

# RXE SERIES

## PRECISION WIRE WOUND RESISTORS

## MOLD WIRE WOUND RESISTORS

### Feature

- Advanced Germany **ISABELLENHÜETTE** alloy technology
- Excellent overall stability: Class 0.5%
- Very low TCR: up to  $\pm 10$ ppm/K
- Tolerance up to  $\pm 0.05\%$
- Non-inductance winding available under request
- Perfect pulse loading capability
- Compliant to RoHS directive 2011/65/EU
- Compliant to REACH (EC No. 1907/2006)) (last updated: 27/06/2018)

### Application

- Current sensor for test and measuring instruments
- Power supply with high reliability
- Components burn-in devices
- Pulse load and in rush current protectors
- Medical equipment
- Military electronics





1. PRODUCT: MOLD TYPE PRECISION WIRE WOUND RESISTORS
2. PART NUMBER: Part number is identified by the series name, power rating, size code, tolerance, temperature coefficient, packing style and resistance value.

Example:

<b>RXE</b>	<b>150</b>	<b>F</b>	<b>2</b>	<b>T</b>	<b>1R80</b>
<b>Series Name</b>	<b>Power rating</b>	<b>Tolerance</b>	<b>Temperature Coefficient</b>	<b>Packing Style</b>	<b>Resistance Value</b>

- (1) Series name: RXE SERIES
- (2) Power Rating: please see data sheet
- (3) Tolerance: please see data sheet
- (4) T.C.R.: please see data sheet
- (5) Packaging Type: B = Bulk/Box; T = Tape on Box Packing
- (6) Resistance Value for J tolerance: R47、1R0、100、101、102.....
- (7) Resistance Value for tighten tolerance: R470、1R00、10R0、1000、1001、1002



## 4. ELECTRICAL CHARACTERISTICS

Type		RXE75	RXE150	RXE300	型号
Standard applied		Q\SLC014-2000			执行标准
Resistance range	from	0.01Ω	0.01Ω	0.01Ω	阻值范围
	to	1kΩ	2.5kΩ	10kΩ	
Rated dissipation	$P_{25}$	1.1W	3W	5W	$P_{25}$ 25℃以下额定功率
Rated dissipation	$P_{70}$	3/4W	1.5W	3W	$P_{70}$ 70℃以下额定功率
Tolerance	(%)	W(±0.05); B(±0.10); C(±0.25); D(±0.5); F(±1); J(±5);			(%) 精度
Temperature coefficient	ppm/℃	C6(±10); C5(±15); C3(±25); C2(±50); C1(±100);			ppm/℃ 温度系数
Max. operating voltage		$\sqrt{P_{25}R}$			最大工作电压
Short time overload		10 $P_{25}$ during 10 s, $\Delta R/R < 0.1 \pm 0.05\Omega$			短时间过负荷试验
Climatic category(LCT/UCT/days)		-40/200/56; 5 circles, $\Delta R/R < 0.5 \pm 0.1\Omega$			气候顺序、温度快速变化试验
Damp heat, steady state		56 days 40 °C ambient - R.H. 95, $\Delta R/R < 0.5 \pm 0.05\Omega$			稳态湿热试验
Endurance		1000 h at $P_{25}$ ; 90'/30' cycle; $\Delta R/R < \pm 0.5 \pm 0.05\Omega$			70℃环境下寿命试验
Dimension	±0.4mm	L=10, D=3.7	L=14.8, D=5.2	L=18.3, D=6.5	外观尺寸
	±0.1mm	d=0.6	d=0.6	d=0.8	

*Unless otherwise specified, all values are tested at the following condition: Temperature: 21 °C to 25 °C; Relative humidity: 45 to 70*

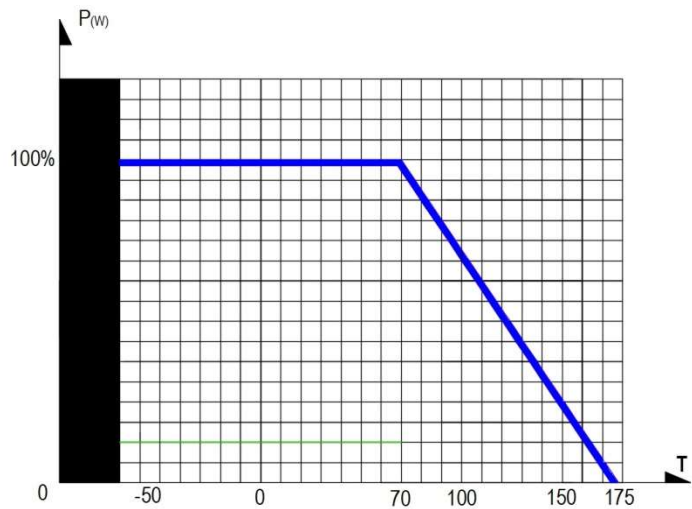
*Unless otherwise specified, all values are tested at the point 10mm away from the resistor body. Resistance out of range is available upon request.*

- \* Unless otherwise specified, all values are tested at the following condition:  
Temperature: 21 °C to 25 °C; Relative humidity: 45% to 70%;
- \* Rated Continuous Working Voltage (RCWV) =  $\sqrt{\text{Power Rating} \times \text{Resistance Value}}$
- \* Resistance out of range is available upon request.
- \* High insulating requirement is available upon request.
- \* Non-inductance wound is available on request.
- \* Digital marking is available upon request.



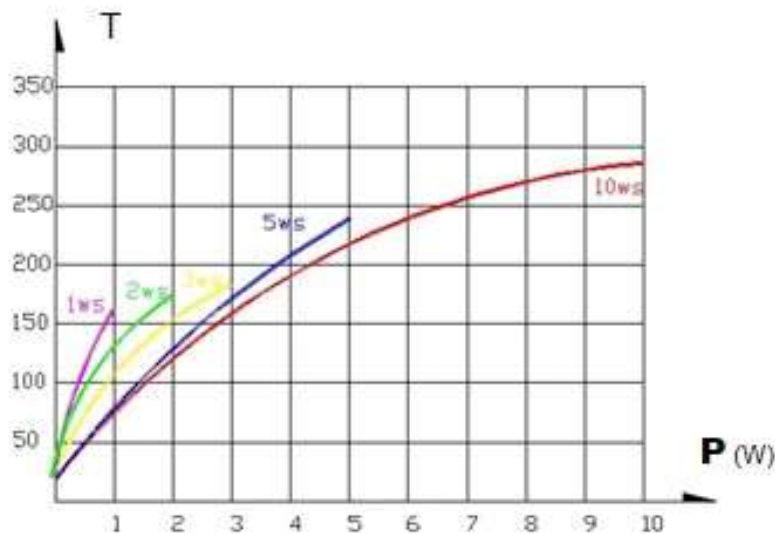
## 5. Derating curves

The power dissipation on the resistor generates a temperature rise against the local ambient, depending on the heat flow support of the printed-circuit board (thermal resistance). The rated dissipation applies only if the permitted film temperature is not exceeded. These resistors do not feature a limited lifetime when operated within the permissible limits. However, resistance value drift increasing over operating time may result in exceeding a limit acceptable to the specific application, thereby establishing a functional lifetime.



For resistors working at an ambience temperature of 70°C or above, the power rating shall be derated in accordance with the above curves.

## 6. Surface temperature of the resistors VS power





## 7. ENVIRONMENTAL CHARACTERISTICS

### (1) Insulation Resistance

IEC 60115-1, 4.6: in V-block for 60 seconds, the test resistance should be high than 10,000 M Ohm.

### (2) Dielectric Withstanding Voltage

IEC 60115-1 4.7: Place resistors in V-block for 60 Seconds, no breakdown or flashover.

### (3) Temperature Coefficient Test

IEC 60115-1, 4.8: Test of resistors at room temperature and 60°C or 100°C on request above room temperature. Then measure the resistance. The Temperature Coefficient is calculated by the following equation and its value should be within the range requested.

$$\text{Resistor Temperature Coefficient} = \frac{R - R_0}{R_0} \times \frac{1}{t - t_0} \times 10^6$$

R = Resistance value under the testing temperature

R<sub>0</sub> = Resistance value at the room temperature

t = the 2<sup>nd</sup> testing temperature

t<sub>0</sub> = Room temperature

### (4) Short Time Over Load Test

IEC60115-1 4.13: At 10 times rated voltage or 2 times the maximum working voltage whichever is lower for 5 seconds, the resistor should be free from defects. The change of the resistance value should be within  $\pm(0.25\%+0.05 \Omega)$  as compared with the value before the test.

### (5) Solderability

IEC 60115-1, 4.17: 235 $\pm$ 5°C for 3 $\pm$ 0.5 Seconds, there are at least 95% solder coverage on the termination.

### (6) Resistance to soldering heat:

IEC 60115-1, 4.18: 260 $\pm$ 3°C for 10 $\pm$ 1 Seconds, immersed to a point 3 $\pm$ 0.5mm from the body. The change of the resistance value should be within  $\pm(0.25\%+0.05 \Omega)$  as compared with the value before the test.



## (7) Climatic sequence

IEC 60115-1, 4.19:  $-55^{\circ}\text{C}$  to Room Temp. to  $+155^{\circ}\text{C}$  to Room Temp. (5 cycles). The change of the resistance value shall be within  $\pm(0.25\%+0.05\ \Omega)$  for tight tolerance and  $\pm(5.0\%+0.05\ \Omega)$  for normal tolerance as compared with the value before the test.

## (8) Damp Heat Steady State

IEC 60115-1, 4.24:  $40\pm 2^{\circ}\text{C}$ , 90-95% RH for 56 days, loaded with 0.1 times RCWV or the maximum working voltage whichever is lower. The change of the resistance value should be within  $\pm(0.50\%+0.05\ \Omega)$  for tight tolerance and  $\pm(5.0\%+0.05\ \Omega)$  for normal tolerance as compared with the value before the test.

## (9) Load Life Test

IEC 60115-1, 4.25:  $70\pm 2^{\circ}\text{C}$  at RCWV or the maximum working voltage whichever is lower for 1,000+48/-0 Hr. (1.5Hr. on, 0.5Hr. off). The resistors shall be arranged not much effected mutually by the temperature of others and the excessive ventilation shall not be performed. The change of the resistance value should be within  $\pm(0.50\%+0.05\ \Omega)$  for tight tolerance and  $\pm(5.0\%+0.05\ \Omega)$  for normal tolerance as compared with the value before the test.

## (10) Accidental Overload Test

IEC 60115-1, 4.26: 4 times RCWV for 1 Minute. No evidence of flaming or arcing

## (11) Resistance to Solvent

IEC 60115-1, 4.30: IPA for  $5\pm 0.5$  Min. with ultrasonic. No deterioration of coating and color code occurred.

## (12) High voltage high pulse overload

Apply 10 pulses with 10 times rated voltage to the resistor, the pulses parameter is  $10\mu\text{s}/700\mu\text{s}$ . The change of the resistance shall be within  $\pm(0.50\%+0.05\ \Omega)$  for tight tolerance and  $\pm(5.0\%+0.05\ \Omega)$  for normal tolerance as compared with the value before the load.



## Disclaimer

*All products, product specifications and data are subject to change without notice to improve reliability, function or design or otherwise.*

*Thunder Precision Resistors makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product to the maximum extent permitted by applicable law.*