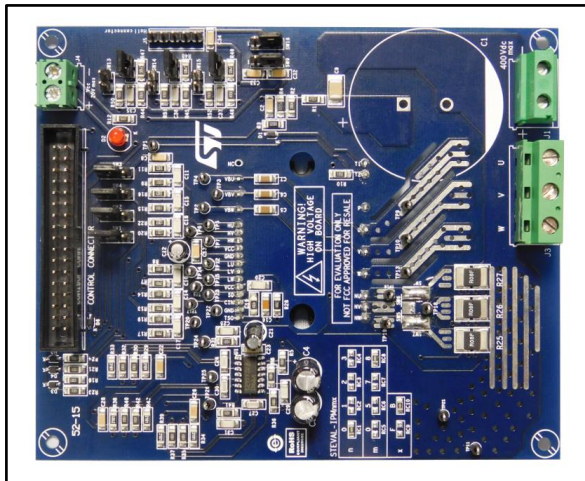


Motor control power board based on the SLLIMM™ 2nd series of IGBT IPMs

Data brief



Description

The STEVAL-IPM08B compact motor drive power board is based on SLLIMM™ (small low-loss intelligent molded module) 2nd series module (STGIB8CH60TS-L). It provides an affordable and easy-to-use solution for driving high power motors in a wide range of applications such as power white goods, air conditioning, compressors, power fans, high-end power tools and 3-phase inverters for motor drives in general.

The IPM itself consists of short-circuit rugged IGBTs and a wide range of features like undervoltage lockout, smart shutdown, embedded temperature sensor and NTC, and overcurrent protection.

Features

- Input voltage: 125 to 400 V_{DC}
- Nominal power: up to 800 W
- Input auxiliary voltage: up to 20V DC
- Single- or three- shunt resistors for current sensing (with sensing network)
- Two options for current sensing: dedicated op-amps or through MCU
- Overcurrent hardware protection
- IPM temperature monitoring and protection
- Hall sensor or encoder input
- IGBT intelligent power module:
 - 2nd series of SLLIMM IPM (STGIB8CH60TS-L – DBC package)
- Motor control connector (32 pin) interfacing with ST MCU boards
- Universal design for further evaluation with bread board and testing pins
- Very compact size
- RoHS compliant

The main characteristics of this evaluation board are its small size, minimal BOM and high efficiency. It consists of an interface circuit (BUS and V_{cc} connectors), bootstrap capacitors, snubber capacitor, hardware short-circuit protection, fault event signal and temperature monitoring. It is designed to work in single or three shunt configuration and with dual current sensing options: using three dedicated on-board op-amps or using op-amps embedded on MCU. The Hall/Encoder part completes the circuit.

Thanks to these advanced characteristics, the system can provide the fast and accurate current feedback conditioning necessary for field oriented control (FOC). The STEVAL-IPM08B is compatible with the ST control board based on the STM32, thus providing a total platform for motor control.

1 Schematic diagrams

Figure 1: STEVAL-IPM08B circuit schematic (1 of 6)

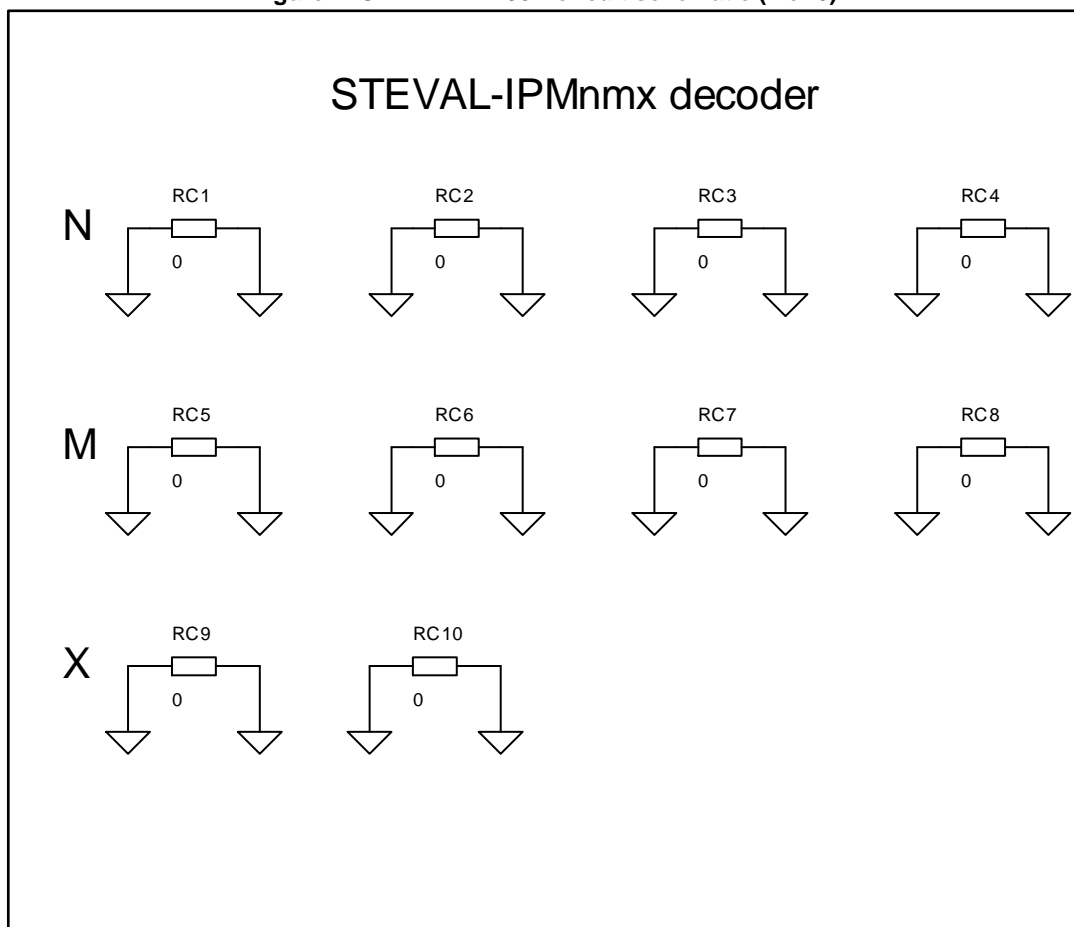


Figure 2: STEVAL-IPM08B circuit schematic (2 of 6)

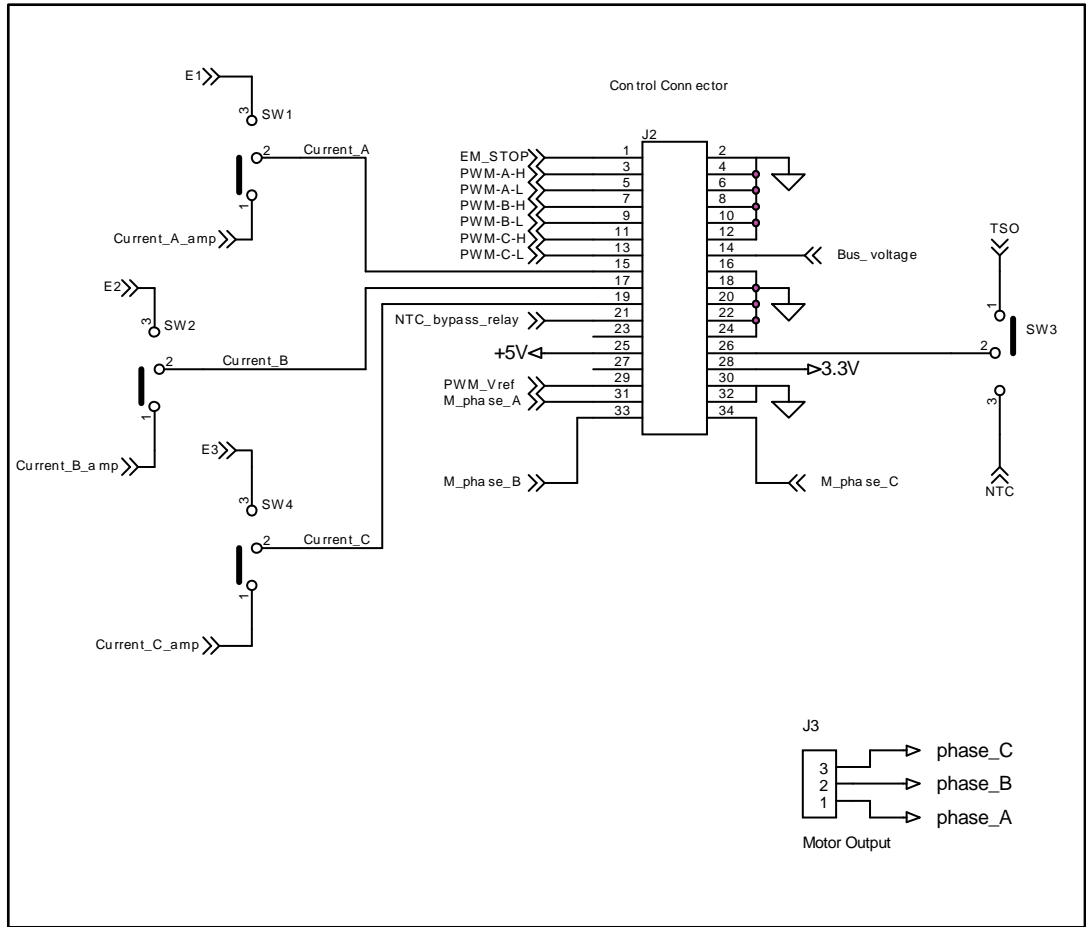


Figure 3: STEVAL-IPM08B circuit schematic (3 of 6)

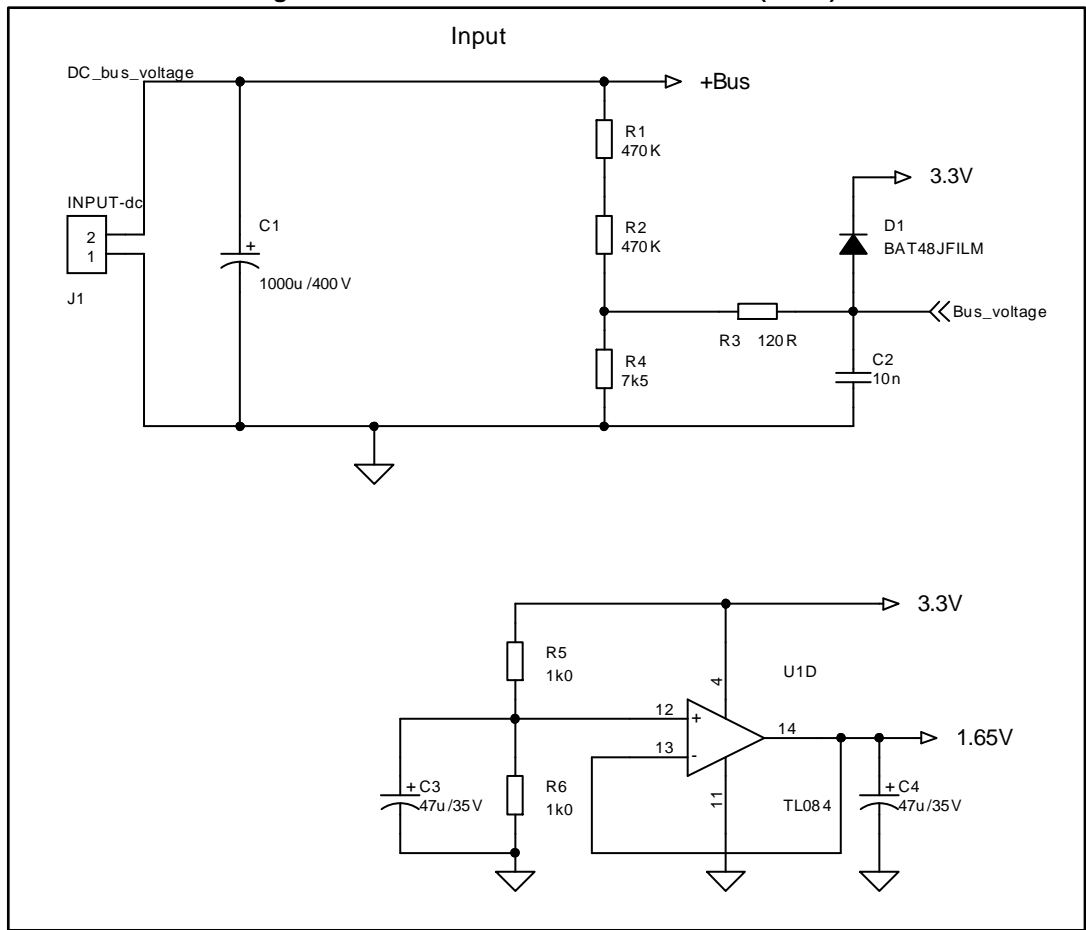


Figure 4: STEVAL-IPM08B circuit schematic (4 of 6)

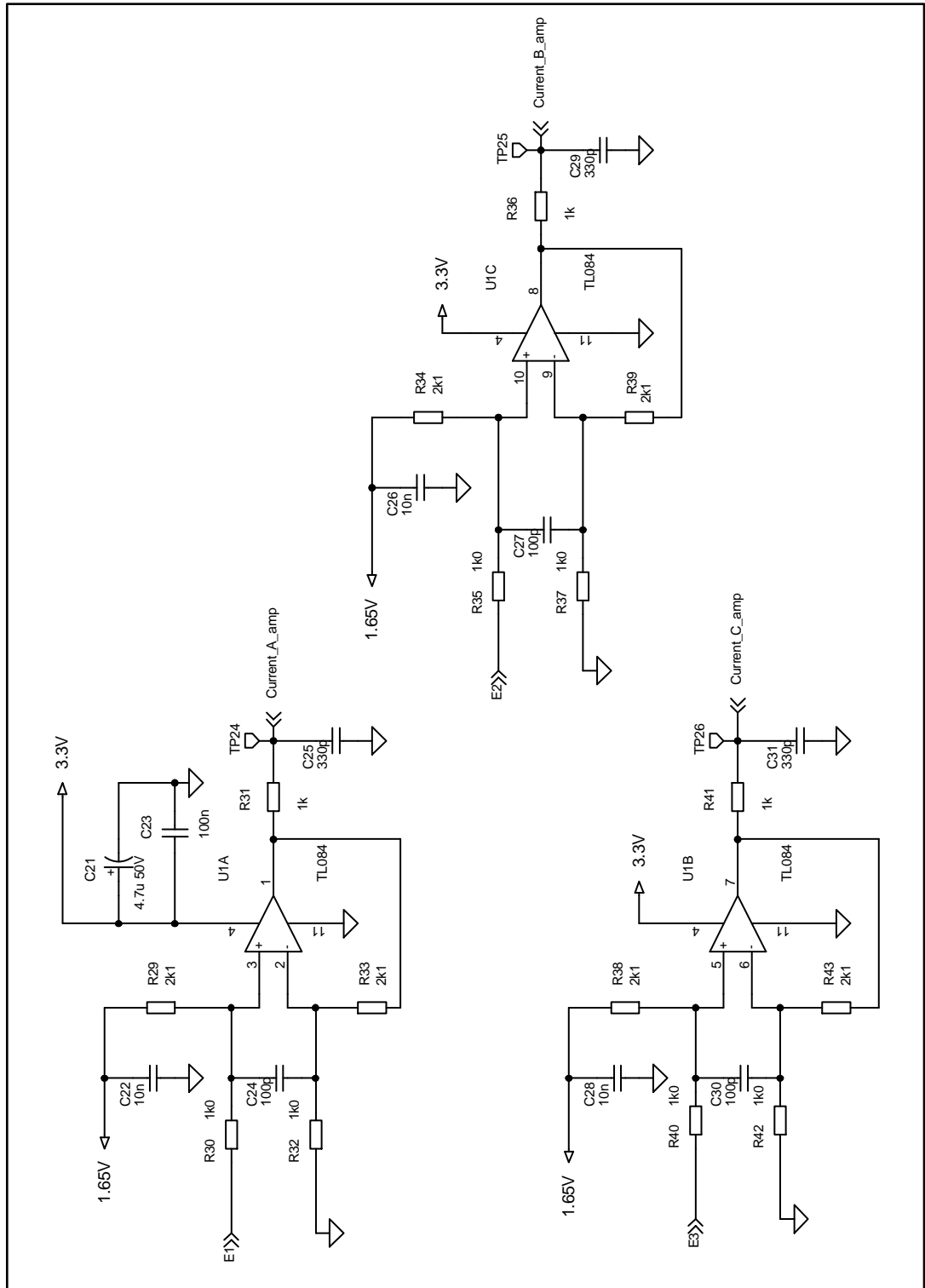


Figure 5: STEVAL-IPM08B circuit schematic (5 of 6)

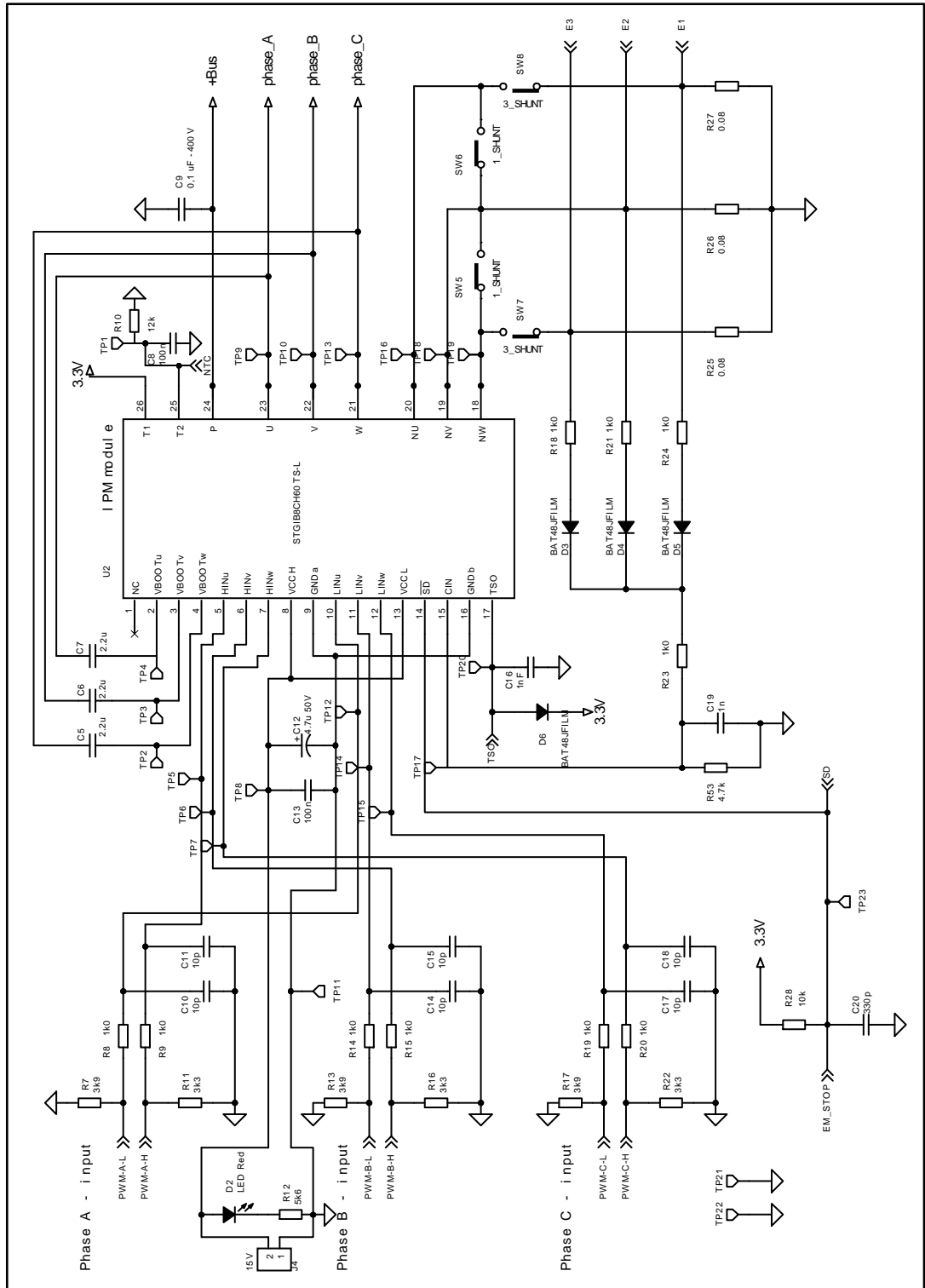
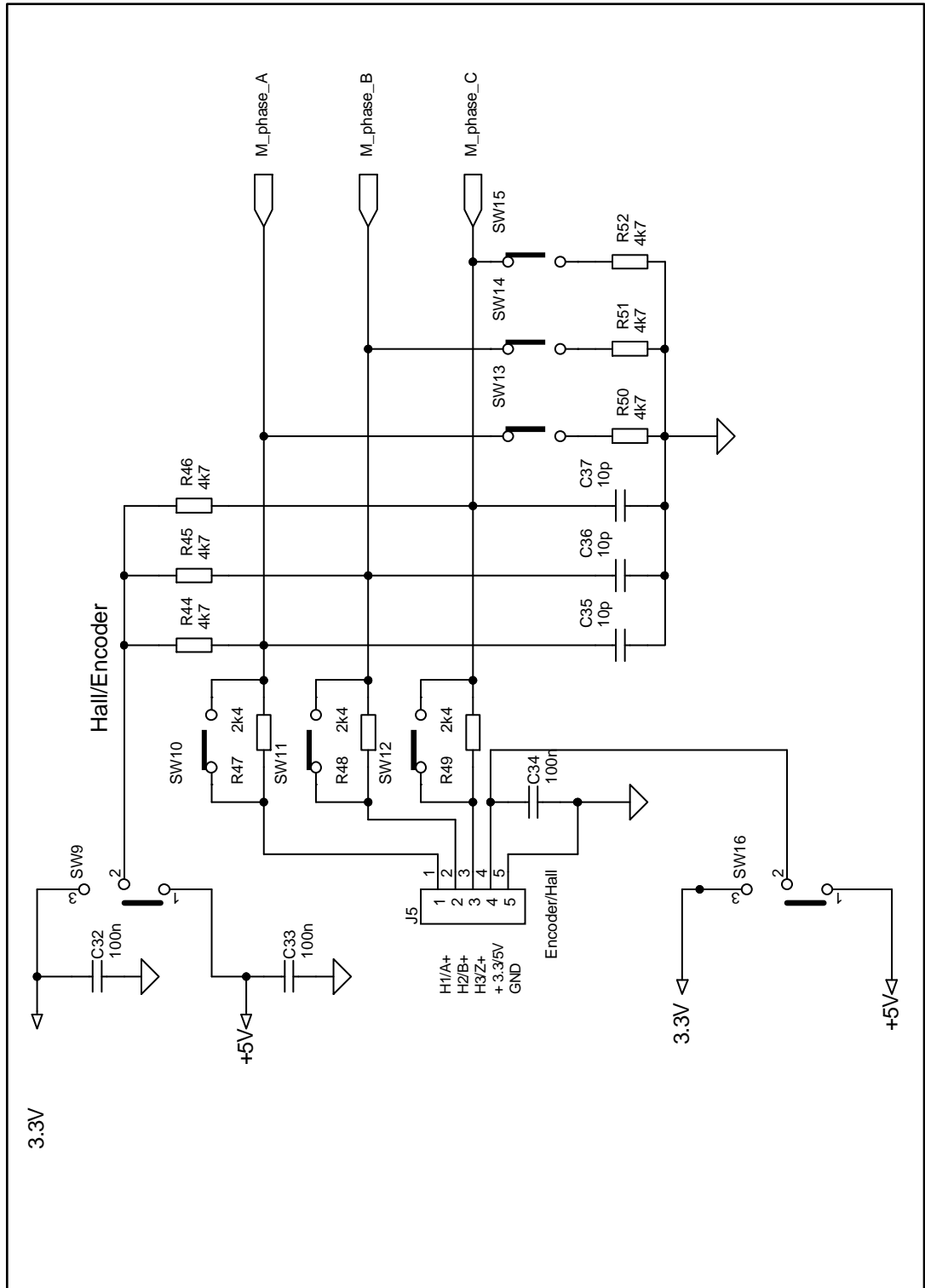


Figure 6: STEVAL-IPM08B circuit schematic (6 of 6)



2 Revision history

Table 1: Document revision history

Date	Version	Changes
06-Jun-2017	1	Initial release.

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