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DIRECT

Electronics Tech.

(UPR) Ultra Precision Resistor Networks

Web: www.direct-token.com

Email: rfq@direct-token.com

Direct Electronics Industry Co., Ltd.

China: 12F, Zhong Xing Industry Bld., Chuang Ye Road,
Nan Shan District, Shen Zhen City,
Guang Dong, China 518054
Tel: +86 755 26055363; Fax: +86 755 26055365

Taiwan: No.137, Sec. 1, Zhongxing Rd., Wugu District,
New Taipei City, Taiwan, R.O.C. 24872
Tel: +886 2981 0109 Fax: +886 2988 7487

► Product Introduction

Direct's wider Ohmic range precision resistor networks have more options.

Features :

- Precision tolerance tight to T($\pm 0.01\%$).
- Superior TCR narrowed to C10 ($\pm 2 \text{ ppm}/^\circ\text{C}$).
- Precision metal film networks, Lead (Pb)-free and RoHS compliant.
- Any value available within resistance range, excellent stability and reliability.

Applications :

- Bridge Circuitry.
- Precision Amplifiers.
- Test and Measurement.
- Medical, Precision Bypass.
- Simulation Equipment, Divider.
- High Precision Instrumentation.
- Audio (High End Stereo Equipment).
- Commercial Avionics, Data Convertors.

Providing design engineers with an economical means of creating precision voltage dividers and set accurate amplifier gains for a wide range of applications, Direct Electronics is offering its series of precision thin-film networks.

Constructed with Direct EE/RE 1/10 series to form a stable, high precision and low temperature coefficient. The networks are protected from moisture by a proprietary passivation material.

Customer can specify Tolerance and Temperature Coefficient range designed to satisfy challenging and specific technical requirements. The resistance and TCR range makes these networks ideal for a number of applications, including test and measurement devices, commercial avionics and medical equipment or devices. Other applications for the networks are instrumentation amplifiers, measurement bridge circuitry, data convertors and precision analogue circuits.

The thin-film networks also can be designed with custom schematics to meet individual customer specifications. The networks provide excellent resistor precision and accuracy with resistor tolerances to $\pm 0.01\%$. They have TCR values to $\pm 2 \text{ ppm}/^\circ\text{C}$, providing superior performance over the military temperature range.

UPR Series equate IRC, EBG Precision Devices with fast delivery and more competitive price. For non-standard technical requirements and special applications, please contact us. Besides, you can link to Direct official website "[Precision Resistors](http://www.direct-token.com)" to get more information.

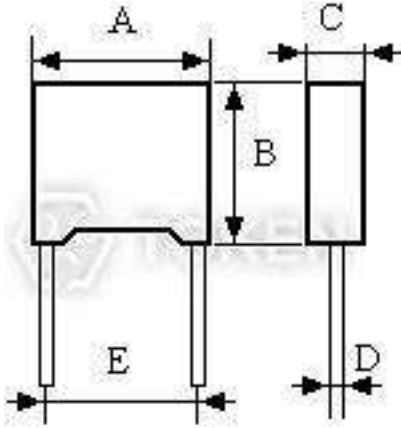
UPR Versus UPSC Series:

- UPSC Series have the advantage of compact body size.
- The electric characteristics of UPR and UPSC are the same.
- UPR Series have the advantage of wider resistance range $10\Omega\sim 5\text{M}\Omega$.



► **Dimensions & Technical Characteristics**

Dimensions & Technical Characteristics (UPR)

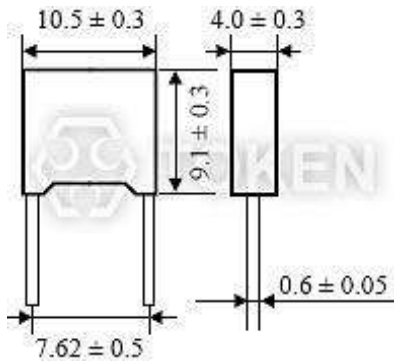
Dimensions (Unit: mm)	A	10.5 ± 0.3	
	B	9.1 ± 0.3	
	C	4.0 ± 0.3	
	D	0.6 ± 0.05	
	E	7.62 ± 0.5	
Working Temperature (°C)	-10 ~ +70		
Rated Wattage at 70°C (W)	0.2		
Maximum Working Voltage (V)	250		
Nominal Resistance Range (Ω)	10Ω ~ 5MΩ	100Ω ~ 500KΩ	
Nominal Resistance Tolerance (%)	A2(±0.02), A5(±0.05), B(±0.1)	T(±0.01), A2(±0.02), A5(±0.05),B(±0.1)	
Temperature Coefficient (ppm/°C) [TCR: +25°C ~ +85°C]	C9(±3), C7(±5), C6(±10), C5(±15), C3(±25)	C10(±2), C9(±3), C7(±5), C6(±10), C5(±15), C3(±25)	
 <p>The diagram shows a cross-section of a resistor network. Dimension A is the width of the main body. Dimension B is the height of the main body. Dimension C is the width of the terminal. Dimension D is the thickness of the terminal. Dimension E is the length of the terminal lead.</p>			
(UPR) Resistor Network Dimensions			

- Remark: 1. Customer can specify Tolerance and Temperature Coefficient range to meet your own needs.
- 2. It can be required to Direct's representatives if customer's requirement beyonds the range of Direct's specifications.

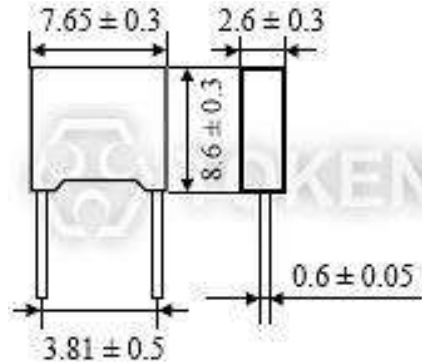
► **UPR Versus UPSC Series**

UPR Versus UPSC Series

Nominal Resistance Range (Ω)		Nominal Resistance Tolerance (%)	Temperature Coefficient (ppm/ $^{\circ}$ C) [TCR: +25 $^{\circ}$ C ~ +85 $^{\circ}$ C]
UPR	UPSC		
10 Ω ~ 5M Ω	40 Ω ~ 5M Ω	A2 \pm 0.02 A5 \pm 0.05 B \pm 0.1	C9 \pm 3ppm/ $^{\circ}$ C C7 \pm 5ppm/ $^{\circ}$ C C6 \pm 10ppm/ $^{\circ}$ C C5 \pm 15ppm/ $^{\circ}$ C C3 \pm 25ppm/ $^{\circ}$ C
100 Ω ~ 500K Ω	200 Ω ~ 500K Ω	T \pm 0.01 A2 \pm 0.02 A5 \pm 0.05 B \pm 0.1	C10 \pm 2ppm/ $^{\circ}$ C C9 \pm 3ppm/ $^{\circ}$ C C7 \pm 5ppm/ $^{\circ}$ C C6 \pm 10ppm/ $^{\circ}$ C C5 \pm 15ppm/ $^{\circ}$ C C3 \pm 25ppm/ $^{\circ}$ C



(UPR) Wider Ohmic Range Networks
Dimensions (Unit: mm)



(UPSC) Compact Size Networks
Dimensions (Unit: mm)

Order Codes

Order Codes (UPR) Resistance Value 10Ω ~ 5MΩ

UPR	100R		A5		C6		P	
Part Number	Resistance Value (Ω)		Resistance Tolerance (%)		Temperature coefficient (PPM/°C)		Package	
UPR							P	Bulk
10R	10		A2	±0.02	C3	±25		
100R	100		A5	±0.05	C5	±15		
1K	1K		B	±0.10	C6	±10		
1K1	1.1K				C7	±5		
11K	11K				C9	±3		
1M1	1.1M							

Order Codes (UPR) Resistance Value 100Ω ~ 500KΩ

UPR	1K		A5		C6		P	
Part Number	Resistance Value (Ω)		Resistance Tolerance (%)		Temperature coefficient (PPM/°C)		Package	
UPR							P	Bulk
1K	1K		T	±0.01	C3	±25		
1K1	1.1K		A2	±0.02	C5	±15		
11K	11K		A5	±0.05	C6	±10		
110K	110K		B	±0.10	C7	±5		
					C9	±3		
					C10	±2		



► General Information

High Precision Devices Made in Direct

Direct is equipped to design and produce custom components to meet many design and reliability demands.

Direct's line of high-reliability and precision products reflects a long-term commitment to our industrial and military customers. In addition to standard industry-grade resistor products, we also have many resistive products designed to meet various military source-controlled drawings.

We continually strive to meet the changing application requirements of the markets by developing new products and manufacturing technologies on an on-going basis.

Enhanced Precision and Stability for Low-Cost Uses

Every component Direct provides to the commercial, industrial, and military markets for cost-efficiency uses is backed by the comprehensive testing and failure analysis capabilities of our own technical staff, whom are industrial experts in understanding and meeting the requirements of the environment.

Low TCR - Fast Approach to a Steady State

Direct Electronics provides a precision Temperature Coefficient of Resistance TCR as low as 2 ppm/°C, If you must guarantee a smaller resistance change in your application. TCR is the best known parameter used to specify a resistor's stability, and is used to depict the resistive element's sensitivity to temperature change due to ambient temperature variations.

A resistor's TCR tells how much its value changes as its temperature changes. It is usually expressed in ppm/°C (parts per million per degree Centigrade) units.

Long-Term Proven Service

Our technical expertise, our knowledge of the industry, our broad product offering, and our ability to work long-term are all part of Direct's ongoing commitment to meeting the changing requirements of our most reliability-conscious customer, today and in the future.

