

# SMT Power Inductors

Round Wire Coils - PG1083NL series



- Inductance Range: 1.0uH to 50.0uH
- Current Rating: up to 70Apk
- Footprint: 21.7mm x 21.5mm Max

- Height: 12.5mm Max
- No Thermal Aging

## Electrical Specifications @ 25°C — Operating Temperature -40°C to +130°C<sup>1</sup>

Part Number	Inductance <sup>2</sup> @ Irated (μH Typical)	Irated <sup>3</sup> (A)	Controlled Electrical Specs.		Saturation <sup>5</sup> Current Isat (A TYP)		Heating Current <sup>6</sup> Idc (A TYP)	Core Loss Factor <sup>7</sup> (K2)	Size X (REF.)	Height (MAX.)
			DCR <sup>4</sup> (mΩ) MAX	Inductance @ 0Adc (μH ±W 20%)	25°C	100°C				
PG1083.102NL	0.95	40	1.4	1.00	70	65	40	17.9	0.098 [2.50] BOTTOM VIEW A	0.417 [10.6]
PG1083.152NL	1.35	40	1.4	1.50	52	45	40	26.8		
PG1083.222NL	1.95	34	1.8	2.20	46	37	34	29.5		
PG1083.332NL	2.70	28	2.2	3.30	37	33	28	35.4		
PG1083.472NL	4.10	26	2.8	4.70	30	24	26	50.4		
PG1083.682NL	6.10	22	3.8	6.80	26	20	22	52.1		
PG1083.103NL	8.60	17.5	6.0	10.5	22.5	18	17.5	62.6	0.054 [1.40] BOTTOM VIEW B	0.492 [12.50]
PG1083.153NL	12.6	14	9.2	15.2	18.5	14	14.0	74.1		
PG1083.253NL	21.0	11	15.0	24.5	14.5	12	11.0	93.9		
PG1083.323NL	27.9	9	21.5	32.0	12.5	10	9.0	107.3		
PG1083.503NL	45.2	7.4	32.6	50.0	10.0	8.5	7.4	134.1		

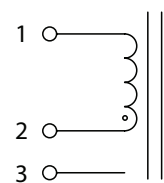
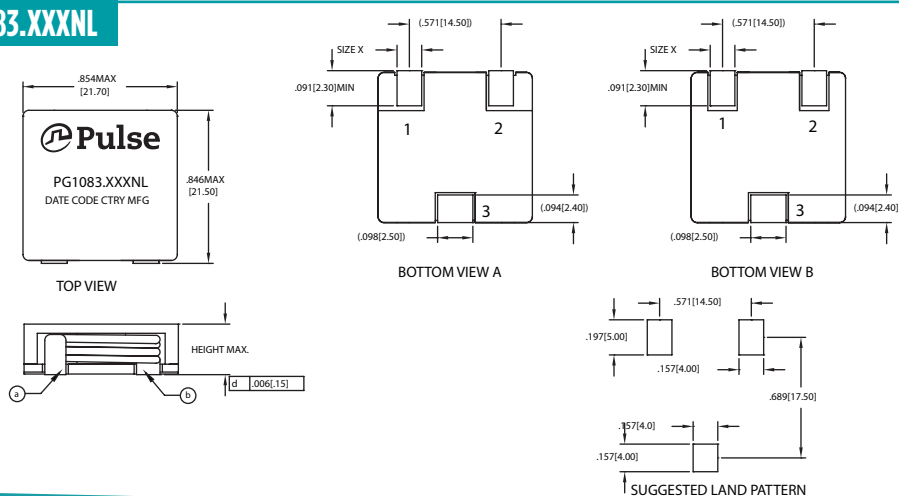
### Notes:

- Actual temperature of the component during system operation (ambient plus temperature rise) must be within the standard operating range.
- Inductance at Irated is a typical inductance value for the component taken at rated current.
- The rated current as listed is either the saturation current (@ 25°C) or the heating current depending on which value is lower.
- The DCR of the part is measured at an ambient temperature of 20°C±3°C from point a to b as shown below on the mechanical drawing.
- The saturation current, Isat, is the current at which the component inductance drop by 20% (typical) at an ambient temperature. This current is determined by placing the component in the specified ambient environment and applying a short duration pulse current (to eliminate self-heating effect) to the component.
- The heating current, Idc, is the DC current required to raise the component temperature by approximately 40°C. The heating current is determined by mounting the component on a typical PCB and applying current for 30 minutes. The temperature is measured by placing the thermocouple on top of the unit under test. Take note that the components' performance varies depending on the system condition. It is suggested that the component be tested at the system level, to verify the temperature rise of the component during system operation.
- Core loss approximation is based on published core data (at 100°C):  
Core Loss =  $K1 * (f)^{1.378} * (K2 * \Delta I)^{2.864}$  in mW  
K1 = 1.01E-9  
f = switching frequency in KHz  
K1 & K2 = core loss factors  
 $\Delta I$  = delta I across the component in Ampere  
K2 = one half of the peak to peak flux density across the component in Gauss
- Unless otherwise specified, all testing is made at 100kHz, 0.1Vac
- Optional Tape & Reel packaging can be ordered by adding a "T" suffix to the part number (i.e. PG1083.682NL becomes PG1083.682NLT). Pulse complies with industry standard tape and reel specification EIA481. The tape and reel for this product has a width (W=44.0mm), pitch (Po=32.0mm). The depth (Ko) has two types: 1) 10.6 mm for parts with height of 10.6mm max, 120 pieces/reel; 2) 12.9mm for the parts of 12.5mm max, 100 pieces/reel.
- The core is a conductive material so care should be taken when mounting this component over an exposed via or if the voltage across the terminals exceeds 24V. Trickle current through the core material may generate additional losses and potential overheating. Please contact Pulse to discuss an alternative solution if required.

## Mechanicals

## Schematic

### PG1083.XXXNL



Weight.....18.6 grams  
Tape and Reel.....100/tray

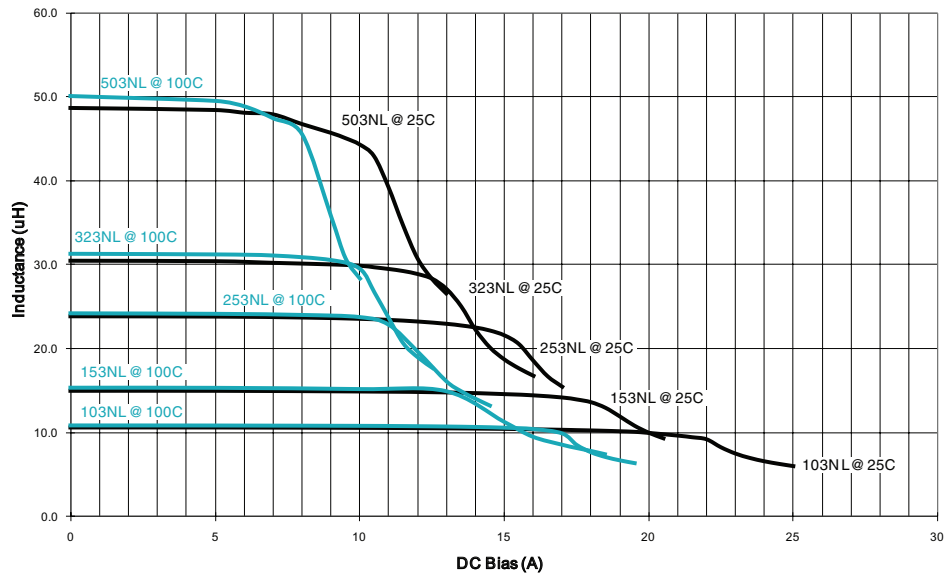
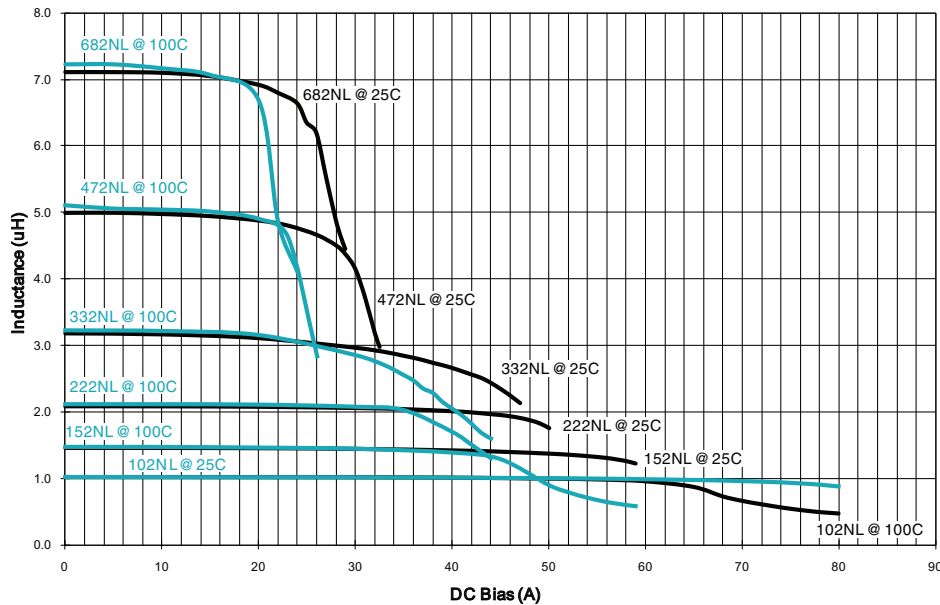
Dimensions:  $\frac{\text{Inches}}{\text{mm}}$

Unless otherwise specified, all tolerances are  $\pm \frac{0.01}{0.25}$

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Typical Inductance VS DC bias



## For More Information

### Pulse Worldwide Headquarters

15255 Innovation Drive Ste 100  
San Diego, CA 92128  
U.S.A.

### Pulse Europe

Pulse Electronics GmbH  
Am Rottland 12  
58540 Meinerzhagen  
Germany

### Pulse China Headquarters

Pulse Electronics (ShenZhen) CO., LTD  
D708, Shenzhen Academy of  
Aerospace Technology,  
The 10th Keji South Road,  
Nanshan District, Shenzhen, P.R.  
China 518057

### Pulse North China

Room 2704/2705  
Super Ocean Finance Ctr.  
2067 Yan An Road West  
Shanghai 200336  
China

### Pulse South Asia

135 Joo Seng Road  
#03-02  
PM Industrial Bldg.  
Singapore 368363

### Pulse North Asia

3F, No. 198  
Zhongyuan Road  
Zhongli City  
Taoyuan County 32068  
Taiwan

Tel: 858 674 8100  
Fax: 858 674 8262

Tel: 49 2354 777 100  
Fax: 49 2354 777 168

Tel: 86 755 33966678  
Fax: 86 755 33966700

Tel: 86 21 62787060  
Fax: 86 2162786973

Tel: 65 6287 8998  
Fax: 65 6280 0080

Tel: 886 3 4356768  
Fax: 886 3 4356823

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