



Current Sensing Resistors

LRC Series - Chip Current Sensing Resistor (SMD) / 贴片低阻电阻

► Chip Current Sensing Resistor Features

- Low TCR $\pm 50, \pm 100 \text{PPM}/^\circ\text{C}$
- Resistance Values from 0.5m ohms to 20m ohms
- High Wattage Rating Up to 3W
- Without Laser Trimmed with Very Low Inductance
- Customized Resistance Available

► Applications

- NB (For power management)
- MB (For power management)
- SWPS (DC-DC converter, Charger, Adaptor)
- Monitor (For power management)

► LRC Series Resistor Construction

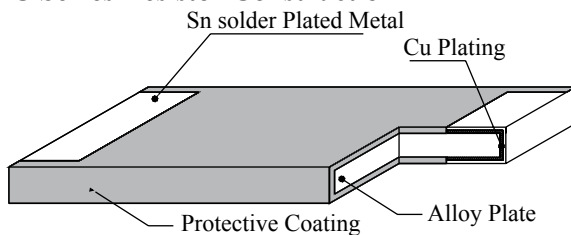


Figure 1

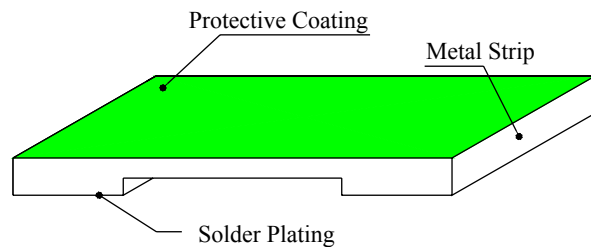
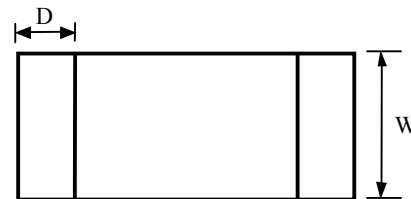
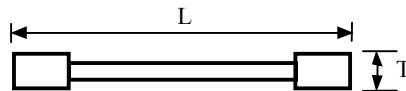


Figure 2

► LRC Series Resistor Dimensions (Unit: mm)



Type	Resistance(mΩ)	L(mm)	W(mm)	T(mm)	D(mm)
LRC12*T*****G	0.50~0.75	6.35±0.25	3.18±0.35	1.00±0.20	1.93±0.75
LRC12*T*****G	1.0~20	6.35±0.25	3.18±0.35	0.60±0.20	1.93±0.75
LRC12*T*0M50	0.50	6.35±0.25	3.18±0.25	1.40±0.20	1.30±0.30
LRC12*T*0M75	0.75	6.35±0.25	3.18±0.25	1.00±0.20	1.30±0.30
LRC12*T*R001	1.00	6.35±0.25	3.18±0.25	0.80±0.20	1.30±0.30
LRC12*T*1M50	1.50	6.35±0.25	3.18±0.25	0.65±0.20	1.30±0.30
LRC12*T*R002	2.00	6.35±0.25	3.18±0.25	0.50±0.20	1.30±0.30
LRC12*T*2M50	2.50	6.35±0.25	3.18±0.25	1.00±0.20	1.30±0.30
LRC12*T*R003	3.00	6.35±0.25	3.18±0.25	0.70±0.20	1.30±0.30
LRC12*T*3M50	3.50	6.35±0.25	3.18±0.25	0.71±0.20	1.30±0.30
LRC12*T*R004	4.00	6.35±0.25	3.18±0.25	0.60±0.20	1.30±0.30
LRC12*T*4M50	4.50	6.35±0.25	3.18±0.25	0.58±0.20	1.30±0.30
LRC12*T*R005	5.00	6.35±0.25	3.18±0.25	0.50±0.20	1.30±0.30
LRC12*T*5M50	5.50	6.35±0.25	3.18±0.25	0.47±0.20	1.30±0.30
LRC12*T*R006	6.00	6.35±0.25	3.18±0.25	0.50±0.20	1.30±0.30
LRC12*T*6M50	6.50	6.35±0.25	3.18±0.25	0.47±0.20	1.30±0.30
LRC12*T*R007	7.00	6.35±0.25	3.18±0.25	0.45±0.20	1.30±0.30
LRC12*T*R010	10.0	6.50±0.35	3.20±0.25	0.80±0.15	1.90±0.15

Notice: TOKEN is capable of manufacturing the optional spec based on customer's requirement.



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► LRC Series Resistor Standard Electrical Specifications

Type	Power Rating at 80°C	Operating Temp. Range	Resistance Tolerance (±%)	Resistance (mΩ)	TCR (±PPM/°C)
LRC12*TD****	1W	-55°C ~ +170°C	1, 3, 5	0.5~2.0	50
LRC12*TK****	1W			2.5~3.0	150
LRC12*TE****	1W			4.0~5.5	100
LRC12*TW****	1W			6.0~7.0	75
LRC12*TER010	1W			10	100
LRC12*TD****G	1W			7.0~20	50

Remark: Operating Current $I = \sqrt{(P/R)}$, Operating Voltage $V = \sqrt{(P * R)}$

► LRC Series Resistor High Power Rating Electrical Specifications

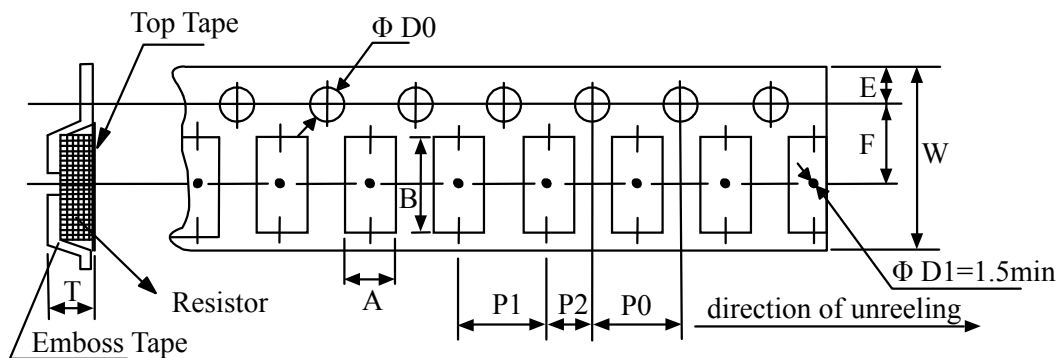
Type	Power Rating at 80°C	Operating Temp. Range	Resistance Tolerance (±%)	Resistance (mΩ)	TCR (±PPM/°C)
LRC12*TDS****	2.0W	-55°C ~ +170°C	1, 3, 5	0.5~2.0	50
LRC12*TDS****G	2.0W			7.0~10.0	50
LRC12*TDB****G	2.5W			3.5~6.0	50
LRC12*TWR****G	3.0W			2.5~3.0	75
LRC12*TDR****G	3.0W			1.0~2.0	50
LRC12*TER****G	3.0W			0.5~0.75	100

Remark: Operating Current $I = \sqrt{(P/R)}$, Operating Voltage $V = \sqrt{(P * R)}$

► Chip Current Sensing Resistor Packaging Quantity (Unit: pcs)

Type	Emboss Plastic Tape
LRC12	2,000

► Chip Current Sensing Resistor Emboss Plastic Tape Specifications (Unit: mm)



Resistance (mΩ)	A	B	W	E	F	P0	P1	P2	ΦD0	T
0.50	3.40±0.1	6.70±0.1	12.0±0.1	1.75±0.1	5.5±0.05	4.0±0.05	4.00±0.1	2.0±0.05	1.50±0.1	1.40±0.1
0.75	3.50±0.1	6.80±0.2	12.0±0.1	1.75±0.1	5.5±0.05	4.0±0.05	4.00±0.1	2.0±0.05	1.50±0.1	1.35±0.1
1~20	3.40±0.1	6.70±0.1	12.0±0.1	1.75±0.1	5.5±0.05	4.0±0.05	4.00±0.1	2.0±0.05	1.50±0.1	0.80±0.1

- Notice:**
- The cumulative tolerance of 10 sprocket hole pitch is ±0.2mm.
 - Carrier camber shall be not more than 1mm per 100mm through a length of 250mm.
 - A & B measured 0.3mm from the bottom of the packet.
 - t measured at a point on the inside bottom of the packet to the top surface of the carrier.
 - Pocket position relative to sprocket hole is measured as the true position of the pocket and not the pocket hole.



Current Sensing Resistors

► Environmental Characteristics - Chip Current Sensing Resistors

Item	Specification		Test Method
	Black coating	Green coating	
Temperature Coefficient of Resistance	As Spec.		MIL-STD-202 Method 304 +25/-30/+25/+130/+25°C
Thermal Shock	±0.5%+0.5mΩ	±1%	MIL-STD-202 Method 107G -55°C~150°C, 100 cycles
Short Time Overload	±0.5%+0.5mΩ	±1%	JIS-C-5202-5.5 RCWV*2.5 or Max Overloading Voltage, 5 seconds
Resistance to Dry Heat	±1%+0.5mΩ	±1%	JIS-C-5202-7.2 96 hours @ +125°C without load
Load Life	±1%+0.5mΩ	±1%	MIL-STD-202 M108 RCWV, 70°C, 1.5 hours on, 0.5 hours off 1000~1048 hours
Resistance to Soldering Heat	±0.5%+0.5mΩ	±1%	MIL-STD-202F Method 210E 260±5°C, 10±1second
Solderability	95%min coverage		MIL-STD-202F Method 210E 260±5°C, 2±0.5second

Remark: Storage Temperature: 25±3°C; Humidity < 80%RH

► How to Order

LRC	12	J	T	K	S	R003	G
①	②	③	④	⑤	⑥	⑦	⑧

① Product Type

② Dimensions (L×W)

Code	Dimensions (L×W)
12	6.3×3.1mm

③ Resistance Tolerance

Code	Resistance Tolerance
J	±5%
H	±3%
G	±2%
F	±1%

④ Packaging

Code	Packaging
T	Taping Reel

⑤ TCR

Code	TCR
D	±50PPM /°C
W	±75PPM/°C
E	±100PPM /°C
K	±150PPM /°C

⑥ Power Rating

Code	Power Rating
	Standard (1W)
S	(2W)
R	(3W)
B	(2.5W)

⑦ Resistance

Code	Resistance
0M50	0.00050Ω
0M75	0.00075Ω
1M50	0.00150Ω
R002	0.00200Ω
R010	0.01000Ω

⑧ Protective Coating

Code	Packaging
	Black Coating
G	Green Coating