HIGH FREQUENCY PLANAR TRANSFORMERS

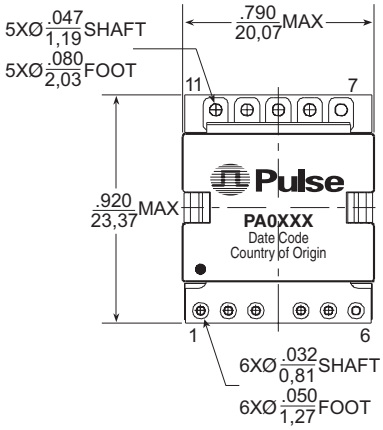
Spyglass Series (up to 140W)

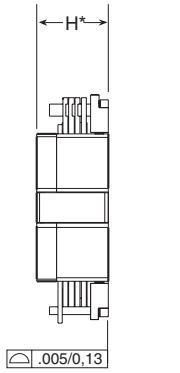
- **Power Rating:** up to 140W
- **Height:** 8.6mm Max
- **Footprint:** 23.4mm x 20.1mm Max
- **Frequency Range:** 200kHz to 700kHz

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

Part Number	Power Rating [1,4]	Turns Ratio (Pri:Sec)	Primary Secondary Isolation [3]	Primary Inductance (µH MIN)	Leakage Inductance [2] (µH MAX)	DCR (mΩ MAX)			Maximum Height (mm)
						Primary	Primary Aux.	Secondary	
PA0369	100W 48v to 3.3v/30A	6:1	1500 Vdc Basic	65	0.25	15	N/A	0.40	8.6
PA0168	100W 48v to 3.3v/30A	12:2	1500 Vdc Basic	320	0.75	45	N/A	1.25	8.6
PA0463	50W 48v to 3.3v/15A	10:2 (w/9T Pri. Aux.)	1500 Vdc Basic	200	1.00	40	2750	2.50	8.6
PA0491	100W 48v to 5.0v/20A	8:2	1500 Vdc Basic	140	0.25	35	N/A	1.25	8.6
PA0423	140W 48v to 12v/11.7A	8:4 (w/4T Pri. Aux.)	1500 Vdc Basic	140	0.30	35	500	7.00	8.6

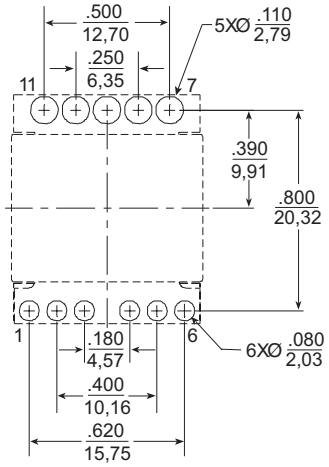
Mechanicals





*H - Maximum Height (see table above)

SUGGESTED PAD LAYOUT



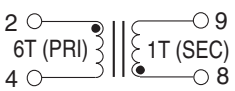
Weight .....11.0 grams
Tape & Reel.....180/reel
Tray.....40/tray

Dimensions: Inches / mm

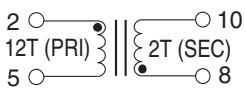
Unless otherwise specified, all tolerances are ± .010 / 0,25

Schematics

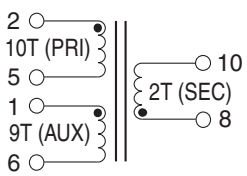
PA0369



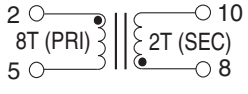
PA0168



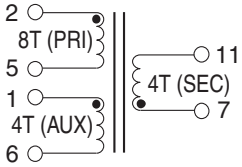
PA0463

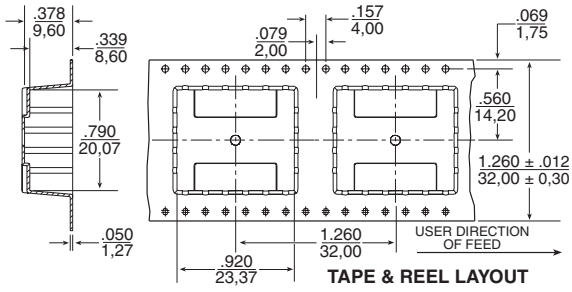


PA0491



PA0423





TAPE & REEL LAYOUT

HIGH FREQUENCY PLANAR TRANSFORMERS
Spyglass Series (up to 140W)

Notes from Tables

1. This series of transformers was designed for (but not limited to) single and two switch forward converter applications. The power levels stated are for actual demo boards typically operating between 200-400kHz with 100-200LFM of airflow. Other turns ratios and auxiliary windings may be available. Please contact Pulse Power Applications Engineering for details.
2. The leakage inductance is measured at the primary terminals with all other windings shorted.
3. The listed transformers are designed to meet basic insulation (1.4mm creepage and clearance with 1500Vdc isolation). Lower cost transformers with operational insulation (1500Vdc isolation with no creepage and clearance spacings) are available. Please contact Pulse Power Applications Engineering for details.
4. To determine if the transformer is suitable for your application, it is necessary to ensure that the temperature rise of the component (ambieint plus temperature rise) does not exceed its operating temperature. To determine the temperature rise of the component it is necessary to calculate the total power losses (core and copper) in the application.

Total Copper Losses (Pcu total(W)):

Pcu total(W) = sum of the losses in each winding
The losses in each winding can be calculated by:
Pcu(W) = .001* DCR(mΩ) * ($Irms^2$)
Core Losses (Pcore(W))

To calculate core loss, use the following formula:

CoreLoss (W) = $1.589E^{-13}$ $(\Delta B)^{2.5}$ * (Freq kHz)$^{1.8}$

where:

ΔB = 179211.46 * Vin min * Dutycycle max / (Freq kHz * Primary Turns)

Total Losses:

P total = Pcu total + CoreLoss

Temperature Rise:

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