

# SMT POWER INDUCTORS

## Flat Coils - PG0642NL Series



- Height:** 5.0mm Max
- Footprint:** 7.9mm x 7.6mm Max
- Saturation Current:** up to 32Apk
- Inductance Range:** 0.32μH to 5.4μH

### Electrical Specifications @ 25°C — Operating Temperature -40°C to +125°C<sup>1</sup>

Part <sup>9</sup> Number	Inductance <sup>2</sup> @I <sub>rated</sub> (μH TYP)	I <sub>rated</sub> <sup>3</sup> (A)	DCR <sup>4</sup> (mΩ) (±6%)	Inductance @0A <sub>dc</sub> (μH ±20%)	Saturation <sup>5</sup> Current I <sub>sat</sub> (A TYP)	Heating <sup>6</sup> Current I <sub>dc</sub> (A TYP)	Core Loss <sup>7</sup> Factor K2
PG0642.401NL	0.32	20.0	3.3	0.40	32	20.0	33.6
PG0642.681NL	0.54	17.5	4.3	0.68	25	17.5	46.5
PG0642.102NL	0.80	14.5	5.8	1.00	22	14.5	58.2
PG0642.152NL	1.20	13.3	6.8	1.50	18	13.3	75.7
PG0642.222NL	1.70	10.0	12.7	2.20	14	10.0	84.7
PG0642.332NL	2.60	9.5	16.6	3.30	13	9.5	107.0
PG0642.472NL	3.70	9.0	18.4	4.70	10	9.0	140.1
PG0642.682NL	5.40	6.0	26.4	6.80	8	6.0	176.2

#### NOTES:

- Actual temperature of the component during system operation (ambient plus temperature rise) must be within the standard operating range.
- Inductance at I<sub>rated</sub> 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 and b as shown above on the mechanical drawing.
- The saturation current, I<sub>sat</sub>, is the current at which the component inductance drops by 20% (typical) at an ambient temperature of 25°C. 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, I<sub>dc</sub>, 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:

$$\text{Core Loss} = K1 * (f)^{1.48} * (K2\Delta I)^{1.97}$$

Where: Core Loss = in Watts

$$K1 = 5.894E-10$$

f = switching frequency in kHz

K1 & K2 = core loss factors

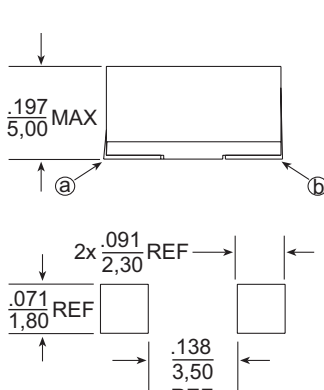
ΔI = delta I across the component in Ampere

K2\*ΔI = one half of the peak to peak flux density across the component in Gauss

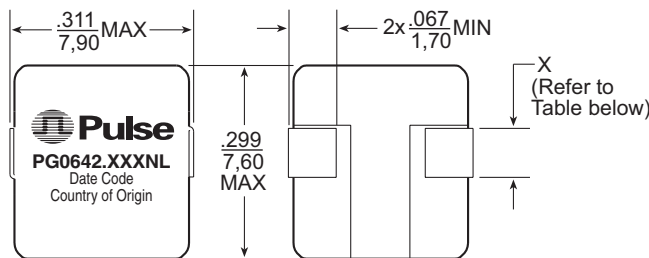
- Unless otherwise specified, all testing is made at 100kHz, 0.1Vac.
- Optional Tape & Reel packaging can be ordered by adding a "T" suffix to the part number (i.e. PG0642.222NL becomes PG0642.222NLT). Pulse complies to industry standard tape and reel specification EIA481. The tape and reel for this product has a width (W=24mm), pitch (Po=12mm) and depth (Ko=5.5mm).

### Mechanical

### Schematic



SUGGESTED PAD LAYOUT

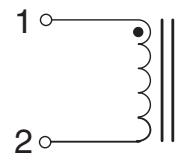


Weight.....1.2 grams

Tape & Reel .....800/reel

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

Unless otherwise specified, all tolerances are  $\pm \frac{.010}{0.25}$



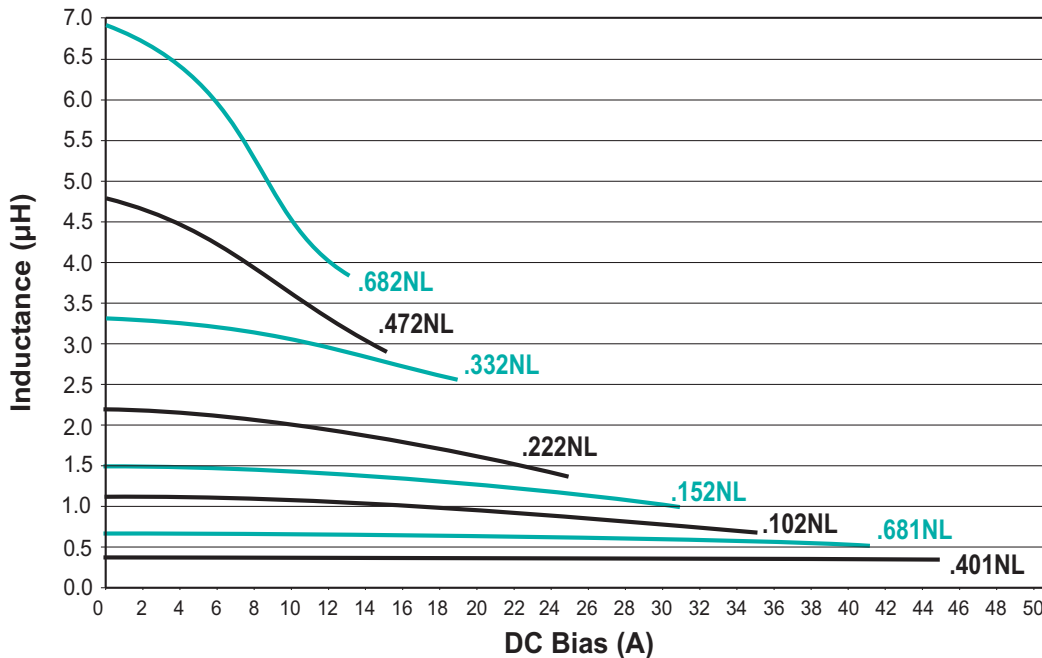
Part No.	X (Ref.)
PG0642.401NL	1.2mm
PG0642.681NL	1.2mm
PG0642.102NL	1.1mm
PG0642.152NL	1.1mm
PG0642.222NL	0.8mm
PG0642.332NL	0.7mm
PG0642.472NL	0.7mm
PG0642.682NL	0.7mm

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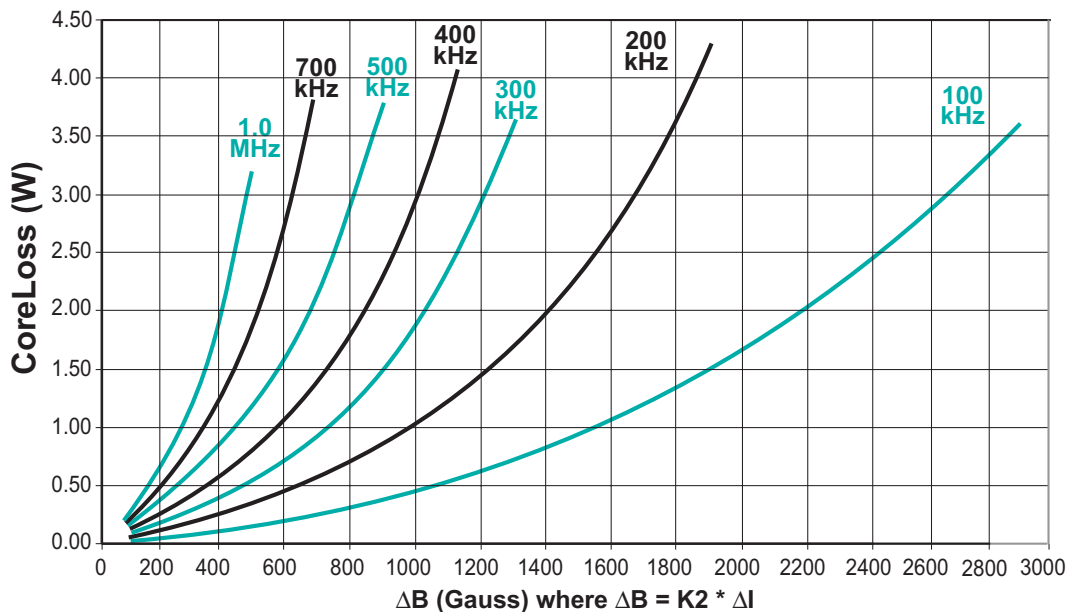
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### Typical Inductance vs Current Characteristics



### Typical Core Loss vs Peak Flux Density



### For More Information:

**Pulse Worldwide Headquarters**  
12220 World Trade Dr.  
San Diego, CA 92128  
U.S.A.  
[www.pulseeng.com](http://www.pulseeng.com)

**Pulse European Headquarters**  
Einsteinstrasse 1  
D-71083 Herrenberg  
Germany

**Pulse China Headquarters**  
B402, Shenzhen Academy of  
Aerospace Technology Bldg.  
10th Kejinan Rd.  
High-Tech Zone  
Nanshan District  
Shenzhen, PR China 518057

**Pulse North China**  
Room 1503  
XinYin Building  
No. 888 YiShan Rd.  
Shanghai 200233  
China

**Pulse South Asia**  
150 Kampong Ampat  
#07-01/02  
KA Centre  
Singapore 368324

**Pulse North Asia**  
No. 26  
Kao Ching Rd.  
Yang Mei Chen  
Taoyuan Hsien  
Taiwan, R. O. C.  
32667

TEL: 858 674 8100  
FAX: 858 674 8262

TEL: 49 7032 7806 0  
FAX: 49 7032 7806 12

TEL: 86 755 33966678  
FAX: 86 755 33966700

TEL: 86 21 32181071  
FAX: 86 21 32181396

TEL: 65 6287 8998  
FAX: 65 6280 0080

TEL: 886 3 4643715  
FAX: 886 3 4641911

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