

RMM Series 0.22 Ω

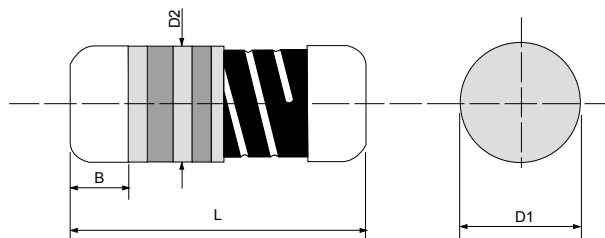
Metal Film MELF Resistor

Specifications Per

- IEC 115-1 115-2
- CECC 40101
- DIN 44061

Features

- SMD enabled structure
- Conformal coating against humidity
- Excellent solderability termination
- Products meet RoHS requirements and do not contain substances of very high concern identified by European Chemicals Agency



■ DIMENSIONS

Type	Body Length (L, mm)	Cap Diameter (D1, mm)	Body Diameter (D2, mm)	Soldering Spot (B, mm)	Net Weight Per 1000 pcs
RMM204	3.52 ± 0.15	1.35 ± 0.1	D1+0.02/ -0.15	0.6 Min.	17 grams

■ GENERAL SPECIFICATIONS

Type	Power Rating At 70°C	Maximum Working Voltage	Maximum Overload Voltage	Resistance	Resistance Tolerance	Available Resistance Values
RMM204	1/4W	200V	400V	0.22Ω	±5%	E-24

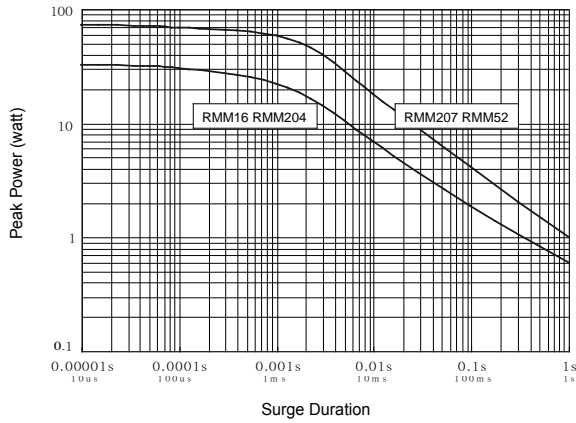
■ TECHNICAL SUMMARY

Characteristics	Ranges & Limits			
Operating Temperature Range, °C	-55 ~ +125			
Temperature Coefficient, PPM / °C	±1%, ±2%		±25, ±50, ±100	
	±5%		±100, ±350	
Dielectric Withstanding Voltage, VAC or DC	RMM16, RMM204		200	
	RMM207, RMM52		500	
Insulation Resistance, MΩ	>10 ⁴			
Film Temperature, °C	RMM16, RMM204, RMM207		125	
	RMM52		140	
Voltage Coefficient, PPM / V	<0.5			
Current Noise, μV / V	RMM16, RMM204		RMM207, RMM52	
	<15KΩ	<0.1	<10KΩ	<0.05
	15KΩ ~ 120KΩ	<0.4	10KΩ ~ 100KΩ	<0.2
	120KΩ ~ 1MΩ	<1.5	100KΩ ~ 1MΩ	<1
	1MΩ ~ 10MΩ	<4	1MΩ ~ 10MΩ	<3
Power Derating, Linear	100% for temp. < 70 °C down to zero at 125°C			
Tin Whisker (JESD201 Temperature Cycling & High Temp. / Humidity Storage), μm	<5			

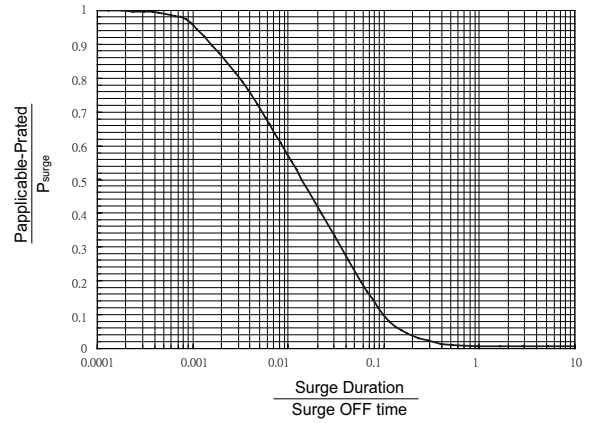
RMM Series 0.22 Ω

Metal Film MELF Resistor

■ SINGLE SURGE PERFORMANCE



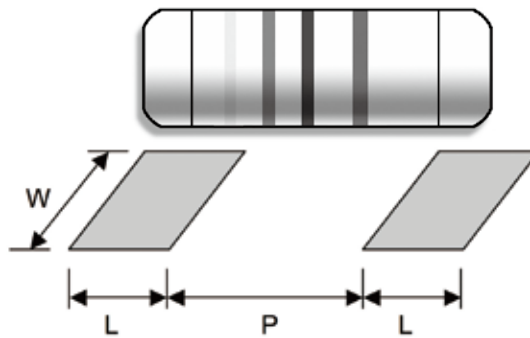
■ SURGE POWER DERATING CURVE



Notes:

- SINGLE SURGE PERFORMANCE graph is good for NON REPETITIVE applications operating in an ambient temperature of 70°C or less. For temperatures above 70°C, the graph power must be derated further linearly down to zero at 125°C.
- To determine applicable surge power in continuous-surge applications:
 1. Identify allowable duration and peak power P_{surge} of single surge;
 2. Determine ratio of surge duration/surge OFF time in application;
 3. Calculate $P_{applicable}$ backwardly according to Y-axis of SURGE POWER DERATING CURVE.

■ SUGGESTED PAD LAYOUT



Type	Soldering Mode	Pad Length (L, mm, Min.)	Pad Spacing (P, mm)	Pad Width (W, mm, Min.)
RMM204	Reflow	1.0	2.0 ± 0.2	1.6
	Wave	1.2	2.0 ± 0.2	1.6

For better heat dissipation / lower heat resistance, increase W & L.

RMM Series 0.22 Ω

Metal Film MELF Resistor

■ PERFORMANCE SPECIFICATIONS

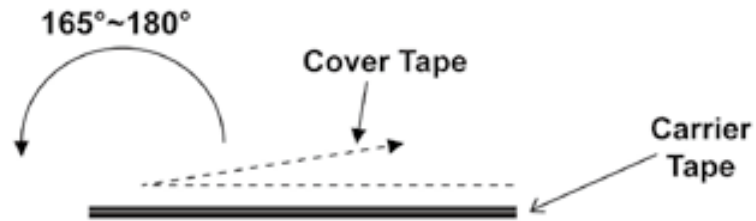
Characteristics	Test Conditions	Limits	
Short Time Overload	IEC 60115-1 4.13 5 seconds 2.5x rated voltage (not over max. overload voltage)	±0.5%	
Load Life	IEC 60115-1 4.25.1 Rated load 1,000 hours with 1.5 hours ON, 0.5 hours OFF, at 70°C	±1.5%	
Load Life In Humidity	IEC 60115-1 4.24 56 days rated load at 40°C and 93% relative humidity	±1.5%	
Load Life In Humidity (accelerated mode)	IEC 60115-1 4.39 1,000 hours at 85°C and 85% relative humidity with 0.1x rated voltage (not over 100V)	±2%	
Periodic Electric Overload	IEC 60115-1 4.37 3.9x rated voltage (not over max. overload voltage) with 0.1s ON, 2.5s OFF for 1,000 cycles	±2.5%	
Resistance To Soldering Heat	IEC 60115-1 4.18 10 seconds at 260°C solder bath temperature	±(0.5%+0.05R)	
Thermal Endurance	IEC 60115-1 4.25.3 1,000 hours without load	85°C	±(0.25%+0.05R)
		125°C	±(0.5%+0.05R)
Thermal Shock	IEC 60115-1 4.19 -55°C 30minutes, +125°C 30minutes	5 cycles	±(0.5%+0.05R)
		1,000 cycles	±(2.5%+0.05R)
Single pulse high voltage overload	IEC 60115-1 4.27 • 5 pulses of 1.2/50µs at 10x rated voltage (not over 400V for MM16 & MM204; not over 600V for MM207 & MM52) with interval of 12 sec. • 10 pulses of 10/700µs at 10x rated voltage (not over 400V for MM16 & MM204; not over 600V for MM207 & MM52) with interval of 60 sec.	±(0.5%+0.05R) ±(1.5%+0.05R)	
Electrostatic discharge (Human body mode)	IEC 60115-1 4.40 3 positive & 3 negative discharges with 2KV for MM16 & MM204 or 4KV for MM207 & MM52 (For continuous surge application please see Surge Performance paragraph)	±(2.5%+0.05R)	
Climatic test	IEC 60115-1 4.23 4.23.2 - dry heat: 16 hours 125°C 4.23.3 - damp heat: 24 hours 55°C with 95% relative humidity 4.23.4 - cold: 2 hours -55°C 4.23.5 - negative air pressure: 2 hour 8.5KPa at 25°C 4.23.6 - damp heat cyclic: 5 days 55°C with 95% relative humidity 4.23.7 - DC load: rated voltage at -55°C and 125°C each 1 Min.	±(1.0%+0.05R)	
Solderability	MIL-STD-202 Method 208 Solder area covered after 230±5°C/5±0.5 seconds with flux applied	> 95%	
Vibration	MIL-STD-202 Method 204 Six hours in each parallel and axial direction with a simple harmonic motion having an amplitude of 1.52mm and 10 to 20,000 Hz.	±(1.0%+0.1R)	
Bending test	IEC 60115-1 4.33 Pressing depth 2mm, 3 times	±(0.5%+0.05R)	
Flammability	IEC 60115-1 4.35 Needle flame test 10s	No burning after 30s	

RMM Series 0.22 Ω

Metal Film MELF Resistor

COVER TAPE PEELING SPECIFICATION

Recommended peeling force: 50±5gf



PART NUMBER

Example: RMM2041/4WR22J350PPMT/R

RMM204	1/4W	R22	J	350ppm	NIL
Type	Power 1/4W	Resistance R22=0.22Ω	Tolerance J (5%) K (10%) M (20%)	TCR ±350 ppm=350ppm	Packaging T/R = Tape and Reel