

THICK FILM METAL PASTE CURRENT SENSING RESISTORS

(RBL & High Power RBLP SERIES)

Features

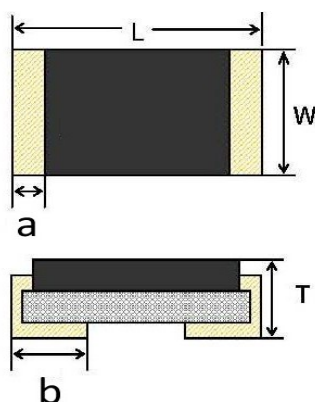
- * Highly stable in auto-placement
Surface mounting application
- * Fixed thick film high power Chip resistors, rated power up to 2W
- * Available range 10m-910m ohm, very good TCR.
- * RoHS compliant & Halogen Free

Applications

- * Switching Power Supply
- * Mother Boards
- * Portable devices current sensing
- * Consumer Electronics



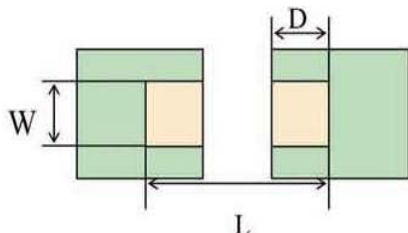
Dimensional Specifications



Style	Dimensions : mm				
	L	W	T	a	b
RBL-06 (0603)	1.60 ±0.10	0.80 ±0.10	0.45 ±0.10	0.30 ±0.20	0.30 ±0.20
RBL-10 (0805)	2.00 ±0.10	1.25 ±0.10	0.50 ±0.10	0.40 ±0.20	0.40 ±0.20
RBL-18 (1206)	3.10 ±0.10	1.60±0.10	0.55 ±0.10	0.50±0.25	0.50 ±0.25
RBL-20 (1210)	3.10 ±0.10	2.60±0.10	0.55 ±0.10	0.50±0.25	0.50 ±0.25
RBL-22 (2010)	5.00 ±0.20	2.50 ±0.20	0.60 ±0.10	0.60±0.25	0.60 ±0.25
RBL-24 (2512)	6.30 ±0.20	3.10 ±0.20	0.60 ±0.15	0.60±0.25	0.90±0.25

Note: RBL/RBLP same dimensions

Recommended Solder Pad Dimensions



Style	Dimensions : mm		
	W	D	L
RBL-06 (0603)	0.90	1.00	3.00
RBL-10 (0805)	1.30	1.15	3.50
RBL-18 (1206)	1.80	1.30	4.70
RBL-20 (1210)	3.00	1.30	4.70
RBL-22 (2010)	3.00	1.50	6.80
RBL-24 (2512)	3.70	2.45	7.60

Marking

E - 24 Series



4 digit marking for ±1%, ±5%
0805, 1206, 1210, 2010, 2512
examples: R100 = 100mΩ, R050 = 50mΩ



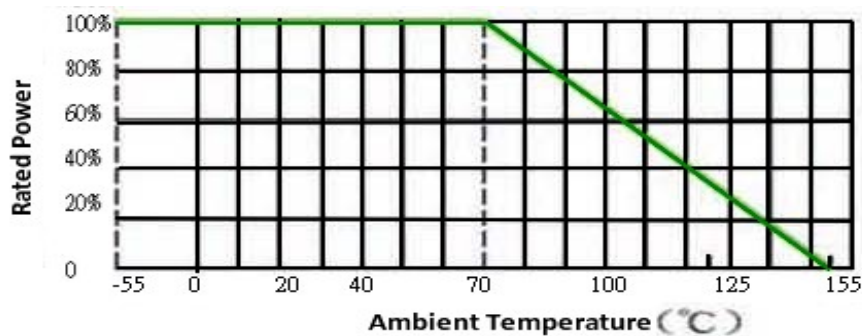
3 digit marking for ±1%, ±5%
examples: R10 = 100mΩ, R50 = 500mΩ



3 digit marking for ±1%, ±5%
10mΩ ~ 91mΩ
examples: 47M = 47mΩ



Power Derating Curve



Electrical Specification

Type	Size	Power Rating at 70° C	MAX. RCWV	Max Overload Voltage	Resistance Tolerance (%)	Temperature coefficient TCR ; ppm/°C	Resistance Range		Standard Resistance Values
							Min.	Max.	
RBL-06	0603	1/8W	337mV	754mV	±5%(J) ±1%(F)	±200,	40mΩ	91mΩ	E-24
RBLP-06		1/4W	477mV	1067mV		±100	100mΩ	910mΩ	
RBL-10	0805	1/4W	477mV	1067mV		±200	10mΩ	46mΩ	
RBLP-10		1/2W	675mV	1058mV		±100	47mΩ	910mΩ	
RBL-18	1206	1/3W	551mV	1232mV		±200	10mΩ	46mΩ	
RBLP-18		3/4W	826mV	1847mV		±100	47mΩ	910mΩ	
RBL-20	1210	2/3W	675mV	1508mV		±200	10mΩ	46mΩ	
RBLP-20		3/4W	826mV	1847mV		±100	47mΩ	910mΩ	
RBL-22	2010	3/4W	675mV	1508mV		±200	10mΩ	46mΩ	
RBLP-22		1W	954mV	2133mV		±100	47mΩ	910mΩ	
RBL-24	2512	1W	954mV	2133mV		±200	10mΩ	46mΩ	
RBLP-24		2W	1349mV	3017mV		±100	47mΩ	910mΩ	

Note: (*)2W loading with total solder-pad and trace size of 300mm²

(**) $E = (P \cdot R)^{1/2}$

E = Working Voltage (V), P = Rated Power (W), R = Resistance Value (Ω)

(***) RBLP-20 1210 available range 47mΩ~910mΩ only.

Parts Number System

RBL -	10 -	102	J	R
Type	Size	Resistance	Tolerance	Standard Packing
RBL Series- Metal paste current Sensing Resistors	06=0603 10=0805 18=1206 20=1210 22=2010 24=2512	3 Digits: for 5% First 2 digits are significant figure third Digits is number of aero	J=± 5% F=± 1%	R=Paper tape reel 5000pcs/Reel size: 0603~1210 K=Embossed plastic tape reel 4000pcs/Reel size: 2010, 2512
RBLP Series- Metal paste high Power Current Sensing Chip Resistor		4 Digits : for 1%, 10K=1002		



General Specification

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	J: $\Delta R \leq \pm (2\% + 0.5m\Omega)$ F: $\Delta R \leq \pm (1\% + 0.05m\Omega)$	5 x 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 $245 \pm 2^\circ\text{C}$ molten solder bath for 3 ± 0.5 sec.
Resistance to Solder Heat	J: $\Delta R \leq \pm (1\% + 0.5m\Omega)$ F: $\Delta R \leq \pm (0.5\% + 0.05m\Omega)$ No mechanical damage	IEC 60115-1 / JIS C 5201-1 , Clause 4.18 with $260 \pm 5^\circ\text{C}$ for 10 ± 1 sec.
Temperature Coefficient of Resistance (TCR)	Test temperature: $25 \sim 155^\circ\text{C}$ Refer to the rating table information.	IEC 60115-1 / JIS C 5201-1 , Clause 4.8 Test temperature : $25^\circ\text{C} \sim 155^\circ\text{C}$ TCR(ppm/ $^\circ\text{C}$) = $\frac{R_2 - R_1}{R_1} \times \frac{1}{T_2 - T_1} \times 10^6$
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 $70 \pm 3^\circ\text{C}$. 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 : $100 \pm 15\text{V}$
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 change after bended on the 90mm PCB. Bending width : 3mm for 0603 0805 2mm for 1206 1210 2010 2512

