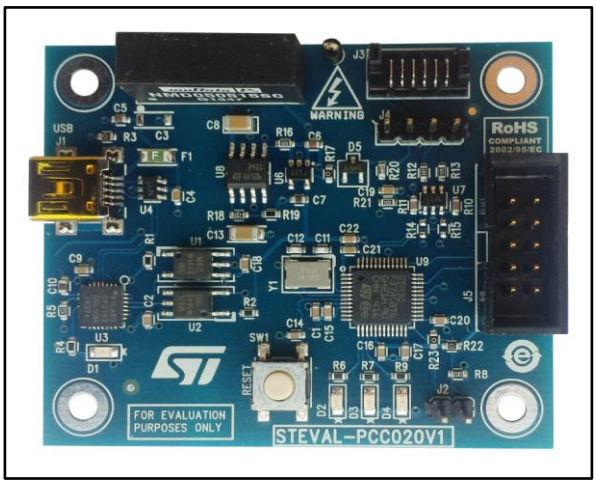
STEVAL-PCC020V1

STEVAL-PCC020V1 USB to I2C/UART bridge evaluation board for HVDPS STNRG011

Data brief



Features

- Bidirectional communication between PC (USB) and STNRG011
- Self-powered from the USB line
- On-board 19 V generation for STNRG011 programming
- Electric Isolation between USB and other board electronics
- An I²C bus running at 400 kHz
- A UART bus running at 19200 bps
- UART and I²C bus muxed together on the same interface
- On-board firmware upgrade through USB port
- Display power metrics (AC voltage, PFC power)
- Access to STNRG M24C32 E²PROM (used to store patch, calibration and event history data)
- Program NVM settings
- RoHS compliant

Description

STEVAL-PCC020V1 tool interfaces any Windows® based PC with HVDPS products such as STNRG011. It is fundamentally a bidirectional bridge between USB and I²C/UART buses.

The STEVAL-PCC020V1 is self-supplied 5 V from the USB port. An isolated DC-DC module provides the correct supplies to the remaining electronics. The board is also able to provide the target STNRG device with a VCC voltage to program the NVM (if supply is less than 17 V).

Communication between the STEVAL-PCC020V1 and the PC is managed by a standard serial peripheral, converting the USB connection into a virtual COM port. UART RX and TX signals are then isolated with opto-couplers and connected to the STM32 microcontroller, so the USB port and the rest of the board remain isolated from the mains. The microcontroller handles bridging between the host UART and target UART/I²C buses and protocols.

Schematic diagram

Figure 1: STEVAL-PCC020V1 circuit schematic USB power

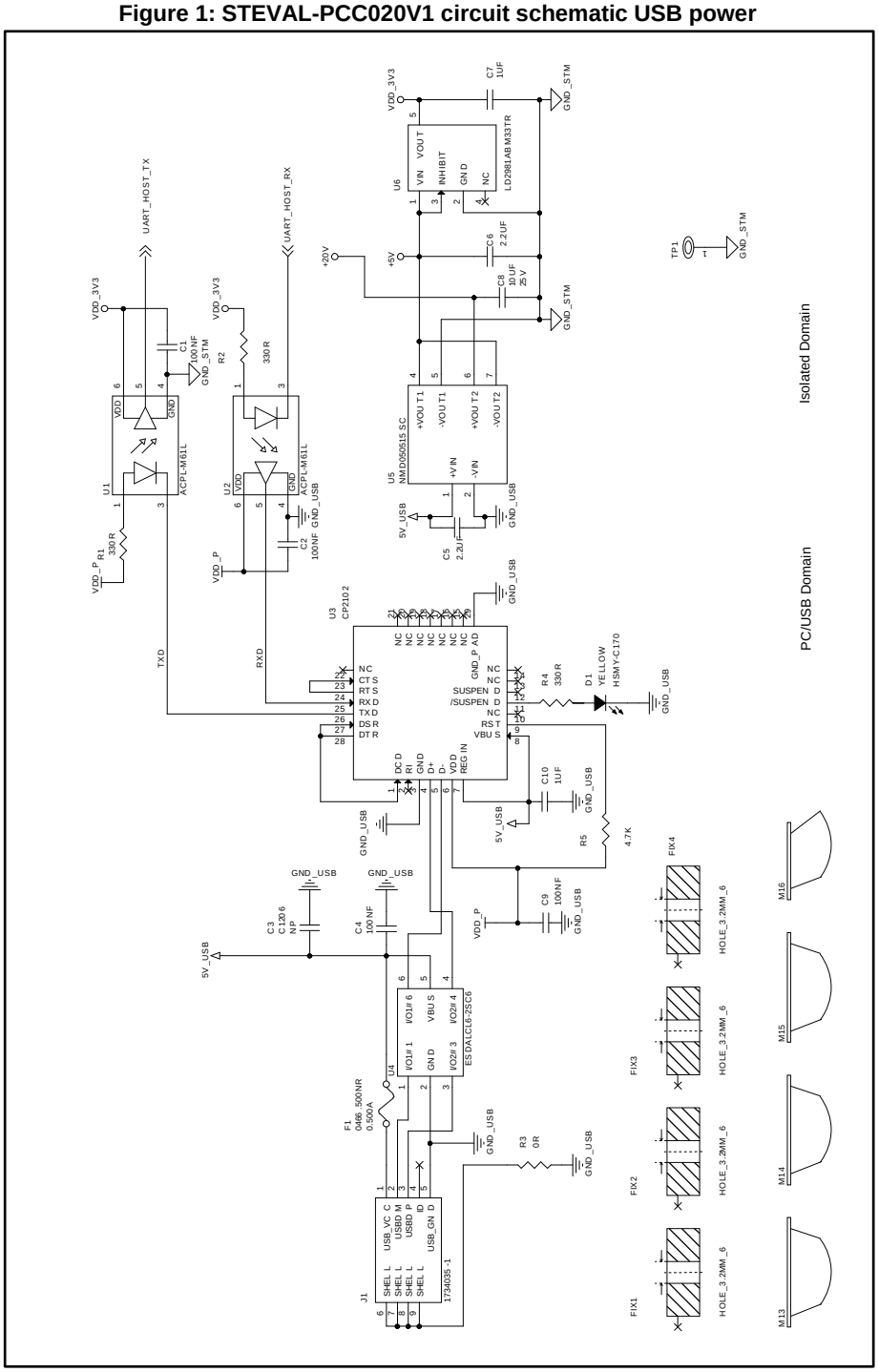
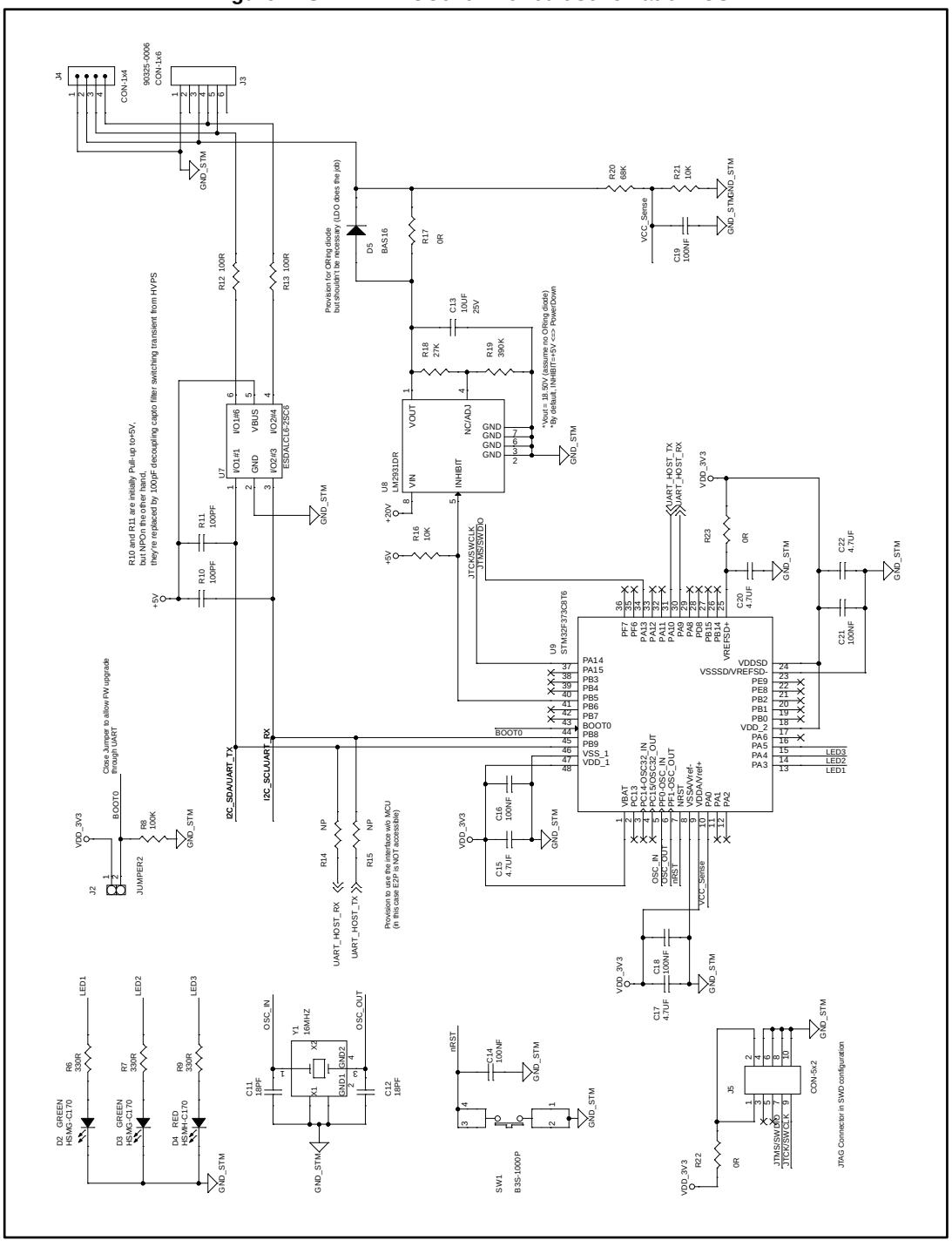


Figure 2: STEVAL-PCC020V1 circuit schematic MCU



Revision history

Table 1: Document revision history

Date	Version	Changes
14-Nov-2017	1	Initial release.

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