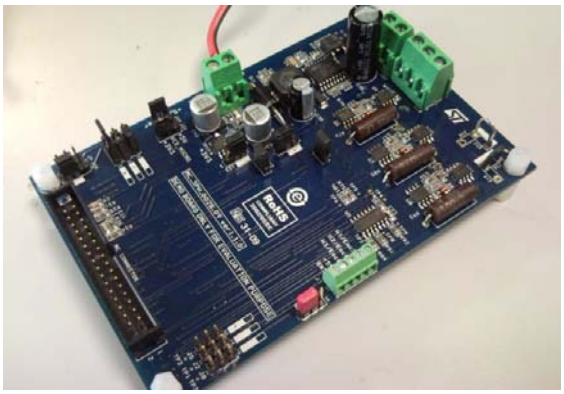
STEVAL-IHM031V1

3-phase low voltage inverter power board for FOC and scalar motor control based on the STS8DNH3LL MOSFET

Data brief

Features

- Bus voltage: 12 V - 24 V, up to 120 W
- 3-phase full bridge inverter topology
- Compact size with dual N-channel power MOSFETs
- Easily configurable for scalar and FOC motor control
- Motor current feedback via three shunt resistors
- Security functions:
  - overcurrent detection
  - bus voltage monitoring
  - temperature sensing
- RoHS compliant



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Description

The STEVAL-IHM031V1 demonstration board is designed to drive a low voltage/low-to-medium current, 3-phase brushless, synchronous or asynchronous motor. It provides a compact solution along with efficient power dissipation thanks to dual in-package power MOSFETs.

This demonstration board integrates the following functional blocks: dedicated power supply for handling bus voltage in the range of 12 V to 24 V (up to 5 A), integrated gate driving, overcurrent protection, overvoltage and overtemperature sensing, three-shunt current sensing for FOC control, single-shunt sensing for trapezoidal control, BEMF sensing and amplification (for both GE and STMicroelectronics methods) and motor control connector.

The on-board MC connector allows the demonstration board to be interfaced with any STMicroelectronics MCU control board with a dedicated connector in order to control several types of 3-phase motors (asynchronous, PMSM brushless DC and brushless AC).

1 Schematic diagrams

Figure 1. BEMF and sensor inputs

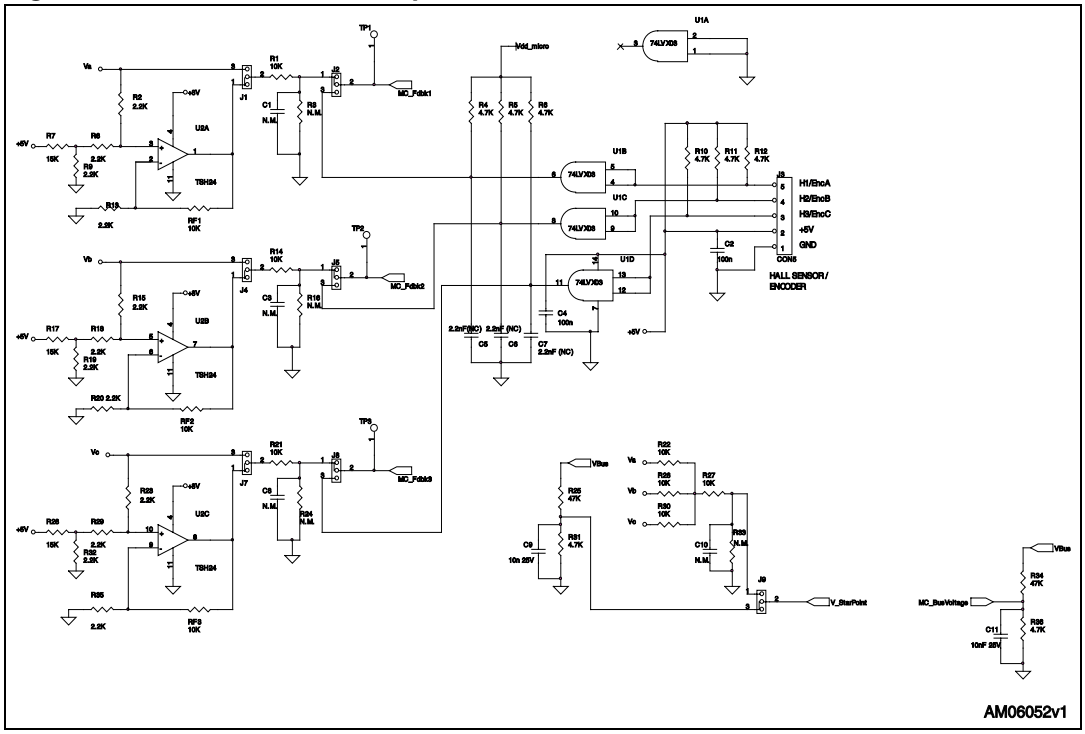


Figure 2. Current conditioning

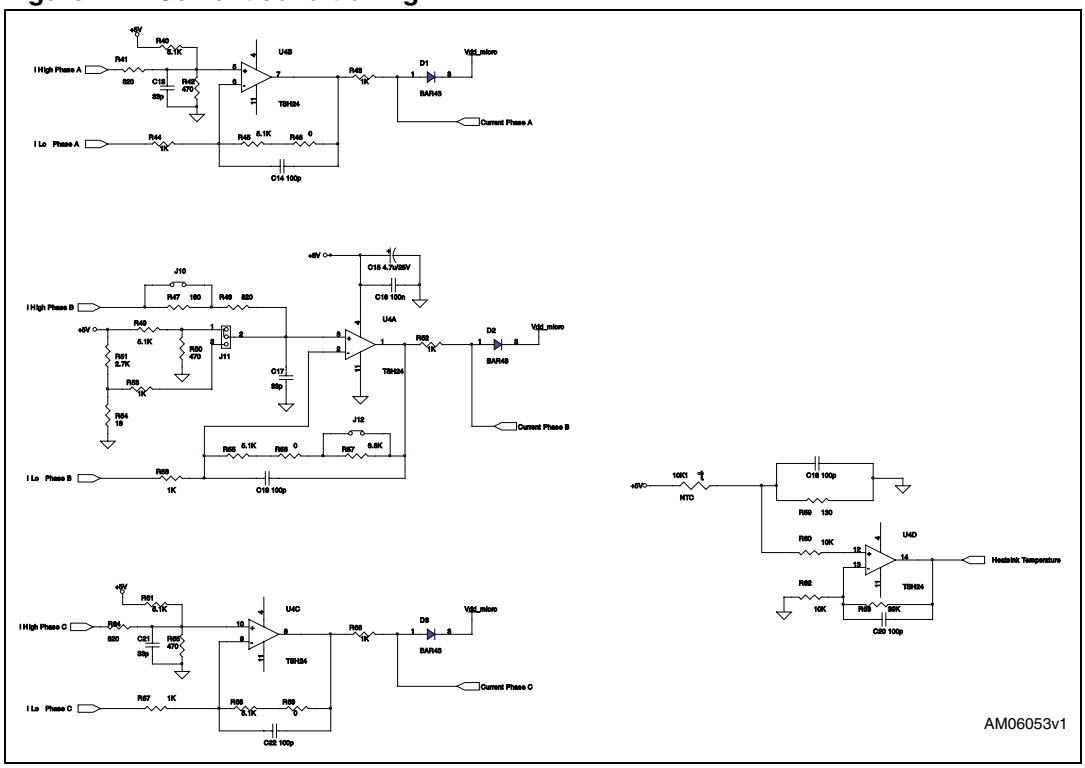


Figure 3. Drivers and power MOSFETs

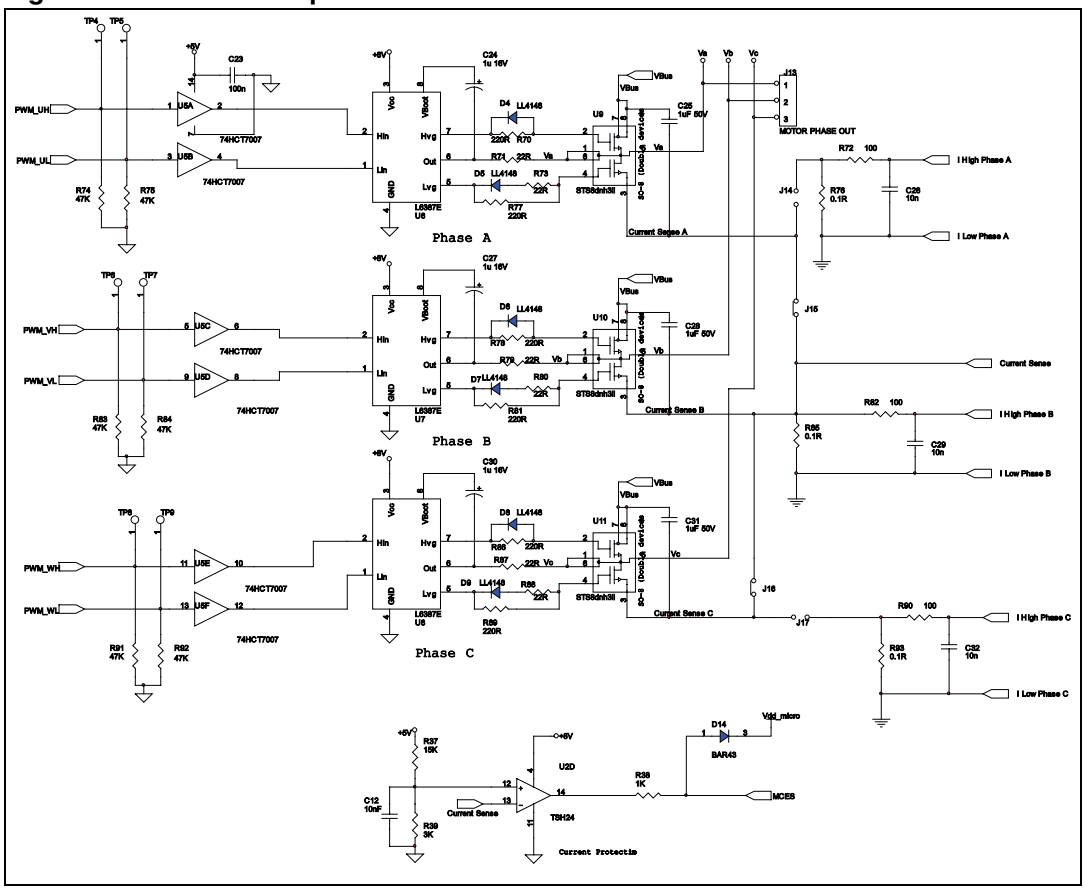


Figure 4. Motor control connector

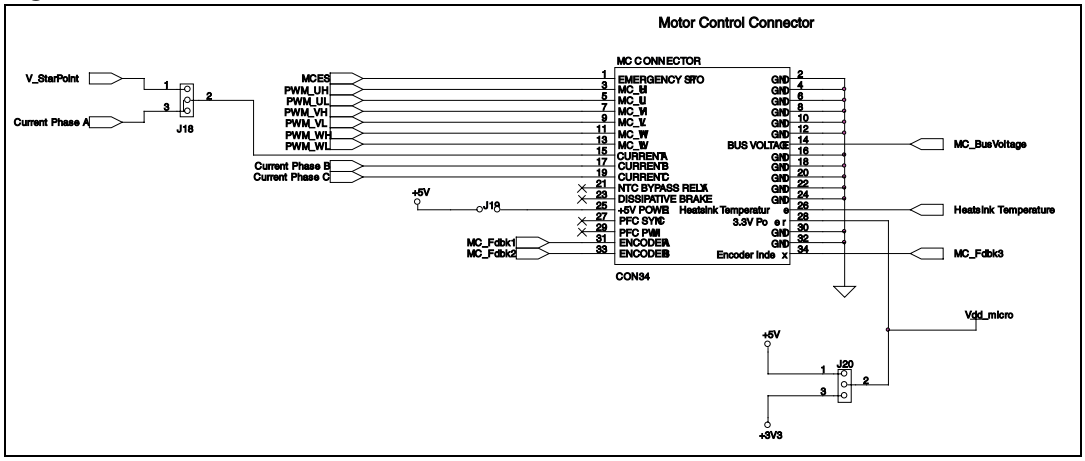
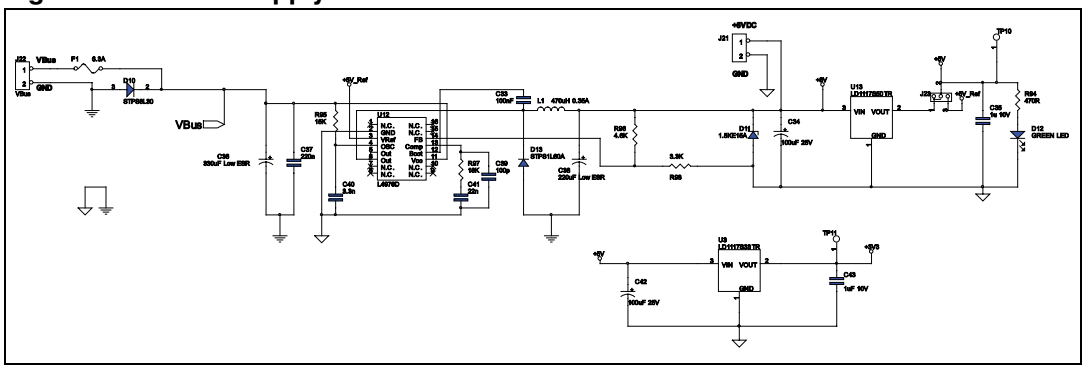


Figure 5. Power supply



2 Revision history

Table 1. Document revision history

Date	Revision	Changes
13-Jan-2010	1	Initial release.