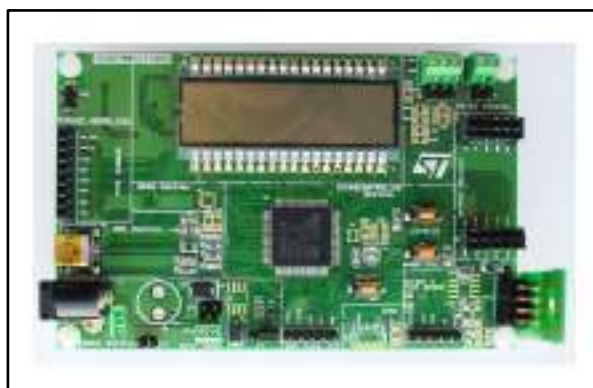


## Gas meter demonstration board

Data brief



- A very low-power and high performance RF transceiver "SPIRIT1" used for wireless communication
- Windows application available to configure WMBUS parameters at concentrator side and reading various metering data received from the gas meter
- Android application available for accessing various parameters of meter from dual interface EEPROM using smartphone through NFC
- RoHS compliant

### Features

- Nominal operating voltage from battery: 3.3 V to 3.6 V
- External power supply source USB/Wall adapter (5 V)
- Low power mode current consumption (Standalone mode) : 15-20  $\mu$ A
- I<sup>2</sup>C communication interfacing with OMRON gas sensor
- Dual Interface EEPROM support
- Maximum gas flow rate: 6.000 m<sup>3</sup>/hr
- Minimum gas flow rate: 0.000 m<sup>3</sup>/hr
- No. of tampers supported: 4
- Maximum tariff scheduling supported: 4 (with minimum time difference between every tariff is 1 Hr in ascending order)
- WMBUS stack running on STM32L microcontroller available on board
- Supports Sub GHz SRD bands: 169 MHz (N mode), 868 MHz (S mode)

### Description

The STEVAL-IPG001V1 demonstration board is a fully functional gas meter demonstration board. It is interfaced with OMRON gas sensor and able to read/write and display various parameters on LCD e.g. configuration parameters, maintenance parameters, total consumption parameters, tariff-wise consumptions, 4 types of tampers etc.

The STEVAL-IPG001V1 also manages maximum demand (MD) calculation and communication with dual interface EEPROM (RF and I2C interface). SPIRIT-RF Sub GHz module is also supported by the board and WMBUS protocol stack is running on STM32L microcontroller available on board.

The STEVAL-IPG001V1 also has provision of controlling gas valve by driving a motor. Connectors for external seismic detector, IrDA, STRNFC module are available for future use. Similarly footprints for external RTC, temperature sensor, USB connector are also available on the board.

# 1 Schematic diagram

Figure 1: MEMS section

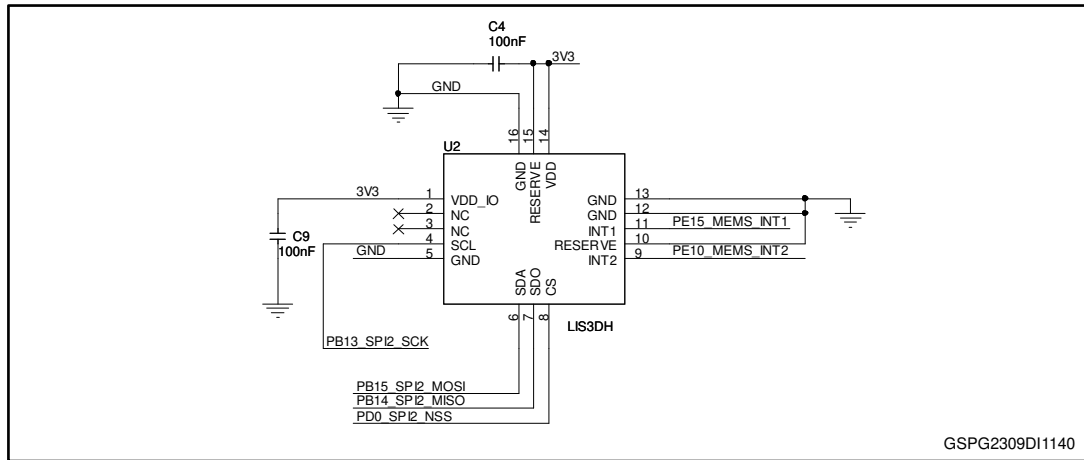


Figure 2: IRDA module

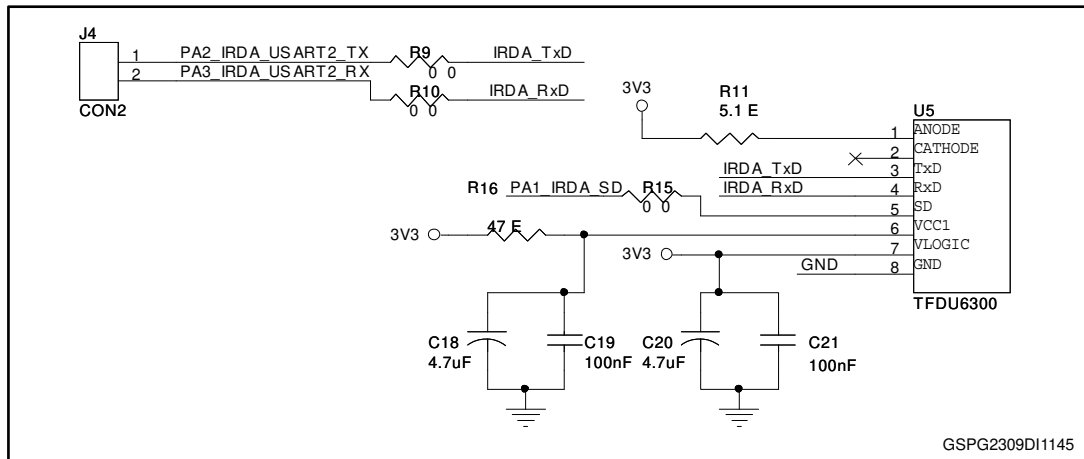


Figure 3: SPIRIT1 section

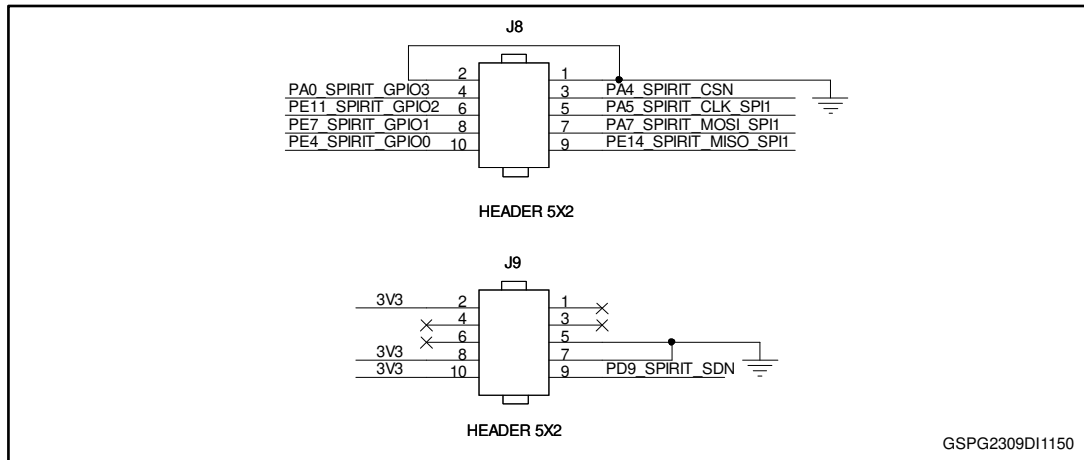


Figure 4: RTC section

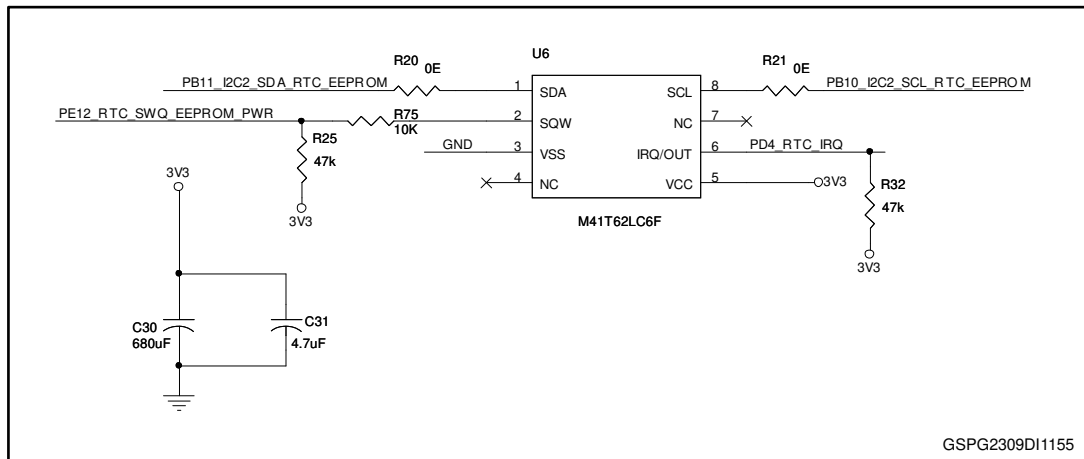


Figure 5: Temperature sensor

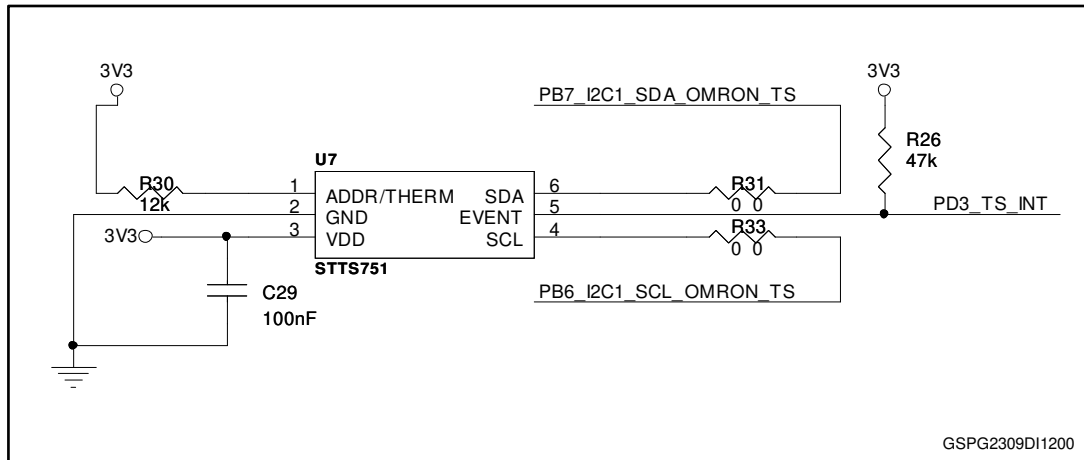


Figure 6: Pressure sensor

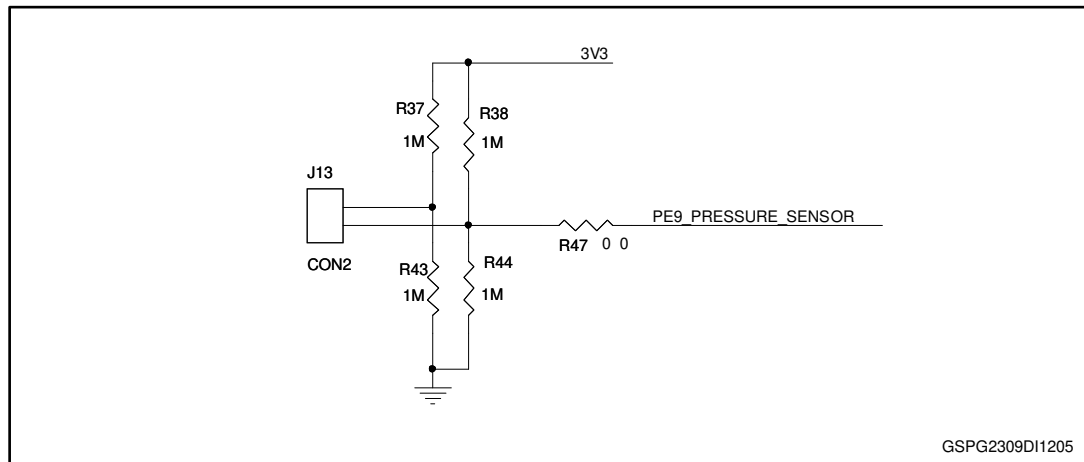


Figure 7: Board schematic

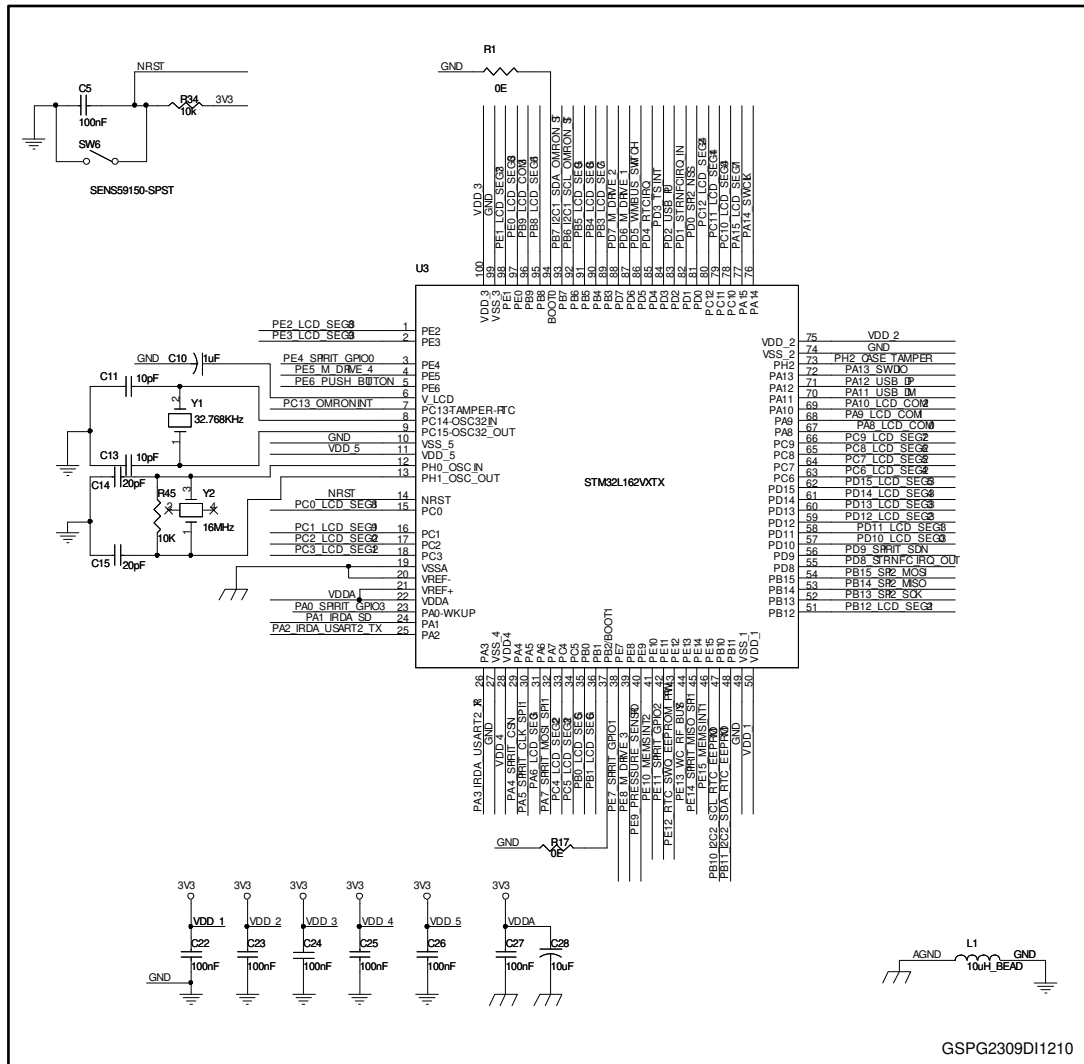


Figure 8: Valve motor drive section

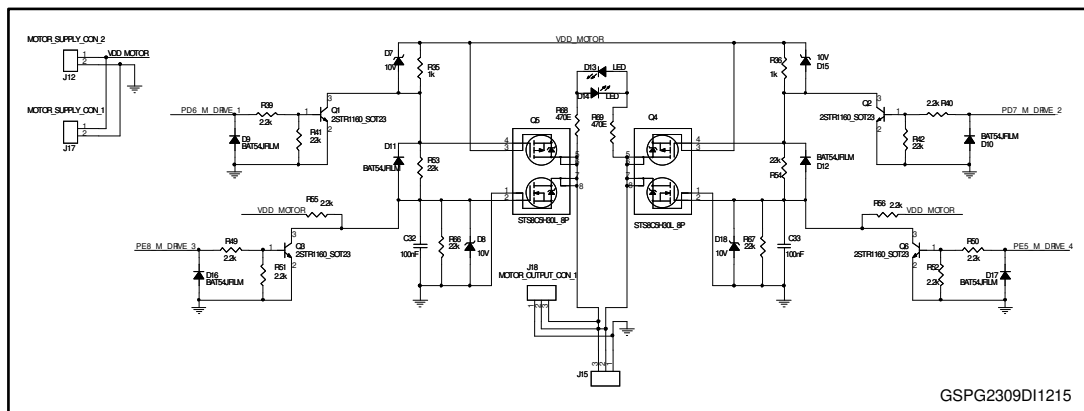


Figure 9: LCD section

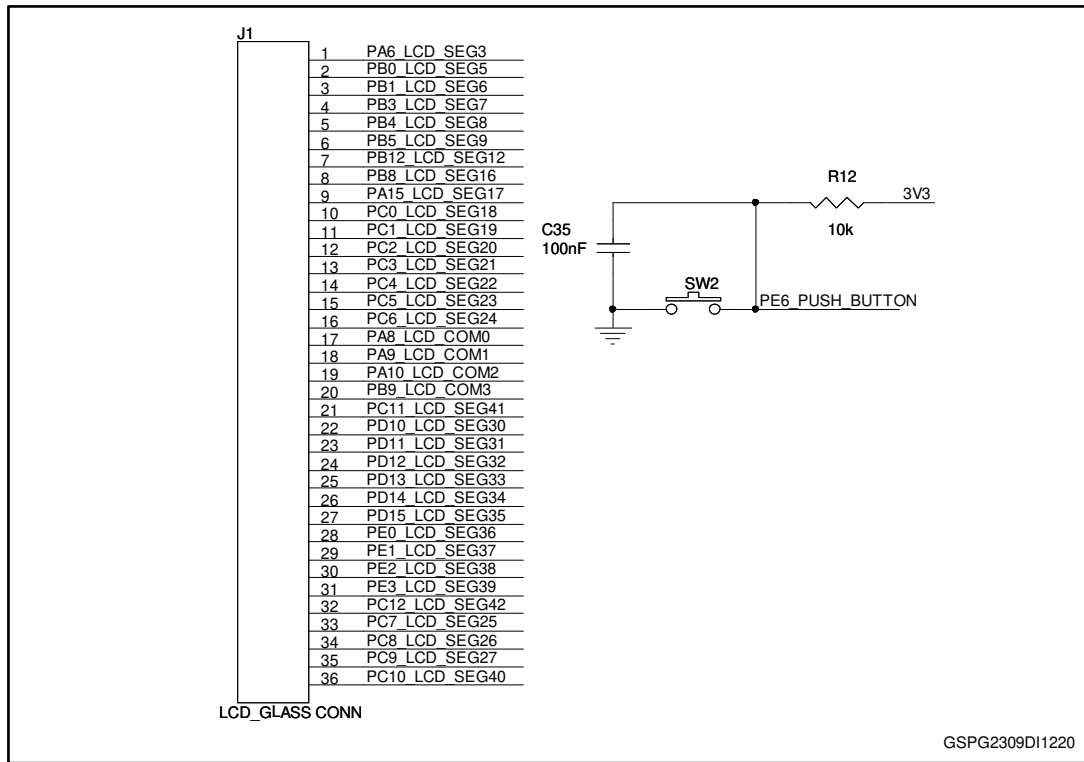


Figure 10: OMRON gas sensor

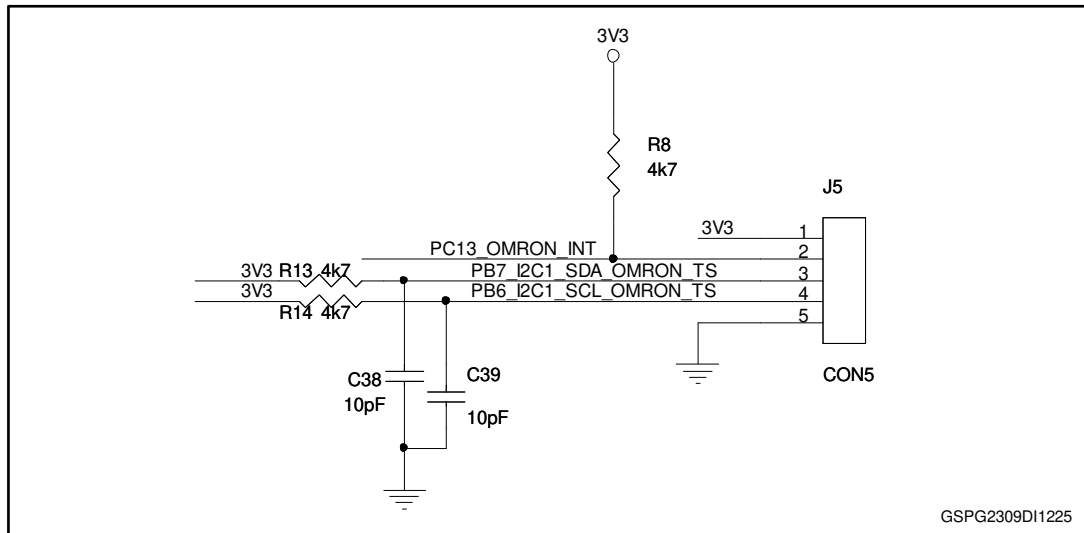


Figure 11: Power supply section

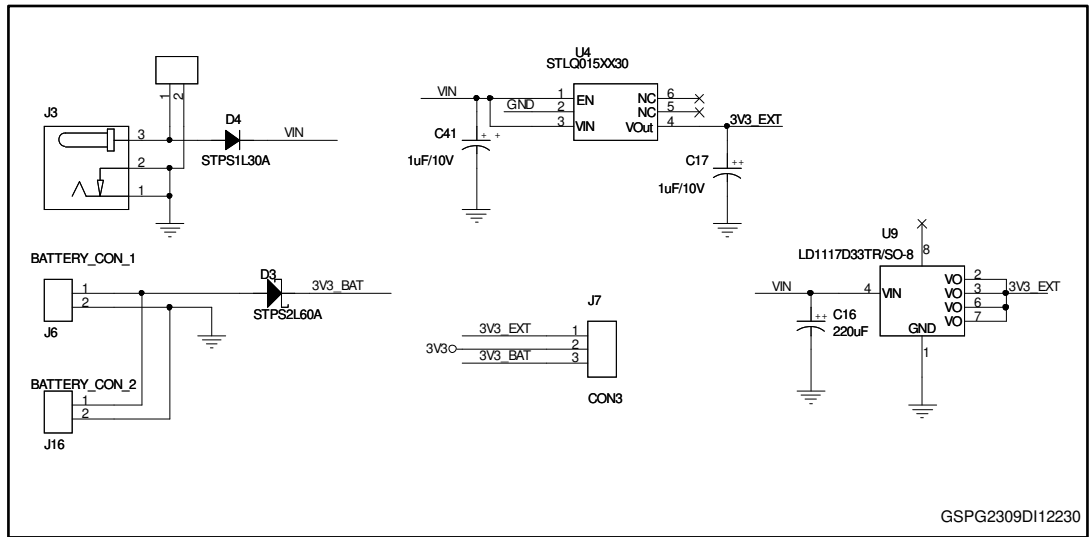


Figure 12: RF EEPROM section

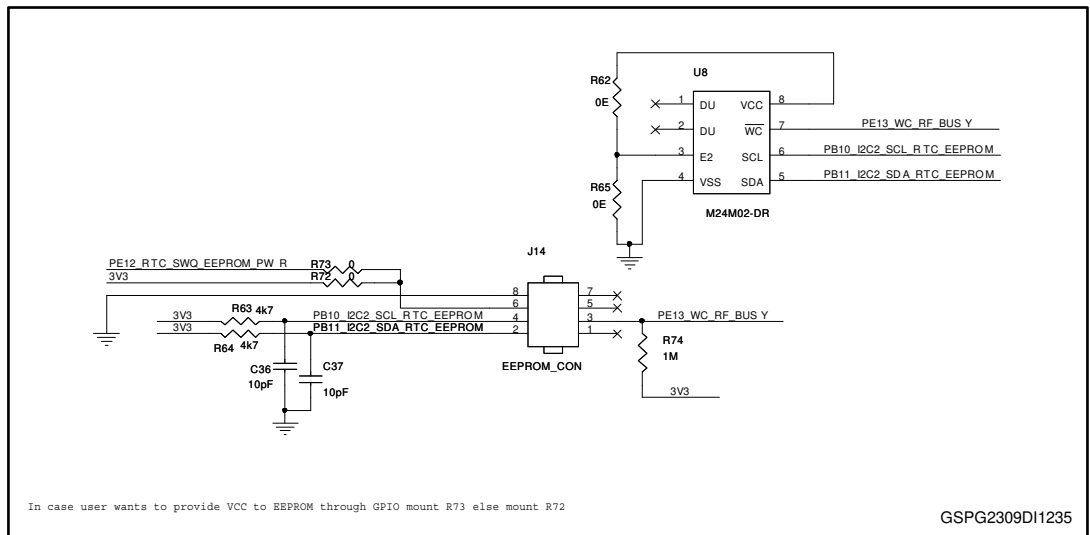


Figure 13: STRNFC section

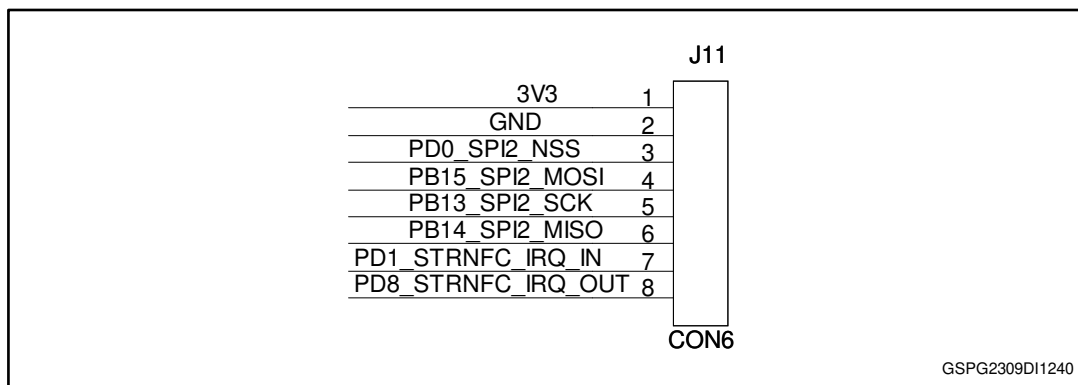


Figure 14: USB section

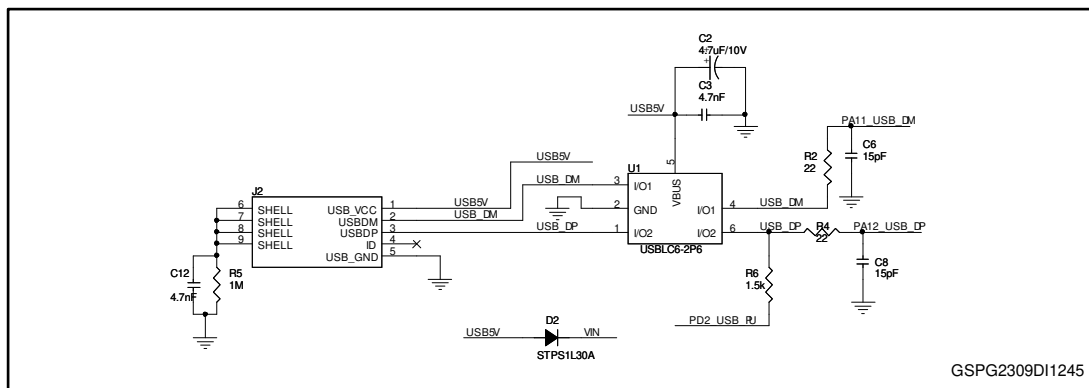




Figure 15: WMBUS data switch

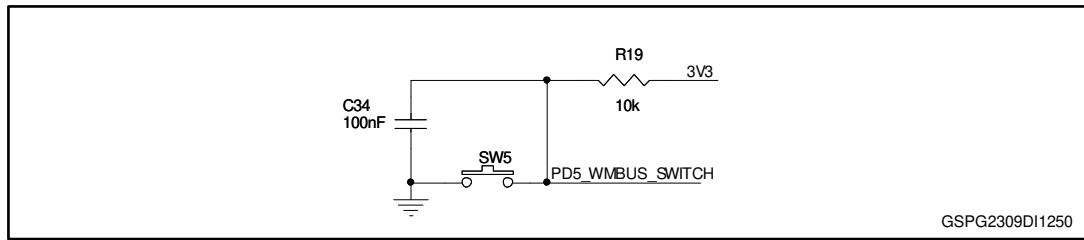


Figure 16: Case tamper

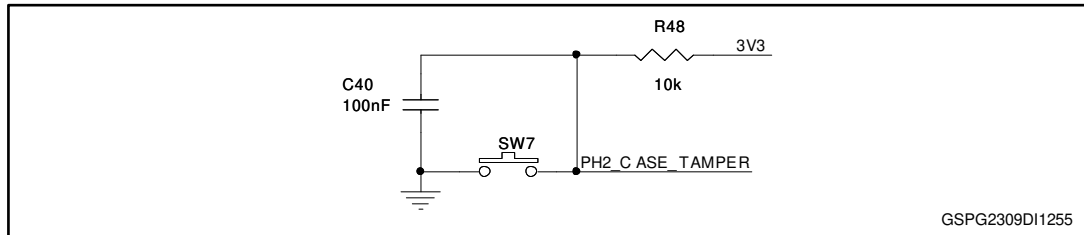
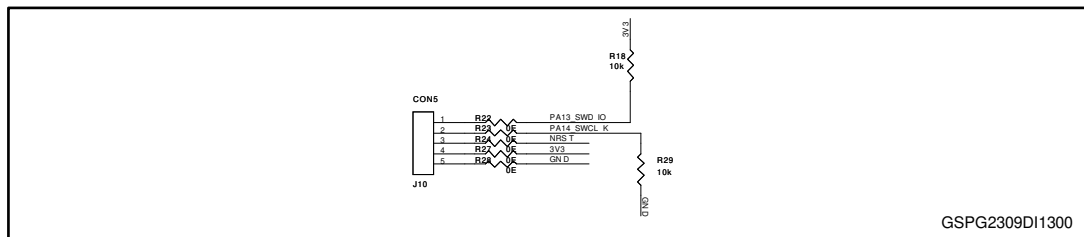


Figure 17: SWD section



## 2 Revision history

Table 1: Document revision history

Date	Revision	Changes
11-Dec-2013	1	Initial release

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