PTX130R-EB-ST-QFN56-POS/IoT v1.1Ren

This document provides an overview of the hardware comprising the PTX130R-EB-ST-QFN56-POS/IoT v1.1Ren (PTX130R-EB) evaluation board.

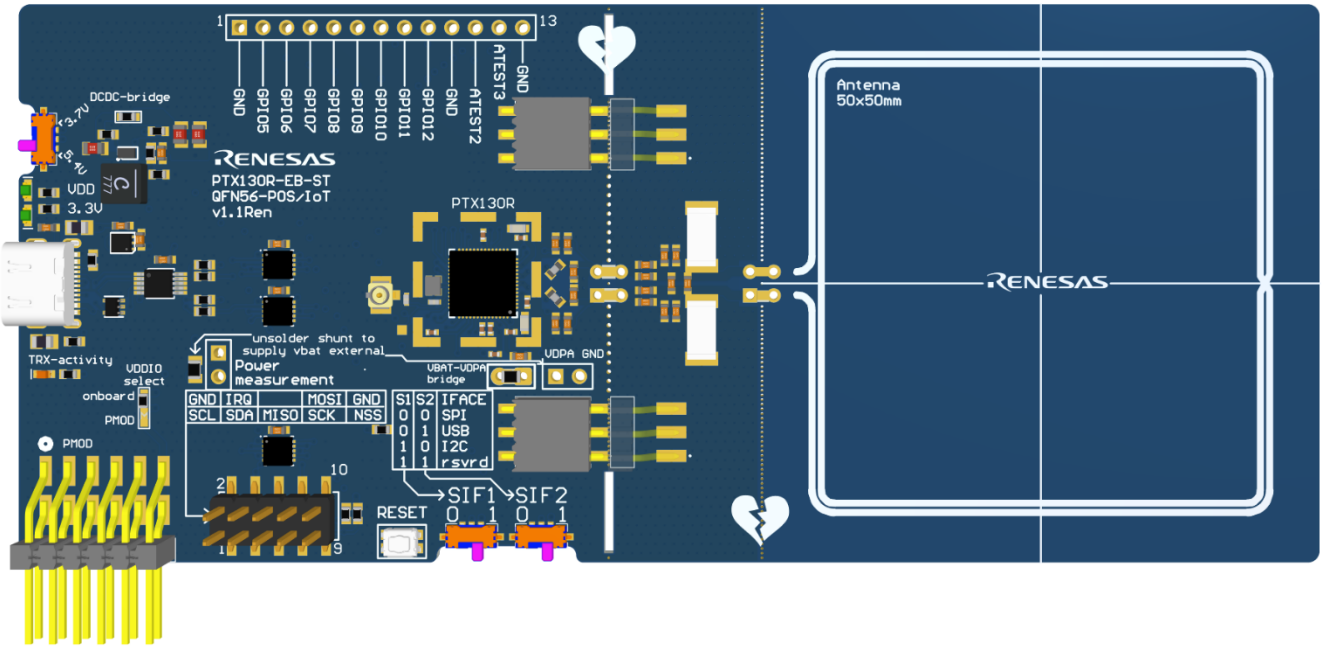
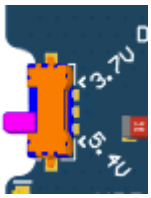


Figure 1. PTX130R-EB-ST-QFN56-POS/IoT v1.1Ren Board

Contents

1. Power Supply

The PTX130R-EB board is powered via a USB-C connection. The board can be operated in two voltage settings (3.7V and 5.4V) that are selected by SW200 on the left side of the board.



The board's default is 5.4V, which is also the setting used for all compliance tests.

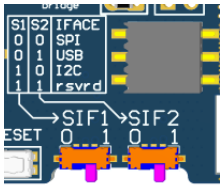
2. USB Interface

The USB Interface is handled by an CH340E USB <-> UART bridge. Driver installation is automatic on Windows® 10.

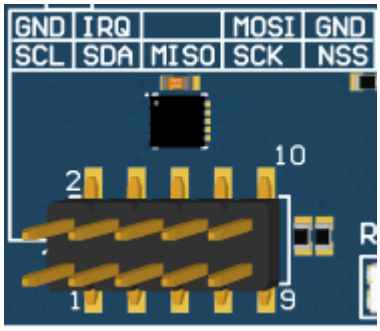
If automatic installation fails or you have an older version of Windows, download the drivers from the manufacturer's website.

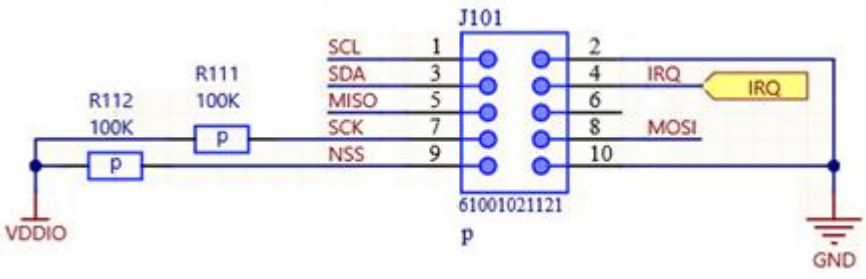
3. Interface Switching

The PTX130R-EB board allows to switch between the three interfaces supported by the PTX130R device using the SIF1 / SIF2 switches.

SIF1	SIF2	Interface	Picture of switches to be used:
0	0	SPI	
0	1	UART → USB	
1	0	I²C	

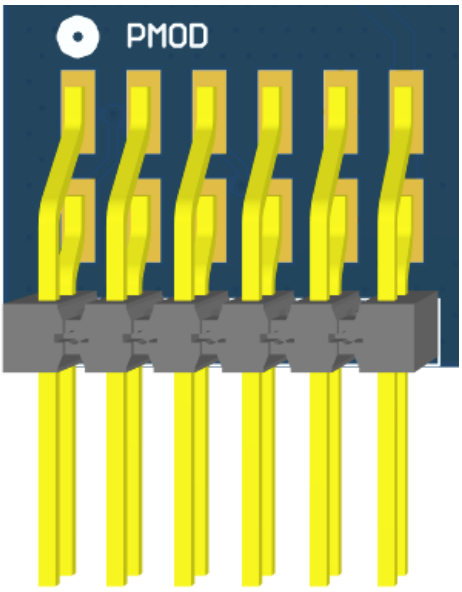
The UART Interface is connected to the USB bridge and can be accessed via the USB-C plug. SPI and I²C are connected to a 2 x 5-pin header on the low side of the board:

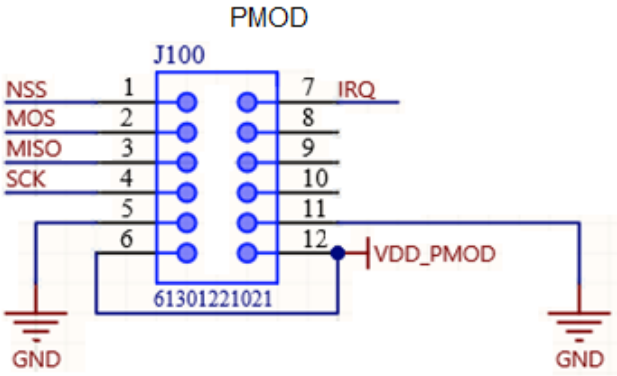




4. PMOD

SPI is also available via a PMOD 2 x 6-pin connector. The PMOD connector allows connecting to a multitude of MCU demo boards. Example firmware is available for the TB-S3A1 board from Renesas.





5. Logic Level

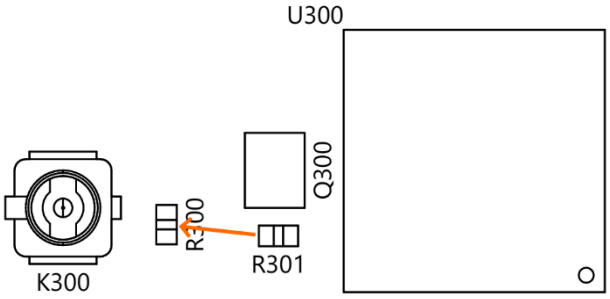
By default, the chip logic level is set to the on-board generated 3.3V (JMP302 in the “onboard” position).

However, it can also be defined from the PMOD connector. If JMP302 is in the PMOD position the voltage level on pins 6 and 12 of the PMOD connector will define the communication logic level.

Values between 1.8V and 5.5V are acceptable.

6. Clocking

The PTX130R device’s default clock source is a 27MHz crystal (Q300). The board gives the possibility to use an external clock source instead. For this, the 0R jumper R301 must be moved to position R300.



When completed, an external clock can be supplied via the U.FL plug K300.

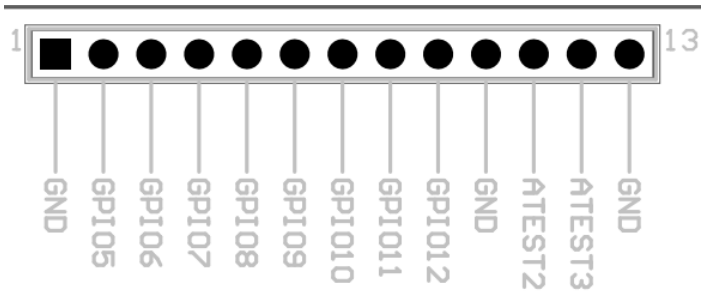
7. Debugging

The PCB has three debug LEDs.

Two above the USB plug for supply.

One below the USB plug for UART communication.

in addition, GPIO5 to GPIO12 and ATEST2/3 are accessible via a pin header on the top of the board.



8. Power Consumption

Component	Typical Consumption [mA]
CH340E	12
NX3L4684TK	0.0003
TLV75533	0.025
TPS63036	0.025
PTX130 (0% sine)	43
PTX130 (100% sine)	372

Total consumption on USB port:

- Differential mode: 436mA, 2.066W
- Single ended mode: 346mA, 1.71W

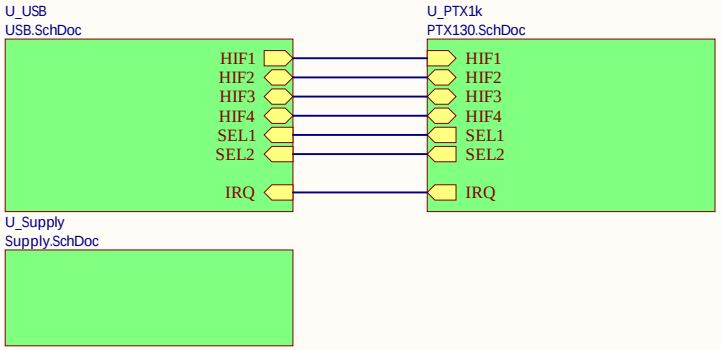
9. Schematics

See the schematics located at the end of this document.

10. Revision History

Revision	Date	Description
1.00	Oct 3, 2024	Initial release.

PTX130R-EB-ST-QFN56-POS/IoT



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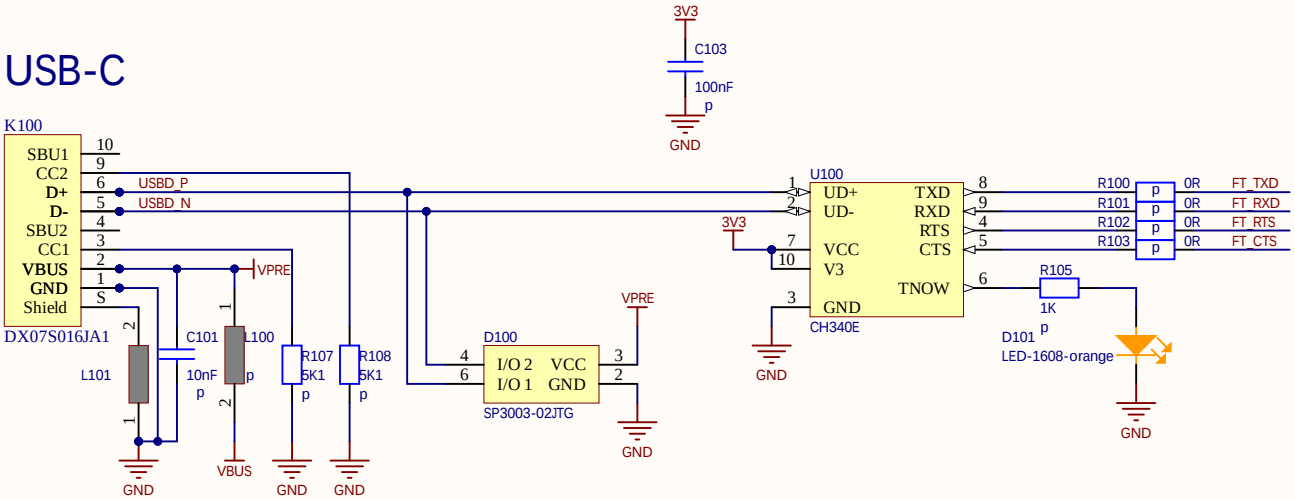
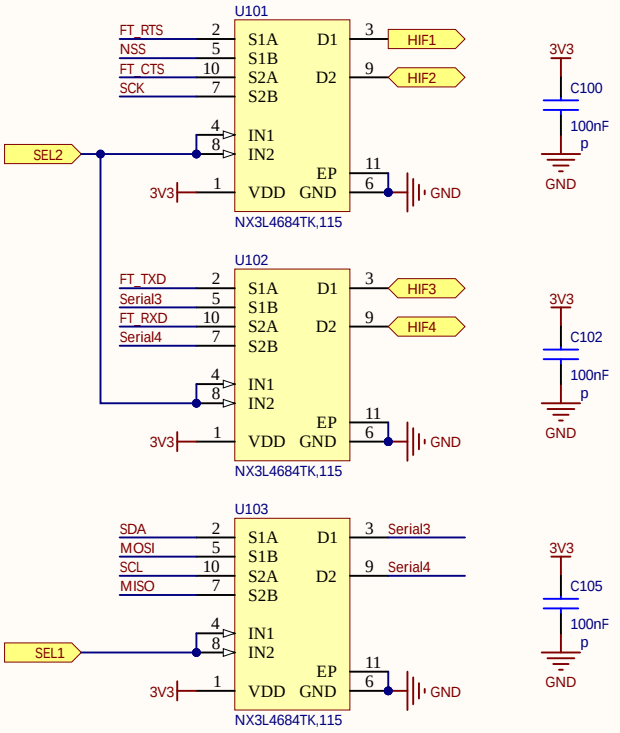
Date: 24/11/2023 Time: 11:26:18		Sheet 1 of 4	www.renesas.com
File: Top.SchDoc			

USB-C

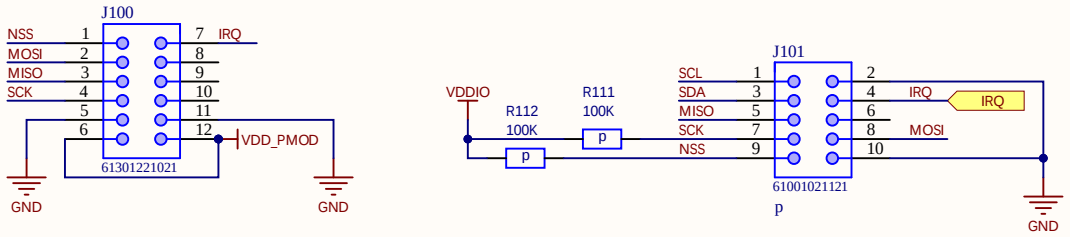


PIN - SPI - I2C - UART
HIF1 - NSS - ADDR0 - CTS
HIF2 - SCK - ADDR1 - RTS
HIF3 - MOSI - SDA - RXD
HIF4 - MISO - SCL - TXD

1) LSBs of I2C address, evaluated at boot



PMOD



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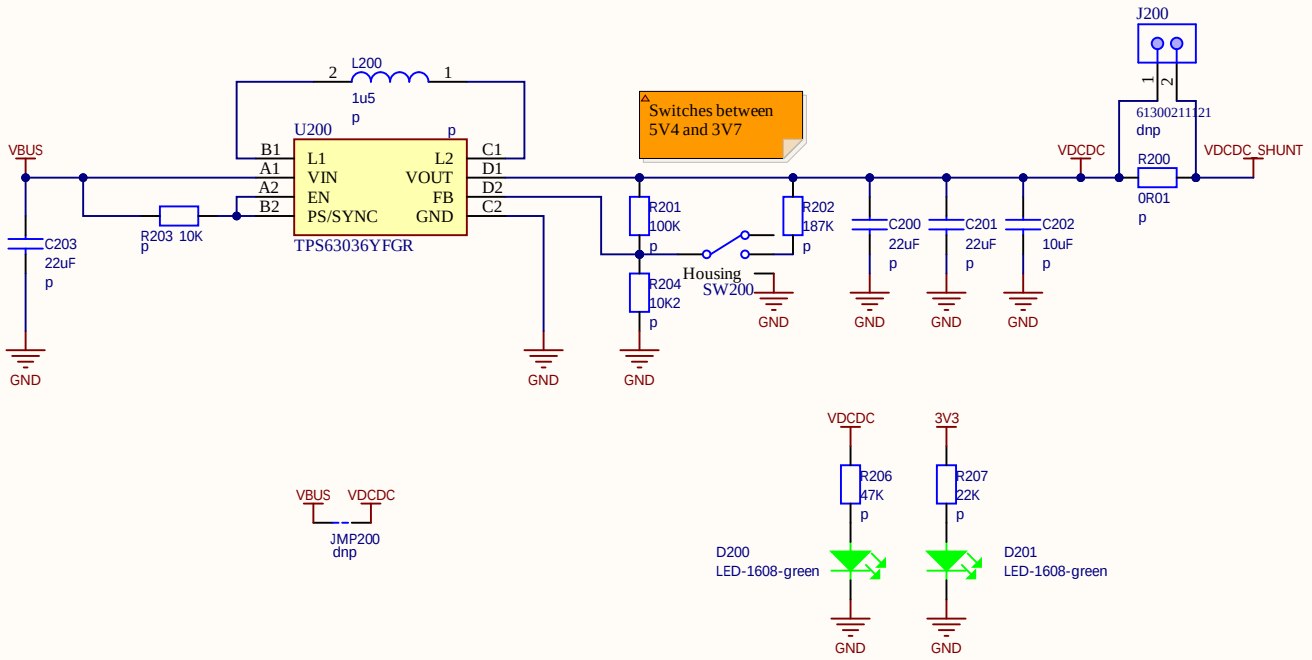
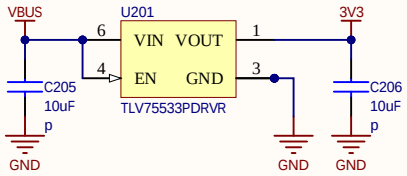
5V Supply



3V3 Supply



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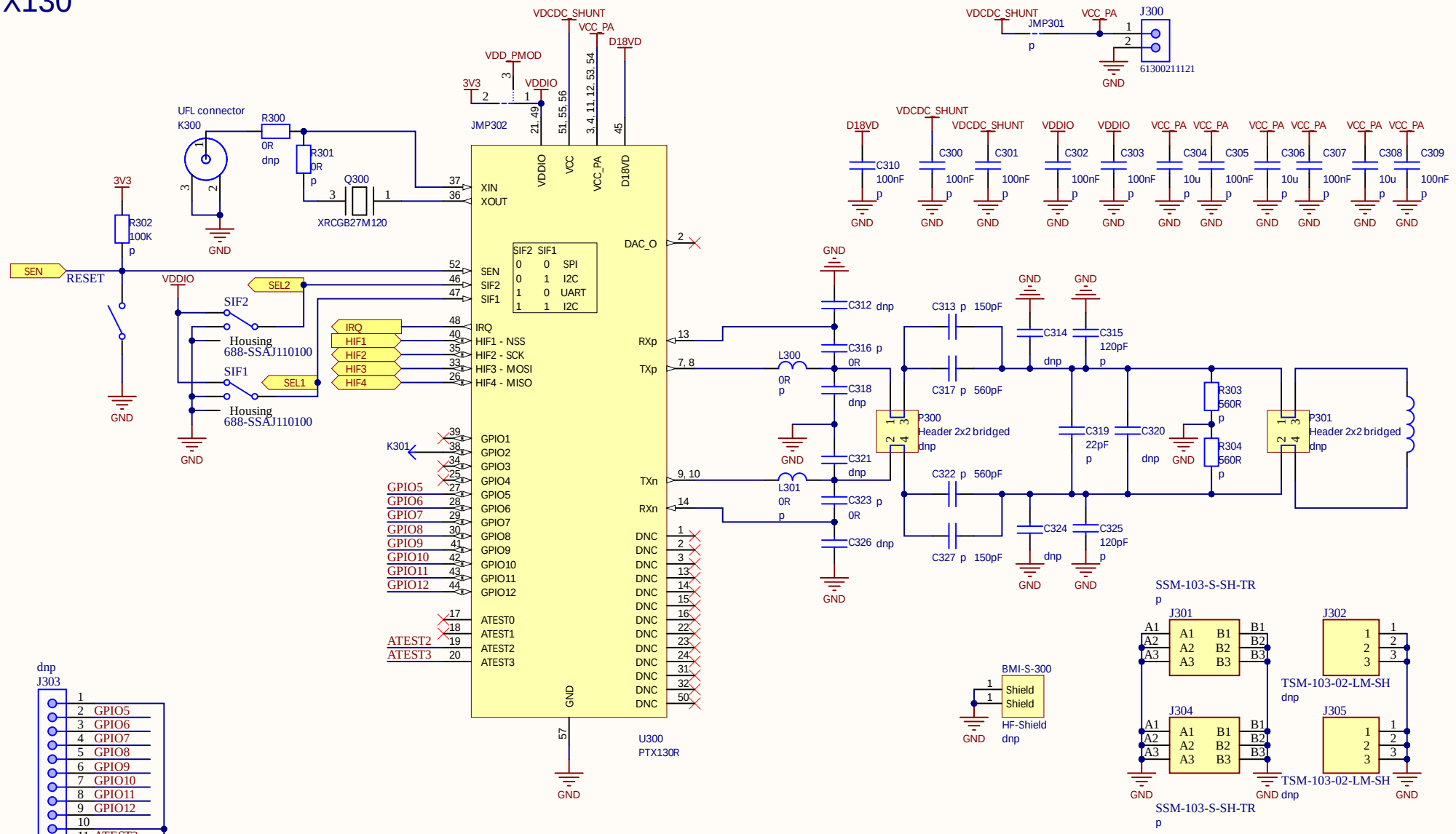
PTX130



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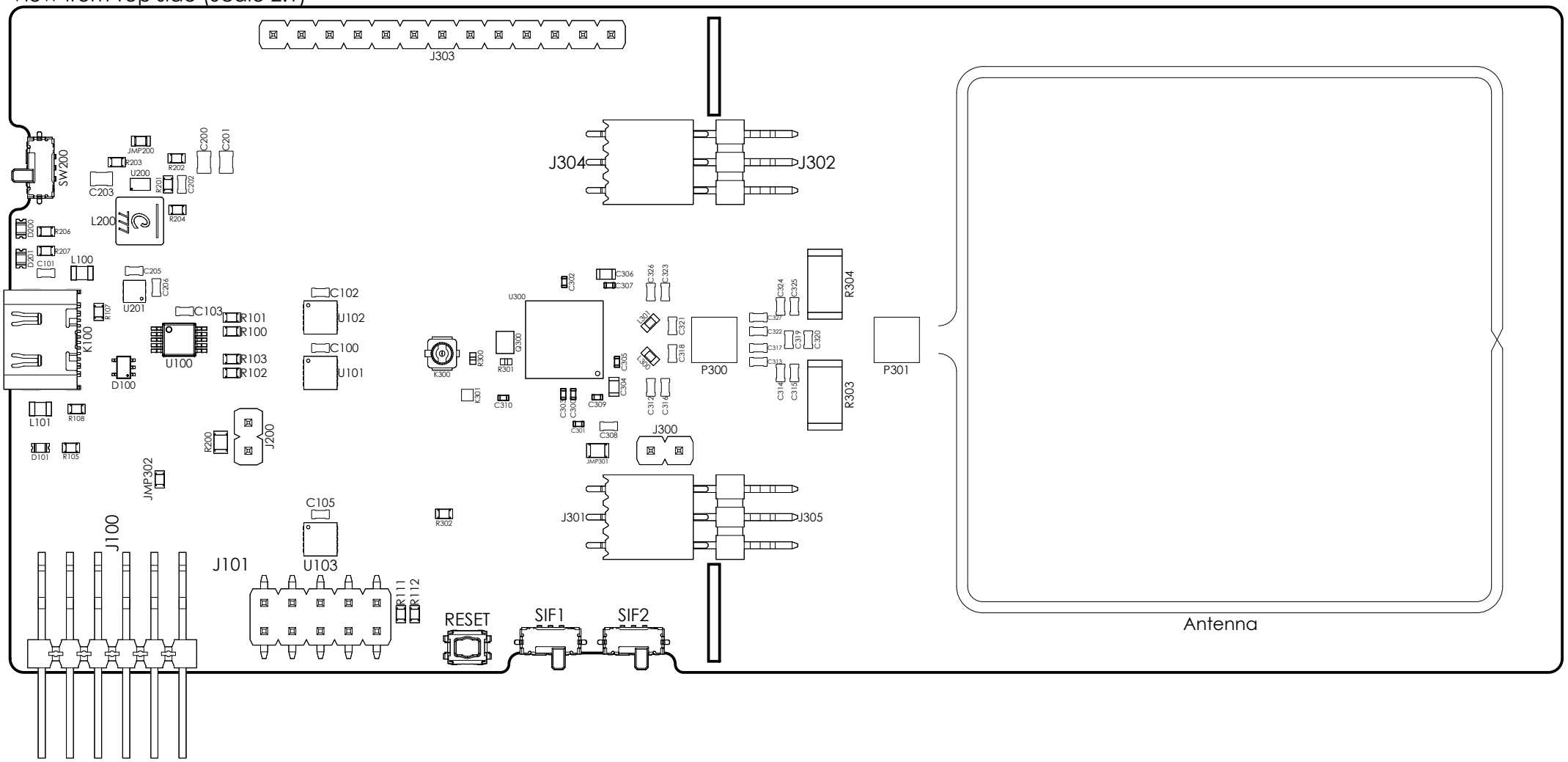
View from Top side (Scale 2:1)



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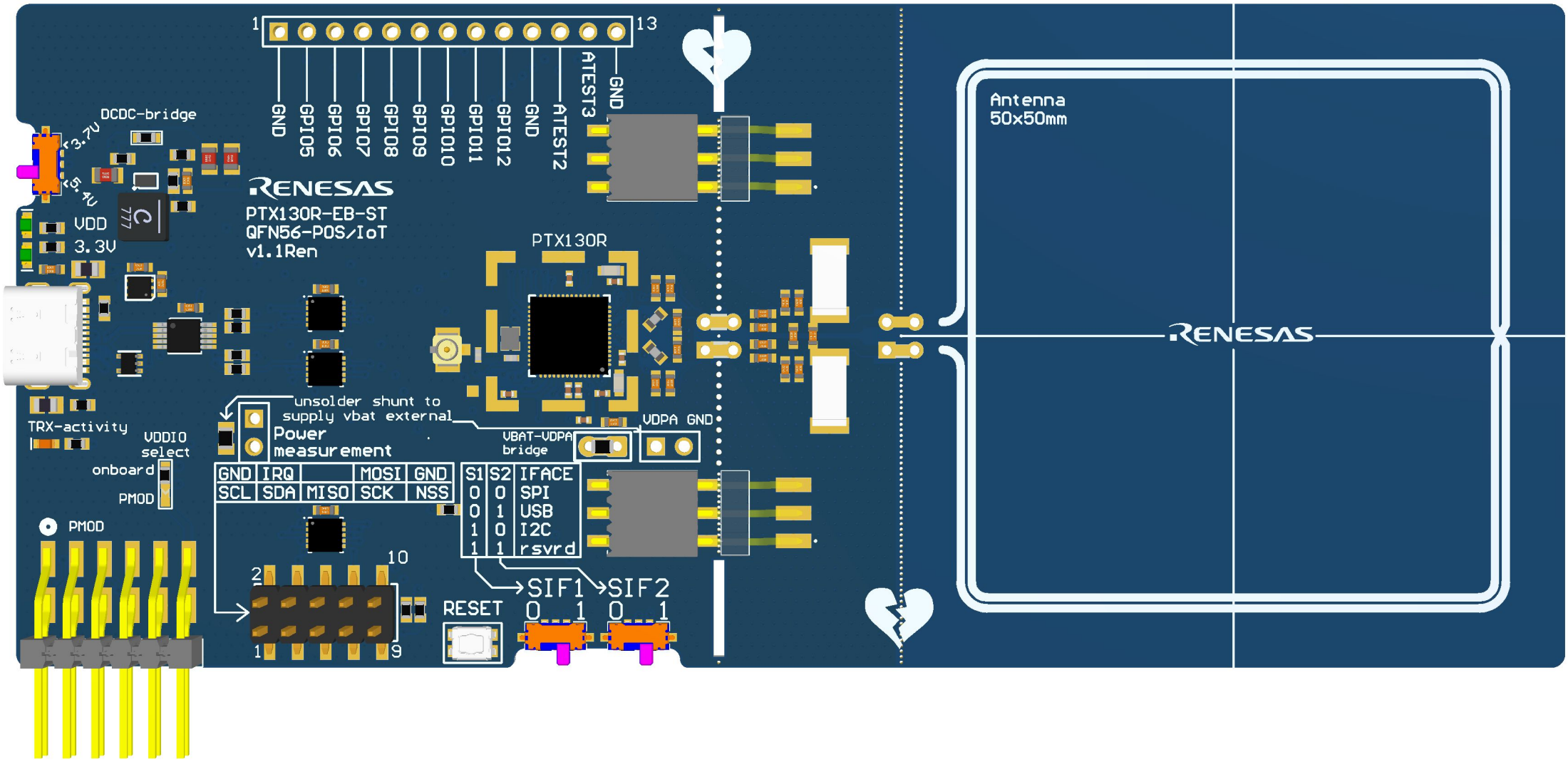
1
13
GND
GPIO5
GPIO6
GPIO7
GPIO8
GPIO9
GPIO10
GPIO11
GPIO12
GND
ATEST2
ATEST3
GND
DCDC-bridge
3.7V
5.4V
VDD
3.3V
RENESAS
PTX130R-EB-ST
QFN56-POS/IoT
v1.1Ren
PTX130R
Antenna
50x50mm
RENESAS
unsolder shunt to
supply vbat external
Power
measurement
VBAT-VDPA
bridge
VDPA GND
TRX-activity
VDDIO
select
onboard
PMOD
PMOD
GND IRQ MOSI GND
SCL SDA MISO SCK NSS
S1 S2 IFACE
0 0 SPI
0 1 USB
1 0 I2C
1 1 rsvrd
2
10
1
9
RESET
SIF1
0 1
SIF2
0 1

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