Multilayer Chip Inductors

FEATURES

- Designed for High Frequency Applications
- Available in EIA 0402, 0603 and 0805Case Sizes
- High Q and SRF Characteristics
- Tight Tolerance D (0.3nH) and J (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	0402	0603	0805
Inductance Range	1.0 ~ 120nH	1.5 ~ 220nH	1.5 ~ 470nH
Inductance Tolerance	D(±0.3nH), J (±5%), K (±10%)		
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 ±10% of Initial Value (3) Q Factor Shall Be Within ± 20% of Initial Value	After 500 Hrs at 60°C and 90-95% RH (No Load)
Soldering Effect		After 10 Seconds at +260°C (3 Minute, 150°C Pre-Heat)
Low Frequency Vibration		
Thermal Shock		After 100 Cycles (+85°C then -40°C) 1 hour each
Low Temperature Storage		
High Temperature Load Life	(1) No Evidence of Damage (2) Inductance Shall Be Within ± 10% of Initial Value (3) Q Factor Shall Be Within ±20% of Initial Value	After 500 Hrs at 85°C with Rated DC Current
Humidity Load Life		After 500 Hrs at 60°C with 90-95% RH with Rated DC Current

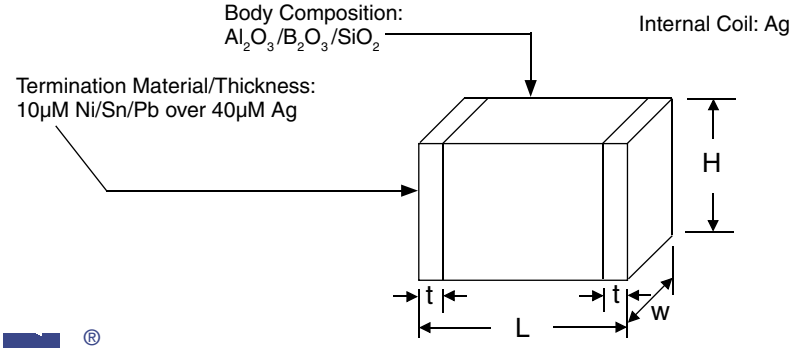
PART NUMBER SYSTEM

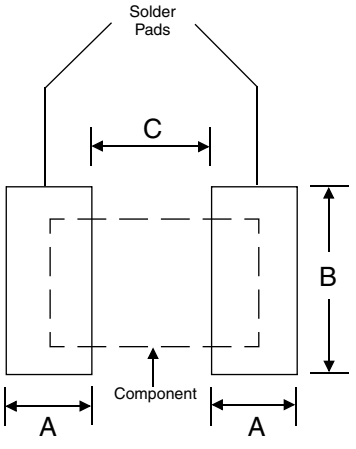
NML 04 J 22N TR F

- F — Pb-free/RoHS compliant
- TR — Packaging: TR = Tape/Reel
- 22N — Inductance Code (N=decimal point) in nano-henries (Ex. 2N2 = 2.2nH, 33N=33nH, R10=100nH)
- J — Tolerance Code (D=±0.3nH, J=±5%, K=±10%)
- 04 — Size Code: 04=0402, 06=0603, 08=0805
- NML — Series

PART AND LAND PATTERN DIMENSIONS

Series	L	W	H	t	A	B	C
NML04	1.0 ± 0.05	0.5 ± 0.05	0.5 ± 0.05	0.25 ± 0.1	0.50 ± 0.05	0.50 ± 0.05	0.50 ± 0.05
NML06	1.6 ± 0.10	0.8 ± 0.10	0.8 ± 0.15	0.30 ± 0.2	0.70 ± 0.10	0.70 ± 0.10	0.70 ± 0.10
NML08	2.0 ± 0.2	1.25 ± 0.20	0.85 ± 0.20 1.25 ± 0.20	0.50 ± 0.30	1.00 ± 0.10	1.00 ± 0.10	1.00 ± 0.10





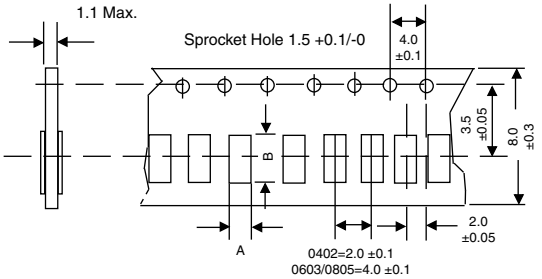
NML04 SERIES VALUES AND SPECIFICATIONS

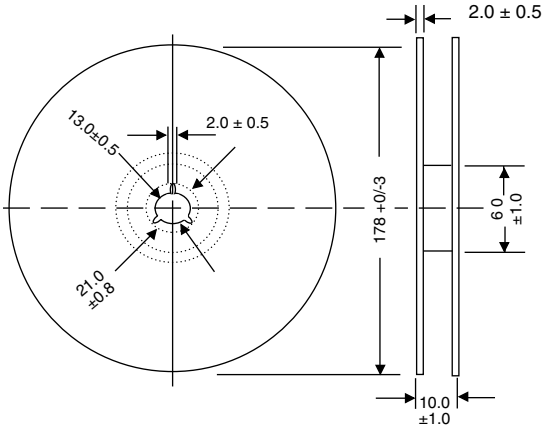
NIC P/N	'L' Inductance (nH)	Tolerance (std)	'Q' Factor (min.)	L & Q Test Freq.	SRF Mhz (min.)	DC Resistance (ohms) Max.	Rated DC Current (mA) Max.
NML04D1N0TRF	1.0	±0.3nH(D)	8.0	100 Mhz	4000	0.12	300
NML04D1N2TRF	1.2	±0.3nH(D)	8.0	100 Mhz	4000	0.12	300
NML04D1N5TRF	1.5	±0.3nH(D)	8.0	100 Mhz	4000	0.13	300
NML04D1N8TRF	1.8	±0.3nH(D)	8.0	100 Mhz	4000	0.14	300
NML04D2N0TRF	2.0	±0.3nH(D)	8.0	100 Mhz	4000	0.16	300
NML04D2N2TRF	2.2	±0.3nH(D)	8.0	100 Mhz	4000	0.16	300
NML04D2N7TRF	2.7	±0.3nH(D)	8.0	100 Mhz	4000	0.17	300
NML04D3N3TRF	3.3	±0.3nH(D)	8.0	100 Mhz	4000	0.19	300
NML04D3N9TRF	3.9	±0.3nH(D)	8.0	100 Mhz	4000	0.22	300
NML04D4N7TRF	4.7	±0.3nH(D)	8.0	100 Mhz	4000	0.24	300
NML04D5N6TRF	5.6	±0.3nH(D)	8.0	100 Mhz	4000	0.27	300
NML04J6N8TRF	6.8	±5% (J)	8.0	100 Mhz	3900	0.32	250
NML04J8N2TRF	8.2	±5% (J)	8.0	100 Mhz	3500	0.37	250
NML04J10NTRF	10	±5% (J)	8.0	100 Mhz	3200	0.42	250
NML04J12NTRF	12	±5% (J)	8.0	100 Mhz	2600	0.50	250
NML04J15NTRF	15	±5% (J)	8.0	100 Mhz	2300	0.55	250
NML04J18NTRF	18	±5% (J)	8.0	100 Mhz	2000	0.65	200
NML04J22NTRF	22	±5% (J)	8.0	100 Mhz	1600	0.80	200
NML04J27NTRF	27	±5% (J)	8.0	100 Mhz	1400	0.90	200
NML04J33NTRF	33	±5% (J)	9.0	100 Mhz	1200	1.00	200
NML04J39NTRF	39	±5% (J)	8.0	100 Mhz	1100	1.20	150
NML04J47NTRF	47	±5% (J)	8.0	100 Mhz	900	1.30	150
NML04J56NTRF	56	±5% (J)	8.0	100 Mhz	750	1.40	150
NML04J68NTRF	68	±5% (J)	8.0	100 Mhz	750	1.40	150
NML04J82NTRF	82	±5% (J)	8.0	100 Mhz	600	1.60	100
NML04JR10TRF	100	±5% (J)	8.0	100 Mhz	600	1.60	100
NML04JR12TRF	120	±5% (J)	8.0	100 Mhz	600	1.60	100

TAPE AND REEL DIMENSIONS (mm)

TYPE	A	B	Reel Qty
NML04	0.7 ± 0.05	1.2 ± 0.05	10,000
NML06	1.0 ± 0.20	1.8 ± 0.20	4,000
NML08	1.42 ± 0.20	2.25 ± 0.20	4,000

TAPE AND REEL PACKAGING (mm)

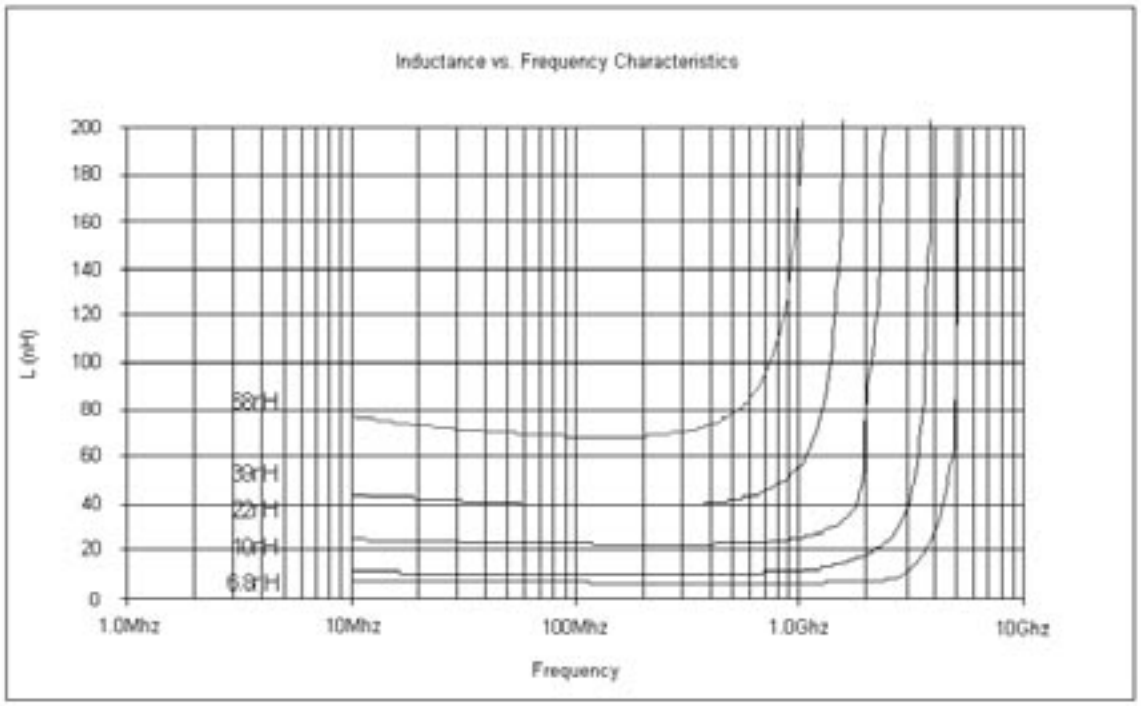




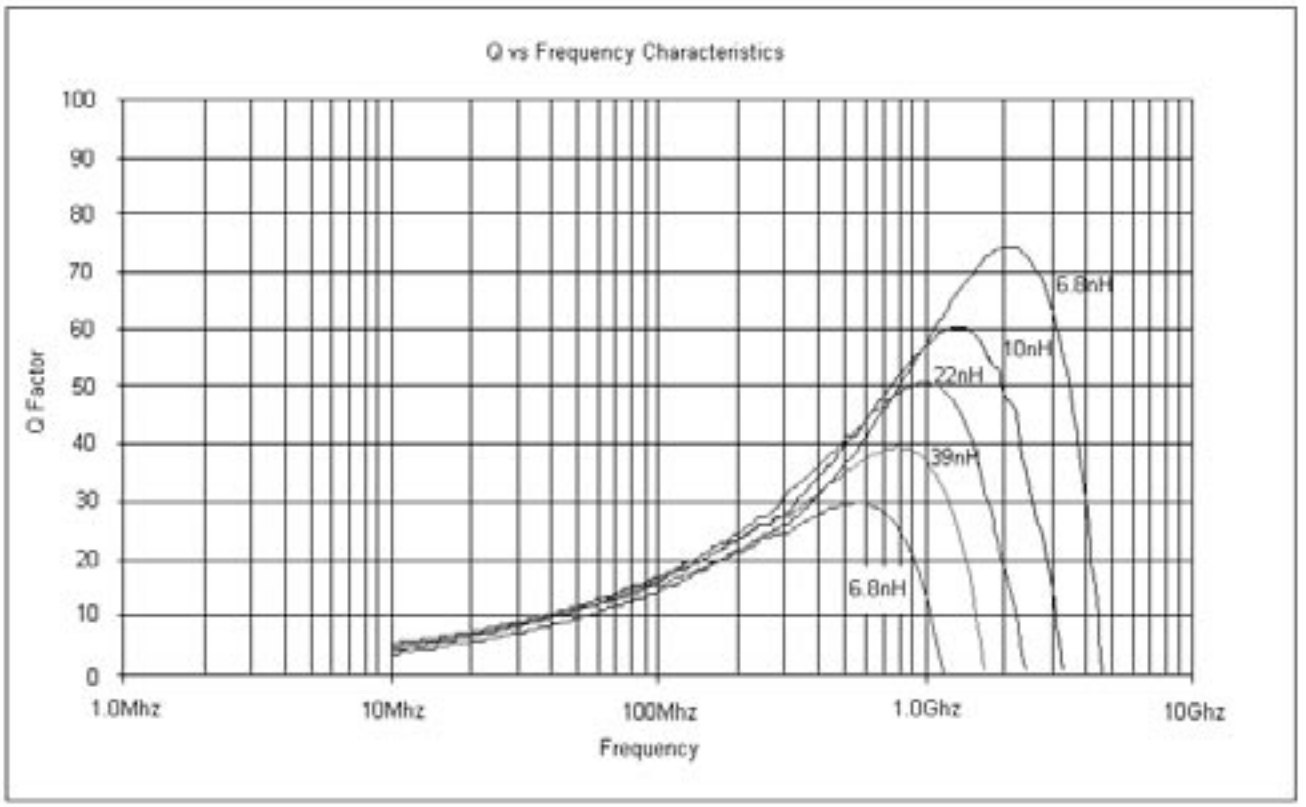
NML06 SERIES **VALUES AND SPECIFICATIONS**

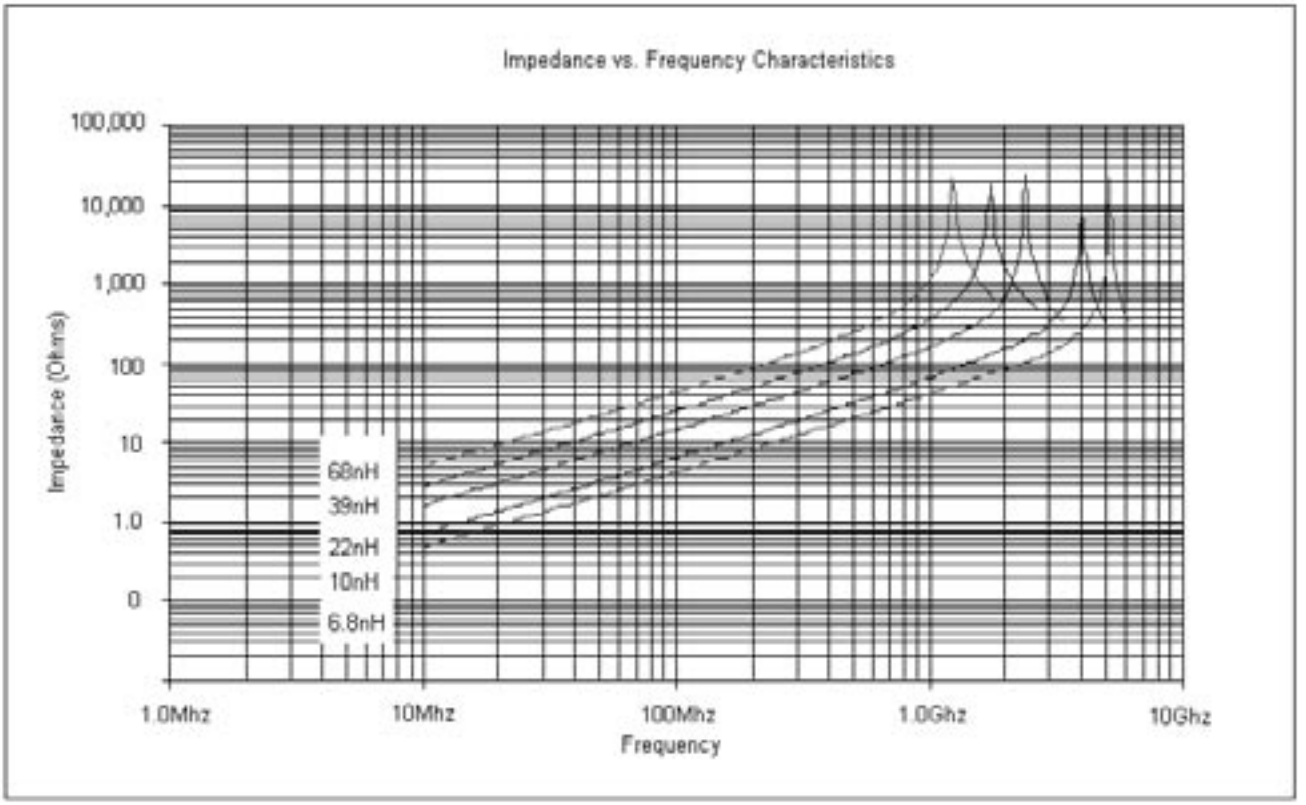
NIC P/N	'L' Inductance (nH)	Tolerance (std)	'Q' Factor (min.)	L & Q Test Freq.	SRF Mhz (min.)	DC Resistance (ohms) Max.	Rated DC Current (mA) Max.
NML06D1N5TRF	1.5	±0.3nH(D)	8.0	100 Mhz	4000	0.10	300
NML06D1N8TRF	1.8	±0.3nH(D)	8.0	100 Mhz	4000	0.10	300
NML06D2N2TRF	2.2	±0.3nH(D)	8.0	100 Mhz	4000	0.10	300
NML06D2N7TRF	2.7	±0.3nH(D)	10.0	100 Mhz	4000	0.10	300
NML06D3N3TRF	3.3	±0.3nH(D)	10.0	100 Mhz	4000	0.13	300
NML06D3N9TRF	3.9	±0.3nH(D)	10.0	100 Mhz	4000	0.15	300
NML06D4N7TRF	4.7	±0.3nH(D)	10.0	100 Mhz	4000	0.20	300
NML06D5N6TRF	5.6	±0.3nH(D)	10.0	100 Mhz	4000	0.23	300
NML06J6N8TRF	6.8	±5% (J)	10.0	100 Mhz	4000	0.25	300
NML06J8N2TRF	8.2	±5% (J)	10.0	100 Mhz	3500	0.28	300
NML06J10NTRF	10	±5% (J)	12.0	100 Mhz	3200	0.30	300
NML06J12NTRF	12	±5% (J)	12.0	100 Mhz	2600	0.35	300
NML06J15NTRF	15	±5% (J)	12.0	100 Mhz	2300	0.40	300
NML06J18NTRF	18	±5% (J)	12.0	100 Mhz	2000	0.45	300
NML06J22NTRF	22	±5% (J)	12.0	100 Mhz	1600	0.50	300
NML06J27NTRF	27	±5% (J)	12.0	100 Mhz	1400	0.55	300
NML06J33NTRF	33	±5% (J)	12.0	100 Mhz	1200	0.60	300
NML06J39NTRF	39	±5% (J)	12.0	100 Mhz	1100	0.65	300
NML06J47NTRF	47	±5% (J)	12.0	100 Mhz	900	0.70	300
NML06J56NTRF	56	±5% (J)	12.0	100 Mhz	900	0.75	300
NML06J68NTRF	68	±5% (J)	12.0	100 Mhz	700	0.80	300
NML06J82NTRF	82	±5% (J)	12.0	100 Mhz	600	0.85	300
NML06JR10TRF	100	±5% (J)	12.0	100 Mhz	600	0.90	300
NML06JR12TRF	120	±5% (J)	8.0	50 Mhz	500	1.00	300
NML06JR15TRF	150	±5% (J)	8.0	50 Mhz	500	1.20	300
NML06JR18TRF	180	±5% (J)	9.0	50 Mhz	400	1.30	300
NML06JR22TRF	220	±5% (J)	8.0	50 Mhz	400	1.50	300

Performance Curves



Performance Curves



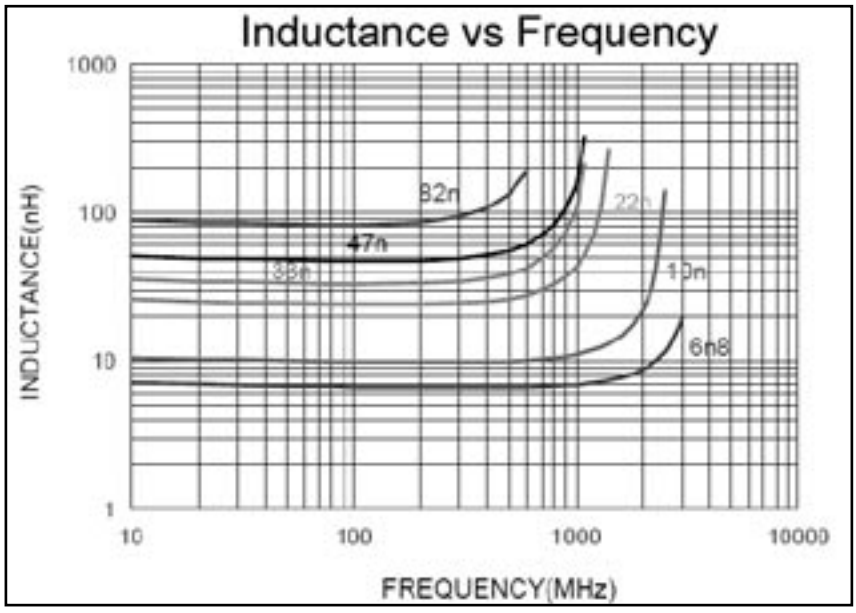


NML08 SERIES **VALUES AND SPECIFICATIONS**

NIC P/N	'L' Inductance (nh)	Tolerance (std)	'Q' Factor (min.)	L & Q Test Freq.	SRF MHz (min.)	DC Resistance (ohms) Max.	Rated DC Current (mA) Max.
NML08D1N5TRF	1.5	±0.3nH (D)	10	100MHz	4,000	0.10	300
NML08D1N8TRF	1.8	±0.3nH (D)	10		4,000	0.10	300
NML08D2N2TRF	2.2	±0.3nH (D)	10		4,000	0.10	300
NML08D2N7TRF	2.7	±0.3nH (D)	12		4,000	0.10	300
NML08J3N3TRF	3.3	±5% (J)	12		4,000	0.13	300
NML08J3N9TRF	3.9	±5% (J)	12		4,000	0.15	300
NML08J4N7TRF	4.7	±5% (J)	12		3,500	0.20	300
NML08J5N6TRF	5.6	±5% (J)	15		3,200	0.23	300
NML08J6N8TRF	6.8	±5% (J)	15		2,800	0.25	300
NML08J8N2TRF	8.2	±5% (J)	15		2,400	0.28	300
NML08J10NTRF	10	±5% (J)	15		2,100	0.30	300
NML08J12NTRF	12	±5% (J)	15		1,900	0.35	300
NML08J15NTRF	15	±5% (J)	15		1,600	0.40	300
NML08J18NTRF	18	±5% (J)	15		1,500	0.45	300
NML08J22NTRF	22	±5% (J)	18		1,400	0.50	300
NML08J27NTRF	27	±5% (J)	18		1,300	0.55	300
NML08J33NTRF	33	±5% (J)	18		1,200	0.60	300
NML08J39NTRF	39	±5% (J)	18		1,000	0.65	300
NML08J47NTRF	47	±5% (J)	18		900	0.70	300
NML08J56NTRF	56	±5% (J)	18		800	0.75	300
NML08J68NTRF	68	±5% (J)	18		700	0.80	300
NML08J82NTRF	82	±5% (J)	18		600	0.90	300
NML08JR10TRF	100*	±5% (J)	18		600	0.90	300
NML08JR12TRF	120*	±5% (J)	13	50MHz	500	0.95	300
NML08JR15TRF	150*	±5% (J)	13		500	1.00	300
NML08JR18TRF	180*	±5% (J)	13		400	1.10	300
NML08JR22TRF	220*	±5% (J)	12		350	1.20	300
NML08JR27TRF	270*	±5% (J)	12		300	1.30	300
NML08JR33TRF	330*	±5% (J)	12		250	1.40	300
NML08JR39TRF	390*	±5% (J)	10		250	1.30	300
NML08JR47TRF	470*	±5% (J)	10		200	1.50	300

*These values have a 1.25mm ±0.20mm height dimension

Performance Curves



Performance Curves