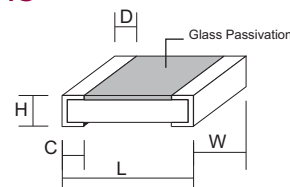


INTRODUCTION

RFE International, Inc. offers a wide range of chip resistors to meet your application requirements. They are made with metal glazed thick film on a high purity ceramic substrate which is overcoated for stability and protection.

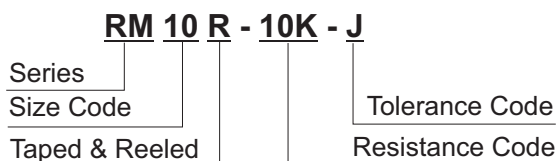
- Lower & Higher values see additional RM Series
- Anti-Sulfur Thick Film see RMS Series
- High Power Thick Film see RMH Series
- Anti-Sulfur High Power see RMP Series
- Thin Film see RMT Series
- Fusible Resistors see RMF Series
- Thick Film Array Chip see RCN Series
- Metal Array Low-Resistance see LR Series

DIMENSIONS



Size Code	Max. Dimension (mm)				
	L	W	H	C	D
RM02 (0201)	0.60±0.03	0.30±0.03	0.23±0.05	0.15±0.05	0.15±0.05
RM04 (0402)	1.00±0.10	0.50±0.05	0.30±0.05	0.15±0.10	0.15±0.10
RM06 (0603)	1.60±0.20	0.80±0.15	0.40±0.10	0.20±0.10	0.20±0.10
RM10 (0805)	2.00±0.20	1.25±0.15	0.50±0.15	0.30±0.15	0.40±0.15
RM12 (1206)	3.05±0.10	1.60±0.20	0.55±0.15	0.40±0.20	0.50±0.20
RM25 (1210)	3.05±0.10	2.50±0.20	0.55±0.15	0.50±0.20	0.50±0.20
RM50 (2010)	5.00±0.20	2.50±0.20	0.55±0.10	0.60±0.20	0.60±0.20
RM50S (1812)	4.50±0.10	3.00±0.10	0.55±0.05	0.55±0.20	0.70±0.20
RM1W (2512)	6.30±0.20	3.20±0.20	0.55±0.10	0.60±0.20	0.60±0.20
RM1WS (1218)	3.10±0.10	4.60±0.10	0.55±0.05	0.40±0.20	0.50±0.20
RM2W (2030)	5.10±0.10	7.60±0.10	0.60±0.05	0.80±0.20	0.80±0.20

PART NUMBER EXAMPLE



RESISTANCE CODE

Ohms	0.0	1.0	100	1.5K	15K	1.5 Meg	10 Meg
Code	0R0	1R0	100R	1K5	15K	1M5	10M

ELECTRICAL CHARACTERISTICS & RESISTANCE RANGE

Code	Size	Rated Power at 70°C	Max. Working Voltage	Max. Overload Voltage	T.C.R. (PPM/°C)	Resistance Range		
						B (±0.1%) D (±0.5%)	F (±1%)	J (±5%)
RM02	0201	0.05W	25V	50V	± 200	-----	10Ω ~ 1MΩ	10Ω ~ 1MΩ
RM04	0402	0.063W	50V	100V	± 200	-----	1Ω ~ 9.9Ω	1Ω ~ 9.9Ω
							1.1MΩ ~ 10MΩ	1.1MΩ ~ 10MΩ
RM06	0603	0.10W	75V	150V	± 400	-----	1Ω ~ 9.9Ω	1Ω ~ 9.9Ω
							10Ω ~ 1MΩ	10Ω ~ 10MΩ
RM10	0805	0.125W	150V	300V	± 400	-----	1Ω ~ 9.9Ω	1Ω ~ 9.9Ω
							10Ω ~ 1MΩ	10Ω ~ 10MΩ
RM12	1206	0.25W	200V	400V	± 400	-----	1Ω ~ 9.9Ω	1Ω ~ 9.9Ω
							10Ω ~ 1MΩ	10Ω ~ 10MΩ
RM25	1210	0.50W	200V	400V	± 400	-----	1Ω ~ 9.9Ω	1Ω ~ 9.9Ω
							10Ω ~ 1MΩ	10Ω ~ 10MΩ
RM50	2010	0.75W	200V	400V	± 200	-----	10Ω ~ 10MΩ	-----
							10Ω ~ 1MΩ	10Ω ~ 10MΩ
RM50S	1812	0.50W	200V	400V	± 400	-----	1Ω ~ 9.9Ω	1Ω ~ 9.9Ω
							10Ω ~ 1MΩ	10Ω ~ 10MΩ
RM1W	2512	1.0W	250V	500V	± 400	-----	1Ω ~ 9.9Ω	1Ω ~ 9.9Ω
							10Ω ~ 1MΩ	10Ω ~ 10MΩ
RM1WS	1218	1.0W	250V	500V	± 200	-----	1Ω ~ 9.9Ω	1Ω ~ 9.9Ω
							10Ω ~ 1MΩ	10Ω ~ 10MΩ
RM2W	2030	2.0W	250V	500V	± 400	-----	1Ω ~ 9.9Ω	1Ω ~ 9.9Ω
							10Ω ~ 1MΩ	10Ω ~ 10MΩ

ELECTRICAL CHARACTERISTICS & RESISTANCE RANGE (CONTINUE)

RATINGS FOR LOW RESISTANCE <1Ω

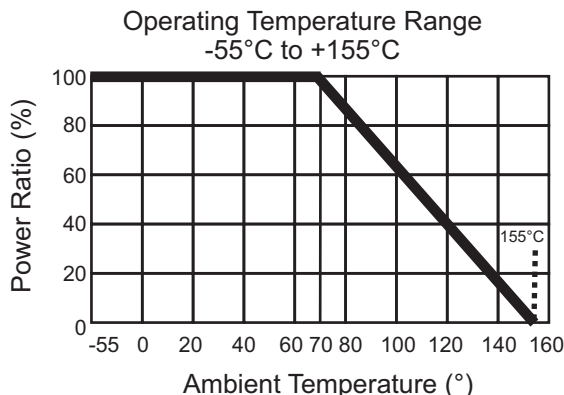
TYPE	Rated Power at 70°C	Max Working Voltage	Max Overload Voltage	T.C.R. (PPM/°C)	Resistance Range (mΩ) F (± 1%, J (± 5%))
RM04 (0402)	0.063 W	0.25 V	0.624 V	± 800	470 ~ 990
RM06 (0603)	0.1 W	0.31 V	0.775 V	± 800	100 ~ 330
				± 600	331 ~ 550
				± 400	511 ~ 990
RM10 (0805)	0.125 W	0.35 V	0.875 V	± 1000	10 ~ 50
				± 800	51 ~ 100
				± 600	101 ~ 330
RM12 (1206)	0.25 W	0.5 V	1.25 V	± 400	331 ~ 990
				± 800	10 ~ 50
				± 600	51 ~ 100
RM25 (1210)	0.33 W	0.57 V	1.425 V	± 500	101 ~ 330
				± 400	331 ~ 990
				± 800	10 ~ 50
RM50 (2010)	0.5 W	0.7 V	1.75 V	± 600	51 ~ 100
				± 400	331 ~ 990
				± 800	10 ~ 50
RM50S (1812)	0.5 W	0.7 V	1.75 V	± 600	51 ~ 100
				± 400	331 ~ 990
				± 800	10 ~ 50
RM1W (2512)	1 W	0.99 V	2.475V	± 700	51 ~ 100
				± 500	101 ~ 330
				± 400	331 ~ 990
RM1WS (1218)	1 W	0.99 V	2.475V	± 800	10 ~ 50
				± 400	51 ~ 990

RATINGS FOR HIGH RESISTANCE >10Meg Ω

TYPE	Rated Power at 70°C	Max Working Voltage	Max Overload Voltage	T.C.R. (PPM/°C)	Resistance Range (mΩ)	
					F (± 1%)	J (± 5%)
RM04 (0402)	0.063 W	50V	100V	± 200	10.1 MΩ ~ 54 MΩ	10.1 MΩ ~ 100 MΩ
RM06 (0603)	0.1 W	50V	100V			
RM10 (0805)	0.125 W	150V	300V			
RM12 (1206)	0.25 W	200V	400V			
RM25 (1210)	0.33 W	200V	400V			
RM50 (2010)	0.5 W	200V	400V			
RM1W (2512)	1 W	200V	400V			
RM1WS (1218)	1 W	200V	400V			

■ **PERFORMANCE CHARACTERISTICS**

■ **Power Derating Curve**



Power rating or current rating is in the case based on continuous full-load at ambient temperature of 70°C. For operation at ambient temperature in excess of 70°C, the load should be derated in accordance with figure of derating Curve.

■ **Voltage Rating or Current Rating**

Resistance Range: ≥1Ω

Rated Voltage: The resistor shall have a DC continuous working voltage or a RMS AC continuous working voltage at commercial-line frequency and wave form corresponding to the power rating, as determined formula as follows:

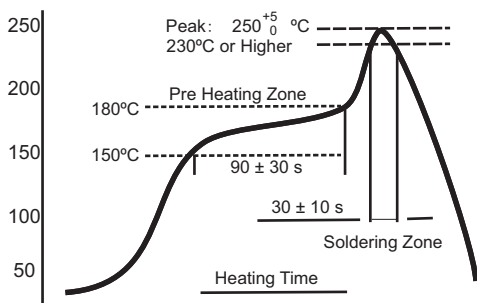
$$E = \sqrt{P \times R}$$

E = Rated Voltage (V)
P = Power Rating (W)
R = Nominal Resistance (Ω)

■ **Operation and Storage Temperature**

TYPE	MIN	MAX
Operation temperature	-55°C	70°C
Storage temperature	20°C	30°C
Storage humidity	30%	70°C

■ **Soldering Profile**

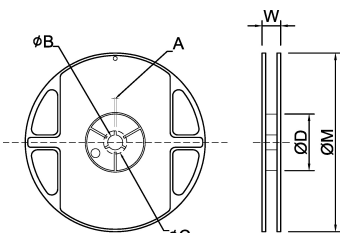


TEST PROCEDURES & REQUIREMENTS

Test Item	Test Method	Procedure	Requirements
Temperature Coefficient of Resistance (T.C.R.)	JIS C 5201-1 Clause 4.8	-55°C ~ +155°C, 20°C is the reference temperature	Refer to Ratings
Short Time Overload	JIS C 5201-1 Clause 4.13	General: 2.5 times RCWV or Max. Overload voltage for 5 seconds High Power: 2.5 times RCWV or Max. Overload voltage for 2 seconds	±1: ±(1.0%+0.05Ω) ±5: ±(2.0%+0.1Ω)
IR Reflow	Sony SS-00254	<p>The graph shows a temperature profile for IR reflow. The y-axis is temperature in °C (50 to 250) and the x-axis is Heating Time. Key points include: Peak at 250 ± 5 °C (230°C or Higher), Pre Heating Zone at 180°C, a 90 ± 30 s dwell at 150°C, and a 30 ± 10 s dwell in the Soldering Zone.</p>	±1: ±(1.0%+0.05Ω) ±5: ±(2.0%+0.1Ω)
Leaching	Sony SS-00254-9	260 ± 5°C for 30 seconds	> 95% Coverage
Soldering Heat	JIS C 5201-1 Clause 4.18	260 ± 5°C for 10 seconds	±1: ±(0.5%+0.05Ω) ±5: ±(1.0%+0.05Ω)
Temperature Cycling	JIS C 5201-1 Clause 4.19	-55°C ~ +155°C, 5 cycles	0.1% ' 0.5% ' 1% ±(0.5%+0.05Ω) 2% ' 5% ±(1.0%+0.1Ω)
Electric Iron	Sony SS-00254-5	Preheating temperature: 350 ± 5°C Electric Iron preheating time: 3 +1/-0 sec.	±1: ±(0.5%+0.05Ω) ±5: ±(1.0%+0.05Ω)
Resistance to Solvent	JIS C 5201-1 Clause 4.29	The tested resistor be immersed into isopropyl alcohol of 20~25°C for 60 seconds. Then the resistor is left in the room for 48 hours.	±1: ±(0.5%+0.05Ω) ±5: ±(1.0%+0.05Ω)
Load Life in Humidity	JIS C 5201-1 Clause 4.24	40 ± 2°C, 90~95% R.H. or Max. working voltage for 1000 hours with 1.5 hrs "ON" and 0.5hr "OFF".	0.1% ' 0.5% ' 1% ±(0.5%+0.05Ω) 2% ' 5% ±(3.0%+0.1Ω)
Load Life (Endurance)	JIS C 5201-1 Clause 4.25	70 ± 2°C, or Max. working voltage for 1000 hours with 1.5 hrs "ON" and 0.5hr "OFF".	0.1% ' 0.5% ' 1% ±(1.0%+0.05Ω) 2% ' 5% ±(3.0%+0.1Ω)
Terminal Bending Strength	JIS C 5201-1 Clause 4.33	Bending once for 5 seconds D: RM Series 0402 ' 0603 ' 0805 = 5mm RM Series 1206 ' 1210 ' 1812 = 3mm RM Series 1218 ' 2010 ' 2512 ' 2030 = 2mm	±1: ±(1.0%+0.05Ω) ±5: ±(1.0%+0.05Ω)
Insulation Resistance	JIS C 5201-1 Clause 4.6	Max Overload Voltage for 1 min.	≥ 10G

■ **PACKAGE & DIMENSION (mm)**

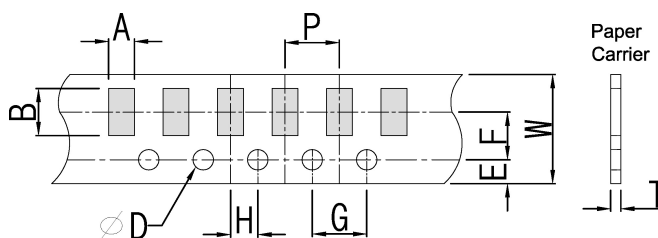
Unit:mm



Size	Package Q'ty	A	øB	øC	øD	W	øM
RM02(0201) RM04(0402)	7" 10K/reel	2.0±0.5	13.5±1.0	21±1.0	60±1.0	11.5±2.0	178±2.0
RM06(0603) RM10(0805) RM12(1206)	7" 5K/reel	2.0±0.5	13.5±1.0	21±1.0	60±1.0	11.5±2.0	178±2.0
	10" 10K/reel	2.0±0.5	13.5±1.0	21±1.0	100±1.0	11.5±2.0	254±2.0
	13" 20K/reel	2.0±0.5	13.5±1.0	21±1.0	100±1.0	11.5±2.0	330±2.0
RM25(1210)	7" 5K/reel	2.0±0.5	13.5±1.0	21±1.0	60±1.0	11.5±2.0	178±2.0
RM50(2010) RM50S(1812) RM1W(2512) RM1WS(1218) RM2W(2030)	7" 4K/reel	2.0±0.5	13.5±1.0	21±1.0	60±1.0	16.0±2.0	178±2.0
	7" 1K/reel	2.0±0.5	13.5±1.0	21±1.0	60±1.0	19.0±2.0	178±2.0

■ **TAPING SPECIFICATION**

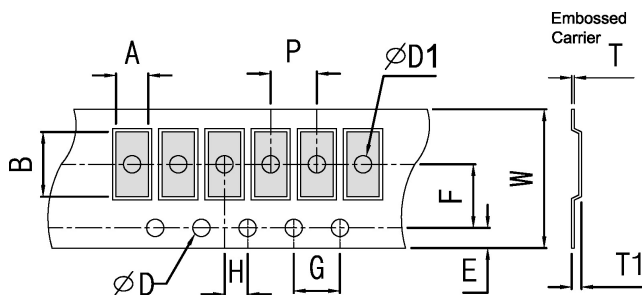
Paper Type
(P= 2.0 ± 0.1)



Unit:mm

Size	A	B	W	E	F	G	H	T	øD
RM02(0201)	0.45±0.10	0.75±0.10	8.0±0.20	1.75±0.10	3.5±0.05	4.0±0.10	2.0±0.05	0.35±0.10	1.50±0.10
RM04(0402)	0.70±0.10	1.20±0.10	8.0±0.20	1.75±0.10	3.5±0.05	4.0±0.10	2.0±0.05	0.45±0.10	1.50±0.10
RM06(0603)	1.05±0.20	1.80±0.20	8.0±0.20	1.75±0.10	3.5±0.05	4.0±0.10	2.0±0.05	0.60±0.10	1.50±0.10
RM10(0805)	1.55±0.20	2.30±0.20	8.0±0.20	1.75±0.10	3.5±0.05	4.0±0.10	2.0±0.05	0.75±0.10	1.50±0.10
RM12(1206)	1.90±0.20	3.50±0.20	8.0±0.20	1.75±0.10	3.5±0.05	4.0±0.10	2.0±0.05	0.75±0.10	1.50±0.10
RM25(1210)	2.85±0.20	3.50±0.20	8.0±0.20	1.75±0.10	3.5±0.05	4.0±0.10	2.0±0.05	0.75±0.10	1.50±0.10

Embossed Type
(P= 4.0 ± 0.1)
(2W.P= 8.0 ± 0.2)



Unit:mm

Size	A	B	W	E	F	G	H	T	øD	øD1	T1
RM50(2010)	2.80±0.20	5.60±0.20	12±0.10	1.75±0.10	5.5±0.05	4.0±0.10	2.0±0.05	0.23±0.10	1.50±0.10	1.50±0.10	0.85±0.15
RM50S(1812)	3.40±0.20	6.70±0.20	12±0.10	1.75±0.10	5.5±0.05	4.0±0.10	2.0±0.05	0.23±0.10	1.50±0.10	1.50±0.10	0.85±0.15
RM1W(2512)	3.30±0.20	4.60±0.20	12±0.10	1.75±0.10	5.5±0.05	4.0±0.10	2.0±0.05	0.23±0.10	1.50±0.10	1.50±0.10	0.85±0.15
RM1WS(1218)	3.30±0.20	4.60±0.20	12±0.10	1.75±0.10	5.5±0.05	4.0±0.10	2.0±0.05	0.23±0.10	1.50±0.10	1.50±0.10	0.85±0.15
RM2W(2030)	5.50±0.20	7.90±0.20	16±0.10	1.75±0.10	7.5±0.05	4.0±0.10	2.0±0.05	0.23±0.10	1.50±0.10	1.50±0.10	0.85±0.15