

FEATURES

- SHIELDED POWER INDUCTOR
- CURRENT RATINGS UP TO 5.0 AMPS
- SURFACE MOUNTABLE CONSTRUCTION
- LOW PROFILE (3.2mm ~ 4.9mm MAXIMUM HEIGHT)
- TAPED AND REELED FOR AUTOMATIC INSERTION
- FOR USE IN DC/DC CONVERTERS

RoHS Compliant
 includes all homogeneous materials
 *See Part Number System for Details



CHARACTERISTICS

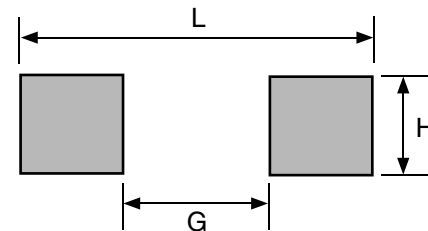
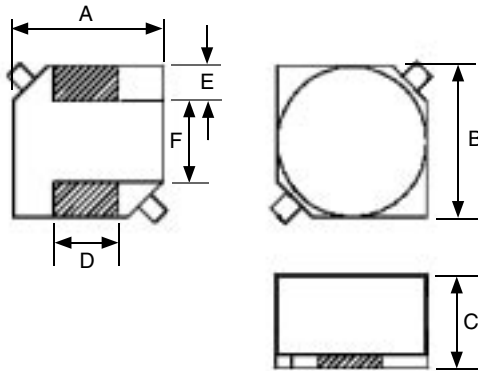
Case Size	NPIS63T	NPIS64T	NPIS65T	NPIS73T	NPIS75T	NPIS103T	NPIS104T
Inductance Range	1.0 ~ 1,000μH			1.0 ~ 1,000μH		1.8 ~ 1,000μH	
Inductance Tolerance	±10% (K) & ±20% (M)			±10% (K), ±15% (L) & ±20% (M)			
Operating Temperature Range	-40°C ~ +105°C						
Inductance Change at Isat	-10% max.						
Temperature Rise at Irms	+40°C max.						
Resistance to Solder Heat	260°C for 10 seconds (Inductance change ±10% max.)						

CASE DIMENSIONS (mm)

Series	A	B	C	D	E	F
NPIS63T	6.0 ± 0.3	6.0 ± 0.3	2.9 ± 0.3	2.0 ± 0.2	1.5 ± 0.2	3.0 ± 0.2
NPIS64T	6.0 ± 0.3	6.0 ± 0.3	3.9 ± 0.3			
NPIS65T	6.0 ± 0.3	6.0 ± 0.3	4.9 ± 0.3			
NPIS73T	7.0 ± 0.3	7.0 ± 0.3	3.0 ± 0.3			
NPIS75T	7.0 ± 0.3	7.0 ± 0.3	4.6 ± 0.3	2.4 ± 0.2	2.0 ± 0.2	4.0 ± 0.2
NPIS103T	10.0 ± 0.3	10.0 ± 0.3	3.0 ± 0.3			
NPIS104T	10.0 ± 0.3	10.0 ± 0.3	4.6 ± 0.3			

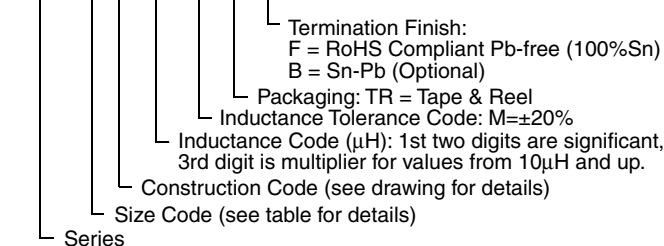
LAND PATTERN DIMENSIONS (mm)

Series	L	G	H
NPIS63T	6.6	2.8	2.2
NPIS64T			
NPIS65T			
NPIS73T	7.5	3.7	2.2
NPIS75T			
NPIS103T	10.7	5.7	2.8
NPIS104T			

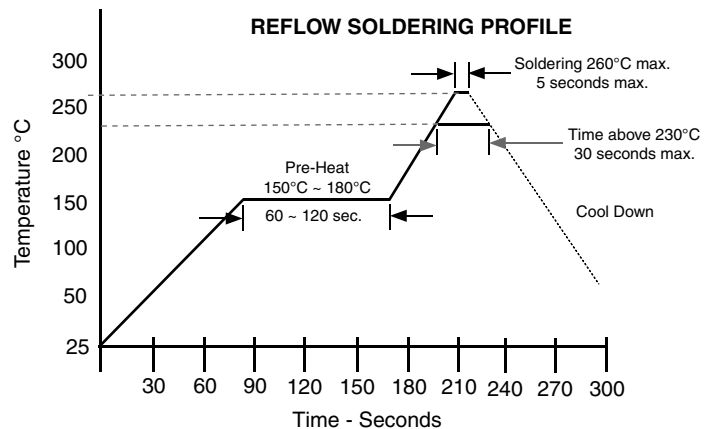


PART NUMBER SYSTEM

NPIS 64 T 220 M TR F



REFLOW SOLDERING PROFILE



Part Number	STANDARD VALUES - 63 CASE SIZE (6.0 x 6.0 x 2.9mm)			
	Inductance Value (µH)	DC Resistance (Ω)	DC Current Isat/Irms (Amps)	Test Frequency
NPIS63T1R0MTRF	1.0 ± 20%	0.019	2.40	100KHz
NPIS63T1R5MTRF	1.5 ± 20%	0.025	2.20	
NPIS63T2R2MTRF	2.2 ± 20%	0.032	1.90	
NPIS63T3R3MTRF	3.3 ± 20%	0.050	1.50	
NPIS63T4R7MTRF	4.7 ± 20%	0.060	1.30	
NPIS63T6R8MTRF	6.8 ± 20%	0.070	1.20	
NPIS63T100MTRF	10 ± 20%	0.120	1.00	
NPIS63T120MTRF	12 ± 20%	0.130	0.90	
NPIS63T150MTRF	15 ± 20%	0.150	0.80	
NPIS63T180MTRF	18 ± 20%	0.160	0.75	
NPIS63T220MTRF	22 ± 20%	0.230	0.65	
NPIS63T270MTRF	27 ± 20%	0.250	0.60	
NPIS63T330KTRF	33 ± 10%	0.340	0.55	
NPIS63T390KTRF	39 ± 10%	0.380	0.52	
NPIS63T470KTRF	47 ± 10%	0.420	0.50	
NPIS63T560KTRF	56 ± 10%	0.570	0.48	
NPIS63T680KTRF	68 ± 10%	0.620	0.45	
NPIS63T820KTRF	82 ± 10%	0.900	0.40	
NPIS63T101KTRF	100 ± 10%	0.990	0.35	
NPIS63T121KTRF	120 ± 10%	1.150	0.30	
NPIS63T151KTRF	150 ± 10%	1.750	0.28	
NPIS63T181KTRF	180 ± 10%	1.950	0.26	
NPIS63T221KTRF	220 ± 10%	2.200	0.22	
NPIS63T271KTRF	270 ± 10%	2.500	0.20	
NPIS63T331KTRF	330 ± 10%	3.200	0.18	
NPIS63T391KTRF	390 ± 10%	3.500	0.17	
NPIS63T471KTRF	470 ± 10%	4.950	0.16	
NPIS63T561KTRF	560 ± 10%	5.350	0.15	
NPIS63T681KTRF	680 ± 10%	6.300	0.14	
NPIS63T821KTRF	820 ± 10%	8.200	0.13	
NPIS63T102KTRF	1000 ± 10%	9.200	0.12	

Maximum +40°C temperature rise at Irms. Maximum -10% inductance change at Isat.



Part Number	STANDARD VALUES - 64 CASE SIZE (6.0 x 6.0 x 3.9mm)			
	Inductance Value (μH)	DC Resistance (Ω)	DC Current Isat/Irms (Amps)	Test Frequency
NPIS64T1R0MTRF	1.0 ± 20%	0.022	2.50	100KHz
NPIS64T1R5MTRF	1.5 ± 20%	0.025	2.20	
NPIS64T2R2MTRF	2.2 ± 20%	0.030	1.90	
NPIS64T3R3MTRF	3.3 ± 20%	0.035	1.70	
NPIS64T4R7MTRF	4.7 ± 20%	0.050	1.30	
NPIS64T6R8MTRF	6.8 ± 20%	0.055	1.10	
NPIS64T100MTRF	10 ± 20%	0.065	1.00	
NPIS64T120MTRF	12 ± 20%	0.090	0.90	
NPIS64T150MTRF	15 ± 20%	0.100	0.80	
NPIS64T180MTRF	18 ± 20%	0.110	0.70	
NPIS64T220MTRF	22 ± 20%	0.150	0.65	
NPIS64T270MTRF	27 ± 20%	0.170	0.60	
NPIS64T330KTRF	33 ± 10%	0.220	0.55	
NPIS64T390KTRF	39 ± 10%	0.240	0.50	
NPIS64T470KTRF	47 ± 10%	0.300	0.47	
NPIS64T560KTRF	56 ± 10%	0.340	0.42	
NPIS64T680KTRF	68 ± 10%	0.390	0.40	
NPIS64T820KTRF	82 ± 10%	0.500	0.35	
NPIS64T101KTRF	100 ± 10%	0.570	0.32	
NPIS64T121KTRF	120 ± 10%	0.630	0.30	
NPIS64T151KTRF	150 ± 10%	0.900	0.27	
NPIS64T181KTRF	180 ± 10%	0.990	0.25	
NPIS64T221KTRF	220 ± 10%	1.150	0.22	
NPIS64T271KTRF	270 ± 10%	1.550	0.20	
NPIS64T331KTRF	330 ± 10%	1.760	0.18	
NPIS64T391KTRF	390 ± 10%	2.600	0.17	
NPIS64T471KTRF	470 ± 10%	3.000	0.16	
NPIS64T561KTRF	560 ± 10%	3.300	0.15	
NPIS64T681KTRF	680 ± 10%	3.700	0.13	
NPIS64T821KTRF	820 ± 10%	4.900	0.12	
NPIS64T102KTRF	1000 ± 10%	5.700	0.11	

Maximum +40°C temperature rise at Irms. Maximum -10% inductance change at Isat.

Part Number	STANDARD VALUES - 65 CASE SIZE (6.0 x 6.0 x 4.9mm)			
	Inductance Value (µH)	DC Resistance (Ω)	DC Current Isat/Irms (Amps)	Test Frequency
NPIS65T1R0MTRF	1.0 ± 20%	0.023	2.70	100KHz
NPIS65T1R5MTRF	1.5 ± 20%	0.026	2.30	
NPIS65T2R2MTRF	2.2 ± 20%	0.028	1.90	
NPIS65T3R3MTRF	3.3 ± 20%	0.035	1.80	
NPIS65T4R7MTRF	4.7 ± 20%	0.040	1.40	
NPIS65T6R8MTRF	6.8 ± 20%	0.045	1.20	
NPIS65T100MTRF	10 ± 20%	0.060	1.00	
NPIS65T120MTRF	12 ± 20%	0.065	0.90	
NPIS65T150MTRF	15 ± 20%	0.070	0.80	
NPIS65T180MTRF	18 ± 20%	0.095	0.70	
NPIS65T220MTRF	22 ± 20%	0.110	0.65	
NPIS65T270MTRF	27 ± 20%	0.120	0.60	
NPIS65T330KTRF	33 ± 10%	0.165	0.55	
NPIS65T390KTRF	39 ± 10%	0.180	0.48	
NPIS65T470KTRF	47 ± 10%	0.200	0.45	
NPIS65T560KTRF	56 ± 10%	0.255	0.40	
NPIS65T680KTRF	68 ± 10%	0.285	0.37	
NPIS65T820KTRF	82 ± 10%	0.390	0.35	
NPIS65T101KTRF	100 ± 10%	0.420	0.30	
NPIS65T121KTRF	120 ± 10%	0.470	0.28	
NPIS65T151KTRF	150 ± 10%	0.630	0.25	
NPIS65T181KTRF	180 ± 10%	0.720	0.22	
NPIS65T221KTRF	220 ± 10%	0.820	0.20	
NPIS65T271KTRF	270 ± 10%	1.100	0.18	
NPIS65T331KTRF	330 ± 10%	1.200	0.17	
NPIS65T391KTRF	390 ± 10%	1.700	0.16	
NPIS65T471KTRF	470 ± 10%	1.900	0.14	
NPIS65T561KTRF	560 ± 10%	2.150	0.13	
NPIS65T681KTRF	680 ± 10%	3.300	0.12	
NPIS65T821KTRF	820 ± 10%	3.650	0.11	
NPIS65T102KTRF	1000 ± 10%	4.150	0.10	

Maximum +40°C temperature rise at Irms. Maximum -10% inductance change at Isat.

Part Number	STANDARD VALUES - 73 CASE SIZE (7.0 x 7.0 x 3.0mm)			
	Inductance Value (µH)	DC Resistance (Ω)	DC Current Isat/Irms (Amps)	Test Frequency
NPIS73T1R0MTRF	1.0 ± 20%	0.019	3.25	100KHz
NPIS73T1R5MTRF	1.5 ± 20%	0.023	3.0	
NPIS73T2R2MTRF	2.2 ± 20%	0.033	2.55	
NPIS73T3R3MTRF	3.3 ± 20%	0.035	2.40	
NPIS73T4R7MTRF	4.7 ± 20%	0.046	2.10	
NPIS73T6R8MTRF	6.8 ± 20%	0.060	1.90	
NPIS73T100MTRF	10 ± 20%	0.090	1.50	
NPIS73T120MTRF	12 ± 20%	0.120	1.45	
NPIS73T150MTRF	15 ± 20%	0.130	1.20	
NPIS73T180MTRF	18 ± 20%	0.150	1.15	
NPIS73T220MTRF	22 ± 20%	0.190	1.05	
NPIS73T270MTRF	27 ± 20%	0.200	1.00	
NPIS73T330MTRF	33 ± 20%	0.280	0.90	
NPIS73T390MTRF	39 ± 20%	0.300	0.80	
NPIS73T470MTRF	47 ± 20%	0.340	0.75	
NPIS73T560MTRF	56 ± 20%	0.440	0.68	
NPIS73T680MTRF	68 ± 20%	0.500	0.65	
NPIS73T820MTRF	82 ± 20%	0.680	0.60	
NPIS73T101MTRF	100 ± 20%	0.760	0.50	
NPIS73T121MTRF	120 ± 20%	0.840	0.48	
NPIS73T151MTRF	150 ± 20%	0.940	0.45	
NPIS73T181MTRF	180 ± 20%	1.300	0.38	
NPIS73T221MTRF	220 ± 20%	1.500	0.35	
NPIS73T271MTRF	270 ± 20%	2.400	0.30	
NPIS73T331MTRF	330 ± 20%	2.600	0.28	
NPIS73T391MTRF	390 ± 20%	3.000	0.25	
NPIS73T471MTRF	470 ± 20%	3.300	0.23	
NPIS73T561MTRF	560 ± 20%	5.700	0.20	
NPIS73T681MTRF	680 ± 20%	6.100	0.18	
NPIS73T821MTRF	820 ± 20%	6.700	0.17	
NPIS73T102MTRF	1000 ± 20%	7.400	0.16	

Maximum +40°C temperature rise at Irms. Maximum -10% inductance change at Isat.

Part Number	STANDARD VALUES - 75 CASE SIZE (7.0 x 7.0 x 4.9mm)			
	Inductance Value (μH)	DC Resistance (Ω)	DC Current Isat/Irms (Amps)	Test Frequency
NPIS75T1R0MTRF	1.0 ± 20%	0.020	3.00	100KHz
NPIS75T1R5MTRF	1.5 ± 20%	0.023	2.90	
NPIS75T2R2MTRF	2.2 ± 20%	0.026	2.70	
NPIS75T3R3MTRF	3.3 ± 20%	0.030	2.50	
NPIS75T4R7MTRF	4.7 ± 20%	0.036	2.00	
NPIS75T6R8MTRF	6.8 ± 20%	0.045	1.90	
NPIS75T100MTRF	10 ± 20%	0.060	1.70	
NPIS75T120MTRF	12 ± 20%	0.065	1.55	
NPIS75T150MTRF	15 ± 20%	0.070	1.45	
NPIS75T180MTRF	18 ± 20%	0.080	1.20	
NPIS75T220MTRF	22 ± 20%	0.090	1.15	
NPIS75T270MTRF	27 ± 20%	0.120	1.00	
NPIS75T330MTRF	33 ± 20%	0.135	0.90	
NPIS75T390MTRF	39 ± 20%	0.150	0.85	
NPIS75T470MTRF	47 ± 20%	0.170	0.80	
NPIS75T560MTRF	56 ± 20%	0.230	0.70	
NPIS75T680MTRF	68 ± 20%	0.270	0.65	
NPIS75T820MTRF	82 ± 20%	0.300	0.57	
NPIS75T101MTRF	100 ± 20%	0.360	0.50	
NPIS75T121MTRF	120 ± 20%	0.400	0.47	
NPIS75T151MTRF	150 ± 20%	0.530	0.40	
NPIS75T181MTRF	180 ± 20%	0.600	0.38	
NPIS75T221MTRF	220 ± 20%	0.800	0.35	
NPIS75T271MTRF	270 ± 20%	0.900	0.32	
NPIS75T331MTRF	330 ± 20%	1.000	0.30	
NPIS75T391MTRF	390 ± 20%	1.400	0.27	
NPIS75T471MTRF	470 ± 20%	1.600	0.25	
NPIS75T561MTRF	560 ± 20%	1.750	0.22	
NPIS75T681MTRF	680 ± 20%	2.500	0.20	
NPIS75T821MTRF	820 ± 20%	2.800	0.19	
NPIS75T102MTRF	1000 ± 20%	3.200	0.18	

Maximum +40°C temperature rise at Irms. Maximum -10% inductance change at Isat.



Part Number	STANDARD VALUES - 103 CASE SIZE (10.0 x 10.0 x 3.0mm)			
	Inductance Value (µH)	DC Resistance (Ω)	DC Current Isat/Irms (Amps)	Test Frequency
NPIS103T1R5MTRF	1.5 ± 20%	0.022	4.00	100KHz
NPIS103T2R2MTRF	2.2 ± 20%	0.025	3.50	
NPIS103T3R3MTRF	3.3 ± 20%	0.040	3.00	
NPIS103T4R7MTRF	4.7 ± 20%	0.045	2.50	
NPIS103T6R8MTRF	6.8 ± 20%	0.060	2.20	
NPIS103T100MTRF	10 ± 20%	0.070	2.00	
NPIS103T120MTRF	12 ± 20%	0.095	1.90	
NPIS103T150MTRF	15 ± 20%	0.120	1.70	
NPIS103T180MTRF	18 ± 20%	0.130	1.55	
NPIS103T220MTRF	22 ± 20%	0.180	1.45	
NPIS103T270MTRF	27 ± 20%	0.200	1.30	
NPIS103T330MTRF	33 ± 20%	0.210	1.10	
NPIS103T390MTRF	39 ± 20%	0.270	1.00	
NPIS103T470MTRF	47 ± 20%	0.300	0.85	
NPIS103T560MTRF	56 ± 20%	0.400	0.80	
NPIS103T680MTRF	68 ± 20%	0.440	0.75	
NPIS103T820MTRF	82 ± 20%	0.490	0.65	
NPIS103T101MTRF	100 ± 20%	0.670	0.60	
NPIS103T121MTRF	120 ± 20%	0.740	0.55	
NPIS103T151MTRF	150 ± 20%	0.790	0.50	
NPIS103T181MTRF	180 ± 20%	1.200	0.45	
NPIS103T221MTRF	220 ± 20%	1.350	0.40	
NPIS103T271MTRF	270 ± 20%	1.800	0.38	
NPIS103T331MTRF	330 ± 20%	2.000	0.32	
NPIS103T391MTRF	390 ± 20%	2.100	0.30	
NPIS103T471MTRF	470 ± 20%	3.500	0.28	
NPIS103T561MTRF	560 ± 20%	3.900	0.25	
NPIS103T681MTRF	680 ± 20%	4.100	0.22	
NPIS103T821MTRF	820 ± 20%	4.550	0.20	
NPIS103T102MTRF	1000 ± 20%	5.100	0.18	

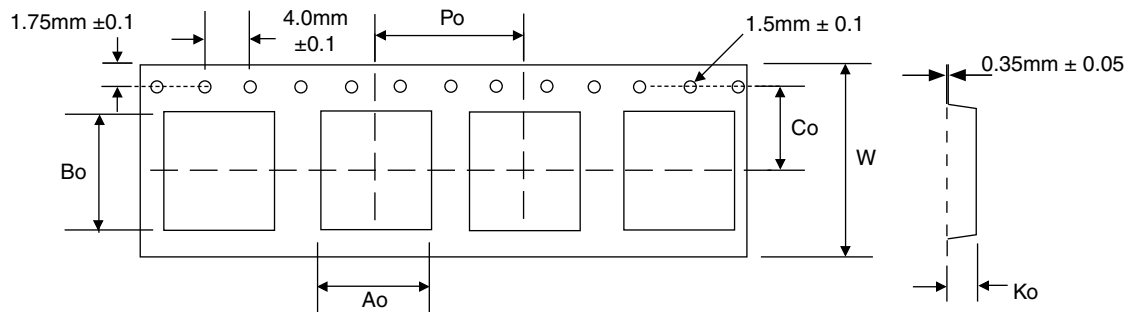
Maximum +40°C temperature rise at Irms. Maximum -10% inductance change at Isat.

Part Number	STANDARD VALUES - 104 CASE SIZE (10.0 x 10.0 x 4.6mm)			
	Inductance Value (µH)	DC Resistance (Ω)	DC Current Isat/Irms (Amps)	Test Frequency
NPIS104T1R5MTRF	1.5 ± 20%	0.021	5.00	100KHz
NPIS104T2R2MTRF	2.2 ± 20%	0.024	4.50	
NPIS104T3R3MTRF	3.3 ± 20%	0.026	4.00	
NPIS104T4R7MTRF	4.7 ± 20%	0.030	3.00	
NPIS104T6R8MTRF	6.8 ± 20%	0.035	2.50	
NPIS104T100MTRF	10 ± 20%	0.042	2.20	
NPIS104T120MTRF	12 ± 20%	0.050	2.00	
NPIS104T150MTRF	15 ± 20%	0.055	1.80	
NPIS104T180MTRF	18 ± 20%	0.060	1.70	
NPIS104T220MTRF	22 ± 20%	0.080	1.50	
NPIS104T270MTRF	27 ± 20%	0.085	1.20	
NPIS104T330MTRF	33 ± 20%	0.110	1.15	
NPIS104T390MTRF	39 ± 20%	0.120	1.10	
NPIS104T470MTRF	47 ± 20%	0.150	1.00	
NPIS104T560MTRF	56 ± 20%	0.160	0.90	
NPIS104T680MTRF	68 ± 20%	0.190	0.85	
NPIS104T820MTRF	82 ± 20%	0.210	0.80	
NPIS104T101MTRF	100 ± 20%	0.300	0.70	
NPIS104T121MTRF	120 ± 20%	0.330	0.65	
NPIS104T151MTRF	150 ± 20%	0.360	0.55	
NPIS104T181MTRF	180 ± 20%	0.510	0.50	
NPIS104T221MTRF	220 ± 20%	0.560	0.45	
NPIS104T271MTRF	270 ± 20%	0.700	0.40	
NPIS104T331MTRF	330 ± 20%	0.760	0.37	
NPIS104T391MTRF	390 ± 20%	1.050	0.32	
NPIS104T471MTRF	470 ± 20%	1.100	0.30	
NPIS104T561MTRF	560 ± 20%	1.250	0.28	
NPIS104T681MTRF	680 ± 20%	1.700	0.24	
NPIS104T821MTRF	820 ± 20%	1.900	0.23	
NPIS104T102MTRF	1000 ± 20%	2.150	0.22	

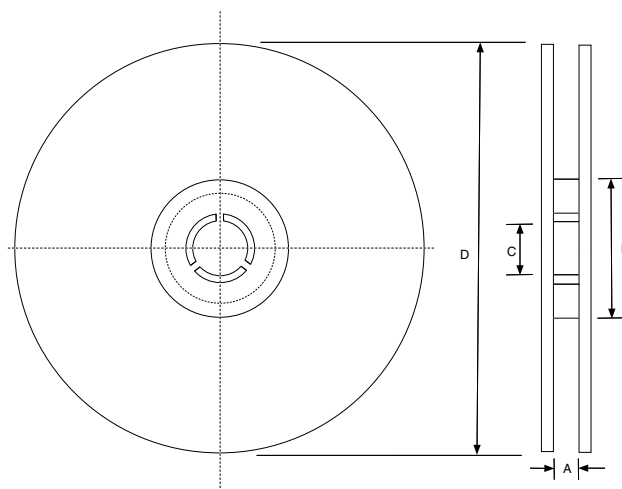
Maximum +40°C temperature rise at Irms. Maximum -10% inductance change at Isat.



Case Size	TAPING DIMENSIONS (mm)						Qty/Reel
	Ao	Bo	Ko	Co	W	Po	
NPIS63T	6.4	6.4	3.3	7.5	16.0	12.0	1,000
NPIS64T	6.4	6.4	4.3	7.5	16.0	12.0	
NPIS65T	6.4	6.4	5.0	7.5	16.0	12.0	
NPIS73T	7.6	7.6	3.4	7.5	16.0	12.0	
NPIS75T	7.6	7.6	5.0	7.5	16.0	12.0	
NPIS103T	10.4	10.4	3.5	11.5	24.0	16.0	
NPIS104T	10.4	10.4	5.0	11.5	24.0	16.0	600



Tape Width	REEL DIMENSIONS (mm)			
	A(mm)	B(mm)	C(mm)	D(mm)
16mm	16.0 ±0.5	75 ±2.0	13 ±0.5	330
24mm	24.5 ±0.5			



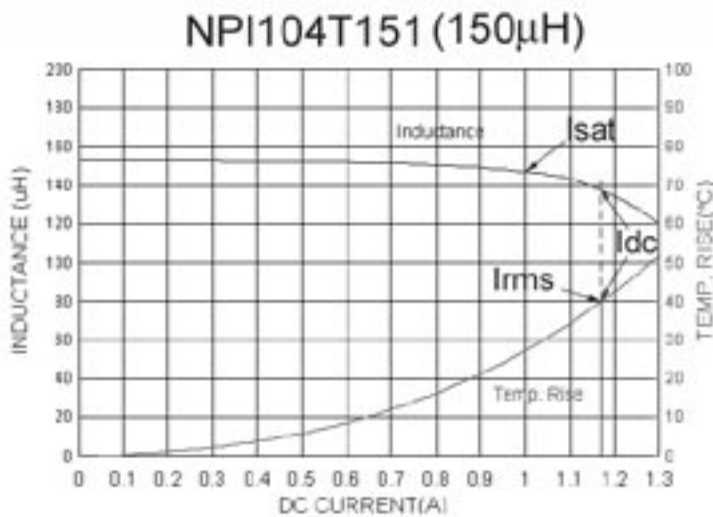
Isat and Irms

NPI & NPIS Series

Isat (Saturation Current) - is the current required to **decrease the inductance** value by the specified maximum amount (given as a percentage of the nominal inductance value).

Irms - is the current required to **increase the temperature** of the part a maximum specified amount (given as a temperature rise in °C).

In some instances Isat and Irms are shown separately with a maximum decrease in inductance specified at one current rating (Isat) and a maximum temperature rise specified at another current rating (Irms). In other cases one current value is given for both (specified as Idc) and represents the current at which a specified maximum inductance decrease and a maximum specified temperature rise can occur. The graph below illustrates change in inductance and temperature as current increases.



Based on the above graph Isat and Irms could be expressed as follows:

1. Isat and Irms can be shown as separate current values. The Isat current is a value of current that could potentially produce a specified maximum inductance change [-5%, -10%, -20%, etc. of the nominal value]. In this case a 1.0A current has produced a -5% inductance change so 1.0A could be specified as the inductor's Isat current rating. The Irms could be expressed as the current that produces a +40°C temperature rise which in this case is about 1.18A.
2. Both Isat and Irms can be expressed using one current value (Idc). In the above graph 1.18A could be specified as the Idc for the part noting that at 1.18A a potential +40°C temperature rise (equivalent to Irms) and a -10% change in inductance (equivalent to Isat) could occur.