

Low Ohm (Metal Strip) Chip Resistor - LRC Series

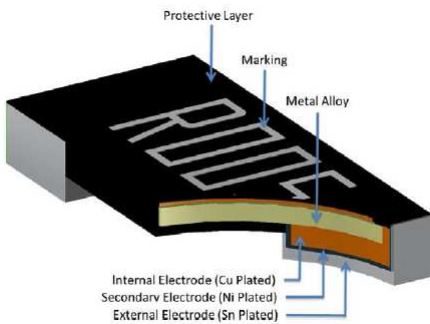
■ Features

- Applications include current sensing voltage division and pulse applications
- Suitable for high precision current sensing circuit protection application
- The resistive material stable and ultra low TCR. Low and stable $TCR \leq \pm 50 PPM/^{\circ}C$
- Specially selected and stabilized materials allow for temperature derating to +170°C
- Pure tin plating provides compatibility with lead (Pb) free and lead containing soldering processes
- Excellent stability ($|\Delta R/R| \leq \pm 1.0\%$ for 1000hr at 70°C) different environmental conditions
- Compliant to RoHS directive 2002/95/EC and halogen free
- Flame retardant type material is used to meet UL94V-0 requirement



■ Construction

- The resistors are constructed in a high grade material, internal metal electrodes are added at Each end and connected by a resistive paste that is applied to the top surface of the metal alloy
- The resistive layer is covered with a protective coat, and two external end terminations are added. Wrap-around terminations have an electroplated nickel barrier and pure tin(lead free) or matte-tin finish, ensuring excellent leach resistance properties and solderability



■ Part Numbering

LRC	06	J	T	D	T	R001
Product Type	Dimensions (L×W)	Resistance Tolerance	Packaging Code	TCR (PPM/°C)	Power Rating	Resistance
	05: 0805 06: 1206 10: 2010 12: 2512 25: 2725 28: 2728 27: 4527	D: ±0.5% F: ±1% G: ±2% J: ±5%	T: Taping Reel	D: ±50	Q: 3/4W T: 1W A: 1.5W S: 2W R: 3W H: 4W D: 5W	0M50: 0.0005Ω R001: 0.001Ω R010: 0.01Ω R100: 0.1Ω

Low Ohm (Metal Strip) Chip Resistor

■ Dimensions

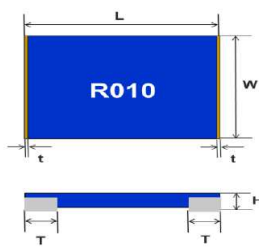


Figure 1

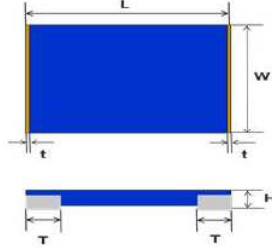
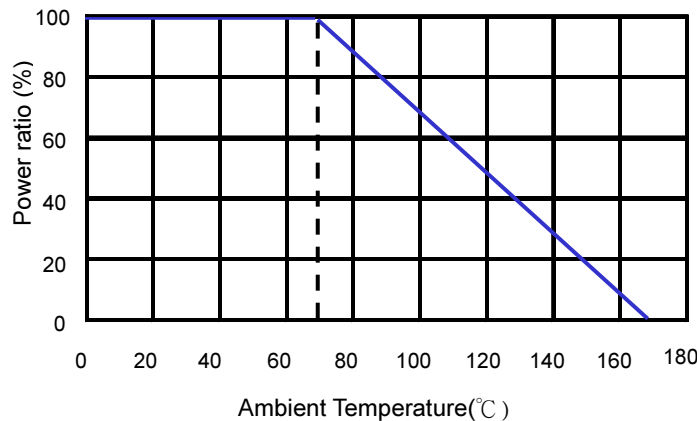


Figure 2

Type	Size (Inch)	Figure	Power Rating	Resistance (mΩ)	L (mm)	W (mm)	H (mm)	T (mm)	t (mm)
LRC05	0805	2	3/4W	3-100	2.10±0.254	1.50±0.254	0.32±0.254	0.40±0.254	0-0.2
			1W	3-10					
LRC06	1206	1	1W	1-2	3.20±0.254	1.65±0.254	0.67±0.254	0.508±0.254	0-0.2
				3-100			0.49±0.254		
LRC10	2010	1	1.5W	1-2	5.10±0.254	2.40±0.254	0.67±0.254	0.84±0.254	0-0.2
				2.5-30			0.46±0.254		
				31-100			0.59±0.254		
LRC12	2512	1	2W	0.5-1	6.35±0.254	3.05±0.254	0.67±0.254	2.20±0.254	0.2-1.0
				1.5			2.00±0.254		
				2			1.40±0.254		
				2.5-100			1.10±0.254		
			3W	101-450	0.61±0.254	0.85±0.254			
				0.5-1	6.35±0.254	3.05±0.254	0.67±0.254	2.20±0.254	0.2-1.0
				1.5				2.00±0.254	
				2				1.40±0.254	
2.5-50	1.10±0.254								
51-100	0.74±0.254								
LRC25	2725	1	4W	0.25	6.80±0.254	6.35±0.254	0.82±0.254	2.30±0.254	0.2-1.0
				0.5			0.69±0.254		
				1			0.69±0.254	1.80±0.254	
				1.5-3			0.61±0.254		
LRC28	2728	1	4W	4-50	6.60±0.254	6.70±0.254	0.72±0.254	1.20±0.254	0.2-1.0
				51-450			0.84±0.254		
				451-600			0.77±0.254		
LRC27	4527	1	5W	1	11.30±0.254	6.60±0.254	0.79±0.254	3.00±0.254	0.2-1.0
				1.5			0.84±0.254		
				2-500			0.84±0.254	2.00±0.254	

■ Derating Curve



Electrical Specifications

Type	Item	Max. Power Rating	Operating Temp. Range	Max. Rating Current	Max. Overload Current	Resistance Range (mΩ)				TCR (PPM/°C)
						±0.5%	±1%	±2%	±5%	
LRC05 (0805)	3/4W	-55 ~ +170°C	15.81A	31.62A	10 - 100	3 - 100			±50	
	1W				10	3 - 10				
LRC06 (1206)	1W	-55 ~ +170°C	31.62A	63.25	7 - 100	1 - 100			±50	
LRC10 (2010)	1.5W	-55 ~ +170°C	38.73A	77.46A	7 - 100	1 - 100			±50	
LRC12 (2512)	2W	-55 ~ +170°C	63.25A	141.42A	7 - 450	0.5 - 450			±50	
	3W				7 - 100	0.5 - 100				
LRC25(2725)	4W	-55 ~ +170°C	126.49A	252.98A	-	0.25 - 3			±50	
LRC28(2728)	4W	-55 ~ +170°C	31.62A	54.77A	7 - 600	4 - 600			±50	
LRC27(4527)	5W	-55 ~ +170°C	70.71A	122.47A	7 - 500	1 - 500			±50	

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

Special tolerance and range of resistance are under requested.

Resistance codes example

No marking for 0805 ; 1206/2010/2512/2725/2728/4527 for 4 digits marking

Resistance (4Marking)

Resistance	0.25 mΩ	1mΩ	1.5mΩ	25mΩ	25.5mΩ	100mΩ
Codes	0m25	R001	1m50	R025	25m5	R100

Environmental Characteristics

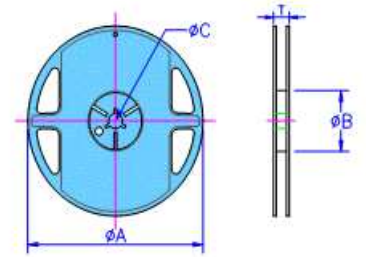
Item	Requirement	Test Method
Temperature Coefficient of Resistance (T.C.R.)	As Spec.	$T.C.R. (ppm/°C) = \frac{(R2-R1)}{R1 (T2-T1)} \times 10^6$ R1: resistance at room temperature (T1) R2: resistance at 150 °C (T2)
Temperature Cycling	$\Delta R/R1 \leq \pm 0.5\%$	-55°C to +150°C, 1,000cycles, 15min at each extreme
Short Time Overload	4527: $\Delta R/R1 \leq \pm 2.0\%$ Other sizes: $\Delta R/R1 \leq \pm 0.5\%$	0805&1206&2010&2725: 4 times rated power for 5 seconds 2512: 5 times rated power for 5 seconds 2728&4527: 3 times rated power for 5 seconds
Resistance to Soldering Heat	$\Delta R/R1 \leq \pm 0.5\%$	260±5°C for 10±1 seconds
High Temperature Exposure	4527: $\Delta R/R1 \leq \pm 2.0\%$ Other sizes: $\Delta R/R1 \leq \pm 1.0\%$	at +170°C for 1000 hrs
Load at Rated Power	4527: $\Delta R/R1 \leq \pm 2.0\%$ Other sizes: $\Delta R/R1 \leq \pm 1.0\%$	70°C, rated power for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF"
Bias Humidity	$\Delta R/R1 \leq \pm 0.5\%$	85°C, 85%RH, Bias for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF"
Solderability	95% min. coverage	245±5°C for 2±0.5 seconds

Remark: ΔR =(resistance after stress – resistance before stress); R1 means resistance before stress.

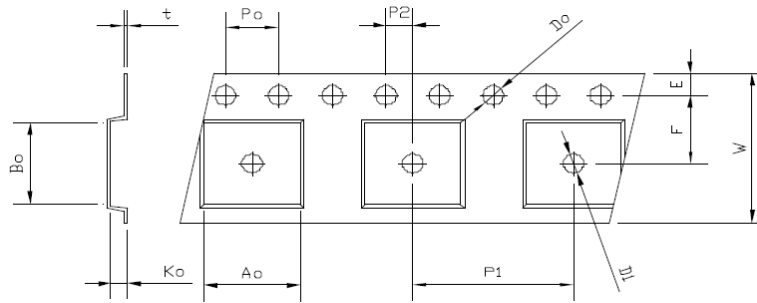
■ Packaging

Reel Specifications & Packaging Quantity

Type	Packaging Quantity	Tape Width	Reel Diameter	ΦA (mm)	ΦB (mm)	ΦC (mm)	T (mm)
LRC05	Embossed 5K	8mm	7 inch	178±1.0	60±0.5	13.2±0.5	12.0±0.5
LRC06	Embossed 5K	8mm	7 inch	178±1.0	60±0.5	13.2±0.5	12.0±0.5
LRC10	Embossed 4K	12mm	7 inch	178±1.0	60±0.5	13.5±0.5	16.2±0.5
LRC12	Embossed 4K	12mm	7 inch	178±1.0	60±0.5	13.5±0.5	16.2±0.5
LRC25	Embossed 2K	12mm	7 inch	178±1.0	60±0.5	13.5±0.5	16.2±0.5
LRC28	Embossed 2K	12mm	7 inch	178±1.0	60±0.5	13.5±0.5	16.2±0.5
LRC27	Embossed 1K	24mm	7 inch	178±1.0	60±0.5	13.2±0.5	24.4±2/-0

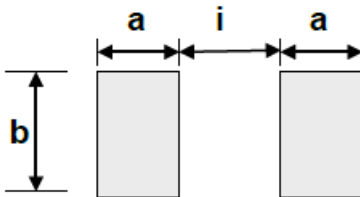


Embossed Plastic Tape Specifications



Type	A ₀ (mm)	B ₀ (mm)	W (mm)	E (mm)	F (mm)	P ₀ (mm)	P ₁ (mm)	P ₂ (mm)	ΦD ₀ (mm)	ΦD ₁ (mm)	K ₀ (mm)	t (mm)
LRC05	1.70±0.10	2.45±0.10	8.0±0.30	1.75±0.10	3.5±0.05	4.00±0.10	4.00±0.10	2.00±0.10	1.55±0.05	1.00±0.10	0.50±0.10	0.20±0.05
LRC06	2.03±0.10	3.55±0.10	8.0±0.30	1.75±0.10	3.5±0.10	4.00±0.10	4.00±0.10	2.00±0.10	1.55±0.05	1.00±0.10	0.70±0.10	0.20±0.05
LRC10	2.85±0.10	5.55±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	1.55±0.05	1.55±0.10	0.82±0.10	0.25±0.05
LRC12	3.50±0.10	6.75±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	1.55±0.05	1.55±0.10	0.90±0.10	0.20±0.05
LRC25	6.81±0.10	7.16±0.10	12.0±0.30	1.75±0.10	5.5±0.05	4.00±0.10	8.00±0.10	2.00±0.05	1.55±0.05	1.55±0.10	1.05±0.10	0.25±0.05
LRC28	7.10±0.10	7.05±0.10	12.0±0.30	1.75±0.10	5.5±0.05	4.00±0.10	8.00±0.10	2.00±0.05	1.55±0.05	1.55±0.10	0.95±0.10	0.20±0.05
LRC27	7.38±0.10	12.0±0.10	24.0±0.30	1.75±0.10	11.5±0.05	4.00±0.10	12.0±0.10	2.00±0.05	1.55±0.05	1.50±0.10	1.05±0.10	0.30±0.05

■ Recommend Land Pattern



Type	a (mm)	b (mm)	i (mm)
LRC05	1.80	2.18	0.66
LRC06	1.60	2.18	0.66
LRC10 (1-3mΩ)	2.89	2.92	1.22
LRC10 (3.1-100mΩ)	2.29	2.92	2.41
LRC12 (0.5-1.5mΩ)	3.05	3.68	1.27
LRC12 (2-3.5mΩ)	2.11	3.68	3.18
LRC12 (3.6-680mΩ)	1.90	3.68	3.50
LRC25 (0.25-0.5mΩ)	3.18	6.86	1.32
LRC25 (1-3mΩ)	2.34	6.86	3.00
LRC28	2.75	7.82	3.51
LRC27 (1-3mΩ)	4.50	8.74	4.50
LRC27 (3.5-100mΩ)	3.40	8.74	6.43
LRC27 (101-500mΩ)	2.93	8.74	7.63