

FEATURES

- MULTILAYER CHIP INDUCTOR
- SIZES 0402 AND 0603
- HIGH SELF RESONANT FREQUENCY
- REFLOW SOLDERING APPLICABLE
- TAPE & REEL PACKAGING FOR AUTOMATIC PICK-PLACE

CHARACTERISTICS

Case Size	NMLS04	NMLS06
Inductance Range	0.6nH ~ 360nH	1.0nH ~ 680nH
Temperature Range	-55°C ~ +125°C (Ambient + Self Heating)	
Temperature Rise at Irms	+20°C max.	
Q & SRF	See Specifications Tables	
Inductance Tolerance	B = ±0.1nH, C = ±0.2nH, D = ±0.3nH, G = ±3%, J = ±5%, K = ±10%	
Resistance to Solder Heat	260°C for 10 seconds	

DIMENSIONS (mm)

Case Size	L	W	T	a	Figure	
					≤10nH	≥12nH
NMLS04	1.00 ± 0.15	0.50 ± 0.15	0.50 ± 0.15	0.25 ± 0.1	1	2
NMLS06	1.60 ± 0.15	0.80 ± 0.15	0.80 ± 0.15	0.30 ± 0.2	2	
	1.65 ± 0.15					

LAND PATTERN DIMENSIONS (mm)

Case Size	A	B	C
NMLS04	0.45 ~ 0.55	0.40 ~ 0.50	0.45 ~ 0.55
NMLS06	0.65 ~ 0.75	0.65 ~ 0.75	0.95 ~ 1.05

Fig. 1

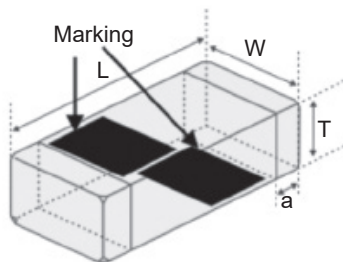
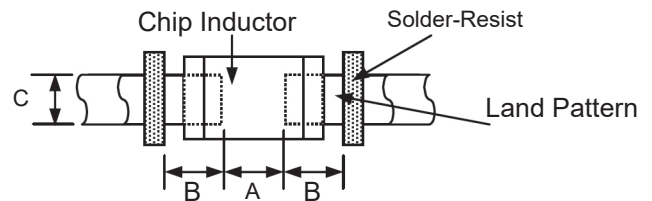
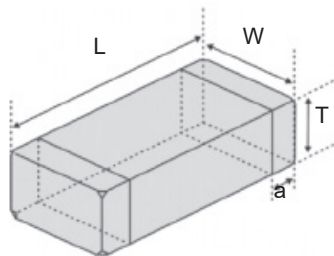
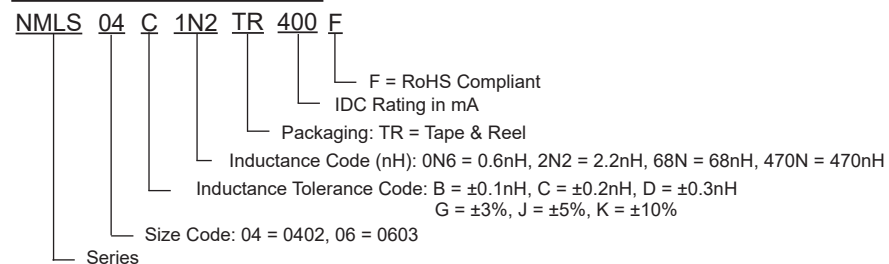


Fig. 2



PART NUMBER SYSTEM



NMLS Series

Surface Mount Chip Inductors



Part Number	Standard Values - NMLS04 Size (1.0 x 0.5 x 0.5mm)									
	Inductance Value (nH)	Value Tolerance	DC Resistance (Ω) Max.	DC Current (mA max)	Q (min.)	Q (typ.) at Frequency (MHz)			SRF (MHz min.)	Test Freq. L/Q (MHz)
						100	800	1,000		
NMLS04_0N6TR800F	0.6	B, C	0.1	800	4	6	35	41	10000	100
NMLS04_1N0TR400F	1.0	B, C	0.1	400	8	11	34	36	10000	100
NMLS04_1N1TR400F	1.1	B, C	0.1	400	8	11	34	36	10000	100
NMLS04_1N2TR400F	1.2	B, C	0.1	400	8	11	34	36	10000	100
NMLS04_1N3TR400F	1.3	B, C	0.1	400	8	11	34	36	10000	100
NMLS04_1N5TR300F	1.5	B, C	0.1	300	8	11	34	36	6000	100
NMLS04_1N6TR300F	1.6	B, C	0.1	300	8	11	32	35	6000	100
NMLS04_1N8TR300F	1.8	B, C	0.1	300	8	11	30	34	6000	100
NMLS04_2N0TR300F	2.0	B, C	0.2	300	8	10	29	33	6000	100
NMLS04_2N2TR300F	2.2	B, C	0.2	300	8	10	29	33	6000	100
NMLS04_2N4TR300F	2.4	B, C	0.2	300	8	10	29	32	6000	100
NMLS04_2N7TR300F	2.7	B, C	0.2	300	8	10	29	32	6000	100
NMLS04_3N0TR300F	3.0	B, C	0.2	300	8	10	29	32	6000	100
NMLS04_3N3TR300F	3.3	B, C	0.2	300	8	10	29	32	6000	100
NMLS04_3N6TR300F	3.6	B, C	0.2	300	8	10	28	31	4000	100
NMLS04_3N9TR300F	3.9	B, C	0.2	300	8	10	28	31	4000	100
NMLS04_4N3TR300F	4.3	B, C	0.2	300	8	10	28	31	4000	100
NMLS04_4N7TR300F	4.7	B, C	0.2	300	8	10	28	31	4000	100
NMLS04_5N1TR300F	5.1	B, C	0.3	300	8	10	28	30	4000	100
NMLS04_5N6TR300F	5.6	B, C	0.3	300	8	10	28	30	4000	100
NMLS04_6N2TR300F	6.2	B, C	0.3	300	8	10	27	30	3900	100
NMLS04_6N8TR300F	6.8	H, J, K	0.3	300	8	10	27	30	3900	100
NMLS04_7N5TR300F	7.5	H, J, K	0.4	300	8	10	27	30	3700	100
NMLS04_8N2TR300F	8.2	H, J, K	0.4	300	8	10	27	30	3600	100
NMLS04_9N1TR300F	9.1	H, J, K	0.4	300	8	10	27	30	3400	100
NMLS04_10NTR300F	10	H, J, K	0.4	300	8	10	27	30	3200	100
NMLS04_12NTR300F	12	H, J, K	0.5	300	8	10	26	29	2700	100
NMLS04_15NTR300F	15	H, J, K	0.5	300	8	10	26	28	2300	100
NMLS04_18NTR300F	18	H, J, K	0.6	300	8	10	25	27	2100	100
NMLS04_20NTR300F	20	H, J, K	0.6	300	8	10	25	26	2000	100
NMLS04_22NTR300F	22	H, J, K	0.6	300	8	10	25	25	1900	100
NMLS04_27NTR300F	27	H, J, K	0.7	300	8	10	25	23	1600	100
NMLS04_33NTR200F	33	H, J, K	0.8	200	8	10	22	22	1300	100
NMLS04_39NTR200F	39	H, J, K	1.0	200	8	10	22	19	1200	100
NMLS04_43NTR200F	43	H, J, K	1.1	200	8	10	21	16	1100	100
NMLS04_47NTR200F	47	H, J, K	1.1	200	8	10	21	16	1000	100
NMLS04_56NTR200F	56	H, J, K	1.2	200	8	10	18	13	750	100
NMLS04_68NTR180F	68	H, J, K	1.4	180	8	10	18	9	750	100
NMLS04_82NTR150F	82	H, J, K	2.4	150	8	10	13	/	750	100
NMLS04_100NTR150F	100	H, J, K	2.6	150	8	10	12	/	700	100
NMLS04_120NTR150F	120	H, J, K	2.8	150	8	10	/	/	600	100
NMLS04_150NTR100F	150	H, J, K	3.2	100	8	10	/	/	550	100
NMLS04_180NTR100F	180	H, J, K	3.7	100	8	10	/	/	500	100
NMLS04_220NTR100F	220	H, J, K	4.0	100	8	12	/	/	450	100
NMLS04_270NTR100F	270	H, J, K	4.5	100	8	12	/	/	400	100
NMLS04_300NTR100F	300	H, J, K	4.5	100	8	12	/	/	400	100
NMLS04_330NTR50F	330	H, J, K	7.0	50	6	8	/	/	350	100
NMLS04_360NTR50F	360	H, J, K	7.5	50	6	8	/	/	300	100

B = ± 0.1 nH, C = ± 0.2 nH, D = ± 0.3 nH, G = $\pm 3\%$, J = $\pm 5\%$, K = $\pm 10\%$

Performance Passives By Design

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Last Updated 11/14/2024. Specification subject to change without notice. Please check web site for latest information.

NMLS Series

Surface Mount Chip Inductors



Part Number	Standard Values - NMLS06 Size (1.60/1.65 x 0.8 x 0.8mm)									
	Inductance Value (nH)	Value Tolerance	DC Resistance (Ω) Max.	DC Current (mA max)	Q (min.)	Q (typ.) at Frequency (MHz)			SRF (MHz min.)	Test Freq. L/Q (MHz)
						100	800	1,000		
NMLS06_1N0TR500F	1.0	B, C, D	0.05	500	8	13	70	80	10000	100
NMLS06_1N2TR500F	1.2	B, C, D	0.05	500	8	13	60	70	10000	100
NMLS06_1N5TR500F	1.5	B, C, D	0.10	500	8	13	47	68	6000	100
NMLS06_1N8TR500F	1.8	B, C, D	0.10	500	8	13	45	61	6000	100
NMLS06_2N0TR500F	2.2	B, C, D	0.10	500	8	13	45	60	6000	100
NMLS06_2N7TR500F	2.7	B, C, D	0.12	500	10	13	44	55	6000	100
NMLS06_3N3TR500F	3.3	B, C, D	0.15	500	10	13	43	50	6000	100
NMLS06_3N9TR500F	3.9	B, C, D	0.16	500	10	13	43	50	6000	100
NMLS06_4N7TR500F	4.7	H, J, K	0.20	500	10	13	43	50	6000	100
NMLS06_5N6TR500F	5.6	H, J, K	0.25	500	10	14	42	48	5000	100
NMLS06_6N8TR500F	6.8	H, J, K	0.30	500	10	14	43	50	5000	100
NMLS06_8N2TR500F	8.2	H, J, K	0.35	500	10	14	43	48	4500	100
NMLS06_10NTR300F	10	H, J, K	0.40	300	12	15	45	50	3500	100
NMLS06_12NTR300F	12	H, J, K	0.45	300	12	18	48	50	3000	100
NMLS06_15NTR300F	15	H, J, K	0.50	300	12	18	48	50	2300	100
NMLS06_18NTR300F	18	H, J, K	0.55	300	12	16	48	51	2200	100
NMLS06_22NTR300F	22	H, J, K	0.60	300	12	16	45	48	2000	100
NMLS06_27NTR300F	27	H, J, K	0.65	300	12	16	45	45	1700	100
NMLS06_33NTR300F	33	H, J, K	0.70	300	12	16	45	41	1500	100
NMLS06_39NTR300F	39	H, J, K	0.70	300	12	17	40	48	1400	100
NMLS06_47NTR300F	47	H, J, K	0.70	300	12	17	35	35	1200	100
NMLS06_56NTR300F	56	H, J, K	0.75	300	12	17	35	30	1100	100
NMLS06_68NTR300F	68	H, J, K	0.85	300	12	17	30	20	900	100
NMLS06_82NTR300F	82	H, J, K	1.0	300	8	15	22	/	800	100
NMLS06_100NTR300F	100	H, J, K	1.2	300	8	15	16	/	700	100
NMLS06_120NTR200F	120*	H, J, K	1.4	200	8	15	/	/	600	100
NMLS06_150NTR200F	150*	H, J, K	1.6	200	8	15	/	/	500	100
NMLS06_180NTR200F	180*	H, J, K	1.9	200	8	15	/	/	400	100
NMLS06_220NTR200F	220*	H, J, K	2.4	200	8	15	/	/	350	100
NMLS06_270NTR150F	270*	H, J, K	2.6	150	8	16	/	/	350	100
NMLS06_330NTR150F	330*	H, J, K	2.8	150	8	16	/	/	350	100
NMLS06_390NTR150F	390*	H, J, K	3.2	150	8	16	/	/	300	100
NMLS06_430NTR150F	430*	H, J, K	3.4	150	8	16	/	/	280	100
NMLS06_470NTR150F	470*	H, J, K	3.6	150	8	15	/	/	250	100
NMLS06_560NTR100F	560*	H, J, K	4.0	100	8	15	/	/	250	100
NMLS06_680NTR100F	680*	H, J, K	4.5	100	8	15	/	/	250	100

*Thickness is 1.65mm \pm 0.15

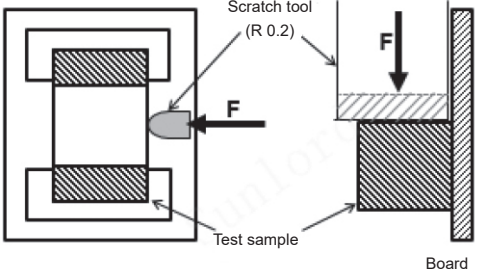
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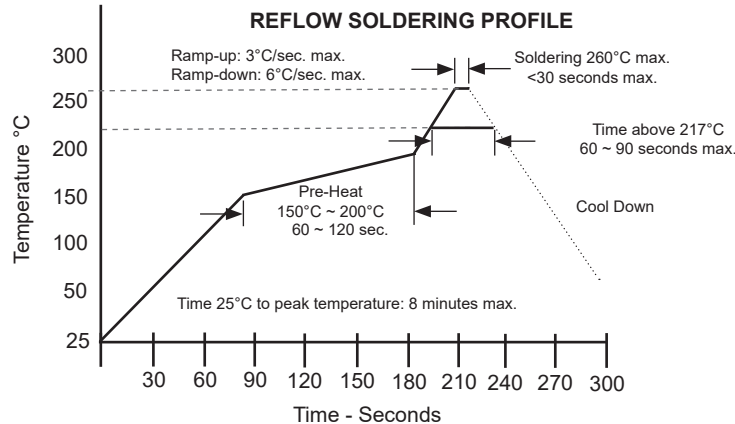
ENVIRONMENTAL CHARACTERISTICS

Item	Performance	Test Condition												
Life Test (High Temperature)		1. Temperature: 125±2°C 2. Applied current: Rated current 3. Duration: 1000 ± 24hrs Measured at room temperature after stabilizing for 1 ~ 2 hrs.												
Resistance to Low Temperature		1. Temperature: -55±2°C, 2. Duration: 1000 ± 24 hours. Measured at room temperature after stabilizing for 1 ~ 2 hrs.												
Damp Heat (Under Load)		1. Humidity: 90% ~ 95% R.H. 2. Applied current: Rated current 3. Temperature: 60°C ±2°C 4. Duration: 1000 ± 24hrs Measured at room temperature after stabilizing for 1 ~ 2 hrs.												
Damp Heat (Steady State)		1. Humidity: 90% ~ 95% R.H. 2. Temperature: 60°C ±2°C 3. Duration: 1000 ± 24hrs Measured at room temperature after stabilizing for 1 ~ 2 hrs.												
Thermal Shock	Appearance: No damage. Inductance: Within ±10% of initial value Q factor: Within ±20% of initial value.	1. Temperature & Time: -55°C for 30±3 min. to +125°C for 30±3 min. 2. Intervale: Maximum 20 seconds 3. Number of Cycles: 100 Measured at room temperature after stabilizing for 1 ~ 2 hrs. 												
Vibration		1. Solder the inductor to the testing jig (glass epoxy board as shown below) using leadfree solder. 2. The inductor shall be subjected to a simple harmonic motion having total amplitude of 1.5mm, the frequency being varied uniformly between the approximate limits of 10 and 55 Hz. 3. The frequency range from 10 to 55 Hz and return to 10 Hz shall be traversed in approximately 1 minute. This motion shall be applied for a period of 2 hours in each 3 mutually perpendicular directions (total of 6 hours).												
Drop Test		Drop chip inductor 10 times on a concrete floor from a height of 100 cm.												
Temperature Test	Inductance: Within ±10% of initial value	1. Temperature range: -55°C to +125°C, 2. Reference temperature: 20°C												
Resistance to Flexure	No visible damage <table border="1"> <thead> <tr> <th>Type</th> <th>a</th> <th>b</th> <th>c</th> </tr> </thead> <tbody> <tr> <td>0402</td> <td>0.4</td> <td>1.5</td> <td>0.5</td> </tr> <tr> <td>0603</td> <td>1.0</td> <td>3.0</td> <td>1.2</td> </tr> </tbody> </table>	Type	a	b	c	0402	0.4	1.5	0.5	0603	1.0	3.0	1.2	1. Solder the inductor to the test jig (glass epoxy board shown below) 2. Using a leadfree solder. Then apply a force in the direction shown: 3. Flexure: 2mm. 4. Pressurizing Speed: 0.5mm/sec. 5. Keep time: 30 sec.
Type	a	b	c											
0402	0.4	1.5	0.5											
0603	1.0	3.0	1.2											

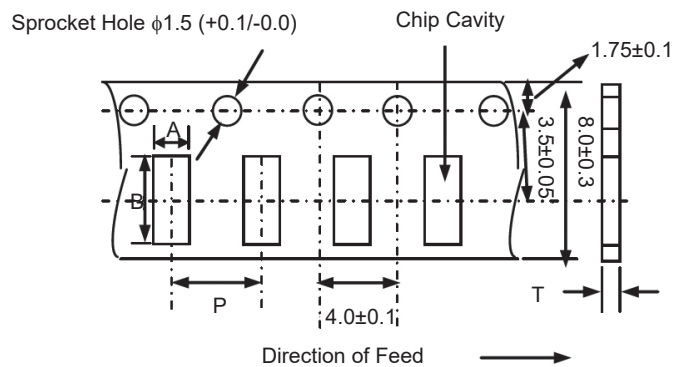
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ENVIRONMENTAL CHARACTERISTICS

Item	Performance	Test Condition
Solderability	No visible damage Wetting shall exceed 95% coverage	Solder temperature: $240 \pm 2^\circ\text{C}$ Duration: 3 sec. Solder: Sn/3.0Ag/0.5Cu. Flux: 25% Resin and 75% ethanol in weight.
Resistance to Soldering Heat	No visible mechanical damage. Wetting shall exceed 95% coverage Inductance change: Within $\pm 10\%$. Q factor change: Within $\pm 20\%$	Solder temperature: $260 \pm 3^\circ\text{C}$ Duration: 5 sec. Solder: Sn/3.0Ag/0.5Cu. Flux: 25% Resin and 75% ethanol in weight. The chip shall be stabilized at normal condition for 1~2 hours before measuring.
Terminal Strength	No removal or split of the termination or other defects shall occur. 	Solder the inductor to the testing jig (glass epoxy board shown) using leadfree solder. Then apply a force in the direction of the arrow. 5N force for NMLS series. Keep time: $10 \pm 1\text{s}$ Speed: 1.0mm/s.



Case Size	Reel Qty	CARRIER TAPE DIMENSIONS (mm)			
		A	B	P	t
NMLS04	10,000	0.65±0.10	1.15±0.10	2.0±0.05	0.80 max.
NMLS06	4,000	1.00±0.20	1.80±0.20	4.0±0.10	1.10 max.



Case Size	Tape Width	REEL DIMENSIONS (mm)			
		A(mm)	B(mm)	C(mm)	D(mm)
NMLS	8.0	8.4 +1.5/-0.0	58 ± 2.0	13.5 ± 0.2	178 ± 0.2
NMLS					

