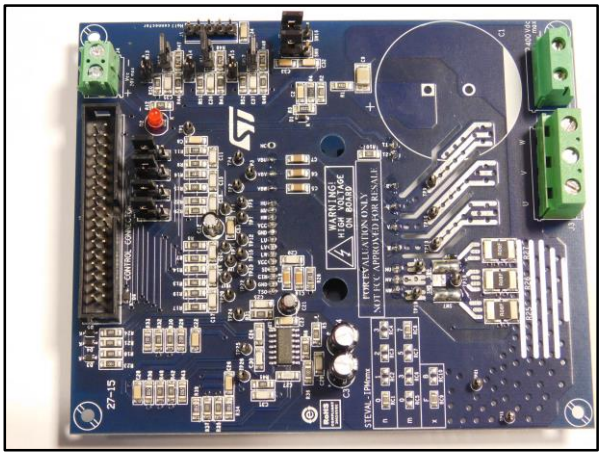
STEVAL-IPM07F

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

Data brief



Features

- Input voltage: 125 - 400 V_{DC}
- Nominal power: up to 800 W
- Input auxiliary voltage: up to 20 V 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
- Uses the STGIF7CH60TS-L IGBT intelligent power module from the SLLIMM™ 2nd series IPMs
- Motor control connector (32-pin) interfacing with ST MCU boards
- Universal conception for further evaluation with bread board and testing pins
- Very compact size

Description

The STEVAL-IPM07F is a compact motor drive power board based on the small low-loss intelligent molded module SLLIMM™ 2nd series product (STGIF7CH60TS-L). It provides an affordable and easy-to-use solution for driving high power motors for 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, internal temperature sensor and NTC, and overcurrent protection. The main characteristics of this evaluation board are small size, minimal BOM and high efficiency. It includes an interface circuit (BUS and Vcc connectors), bootstrap capacitors, snubber capacitor, hardware short-circuit protection, fault event signaling and temperature monitoring. In order to increase the flexibility, it is designed to work in single- or three-shunt configurations and with two current sensing options: either three dedicated onboard op-amps or with op-amps embedded on the MCU. The Hall/Encoder part completes the circuit. Thanks to these advanced characteristics, the system is able to achieve fast and accurate current feedback conditioning, meeting most of the requirements for field oriented control (FOC). The STEVAL-IPM07F is compatible with ST's STM32-based control board, for a complete motor control platform.

1 Schematics

Figure 1: STEVAL-IPM07F schematic part 1

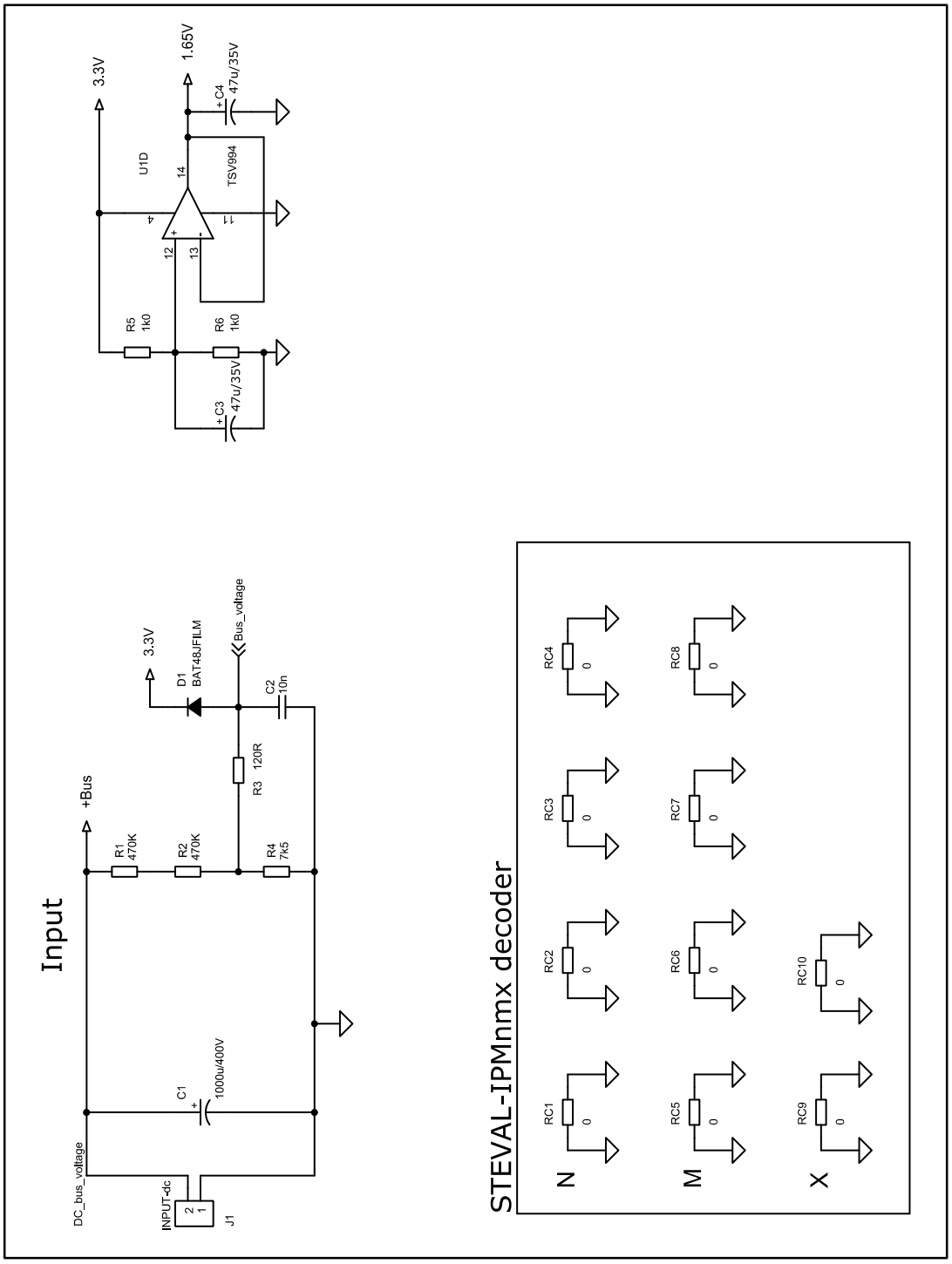


Figure 2: STEVAL-IPM07F schematic part 2

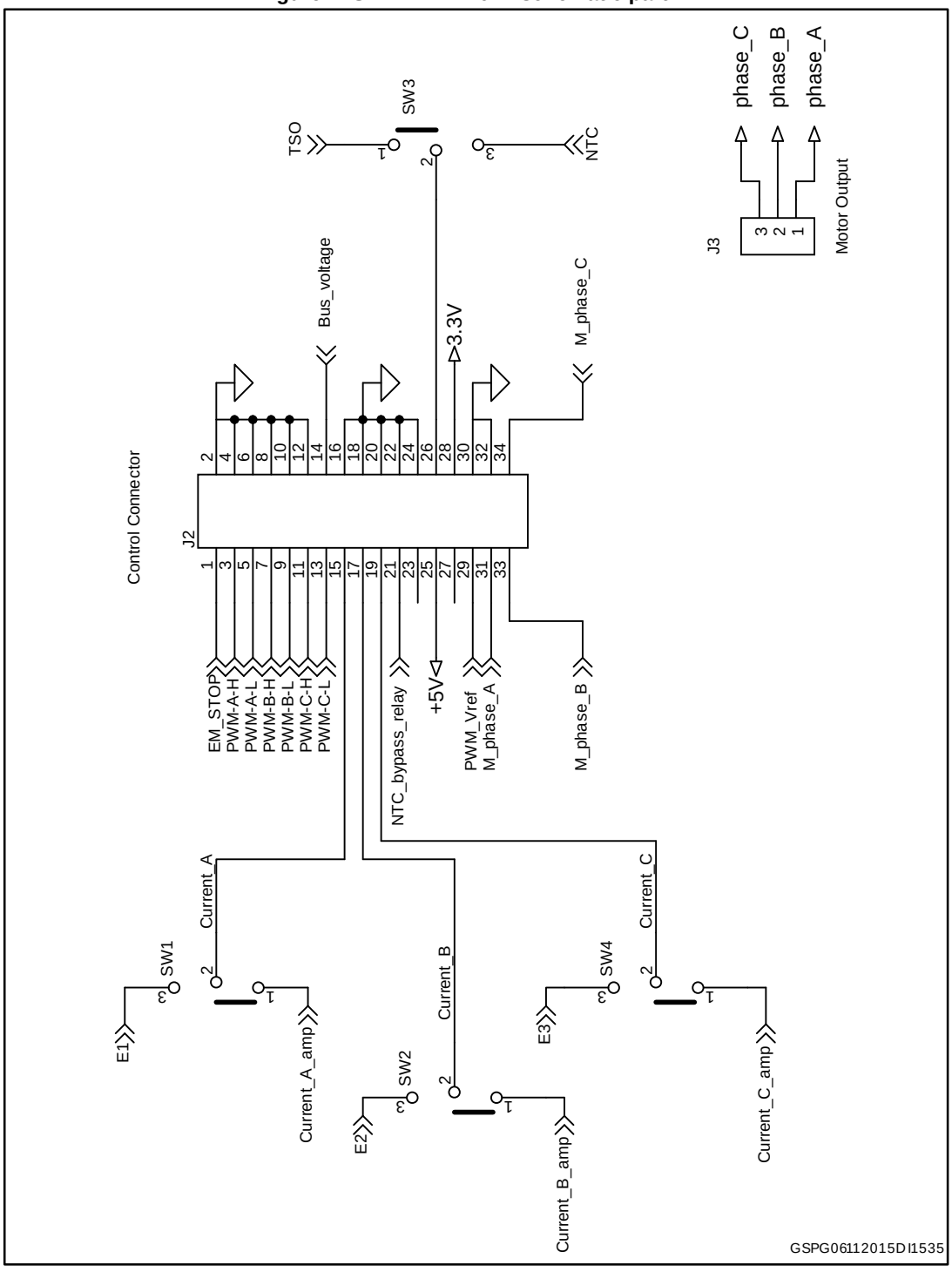


Figure 3: STEVAL-IPM07F schematic part 3

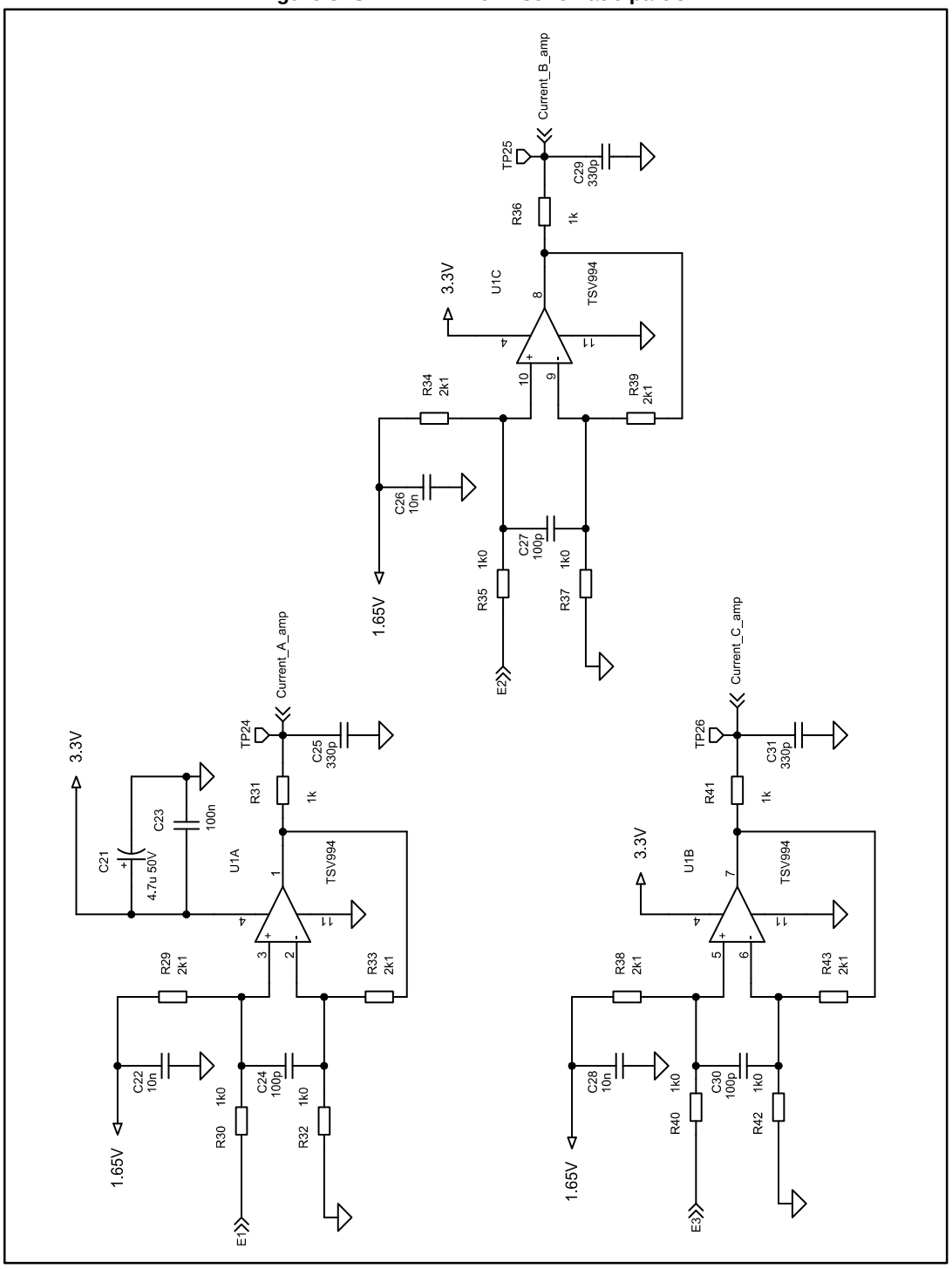


Figure 4: STEVAL-IPM07F schematic part 4

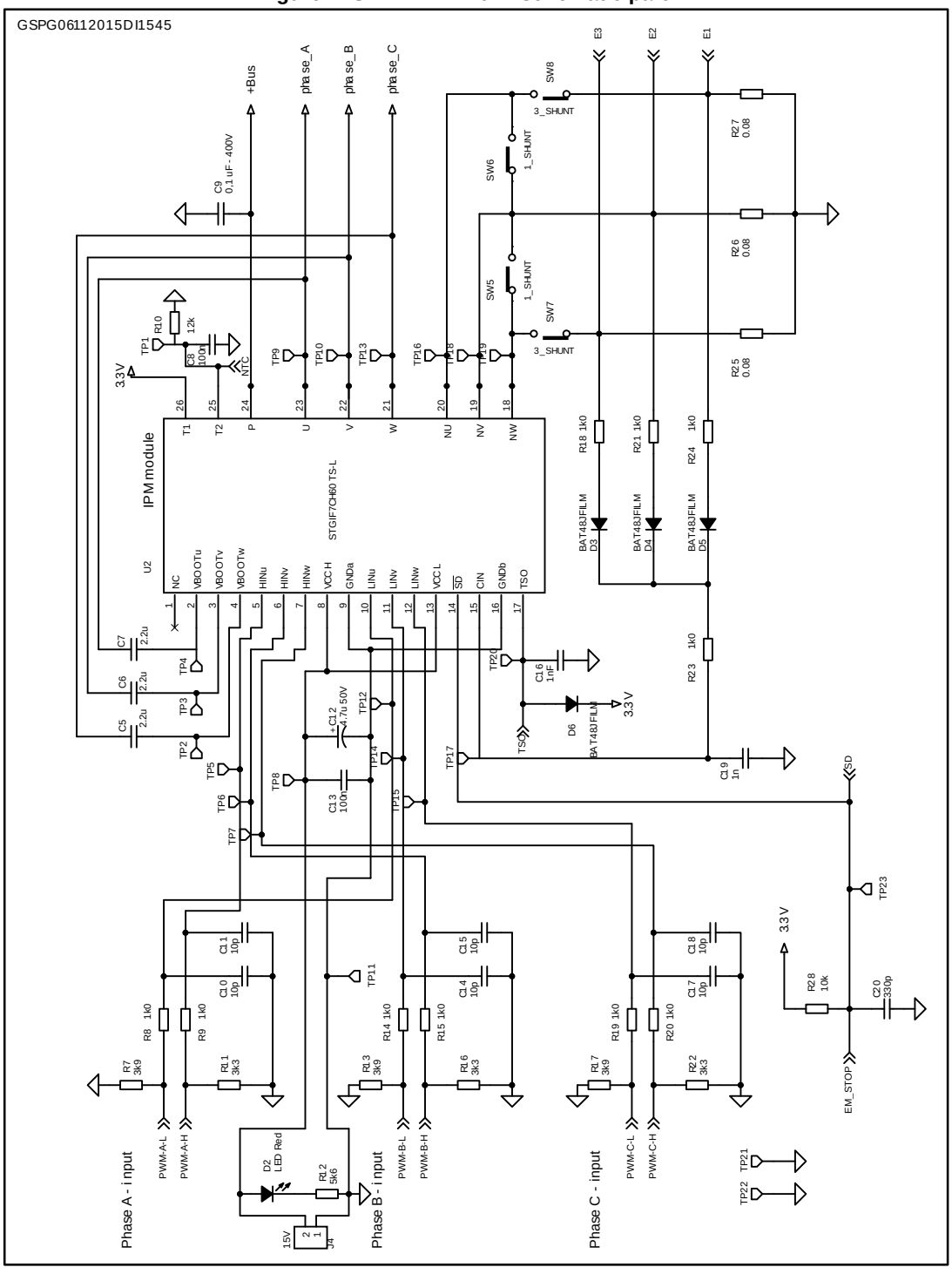
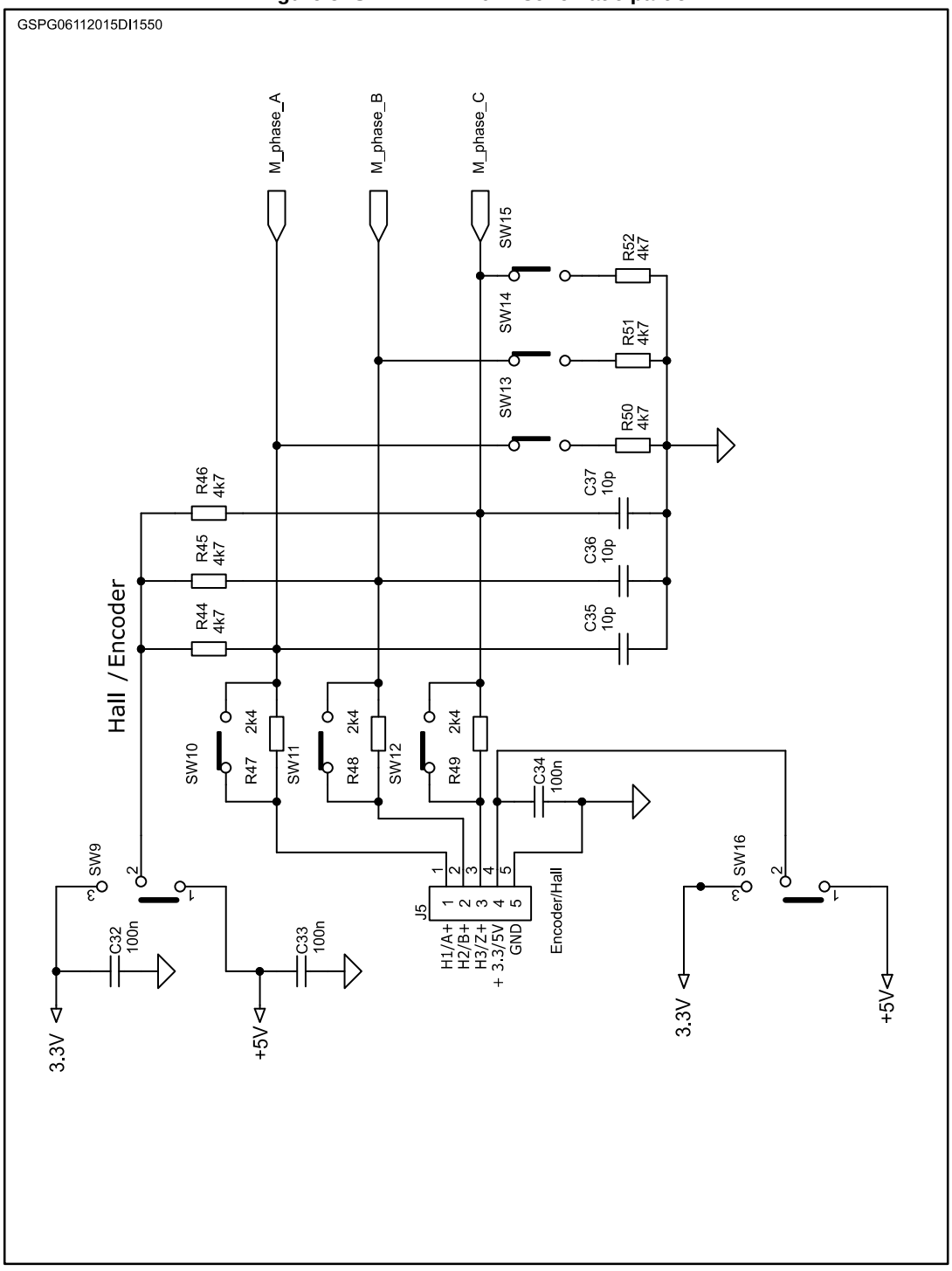


Figure 5: STEVAL-IPM07F schematic part 5



2 Revision history

Table 1: Document revision history

Date	Version	Changes
12-Nov-2015	1	Initial release.
16-Mar-2016	2	Updated *Figure 1: "STEVAL-IPM07F schematic part 1"* and *Figure 3: "STEVAL-IPM07F schematic part 3"*

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