RXM SERIES

PRECISION WIRE WOUND MELF RESISTORS

Feature

· Advanced Isabella Germany alloy technology
· Excellent overall stability: Class 0.5%
· Very low TCR: up to ±10ppm/K
· Tolerance up to ±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: PRECISION WIRE WOUND MELF RESISTORS

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

RXM	74P	0207	B	6	T	5101
Series Name	Power rating	Size code	Tolerance	Temperature Coefficient	Packing Style	Resistance Value

(1) Series name: RXM SERIES PRECISION WIRE WOUND MELF RESISTORS

(2) Power Rating: 73P=0.4W; 74P=0.6W; 16M=1.0W; 17M=2.0W; 18M=3.0W

(3) Size code: DIN: 0204; DIN: 0207; DIN0411; DIN0617

(4) Tolerance: W=±0.05%; B=±0.1%; C=±0.25%; D=±0.5%; F=±1.0%; J=5.0%

(5) T.C.R.: 6= ±10ppm/℃; 5=±15ppm/℃; 3=±25ppm/℃; 2=±50ppm/℃; 1=±100ppm/℃; 0= >100 ppm/℃ and <250ppm/℃

(6) Packaging Type: B＝BULK/BOX; T＝REEL/BOX

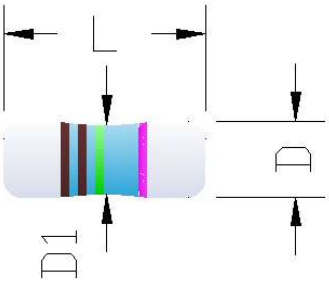
3. Resistance Value: 22K5(2252),2K15(2151),120R(1200),10R(10R0),1.5R(1R50)

4. Construction of the resistors:

Alloy wire made by Isabelle Germany with quite low temperature coefficient gently wounded on the high-grade ceramic cores or high-grade glass fiber rods

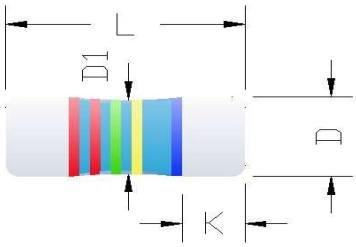
5. COLOR BAND-CODE:

Four color band codes for size 0204.



颜色	1st	2nd	3rd	倍率
黑色	0	0	0	1
棕色	1	1	1	10
红色	2	2	2	10^2
棕色	3	3	3	10^3
黄色	4	4	4	10^4
绿色	5	5	5	10^5
蓝色	6	6	6	10^6
紫色	7	7	7	10^7
灰色	8	8	8	
白色	9	9	9	
金色				10^{-1}
银色				10^{-2}

Five color band cods for size 0207

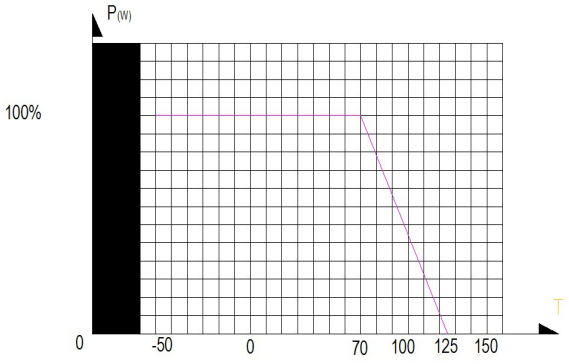


颜色	1st	2nd	3rd	倍率	精度
黑色	0	0	0	1	
棕色	1	1	1	10	F(±1.0%)
红色	2	2	2	10^2	G(±2.0%)
棕色	3	3	3	10^3	
黄色	4	4	4	10^4	
绿色	5	5	5	10^5	D(±0.50%)
蓝色	6	6	6	10^6	C(±0.25%)
紫色	7	7	7		B(±0.10%)
灰色	8	8	8		
白色	9	9	9		
金色				10^{-1}	J(±5.0%)
银色				10^{-2}	K(±10%)

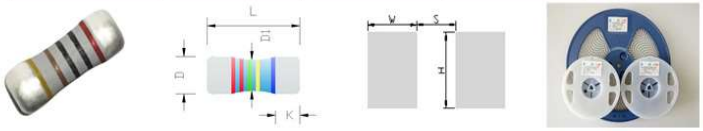
6. Derating curves

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 MELF resistors working at an ambiance temperature of 70℃ or above, the power rating shall be derated in accordance with the above curves.



7. ELECTRICAL CHARACTERISTICS

Type		RXM73P	RXM74P	RXM16M	RXM17M	RXM18M		型号
Metric type		DIN: 0204	DIN: 0207	DIN: 0207	DIN: 0411	DIN: 0617		德国工业标准型号
Standard applied		Q\SLC024-2014						技术标准
Resistance range	from	0.1Ω	0.1Ω	0.1Ω	0.1Ω	0.1Ω	从	阻值范围
	to	200Ω	1kΩ	1kΩ	6.8kΩ	6.8kΩ	到	
Resistance tolerance		C(±0.25%); D(±0.5%) F(±1%); G(±2%); J(±5%)						精度
Temperature coefficient		C6(±10ppm/℃); C5(±15ppm/℃); C3(±25ppm/℃); C2(±50ppm/℃); C1(±100ppm/℃);						温度系数
Rated dissipation	P_{70}	0.40W	0.60W	1.0W	2.0W	3.0W	P_{70}	70℃以下额定功率
Short time overload		$10P_{70}$ 10 s 25 °C ambients, △R/R<0.5%±0.01Ω						短时间过负荷试验
Damp heat, steady state		56 days 40 °C ambient - R.H. 95%, △R/R<0.50%±0.01Ω						稳态湿热试验
Endurance		1000 h at P_{70}; 90'/30' cycle; △R/R<±0.5%±0.01Ω						寿命试验
Dimension	±0.3mm	L=3.5;D=1.3	L=5.9;D=2.2	L=5.9;D=2.2	L=8.6;D=3.0	L=10.7;D=3.7	±0.3mm	外型尺寸
	(mm)	K≥0.6;D_1≥D-0.2	K≥0.8;D_1≥D-0.2	K≥0.8;D_1≥D-0.2	K≥1.0;D_1≥D-0.2	K≥1.2;D_1≥D-0.2	(mm)	
Soldering pad (recommen	(mm)	S=1.5;W=2;H=2.2	S=2.8;W=3;H=3	S=2.8;W=3;H=3	S=5.6;W=4;H=4	S=7.2;W=4;H=4	(mm)	建议焊盘尺寸
Outlooks								
Unless otherwise specified, all values are tested at the following condition: Temperature: 21 ℃ to 25 ℃; Relative humidity: 45% to 70%								
Non-inductive (NI) version is available upon request. Fusible version is available upon request.								

* 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 value out of range is available on request.
* Terminal caps of the resistors are all with three electroplating: the inner is copper plating + nickel plating to minimize the tin whisker phenomenon and final plating is tin to improve the solderability. The thickness of the 3 layers are Cu:>0.8μm + Ni:<1μm + Tin:>3μm.
* The post high temperature treatment after final tin plating is strictly controlled by our production procedure to minimize the tin whisker phenomenon

8. ENVIRONMENTAL CHARACTERISTICS

(1) Temperature Coefficient Test

IEC 60115-1, 4.8: Test of resistors at room temperature and 60°C (or 100°C upon 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_0 = Resistance value at the room temperature
t = the 2nd testing temperature
t_0 = Room temperature

(2) Short Time over Load Test

IEC60115-1 4.13: At 2.5 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 ±(0.25%+0.05Ω) as compared with the value before the test.

(3) Solderability

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

(4) Resistance to soldering heat:

IEC 60115-1, 4.18: 260±3°C for 10±1 Seconds, immersed the terminals of resistor one by one into the solder pot. The change of the resistance value should be within ±(0.15%+0.1Ω) as compared with the value before the test.

(5) Damp heat, steady state

IEC 60115-1, 4.24: 40±2°C, 90-95% RH for 1000±48 hours. loaded with 0.1 times RCWV or the maximum working voltage whichever is lower. The change of the resistance value should be within ± (0.5%+0.05Ω) for tight tolerance and ±(5.0%+0.05 Ω) for normal tolerance as compared with the value before the test.as compared with

the value before the load.

(6) Climatic sequence

IEC 60115-1, 4.23: Cycling Conditions:

dry heat	UCT; 16 h
damp heat,	55℃;24h; ≥90% RH
cyclic	1 cycle;
cold	LCT; 2 h
low air	8.5 kPa
pressure	25±10℃ 2h;
damp heat	55℃;24h; ≥90% RH ;
cyclic	5 cycles
	LCT=-55℃;
	UCT=125℃

Apply RCWV or the maximum working voltage whichever is lower for 1 min. The change of the resistance value should be within ±(0.5%+0.05Ω) as compared with the value before the load.

(7) Load Life Test 1000 hours

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 ±(0.5%+0.05Ω) for tight tolerance and ±(5.0%+0.05 Ω) for normal tolerance as compared with the value before the load.

(8) Accidental Overload Test

IEC 60115-1, 4.26: 4 times RCWV or 2 times the maximum working voltage whichever is lower for 1 Minute. No evidence of flaming or arcing.

(9) Component solvent resistance

IEC 60115-1, 4.29: Isopropyl alcohol; 50 °C; method 2. No visible damage.

(10) Solvent resistance of marking

IEC 60115-1, 4.30: Isopropyl alcohol; 50 °C; method 1, toothbrush. Marking legible; no visible damage

(11) Flammability

IEC 60115-1, 4.35: IEC 60695-11-5 (1), needle flame test; 10 s. No burning after 30 seconds.

(12) Damp heat, steady state, accelerated

IEC 60115-1, 4.37: (85 ± 2)°C, (85 ± 5)% RH; U = 0.3 x RCWV or U = 0.3 x U_{max} or 100V whichever is lower for 1000 hours. The change of the resistance value should be within ±(0.5%+0.05Ω) for tight tolerance and ±(5.0%+0.05 Ω) for normal tolerance as compared with the value before the load.

(13) Electrostatic discharge (Human Body Model)

IEC 60115-1, 4.38: IEC 61340-3-1 (1); 3 pos. + 3 neg. discharges.
RVM73P0204: 2kV; RXM74P0207 and RXM16M0207: 3kV;
RXM17M0411: 6kV; RXM18M0617: 6kV
The change of the resistance value should be within ±(0.50%+0.05Ω) 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.