

# SMT POWER INDUCTORS

## Wirewound - PD0120NL Series



-  **Height:** 8.2mm Max
-  **Footprint:** 16.2mm x 16.0mm Max
-  **Current Rating:** up to 15.4A
-  **Inductance Range:** 1.2μH to 55.4μH

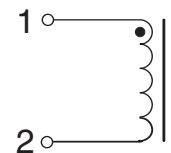
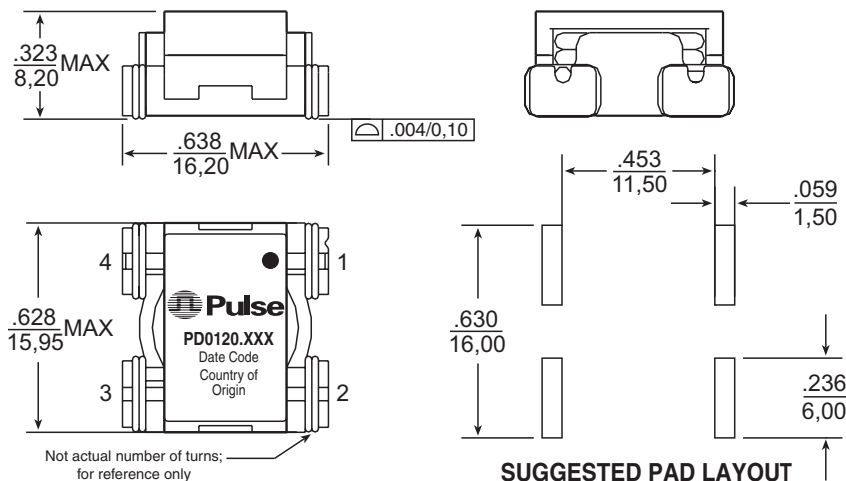
**Electrical Specifications @ 25°C — Operating Temperature -40°C to +125°C<sup>7</sup>**

| Part Number <sup>5,7</sup> | Inductance<br>@ Irated<br>(μH ±10%) | Irated <sup>1</sup><br>(A <sub>DC</sub> ) | DCR<br>(mΩ) |      | Inductance<br>@ 0 A <sub>DC</sub><br>(μH ±10%) | Saturation Current <sup>2</sup><br>(A) |       | Heating<br>Current <sup>3</sup><br>(A) | Core Loss<br>Factor <sup>4</sup><br>Kc |
|----------------------------|-------------------------------------|-------------------------------------------|-------------|------|------------------------------------------------|----------------------------------------|-------|----------------------------------------|----------------------------------------|
|                            |                                     |                                           | TYP         | MAX  |                                                | 25°C                                   | 100°C |                                        |                                        |
| PD0120.102NL               | 1.2                                 | 15.4                                      | 1.5         | 2.0  | 1.2                                            | 29                                     | 24.6  | 15.4                                   | 5556                                   |
| PD0120.152NL               | 1.8                                 | 14.2                                      | 2.5         | 3.0  | 1.8                                            | 24.3                                   | 19    | 14.2                                   | 4444                                   |
| PD0120.222NL               | 2.5                                 | 11.4                                      | 4.0         | 4.2  | 2.6                                            | 20.6                                   | 17.6  | 11.4                                   | 3704                                   |
| PD0120.332NL               | 4.5                                 | 11.2                                      | 6.3         | 6.8  | 4.6                                            | 15                                     | 13    | 11.2                                   | 2778                                   |
| PD0120.532NL               | 5.6                                 | 10.4                                      | 8.0         | 8.5  | 5.7                                            | 13.6                                   | 11.6  | 10.4                                   | 2469                                   |
| PD0120.702NL               | 7.1                                 | 8.6                                       | 9.5         | 10.0 | 7.2                                            | 12.6                                   | 10.6  | 8.6                                    | 2222                                   |
| PD0120.113NL               | 12.0                                | 7.6                                       | 15.0        | 16.0 | 12.2                                           | 9                                      | 8     | 7.6                                    | 1709                                   |
| PD0120.183NL               | 18.3                                | 6.4                                       | 21.5        | 25.5 | 18.7                                           | 7.6                                    | 6.6   | 6.4                                    | 1389                                   |
| PD0120.223NL               | 22.6                                | 5.3                                       | 30.5        | 35.5 | 23.1                                           | 6.8                                    | 6     | 5.3                                    | 1235                                   |
| PD0120.373NL               | 39.9                                | 4                                         | 51.5        | 58.5 | 40.7                                           | 5                                      | 4.6   | 4                                      | 926                                    |
| PD0120.503NL               | 55.4                                | 3.4                                       | 75.5        | 82.5 | 56.5                                           | 4.3                                    | 3.8   | 3.4                                    | 794                                    |

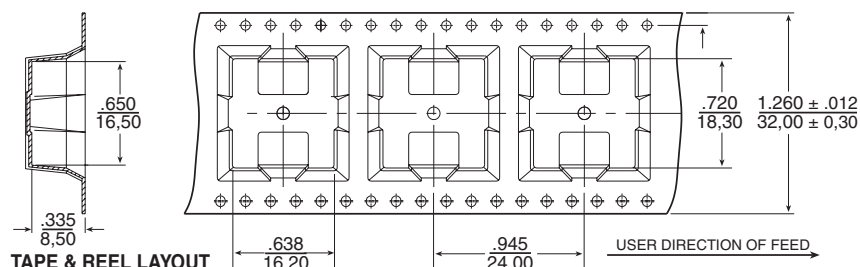
**NOTE:** To order RoHS compliant part, add the suffix "NL" to the part number (i.e. PD0120.102 becomes PD0120.102 NL).

### Mechanical

### Schematic



**Weight** ..... 4.25 grams  
**Tape & Reel** ..... .250/reel



**Dimensions:**  $\frac{\text{Inches}}{\text{mm}}$   
 Unless otherwise specified,  
 all tolerances are  $\pm \frac{.010}{0.25}$

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### Notes from Tables

1. The rated current as listed is either the saturation current or the heating current depending on which value is lower.
2. The saturation current is the current which causes the inductance to drop by 10% at the stated ambient temperatures (-40°C, 25°C and 125°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.
3. The heating current is the DC current which causes the temperature of the part to increase by approximately 45°C. This current is determined by mounting the component on a PCB with .25" wide, 3 oz. equivalent copper traces, and applying the current to the device for 30 minutes with no forced air cooling.
4. In high volt\*time applications, additional heating in the component can occur due to losses in the inductor which may necessitate derating the current in order to limit the temperature rise of the component. In order to determine the approximate total losses (or temperature rise) for a given application both copper losses and core losses should be taken into account.
5. Optional Tape & Reel packaging can be ordered by adding a "T" suffix to the part number (i.e. PD0120.102 becomes PD0120.102T). Pulse complies to industry standard tape and reel specification EIA481.

### Estimated Temperature Rise:

$$Trise = \left[ \frac{Coreloss (mW) + DCRloss (mW)}{7.05} \right]^{.833} (°C)$$

$$Coreloss = 1.86E-12 * (Freq (kHz))^{1.63} * (Kc * V\mu sec)^{2.17} (mW)$$

$$DCRloss = I_{rms}^2 * DCR(m\Omega) (mW)$$

$$I_{rms} = \left[ I_{DC}^2 + \left[ \frac{dI}{12} \right]^2 \right]^{1/2} (A_{rms})$$

$$Freq (kHz) = \text{switching frequency (kHz)}$$

$$V\mu sec = L (\mu H) * dI \text{ or } V * D * 1000 / Freq (kHz)$$

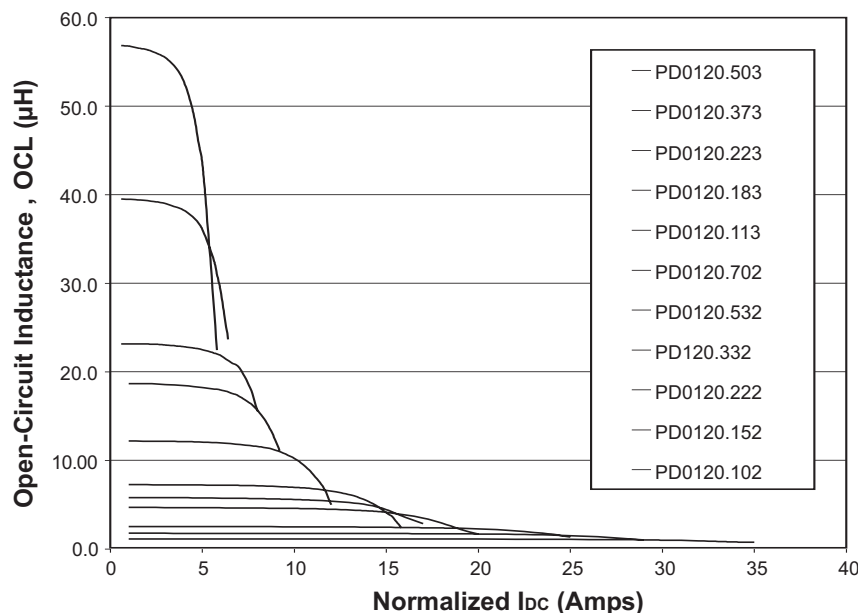
$$dI = pk - pk \text{ ripple current across the component (A)}$$

$$V = \text{Voltage across the component (V)}$$

$$D = \text{Duty cycle}$$

6. The "NL" suffix indicates an RoHS-compliant part number. Non-NL suffixed parts are not necessarily RoHS compliant, but are electrically and mechanically equivalent to NL versions. If a part number does not have the "NL" suffix, but an RoHS compliant version is required, please contact Pulse for availability.
7. The temperature of the component (ambient plus temperature rise) must be within the stated operating temperature range.

### Inductance vs Current Characteristics





Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

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