STEVAL-ISA105V1

Power supply for energy meter and power line modem based on the ALTAIR04-900

Databrief

Features

- Min. operating voltage V_{acmin}: 90 V_{ac}
- Max. operating voltage V_{acmax}: 265 V_{ac}, 440 V_{max}
- Topology: quasi-resonant flyback converter, primary side regulation
- Mains frequency fL: 50 Hz +/-3 Hz
- Input/output isolation: yes, Galvanic isolation >2.7 KV
- Nominal output voltage:
  - 5 V/70 mA nominal, 1 A max.
  - 3.3 V/30 mA nominal, 150 mA max.
  - 12 V/2 mA nominal, 100 mA max.
  - 5 V_ISO/2 mA nominal, 80 mA max.
- Total output power P_{out}: 1 W nominal, 7.5 W (during transmission mode)
- Typical efficiency @ 230 V_{ac}: > 75%
- Output voltage pk-pk ripple: < 100 mV
- Protection: short-circuit protection
- Reflected voltage of transformer, V_R: 100 V
- RoHS compliant

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Description

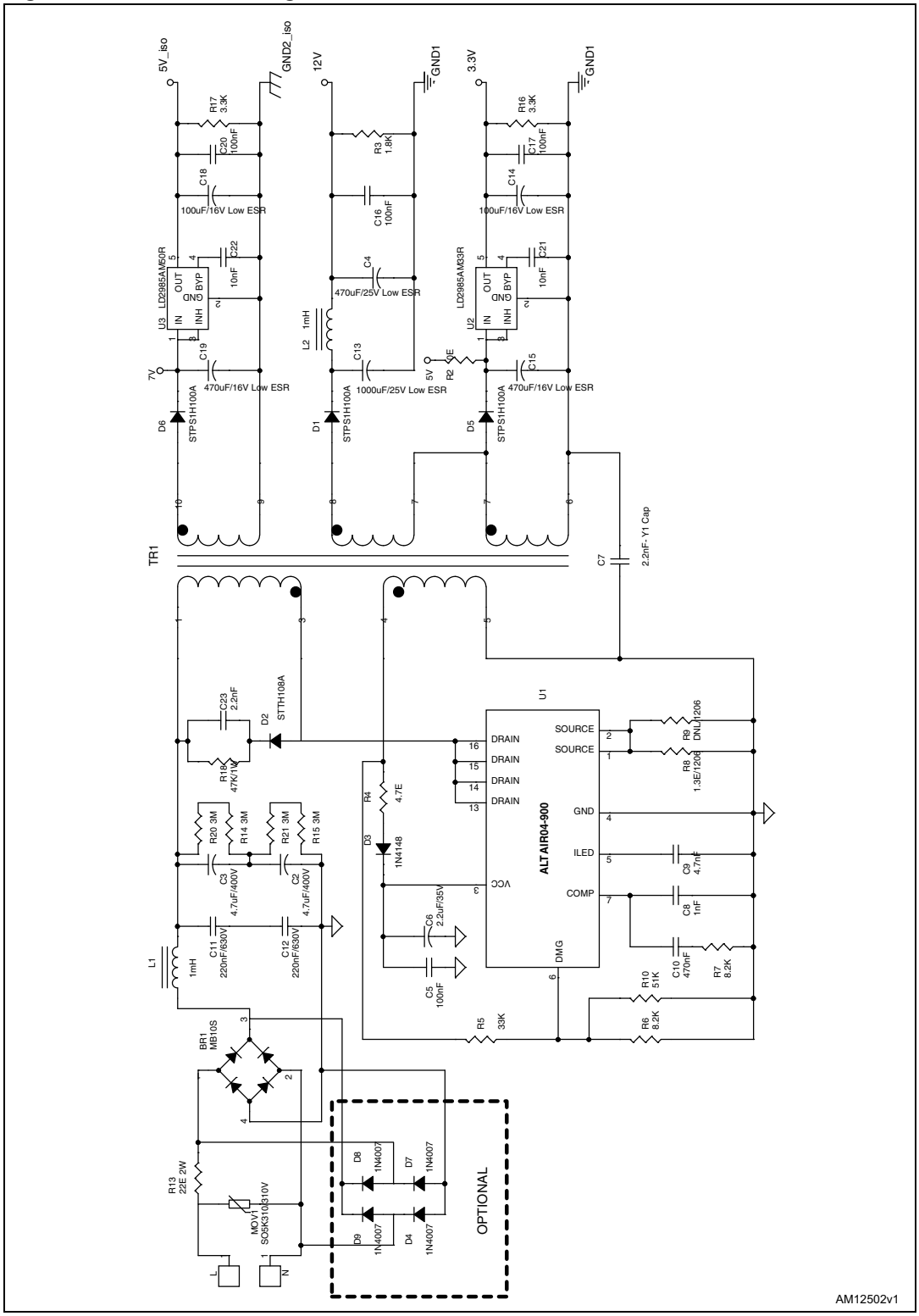
The STEVAL-ISA105V1 demonstration board implements a power supply based on a quasi-resonant mode of operation using ST primary side ALTAIR04-900 flyback switch.

The ALTAIR04-900 is a high-voltage all-primary sensing switcher intended for operating directly from the rectified mains with minimum external parts. It combines a high-performance low voltage PWM controller chip and a 900 V avalanche-rugged power section in the same package.

The controller is a current-mode specifically designed for offline quasi-resonant flyback converters. The device is capable of providing constant output voltage using all primary sensing feedback. This eliminates the need for the optocoupler, the secondary voltage reference, as well as the current sensor, while still maintaining quite accurate regulation.

1 Schematic diagram

Figure 1. Schematic diagram



2 Revision history

Table 1. Document revision history

Date	Revision	Changes
06-Aug-2012	1	Initial release.