

## PTX105R-EB-ST-QFN56-POS\_IoT (v2.0)

This document describes how the PTX105R demonstration (demo) board can be operated with two selectable voltage settings by moving the jumper from JMP\_VBUS to JMP\_DCDC. The board also provides easy interfacing options to a PC via USB or to a microcontroller board via PMOD.



Figure 1. PTX105R-EB-ST-QFN56-POS\_IoT Demo Board

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## 1. Power Supply

The board is powered via a USB-C connection.

The PTX105R can be operated in two voltage settings which can be selected by moving the jumper from JMP\_VBUS to JMP\_DCDC:

- VBUS (5V)
- or
- VDCDC (5.4V)

The board's default is VBUS which is also the setting that the compliance tests were performed in.



Current consumption in continuous field mode is ~360mA with VBUS and ~450mA with VDCDC.

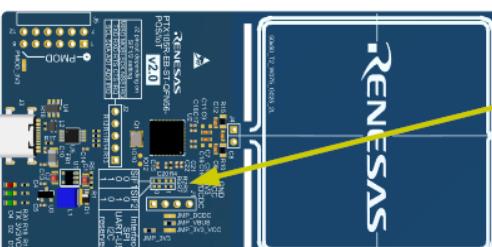
## 2. USB Interface

The USB Interface is handled by a CH340E USB to UART bridge.

Drivers can be downloaded from the manufacturer's [webpage](#).

## 3. Interface Switching

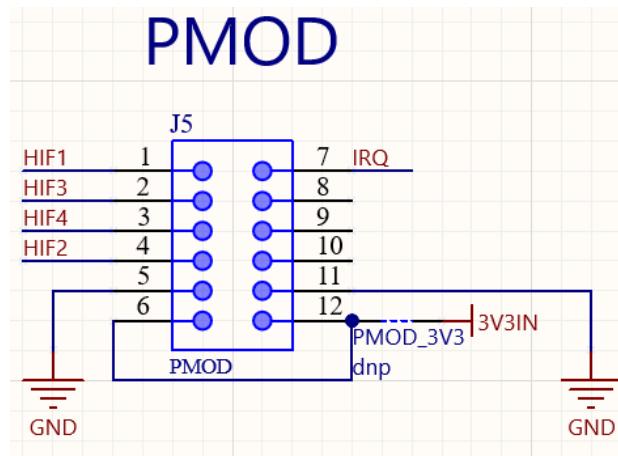
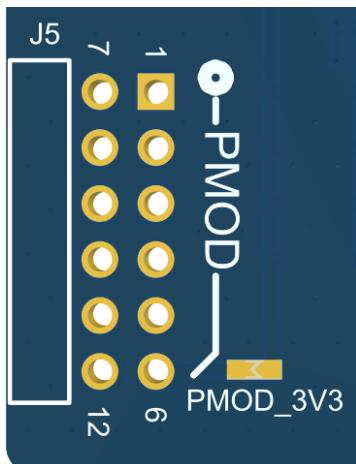
The evaluation board allows the user to switch between three interfaces supported by the PTX105R IC using the SIF1 / SIF2 jumpers:

SIF1	SIF2	Interface	Jumpers Used																					
0	0	SPI																						
0	1	UART to USB																						
1	0	I <sup>2</sup> C	 <table border="1"> <tr> <td>R2R3</td> <td>R6R7</td> <td></td> </tr> <tr> <td>1</td> <td>0</td> <td></td> </tr> <tr> <td>SIF1</td> <td>SIF2</td> <td>Interface</td> </tr> <tr> <td>0</td> <td>0</td> <td>SPI</td> </tr> <tr> <td>0</td> <td>1</td> <td>UART-USB</td> </tr> <tr> <td>1</td> <td>0</td> <td>I<sup>2</sup>C</td> </tr> <tr> <td>1</td> <td>1</td> <td>reserved</td> </tr> </table>	R2R3	R6R7		1	0		SIF1	SIF2	Interface	0	0	SPI	0	1	UART-USB	1	0	I <sup>2</sup> C	1	1	reserved
R2R3	R6R7																							
1	0																							
SIF1	SIF2	Interface																						
0	0	SPI																						
0	1	UART-USB																						
1	0	I <sup>2</sup> C																						
1	1	reserved																						

The UART Interface is connected to the USB bridge and can be accessed via the USB-C plug.

## 4. PMOD

All interfaces are also available via a PMOD  $2 \times 6$  pin connector (must be soldered manually). The pinout follows the PMOD recommendation for an SPI Interface. The PMOD connector allows connecting to a multitude of MCU demo boards. Example firmware is available for the Renesas [TB-S3A1 board](#).



The 3.3V supply for the host MCU can also be provided by the demo board if jumper PMOD\_3V3 is placed

## 5. Clocking

The PTX105R device's default clock source is a 27.12MHz crystal (Q1).

## 6. Debugging

The PCB has three debug LEDs:

- Two for supply (green)
- One for UART communication (red)

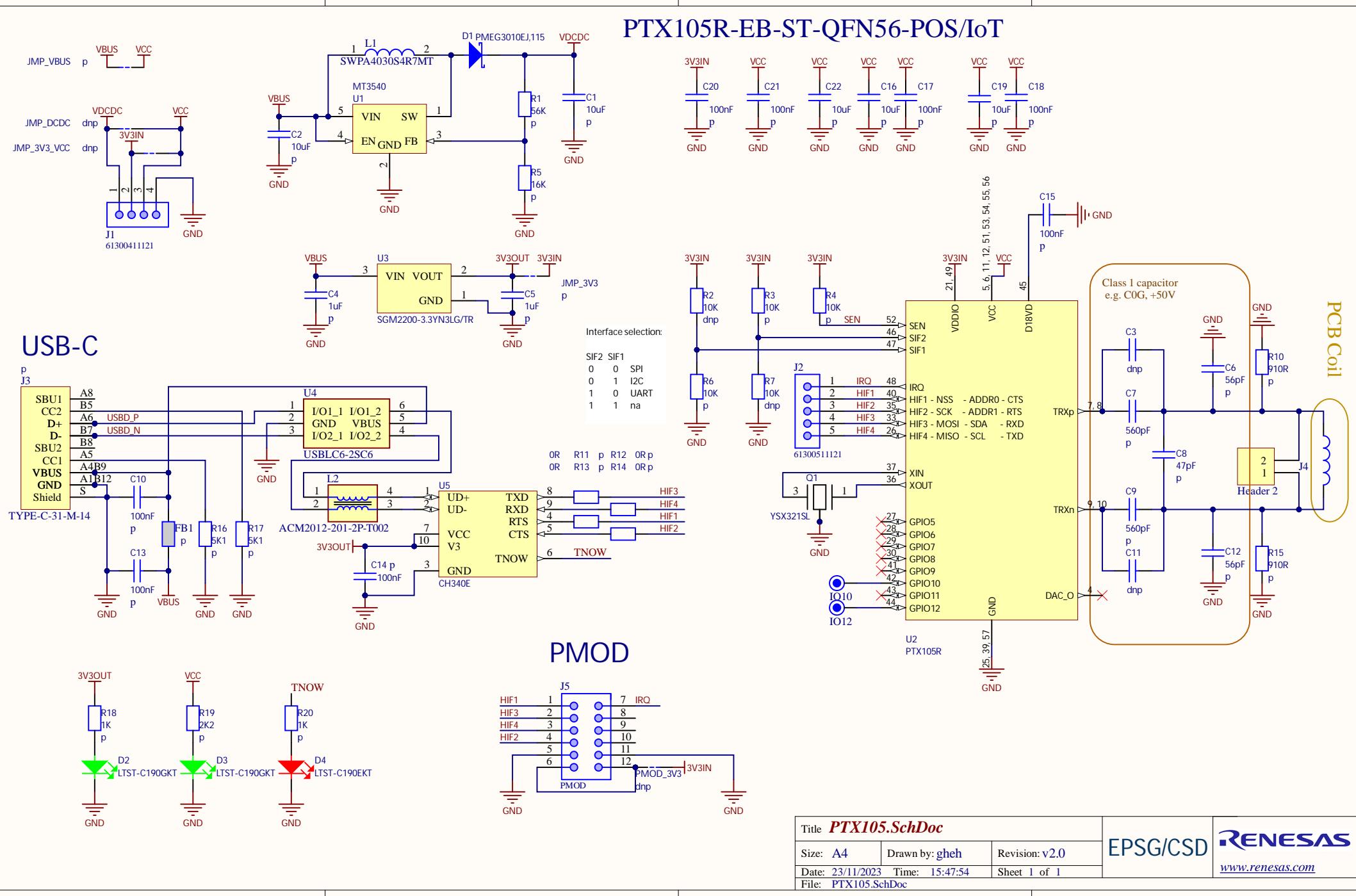


## 7. Schematics

The PTX105R-EB-ST-QFN56-POS\_IoT schematics and layout diagrams are located at the end of this document.

## 8. Revision History

Revision	Date	Description
1.00	Apr 9, 2024	Initial release.



A

8

C

D

52.00mm

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50x50\_T2\_W075\_G025\_2L

1

**PTX105R-EB-ST-QF  
POS/IoT** **v2.0**

### View from Top side (Scale 2:1)

– 52.25mm

105.00mm

Title: **Assembly Top**

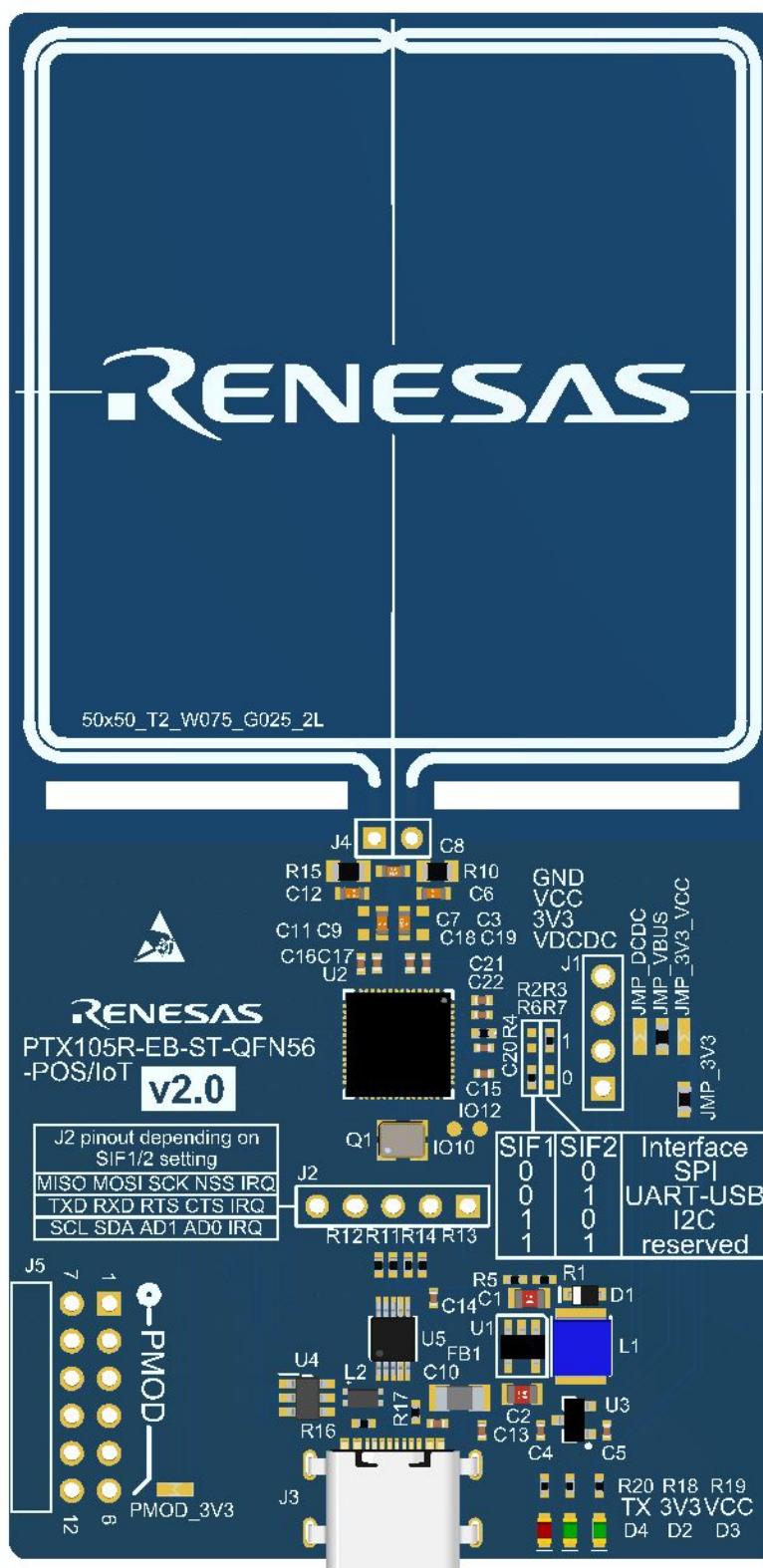
Project: Eval Board PTX105.PrtPcb

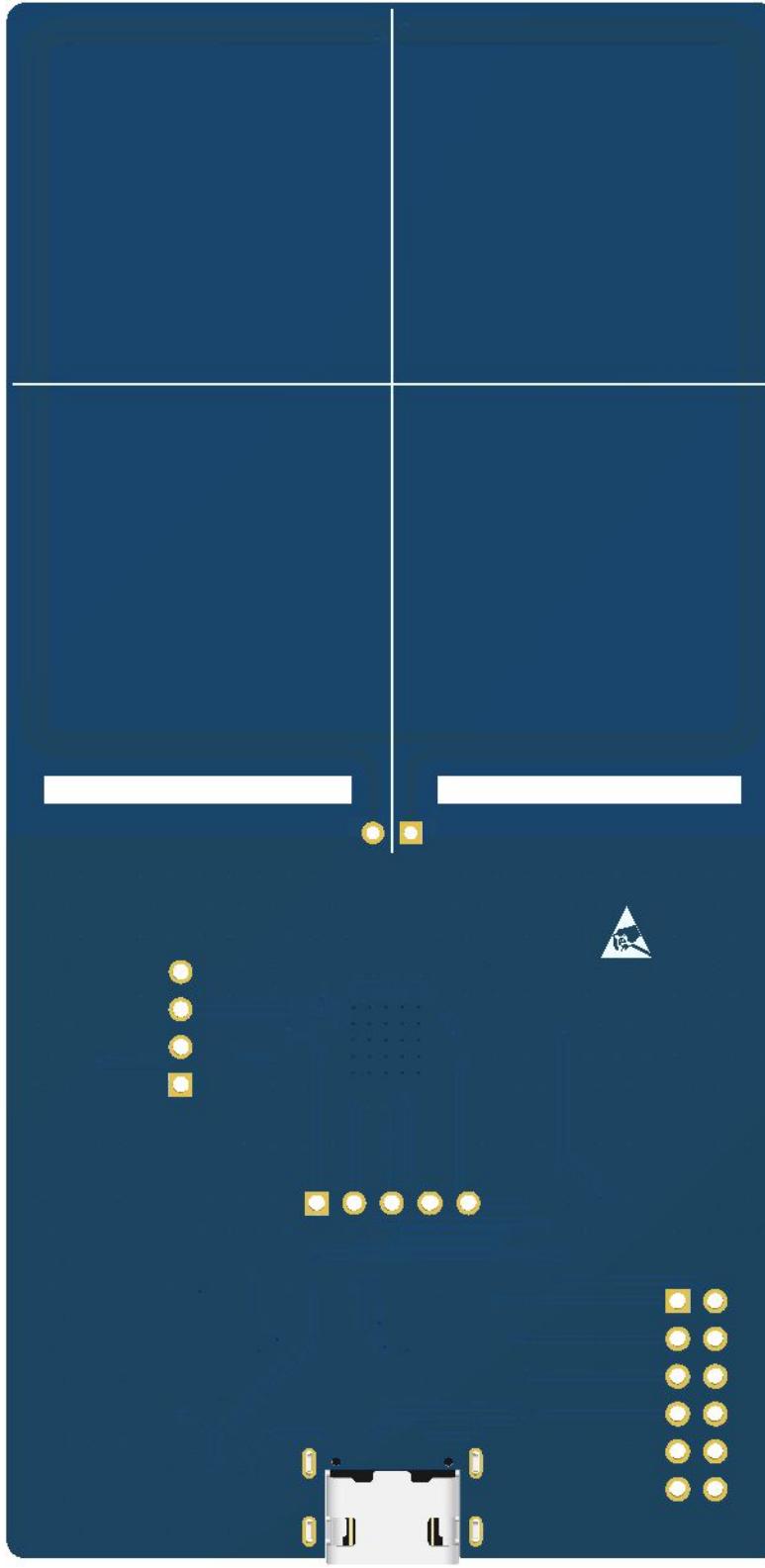
Date: 23/11/2023 Time: 15:47 Sheet 1 of 1

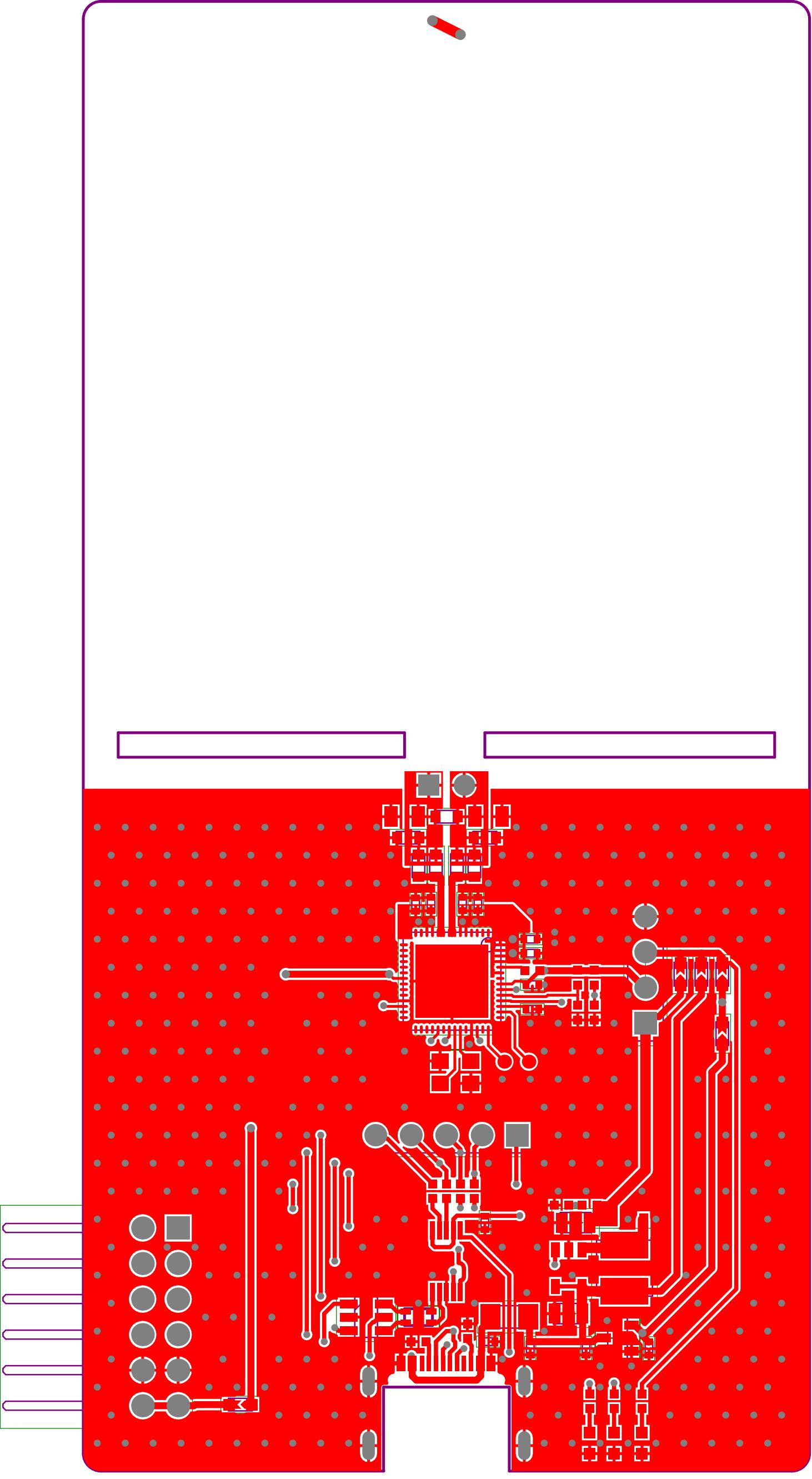
File: Assembly.PCBD

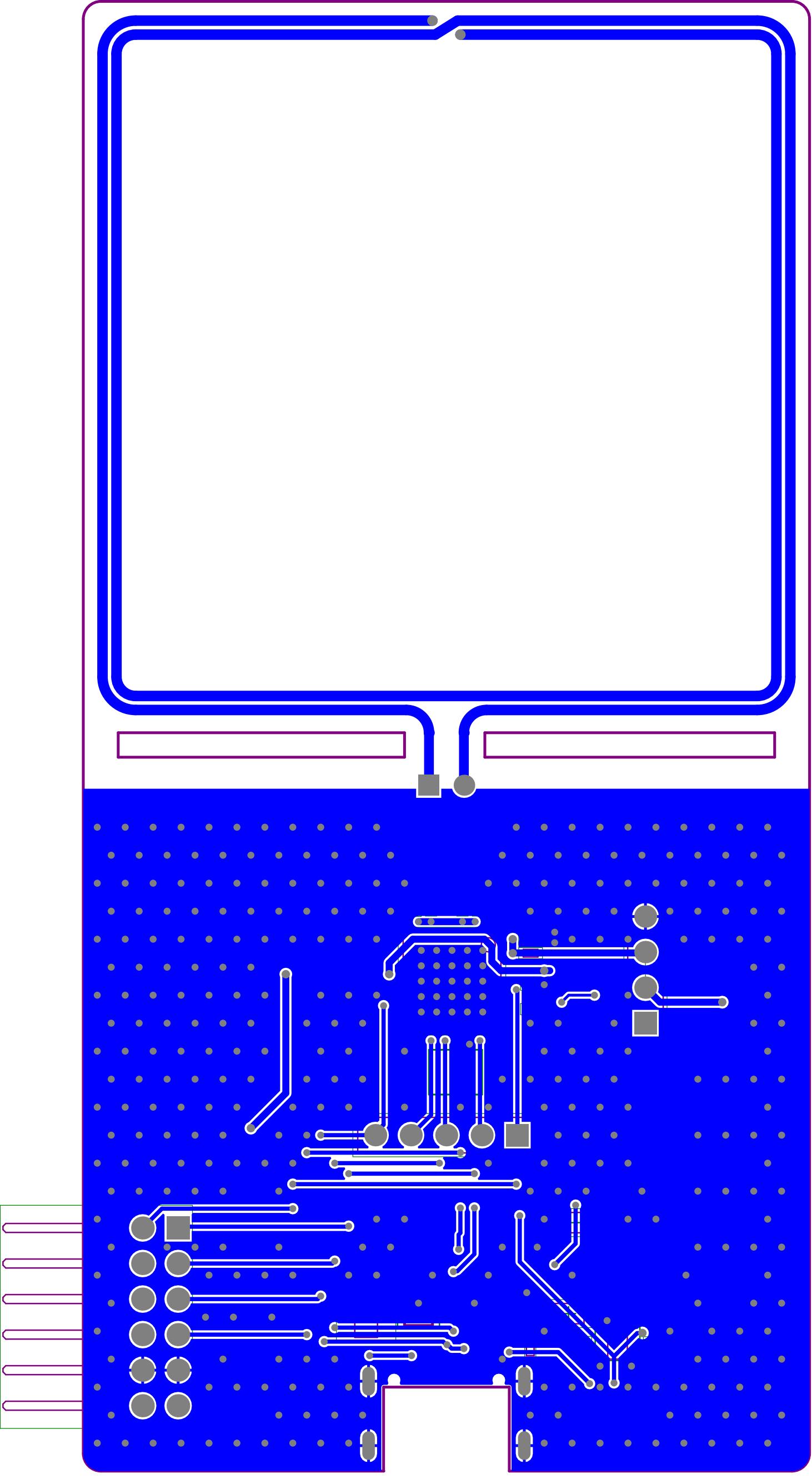
EPSG/CSD

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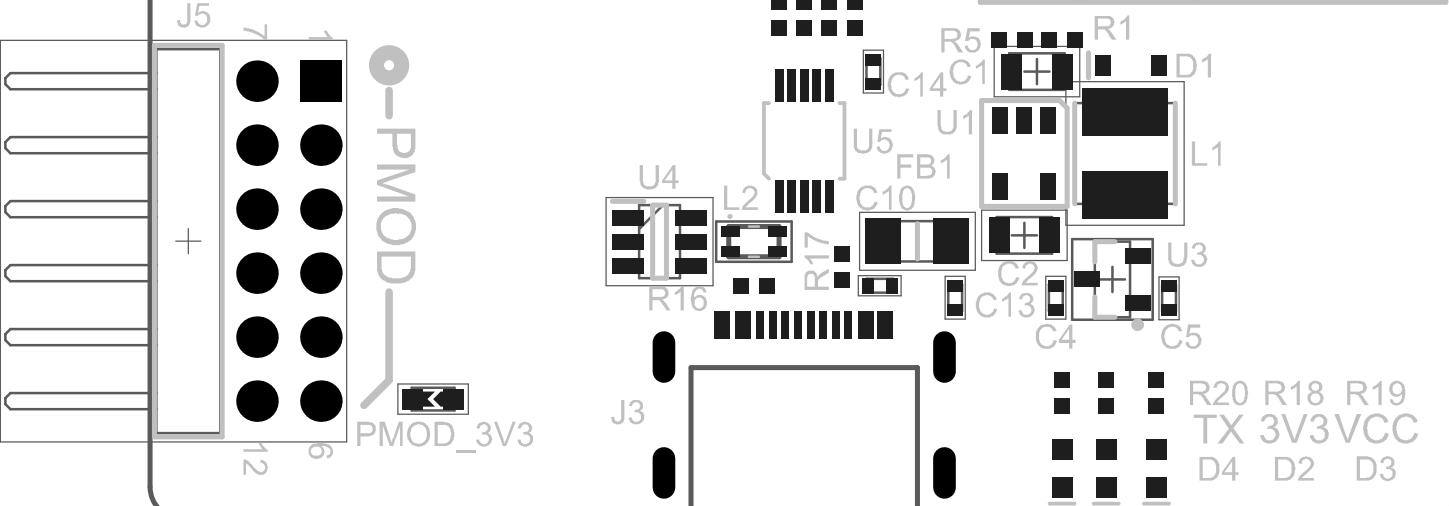
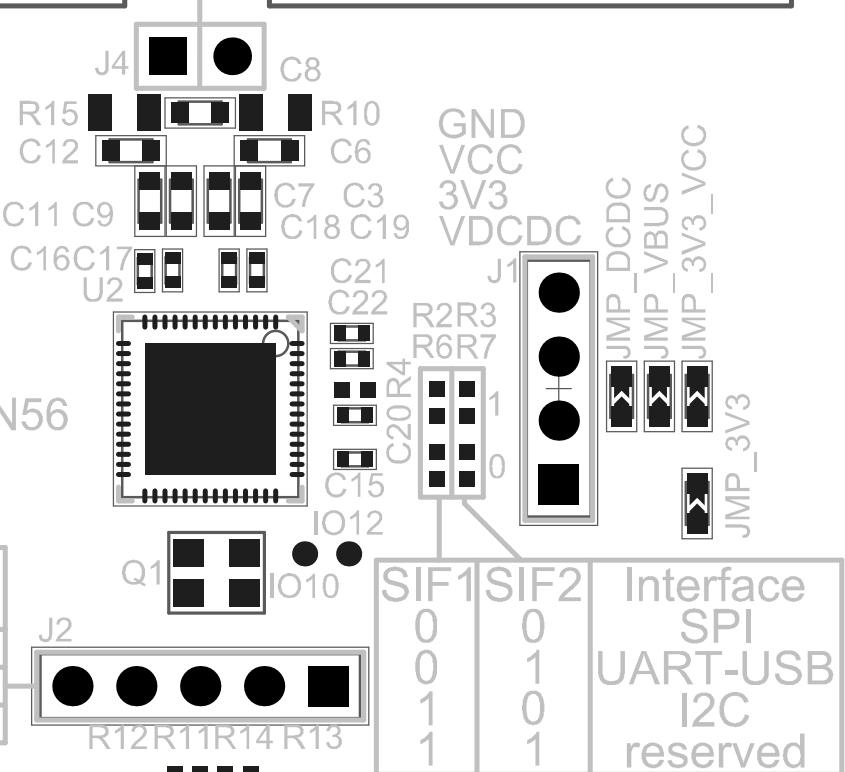
50x50\_T2\_W075\_G025\_2L

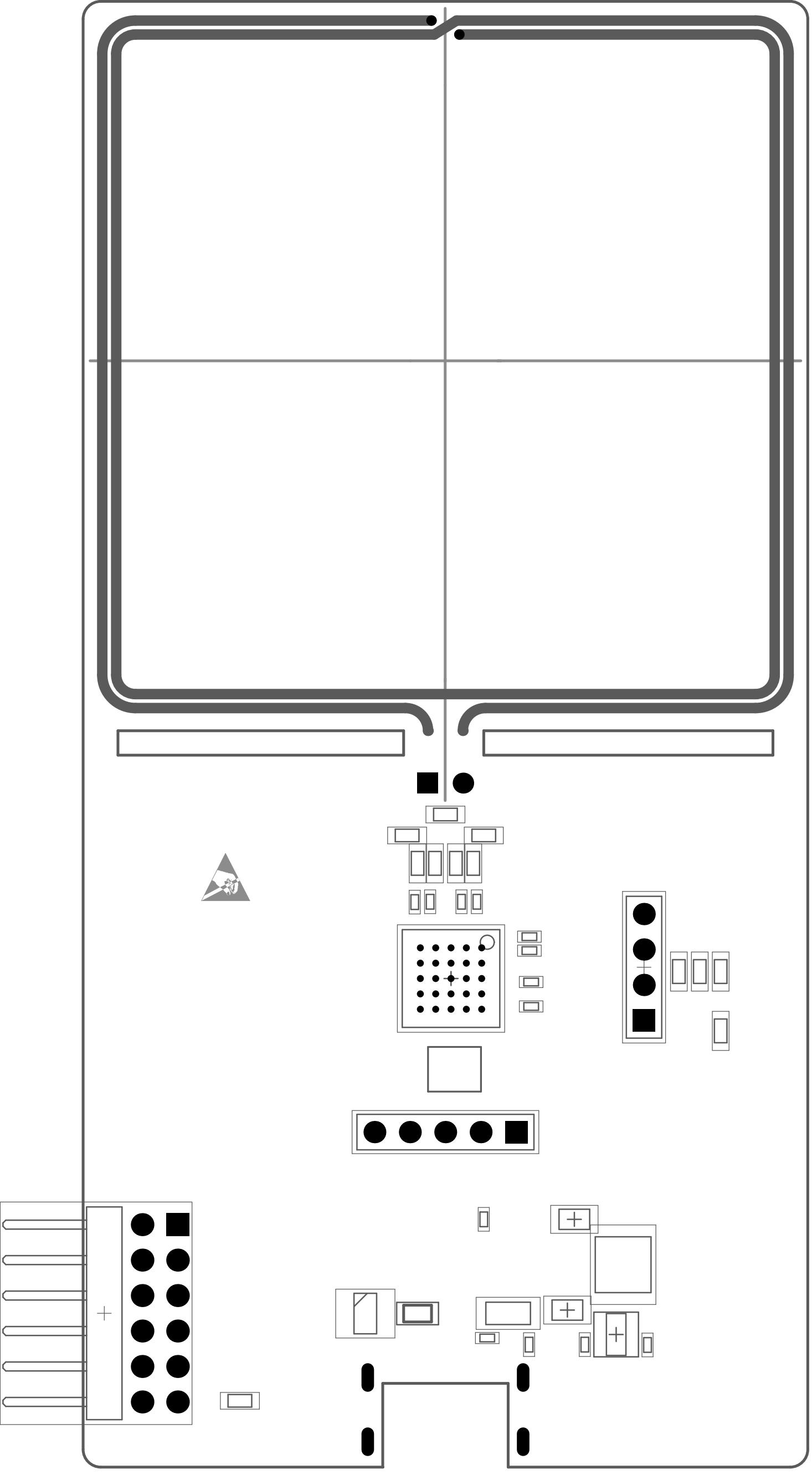


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PTX105R-EB-ST-QFN56  
-POS/IoT **v2.0**

J2 pinout depending on SIF1/2 setting

MISO	MOSI	SCK	NSS	IRQ
TXD	RXD	RTS	CTS	IRQ
SCL	SDA	AD1	AD0	IRQ





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