



APPROVAL SHEET

Product Name : Metal Foil Low Ohm Chip Resistor

Part No. : RFL

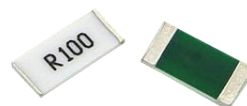
Description : Size 0402~2512

For more contact information, please refer to our website: www.rideetech.com

Metal Foil Low Ohm Chip Resistor — RFL Series

Applications

- Power Supply
- Entertainment
- Measuring instrument
- Industrial
- Battery management system



Features

- Low Resistance / TCR / EMF (only for MnCu)/Inductance
- Excellent long term stability
- RoHS compliant & Halogen Free
- Lead free
- High precision current sensing and voltage division.

Part Number Explanation

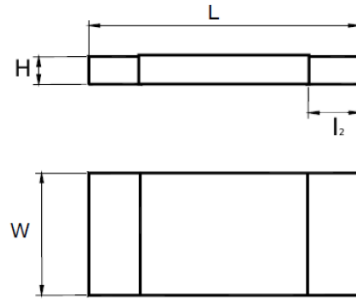
RFL	2512	20	F	R005	T	S
Product	Size (Inch)	Rated Power	Tolerance	Resistance	Packaging	Functional
Metal Foil Low Ohm Chip Resistor	0402 0603 0805 1206 2512	03=0.33W 05=0.50W 07=0.75W 10=1.00W 20=2.00W	D : ±0.5% F : ±1.0% J : ±5.0%	R005=5mΩ R020=20mΩ R150=150mΩ	T=Tape & Reel	S=Standard

■ Standard Electrical Specifications

Type	Rating Power at 70°C	T.C.R. (ppm/°C)	Resistance Range (mΩ)		
			0.5% (D)	1.0% (F)	5.0% (J)
RFL0402	0.33W	±100	5~25		
		±50	-		
RFL0603	0.5W	±100	5~9		
		±50	10~75		
RFL0805	0.75W	±100	3~9		
		±50	10~500		
RFL1206	1W	±100	3~9		
		±50	10~700		
RFL2512	2W	±100	2~9		
		±50	10~700		

- Beyond the above specification also can meet the special requirements. For detail questions, please contact us freely

Dimension

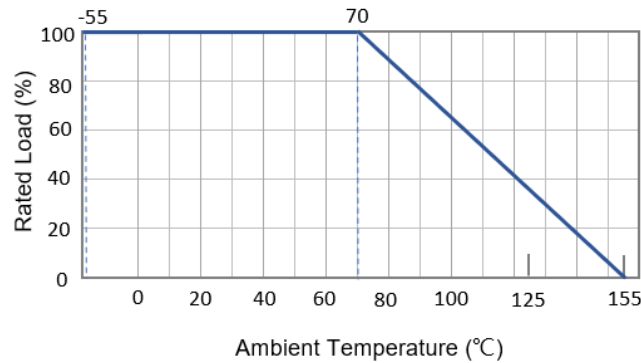


Unit: mm

Type	R-value	L (mm)	W (mm)	H (mm)	l ₂ (mm)
RFL2512	R002	6.4±0.30	3.2±0.30	0.65±0.20	2.8±0.30
	R003	6.4±0.30	3.2±0.30	0.65±0.20	2.6±0.30
	R004-R009	6.4±0.30	3.2±0.30	0.65±0.20	1.05±0.30
	R010-R049	6.4±0.30	3.2±0.30	0.65±0.20	1.05±0.30
	R050-R700	6.4±0.30	3.2±0.30	0.65±0.20	1.05±0.30
RFL1206	R003	3.3±0.20	1.7±0.20	0.65±0.20	1.20±0.30
	R004-R008	3.3±0.20	1.7±0.20	0.65±0.20	0.68±0.30
	R009-R049	3.3±0.20	1.7±0.20	0.65±0.20	0.68±0.30
	R050-R700	3.3±0.20	1.7±0.20	0.65±0.20	0.68±0.30
RFL0805	R003	2.10±0.20	1.35±0.20	0.65±0.20	0.65±0.20
	R004	2.10±0.20	1.35±0.20	0.65±0.20	0.50±0.20
	R005-R007	2.10±0.20	1.35±0.20	0.65±0.20	0.50±0.20
	R008-R049	2.10±0.20	1.35±0.20	0.65±0.20	0.50±0.20
	R050-R500	2.10±0.20	1.35±0.20	0.65±0.20	0.5±0.20
RFL0603	R005	1.7±0.20	0.9±0.20	0.65±0.20	0.50±0.20
	R006-R009	1.7±0.20	0.9±0.20	0.65±0.20	0.40±0.20
	R010-R049	1.7±0.20	0.9±0.20	0.65±0.20	0.40±0.20
	R050-R075	1.7±0.20	0.9±0.20	0.65±0.20	0.40±0.20
RFL0402	R005-R025	1.0±0.10	0.55±0.10	0.30±0.05	0.23±0.10

■ Derating Curve

Operating Temperature Range: -55 to +155°C



■ Voltage Rating or Current Rating

The direct or alternating voltage for the rated power can be calculated from the following formula but must not exceed the maximum voltage.

$$V = \sqrt{P \times R}$$

V = Rated Voltage(V)
 P = Rated Power(W)
 R = Rated Resistance(Ω)

■ Recommended Customer Soldering Parameters

■ Recommended IR Reflow Soldering Conditions

Preliminary heating: 150°C~180°C, 120s max

Soldering: 220°C, 60s max

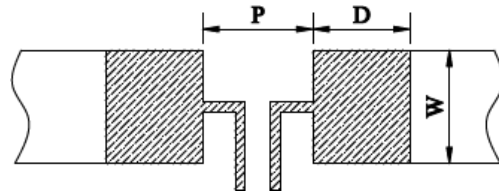
Peak temperature: 245°C, 15s max

■ Recommended WAVE Soldering Conditions

Reservoir Temperature: 260°C, 10s max

Number of times: two times max

■ Recommend Land Pattern Design



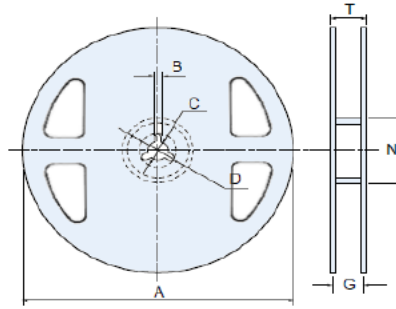
Unit: mm

Type	R-value	P	W	D
RFL2512	R002	0.60	3.57	4.35
	R003	0.90	3.57	4.20
	R004-R009	3.10	3.57	3.10
	R010-R700	3.10	3.57	3.10
RFL1206	R003	0.60	1.84	2.10
	R004-R008	1.20	1.84	1.80
	R009-R700	1.20	1.84	1.80
RFL0805	R003	0.50	1.44	1.55
	R004-R007	0.80	1.44	1.40
	R008-R500	0.80	1.44	1.40
RFL0603	R005	0.50	0.92	1.35
	R006-R009	0.60	0.92	1.30
	R010-R075	0.60	0.92	1.30
RFL0402	R005-R025	0.40	0.60	0.60

■ 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	Temperature: (T1. +25°C) ~ (T2. +125°C) TCR(ppm/°C) = $(R2-R1)/R1 \times 1/(T2-T1) \times 10^6$ (+25~ -55°C please contact factory)	As Spec
Short Time Overload	JIS-C-5201-1 4.13 IEC-60115-1 4.13	2.5 × Rated power for 5 seconds	$\Delta R \leq \pm (1.0\% + 0.5m\Omega)$
Resistance to Soldering Heat.	JIS-C-5201-1 4.18 IEC-60115-1 4.18	260±5°C for 10 seconds.	$\Delta R \leq \pm (1.0\% + 0.5m\Omega)$
Temperature Cycling	JIS-C-5201-1 4.19 IEC-60115-1 4.19	Repeat 100 cycles as follows-55°C(30 min.) + 25°C(2~3 min.) +155°C(30 min.) + 25°C(2~3 min.)	$\Delta R \leq \pm (1.0\% + 0.5m\Omega)$
Damp Heat	JIS-C-5201-1 4.24 IEC-60115-1 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 hour, measure the resistance value.	$\Delta R \leq \pm (2.0\% + 0.5m\Omega)$
Load Life	JIS-C-5201-1 4.25 IEC-60115-1 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"	$\Delta R \leq \pm (2.0\% + 0.5m\Omega)$
Bending Strength	JIS-C-5201-1 4.33 IEC-60115-1 4.33	Bend: 2mm for 10 seconds	$\Delta R \leq \pm (1.0\% + 0.5m\Omega)$
Solderability	JIS-C-5201-1 4.17 IEC-60115-1 4.17	After immersing flux, dip in the 245±5°C molten solder bath for 3±0.5 sec	Over 95% of termination must be covered with Solder

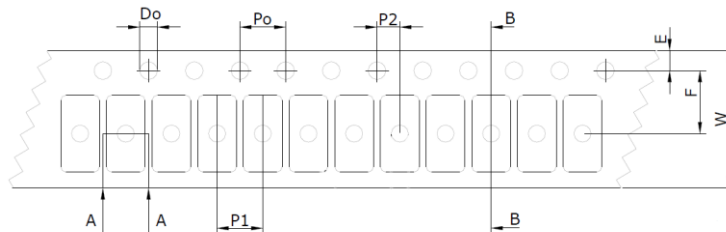
■ Packaging Information



Unit : mm

Size	Type		A	N	C	D	B	G	T
0402	7"	10K/Reel	178±2.0	60.0±0.5	13.0±0.5	20min	2.0±0.5	10.0±1.5	14.9 max
0603 / 0805 / 1206	7"	5K/Reel	178±2.0	60.0±0.5	13.0±0.5	20min	2.0±0.5	10.0±1.5	14.9 max
2512	7"	4K/Reel	178±2.0	60.0±0.5	13.0±0.5	20min	2.0±0.5	13.8±1.5	16.7 max.

■ Tapping Specification



Unit : mm

Packaging	Size	A	B	W	E	F	P1	P2	D0	P0
Paper Type	0402	0.70±0.10	1.20±0.10	8.00±0.30	1.75±0.10	3.50±0.05	2.00±0.10	2.00±0.05	1.50+0.10/-0	4.00±0.10
	0603	1.10±0.20	1.90±0.20	8.00±0.30	1.75±0.10	3.50±0.05	4.00±0.10	2.00±0.05	1.50+0.10/-0	4.00±0.10
	0805	1.65±0.20	2.40±0.20	8.00±0.30	1.75±0.10	3.50±0.05	4.00±0.10	2.00±0.05	1.50+0.10/-0	4.00±0.10
	1206	2.00±0.20	3.60±0.20	8.00±0.30	1.75±0.10	3.50±0.05	4.00±0.10	2.00±0.05	1.50+0.10/-0	4.00±0.10

Packaging	Size	A	B	W	E	F	P1	P2	D0	P0
Embossed Type	2512	3.50±0.20	6.70±0.20	12.00±0.30	1.75±0.10	5.50±0.05	4.00±0.10	2.00±0.05	1.50+0.10/-0	4.00±0.10

■ Marking

2512/1206: 4 digits marking

0805: 3 digits marking

0603: 2 digits marking

0402: no marking

Example:

Type	RFL2512 / RFL1206	RFL0805	RFL0603	RFL0402
Resistance	0.02Ω	0.02Ω	0.02Ω	0.02Ω
Digits Code	R020	020	20	no marking