

# MNR80\*\* 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 ....  $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$  (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

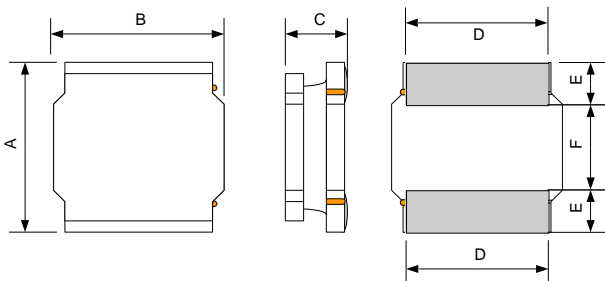
### Explanation of Part Number

MNR 8040 T1R0 M T

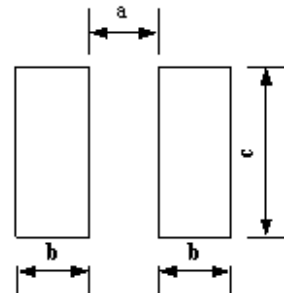
1 2 3 4 5 6

- ◆ 1:Product Series:Wire Wound SMD Power Inductors
- ◆ 2:Dimensions:
- ◆ 3: Feature Type:T Type
- ◆ 4: Initial inductance value: 1R0 = 1.0uH
- ◆ 5: Tolerance of Inductance:M:+/-20%
- ◆ 6:Packing:Tape Carrier Package

### Dimensions: [mm]



### Recommended Land Pattern



Unit: mm

Series	A	B	C	D	E	F	a Typ.	b Typ.	c Typ.
MNR8040	8.0±0.3	8.0±0.3	4.2 Max.	6.3±0.3	2.00±0.3	4.0±0.3	3.8	2.2	7.5
MNR8065	8.0±0.3	8.0±0.3	6.5 Max.	6.3±0.3	2.00±0.3	4.0±0.3	3.8	2.2	7.5

## Electrical Characteristics List

### MNR8040 Series

Part Number	Inductance	DC Resistance		Self-resonant Frequency	Saturation Current <sup>3</sup>		Heat Rating Current <sup>4</sup>	
	@100kHz, 1V	Max.	Typ.	Min.	Max.	Typ.	Max.	Typ.
Units	μH	Ω		MHz	A		A	
Symbol	L	DCR		S.R.F	Isat		Irms	
MNR8040TR82MT	0.82±20%	0.010	0.008	94	13.80	16.00	6.30	6.90
MNR8040T1R0MT	1.0±20%	0.010	0.008	89	9.85	14.00	6.30	6.90
MNR8040T1R2MT	1.2±20%	0.013	0.010	59	10.00	14.00	5.65	6.20
MNR8040T1R5MT	1.5±20%	0.013	0.010	67	8.15	11.00	5.65	6.20
MNR8040T2R0MT	2.0±20%	0.016	0.012	43	9.25	10.00	5.15	5.60
MNR8040T2R2MT	2.2±20%	0.016	0.012	41	7.10	8.00	5.15	5.60
MNR8040T3R0MT	3.0±20%	0.018	0.014	32	6.10	7.00	4.70	5.20
MNR8040T3R3MT	3.3±20%	0.022	0.017	27	6.50	7.00	4.40	4.80
MNR8040T3R6MT	3.6±20%	0.022	0.017	30	7.52	8.50	4.35	4.80
MNR8040T3R9MT	3.9±20%	0.022	0.017	26	5.75	6.50	4.35	4.80
MNR8040T4R7MT	4.7±20%	0.025	0.019	24	5.90	6.50	4.10	4.50
MNR8040T5R1MT	5.1±20%	0.025	0.019	22	4.70	5.40	4.05	4.40
MNR8040T5R6MT	5.6±20%	0.027	0.021	24	6.00	6.90	3.85	4.20
MNR8040T6R2MT	6.2±20%	0.027	0.021	20	4.45	5.10	3.85	4.20
MNR8040T6R8MT	6.8±20%	0.031	0.024	20	4.55	5.20	3.60	4.00
MNR8040T8R2MT	8.2±20%	0.034	0.026	17	4.20	4.80	3.45	3.80
MNR8040T100MT	10±20%	0.038	0.029	15	3.60	4.10	3.30	3.60
MNR8040T120MT	12±20%	0.053	0.041	13	3.50	4.00	2.80	3.00
MNR8040T150MT	15±20%	0.061	0.047	12	2.95	3.40	2.60	2.80
MNR8040T180MT	18±20%	0.069	0.053	11	2.70	3.10	2.40	2.60
MNR8040T220MT	22±20%	0.090	0.069	9.5	2.40	2.70	2.10	2.30
MNR8040T270MT	27±20%	0.101	0.078	9.2	2.15	2.50	2.00	2.20
MNR8040T330MT	33±20%	0.126	0.097	7.8	2.05	2.40	1.80	2.00
MNR8040T360MT	36±20%	0.133	0.102	7.8	2.00	2.30	1.75	1.90
MNR8040T390MT	39±20%	0.139	0.107	7.8	1.95	2.20	1.70	1.90
MNR8040T430MT	43±20%	0.147	0.113	7.8	1.90	2.20	1.65	1.80
MNR8040T470MT	47±20%	0.177	0.136	6.4	1.75	2.00	1.55	1.70
MNR8040T510MT	51±20%	0.185	0.142	6.4	1.70	1.90	1.50	1.60
MNR8040T560MT	56±20%	0.192	0.148	6.4	1.55	1.70	1.45	1.60
MNR8040T620MT	62±20%	0.237	0.182	6.4	1.50	1.60	1.30	1.40
MNR8040T680MT	68±20%	0.255	0.196	4.9	1.45	1.60	1.25	1.40
MNR8040T750MT	75±20%	0.274	0.211	4.9	1.35	1.50	1.20	1.30
MNR8040T820MT	82±20%	0.293	0.225	5.9	1.30	1.40	1.15	1.20
MNR8040T910MT	91±20%	0.354	0.272	4.9	1.20	1.30	1.05	1.10
MNR8040T101MT	100±20%	0.377	0.290	4.2	1.15	1.30	1.00	1.10
MNR8040T121MT	120±20%	0.434	0.334	3.5	1.05	1.10	0.95	1.00
MNR8040T151MT	150±20%	0.533	0.410	3.5	1.10	1.20	0.85	0.94
MNR8040T181MT	180±20%	0.676	0.520	3.5	0.95	1.15	0.83	0.92
MNR8040T221MT	220±20%	0.779	0.599	3.5	0.85	0.94	0.80	0.88
MNR8040T331MT	330±20%	1.156	0.889	2.8	0.68	0.75	0.64	0.70
MNR8040T471MT	470±20%	1.625	1.250	2.1	0.60	0.70	0.50	0.60

## MNR8065Series

Part Number	Inductance	DC Resistance		Self-resonant Frequency	Saturation Current <sup>*3</sup>		Heat Rating Current <sup>*4</sup>	
	@100kHz,1V	Max.	Typ.	Min.	Max.	Typ.	Max.	Typ.
Units	μH	Ω		MHz	A		A	
Symbol	L	DCR		S.R.F	Isat		Irms	
MNR8065TR68MT	0.68±20%	0.008	0.007	100	24.0	26.0	7.50	8.50
MNR8065T1R0MT	1.0±20%	0.011	0.008	96	20.0	22.0	7.00	8.00
MNR8065T2R2MT	2.2±20%	0.016	0.013	45	13.8	12.0	5.20	4.50
MNR8065T3R3MT	3.3±20%	0.018	0.015	27	9.50	10.0	5.10	5.90
MNR8065T4R7MT	4.7±20%	0.022	0.018	18	8.50	9.50	4.70	5.40
MNR8065T5R6MT	5.6±20%	0.026	0.022	17	8.00	9.00	4.50	5.20
MNR8065T6R8MT	6.8±20%	0.026	0.022	16	7.50	8.00	4.50	5.20
MNR8065T8R2MT	8.2±20%	0.031	0.026	15	7.00	7.70	4.20	4.80
MNR8065T100MT	10±20%	0.044	0.037	13	8.00	8.90	3.20	3.70
MNR8065T150MT	15±20%	0.053	0.044	10	5.70	6.70	3.25	3.75
MNR8065T220MT	22±20%	0.072	0.060	8	4.30	4.80	2.70	3.10
MNR8065T470MT	47±20%	0.152	0.127	7	3.40	3.70	1.85	2.15
MNR8065T560MT	56±20%	0.198	0.165	6	3.20	3.70	1.35	1.55
MNR8065T680MT	68±20%	0.218	0.182	5	2.70	3.20	1.55	1.80
MNR8065T101MT	100±20%	0.280	0.233	3.1	2.00	2.40	1.35	1.45
MNR8065T151MT	150±20%	0.440	0.353	2.5	1.60	2.00	0.95	1.10
MNR8065T221MT	220±20%	0.656	0.547	2.0	1.20	1.50	0.80	0.90
MNR8065T331MT	330±20%	0.840	0.700	1.7	1.00	1.20	0.75	0.85
MNR8065T471MT	470±20%	1.560	1.300	1.4	1.00	1.20	0.55	0.65
MNR8065T681MT	680±20%	1.944	1.620	1	0.85	1.00	0.52	0.60

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

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

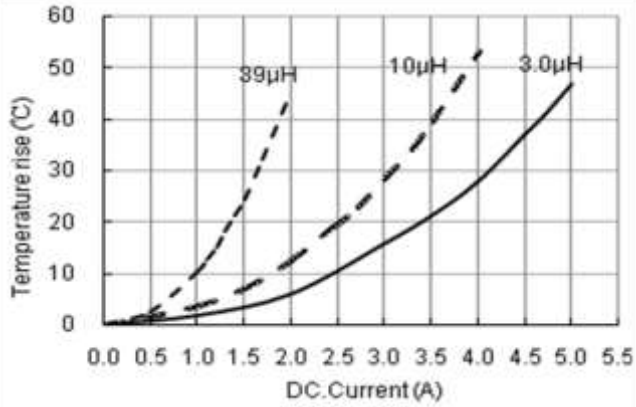
※\*3: Isat: DC current at which the inductance drops approximate 30% from its value without current;

※\*4: Irms: DC current that causes the temperature rise ( $\Delta T = 40^\circ\text{C}$ ) from 20°C ambient.

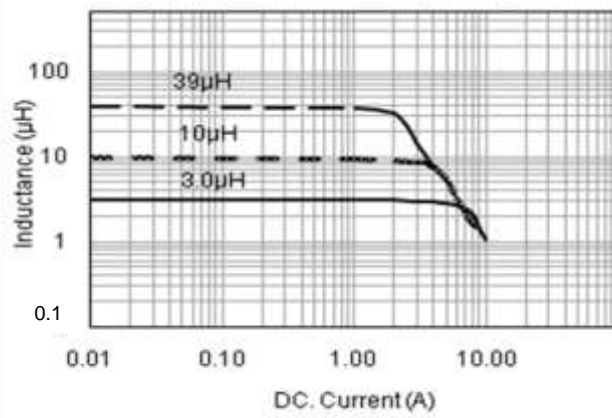
## TYPICAL ELECTRICAL CHARACTERISTICS

### MNR8040 Series

Temperature vs. DC Current Characteristics

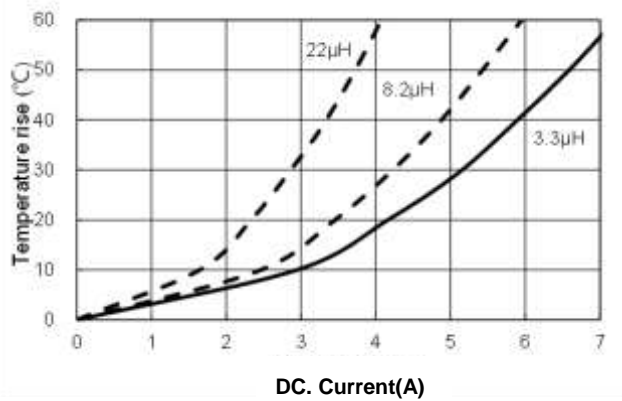


Inductance vs. DC Current Characteristics

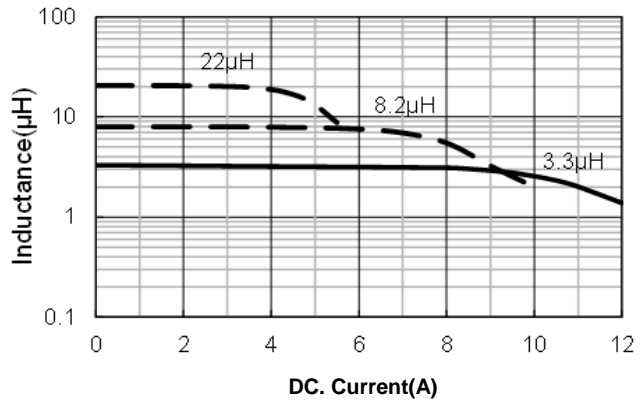


### MNR8065 Series

Temperature vs. DC Current Characteristics



Inductance vs. DC Current Characteristics



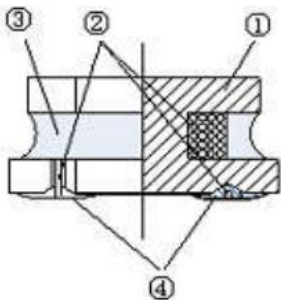
## Reliability Test

TEST ITEM	SPECIFICATION	TEST CONDITION
Withstanding voltage test	After test, inductors shall have no evidence of electrical and mechanical damage.	AC voltage of 100v and AC current of 1mA applied between inductor's terminal and core for 3 secs.
Resistance to soldering heat	1. Inductor shall have no evidence of electrical and mechanical damage. 2. Inductance shall not change more than $\pm 5\%$ . 3. Q shall not change more than 20%.	a. Temp: $260 \pm 5$ b. Time: $10 \pm 1.0$ se
Solderability test	The terminal shall be at least 95% covered with solder.	After fluxing, the terminal shall be dipped in a melted solder bath at $245 \pm 5^\circ\text{C}$ for $4 \pm 1.0$ secs.
High temperature & high humidity test	The anti-erosion quality of the surface and the specimen's inductance shall not change from the initial value within $\pm 10\%$	a. Test condition 1)Temp.: $85^\circ\text{C}$ , R.H.:85% 2)Time: $144 \pm 2$ hours b. Measurement method The experimental component should be put at normal condition for 2 hours then to measure again after test
Salt spray test		a. Test condition 1)Temp.: $35 \pm 2^\circ\text{C}$ 2)Time: $48 \pm 2$ hours 3)Salt solution PH:6.5~7.2 b. Measurement method The experimental component should be put at normal condition for 2 hours then to measure again after test
Vibration test	1. Inductance shall be within 10% of the initial value. 2. Appearance: no damage	a. Frequency: 10 to 55 b. Amplitude: 1.5 c. Direction and time X, Y and Z directions for 2 hours each.

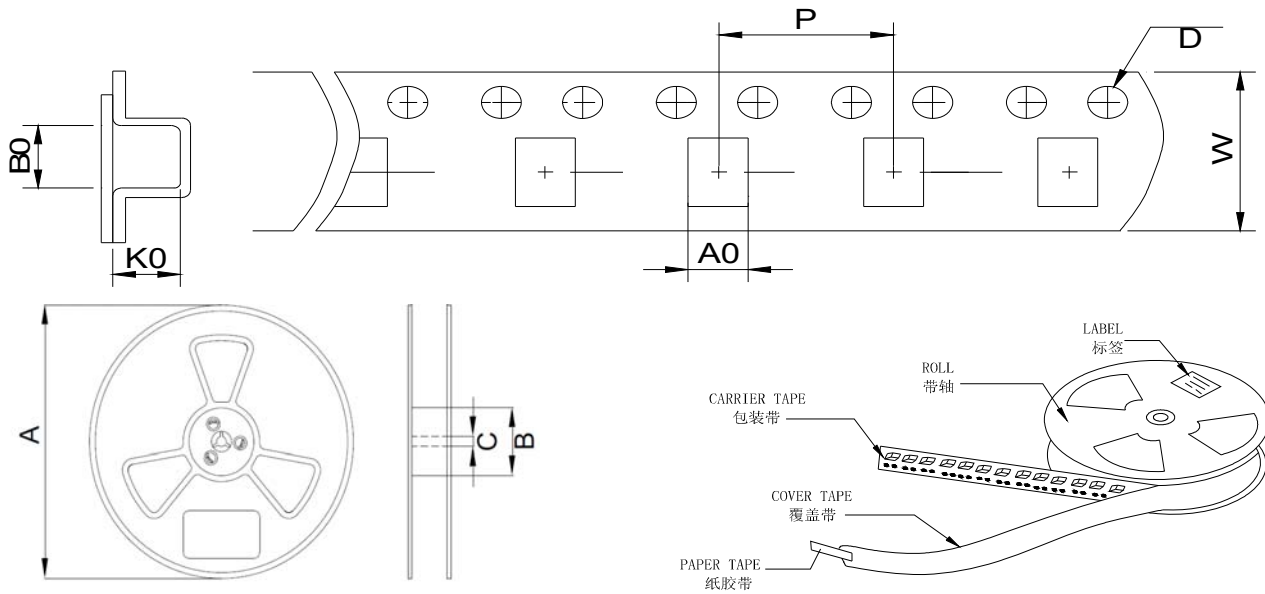
TEST ITEM	SPECIFICATION	TEST CONDITION
Free fall test	No mechanical damage shall be noticed.	Drop 5 times on a concrete floor from 1m the height
Temperature Cycling test	1. Inductance shall be within 10% of the initial value 2. Appearance: No dama	a. Test conditi 1)Temp.: $-55^{\circ}\text{C}$ ,time: $30\pm 3\text{min}$ 2)Temp.: $+125^{\circ}\text{C}$ ,time: $30\pm 3\text{min}$ 3)Cycles times:12 cycles b. Measurement method The experimental component should be put at normal condition for 2 hours then to measure again after test
High Temperature resistance test		a. Test conditi 1)Applied rated current 2)Temp.: $85^{\circ}\text{C}\pm 2^{\circ}\text{C}$ 3)Test time: $1000+24/-0\text{H}$ b. Measurement method The experimental component should be put at normal condition for 24 hours then to measure again after test.
Low temperature resistance test		a. Test conditi 1)Temp.: $-55^{\circ}\text{C}\pm 2^{\circ}\text{C}$ 2)Test time: $1000+24/-0\text{H}$ b. Measurement method The experimental component should be put at normal condition for 24 hours then to measure again after test.

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

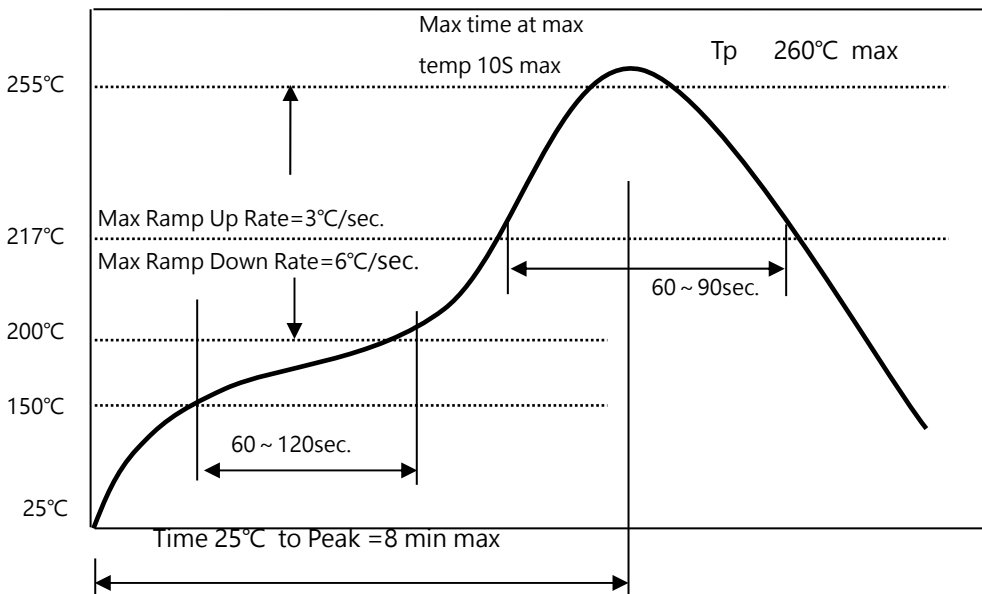
### Structure (The structure of product.)



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 SPECIFICATION :**


Type	Tape Dimension (mm)						Reel Dimension (mm)			Quantity (Pcs/Reel)
	W	A0	B0	K0	D	P	A	B	C	
MNR8040	16	8.4	8.4	4.5	1.5	12	330	100	13	1000
MNR8065	16	8.4	8.4	6.8	1.5	12	330	100	13	800

**Re-flowing Profile:**


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