

# SMT Power Inductors

Flat Coils - PG0255NL Series



- Height:** 4.0mm Max
- Footprint:** 11.5mm x 10.3mm Max
- Heating Current Rating:** up to 51A
- Inductance Range:** 0.17μH to 2.1μH

Electrical Specifications @ 25°C - Operating Temperature -40°C to +125°C

Part Number	Inductance <sup>2</sup> @ I <sub>rated</sub> (TYP)	I <sub>rated</sub> <sup>5</sup> (A)	Controlled Electrical Specifications				Saturation <sup>5</sup> Current I <sub>sat</sub> (A)	Heating <sup>6</sup> Current I <sub>dc</sub> (A)	Core Loss Factor <sup>7</sup>	
			DCR (mΩ)		Inductance @ 0A <sub>dc</sub> (μH ±15%)	Inductance <sup>4</sup> @ Bias (μH ±20%)			K1	K2
			TYP	MAX						
PG0255.201NL	0.17	30	0.45	0.55	0.20	0.18 @ 21Adc	30	51	6.20e-10	47
PG0255.401NL	0.34	29	1.05	1.15	0.40	0.36 @ 17Adc	29	34	6.20e-10	56
PG0255.601NL	0.51	27	1.70	1.87	0.60	0.56 @ 15Adc	28	27	6.20e-10	60
PG0255.102NL	0.90	21	2.80	3.20	1.00	0.87 @ 26Adc	27	21	6.20e-10	78
PG0255.152NL	1.35	16	4.50	5.00	1.50	1.20 @ 17Adc	22	16	6.20e-10	95
PG0255.182NL	1.57	16	4.50	5.00	1.80	1.57 @ 16Adc	21	16	6.20e-10	115
PG0255.222NL	2.10	13	6.60	7.00	2.20	1.80 @ 20Adc	20	13	6.20e-10	118

**Notes:**

- The temperature of the component (ambient plus temperature rise) must be within the specified operating temperature range.
- Inductance at I<sub>rated</sub> is a typical inductance value for the component taken at rated current.
- The rated current listed is the lower of the saturation current @ 25°C or the heating current.
- The inductance at Bias is the controlled inductance value measured after subjecting the part to the listed dc bias current.
- 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 effects) 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 component's 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:  
 $Core\ Loss = K1 * (f)^{1.48} * (K2\Delta I)^{1.97}$   
**Where: Core Loss** = in Watts  
**f** = switching frequency in kHz  
**K1 & K2** = core loss factors  
**ΔI** = delta I across the component in Ampere  
**K2ΔI** = one half of the peak to peak flux density across the component in Gauss
- Unless otherwise specified, all testing is made at 100kHz, 0.1V<sub>AC</sub>.
- Optional Tape & Reel packaging can be ordered by adding a "T" suffix to the part number (i.e. PG0255.601NL becomes PG0255.601NLT). Pulse complies to industry standard tape and reel specification EIA481.

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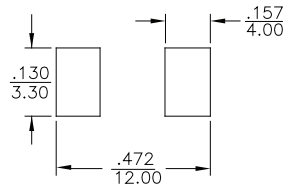
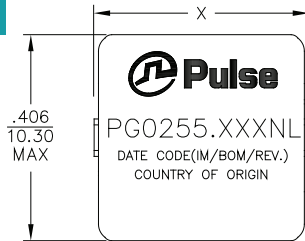
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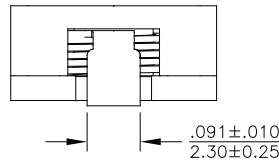
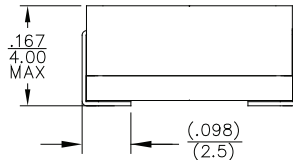
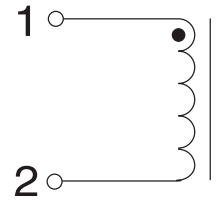
## Mechanical

## Schematic

PG0255.XXXNL

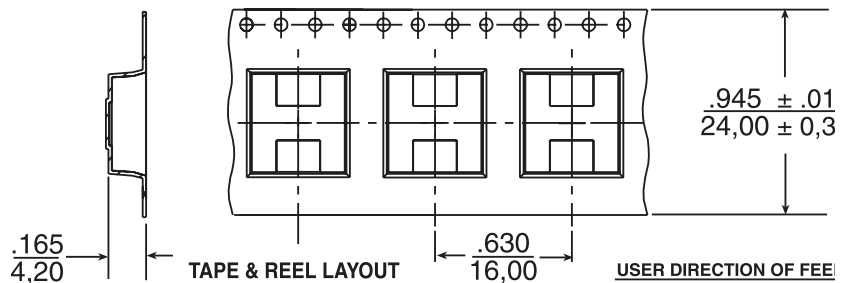


SUGGESTED LAND PATTERN

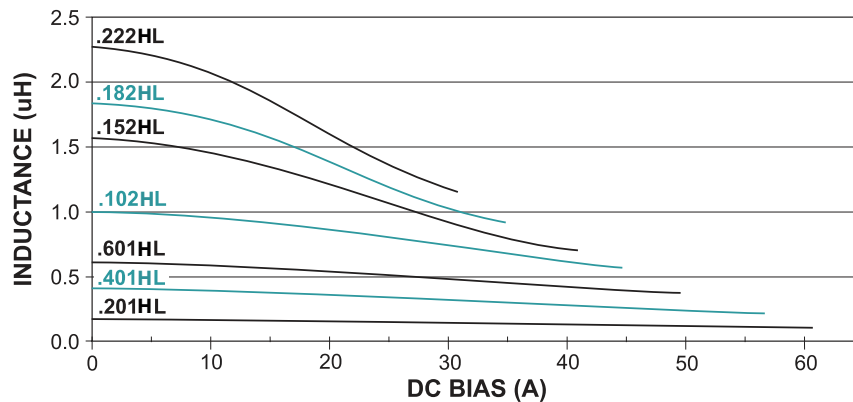


Weight .....1.8grams  
 Tape & Reel .....850/reel  
 Dimensions:  $\frac{\text{Inches}}{\text{mm}}$   
 Unless otherwise specified,  
 all tolerances are:  $\pm \frac{0.10}{0.25}$

PART NUMBER	"X" Dimension (mm MAX)
PG0255.201NL	.453/11.50
PG0255.401NL	.453/11.50
PG0255.601NL	.453/11.50
PG0255.222NL	.425/10.80
PG0255.152NL	.425/10.80
PG0255.102NL	.425/10.80
PG0255.182NL	.425/10.80



## 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

3 Fraser Street 0428  
 DUO Tower  
 Singapore 189352

### Pulse North Asia

1F., No.111 Xiyuan Road  
 Zhongli District  
 Taoyuan City 32057  
 Taiwan (R.O.C)

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 4356820

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