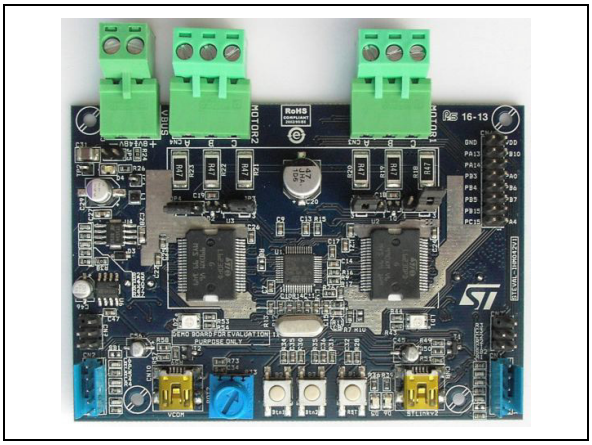
STEVAL-IHM042V1

Compact, low-voltage dual motor control evaluation board based on the STM32F303CC and L6230

Data brief



Features

- Highly compact dual 3-phase motor control design
- Two L6230 monolithic power stages in a PowerSO package, featuring overcurrent and thermal protection
- STMicroelectronics' ARM™ Cortex-M4F core-based STM32F303CC microcontroller capable of simultaneous driving field-oriented control of two PMSM motors
- Sensored or sensorless vector control (FOC)
- Input voltage from 8 V to 48 V
- Up to 10 W continuous for each motor
- 3- or 1-shunt current sensing topology for each drive easily selectable through jumpers
- On-board STLink for STM32F303CC programming
- USB-to-serial interface for real-time control via ST MC Workbench
- RoHS compliant

Description

The STEVAL-IHM042V1 evaluation board is designed as a complete dual motor field-oriented control (FOC) demonstration platform featuring STMicroelectronics' ARM Cortex™-M4F 32-bit core-based STM32F303CC microcontroller with floating point support and two fully integrated DMOS L6230 3-phase motor drivers.

It is designed as an integrated evaluation environment for motor control applications in the range of 8 V - 48 V DC bus voltage (extendable up to 52 V) and nominal power up to 10 W for each motor drive. The design exploits the computational power of the STM32F303CC microcontroller with 48 KB of internal SRAM and 256 KB Flash, 4 ADCs, 2 DACs, 7 comparators, 4 operational amplifiers with programmable gains, SWD debugging, as well as the L6230 DMOS driver's 2.8 A output peak current, non-dissipative overcurrent detection/protection, cross-conduction protection, uncommitted comparator, thermal shutdown, and undervoltage lockout.

The STEVAL-IHM042V1 is equipped with a USB-to-serial interface, specifically for real-time data exchange implemented by an STM32F103C8 pre-programmed with the STM32 Virtual COM Port firmware.

The ST Link in-circuit debugger and programmer is embedded in the board, allowing the user to program and debug the STM32F303CC microcontroller directly with a USB cable using a compatible toolset.

1 Schematic diagrams

Figure 1. Schematic (1 of 5)

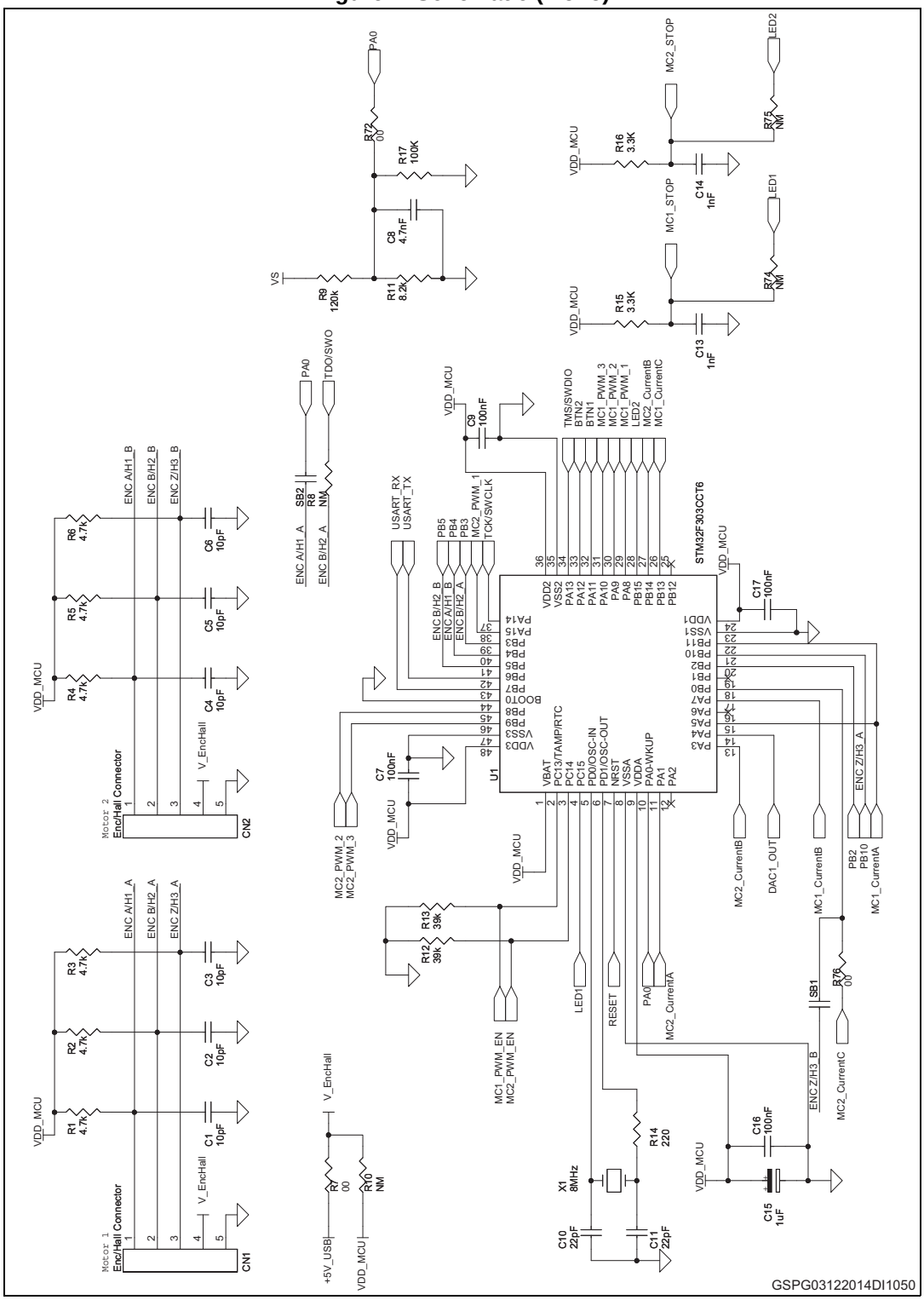


Figure 2. Schematic (2 of 5)

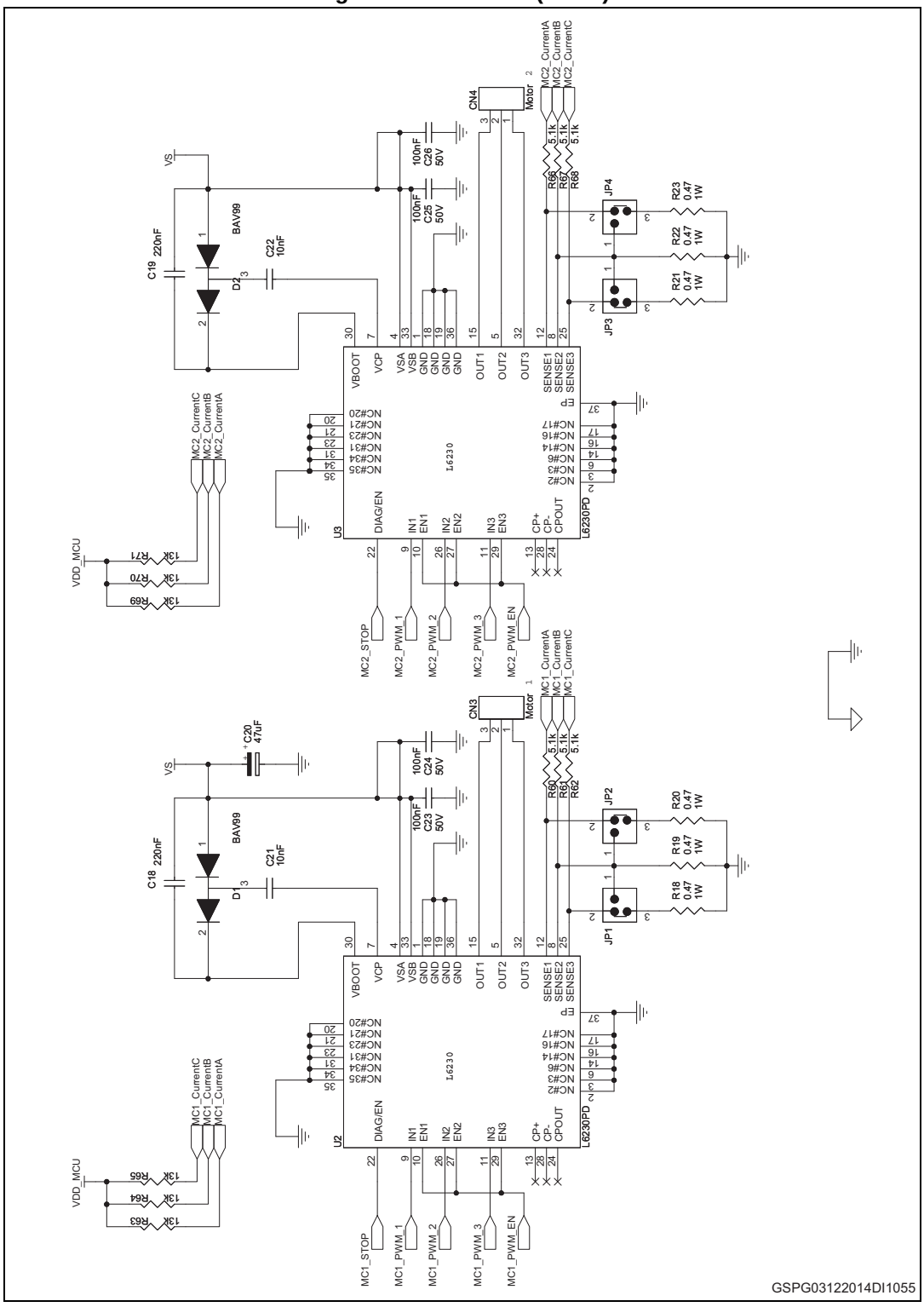


Figure 3. Schematic (3 of 5)

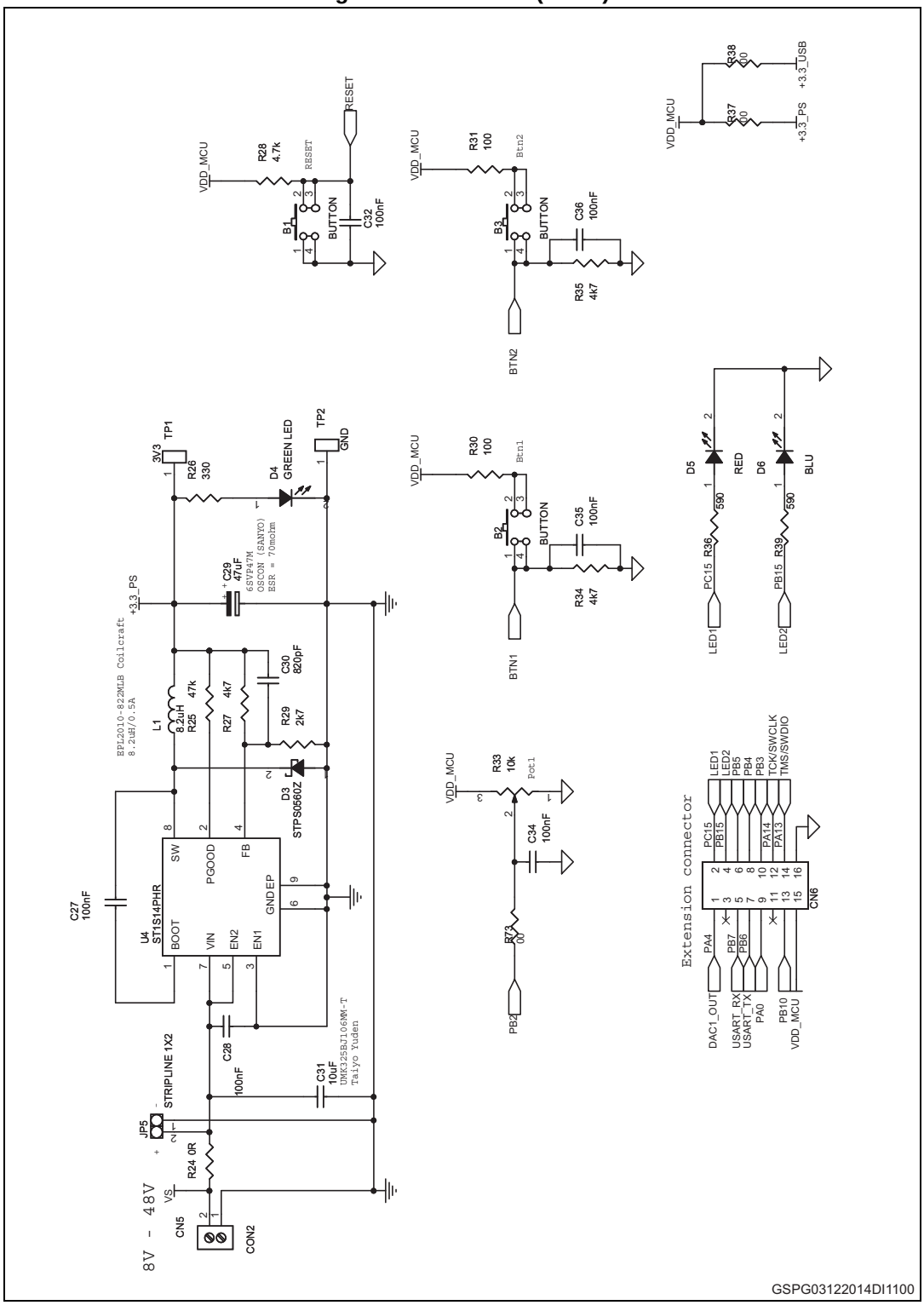


Figure 4. Schematic (4 of 5)

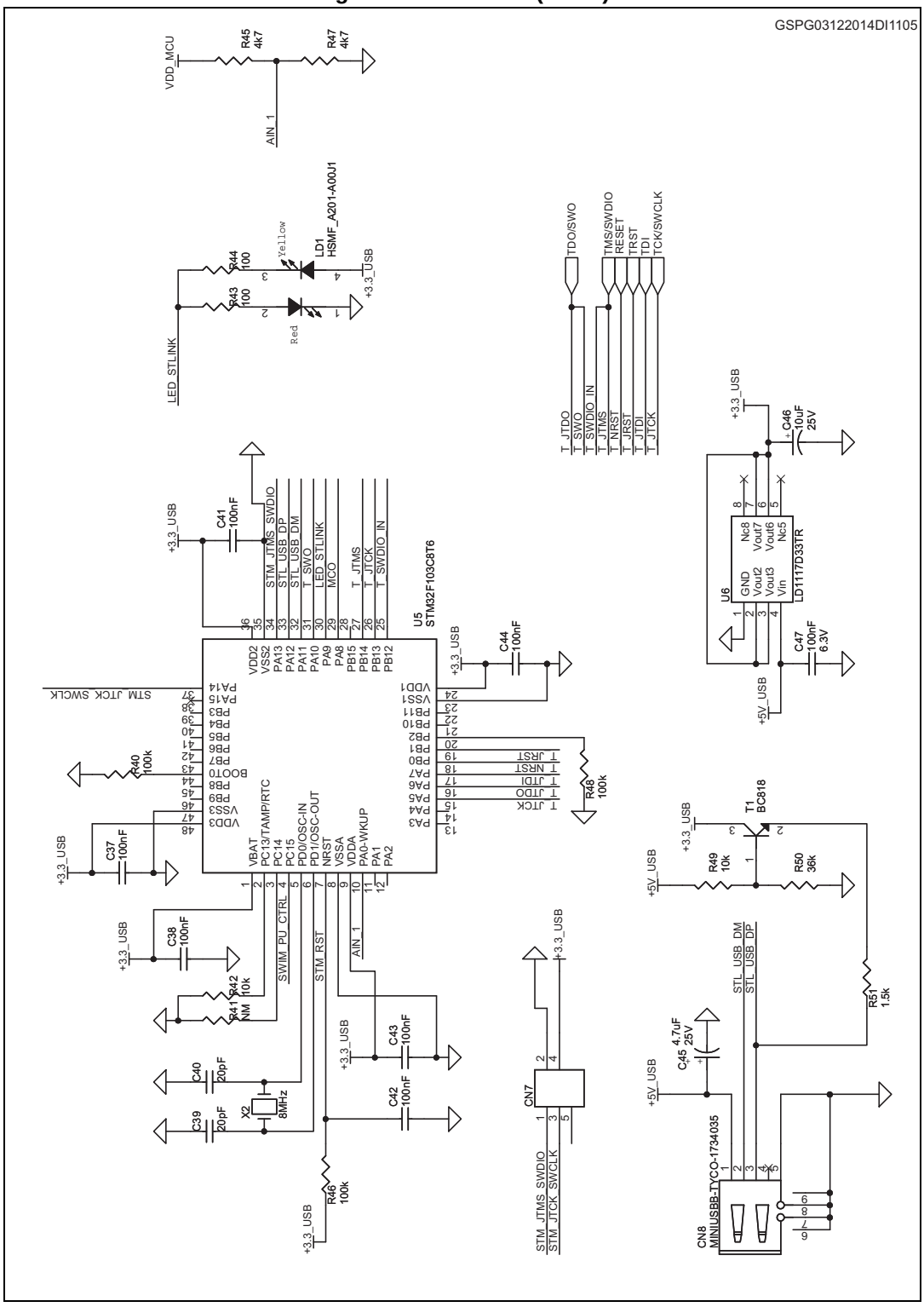
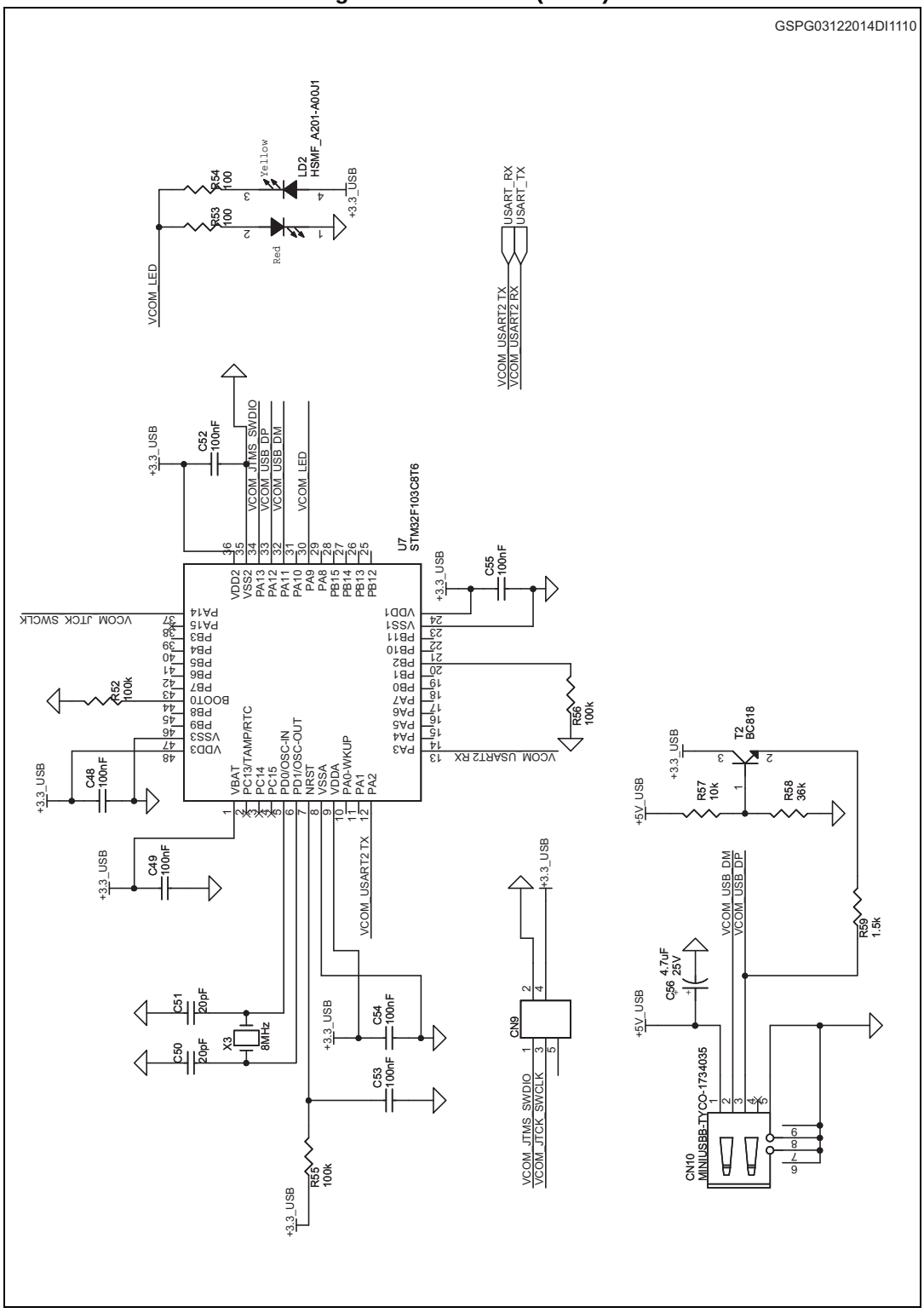


Figure 5. Schematic (5 of 5)



2 Revision history

Table 1. Document revision history

Date	Revision	Changes
26-Nov-2012	1	Initial release.
03-Dec-2012	2	Added figure from 1 to 5.
31-Mar-2014	3	– Updated the *Features* and *Description* of the board. – Minor text modifications in the title, section headings and figure captions.
26-Mar-2015	4	Modified *Section 1: Schematic diagrams*