

# Inductors

## For General Applications

### SMD

## NL Series NL3225 Type

(We currently recommend that you switch to the NLV32 type.)

### FEATURES

- The NL series are available in ranging from 2016 to 5650 types.
- Utilizing a miniaturized winding structure, these products provide high Q characteristics.
- Inductance tolerance is  $\pm 5\%$  and  $\pm 10\%$ .

### APPLICATIONS

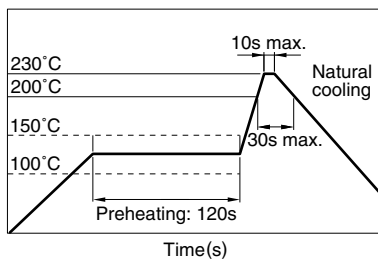
Personal computers, hard disk drives, and other electronic equipment.

### SPECIFICATIONS

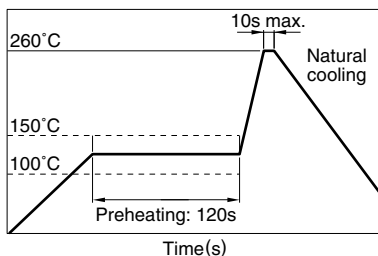
|                             |                                 |
|-----------------------------|---------------------------------|
| Operating temperature range | -40 to +85°C                    |
| Storage temperature range   | -40 to +85°C [Unit of products] |

### RECOMMENDED SOLDERING CONDITIONS

#### REFLOW SOLDERING



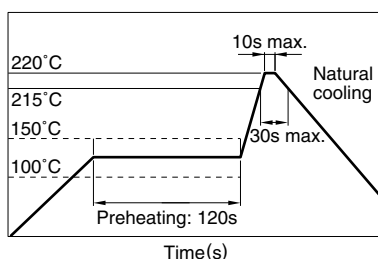
#### FLOW SOLDERING



#### IRON SOLDERING

Perform soldering at 250°C on 30W max. within 5 seconds.

#### VAPOR-PHASING



### FLUX AND CLEANING

Rosin-based flux is recommended.

#### Cleaning Conditions

|         |                                                                                                                         |
|---------|-------------------------------------------------------------------------------------------------------------------------|
| Solvent | Please select the solvent of this product avoiding a strong acid and a strong alkali, and considering the environments. |
| Time    | 2min max.                                                                                                               |

### PRODUCT IDENTIFICATION

|     |        |     |     |     |
|-----|--------|-----|-----|-----|
| NL  | 322522 | T-  | 2R2 | J   |
| (1) | (2)    | (3) | (4) | (5) |

(1)Series name

(2)Dimensions L×W×T

|        |               |
|--------|---------------|
| 322522 | 3.2×2.5×2.2mm |
|--------|---------------|

(3)Packaging style

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

(4)Inductance value

|     |      |
|-----|------|
| 1R0 | 1μH  |
| 330 | 33μH |

(5)Inductance tolerance

|   |            |
|---|------------|
| J | $\pm 5\%$  |
| K | $\pm 10\%$ |

### PACKAGING STYLE AND QUANTITIES

|                 |                  |
|-----------------|------------------|
| Packaging style | Quantity         |
| Taping          | 2000 pieces/reel |

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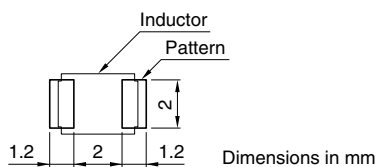
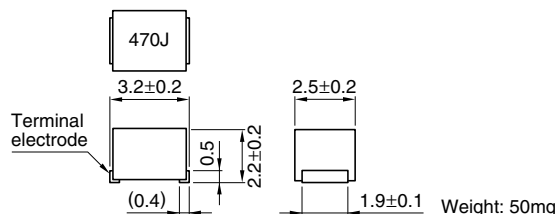
## For General Applications

### SMD

## NL Series NL3225 Type

(We currently recommend that you switch to the NLV32 type.)

### SHAPES AND DIMENSIONS/RECOMMENDED PC BOARD PATTERN



### ELECTRICAL CHARACTERISTICS

| Inductance (μH) | Inductance tolerance | Q min. | Test frequency L, Q (MHz) | Self-resonant frequency (MHz)min. | DC resistance (Ω)max. | Rated current (mA)max. | Part No.        |
|-----------------|----------------------|--------|---------------------------|-----------------------------------|-----------------------|------------------------|-----------------|
| 0.01            | ±10, ±5%             | 15     | 100                       | 2500                              | 0.13                  | 450                    | NL322522T-010X* |
| 0.012           | ±10, ±5%             | 17     | 100                       | 2300                              | 0.14                  | 450                    | NL322522T-012X  |
| 0.015           | ±10, ±5%             | 19     | 100                       | 2100                              | 0.16                  | 450                    | NL322522T-015X  |
| 0.018           | ±10, ±5%             | 21     | 100                       | 1900                              | 0.18                  | 450                    | NL322522T-018X  |
| 0.022           | ±10, ±5%             | 23     | 100                       | 1700                              | 0.2                   | 450                    | NL322522T-022X  |
| 0.027           | ±10, ±5%             | 23     | 100                       | 1500                              | 0.22                  | 450                    | NL322522T-027X  |
| 0.033           | ±10, ±5%             | 25     | 100                       | 1400                              | 0.24                  | 450                    | NL322522T-033X  |
| 0.039           | ±10, ±5%             | 25     | 100                       | 1300                              | 0.27                  | 450                    | NL322522T-039X  |
| 0.047           | ±10, ±5%             | 26     | 100                       | 1200                              | 0.3                   | 450                    | NL322522T-047X  |
| 0.056           | ±10, ±5%             | 26     | 100                       | 1100                              | 0.33                  | 450                    | NL322522T-056X  |
| 0.068           | ±10, ±5%             | 27     | 100                       | 1000                              | 0.36                  | 450                    | NL322522T-068X  |
| 0.082           | ±10, ±5%             | 27     | 100                       | 900                               | 0.4                   | 450                    | NL322522T-082X  |
| 0.1             | ±10, ±5%             | 28     | 100                       | 700                               | 0.44                  | 450                    | NL322522T-R10X  |
| 0.12            | ±10, ±5%             | 30     | 25.2                      | 500                               | 0.22                  | 450                    | NL322522T-R12X  |
| 0.15            | ±10, ±5%             | 30     | 25.2                      | 450                               | 0.25                  | 450                    | NL322522T-R15X  |
| 0.18            | ±10, ±5%             | 30     | 25.2                      | 400                               | 0.28                  | 450                    | NL322522T-R18X  |
| 0.22            | ±10, ±5%             | 30     | 25.2                      | 350                               | 0.32                  | 450                    | NL322522T-R22X  |
| 0.27            | ±10, ±5%             | 30     | 25.2                      | 320                               | 0.36                  | 450                    | NL322522T-R27X  |
| 0.33            | ±10, ±5%             | 30     | 25.2                      | 300                               | 0.4                   | 450                    | NL322522T-R33X  |
| 0.39            | ±10, ±5%             | 30     | 25.2                      | 250                               | 0.45                  | 450                    | NL322522T-R39X  |
| 0.47            | ±10, ±5%             | 30     | 25.2                      | 220                               | 0.5                   | 450                    | NL322522T-R47X  |
| 0.56            | ±10, ±5%             | 30     | 25.2                      | 180                               | 0.55                  | 450                    | NL322522T-R56X  |
| 0.68            | ±10, ±5%             | 30     | 25.2                      | 160                               | 0.6                   | 450                    | NL322522T-R68X  |
| 0.82            | ±10, ±5%             | 30     | 25.2                      | 140                               | 0.65                  | 450                    | NL322522T-R82X  |
| 1               | ±5%                  | 30     | 7.96                      | 120                               | 0.7                   | 400                    | NL322522T-1R0J  |
| 1.2             | ±5%                  | 30     | 7.96                      | 100                               | 0.75                  | 390                    | NL322522T-1R2J  |
| 1.5             | ±5%                  | 30     | 7.96                      | 85                                | 0.85                  | 370                    | NL322522T-1R5J  |
| 1.8             | ±5%                  | 30     | 7.96                      | 80                                | 0.9                   | 350                    | NL322522T-1R8J  |
| 2.2             | ±5%                  | 30     | 7.96                      | 75                                | 1                     | 320                    | NL322522T-2R2J  |
| 2.7             | ±5%                  | 30     | 7.96                      | 70                                | 1.1                   | 290                    | NL322522T-2R7J  |
| 3.3             | ±5%                  | 30     | 7.96                      | 60                                | 1.2                   | 260                    | NL322522T-3R3J  |
| 3.9             | ±5%                  | 30     | 7.96                      | 55                                | 1.3                   | 250                    | NL322522T-3R9J  |
| 4.7             | ±5%                  | 30     | 7.96                      | 50                                | 1.5                   | 220                    | NL322522T-4R7J  |
| 5.6             | ±5%                  | 30     | 7.96                      | 45                                | 1.6                   | 200                    | NL322522T-5R6J  |
| 6.8             | ±5%                  | 30     | 7.96                      | 40                                | 1.8                   | 180                    | NL322522T-6R8J  |
| 8.2             | ±5%                  | 30     | 7.96                      | 35                                | 2                     | 170                    | NL322522T-8R2J  |
| 10              | ±5%                  | 30     | 2.52                      | 30                                | 2.1                   | 150                    | NL322522T-100J  |
| 12              | ±5%                  | 30     | 2.52                      | 20                                | 2.5                   | 140                    | NL322522T-120J  |

\* X: Please specify the inductance tolerance, K(±10%) or J(±5%)

• Inductance tolerance is only standard.

• Test equipment L, Q: YHP4191A IMPEDANCE ANALYZER (16092A) [ $L \leq 0.1\mu\text{H}$ ]  
YHP4194A IMPEDANCE ANALYZER (16085A+16093B+TDK TF-1) [ $L \geq 0.12\mu\text{H}$ ]  
SRF:HP8753C NETWORK ANALYZER  
Rdc:MATSUSHITA VP-2941A DIGITAL MILLIOHM METER

# Inductors

## For General Applications

### SMD

## NL Series NL3225 Type

(We currently recommend that you switch to the NLV32 type.)

### ELECTRICAL CHARACTERISTICS

| Inductance (μH) | Inductance tolerance | Q min. | Test frequency L, Q (MHz) | Self-resonant frequency (MHz)min. | DC resistance (Ω)max. | Rated current (mA)max. | Part No.       |
|-----------------|----------------------|--------|---------------------------|-----------------------------------|-----------------------|------------------------|----------------|
| 15              | ±5%                  | 30     | 2.52                      | 20                                | 2.8                   | 130                    | NL322522T-150J |
| 18              | ±5%                  | 30     | 2.52                      | 20                                | 3.3                   | 120                    | NL322522T-180J |
| 22              | ±5%                  | 30     | 2.52                      | 20                                | 3.7                   | 110                    | NL322522T-220J |
| 27              | ±5%                  | 30     | 2.52                      | 20                                | 5                     | 80                     | NL322522T-270J |
| 33              | ±5%                  | 30     | 2.52                      | 17                                | 5.6                   | 70                     | NL322522T-330J |
| 39              | ±5%                  | 30     | 2.52                      | 16                                | 6.4                   | 65                     | NL322522T-390J |
| 47              | ±5%                  | 30     | 2.52                      | 15                                | 7                     | 60                     | NL322522T-470J |
| 56              | ±5%                  | 30     | 2.52                      | 13                                | 8                     | 55                     | NL322522T-560J |
| 68              | ±5%                  | 30     | 2.52                      | 12                                | 9                     | 50                     | NL322522T-680J |
| 82              | ±5%                  | 30     | 2.52                      | 11                                | 10                    | 45                     | NL322522T-820J |
| 100             | ±5%                  | 20     | 0.796                     | 10                                | 10                    | 40                     | NL322522T-101J |
| 120             | ±5%                  | 20     | 0.796                     | 10                                | 11                    | 70                     | NL322522T-121J |
| 150             | ±5%                  | 20     | 0.796                     | 8                                 | 15                    | 65                     | NL322522T-151J |
| 180             | ±5%                  | 20     | 0.796                     | 7                                 | 17                    | 60                     | NL322522T-181J |
| 220             | ±5%                  | 20     | 0.796                     | 7                                 | 21                    | 50                     | NL322522T-221J |
| 270             | ±5%                  | 20     | 0.796                     | 6                                 | 28                    | 45                     | NL322522T-271J |
| 330             | ±5%                  | 20     | 0.796                     | 5                                 | 34                    | 40                     | NL322522T-331J |
| 390             | ±5%                  | 20     | 0.796                     | 5                                 | 42                    | 35                     | NL322522T-391J |
| 470             | ±5%                  | 20     | 0.796                     | 4                                 | 40                    | 25                     | NL322522T-471J |

• Inductance tolerance is only standard.

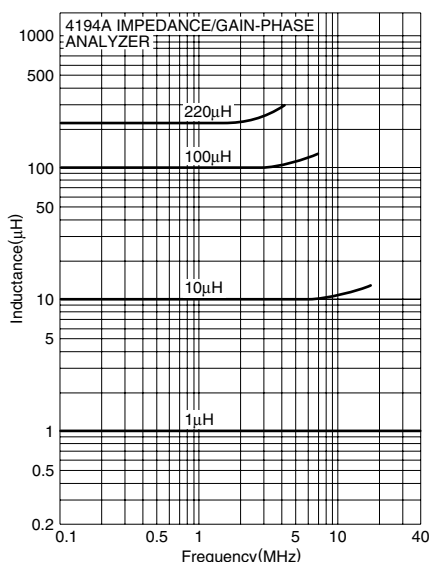
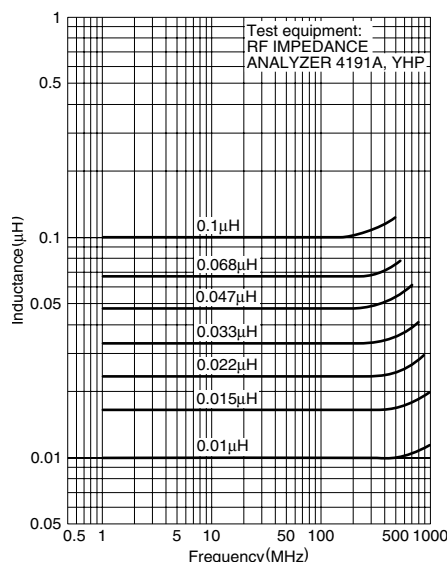
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Rdc: MATSUSHITA VP-2941A DIGITAL MILLIOHM METER

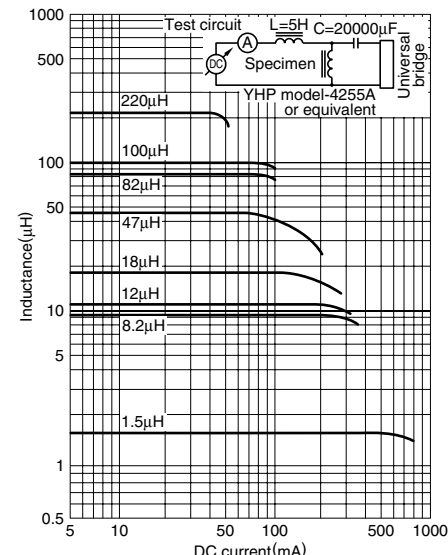
### TYPICAL ELECTRICAL CHARACTERISTICS

#### INDUCTANCE vs. FREQUENCY CHARACTERISTICS



#### INDUCTANCE CHANGE vs. DC

#### SUPERPOSITION CHARACTERISTICS



# Inductors

For General Applications

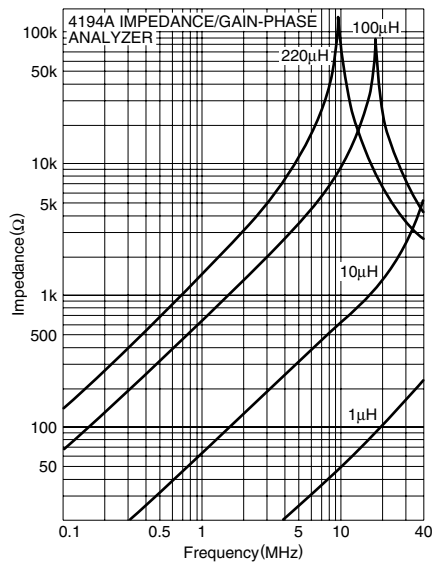
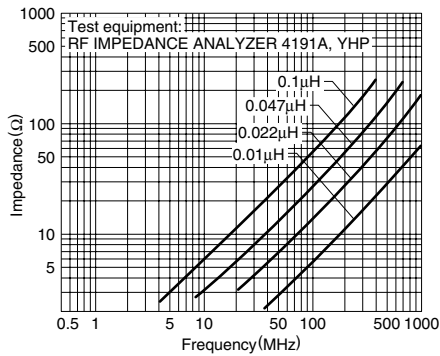
SMD

NL Series NL3225 Type

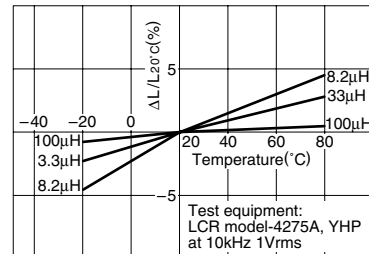
(We currently recommend that you switch to the NLV32 type.)

## TYPICAL ELECTRICAL CHARACTERISTICS

### IMPEDANCE vs. FREQUENCY CHARACTERISTICS



### INDUCTANCE CHANGE vs. TEMPERATURE CHARACTERISTICS



### Q vs. FREQUENCY CHARACTERISTICS

