

MNR201610 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

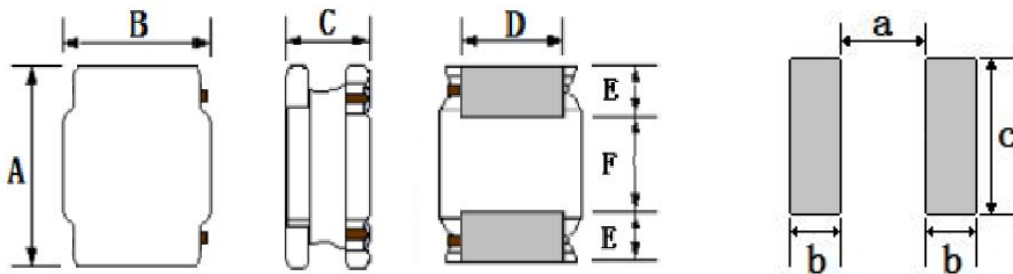
Explanation of Part Number

MNR 201610T 1R0 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: $\pm 20\%$, N: $\pm 30\%$
- ◆ 6:Packing:Tape Carrier Package

Dimensions: [mm]



Recommended Land Pattern

| Series | A | B | C | D | E | F | a Typ. | b Typ. | c Typ. |
|------------|---------|---------|----------|---------|---------|---------|--------|--------|--------|
| MNR201610T | 2.0±0.3 | 1.6±0.3 | 1.05 Max | 1.2±0.2 | 0.6±0.2 | 0.8±0.2 | 0.70 | 0.70 | 1.70 |

Electrical Characteristics List

MNR201610 Series

| Part Number | Inductance | DC Resistance | | Isat(A) | | Irms(A) | |
|-----------------|----------------|---------------|----------|---------|------|---------|------|
| | 100KHz/1.0V | Max. | Typ. | Max. | Typ. | Max. | Typ. |
| Units | (μ H) | Ω | Ω | A | A | A | A |
| MNR201610TR22NT | 0.22 \pm 30% | 0.040 | 0.033 | 3.70 | 4.10 | 2.80 | 3.10 |
| MNR201610TR24NT | 0.24 \pm 30% | 0.040 | 0.033 | 3.70 | 4.10 | 2.80 | 3.10 |
| MNR201610TR33NT | 0.33 \pm 30% | 0.048 | 0.043 | 3.00 | 3.70 | 2.40 | 2.90 |
| MNR201610TR47NT | 0.47 \pm 30% | 0.060 | 0.052 | 2.30 | 2.85 | 2.30 | 2.60 |
| MNR201610TR68NT | 0.68 \pm 30% | 0.076 | 0.068 | 1.95 | 2.45 | 2.00 | 2.20 |
| MNR201610T1R0MT | 1.0 \pm 20% | 0.114 | 0.104 | 1.65 | 1.85 | 1.45 | 1.60 |
| MNR201610T1R5MT | 1.5 \pm 20% | 0.174 | 0.164 | 1.35 | 1.65 | 1.10 | 1.20 |
| MNR201610T2R2MT | 2.2 \pm 20% | 0.265 | 0.232 | 1.20 | 1.45 | 1.05 | 1.15 |
| MNR201610T3R3MT | 3.3 \pm 20% | 0.345 | 0.328 | 1.00 | 1.20 | 0.85 | 0.95 |
| MNR201610T4R7MT | 4.7 \pm 20% | 0.480 | 0.430 | 0.75 | 0.90 | 0.70 | 0.80 |
| MNR201610T6R8MT | 6.8 \pm 20% | 0.800 | 0.715 | 0.70 | 0.85 | 0.55 | 0.60 |
| MNR201610T8R2MT | 8.2 \pm 20% | 0.940 | 0.818 | 0.68 | 0.78 | 0.53 | 0.60 |
| MNR201610T100MT | 10 \pm 20% | 1.000 | 0.930 | 0.65 | 0.70 | 0.50 | 0.60 |

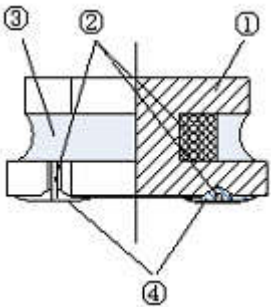
※1: All test data is referenced to 20°C ambient;

※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.

Structure



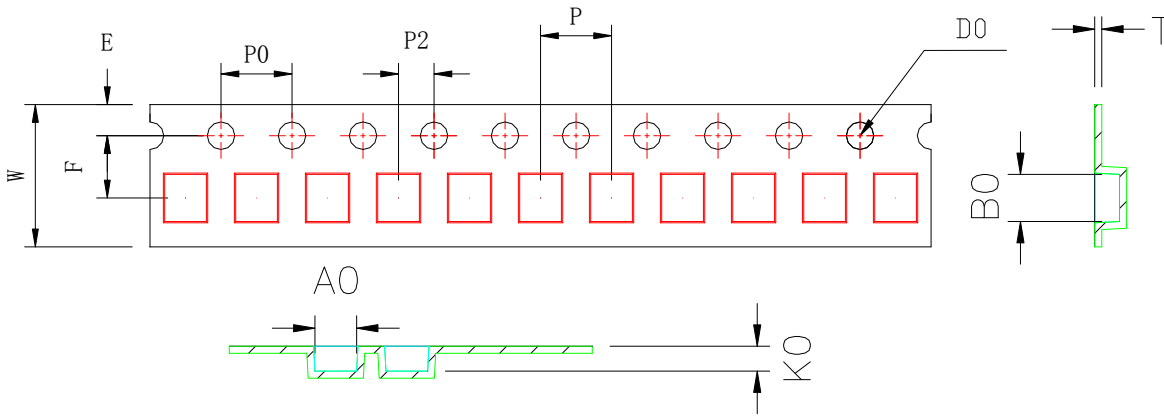
| NO. | Components | Material |
|-----|---------------|--|
| ① | Core | Ni-Zn Ferrite |
| ② | Wire | Polyurethane system enameled copper wire |
| ③ | Magnetic Glue | Epoxy resin and magnetic powder |
| ④ | Electrodes | AgNiSn or FeNiCu + Sn Alloy |

Reliability Test

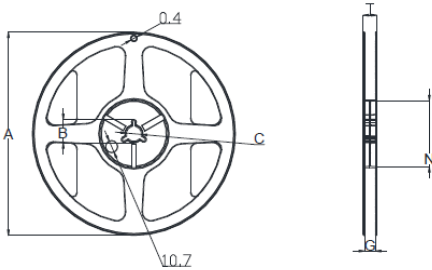
| TEST ITEM | SPECIFICATION | TEST CONDITION |
|---------------------------------------|---|--|
| Withstanding voltage test | After test, inductors shall have no evidence of electrical and mechanical damage. | AC voltage of 100v and AC current of 1mA applied between inductor's terminal and core for 3 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 ± 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 $245 \pm 5^\circ\text{C}$ 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 $\pm 10\%$ | a. Test condition 1) Temp.: 85°C , R.H.: 85% 2) Time: 144 ± 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 ± 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°C, time: 30±3min 2)Temp.: +125°C, 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°C±2°C 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°C±2°C 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.

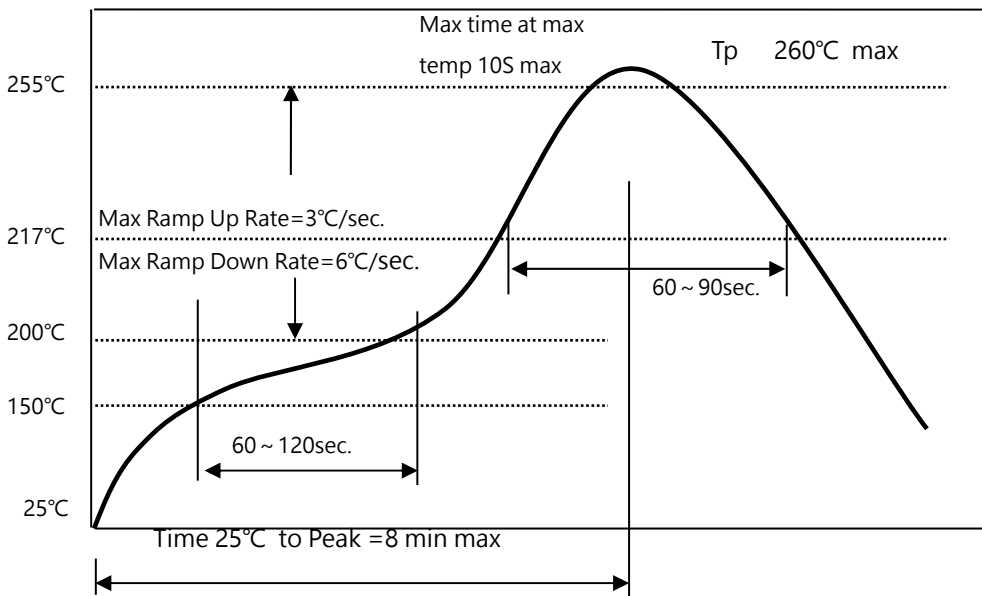
PACKAGING SPECIFICATION :


| ITEM | W | A0 | B0 | K0 | P | F | E | D0 | P0 | P2 | T |
|------|------|------|------|------|------|------|------|------|------|------|-------|
| DIM | 8.00 | 2.00 | 2.40 | 1.20 | 4.00 | 3.5 | 1.75 | 1.50 | 4.00 | 2.00 | 0.25 |
| TOLE | ±0.3 | ±0.1 | ±0.1 | ±0.1 | ±0.1 | ±0.1 | ±0.1 | +0.1 | ±0.1 | ±0.1 | ±0.05 |



| Type | A | B | C | G | N | T |
|------|-----|----------|--------|---|----|------|
| 8mm | 178 | 20.7±0.8 | 13±0.4 | 9 | 60 | 10.8 |

Packaging Quantity: 2K/Reel

Re-flowing Profile:


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