



STEVAL-IHM029V1

2000 W universal motor control demonstration board
based on the STM8S103F2 MCU and T1235H Triac

Data brief

Features

- Input voltage range: 90-265 VAC, 50/60 Hz
- 12 VDC / 5 VDC auxiliary power supply based on the VIPer16L in buck converter topology
- Total power consumption below 300 mW in standby mode
- Maximum output power: 2000 W
- 20-pin, 8-bit STM8S103F2 MCU as main controller
- Employs zero-voltage switching (ZVS) to synchronize MCU events with the voltage mains
- Motor driven by T1235H high-temperature Triac in phase-angle control
- 5 power levels and standby mode selectable by potentiometer
- 5 LEDs to display the power level of the board
- "RUN" LED to indicate the board is functioning
- Standard in-circuit programming connector
- IEC 61000-4-4 pre-compliance test passed (burst up to 8 kV)
- IEC 61000-4-5 pre-compliance test passed (surge up to 2 kV)
- RoHS compliant

Description

The STEVAL-IHM029V1 is a low-cost universal motor control demonstration board designed for the home appliance market, with particular focus on vacuum cleaners, food processors and power tools.

This system features the 20-pin, 8-bit STM8S103F2 microcontroller running at 16 MHz (RC user-trimmable internal RC clock), featuring 4 KB of Flash memory, a 10-bit A/D converter, 8/16 bit timers, communication interfaces and 640 bytes E²PROM.



The power supply circuitry is based on the VIPer16L, an off-line converter with an 800 V avalanche-rugged power section, operating at 60 kHz.

The STEVAL-IHM029V1 can control any universal motor up to 2000 W, thanks to the T1235H, a 12 A 600 V high temperature Triac. The motor control is based on phase-angle.

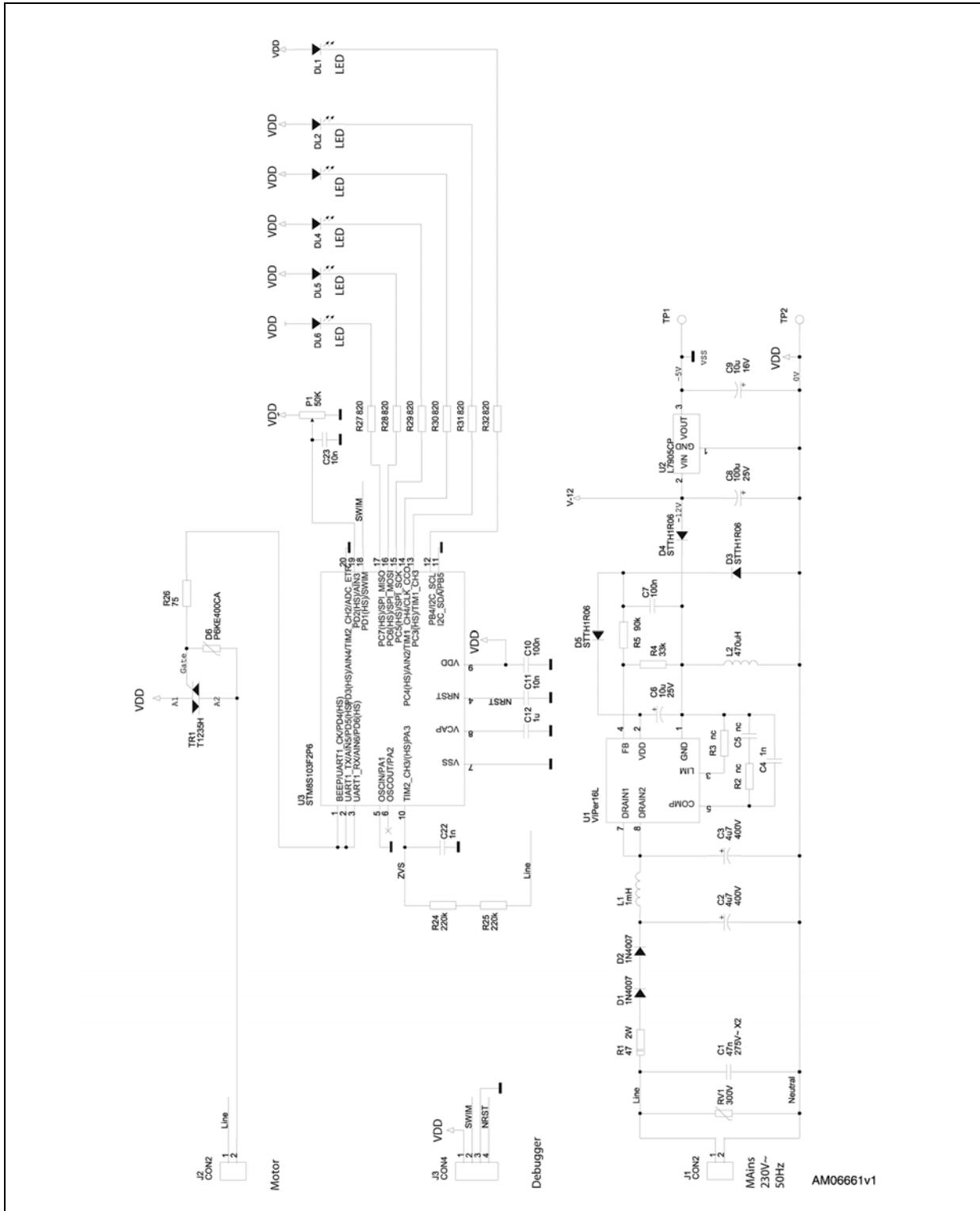
In order to limit the in-rush current and possible current peaks, the demonstration board features a soft-start routine and a smooth power change function.

The board passed the pre-compliance tests for EMC directives IEC 61000-4-4 (burst up to 8 kV) and IEC 61000-4-5 (surge up to 2 kV).

In standby mode, the STEVAL-IHM029V1 has an overall standby power consumption below 300 mW.

1 Schematic diagram

Figure 1. STEVAL-IHM029V1 circuit schematic



2 Revision history

Table 1. Document revision history

| Date | Revision | Changes |
|-------------|----------|------------------|
| 11-Jun-2010 | 1 | Initial release. |

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