

# SMT Power Inductors

Power Beads - PA3784.XXXHL Series



- Current Rating: Over 94 Apk
- Inductance Range: 120nH to 180nH
- Height: 8.0 mm Max
- Footprint: 10.0mm x 8.0mm Max
- Halogen Free

## Electrical Specifications @ 25°C — Operating Temperature - 40°C to +130°C<sup>7</sup>

| Part Number  | Inductance <sup>1</sup><br>@ 0A <sub>DC</sub><br>(nH +/- 10%) | Inductance <sup>2</sup><br>@ I <sub>rated</sub><br>(nH TYP) | I <sub>rated</sub> <sup>3</sup><br>(ADC) | DCR <sup>4</sup><br>(mΩ nominal) | Saturation Current <sup>5</sup><br>(A TYP) |       | Heating Current <sup>6</sup><br>(A TYP) |
|--------------|---|---|--|----------------------------------|--|-------|---|
|              |   |   |  |                                  | 25°C                                       | 100°C |   |
| PA3784.121HL | 120   | 120   | 84                                       | 0.18 +/- 5%                      | 94   | 84    | 70                                      |
| PA3784.151HL | 150   | 150   | 67                                       |                                  | 83   | 67    |   |
| PA3784.181HL | 180   | 165   | 55                                       |                                  | 67   | 55    |   |

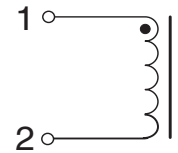
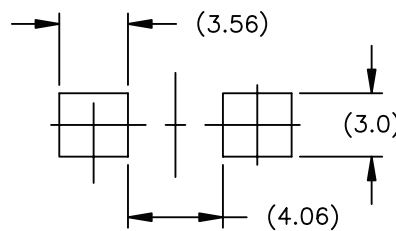
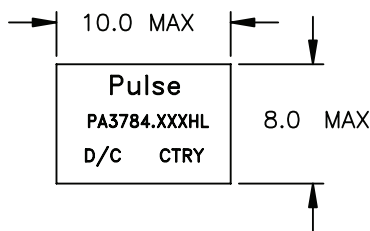
### NOTES:

1. Inductance measured at 100kHz, 100mVrms.
2. Inductance at I<sub>rated</sub> is the value of the inductance at 25°C at the listed rated current.
3. The rated current as listed is either the saturation current (25°C or 100°C) or the heating current depending on which value is lower.
4. The nominal DCR is measured from point (a) to point (b), as shown below on the mechanical drawing.
5. The saturation current is the typical current which causes the inductance to drop by 20% at the stated ambient temperatures (25°C, 100°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.
6. The heating current is the DC current which causes the part temperature to increase by approximately 40°C when used in a typical application.
7. In high volt\*time applications, additional heating in the component can occur due to core losses in the inductor which may necessitate derating the current in order to limit the temperature rise of the component. To determine the approximate total losses (or temperature rise) for a given application, the core loss and temperature rise curves can be used.
8. Optional Tape & Reel packaging can be ordered by adding a "T" suffix to the part number (i.e. PA3784.121HL becomes PA3784.121HLT). Pulse complies to industry standard tape and reel specification EIA481. The tape and reel for this product has a width (W=24mm), pitch (Po=16.0mm) and depth (Ko=8.2mm).
9. The temperature of the component (ambient plus temperature rise) must be within the stated operating temperature range.

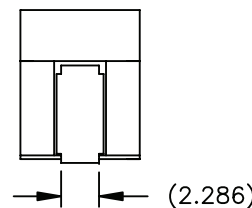
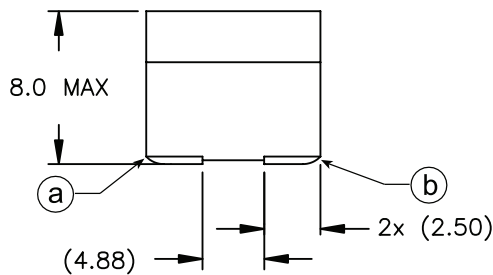
## Mechanical

## Schematics

### PA3784.XXXHL



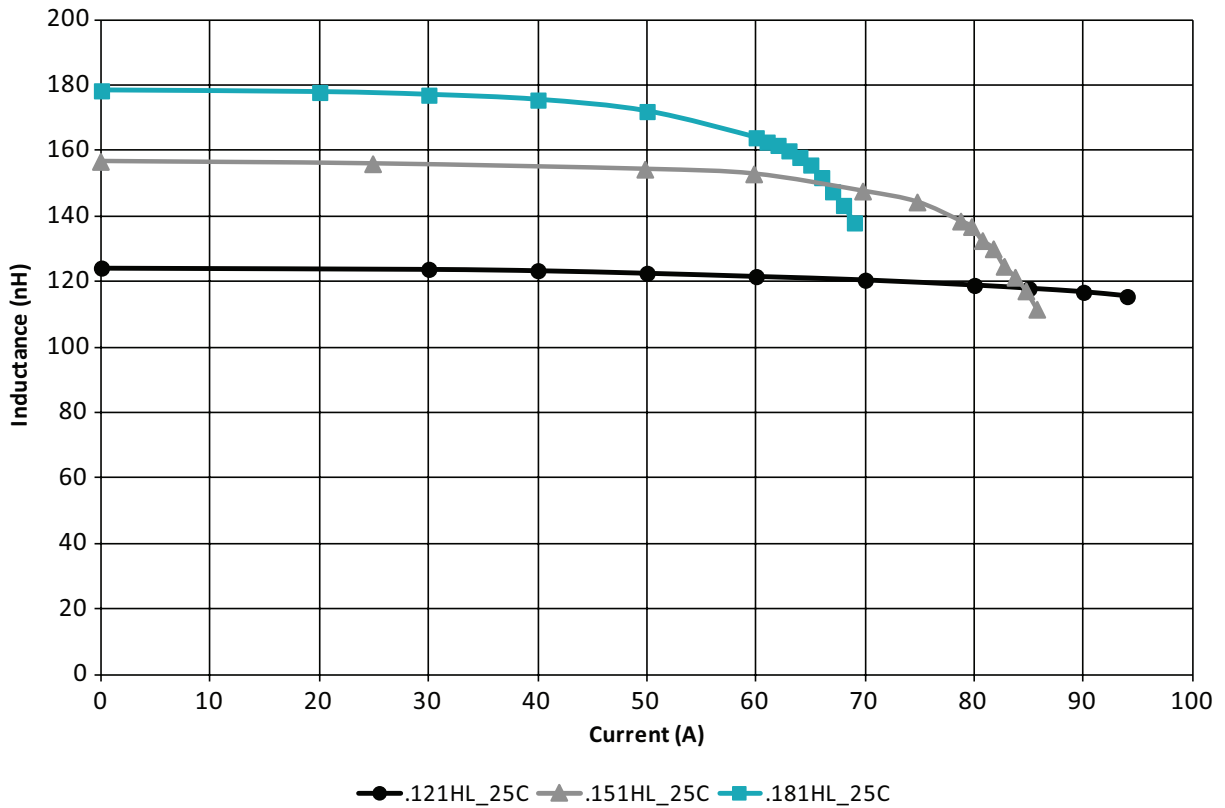
### SUGGESTED LAND PATTERN



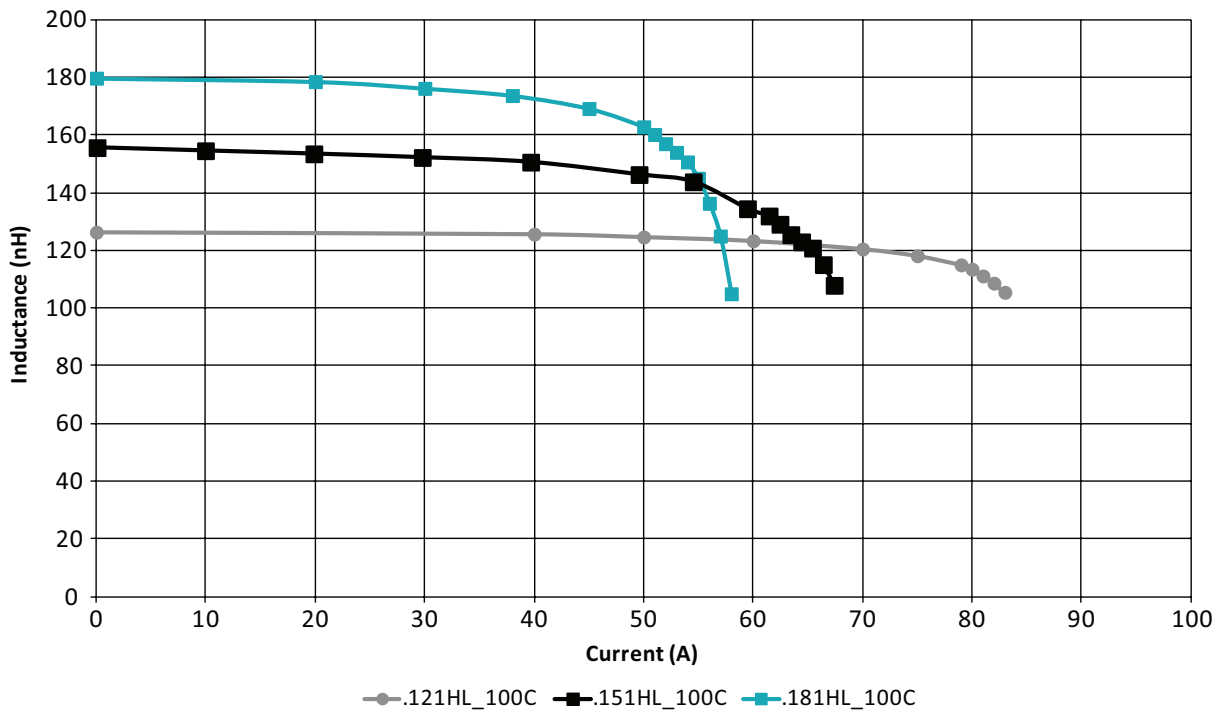
Weight ..... 2.75 grams  
Tape & Reel ..... 450/reel

Dimensions: mm  
Unless otherwise specified,  
all tolerances are ± 0.25

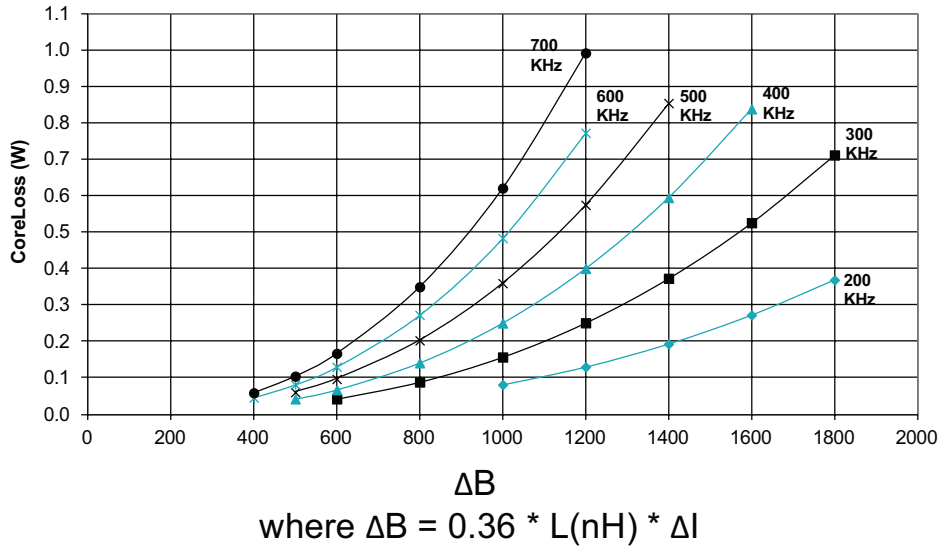
## PA3784.XXXHL, LvsI, 25C



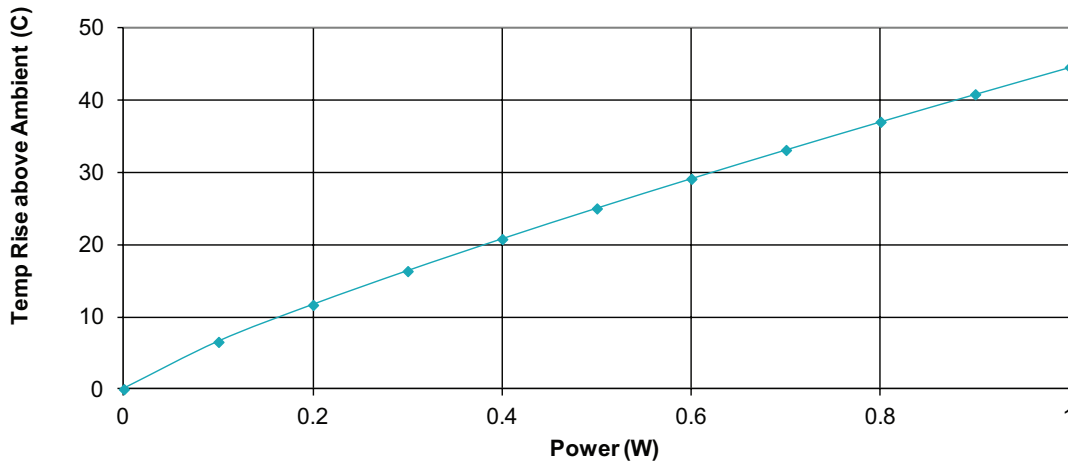
## PA3784.XXXHL, LvsI, 100C



## PA3784.XXXHL CoreLoss (W)



## PA3784.XXXHL Temp Rise vs Power Dissipation



**Total Power Dissipation (W) = CopperLoss + CoreLoss**  
**CopperLoss =  $I_{rms}^2 * R_{dc}(\text{mOhms}) / 1000$**   
**CoreLoss = (from table)**

### 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

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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