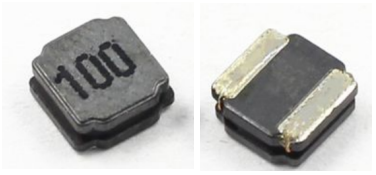
MetalLions

MNR5040 Series

Wire Wound SMD Power Inductors

FEATURES

- Magnetic-resin shielded construction reduces buzz noise to ultra-low levels
- Metallization on ferrite core results in excellent shock resistance and damage-free durability
- Closed magnetic circuit design reduces leakage flux and Electro Magnetic Interference (EMI)
- 30% higher current rating than conventional inductors of equal size
- Takes up less PCB real estate and save more power
- Operate temperature range .... −40℃～+125℃(Including self temp. rise)
- RoHS compliant



APPLICATIONS

- Smart phone, smart TV, set top box, notebook
- Car navigation systems, telecomm base stations
- VR, AR
- LED lighting

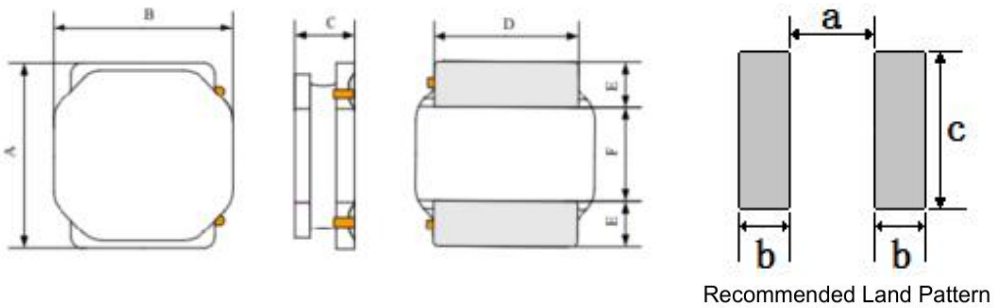
Explanation of Part Number

MNR 5040T 1R0 M T

1 2 3 4 5

- 1:Product Series:Wire Wound SMD Power Inductors
- 2:Dimensions:
- 3: Initial inductance value: 1R0 = 1.0uH
- 4:Tolerance of Inductance:M:±20%
- 5.Packing:Tape Carrier Package

Dimensions: [mm]



Recommended Land Pattern

Series	A	B	C	D	E	F	a Typ.	b Typ.	c Typ.
MNR5040	5.0±0.2	5.0±0.2	4.0 Max.	4.0±0.2	1.25±0.2	2.5±0.2	2.3	1.4	4.2

Electrical Characteristics List

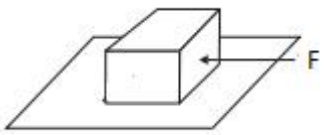
Part Number	Inductance	DC Resistance		Isat(A)		Irms(A)		Marking
	100KHz/1.0V	Max.	Typ.	Max.	Typ.	Max.	Typ.	
Units	（uH）	Ω	Ω	A	A	A	A	
MNR5040TR47NT	0.47±30%	0.013	0.010	10.00	11.50	6.60	7.60	R47
MNR5040T1R0MT	1.00±30%	0.016	0.014	7.35	8.00	4.90	5.00	1R0
MNR5040T1R5MT	1.50±30%	0.020	0.016	6.30	6.80	4.30	4.80	1R5
MNR5040T2R2MT	2.20±20%	0.027	0.021	4.90	5.50	3.80	4.20	2R2
MNR5040T3R3MT	3.30±20%	0.031	0.025	3.95	4.45	3.40	3.90	3R3
MNR5040T4R7MT	4.70±20%	0.041	0.032	3.50	3.90	3.00	3.30	4R7
MNR5040T5R6MT	5.60±20%	0.046	0.040	3.00	3.70	2.80	3.10	5R6
MNR5040T6R8MT	6.80±20%	0.056	0.045	2.90	3.50	2.50	2.80	6R8
MNR5040T8R2MT	8.20±20%	0.062	0.059	2.70	3.00	2.30	2.60	8R2
MNR5040T100MT	10.0±20%	0.083	0.069	2.35	2.90	2.10	2.40	100
MNR5040T150MT	15.0±20%	0.112	0.096	2.00	2.20	2.00	2.05	150
MNR5040T220MT	22.0±20%	0.168	0.151	1.60	1.90	1.50	1.60	220
MNR5040T270MT	27.0±20%	0.234	0.180	1.52	1.75	1.40	1.50	270
MNR5040T330MT	33.0±20%	0.244	0.213	1.30	1.50	1.20	1.40	330
MNR5040T470MT	47.0±20%	0.354	0.300	1.10	1.30	1.00	1.10	470
MNR5040T680MT	68.0±20%	0.520	0.430	0.90	1.10	0.80	0.90	680
MNR5040T101MT	100.0±20%	0.728	0.645	0.75	0.85	0.70	0.80	101
MNR5040T151MT	150.0±20%	0.975	0.840	0.65	0.67	0.60	0.70	151
MNR5040T221MT	220.0±20%	1.820	1.570	0.48	0.55	0.40	0.50	221
MNR5040T331MT	330.0±20%	2.600	2.340	0.50	0.58	0.35	0.40	331
MNR5040T391MT	390.0±20%	3.250	2.590	0.35	0.45	0.32	0.32	391
MNR5040T471MT	470.0±20%	3.900	3.150	0.37	0.43	0.35	0.40	471
MNR5040T561MT	560.0±20%	4.914	3.670	0.31	0.36	0.31	0.35	561
MNR5040T681MT	680.0±20%	5.070	3.830	0.30	0.35	0.25	0.30	681
MNR5040S102MT	1000.0±20%	7.800	6.030	0.25	0.30	0.30	0.32	102

※1: All test data is referenced to 20°C ambient;

※2: Rated current: Isat or Irms, whichever is smaller;

※*3: Isat: DC current at which the inductance drops approximate 30% from its value without current;

※*4: Irms: DC current that causes the temperature rise (△T =40°C) from 20°C ambient.

RELIABILITY TEST			
No.	TEST ITEM	SPECIFICATION	TEST CONDITION
1	High temperature Storage test	1. No significant defects in appearance. 2.ΔL/L ≦ 10% 3.ΔDCR/DCR ≦ 10%	Temperature: 125℃±5℃ (N: Follow the product specification for the setting.) Time : 96±2 hours Place the samples for one hour at room temperature and test them within two hours
2	Low temperature Storage test	1. No significant defects in appearance. 2.ΔL/L ≦ 10% 3.ΔDCR/DCR ≦ 10%	Temperature: -40℃±5℃ (M: Follow the product specification for the setting) Time : 96±2 hours Place the samples for one hour at room temperature and test them within two hours.
3	Humidity test	1. No significant defects in appearance. 2.ΔL/L ≦ 10% 3.ΔDCR/DCR ≦ 10%	Temperature: 40±2℃ , Humidity: 93±3%RH Time : 96±2 hours Place the samples for one hour at room temperature and test them within two hours
4	Solderability test	Terminals must have 95% minimum solder coverage	1.Dip pads in flux then dip in solder pot at 245±5°C for 5 second. 2.Solder: lead free 3.Flux: rosin flux
5	Heat endurance of flow soldering	1. No significant defects in appearance. 2.ΔL/L ≦ 10% 3.ΔDCR/DCR ≦ 10%	1.Refer to the above reflow curve and go through the reflow for twice. 2.The peak temperature : 260+0/-5℃
6	Vibration test	1.No significant defects in appearance. 2.No short and no open.	Apply frequency 10~55~10Hz and amplitude 1.5mm, 1 min/cycle in X ㄱY and Z direction for 2 hours each. (total 6 hours)
7	Terminal strength push test	1. Applied force:10N Duration: 10sec 2.Solder paste thickness:0.12mm 3.Meet the above requirements without any loose termina	Solder the test samples to the PCB through245 ℃ reflow, apply a standard force on the side of the test samples for 10 seconds. 

We have suggested the storage period of lead-free product should not over 6 months.

SOLDERING CONDITIONS

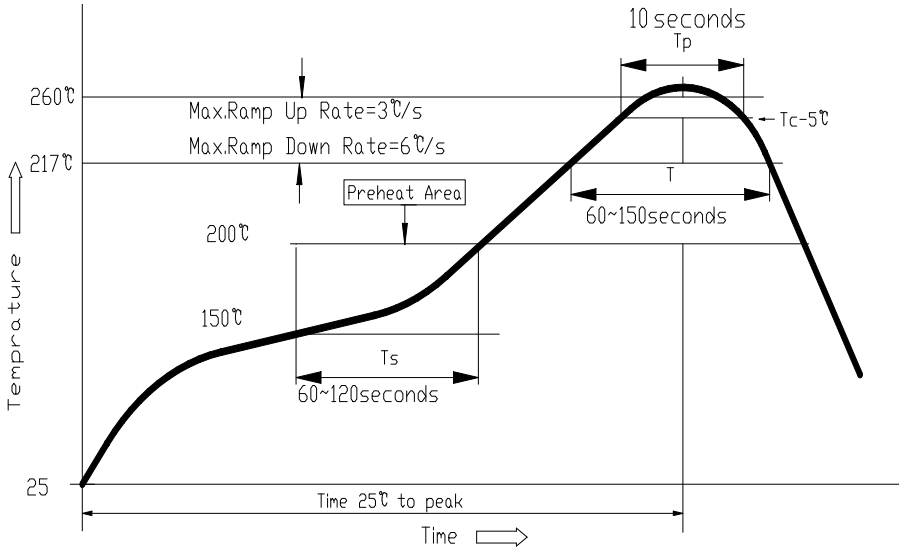
Applicable soldering process to the products is refl.

1 Soldering Materials

(1) Solder:Sn-3.0Ag-0.5Cu

(2) Flux:Use rosin-based flux,but not strongly acidic flux (with xhlorine exceeding 0.2wt%).Do not use water-soluble flux.

2 Reflow Soldering Profile



3 Soldering Iron

Reworking with electric solding iron must preheating at 150℃ for 1 minute is required,and do not directly touch the core with the tip of the soldering iron.The reworking soldering conditions are as follows.

①Temperature of soldering iron tip:350℃;

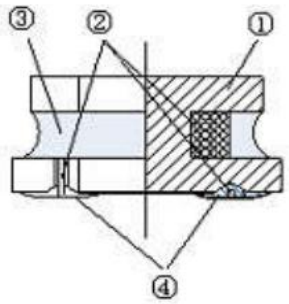
② Soldering iron power output:≤30W;

③ Diameter of soldering iron end:≤1.0mm;

④Soldering time:＜3 s



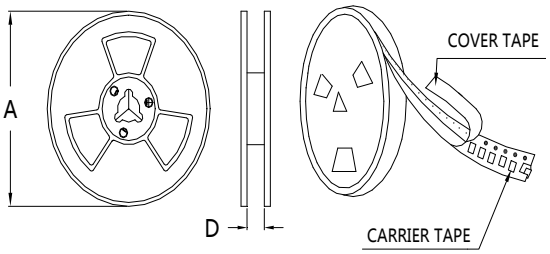
Structure (The structure of product.)



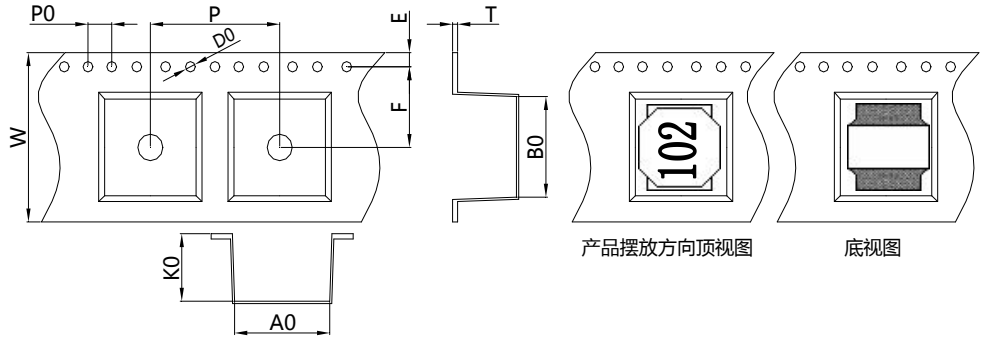
NO	Components	Material
①	Core	Ni-Zn Ferrite
②	Wire	Polyurethane system enameled copper wire
③	Magnetic Glue	Epoxy resin and magnetic powder
④	Plating	AgNiSn or FeNiCu + Sn Alloy

PACKAGING(unit: mm)

☑ 13″ 盘　　☐ 7″ 盘



	13″ 盘	7″ 盘
A	Φ330±2.0	Φ178±2.0
D	12.5	



Size	Item	W	A0	B0	K0	P	T	E	F	D0	P0
5040	(mm)	12.0±0.3	5.5±0.3	5.5±0.3	4.4±0.2	8.0±0.3	0.4±0.1	1.75±0.1	5.5±0.1	1.5±0.1	4.0±0.2

Quantity：1500PCS/Reel