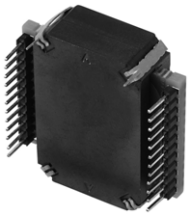
Versatile Planar Transformer



FEATURES

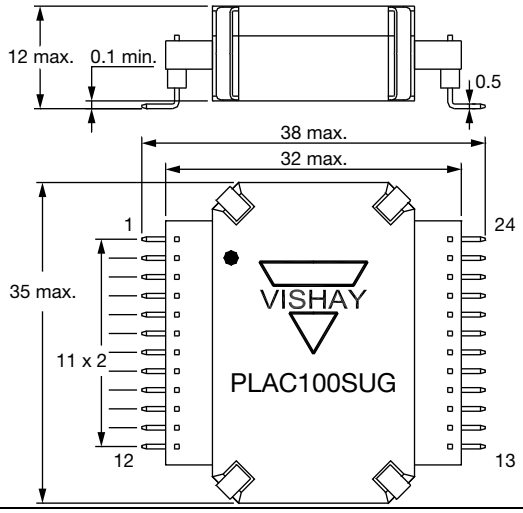
- Patent Nº 99 00241
- Designed for switch mode power supply applications (transformer and choke inductor)
- End user configures the transformer by using a software supplied
- Frequency range: 50 kHz to 400 kHz
- Suitable for surface mount or through hole
- UL 94 V-0 material
- High power up to 220 W
- Operating temperature: -55 °C to +125 °C
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

RoHS COMPLIANT

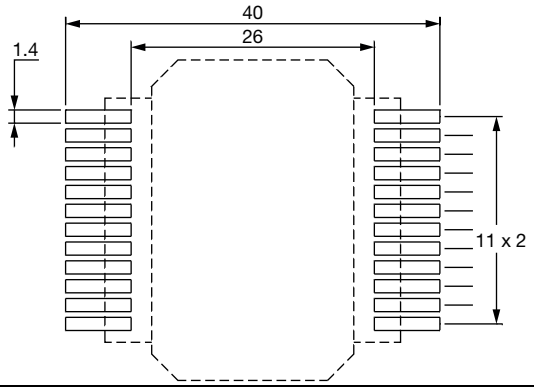
QUICK REFERENCE DATA	
Type	Transformer
Size (L x W x H)	40 mm x 35 mm x 12 mm
Terminals	SMD or through holes
Power	Up to 220 W
Frequency range	50 kHz to 400 kHz
Inductance range	5.2 µH to 4032 µH

DIMENSIONS in millimeters (± 0.5)

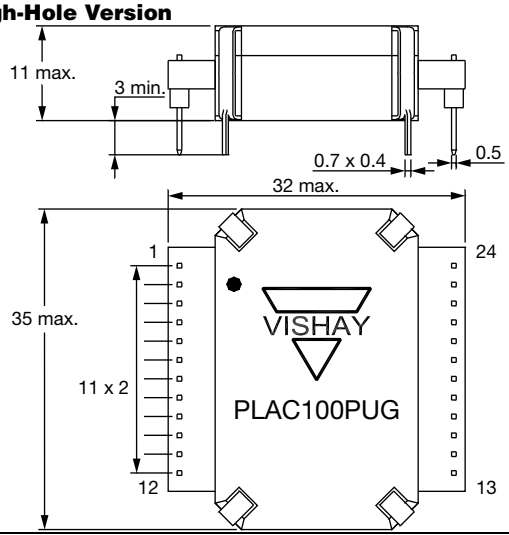
SMD Version



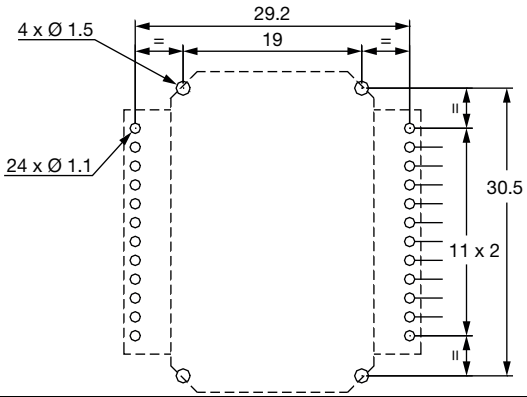
Recommended PCB Layout
Weight: 35 g



Through-Hole Version



Recommended PCB Layout
Weight: 35 g



APPLICATIONS: DC/DC POWER SUPPLY

- Switching mode power supplies
- DC/DC converters

TECHNOLOGY

PLAC 100 is a highly flexible planar transformer. Inhouse the design engineer can adapt the different combinations of serial and parallel configurations of the windings to give a substantial number of ratio and current possibilities via the supplied software.

The transformer is one of the first critical components in the design of power supply and converters. PLAC 100 allows a great versatility for many power supply topologies: forward, flyback, half-bridge, bridge ...

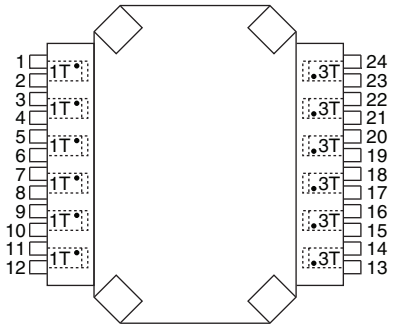
Thanks to this adaptability it enables user to reduce and optimize times during the development and the production of power supplies.

PRINCIPLE OF USE

Available windings:

- 6 windings with 1 turn
- 6 windings with 3 turns

The user determines their own configuration of the windings via the PCB layout - software provided PLAC 100 SOFT.



Note

- See also Application Notes: www.vishay.com/doc?59056

TECHNICAL DATA ALLOWING CONCEPTION

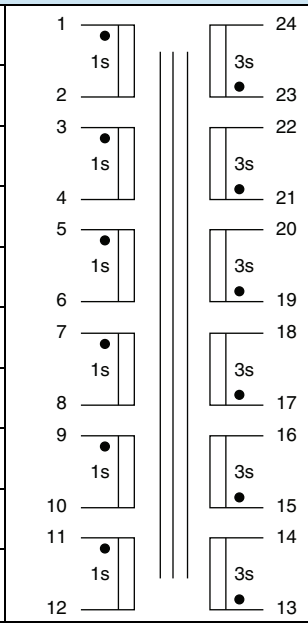
B_{sat}	Saturation flux density		< 300 mT à 100 °C
A_e	Effective cross-sectional area of a core		113 mm^2
V_e	Effective volume of a core		4234 mm^3
R_{th}	Thermal resistance		22 °C/W
P_c	Core power loss	f: 50 kHz to 200 kHz (excluded)	$P_c = 5.8 \times 10\text{-}6\ f_{(Hz)}^{1.51} \left(\frac{B\ (T)}{2}\right)^{2.94}$
		f: 200 kHz (included) to 400 kHz	$P_c = 11 \times 10\text{-}9\ f_{(Hz)}^{1.96} \left(\frac{B\ (T)}{2}\right)^{2.55}$
			f: Frequency; B: Peak-peak flux density

STANDARD ELECTRICAL SPECIFICATIONS

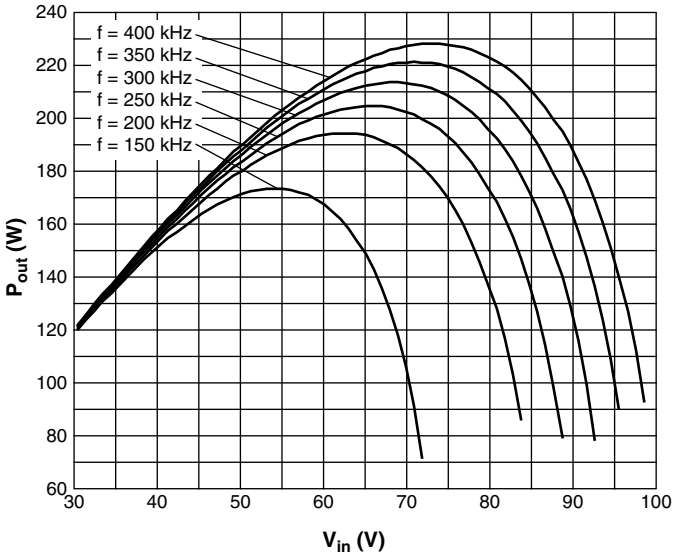
MODEL	INDUCTANCE µH	POWER RANGE W	FREQUENCY kHz	POWER SUPPLY TOPOLOGY
PLAC 100	7 to 63	up to 220	50 to 400	Flyback; forward; push-pull; bridge; half-bridge

ELECTRICAL CHARACTERISTICS at 25 °C

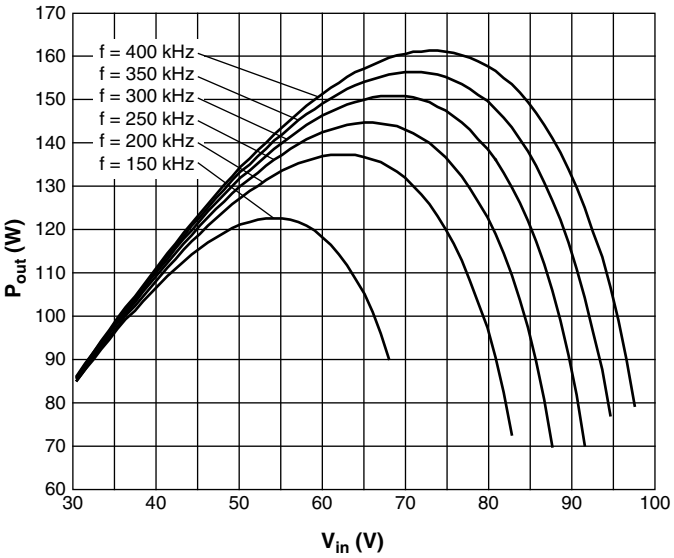
3 turn coil (13 to 24) Inductance without air gap (0.1 V, 10 kHz)	63 µH ± 25 %
1 turn coil (1 to 12) Inductance without air gap (0.1 V, 10 kHz)	7 µH ± 25 %
Al (nH) without air gap (UG)	7000
Al (nH) expendable	100; 160; 250; 400; 630
R_{DC} 1 turn coil (1 to 12) (typical value)	3 mΩ
R_{DC} 3 turn coil (13 to 24) (typical value)	35 mΩ
Hipot between 1 turn winding/3 turns winding with if < 100 µA	1000 V_{AC}
Hipot between 1 turn winding with if < 100 µA	300 V_{AC}
Hipot between 3 turn winding with if < 100 µA	300 V_{AC}
Hipot between winding and ground with if < 100 µA	800 V_{AC}



FORWARD: $P_{out\ max.}$; Duty cycle = 0.45



FLYBACK: $P_{out\ max.}$; Duty cycle = 0.45



MARKING

- Vishay trademark
- Part number
- Manufacturing date

TERMINALS FINISH

- e3 = Pure tin

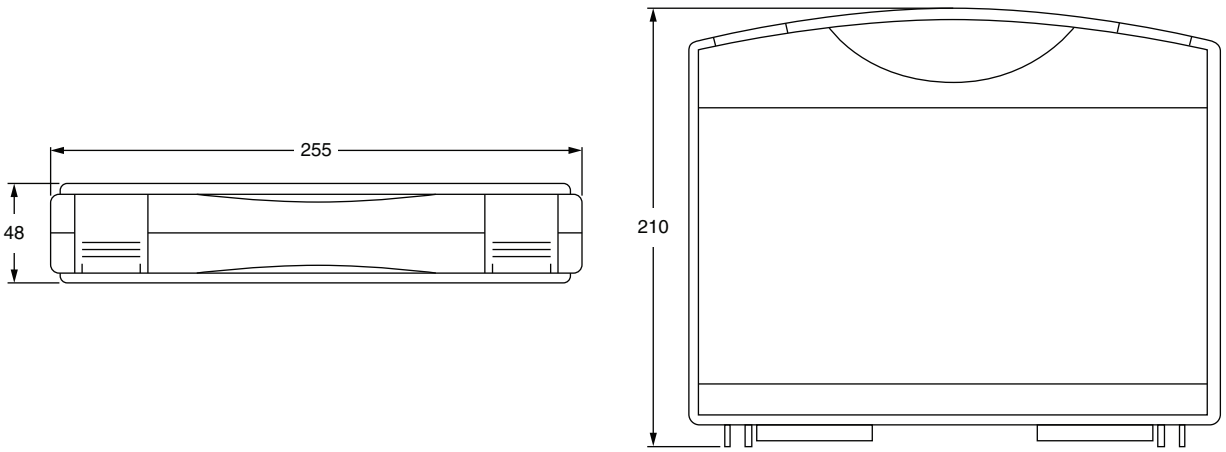
PACKAGING

- Box of 15 pieces

KIT WITH SOFTWARE FOR DESIGN SUPPORT ON PLAC 100 TRANSFORMER

For technical questions, contact: sferaztronics@vishay.com

DIMENSIONS in millimeters (± 10)



FEATURES OF SOFTWARE

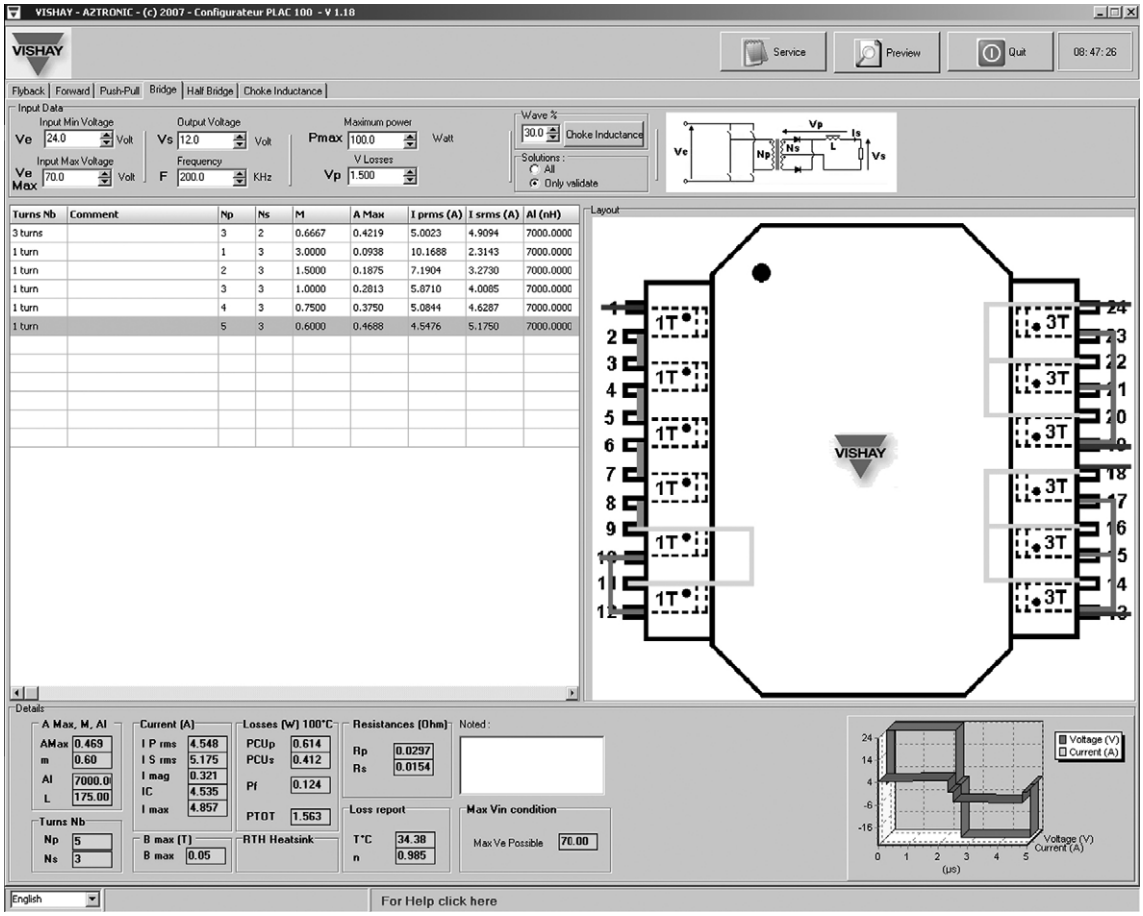
- Interactive
- Directly executable
- Compatible with all versions of WINDOWS
- Available on USB key
- English and French languages
- Designed solutions on PDF format
- Kit includes
  - Software in USB key
  - One part of each type (through hole)
  - 12 female headers

HARDWARE REQUIREMENTS

- PC compatible, WINDOWS 2000, XP and VISTA
- Minimum processor Intel P3 or equivalent
- RAM 128 Mo minimum
- Screen resolution 1024 x 768 minimum
- Directly executable, no installation required

WARNING: This software is a support to technical designers. User is responsible to validate the solution in its own configuration.

KIT WITH VISHAY AZTRONIC (c) 2007-2014 CONFIGURATION PLAC 100 - V1.22



INPUT DATA

Type of power supply:

- Flyback
- Forward
- Push-pull
- Bridge
- Half-bridge

Electrical data:

- Input voltage (V)
- Output voltage (V)
- Power (W)
- Frequency (kHz)

Note

- See also Application Note: www.vishay.com/doc?59057

OUTPUT DATA

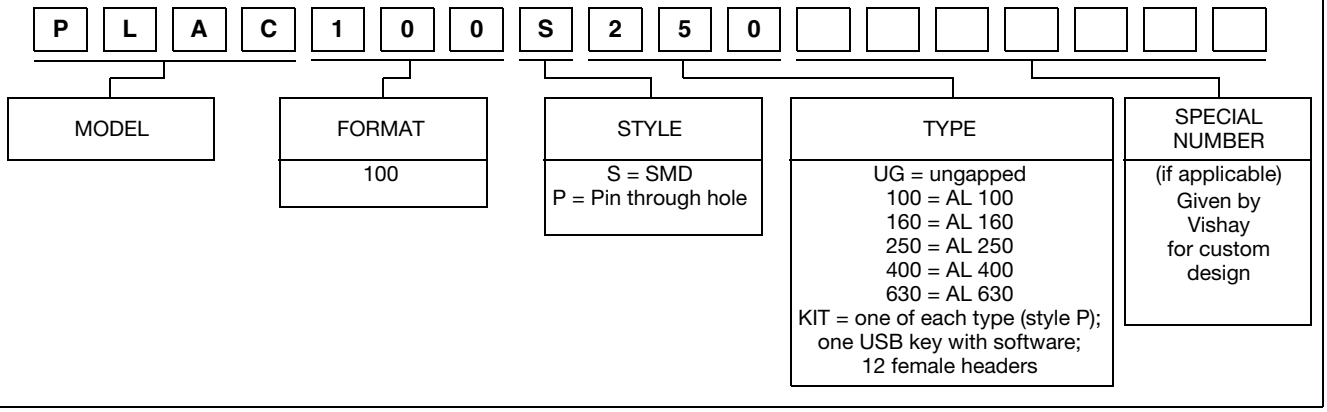
PCB layout

Electrical data:

- Maximum duty cycle
- Ratio
- Primary inductance (µH)
- Input and output current (A)
- Balance of power losses (W)
- Winding resistance (Ω)
- Difference between temperature inside PLAC 100 and ambient temperature

The software allows to calculate all data for the choke inductance when power supply structure needs it.

SAP PART NUMBERING



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