3	25	0.1Ω-47Ω	48Ω-150KΩ
PRVB 5W	10	9	27/25	15/9.5	1.3	25	0.1Ω-120Ω	121Ω-200KΩ
PRVB 7W	10	9	35	22	1.3	25	0.1Ω-560Ω	561Ω-200KΩ
PRVB 10W	10	9	48	35/32	1.3	25	1Ω-820Ω	821Ω-200KΩ
PRVB 15W	12.5	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 Method (GB/T5729&JIS-C-5201&IEC60115)
Temperature Coefficient	≧20Ω: ±350PPM/℃max.. ＜20Ω: ±400PPM/℃max..	4.8 Natural resistance changes per temp. Degree centigrade $\frac{R_2-R_1}{R_1(t_2-t_1)} \times 10^6$ (PPM/℃) $\frac{R_3-R_1}{R_1(t_3-t_1)} \times 10^6$ (PPM/℃) R_1: Resistance Value at room temperature （t_1）; R_2: Resistance Value at upper limit temperature ± 2℃（t_2） R_3 : Resistance Value at lower limit temperature ± 3℃（t_3） Test pattern： Room temperature：（t_1） Upper limit temperature：（t_2） Lower limit temperature ：（t_3）
Short-time overload	Resistance change rate must be in ±(5%+0.05Ω) , 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 ± (1%+0.05Ω), and no mechanical damage.	4.18 Permanent resistance change when leads immersed to a point 2.0-2.5mm from the body in260℃±5℃ 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℃±3℃ 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: ΔR/R: ±5% For Power film range: ＜100KΩ ΔR/R: ±5% ≧100KΩ ΔR/R: ±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 ±(5%+0.05Ω) , and no mechanical damage.	4.24 Temporary resistance change after 240 hours exposure in a humidity test chamber controlled at 40±2℃ and 90~95%RH relative humidity
Load life in humidity	For Wire-wound: ΔR/R: ±5% For Power film range: ＜100KΩ ΔR/R: ±5% ≧100KΩ ΔR/R: ±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℃±2℃ and 90 to 95% relative humidity.
Load life	For Wire-wound: ΔR/R: ±5% For Power film range: ＜100KΩ ΔR/R: ±5% ≧100KΩ ΔR/R: ±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℃ ±2℃ ambient.

Low Temperature Storage	For Wire-wound: ΔR/R: ±5% For Power film range: ＜100KΩ ΔR/R: ±5% ≧100KΩ ΔR/R: ±10%	4.23.4 Lower limit temperature，for 2H.
High Temperature Exposure	For Wire-wound: ΔR/R: ±5% For Power film range: ＜100KΩ ΔR/R: ±5% ≧100KΩ ΔR/R: ±10%	4.23.2 Upper limit temperature ，for 16H.

8. Precaution for storage/Transportation

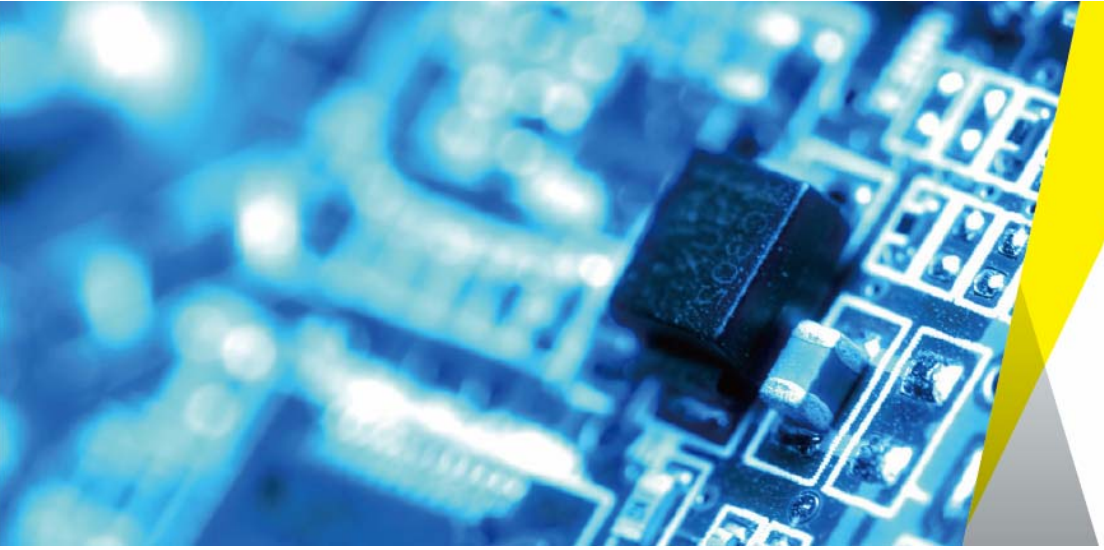
8.1. UNI-ROYAL recommend the storage condition temperature: 15℃~35℃, humidity :25%~75%.
(Put condition for individual product).Even under UNI-ROYAL recommended storage condition, solderability of products over 1 year old.
(Put condition for each product) may be degraded.

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:
a. Storage in high Electrostatic.
b. Storage in direct sunshine、rain and snow or condensation.
c. Where the products are exposed to sea winds or corrosive gases, including Cl_2, H_2S_3 NH_3, SO_2, NO_2.

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



DATA SHEET

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

Part Name **PRZ Series**

Uniroyal Electronics Global Co., Ltd.

88 Longteng Road, Economic & Technical Development Zone, Kunshan, Jiangsu, China

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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-PRZ Series Resistors manufactured by UNI-ROYAL.

1.2 Self-extinguishing

1.3 Extremely small &moisture resistance

1.4 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 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: PZ1A=PRZA-1 type PZ2A=PRZA-2 type PRZC=PRZC type

PZ1C=PRZC-1 type PRZD=PRZD type

2.2 5th~6th digits:

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

Example: 5W=5W

2.2.2 For power rating between20 watt to 99 watt, the 5th and the 6th digits will show the whole numbers of the power rating itself.

Example: 20=20W 75=75W

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 8th 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 9th to 11th please refer to point a) of item 4.

Example: W12J=1.2Ω W120=12Ω P273=27KΩ

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

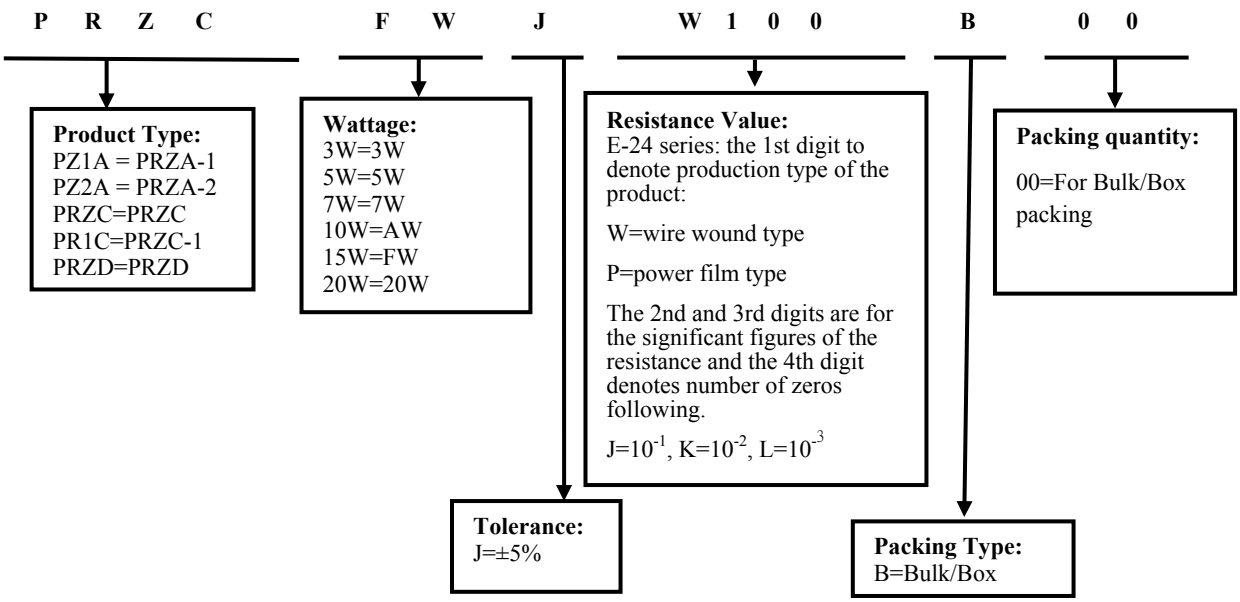
2.5.2 The 13th digit is normally to indicate the Packing Quantity, This digit should be filled with "0"for the Cement products with "Bulk/Box"packing requirements.

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

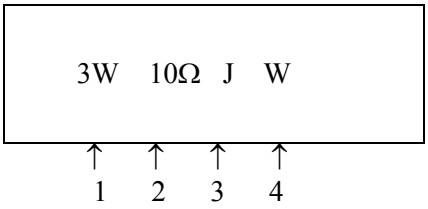
3. Ordering Procedure

(Example: PRZC 15W ±5% 10Ω B/B)



4. Marking

Example:

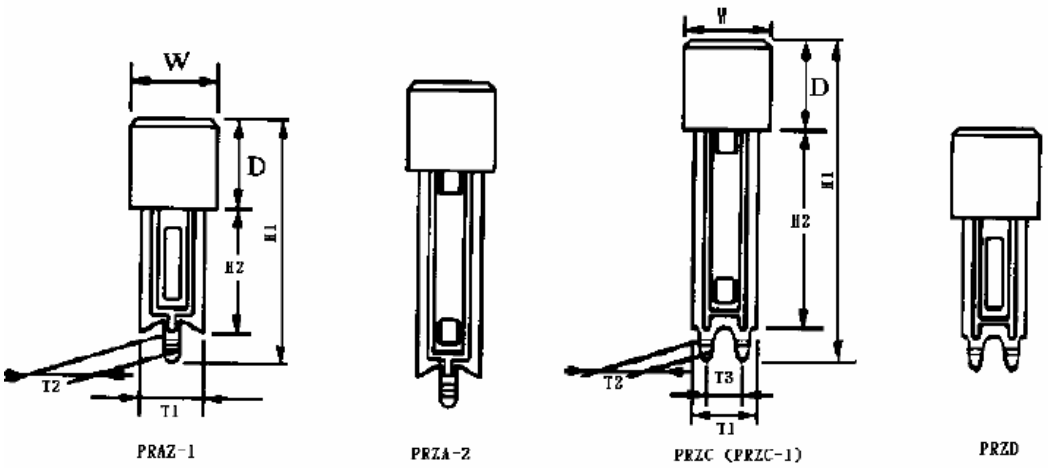


Code description and regulation:

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. Ratings & Dimension



5.1 PRZA-1Types:

Type	Dimension(mm)								Resistance Range	
	W±1	D±1	L	P±1.5	T1±1	T2±0.2	+2 H1 -1	+2 H2 -1	Wire Wound	Power Film
3W	10	9	22±1	9.5	7	1.6	24	10	0.1Ω~47Ω	48Ω~150KΩ
5W	10	9	25/27±1	9.5/15	7	1.6	24	10	0.1Ω~120Ω	121Ω~200KΩ
7W	10	9	35±1	22	7	1.6	24	10	0.1Ω~560Ω	561Ω~200KΩ
10W	10	9	48±1.5	32/35	7	1.6	24	10	1Ω~820Ω	821Ω~200KΩ
15W	12.5	11.5	48±1.5	32	10	3	35	15	1Ω~1KΩ	1.1KΩ~200KΩ
20W	12.5	13.5	63±1.5	42	10	3	35	15	2Ω~1.2KΩ	1.3KΩ~200KΩ

5.2 PRZA-2 Types:

Type	Dimension(mm)								Resistance Range	
	W±1	D±1	L	P±1.5	T1±1	T2±0.2	+2 H1 -1	+2 H2 -1	Wire Wound	Power Film
3W	10	9	22±1	9.5	7	1.6	39	25	0.1Ω~47Ω	48Ω~150KΩ
5W	10	9	27±1	15	7	1.6	39	25	0.1Ω~120Ω	121Ω~200KΩ
7W	10	9	35±1	22	7	1.6	39	25	0.1Ω~560Ω	561Ω~200KΩ
10W	10	9	48±1.5	32/35	7	1.6	39	25	1Ω~820Ω	821Ω~200KΩ
15W	12.5	11.5	48±1.5	32	10	3	47	30	1Ω~1KΩ	1.1KΩ~200KΩ
20W	12.5	13.5	63±1.5	42	10	3	47	30	2Ω~1.2KΩ	1.3KΩ~200KΩ

5.3 PRZC Types:

Type	Dimension(mm)									Resistance Range	
	W±1	D±1	L	P±1.5	T1±1	T2±0.2	T3±0.5	+2 H1 -1	+2 H2 -1	Wire Wound	Power Film
3W	10	9	22±1	9.5	7	1.5	3.5	36	22	0.1Ω~47Ω	48Ω~150KΩ
5W	10	9	27±1	15	7	1.5	3.5	36	22	0.1Ω~120Ω	121Ω~200KΩ
7W	10	9	35±1	22	7	1.5	3.5	36	22	0.1Ω~560Ω	561Ω~200KΩ
10W	10	9	48±1.5	32/35	7	1.5	3.5	36	22	1Ω~820Ω	821Ω~200KΩ
15W	12.5	11.5	48±1.5	32	10	2	5	47	30	1Ω~1KΩ	1.1KΩ~200KΩ
20W	12.5	13.5	63±1.5	42	10	2	5	47	30	2Ω~1.2KΩ	1.3KΩ~200KΩ

5.4 PRZC-1 Type

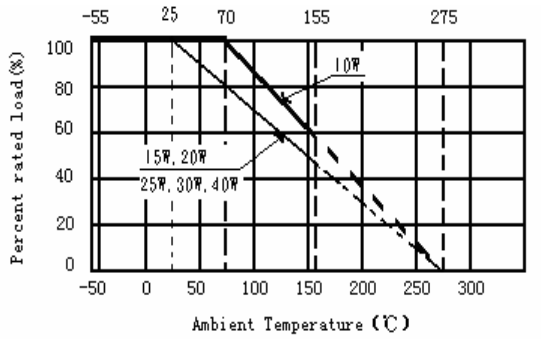
Type	Dimension(mm)									Resistance Range	
	W±1	D±1	L	P±1.5	T1±1	T2±0.2	T3±0.5	+2 H1 -1	+2 H2 -1	Wire Wound	Power Film
5W	10	9	27±1	15	7	1.3	3.5	39	24	0.1Ω~120Ω	121Ω~200KΩ
7W	10	9	35±1	22	7	1.3	3.5	39	24	0.1Ω~560Ω	561Ω~200KΩ

5.5 PRZD Type

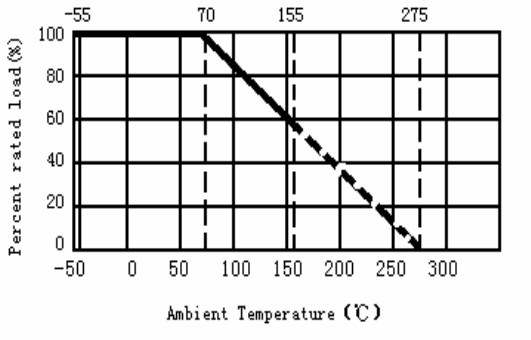
Type	Dimension(mm)									Resistance Range	
	W±1	D±1	L	P±1.5	T1±1	T2±0.2	T3±0.5	+2 H1 -1	+2 H2 -1	Wire Wound	Power Film
3W	10	9	22±1	9.5	7	1.3	3.5	24	10	0.1Ω~47Ω	48Ω~150KΩ
5W	10	9	27±1	15	7	1.3	3.5	24	10	0.1Ω~120Ω	121Ω~200KΩ
7W	10	9	35±1	22	7	1.3	3.5	24	10	0.1Ω~560Ω	561Ω~200KΩ
10W	10	9	48±1.5	32/35	7	1.3	3.5	24	10	1Ω~820Ω	821Ω~200KΩ

6. Derating Curve

Heat rise chart:



Derating curve:



6.1 Voltage rating:

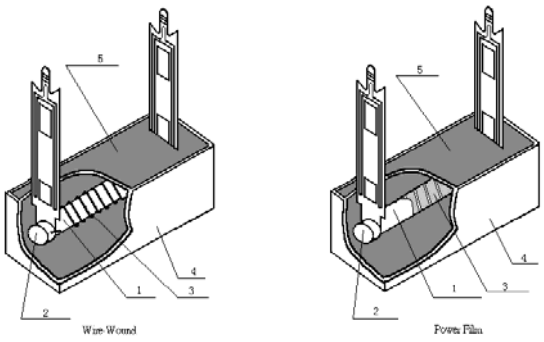
Resistors shall have a rated direct-current (DC) continuous working voltage or an approximate sine-wave root-mean-square (RMS) alternating-current (AC) continuous working voltage at commercial-line frequency and waveform corresponding to the power rating, as determined from the following formula:

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

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. Structure



No.	Name	Material Generic Name
1	Body	Al_2O_3
2	Cap	Tin plated iron
3	Resistor element	Power: Metal Oxide Film
		Wire wound: Alloy Wire
4	Ceramic case	Al_2O_3 Cao
5	Filling materials	SiO_2

8. Performance Specification

Characteristic	Limits	Test Method (GB/T5729&JIS-C-5201&IEC60115)
Temperature Coefficient	≧20Ω: ±350PPM/℃Max.. ＜20Ω: ±400PPM/℃Max..	4.8 Natural resistance changes per temp. Degree centigrade $\frac{R_2-R_1}{R_1(t_2-t_1)} \times 10^6$ (PPM/℃) $\frac{R_3-R_1}{R_1(t_3-t_1)} \times 10^6$ (PPM/℃) R_1: Resistance Value at room temperature （t_1）; R_2: Resistance Value at upper limit temperature ± 2℃（t_2） R_3 : Resistance Value at lower limit temperature ± 3℃（t_3） Test pattern： Room temperature：（t_1） Upper limit temperature：（t_2） Lower limit temperature ：（t_3）
Short-time overload	Resistance change rate must be in ±(5%+0.05Ω) ,and no mechanical damage.	4.13 Permanent resistance change after the application of a potential of 2.5 times RCWV for 5 seconds.
Resistance to soldering heat	Resistance change rate must be in ± (1%+0.05Ω) ,and no mechanical damage.	4.18 Permanent resistance change when leads immersed to a point 2.0-2.5mm from the body in 260℃±5°c solder for 10±1 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.
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.
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℃±3℃ Dwell time in solder: 2~3seconds.
Rapid change of temperature	For Wire-wound: ΔR/R: ±5% For Power film range: ＜100KΩ ΔR/R: ±5% ≧100KΩ ΔR/R: ±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 ±(5%+0.05Ω) ,and no mechanical damage.	4.24 Temporary resistance change after 240 hours exposure in a humidity test chamber controlled at 40±2℃ and 90~95%RH relative humidity
Load life in humidity	For Wire-wound: ΔR/R: ±5% For Power film range: ＜100KΩ ΔR/R: ±5% ≧100KΩ ΔR/R: ±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℃±2℃ and 90 to 95% relative humidity.
Load life	For Wire-wound: ΔR/R: ±5% For Power film range: ＜100KΩ ΔR/R: ±5% ≧100KΩ ΔR/R: ±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℃ ±2℃ ambient.
Low Temperature Storage	For Wire-wound: ΔR/R: ±5% For Power film range: ＜100KΩ ΔR/R: ±5% ≧100KΩ ΔR/R: ±10%	4.23.4 Lower limit temperature，for 2H.

High Temperature Exposure	For Wire-wound: ΔR/R: ±5% For Power film range: ＜100KΩ ΔR/R: ±5% ≧100KΩ ΔR/R: ±10%	4.23.2 Upper limit temperature ，for 16H.

9. Note

9.1 UNI-ROYAL recommend the storage condition temperature: 15℃~35℃, 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.

9.2 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.

9.3 Product performance and soldered connections may deteriorate if the products are stored in the following places:
a. Storage in high Electrostatic.
b. Storage in direct sunshine、rain and snow or condensation.
c. Where the products are exposed to sea winds or corrosive gases, including Cl_2, H_2S_3 NH_3, SO_2, NO_2.

10. Record

Version	Description of amendment	Page	Date	Amended by	Checked by
1	First issue of this specification	1~7	Mar.20, 2018	Chen Haiyan	Chen Nana