

250 W microinverter for plug-in PV panels (60 Hz version)

Data brief

**Features**

- Input voltage range from 18 V to 45 V
- Output voltage range from 110 V to 240 V AC, 60 Hz
- Grid connection algorithm and MPPT capability
- Digital control section managed by the STM32
- RS-232 for communication
- RoHS compliant

Description

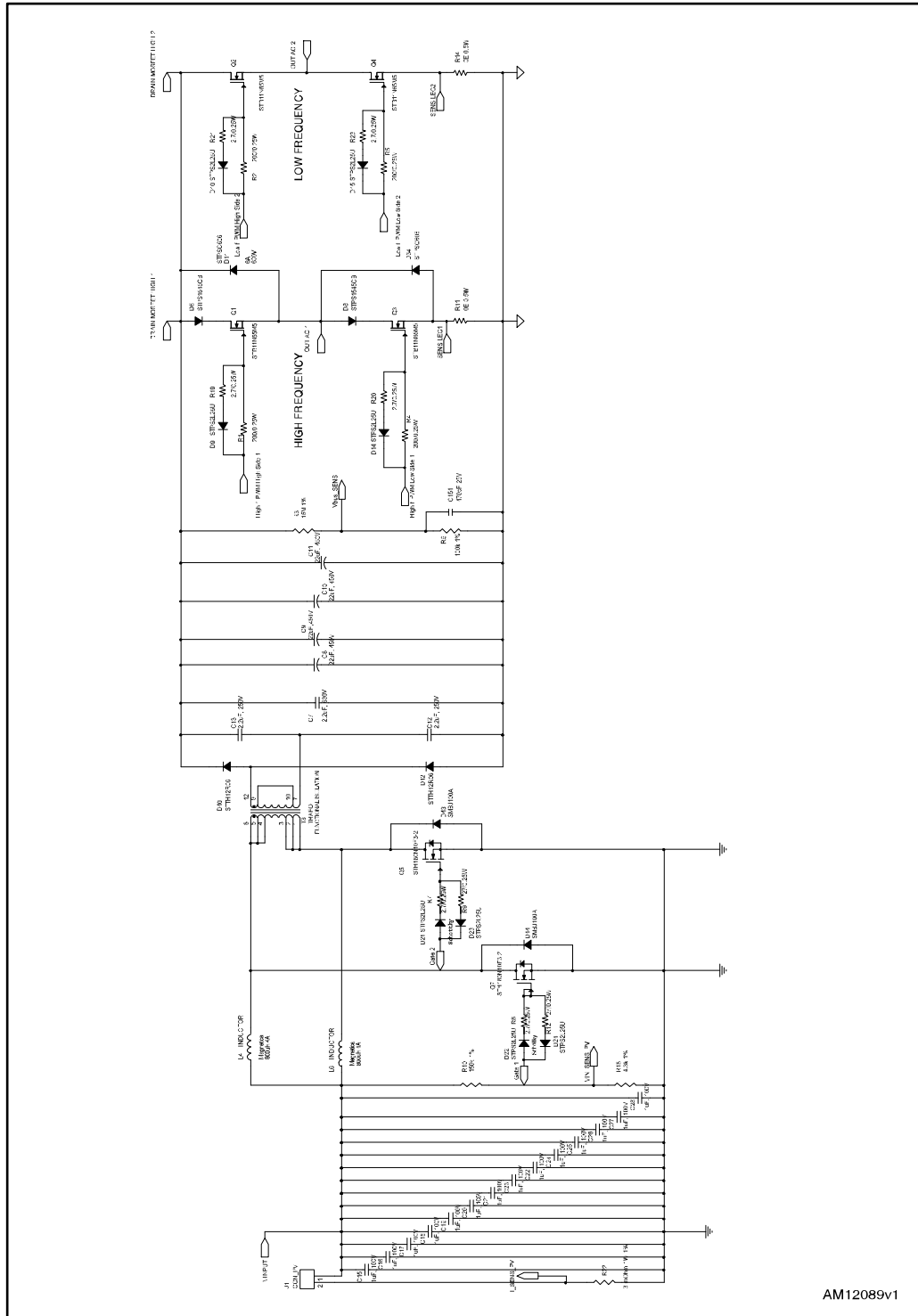
The STEVAL-ISV003V2 is a demonstration board which implements the microinverter concept and is designed to optimize the power production of each single solar panel by means of DC-AC

conversion. The conversion system is capable of both grid synchronization and maximum power point tracking (MPPT) thanks to the use of an advanced control algorithm implemented on a 32-bit STM32 microcontroller. The MPPT function is based on the perturb and observe (P&O) concept which seeks the best operating point of the panel, thus maximizing the energy produced in every environmental condition. The grid synchronization algorithm has the advantage over standard solutions of a decoupled control of active and reactive power. The STEVAL-ISV003V2 demonstration board uses a high-frequency (HF) isolated DC-DC converter with interleaved current and an optimized full-bridge DC-AC inverter. The typical solar panel voltage is first stepped up to about 400 V and then converted into AC to create a sinusoidal output.

An LED display provides a user-friendly interface for the end user and allows monitoring and/or modifying some of the main operating parameters. Two modes of operation are available and can be selected for the STEVAL-ISV003V2 to allow either open-loop or closed-loop operation in synchronization with the grid. In open-loop mode the sinusoidal reference is created internally by means of a standard lookup table, while in closed-loop mode a sinusoidal voltage feedback proportional to the grid voltage is used. Finally, the RS-232 interface can be used for serial data transfer of specified voltage, current, and current signals.

1 Schematic

Figure 1: STEVAL-ISV003V2



2 Revision history

Table 1: Document revision history

Date	Revision	Changes
15-Apr-2014	1	Initial release.

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