

Inductors

For General Applications
SMD

NL Series NL3225 Type

FEATURES

- The NL series are available in 5 form factors ranging from 2016 to 5650.
- Utilizing a miniaturized winding structure, these products provide high Q characteristics.
- Inductance tolerance is ± 5 percent.

APPLICATIONS

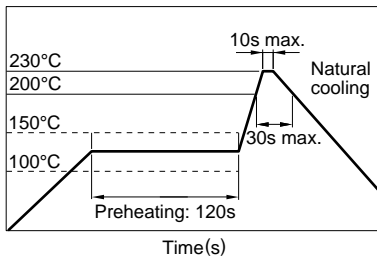
Personal computers, hard disk drives, and other electronic equipment.

SPECIFICATIONS

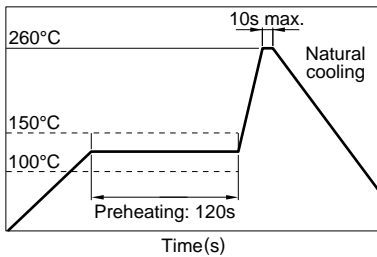
| | |
|-----------------------------|---------------------------------|
| Operating temperature range | -20 to +85°C |
| Storage temperature range | -40 to +85°C [Unit of products] |

RECOMMENDED SOLDERING CONDITIONS

REFLOW SOLDERING



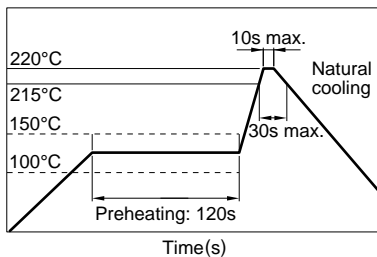
FLOW SOLDERING



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 | Chlorine-based solvent (Do not use acid or alkali solvents.) |
| Time | 2min max. |

PRODUCT IDENTIFICATION

| | | | | |
|-----|--------|-----|-----|-----|
| NL | 201614 | T | 2R2 | J |
| (1) | (2) | (3) | (4) | (5) |

(1) Series name

(2) Dimensions L×W×T

| | |
|--------|---------------|
| 201614 | 2.1×1.6×1.4mm |
| 252018 | 2.5×2.0×1.8mm |
| 322522 | 3.2×2.5×2.2mm |
| 453232 | 4.5×3.2×3.2mm |
| 565050 | 5.6×5.0×5.0mm |

(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

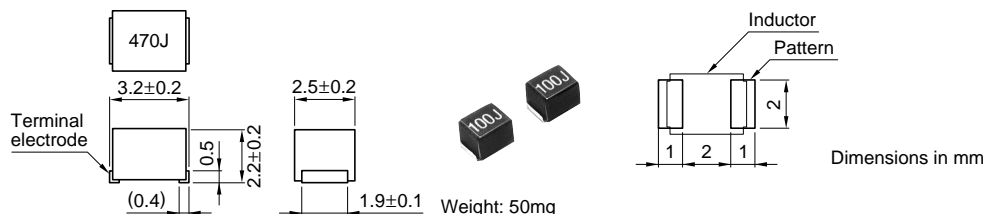
| Packaging style | Type | Quantity |
|-----------------|-----------|------------------|
| Taping | NL201614T | 2000 pieces/reel |
| | NL252018T | 2000 pieces/reel |
| | NL322522T | 2000 pieces/reel |
| | NL453232T | 500 pieces/reel |
| | NL565050T | 400 pieces/reel |

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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: 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

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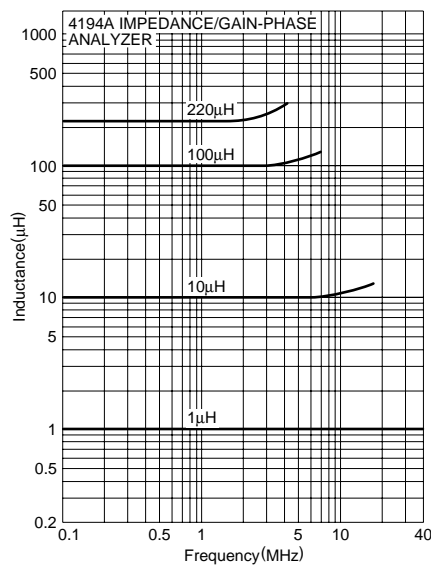
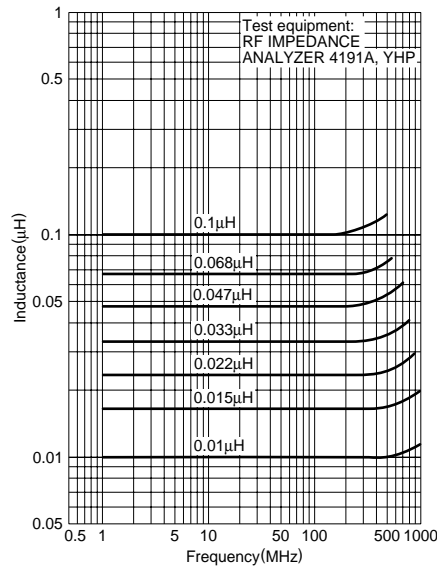
ELECTRICAL CHARACTERISTICS

| 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.
- Test equipment L, Q: YHP4194A IMPEDANCE ANALYZER (16085A+16093B+TDK TF-1) [$L \geq 0.12\mu\text{H}$]
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Rdc: MATSUSHITA VP-2941A DIGITAL MILLIOHM METER

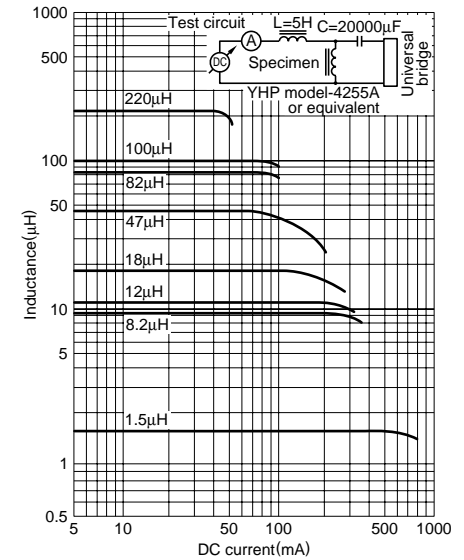
TYPICAL ELECTRICAL CHARACTERISTICS

INDUCTANCE vs. FREQUENCY CHARACTERISTICS



INDUCTANCE CHANGE vs. DC

SUPERPOSITION CHARACTERISTICS

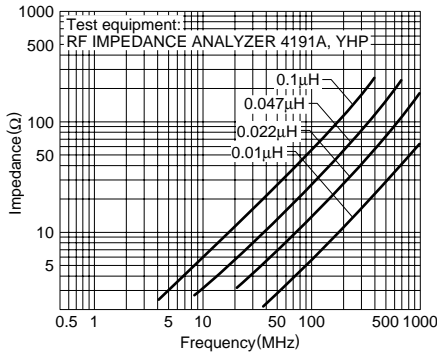


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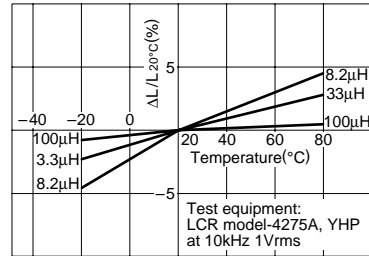
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TYPICAL ELECTRICAL CHARACTERISTICS IMPEDANCE vs. FREQUENCY CHARACTERISTICS



INDUCTANCE CHANGE vs. TEMPERATURE CHARACTERISTICS



Q vs. FREQUENCY CHARACTERISTICS

