

METAL FOIL CURRENT SENSING RESISTOR

(RLPS SERIES)

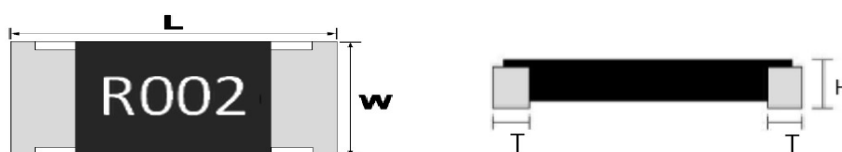
Features

- * Low Resistance/Low TCR
- * Excellent long term stability
- * RoHs compliant and halogen free
- * High precision current sensing & voltage division

Applications

- * Entertainment product
- * Power supply
- * Measuring instrument
- * Industrial product
- * Battery management system

Dimensional Specifications



Type (Size)		Resistance Range (mΩ)	Dimension			mm
			L	W	H	T
RLPS-06	0603	5 mΩ	1.60 ±0.25	0.8 ±0.25	0.65 ±0.20	0.5 ±0.20
		6 ~ 100 mΩ				0.4 ±0.20
RLPS-10	0805	4 ~ 270 mΩ	2.00 ±0.25	1.20 ±0.25	0.65 ±0.20	0.6 ±0.20
RLPS-18	1206	4 ~ 700 mΩ	3.20 ±0.25	1.60 ±0.25	0.65 ±0.20	0.7 ±0.20
RLPS-22	2010	2 ~ 3 mΩ	5.08 ±0.25	2.54 ±0.25	0.65 ±0.20	2.1 ±0.30
		4 ~ 500 mΩ				0.7 ±0.30
RLPS-24	2512	2 mΩ	6.40 ±0.30	3.20 ±0.30	0.75 ±0.20	1.65 ±0.30
		3 mΩ			0.75 ±0.20	1.65 ±0.30
		4 ~ 560 mΩ			0.65 ±0.20	1.05 ±0.30

Type (Size)	Power rating at 70°C	TCR ppm/°C	Max Rating Current	Max Overload Current	Resistance Range (mΩ)			Operating Temp. Range (°C)
					0.5% (D)	1%(F)	5% (J)	
RLPS-06 (0603)	1/2W (0.5W)	±50	7.07 A	11.18 A	10 mΩ ~ 50 mΩ		5mΩ~20mΩ	-55 ~ 155°C
		±75	10 A	15.81 A	---	5mΩ ~ 9mΩ	---	
RLPS-10 (0805)	3/4W (0.75W)	±50	8.66 A	13.69 A	10 mΩ ~ 270 mΩ		5mΩ~30mΩ	
		±75	13.69 A	21.65 A	---	4mΩ ~ 9mΩ	---	
RLPS-18 (1206)	1W	±50	10 A	15.81 A	10 mΩ ~ 700 mΩ		5mΩ~40mΩ	
		±75	15.81 A	25 A	---	4mΩ ~ 9mΩ	---	
RLPS-22 (2010)	1.5W	±50	12.24 A	19.36 A	10 mΩ ~ 500 mΩ		---	
		±100	27.38 A	43.30 A	---	2mΩ ~ 9mΩ	---	
RLPS-24 (2512)	2W	±50	14.14 A	22.36A	10 mΩ ~ 560 mΩ		5mΩ~10mΩ	
		±75	31.62 A	50 A	---	2mΩ ~ 9mΩ	---	

* Material: size :0603/0805/1206 -- R004~R049: MuCu, R050~R700: Cu Alloy

2010 -- R002~R500: Cu Alloy

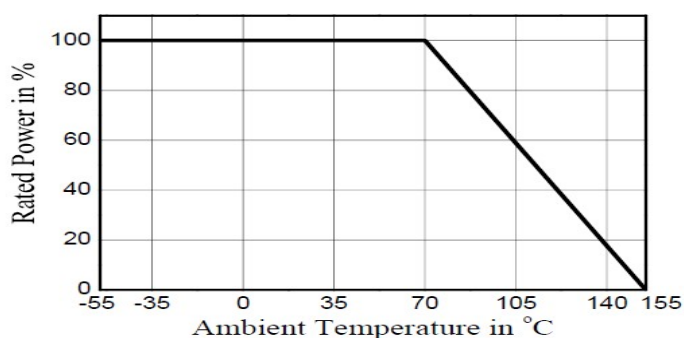
2512 -- R004~R049: MuCu, R050~R560: Cu Alloy



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°C ~ +125°C, 25°C is the reference temperature	As spec
Insulation Resistance	JIS- C- 5201-1 4.6 IEC-60115-1 4.6	Apply 100VDC for 1 minute	> 100M Ω
Short Time Overload	JIS- C- 5201-1 4.13 IEC-60115-1 4.13	5 x rated power for 5 seconds	± 1.0% + 0.5mΩ
Solderability	JIS- C- 5201-1 4.17 IEC-60068-1 4.17	245 ± 5°C for 3 seconds.	The covered area > 95%
Moisture no load	JIS- C- 5201-1 4.24 2.1a IEC-60115-1 4.24.2.1a	85°C, 85% RH, 1000 hrs.	± 1.0% + 0.5mΩ
Resistance to Soldering Heat	JIS -C- 5201-1 4.18 IEC-60115-1 4.18	260 ± 5°C for 10 seconds.	± 1.0% + 0.5mΩ
Rapid Change of Temperature	JIS -C- 5201-1 4.19 IEC-60115-1 4.19	-55°C to +155°C, 5 cycles	± 1.0% + 0.5mΩ
Damp Heat with Load	JIS -C- 5201-1 4.24 IEC-60115-1 4.24	40 ± 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"	± 2.0% + 0.5mΩ
Load Life (Endurance)	JIS -C- 5201-1 4.25 IEC-60115-1 4.25.1	70 ± 2°C, RCWV or Max. working voltage whichever is less for 1000 hrs with 1.5 hrs "ON" and 0.5 hr "OFF"	± 2.0% + 0.5mΩ
Bending Strength	JIS -C- 5201-1 4.33 IEC-60115-1 4.33	Bending once 2mm for 10 seconds	± 1.0% + 0.5mΩ

Derating Curve



The Operating Temperature Range: -55°C ~ +155°C. For resistors operated in ambient temperatures above 70°C, power rating must be derated in accordance with the curve below (Terinal temp. derating from above 100°C).

* Rate voltage

The rated current and voltage are calculated by the following formula:

$$I = \sqrt{P \div R}$$

I = Rating Current (A), P = Rating Power (W), R = Resistance (Ω)



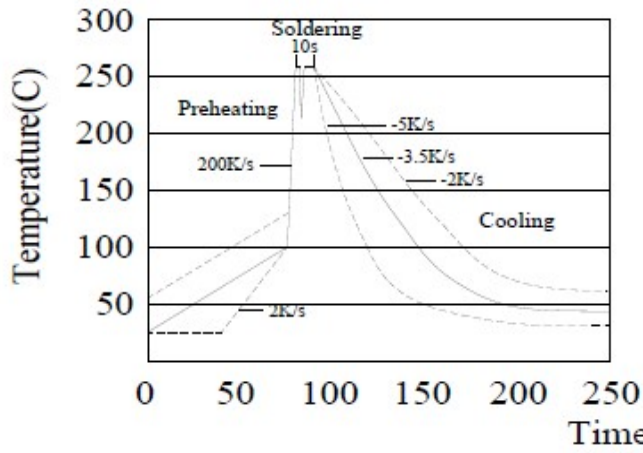
Recommended Customer Soldering Parameters

* Wave solder Temperature Condition

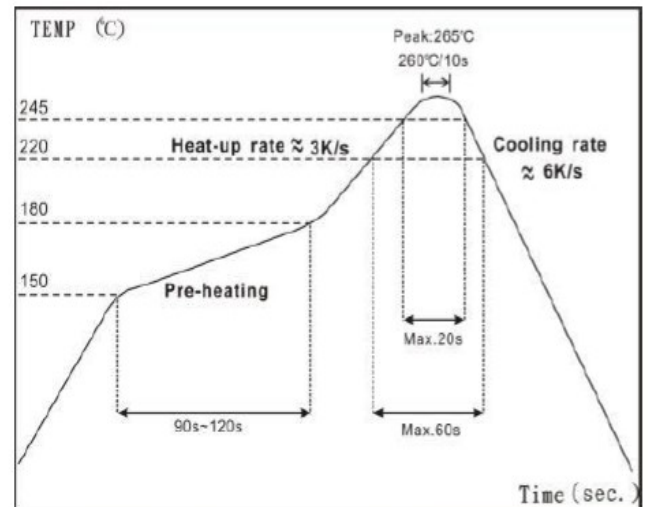
Preheating : 100°C~130°C, max.100 sec.

Soldering: 250°C~265°C max. 10 sec.

Maximum temperature : 260±5°C, max. 10sec.



* Solder reflow Temperature Condition



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

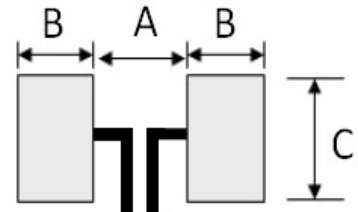
* Recommended reflow methods

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 (Size)	Resistance (mΩ)	Dimension mm		
		A	B	C
RLPS-06	5 mΩ	0.50	1.35	0.92
	6 ~ 50 mΩ	0.6 / 0.85	1.3 / 1.00	0.92
RLPS-10	4 ~ 270 mΩ	0.8 / 1.2	1.40	1.44
RLPS-18	4 ~ 700 mΩ	1.2 / 1.8 / 2.2	1.80	1.84
RLPS-22	2 ~ 3 mΩ	0.70	3.65	2.88
	4 ~ 500 mΩ	2.70	2.65	2.88
RLPS-24	2 ~ 3 mΩ	1.60	3.85	3.57
	5 ~ 10 mΩ	4.60	1.65	3.60
	4 ~ 560 mΩ	3.10	3.10	3.57



Marking

* m Ω Resistance Codes



0603 no marking



0805 ~ 2512 5%
3 digits code



0805~2512 1%
4 digits code

	Code		Example	
	5%	1%	5%	1%
50 m Ω	R05	R050	R05=50m Ω	R050=50m Ω
10 m Ω	R01	R010	R01=10m Ω	R010=10m Ω

Parts Number system

RLPS -	10 -	102	J	R
Type RLPS Series- Metal Foil Low TCR Chip Resistors	Size 06=0603 10=0805 18=1206 22=2010 24=2512	Resistance 3 Digits: for 5% R01=100m Ω R10=10m Ω 4 Digits: for 1% R020=20m Ω R050=50m Ω	Tolerance D=± 0.5% J=± 5% F=± 1%	Standard Packing R=Paper tape reel 5Kpcs/Reel size: 0603~1206 K=Embossed plastic tape reel 4Kpcs/Reel size: 2010,2512