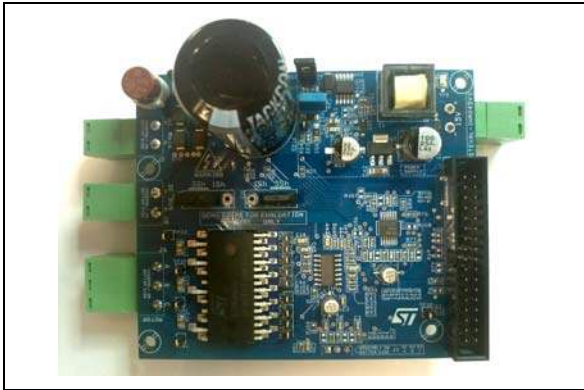


3-phase high voltage inverter power board for FOC based on the STGIPN3H60A (SLLIMM™-nano)

Data brief



Description

The STEVAL-IHM045V1 system evaluation board is a 3-phase inverter designed to perform field oriented control (FOC) of sinusoidal-shaped back-EMF PMSMs with or without sensors, with nominal power up to 100 W. This flexible, high-performance design consists of a 3-phase inverter bridge based on the STGIPN3H60A SLLIMM™-nano (small low-loss intelligent molded module) IPM, 3-phase inverter, 3 A / 600 V very fast IGBT and the VIPer06 fixed frequency offline converter from the VIPer™ plus family.

The system is specifically designed to achieve fast and accurate current feedback conditioning, thereby matching the requirements typical of high-end applications such as field oriented motor control.

The board is compatible with 110 and 230 Vac mains, and includes an auxiliary power supply stage with the VIPer06 to generate the +15 V and the +3.3 V supply voltages required by the application.

Through a dedicated connector, the board can be interfaced with the STM3210B-EVAL, STM32100B-EVAL, STM3210E-EVAL, STM320518-EVAL, STM3220G-EVAL, STM32303C-EVAL, STM3240G-EVAL (STM32 microcontroller evaluation boards), STEVAL-IHM022V1 (high density dual motor control evaluation board based on the STM32F103ZE microcontroller), STEVAL-IHM039V1 (Dual motor drive control stage based on the STM32F415ZG microcontroller) and the STEVAL-IHM033V1 (Control stage based on the STM32F100CB microcontroller suitable for motor control).

Features

- Wide-range input voltage (30-270 Vac)
- Maximum power up to 100 W at 230 Vac input
- Based on the STGIPN3H60A SLLIMM™-nano AC motor drive
- Mounts the VIPer06 fixed frequency offline converter from the VIPer™ plus family
- Efficient DC-DC power supply (15 V, 3.3 V)
- DC bus voltage power supply connectors
- External 15 V input
- Dedicated connector for interfacing with the various other ST evaluation boards
- Suitable for sinusoidal FOC drives
- Selectable single or three-shunt current reading topology with fast operational amplifier
- Configurable for direct motor current sampling from shunt resistors
- Hardware overcurrent detecting network
- Temperature sensor
- Hall sensor/quadrature encoder inputs
- RoHS compliant

1 Schematic diagrams

Figure 1. STEVAL-IHM045V1 circuit schematic (1 of 4)

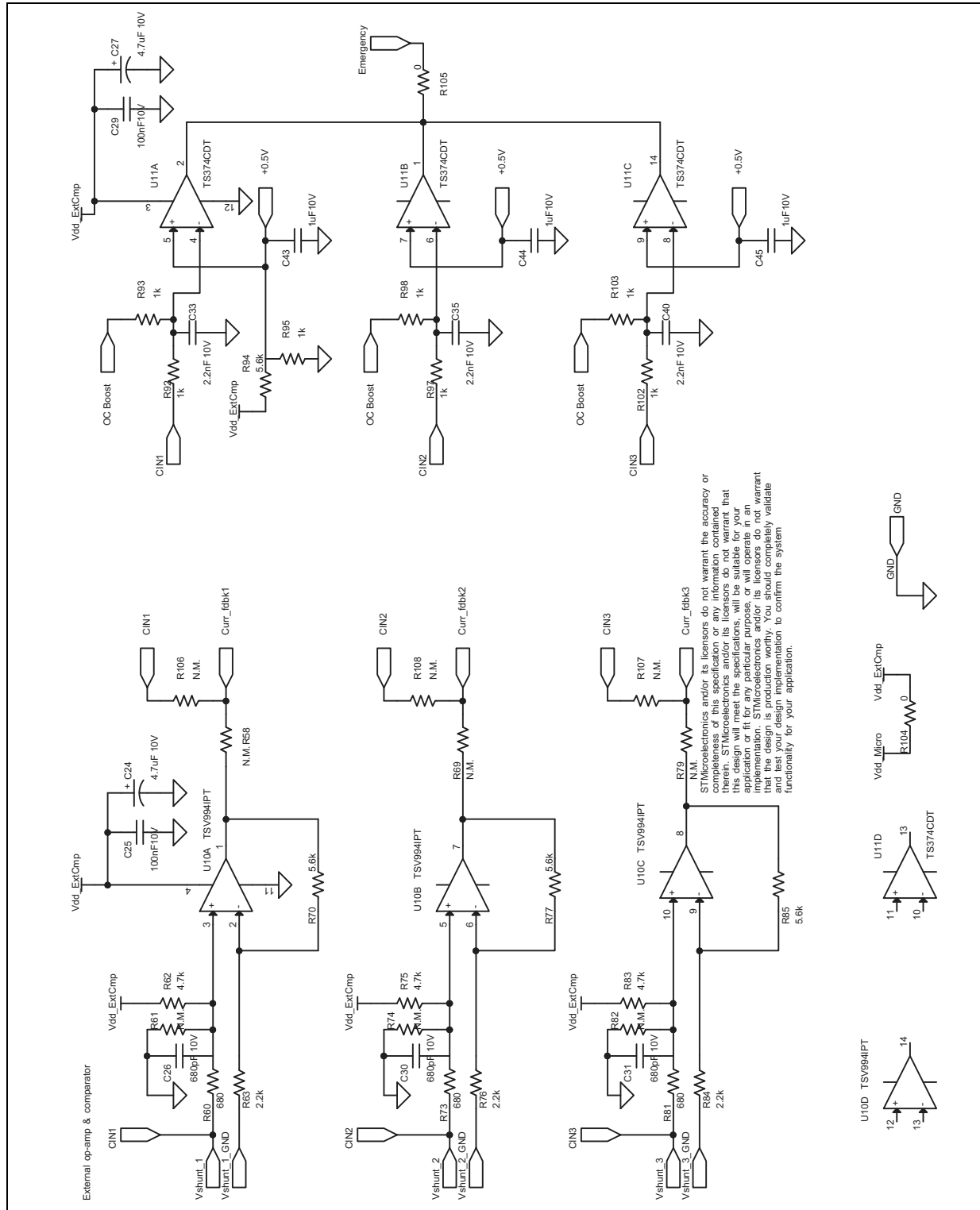


Figure 2. STEVAL-IHM045V1 circuit schematic (2 of 4)

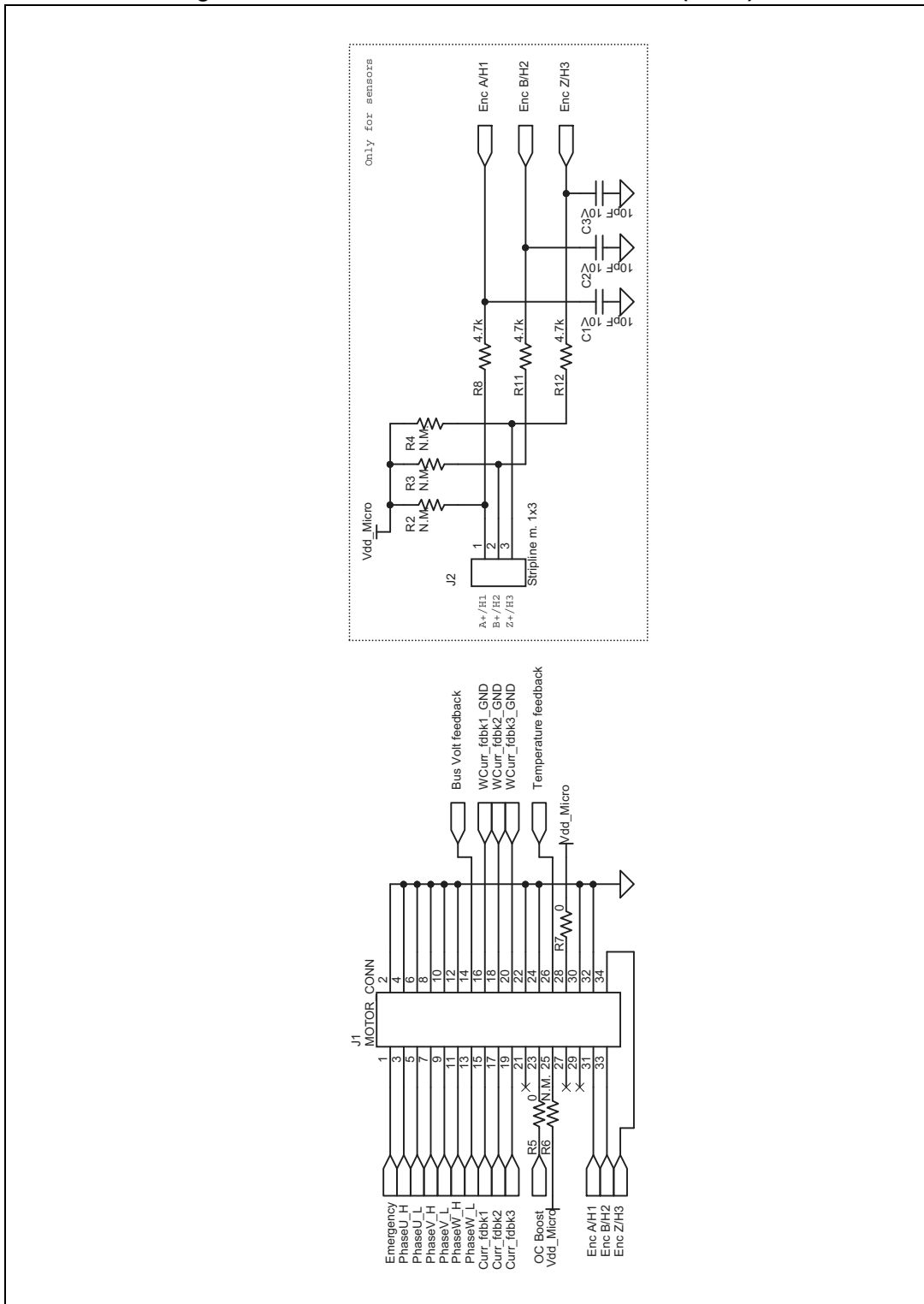


Figure 3. STEVAL-IHM045V1 circuit schematic (3 of 4)

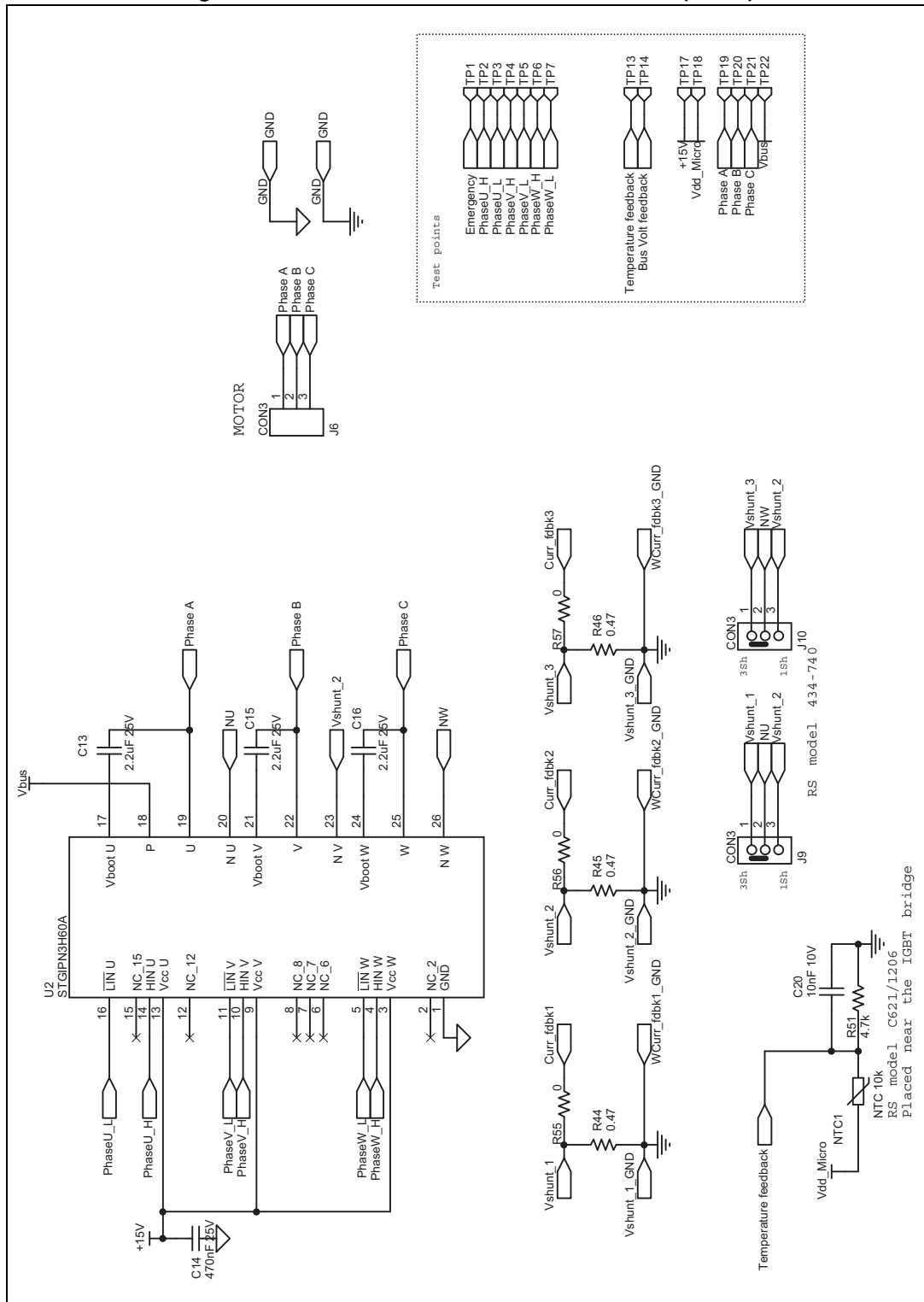
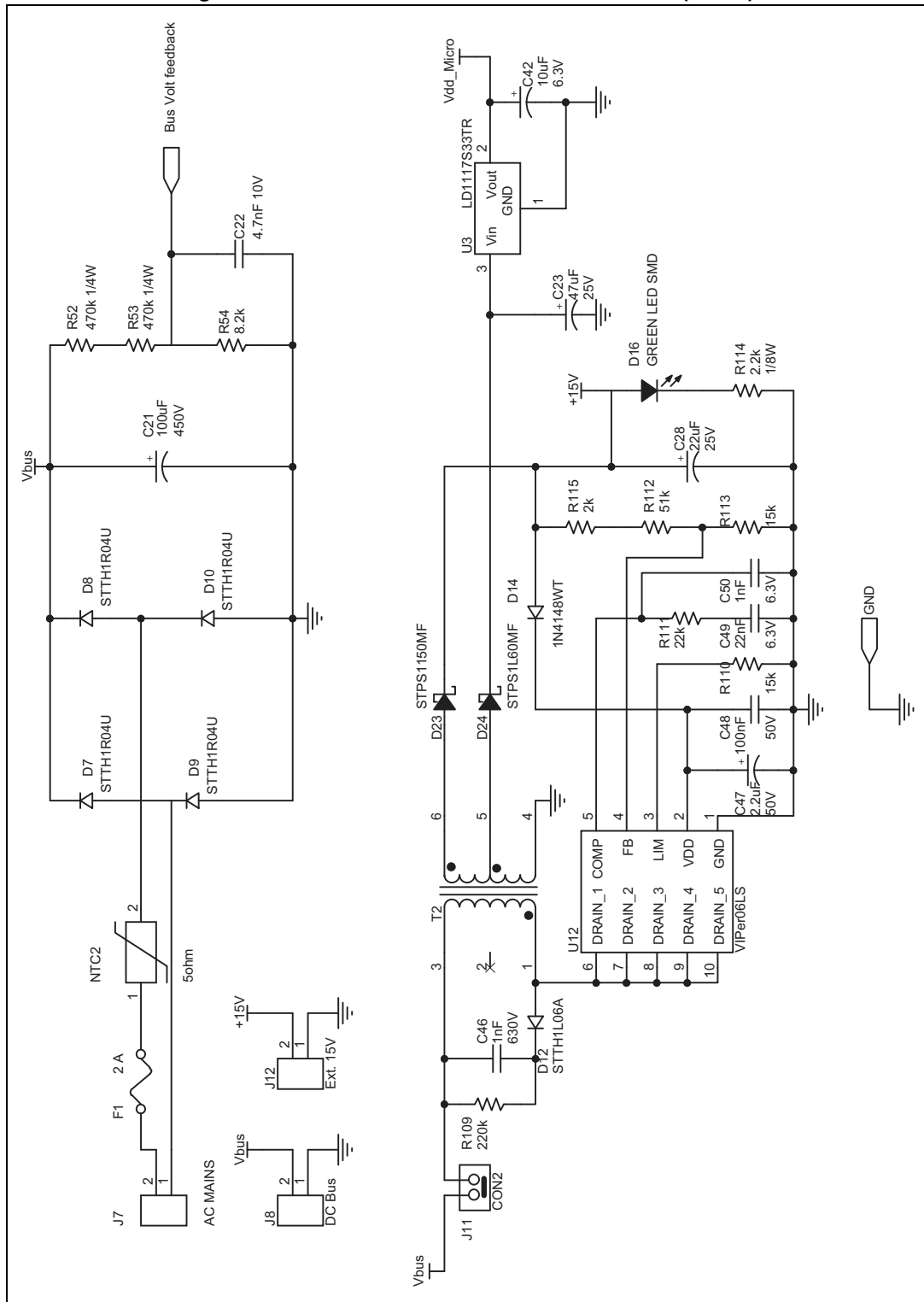


Figure 4. STEVAL-IHM045V1 circuit schematic (4 of 4)



2 Revision history

Table 1. Document revision history

Date	Revision	Changes
27-May-2014	1	Initial release.

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