

FEATURES

- Designed for High Frequency Applications
- Available in EIA 0201, 0402 and 0603 Case Sizes
- High Q and SRF Characteristics
- Tight Tolerance From C ($\pm 0.2\text{nH}$) to J ($\pm 5\%$)
- Tape and Reel Packaging for Automatic Pick & Place

**RoHS
Compliant**
includes all homogeneous materials

*See Part Number System for Details



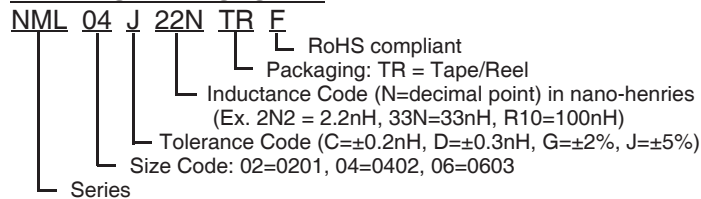
SPECIFICATIONS

| NML Multilayer High Frequency Inductors | | | |
|---|---------------------------------|-------------|-----------|
| Specifications | 0201 | 0402 | 0603 |
| Inductance Range | 0.3 ~ 100nH | 0.6 ~ 270nH | 1 ~ 470nH |
| Operating Temperature Range | -40°C ~ +85°C | | |
| Q-Factor, Self Resonant Frequency, DC Resistance, Rated DC Current and Inductance Tolerance | See Individual Product Listings | | |

ENVIRONMENTAL CHARACTERISTICS

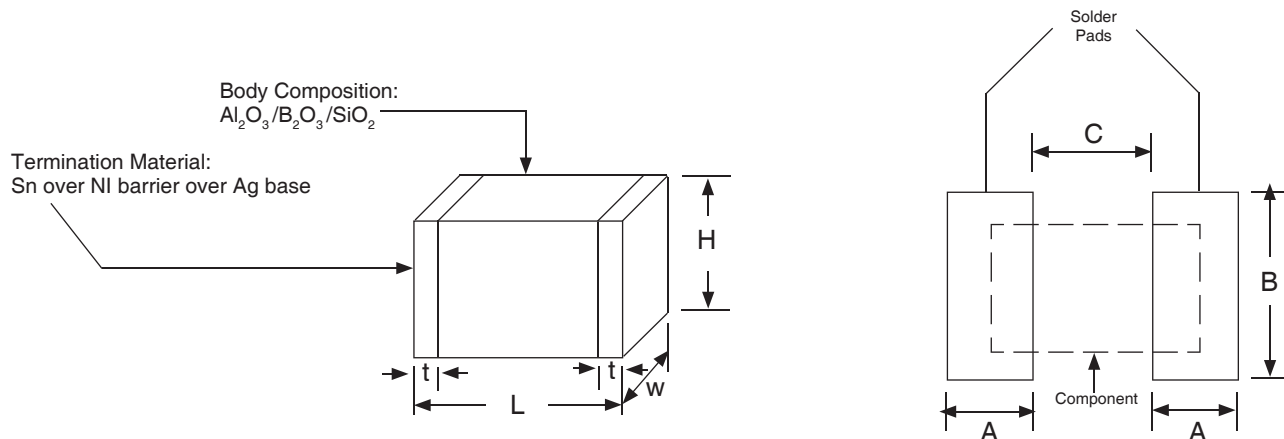
| Test | Specification | Test Method & Condition |
|----------------------------|---|---|
| Solderability | 75% Min. Coverage | After 5 Sec. Dip in +230°C Solder Pot (Post Flux) |
| Humidity Resistance | (1) No Evidence of Damage (2) Inductance Shall Be Within $\pm 10\%$ of Initial Value (3) Q Factor Shall Be Within $\pm 20\%$ of Initial Value | After 500 Hrs at +40°C and 90~95% RH (No Load) |
| Soldering Effect | | After 10 Sec. at +270°C (1 Minute, 150°C Pre-Heat) |
| Thermal Shock | | After 5 Cycles, +85°C to -40°C within 3 minutes |
| High Temperature Load Life | | After 500 hours at +85°C with Rated DC Current |
| Humidity Load Life | | After 500 Hrs at +40°C with 90~95% RH at Rated DC Current |

PART NUMBER SYSTEM



COMPONENT AND LAND PATTERN DIMENSIONS

| Series | L | W | H | t | A | B | C |
|--------|----------------|----------------|----------------|-----------|-------------|-------------|-------------|
| NML02 | 0.6 ± 0.03 | 0.3 ± 0.03 | 0.33 max. | 0.1 ~ 0.2 | 0.20 ~ 0.30 | 0.25 ~ 0.30 | 0.15 ~ 0.35 |
| NML04 | 1.0 ± 0.10 | 0.5 ± 0.10 | 0.5 ± 0.10 | 0.1 ~ 0.3 | 0.35 ~ 0.45 | 0.40 ~ 0.50 | 0.30 ~ 0.50 |
| NML06 | 1.6 ± 0.15 | 0.8 ± 0.15 | 0.8 ± 0.15 | 0.2 ~ 0.6 | 0.70 ~ 0.80 | 0.60 ~ 0.80 | 0.70 ~ 1.00 |



NML02 SERIES VALUES AND SPECIFICATIONS

| NIC P/N | 'L' Inductance (nH) | Tolerance (std)* | 'Q' Factor (min.) | L & Q Test Freq. (MHz) | SRF MHz (min.) | DC Resistance (ohms) Max. | Rated DC Current (mA) Max. |
|--------------|---------------------|------------------------------------|-------------------|------------------------|----------------|---------------------------|----------------------------|
| NML02_0N3TRF | 0.3 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 4 | 100 | 10,000 | 0.07 | 250 |
| NML02_0N4TRF | 0.4 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 4 | 100 | 10,000 | 0.07 | 250 |
| NML02_0N5TRF | 0.5 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 4 | 100 | 10,000 | 0.08 | 250 |
| NML02_0N6TRF | 0.6 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 4 | 100 | 10,000 | 0.08 | 250 |
| NML02_0N7TRF | 0.7 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 4 | 100 | 10,000 | 0.09 | 250 |
| NML02_0N8TRF | 0.8 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 4 | 100 | 10,000 | 0.10 | 250 |
| NML02_0N9TRF | 0.9 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 4 | 100 | 10,000 | 0.10 | 250 |
| NML02_1N0TRF | 1.0 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 4 | 100 | 10,000 | 0.14 | 250 |
| NML02_1N1TRF | 1.1 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 4 | 100 | 10,000 | 0.14 | 250 |
| NML02_1N2TRF | 1.2 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 4 | 100 | 10,000 | 0.14 | 250 |
| NML02_1N3TRF | 1.3 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 4 | 100 | 10,000 | 0.14 | 250 |
| NML02_1N5TRF | 1.5 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 4 | 100 | 10,000 | 0.18 | 230 |
| NML02_1N6TRF | 1.6 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 4 | 100 | 10,000 | 0.18 | 230 |
| NML02_1N8TRF | 1.8 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 4 | 100 | 10,000 | 0.19 | 200 |
| NML02_2N0TRF | 2.0 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 4 | 100 | 8,800 | 0.20 | 200 |
| NML02_2N1TRF | 2.1 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 4 | 100 | 8,800 | 0.20 | 200 |
| NML02_2N2TRF | 2.2 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 4 | 100 | 8,800 | 0.22 | 200 |
| NML02_2N4TRF | 2.4 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 4 | 100 | 8,300 | 0.24 | 200 |
| NML02_2N7TRF | 2.7 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 5 | 100 | 7,700 | 0.25 | 200 |
| NML02_3N0TRF | 3.0 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 5 | 100 | 7,200 | 0.28 | 180 |
| NML02_3N2TRF | 3.2 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 5 | 100 | 6,700 | 0.30 | 180 |
| NML02_3N3TRF | 3.3 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 5 | 100 | 6,700 | 0.30 | 180 |
| NML02_3N6TRF | 3.6 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 5 | 100 | 6,400 | 0.30 | 170 |
| NML02_3N9TRF | 3.9 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 5 | 100 | 6,000 | 0.30 | 170 |
| NML02_4N3TRF | 4.3 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 5 | 100 | 5,700 | 0.40 | 150 |
| NML02_4N7TRF | 4.7 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 5 | 100 | 5,300 | 0.40 | 150 |
| NML02_5N1TRF | 5.1 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 5 | 100 | 5,000 | 0.40 | 150 |
| NML02_5N6TRF | 5.6 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 5 | 100 | 4,200 | 0.40 | 150 |
| NML02_6N2TRF | 6.2 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 5 | 100 | 3,800 | 0.44 | 150 |
| NML02_6N8TRF | 6.8 | ±5% (J), ±3% (H) | 5 | 100 | 3,500 | 0.50 | 150 |
| NML02_7N5TRF | 7.5 | ±5% (J), ±3% (H) | 5 | 100 | 3,300 | 0.53 | 150 |
| NML02_8N2TRF | 8.2 | ±5% (J), ±3% (H) | 5 | 100 | 3,200 | 0.55 | 150 |
| NML02_9N1TRF | 9.1 | ±5% (J), ±3% (H) | 5 | 100 | 3,000 | 0.62 | 150 |
| NML02_10NTRF | 10 | ±5% (J), ±3% (H) | 5 | 100 | 2,800 | 0.65 | 150 |
| NML02_12NTRF | 12 | ±5% (J), ±3% (H) | 5 | 100 | 2,400 | 0.70 | 100 |
| NML02_15NTRF | 15 | ±5% (J), ±3% (H) | 5 | 100 | 2,200 | 0.80 | 100 |
| NML02_18NTRF | 18 | ±5% (J), ±3% (H) | 5 | 100 | 2,200 | 0.90 | 100 |
| NML02_22NTRF | 22 | ±5% (J), ±3% (H) | 5 | 100 | 1,800 | 1.20 | 100 |
| NML02_27NTRF | 27 | ±5% (J), ±3% (H) | 4 | 100 | 1,800 | 1.80 | 50 |
| NML02J33NTRF | 33 | ±5% (J) | 4 | 100 | 1,700 | 2.10 | 50 |
| NML02J39NTRD | 39 | ±5% (J) | 4 | 100 | 1,500 | 2.40 | 50 |
| NML02J47NTRF | 47 | ±5% (J) | 4 | 100 | 1,300 | 2.80 | 100 |
| NML02J56NTRF | 56 | ±5% (J) | 4 | 100 | 1,100 | 3.00 | 80 |
| NML02J68NTRF | 68 | ±5% (J) | 4 | 100 | 1,100 | 2.66 | 80 |
| NML02J82NTRF | 82 | ±5% (J) | 4 | 100 | 1,000 | 3.37 | 70 |
| NML02JR10TRF | 100 | ±5% (J) | 4 | 100 | 900 | 3.74 | 60 |

*Other tolerances available. Contact NIC for availability.



NML04 SERIES

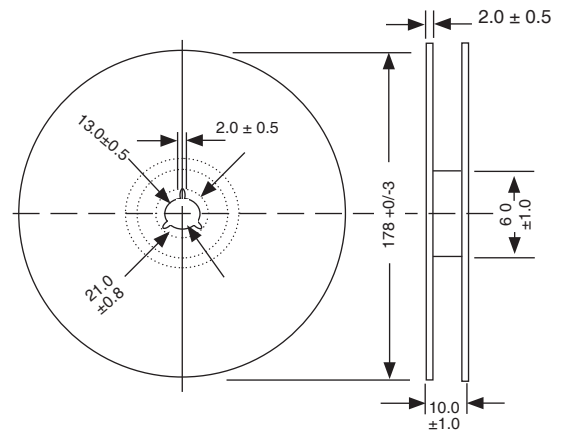
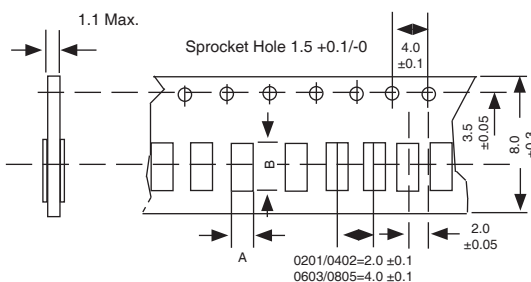
VALUES AND SPECIFICATIONS

| NIC P/N | 'L' Inductance (nH) | Tolerance (std)* | 'Q' Factor (min.) | L & Q Test Freq. (MHz) | SRF MHz (min.) | DC Resistance (ohms) Max. | Rated DC Current (mA) Max. |
|----------------|---------------------|------------------------------------|-------------------|------------------------|----------------|---------------------------|----------------------------|
| NML0402_0N6TRF | 0.6 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 8 | 100 | 10000 | 0.08 | 300 |
| NML0402_1N0TRF | 1.0 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 8 | 100 | 10000 | 0.08 | 300 |
| NML0402_1N1TRF | 1.1 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 8 | 100 | 10000 | 0.08 | 300 |
| NML0402_1N2TRF | 1.2 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 8 | 100 | 10000 | 0.09 | 300 |
| NML0402_1N3TRF | 1.3 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 8 | 100 | 10000 | 0.09 | 300 |
| NML0402_1N5TRF | 1.5 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 8 | 100 | 10000 | 0.10 | 300 |
| NML0402_1N6TRF | 1.6 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 8 | 100 | 10000 | 0.10 | 300 |
| NML0402_1N8TRF | 1.8 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 8 | 100 | 6000 | 0.12 | 300 |
| NML0402_2N0TRF | 2.0 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 8 | 100 | 6000 | 0.12 | 300 |
| NML0402_2N2TRF | 2.2 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 8 | 100 | 6000 | 0.13 | 300 |
| NML0402_2N4TRF | 2.4 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 8 | 100 | 6000 | 0.13 | 300 |
| NML0402_2N7TRF | 2.7 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 8 | 100 | 6000 | 0.16 | 300 |
| NML0402_3N0TRF | 3.0 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 8 | 100 | 6000 | 0.16 | 300 |
| NML0402_3N3TRF | 3.3 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 8 | 100 | 6000 | 0.16 | 300 |
| NML0402_3N6TRF | 3.6 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 8 | 100 | 5000 | 0.20 | 300 |
| NML0402_3N9TRF | 3.9 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 8 | 100 | 4000 | 0.20 | 300 |
| NML0402_4N3TRF | 4.3 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 8 | 100 | 4000 | 0.20 | 300 |
| NML0402_4N7TRF | 4.7 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 8 | 100 | 4000 | 0.20 | 300 |
| NML0402_5N1TRF | 5.1 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 8 | 100 | 4000 | 0.23 | 300 |
| NML0402_5N6TRF | 5.6 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 8 | 100 | 4000 | 0.23 | 300 |
| NML0402_6N2TRF | 6.2 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 8 | 100 | 3900 | 0.25 | 300 |
| NML0402_6N8TRF | 6.8 | ±5% (J), ±2% (G) | 8 | 100 | 3900 | 0.25 | 300 |
| NML0402_7N5TRF | 7.5 | ±5% (J), ±2% (G) | 8 | 100 | 3700 | 0.28 | 300 |
| NML0402_8N2TRF | 8.2 | ±5% (J), ±2% (G) | 8 | 100 | 3500 | 0.28 | 300 |
| NML0402_9N1TRF | 9.1 | ±5% (J), ±2% (G) | 8 | 100 | 3400 | 0.30 | 300 |
| NML0402_10NTRF | 10.0 | ±5% (J), ±2% (G) | 8 | 100 | 3200 | 0.31 | 300 |
| NML0402_12NTRF | 12.0 | ±5% (J), ±2% (G) | 8 | 100 | 2600 | 0.45 | 300 |
| NML0402_15NTRF | 15.0 | ±5% (J), ±2% (G) | 8 | 100 | 2300 | 0.55 | 300 |
| NML0402_18NTRF | 18.0 | ±5% (J), ±2% (G) | 8 | 100 | 2000 | 0.65 | 300 |
| NML0402_22NTRF | 22.0 | ±5% (J), ±2% (G) | 8 | 100 | 1600 | 0.70 | 300 |
| NML0402_27NTRF | 27.0 | ±5% (J), ±2% (G) | 8 | 100 | 1400 | 0.80 | 300 |
| NML0402_33NTRF | 33.0 | ±5% (J), ±2% (G) | 8 | 100 | 1200 | 0.90 | 200 |
| NML0402_39NTRF | 39.0 | ±5% (J), ±2% (G) | 8 | 100 | 1100 | 1.00 | 200 |
| NML0402_47NTRF | 47.0 | ±5% (J), ±2% (G) | 8 | 100 | 900 | 1.10 | 200 |
| NML0402_56NTRF | 56.0 | ±5% (J), ±2% (G) | 8 | 100 | 750 | 1.10 | 200 |
| NML0402_68NTRF | 68.0 | ±5% (J), ±2% (G) | 8 | 100 | 750 | 1.20 | 180 |
| NML0402_82NTRF | 82.0 | ±5% (J), ±2% (G) | 8 | 100 | 600 | 1.30 | 150 |
| NML0402_R10TRF | 100.0 | ±5% (J), ±2% (G) | 8 | 100 | 600 | 1.60 | 150 |
| NML0402_R12TRF | 120.0 | ±5% (J), ±2% (G) | 8 | 100 | 600 | 1.60 | 150 |
| NML0402_R15TRF | 150.0 | ±5% (J), ±2% (G) | 8 | 100 | 550 | 2.40 | 140 |
| NML0402_R18TRF | 180.0 | ±5% (J), ±2% (G) | 8 | 100 | 500 | 3.70 | 130 |
| NML0402_R22TRF | 220.0 | ±5% (J), ±2% (G) | 8 | 100 | 450 | 4.20 | 120 |
| NML0402_R27TRF | 270.0 | ±5% (J), ±2% (G) | 8 | 100 | 400 | 4.80 | 110 |

TAPE AND REEL DIMENSIONS (mm)

| TYPE | A | B | Reel Qty |
|-------|-------------|-------------|----------|
| NML02 | 0.38 ± 0.04 | 0.68 ± 0.04 | 15,000 |
| NML04 | 0.7 ± 0.05 | 1.2 ± 0.05 | 10,000 |
| NML06 | 1.0 ± 0.20 | 1.8 ± 0.20 | 4,000 |

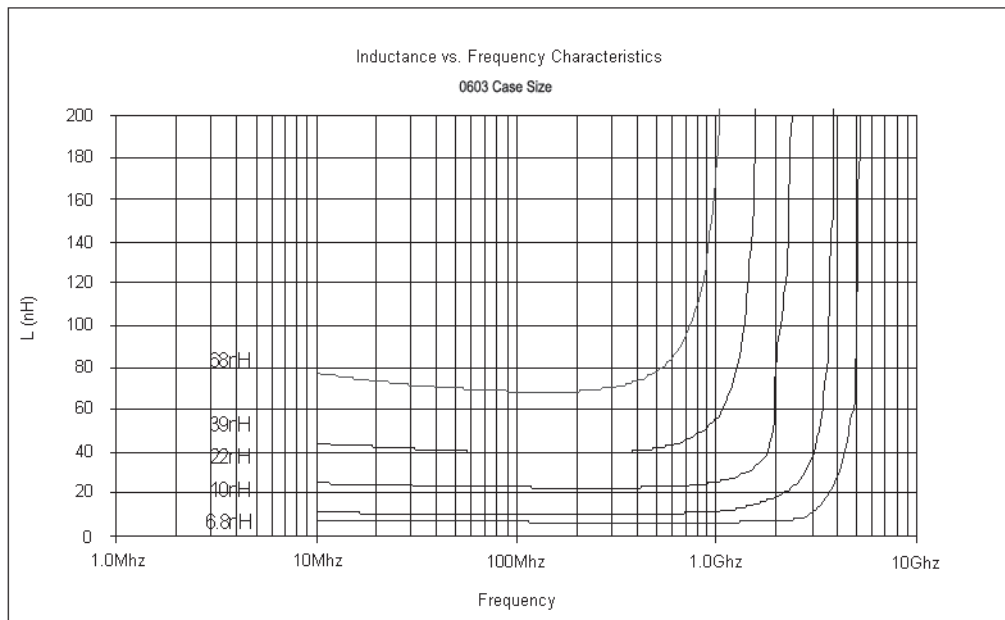
TAPE AND REEL PACKAGING (mm)



NML06 SERIES VALUES AND SPECIFICATIONS

| NIC P/N | 'L' Inductance (nH) | Tolerance (std)* | 'Q' Factor (min.) | L & Q Test Freq. (MHz) | SRF MHz (min.) | DC Resistance (ohms) Max. | Rated DC Current (mA) Max. |
|--------------|---------------------|------------------------------------|-------------------|------------------------|----------------|---------------------------|----------------------------|
| NML06_1N0TRF | 1 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 8 | 100 | 10000 | 0.05 | 1000 |
| NML06_1N2TRF | 1.2 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 8 | 100 | 10000 | 0.05 | 1000 |
| NML06_1N5TRF | 1.5 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 8 | 100 | 10000 | 0.10 | 1000 |
| NML06_1N8TRF | 1.8 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 8 | 100 | 10000 | 0.10 | 1000 |
| NML06_2N2TRF | 2.2 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 8 | 100 | 6000 | 0.10 | 1000 |
| NML06_2N7TRF | 2.7 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 10 | 100 | 6000 | 0.13 | 1000 |
| NML06_3N3TRF | 3.3 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 10 | 100 | 6000 | 0.13 | 1000 |
| NML06_3N9TRF | 3.9 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 10 | 100 | 6000 | 0.15 | 1000 |
| NML06_4N7TRF | 4.7 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 10 | 100 | 4000 | 0.20 | 1000 |
| NML06_5N6TRF | 5.6 | ±0.3nH (D), ±0.2nH (C), ±0.1nH (B) | 10 | 100 | 4000 | 0.23 | 600 |
| NML06_6N8TRF | 6.8 | ±5% (J), ±2% (G) | 10 | 100 | 4000 | 0.25 | 600 |
| NML06_8N2TRF | 8.2 | ±5% (J), ±2% (G) | 10 | 100 | 3500 | 0.28 | 600 |
| NML06_10NTRF | 10 | ±5% (J), ±2% (G) | 12 | 100 | 3200 | 0.30 | 600 |
| NML06_12NTRF | 12 | ±5% (J), ±2% (G) | 12 | 100 | 2600 | 0.35 | 600 |
| NML06_15NTRF | 15 | ±5% (J), ±2% (G) | 12 | 100 | 2300 | 0.40 | 600 |
| NML06_18NTRF | 18 | ±5% (J), ±2% (G) | 12 | 100 | 2000 | 0.45 | 600 |
| NML06_22NTRF | 22 | ±5% (J), ±2% (G) | 12 | 100 | 1600 | 0.50 | 600 |
| NML06_27NTRF | 27 | ±5% (J), ±2% (G) | 12 | 100 | 1400 | 0.55 | 600 |
| NML06_33NTRF | 33 | ±5% (J), ±2% (G) | 12 | 100 | 1200 | 0.60 | 600 |
| NML06_39NTRF | 39 | ±5% (J), ±2% (G) | 12 | 100 | 1100 | 0.65 | 500 |
| NML06_47NTRF | 47 | ±5% (J), ±2% (G) | 12 | 100 | 900 | 0.70 | 500 |
| NML06_56NTRF | 56 | ±5% (J), ±2% (G) | 12 | 100 | 900 | 0.75 | 500 |
| NML06_68NTRF | 68 | ±5% (J), ±2% (G) | 12 | 100 | 700 | 0.85 | 400 |
| NML06_82NTRF | 82 | ±5% (J), ±2% (G) | 12 | 100 | 600 | 0.95 | 300 |
| NML06_R10TRF | 100 | ±5% (J), ±2% (G) | 12 | 100 | 600 | 1.00 | 300 |
| NML06_R12TRF | 120 | ±5% (J), ±2% (G) | 8 | 50 | 500 | 1.20 | 300 |
| NML06_R15TRF | 150 | ±5% (J), ±2% (G) | 8 | 50 | 500 | 1.20 | 300 |
| NML06_R18TRF | 180 | ±5% (J), ±2% (G) | 8 | 50 | 400 | 1.30 | 300 |
| NML06_R22TRF | 220 | ±5% (J), ±2% (G) | 8 | 50 | 400 | 1.50 | 300 |
| NML06_R24TRF | 240 | ±5% (J), ±2% (G) | 8 | 50 | 400 | 1.70 | 200 |
| NML06_R27TRF | 270 | ±5% (J), ±2% (G) | 8 | 50 | 400 | 1.90 | 150 |
| NML06_R33TRF | 330 | ±5% (J), ±2% (G) | 8 | 50 | 350 | 2.10 | 150 |
| NML06_R39TRF | 390 | ±5% (J), ±2% (G) | 8 | 50 | 350 | 2.30 | 150 |
| NML06_R47TRF | 470 | ±5% (J), ±2% (G) | 8 | 50 | 300 | 2.60 | 150 |

Performance Curves



Performance Curves

