

# RBF series

## Metal Paste Current Sensing Resistor

### ◆ Features

- » Rated Power up to 2W
- » Low T.C.R.
- » Low resistance and high precision (1%)
- » Excellent reliability and suitable cost
- » Suitable for lead free soldering
- » RoHS compliant & Halogen free

### ◆ Applications

- » Switching model power supply
- » Battery pack
- » Notebook, personal computer
- » Test Instrument
- » Power Amplifier

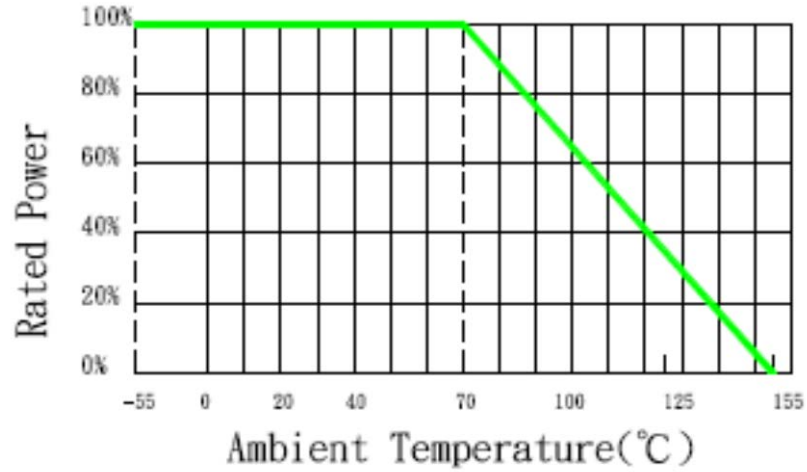
### ◆ Part Number

RBF	2512	F	T	R050	□	□□
Type	Size	Tolerance	Watt	R Value	Reel Size	Package Quantity
RBF	0603	F: 1%	W: 1/8W	0.05Ω = R050	Blank= 7"	(standard package As below)
	0805	J: 5%	V: 1/4W		B= 13"	10= 10K per reel
	1206		O: 1/3W		C= 10"	20= 20K per reel
	1210		U: 1/2W			08= 8K per reel
	2010		Q: 3/4W			16= 16K per reel
	2512		T: 1W S: 2W P: 2/3W			

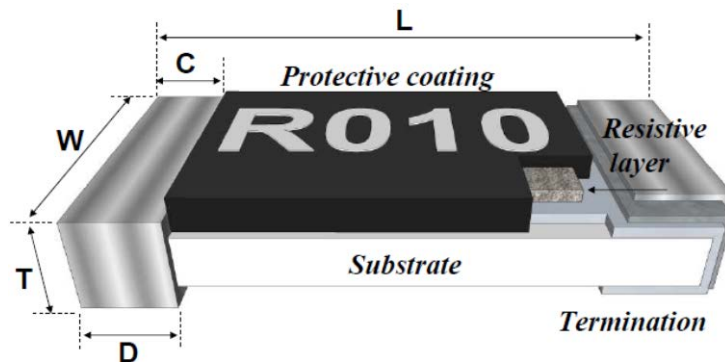
» Standard Package Q'ty for each size is as following.

TYPE	Standard Package Q'ty
RBF0603	5K per reel
RBF0805	5K per reel
RBF1206	5K per reel
RBF1210	5K per reel
RBF2010	4K per reel
RBF2512	4K per reel

### ◆ Power Derating



### ◆ Dimensions



Type	Dimensions				
	L	W	C	D	T
RBF0603	1.60±0.10	0.80±0.10	0.30±0.20	0.30±0.20	0.45±0.10
RBF0805	2.00±0.10	1.25±0.10	0.40±0.20	0.40±0.20	0.50±0.10
RBF1206	3.10±0.10	1.60±0.10	0.50±0.25	0.50±0.25	0.55±0.10
RBF1210	3.10±0.10	2.60±0.10	0.50±0.25	0.50±0.25	0.55±0.10
RBF2010	5.00±0.20	2.50±0.20	0.60±0.25	0.60±0.25	0.60±0.10
RBF2512	6.30±0.20	3.10±0.20	0.60±0.25	0.90±0.25	0.60±0.15

Unit: mm

## ◆ Electrical Characteristic

### Standard Type

Type	Power rating at 70°C	Max. RCWV	Max. Overload Voltage	Resistance Tolerance(%)	Temperature Coefficient (TCR; ppm/°C)	Resistance Range (mΩ)		Standard Resistance Value
						Min.	Max.	
RBF0603	1/8W	337mV	754mV	± 1% ± 5%	± 200	40	91	E-24
					± 100	100	910	
RBF0805	1/4W	477mV	1067mV		± 400	10	18	
					± 200	20	46	
					± 100	47	910	
RBF1206	1/3W	551mV	1232mV		± 400	10	18	
					± 200	20	46	
					± 100	47	910	
RBF1210	2/3W	675mV	1508mV		± 400	10	18	
					± 200	20	46	
				± 100	47	910		
RBF2010	3/4W	675mV	1508mV	± 400	10	18		
				± 200	20	46		
				± 100	47	910		
RBF2010	3/4W	826mV	1847mV	± 200	100	910		
				± 400	10	18		
RBF2512	1W	954mV	2133mV	± 200	20	46		
				± 100	47	910		
RBF2512	1W	3.16V	7.07V	± 1% ± 5%	± 100	1R	10R	E-24

Note : RCWV=(P×R)1/2 or Max. RCWV listed above, whichever is lower.

RCWV: Working Voltage(V) · P : Rated Power(W) · R : Resistance Value (Ω)

### High Power Rating Type

Type	Power rating at 70°C	Max. RCWV	Max. Overload Voltage	Resistance Tolerance(%)	Temperature Coefficient (TCR; ppm/°C)	Resistance Range (mΩ)		Standard Resistance Value
						Min.	Max.	
RBF0603	1/4W	477mV	1067mV	± 1% ± 5%	± 200	40	91	E-24
					± 100	100	910	
RBF0805	1/2W	675mV	1508mV		± 400	10	18	
					± 200	20	46	
					± 100	47	910	
RBF1206	3/4W	826mV	1847mV		± 400	10	18	
					± 200	20	46	
					± 100	47	910	
RBF1210	3/4W	826mV	1847mV		± 400	10	18	
					± 200	20	46	
				± 100	47	910		
RBF2010	1W	954mV	2133mV	± 400	10	18		
				± 200	20	46		
				± 100	47	910		
RBF2512	2W	1349mV	3017mV	± 400	10	18		
				± 200	20	46		

RBF2512	2W	4.47V	10V		± 100 ± 100	47 1R	910 10R	
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Note : (\*) 2W loading with total solder-pad and trace size of 300 mm<sup>2</sup>  
 (\*\*) $RCWV=(P \times R)1/2$  or Max. RCWV listed above, whichever is lower.  
 RCWV: Working Voltage(V) , P : Rated Power(W) , R : Resistance Value ( $\Omega$ )

## ◆ Specification

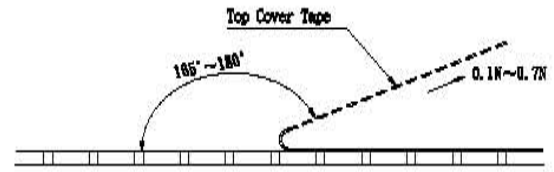
TEST ITEM	SPECIFICATON	TEST METHOD
DC Resistance	F : ±1% J : ±5%	IEC 60115-1 / JIS C 5201-1 , Clause 4.5 Measure the resistance Value.
Short Time Overload	J: $\Delta R \leq \pm(2\% + 0.5m\Omega)$ F: $\Delta R \leq \pm(1\% + 0.5m\Omega)$	5 × Rated power for 5 seconds
Solderability	Over 95% of termination 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	J: $\Delta R \leq \pm(1\% + 0.5m\Omega)$ F: $\Delta R \leq \pm(0.5\% + 0.5m\Omega)$ No mechanical damage	IEC 60115-1/JIS C 5201-1 , Clause 4.18 With 260±5°C for 10± 1sec.
Temperature Coefficient of Resistance (TCR)	Refer to the rating table information.	IEC 60115-1 / JIS C 5201-1 , Clause 4.8 Test temperature : 25 °C ~ 155°C $TCR(ppm/^{\circ}C) = \frac{R2 - R1}{R1} \times \frac{1}{T2 - T1} \times 10^6$
Load Life	J : $\Delta R \leq \pm(3\% + 0.5m\Omega)$ F : $\Delta R \leq \pm(1\% + 0.5m\Omega)$	IEC 60115-1 / JIS C 5201-1 , Clause 4.25 Rated voltage for 1.5 hours for followed by a pause 0.5 hour at 70 ± 3°C Cycle repeated 1000 hours
Insulation Resistance	Between termination and coating must be over 1000M $\Omega$	IEC 60115-1 / JIS C 5201-1 , Clause 4.6 Test voltage : 100±15V
Bending Strength	J : $\Delta R \leq \pm(1\% + 1m\Omega)$ F : $\Delta R \leq \pm(0.5\% + 1m\Omega)$ No mechanical damage	IEC 60115-1 / JIS C 5201-1 , Clause 4.33 Resistance changes after bended on the 90mm PCB. Bending width : 3mm for 0603 0805 2mm for 1206 2010 2512

## ◆ Packing

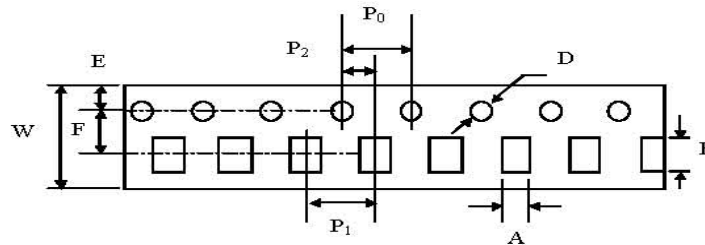
### Peel Strength of Top Cover Tape

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

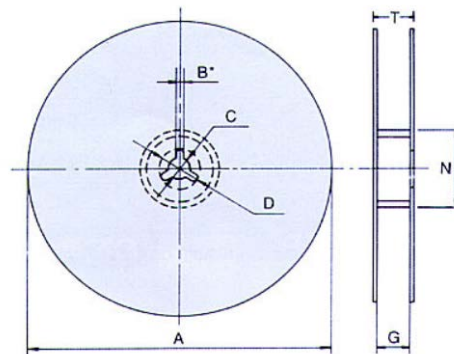


Accumulated dimensional tolerance  $40 \pm 0.2 \text{mm}$

Size	A	B	W	F	E	P1	P2	P0	D
0603	$1.10 \pm 0.20$	$1.90 \pm 0.20$	$8.00 \pm 0.30$	$3.50 \pm 0.05$	$1.75 \pm 0.10$	$4.00 \pm 0.10$	$2.00 \pm 0.05$	$4.00 \pm 0.10$	$1.50 + 0.10 / -0$
0805	$1.65 \pm 0.20$	$2.40 \pm 0.20$	$8.00 \pm 0.30$	$3.50 \pm 0.05$	$1.75 \pm 0.10$	$4.00 \pm 0.10$	$2.00 \pm 0.05$	$4.00 \pm 0.10$	$1.50 + 0.10 / -0$
1206	$2.00 \pm 0.20$	$3.60 \pm 0.20$	$8.00 \pm 0.30$	$3.50 \pm 0.05$	$1.75 \pm 0.10$	$4.00 \pm 0.10$	$2.00 \pm 0.05$	$4.00 \pm 0.10$	$1.50 + 0.10 / -0$
1210	$3.00 \pm 0.20$	$3.60 \pm 0.20$	$8.00 \pm 0.30$	$3.50 \pm 0.05$	$1.75 \pm 0.10$	$4.00 \pm 0.10$	$2.00 \pm 0.05$	$4.00 \pm 0.10$	$1.50 + 0.10 / -0$
2010	$2.80 \pm 0.20$	$5.50 \pm 0.20$	$12.00 \pm 0.30$	$5.50 \pm 0.05$	$1.75 \pm 0.10$	$4.00 \pm 0.10$	$2.00 \pm 0.05$	$4.00 \pm 0.10$	$1.50 + 0.10 / -0$
2512	$3.50 \pm 0.20$	$6.70 \pm 0.20$	$12.00 \pm 0.30$	$5.50 \pm 0.05$	$1.75 \pm 0.10$	$4.00 \pm 0.10$	$2.00 \pm 0.05$	$4.00 \pm 0.10$	$1.50 + 0.10 / -0$

Unit: mm

### Reel Dimensions



Size	Packing Q'ty	A	N	C	D	B	G	T
0603	5kpcs/Reel (7")	$178.0 \pm 2.0$	$60.0 \pm 0.5$	$13.0 \pm 0.5$	20(Min.)	$2.0 \pm 0.5$	$10.0 \pm 1.5$	14.9max.
0805	10kpcs/Reel (10")	$254.0 \pm 2.0$	$100.0 \pm 1.0$	$13.5 \pm 0.5$	20(Min.)	$2.0 \pm 0.5$	$10.0 \pm 1.5$	14.9max.
1206								
1210	20kpcs/Reel (13")	$330.0 \pm 2.0$	$100.0 \pm 1.0$	$13.5 \pm 0.5$	20(Min.)	$2.0 \pm 0.5$	$10.0 \pm 1.5$	14.9max.
2010 2512	4kpcs/Reel (7")	$178.0 \pm 2.0$	$60.0 \pm 0.5$	$13.0 \pm 0.5$	20(Min.)	$2.0 \pm 0.5$	$13.8 \pm 1.5$	16.7max.
	8kpcs/Reel (10")	$254.0 \pm 2.0$	$100.0 \pm 1.0$	$13.0 \pm 0.5$	20(Min.)	$2.0 \pm 0.5$	$13.8 \pm 1.5$	20.0max.
	16kpcs/Reel (13")	$330.0 \pm 2.0$	$100.0 \pm 1.0$	$13.5 \pm 0.5$	20(Min.)	$2.0 \pm 0.5$	$13.8 \pm 1.5$	20.0max.

All product specification and data are subject to change without notice.

Unit: mm