STEVAL-ISF002V1

1.4 kW digital PFC demonstration board based on the STW23NM60N and TD352

Data brief

Features

- Max output power 1400 W
- Input voltage range: 185 - 230 VAC, 50/60 Hz
- Output voltage: 415 VDC, 5% ripple
- PF up to 0.998 (at nominal rated power)
- THD between 0.9% and 9% over entire operating range
- Hardware overcurrent protection
- Software current limitation
- Software overvoltage protection
- Software voltage limitation
- Regulated DC output voltage with zero load
- Adjustable output DC voltage target value
- Embedded UI for adjusting real-time PI parameters for voltage and current
- Dual FOC motor control drive demonstration available
- RoHS compliant

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Description

The STEVAL-ISF002V1 demonstration board provides platform for evaluating the capabilities of STMicroelectronics' STW23NM60N MDmesh™ power MOSFET, and the TD352 advanced IGBT/MOSFET driver.

The board also demonstrates ST's STM32F103ZE microcontroller in digital power factor corrector application. The performance of the MCU in this design is comparable to standard continuous-mode PFC dedicated monolithic ICs, while retaining sufficient microcontroller resources (such as program memory and CPU computational capability) to execute additional complex operations.

The system is designed to offer high performance in terms of PF, THD and DC output voltage ripple. For less demanding applications, the size of power components on the PFC power board can be reduced to implement a more cost-effective solution. Unlike monolithic ICs, this digital approach allows the application of sophisticated control algorithms and easier adjustment of system parameters to meet customer requirements.

Thanks to an MC connector on the PFC power board, it can be interfaced with several ST MCU-based boards, particularly those developed for motor control. The on-board off-line SMPS based on ST's VIPer12A-E is used to generate the 15 VDC voltages necessary to supply the drivers in the power board. This board also provides 5 V to supply any control stage supplied via the MC connector.

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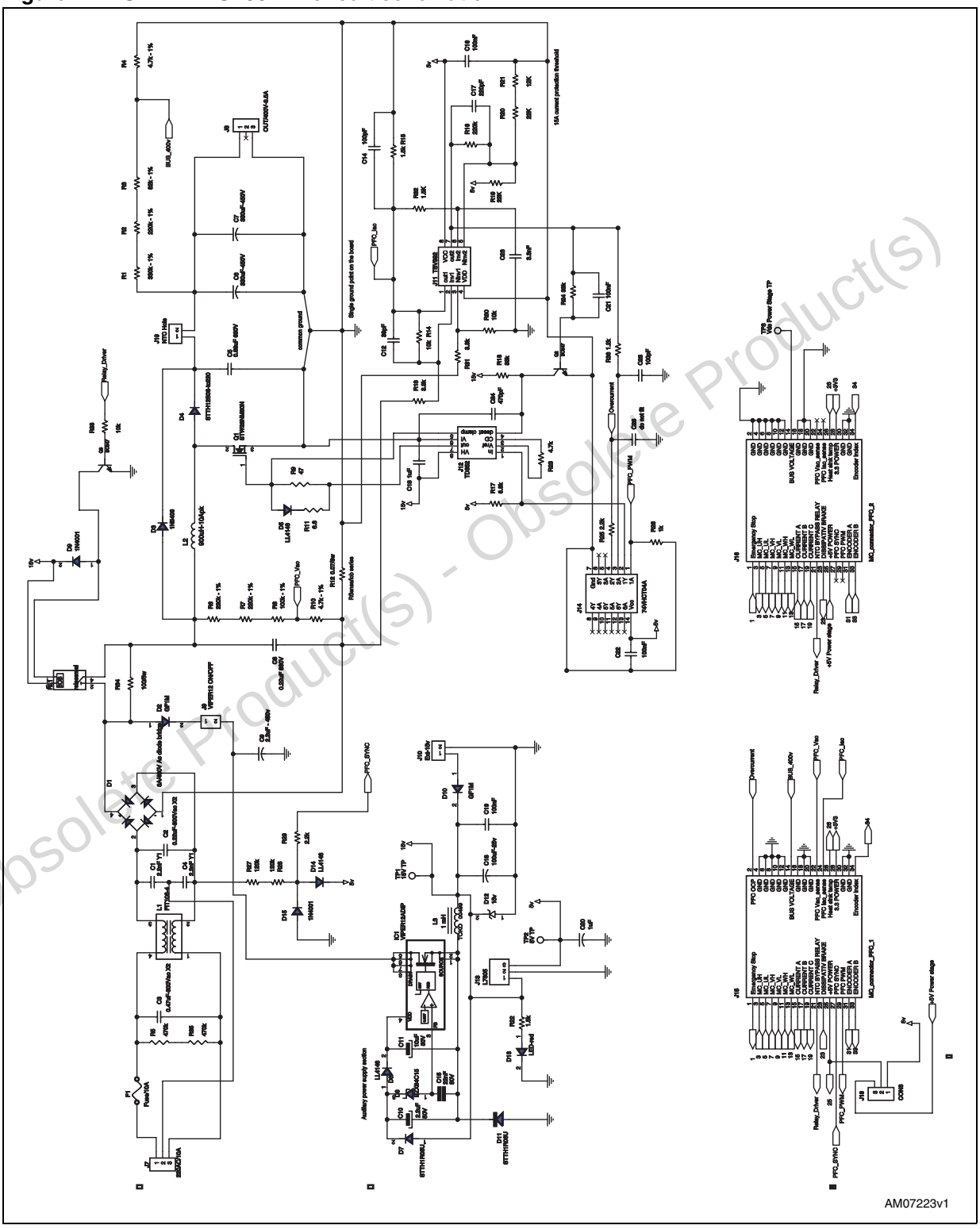
1 Schematic diagram

Figure 1. STEVAL-ISF002V1 circuit schematic



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2 Revision history

Table 1. Document revision history

Date	Revision	Changes
26-Apr-2010	1	Initial release.

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