



STEVAL-ISA002V1

6W Single Output Supply using VIPer12A

Data Brief

Features

- Switch mode General Purpose Power Supply
- Input: 85 to 264 VAC @ 50/60 Hz
- Output: 12V @ 0.5A
- Output power (peak): 6W
- Burst Mode Operation in Standby for Blue Angel operation
- Switching Frequency 60 kHz
- 75% Efficiency
- Auxiliary Undervoltage Lockout with Hysteresis
- Output Short Circuit Protection
- Thermal Shutdown Protection
- Meets EN55022 Class B EMI specification

Applications

This board is an off-line wide range single output general-purpose power supply capable of delivering up to 6W of total output power. In low load condition, it operates in the automatic burst mode while in an overvoltage condition it will operate in hiccup mode.

Other output voltages can easily be achieved by changing the transformer and a few components on the board, as shown in the application note. Transformers are readily available for the following configurations:

- 5V @ 1.2A
- 12V @ 0.5A
- 15V @ 0.4A
- 24V @ 0.25A.



Blue angels

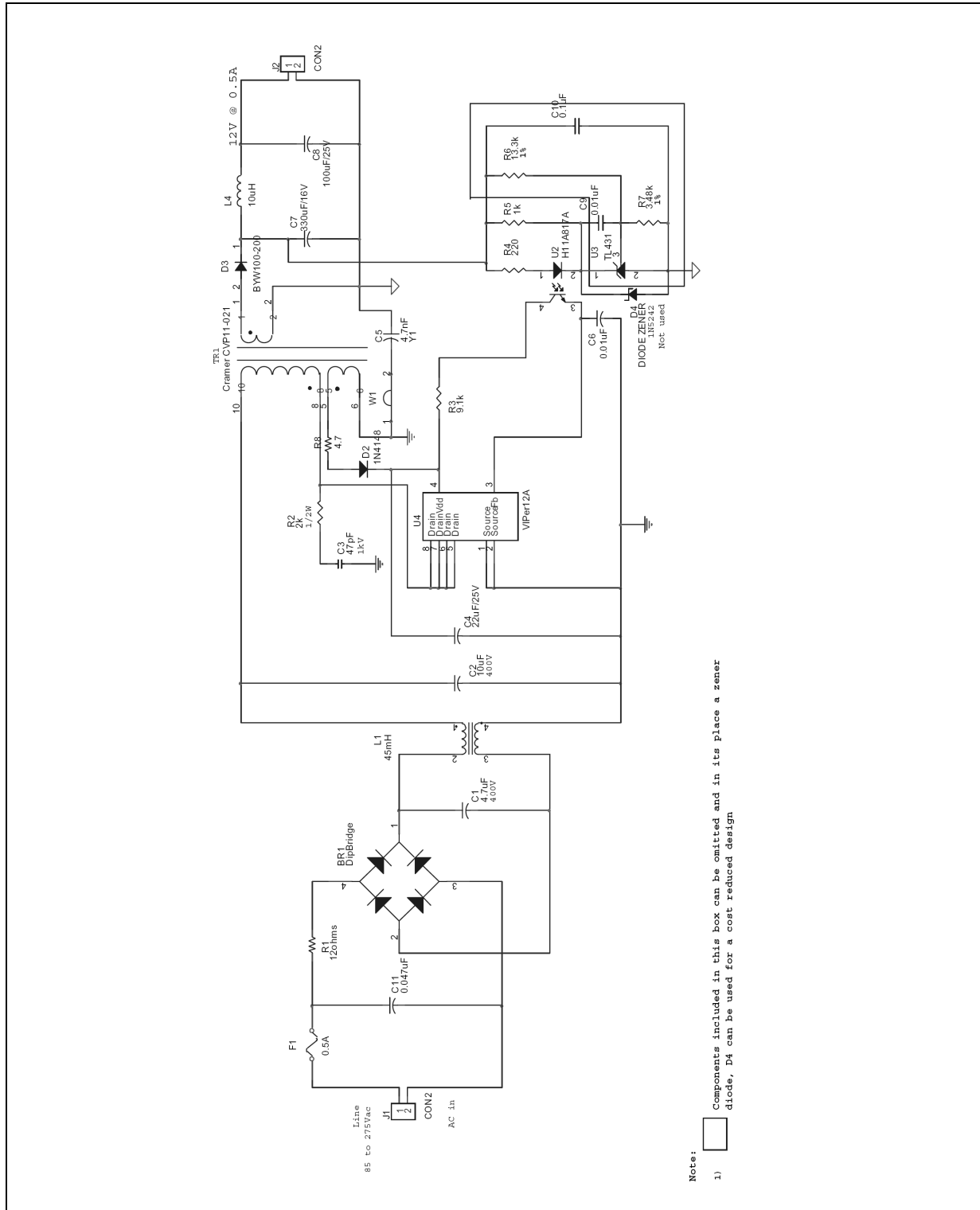
When working in standby, the reference board consumes less than 1W total power consumption and therefore, meets the "Blue Angel" Norm. This unit operates in burst mode when the output load is reduced to zero and normal operation will resume automatically when the power gets back to a level higher than the standby power. The output voltage remains regulated even when the board operates in burst mode. The total power consumption measured at 115Vac input with zero load at output is approximately 168mW, while at 230Vac input this value is about 248mW. At 120Vac input, a minimum load of 52mA is needed to keep the input power consumption at less than 1W.

1 General circuit description

This board is designed as a discontinuous flyback regulator delivering 0.5A at 12V. The AC input is rectified and filtered by the bridge BR1, the bulk capacitor C1, and C2 to generate the high voltage DC bus applied to the primary winding (pins 8-10) of the transformer, TR1. C1, L1, and C2 provide EMI filtering for the circuit. R2 and C3 form the snubber circuit needed to reduce the leakage spike and voltage ringing on the drain pin of VIPer12A. The output voltage is regulated with a TL431 (U3) via an optocoupler (U2) to the feedback pin. The output voltage ripple is controlled with the capacitor, C7, with an additional LC PI filter configuration made up of L4 and C8. It is possible to modify the output voltages by changing the transformer turns ratio and modifying the resistance values of R6 and R7 in the feedback loop.

2 Board Schematic

Figure 1. Scheme



3 Revision history

Date	Revision	Changes
01-Feb-2006	1	Initial release.

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