Low Ohm (metal Strip) Chip Resistors
MCLRP Series

RoHS Compliant



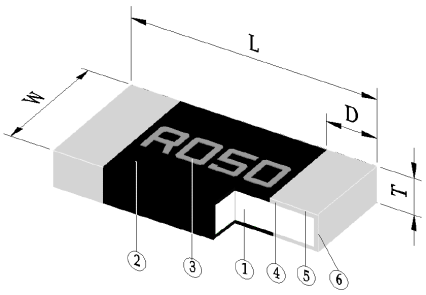
Features

- High power rating up to 3 Watts
- Low TCR down to ±50 PPM/°C
- Resistance values from 3mΩ to 100mΩ
- Customized resistance available

Applications

- NB (for Power Management)
- MB (for Power Management)
- SWPS (DC-DC Converter, Charger, Adaptor)
- Monitor (for Power Management)

Construction



1	Alloy Plate
2	Overcoat
3	Marking

4	Internal Electrode
5	Barrier Layer
6	Solder Plating

Dimensions

Type	Size (Inch)	L (mm)	W (mm)	T (mm)	D (mm)
MCLRP06	1206	3.1 ±0.1	1.6 ±0.1	0.6 ±0.1	0.45 ±0.15
MCLRP12	2512	6.4 ±0.25	3.2 ±0.25	0.7 ±0.2	0.9 ±0.3

Electrical Specifications

Item / Type	Power Rating at 70°C	Operating Temp. Range	Resistance Range (mΩ)			TCR (PPM/°C)
			±0.5%	±1%	±5%	
MCLRP06 (1206)	1W	-55°C ~ +170°C	8, 10, 12, 15, 20			±100
MCLRP12 (2512)	1W, 2W, 3W	-55°C ~ +170°C	3, 4, 5, 6, 7, 8, 9, 10, 12, 15, 18, 20, 22, 25, 30, 33, 35, 39, 40, 47, 50, 60, 68, 70, 75, 80, 82, 90, 91, 100			±75
			15, 18, 20, 22, 25, 30, 33, 35, 39, 40, 47, 50, 60, 68, 70, 75, 80, 82, 90, 91, 100			±50

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

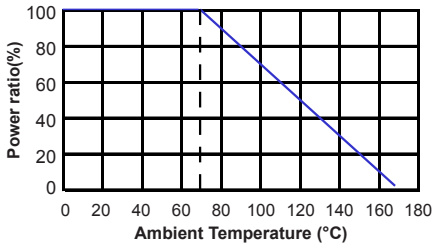
Environmental Characteristics

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%	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%	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%	MIL-STD-202 Method 103 1000 hrs 85°C/85%RH 10% of operating power
Dry Heat	±1%	IEC60115-1 4.23.2 JIS-C-5201-1 4.23.2 at +170°C for 1000 hrs
Bending Strength	±1%	JIS-C-5201-1 4.33 IEC-60115-1 4.33 Bending width 2mm once for 5 seconds
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
Rapid Change of Temperature	±1%	JIS-C-5201-1 4.19 IEC-60115-1 4.19 -55°C to +155°C, 5 cycles
Low Temperature Storage	±1%	IEC60115-1 4.23.4 JIS-C-5201-1 4.23.4 at -55°C for 2 hrs

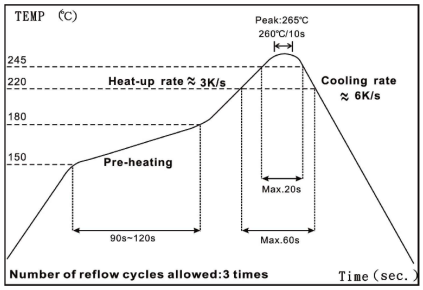
RCWV(Rated Continuous Working Voltage)= √(P*R) or Max. Operating Voltage whichever is lower.

Storage Temperature : 15~28°C
Humidity : < 80%RH

Derating Curve



Soldering Condition (Reflow Soldering Only)

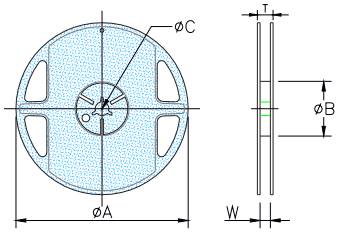


IR Reflow Soldering

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

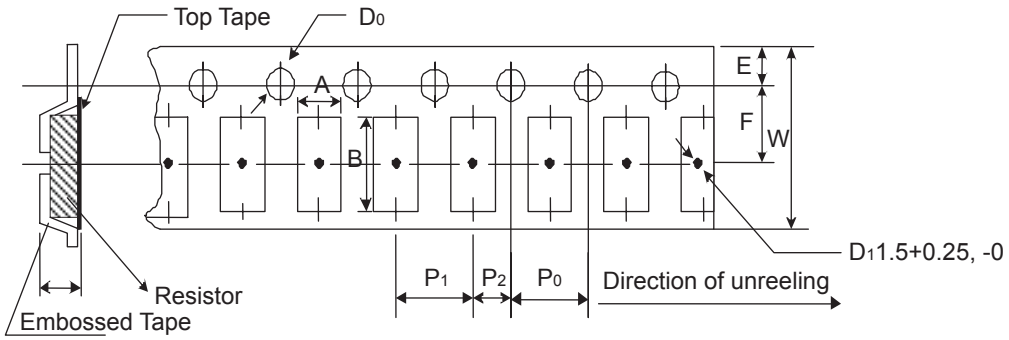
Packaging

Reel Specifications & Packaging Quantity



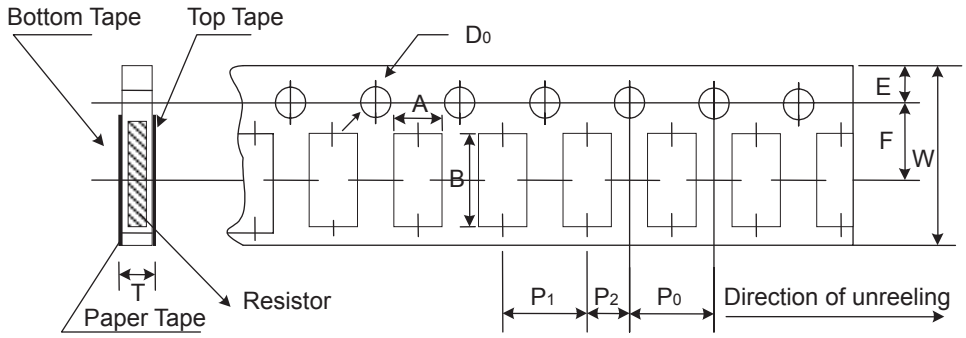
Type	Resistance (mΩ)	Packaging Quantity		Tape Width	Reel Diameter	ΦA (mm)	ΦB (mm)	ΦC (mm)	W (mm)	T (mm)
MCLRP06	8 ~ 20	Paper	5K	8mm	7 inch	178.5 ±1.5	$60^{+/-0}$	13 ±0.2	9 ±0.5	12.5 ±0.5
MCLRP12	4 ~ 100	Embossed	4K	12mm	7 inch	178.5 ±1.5	60 ±1	13 ±0.5	13 ±1	15.5 ±0.5
	3	Embossed	2K	12mm	7 inch	178.5+/-1.5	60 ±1	13 ±0.5	13 ±1	15.5 ±0.5

Embossed Plastic Tape Specifications



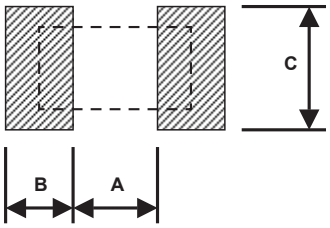
Type	A (mm)	B (mm)	W (mm)	E (mm)	F (mm)	P_0 (mm)	P_1 (mm)	P_2 (mm)	D_0 (mm)	T (mm)
MCLRP12	3.5 ±0.1	6.7 ±0.1	12 ±0.3	1.75 ±0.1	5.5 ±0.05	4 ±0.1	4 ±0.1	2 ±0.05	1.5 +0.1, -0	1.2 +0

Paper Tape Specifications



Type	A (mm)	B (mm)	W (mm)	E (mm)	F (mm)	P_0 (mm)	P_1 (mm)	P_2 (mm)	D_0 (mm)	T (mm)
MCLRP06	1.9 ±0.1	3.5 ±0.2	8 ±0.2	1.75 ±0.1	3.5 ±0.05	4 ±0.1	4 ±0.05	2 ±0.05	1.5 +0.1,-0	0.85 ±0.1

Recommend Land Pattern



Type	A (mm)	B (mm)	C (mm)
MCLRP06	1.5	1.4	1.7
MCLRP12	4	2	3.5

FR4 copper board, 100µm of copper pad thickness

Part Number Explanation

MCLRP **12** **F** **T** **E** **X** **1003**

Series Type	Dimensions (L×W)	Resistance Tolerance	Packaging Code	TCR (PPM/°C)	Power Rating	Resistance
	06: 1206 12: 2512	D: ±0.5% F: ±1% J: ±5%	T: Taping Reel	D: ±50 W: ±75 E: ±100	R: 3W S: 2W T: 1W	R015: 0.015Ω R050: 0.05Ω

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