APPROVAL SHEET

Product Name : **Metal Strip Extra Low Ohm Chip Resistor**

Part No. : **RML**

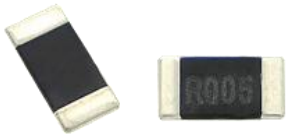
Description : **Size 1206, 2512**

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

Metal Strip Extra Low Ohm Chip Resistor — RML Series

Application

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



Features

- — Ultra Low Resistance / Low TCR
- — Excellent long term stability
- — RoHS compliant and halogen free
- — Lead free
- — AEC-Q200 Compliant
- — Low Inductance less than 3nH

Parts Number Explanation

RML	2512	20	F	R005	T	S
Product	**Size (Inch)**	**Rated Power**	**Tolerance**	**Resistance**	**Packaging**	**Functional**
Metal Strip Extra Low Ohm Chip Resistor	1206 2512	05=0.50W 10=1.00W 20=2.00W 30=3.00W	D=±0.5% F=±1% G=±2% J=±5%	0R00=0Ω M750=0.75mΩ R005=5mΩ R020=20mΩ R100=100mΩ	T=7” Taped & Reel	S= Standard Type SB= Standard Type (Low EMF) M= Meet AEC-Q200 MB= Meet AEC-Q200 (Low EMF)

■ Standard Electrical Specifications

Type	Rating Power at 70℃	T.C.R. (ppm/℃)	Max. Rating Current	Max. Overload Current	Alloy Type	Resistance Range (mΩ)	
						0.5% (D)	1.0% (F) 2.0% (G) 5.0% (J)
RML1206	0.5W	≦±75	22.4A (111mV)	50.0A (250mV)	Low EMF	-	1,2
		≦±70				-	3,4,5,6,7,8,9, 10,12,15,20,25
		≦±50	10.0A (111mV)	22.4A (250mV)	Standard	-	5,10,15,18 20,25,30
	1W	≦±75	31.6A (158mV)	70.7A (354mV)	Low EMF	-	1,2
		≦±70				-	3,4,5,6,7,8,9, 10,12,15,20,25
		≦±50	14.1A (173mV)	31.6A (387mV)	Standard	-	5,10,15 18,20,25,30
RML 2512	1W	≦±70	31.6A (158mV)	70.7A (354mV)	Low EMF	1,2,2.5,3,4,5 10,15,20,25	
		≦±50	18.3A (469mV)	40.8A (1049mV)	Standard	3,4,5,6,7,8,9,10 12,15,18,20,22,25 30,33,35,40,50,60 70,75,80,100	
	2W	≦±70	44.7A (224mV)	100A (500mV)	Low EMF	1,2,2.5,3,4,5 10,15,20,25	
		≦±50	25.8A (548mV)	57.7A (1225mV)	Standard	0.75,3,4,5,6,7,8,9,10 12,15,18,20,22,25 30,33,35,40,50,60 70,75,80,100,150	
	3W	≦±70	77.5A (47mV)	173.2A (106mV)	Low EMF	0.5,0.75	
		≦±70	54.8A (245mV)	122.5A (548mV)		1,2,2.5,3,4,5 6,7,8,9,10	
		≦±50				20	
	3W	≦±70	24.5A (812mV)	54.8A (1817mV)	Standard	5,6,8,10	
		≦±50				12,14,15,16,18,20 25,30,33,35,40,50 60,75,80,100	

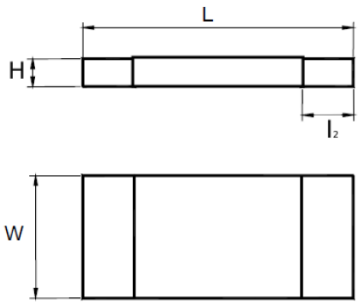
• Beyond the above specification also can meet the special requirements. For detail questions, please contact us freely.

Jumper Specifications

Type	Max. Working Current	Max. Overload Current	Resistance
RML1206	80A	100A	0.2mΩ (Max.)
RML2512	120A	150A	0.1mΩ (Max.)

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

Dimension

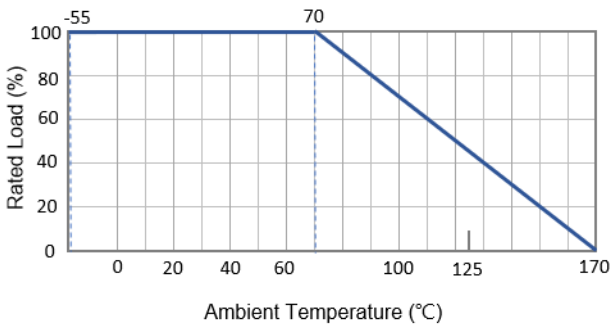


Unit：mm

Type	Power Rating	Resistance Range	L	W	H	l_2
RML1206	0.5W	1~2mΩ	3.20±0.20	1.70±0.20	0.70±0.20	1.10±0.25
	1W	0 & 3~30mΩ	3.10±0.20	1.65±0.20	0.60±0.20	0.60±0.20
RML2512	1W	0 & 4~100mΩ	6.20±0.20	3.25±0.20	0.60±0.20	0.80±0.20
	2W	1~3 mΩ	6.40±0.20	3.25±0.20	0.75±0.20	2.00±0.20
	2W	0.75 mΩ	6.40±0.20	3.18±0.26	0.75±0.20	1.30±0.38
	3W	4~100 mΩ	6.20±0.20	3.25±0.20	0.65±0.20	0.80±0.20
		2~3 mΩ	6.40±0.20	3.25±0.20	0.75±0.20	2.00±0.20
		1 mΩ	6.40±0.20	3.25±0.20	0.80±0.20	2.00±0.20
		0.5~0.75mΩ	6.30±0.20	3.25±0.20	0.80±0.20	2.25±0.20

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

- **Recommended WAVE Soldering Conditions**

  Reservoir Temperature: 260℃, 10s max

  Number of times: two times 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

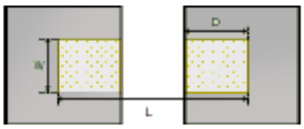
$$V=\sqrt{P\times R}$$

V=Rated Voltage(V)

P=Rated Power(W)

R=Rated Resistance(Ω)

Recommend Land Pattern Design



Unit: mm

TYPE	Resistance Range	W	D	L
RML1206	1~2 mR	1.80	2.30	5.60
	Other	1.80	1.30	4.70
RML2512	0.5~3 mR	4.00	3.00	7.30
	Other	3.70	1.60	7.60

Reliability Test and Requirement - AEC-Q200

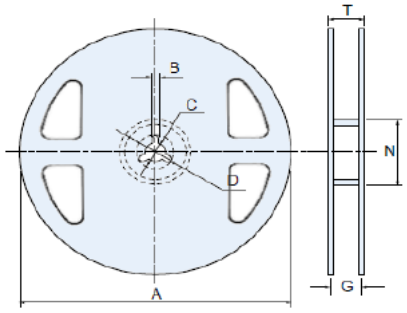
Test Item	Test Method	Procedure	Requirements
High Temperature Exposure (Storage)	AEC-Q200 7.3	1000 hrs. @ T=170℃. Unpowered. Measurement at 24 ±2 hours after test conclusion.	J、G：△R≦ ±3% F、D：△R≦ ±1%
Temperature Cycling	AEC-Q200 7.4	1000 Cycles (-55°C to +125°C). Measurement at 24±2 hours after test conclusion.	J、G：ΔR≦ ±1% F、D：ΔR≦ ±0.5% No mechanical damage.
Moisture Resistance	AEC-Q200 7.6	Test 65℃/80~100%RH/10Cycles. Measurement at 24±2 hours after test conclusion. (t=24hrs/cycle).	J、G：△R≦±1% F、D：△R≦±0.5%
Biased Humidity	AEC-Q200 7.7	1000 hours 85℃/85%RH. 10% of operating power. Measurement at 24 ±2 hours after test conclusion.	J、G：△ R≦±3% F、D：△ R≦±1%
Operational Life	AEC-Q200 7.8	Test 1000hr @ T=125℃ at specified rated power. Measurement at 24±2 hours after test conclusion.	J、G：△ R≦±3% F、D：△ R≦±1%
External Visual	AEC-Q200 7.9	Inspect device construction, marking and workmanship.	No visual damage and refer Ridee marking code.
Physical Dimension	AEC-Q200 7.10	Verify physical dimensions to the applicable device detail specification.	Within the spec.
Mechanical Shock	AEC-Q200 7.13	Test Peak value:100g's,Wave:Hail-sine, Duration:6ms,Velocity:12.3ft/sec.	Within product specification tolerance and no visible damage.
Vibration	AEC-Q200 7.14	5 g's for 20 min., 12 cycles each of 3 orientations. Test from 10-2000 Hz.	No mechanical damage.
Resistance to Soldering Heat	AEC-Q200 7.15	270℃±5℃ for 10sec.±1sec.	J、G：ΔR≦±1% F、D：ΔR≦±0.5% No mechanical damage.
Thermal Shock	AEC-Q200 7.16	-55 to 155℃/ dwell time 15min/ Max transfer time 20sec/ 300cycles.	J、G：ΔR≦±1% F、D：ΔR≦±0.5% No mechanical damage.
ESD	AEC-Q200-002	Test contact min. 1KV.	ΔR≦±1% No mechanical damage.
Solderability	AEC-Q200 7.18	a) Baking 155℃4H, dipping 235℃5s b) Steam 1H, dipping 215℃5s c) Steam 1H, dipping 260℃7s	Over 95% of termination must be covered with solder.
Flammability	AEC-Q200 7.20	UL-94 V-0 or V-1 are acceptable	Refer UL-94.
Bending Strength	AEC-Q200 7.21	Bending 2mm 2512.1206	J、G：ΔR≦±1% F、D：ΔR≦±0.5% No mechanical damage.

Terminal Strength	AEC-Q200 7.22	**AEC-Q200 7.22** Force 1Kg for 60 seconds	No mechanical damage
Anti-Sulfur	ASTM-B-809-95 (Modified) EIA-977(Test B)	**ASTM-B-809-95** Sulfur 1000 hours, 90±2°C **EIA-977(Test B):** Sulfur 750 hours, 105±2°C	△ R≦±1%

■ Reliability Test and Requirement - Standard

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℃) ~ (T2. +155℃) TCR(ppm/℃) = (R2-R1)/R1×1/(T2-T1)×10^6 (+25~ -55℃ please contact factory)	As Spec
Short Time Overload	JIS-C-5201-1 4.13 IEC-60115-1 4.13	5 × Rated power for 5 seconds	J、G：ΔR≦±2% F、D：ΔR≦±1%
Resistance to Soldering Heat. (R.S.H)	JIS-C-5201-1 4.18 IEC-60115-1 4.18	260±5℃ for 10 seconds.	ΔR≦±(1%+0.1mΩ) No mechanical damage
Temperature Cycling	JIS-C-5201-1 4.19 IEC-60115-1 4.19	Repeat 5 cycles as follows-55℃(30 min.) + 25℃(2～3 min.) +155℃(30 min.) + 25℃(2～3 min.)	J、G：ΔR≦±1% F、D：ΔR≦±0.5% No mechanical damage.
Damp Heat	JIS-C-5201-1 4.24 IEC-60115-1 4.24	Maintain the temperature of the resistor at 40±2℃ 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.	J、G：△R≦±3% F、D：△R≦±1%
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℃ ambient"	J、G：△R≦±3% F、D：△R≦±1%
Insulation Resistance	JIS-C-5201-1 4.6 IEC-60115-1 4.6	Apply the maximum overload voltage (DC) for 1minute	△R ≥10GΩ
Bending Strength	JIS-C-5201-1 4.33 IEC-60115-1 4.33	Bending 2mm	J、G：ΔR≦±1% F、D：ΔR≦±0.5% No mechanical damage.
Solderability	JIS-C-5201-1 4.17 IEC-60115-1 4.17	After immersing flux, dip in the 235±2℃ molten solder bath for 3±0.5 sec	Over 95% of termination must be covered with Solder

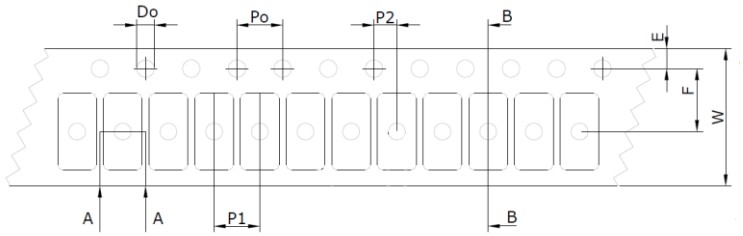
Packaging Information



Unit: mm

Size	Packaging Q'ty	A	N	C	D	B	G	T
1206	4kpcs/Reel	178.0±2.0	60.0±0.5	13.0±0.5	20(Min.)	2.0±0.5	10.0±1.5	14.9max.
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	A	B	W	F	E	P1	P2	P0	D	T1
1206	2.00±0.20	3.60±0.20	8.00±0.30	3.50±0.05	1.75±0.10	4.00±0.10	2.00±0.05	4.00±0.10	1.50±0.10	1.00±0.10
2512	3.50±0.20	6.75±0.20	12.0±0.30	5.50±0.05	1.75±0.10	4.00±0.10	2.00±0.05	4.00±0.10	1.50±0.10	1.15±0.10

Marking

1206/2512 : 4 digits marking

Resistance	5mΩ	1mΩ	2.5mΩ
4 digits code	R005	R001	2L50