



Dual motor drive control stage based on the STM32F415ZG microcontroller

Data brief

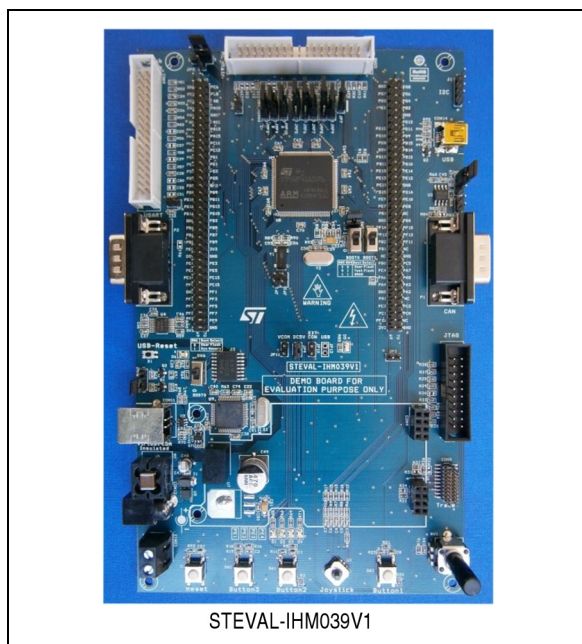
Features

- Two fully featured MC connectors for interfacing with any of the possible STMicroelectronics's evaluation power boards
- JTAG, SWD and trace debug support
- Mini-USB connector for isolated virtual COM port
- USB 2.0 full speed connection
- 240 x 320 TFT color LCD
- Joystick with 4 LEDs and 4-direction control and selector
- Reset plus three user buttons
- Five 5 V power supply sources: 2-way screw connector, power jack,
- 2 USB connectors (one isolated)
- Boot from user Flash or system memory
- CAN 2.0 A/B compliant connection
- I²C connection
- RS-232 channel with RTS/CTS handshake support
- Extension connectors for daughterboard or wrapping area board
- RoHS compliant

Description

The STEVAL-IHM039V1 demonstration board is a control stage based on STMicroelectronics's ARM™ Cortex™-M4 core-based STM32F415ZGT6 microcontroller featuring single and dual motor control.

It can be used together with the STM32 PMSM single/dual FOC SDK v3.2 and two of the possible STMicroelectronics's evaluation power boards provided with MC connectors for a complete dual



motor control evaluation and development platform.

With dedicated hardware features, the STEVAL-IHM039V1 demonstration board is designed to help developers to evaluate ST devices and to develop their own applications.

1 Schematic diagram

Figure 1. Extension & I2C_IOS Connectors

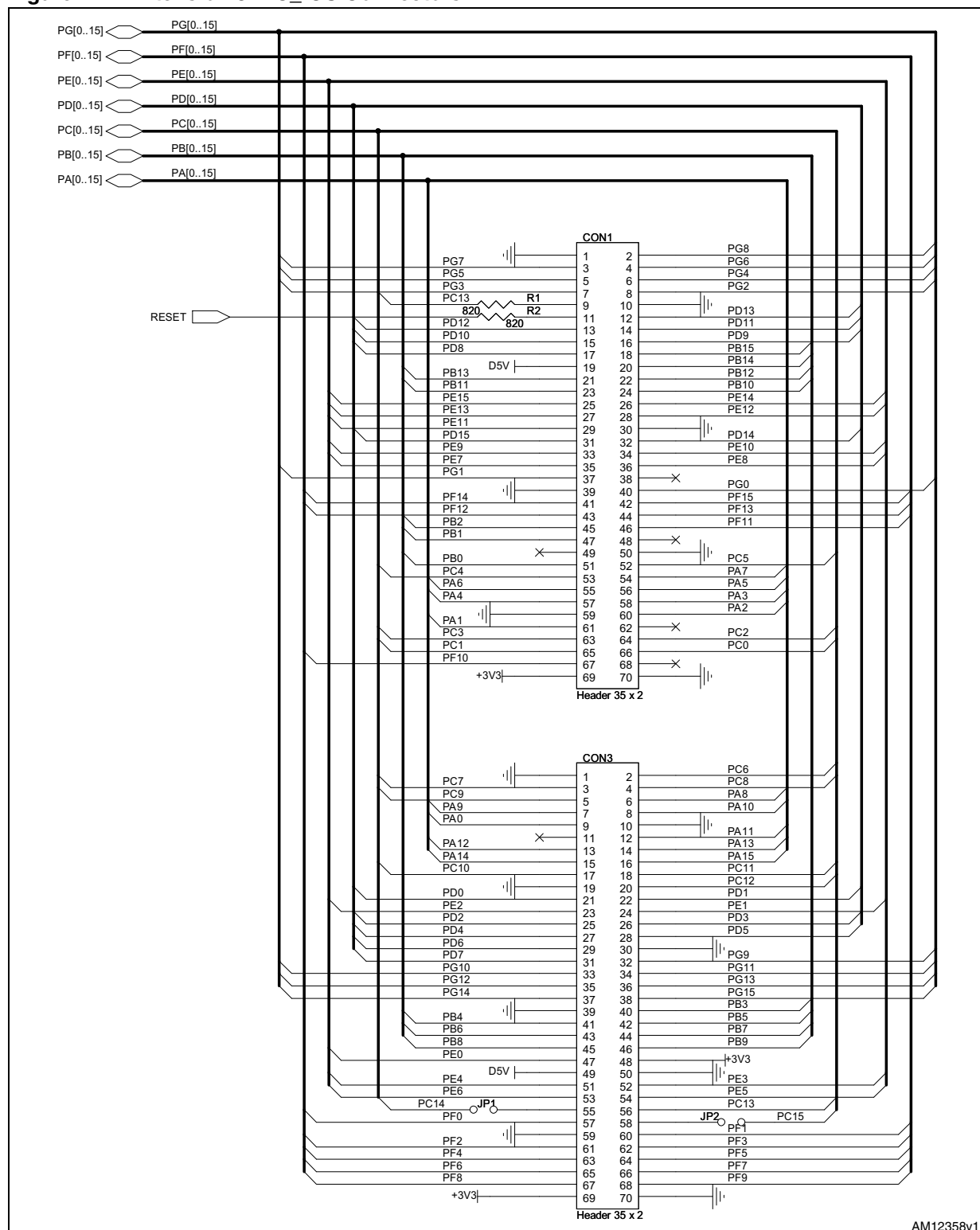
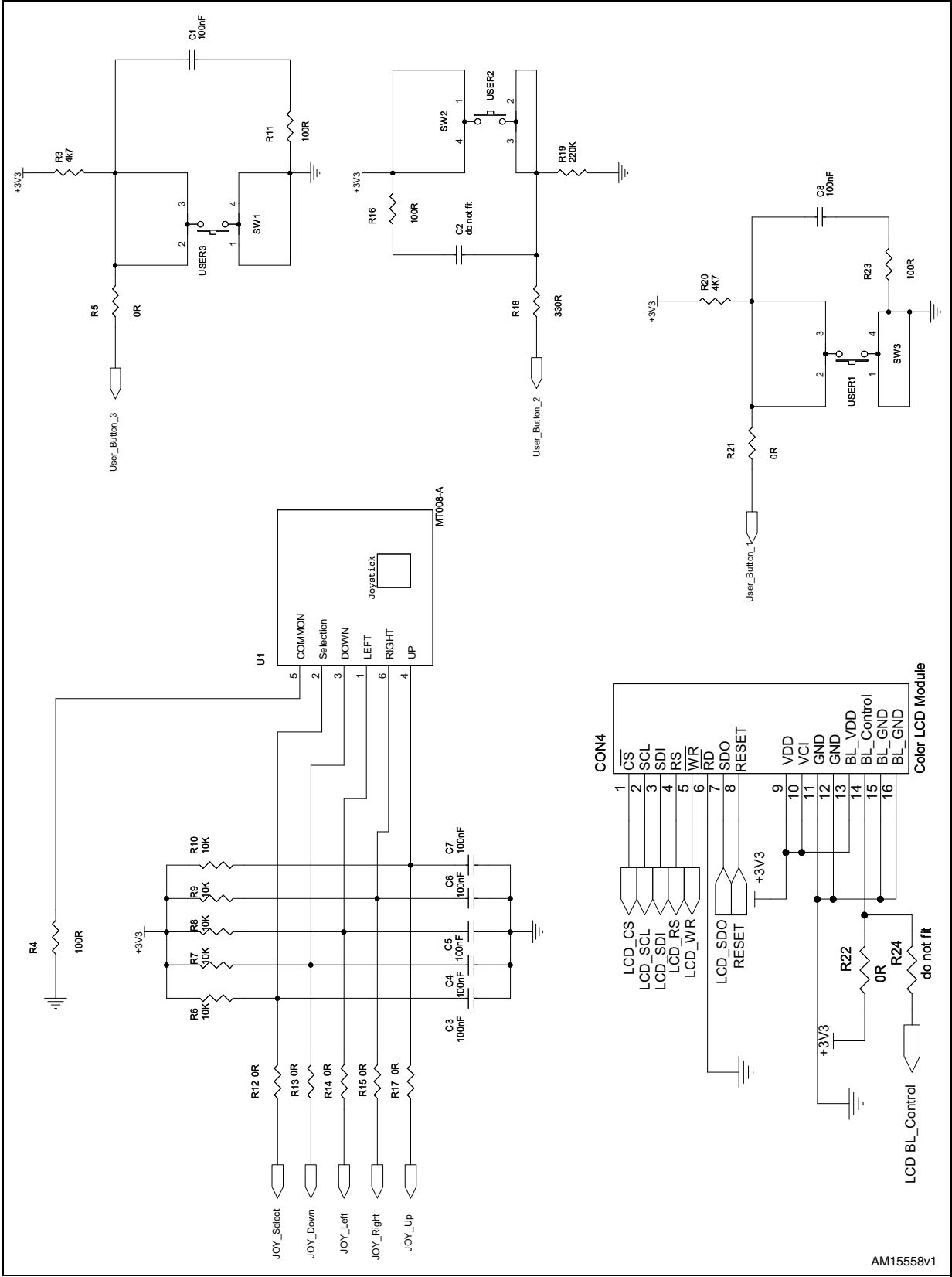


Figure 2. Joystick button and LCD



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Figure 3. JTAG SWD and trace

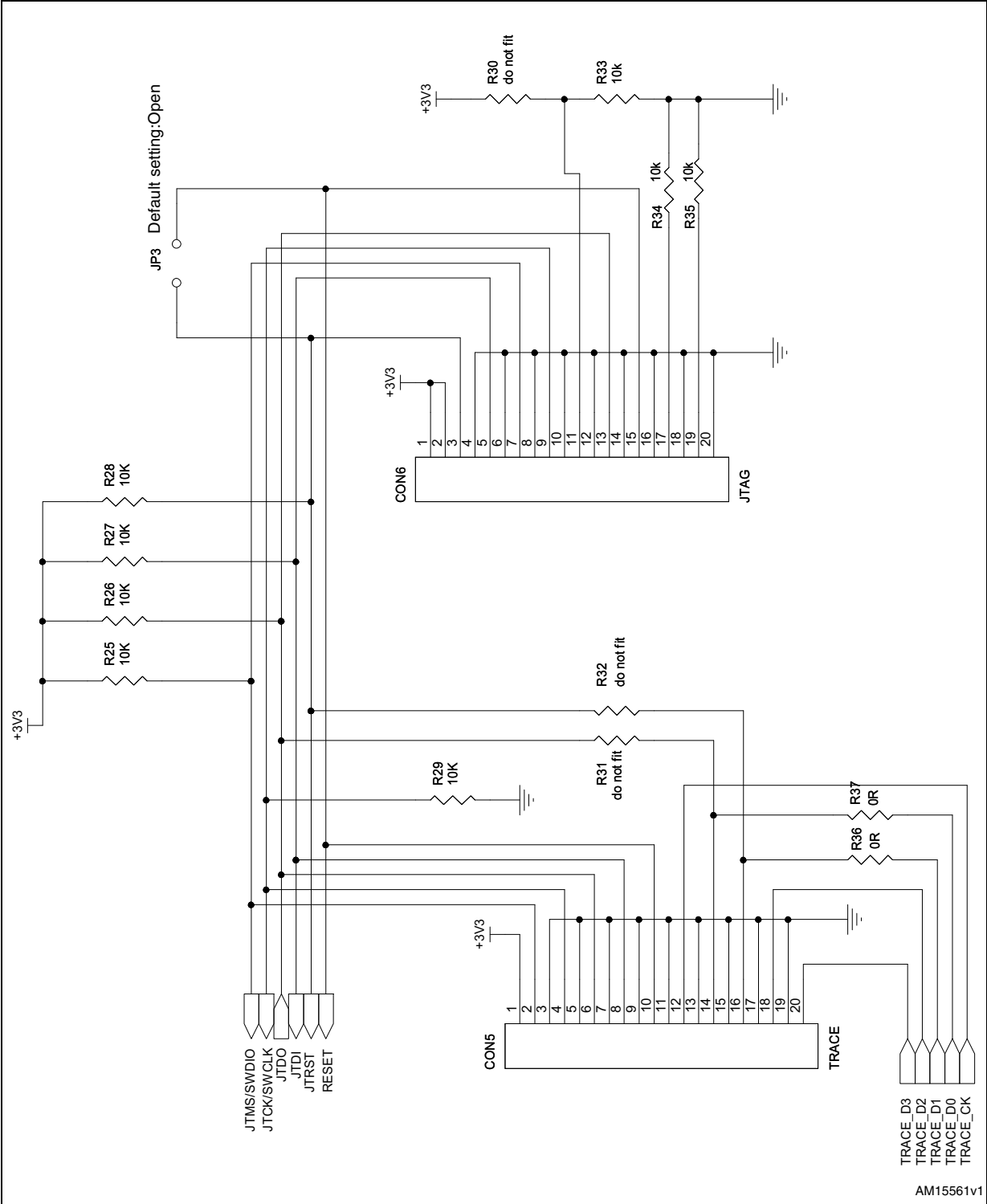
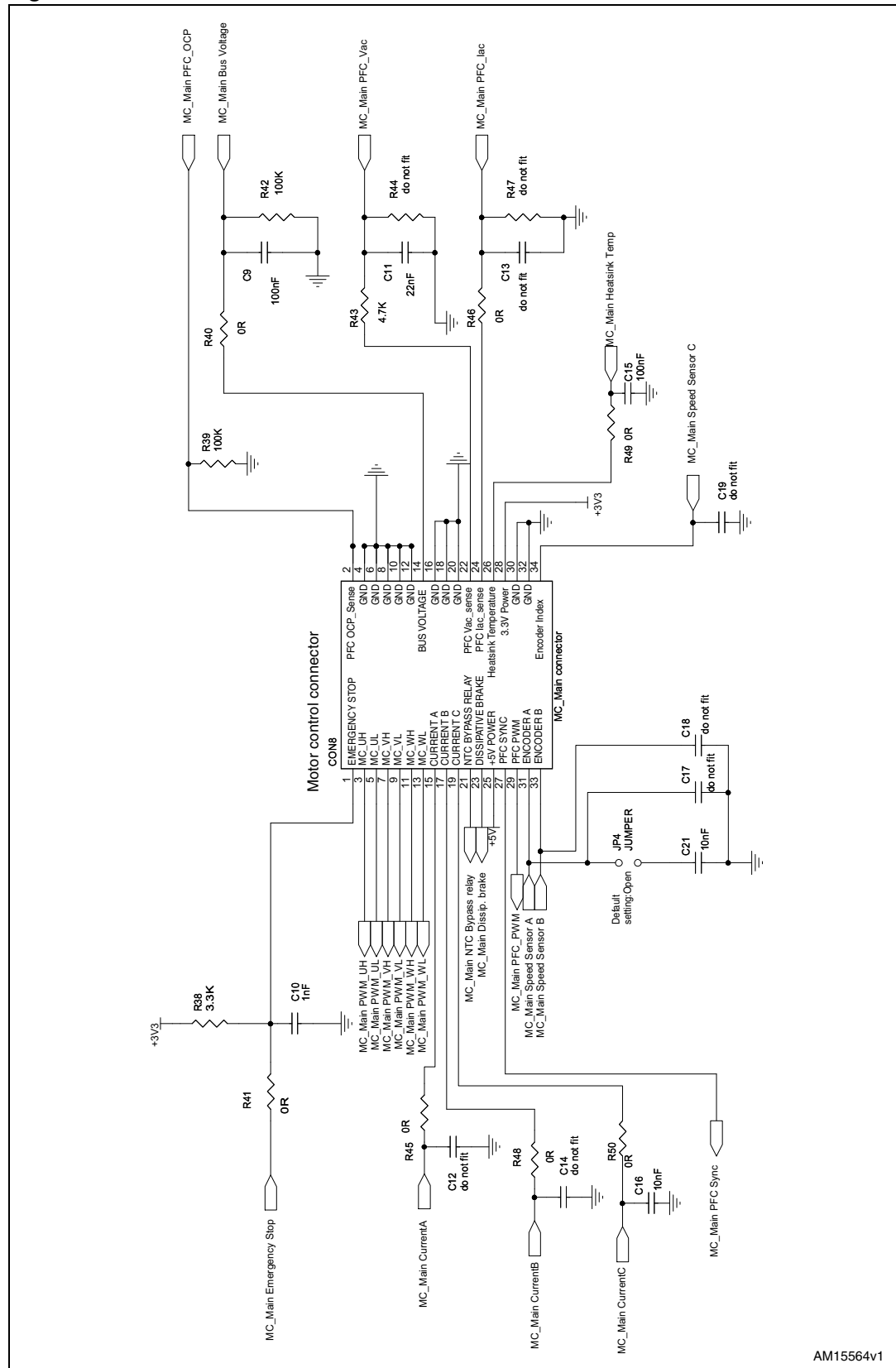


Figure 4. MC connector MAI



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Figure 5. MC connector SUB1

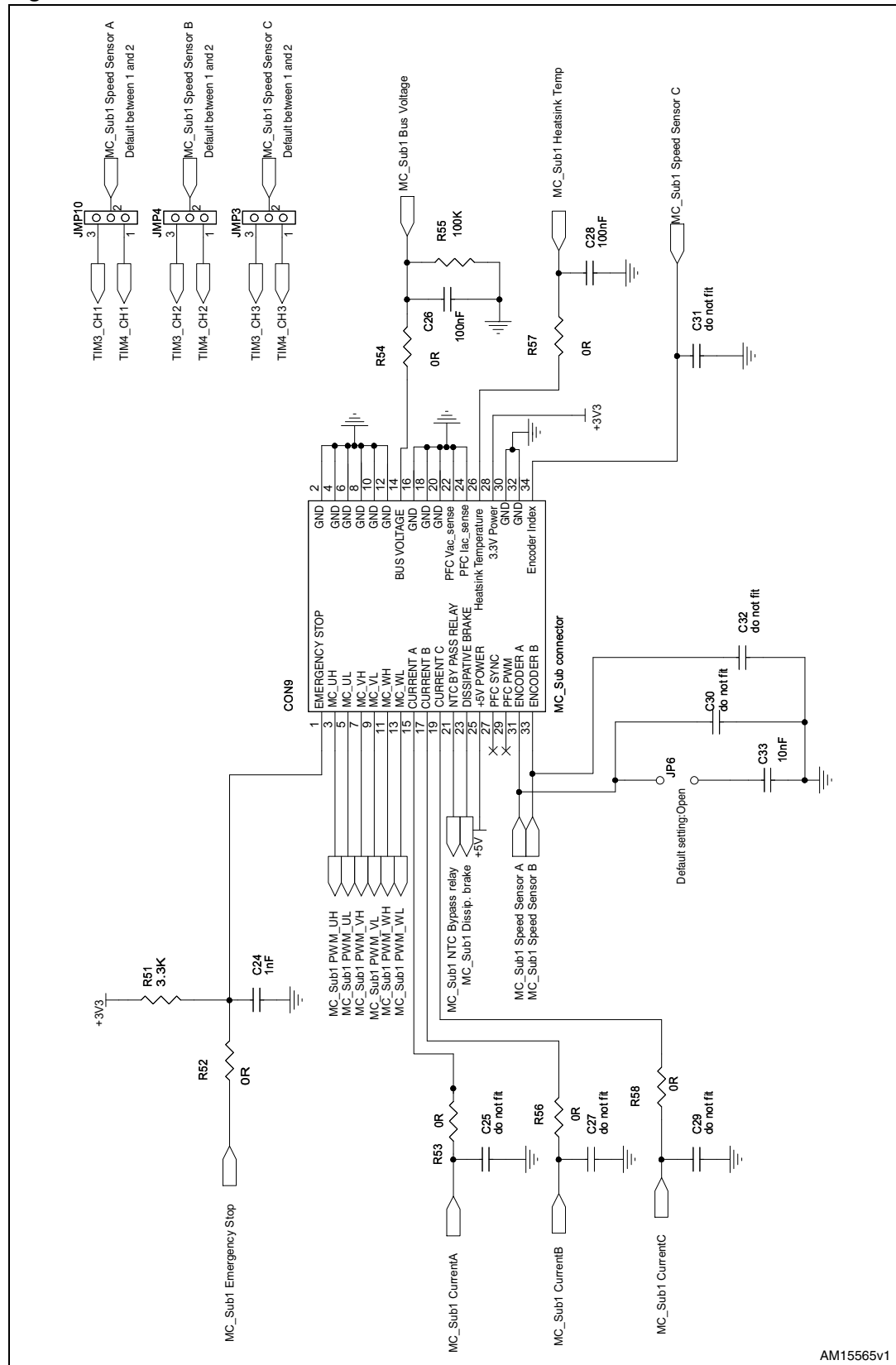


Figure 6. Peripheral (1 of 2)

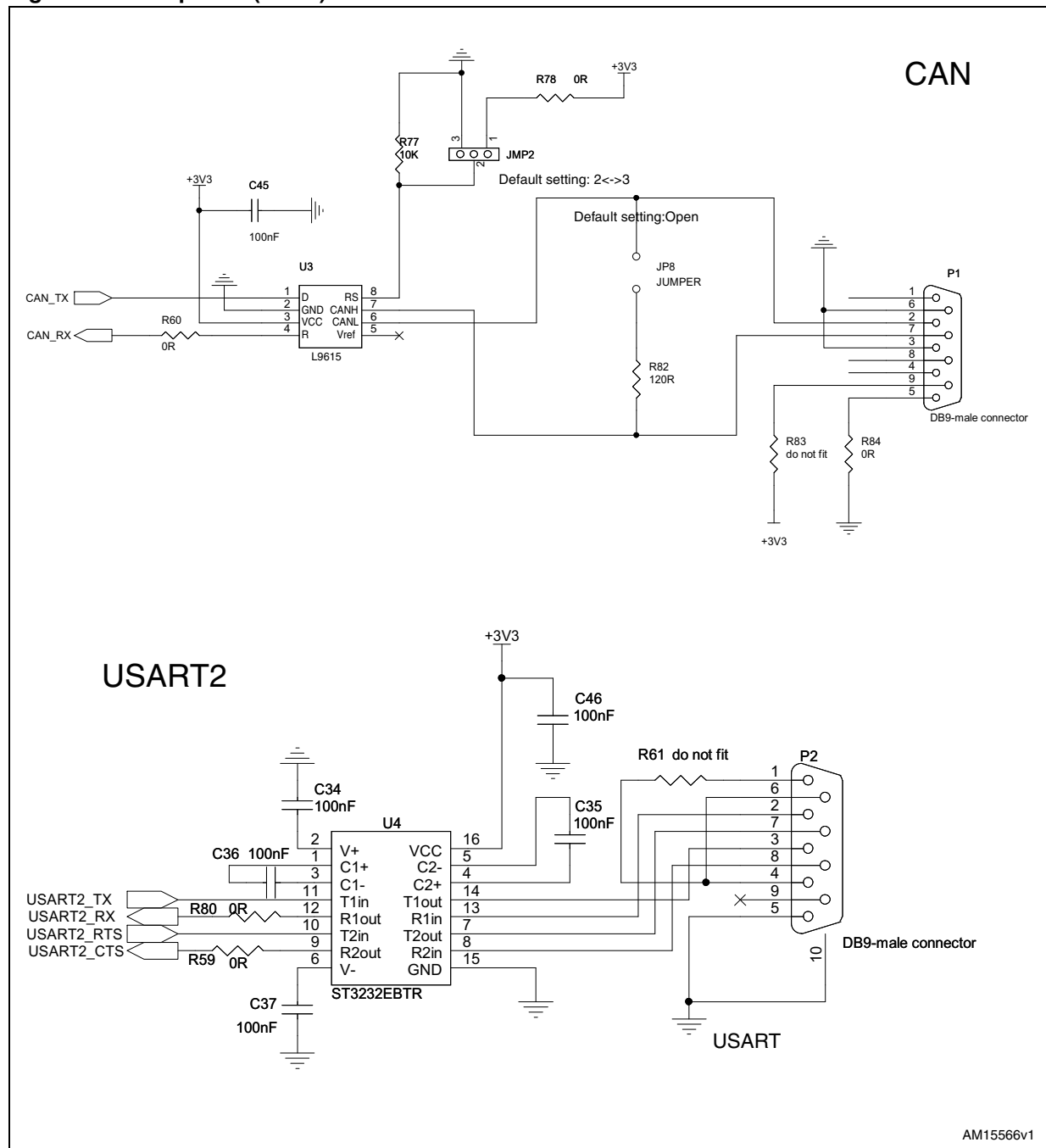
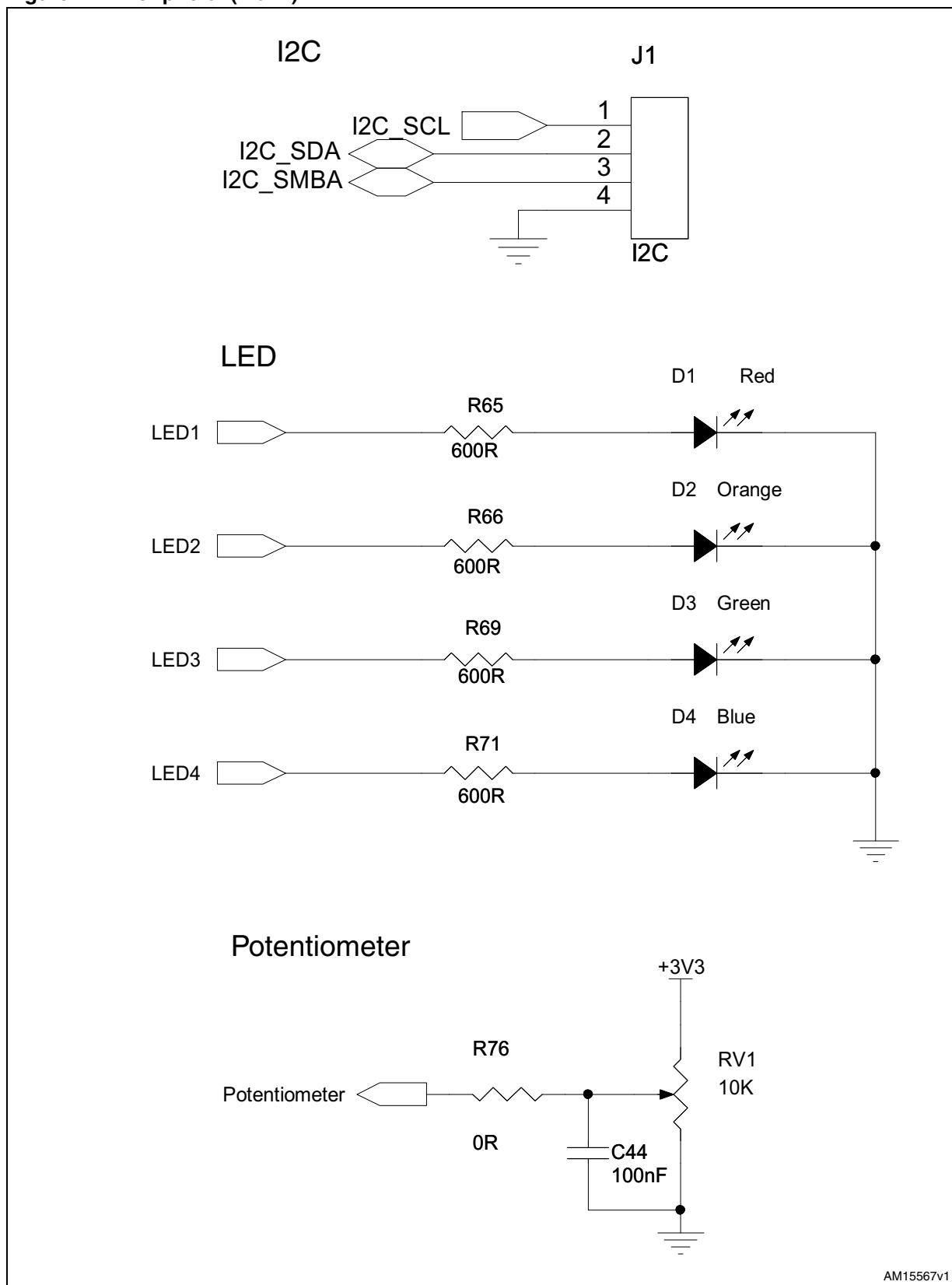
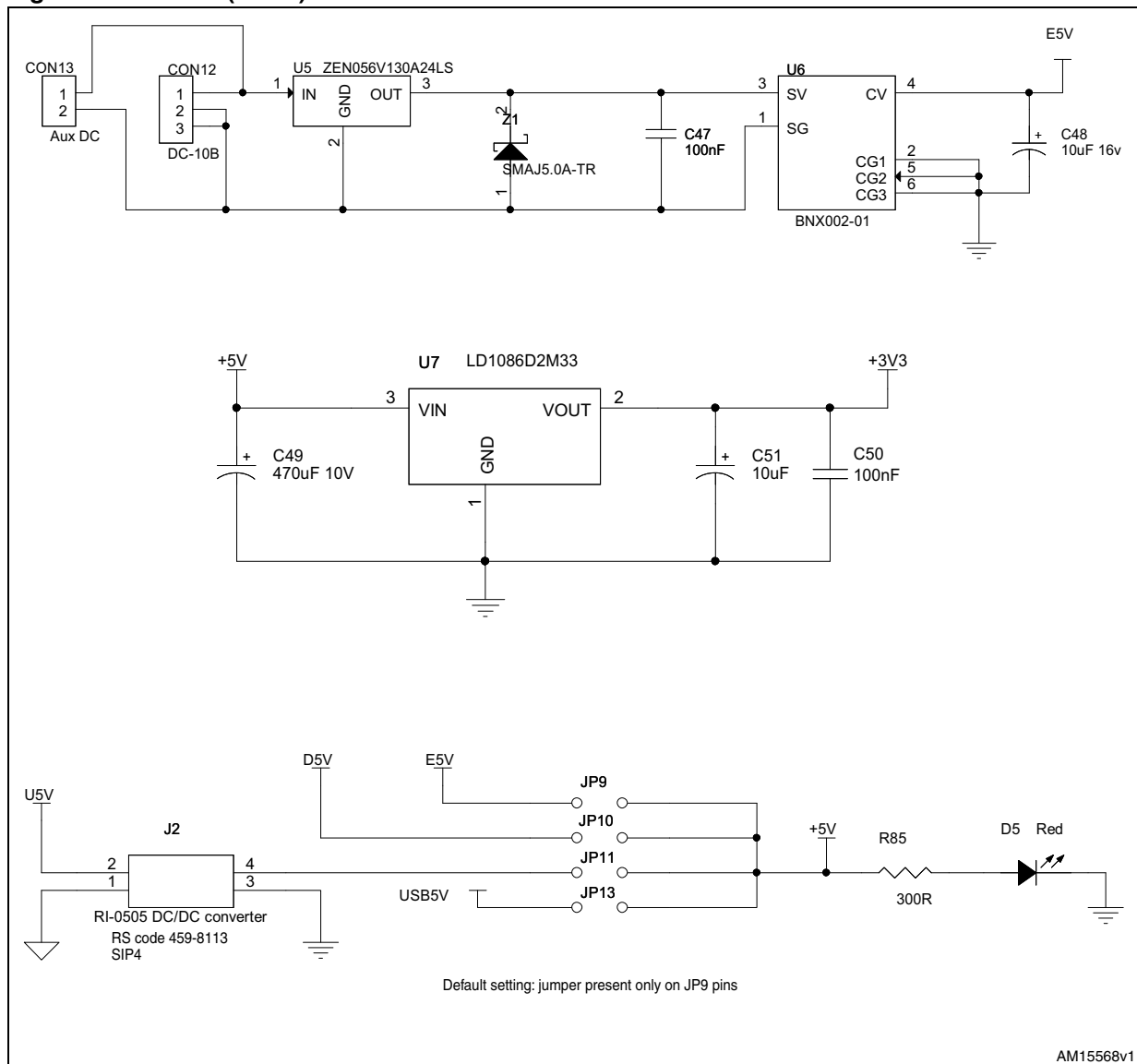


Figure 7. Peripheral (2 of 2)



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Figure 8. Power (1 of 2)



The schematic diagram illustrates the power supply and decoupling network for the STM32F415ZGT6 microcontroller (U8B). The microcontroller is shown with its pin connections for VCAP1, VSS_2, PDR_ON, VSS_4, VSS_5, VSS_6, VSS_7, VSS_8, VSS_9, VSS_10, VSS_11, VREF-, VREF+, VCAP2, VDD_12, VDD_11, VDD_10, VDD_9, VDD_8, VDD_7, VDD_6, VDD_5, VDD_4, VDD_3, VDD_2, VDD_1, VREF+, VDDA, and VBAT.

Key components and connections include:

- Power Supply:** A +3V3 supply is connected to the VDD pin (pin 131) via a 470nF capacitor (C52). The VREF+ pin (pin 121) is also connected to +3V3.
- Decoupling:** A 47R resistor (R86) is connected between VDD and VDDA. A 10uF capacitor (C53) is connected between VDDA and ground. A 10nF capacitor (C54) is connected between VBAT and ground.
- Crystal Oscillator:** A 33MHz crystal (L1, BEAD distrelec 330005) is connected between pins 32 and 33. A 47R resistor (R87) is connected between pin 32 and ground. A 2.2uF capacitor (C76) is connected between pin 33 and ground.
- Other Components:** A 2.2uF capacitor (C77) is connected between VREF- and ground. A 0R resistor (C75) is connected between VREF- and ground.

The microcontroller is labeled U8B and STM32F415ZGT6. The schematic also includes a note: "Default: JP12 present".

AM15570v1

2 Revision history

Table 1. Document revision history

Date	Revision	Changes
16-Jan-2013	1	Initial release.

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Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: info@moschip.ru

Skype отдела продаж:

moschip.ru

moschip.ru_4

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moschip.ru_9