

# SMD Inductors(Coils) For Power Line(Wound)

Conformity to RoHS Directive

## NLC Series NLC453232

### FEATURES

- The NLC series feature low DC resistance and high current handling capacities, making them ideal for power supply line applications.
- The product has good heat durability that withstands lead-free compatible reflow soldering conditions.
- Lead-free material is used for the plating on the terminal.
- The product uses metal terminals, which realize excellent connection reliability.
- From 1 $\mu$ H to 330 $\mu$ H, all of the products in the E-12 series are K( $\pm$ 10%) tolerance products.
- It is a product conforming to RoHS directive.

### APPLICATIONS

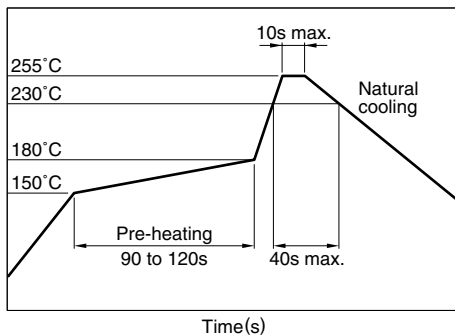
- Electronic equipment used in communication infrastructures including xDSL and mobile base stations.
- Audio-visual equipment including TVs and VCRs.
- Other electronic equipment including HDDs and ODDs.

### SPECIFICATIONS

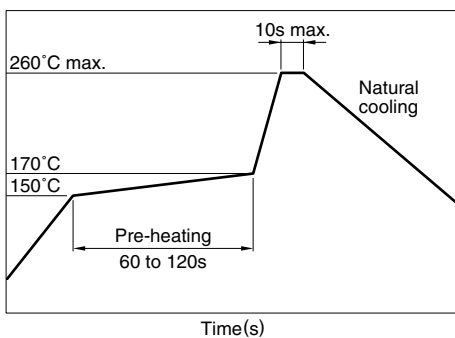
|                             |                                                    |
|-----------------------------|----------------------------------------------------|
| Operating temperature range | -40 to +105°C<br>[Including self-temperature rise] |
| Storage temperature range   | -40 to +105°C                                      |

### RECOMMENDED SOLDERING CONDITIONS

#### REFLOW SOLDERING



#### FLOW SOLDERING



### IRON SOLDERING

|                              |                               |
|------------------------------|-------------------------------|
| Tip temperature              | 300 to 350°C                  |
| Heating time                 | 3 seconds/soldering           |
| Soldering rod specifications | Output: 30W Tip diameter: 1mm |

- Based on the above conditions, use a maximum product temperature of 260°C and a maximum accumulated heating time of 10 seconds as a guideline.
- Please contact us for details.

### PRODUCT IDENTIFICATION

| NLC | 453232 | T-  | 2R2 | K   | - PF |
|-----|--------|-----|-----|-----|------|
| (1) | (2)    | (3) | (4) | (5) | (6)  |

(1) Series name

(2) Dimensions

|        |                       |
|--------|-----------------------|
| 453232 | 4.5×3.2×3.2mm (L×W×T) |
|--------|-----------------------|

(3) Packaging style

|   |               |
|---|---------------|
| T | Taping (reel) |
|---|---------------|

(4) Inductance value

|     |             |
|-----|-------------|
| 1R0 | 1 $\mu$ H   |
| 100 | 10 $\mu$ H  |
| 101 | 100 $\mu$ H |

(5) Inductance tolerance

|   |           |
|---|-----------|
| K | $\pm$ 10% |
|---|-----------|

(6) Lead-free compatible product

|    |                              |
|----|------------------------------|
| PF | Lead-free compatible product |
|----|------------------------------|

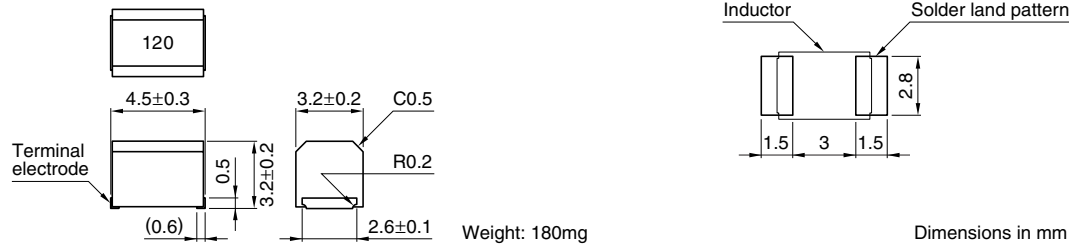
### PACKAGING STYLE AND QUANTITIES

| Packaging style | Quantity        |
|-----------------|-----------------|
| Taping          | 500 pieces/reel |

• Conformity to RoHS Directive: This means that, in conformity with EU Directive 2002/95/EC, lead, cadmium, mercury, hexavalent chromium, and specific bromine-based flame retardants, PBB and PBDE, have not been used, except for exempted applications.

• All specifications are subject to change without notice.

## SHAPES AND DIMENSIONS/RECOMMENDED PC BOARD PATTERN



## ELECTRICAL CHARACTERISTICS

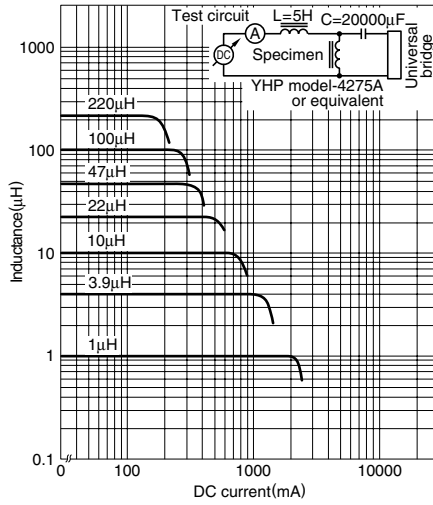
| Inductance<br>( $\mu$ H) | Inductance<br>tolerance | Q<br>min. | Test frequency<br>L, Q (MHz) | Self-resonant<br>frequency (MHz)min. | DC resistance<br>( $\Omega$ )max. | Rated current*<br>(mA)max. | Part No.           |
|--------------------------|-------------------------|-----------|------------------------------|--------------------------------------|-----------------------------------|----------------------------|--------------------|
| 1                        | $\pm 10\%$              | 10        | 7.96                         | 200                                  | 0.11                              | 1050                       | NLC453232T-1R0K-PF |
| 1.2                      | $\pm 10\%$              | 10        | 7.96                         | 160                                  | 0.12                              | 1000                       | NLC453232T-1R2K-PF |
| 1.5                      | $\pm 10\%$              | 10        | 7.96                         | 130                                  | 0.15                              | 950                        | NLC453232T-1R5K-PF |
| 1.8                      | $\pm 10\%$              | 10        | 7.96                         | 100                                  | 0.16                              | 900                        | NLC453232T-1R8K-PF |
| 2.2                      | $\pm 10\%$              | 10        | 7.96                         | 80                                   | 0.18                              | 850                        | NLC453232T-2R2K-PF |
| 2.7                      | $\pm 10\%$              | 10        | 7.96                         | 60                                   | 0.2                               | 800                        | NLC453232T-2R7K-PF |
| 3.3                      | $\pm 10\%$              | 10        | 7.96                         | 45                                   | 0.22                              | 750                        | NLC453232T-3R3K-PF |
| 3.9                      | $\pm 10\%$              | 10        | 7.96                         | 40                                   | 0.24                              | 700                        | NLC453232T-3R9K-PF |
| 4.7                      | $\pm 10\%$              | 10        | 7.96                         | 35                                   | 0.27                              | 650                        | NLC453232T-4R7K-PF |
| 5.6                      | $\pm 10\%$              | 10        | 7.96                         | 30                                   | 0.3                               | 650                        | NLC453232T-5R6K-PF |
| 6.8                      | $\pm 10\%$              | 10        | 7.96                         | 28                                   | 0.35                              | 600                        | NLC453232T-6R8K-PF |
| 8.2                      | $\pm 10\%$              | 10        | 7.96                         | 25                                   | 0.4                               | 600                        | NLC453232T-8R2K-PF |
| 10                       | $\pm 10\%$              | 10        | 2.52                         | 22                                   | 0.5                               | 550                        | NLC453232T-100K-PF |
| 12                       | $\pm 10\%$              | 10        | 2.52                         | 21                                   | 0.6                               | 500                        | NLC453232T-120K-PF |
| 15                       | $\pm 10\%$              | 10        | 2.52                         | 20                                   | 0.7                               | 450                        | NLC453232T-150K-PF |
| 18                       | $\pm 10\%$              | 10        | 2.52                         | 19                                   | 0.8                               | 400                        | NLC453232T-180K-PF |
| 22                       | $\pm 10\%$              | 10        | 2.52                         | 18                                   | 0.9                               | 370                        | NLC453232T-220K-PF |
| 27                       | $\pm 10\%$              | 10        | 2.52                         | 16                                   | 1.2                               | 330                        | NLC453232T-270K-PF |
| 33                       | $\pm 10\%$              | 10        | 2.52                         | 14                                   | 1.4                               | 300                        | NLC453232T-330K-PF |
| 39                       | $\pm 10\%$              | 10        | 2.52                         | 12                                   | 1.6                               | 280                        | NLC453232T-390K-PF |
| 47                       | $\pm 10\%$              | 10        | 2.52                         | 11.5                                 | 1.9                               | 260                        | NLC453232T-470K-PF |
| 56                       | $\pm 10\%$              | 10        | 2.52                         | 11                                   | 2.2                               | 240                        | NLC453232T-560K-PF |
| 68                       | $\pm 10\%$              | 10        | 2.52                         | 10                                   | 2.6                               | 220                        | NLC453232T-680K-PF |
| 82                       | $\pm 10\%$              | 10        | 2.52                         | 9                                    | 3.5                               | 200                        | NLC453232T-820K-PF |
| 100                      | $\pm 10\%$              | 20        | 0.796                        | 8                                    | 4                                 | 180                        | NLC453232T-101K-PF |
| 120                      | $\pm 10\%$              | 20        | 0.796                        | 7.5                                  | 4.5                               | 160                        | NLC453232T-121K-PF |
| 150                      | $\pm 10\%$              | 20        | 0.796                        | 7                                    | 6.5                               | 140                        | NLC453232T-151K-PF |
| 180                      | $\pm 10\%$              | 20        | 0.796                        | 6.5                                  | 7.5                               | 120                        | NLC453232T-181K-PF |
| 220                      | $\pm 10\%$              | 20        | 0.796                        | 5.5                                  | 9                                 | 120                        | NLC453232T-221K-PF |
| 270                      | $\pm 10\%$              | 20        | 0.796                        | 5                                    | 11                                | 100                        | NLC453232T-271K-PF |
| 330                      | $\pm 10\%$              | 20        | 0.796                        | 4                                    | 13                                | 90                         | NLC453232T-331K-PF |

\* Rated current: Value obtained when current flows and the temperature has risen to 20°C or when DC current flows and the initial value of inductance has fallen by 10%, whichever is smaller.

- Test equipment L, Q: YHP4194A IMPEDANCE ANALYZER+YHP16085A+YHP16093B+TF-1, or equivalent  
SRF: HP8753C NETWORK ANALYZER ( $Z_{in}=Z_{out}=50\Omega$ ), or equivalent  
Rdc: MATSUSHITA VP-2941A DIGITAL MILLIOHM METER, or equivalent

## TYPICAL ELECTRICAL CHARACTERISTICS

### INDUCTANCE CHANGE vs. DC SUPERPOSITION CHARACTERISTICS



### IMPEDANCE vs. FREQUENCY CHARACTERISTICS

