Data Sheet

Customer:	
Product:	Automotive Grade Low Ohm (Metal Strip) Chip Resistor – LRP..A Series
Size:	0805/1206/2010/2512
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Automotive Grade Low Ohm (Metal Strip) Chip Resistor- LRP..A Series



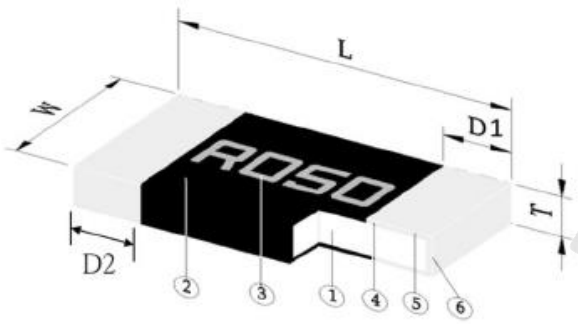
■Features

- Low TCR down to ±25 PPM/˚C
- Customized resistance available
- Low inductance < 5nH
- AEC-Q200 Qualified
- Sulfur resistance unaffected by sulfur environments
- Lead-free and RoHS compliant
- 100% CCD inspection
- MSL: Level 1

■Applications

- NB (for Power Management)
- MB (for Power Management)
- SWPS (DC-DC Converter, Charger, Adaptor)
- Monitor (for Power Management)
- Industrial / Power supply
- Automotive

■Construction



①	Alloy Plate	④	Internal Electrode
②	Overcoat	⑤	Barrier Layer
③	Marking	⑥	Solder Plating

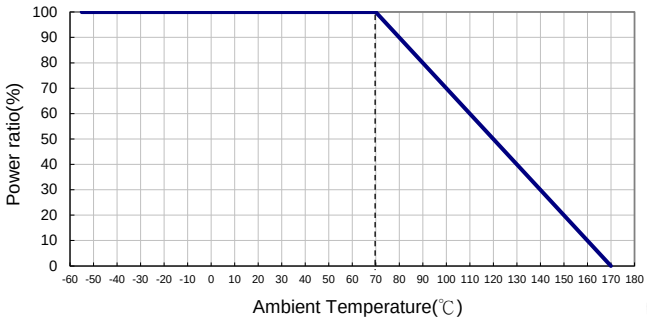
■Dimensions

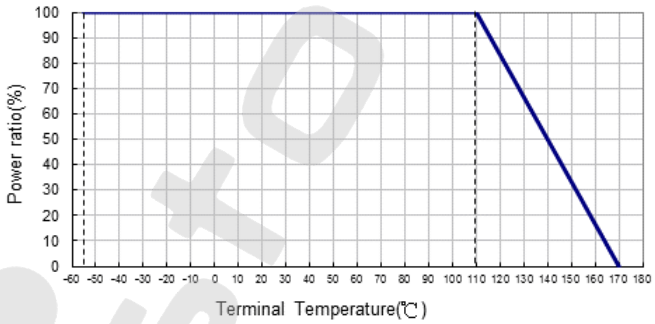
Type	Size (Inch)	L (mm)	W (mm)	T (mm)	D1 (mm)	D2 (mm)	Weight (g) (1000pcs)
LRP05 (2mΩ)	0805	2.05±0.10	1.25±0.10	0.5±0.15	0.65±0.15	0.65±0.15	6.5
LRP05 (5~20mΩ)	0805	2.05±0.10	1.25±0.10	0.43±0.15	0.45±0.15	0.45±0.15	4.5
LRP06	1206	3.15±0.10	1.45±0.10	0.55±0.10	0.55±0.15	0.55±0.15	10.5
LRP10	2010	5.00±0.15	2.40±0.15	0.55±0.15	0.80±0.20	0.80±0.20	40.0
LRP12 (2~200mΩ)	2512	6.40±0.25	3.20±0.25	0.70±0.20	0.90±0.30	0.90±0.30	52.6
LRP12 (1.5mΩ)	2512	6.40±0.25	3.20±0.25	0.70±0.20	0.90±0.30	1.45±0.30	52.6
LRP12 (1mΩ)	2512	6.40±0.25	3.20±0.25	0.70±0.20	0.90±0.30	1.85±0.30	52.6

■Part Numbering

LRP	12	F	T	D	S	R015	A
Product Type	Dimensions (L×W)	Resistance Tolerance	Packaging Code	TCR (PPM/℃)	Power Rating	Resistance	Marking
	05: 0805 06: 1206 10: 2010 12: 2512	D: ±0.5% F: ±1% J: ±5%	T: Taping Reel	C: ±25 D: ±50 W: ±75 E: ±100	Q: 3/4W R: 3W S: 2W T: 1W	R015: 0.015Ω R050: 0.05Ω	A: Automotive Grade

■Derating Curve





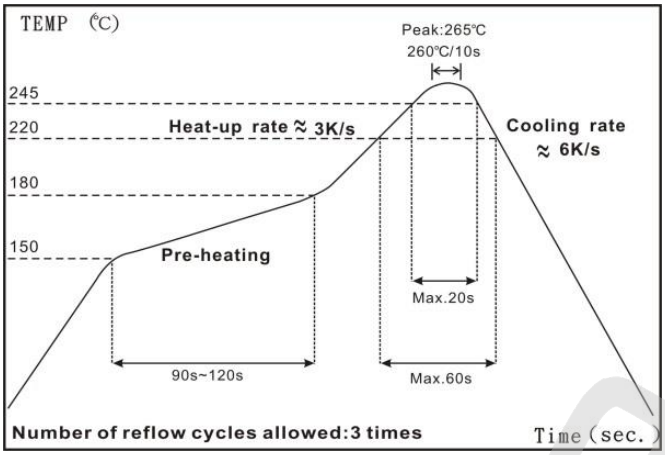
■Electrical Specifications

Item / Type	Power Rating at 70°C	Rated Terminal Temperature	Operating Temp. Range	Resistance Range (mΩ) ±0.5%	Resistance Range (mΩ) ±1%	Resistance Range (mΩ) ±5%	TCR (PPM/°C)
LRP05 (0805)	3/4W	110°C	-55 ~ +170°C	10、15、20			±50 ±75
				5			±75
				2			±100
	1W	110°C	-55 ~ +170°C	10			±50 ±75
				5			±75
				2			±100
LRP06 (1206)	1W	110°C	-55 ~ +170°C	8, 10, 12, 15, 20, 25, 30, 33, 40			±50
				3, 4, 5, 7, 8, 10, 12, 15, 20, 25, 30, 33, 40			±75 ±100
LRP10 (2010)	1W	110°C	-55 ~ +170°C	4, 5, 10, 15, 20, 30, 50, 68, 75, 100			±75
	2W	110°C	-55 ~ +170°C	4, 5, 10, 15, 20, 30, 50, 68, 75			
LRP12 (2512)	2W, 3W	110°C	-55 ~ +170°C	3, 4, 5, 6, 7, 18, 20, 22, 25, 30, 33, 35, 39, 40, 47, 50, 60, 68, 70, 75, 80, 82, 90, 91, 100, 120, 150, 180, 200			±25
				1, 1.5, 2, 2.5, 3, 4, 5, 6, 7, 8, 8.5, 9, 10, 12, 15, 18, 20, 22, 25, 30, 33, 35, 39, 40, 47, 50, 60, 68, 70, 75, 80, 82, 90, 91, 100, 120, 150, 180, 200			±50 ±75

Operating Current =√(P/R) , Operationg Voltage=√(P*R)

■ Viking is capable of manufacturing the optional spec based on customer's requirement.

■ Soldering Condition



IR Reflow Soldering

(1) Time of IR reflow soldering at maximum temperature point 260°C：10s

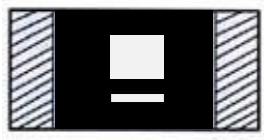
■Marking

1206/2010/2512: 4 digits marking

Example:

Resistance	1mΩ	1.5mΩ	25mΩ	100mΩ
Marking	R001	1M50	R025	R100

0805:



■Environmental Characteristics

Item	Requirement	Test Method
Temperature Coefficient of Resistance (T.C.R.)	As Spec.	**IEC60115-1 4.8** **JIS-C-5201-1 4.8** +25°C ~125°C, 25°C is the reference temperature
Short Time Overload	±1.0%	**IEC60115-1 4.13** **JIS-C-5201-1 4.13** 5*rated power for 5 seconds
Insulation Resistance	≥10G	**IEC60115-1 4.6** **JIS-C-5201-1 4.13** 100V DC for 1 minute
Endurance	±1.0%	**IEC60115-1 4.25** **JIS-C-5201-1 4.25.1** 70±2°C, rated power for 1000 hrs with 1.5 hrs “ON” and 0.5 hr “OFF”
Biased Humidity	±1.0%	**MIL-STD-202 Method 103** 1000 hrs 85°C/85%RH 10% of operating power (≦100 V)
High Temperature Exposure	±1.0%	**MIL-STD-202 Method 108** at +170°C for 1000 hrs
Board Flex	±1.0%	**AEC-Q200-005** Bending once for 60 seconds 3mm
Solderability	95% min. coverage	**JIS-C-5201-1 4.17** **IEC-60115-1 4.17** 245±5°C for 3 seconds
Resistance to Soldering Heat	±0.5%	**JIS-C-5201-1 4.18** **IEC-60115-1 4.18** 260±5°C for 10 seconds
Temperature Cycling	±1.0%	**JESD22 Method JA-104** -55°C to +125°C, 1000 cycles
Low Temperature Storage	±1.0%	**IEC60115-1 4.23.4** **JIS-C-5201-1 4.23.4** at -55°C for 2 hrs
Mechanical Shock	±(0.25%+0.05Ω)	**MIL-STD-202 Method 213** Wave Form: Tolerance for half sine shock pulse. Peak value is 100g’s. Normal duration (D) is 6.
Vibration	±(0.5%+0.05Ω)	**MIL-STD-202 Method 204** 5 g’s for 20 min., 12 cycles each of 3 orientations, 10-2000 Hz
ESD	±(3%+0.05Ω)	**AEC-Q200-002** Human body model: 2KV
Resistance to Solvents	No visible damage on appearance and marking.	**MIL-STD-202 Method 215** Add Aqueous wash chemical - OKEM Clean or equivalent. Do not use banned solvents.
Terminal Strength	No broken	**AEC-Q200-006** Force of 1.8kg for 60 seconds.
Flammability	No ignition of the tissue paper or scorching or the pinewood board	**UL-94** V-0 or V-1 are acceptable. Electrical test not required.

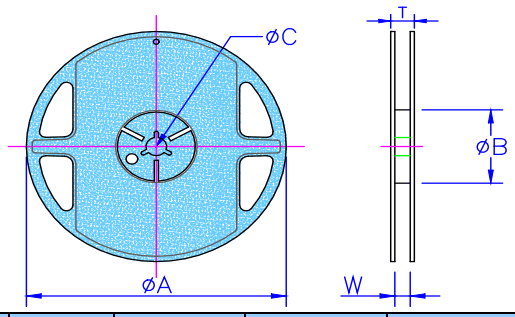
RCWV(Rated Continuous Working Voltage)= $\sqrt{}$(P*R) or Max. Operating Voltage whichever is lower.

■Storage Temperature: 15~28ºC; Humidity < 80%RH

■Shelf Life: 2 years from production date.

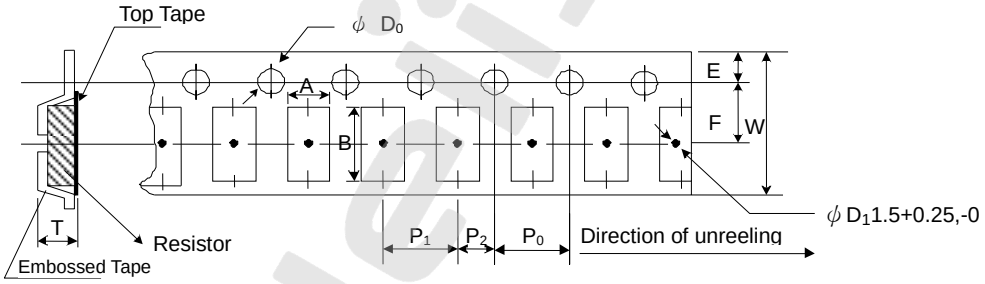
■Packaging

Reel Specifications & Packaging Quantity



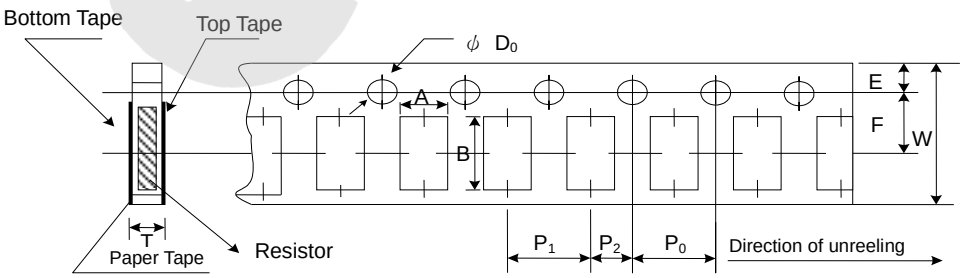
Type	Resistance (mΩ)	Packaging Quantity		Tape Width	Reel Diameter	ΦA (mm)	ΦB (mm)	ΦC (mm)	W (mm)	T (mm)
LRP05	2~20	Paper	5K	8mm	7 inch	178.5±1.5	$60^{+1/-0}$	13.0±0.2	9.0±0.5	12.5±0.5
LRP06	3~40	Paper	5K	8mm	7 inch	178.5±1.5	$60^{+1/-0}$	13.0±0.2	9.0±0.5	12.5±0.5
LRP10	4~100	Embossed	4K	12mm	7 inch	178.5+/-1.5	60±1.0	13.0±0.5	13.0±1.0	15.5±0.5
LRP12	1~200	Embossed	4K	12mm	7 inch	178.5+/-1.5	60±1.0	13.0±0.5	13.0±1.0	15.5±0.5

Embossed Plastic Tape Specifications



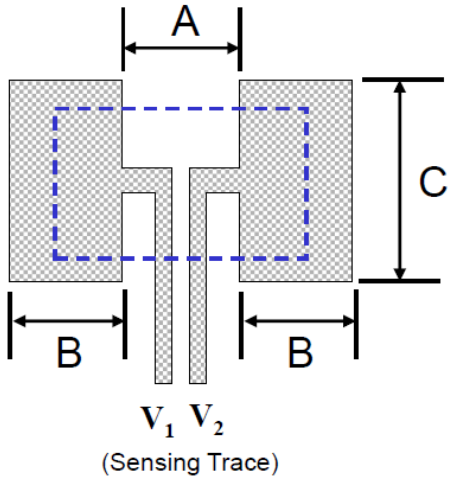
Type	A (mm)	B (mm)	W (mm)	E (mm)	F (mm)	P0 (mm)	P1 (mm)	P2 (mm)	ΦD0 (mm)	T (mm)
LRP10	2.80±0.10	5.40±0.20	12.0±0.30	1.75±0.10	5.5±0.05	4.00±0.10	4.00±0.10	2.00±0.05	1.50+0.1, -0	1.20+0
LRP12	3.50±0.10	6.70±0.10	12.0±0.30	1.75±0.10	5.5±0.05	4.00±0.10	4.00±0.10	2.00±0.05	1.50+0.1, -0	1.20+0

Paper Tape Specifications



Type	A (mm)	B (mm)	W (mm)	E (mm)	F (mm)	P0 (mm)	P1 (mm)	P2 (mm)	ΦD0 (mm)	T (mm)
LRP05	1.60±0.10	2.40±0.20	8.0±0.20	1.75±0.10	3.50±0.05	4.00±0.10	4.00±0.05	2.00±0.05	1.50+0.1,-0	0.85±0.10
LRP06	1.90±0.10	3.50±0.20	8.0±0.20	1.75±0.10	3.50±0.05	4.00±0.10	4.00±0.05	2.00±0.05	1.50+0.1,-0	0.85±0.10

■Recommend Land Pattern



Type	A (mm)	B (mm)	C (mm)
LRP05	0.65	1.10	1.40
LRP06	1.50	1.40	1.70
LRP10	3.60	1.40	2.50
LRP12 (2~200mΩ)	4.00	2.00	3.50
LRP12 (1~1.5mΩ)	2.30	2.65	3.50

＊FR4 copper board, 100μm of copper pad thickness

Note: The land pattern is designed based on the Kelvin resistance measurement (also known as the 4-wire resistance measurement), with the sensing trace positioned on the inner side. This approach ensures that the resistance impedance meets the specified design standards.

However, factors such as the solder pad area and the amount of solder applied can influence the resistance after soldering. Therefore, these variables should also be carefully considered during the circuit design process.

■Product Appearance

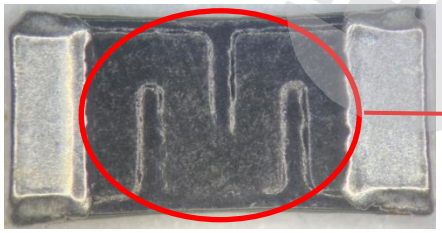
Qualified product appearance

Top



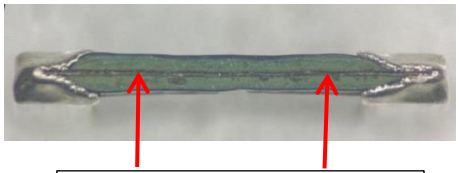
Product design not crack

Bottom



Punch mark is allowed but raw material can not exposed.

Side



Product design not crack

REVISION HISTORY

REVISION	DATE	CHANGE NOTIFICATION	DESCRIPTION
Version A	Jul 20, 2021	-	- First issue of this specification
Version A1	Nov 15, 2021	-	- Increase the shelf life description
Version A2	Feb 15, 2022	-	- Derating Curve changes the temperature range
Version A3	Mar 18, 2022	-	- Add Terminal Temperature Derating Curve - Add 2512 8.5mΩ - Add 2010 Size Resistance Range
Version A4	Jan 06, 2023		- Modify 2512 3mΩ Packaging Quantity - Add 2010 Size Resistance Range
Version A5	Sep 01, 2023		- Add 2512 Size Resistance Range
Version A6	Jul 08, 2024		- Modify the descriptions in the Features
Version A7	Jun 09, 2025		- Modify the descriptions in the Features - Add Product Appearance
Version A8	Sep 09, 2025		- Add 0805 production range