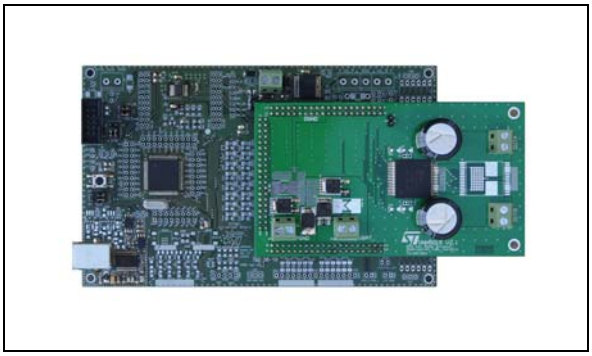
STEVAL-VNH5019A

Motor driver evaluation board based on VNH5019A

Data brief



Features

Type	$R_{DS(on)}$	I_{out}	$V_{CC(max)}$
VNH5019A-E	18 mΩ typ (per leg)	30 A	41 V

- Handling up to 30 A of maximum motor current output
- Undervoltage and overvoltage shutdown
- Device thermal protection
- Cross-conduction protection
- Very low standby power consumption
- Programmable PWM operation (up to 20 kHz)
- Protection against loss of ground and loss of V_{CC}
- Motor current monitoring (thanks to VNH5019A current sense output)
- On-board charge pump output for reverse polarity protection
- Device output protected against short to ground and short to V_{CC}
- Graphic User Interface (GUI)

Description

STEVAL-VNH5019A offers dedicated power stage and controls suitable for electric DC motor driving. This evaluation board comes pre-assembled with VNH5019A H-bridge belonging to the VNH Motor Driver series based on VIPower® proprietary technology. Typical applications are Windows Lift, Sliding Door, Seat regulation.

This Evaluation Board consists of a motherboard (STM8 Universal Board) and a daughterboard.

The motherboard, based on STM8 microcontroller, provides the logic section for monitoring and driving the VNH5019A assembled in the daughterboard.

With the aim to make simpler the board usage and settings, ST provides a dedicated and user-friendly software with a Graphic User Interface (GUI). This enables the user to set VNH5019A parameters (PWM, Motor direction…) and at the same time it shows real time device diagnostic information like current output evolution, battery voltage monitoring, board temperature and much more.

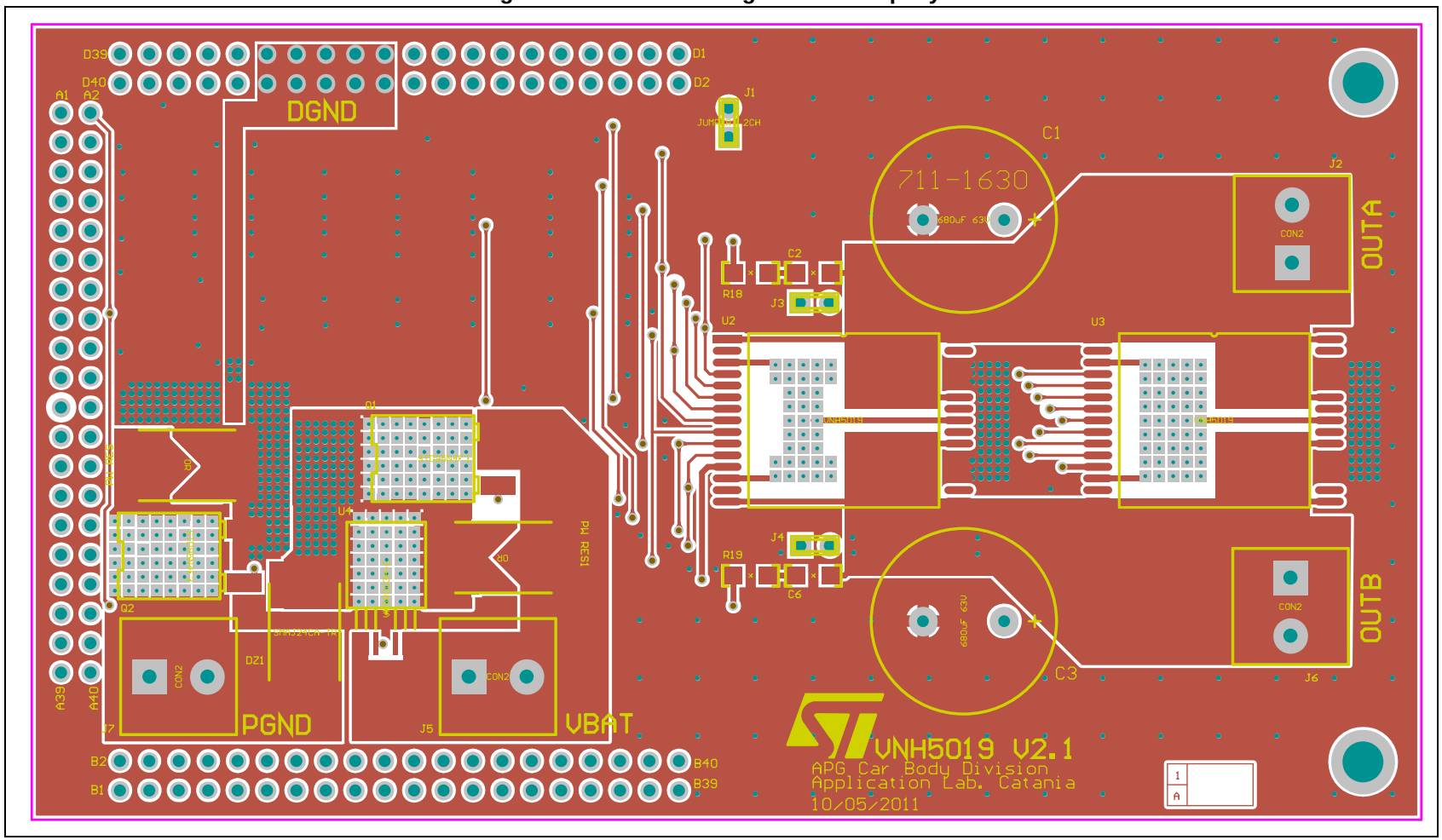
Table 1. Device summary

Order code	Reference
STEVAL-VNH5019A	VNH5019A evaluation board

1 Application schematics and layouts

1.1 VNH5019A daughterboard

Figure 1. VNH5019A daughterboard top layer



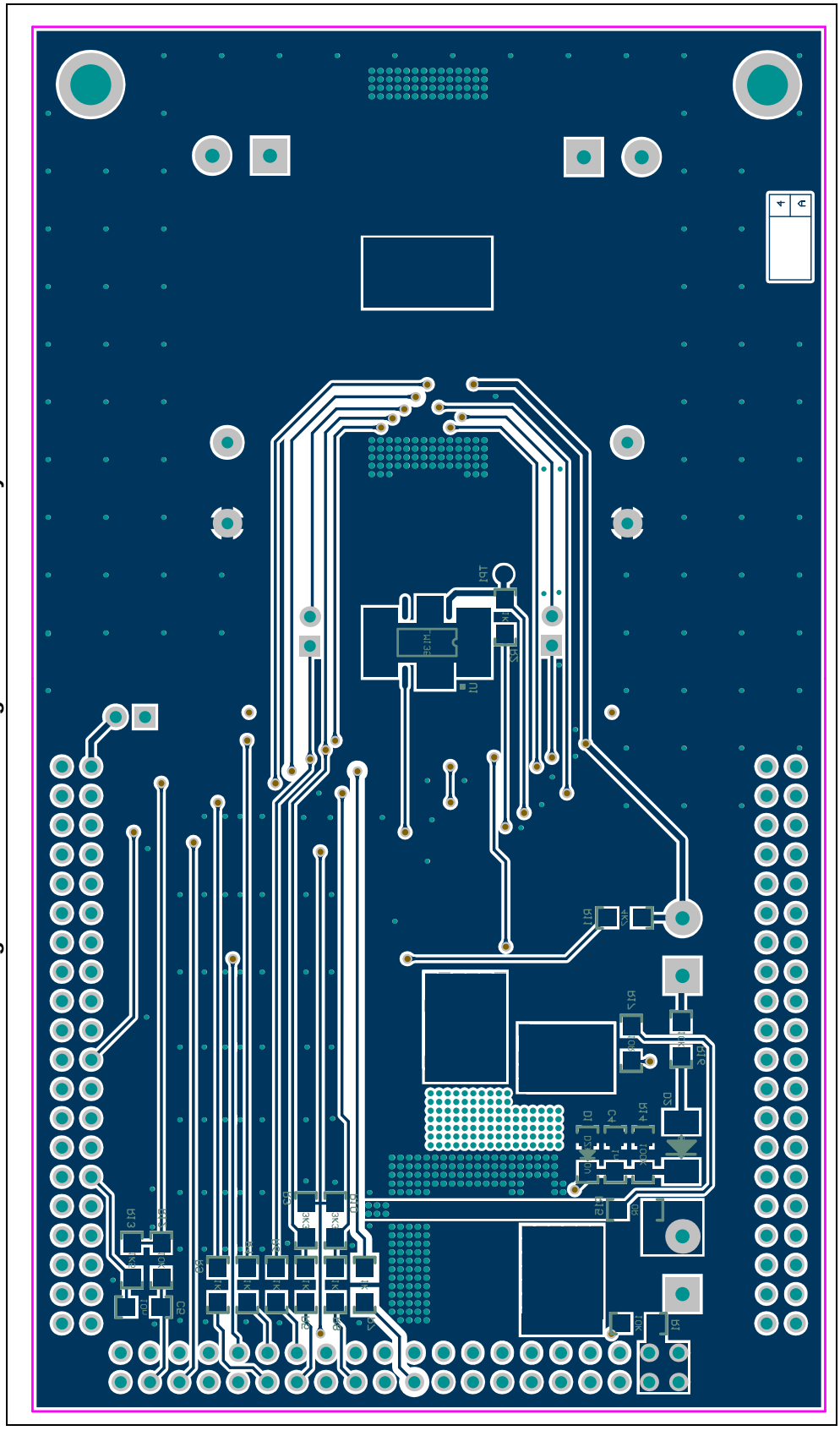


Figure 2. VNH5019A daughterboard bottom layer

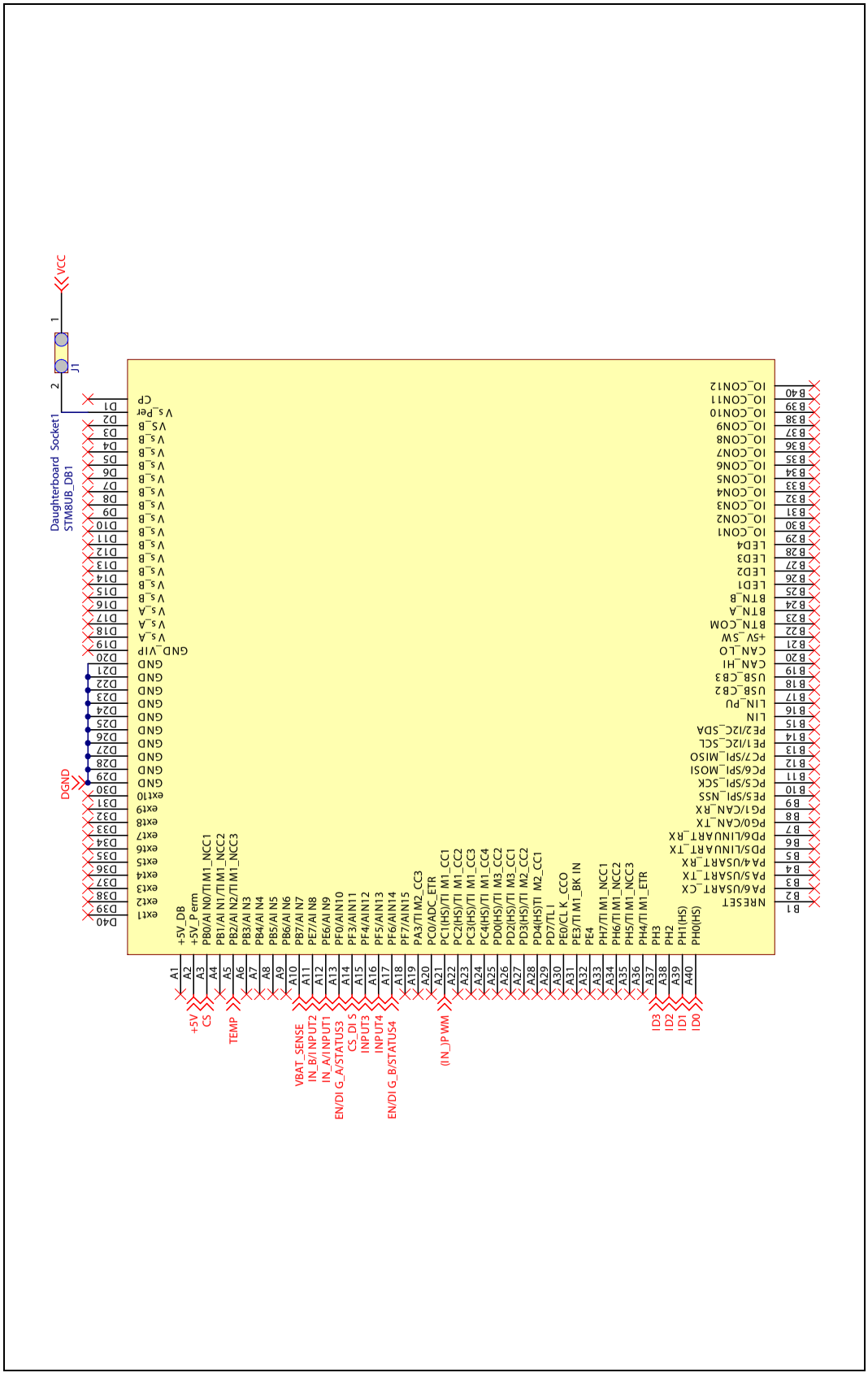


Figure 3. VNH5019A daughterboard application schematic (part 1)

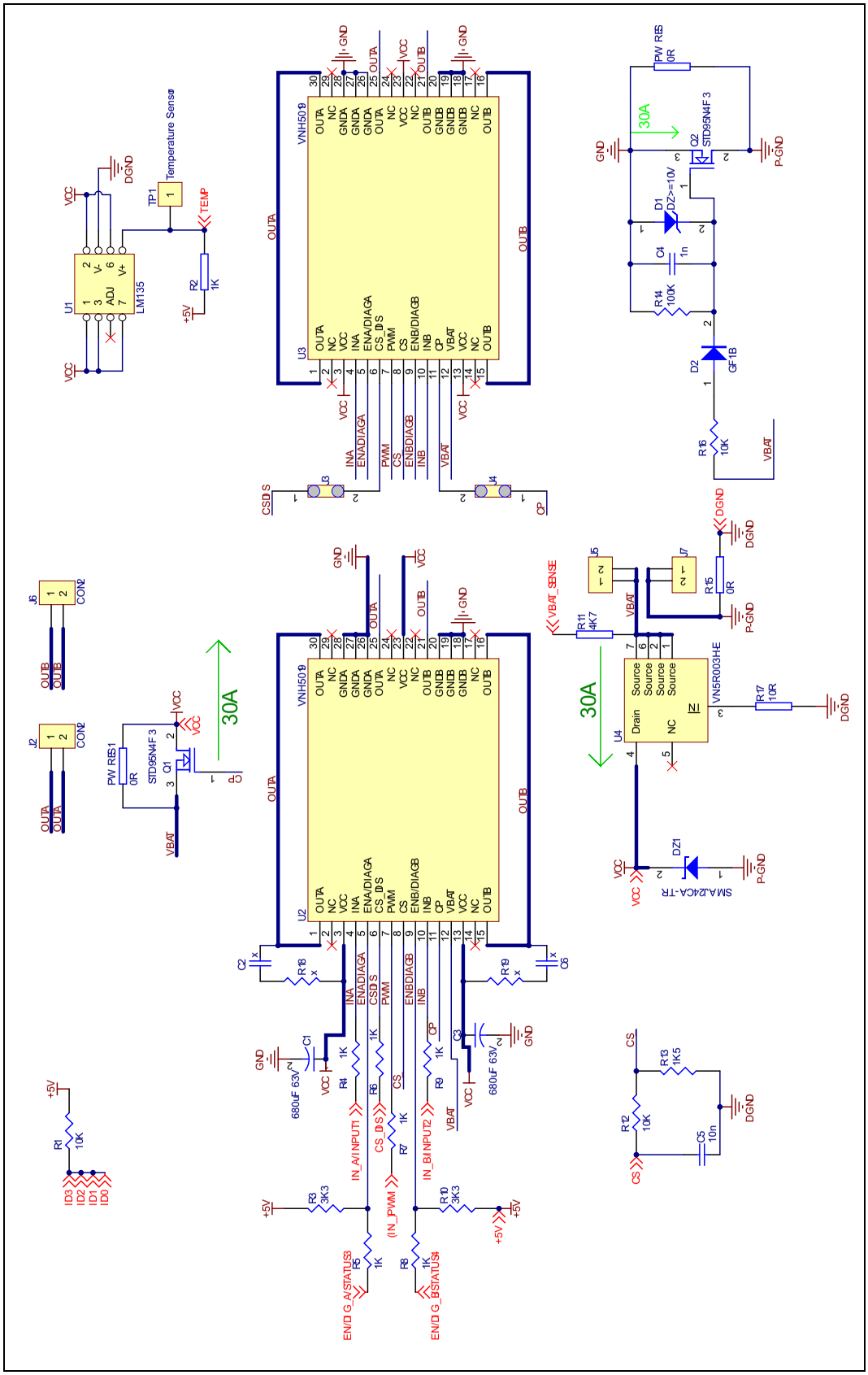


Figure 4. VNH5019A daughterboard application schematic (part 2)

1.2 STM8 motherboard

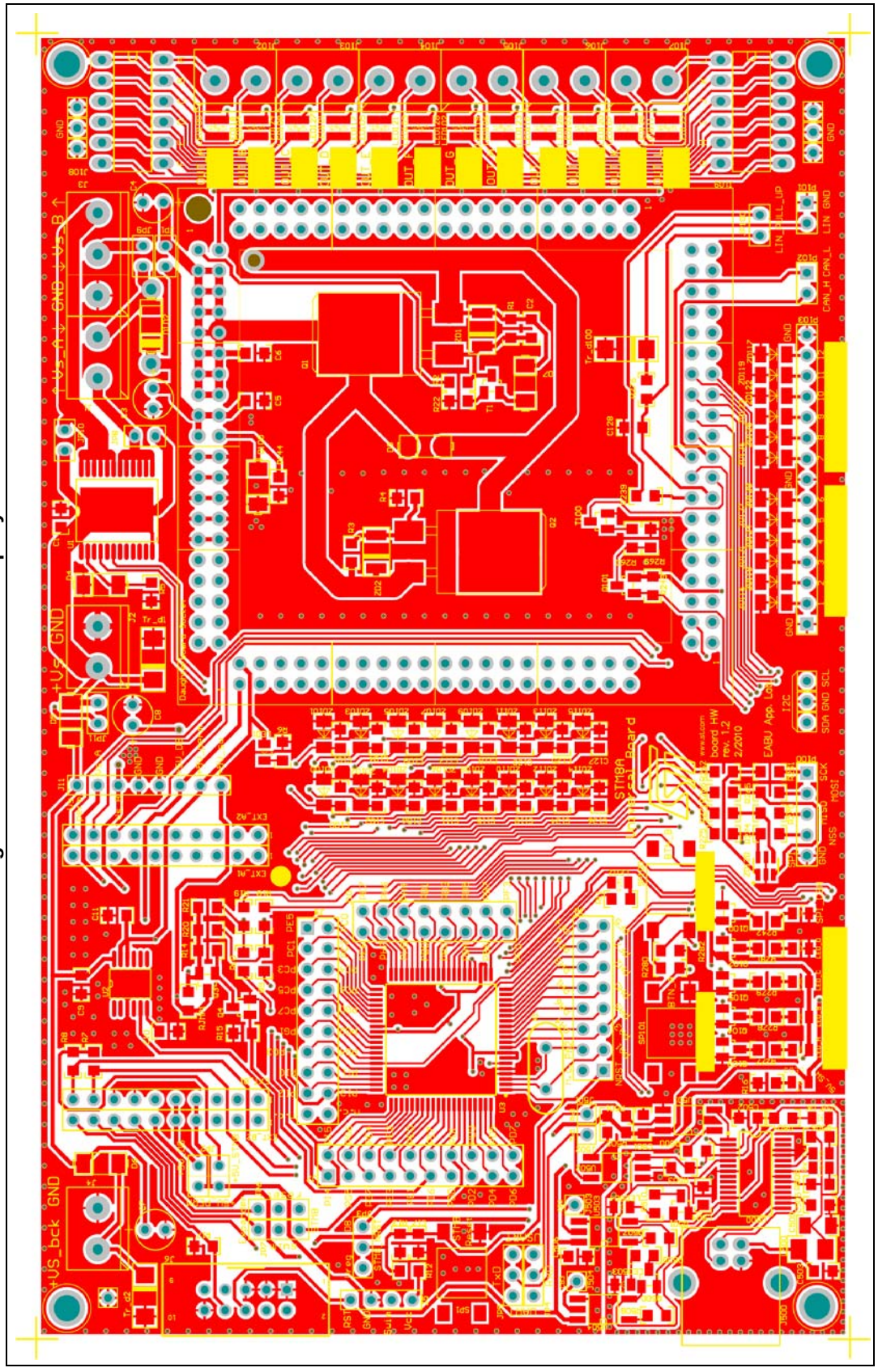


Figure 5. STM8 motherboard top layer

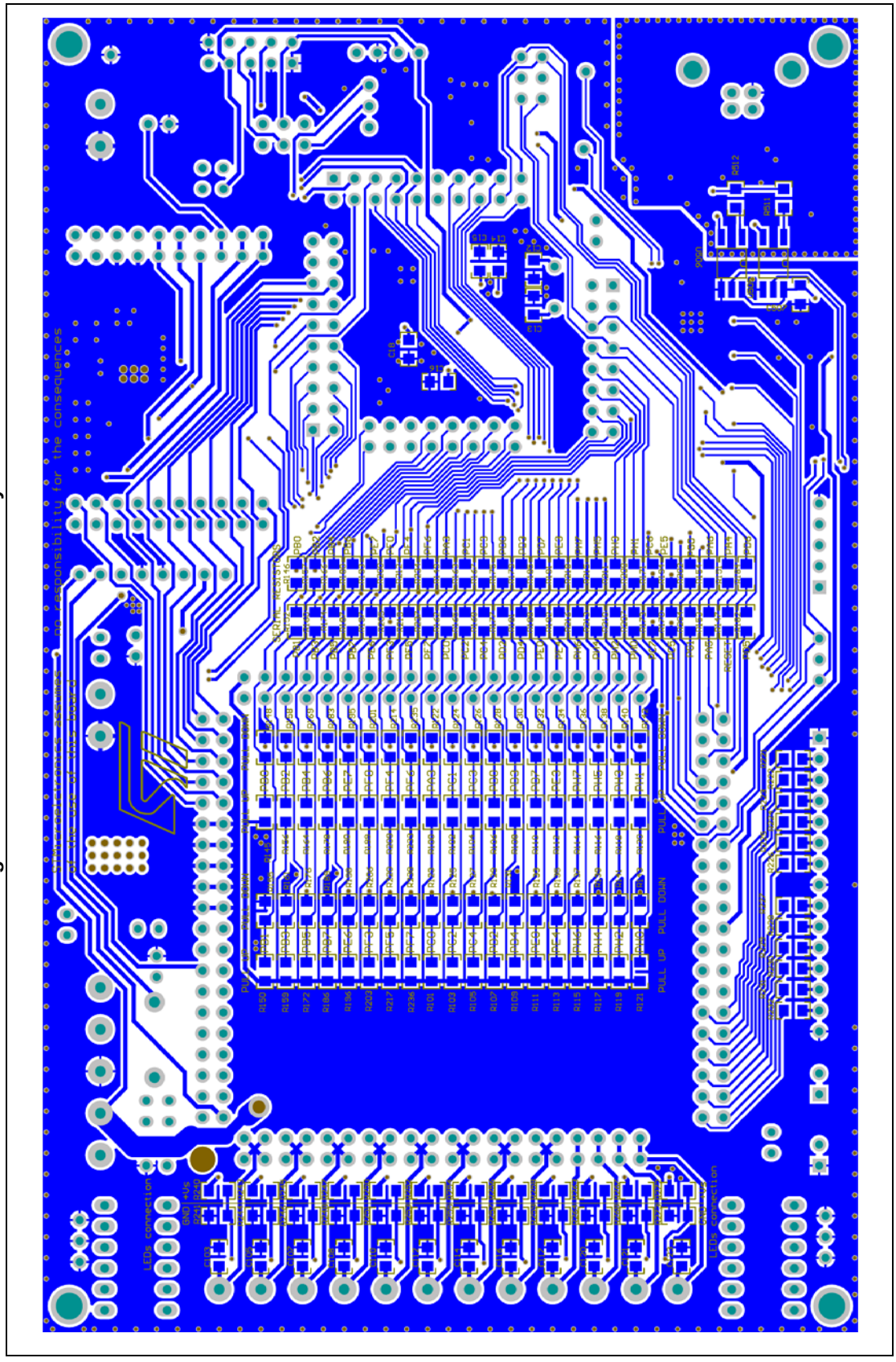


Figure 6. STM8 motherboard bottom layer

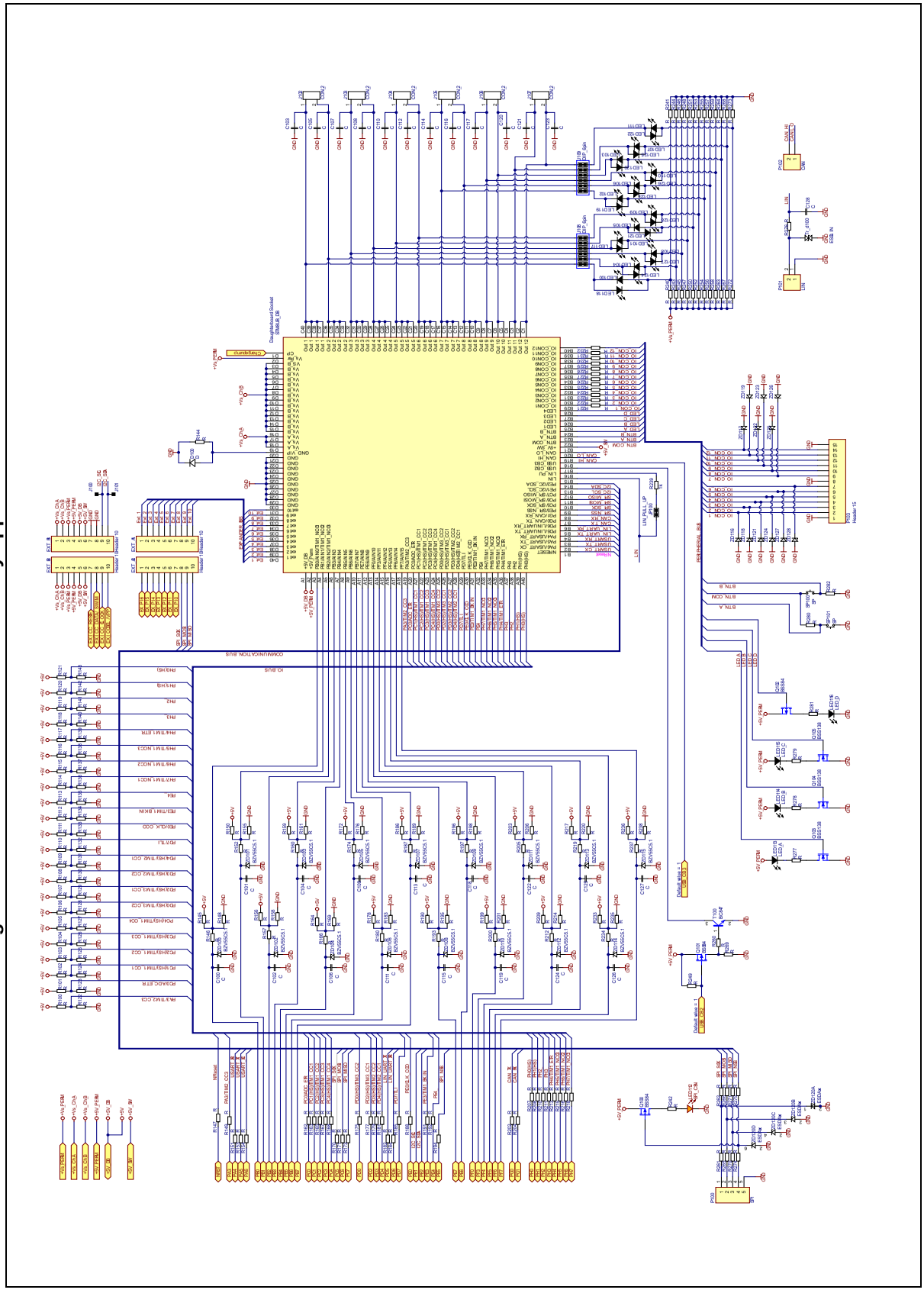


Figure 7. STM8 motherboard - I/O & Body application schematic

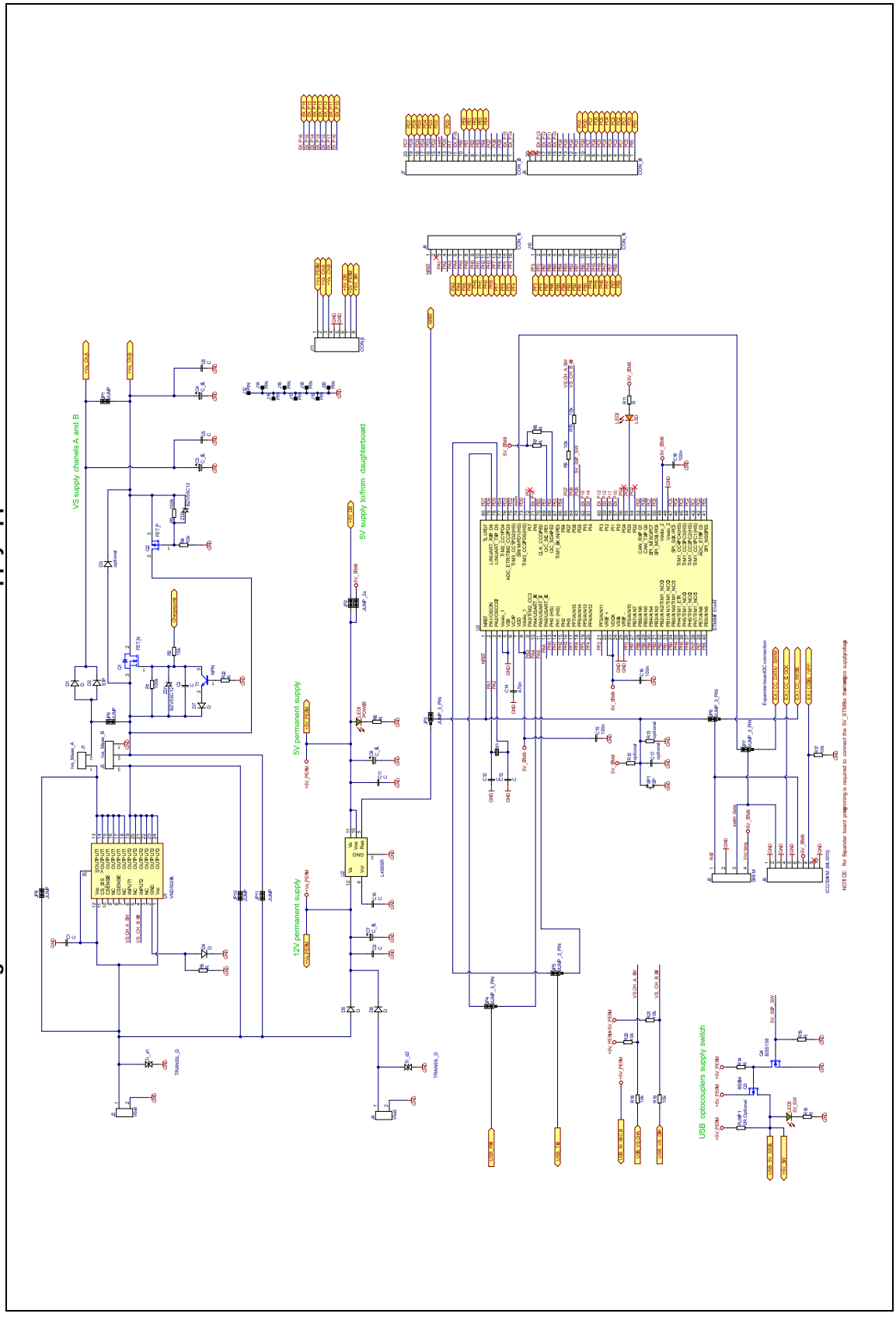


Figure 8. STM8 motherboard - STM8 & Supply application schematic

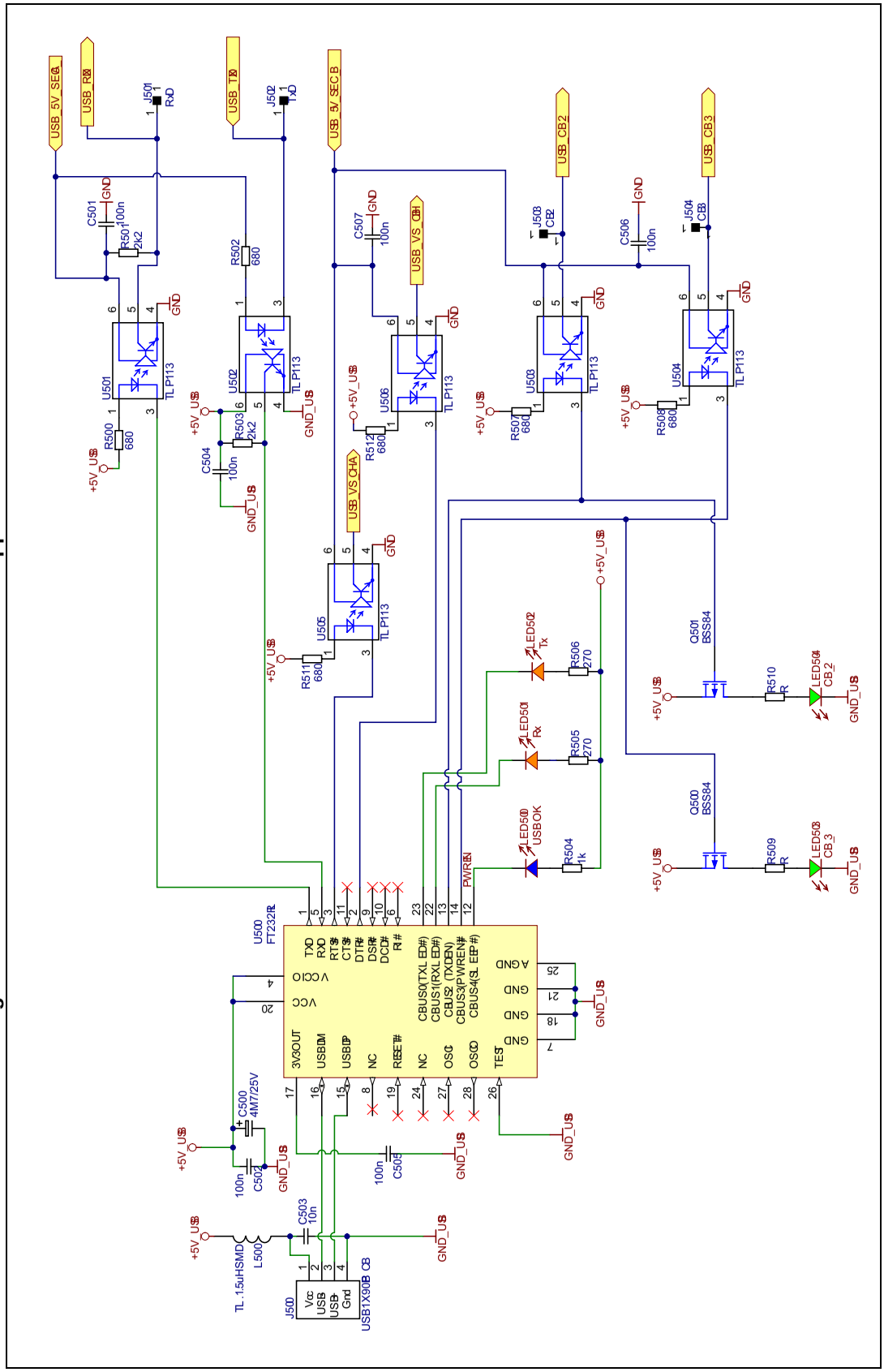


Figure 9. STM8 motherboard - USB Interface application schematic

2 Revision history

Table 2. Document revision history

Date	Revision	Changes
22-Jul-2013	1	Initial release.
06-Sep-2013	2	Updated *Section 1.2: STM8 motherboard*
16-Sep-2013	3	Updated disclaimer.

Please Read Carefully:

Information in this document is provided solely in connection with ST products. STMicroelectronics NV and its subsidiaries (“ST”) reserve the right to make changes, corrections, modifications or improvements, to this document, and the products and services described herein at any time, without notice.

All ST products are sold pursuant to ST’s terms and conditions of sale.

Purchasers are solely responsible for the choice, selection and use of the ST products and services described herein, and ST assumes no liability whatsoever relating to the choice, selection or use of the ST products and services described herein.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted under this document. If any part of this document refers to any third party products or services it shall not be deemed a license grant by ST for the use of such third party products or services, or any intellectual property contained therein or considered as a warranty covering the use in any manner whatsoever of such third party products or services or any intellectual property contained therein.

UNLESS OTHERWISE SET FORTH IN ST’S TERMS AND CONDITIONS OF SALE ST DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY WITH RESPECT TO THE USE AND/OR SALE OF ST PRODUCTS INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION), OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT.

ST PRODUCTS ARE NOT DESIGNED OR AUTHORIZED FOR USE IN: (A) SAFETY CRITICAL APPLICATIONS SUCH AS LIFE SUPPORTING, ACTIVE IMPLANTED DEVICES OR SYSTEMS WITH PRODUCT FUNCTIONAL SAFETY REQUIREMENTS; (B) AERONAUTIC APPLICATIONS; (C) AUTOMOTIVE APPLICATIONS OR ENVIRONMENTS, AND/OR (D) AEROSPACE APPLICATIONS OR ENVIRONMENTS. WHERE ST PRODUCTS ARE NOT DESIGNED FOR SUCH USE, THE PURCHASER SHALL USE PRODUCTS AT PURCHASER’S SOLE RISK, EVEN IF ST HAS BEEN INFORMED IN WRITING OF SUCH USAGE, UNLESS A PRODUCT IS EXPRESSLY DESIGNATED BY ST AS BEING INTENDED FOR “AUTOMOTIVE, AUTOMOTIVE SAFETY OR MEDICAL” INDUSTRY DOMAINS ACCORDING TO ST PRODUCT DESIGN SPECIFICATIONS. PRODUCTS FORMALLY ESCC, QML OR JAN QUALIFIED ARE DEEMED SUITABLE FOR USE IN AEROSPACE BY THE CORRESPONDING GOVERNMENTAL AGENCY.

Resale of ST products with provisions different from the statements and/or technical features set forth in this document shall immediately void any warranty granted by ST for the ST product or service described herein and shall not create or extend in any manner whatsoever, any liability of ST.

ST and the ST logo are trademarks or registered trademarks of ST in various countries.
Information in this document supersedes and replaces all information previously supplied.
The ST logo is a registered trademark of STMicroelectronics. All other names are the property of their respective owners.

STMicroelectronics group of companies

Australia - Belgium - Brazil - Canada - China - Czech Republic - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco - Philippines - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States of America

www.st.com