APPROVAL SHEET

UPR SERIES

ULTRA-STABILITY METAL FILM RESISTORS

ULTRA-PRECISION METAL FILM RESISTORS

MOLD TYPE

PRODUCE	CHECK AND APPROVE	ACCEPTED BY
EM	CE	HONORABLE CUSTOMER
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Oct 22, 2023	Oct 24, 2023	

1. PRODUCT: ULTRA-STABLITY METAL FILM RESISTORS MOLD TYPE
   ULTRA-PRECISION METAL FILM RESISTORS MOLD TYPE

2. PART NUMBER: Part number of the resistor is identified by the series name, power rating, tolerance, temperature coefficient, packing type and resistance value.

   Example：

UPR	0.25	L	10	T	1002
Series Name	Power Code	Resistance Tolerance	Temperature Coefficient of Resistance	Packing Type	Resistance Value

(1) Series name: UPR series normal size;

UPR125,150 series narrow size

(2) Power Rating below 70℃: 0.25=125=0.25W、0.50=150=0.5W、1.0=1.0W

(3) Tolerance: V=±0.005%; L=±0.01%; P=±0.025%; W=±0.05%; B=±0.1%;

C=±0.25%; D=±0.5%; F=±1.0%;

(4) T.C.R.: U=0.6ppm/℃; 10=±1ppm/℃; 9=±2ppm/℃; 8=±3ppm/℃; 7=±5ppm/℃;

6=±10ppm/℃; 5=±15ppm/℃; 4=±20ppm/℃; 3=±25ppm/℃;

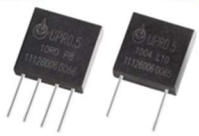
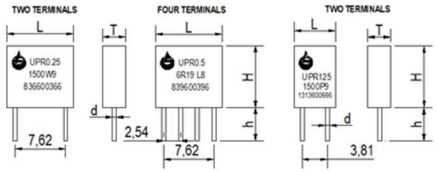
(5) Packaging Type: T＝TUBE/BOX

(6) Resistance Value: 1R00、20R0、1000、1001、1002、3303、1004、1005

3. Marking:

Digital marling including type, power, value, Tolerance, TCR, batch number.

4. ELECTRICAL CHARACTERISTICS

Type	UPR0.25	UPR0.50	UPR1.0	UPR125	UPR150	型号
Standard applied	Q\SLC003-2011					技术标准
Power rating P_{70}	0.25W	0.50W	1.0W	0.25W	0.50W	P_{70} 70℃以下额定功率
Maximum working voltage U_{max}	400V	500V	500V	400V	500V	U_{max} 最大工作电压
Max short time over load voltage	800V	1000V	1000V	800V	1000V	最大短时间过负荷电压
Resistance range	10Ω to 1MΩ					标准阻值范围
Tol. %	V(±0.005); L(±0.01); P(±0.025); W(±0.05); B(±0.10); C(±0.25); D(±0.50); F(±1.0);					% 精度
TCR (ppm/°C)	U(±0.6); 10(±1); 9(±2); 8(±3); 7(±5); 6(±10); 5(±15); 4(±20); 3(±25);					(ppm/°C) 温度系数
Stability	0.050%					稳定度等级
Operating Temperature range	-55℃~125℃					工作环境温度
Dimension ±0.5mm	L=10.5, H=10.5, T=3.5, h=7			L=6.9, H=10.5, T=3.5, h=7		±0.5mm 外观尺寸
Dimension ±0.05mm	d=0.6					±0.05mm
Dimension ±0.5(mm)	 					±0.5(mm) 尺寸 

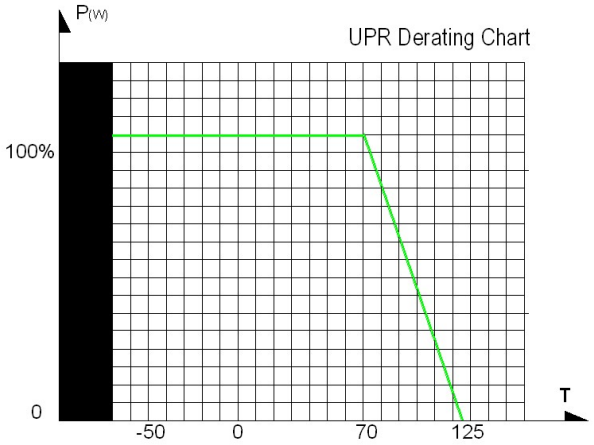
* Unless otherwise specified, all values are tested at the following condition:
Temperature: 21℃ to 25℃; Relative humidity: 45% to 70%;

* Rated Continuous Working Voltage (RCWV) = $\sqrt{\text{Power Rating} \times \text{Resistance Value}}$

* Resistance out of range is available upon request.

5. DERATING CURVE

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.



6. 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.
The temperature coefficients from room temperature to -40°C are available upon request but the results could be differed from those from room temperature to 60°C above.

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

R = Resistance value under the testing temperature
R_0 = Resistance value at the room temperature
t = the 2nd testing temperature
t_0 = Room temperature

(4) Short Time Overload 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 ±(0.01%+0.05 Ω) as compared with the value before the test.

(5) Solderability

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

(6) Resistance to soldering heat:

IEC 60115-1, 4.18: 260±3°C for 10±1 Seconds, immersed to a point 3±0.5mm from the body. The change of the resistance value should be within ±(0.025%+0.05 Ω) as compared with the value before the test.

(7) Climatic sequence

IEC 60115-1, 4.19: -55°C to Room Temp. to +155°C to Room Temp. (5 cycles). The change of the resistance value shall be within ±(0.02%+0.05 Ω) as compared with the value before the test.

(8) Damp Heat Steady State

IEC 60115-1, 4.24: 40±2°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 ±(0.025%+0.05 Ω) except UPR1.0 which should be within ±(0.05%+0.05 Ω) as compared with the value before the test.

(9) Load Life Test

IEC 60115-1, 4.25: 70±2°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 ±(0.025%+0.05 Ω) except UPR1.0 and those with resistance over 300k which should be within ±(0.05%+0.05 Ω) 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±0.5 Min. with ultrasonic. No deterioration occurred.

Disclaimer

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

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