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# DIRECT

## Electronics Tech.

### (RE)

# Ultra Precision Resistors

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**▶ Product Introduction****Direct's Precision Military Established Resistors are Ten-Times More Accurate.****Features :**

- Power rating from 0.125W to 1.5W.
- Military/Established Reliability and Stability.
- Extreme precision tolerance tight to  $\pm 0.01\%$ .
- Temperature coefficient narrowed to  $\pm 2\text{PPM}/^\circ\text{C}$ .
- Industrial grades, RoHS Compliant, metal film lacquer coated.
- Covers all general type precision resistive products.

**Applications :**

- Measuring and calibration equipment,
- Telecom, Industrial process control systems,
- Test and measurement, Space and aircraft electronics.

The (RE) Series from Direct Electronics is capped ultra-precision metal-film resistors, as well as a complete selection of MIL-PRF-55182 and GJB244A-2001 quality standards. Direct offers a low-cost alternative to traditional solutions for precision applications.

The (RE) is available in a resistance range of  $10\Omega \sim 10\text{M}\Omega$  with a precision tolerance of  $\pm 0.01\%$  and a temperature coefficient of resistance (TCR) of  $\pm 2\text{PPM}/^\circ\text{C}$ , although other tolerances and TCRs are available.

The resistance element in these devices is a precisely controlled thin film of metal alloy deposited on a high quality alumina substrate. Plated caps are force-fitted before the assembly is trimmed using advanced laser techniques to ensure excellent performance and low electrical noise. Leads are welded to the end caps prior to the resistor being coated with epoxy.

Products equate Vishay, Ohmite, Caddock, IRC, EBG, and Panasonic Precision Devices with more competitive price and fast delivery. Detailed precision (RE) specifications, both mechanical and electrical, please contact our sales representative or link to Direct official website "[Precision Resistors](#)" for more information.

**Production Standard:**

Which is made referencing to Chinese National Quality Standard GJB244A-2001 standards, and USA Military/Established Reliability MIL-PRF-55182 in environmental and dimensional requirements.

**Power Rating:**

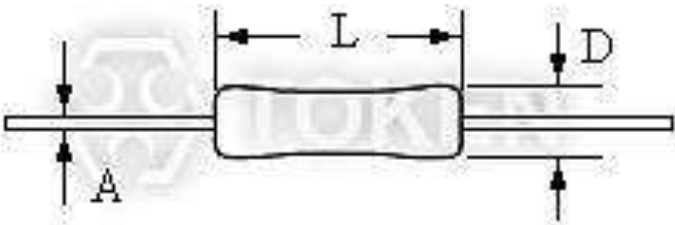
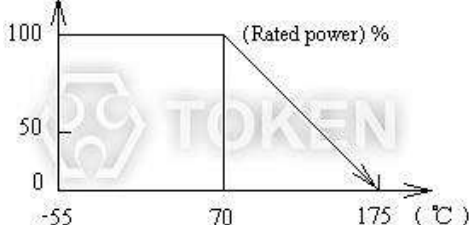
Power ratings are based on the following two conditions,

- $\pm 2.0\%$  maximum  $\Delta R$  in 10 000 h load life.
- $+ 175^\circ\text{C}$  maximum operating temperature.



► **Dimensions & Technical Characteristics**

**Dimensions & Technical Characteristics (RE)**

Type		RE50	RE55	RE60	RE65	RE70	RE75
Rated Wattage (W)	70 °C	0.125	0.25	0.5	0.75	1.0	1.5
Max. Working Voltage (V)		200	200	250	300	350	500
Dimensions (Unit: mm)	L ± 0.3	4.0	6.7	9.8	12.5	14.1	17.8
	D ± 0.4	1.4	2.05	3.2	3.6	4.65	7.2
	A ± 0.05	0.40	0.60	0.60	0.60	0.80	0.80
Resistance Range (Ω)		1Ω ~ 3MΩ	0.05Ω ~ 10MΩ	0.05Ω ~ 10MΩ	0.05Ω ~ 10MΩ	0.05Ω ~ 10MΩ	0.05Ω ~ 10MΩ
Working Temperature Range		-55°C ~ +175°C					
Nominal Resistance Tolerance		A2 (±0.02%), A5 (±0.05%), B(±0.10%), C(±0.25%), D(±0.50%), F(±1.00%) between 10Ω to 350KΩ can be reached to T(±0.01%)					
Temperature Coefficient PPM Normal test range(+25°C ~ +85°C) Special require range(-10°C ~ +50°C)		C7(±5PPM/°C), C6(±10PPM/°C), C5(±15PPM/°C), C3(±25PPM/°C), C2(±50PPM/°C), C1(±100PPM/°C) between 10Ω to 350KΩ can be reached to C9(±3PPM/°C), C10(±2PPM/°C)					
 <p>Coating Type (RE) Dimensions</p>				 <p>(RE) Power VS Temperature Curve</p>			

● Remark: Please contact Direct's Representatives if your requirement is not in above range.



## ► Mechanical and Electrical Test Conditions

### Mechanical and Electrical Test Conditions (RE)

Type	Item	Method	Requirement
Long Period	Life Time	GJB244A (MIL-PRF-55182) 4.8.18 Rated Wattage, 125 °C, 2000h, 10000h	GJB244A (MIL-PRF-55182) 3.24 $\Delta R \leq \pm(0.5\%R + 0.01\Omega)$ $\Delta R \leq \pm(2\%R + 0.01\Omega)$
	Humidity	GJB244A (MIL-PRF-55182) 4.8.18 -10°C ~ +65°C, RH<90% Rated Wattage, Cycle 240h.	GJB244A (MIL-PRF-55182) 3.21 $\Delta R \leq \pm(0.4\%R + 0.01\Omega)$
	High Temp Exposed	GJB244A 4.8.19 175°C 2000h	GJB244A (MIL-PRF-55182) 3.25 $\Delta R \leq \pm(2.0\%R + 0.01\Omega)$
Short Period	Dielectric Voltage	GJB244A (MIL-PRF-55182) 4.8.12/4.8.23/4.8.10	GJB244A (MIL-PRF-55182) 3.18/3.29/3.16 $\Delta R \leq \pm(0.15\%R + 0.01\Omega)$ no physical damage, arc, isolation break through
	Lead Strength, Impact, High Frequency Vibration	GJB244A (MIL-PRF-55182) 4.8.11/4.8.16/4.8.17	GJB244A (MIL-PRF-55182) 3.17/3.22/3.23 $\Delta R \leq \pm(0.20\%R + 0.01\Omega)$ no physical damage
	Solderability	GJB244A (MIL-PRF-55182) 4.8.14	GJB244A (MIL-PRF-55182) 3.20 $\Delta R \leq \pm(0.10\%R + 0.01\Omega)$ no physical damage

## ► Order Codes

### Order Codes (RE)

RE60		0.5W		10R		D		C5		P	
Part Number	Rated Power (W)			Resistance Value (Ω)		Resistance Tolerance (%)		Temperature coefficient (PPM/°C)		Package	
	RE50	70°C	0.125	10R	10	T	±0.01	C2	±50	P	Bulk
RE55	RE55		0.25	100R	100	A2	±0.02	C3	±25		
RE60	RE60		0.5	1K1	1.1K	A5	±0.05	C5	±15		
RE65	RE65		0.75	1M	1M	B	±0.1	C6	±10		
RE70	RE70		1.0	10M	10M	C	±0.25	C7	±5		
RE75	RE75		1.5			D	±0.50	C9	±3		
						F	±1.00	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.

