

FEATURES

- SHIELDED POWER INDUCTOR
- HIGH CURRENT (UP TO 75 AMPS)
- SURFACE MOUNTABLE CONSTRUCTION
- LOW PROFILE (3.0, 3.5, 4.0 & 5mm 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

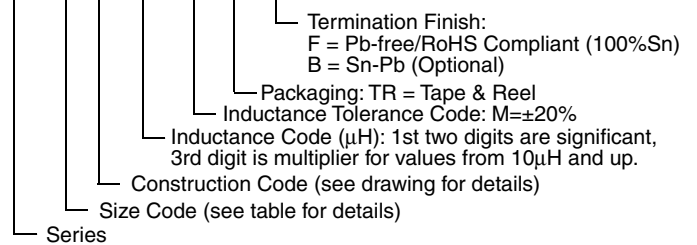


CHARACTERISTICS

Case Size	NPIS_P
Inductance Range	0.1 ~ 10 μ H
Temperature Range	-55°C ~ +125°C
Temperature Rise at Irms	+40°C max.
Inductance Change at Isat	-20% typical
Inductance Tolerance	20% (M)
Resistance to Solder Heat	260°C for 5 seconds

PART NUMBER SYSTEM

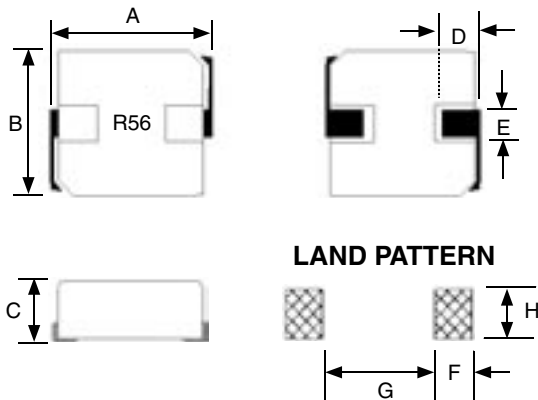
NPIS 23 P 5R6 M TR F



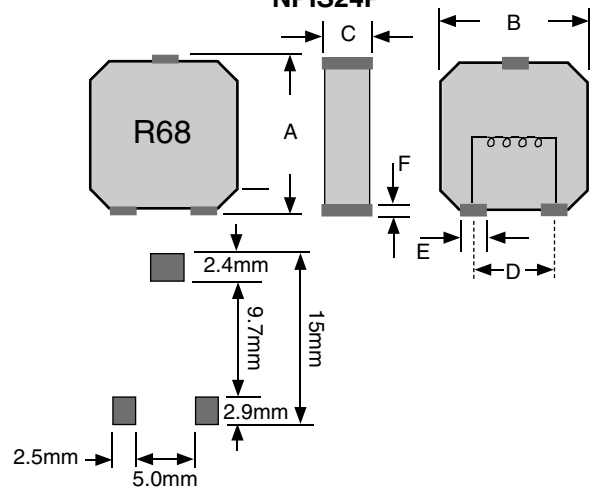
DIMENSIONS (mm)

Series	A	B	C	D	E	F	G	H
NPIS60P	7.8 max.	7.0 max.	2.4 max.	1.6 ± 0.5	2.1 ± 0.5	2.5	3.7	3.5
NPIS63P	7.8 max.	7.0 max.	3.2 max.	1.6 ± 0.5	2.1 ± 0.5	2.5	3.7	3.5
NPIS64P	7.8 max.	7.0 max.	4.2 max.	1.6 ± 0.5	2.1 ± 0.5	2.5	3.7	3.5
NPIS14P	11.8 max.	10.5 max.	4.2 max.	2.2 ± 0.5	2.9 ± 0.5	3.5	5.4	4.5
NPIS23P	13.9 max.	13.5 max.	3.8 max.	2.5 ± 0.5	3.0 ± 0.5	3.35	7.1	4.5
NPIS25P	13.9 max.	13.5 max.	5.2 max.	2.5 ± 0.5	3.0 ± 0.5	3.35	7.1	4.5
NPIS24P	13.9 max.	13.9 max.	5.4 max.	7.6 ± 0.3	2.0 ± 0.3	2.2 ± 0.3	-	-

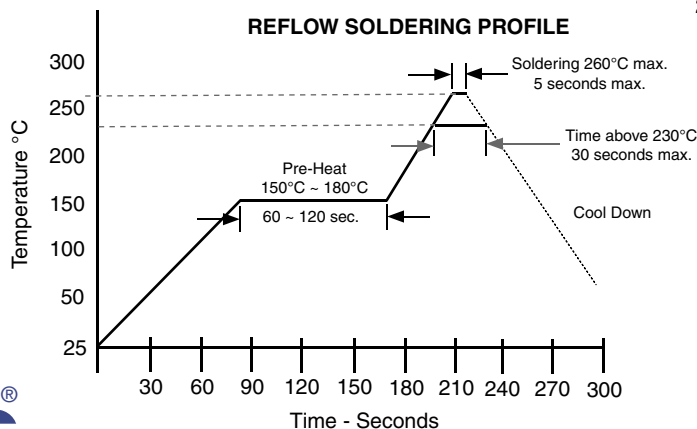
NPIS63P, 64P, 14P, 23P & 25P



NPIS24P



REFLOW SOLDERING PROFILE



Part Number	STANDARD VALUES - CASE SIZE 60 (7.8 X 7.0 X 2.4mm)				Test Frequency
	Inductance Value (μH)	DC Resistance (mΩ)	DC Current Irms (Amps)	DC Current Isat (Amps)	
NPIS60PR10MTRF	0.1	1.7	30	50	100KHz
NPIS60PR22MTRF	0.22	3.2	21	34	
NPIS60PR33MTRF	0.33	4.1	18	22	
NPIS60PR47MTRF	0.47	6.5	13.5	21	
NPIS60PR68MTRF	0.68	9.4	11	18	
NPIS60PR82MTRF	0.82	11.8	10	17	
NPIS60P1R0MTRF	1.0	14.2	9	16	
NPIS60P1R5MTRF	1.5	21.2	7.5	15	
NPIS60P2R2MTRF	2.2	34	6.5	14	
NPIS60P3R3MTRF	3.3	51.2	5	13	
NPIS60P4R7MTRF	4.7	63	4.5	10	
NPIS60P6R8MTRF	6.8	95	3.5	9.0	
NPIS60P8R2MTRF	8.2	106	3	8	
NPIS60P100MTRF	10	129	2.5	7	

Maximum +40°C temperature rise at Irms. Typical -20% inductance change at Isat.

Part Number	STANDARD VALUES - CASE SIZE 63 (7.8 X 7.0 X 3.2mm)				Test Frequency
	Inductance Value (μH)	DC Resistance (mΩ)	DC Current Irms (Amps)	DC Current Isat (Amps)	
NPIS63PR10MTRF	0.1	1.7	32.5	42	100KHz
NPIS63PR15MTRF	0.15	2.5	26	38	
NPIS63PR20MTRF	0.20	3.0	24	36	
NPIS63PR22MTRF	0.22	2.8	23	36	
NPIS63PR33MTRF	0.33	3.9	20	30	
NPIS63PR47MTRF	0.47	4.2	17.5	26	
NPIS63PR68MTRF	0.68	5.5	15.5	23	
NPIS63PR82MTRF	0.82	8.0	13	20	
NPIS63P1R0MTRF	1.0	10	11	16	
NPIS63P1R5MTRF	1.5	15	9	14	
NPIS63P2R2MTRF	2.2	20	8	12	
NPIS63P3R3MTRF	3.3	30	6	10	
NPIS63P4R7MTRF	4.7	40	5.5	6.5	

Maximum +40°C temperature rise at Irms. Typical -20% inductance change at Isat.

Part Number	STANDARD VALUES - CASE SIZE 64 (7.8 X 7.0 X 4.2mm)				Test Frequency
	Inductance Value (μH)	DC Resistance (mΩ)	DC Current Irms (Amps)	DC Current Isat (Amps)	
NPIS64P6R8MTRF	6.8	60	4.5	6.0	100KHz
NPIS64P8R2MTRF	8.2	68	4.0	5.5	
NPIS64P100MTRF	10	105	3.0	4.5	

Maximum +40°C temperature rise at Irms. Typical -20% inductance change at Isat.

Part Number	STANDARD VALUES - CASE SIZE 14 (11.8 X 10.5 X 4.2mm)				Test Frequency
	Inductance Value (μH)	DC Resistance (mΩ)	DC Current Irms (Amps)	DC Current Isat (Amps)	
NPIS14PR36MTRF	0.36	1.4	28	40	100KHz
NPIS14PR47MTRF	0.47	1.6	26	38	
NPIS14PR56MTRF	0.56	1.9	25	36	
NPIS14PR68MTRF	0.68	2.4	23	32	
NPIS14PR82MTRF	0.82	2.6	21.5	30	
NPIS14P1R0MTRF	1.0	3.5	20	28	
NPIS14P1R5MTRF	1.5	7.5	12	20	
NPIS14P2R2MTRF	2.2	8.6	11.5	16.5	
NPIS14P3R3MTRF	3.3	10	10	14	
NPIS14P4R7MTRF	4.7	13.5	8	13	
NPIS14P5R6MTRF	5.6	16	7	12	
NPIS14P8R2MTRF	8.2	32.5	5	8	

Maximum +40°C temperature rise at Irms. Typical -20% inductance change at Isat.

Part Number	STANDARD VALUES - CASE SIZE 23 (13.9 X 13.5 X 3.8mm)				Test Frequency
	Inductance Value (μH)	DC Resistance (mΩ)	DC Current Irms (Amps)	DC Current Isat (Amps)	
NPIS23PR10MTRF	0.1	0.96	43	56	100KHz
NPIS23PR15MTRF	0.15	1.2	41	52	
NPIS23PR22MTRF	0.22	1.3	38.5	52	
NPIS23PR33MTRF	0.33	1.5	37	50	
NPIS23PR47MTRF	0.47	2	32	44	
NPIS23PR60MTRF	0.60	2.5	30	42	
NPIS23PR68MTRF	0.68	2.5	30	40	
NPIS23PR82MTRF	0.82	3	25	38	
NPIS23P1R0MTRF	1.0	3.5	24	36	
NPIS23P1R5MTRF	1.5	5.5	20	28	
NPIS23P1R8MTRF	1.8	7	17	24	
NPIS23P2R2MTRF	2.2	8	16	20	
NPIS23P3R3MTRF	3.3	12	14	18	
NPIS23P4R7MTRF	4.7	15	12	16	
NPIS23P5R6MTRF	5.6	18	10	14	
NPIS23P6R8MTRF	6.8	22	9	13	
NPIS23P8R2MTRF	8.2	28	8.5	12	

Maximum +40°C temperature rise at Irms. Typical -20% inductance change at Isat.

Part Number	STANDARD VALUES - CASE SIZE 25 (13.9 X 13.5 X 5.2mm)				Test Frequency
	Inductance Value (μH)	DC Resistance (mΩ)	DC Current Irms (Amps)	DC Current Isat (Amps)	
NPIS25PR36MTRF	0.36	1.1	41	75	100KHz
NPIS25PR47MTRF	0.47	1.3	38	65	
NPIS25PR50MTRF	0.50	1.5	36	55	
NPIS25PR56MTRF	0.56	1.5	36	55	
NPIS25PR68MTRF	0.68	1.7	34	54	
NPIS25P1R0MTRF	1.0	2.5	29	50	
NPIS25P1R5MTRF	1.5	4.1	23	48	
NPIS25P2R2MTRF	2.2	5.5	20	32	
NPIS25P8R2MTRF	8.2	28	8.5	12	
NPIS25P100MTRF	10	34	7.0	9.5	

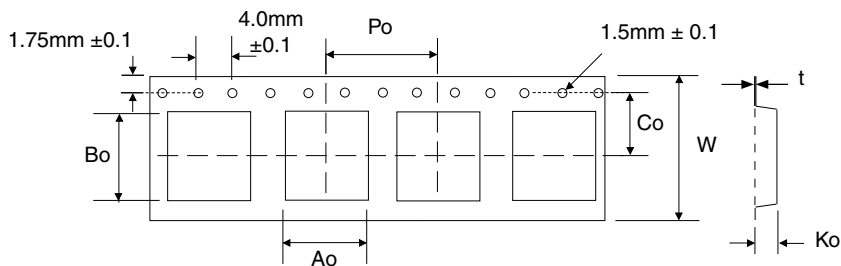
Maximum +40°C temperature rise at Irms. Typical -20% inductance change at Isat.



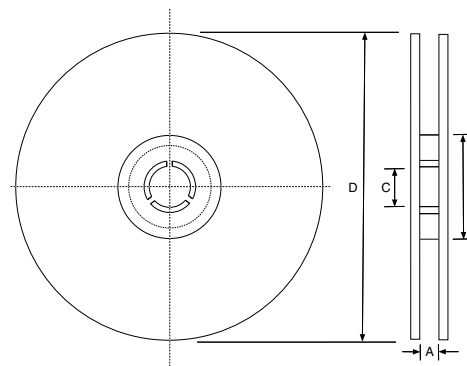
Part Number	STANDARD VALUES - CASE SIZE 24 (13.9 X 13.9 X 5.4mm)				Test Frequency
	Inductance Value (μH)	DC Resistance (mΩ)	DC Current Irms (Amps)	DC Current Isat (Amps)	
NPIS24PR68MTRF	0.68	1.5	29.7	38.8	100KHz
NPIS24P1R0MTRF	1.0	2.0	25.7	33.6	
NPIS24P1R2MTRF	1.2	2.6	23.1	26.9	
NPIS24P2R2MTRF	2.2	4.5	17.8	19.6	
NPIS24P3R3MTRF	3.3	7.0	14.4	17.5	
NPIS24P4R7MTRF	4.7	8.0	12.8	14.9	

Maximum +40°C temperature rise at Irms. Typical -20% inductance change at Isat.

Case Size	CARRIER TAPING DIMENSIONS (mm) AND REEL QUANTITY							
	Ao	Bo	Ko	Co	W	Po	t	Quantity
NPIS60P	7.0 ± 0.1	7.8 ± 0.1	2.6 ± 0.1	7.9 ± 0.1	16 ± 0.3	12.0 ± 0.1	0.035 ± 0.05	1000
NPIS63P	7.0 ± 0.1	7.8 ± 0.1	3.3 ± 0.1	7.9 ± 0.1	16 ± 0.3	12.0 ± 0.1	0.035 ± 0.05	1000
NPIS64P	7.0 ± 0.1	7.8 ± 0.1	4.3 ± 0.1	7.9 ± 0.1	16 ± 0.3	12.0 ± 0.1	0.035 ± 0.05	1000
NPIS14P	10.5 ± 0.1	11.8 ± 0.1	4.5 ± 0.1	11.5 ± 0.1	24 ± 0.3	16.0 ± 0.1	0.035 ± 0.05	900
NPIS23P	13.5 ± 0.1	13.9 ± 0.1	4.5 ± 0.1	11.5 ± 0.1	24 ± 0.3	16.0 ± 0.1	0.035 ± 0.05	600
NPIS25P	13.5 ± 0.1	13.9 ± 0.1	5.6 ± 0.1	11.5 ± 0.1	24 ± 0.3	16.0 ± 0.1	0.035 ± 0.05	600
NPIS24P	13.9 ± 0.1	13.9 ± 0.1	5.6 ± 0.1	11.5 ± 0.1	24 ± 0.3	16.0 ± 0.1	0.040 ± 0.05	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			



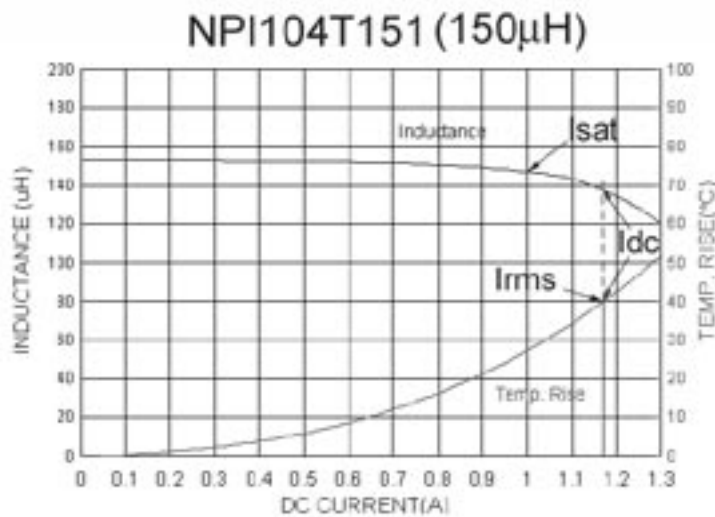
Isat and Irms

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.