

### NR252012 Series

#### FEATURES

- Magnetically shielded structure that ensures the high-density mounting configurations.
- Closed magnetic circuit design reduces leakage 4、 Small and low profile inductor.tal material for large current and low loss.
- Provided in embossed carrier tape packaging for use with automatic mounting machines.
- 30% higher current rating than conventional inductors of equal size.

#### APPLICATIONS

- Smart phone.
- Smart TV
- LED lighting
- Flat-screen TVs, blue-ray disc recorders,set top boxes.
- Notebooks, desktop computers, servers,graphic cards.

#### PRODUCT IDENTIFICATION

|    |        |   |     |   |
|----|--------|---|-----|---|
| NR | 252012 | - | R24 | N |
| 1  | 2      |   | 3   | 4 |

1. Series Name : Wire Wound SMD Power Inductor

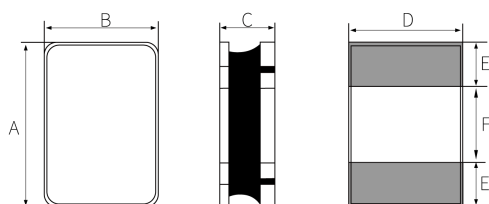
2. Size Code : Dimensions (unit:mm)

3. Nominal Inductance Value :

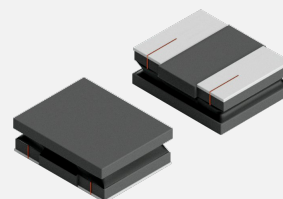
R33=0.33μH, 1R0=1.0μH, 100=10μH

4. Inductance Tolerance : N=±30%, M=±20%, K=±10%

#### DIMENSIONS



| Series   | A            | B              | C(MAX) | D    | E   | F   |
|----------|--------------|----------------|--------|------|-----|-----|
| NR252012 | 2.5+0.3/-0.1 | 2.0+0.35/-0.05 | 1.25   | 2.17 | 0.8 | 1.0 |



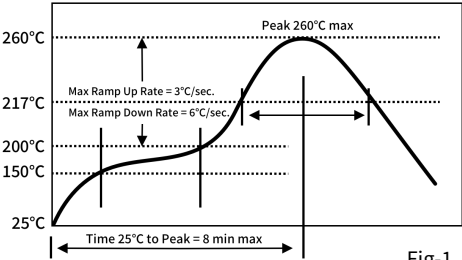
## APPLICATIONS

| Part NO.          | Inductance<br>L0 (μH) | Test Condition | Tolerance<br>(%) | DCR (mΩ)<br>Max. | Isat (A)<br>$\Delta L/L0 \leq 30\%$ |
|-------------------|-----------------------|----------------|------------------|------------------|-------------------------------------|
| ▪ NR252012 Series |                       |                |                  |                  |                                     |
| NR252012-R24N     | 0.24                  | 1MHz/0.1V      | ±30              | 34               | 4.05                                |
| NR252012-R47N     | 0.47                  | 1MHz/0.1V      | ±30              | 44               | 3.60                                |
| NR252012-R68N     | 0.68                  | 1MHz/0.1V      | ±30              | 57               | 2.70                                |
| NR252012-1R0M     | 1.00                  | 1MHz/0.1V      | ±20              | 66               | 2.45                                |
| NR252012-1R5M     | 1.50                  | 1MHz/0.1V      | ±20              | 86               | 2.05                                |
| NR252012-2R2M     | 2.20                  | 1MHz/0.1V      | ±20              | 120              | 1.90                                |
| NR252012-3R3M     | 3.30                  | 1MHz/0.1V      | ±20              | 160              | 1.50                                |
| NR252012-4R7M     | 4.70                  | 1MHz/0.1V      | ±20              | 228.8            | 1.35                                |
| NR252012-6R8M     | 6.80                  | 1MHz/0.1V      | ±20              | 325              | 1.00                                |
| NR252012-100M     | 10.0                  | 1MHz/0.1V      | ±20              | 492              | 0.75                                |
| NR252012-120M     | 12.0                  | 1MHz/0.1V      | ±20              | 620              | 0.62                                |
| NR252012-150M     | 15.0                  | 1MHz/0.1V      | ±20              | 648              | 0.56                                |
| NR252012-220M     | 22.0                  | 1MHz/0.1V      | ±20              | 1020             | 0.50                                |

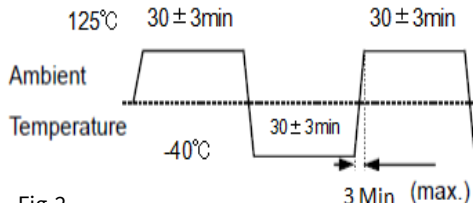
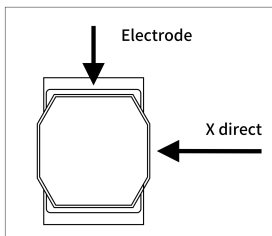
## Notes

1. All test data is referenced to 25 °C ambient .
2. Isat: DC current (A) that will cause L0 to drop approximately 35% TYP .
- 3 Operating temperature range - 40 °C to + 125 °C(Including self - temperature rise) .
4. Storage temperature and humidity range (product with tapping):-10°C~+40°C,RH70% Max

### RELIABILITY TEST

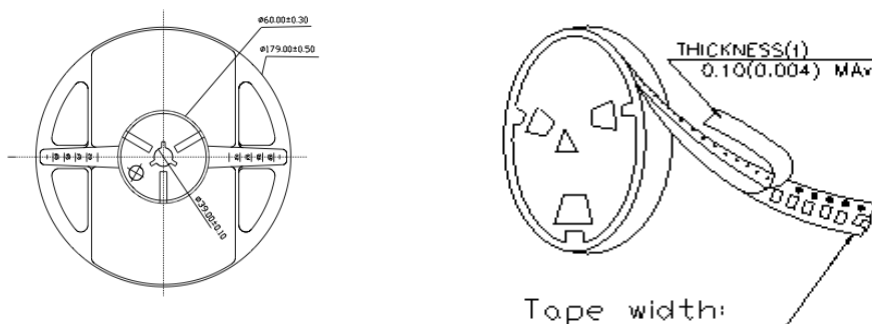
| TEST ITEM                    | REQUIREMENTS                                                                                                                            | TEST METHODS AND REMARKS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Resistance to Soldering Heat | <ol style="list-style-type: none"> <li>No visible mechanical damage</li> <li>Inductance change: Within <math>\pm 5\%</math></li> </ol>  | <ol style="list-style-type: none"> <li>Solder on PCB to Reflow test Peak Temp. <math>260 \pm 5^\circ\text{C}</math> 5 ~ 10 secs ,Cycles :2 times..Re-flowing Profile: Please refer to Fig-1</li> <li>Test board thickness: 1.5mm</li> <li>Test board material: glass epoxy resin</li> <li>The specimen shall be stored at standard atmospheric conditions for 1 hour, after which the measurement shall be made.product showed no damage under microscope.(for microscope of Shun Yu SZM-45 20X)</li> </ol>  <p>Fig-1</p> |
| High Temperature             | <ol style="list-style-type: none"> <li>No visible mechanical damage</li> <li>Inductance change: Within <math>\pm 10\%</math></li> </ol> | <ol style="list-style-type: none"> <li>Temperature: <math>125 \pm 2^\circ\text{C}</math></li> <li>Duration: 1000 hours</li> <li>The specimen shall be stored at standard atmospheric conditions for 1 hour, after which the measurement shall be made.</li> </ol>                                                                                                                                                                                                                                                                                                                                           |
| Steady damp-heat             | <ol style="list-style-type: none"> <li>No visible mechanical damage</li> <li>Inductance change: Within <math>\pm 10\%</math></li> </ol> | <ol style="list-style-type: none"> <li>Temperature: <math>85^\circ\text{C}</math></li> <li>Humidity: 85% RH</li> <li>Duration: 1000 hours</li> <li>The specimen shall be stored at standard atmospheric conditions for 1 hour, after which the measurement shall be made.</li> </ol>                                                                                                                                                                                                                                                                                                                        |
| Mechanical Vibration         | <ol style="list-style-type: none"> <li>No visible mechanical damage</li> <li>Inductance change: Within <math>\pm 10\%</math></li> </ol> | <ol style="list-style-type: none"> <li>Frequency: 10HZ~55HZ~10HZ/Min Cycles</li> <li>Amplitude: 1.5 mm</li> <li>Directions: X,Y,Z</li> <li>Time: 2 hours in each directions (total of 6 hours)</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                   |

### RELIABILITY TEST

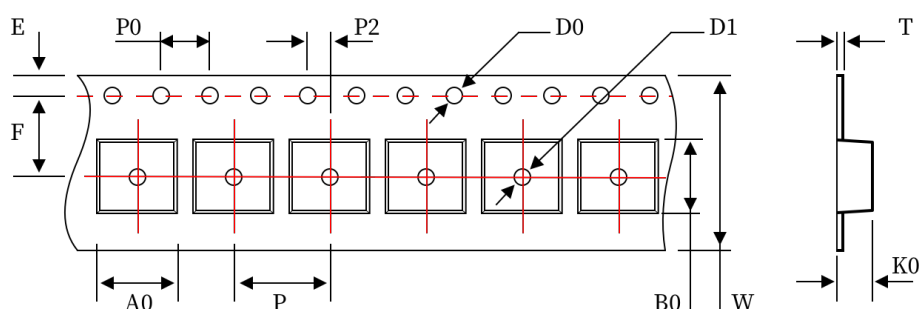
| TEST ITEM         | REQUIREMENTS                                                                                                                            | TEST METHODS AND REMARKS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Thermal Shock     | <ol style="list-style-type: none"> <li>No visible mechanical damage</li> <li>Inductance change: Within <math>\pm 10\%</math></li> </ol> | <ol style="list-style-type: none"> <li>Temperature and time: -40°C for <math>30 \pm 3</math> min → 125°C for <math>30 \pm 3</math> min, please refer to Fig-2</li> <li>Transforming interval: Max. 3 Min</li> <li>Tested cycle: 1000 cycles</li> <li>The specimen shall be stored at standard atmospheric conditions for 1 hour, after which the measurement shall be made.</li> </ol>  <p>Fig-2</p>                    |
| Salt Spray        | <ol style="list-style-type: none"> <li>No visible mechanical damage</li> <li>Inductance change: Within <math>\pm 10\%</math></li> </ol> | <ol style="list-style-type: none"> <li>Salt concentration: <math>(5 \pm 1)\%</math> (mass percent)</li> <li>pH value: 6.5 - 7.2</li> <li>Temperature: <math>35 \pm 2</math> °C</li> <li>humidity: 85%</li> <li>time: 24 hours</li> <li>in normal temperature and humidity for 1 ~ 2 hours, testing inductance, the inductance value change can not be more than before test <math>\pm 10\%</math>.</li> </ol>                                                                                             |
| Terminal Strength | <ol style="list-style-type: none"> <li>The peak thrust is greater than 10N</li> </ol>                                                   | <ol style="list-style-type: none"> <li>The electrode of the inductor is soldered to the PCB, to Fig-3 Then apply a force in the X direction of the arrow.</li> <li>10N force.</li> <li>Keep time: <math>10(\pm 1)</math>s</li> <li>The first three tests were OK, and the force was applied until the peak value of the product peeling. The test speed was set in the range of 3 ~ 8mm/min.</li> </ol>  <p>Fig-3</p> |

### PACKAGING INFORMATION

#### REEL DIMENSION (mm)



#### TAPING DIMENSIONS (mm)



| Type     | Tape dimensions (mm) |                  |                  |                   |                   |                    |                    |                   |                   |                   |                   |                    |
|----------|----------------------|------------------|------------------|-------------------|-------------------|--------------------|--------------------|-------------------|-------------------|-------------------|-------------------|--------------------|
| Series   | W                    | P                | P0               | P2                | D0                | D1                 | T                  | A0                | B0                | K0                | E                 | F                  |
| NR252012 | 8.0<br>$\pm 0.1$     | 4.0<br>$\pm 0.1$ | 4.0<br>$\pm 0.1$ | 2.0<br>$\pm 0.05$ | 1.50<br>$\pm 0.1$ | 1.00<br>$\pm 0.05$ | 0.20<br>$\pm 0.05$ | 2.40<br>$\pm 0.1$ | 2.85<br>$\pm 0.1$ | 1.40<br>$\pm 0.1$ | 1.75<br>$\pm 0.1$ | 3.50<br>$\pm 0.05$ |

#### PACKAGING QUANTITY (Standard)

| Type     | Reel            | Inner Box                 | Carton Box                    |
|----------|-----------------|---------------------------|-------------------------------|
| NR252012 | 2000 pcs / Reel | 5 Reel / Box (10,000 pcs) | 10 Middle boxes (100,000 pcs) |

#### PEEL FORCE OF TOP COVER TAPE

The peel speed shall be about 300mm/minute

The peel force of top cover tape shall be between 0.1 to 1.3 N

