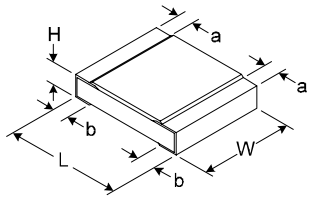
Thick Film Chip Resistors

SEI Type RMC



- Surface Mount Devices (SMD)
- Tolerances of ±1% and ±5%
- Temperature Coefficients as Low as ±100ppm/°C
- Precision Performance – Space Saving Construction
- Available from 0.1 ohm to 20 megohms

PERFORMANCE CHARACTERISTICS (TESTED PER MIL-STD-202)

ELECTRICAL(Operating Temperature Range: -55°C to +125°C)

TYPE	Package Size	Power Rating (Watts)	Maximum Working Voltage	Maximum Overload Voltage	Resistance Temperature Coefficient	Resistance Range[6]	Tolerance	Current Rating of Jumper[5]
RMC 1/16S	0402	1/16 @ 70°C	√PR or 50V whichever is less	100V	±350ppm/°C ±200ppm/°C ±200ppm/°C	1.0Ω – 9.1Ω 10Ω – 10M 10Ω – 1M	±5% ±5% ±1%	1A max.
RMC 1/16	0603	1/16[1] @ 70°C	√PR or 50V whichever is less	100V	±350ppm/°C ±200ppm/°C ±350ppm/°C ±100ppm/°C	1.0Ω – 9.1Ω 10Ω – 1M 1.1M – 22M 1.0Ω – 4.7M	±5% ±5% ±5% ±1%	1A max.
RMC 1/10	0805	1/10[2] @ 70°C	√PR or 150V whichever is less	300V	±350ppm/°C ±200ppm/°C ±350ppm/°C ±100ppm/°C ±350ppm/°C	0.1Ω – 9.1Ω 10Ω – 1M 1.1M – 22M 0.3Ω – 1M 1.02M – 10M	±5% ±5% ±5% ±1% ±1%	2A max.
RMC 1/8	1206	1/8[3] @ 70°C	√PR or 200V whichever is less	400V	±350ppm/°C ±200ppm/°C ±500ppm/°C ±100ppm/°C ±350ppm/°C	0.1Ω – 9.1Ω 10Ω – 1M 1.1M – 24M 0.3Ω – 1M 1.02M – 10M	±5% ±5% ±5% ±1% ±1%	2A max.
RMC 1/4	1210	1/4 @ 70°C	√PR or 200V whichever is less	400V	±350ppm/°C ±200ppm/°C ±350ppm/°C ±100ppm/°C	0.1Ω – 9.1Ω 10Ω – 1M 1.1M – 22M 0.1Ω – 10M	±5% ±5% ±5% ±1%	3A max.
RMC 1/2	2010	1/2[4] @ 70°C	√PR or 200V whichever is less	400V	±350ppm/°C ±200ppm/°C ±100ppm/°C	0.1Ω – 9.1Ω 10Ω – 22M 0.1Ω – 10M	±5% ±5% ±1%	3A max.
RMC 1	2512	1 @ 70°C	√PR or 200V whichever is less	400V	±350ppm/°C ±200ppm/°C ±100ppm/°C	0.1Ω – 9.1Ω 10Ω – 22M 0.1Ω – 1M	±5% ±5% ±1%	3A max.

DIMENSIONS: Inches (mm)

FEATURE	RMC 1/16S	RMC 1/16	RMC 1/10	RMC 1/8
L – Body Length	.039 +.004/-.002 (1.00 +0.10/-0.05)	.063 ±.004 (1.60 ±0.10)	.078 ±.008 (2.00 ±0.20)	.122 ±.004 (3.10 ±0.10)
W – Body Width	.020 +.004/-.002 (0.50 +0.10/-0.05)	.031 +.006/-.002 (0.80 +0.15/-0.05)	.049 ±.008 (1.25 ±0.20)	.061 ±.004 (1.55 ±0.10)
H – Body Height	.014 ±.002 (0.35 ±0.05)	.018 ±.004 (0.45 ±0.10)	.018 ±.004 (0.45 ±0.10)	.021 +.004/-.002 (0.55 +0.10/-0.05)
a – Top Termination	.008 ±.004 (0.20 ±0.10)	.010 ±.004 (0.25 ±0.10)	.016 ±.008 (0.40 ±0.20)	.018 ±.008 (0.45 ±0.20)
b – Bottom Termination	.010 +.008/-.004 (0.25 +0.20/-0.10)	.012 +.008/-.004 (0.30 +0.20/-0.10)	.012 +.008/-.004 (0.30 +0.20/-0.10)	.012 +.008/-.004 (0.30 +0.20/-0.10)
FEATURE	**RMC 1/4**	**RMC 1/2**	**RMC 1**	
L – Body Length	.122 ±.004 (3.10 ±0.10)	.197 ±.008 (5.00 ±0.20)	.248 ±.008 (6.30 ±0.20)	
W – Body Width	.100 ±.004 (2.55 ±0.10)	.098 ±.008 (2.50 ±0.20)	.124 ±.008 (3.15 ±0.20)	
H – Body Height	.021 +.004/-.002 (0.55 +0.10/-0.05)	.021 ±.004 (0.55 ±0.10)	.021 ±.004 (0.55 ±0.10)	
a – Top Termination	.018 ±.008 (0.45 ±0.20)	.020 ±.008 (0.50 ±0.20)	.020 ±.008 (0.50 ±0.20)	
b – Bottom Termination	.012 +.008/-.004 (0.30 +0.20/-0.10)	.020 ±.008 (0.50 ±0.20)	.020 ±.008 (0.50 ±0.20)	

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Rev. 12/00

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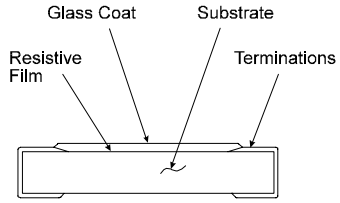
SEI Type RMC

PERFORMANCE CHARACTERISTICS				
ENVIRONMENTAL		**Specification Requirement**	**Tested per EIA J-RC-2690A**	**Typical**
Moisture Resistance, Thermal Shock		±(1% +0.05Ω), No Mechanical Damage	-55°C to +125°C, 5 cycles	Within ±0.2%
Low Temperature Exposure		±(3% +0.1Ω), No Mechanical Damage	-55°C, 1,000 hours	Within ±0.5%
Load Life		<1meg ±(3% +0.1Ω), ≥1meg ±5%	70°C, rated voltage, 1.5hr on/0.5hr off, 1000 hrs	See graph
Load Life in Moisture		<1meg ±(3% +0.1Ω), ≥1meg ±5%	40°C, 95% R.H., 1.5hr on/0.5hr off, 1,000 hrs	See graph
Vibration		±(1% +0.05Ω), No Mechanical Damage	10-55 Hz, 3 direction, each 2 hours	Within ±0.1%
Resistance to Soldering Heat		±(1% +0.05Ω), No Mechanical Damage	270°C, 10 seconds	See graph
Solderability		min. 95% coverage	230°C, 3 seconds, flux applied[1]	More than 97%
Heat Resistance	Adhesion Curing	±(1% +0.05Ω)	+150°C, 10 minutes	Within ±0.3%
	Dry Heat	±(3% +0.1Ω), No Mechanical Damage	-125°C, 1,000 hours	Within ±0.5%
Terminal Strength	Pull	±(1% +0.05Ω), No Mechanical Damage	500G load, 30 seconds	Within ±0.2%
	Board Bending	±(1% +0.05Ω), No Mechanical Damage	1/45mm bend, 10 seconds	Within ±0.2%
Dielectric Withstanding Voltage		No insulation breakdown	500V, 1 minute	Above 900V
Short Time Overload		±(1% +0.05Ω), No evidence of arc	2 1/2 times rated voltage, 5 seconds	Within ±0.4%
Insulation Resistance		1,000 meg minimum	500V, 1 minute	Above 10^6 meg
Voltage Coefficient		+0/-100ppm/V (above 1K±)	Rated voltage & 1/10 times rated voltage	Within -90ppm/V

Note 1. Maximum solder flow process "Normal" 275°C, 30 seconds or the "SM10" process @ 310°C for 10 seconds.

MATERIALS



Feature	Material	Remarks (Reference Only)
Substrate	Alumina Porcelain	Purity 96% min.
Resistive Film	Ruthenium-Oxide Film	20 Microns Thick
Coating	Boro-Silicated Acid Lead Glass	20 Microns Thick
Terminations	90/10 Tin-Lead (Electrical Plated) over	3 Microns Thick
	Nickel (Electrical Plated) over	3 Microns Thick
	AG-PD (Silver-Palladium[Glaze Printed])	8 Microns Thick

MARKING

Marking

Resistance value in three-digit designation system is marked on the glasscoat. Illustrated is a resistor of 15KΩ. Four-digit resistance designation system is applied to RMC 1/8 and E-96 Series. For example, 1502 designated 15KΩ. (The last digit specifies the number of zeros.)

5% 3-digit	1% 4-digit
0603*	0805
0805	1206
1206	1210
1210	2010
2010	2512
2512	

* For 1%, a 3-digit alpha-numeric marking system is used. Contact factory for details.

ORDERING INFORMATION

RMC 1/16 1K 1%

Type Wattage Resistance Tolerance

NOTES

1. RMC 1/16 is Dual Rated at 1/10W.
2. RMC 1/10 is Dual Rated at 1/8W.
3. RMC 1/8 is Dual Rated at 1/4W.
4. RMC 1/2 is Dual Rated at 3/4W.
5. Zero ohm (0.05Ω max.) jumper available in all sizes.
6. Contact factory for additional resistance values.

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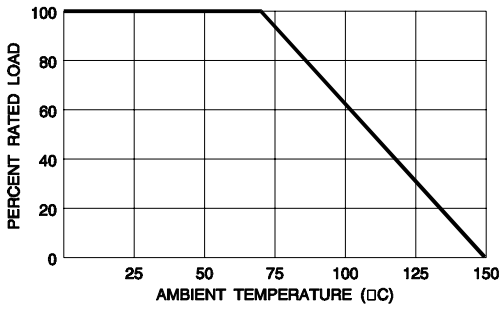
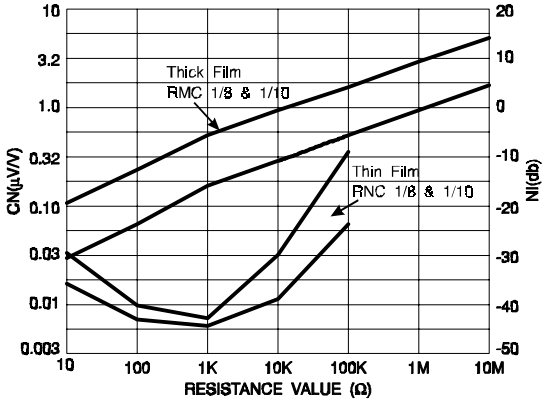
PERFORMANCE CURVES

Power - Temperature Derating

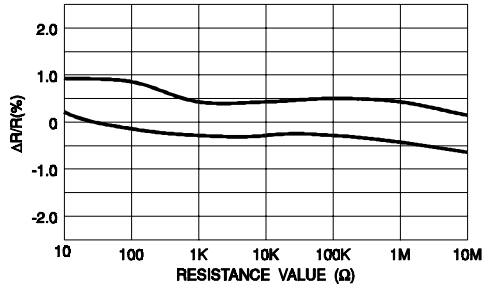


Current Noise

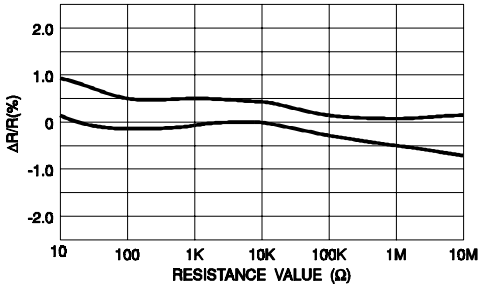


NOTE: RNC is Thin Film (see page 14)

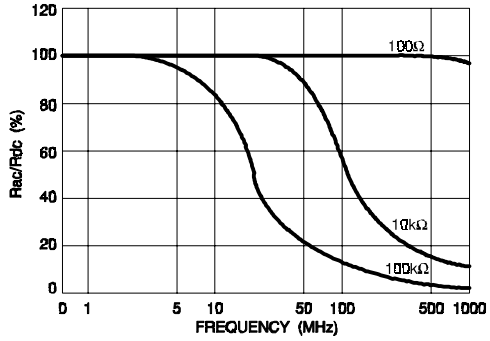
Load Life in Moisture (1,000 hrs)



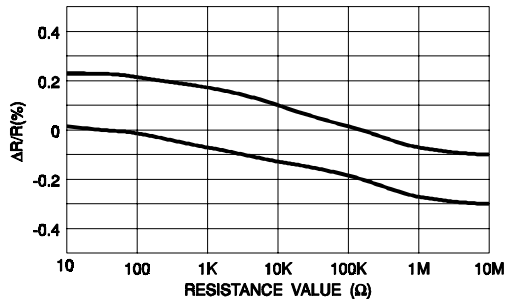
Load Life (1,000 hrs)



High Frequency Characteristics



Resistance to Soldering Heat



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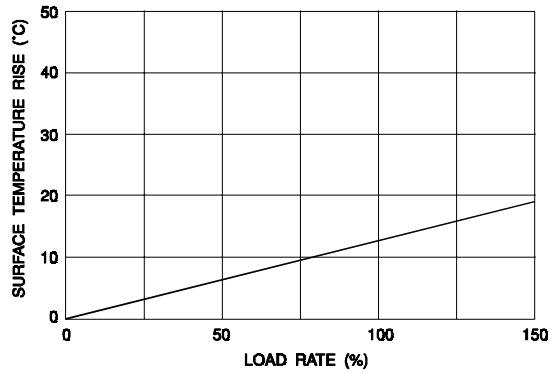
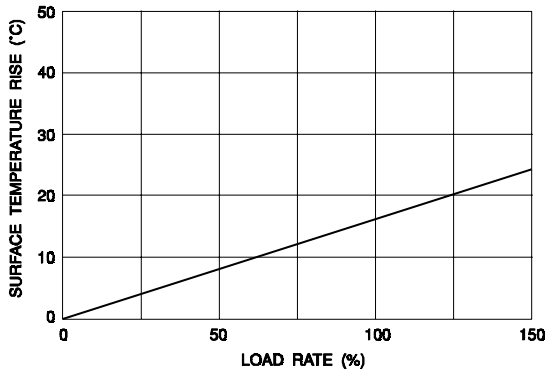
PERFORMANCE CURVES

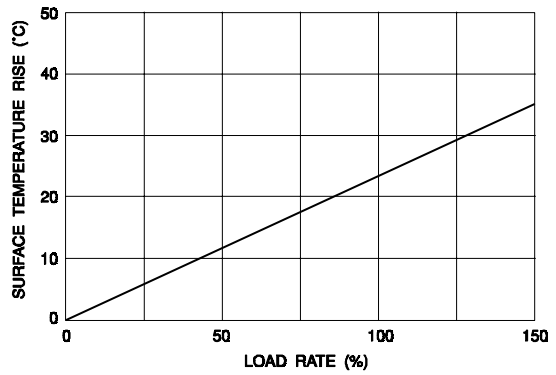
Surface Temperature Rise vs. Load – RMC-1/10



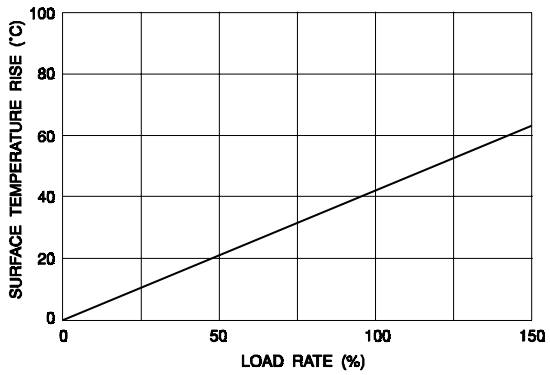
Surface Temperature Rise vs. Load – RMC-1/8



Surface Temperature Rise vs. Load – RMC-1/4



Surface Temperature Rise vs. Load – RMC-1/2



Surface Temperature Rise vs. Load – RMC-1