# KIT_XMC_PLT2GO_XMC4200 Evaluation board guide

## About this document

### Scope and purpose

This document explains about the KIT_XMC_PLT2GO_XMC4200 Evaluation board: kit operation, out-of-the-box example and its operation, and the hardware details of the board.

### Intended audience

This document is intended for all embedded developers using the KIT_XMC_PLT2GO_XMC4200 Evaluation board.

### Evaluation board

This board is to be used during the design-in process for evaluating and measuring characteristic curves, and for checking datasheet specifications.

***Note**:* *PCB and auxiliary circuits are NOT optimized for final customer design.*

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# Safety precautions

***Note**: Please note the following warnings regarding the hazards associated with development systems.*

**Table 1 Safety precautions**

| | |
|---|---|
|  | **Warning:** *The DC link potential of this board is up to 1000 V or more. When measuring voltage waveforms by oscilloscope, high voltage differential probes must be used. Failure to do so may result in personal injury or death.* |
|  | **Warning:** *The evaluation or reference board contains DC bus capacitors which take time to discharge after removal of the main supply. Before working on the drive system, wait five minutes for capacitors to discharge to safe voltage levels. Failure to do so may result in personal injury or death. Darkened display LEDs are not an indication that capacitors have discharged to safe voltage levels.* |
|  | **Warning:** *The evaluation or reference board is connected to the grid input during testing. Hence, high-voltage differential probes must be used when measuring voltage waveforms by oscilloscope. Failure to do so may result in personal injury or death. Darkened display LEDs are not an indication that capacitors have discharged to safe voltage levels.* |
|  | **Caution:** *Only personnel familiar with the drive, power electronics and associated machinery should plan, install, commission and subsequently service the system. Failure to comply may result in personal injury and/or equipment damage.* |
|  | **Caution:** *The evaluation or reference board contains parts and assemblies sensitive to electrostatic discharge (ESD). Electrostatic control precautions are required when installing, testing, servicing or repairing the assembly. Component damage may result if ESD control procedures are not followed. If you are not familiar with electrostatic control procedures, refer to the applicable ESD protection handbooks and guidelines.* |

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# 1 Introduction

This document describes the features and hardware details of the XMC4200 Platform2Go Series-V1.1 equipped with an ARM® Cortex®-M4 based XMC™ Microcontroller from Infineon Technologies AG.

It can be used with a wide range of development tools including Infineon's free of charge Eclipse based IDE DAVE. The XMC4200 Platform2Go Series-V1.1 are designed to evaluate the capabilities of the XMC4200 Microcontroller. Table 2 shows its specification.

**Table 2 Kit Specification**

| | |
|---|---|
| Processor | Infineon's ARM® Cortex®-M4 XMC4200 Microcontroller in PG-LQFP-64-19 package (order number XMC4200-F64K256) |
| Flash Memory | 256 kB Flash |
| Data Memory | 40 kB |
| Dimensions | 66 x 129 mm |
| Clock Crystals | • 12 MHz and 32.768 kHz crystal for CPU |
| Power | • 5V external powering<br>• Micro-AB USB Connector interface or<br>• On-Board Debugger USB interface |
| Connectors | • Arduino compatible connectors for 3.3V/5V<br>• Two Shield2Go connectors<br>• All relevant XMC™ pins available on expansion pads (X1, X2)<br>• mikroBUS™ connector<br>• 9-Position D-Sub Connector<br>• microUSB<br>• Serial Wire Debug interface (2x5, 50 mil pitch) to XMC™ (on board debugger can be overridden by externally connected debugger) |
| Debugger | • On-Board J-Link Debug Probe via USB supporting<br>• Serial Wire Debug (SWD)<br>• UART-to-USB bridge (virtual COM) |
| Others | • On-board debug probe, based on XMC4200 Microcontroller<br>• CAN transceiver connected to D-Sub Connector<br>• 1 user push-button, 1 user LED<br>• Reset push-button<br>• Potentiometer for variable analog input |

The XMC4200 Platform2Go Series-V1.1 are available in four different assembly versions differentiating in features:

- XMC4200 Platform2Go for 3.3V Shields
- XMC4200 Platform2Go for 5V Shields
- XMC4200 Platform2Go Lite for 3.3V Shields
- XMC4200 Platform2Go Lite for 5V Shields

The **XMC4200 Platform2Go** features an Ethernet-enabled communication option. You can control the XMC4200 Platform2Go via the web browser on your PC.

Additional voltage level shifters and Arduino connection header on the XMC4200 Platform2Go allow the usage of **Arduino shields with 3.3V or 5V** logic level.

The Ethernet-communication is not supported by the **XMC4200 Platform2Go Lite Kit**, because some components e.g. for Ethernet are not assembled.

All boards are marked with “Platform2Go XMC4200-V1.1” and can be distinguished by the assembled devices (see pictures in Chapter 2). These boards are neither cost nor size optimized and do not serve as a reference design.

## 1.1 Key Features

Table 3 summarizes the features of the different assembly versions of the XMC4200 Platform2Go Series-V1.1.

**Table 3 Kit Features of Assembly Versions**

| Feature | XMC4200 Platform2Go 3.3V | XMC4200 Platform2Go 3.3V Lite | XMC4200 Platform2Go 5V | XMC4200 Platform2Go 5V Lite |
|---|---|---|---|---|
| XMC4200 Microcontroller | ✓ | ✓ | ✓ | ✓ |
| On-board Debug Probe with USB interface supporting SWD + SWO | ✓ | ✓ | ✓ | ✓ |
| Virtual COM Port via Debug Probe | ✓ | ✓ | ✓ | ✓ |
| 1 x User Push-Button and<br>1 x User LED and<br>1 x Reset Push-Button<br>1 x Potentiometer | ✓ | ✓ | ✓ | ✓ |
| Voltage Regulator 5 V -> 3.3 V | ✓ | ✓ | ✓ | ✓ |
| USB (Micro USB Plug) | ✓ | ✓ | ✓ | ✓ |
| 12 MHz Crystal | ✓ | ✓ | ✓ | ✓ |
| 32.768 kHz RTC Crystal | ✓ | ✓ | ✓ | ✓ |
| Arduino compatible connector 3.3 V/5 V Arduino shields | ✓ | ✓ | ✓ | ✓ |
| 0 Ohm Bridges Array for 3.3 V Arduino shields | ✓ | ✓ | | |
| Voltage level shifter for 5 V Arduino | | | ✓ | ✓ |
| D-Sub Connector | ✓ | | ✓ | |
| CAN Transceiver | ✓ | | ✓ | |

## 1.2 Block Diagram

The block diagram in Figure 1 shows the main components of the XMC4200 Platform2Go Series-V1.1 and their interconnections. There are following main building blocks:

- XMC4200 controller in a LQFP64 package
- On-board USB debug probe based on XMC4200 for SWD, SWV and Virtual COM Port support
- Two 40-pin header X1 and X2
- Connection Header for Arduino
- MikroBUS™ connector
- Two Infineon Shield2Go connectors (at the bottom of the board)
- Potentiometer (10kOhm)
- On-board power generation
- User Push-Button, User LED, Reset Push-Button
- Micro-AB USB Plug
- CAN Transceiver connected to 9-position D-Sub connector RS232

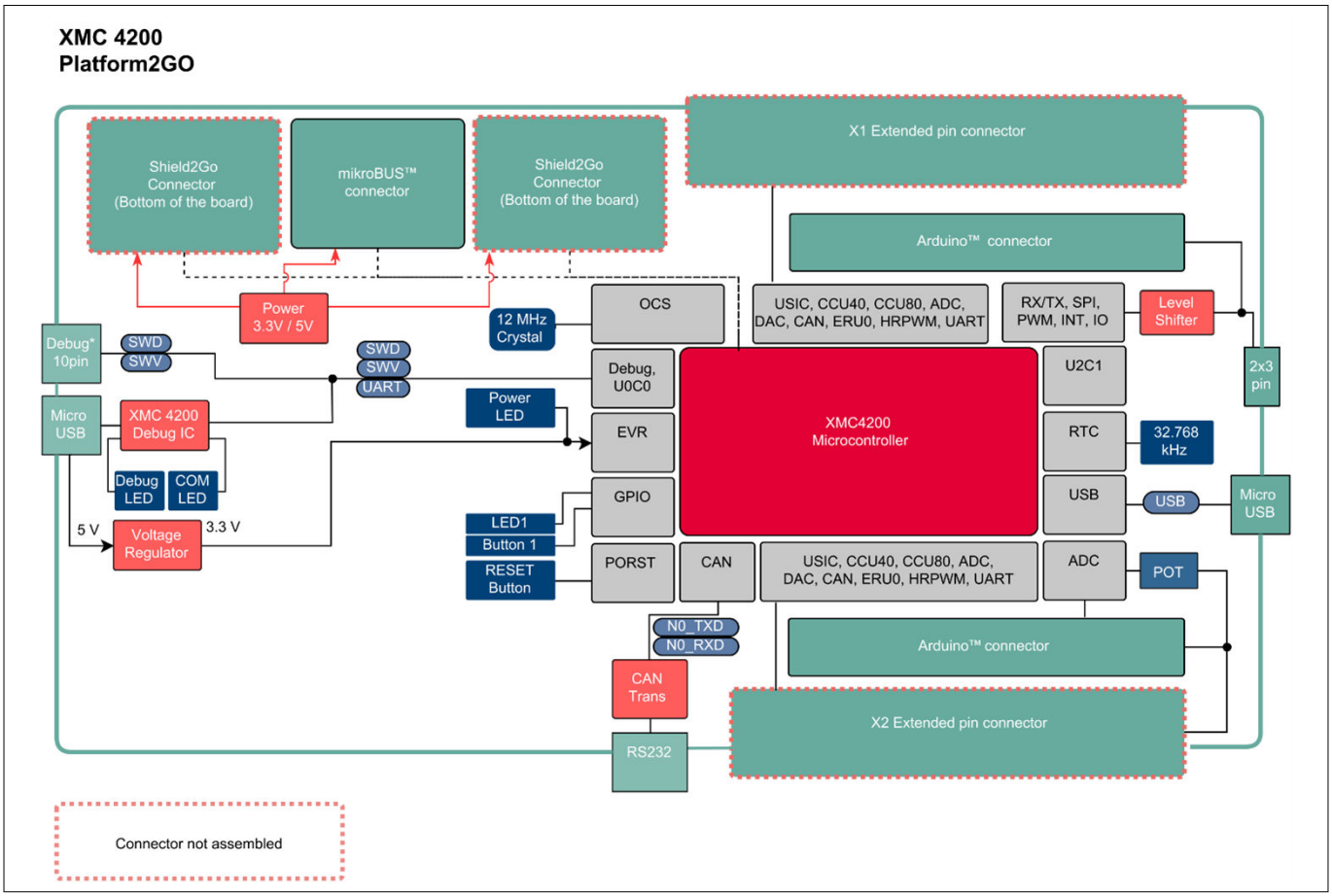


**Figure 1 Block Diagram of the XMC4200 Platform2Go Series-V1.1**

# 2 Hardware Description

The following chapters give a detailed description of the board hardware and how it can be used. The different assembly versions of the kits series are shown in Figure 2, Figure 3, Figure 4 and Figure 5.

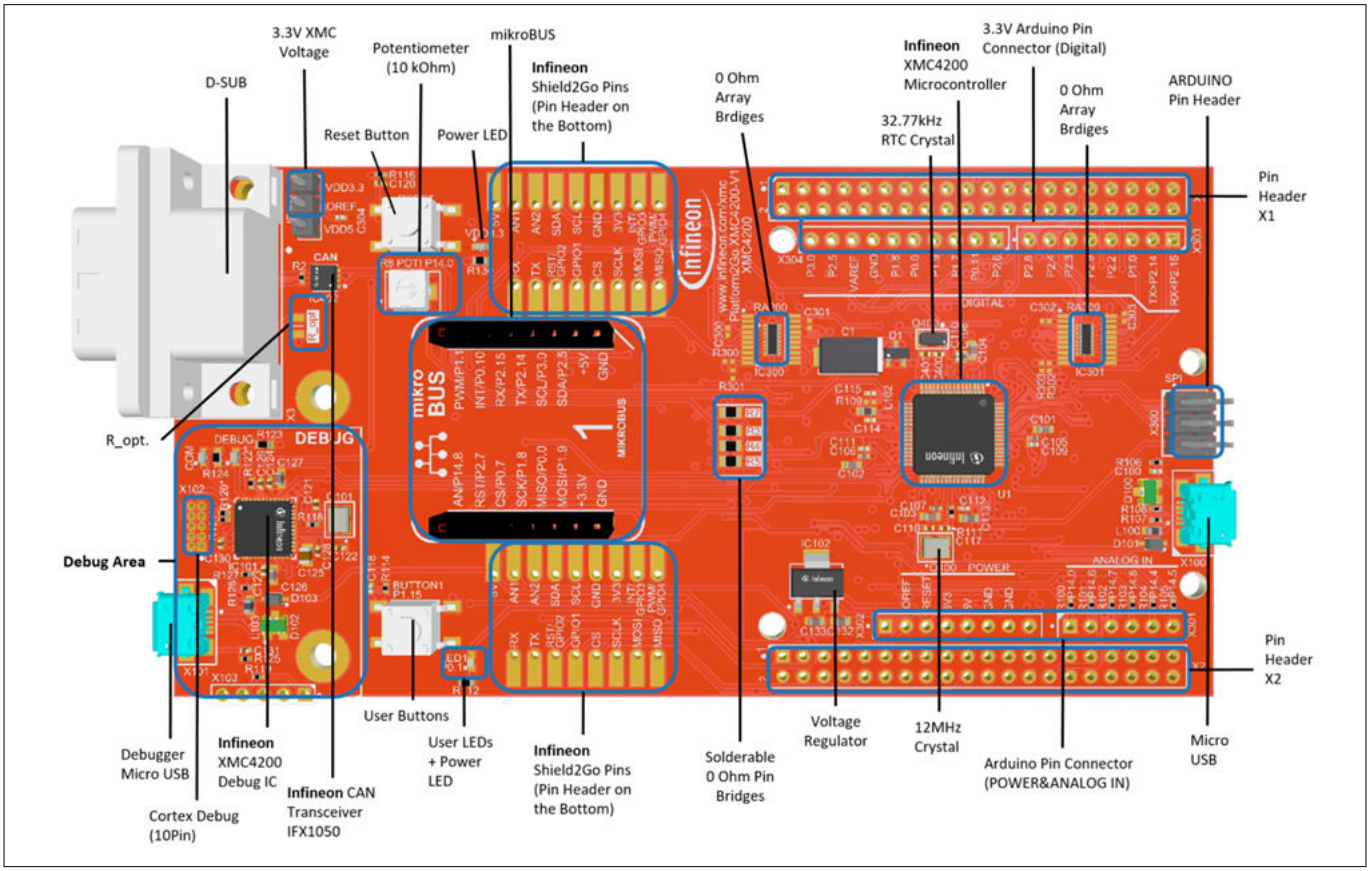


**Figure 2 XMC4200 Platform2Go 3.3V**

## 2 Hardware Description

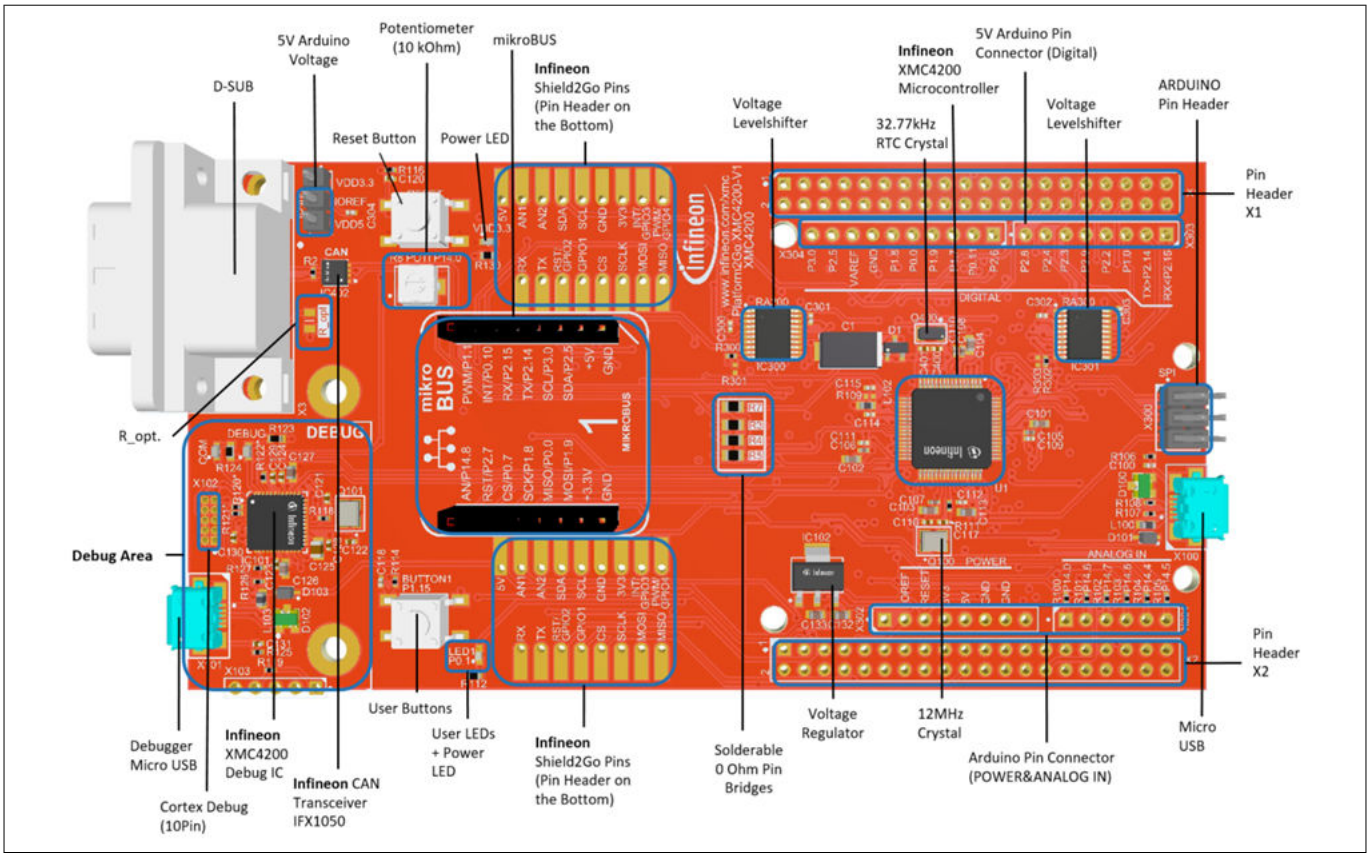


**Figure 3 XMC4200 Platform2Go 5V**

## 2 Hardware Description

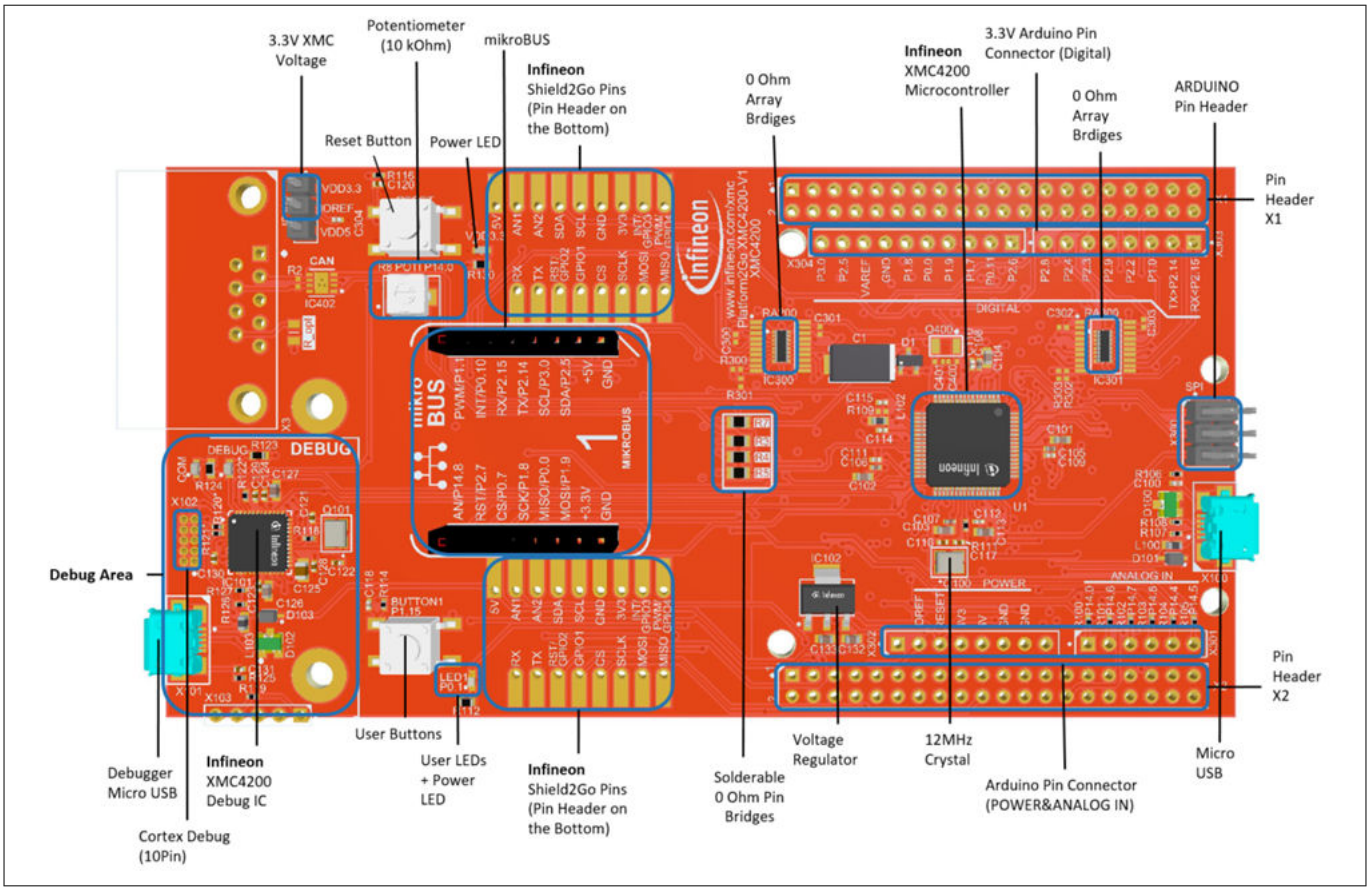


**Figure 4 XMC4200 Platform2Go 3.3V Lite**

## 2 Hardware Description

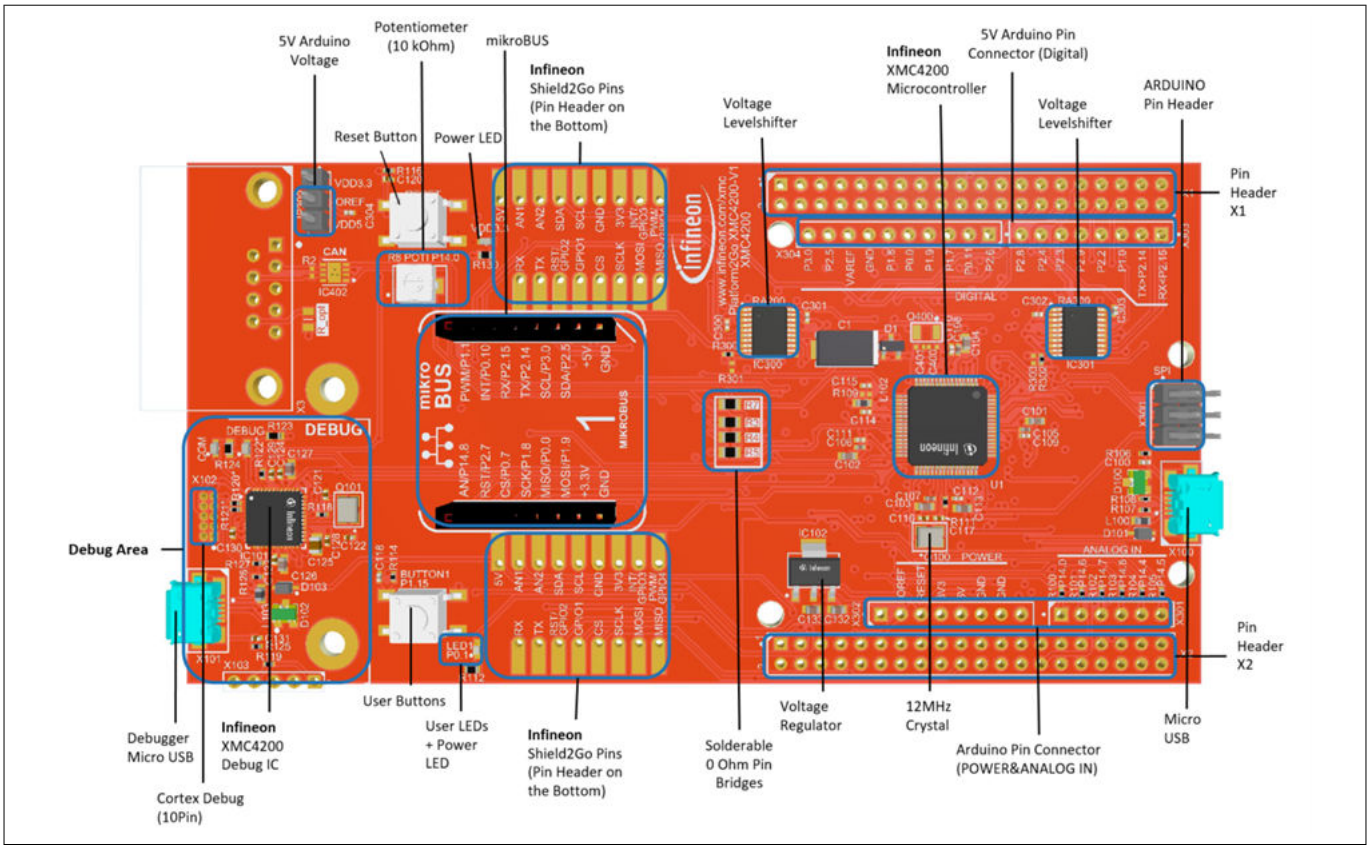


**Figure 5 XMC4200 Platform2Go 5V Lite**

## 2.1 Power Supply

The XMC4200 Platform2Go Series-V1.1 must be supplied by an external 5 Volt DC power supply connected to any of the micro USB plugs (X100, X101). The green Power LED (VDD3.3) indicates the presence of the generated 3.3 V supply voltage.

On-board reverse current protection diodes will ensure safe operation in case power is provided through both USB plugs at the same time. These protection diodes allows to use the on-board debug probe connected with a PC/Notebook via X101 and a second host PC/Laptop connected with the XMC4200 via X100.

If the board is powered via a USB plug, it's not recommended to apply an additional 5 Volt power supply to one of the 5 Volt power pins (VDD5, 5 V) on the pin headers X1 or X2 or the Arduino Power header, because there is no protection against reverse current into the external power supply. These power pins can be used to power an external circuit. But care must be taken not to draw more current than USB can deliver. A PC as USB host typically can deliver up to 500 mA current. If higher currents are required and in order to avoid damages on the USB host the use of an external USB power supply unit which is able to deliver higher currents than 500 mA is strongly recommended.

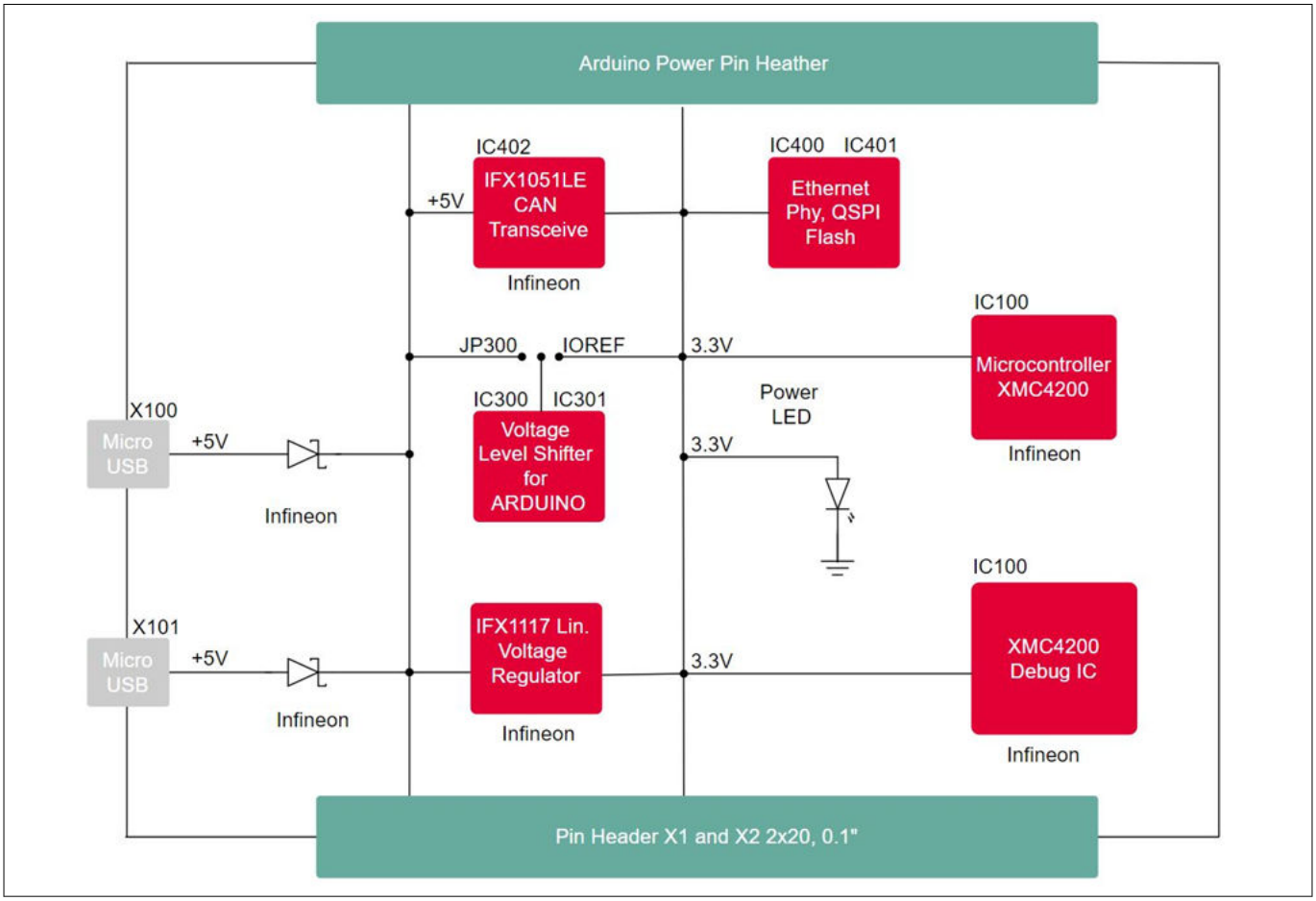


**Figure 6 Power Supply Concept**

## 2.2 Pin Header X1 and X2

The pin headers X1 and X2 can be used to extend the evaluation board or to perform measurements on the XMC4200. Figure 7 shows the available GPIOs/signals at these pin headers. The pin table is also printed onto the bottom side of the PCB in bottom view.

**Pin Header X2**

| | | | | | |
|---|---|---|---|---|---|
| | GND | 2 | 1 | P0.7 | CS_MB |
| RST/GPIO2_2GO_1 | P0.8 | 4 | 3 | NC | |
| | NC | 6 | 5 | NC | |
| | NC | 8 | 7 | P0.11 | PWM3 |
| | NC | 10 | 9 | P0.5 | INT/GPIO3_2GO_1 |
| RST/GPIO2_2GO_2 | P0.6 | 12 | 11 | P0.3 | INT/GPIO3_2GO_2 |
| GPIO1_S2GO_1 | P0.4 | 14 | 13 | P0.1 | LED1 |
| CS_2GO_1 | P0.2 | 16 | 15 | P0.10 | INT_MB |
| SPI_MISO | P0.0 | 18 | 17 | NC | |
| CS_2GO_2 | P0.9 | 20 | 19 | P3.0 | SCL, ADC_5 |
| | NC | 22 | 21 | P14.14 | AN2_2GO |
| SDA, ADC_4, AN1_2GO | P14.4 | 24 | 23 | NC | |
| | NC | 26 | 25 | P14.6 | ADC_1 |
| ADC_2 | P14.7 | 28 | 27 | NC | |
| SCL, ADC_5, AN2_2GO | P14.5 | 30 | 29 | NC | |
| CAN_RX | P14.3* | 32 | 31 | NC | |
| ADC0/Potentiometer | P14.0 | 34 | 33 | P14.8 | AN_MB/DAC0 |
| AN1_2GO/DAC1 | P14.9 | 36 | 35 | HIB_IO_0 | |
| | VARREF | 38 | 37 | NC | |
| | VDD3.3 | 40 | 39 | #VBAT | |

**Pin Header X1**

| | | | | | |
|---|---|---|---|---|---|
| | RESET# | 2 | 1 | GND | |
| UART_RX | P2.15 | 4 | 3 | P2.14 | UART_TX |
| | NC | 6 | 5 | NC | |
| SPI_CS.PWM_4 | P1.7 | 8 | 7 | NC | |
| SPI_MOSI/PWM_5 | P1.9 | 10 | 9 | P1.8 | SPI_CLK |
| PWM_MB | P1.1 | 12 | 11 | P1.0 | INT_0 |
| QSPI_IO2 | P1.3 | 14 | 13 | P1.2 | PWM/GPIO4_2GO_1 |
| QSPI_IO0 | P1.5 | 16 | 15 | P1.4 | PC_TXD |
| | NC | 18 | 17 | NC | |
| | NC | 20 | 19 | NC | |
| BUTTON1 | P1.15* | 22 | 21 | NC | |
| | NC | 24 | 23 | NC | |
| | NC | 26 | 25 | | |
| RST_MB | P2.7 | 28 | 27 | P2.6 | IO_2 |
| GPIO1_2GO_2 | P2.1 | 30 | 29 | P2.0* | CAN_TX |
| PWM_1 | P2.3 | 32 | 31 | P2.2 | INT_1, PWM_0 |
| SDA, ADC_4 | P2.5 | 34 | 33 | P2.4 | PWM_2 |
| IO_0 | P2.9 | 36 | 35 | P2.8 | IO_1 |
| | NC | 38 | 37 | NC | |
| | VDD5 | 40 | 39 | VDD3.3 | |

(Top View)

*Note: These pins have solderable 0 Ohm (0805) resistor bridges. See section 2.4 and Table 4.

**Figure 7 Signal mapping of the pin headers X1 and X2**

## 2.3 Pin Header for Microbus and Shield2Go Connector 1 and 2

The pin header for Microbus and Shield2Go Connector 1 and 2 can be used to extend the evaluation board or to perform measurements on the XMC4200. Figure 8 shows the available signals at these pin headers. The **Shield2Go pin header is mounted on the bottom**. The pin table is also printed onto the top and bottom side of the PCB in each view.

**Shield2Go Connector 1 (bottom)**

| | | | | | |
|---|---|---|---|---|---|
| 1 | VDD5 | 5V | | | |
| 2 | P14.4 | AN1 | RX | P2.14 | 10 |
| 3 | P14.14 | AN2 | TX | P2.15 | 11 |
| 4 | P2.5 | SDA | RST/GPIO2 | P0.8 | 12 |
| 5 | P3.0 | SCL | GPIO1 | P0.4 | 13 |
| 6 | GND | GND | CS | P0.2* | 14 |
| 7 | VDD3.3 | 3V3 | SCLK | P1.8* | 15 |
| 8 | P0.5 | INT/GPIO3 | MOSI | P1.9* | 16 |
| 9 | P1.2 | PWM/GIO4 | MISO | P0.0* | 17 |

(Bottom View)

**Shield2Go Connector 2 (bottom)**

| | | | | | |
|---|---|---|---|---|---|
| 1 | VDD5 | 5V | | | |
| 2 | P14.9 | AN1 | RX | P2.15 | 10 |
| 3 | P14.5 | AN2 | TX | P2.14 | 11 |
| 4 | P2.5 | SDA | RST/GPIO2 | P0.6 | 12 |
| 5 | P3.0 | SCL | GPIO1 | P2.1 | 13 |
| 6 | GND | GND | CS | P0.9* | 14 |
| 7 | VDD3.3 | 3V3 | SLCK | P1.8* | 15 |
| 8 | P0.3 | INT/GPIO3 | MOSI | P1.9* | 16 |
| 9 | P1.3 | PWM/GPIO4 | MISO | P0.0* | 17 |

(Bottom View)

**Microbus Connector**

| | | | | | |
|---|---|---|---|---|---|
| 1 | P14.8 | AN | PWM | P1.1 | 16 |
| 2 | P2.7 | RST | INT | P0.10 | 15 |
| 3 | P0.7* | CS | RX | P2.15 | 14 |
| 4 | P1.8* | SCK | TX | P2.14 | 13 |
| 5 | P0.0* | MISO | SCL | P3.0 | 12 |
| 6 | P1.9* | MOSI | SDA | P2.5 | 11 |
| 7 | VDD3.3 | 3.3V | 5V | VDD5 | 10 |
| 8 | GND | GND | GND | GND | 9 |

(Top View)

*Note:

- The SPI channels MOSI MISO and SLCK are connected with both shields and the microbus.
- Each of the three mentioned connectors has an own CS (Chipselect) channel.

**Figure 8 Signal mapping of the pin headers for Microbus and Shield2Go Connector 1 and 2**

## 2.4 Solderable 0 Ohm Pin Bridges

The 0 Ohm (0805) pin bridges enable/disable the signal pins in Table 4 (enabled by default).

To disable the signals, their resistor has to be removed. The XMC4200 pins are then usable for other usages.

**Table 4 Signal mapping of the 0 Ohm Pin Bridges**

| Resistor | XMC Pin | Signal |
|---|---|---|
| R3 | P2.0 | CAN_TX |
| R4 | P14.3 | CAN_RX |
| R5 | P1.15 | BUTTON1 |
| R7 | P14.0 | Potentiometer |
| R112 | P0.1 | LED1 |

## 2.5 Arduino Compatible Connector

The mapping of GPIOs and XMC pin functions to Arduino compatible functions can be found in Figure 9. The Arduino compatible connector supports

- SPI interface (SPI_xxx)
- I2C interface (I2C_xxx)
- UART interface (UART_xxx)
- PWM signal outputs (PWM0-3)
- ADC input (ADC0-5)
- Interrupt input (INT0-1)

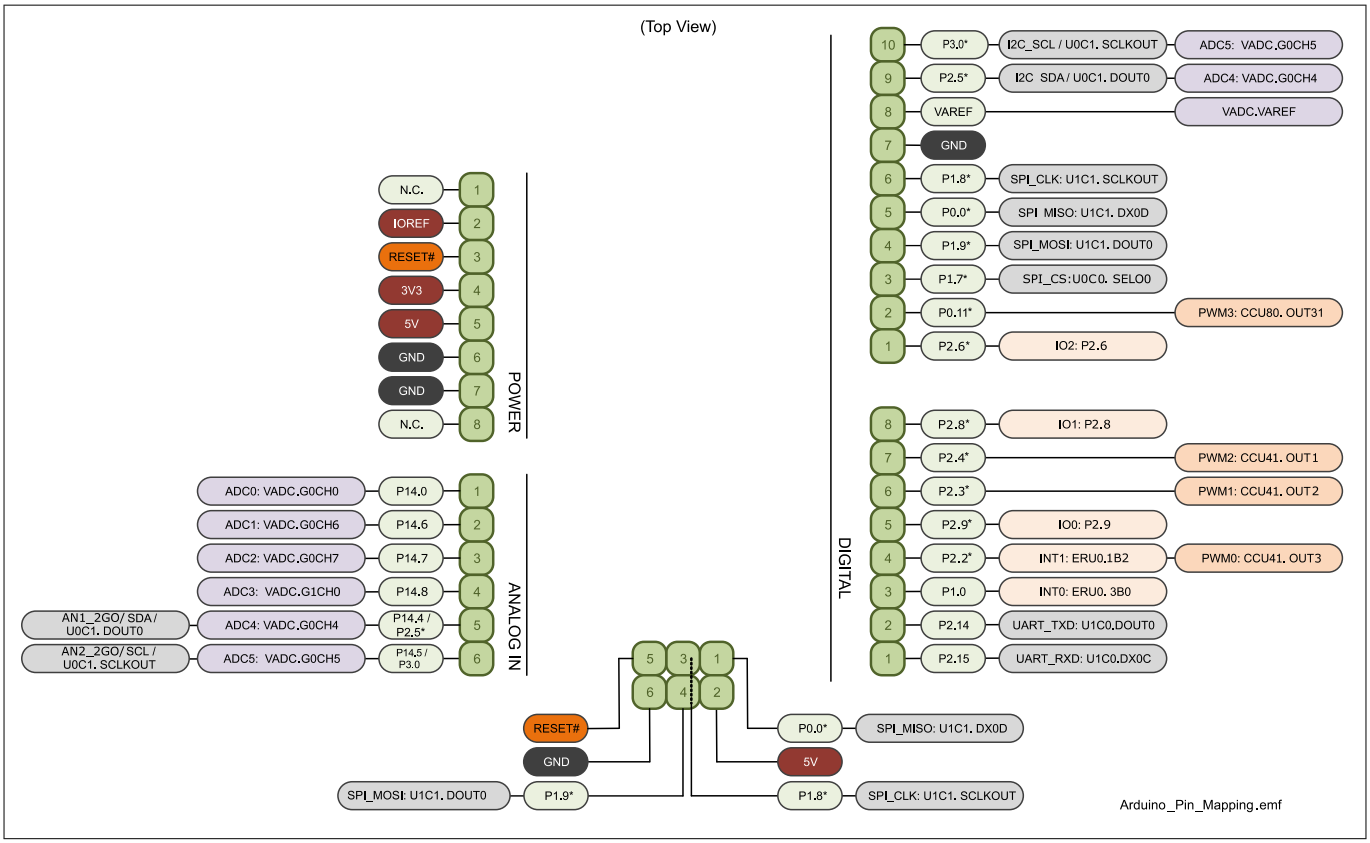


**Figure 9 Mapping of Arduino Functions to XMC Pin Functions**

The **XMC4200 Platform2Go 5V** features bi-directional voltage level shifter and therefor supports 5 V Arduino shields. Jumper JP300 (IOREF) determines whether the Arduino shield is driven with 5 V or 3.3 V.

Analog input signals ADC0-5 are limited to 3.3 V input voltage. Primarily ADC0 to ADC3 should be used as analog input, because there is no additional circuit connected to these pins, whereas ADC4 and ADC5 have additional circuitry and require an input signal with lower input impedance. ADC0 is also connected to the Potentiometer for a variable value of the analog input (optional see Table 6).

***Note**: Parallel operation of I2C and ADC4/ADC5 is not possible, because they share the same Arduino pins.*

## 2.6 User Push Buttons, Potentiometer and User LEDs

The XMC4200 Platform2Go Series-V1.1 provides one user push button, one LED and one Potentiometer. The port pins used can be found in Table 5 and Table 6.

**Table 5 XMC4200 Pin Mapping for User LEDs**

| LED | XMC Pin | Resistor |
|---|---|---|
| LED1[1)] | P0.1 | R112 (680 Ohm) |

*1)* The push button, the potentiometer and the LED can be disabled by removing their designator.

**Table 6 XMC4200 Pin Mapping for User Push Buttons and Potentiometer**

| Button | XMC Pin | Resistor |
|---|---|---|
| BUTTON1[1)] | P1.15 | R5 |
| Potentiometer[1)] | P14.0 | R7 |

*1)* The push button, the potentiometer and the LED can be disabled by removing their designator.

Also see Table 4.

Debugging and UART-to-USB Communication

The XMC4200 Platform2Go Series-V1.1 supports debugging via 2 different channels:

- On-board debug probe
- 10-pin Cortex™ Debug Connector (not assembled)

## 2.7 On-board Debug Probe

The on-board debug probe supports Serial Wire Debug (SWD) and UART communication. Both require the installation of Segger's J-Link Driver which is part of the DAVE™ installation. DAVE™ is a highly efficient development platform for the XMC microcontroller families to simplify and shorten SW development. It can be downloaded at www.infineon.com/dave. The latest Segger J-Link Driver can be downloaded at http://www.segger.com/jlink-software.html. Table 7 shows the pin assignment of the XMC4200 used for debugging and UART communication.

## 2.8 UART Communication for XMC4200

**Table 7 XMC4200 Pins Mapping for Debugging and UART-Communication**

| Pin Function | Input/Output | XMC Pin |
|---|---|---|
| Data pin for Debugging via SWD | I/O | TMS |
| Clock pin for Debugging via SWD | O | TCK |
| Transmit pin for UART communication (PC_RX) | O | XMC4200 Debugger P1.5 (TXD_U0C0.DOUT0) |
| Receive pin for UART communication (PC_TX) | I | XMC4200 Debugger P1.4 (RXD_U0C0.DX0B) |
| Transmit pin for UART(UART_RX) | O | XMC4200 P2.15(RXD_U1C0.DX0C) |
| Receive pin for UART(UART_TX) | I | XMC4200 P2.14(TXD_U1C0.DOUT0) |

## 2.9 Cortex™ Debug Connector (10-pin)

The 10-pin Cortex™ Debug Connector supports Serial Wire Debug (SWD) and Serial Wire Viewer (SWV). The pin assignment of the Cortex™ Debug Connector is shown in Table 8.

**Table 8 Pin Assignment of the Cortex™ Debug Connector (X102)**

| Pin No. | Signal Name | Description |
|---|---|---|
| 1 | VCC | +3.3 V |
| 2 | TMS | Serial Wire Data I/O |
| 3 | GND | Ground |
| 4 | TCK | Serial Wire Clock |
| 5 | GND | Ground |
| 6 | SWV | Serial Wire Viewer (Trace Data Out) |
| 7 | NC | Not connected |
| 8 | NC | Not connected |
| 9 | GND_Detect | Ground detect |
| 10 | RESET | Rest (active low) |

## 2.10 Reset

The reset pin (PORST#) of the XMC4200 is a bi-directional pin in open drain mode. An internal pull-up resistor keeps the PORST# pin high during normal operation. A low level at this pin will force a hardware reset. In case of a MCU internal reset the PORST# pin will drive a low signal.

A reset signal can be issued by

- the on-board Reset Button (“RESET”)
- the on-board debug probe (IC101.47)
- the external debugger connected to the 10-pin Cortex™ Debug probe connector (X102)

- the Arduino Power Header (X302.3, “RESET#”)
- the pin header X1 (X1.2, “RESET#”)

An XMC™ internal circuit always ensures a save Power-on-Reset. XMC™ does not require any additional external components to generate a reset signal during power-up.

## 2.11 CAN Transceiver

The XMC4200 Platform2Go provides a CAN interface via X3, a D-Sub DE-9, and the X1 and X2 connector. Infineon’s high speed CAN transceiver (IFX1051LE) for industrial applications supports 3.3V I/O logic and is suitable for 12 V and 24 V bus systems with an excellent EMC performance. The CAN bus (signals CANH, CANL) are terminated by a 120 Ohm resistor and can provide 5V if R_opt is assembled with a 0 Ohm 0805 resistor (not assembled by default). The other CAN bus (CAN_TX, CAN_RX) is not terminated by a 120 Ohm and needs to be terminated externally. To use the CAN_TX/RX pins otherwise see also Table 4.

**Table 9 CAN Signals and XMC4200 Pin Mapping**

| Signal Name | Pin No. at Pin Header | XMC Pin, XMC Function |
|---|---|---|
| CANH | X3.7 | - |
| CANL | X3.2 | - |
| CAN_TX | X2.34 | P2.0, CAN_TX |
| CAN_RX | X1.29 | P14.0, CAN_RX |
| GND | X3.3, X3.6 | - |
| VDD5 | X3.9 | - |

## 2.12 Boot Option

During power-on-reset the XMC4200 latches the signal level at the pins TMS and TCK. Based on the logic levels latched at these pins after reset the XMC4200 starts booting in different modes. TMS and TCK pins are used for debugging and by default program execution is always starting from on-chip flash (normal mode).

The XMC4200 Platform2Go Series-V1.1 does not support the selection of the boot options by switches directly. In case of no external debug probe is used the boot mode can be influenced by applying 1 kOhm pull-up- or pull-down resistors to TMS and TCK pins. These pins are available at the 10-pin debug connector X102.

**Table 10 Boot Mode Selection with external Pull Resistors**

| Logic Level at TMS during Reset | Logic Level at TCK during Reset | Boot Mode |
|---|---|---|
| High | Low | Normal Mode (boot from on-chip flash) (DEFAULT) |
| Low | Low | ASC BSL Mode (boot from UART) |
| High | High | BMI Customized Boot Mode |
| Low | High | CAN BSL Mode (boot from CAN) |

# 3 Production Data

This chapter covers schematics, board dimensions, component placement and the list of material.

## 3.1 Schematics

In the following figures shows the schematics of the XMC4200 Platform2Go Series-V1.1 in.

## 3 Production Data

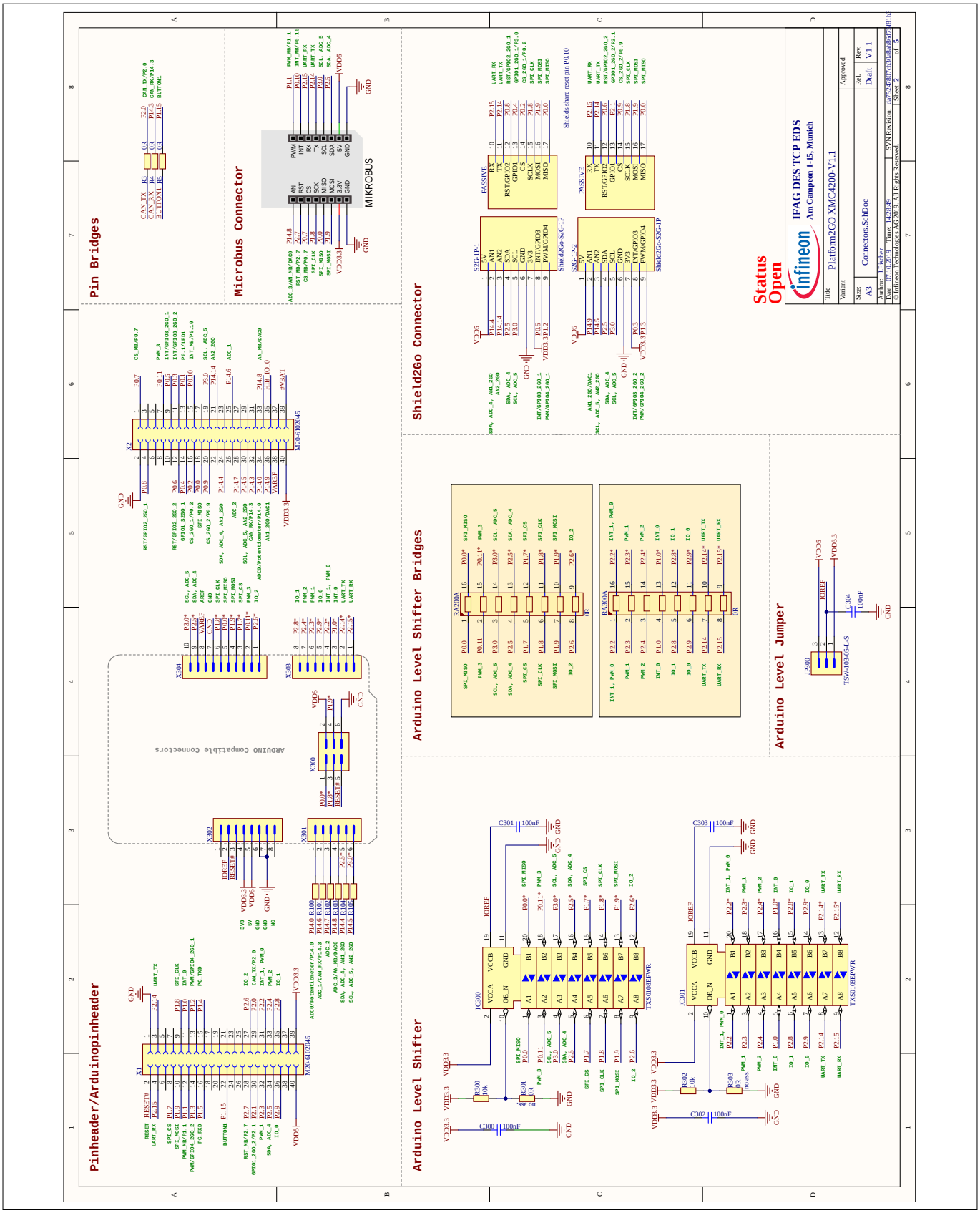


**Figure 10 Connectors Schematic: Pin header, Pin Bridges, Level Shifter, Microbus, Shield2Go Connector, Arduino Level Jumper**

## 3 Production Data

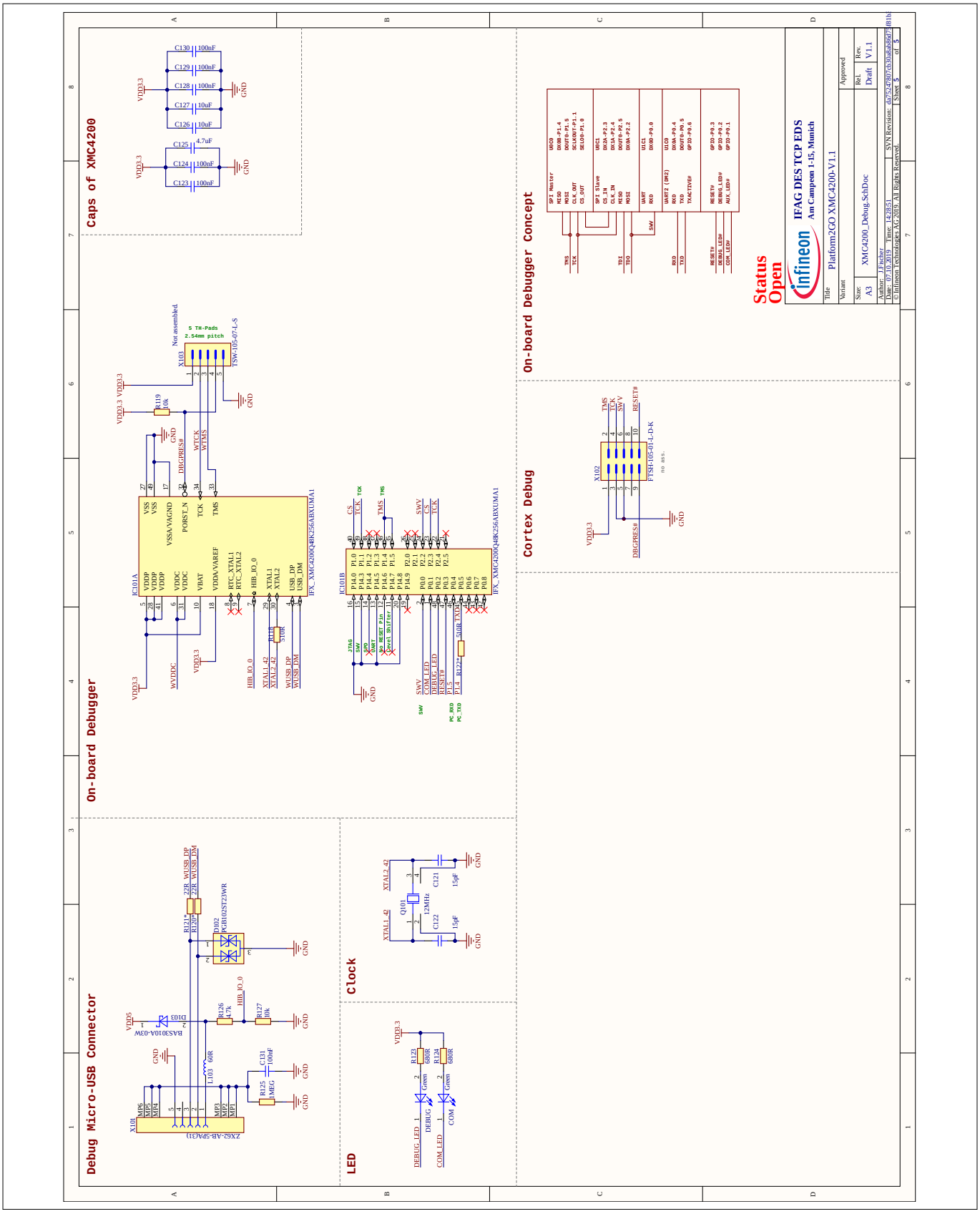


**Figure 11 XMC_4200_Debug Schematic: OBD Probe**

## 3 Production Data

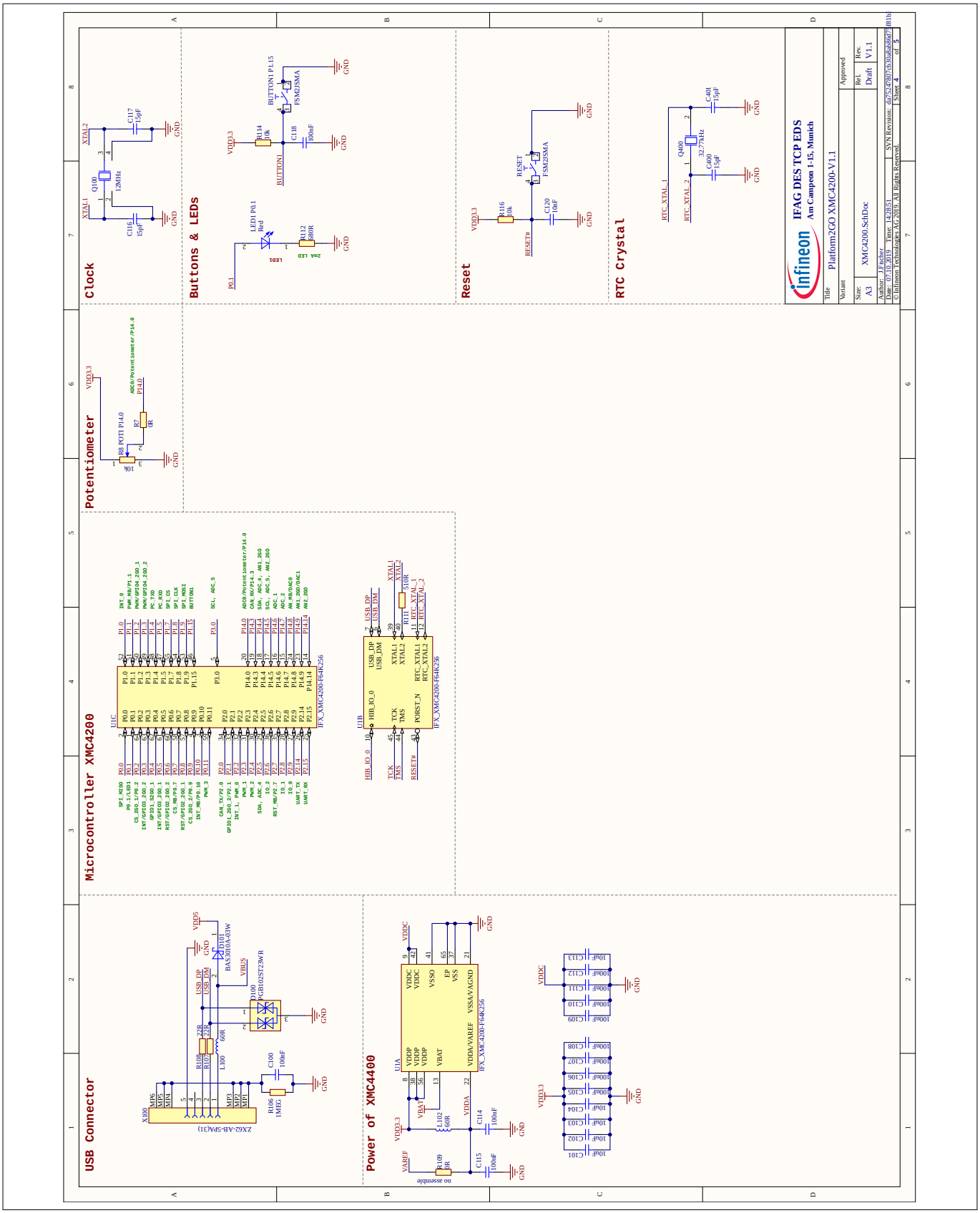


**Figure 12** **XMC4200 Schematic: USB connector, Microcontroller pins and power, Potentiometer Button and LED**

## 3 Production Data

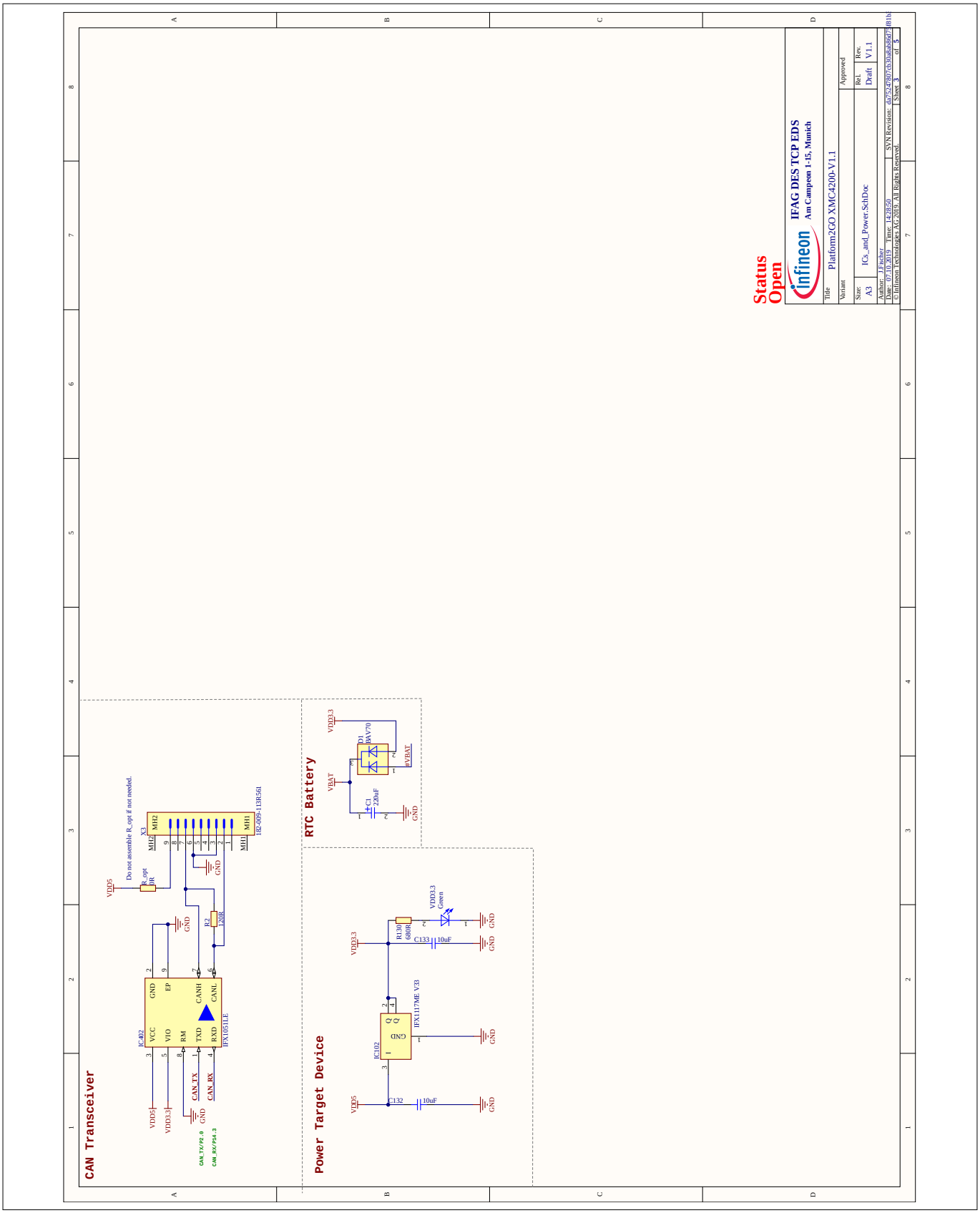


**Figure 13 ICs and Power Schematic: Can Transceiver, RTC Battery, Power**

## 3 Production Data

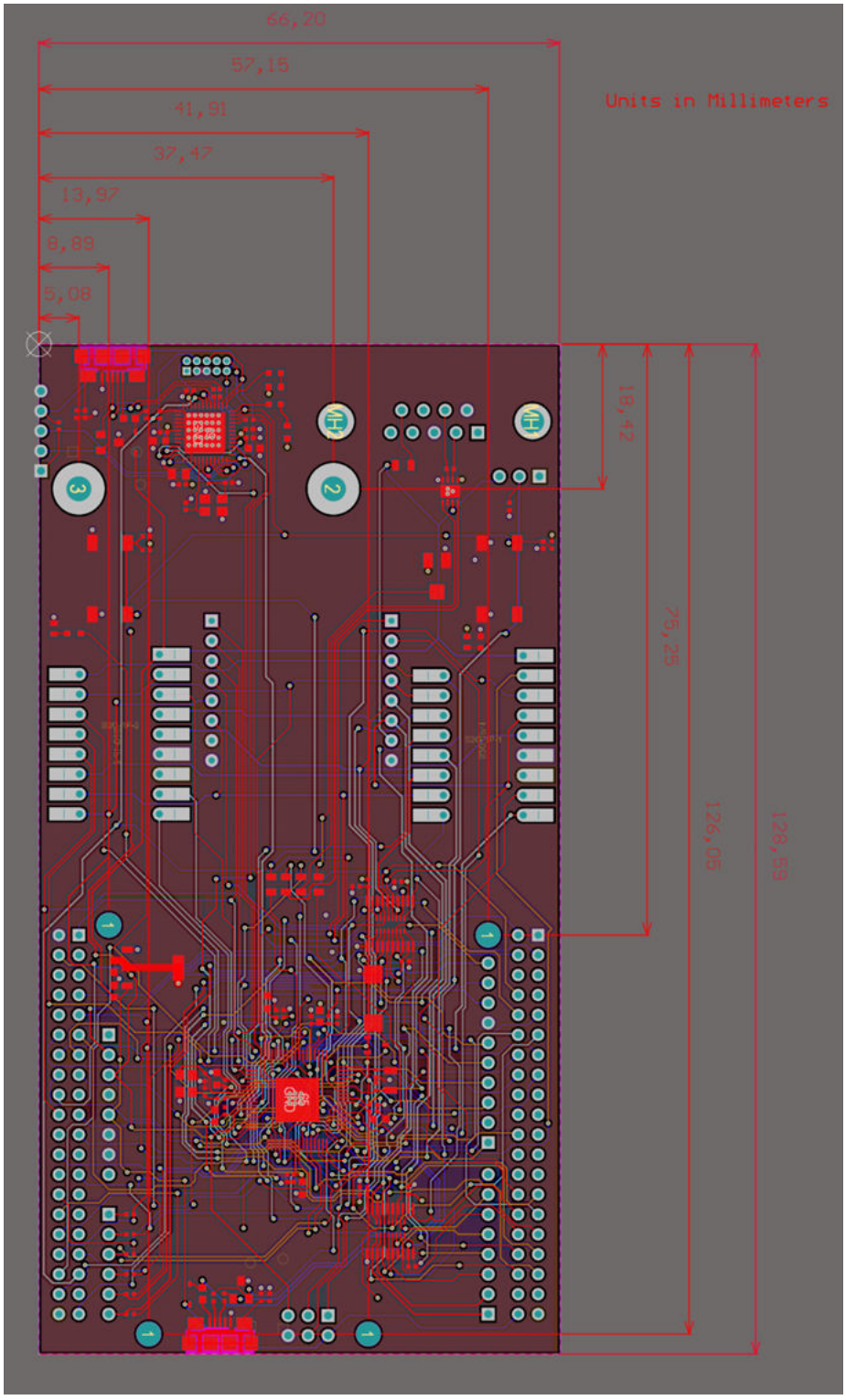


**Figure 14 Geometry**

## 3.2 List of Material

**Table 11 List of Material**

| Description | Designator | Package Reference | Value | Quantity | Not fitted in[1)] |
|---|---|---|---|---|---|
| Micro Miniature Pushbutton Switch | BUTTON1 P1.15, RESET | | FSM2JSMA | 2 | |
| Solid Tantalum Surface Mount Chip Capacitor | C1 | CAPMP7343X310N-1 | 220uF | 1 | |
| Surface Mount Multilayer Ceramic Chip Capacitor | C100, C109, C110, C111, C112, C114, C115, C118, C304 | 0402/1005 | 100nF | 9 | |
| Surface Mount Multilayer Ceramic Chip Capacitor | C300, C301, C302, C303 | 0402/1005 | 100nF | 3 | A,C |
| Chip Monolithic Ceramic Capacitor | C101, C102, C103, C104, C126 | CAPC1608X90N | 10uF | 5 | |
| Multilayer Ceramic Chip Capacitor | C105, C106, C107, C108 | 0402/1005 | 100nF | 4 | |
| Chip Multilayer Ceramic Capacitor | C113, C127, C132, C133 | 0603/1608 | 10uF | 4 | |
| Chip Monolithic Ceramic Capacitor | C116, C117 | CAPC1005X33N | 15pF | 2 | |
| Chip Monolithic Ceramic Capacitor | C400, C401 | CAPC1005X33N | 15pF | 2 | C,D |
| Chip Monolithic Ceramic Capacitor | C120 | CAPC1005X55N-0 | 10nF | 1 | |
| Chip Monolithic Ceramic Capacitor | C121, C122 | CAPC1005X55N-0 | 15pF | 2 | |
| Chip Monolithic Ceramic Capacitor | C123, C124, C128, C129, C130, C131 | CAPC1005X55N-0 | 100nF | 6 | |

**(table continues...)**

**Table 11 (continued) List of Material**

| Description | Designator | Package Reference | Value | Quantity | Not fitted in[1)] |
|---|---|---|---|---|---|
| Chip Monolithic Ceramic Capacitor | C125 | CAPC2013X95N | 4.7uF | 1 | |
| Surface Mount LED, Green, 570nm | COM, DEBUG, VDD3.3 | 0603/1608 | Green | 3 | |
| High-Speed Switching Diode | D1 | SOT23 | BAV70 | 1 | |
| Bi-Directional Surface Mount Polymeric ESD Suppressor, 24V | D100, D102 | SOT-23 | PGB102ST23WR | 2 | |
| Medium Power AF Schottky Diode | D101, D103 | SOD323 | BAS3010A-03W | 2 | |
| Performance of the ARM® Cortex™-M4 Core with Powerful On-Chip Peripheral Subsystems, Temp Range(-40°C to 125Â°C) | IC101 | PG-VQFN-48-53 | XMC4200Q48K256 | 1 | |
| Voltage Regulator, 3.3 V Output | IC102 | PG-SOT223 | IFX1117ME V33 | 1 | |
| 8-Bit Bidirectional Voltage-Level Translator for Open-Drain and Push-Pull Applications | IC300, IC301 | TSSOP-20 | TXS0108EPWR | 2 | A,C |
| Industrial High Speed CAN-FD Transceiver | IC402 | PG-TSON-8-1 | IFX1051LE | 1 | C,D |
| Through hole .025'' SQ Post Header, 2.54mm pitch, 3 pins, vertical, Single Row | JP300 | | TSW-103-05-L-S | 1 | C,D |

**(table continues...)**

**Table 11 (continued) List of Material**

| Description | Designator | Package Reference | Value | Quantity | Not fitted in[1)] |
|---|---|---|---|---|---|
| For Power Lines; For General | L100, L102, L103 | SMD Chip | 60R | 3 | |
| LED | LED1 P0.1 | 0603/1608 | Red | 1 | |
| mikroBUS Host Socket | MIKROBUS | Two times 1x8 pins, 2.54 mm pitch, female | | 1 | |
| SMD Crystal Unit for Automotive Application, 12.000 MHz | Q100, Q101 | SMD 3.2 x 2.5 x 0.6mm | 12 MHz | 2 | |
| SMD, 32.768kHz ±20PPM,12.5pF Crystal Unit | Q400 | SMD 3.2 x 1.5 x 0.8 mm | 32.77kHz | 1 | C,D |
| Standard Thick Film Chip Resistor | R2 | 0402/1005 | 120R | 1 | CD |
| Automotive Grade Thick Film Chip Resistor, General Purpose Chip Resistor | R3, R4, R5, R7 | 0805/2012 | 0R | 4 | |
| Surface Mount Single Turn Trimmer, Model 23A - J Hook | R8 POTI P14.0 | SMT | 23AR10KLFTR/ 10kOhm | 1 | |
| Standard Thick Film Chip Resistor | R100, R101, R102, R103, R104, R105 | 0402/1005 | 100R | 6 | |
| Standard Thick Film Chip Resistor | R106, R125 | 0402/1005 | 1MEG | 2 | |
| Standard Thick Film Chip Resistor | R107, R108, R120[1)] , R121[1)] | 0402/1005 | 22R | 4 | |
| Standard Thick Film Chip Resistor, 0R/50V | R109 | 0402/1005 | 0R | 1 | |
| Standard Thick Film Chip Resistor, 0R/50V | R301, R303 | 0402/1005 | 0R | 2 | N |

**(table continues...)**

**Table 11 (continued) List of Material**

| Description | Designator | Package Reference | Value | Quantity | Not fitted in[1)] |
|---|---|---|---|---|---|
| Standard Thick Film Chip Resistor | R111, R118, R122[1)] | 0402/1005 | 510R | 3 | |
| Standard Thick Film Chip Resistor | R112, R130 | 0603/1608 | 680R | 2 | |
| Standard Thick Film Chip Resistor | R114, R116, R119, R127 | 0402/1005 | 10k | 4 | |
| Standard Thick Film Chip Resistor | R300, R302 | 0402/1005 | 10k | 2 | A,C |
| Automotive Grade Thick Film Chip Resistor | R123, R124 | 0603/1608 | 680R | 2 | |
| Standard Thick Film Chip Resistor | R126 | 0402/1005 | 4.7k | 1 | |
| Standard Thick Film Chip Resistor | R_opt | 0805/2012 | 0R | 1 | N |
| Chip Resistor Array, Temp Range (-55 to 125Â°C) | RA200, RA300 | | 0R | 2 | B,D |
| Microcontroller Series for Industrial Apllication, Temp Range (-40° to 125°C) | U1 | PG-TQFP-64-19 | XMC4200-F64K256 | 1 | |
| Shield2Go Connector | S2G-1P-1, S2G-1P-2 | | Two times 1x9 pins and 1x8 pins, 2.54mm pitch, female | 1 | N |
| 2.54mm PC/104 Connector, Stackthrough | X1, X2 | | M20-6102045 | 2 | N |
| R/A - 0.318 - Male Economy D-SUB | X3 | | 182-009-113R561 | 1 | C,D |

**(table continues...)**

**Table 11 (continued) List of Material**

| Description | Designator | Package Reference | Value | Quantity | Not fitted in[1)] |
|---|---|---|---|---|---|
| Micro-USB 2.0 Standard, Type AB, Bottom Mount, Shell SMT | X100, X101 | | ZX62-AB-5PA(31) | 2 | |
| THT Micro Header, 1.27mm pitch, 10 pin, vertical, double row, keying shroud , DAP | X102 | | FTSH-105-01-L-D-K | 1 | N |
| Through hole .025'' SQ Post Header, 2.54mm pitch, 5 pin, vertical, single row | X103 | | TSW-105-07-L-S | 1 | N |
| Through hole .025'' SQ Post Header, 2.54mm pitch, 6 pin, vertical, double row | X300 | | TSW-103-07-L-D | 1 | |
| Through hole .025'' SQ Post Header, 2.54mm pitch, 6 pin, vertical, single row | X301 | | TSW-106-07-L-S | 1 | |
| Through hole .025'' SQ Post Header, 2.54mm pitch, 8 pin, vertical, single row | X302 | | TSW-108-23-F-S | 1 | |
| Through hole .025'' SQ Post Header, 2.54mm pitch, 8 pin, vertical, single row | X303 | | TSW-108-07-L-S | 1 | |

**(table continues...)**

## 3 Production Data

**Table 11 (continued) List of Material**

| Description | Designator | Package Reference | Value | Quantity | Not fitted in[1)] |
|---|---|---|---|---|---|
| Through hole .025'' SQ Post Header, 2.54mm pitch, 10 pin, vertical, single row | X304 | | TSW-110-07-L-S | 1 | |

*1)* Agenda:
A: XMC4200 Platform2Go for 3.3V Shields
B: XMC4200 Platform2Go for 5V Shields
C: XMC4200 Platform2Go Lite for 3.3V Shields
D: XMC4200 Platform2Go Lite for 5V Shields
N: Not assembled in all Versions

# Revision history

| Document revision | Date | Description of changes |
|---|---|---|
| 1.0 | 2019-08-30 | Initial version |
| 1.1 | 2025-01-23 | Template update; no content update |

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