

HIGH FREQUENCY PLANAR TRANSFORMERS

PA045X Series (up to 75W)



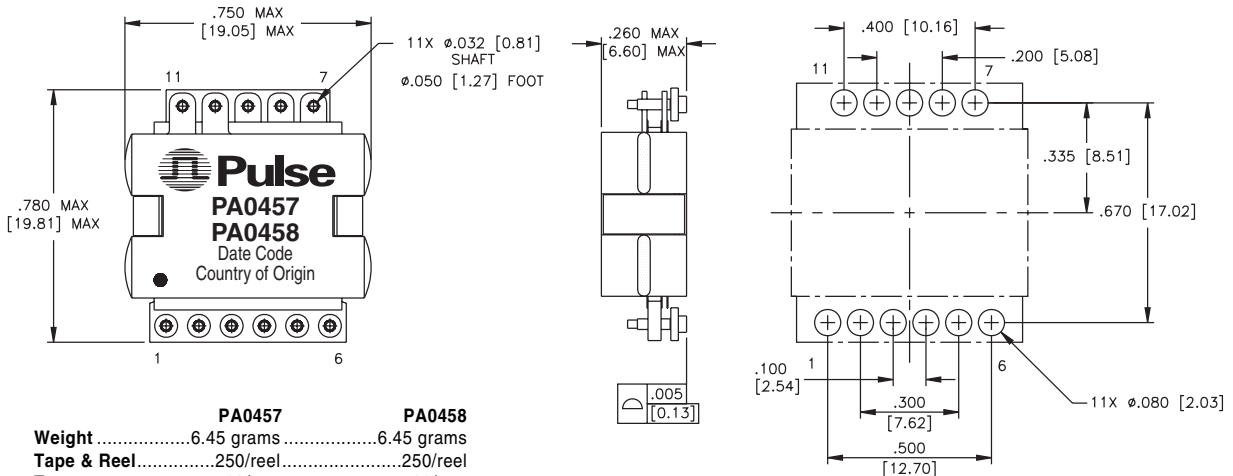
- Power rating:** up to 75W
- Height:** 6.6mm Max
- Footprint:** 20.1mm x 18.5mm Max
- Frequency range:** 200kHz to 700kHz

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

Part Number	Power Rating ¹	Turns Ratio	Primary Secondary Isolation	Primary Inductance (μH MIN)	Leakage Inductance (μH MAX)			DCR (mΩ MAX)		
					(7-11),(1-6) shorted	only (7-11) shorted	only (1-6) shorted	Primary	Pri. Aux.	Secondary
PA0457	67W (48v to 3.3v/20.3A)	12:2 (with 4T Pri. Aux.)	1500V _{DC} Operational	220	0.95	1.25	0.95	108	200	1.3
PA0458	75W (48v to 5.0v/15A)	12:3 (with 4T Pri. Aux.)	1500V _{DC} Operational	220	0.85	1.15	0.85	108	200	3.0

Mechanical

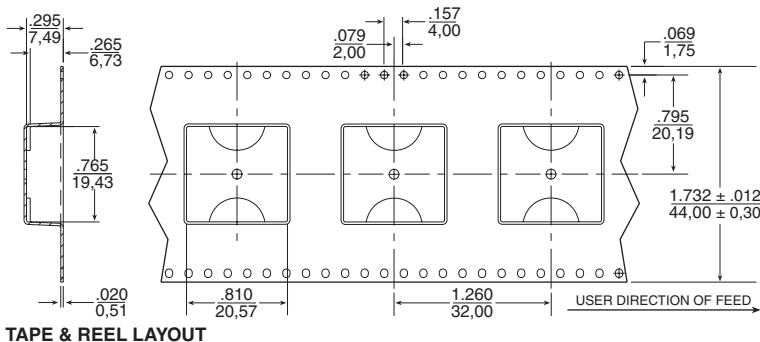
SUGGESTED PAD LAYOUT



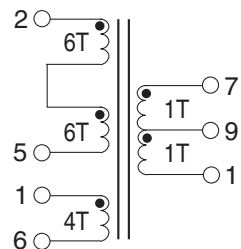
	PA0457	PA0458
Weight	6.45 grams	6.45 grams
Tape & Reel	250/reel	250/reel
Tray	60/tray	60/tray
Dimensions: <u>Inches</u>		
	<u>mm</u>	
Unless otherwise specified, all tolerances are ± $\frac{.010}{0.25}$		

The above suggested pad layout is for a transformer which has all of the pins populated. For a given transformer, it is only necessary to provide pads for those locations that have populated pins as shown on the below schematics.

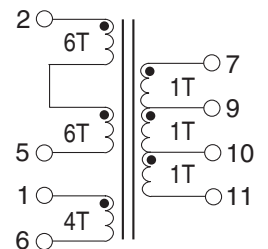
Schematics



TAPE & REEL LAYOUT



PA0457



PA0458

HIGH FREQUENCY PLANAR TRANSFORMERS

PA045X Series (up to 75W)



Notes from Tables

1. This series of transformers was designed for (but not limited to) single switch forward converter applications operating between 200 - 400kHz with a standard telecom input of 36V - 75V. Other turns ratios and auxiliary windings may be available. Please contact Pulse Power Applications Engineering for details.

To determine if the transformer is suitable for your application, it is necessary to ensure that the temperature rise of the component (ambient plus temp. rise) does not exceed its operating temperature. To determine the temperature rise of the component, it is necessary to calculate the total power losses (copper and core) in the application.

Total Copper Losses (P_{cu total}(W)):

P_{cu total}(W) = sum of the losses in each winding

The losses in each winding can be calculated by:

$$P_{cu}(W) = .001 * DCR(m\Omega) * (I_{RMS})^2$$

Core Losses (P_{core}(W)):

To calculate the core loss, use the following formula:

$$P_{core}(W) = 1.57 * 10^{-13} (\Delta B)^{2.5} * (Freq \text{ kHz})^{1.8}$$

where:

$$\Delta B = 27833 * V_{inmin} * \text{Dutycycle max} / \text{Freq kHz}$$

Total Losses:

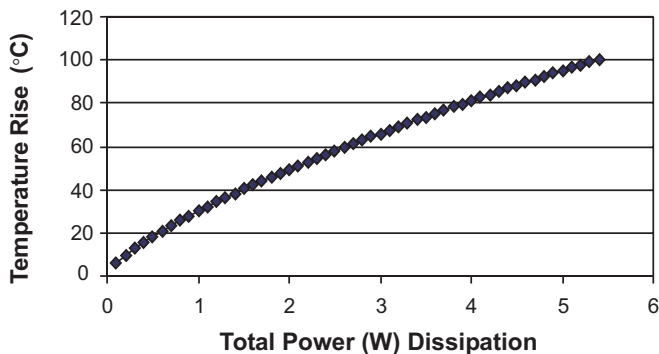
$$P_{total} = P_{cu total} + P_{core}$$

Temperature Rise:

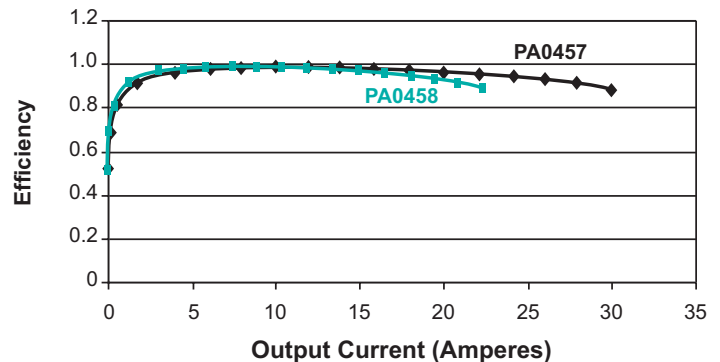
The approximate temperature rise can be found by looking up the calculated total losses in the temperature rise vs. power dissipation curve.

2. Optional Tape & Reel packaging can be ordered by adding a "T" suffix to the part number, (i.e. PA0457T).

Temperature Rise vs. Power (W) Dissipation



Efficiency



For More Information:

Pulse Worldwide Headquarters	Pulse Northern Europe	Pulse Southern Europe	Pulse China Headquarters	Pulse North China	Pulse South Asia	Pulse North Asia
12220 World Trade Drive San Diego, CA 92128 U.S.A. www.pulseeng.com TEL: 858 674 8100 FAX: 858 674 8262	3 Huxley Road Surrey Research Park Guildford, Surrey GU2 5RE United Kingdom TEL: 44 1483 401700 FAX: 44 1483 401701	Zone Industrielle F-39270 Orgelet France TEL: 33 3 84 35 04 04 FAX: 33 3 84 25 46 41	No. 1 Industrial District Changan, Dongguan China TEL: 86 769 5538070 FAX: 86 769 5538870	Room 1002 No. 819 Nanjing West Rd Shanghai China TEL: 86 21 32181071 FAX: 86 21 32181396	150 Kampong Ampat #07-01/02 KA Centre Singapore 368324 TEL: 65 6287 8998 FAX: 65 6280 0080	3F-4, No. 81, Sec. 1 Hsin Tai Wu Road Hsi-Chih Taipei Hsien Taiwan TEL: 886 2 26980228 FAX: 886 2 26980948

Performance warranty of products offered on this data sheet is limited to the parameters specified. Data is subject to change without notice. Other brand and product names mentioned herein may be trademarks or registered trademarks of their respective owners.

© Copyright, 2005. Pulse Engineering, Inc. All right reserved.