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STEVAL-ISA176V1

ALTAIR05T-800 5 W wide range CV-CC optoless adapter evaluation board

Data brief



Features

- Universal input mains range: 90 - 264 V AC, frequency 45-65 Hz
- Output voltage: 5 V @ 1 A continuous operation
- Optoless constant voltage - constant current output regulation
- Standby mains consumption: < 100 mW @ 230 V AC
- Average efficiency: >70%
- EMI: in accordance with EN55022-Class-B
- RoHS compliant

Description

The STEVAL-ISA176V1 evaluation board implements a 5 W (5 V / 1 A) wide-range mains battery charger with constant voltage/constant current, tailored for AC-DC chargers for mobile phones and adapters or other hand-held equipment.

The core of the application is the ALTAIR05T-800, the first “all-primary sensing switching regulator” of the ALTAIR family.

The IC combines a high-performance, low-voltage PWM controller chip and an 800 V, avalanche-rugged power MOSFET in the same package.

The PWM chip is a quasi-resonant (QR) current mode controller IC specifically designed for QR ZVS (zero voltage switching at switch turn-on) flyback converters.

The device is capable of providing constant output voltage (CV) and constant output current (CC) regulation using primary-sensing feedback. This eliminates the need for the optocoupler, the secondary voltage reference and the current sensor, while still maintaining quite accurate regulation.

In addition, it is possible to compensate the voltage drop on the output cable to improve CV regulation on the externally accessible terminals.

Extremely low consumption under no load conditions is ensured thanks to controlled burst mode operation that, along with the built-in high voltage startup circuit and the low operating current of the device, helps minimize the residual input consumption. Although an auxiliary winding is required in the transformer to correctly perform CV/CC regulation, the chip can be powered directly from the rectified mains. This is useful particularly during CC regulation, where the flyback voltage is generated by the winding drops.

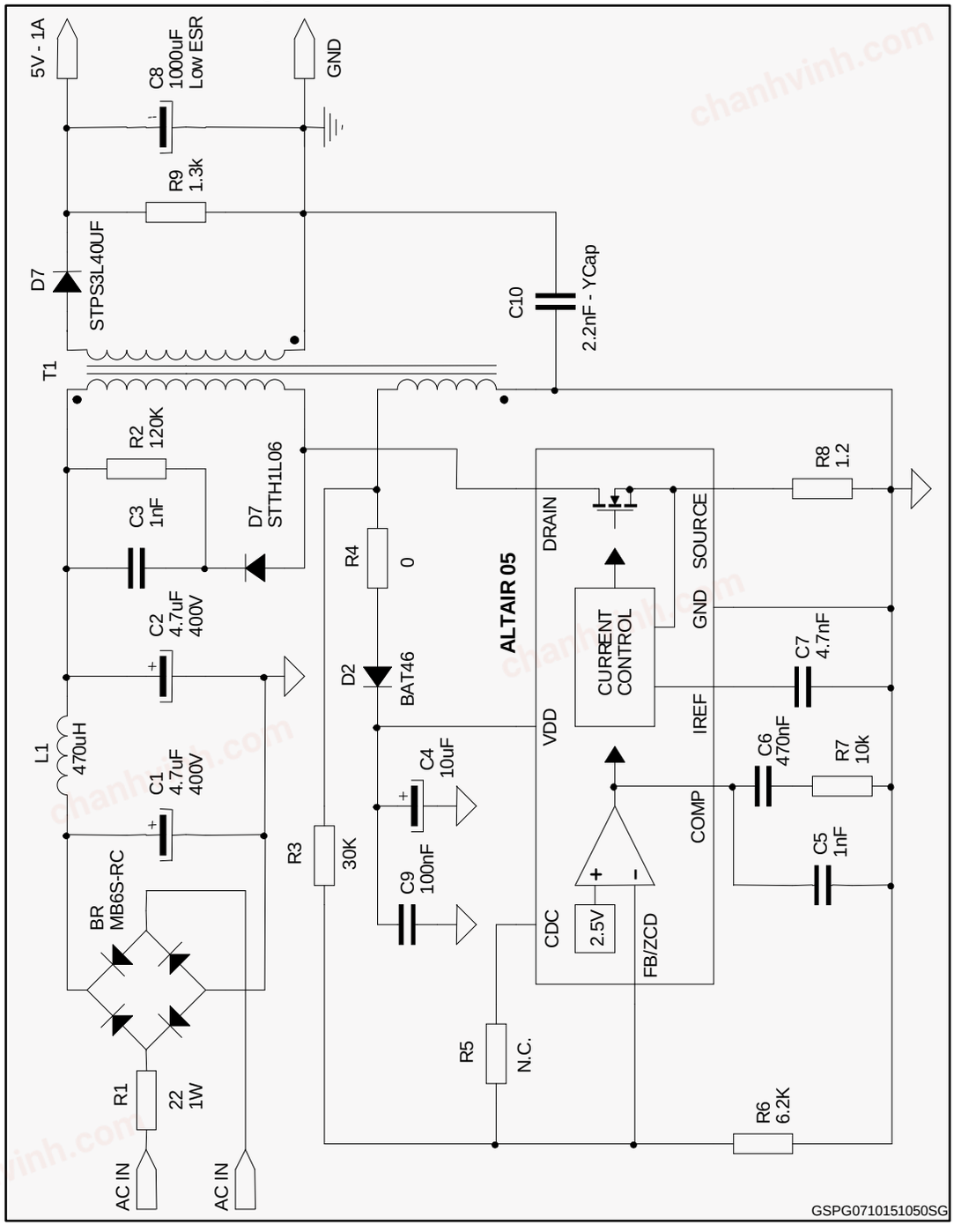
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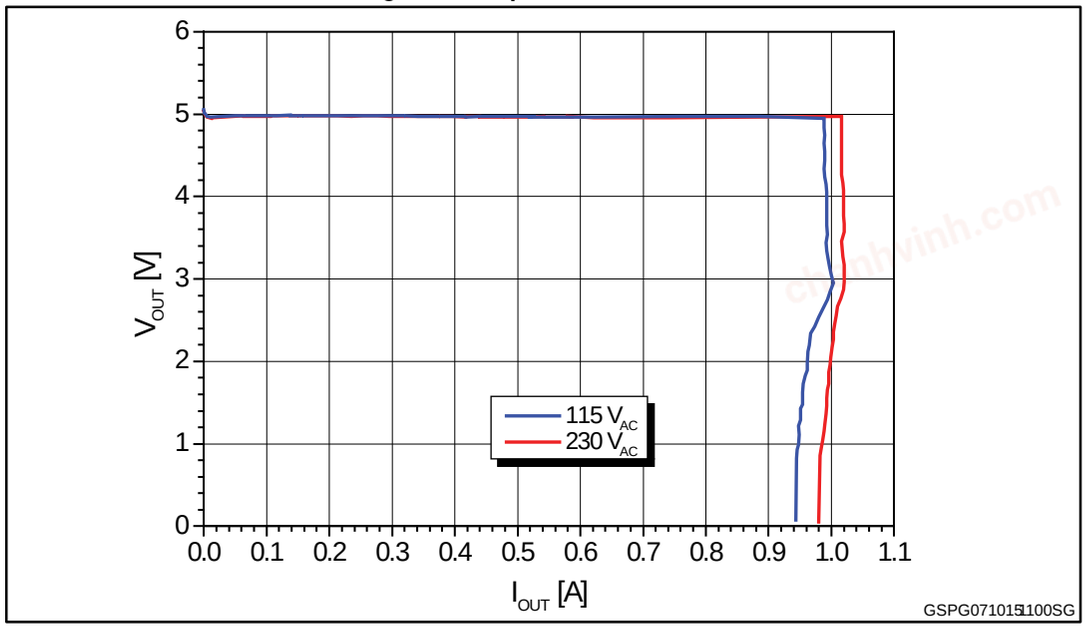
1 Schematic diagram

Figure 1: EVLALTAIR05T-5W circuit schematic



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Figure 2: Output characteristics



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2 Revision history

Table 1: Document revision history

Date	Version	Changes
19-Oct-2015	1	Initial release.

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