APPROVAL SHEET

Product Name	**: Metal Strip Extra Low Ohm Current. Sensing Chip Resistor**
Part No.	**: RHL Series**
Description	**: High Power / Extra Low Ohm**

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

Metal Strip Extra Low Ohm Current Sensing Chip Resistor _ RHL Series

■ Applications

— Household Appliances.

— Power Supply

— Industrial Product Power Management.

Pb-free
RoHS COMPLIANT
HALOGEN FREE

■ Features

— Extra Low ohm and Low TCR .

— High Power Up to 4.5W

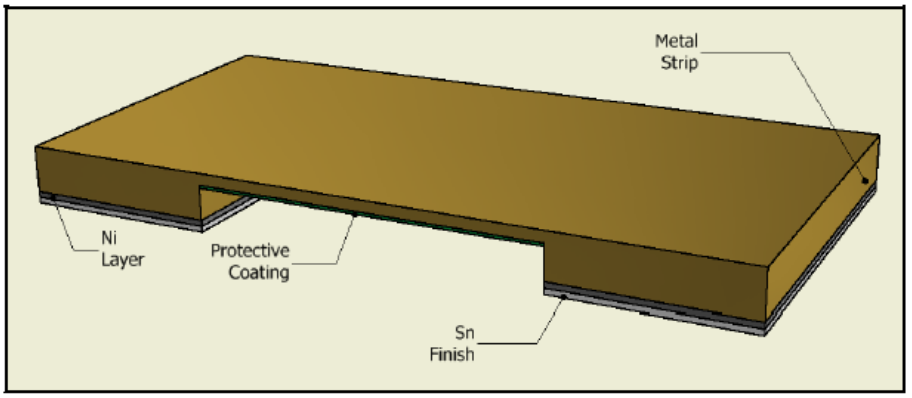
— Low Inductance

— RoHS compliant

■ Part Number Explanation

RHL	2512	30	F	R005	T	S
Product	Size (Inch)	Rated Power	Tolerance	Resistance	Packaging	Functional
Metal Strip Extra Low Ohm Current Sensing Chip Resistor	2512	30: 3W 37: 3.75W 45: 4.5W	F : ±1.0% H : ±3.0% J : ±5.0%	R005=5mΩ R012=12mΩ 1M50=1.5mΩ M500=0.5mΩ	T= Tape & Reel	S= Standard M= Meet AEC-Q200

■ Configuration

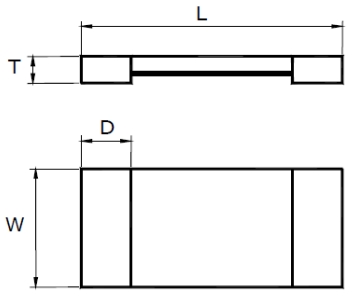


■ Standard Electrical Specifications

Item / Type	Rated Power at 70℃	Rated Power at 100℃	Max Working Current (A)	Max Overload Current (A)	T.C.R. (PPM/℃)	Resistance Range
	Standard	Standard				F(± 1%) H(± 3%) J(± 5%)
RHL2512	4.5W	3W	77.5	173.2	100	0.5mΩ
	4.5W	3W	63.3	141.4	100	0.75mΩ
	4.5W	3W	54.8	122.5	50	1mΩ
	4.5W	3W	38.7	86.6	50	2mΩ
	4.5W	3W	31.6	70.7	50	3mΩ
	3.75W	2.5W	25 20.4	55.9 45.6	50	4mΩ~6mΩ
	3W	2W	16.9 14.1	37.8 31.6	50	7mΩ~10mΩ

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

■ Dimension



Unit: mm

Type	L	W	D	T
0.5mΩ	6.35±0.25	3.0±0.2	2.68±0.25	0.6±0.2
0.75mΩ	6.35±0.25	3.0±0.2	2.48±0.25	0.6±0.2
1mΩ	6.35±0.25	3.0±0.2	1.93±0.25	0.6±0.2
1.5mΩ	6.35±0.25	3.0±0.2	1.43±0.25	0.6±0.2
2mΩ~3.5mΩ	6.35±0.25	3.0±0.2	1.18±0.25	0.6±0.2
4mΩ~4.5mΩ	6.35±0.25	3.0±0.2	2.18±0.25	0.6±0.2
5mΩ~6mΩ	6.35±0.25	3.0±0.2	1.93±0.25	0.6±0.2
6.5mΩ~7.5mΩ	6.35±0.25	3.0±0.2	1.43±0.25	0.6±0.2
8mΩ~10mΩ	6.35±0.25	3.0±0.2	1.18±0.25	0.6±0.2

■ Recommended Customer Soldering Parameters

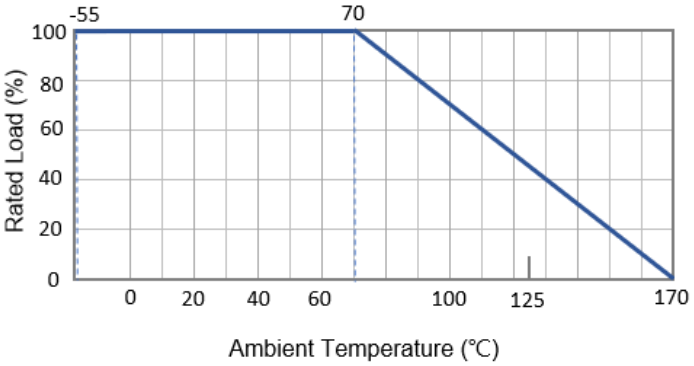
■ Recommended IR Reflow Soldering Conditions

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

■ Performance Characteristics

■ Power Derating Curve

Operating Temperature Range: -55 to +170℃



■ Voltage Rating or Current Rating

Resistance Range: ≧1Ω
Rated Voltage: The resistor shall have a DC continuous working voltage or a RMS AC continuous working voltage at commercial-line frequency and wave form corresponding to the power rating, as determined formula as following:

E=Rated voltage(V)

E(RCWV)=√P×R

P=Power rating(W)
R=Nominal resistance(Ω)

■ Reliability Test and Requirement

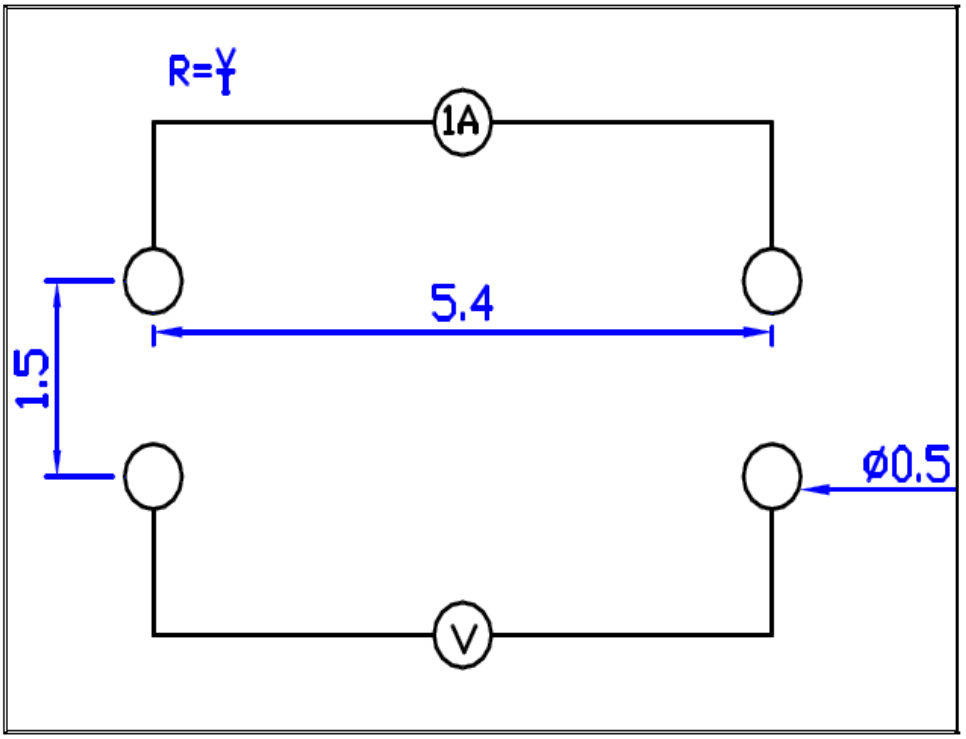
Test Item	Test Method	Procedure	Requirements
Short Time Overload	IEC-60115-1 4.13	5 times the rated power is applied to the resistor for 5 seconds and the change in resistance is measured after 30mins.	ΔR≦ ±(1%+0.5mΩ)
Insulation Resistance	IEC-60115-1 4.6	The resistor is placed in a test fixture and 100VDC is applied for 1min.	≧10GΩ No Defects
Solderability	IEC-60115-1 4.17	The resistor is immersed in solder bath at 260±5℃ for 2±0.5secs.	Coverage of 95% of the surface immersed.
Resistance to Soldering Heat	IEC-60115-1 4.18	The resistor is reflowed through an IR oven at 260±5℃ for 10±1secs and the resistance is measured 1hr after the test.	ΔR≦ ±(1%±0.5mΩ)
Load Life	IEC-60115-1 4.25	The resistor is placed in a chamber for 1000hrs at 70±2℃. The rated power is applied to the resistor (duty cycle: 90mins ON, 30mins OFF). The change in resistance is measured 60mins after removal from test chamber.	ΔR≦ ±(1%±0.5mΩ)
Bending Strength	IEC-60115-1 4.33	The resistor is re-flow soldered to a test board and placed in a test fixture. Pressure is applied to achieve bending amplitude of 3mm for 10secs. The change in resistance is measured before and during the pressurization. The resistor is re-flow soldered to a test board and placed in a test fixture. Pressure is applied to achieve bending amplitude of 3mm for 10secs. The change in resistance is measured before and during the pressurization.	ΔR≦ ±(1%±0.5mΩ)
High Temperature Storage	AEC-Q200 TABLE 7.3	The resistor is placed in a constant temperature-humidity chamber at 170±2℃ for 1000hrs and the resistance is measured 60mins after the end of the cycle	ΔR≦ ±(1%±0.5mΩ)
Thermal Shock	AEC-Q200 TABLE 7.16	The resistor is kept at a temperature of –55℃ for 15mins and the temperature is then raised to 150℃ and the resistor is held in this state for another 15mins. This is repeated for 1000 cycles. The change in resistance is then measured 2hrs after the completion of 1000 cycles.	ΔR≦ ±(1%±0.5mΩ)

Test Item	Test Method	Procedure	Requirements
Moisture Resistance	AEC-Q200 TABLE 7.6	The resistor is placed in a chamber at 80~100% RH and the temperature is raised from 25℃ to 65oC in 2.5hrs where it is kept for 3hrs after which the temperature is brought down to 25℃ in 2.5hrs. This 24hr loop is repeated again and at the end of the second loop the resistor is held at 25℃ for the remaining 8hrs. The change in resistance is then measured 2hrs after the completion of 10 cycles	ΔR≦ ±(1%±0.5mΩ)
Damp Heat with Load	IEC-60115-1 4.24	The resistor is placed in a chamber for 1000hrs at 40±2℃, 90~95% RH. The rated power is applied to the resistor (duty cycle: 90mins ON, 30mins OFF). The change in resistance is measured 60mins after removal from test chamber.	ΔR≦ ±(1%±0.5mΩ)
Dielectric Withstand Voltage	JIS-C5201-1 4.**7**	The resistor is placed in a test fixture and maximum overload voltage is applied for 1min.	No Defects
Biased Humidity	AEC-Q200 TABLE 7.7	+85℃, 85%RH, 10%Bias, 1000h.	ΔR≦ ±(0.5%±0.5mΩ)
Mechanical Shock	AEC-Q200 TABLE 7.1 3	100g's for 6ms, 5 pulses	ΔR≦ ±(0.5%±0.5mΩ)
Vibration	AEC-Q200 TABLE 7.1 4	Frequency varied 10Hz to 2000Hz in 1min, 3 directions, 12hr	ΔR≦ ±(0.5%±0.5mΩ)

■ Measurements

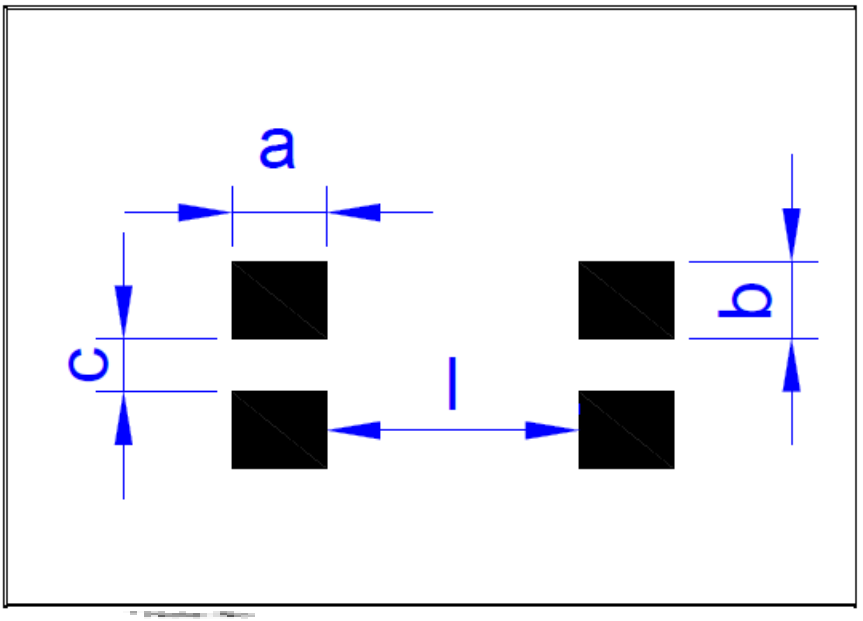
■ 4-wire precision measurement

Equipment: ADEX AX-1152D DC Low Ohm Meter
Excitation Current: 3A (0.5mΩ~1.5mΩ)
1A (2mΩ~15mΩ)



Unit: mm

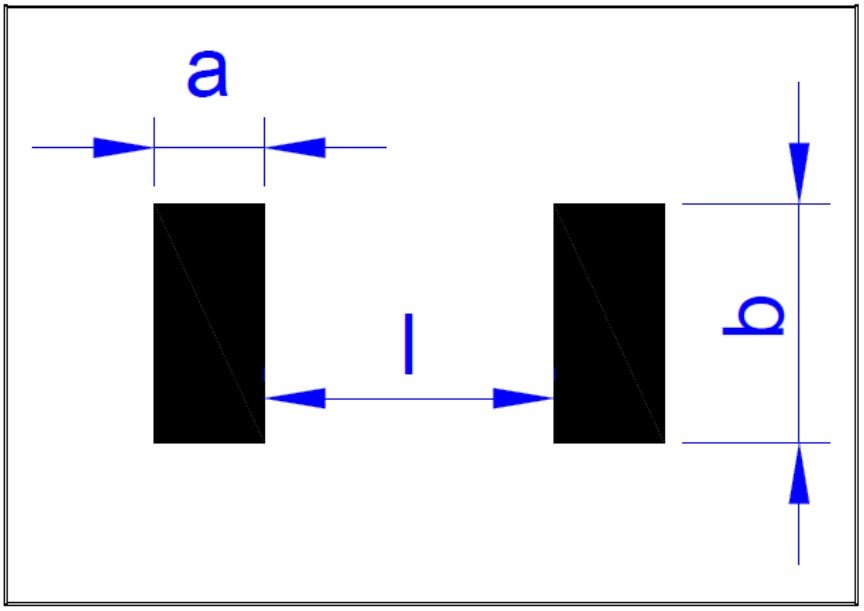
■ **4-wire pad layout (recommended for precision current sensing)**



Unit: mm

Type	a	b	c	l
0.5mΩ	3.13	1.2	1.0	0.52
0.75mΩ	2.93	1.2	1.0	0.94
1mΩ	2.38	1.2	1.0	2.04
1.5mΩ	1.88	1.2	1.0	3.04
2mΩ~3.5mΩ	1.63	1.2	1.0	3.54
4mΩ~4.5mΩ	2.63	1.2	1.0	1.54
5mΩ~6mΩ	2.38	1.2	1.0	2.04
6.5mΩ~7.5mΩ	1.88	1.2	1.0	3.04
8mΩ~10mΩ	1.63	1.2	1.0	3.54

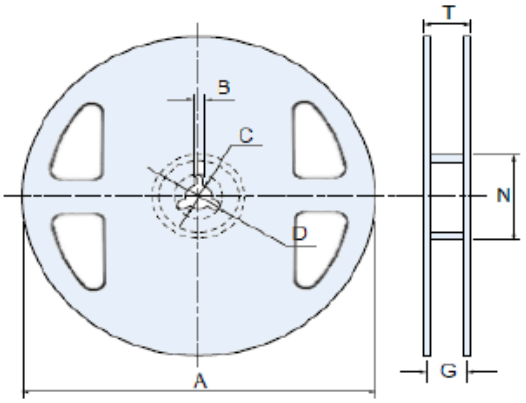
■ 2-wire pad layout



Unit: mm

Type	a	b	l
0.5mΩ	3.13	3.4	0.52
0.75mΩ	2.93	3.4	0.94
1mΩ	2.38	3.4	2.04
1.5mΩ	1.88	3.4	3.04
2mΩ~3.5mΩ	1.63	3.4	3.54
4mΩ~4.5mΩ	2.63	3.4	1.54
5mΩ~6mΩ	2.38	3.4	2.04
6.5mΩ~7.5mΩ	1.88	3.4	3.04
8mΩ~10mΩ	1.63	3.4	3.54

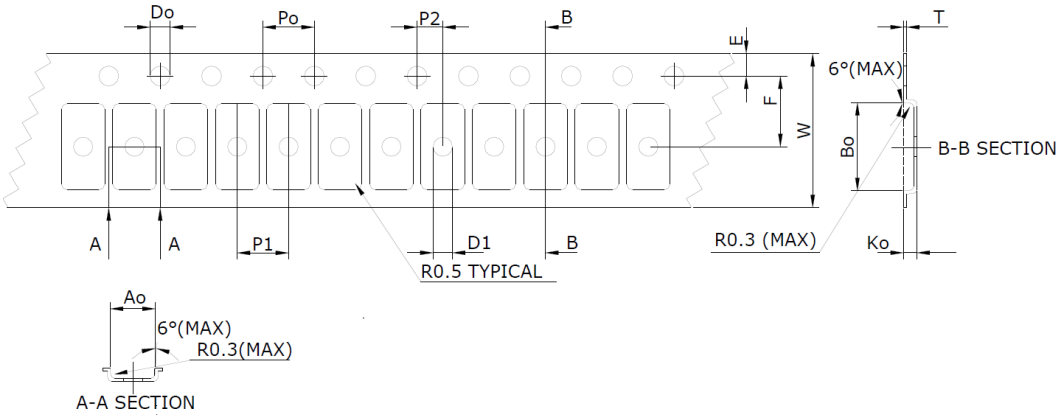
■ Packaging Information



Unit : mm

Size	Packaging Q'ty	A	N	C	D	B	G	T
2512	4kpcs/Reel	178.0±2.0	60.0±0.5	13.0±0.5	20(Min.)	2.0±0.5	13.8±1.5	16.7max.

■ Tapping Specification



Unit : mm

Size	Ao	Bo	Ko	Po	P1	P2	T
2512	3.40±0.10	6.75±0.10	0.80±0.10	4.0±0.10	4.0±0.10	2.0±0.10	0.25±0.1
	E	F	Do	D1	W	10Po	
	1.75±0.1	5.5±0.05	1.55±0.05	1.5 (MIN)	12.0±0.3	40.0±0.2	