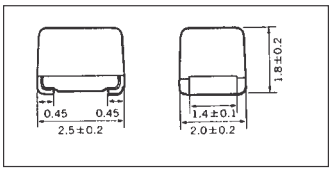
Molded Chip Wirewound Inductors

OUTLINE

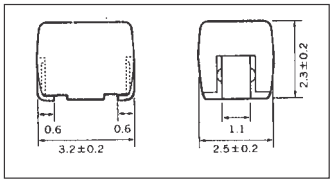
• These revolutionary, high reliability winding type leadless (wound chip) inductors for automatic mounting have been developed in response to the trend toward higher density of parts in electronic circuits.

• Since metal terminals are used as the electrodes and the body is molded of heat resin, these inductors offer many superior features.

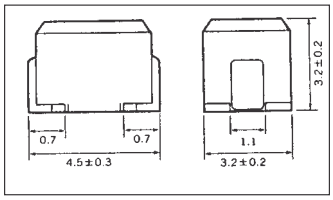
NL2520 Type



NL3225 Type



NL4532 Type



FEATURES

• Leaching resistant terminations due to metal tab electrodes.

• Coils encapsulated in heat-proof resin make high accurate dimensions and resistant to mechanical shock or pressure.

• High resistance to heat and humidity.

• Matched parts on taping-reel.

RECOMMENDED APPLICATIONS

• Microtelevisions, liquid crystal televisions, video cameras, portable VCRs, car radios, car stereos, thin type radios, television tuners, mobile telephones, radio equipment and modules such as hybrid ICs.

STANDARD SPECIFICATIONS

Temperature Rise	20°C max.
Ambient Temperature	80°C
Storage Temperature	-40 to +100°C
Operating Temperature	-20 to +100°C
Terminal Tensile Strength	1 kg min. (0.5 kg for NL3225)
Current Rating	Value obtained when current flows and the temperature has risen to 20°C or when LC current flows and the initial value of inductance has fallen by 10% whichever is smaller
Resistance to Soldering Heat	260°C, 10 seconds
Resistance to Solvent	Conforms to ML-STD-202E

INDUCTANCE RANGE

Part No.	Inductance (µH)	Size
NL2520	.01 to 100	1008
NL3225	.01 to 220	1210
NL4532	.22 to 1000	1812

PACKAGING QUANTITY

TYPE	PCS./BULK	PCS./REEL
NL2520	2000	2000
NL3225	2000	2000
NL4532	500	500

*Note for Lead-Free: Cal-Chip is beginning to phase in Lead-Free products. Upon checking availability with the factory, please specify "LF" at the end of the part number.

ORDERING CODE

NL 2520 T 101 J

Type

External Dimensions (LxW) (mm)
2520 (1008) - 2.5 x 2.0
3225 (1210) - 3.2 x 2.5
4532 (1812) - 4.5 x 3.2

Packaging
T = Taped
B = Bulk

Inductance Tolerance (%)
J = ±5
K = ±10
M = ±20

Nominal Inductance
Example:
100 = 10µH
6R8 = 6.8µH
82N = 82nH (0.082µH)

Molded Chip Wirewound Inductors - NL2520

• NL2520 TYPE (nH type)

Ordering Code	Inductance (nH)	Inductance Tolerance	Q min.	Self-Resonant Frequency (MHz) (min)	(DC) Resistance (Ω) (max.)	Rated Current (mA) (max.)	Measuring Frequency (MHz)
NL2520T10NK	10	±10%	10	2150	0.26	530	100
NL2520T12NK	12		15	2050	0.27	500	
NL2520T15NK	15			1850	0.31	480	
NL2520T18NK	18			1650	0.34	450	
NL2520T22NK	22			1550	0.38	420	
NL2520T27NK	27			1400	0.42	410	
NL2520T33NK	33			1250	0.46	400	
NL2520T39NK	39		20	1100	0.50	380	
NL2520T47NK	47			1050	0.56	360	
NL2520T56NK	56			950	0.65	340	
NL2520T68NK	68			900	0.70	320	
NL2520T82NK	82			850	0.75	300	
NL2520TR10K	100			700	0.80	280	

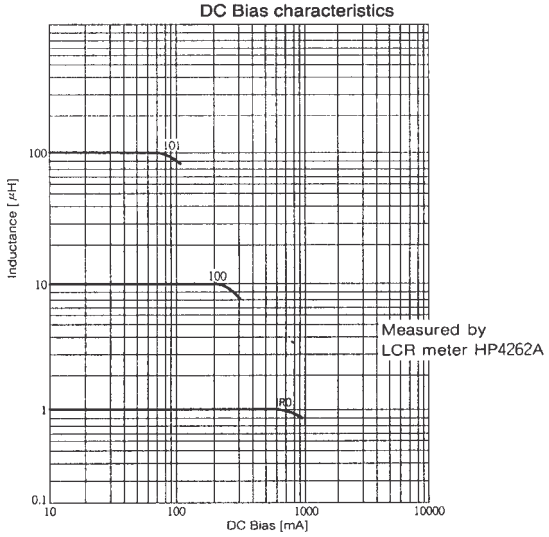
• NL2520 TYPE (ordinary type)

Ordering Code	Inductance (μH)	Inductance Tolerance	Q min.	Self-Resonant Frequency (MHz) (min)	(DC) Resistance (Ω) (max.)	Rated Current (mA) (max.)	Measuring Frequency (MHz)
NL2520TR12☐	0.12	±5% ±10%	30	600	0.37	520	25.2
NL2520TR15☐	0.15			550	0.42	480	
NL2520TR18☐	0.18			500	0.46	460	
NL2520TR22☐	0.22			450	0.52	430	
NL2520TR27☐	0.27			425	0.56	420	
NL2520TR33☐	0.33			400	0.60	400	
NL2520TR39☐	0.39			375	0.65	375	
NL2520TR47☐	0.47			350	0.68	350	
NL2520TR56☐	0.56			300	0.75	325	
NL2520TR68☐	0.68			270	0.85	300	
NL2520TR82☐	0.82			250	1.00	260	
NL2520T1R0☐	1.0			220	1.10	245	7.96
NL2520T1R2☐	1.2			180	1.20	230	
NL2520T1R5☐	1.5			135	1.30	220	
NL2520T1R8☐	1.8			100	1.45	210	
NL2520T2R2☐	2.2			75	1.55	200	
NL2520T2R7☐	2.7			55	1.70	195	
NL2520T3R3☐	3.3			48	1.90	185	
NL2520T3R9☐	3.9			43	2.10	180	
NL2520T4R7☐	4.7			40	2.30	175	
NL2520T5R6☐	5.6		25	36	2.50	170	2.52
NL2520T6R8☐	6.8			33	2.70	165	
NL2520T8R2☐	8.2			30	3.05	160	
NL2520T100☐	10			27	3.50	155	
NL2520T120☐	12			23	3.80	150	
NL2520T150☐	15			20	4.40	140	
NL2520T180☐	18			18	4.80	130	
NL2520T220☐	22			17	5.50	125	
NL2520T270☐	27			16	6.30	115	
NL2520T330☐	33			15	7.10	110	
NL2520T390☐	39		20	14	9.50	90	
NL2520T470☐	47			13	11.10	80	
NL2520T560☐	56			12	12.10	75	
NL2520T680☐	68			11	16.60	70	
NL2520T820☐	82			10	19.00	65	
NL2520T101☐	100		15	9	21.00	60	0.796

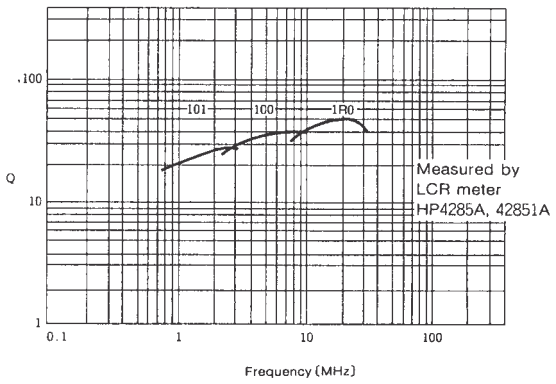
☐ Please specify Tolerance Code.

NL2520TYPE Operating Temperature Range: -25~+85°C

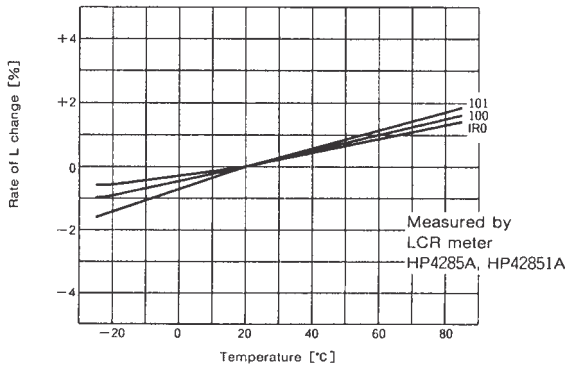
DC Bias characteristics



Q Characteristics



Temperature Characteristics



Molded Chip Wirewound Inductors - NL3225

• NL3225 TYPE (nH type)

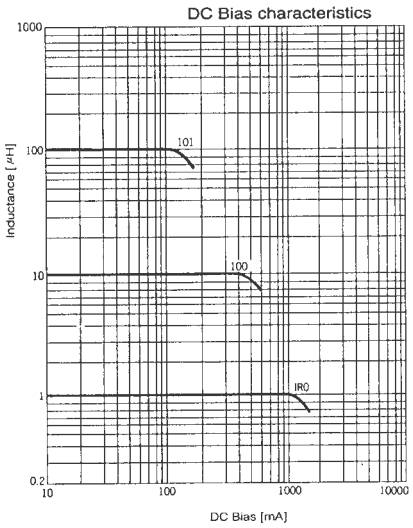
Ordering Code	Inductance (nH)	Inductance Tolerance	Q min.	Self-Resonant Frequency (MHz) (min)	(DC) Resistance (Ω) (±40%)	Rated Current (mA) (max.)	Measuring Frequency (MHz)
NL3225T10N☐	10	±10% ±20%	10	2500	0.09	720	100
NL3225T12N☐	12			2300	0.10	710	
NL3225T15N☐	15			2100	0.13	620	
NL3225T18N☐	18			1900	0.14	600	
NL3225T22N☐	22		15	1700	0.16	560	
NL3225T27N☐	27			1500	0.18	530	
NL3225T33N☐	33			1400	0.20	500	
NL3225T39N☐	39			1300	0.22	480	
NL3225T47N☐	47			1200	0.24	450	
NL3225T56N☐	56			1100	0.27	430	
NL3225T68N☐	68			1000	0.29	410	
NL3225T82N☐	82			900	0.32	390	
NL3225TR10☐	100			700	0.35	380	

• NL3225 TYPE (ordinary type)

Ordering Code	Inductance (μH)	Inductance Tolerance	Q min.	Self-Resonant Frequency (MHz) (min)	(DC) Resistance (Ω) (±40%)	Rated Current (mA) (max.)	Measuring Frequency (MHz)
NL3225TR12☐	0.12	±20% ±10% ±5%	25	330	0.14	640	25.2
NL3225TR15☐	0.15		30	290	0.16	610	
NL3225TR18☐	0.18			260	0.18	580	
NL3225TR22☐	0.22			230	0.20	550	
NL3225TR27☐	0.27			210	0.22	520	
NL3225TR33☐	0.33			190	0.24	500	
NL3225TR39☐	0.39			170	0.26	480	
NL3225TR47☐	0.47			150	0.29	460	
NL3225TR56☐	0.56			130	0.33	430	
NL3225TR68☐	0.68			120	0.35	410	
NL3225TR82☐	0.82			100	0.39	390	
NL3225T1R0☐	1.0			90	0.44	370	7.96
NL3225T1R2☐	1.2			85	0.48	350	
NL3225T1R5☐	1.5			70	0.54	330	
NL3225T1R8☐	1.8			60	0.58	320	
NL3225T2R2☐	2.2			50	0.67	300	
NL3225T2R7☐	2.7			45	0.72	290	
NL3225T3R3☐	3.3	±20% ±10% ±5%		40	0.80	270	
NL3225T3R9☐	3.9			37	0.88	260	
NL3225T4R7☐	4.7			32	0.95	250	
NL3225T5R6☐	5.6			30	1.1	230	
NL3225T6R8☐	6.8			28	1.2	220	
NL3225T8R2☐	8.2			25	1.3	215	
NL3225T100☐	10			23	1.4	200	2.52
NL3225T120☐	12			20	1.6	190	
NL3225T150☐	15			19	1.8	180	
NL3225T180☐	18			17	1.9	175	
NL3225T220☐	22			16	3.1	140	
NL3225T270☐	27			14	3.5	130	
NL3225T330☐	33			13	3.9	125	
NL3225T390☐	39			12	4.3	120	
NL3225T470☐	47			10	6.0	100	
NL3225T560☐	56			9	6.5	95	
NL3225T680☐	68			9	7.3	90	
NL3225T820☐	82			8	10.2	75	
NL3225T101☐	100		20	7	11.3	70	0.796
NL3225T121☐	120			7	11.3	65	
NL3225T151☐	150			6	13.0	60	
NL3225T181☐	180			6	15.0	55	
NL3225T221☐	220			5	17.0	50	

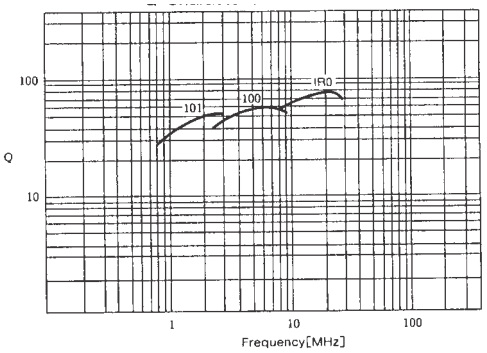
☐ Please specify Tolerance Code.

NL3225TYPE



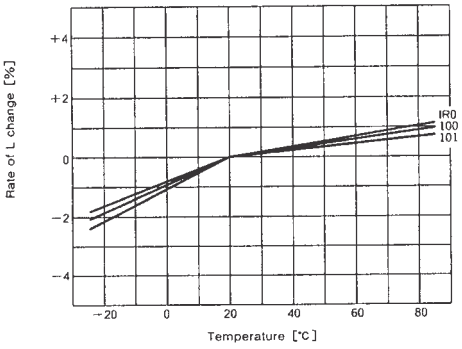
Measured by
LCR meter HP4262A

Q Characteristics



Measured by
LCR meter
HP4285A, 42851A

Temperature Characteristics



Measureb by
LCR meter
HP4285A, 42851A

Molded Chip Wirewound Inductors - NL4532

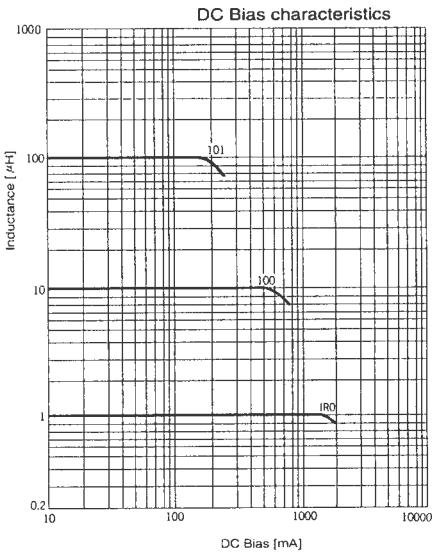
• NL4532 TYPE

Ordering Code	Inductance (μH)	Inductance Tolerance	Q min.	Self-Resonant Frequency (MHz) (min)	(DC) Resistance (Ω)	Rated Current (mA) (max.)	Measuring Frequency (MHz)
NL4532TR22☐	0.22	±10% ±20%	40	150	0.10±50%	710	25.2
NL4532TR27☐	0.27			150	0.10±50%	710	
NL4532TR33☐	0.33			150	0.11±50%	670	
NL4532TR39☐	0.39			150	0.12±50%	650	
NL4532TR47☐	0.47		50	150	0.13±50%	620	
NL4532TR56☐	0.56			150	0.14±50%	600	
NL4532TR68☐	0.68			130	0.15±50%	580	
NL4532TR82☐	0.82			110	0.16±50%	560	
NL4532T1R0☐	1.0	±20% ±10%		100	0.18±50%	530	
NL4532T1R2☐	1.2			80	0.20±50%	500	7.96
NL4532T1R5☐	1.5			70	0.22±50%	480	
NL4532T1R8☐	1.8			60	0.24±50%	460	
NL4532T2R2☐	2.2			55	0.27±50%	430	
NL4532T2R7☐	2.7			50	0.30±50%	410	
NL4532T3R3☐	3.3			45	0.32±50%	400	
NL4532T3R9☐	3.9			40	0.35±50%	380	
NL4532T4R7☐	4.7			35	0.38±50%	360	
NL4532T5R6☐	5.6		40	30	0.42±50%	350	
NL4532T6R8☐	6.8			25	0.46±50%	330	
NL4532T8R2☐	8.2			23	0.51±50%	310	
NL4532T100☐	10			20	0.56±50%	300	
NL4532T120☐	12			19	0.9±50%	230	2.52
NL4532T150☐	15			18	1.0±50%	220	
NL4532T180☐	18			17	1.1±50%	210	
NL4532T220☐	22			16	1.2±40%	200	
NL4532T270☐	27			15	1.4±40%	190	
NL4532T330☐	33			14	1.6±40%	180	
NL4532T390☐	39			13	1.7±40%	170	
NL4532T470☐	47			12	1.9±40%	160	
NL4532T560☐	56			11	2.8±40%	130	
NL4532T680☐	68		50	9.5	3.1±40%	125	
NL4532T820☐	82			9.0	3.5±40%	120	
NL4532T101☐	100			8.5	4.0±40%	110	
NL4532T121☐	120			7.0	6.6±40%	85	0.796
NL4532T151☐	150			6.0	7.6±40%	80	
NL4532T181☐	180			5.5	8.6±40%	75	
NL4532T221☐	220			5.0	9.8±40%	70	

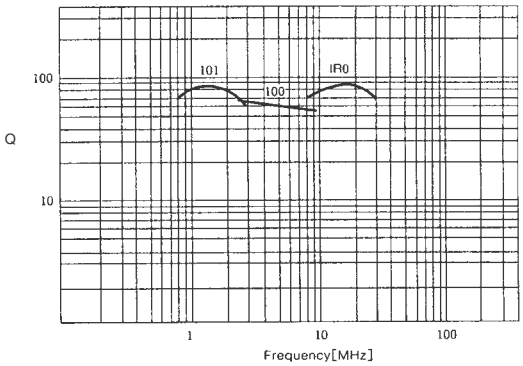
330MH to 1000 MH available as special order. ±10%

☐ Please specify Tolerance Code.

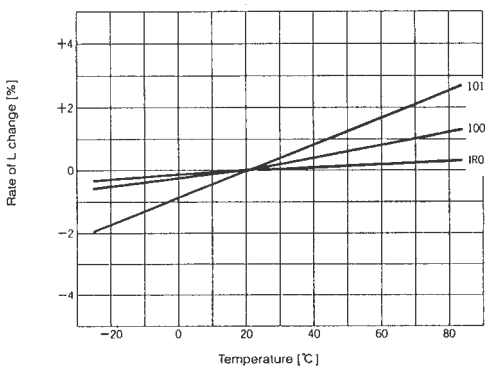
NL4532TYPE



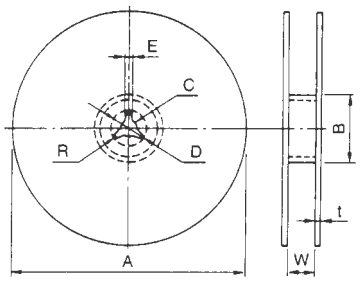
Q Characteristics



Temperature Characteristics



REEL DIMENSIONS



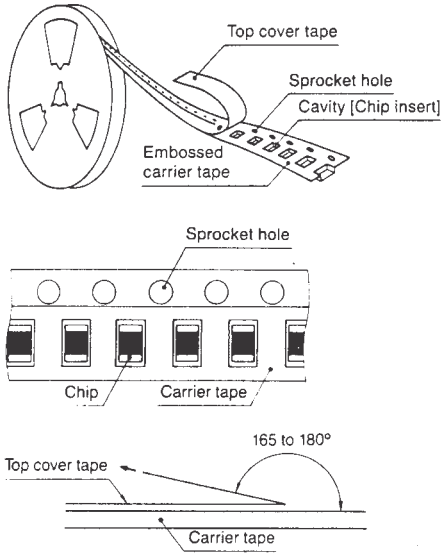
Dimensions in mm (inches)

A	B	C	D	E	W	t	R
ϕ178±2 (7.008 ±.079)	ϕ50 (1.969) min.	ϕ13±0.5 (.512±.020)	ϕ21±0.8 (.827±0.04)	2±0.5 (.079±.020)	14*±0.5 (.551±.020)	2±0.5 (.079±.020)	1 (.039)

**NL2520 and NL3225 types: 10mm (.394 inches)*
**NL4532 type are available for ϕ330mm (12.992 inches) reel packaging*

TAPING MATERIAL

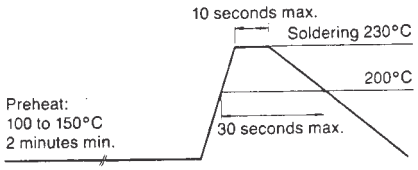
Embossed Carrier Tape



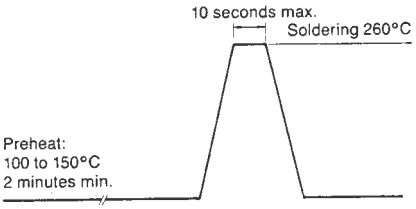
**The force for tearing off cover tape is 10 to 60 grams in the arrow direction.*

Recommended Soldering Conditions

Reflow Soldering



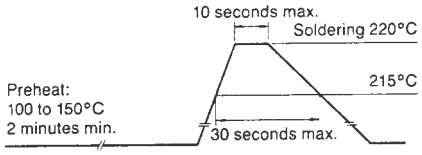
Flow Soldering



Iron Soldering

Perform soldering at 250°C on 30W max.
within 5 second.
Take care not to apply the tip of soldering iron to the terminal electrode.

Vapor-Phasing



Flux and Cleaning

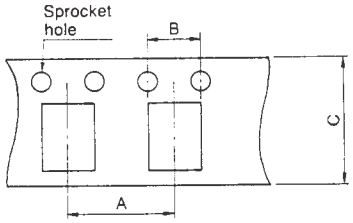
Rosin-based flux is recommended.

Cleaning Conditions

Solvent: Chlorine-based solvent
(Do not use acid or alkali solvents)

Time: 2 minutes min. for ultrasonic cleaning

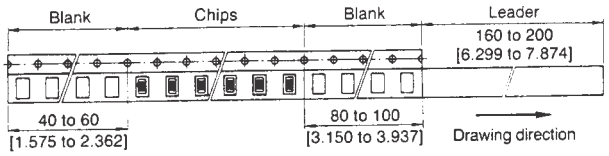
Tape Dimensions (EIAJ RC-1009)



Dimensions in mm (inches)

Type	A	B	C
NL2520	4(.157)	4(.157)	8(.315)
NL3225	4 (.157)	4(.157)	8(.315)
NL4532	8(.315)	4(.157)	12(.472)

The storage temperature range for packaging is 0 to 60C.



Packaging

Type	Quantity (pcs./reel)
NL2520	2000
NL3225	2000
NL4532	500