APPROVAL SHEET

Product Name	**: Metal Strip High Power Low Ohm 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 High Power Low Ohm 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

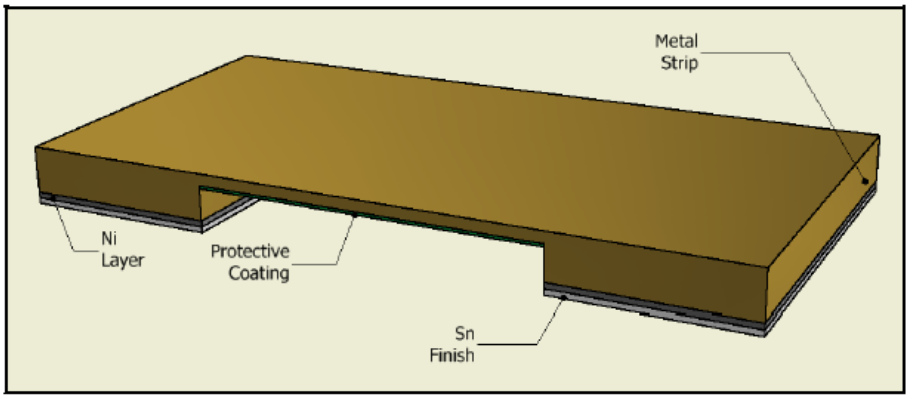
— Low Inductance

— RoHS compliant

Part Number Explanation

RHL	2512	30	F	R005	T	S
Product	**Size (Inch)**	**Rated Power**	**Tolerance**	**Resistance**	**Packaging**	**Functional**
Metal Strip High Power Low Ohm 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

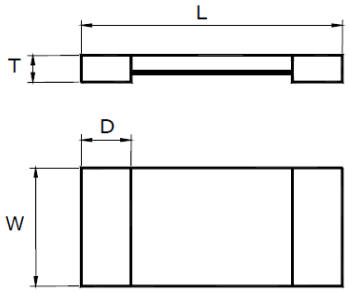


Standard Electrical Specifications

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

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

Dimension

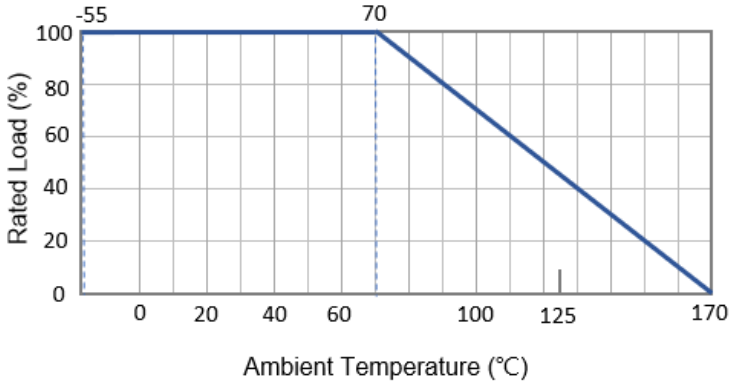


Unit: mm

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

Derating Curve

Operating Temperature Range: -55 to +170℃



Recommended Customer Soldering Parameters

Recommended IR Reflow Soldering Conditions

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

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)

Reliability Test and Requirement

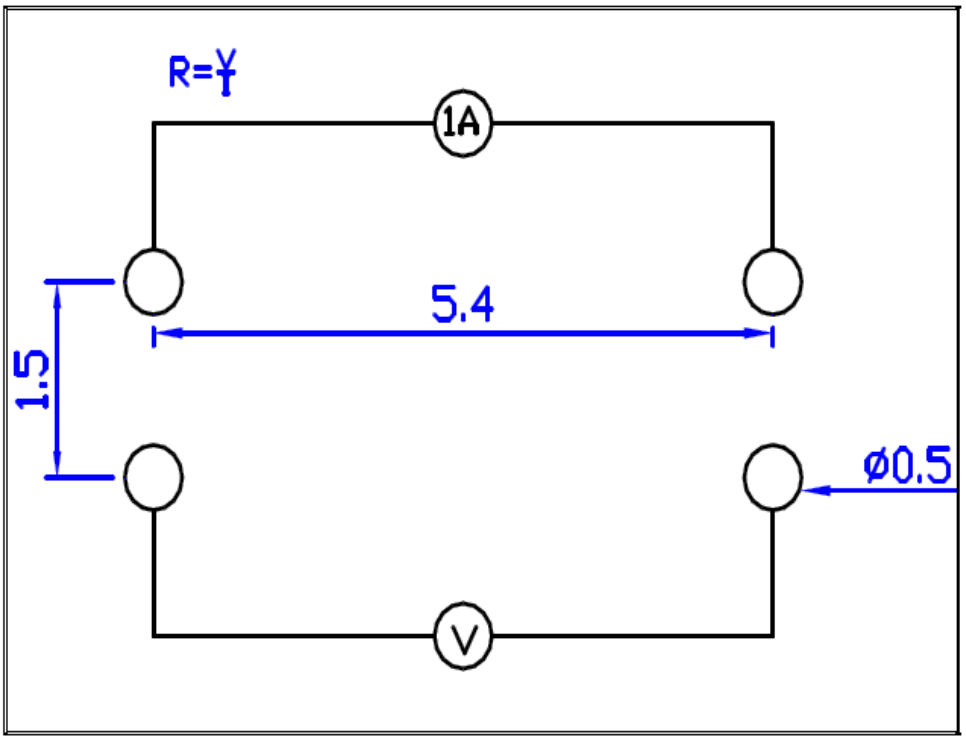
Test Item	Test Method	Procedure	Requirements
Short Time Overload	IEC-60115-1 4.13	5 times the rated power is applied to the resistor for 5 seconds and the change in resistance is measured after 30mins.	ΔR≦ ±(1%＋0.5mΩ)
Insulation Resistance	IEC-60115-1 4.6	The resistor is placed in a test fixture and 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

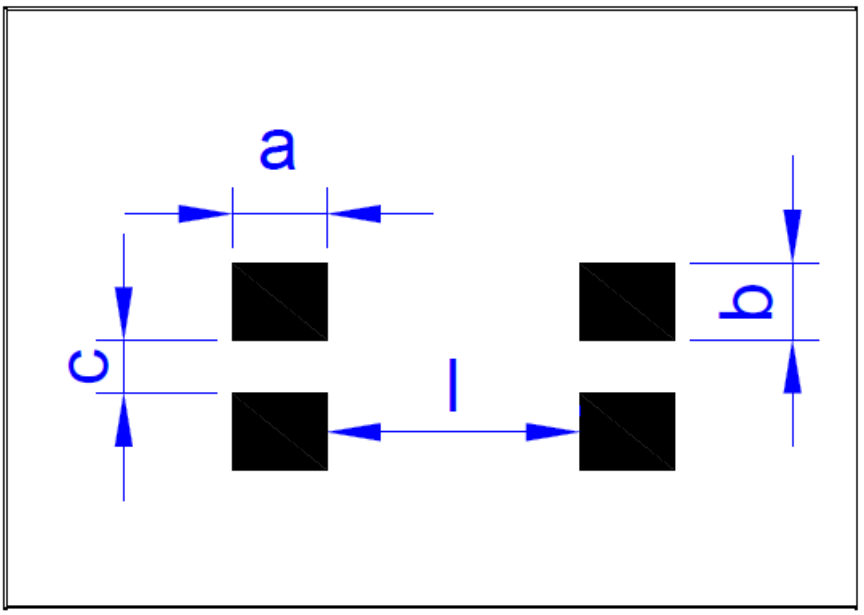
4-wire precision measurement

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)

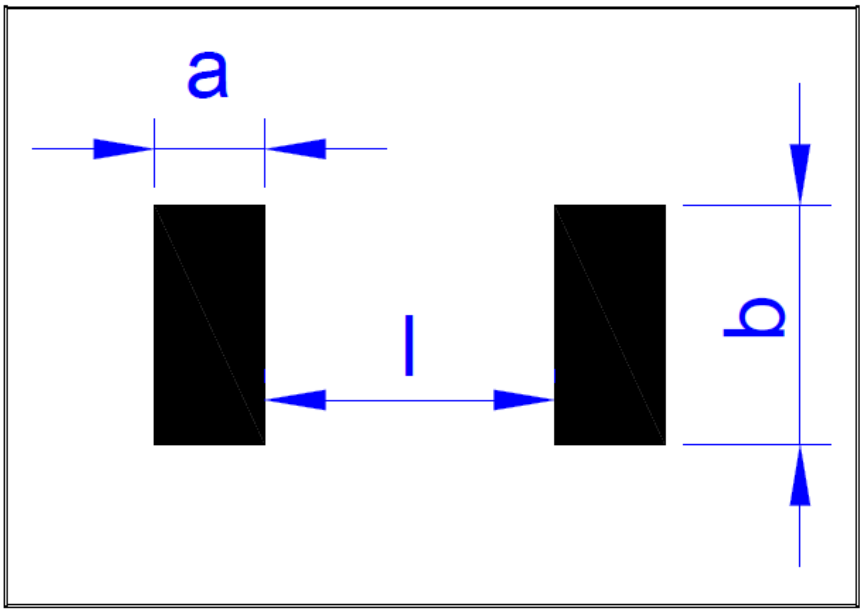


* Note: No circuits between pads to avoid short circuit

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

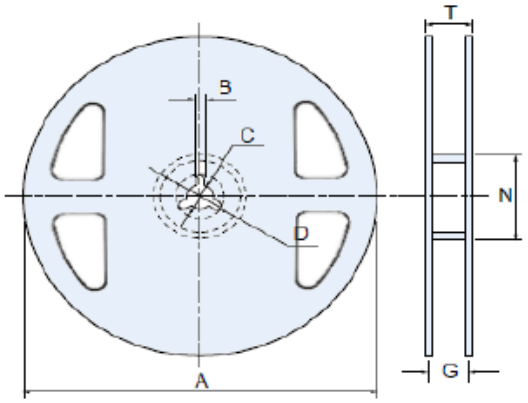


* Note: No circuits between pads to avoid short circuit

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

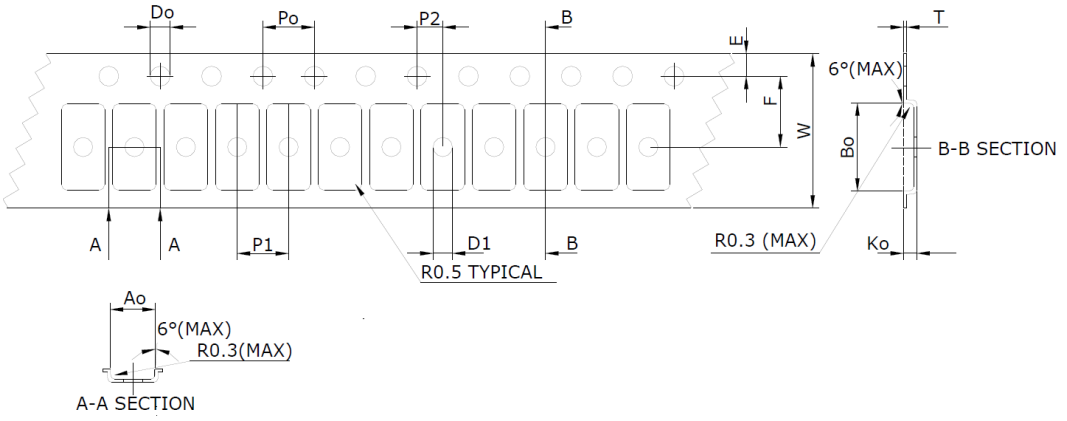
Packaging Information



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	