

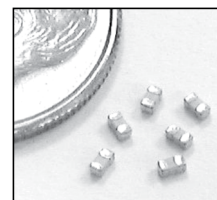
FEATURES

- Designed for High Frequency Applications
- Available in EIA 0201, 0402 and 0603 Case Sizes
- High Q and SRF Characteristics
- Tight Tolerance From B ($\pm 0.1\text{nH}$) 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	-55°C ~ +125°C		-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 0201 & 0402: -55°C ~ +125°C within 3 minutes 0603: -40°C ~ +85°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

NML 04 J 22N TR F

RoHS compliant

Packaging: TR = Tape/Reel

Inductance Code (N=decimal point) in nano-henries
(Ex. 2N2 = 2.2nH, 33N=33nH, R10=100nH)

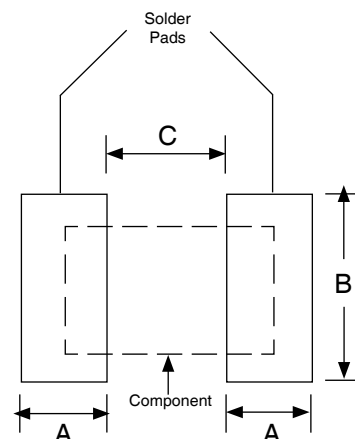
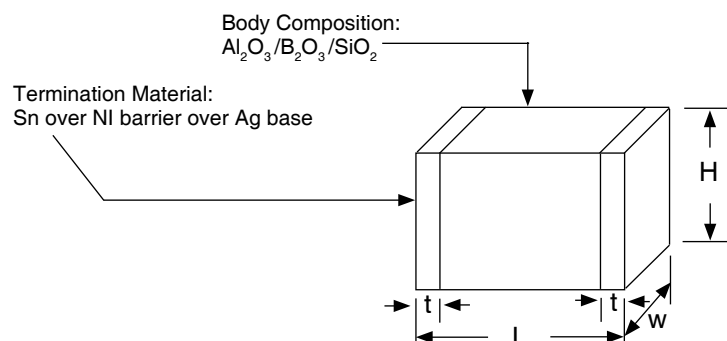
Tolerance Code (C= $\pm 0.2\text{nH}$, D= $\pm 0.3\text{nH}$, G= $\pm 2\%$, J= $\pm 5\%$)

Size Code: 02=0201, 04=0402, 06=0603

Series

COMPONENT AND LAND PATTERN DIMENSIONS

Series	L	W	H	t	A	B	C
NML02	0.6 $\pm$ 0.03	0.3 $\pm$ 0.03	0.33 max.	0.1 ~ 0.2	0.20 ~ 0.30	0.25 ~ 0.30	0.15 ~ 0.35
NML04	1.0 $\pm$ 0.10	0.5 $\pm$ 0.10	0.5 $\pm$ 0.10	0.1 ~ 0.3	0.35 ~ 0.45	0.40 ~ 0.50	0.30 ~ 0.50
NML06	1.6 $\pm$ 0.15	0.8 $\pm$ 0.15	0.8 $\pm$ 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

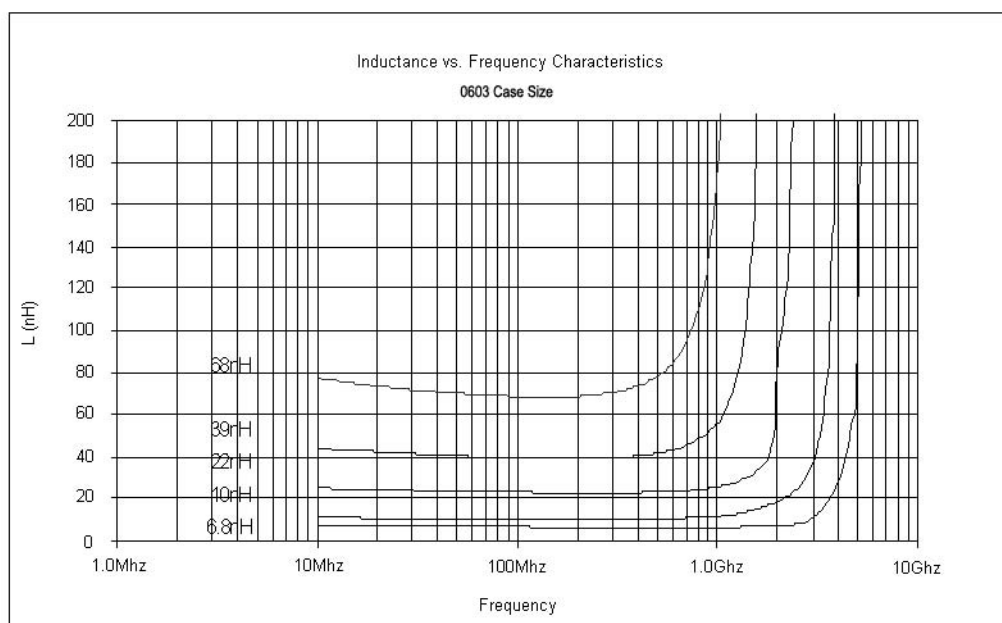
NIC P/N	'L' Inductance (nH)	Tolerance (std)*	'Q' Factor (min.)	L & Q Test Freq. (MHz)	SRF MHz (min.)	DC Resistance (ohms) Max.	Rated DC Current (mA) Max.
NML04_0N6TRF	0.6	±0.3nH (D), ±0.2nH (C), ±0.1nH (B)	8	100	10000	0.08	300
NML04_1N0TRF	1.0	±0.3nH (D), ±0.2nH (C), ±0.1nH (B)	8	100	10000	0.08	300
NML04_1N1TRF	1.1	±0.3nH (D), ±0.2nH (C), ±0.1nH (B)	8	100	10000	0.08	300
NML04_1N2TRF	1.2	±0.3nH (D), ±0.2nH (C), ±0.1nH (B)	8	100	10000	0.09	300
NML04_1N3TRF	1.3	±0.3nH (D), ±0.2nH (C), ±0.1nH (B)	8	100	10000	0.09	300
NML04_1N5TRF	1.5	±0.3nH (D), ±0.2nH (C), ±0.1nH (B)	8	100	10000	0.10	300
NML04_1N6TRF	1.6	±0.3nH (D), ±0.2nH (C), ±0.1nH (B)	8	100	10000	0.10	300
NML04_1N8TRF	1.8	±0.3nH (D), ±0.2nH (C), ±0.1nH (B)	8	100	6000	0.12	300
NML04_2N0TRF	2.0	±0.3nH (D), ±0.2nH (C), ±0.1nH (B)	8	100	6000	0.12	300
NML04_2N2TRF	2.2	±0.3nH (D), ±0.2nH (C), ±0.1nH (B)	8	100	6000	0.13	300
NML04_2N4TRF	2.4	±0.3nH (D), ±0.2nH (C), ±0.1nH (B)	8	100	6000	0.13	300
NML04_2N7TRF	2.7	±0.3nH (D), ±0.2nH (C), ±0.1nH (B)	8	100	6000	0.16	300
NML04_3N0TRF	3.0	±0.3nH (D), ±0.2nH (C), ±0.1nH (B)	8	100	6000	0.16	300
NML04_3N3TRF	3.3	±0.3nH (D), ±0.2nH (C), ±0.1nH (B)	8	100	6000	0.16	300
NML04_3N6TRF	3.6	±0.3nH (D), ±0.2nH (C), ±0.1nH (B)	8	100	5000	0.20	300
NML04_3N9TRF	3.9	±0.3nH (D), ±0.2nH (C), ±0.1nH (B)	8	100	4000	0.20	300
NML04_4N3TRF	4.3	±0.3nH (D), ±0.2nH (C), ±0.1nH (B)	8	100	4000	0.20	300
NML04_4N7TRF	4.7	±0.3nH (D), ±0.2nH (C), ±0.1nH (B)	8	100	4000	0.20	300
NML04_5N1TRF	5.1	±0.3nH (D), ±0.2nH (C), ±0.1nH (B)	8	100	4000	0.23	300
NML04_5N6TRF	5.6	±0.3nH (D), ±0.2nH (C), ±0.1nH (B)	8	100	4000	0.23	300
NML04_6N2TRF	6.2	±0.3nH (D), ±0.2nH (C), ±0.1nH (B)	8	100	3900	0.25	300
NML04_6N8TRF	6.8	±5% (J), ±2% (G)	8	100	3900	0.25	300
NML04_7N5TRF	7.5	±5% (J), ±2% (G)	8	100	3700	0.28	300
NML04_8N2TRF	8.2	±5% (J), ±2% (G)	8	100	3500	0.28	300
NML04_9N1TRF	9.1	±5% (J), ±2% (G)	8	100	3400	0.30	300
NML04_10NTRF	10.0	±5% (J), ±2% (G)	8	100	3200	0.31	300
NML04_12NTRF	12.0	±5% (J), ±2% (G)	8	100	2600	0.45	300
NML04_15NTRF	15.0	±5% (J), ±2% (G)	8	100	2300	0.55	300
NML04_18NTRF	18.0	±5% (J), ±2% (G)	8	100	2000	0.65	300
NML04_22NTRF	22.0	±5% (J), ±2% (G)	8	100	1600	0.70	300
NML04_27NTRF	27.0	±5% (J), ±2% (G)	8	100	1400	0.80	300
NML04_33NTRF	33.0	±5% (J), ±2% (G)	8	100	1200	0.90	200
NML04_39NTRF	39.0	±5% (J), ±2% (G)	8	100	1100	1.00	200
NML04_47NTRF	47.0	±5% (J), ±2% (G)	8	100	900	1.10	200
NML04_56NTRF	56.0	±5% (J), ±2% (G)	8	100	750	1.10	200
NML04_68NTRF	68.0	±5% (J), ±2% (G)	8	100	750	1.20	180
NML04_82NTRF	82.0	±5% (J), ±2% (G)	8	100	600	1.30	150
NML04_R10TRF	100.0	±5% (J), ±2% (G)	8	100	600	1.60	150
NML04_R12TRF	120.0	±5% (J), ±2% (G)	8	100	600	1.60	150
NML04_R15TRF	150.0	±5% (J), ±2% (G)	8	100	550	2.40	140
NML04_R18TRF	180.0	±5% (J), ±2% (G)	8	100	500	3.70	130
NML04_R22TRF	220.0	±5% (J), ±2% (G)	8	100	450	4.20	120
NML04_R27TRF	270.0	±5% (J), ±2% (G)	8	100	400	4.80	110

NML06 SERIES

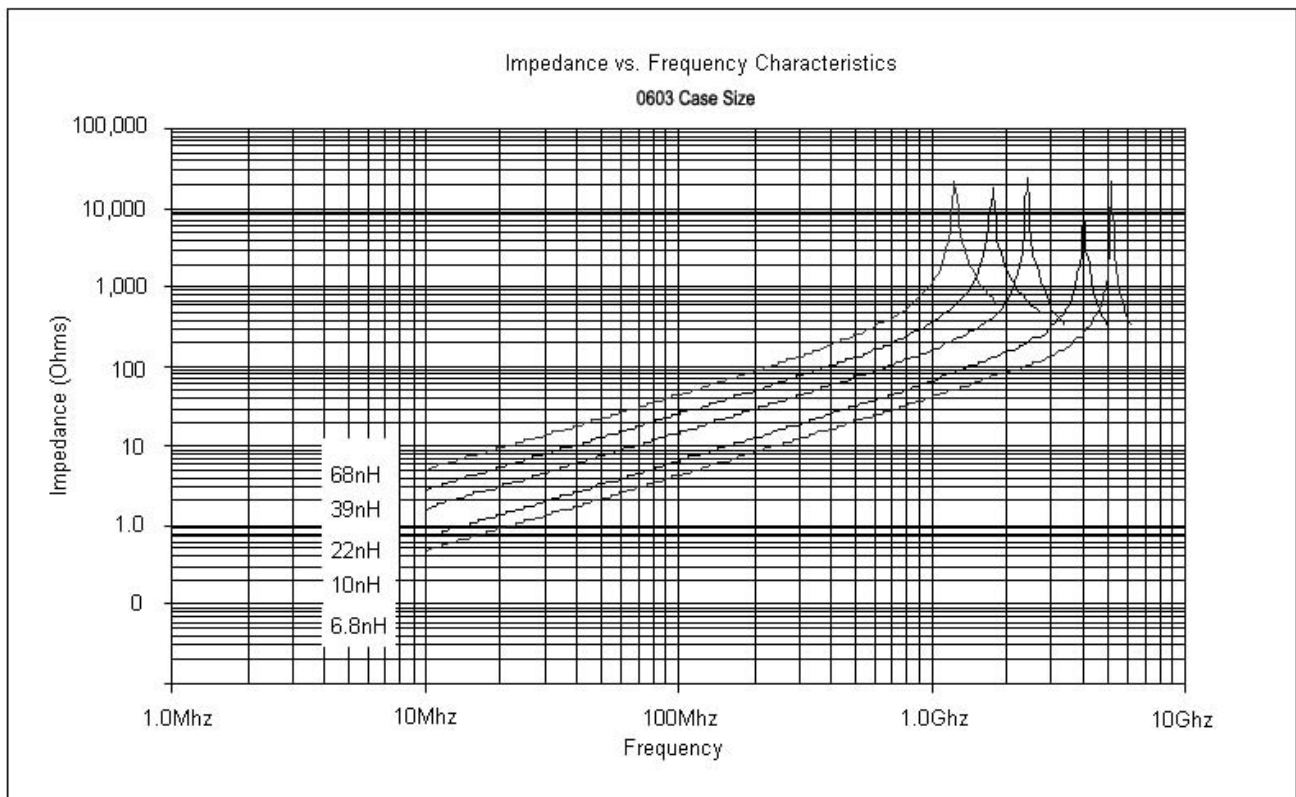
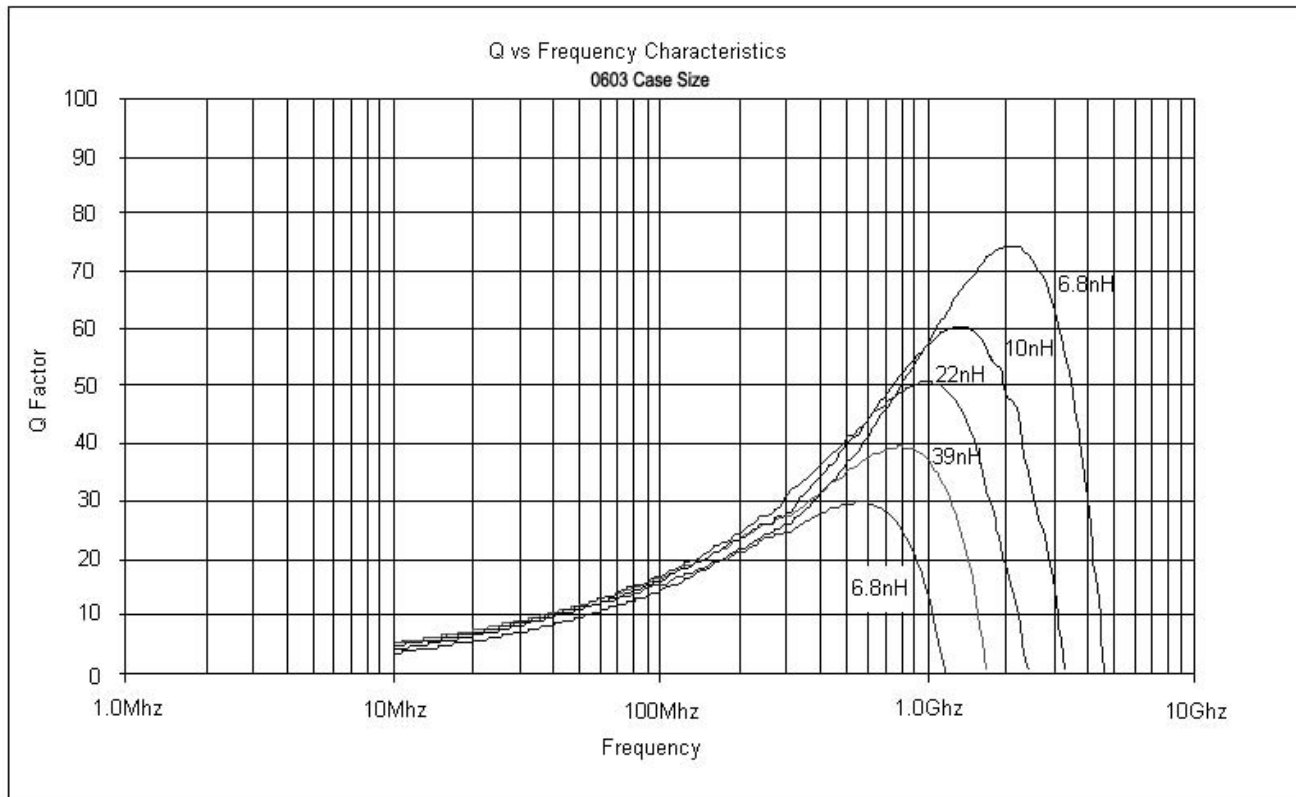
VALUES AND SPECIFICATIONS

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



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

Technical drawing of a sprocket hole assembly. The drawing shows a side view of a sprocket with a hole. The hole is labeled "Sprocket Hole 1.5 +0.1/-0". The hole is located at a distance of 1.1 Max. from the left edge. The hole is 4.0 ±0.1 wide. The hole is located at a distance of 3.5 ±0.05 from the bottom edge. The hole is located at a distance of 8.0 ±0.3 from the right edge. The hole is located at a distance of 2.0 ±0.05 from the right edge. The hole is located at a distance of 0.201/0.402 = 2.0 ±0.1 from the right edge. The hole is located at a distance of 0.603/0.805 = 4.0 ±0.1 from the right edge.

