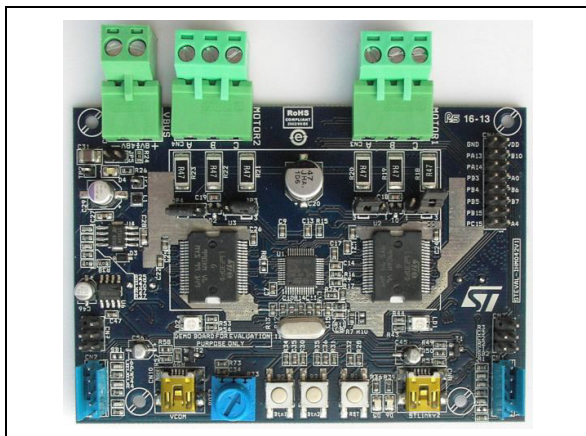


## Compact, low-voltage dual motor control evaluation board based on the STM32F303CC and L6230

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<sup>TM</sup> 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<sup>TM</sup>-M4F 32-bit core-based STM32F303CC microcontroller with floating point support and two fully integrated DMOS L6230 3-phase motor drivers.

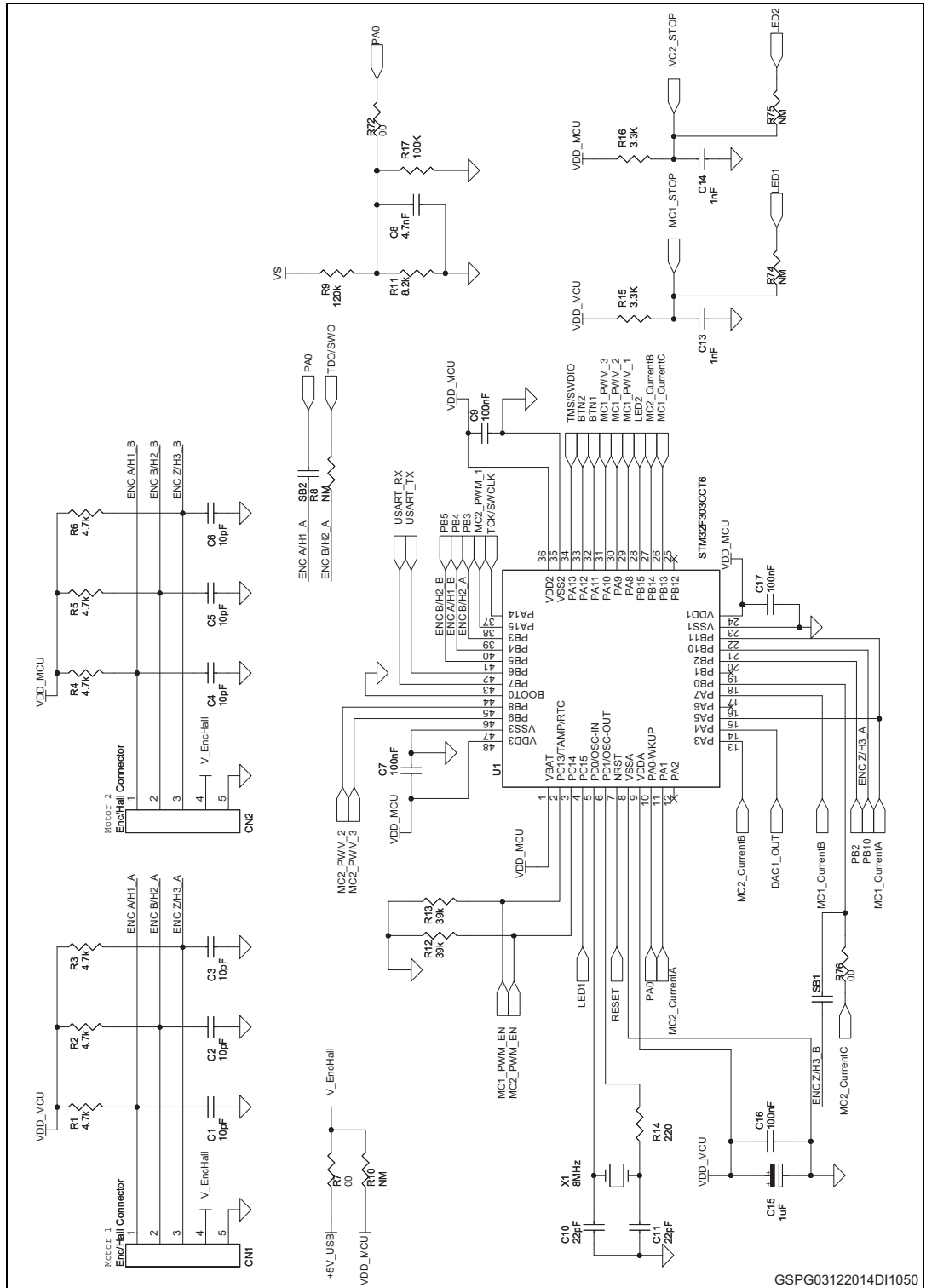
It is designed as an integrated evaluation environment for motor control applications in the range of 8 V - 48 V DC bus voltage (extendable up to 52 V) and nominal power up to 10 W for each motor drive. The design exploits the computational power of the STM32F303CC microcontroller with 48 KB of internal 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.

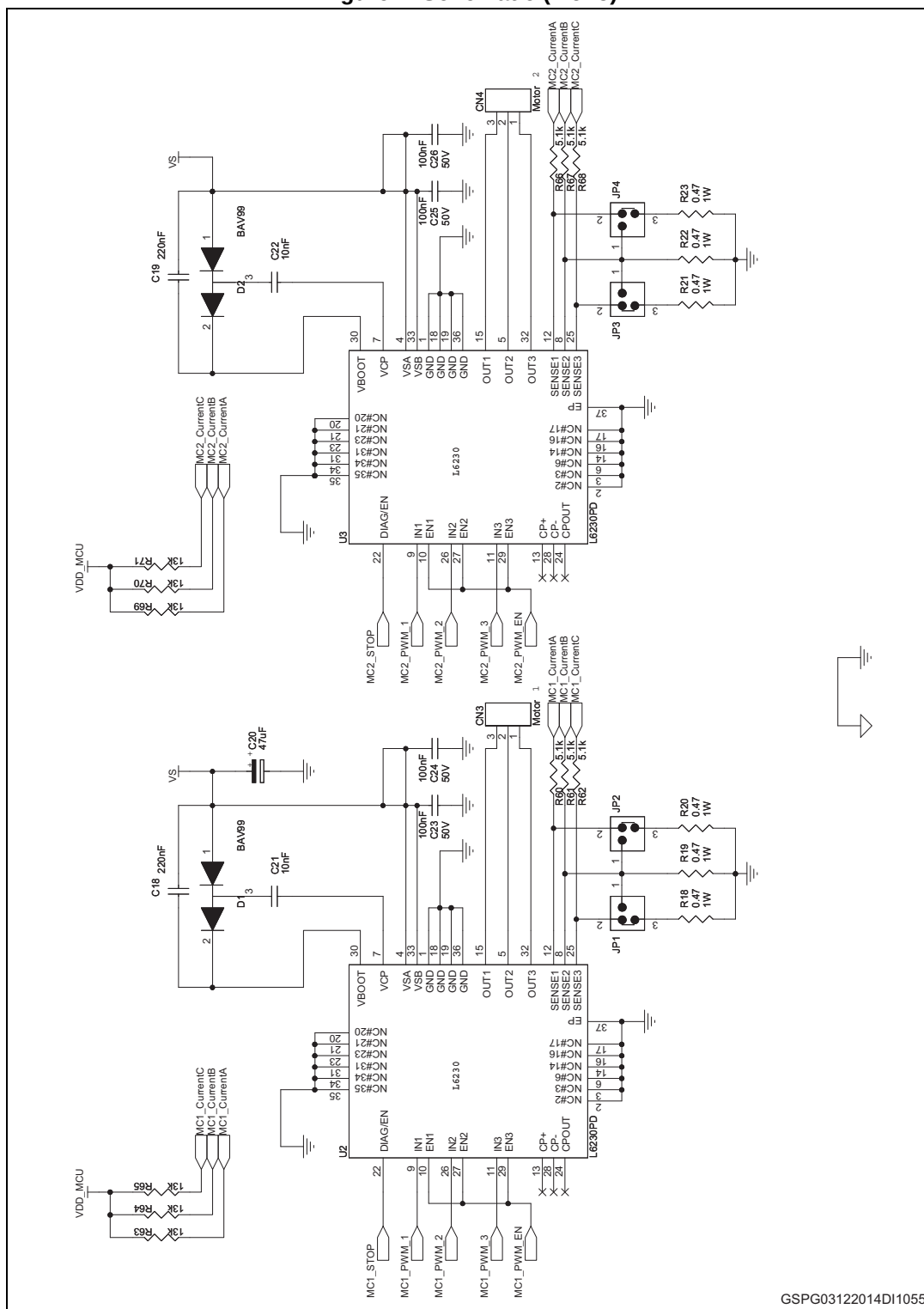
The ST Link in-circuit debugger and programmer is embedded in the board, allowing the user to program and debug the STM32F303CC microcontroller directly with a USB cable using a compatible toolset.

# 1 Schematic diagrams

Figure 1. Schematic (1 of 5)



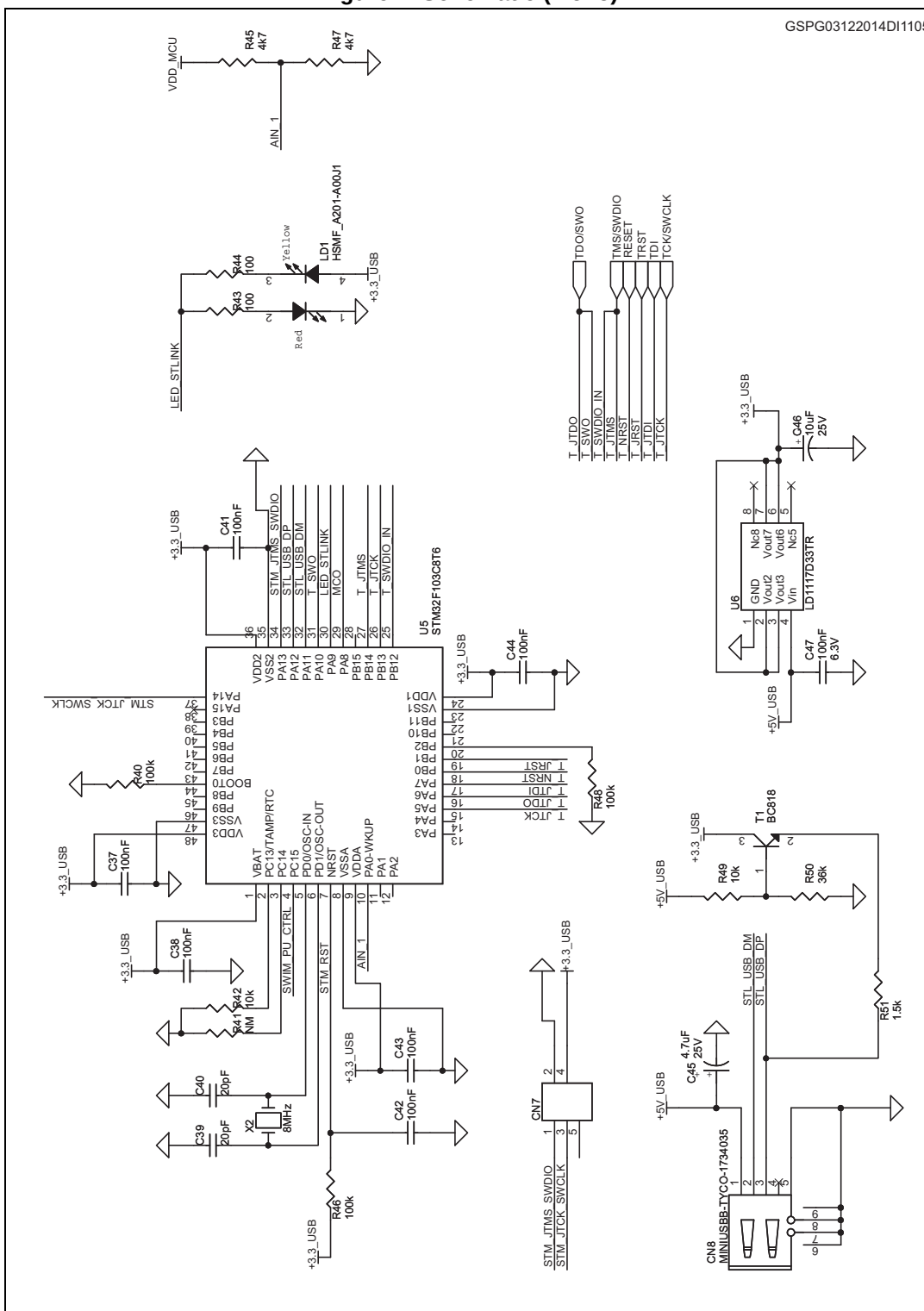
### Figure 2. Schematic (2 of 5)



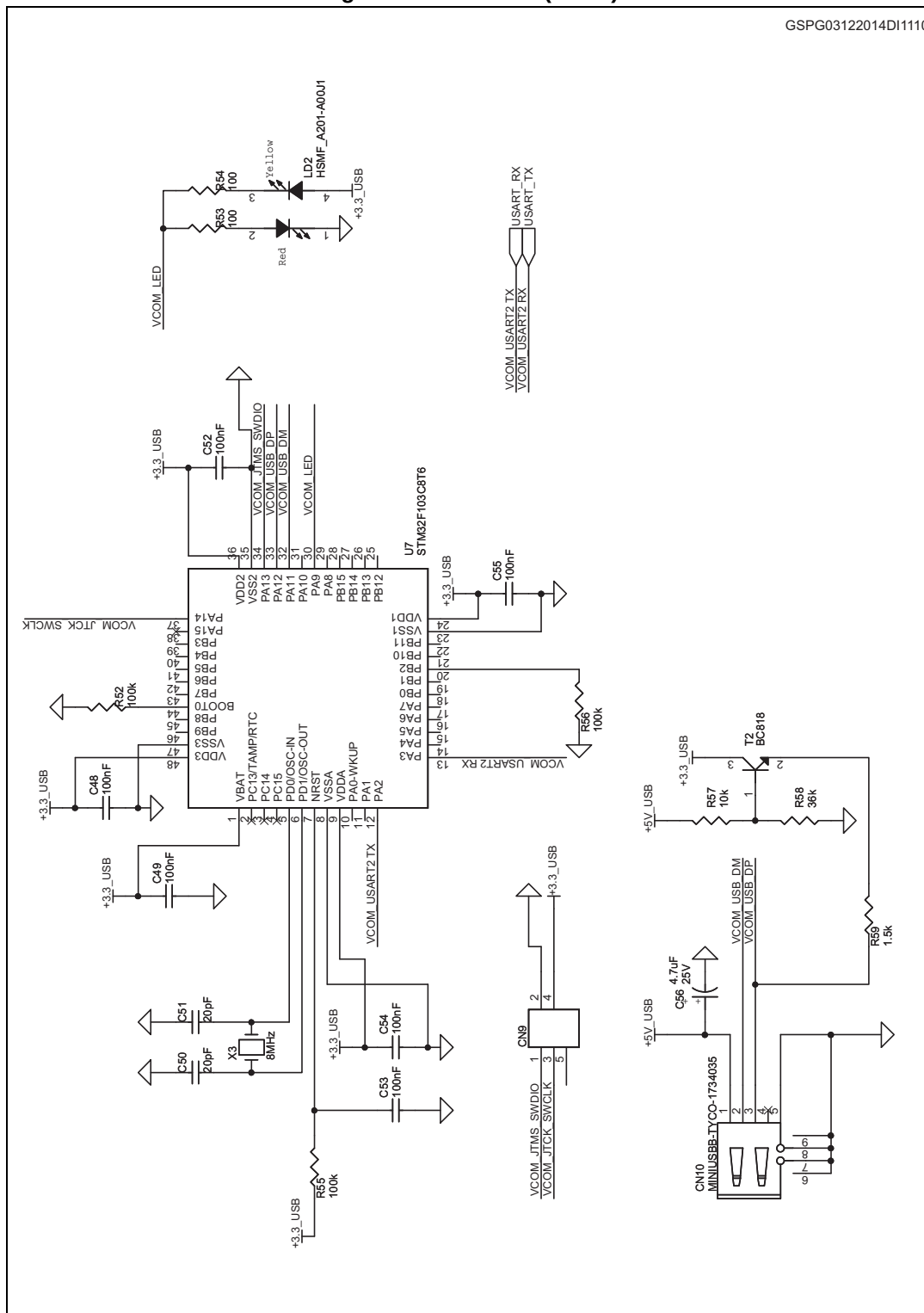
### Figure 3. Schematic (3 of 5)



GSPG03122014DI1105



GSPG03122014DI1110



## 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        | <ul style="list-style-type: none"><li>– Updated the <i>Features</i> and <i>Description</i> of the board.</li><li>– Minor text modifications in the title, section headings and figure captions.</li></ul> |
| 26-Mar-2015 | 4        | Modified <i>Section 1: Schematic diagrams</i>                                                                                                                                                             |

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