APPROVAL SHEET

Product Name : Current Sensing Chip Resistor

Part No. : RSL Series

Description : Size 0603~2512

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

Current Sensing Chip Resistor - RSL Series

Applications

— Power Management Applications

— Switching Power Supply

— Over Current Protection in Audio Applications

— Voltage Regulation Module (VRM)

— DC-DC Converter, Battery Pack, Charger, Adaptor

— Disk Driver

Features

— Low TCR of ±100 PPM/°C

— Resistance values from 1 mΩ to 1 Ω

— High purity alumina substrate for high power dissipation

— Long side terminations with higher power rating

— RoHS Compliance

Part Number Explanation

RSL	0603	F	1R00	T	P
Product	Size (Inch)	Tolerance	Resistance	Packaging	Functional
Current Sensing Chip Resistor	0603 0805 1206 1210 2010 2512	F = ±1% G = ±2% J = ±5%	R010=10mΩ R100=100mΩ 1R00=1Ω	T= Tape & Reel	S= Standard Type P= Power U= High Power

Standard Electrical Specifications

Type	Power Rating at 70°C	Max. Operating Current	Resistance Range (mΩ)			TCR (PPM/°C)
			±1%	±2%	±5%	
RSL0603	0.1W	2.23A	20 - 50 51 - 100 102 - 300 301 - 1000			±600 ±400 ±300 ±200
RSL0805	0.125W	2.50A	20 - 50 51 - 100 102 -196 200 - 1000			±600 ±400 ±300 ±200
RSL1206	0.25W	5.00A	10 - 20 21 - 50 51 - 91 100 - 1000			±600 ±400 ±300 ±200
RSL2010	0.5W	7.07A				
RSL2010	0.75W	8.66A				
RSL2512	1W	10.0A				

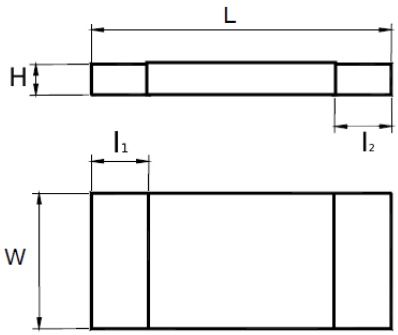
- Functional code: S
- Beyond the above specification also can meet the special requirements. For detail questions, please contact us freely.

Power & High Power Rating Electrical Specifications

Type	Power Rating at 70°C	Max. Operating Current	Resistance Range (mΩ)			TCR (PPM/°C)
			±1%	±2%	±5%	
RSL0603	0.125W 0.2W	1.98A	51 - 100 102 - 500 510 - 1000			±400 ±300 ±200
RSL0805	0.25W 0.5W	2.21A				
RSL1206	0.5W	7.07A	10 - 20 21 - 50 51 - 91 100 - 1000			±600 ±400 ±300 ±200
RSL2010	0.75W	8.66A				
RSL2010	1W	10.0A				
RSL2512	1.5W	12.2A				
RSL2512	*2W	14.1A				
RSL1206	*1W	3.13A	102-1000			±100

- Power Functional code: P
- "*"High Power: U
- RSL1206 1W: double-printed resistor element without marking.
- Beyond the above specification also can meet the special requirements. For detail questions, please contact us freely.

Dimension

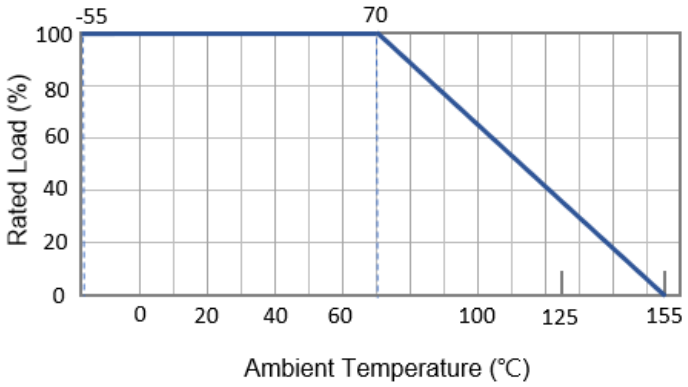


Unit: mm

Size	L	W	H	l_1	l_2
0603	1.60±0.10	0.80±0.10	0.45±0.10	0.30±0.20	0.30±0.20
0805	2.00±0.10	1.25±0.10	0.55±0.10	0.30±0.20	0.40±0.25
1206	3.10±0.10	1.55±0.10	0.55±0.10	0.50±0.30	0.40±0.25
1206 (1W) (102 - 1000mΩ)	3.15±0.10	1.60±0.15	0.65±0.10	0.80±0.20	0.80±0.20
1210	3.10±0.10	2.60±0.15	0.55±0.10	0.50±0.30	0.50±0.25
2010	5.00±0.10	2.50±0.15	0.60±0.15	0.60±0.30	0.50±0.25
2512	6.35±0.10	3.10±0.15	0.60±0.10	0.60±0.30	0.55±0.25
2512 (2W) (10 - 99mΩ)	6.35±0.20	3.15±0.15	0.74±0.10	0.60±0.30	0.55±0.25
2512 (2W) (100 - 1000mΩ)	6.35±0.20	3.15±0.15	0.74±0.10	0.60±0.30	2.10±0.10

Power Derating Curve

Operating Temperature Range: -55 to +155℃



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.

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

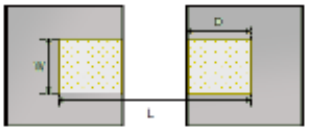
V=Rated Voltage(V)
P=Rated Power(W)
R=Rated Resistance(Ω)

Recommended Customer Soldering Parameters

- **Recommended IR Reflow Soldering Conditions**

  Preliminary heating: 150℃~180℃, 120s max
  Soldering: 220℃, 60s max
  Peak temperature: 245℃, 15s max

■ Recommend Land Pattern Design (For Reflow Soldering)



■ Except For RSL2512 High Power Rating Series

Unit : mm

Type	L	D	W
RSL0603	2.80	1.00	0.90±0.2
RSL0805	3.00	1.00	1.35±0.2
RSL1206	4.30	1.15	1.70±0.2
RSL1206 (1W)	4.30	1.70	1.70±0.2
RSL1210	4.30	1.15	2.50±0.2
RSL2010	6.40	1.40	2.50±0.2
RSL2512	8.10	1.60	3.20±0.2

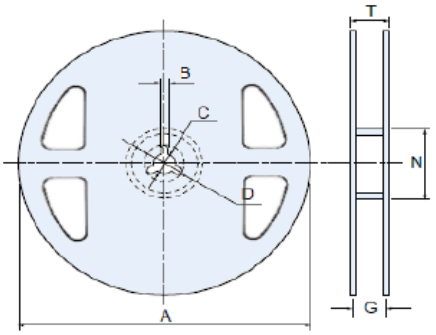
■ For RSL2512 High Power Rating Series

Type	Resistance Range	L	D	W
RSL2512	10~99 mΩ	8.10	1.60	3.2±0.2
RSL2512	100~1000mΩ	8.10	3.55	3.2±0.2

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 / -55℃ and 25℃ /+155℃, 25℃ is the reference temperature	As Spec
Short Time Overload	JIS-C-5201-1 4.13 IEC-60115-1 4.13	2.5 times RCWV or Max. Overload voltage whichever is less for 5 seconds. RSL1206 1W:5*rated power for 5 seconds	±(0.5%+0.05Ω) ±(1.0%+0.05Ω) For High power rating
Leaching	JIS-C-5201-1 4.18 IEC-60115-1 8.2.1	260±5℃ for 30 seconds.	Individual leaching area ≦5% Total leaching area ≦ 10%
Resistance to Soldering Heat	JIS-C-5201-1 4.18 IEC-60115-1 4.18	Solder dipping @ 260℃±5℃ for 10sec.±1sec..	±(0.5%+0.05Ω) RSL1206 1W：±(1.0%+0.05Ω)
Insulation Resistance	JIS-C-5201-1 4.6 IEC-60115-1 4.6	Max. Overload Voltage for 1 minute	≧10G
Temperature Cycling	JIS-C-5201-1 4.19 IEC-60115-1 4.19	55 °C to +155 °C, 5 cycles	±(0.5%+0.05Ω) RSL1206 1W：±(1.0%+0.05Ω)
Voltage Proof	JIS-C-5201-1 4.7 IEC-60115-1 4.7	1.42 times Max. Operating Voltage for 1 minute 0603:150V; 0805:300V 1206/1210/2010:400V; 2512:500V.	No breakdown or flashover
Endurance	JIS-C-5201-1 4.25 IEC-60115-1 4.25.1	70±2 °C, RCWV for 1000hrs with 1.5 hrs “ON” and 0.5 hr “OFF”	±(1.0%+0.05Ω)
Damp Heat	JIS-C-5201-1 4.24 IEC-60115-1 4.24	40±2 °C, 90~95% R.H., RCWV for 1000 hrs with 1.5hrs “ON” and 0.5 hr “OFF”	±(0.5%+0.05Ω) RSL1206 1W：±(1.0%+0.05Ω)
Solderability	JIS-C-5201-1 4.17 IEC-60115-1 4.17	245±5 °C for 3 seconds	Over 95% of termination must be covered with solder.
Bending Strength	JIS-C-5201-1 4.33 IEC-60115-1 4.33	Bending once for 60 se conds with 3mm 2010, 2512 sizes: 2mm	±(1.0%+0.05Ω)

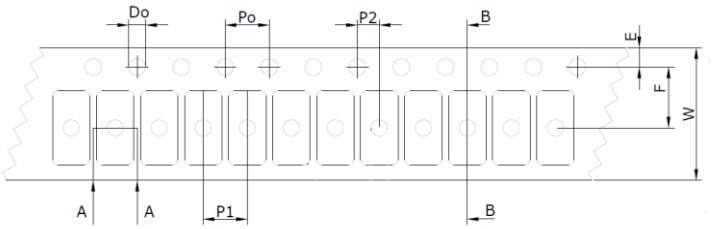
Packaging Information



Unit:mm

Size	Packaging Q'ty		B	C	D	N	T	A
0603 / 0805	7"	5K/Reel	2.0±0.5	13.0±0.5	20(Min.)	60±0.5	10.0±1.5	178±2.0
1206 / 1210								
2010 / 2512	7"	4K/Reel	2.0±0.5	13.0±0.5	20(Min.)	60±0.5	13.8±1.5	178±2.0
2512 (2W)	7"	2K/Reel	2.0±0.5	13.0±0.5	20(Min.)	60±0.5	13.8±1.5	178±2.0

Tapping Specification



Unit:mm

Size	A	B	W	F	E	P1	P2	P0	D0
0603	1.10±0.20	1.90±0.20	8.00±0.3	3.50±0.05	1.75±0.1	4.00±0.10	2.00±0.05	4.00±0.10	1.50+0.10/-0
0805	1.65±0.20	2.40±0.20	8.00±0.3	3.50±0.05	1.75±0.1	4.00±0.10	2.00±0.05	4.00±0.10	1.50+0.10/-0
1206	2.00±0.20	3.60±0.20	8.00±0.3	3.50±0.05	1.75±0.1	4.00±0.10	2.00±0.05	4.00±0.10	1.50+0.10/-0
1210	3.00±0.20	3.60±0.20	8.00±0.3	3.50±0.05	1.75±0.1	4.00±0.10	2.00±0.05	4.00±0.10	1.50+0.10/-0
2010	2.80±0.20	5.50±0.20	12.00±0.3	5.50±0.05	1.75±0.1	4.00±0.10	2.00±0.05	4.00±0.10	1.50+0.10/-0
2512	3.50±0.20	6.70±0.20	12.00±0.3	5.50±0.05	1.75±0.1	4.00±0.10	2.00±0.05	4.00±0.10	1.50+0.10/-0
2512 (2W)	3.38±0.10	6.68±0.10	12.0±0.3	5.50±0.10	1.75±0.1	4.00±0.10	2.00±0.05	4.00±0.10	1.50+0.10/-0

Marking

- **1%, for 0805/1206/1210/2010/2512 4 digits marking**

Resistance	47mΩ	75mΩ	750mΩ
4 digits code	R047	R075	R750

- **0603 E24 ±5%: 3 digits marking**
- **0603 ±1%: 3 digit s marking with under line in E96 (non including E24 series)**