MetalLions

MNR30** 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

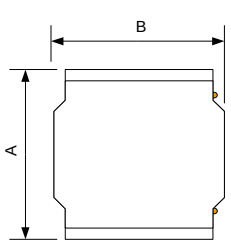
Explanation of Part Number

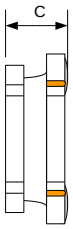
MNR 3015 T1R0 M T

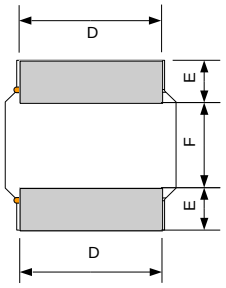
1 2 3 4 5 6

- 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%， N:+/-30%
- 6:Packing:Tape Carrier Package

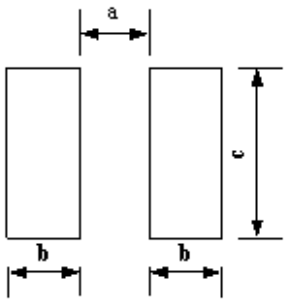
Dimensions: [mm]







Recommended Land Pattern



Unit: mm

Series	A	B	C	D	E	F	a Typ.	b Typ.	c Typ.
MNR3010	3.0±0.2	3.0±0.2	1.0 Max.	2.5±0.2	0.75±0.2	1.5±0.2	1.5	0.8	2.7
MNR3012	3.0±0.2	3.0±0.2	1.2 Max.	2.5±0.2	0.75±0.2	1.5±0.2	1.5	0.8	2.7
MNR3015	3.0±0.2	3.0±0.2	1.5 Max.	2.5±0.2	0.75±0.2	1.5±0.2	1.5	0.8	2.7

Electrical Characteristics List

MNR3010 Series

Part Number	Inductance	DC Resistance		Self-resonant Frequency	Saturation Current*3		Heat Rating Current *4	
	@100kHz,1V	Max.	Typ.	Min.	Max.	Typ.	Max.	Typ.
Units	μH	Ω		MHz	A		A	
Symbol	L	DCR		S.R.F	Isat		Irms	
MNR3010T1R0MT	1.0±20%	0.085	0.065	180	1.40	2.10	1.45	1.80
MNR3010T1R2MT	1.2±20%	0.085	0.065	137	1.25	1.70	1.45	1.80
MNR3010T1R5MT	1.5±20%	0.104	0.080	120	1.27	1.70	1.30	1.60
MNR3010T2R2MT	2.2±20%	0.143	0.110	100	1.15	1.50	1.09	1.40
MNR3010T2R7MT	2.7±20%	0.169	0.130	90	1.00	1.20	1.02	1.40
MNR3010T3R3MT	3.3±20%	0.189	0.145	74	0.97	1.20	0.96	1.20
MNR3010T3R6MT	3.6±20%	0.215	0.165	67	0.95	1.20	0.90	1.10
MNR3010T4R7MT	4.7±20%	0.293	0.225	59	0.75	1.05	0.77	1.10
MNR3010T5R6MT	5.6±20%	0.322	0.248	40	0.58	0.65	0.70	1.05
MNR3010T6R8MT	6.8±20%	0.397	0.305	42	0.55	0.72	0.66	0.96
MNR3010T8R2MT	8.2±20%	0.520	0.40	23	0.55	0.70	0.58	0.70
MNR3010T100MT	10±20%	0.520	0.40	39	0.55	0.75	0.58	0.70
MNR3010T120MT	12±20%	0.657	0.505	36	0.43	0.65	0.52	0.67
MNR3010T150MT	15±20%	0.793	0.610	30	0.42	0.57	0.47	0.57
MNR3010T220MT	22±20%	1.209	0.930	28	0.35	0.48	0.38	0.52
MNR3010T270MT	27±20%	1.404	1.080	25	0.30	0.45	0.35	0.50
MNR3010T330MT	33±20%	2.015	1.550	18	0.29	0.42	0.30	0.55
MNR3010T390MT	39±20%	2.275	1.750	18	0.28	0.38	0.28	0.53
MNR3010T430MT	43±20%	2.340	1.80	18	0.23	0.36	0.27	0.52
MNR3010T470MT	47±20%	2.535	1.950	18	0.22	0.35	0.26	0.52
MNR3010T510MT	51±20%	2.860	2.20	18	0.21	0.33	0.25	0.48
MNR3010T560MT	56±20%	3.016	2.320	16	0.21	0.28	0.24	0.35

MNR3012 Series

Part Number	Inductance	DC Resistance		Self-resonant Frequency	Saturation Current*3		Heat Rating Current *4	
	@100kHz,1V	Max.	Typ.	Min.	Max.	Typ.	Max.	Typ.
Units	μH	Ω		MHz	A		A	
Symbol	L	DCR		S.R.F	Isat		Irms	
MNR3012TR22NT	0.22±30%	0.022	0.017	321	5.30	6.00	3.00	3.30
MNR3012TR82NT	0.82±30%	0.039	0.030	180	2.05	2.80	2.47	3.00
MNR3012T1R0MT	1.0±20%	0.052	0.040	120	1.87	2.80	2.20	2.70
MNR3012T1R2MT	1.2±20%	0.059	0.045	120	2.22	2.50	2.01	2.20
MNR3012T1R5MT	1.5±20%	0.059	0.045	110	1.62	1.90	2.01	2.20
MNR3012T1R8MT	1.8±20%	0.082	0.063	90	1.30	1.90	1.65	1.80
MNR3012T2R2MT	2.2±20%	0.098	0.075	84	1.20	1.90	1.55	1.70
MNR3012T2R4MT	2.4±20%	0.088	0.068	100	1.15	1.50	1.60	1.70
MNR3012T2R7MT	2.7±20%	0.110	0.085	65	1.14	1.50	1.48	1.50
MNR3012T3R3MT	3.3±20%	0.130	0.10	64	1.05	1.50	1.36	1.40
MNR3012T3R6MT	3.6±20%	0.130	0.10	36	1.05	1.50	1.36	1.40
MNR3012T3R9MT	3.9±20%	0.189	0.145	61	1.00	1.30	1.24	1.30
MNR3012T4R7MT	4.7±20%	0.156	0.120	61	0.90	1.00	1.24	1.30
MNR3012T6R8MT	6.8±20%	0.247	0.190	61	0.75	0.90	0.98	1.10
MNR3012T100MT	10±20%	0.345	0.265	42	0.60	0.88	0.83	0.90

Part Number	Inductance	DC Resistance		Self-resonant Frequency	Saturation Current*3		Heat Rating Current *4	
	@100kHz,1V	Max.	Typ.	Min.	Max.	Typ.	Max.	Typ.
Units	μH	Ω		MHz	A		A	
Symbol	L	DCR		S.R.F	Isat		Irms	
MNR3012T120MT	12±20%	0.449	0.345	32	0.48	0.67	0.73	0.84
MNR3012T150MT	15±20%	0.468	0.360	27	0.45	0.62	0.71	0.77
MNR3012T180MT	18±20%	0.709	0.545	25	0.43	0.59	0.58	0.65
MNR3012T220MT	22±20%	0.839	0.645	23	0.42	0.52	0.53	0.59
MNR3012T270MT	27±20%	1.131	0.870	21	0.35	0.48	0.47	0.51
MNR3012T330MT	33±20%	1.138	0.875	18	0.36	0.46	0.46	0.50
MNR3012T360MT	36±20%	1.235	0.950	18	0.34	0.44	0.44	0.48
MNR3012T390MT	39±20%	1.729	1.330	18	0.30	0.39	0.37	0.41
MNR3012T470MT	47±20%	1.885	1.450	14	0.27	0.35	0.35	0.40
MNR3012T560MT	56±20%	1.794	1.380	9	0.26	0.33	0.28	0.40
MNR3012T680MT	68±20%	2.171	1.670	7	0.24	0.29	0.33	0.37
MNR3012T820MT	82±20%	3.302	2.540	7	0.17	0.27	0.27	0.31
MNR3012T101MT	100±20%	3.718	2.860	5	0.21	0.23	0.25	0.29

MNR3015 Series

Part Number	Inductance	DC Resistance		Self-resonant Frequency	Saturation Current*3		Heat Rating Current *4	
	@100kHz,1V	Max.	Typ.	Min.	Max.	Typ.	Max.	Typ.
Units	μH	Ω		MHz	A		A	
Symbol	L	DCR		S.R.F	Isat		Irms	
MNR3015TR47NT	0.47±30%	0.039	0.030	162	3.90	4.20	2.60	2.80
MNR3015T1R0MT	1.0±20%	0.039	0.030	150	2.32	2.80	2.35	2.50
MNR3015T1R2MT	1.2±20%	0.052	0.040	110	2.21	3.10	1.95	2.30
MNR3015T1R5MT	1.5±20%	0.065	0.050	100	2.30	2.70	1.70	2.20
MNR3015T1R8MT	1.8±20%	0.065	0.050	92	1.75	2.20	1.70	2.20
MNR3015T2R2MT	2.2±20%	0.078	0.060	86	1.60	2.00	1.60	2.00
MNR3015T2R7MT	2.7±20%	0.098	0.075	64	1.52	1.90	1.43	1.90
MNR3015T3R3MT	3.3±20%	0.104	0.080	68	1.32	1.81	1.36	1.60
MNR3015T3R6MT	3.6±20%	0.137	0.105	59	1.28	1.60	1.20	1.50
MNR3015T3R9MT	3.9±20%	0.137	0.105	47	1.20	1.40	1.20	1.50
MNR3015T4R3MT	4.3±20%	0.150	0.115	53	1.20	1.40	1.14	1.30
MNR3015T4R7MT	4.7±20%	0.163	0.125	46	1.10	1.40	1.09	1.30
MNR3015T5R1MT	5.1±20%	0.173	0.133	49	1.00	1.20	1.05	1.20
MNR3015T6R2MT	6.2±20%	0.254	0.195	46	1.00	1.20	0.86	1.00
MNR3015T6R8MT	6.8±20%	0.260	0.20	39	0.85	1.10	0.85	1.10
MNR3015T100MT	10±20%	0.325	0.250	41	0.72	0.92	0.77	0.90
MNR3015T120MT	12±20%	0.416	0.320	32	0.70	0.90	0.68	0.89
MNR3015T150MT	15±20%	0.455	0.350	30	0.66	0.88	0.65	0.72
MNR3015T180MT	18±20%	0.559	0.430	23	0.56	0.72	0.59	0.72
MNR3015T220MT	22±20%	0.598	0.460	23	0.52	0.68	0.57	0.69
MNR3015T270MT	27±20%	0.949	0.730	22	0.48	0.56	0.45	0.56
MNR3015T330MT	33±20%	1.066	0.820	20	0.44	0.53	0.43	0.51
MNR3015T390MT	39±20%	1.294	0.995	14	0.41	0.55	0.39	0.44
MNR3015T430MT	43±20%	1.378	1.060	16	0.37	0.43	0.37	0.48
MNR3015T470MT	47±20%	1.625	1.250	14	0.35	0.43	0.35	0.44
MNR3015T560MT	56±20%	1.664	1.280	13	0.33	0.42	0.34	0.41
MNR3015T620MT	62±20%	2.093	1.610	13	0.30	0.40	0.30	0.41
MNR3015T680MT	68±20%	3.510	2.700	11	0.28	0.37	0.23	0.31
MNR3015T101MT	100±20%	4.043	3.110	7.2	0.23	0.25	0.21	0.25
MNR3015T151MT	150±20%	4.940	3.80	4.5	0.18	0.22	0.19	0.23

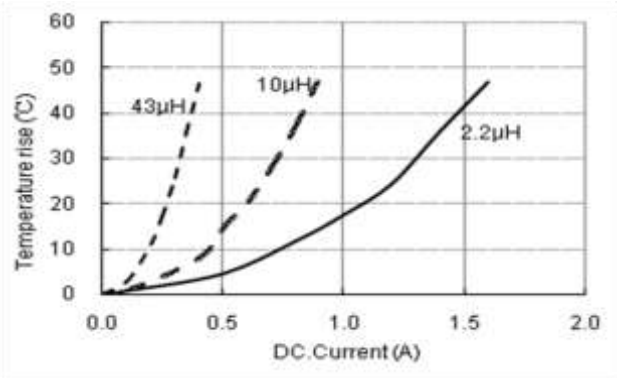
Notes:

※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.

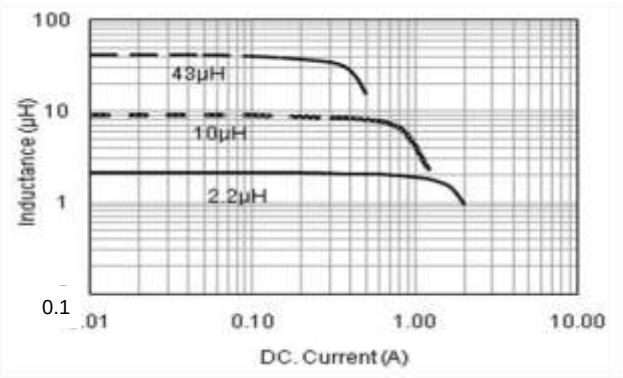
TYPICAL ELECTRICAL CHARACTERISTICS

MNR3010 Series

Temperature vs. DC Current Characteristics

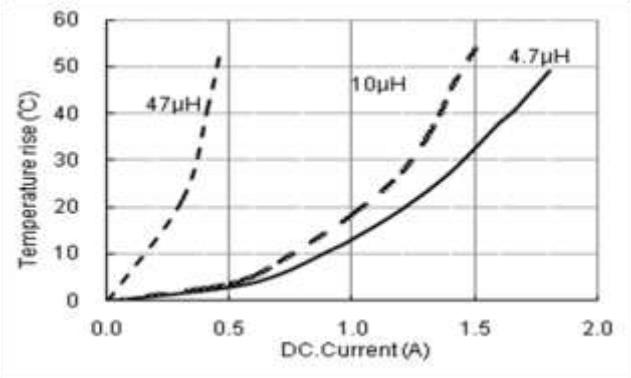


Inductance vs. DC Current Characteristics

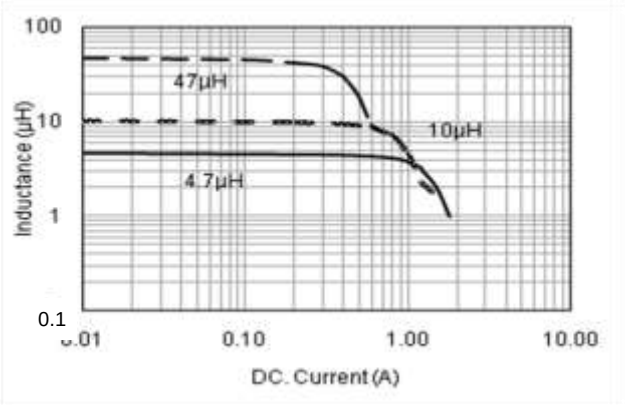


MNR3012 Series

Temperature vs. DC Current Characteristics

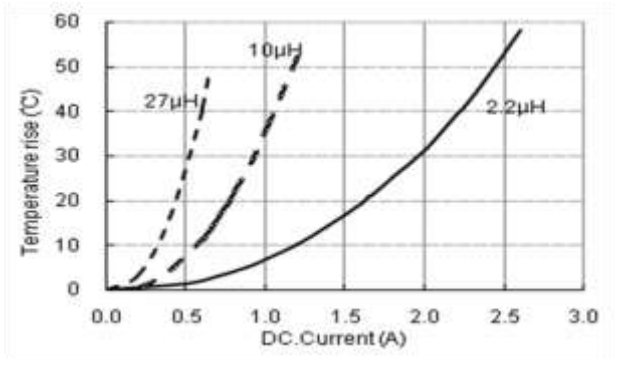


Inductance vs. DC Current Characteristics

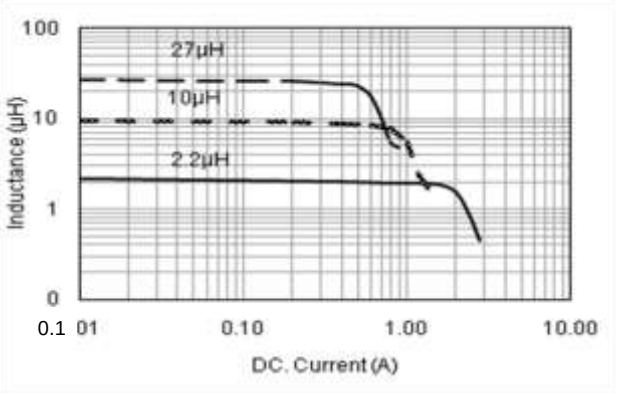


MNR3015Series

Temperature vs. DC Current Characteristics



Inductance vs. DC Current Characteristics



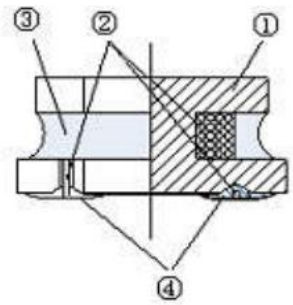
Reliability Test

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 eviden of electrical and mechanical damage. 2. Inductance shall not chan more than ±5%. 3. Q shall not change more than 20%.	a. Temp: 260±5 b. Time: 10±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±5℃ for 4±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 ±10%	a. Test conditi 1)Temp.:85℃, R.H.:85% 2)Time:144±2hours 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 conditi 1)Temp.:35±2℃ 2)Time:48±2hours 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 dama	a. Frequency: 10 to 55 b. Amplitude: 1.5 c. Direction and tim 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 lm 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℃,time:30±3min 2)Temp.:+125℃,time: 30±3min 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℃±2℃ 3)Test time:1000+24/-0H 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℃±2℃ 2)Test time:1000+24/-0H b. Measurement method The experimental component should be put at normal condition for 24 hours then to measure again after test.

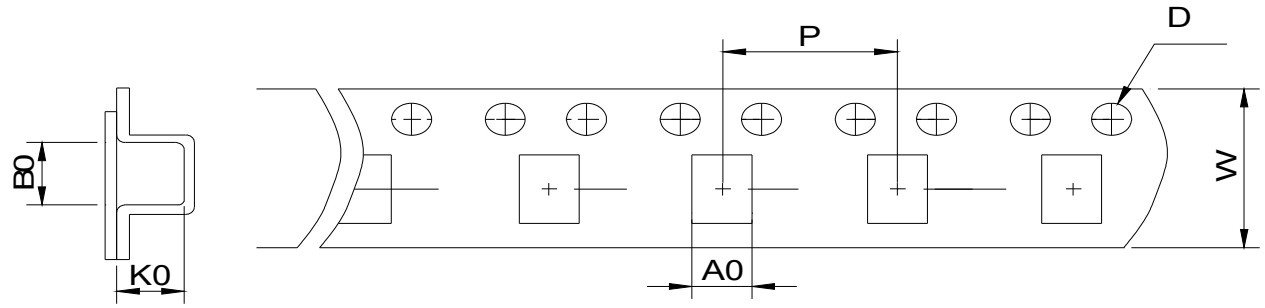
We have suggested the storage period of lead-free product should not over 6 months.

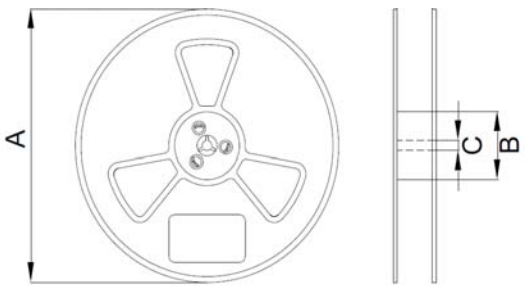
Structure (The structure of product.)

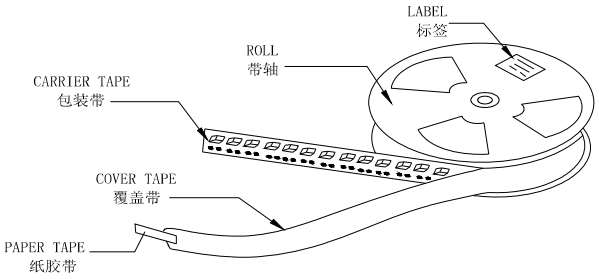


NO	Components	Material
①	Core	Ni-Zn Ferrite
②	Wire	Polyurethane system enameled copper wire
③	Magnetic Glue	Epoxy resin and magnetic powder
④	Plating	AgNiSn or FeNiCu + Sn Alloy

PACKAGING SPECIFICATION :







Type	Tape Dimension (mm)						Reel Dimension (mm)			Quantity (Pcs/Reel)
	W	A0	B0	K0	D	P	A	B	C	
MNR3010	8	3.3	3.3	1.32	1.5	4	178	58	13	2000
MNR3012	8	3.3	3.3	1.4	1.5	4	178	58	13	2000
MNR3015	8	3.3	3.3	1.85	1.5	4	178	58	13	2000

Re-flowing Profile: