



STEVAL-ISA001V1

6W dual output supply evaluation board 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
- Current mode control
- Switching frequency 60 kHz
- Over 74% efficiency
- Auxiliary undervoltage lockout with hysteresis
- Output short circuit protection
- Thermal shutdown protection
- Meets EN55022 Class B EMI specification

Applications

This evaluation board is an off-line wide range dual output general-purpose power supply capable of delivering a total output power up to 6W. 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/12V
- 5V/15V
- 5V/24V



Description

The evaluation board consumes less than 1W total power consumption when working in the burst mode during standby operation and therefore, meets Blue Angel norm. Table 2 below outlines the total power consumption measured on the reference board at different line voltages with zero loads at both the outputs. The output voltages remain regulated when operating in burst mode condition.

1 General circuit description

The circuit operates from 85Vac to 264Vac input voltage with an output power peak of 6W through two output voltages of 5Vdc and 12Vdc. It contains an input fuse (F2), EMI filtering (C1, L1, and C2), and the secondary regulation is provided by U2 and U3, the optocoupler and TL431 respectively. For output filtering, the components used are the output capacitors C8 and C10. These two output capacitors are sized according to the ripple current and ripple voltage specifications. The two specifications determine the ESR and RMS current capabilities of the capacitors used. An additional LC (PI) filter is added to the 5Vdc output, C9-L2 configuration, for further effective ripple and noise rejection. The AC input is rectified and filtered by the bridge BR1 and the bulk capacitor C1 to generate the high voltage DC bus applied to the primary winding of the transformer, T1. The 5Vdc output is sensed with an optocoupler. It is possible to modify the output voltages by changing the transformer turns ratio and modifying the resistance values of R7 and R8 in the feedback loop. R2 and C4 form the snubber circuit needed to reduce the voltage ringing on the drain pin and the leakage spikes.

3 Revision history

Table 1. Document revision history

Date	Revision	Changes
20-Jul-2007	1	Initial release.

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