

# RMF series Metal Strip Current Sensing Resistor

## ◆ Features

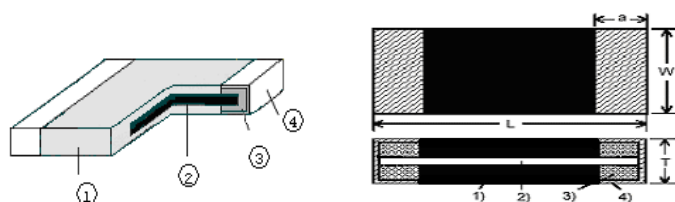
- » High power rating and low T.C.R.
- » Low resistance and high precision (1%)
- » Inductance less than 1.0nH
- » Excellent reliability and suitable cost
- » Suitable for lead free soldering
- » RoHS compliant & Halogen Free
- » 0805 Series is Low EMF component

## ◆ Applications

- » Switching model power supply
- » Battery pack
- » Notebook, Tablet PC
- » Test Instrument
- » Power Amplifier

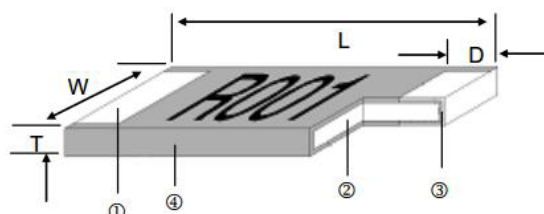


## ◆ Configuration



TYPE	RMF
1. Protective Molding	Resin
2. Resistive Element	Alloy Metal
3. Internal Terminal	Copper
4. External Terminal	Solder

2512 0R0005



Black – Wave or IR reflow soldering

① Solder Plating (Sn)	③ Barrier Layer (Ni)
② Alloy Plate	④ Overcoat

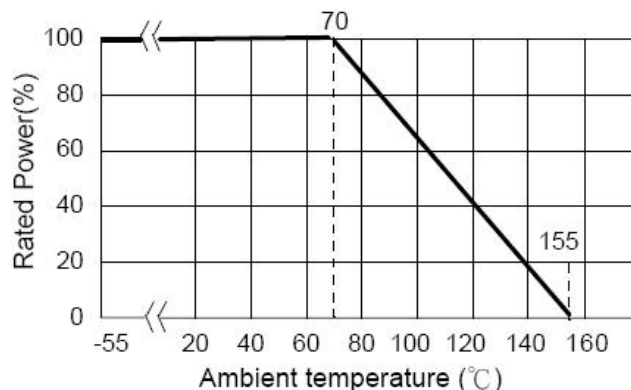
## ◆ Dimension

TYPE		L	W	T	a
RMF5931		15.0+/-0.20	7.80+/-0.20	0.70+/-0.20	3.50+/-0.20
RMF2512		6.20+/-0.20	3.20+/-0.20	0.60+/-0.20	0.80+/-0.20
RMF2512	0,5mR	6.35+/-0.254	3.18+/-0.254	1.25+/-0.20	1.30+/-0.38
	2mR	6.25+/-0.254	3.30+/-0.254	0.8+/-0.254	1.88+/-0.254
RMF2010	1~3mR	5.08+/-0.254	2.54+/-0.254	0.787+/-0.254	1.295+/-0.254
	3.1~100mR			0.645+/-0.254	0.787+/-0.254
RMF1206		3.10+/-0.20	1.65+/-0.20	0.60+/-0.20	0.60+/-0.20
RMF0805		2.00+/-0.15	1.2+/-0.15	0.45+/-0.15	0.325+/-0.20

Unit: mm

## ◆ Power Derating Curve

Operating Temperature Range: -55 to +155 deg. C





## ◆ Rating

TYPE	Power Rating At 70°C(W)	Resistance Tolerance (%)	Max Working Voltage(mV)	Temperature coefficient of Resistance (ppm/°C)	Resistance Range (mΩ)
RMF5931	5	±1%(F) ±5%(J)	224	± 100	3
				± 70	5
RMF2512	3	±1%(F) ±5%(J)	173	±150	0.3
				±100	0.5~1.0
				±50	1.1~25
RMF2512	2	±1%(F) ±5%(J)	447	± 100(Standard)	0.5~75
				± 100	0.5~75
RMF2512	1	±1%(F) ±5%(J)	316	± 100(Standard)	0.5~100
				± 100	0.5~100
RMF2010	1	±1%(F) ±5%(J)	316	±100	0.5~100
RMF1206	1	±1%(F) ±5%(J)	224	± 75(Standard)	1~50
				± 25	4.1~15
RMF1206	1/2	±1%(F) ±5%(J)	224	± 75(Standard)	1~50
				± 25	4.1~15
RMF0805	1/4	±1%(F) ±5%(J)	71	± 100	5,10,20
	1/2		100		

Operating Current= $\sqrt{P/R}$ , Operating Voltage= $\sqrt{P \cdot R}$

All product specification and data are subject to change without notice

## ◆ Part Number

RMF	2512	J	T	R002			
Type	Size	Tolerance	Watt	R Value	TCR (ppm/°C)	Reel Size	Package Quantity
RMF	2512	F: 1%	T: 1W	R002=2mΩ	Blank=Standard	Blank = 7"	(standard package As below)
	2010	J: 5%	S: 2W		E: 100ppm	B= 13"	08= 8K per reel
	1206		U: 1/2W		L: 70ppm	C= 10"	16= 16K per reel
	5931		H: 5W		D: 50ppm		
	0805		D: 1/4W		C: 25ppm		
			R: 3W				

» Standard Package Q'ty for each size is as following.

TYPE	Standard Package Q'ty
RMF0805	5K per reel
RMF1206	4K per reel
RMF2010	2K per reel
RMF2512	4K per reel
RMF2512 0,5mR	2K per reel
RMF5931	3K per reel

## ◆ Resistance Marking



For 1 ~ 2mΩ



For 3 ~ 50mΩ

R002 = 2 mΩ

R020 = 20mΩ

## ◆ Specification

### Specification and Test Methods

TEST ITEM	SPECIFICATION	TEST METHOD
DC Resistance	F : $\pm 1\%$ J : $\pm 5\%$	IEC 60115-1 / JIS C 5201-1 , Clause 4.5 Measure the resistance Value.
Short Time Overload	$\Delta R \leq \pm (1\% + 0.1\text{m}\Omega)$	IEC 60115-1 / JIS C 5201-1 , Clause 4.13 5 × Rated power for 5 seconds 5 × Rated power for 2 seconds (for 5931) Measure resistance after 30 minutes
Solderability	Over 95% of termination must be covered with Solder	IEC 60115-1 / JIS C 5201-1 , Clause 4.17 After immersing flux, dip in the 245± 2°C molten solder bath for 3± 0.5 sec.
Resistance to Solder Heat	$\Delta R \leq \pm (1\% + 0.1\text{m}\Omega)$ No mechanical damage	IEC 60115-1/JIS C 5201-1 , Clause 4.18 With 260± 5°C for 10± 1sec.
Load Life Humidity	$\Delta R \leq \pm (1\% + 0.5\text{m}\Omega)$	IEC 60115-1 / JIS C 5201-1 , Clause 4.24 Maintain the temperature of the resistor at 40±2°C and 90% ~ 95% R.H. with the rated voltage applied. Cycle ON for 1.5 hours and OFF for 0.5 hour for 1000+48/-0 hours. After 1 ~ 4 hours, measure the resistance value.
Temperature Coefficient of Resistance (TCR)	$\pm 100\text{ppm}/^\circ\text{C}$ $\pm 70\text{ppm}/^\circ\text{C}$	IEC 60115-1 / JIS C 5201-1 , Clause 4.8 Test temperature : 25°C(T1) → -55°C(T2) 25°C(T1) → +155°C(T2) $\text{TCR}(\text{ppm}/^\circ\text{C}) = \frac{R2 - R1}{R1} \times \frac{1}{T2 - T1} \times 10^6$ T1: 25°C T2: Test temperature R1: Resistance at reference temperature (T1) R2: Resistance at test temperature (T2)
Load Life	$\Delta R \leq \pm (1\% + 0.5\text{m}\Omega)$	IEC 60115-1 / JIS C 5201-1 , Clause 4.25 Permanent resistance change after 1000+48/-0 hours (1.5 hours ON, 0.5 hour OFF) at RCWV or Max. Keep the resistor at 70 ± 2°C ambient.
Temperature Cycle	$\Delta R \leq \pm (1\% + 0.5\text{m}\Omega)$ No mechanical damage	IEC 60115-1 / JIS C 5201-1 , Clause 4.19 Repeat 5 cycles as follows -55°C (30min.) → +25°C (2~3min.) → +155°C (30min.) → +25°C (2~3min.)
Insulation Resistance	Between termination and coating must be over 1000MΩ	IEC 60115-1 / JIS C 5201-1 , Clause 4.6 Test voltage : 100±15V
Bending Strength	$\Delta R \leq \pm (1\% + 0.5\text{m}\Omega)$ No mechanical damage	IEC 60115-1 / JIS C 5201-1 , Clause 4.33 Resistance changes after bended on the 90mm PCB. Bend :2mm

## ◆ Packing

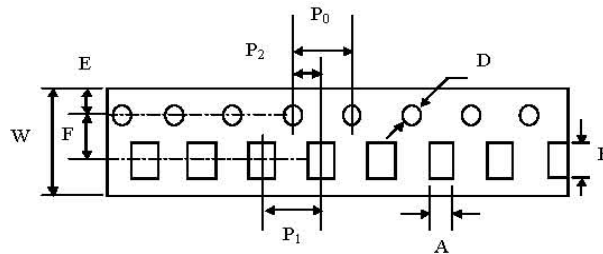
### Peel Strength of Top Cover Tape

The peel speed shall be about 300 mm/min

The peel force of top cover tape shall between 0.1 to 0.7N



### Tape Packaging Dimensions

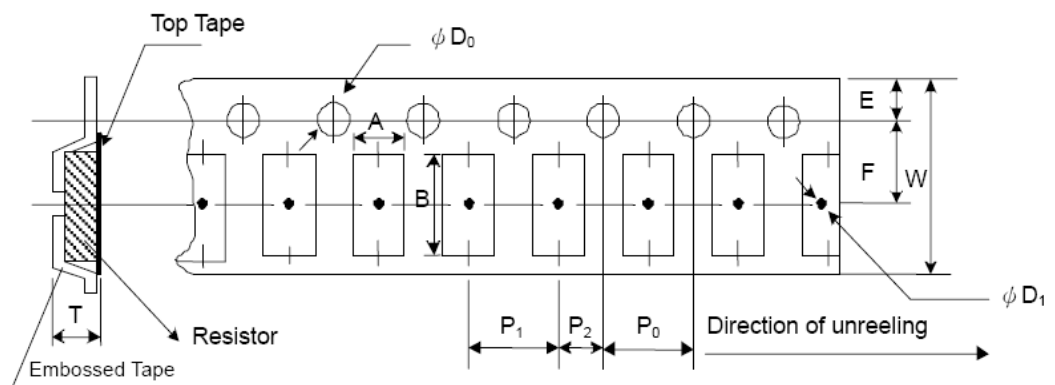


Accumulated dimensional tolerance  $40 \pm 0.2 \text{ mm}$

Size	A	B	W	F	E	P1	P2	P0	D
2010	$2.90 \pm 0.10$	$5.45 \pm 0.10$	$12.0 \pm 0.15$	$5.50 \pm 0.10$	$1.75 \pm 0.10$	$4.0 \pm 0.10$	$2.0 \pm 0.10$	$4.0 \pm 0.10$	$1.50 \pm 0.10$
2512	$3.50 \pm 0.20$	$6.75 \pm 0.20$	$12.0 \pm 0.30$	$5.50 \pm 0.05$	$1.75 \pm 0.10$	$4.0 \pm 0.10$	$2.0 \pm 0.05$	$4.0 \pm 0.10$	$1.50 \pm 0.10$
1206	$2.0 \pm 0.20$	$3.60 \pm 0.20$	$8.0 \pm 0.30$	$3.50 \pm 0.05$	$1.75 \pm 0.10$	$4.0 \pm 0.10$	$2.0 \pm 0.05$	$4.0 \pm 0.10$	$1.50 \pm 0.10$
5931	$8.2 \pm 0.10$	$15.4 \pm 0.10$	$24.0 \pm 0.30$	$11.5 \pm 0.10$	$1.75 \pm 0.10$	$12.0 \pm 0.10$	$2.0 \pm 0.10$	$4.0 \pm 0.10$	$1.50 \pm 0.10$

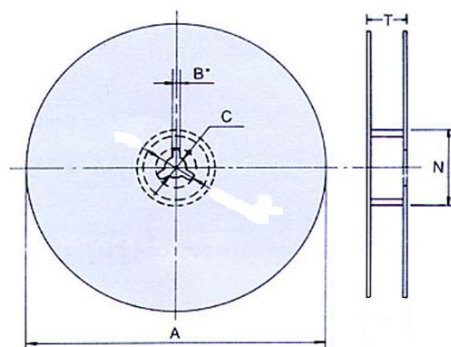
Unit: mm

### Embossed Plastic Tape Specifications



Size	A	B	W	E	F	P0	P1	P2	D0	D1	T
2512 0,5mR	$3.40 \pm 0.10$	$6.75 \pm 0.10$	$12.0 \pm 0.10$	$1.75 \pm 0.10$	$5.5 \pm 0.10$	$4.0 \pm 0.10$	$4.0 \pm 0.10$	$2.0 \pm 0.05$	$1.55 \pm 0.05$	1.4min.	$1.45 \pm 0.20$

## Reel Dimensions



Size	Packing Q'ty	A	N	C	B	T
2512	4kpcs/Reel (7")	178.0±2.0	60.0±0.5	13.0±0.5	2.0±0.5	16.7max.
	0,5mR 2kpcs/Reel (7")	178.0±2.0	60.0±0.5	13.0±0.5	2.0±0.5	16.7max.
	8kpcs/Reel (10")	254.0±2.0	100.0±0.5	13.0±0.5	2.0±0.5	20.0max.
	16kpcs/Reel (13")	330.0±2.0	100.0±1.0	13.0±0.5	2.0±0.5	20.0max.
1206	4kpcs/Reel (7")	178.0±2.0	60.0±0.5	13.0±0.5	2.0±0.5	14.9max.
2010	2kpcs/Reel (7")	178.0±2.0	60.0±0.5	13.5±0.5	2.5±0.5	16.7max.
5931	3kpcs/Reel (7")	330.0±2.0	99.5±1.0	13.0±0.5	2.0±0.5	28.6max.

Unit: mm