

LOW OHM (METAL STRIP) CHIP RESISTOR

- LOR SERIES -

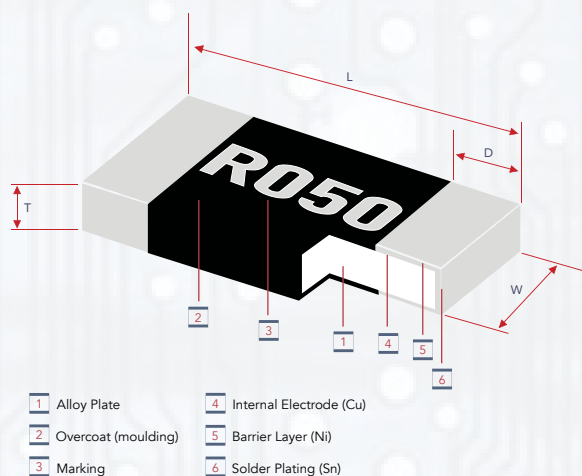
FEATURES

- High power rating up to 3 Watts
- Low TCR down to ± 75 PPM/ $^{\circ}$ C
- Resistance values from 0.5m to 100m ohm
- Customized resistance available

APPLICATIONS

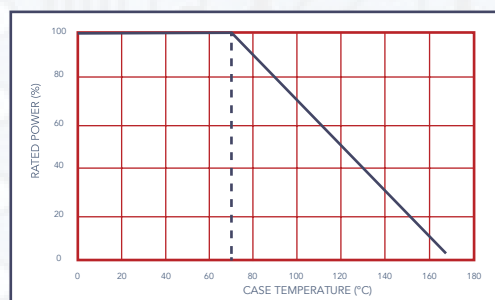
- NB (for Power Management)
- MB (for Power Management)
- SWPS (DC-DC Converter, Charger, Adaptor)
- Monitor (For Power Management)

CONSTRUCTION & DIMENSIONS



TYPE	SIZE (INCH)	L (MM)	W (MM)	T (MM)	D (MM)	WEIGHT (G) (1000PCS)
LOR10	0805	2.00±0.10	1.25±0.10	0.60±0.20	0.40±0.20	15.00
LOR12	1206 (1 mΩ)	3.20±0.20	1.60±0.20	0.75±0.20	1.10±0.30	18.80
LOR12	1206 (2-30 mΩ)	3.20±0.20	1.60±0.20	0.60±0.20	0.50±0.30	18.80
LOR20	2010	5.00±0.20	2.50±0.20		0.60±0.30	40.50
LOR25	2512 (0.5-0.75 mΩ)	6.40±0.20	3.20±0.20		2.60±0.20	90.90
LOR25	2512 (1-3 mΩ)				2.00±0.20	90.90
LOR25	2512 (4-50m Ω)			0.90±0.20		
LOR25	2512 (2-4 mΩ)			2.0±0.20		
LOR25	2512 (10-100 mΩ)			0.90±0.20		

DERATING CURVE



PART NUMBERING

LOR	12	J	R010	CT	E	S	M
TYPE	DIMENSIONS (L x W)	RESISTANCE TOLERANCE	RESISTANCE	PACKAGING CODE	TCR (PPM/ $^{\circ}$ C)	POWER RATING	MARKING
LOR SERIES	10: 0805 12: 1206 20: 2010 25: 2512	F: $\pm$ 1% G: $\pm$ 2% J: $\pm$ 5%	R001: 0.001 Ω R010: 0.01 Ω R050: 0.05 Ω	CT: Taping Reel	3: $\pm$ 275 E: $\pm$ 100 W: $\pm$ 75 Z: $\pm$ 50	R: 3W S: 2W A: 1.5W T: 1W Q: 3/4W U: 1/2W O: 1/3W V: 1/4W W: 1/8W	: NiCu Material M: MnCu Material N: No Marking



ELECTRICAL SPECIFICATIONS

- For MnCu Material

TYPE	ITEM	POWER RATING AT 70°C	OPERATING TEMP RANGE	RESISTANCE RANGE (mΩ)		T.C.R. (PPM / °C)
				±1%	±5%	
LOR10	0805	1/8W 1/4W 1/2W	-55 ~ +170°C	5, 9, 10, 20		±100
LOR12	1206	1/4W 1/2W 1W		1		±200
				2, 3, 5, 6, 7, 10		±100
				15, 20, 25, 30		±75
LOR25	2512	1W 2W		0.5, 0.75		±200
		1W		5, 10		±100 ±50
				20, 25, 30, 40, 50		±75

- For NiCu Material

TYPE	ITEM	POWER RATING AT 70°C	OPERATING TEMP RANGE	RESISTANCE RANGE (mΩ)		T.C.R. (PPM / °C)
				±1%	±5%	
LOR20	2010	1/2W 3/4W 1W 1.5W	-55 ~ +170°C	5, 6, 10		±100
				15, 20		±75
				1, 1.5		±275
LOR25	2512	1W 2W		2, 3, 4, 5, 6, 7, 8, 10		±100
		1W		12, 15, 18, 20, 25, 30, 33, 35, 40, 50		±75
		1W 2W 3W		2, 3, 4, 10, 12, 15, 18, 20, 25, 30, 39, 40, 50, 60, 70, 80, 100		±75

Operating Current: $\sqrt{(P/R)}$

Operating Voltage: $\sqrt{(P/R)}$

CalChip is capable of manufacturing the optional spec based on customer's requirement



ENVIRONMENTAL CHARACTERISTICS

ITEMS	REQUIREMENT	TEST METHOD
Temperature Coefficient of Resistance (T.C.R.)	As Spec.	IEC-60115-1 4.8 JIS-C-5201-1 4.8 ±25 / -55 / +25 / +125 / +25°C
Short Time Overload	0805 & 2010 & 2512: ±0.5% 1205: ±1%	IEC-60115-1 4.13 JIS-C-5201-1 4.13 5* rated power for 5 seconds
Insulation Resistance	≥100MΩ	IEC-60115-1 4.6 JIS-C-5201-1 4.13 100V DC for 1 minute
Endurance	±1.0%	IEC-60115-1 4.25.18 JIS-C-5201-1 4.25.1 70±2°C, rated power for 1000 hrs with 1.5hrs "ON" and 0.5 hrs "OFF"
Damp Heat with Load	2512: 0.5MΩ 0.75MΩ & 1206: ±0.5% Other sizes: ±1.0%	IEC-60115-1 4.24.2.1a JIS-C-5201-1 4.24.2.1a 85°C, 85%RH, 1000 hrs
Dry Heat	±1.0%	IEC-60115-1 4.23.2 JIS-C-5201-1 4.23.2 at + 170°C for 1000hrs
Bending Strength	±1.0%	JIS-C-5201-1 4.33 IEC-60115-1 4.33 Bending width 2mm once for 5 seconds
Solderability	95% coverage Min.	JIS-C-5201-1 4.17 IEC-60115-1 4.17 245±5°C for 2 seconds
Resistance to Soldering Heat	±0.5%	JIS-C-5201-1 4.18 IEC-60115-1 4.18 0805 & 2010: 260±5°C for 10 seconds 1206 & 2512: 260±5°C for 20 seconds
Thermal Shock	0805 & 2010: ±0.5% 1206 & 2512: ±1%	JIS-C-5201-1 4.19 IEC-60115-1 4.19 -55°C ~ 150°C, 300 cycles, 15 min per extreme condition
Low Temperature Storage	0805 & 2010 & 2512: ±5% 1206: ±1%	IEC-60115-1 4.23.4 JIS-C-5201-1 4.23.4 -55°C to for 1000 hrs

RCWW (Rated continuous working voltage): $\sqrt{(P \cdot R)}$

or Max. Operating voltage whichever is lower

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

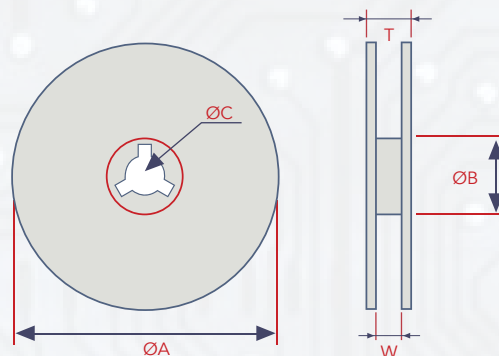


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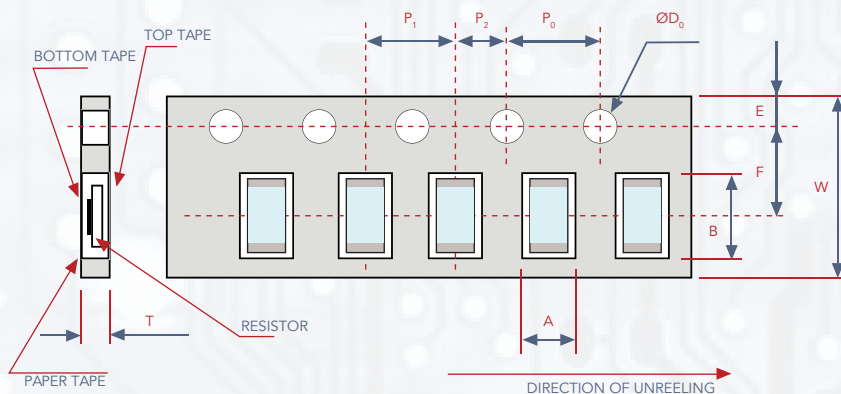


- Reel Specifications & Packaging Quantity

TYPE	PACKAGING QUANTITY		TAPE WIDTH	REEL DIAMETER	ØA (mm)	ØB (mm)	ØC (mm)	W (mm)	T (mm)
LOR10	Paper	5K	8mm	7 inch	178±2.0	60±1.0	13±1.0	9.0±1.0	11.4±1.0
LOR12									11.5±1.0
LOR20	Embossed	4K	12 mm		180+0/-3			13±1.0	15.5±1.0
LOR25									15.4±2.0

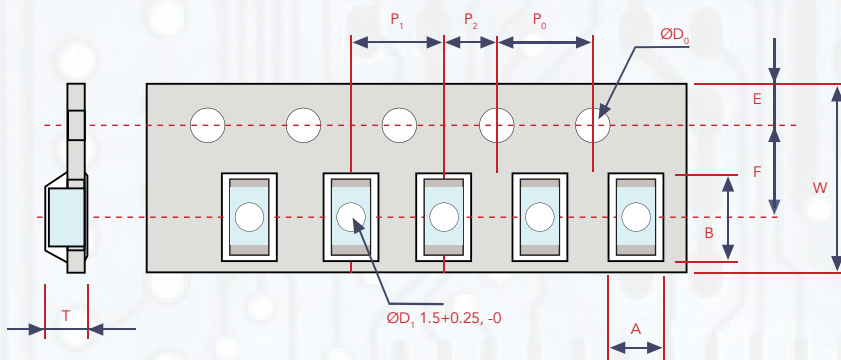


- Paper Tape Specifications



TYPE	A	B	W	E	F	P ₀	P ₁	P ₂	ØD ₀	T
LOR10	1.6±0.15	2.40±0.20	8.00±0.20	1.75±0.10	3.50±0.05	4.00±0.10	4.00±0.10	2.00±0.05	1.50+0.1/-0	0.84±0.10
LOR12	2.00±0.15	3.60±0.20								

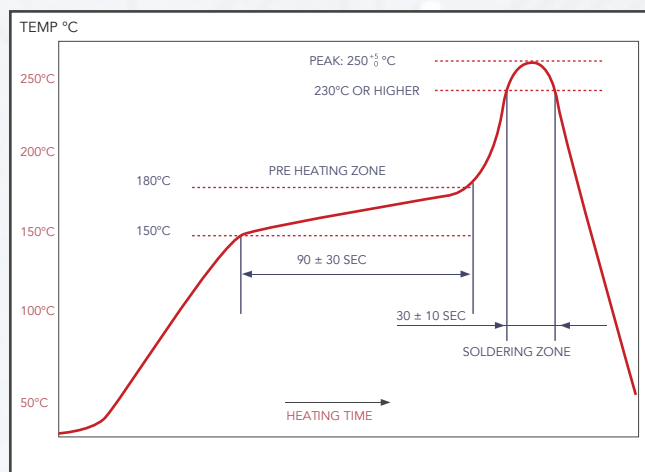
- Embossed Plastic Tape Specifications



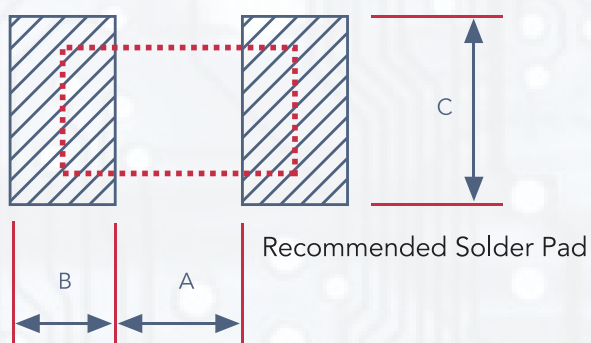
TYPE	A	B	W	E	F	P ₀	P ₁	P ₂	ØD ₀	T
LOR20	2.80±0.20	5.20±0.20	12.0±0.20	1.75±0.10	5.5±0.05	4.00±0.10	4.00±0.10	2.00±0.05	1.50+0.1, -0	0.85±0.15
LOR25 (1-50mΩ)	3.60±0.20	6.90±0.20	12.0±0.30							
LOR25 (2-100mΩ)										



SOLDERING CONDITION



RECOMMEND LAND PATTERN



TYPE	A (MM)	B (MM)	C (MM)
LOR10	1.20	1.15	1.40
LOR12 (1MΩ)	1.00	2.30	1.80
LOR12 (2-30MΩ)	1.60	1.70	
LOR20	3.50±0.2	1.50±0.2	3.40±0.2
LOR25 (0.5-3MΩ)	1.30	3.10	4.00
LOR25 (4-100MΩ)	4.10	2.10	

