

HIGH FREQUENCY PLANAR TRANSFORMERS

PA08XXNL Series (up to 140W)



- Power Rating:** up to 140W
- Height:** 8.6mm to 9.7mm Max
- Footprint:** 23.4mm x 21.6mm Max
- Frequency Range:** 200kHz to 700kHz
- Isolation (Primary to Secondary & Core):** 1750VDC

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

| Part ³ Number | Turns | | | Schematic | Primary ¹ Inductance (μH MIN) | Leakage ² Inductance (μH MAX) | DCR (mΩ MAX) | | | Maximum Height (mm) |
|--------------------------|-----------|-----------|---------------------|-----------|--|--|--------------|-----------|-------------|---------------------|
| | Primary A | Primary B | Secondary | | | | Primary A | Primary B | Secondary | |
| PA0801NL | 4T | 4T | 4T (1T:1T:1T:1T) | A1 | 153 | 0.45 | 17.5 | 17.5 | 7 | 8.6 |
| PA0802 | 4T | 5T | | | 194 | 0.45 | 17.5 | 20 | 7 | 8.6 |
| PA0803NL | 5T | 5T | | | 240 | 0.55 | 20 | 20 | 7 | 8.6 |
| PA0804NL | 5T | 6T | | | 290 | 0.60 | 20 | 25 | 7 | 8.6 |
| PA0805NL | 6T | 6T | | | 345 | 0.65 | 25 | 25 | 7 | 8.6 |
| PA0806NL | 4T | 4T | 1T & 1T | A2 | 153 | 0.45 | 17.5 | 17.5 | .875 & .875 | 8.6 |
| PA0807 | 4T | 5T | | | 194 | 0.45 | 17.5 | 20 | .875 & .875 | 8.6 |
| PA0808NL | 5T | 5T | | | 240 | 0.55 | 20 | 20 | .875 & .875 | 8.6 |
| PA0809NL | 5T | 6T | | | 290 | 0.60 | 20 | 25 | .875 & .875 | 8.6 |
| PA0810NL | 6T | 6T | | | 345 | 0.65 | 25 | 25 | .875 & .875 | 8.6 |
| PA0811NL | 4T | 4T | 2T & 1T | A3 | 153 | 0.45 | 17.5 | 17.5 | 1.75 & 1.75 | 8.6 |
| PA0812 | 4T | 5T | | | 194 | 0.45 | 17.5 | 20 | 1.75 & 1.75 | 8.6 |
| PA0813NL | 5T | 5T | | | 240 | 0.45 | 20 | 20 | 1.75 & 1.75 | 8.6 |
| PA0814NL | 5T | 6T | | | 290 | 0.50 | 20 | 25 | 1.75 & 1.75 | 9.7 |
| PA0815NL | 6T | 6T | | | 345 | 0.55 | 25 | 25 | 1.75 & 1.75 | 9.7 |

Notes: 1. Inductance is measured with both primary windings connected in series (2 to 5, with 3 and 4 shorted). 2. Leakage inductance is measured on winding (2-5) with (3,4) and (7, 8, 9, 10, 11) shorted. 3. The "NL" suffix indicates a 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. 4. Basic insulated parts can be made available. Please contact Pulse for availability.

Mechanical

SUGGESTED PAD LAYOUT

Weight11.0 grams
Tape & Reel180/reel
Tray40/tray

Dimensions: Inches
mm
Unless otherwise specified,
all tolerances are ± .010
0,25

Tape & Reel Layout for PA0801 thru PA0813

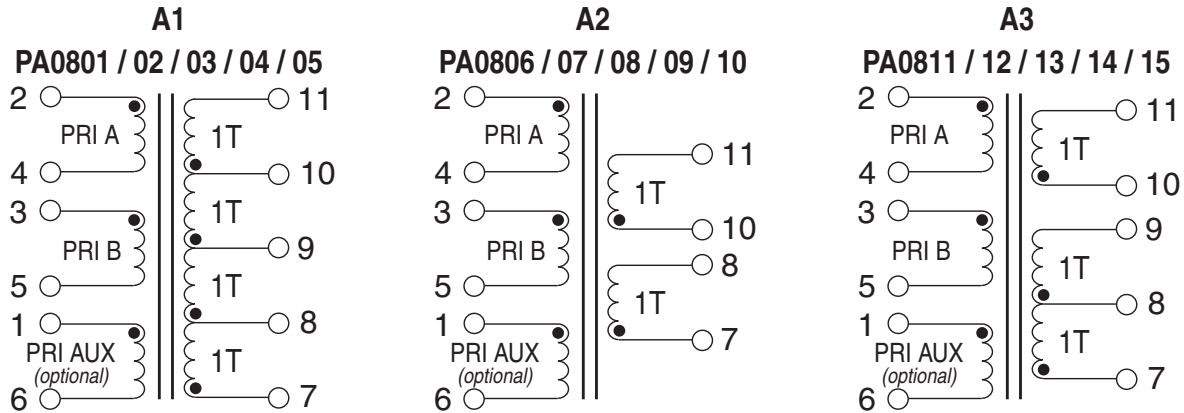
NOTE: The above is a universal footprint for a component that has all 11 pins populated. For a given part number, it is only necessary to provide pads for the terminations shown in the schematics on the next page.

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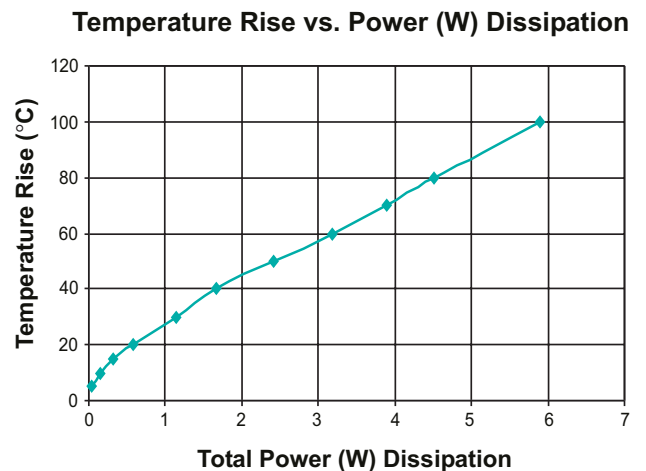
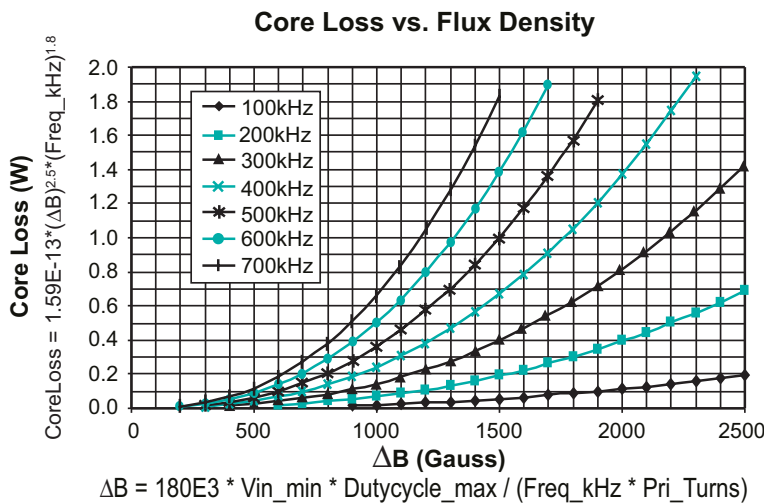


Schematics



Notes

1. The above transformers have been tested and approved by Pulse's IC partners and are cited in the appropriate datasheet or evaluation board documentation at these companies. To determine which IC and IC companies are matched with the above transformers, please refer to the IC cross reference on the Pulse web page. See the Spyglass transformer matrix on the next page for other winding configurations that can be made available.
2. To determine if the transformer is suitable for your application, it is necessary to ensure that the temperature rise of the component (ambient plus temperature rise) does not exceed its operating temperature. To determine the approximate temperature rise of the transformer, refer to the graphs below.



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PA08XX Transformer Winding Configuration Matrix

The following is a matrix of the winding configurations that are possible with the Pulse PA08XX Planar Transformer Platform. The package is typically capable of handling between 80-140W of power depending on the application, ambient conditions and

available cooling. Once a configuration is selected, the formulae and charts can be used to determine the approximate power dissipation and temperature rise of the component in a given application.

| | | | SECONDARY WINDINGS | | | | | | | | | | |
|------------------|----------------|-------|--------------------|--------|--------|--------|----------------|--------|--------|--------|--------------|---------|---------|
| | | | Single Winding | | | | Tapped Winding | | | | Dual Winding | | |
| | | | Turns | 1T | 2T | 3T | 4T | 1:1 | 1:2 | 1:3 | 2:2 | 1T & 1T | 1T & 2T |
| | DCR (mΩ) | 0.44 | 1.3 | 3.5 | 7 | 1.3 | 3.5 | 7 | 7 | 1.3 | 3.5 | | |
| PRIMARY WINDINGS | Single Winding | 4T | 10 | PA0806 | PA0806 | PA0811 | PA0801 | PA0806 | PA0811 | PA0801 | PA0801 | PA0806 | PA0811 |
| | | 5T | 12.5 | PA0808 | PA0808 | PA0813 | PA0803 | PA0808 | PA0813 | PA0803 | PA0803 | PA0808 | PA0813 |
| | | 6T | 15 | PA0810 | PA0810 | PA0815 | PA0805 | PA0810 | PA0815 | PA0805 | PA0805 | PA0810 | PA0815 |
| | | 8T | 40 | PA0806 | PA0806 | PA0811 | PA0801 | PA0806 | PA0811 | PA0801 | PA0801 | PA0806 | PA0811 |
| | | 9T | 45 | PA0807 | PA0807 | PA0812 | PA0802 | PA0807 | PA0812 | PA0802 | PA0802 | PA0807 | PA0812 |
| | | 10T | 50 | PA0808 | PA0808 | PA0813 | PA0803 | PA0808 | PA0813 | PA0803 | PA0803 | PA0808 | PA0813 |
| | | 11T | 55 | PA0809 | PA0809 | PA0814 | PA0804 | PA0809 | PA0814 | PA0804 | PA0804 | PA0809 | PA0814 |
| | | 12T | 60 | PA0810 | PA0810 | PA0815 | PA0805 | PA0810 | PA0815 | PA0805 | PA0805 | PA0810 | PA0815 |
| | Dual Winding | 4T/4T | 20/20 | PA0806 | PA0806 | PA0811 | PA0801 | PA0806 | PA0811 | PA0801 | PA0801 | PA0806 | PA0811 |
| | | 4T/5T | 20/25 | PA0807 | PA0807 | PA0812 | PA0802 | PA0807 | PA0812 | PA0802 | PA0802 | PA0807 | PA0812 |
| | | 5T/5T | 25/25 | PA0808 | PA0808 | PA0813 | PA0803 | PA0808 | PA0813 | PA0803 | PA0803 | PA0808 | PA0813 |
| | | 5T/6T | 25/30 | PA0809 | PA0809 | PA0814 | PA0804 | PA0809 | PA0814 | PA0804 | PA0804 | PA0809 | PA0814 |
| | | 6T/6T | 30/30 | PA0810 | PA0810 | PA0815 | PA0805 | PA0810 | PA0815 | PA0805 | PA0805 | PA0810 | PA0815 |

NOTES:

- The primary inductance for any configuration can be calculated as:

$$\text{Primary Inductance } (\mu\text{H MIN}) = 2.4 * (\text{Primary_Turns})^2$$
- The above base part numbers (**PA08XXNL**) are available from stock.
- It is possible to add a small gap to the transformer. Gapped transformers are non-standard and can be made available upon request, but are not typically available from stock. To request a gapped version of the transformer, add a suffix 'G' to the base number (ie: PA0801NLG or PA0801.004NLG etc.). The nominal inductance with the a gap can be calculated as:

$$\text{Primary Inductance } (\mu\text{H nominal}) = 0.69 * (\text{Primary Turns})^2$$
- It is possible to add a primary side aux. winding to any of the above configurations as shown in the schematics. Transformers with primary side aux. windings are non-standard and can be made available upon request, but are not typically available from stock. The primary aux. winding can be between 2 and 16 turns. To add a primary aux. winding to a given base, use the extension **.0XX**. For example, to add a 4T aux. winding to the base part number **PA0801NL**, use the part number **PA0801.004NL**. To add a 16T aux. winding, use the part number **PA0801.016NL**.
- Optional Tape & Reel packaging can be ordered by adding a "T" suffix to the complete part number (i.e. PA0801 becomes PA0801T for no AUX - PA0801.009NL becomes PA0801T.009NLT for 9T AUX). Pulse complies to industry standard tape and reel specification EIA481.