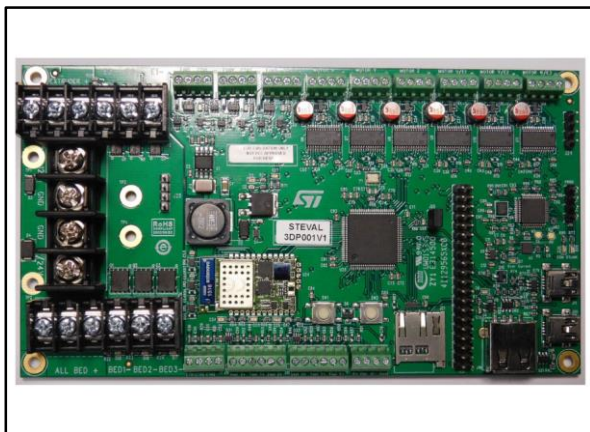


## Discovery board for 3D printer including 6-axis stepper motor driver based on the L6474H

Data brief



### Features

- Ready for the next generation of 3D printers
  - Multiple extruders support (up to 3): 12 V; up to 8 A; temperature and fan control; LED display
  - Multiple peripheral support and easy interfacing
  - Hot chamber and multi-zone heating bed, with high power capability: 12 V or 24 V; up to 20 A; temperature control; LED display
- High efficiency and small footprint thanks to low  $R_{ds(on)}$  MOSFETs
- Open source firmware available
- Main peripherals supported:
  - USB and microSD modules embedded
  - WiFi module embedded with web server available
  - External LCD/keypad
- Based on STSPIN L6474 stepper motor driver with unique features in terms of

current control and protection (up to 6 axes; phase current up to 3 A<sub>r.m.s</sub>; micro-stepping digital end stop)

- Integrated debug solution; STLINKV2 embedded
- RoHS compliant

### Description

The STEVAL-3DP001V1 is a complete and integrated solution for driving all 3D printers on the market, including Delta models requiring more complex computation. The solution is ideal for both beginners and experienced users. It is autonomous and can be used with a software interface or with custom firmware thanks to the embedded STM32 microcontroller based on the ARM 32-bit Cortex M4 core. The STEVAL-3DP001V1 is designed to drive 3D printers providing several axes (6 motors), several extruders (1 to 3), and multi-zone heating bed (1 to 3).

The STEVAL-3DP001V1 features integrated WiFi connectivity, enabling the user to drive a 3D printer using a smartphone or tablet. The solution is also designed to work with 3D printer tools, such as Pronterface. USB connectivity is available through Virtual COM port, mini USB OTG and Dongle USB A. Moreover, the board includes a complete debug solution (STLINK-V2), a tool that is appreciated by developers.

The STEVAL-3DP001V1 allows connection to another board (e.g. Raspberry board or user board), with a connector that provides drive power (5 V - 3.3 V) and digital interface (SPI-I<sup>2</sup>C-ADC-GPIOS-SD-USB).

# 1 Board specifications

Table 1: STEVAL-3DP001V1 specifications

| Parameters                          | Value        |
|-------------------------------------|--------------|
| Supply voltage                      | 12 V         |
| Extruder supply voltage (VDD_power) | 12 V         |
| Motor supply voltage (VDD_power)    | 12 V         |
| Bed supply voltage                  | 12 V or 24 V |
| Logic supply voltage (VDD_5V)       | 5 V          |
| Logic supply current (VDD_5V)       | Up to 1.5 A  |
| Logic supply voltage (VDD_3V3)      | 3.3 V        |
| Logic supply voltage (VDD_3V3)      | Up to 1 A    |
| USB dongle supply voltage           | 5 V          |
| USB dongle supply voltage           | Up to 0.5 A  |
| Operating temperature               | 0 to 85 °C   |

## 2 Schematic diagrams

Figure 1: STEVAL-3DP001V1 circuit schematic: Power supply

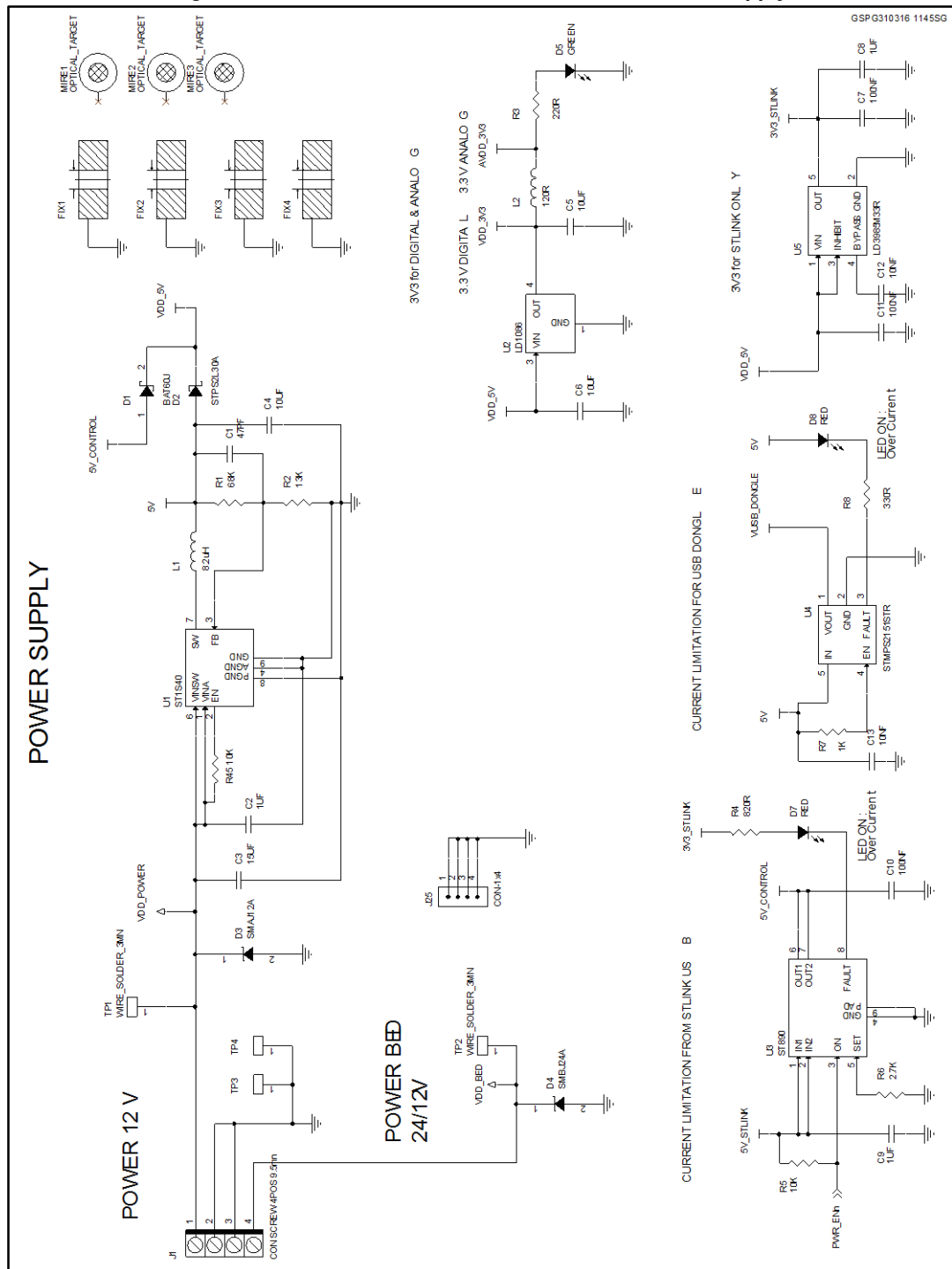
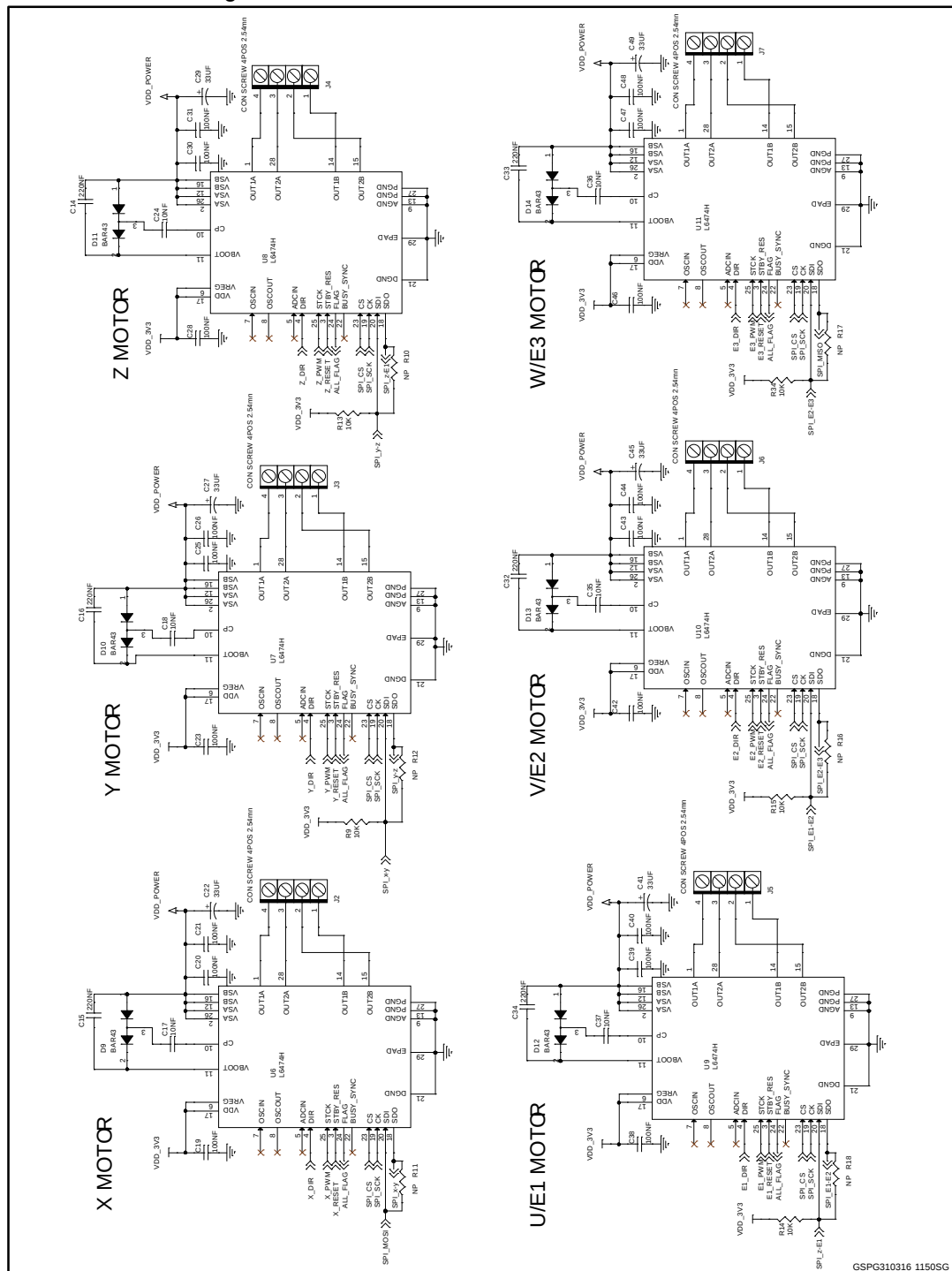


Figure 2: STEVAL-3DP001V1 circuit schematic: Motors



GSPG310316 1150SG

Figure 3: STEVAL-3DP001V1 circuit schematic: BEDS control

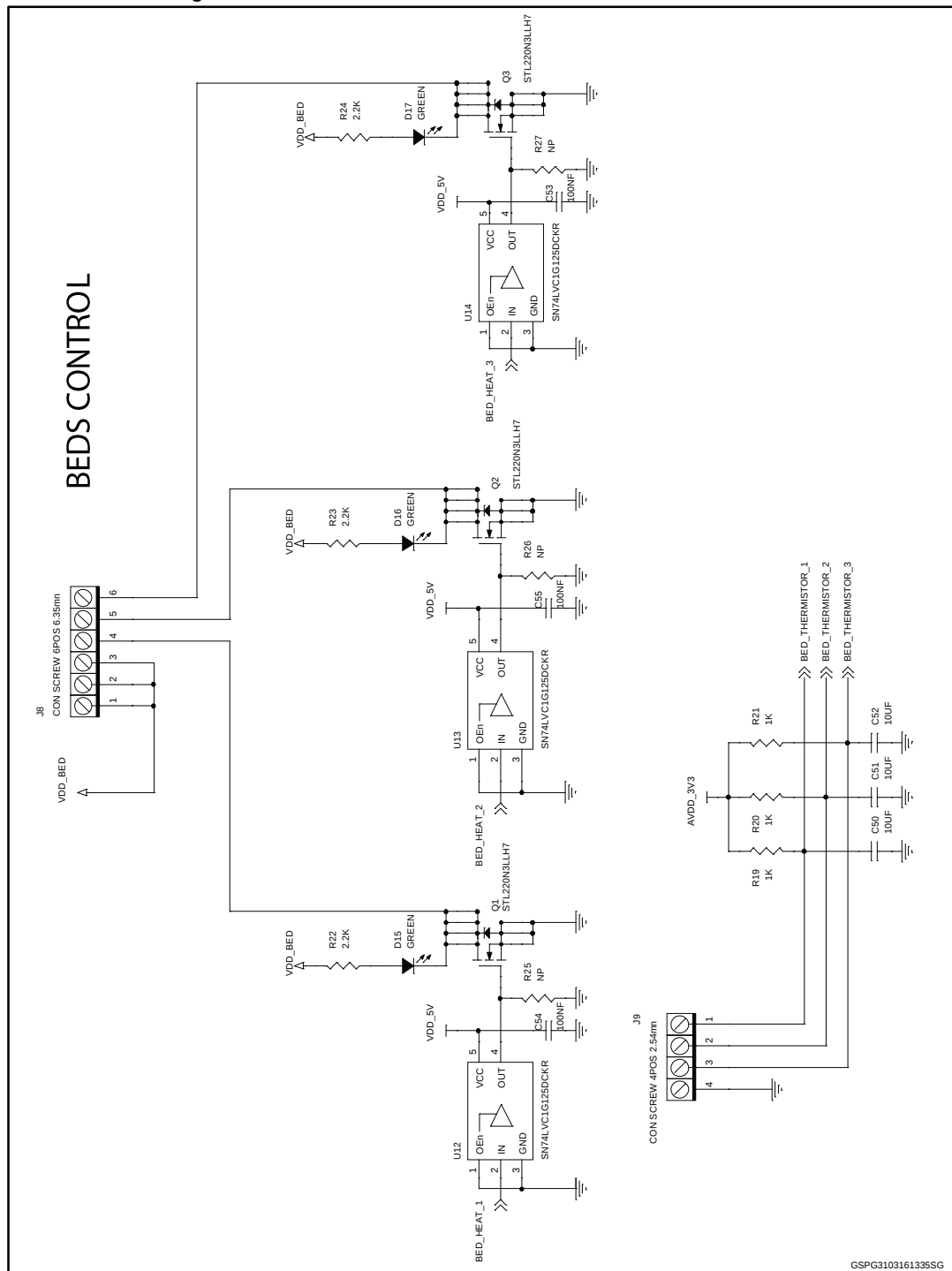


Figure 4: STEVAL-3DP001V1 circuit schematic: Controls

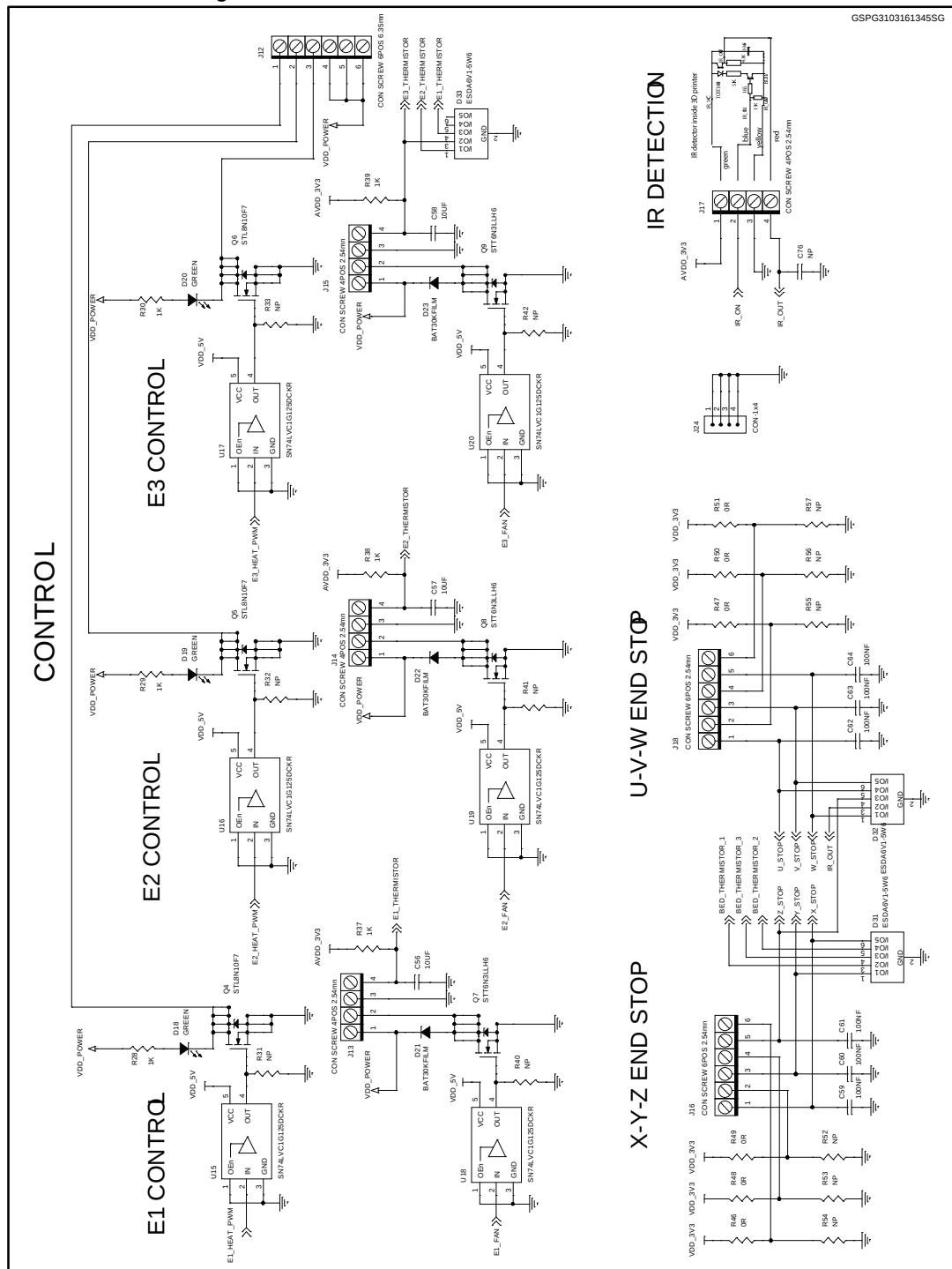
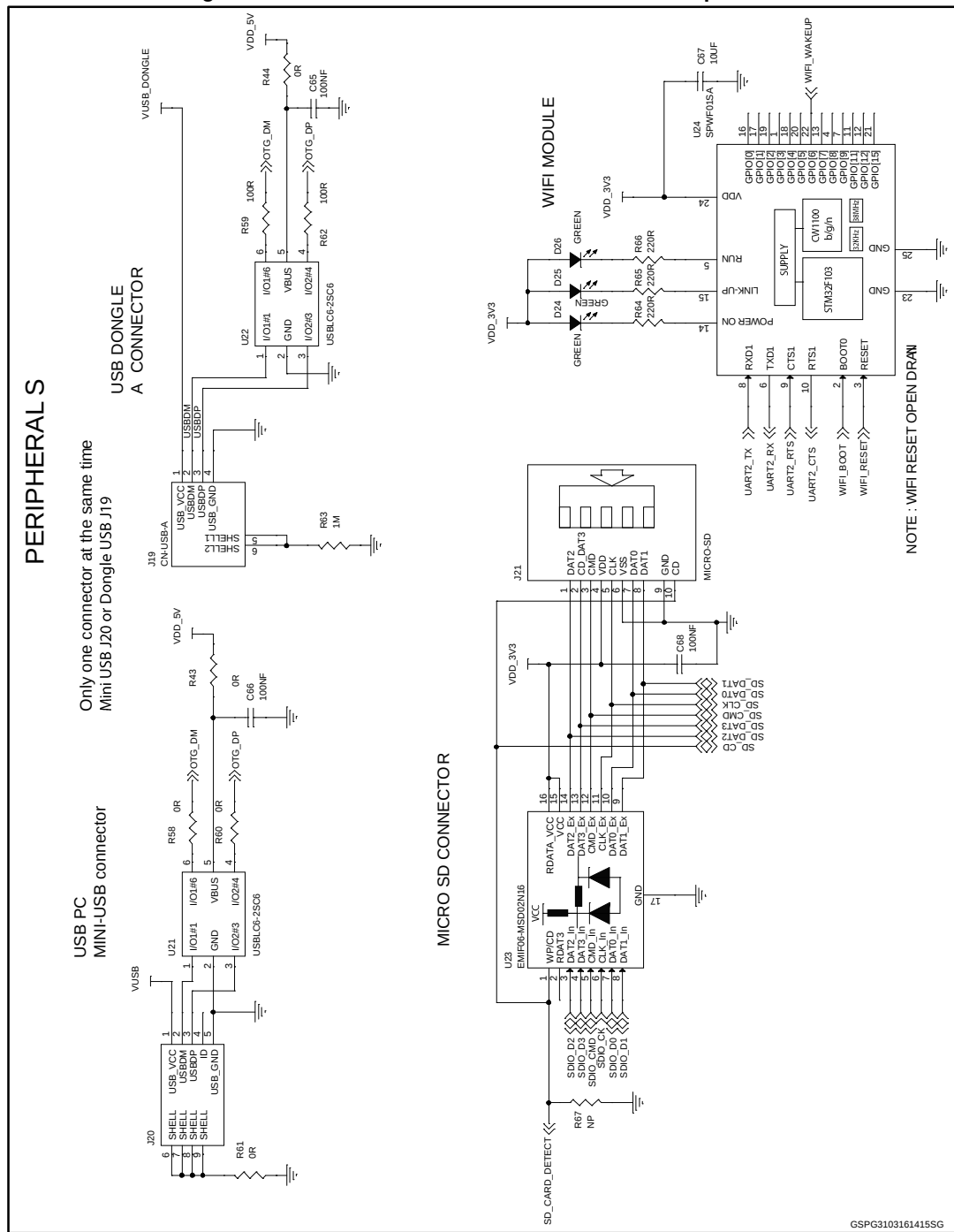
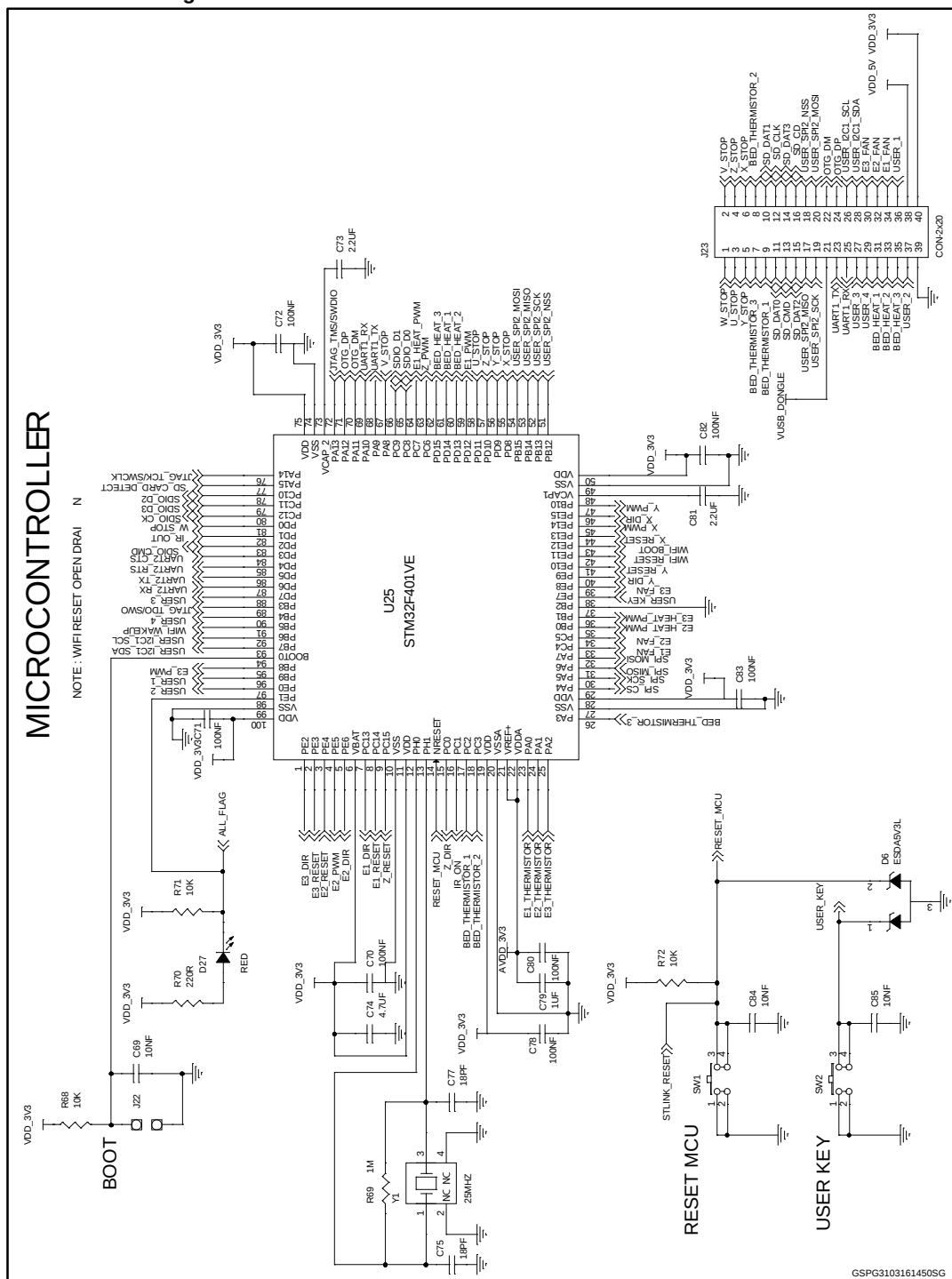


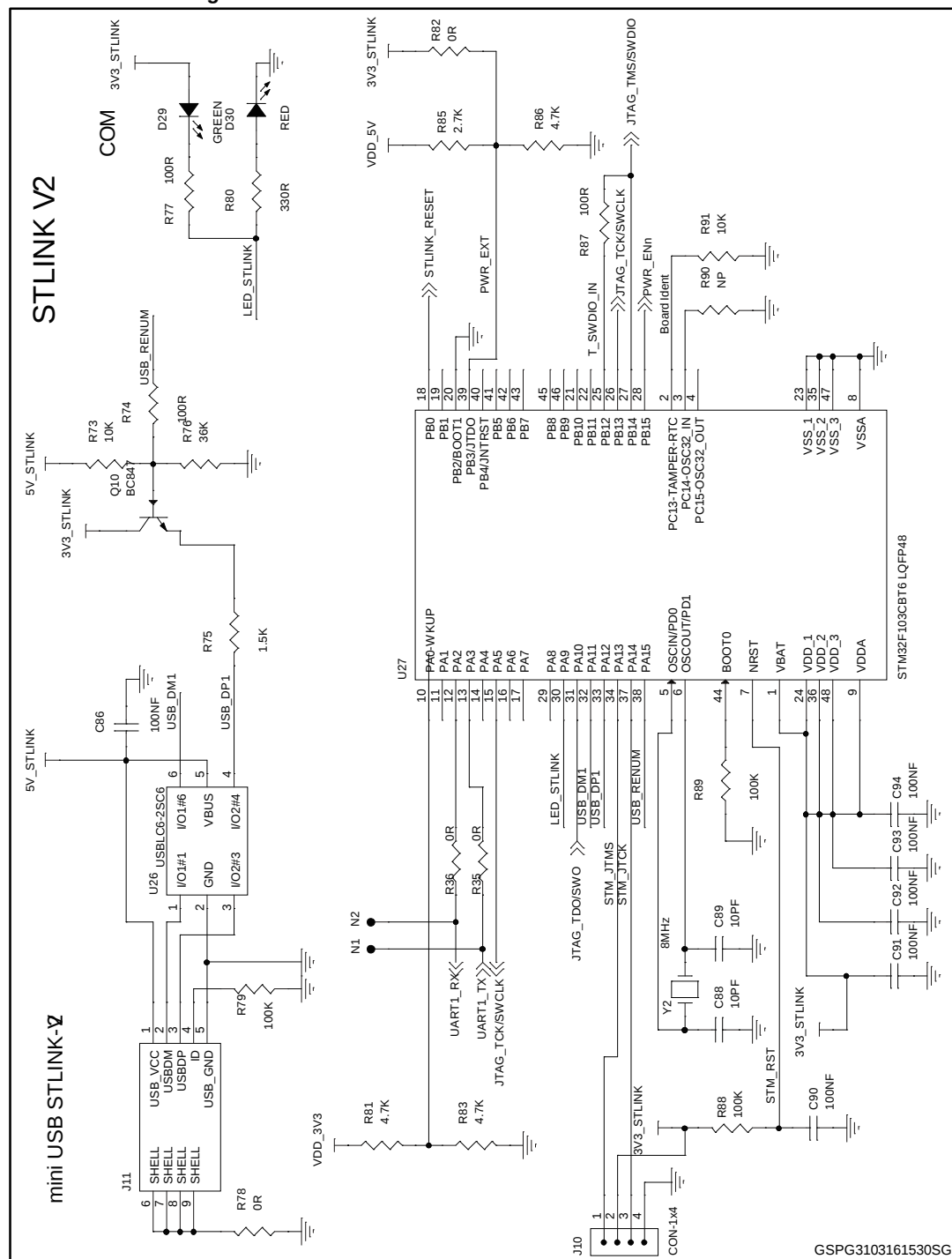
Figure 5: STEVAL-3DP001V1 circuit schematic: Peripherals



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**Figure 7: STEVAL-3DP001V1 circuit schematic: STLINK V2**



### 3 Revision history

Table 2: Document revision history

| Date        | Version | Changes          |
|-------------|---------|------------------|
| 12-Apr-2016 | 1       | Initial release. |

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