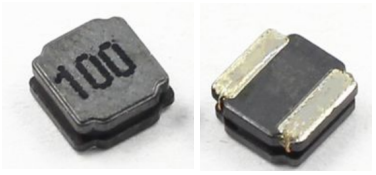
MetalLions

MNR4020 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

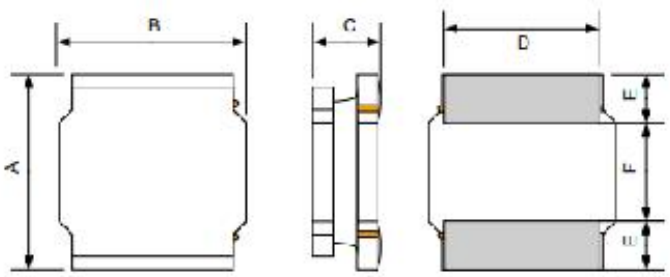
Explanation of Part Number

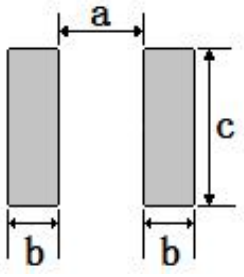
MNR 4020T 1R0 M T

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.
MNR4020	4.0±0.2	4.0±0.2	2.0 Max.	3.3±0.2	0.95±0.2	2.1±0.2	1.9	1.1	3.7

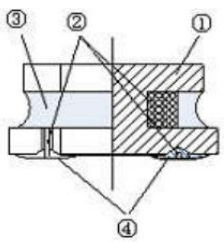
Electrical Characteristics List

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	
MNR4020TR24NT	0.24±30%	0.014	0.010	10.50	12.50	4.50	5.20	R24
MNR4020TR47NT	0.47±30%	0.018	0.012	7.00	7.50	4.00	4.50	R47
MNR4020TR68NT	0.68±30%	0.022	0.017	6.40	6.80	2.80	3.30	R68
MNR4020T1R0NT	1.00±30%	0.038	0.029	4.80	5.20	2.50	3.20	1R0
MNR4020T1R5NT	1.50±30%	0.046	0.035	4.45	4.90	2.20	3.00	1R5
MNR4020T2R2MT	2.20±20%	0.052	0.045	3.40	3.50	2.00	2.80	2R2
MNR4020T3R3MT	3.30±20%	0.091	0.075	3.20	3.50	1.80	2.50	3R3
MNR4020T4R7MT	4.70±20%	0.098	0.084	2.35	2.50	1.50	2.00	4R7
MNR4020T6R8MT	6.80±20%	0.163	0.141	2.20	2.40	1.10	1.60	6R8
MNR4020T100MT	10.0±20%	0.215	0.184	1.60	1.70	0.90	1.20	100
MNR4020T150MT	15.0±20%	0.299	0.240	1.35	1.50	0.77	1.10	150
MNR4020T220MT	22.0±20%	0.455	0.360	1.05	1.10	0.62	0.87	220
MNR4020T330MT	33.0±20%	0.715	0.490	0.85	1.00	0.50	0.60	330
MNR4020T470MT	47.0±20%	0.923	0.795	0.70	0.75	0.44	0.60	470
MNR4020T680MT	68.0±20%	1.380	1.130	0.61	0.67	0.36	0.50	680
MNR4020T750MT	75.0±20%	1.510	1.310	0.70	0.77	0.35	0.49	750
MNR4020T820MT	82.0±20%	1.520	1.410	0.50	0.55	0.34	0.47	820
MNR4020T101MT	100.0±20%	2.020	1.810	0.48	0.53	0.31	0.43	101

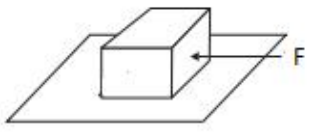
※1: All test data is referenced to 20°C ambient;

※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.

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

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

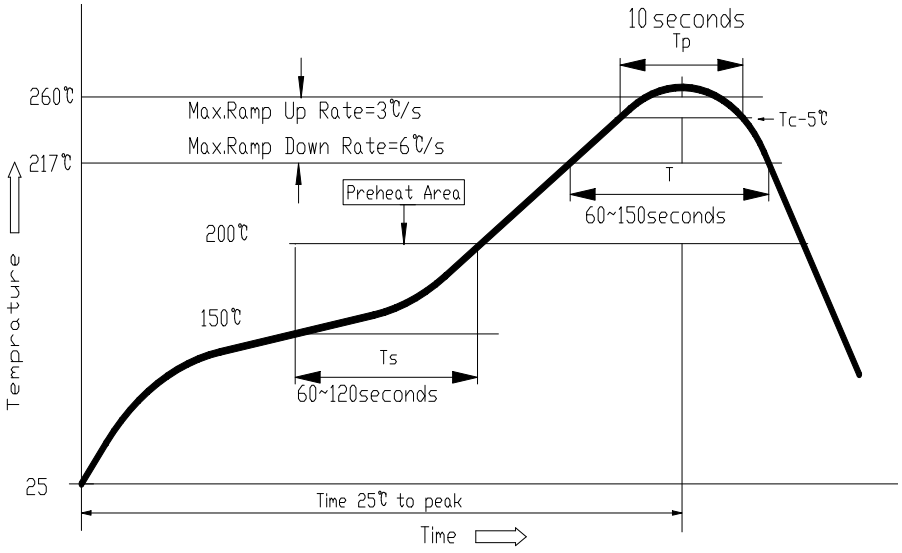
Applicable soldering process to the products is refl.

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

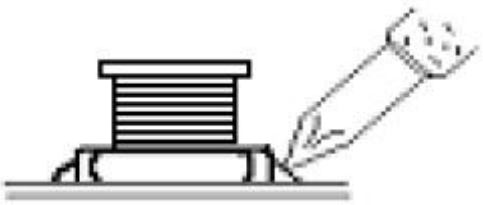
Reworking with electric solding iron must preheating at 150℃ for 1 minute is required,and do not directly touch the core with the tip of the soldering iron.The reworking soldering conditions are as follows.

①Temperature of soldering iron tip:350℃；

② Soldering iron power output:≤30W；

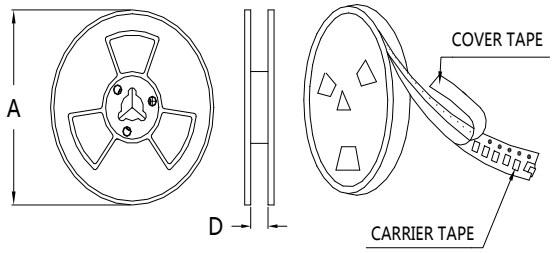
③ Diameter of soldering iron end:≤1.0mm；

④Soldering time:＜3 s

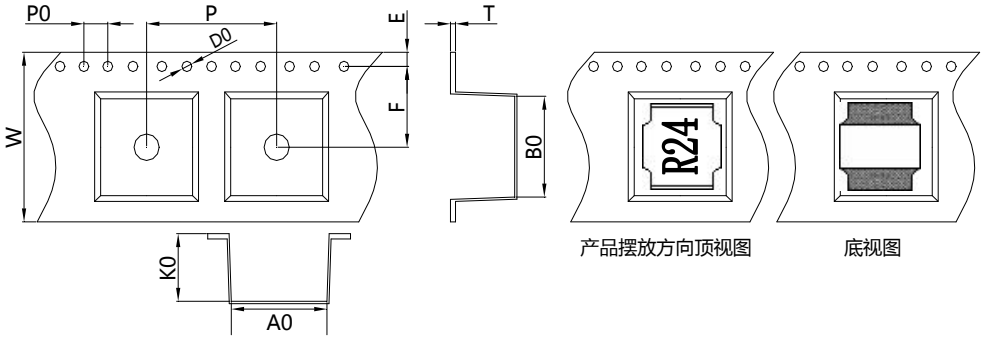


PACKAGING(unit: mm)

☑ 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
4020	(mm)	12.0±0.3	4.4±0.2	4.4±0.2	2.1±0.2	8.0±0.3	0.3±0.1	1.75±0.1	5.5±0.2	1.5±0.1	4.0±0.2

Quantity：3000PCS/Reel