

THICK FILM GENERAL PURPOSE CHIP RESISTORS

(RMC SERIES)

Application

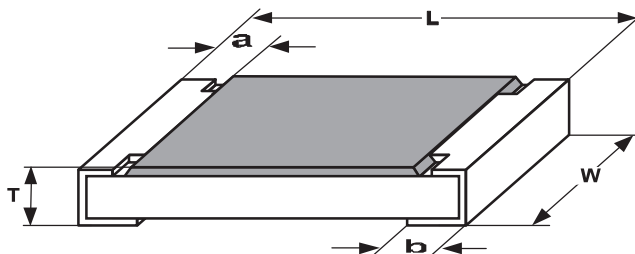
- * Power equipment
- * Telecommunication Equipments
- * Consumer Electrical, Electronic device
- * Home Appliance: Air conditioner, Refrigerator
- * Computer & relative products



Features

- * Reduce assembly costs.
- * Miniature size for compact PC Board.
- * Excellent mechanical strength and electrical stability.

Dimension Specifications



Style		Dimension					mm
		L	W	T	a	b	
RMC-01	01005	0.40 ±0.02	0.20 ±0.02	0.1 ±0.03	0.10 ±0.05	0.13 ±0.05	
RMC-02	0201	0.60 ±0.08	0.30 ±0.03	0.23 ±0.05	0.15 ±0.05	0.15±0.05	
RMC-04	0402	1.00 ±0.10	0.50 ±0.05	0.20 ±0.10	0.15 ±0.10	0.25 ±0.05	
RMC-06	0603	1.60 ±0.10	0.80 ±0.10	0.30 ±0.20	0.30 ±0.20	0.30 ±0.10	
RMC-10	0805	2.00 ±0.10	1.25 ±0.10	0.40 ±0.20	0.40 ±0.20	0.50 ±0.10	
RMC-18	1206	3.10 ±0.20	1.60±0.10	0.50 ±0.25	0.40±0.25	0.55 ±0.10	
RMC-20	1210	3.10 ±0.20	2.60 ±0.15	0.50 ±0.25	0.50±0.20	0.55 ±0.10	
RMC-22	2010	5.00 ±0.20	2.50 ±0.15	0.60 ±0.25	0.60±0.20	0.60 ±0.20	
RMC-24	2512	6.35 ±0.20	3.20 ±0.15	0.60 ±0.25	0.60±0.20	0.60 ±0.20	
RMC-26	1812	4.50 ±0.10	3.10 ±0.15	0.55 ±0.10	0.55 ±0.20	0.70 ±0.20	
RMC-28	1218	3.10 ±0.10	4.60 ±0.10	0.55 ±0.10	0.40 ±0.10	0.55 ±0.10	



General Specifications

Style (Size)	Power rating at 70°C	Max working voltage	Max overload voltage	Operating Temp. Range	TCR ppm/°C	Resistance Range	
						±1%(F) (E24, E96)	±5%(J) (E24)
RMC-01 01005	1/32W	15V	30V	-55~+125°C	±300ppm	1Ω ~ 1MΩ	
RMC-02 0201	1/20W	25V	50V	-55~+125°C	-200/+400ppm	1Ω ~ 10Ω	
					±200ppm	10Ω ~ 10MΩ	
RMC-04 0402	1/16W	50V	100V	-55~+155°C	±400ppm	1Ω ~ 10Ω, 20.5MΩ ~ 100MΩ	
					±200ppm	1Ω ~ 9.76Ω, 1.02M~20MΩ	10Ω ~ 10MΩ
					±100ppm	10Ω ~ 10MΩ	
RMC-06 0603	1/10W	75V	150V	-55~+155°C	±400ppm	1Ω ~ 10Ω, 20.5MΩ ~ 100MΩ	
					±200ppm	1Ω ~ 9.76Ω, 1.02M~20MΩ	10Ω ~ 10MΩ
					±100ppm	10Ω ~ 10MΩ	
RMC-10 0805	1/8W	150V	300V	-55~+155°C	±400ppm	1Ω ~ 10Ω, 20.5MΩ ~ 100MΩ	
					±200ppm	1Ω ~ 9.76Ω, 1.02M~20MΩ	10Ω ~ 10MΩ
					±100ppm	10Ω ~ 10MΩ	
RMC-18 1206	1/4W	200V	400V	-55~+155°C	±400ppm	1Ω ~ 10Ω, 20.5MΩ ~ 100MΩ	
					±200ppm	1Ω ~ 9.76Ω, 1.02M~20MΩ	10Ω ~ 10MΩ
					±100ppm	10Ω ~ 10MΩ	
RMC-20 1210	1/2W 1/3W	200V	400V	-55~+155°C	±400ppm	1Ω ~ 10Ω, 20.5MΩ ~ 100MΩ	
					±200ppm	1Ω ~ 9.76Ω, 1.02M~20MΩ	10Ω ~ 10MΩ
					±100ppm	10Ω ~ 10MΩ	
RMC-22 2010	3/4W	200V	400V	-55~+155°C	±400ppm	1Ω ~ 10Ω, 20.5MΩ ~ 100MΩ	
					±200ppm	1Ω ~ 9.76Ω, 1.02M~20MΩ	10Ω ~ 10MΩ
					±100ppm	10Ω ~ 10MΩ	
RMC-24 2512	1W	200V	400V	-55~+155°C	±400ppm	1Ω ~ 10Ω, 20.5MΩ ~ 100MΩ	
					±200ppm	1Ω ~ 9.76Ω, 1.02M~20MΩ	10Ω ~ 10MΩ
					±100ppm	10Ω ~ 10MΩ	
RMC-26 1812	3/4W	200V	400V	-55~+155°C	±400ppm	1Ω ~ 10Ω, 20.5MΩ ~ 100MΩ	
					±200ppm	1Ω ~ 9.76Ω, 1.02MΩ ~ 20MΩ	
					±100ppm	10Ω ~ 10MΩ	
RMC-28 1218	1W	200V	400V	-55~+155°C	±400ppm	1Ω ~ 10Ω, 20.5MΩ ~ 100MΩ	
					±200ppm	1Ω ~ 9.76Ω, 1.02MΩ ~ 20MΩ	
					±100ppm	10Ω ~ 10MΩ	

Operating Voltage= $\sqrt{P \cdot R}$ or Max. Operating Voltage listed above, whichever is lower

Overload Voltage= $2.5 \cdot \sqrt{P \cdot R}$ or Max. Overload Voltage listed above, whichever is lower.

Type	01005, 0201	0402, 0603	0805, 1206	1210	2010	2512, 1812, 1218
Jumper Resistance value	50 mΩ Max.					
Jumper Rated Current	0.5A	1A	2A	2.5A	3.A	4A
Max. Over load Current < 1 second and 1 times	1A	3A		10A		

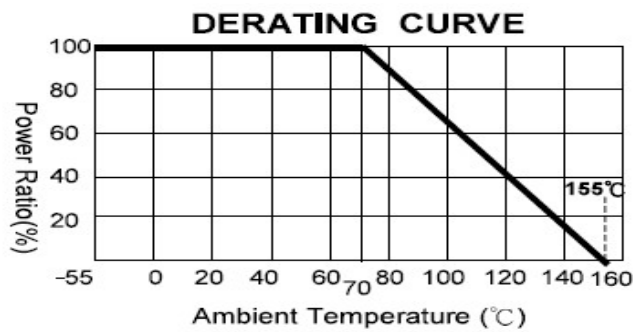


Reliability Test and Requirement

Test Item	Test Method	Procedure	Requirements
Temperature Coefficient of Resistance (T.C.R.)	JIS- C- 5201-1 4.8 IEC-60115-1 4.8	At 25 / -55°C and 25°C / +155°C, 25°C is the reference temperature	As pec
Insulation Resistance	JIS- C- 5201-1 4.6 IEC-60115-1 4.6	Apply 100VDC for 1 minute	$\geq 10G \Omega$
Short Time Overload	JIS- C- 5201-1 4.13 IEC-60115-1 4.13	2.5 times RCWV or Max Overload voltage whichever is less for 5 Sec	F 1% and below : $\pm (1.0\% + 0.05\Omega)$ J 5% : $\pm (2.0\% + 0.10\Omega)$
Leaching	JIS- C- 5201-1 4.18 IEC-60068-2-58 8.2.1	260 $\pm$ 5°C for 30 seconds.	Individual leaching area $\leq 5\%$, Total leaching area $\leq 10\%$
Resistance to Soldering Heat	JIS -C- 5201-1 4.18 IEC-60115-1 4.18	260 $\pm$ 5°C for 10 seconds.	F 1% and below : $\pm (0.5\% + 0.05\Omega)$ J 5% : $\pm (1.0\% + 0.05\Omega)$
Rapid Change of Temperature	JIS -C- 5201-1 4.19 IEC-60115-1 4.19	-55°C to +155°C, 5 cycles	F 1% and below : $\pm (0.5\% + 0.05\Omega)$ J 5% : $\pm (1.0\% + 0.10\Omega)$
Resistance to Solvent	JIS -C- 5201-1 4.29	The tested resistor be immersed into isopropyl alcohol of 20~25 °C for 60 secs. Then the resistor is left in the room for 48 hrs.	F 1% and below : $\pm (0.5\% + 0.05\Omega)$ J 5% : $\pm (0.5\% + 0.05\Omega)$
Damp Heat with Load	JIS -C- 5201-1 4.24 IEC-60115-1 4.24	40 $\pm$ 2°C, 90~95% R.H RCWV or Max. working voltage whichever is less for 1000 hrs with 1.5 hrs "ON" and 0.5 hr "OFF"	F 1% and below : $\pm (1.0\% + 0.05\Omega)$ J 5% : $\pm (2.0\% + 0.05\Omega)$ value $< 1\Omega : \pm (2.0\% + 0.05\Omega)$
Load Life (Endurance)	JIS -C- 5201-1 4.25 IEC-60115-1 4.25.1	70 $\pm$ 2°C, RCWV or Max. working voltage whichever is less for 1000 hrs with 1.5 hrs "ON" and 0.5 hr "OFF"	F 1% and below : $\pm (1.0\% + 0.05\Omega)$ J 5% : $\pm (3.0\% + 0.10\Omega)$ value $< 1\Omega : \pm (3.0\% + 0.10\Omega)$
Bending Strength	JIS -C- 5201-1 4.33 IEC-60115-1 4.33	Bending once for 60 seconds D: 0201 ~ 0805= 3mm; 1206 , 1210= 3mm 2010 , 2512 =2mm	F 1% and below : $\pm (1.0\% + 0.05\Omega)$ J 5% : $\pm (1.0\% + 0.50\Omega)$



Derating Curve



Power 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 or derating Curve.

* Rate voltage

Resistance range: $\geq 1\Omega$

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

$$E(RCWV) = \sqrt{P \times R}$$

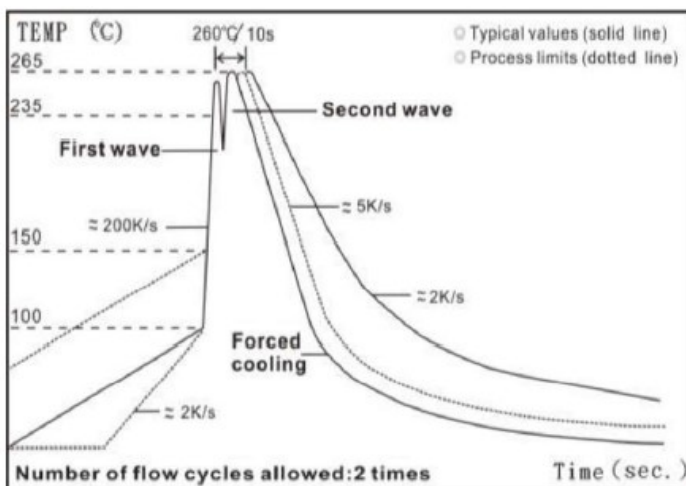
E=Rated voltage(V)

P=Power rating(W)

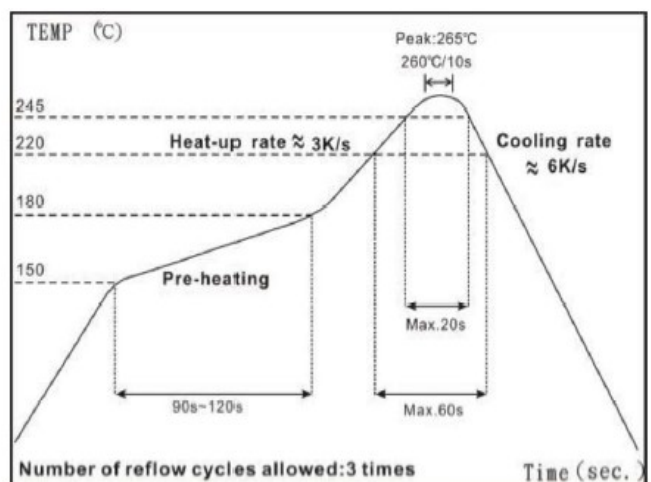
R=Nominal resistance(Ω)

Recommended Customer Soldering Parameters

* Wave solder Temperature Condition



* Solder reflow Temperature Condition



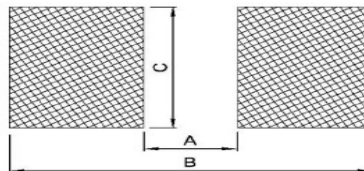
* Rework Temperature (hot air equipment: 350°C, 3~5 seconds)

* Recommended reflow methods

IR, vapor phase oven, hot air oven

If reflow temp. exceed the recommended profile, devices may not meet the performance requirements.

* Recommend Land Pattern Design



Type	0201	0402	0603	0805	1206	1210	2010	2512
A	0.25	0.60	0.85	1.30	2.20	2.00	3.80	4.90
B	1.1	1.60	2.40	2.90	4.20	4.40	6.60	8.10
C	0.32	0.70	1.00	1.40	1.70	2.70	2.70	3.40



Marking



No marking

RMC-01(01005)
RMC-02(0201)
RMC-04(0402)



1% EIA 96 marking

RMC-06(0603)



1% : 4 digits code

RMC-10(0805) RMC-24(2512)
RMC-18(1206) RMC-26(1812)
RMC-20(1210) RMC-28(1218)



1% : 3 digits code

RMC-28(1218)



5% : 3 digits code

RMC-02(0201) RMC-20(1210)
RMC-04(0402) RMC-22(2010)
RMC-06(0603) RMC-24(2512)
RMC-10(0805) RMC-26(1812)
RMC-18(1206)

※5% tolerance: 3 digits

First two digits are significant figure,

Third digit is number of zeros, Letter R is decimal point.

- ⊙ 01005, 0201 and 0402 no marking
- ⊙ Standard packaging is 8mm tape reel per EIA481
- ⊙ Paper tape 7" reel : RMC-01/02/04:10,000PCS,
RMC-06/18/ 20: 5,000pcs

※1% tolerance: 4 digits

First three digits are significant figure,

Forth digit is number of zeros, Letter R is decimal point.

- ⊙ 0603% : EIA-96 marking
- ⊙ Plastic tape 7" reel: RMC-22/24/26/28:4K/reel

code	R Value	code	R Value	code	R Value	code	R Value	code	R Value	code	R Value	code	R Value	code	R Value
01	100	13	133	25	178	37	237	49	316	61	422	73	562	85	750
02	102	14	137	26	182	38	243	50	324	62	432	74	576	86	768
03	105	15	140	27	187	39	249	51	332	63	442	75	590	87	787
04	107	16	143	28	191	40	255	52	340	64	453	76	604	88	806
05	110	17	147	29	196	41	261	53	348	65	464	77	619	89	825
06	113	18	150	30	200	42	267	54	357	66	475	78	634	90	845
07	115	19	154	31	205	43	274	55	365	67	487	79	649	91	866
08	118	20	158	32	210	44	280	56	374	68	499	80	665	92	887
09	121	21	162	33	215	45	287	57	383	69	511	81	681	93	909
10	124	22	165	34	221	46	294	58	392	70	523	82	698	94	931
11	127	23	169	35	226	47	301	59	402	71	536	83	715	95	953
12	130	24	174	36	232	48	309	60	412	72	549	84	732	96	976

This table shows the first two digits for the three-digit EIA-96 part marking scheme. The third character is a letter multiplier:

⁻²Y=10 ⁻¹X=10 ⁰A=10 ¹B=10 ²C=10 ³D=10 ⁴E=10 ⁵F=10

Parts Number system

RMC -	10 -	102	J	R
Type RMC Series- Thick Film General Purpose Chip Resistors	Size 04=0402 06=0603 10=0805 18=1206 20=1210 22=2010 24=2512	Resistance 3 Digits: for 5% 10K=103 100K=104 4 Digits: for 1% 10K=1002 100K=1003	Tolerance J=± 5% F=± 1%	Standard Packing R=Paper tape reel 10Kpcs/Reel: 0402 5Kpcs/Reel size: 0603~1206 K=Embossed plastic tape reel 4Kpcs/Reel size: 2010~2512

