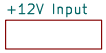
USB Hub

+12V Input



File: POS12_Input.kicad_sch

+12V Telemetry

File: POS12_Telemetry.kicad_sch

+5V Power Supply

File: POS5_Power_Supply.kicad_sch

+5V Telemetry

File: POS5_Telemetry.kicad_sch

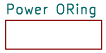
+3.3V Power Supply

File: POS3P3_Power_Supply.kicad_sch

+3.3V Telemetry

File: POS3P3_Telemetry.kicad_sch

Power ORing



File: power_oring.kicad_sch

PIC18F Programming

File: PIC18F_Programming.kicad_sch

PIC18F Core

File: PIC18F_Core.kicad_sch

USB UART Bridge

File: USB_UART_Bridge.kicad_sch

PGOOD LEDs

File: PGOOD_LEDs.kicad_sch

Status LEDs

File: Status_LEDs.kicad_sch

Hub LEDs

File: Hub_LEDs.kicad_sch

Display

File: Display.kicad_sch

Pushbuttons

File: Pushbuttons.kicad_sch

Hub Controller

File: Hub_Controller.kicad_sch

Downstream Port 0

File: Downstream_Port_0.kicad_sch

Downstream Port 1

File: Downstream_Port_1.kicad_sch

Downstream Port 2

File: Downstream_Port_2.kicad_sch

Downstream Port 3

File: Downstream_Port_3.kicad_sch

Upstream Port

File: Upstream_Port.kicad_sch

Port Power Control

File: port_power_control.kicad_sch

Port Telemetry

File: Port_Telemetry.kicad_sch

Mechanical

File: mechanical.kicad_sch

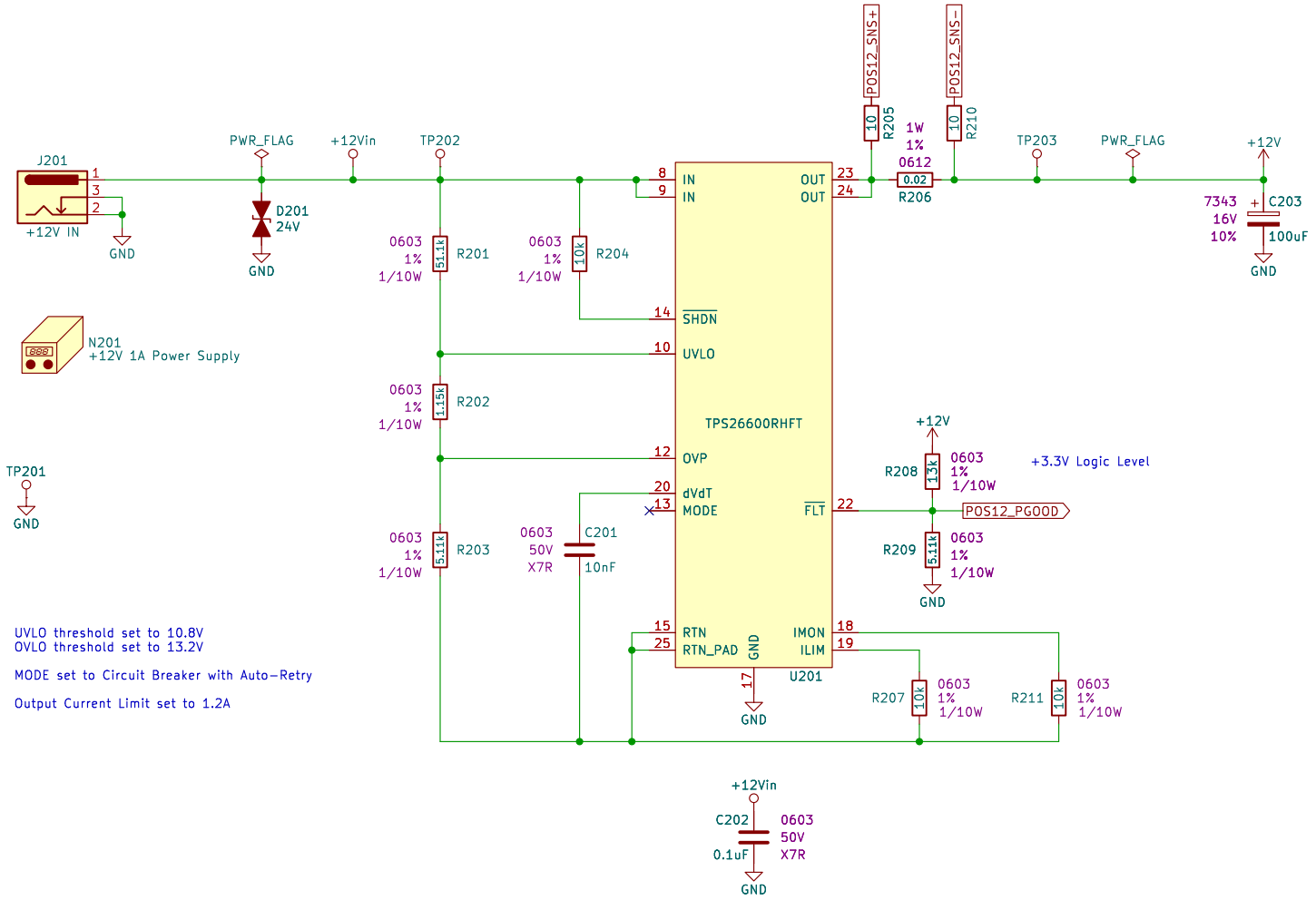
Drew Maatman

Sheet: /

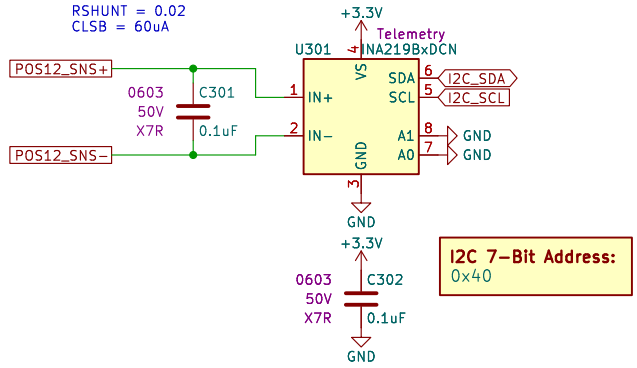
File: USB_Hub.kicad_sch

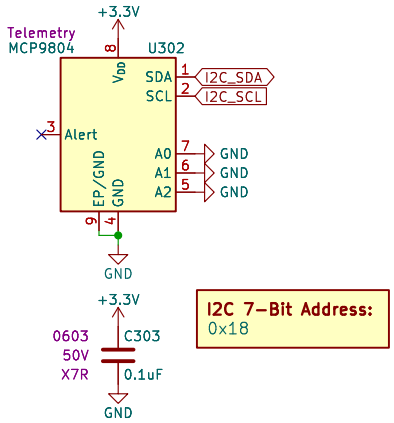
Title: USB Hub

Size: A	Date: 2023-08-20	**Rev: PRELIM**
KiCad E.D.A. kicad 7.0.1		Id: 1/25

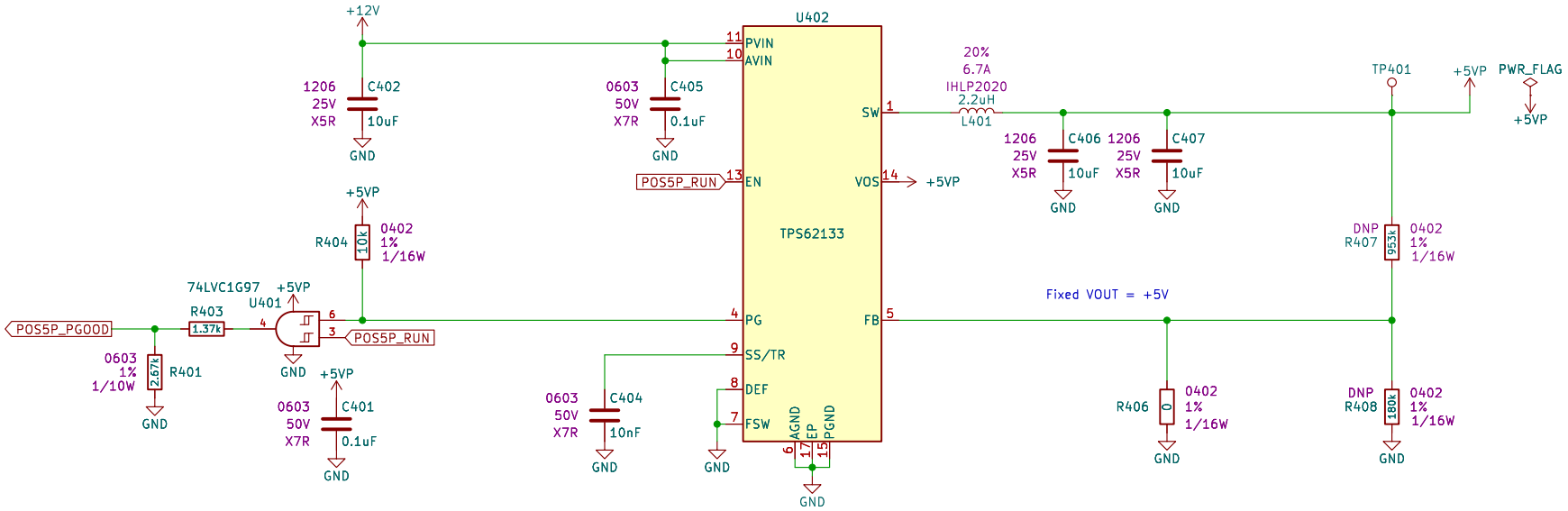


Drew Maatman		
Sheet: /+12V Input/		
File: POS12_Input.kicad_sch		
Title: USB Hub		
Size: A	Date: 2023-08-20	**Rev: PRELIM**
KiCad E.D.A. kicad 7.0.1		Id: 2/25



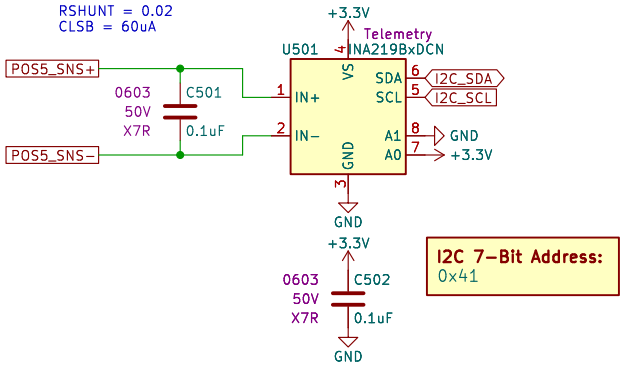


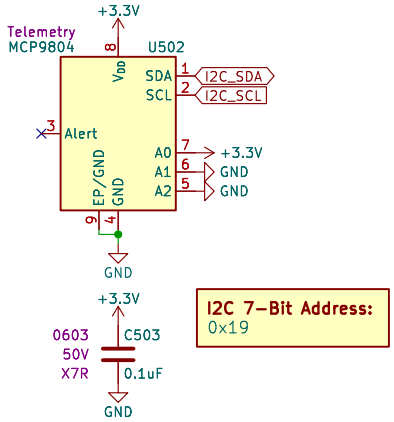
Drew Maatman		
Sheet: /+12V Telemetry/		
File: POS12_Telemetry.kicad_sch		
Title: USB Hub		
Size: A	Date: 2023−08−20	**Rev: PRELIM**
KiCad E.D.A. kicad 7.0.1		Id: 3/25



Drew Maatman	
Sheet: /+5V Power Supply/	
File: POS5_Power_Supply.kicad_sch	
Title: USB Hub	
Size: A	Date: 2023-08-20
KiCad E.D.A. kicad 7.0.1	Id: 4/25

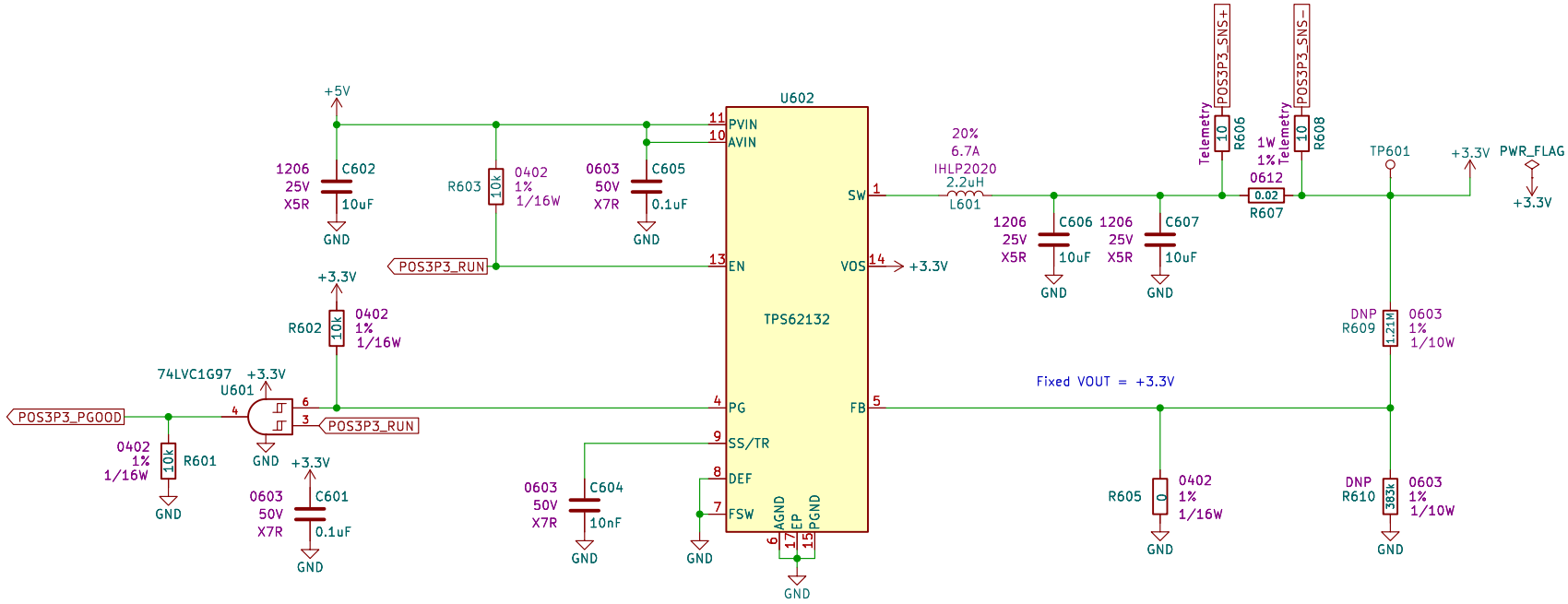
Rev: PRELIM

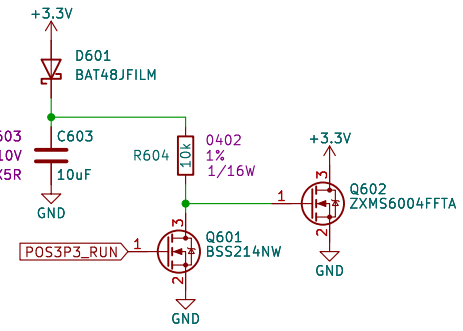




Drew Maatman		
Sheet: /+5V Telemetry/		
File: POS5_Telemetry.kicad_sch		
Title: USB Hub		
Size: A	Date: 2023−08−20	**Rev: PRELIM**
KiCad E.D.A. kicad 7.0.1		Id: 5/25

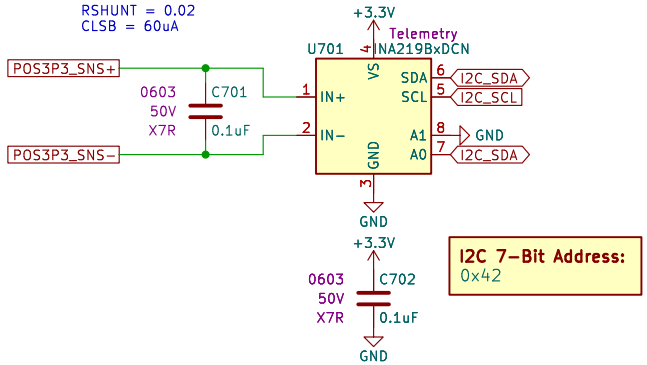
DOUBLE CHECK POS3P3_RUN VOLTAGE LEVEL TOLERANCE

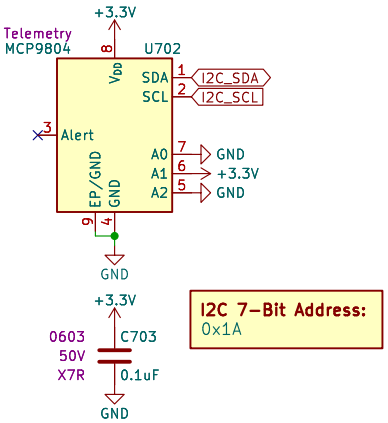




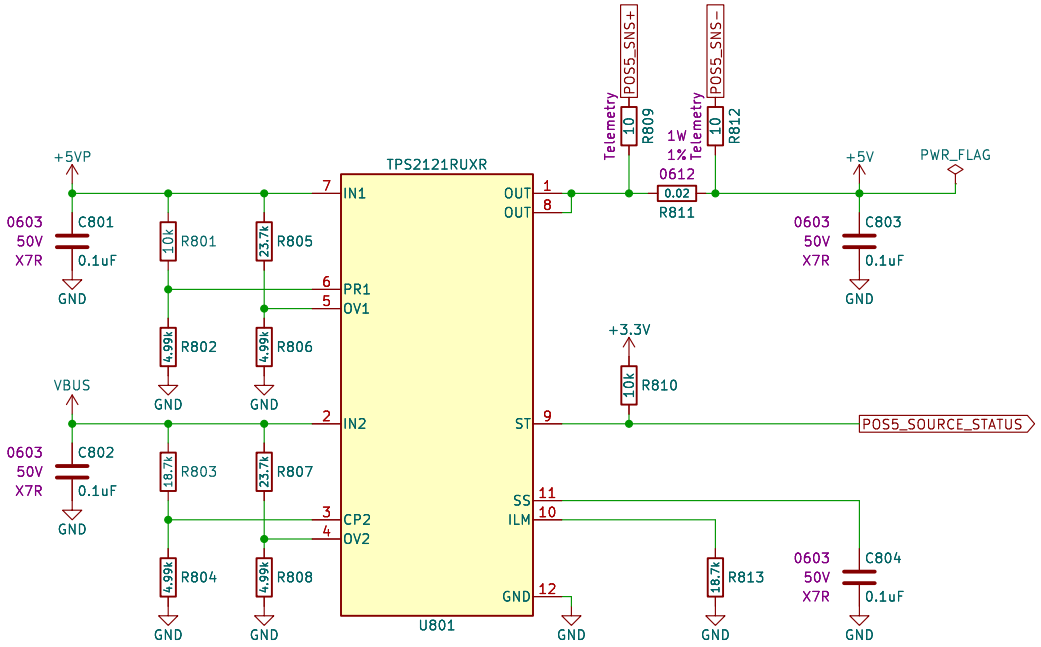
Drew Maatman	
Sheet: /+3.3V Power Supply/	
File: POS3P3_Power_Supply.kicad_sch	
Title: USB Hub	
Size: A	Date: 2023-08-20
KiCad E.D.A. kicad 7.0.1	Id: 6/25

Rev: PRELIM





Drew Maatman		
Sheet: /+3.3V Telemetry/		
File: POS3P3_Telemetry.kicad_sch		
Title: USB Hub		
Size: A	Date: 2023−08−20	**Rev: PRELIM**
KiCad E.D.A. kicad 7.0.1		Id: 7/25

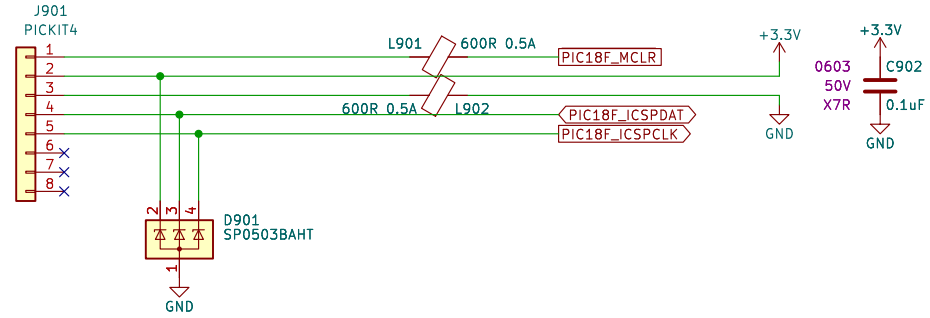


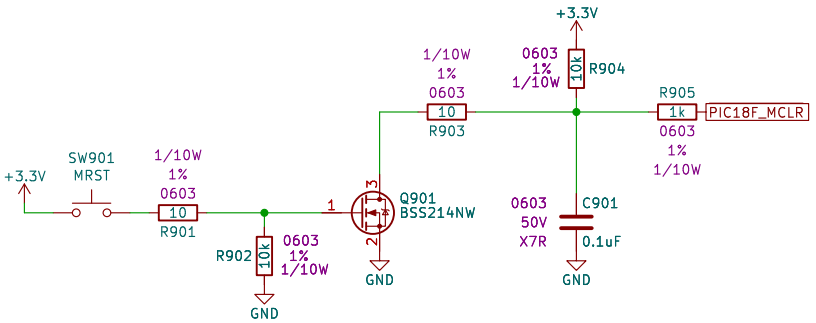
ST High when wall wart powering output,
low when upstream VBUS powering output.
This should not change during operation

OVP ~ 6V on IN1, IN2
IN1 is prioritized unless IN1 is under PR1 threshold

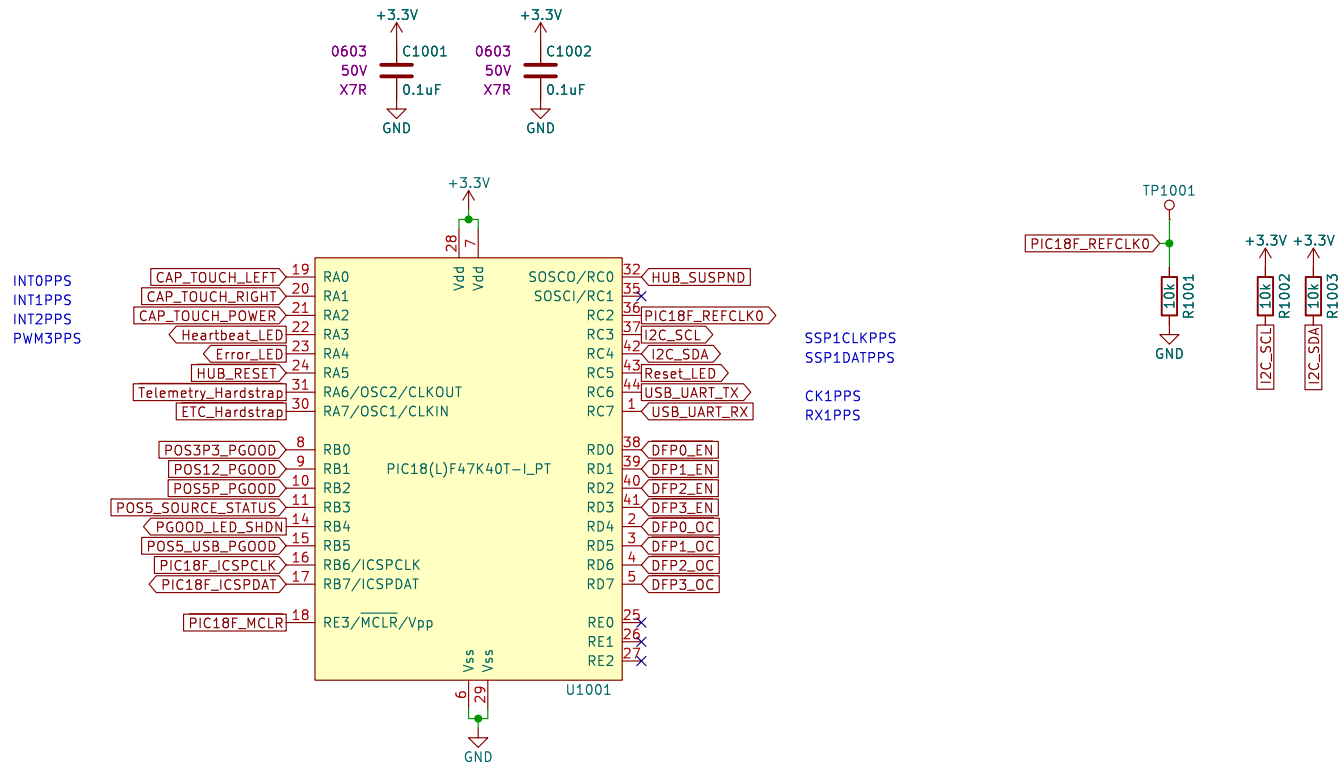
Output current limit = 5.2A (4.6A min, 5.8A max)
Output slew rate = 780mV/ms

Drew Maatman		
Sheet: /Power ORing/		
File: power_oring.kicad_sch		
Title: USB Hub		
Size: A	Date: 2023-08-20	**Rev: PRELIM**
KiCad E.D.A. kicad 7.0.1		Id: 8/25

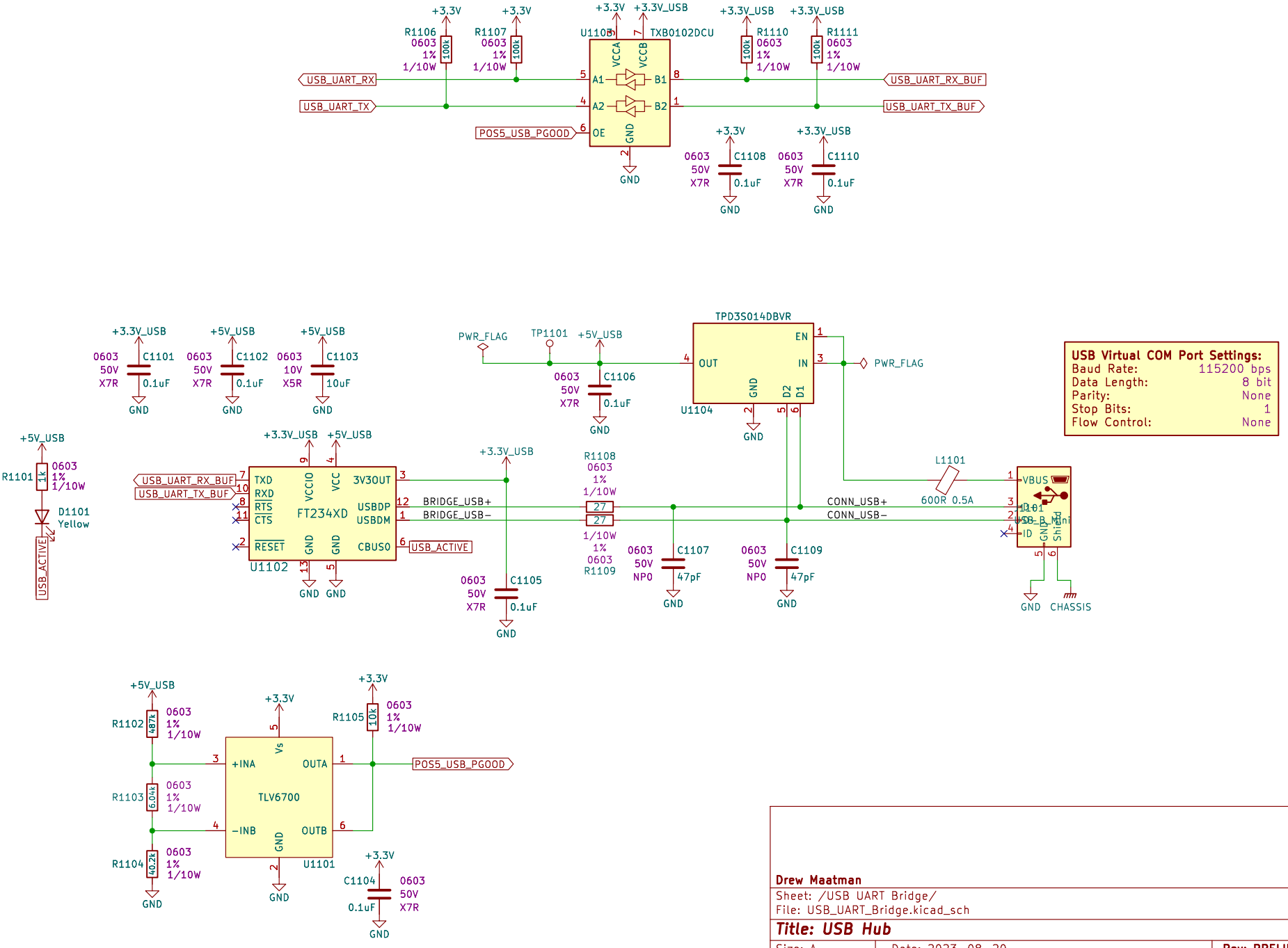




Drew Maatman		
Sheet: /PIC18F Programming/		
File: PIC18F_Programming.kicad_sch		
Title: USB Hub		
Size: A	Date: 2023-08-20	**Rev: PRELIM**
KiCad E.D.A. kicad 7.0.1		Id: 9/25



Drew Maatman		
Sheet: /PIC18F Core/		
File: PIC18F_Core.kicad_sch		
Title: USB Hub		
Size: A	Date: 2023-08-20	**Rev: PRELIM**
KiCad E.D.A. kicad 7.0.1		Id: 10/25



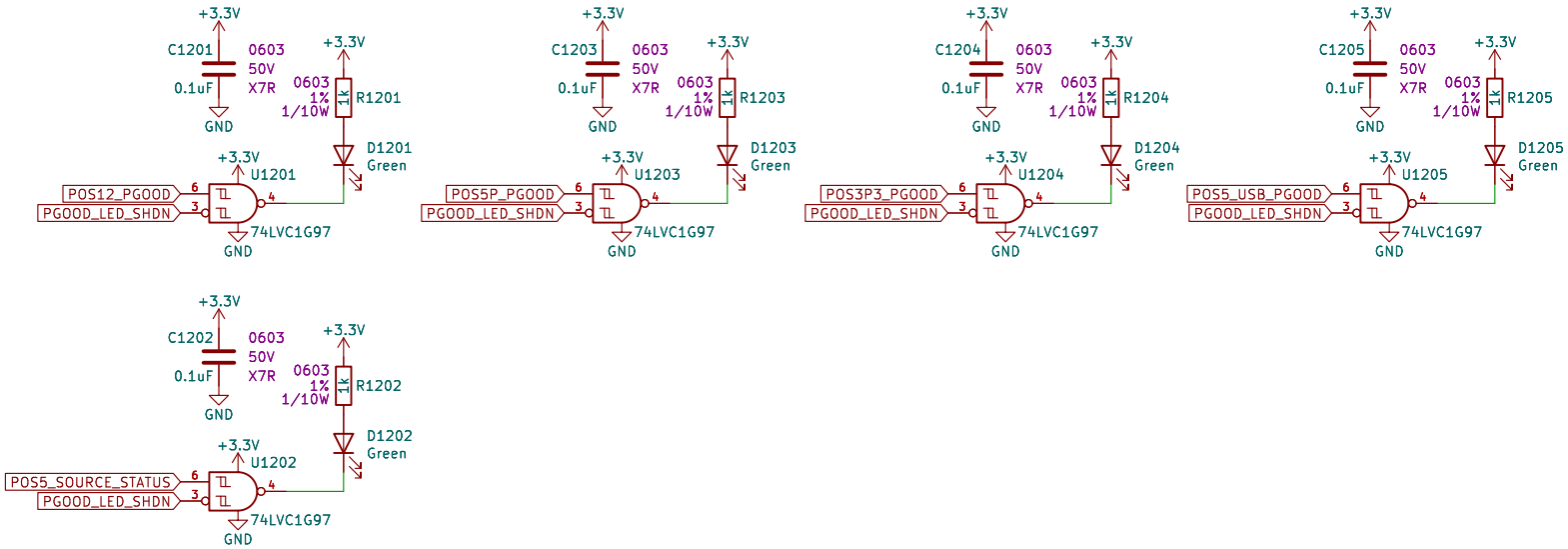
Drew Maatman

Sheet: /USB UART Bridge/

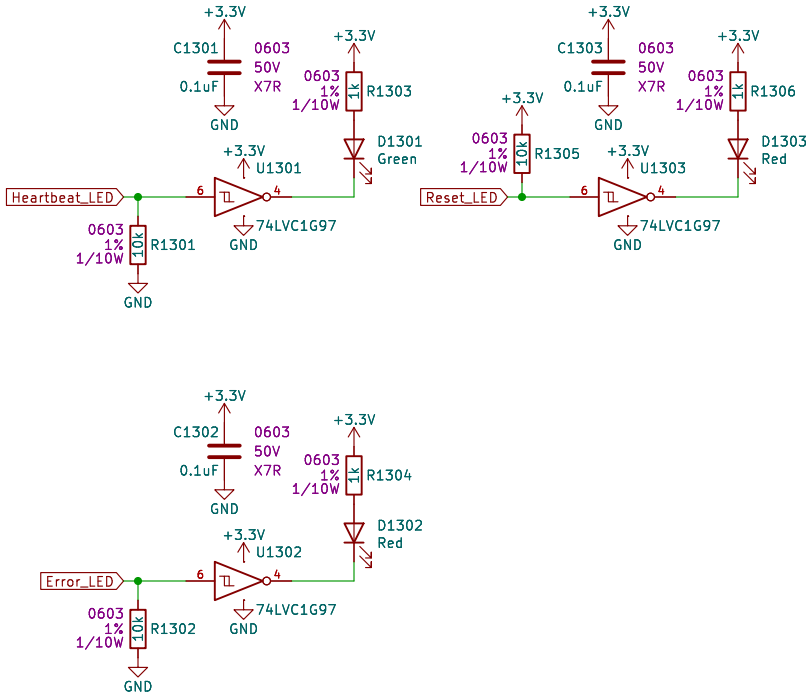
File: USB_UART_Bridge.kicad_sch

Title: USB Hub

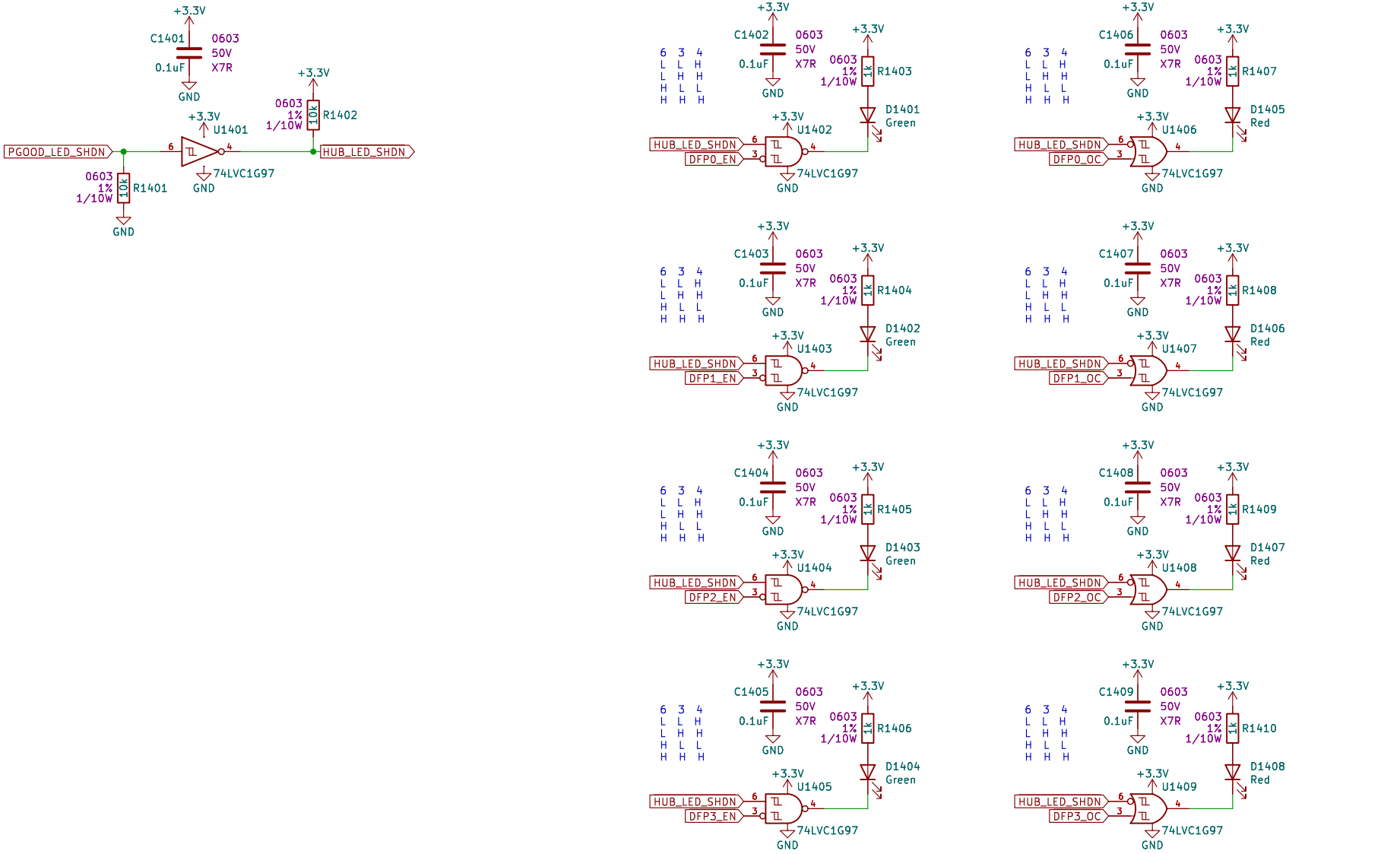
Size: A	Date: 2023-08-20	Rev: PRELIM
KiCad E.D.A. kicad 7.0.1		Id: 11/25



Drew Maatman		
Sheet: /PGOOD LEDs/		
File: PGOOD_LEDs.kicad_sch		
Title: USB Hub		
Size: A	Date: 2023-08-20	**Rev: PRELIM**
KiCad E.D.A. kicad 7.0.1		Id: 12/25



Drew Maatman		
Sheet: /Status LEDs/		
File: Status_LEDs.kicad_sch		
Title: USB Hub		
Size: A	Date: 2023-08-20	**Rev: PRELIM**
KiCad E.D.A. kicad 7.0.1		Id: 13/25

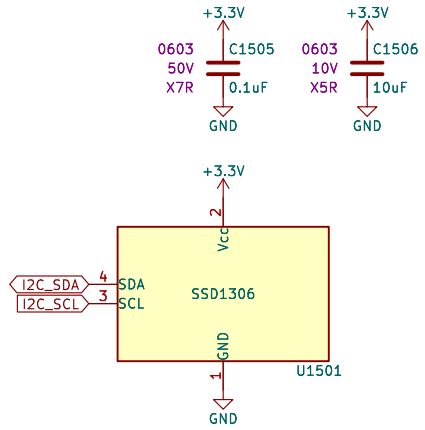


Drew Maatman

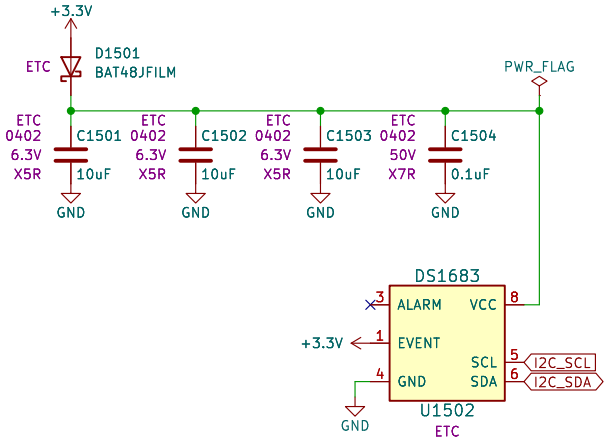
Sheet: /Hub LEDs/
File: Hub_LEDs.kicad_sch

Title: USB Hub

Size: A	Date: 2023-08-20	**Rev: PRELIM**
KiCad E.D.A. kicad 7.0.1		Id: 14/25



I2C 7-Bit Address:
0x3C



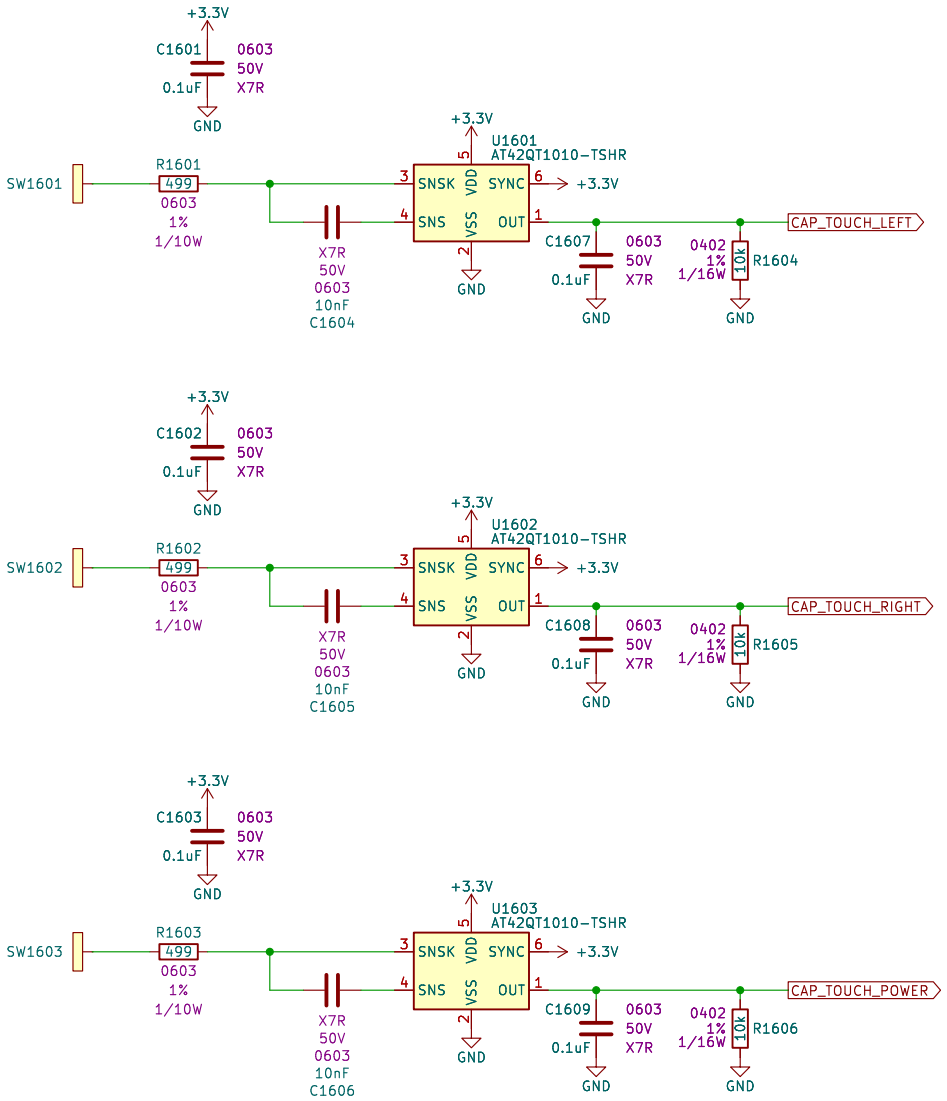
I2C 7-Bit Address:
0x6B

Drew Maatman

Sheet: /Display/
File: Display.kicad_sch

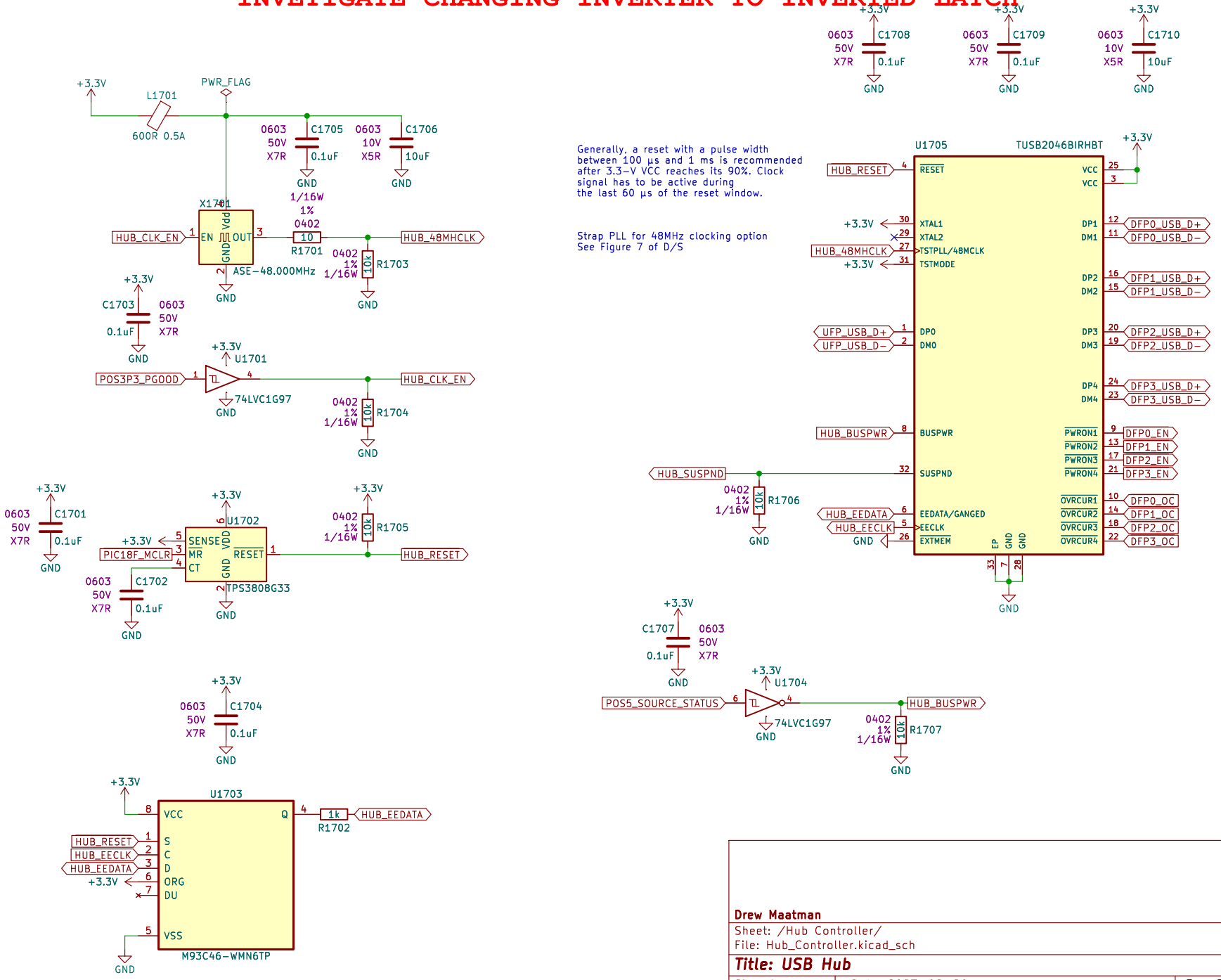
Title: USB Hub

Size: A	Date: 2023-08-20	**Rev: PRELIM**
KiCad E.D.A. kicad 7.0.1		Id: 15/25



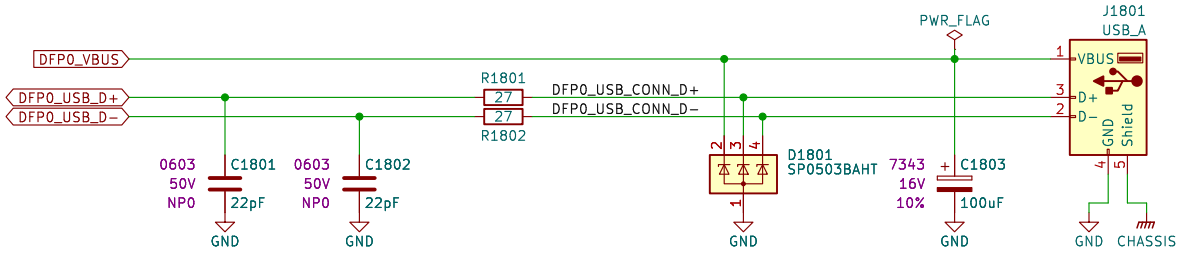
Drew Maatman		
Sheet: /Pushbuttons/		
File: Pushbuttons.kicad_sch		
Title: USB Hub		
Size: A	Date: 2023-08-20	**Rev: PRELIM**
KiCad E.D.A. kicad 7.0.1		Id: 16/25

INVETIGATE CHANGING INVERTER TO INVERTED LATCH

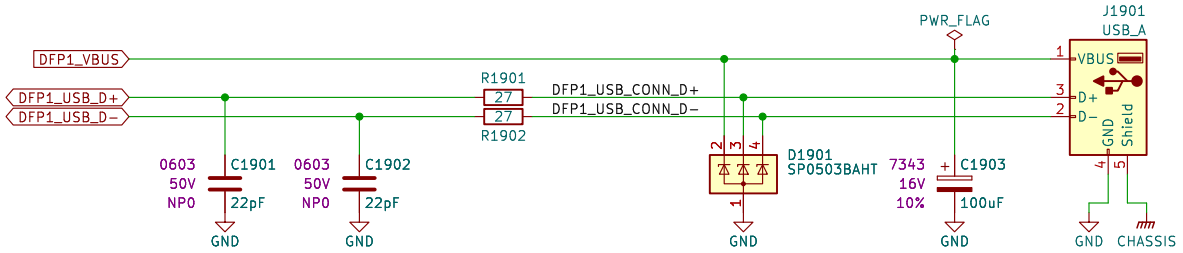


Drew Maatman	
Sheet: /Hub Controller/	
File: Hub_Controller.kicad_sch	
Title: USB Hub	
Size: A	Date: 2023-08-20
KiCad E.D.A. kicad 7.0.1	Id: 17/25

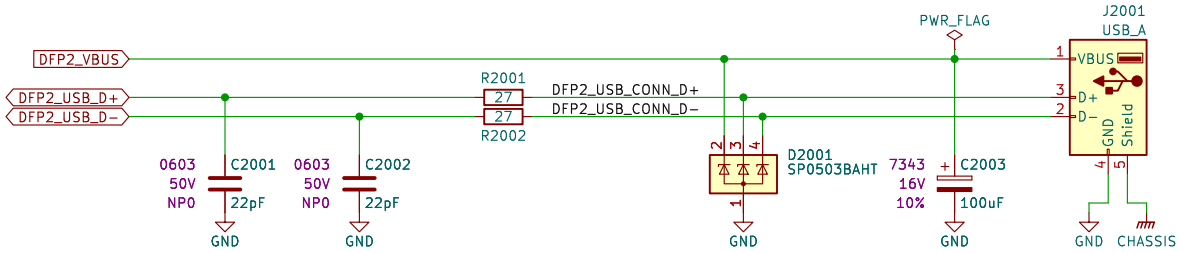
Rev: PRELIM



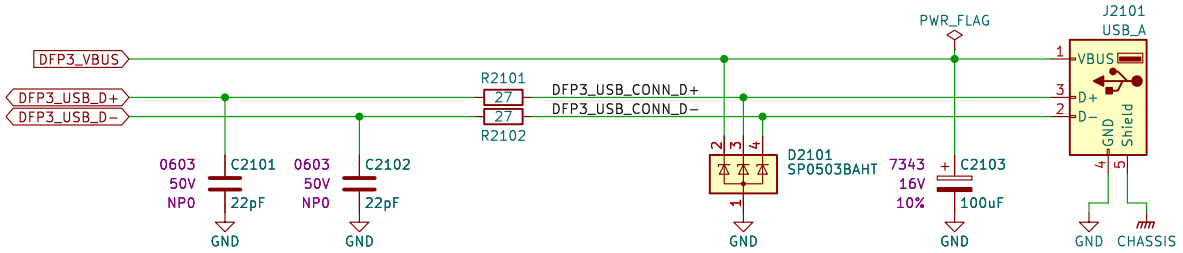
Drew Maatman		
Sheet: /Downstream Port 0/		
File: Downstream_Port_0.kicad_sch		
Title: USB Hub		
Size: A	Date: 2023-08-20	**Rev: PRELIM**
KiCad E.D.A. kicad 7.0.1		Id: 18/25



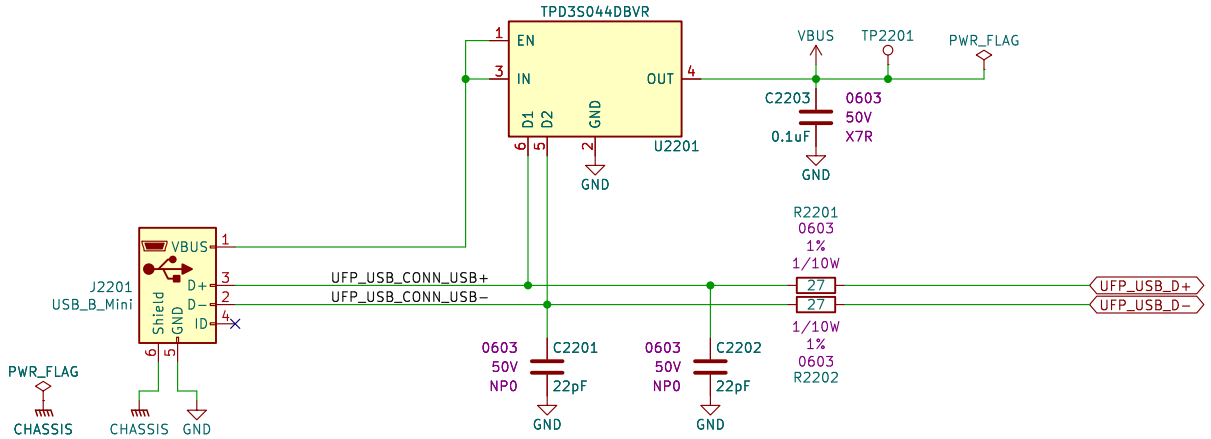
Drew Maatman		
Sheet: /Downstream Port 1/		
File: Downstream_Port_1.kicad_sch		
Title: USB Hub		
Size: A	Date: 2023-08-20	**Rev: PRELIM**
KiCad E.D.A. kicad 7.0.1		Id: 19/25



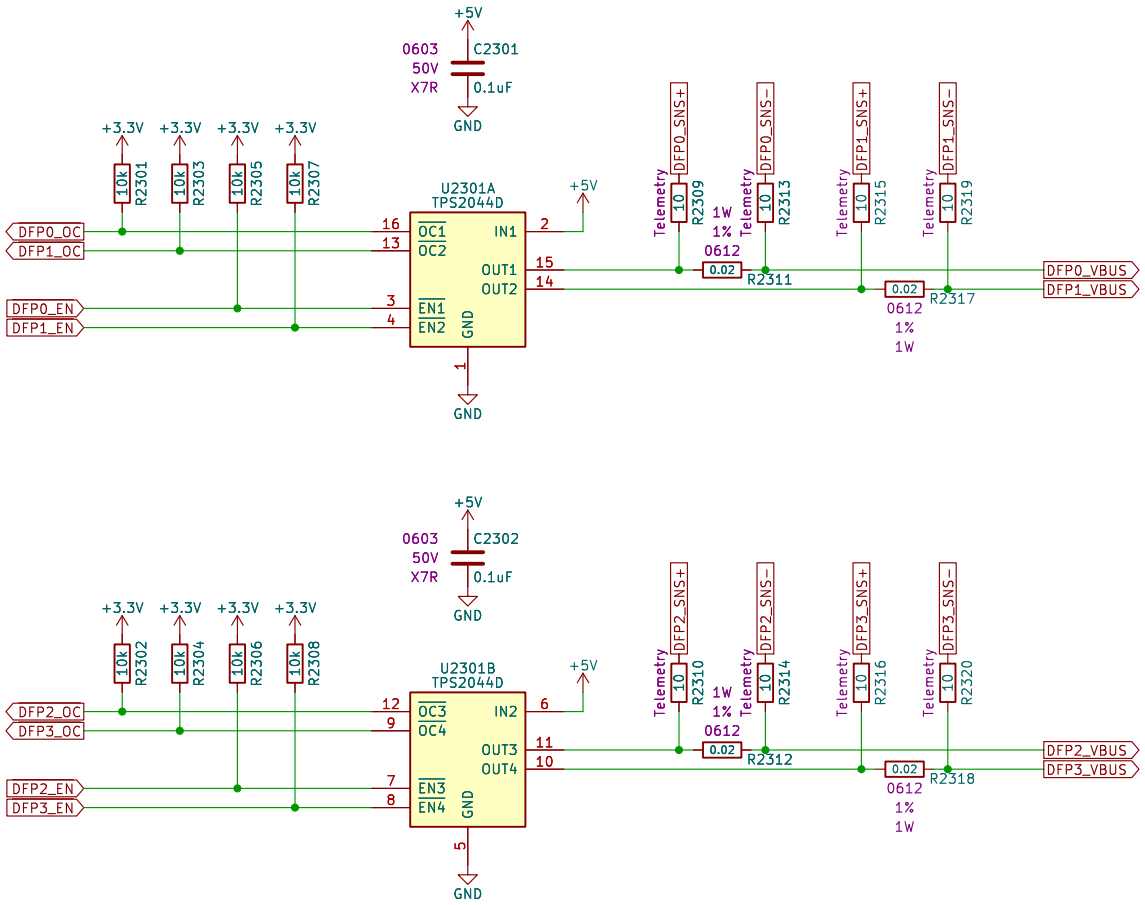
Drew Maatman		
Sheet: /Downstream Port 2/		
File: Downstream_Port_2.kicad_sch		
Title: USB Hub		
Size: A	Date: 2023-08-20	**Rev: PRELIM**
KiCad E.D.A. kicad 7.0.1		Id: 20/25



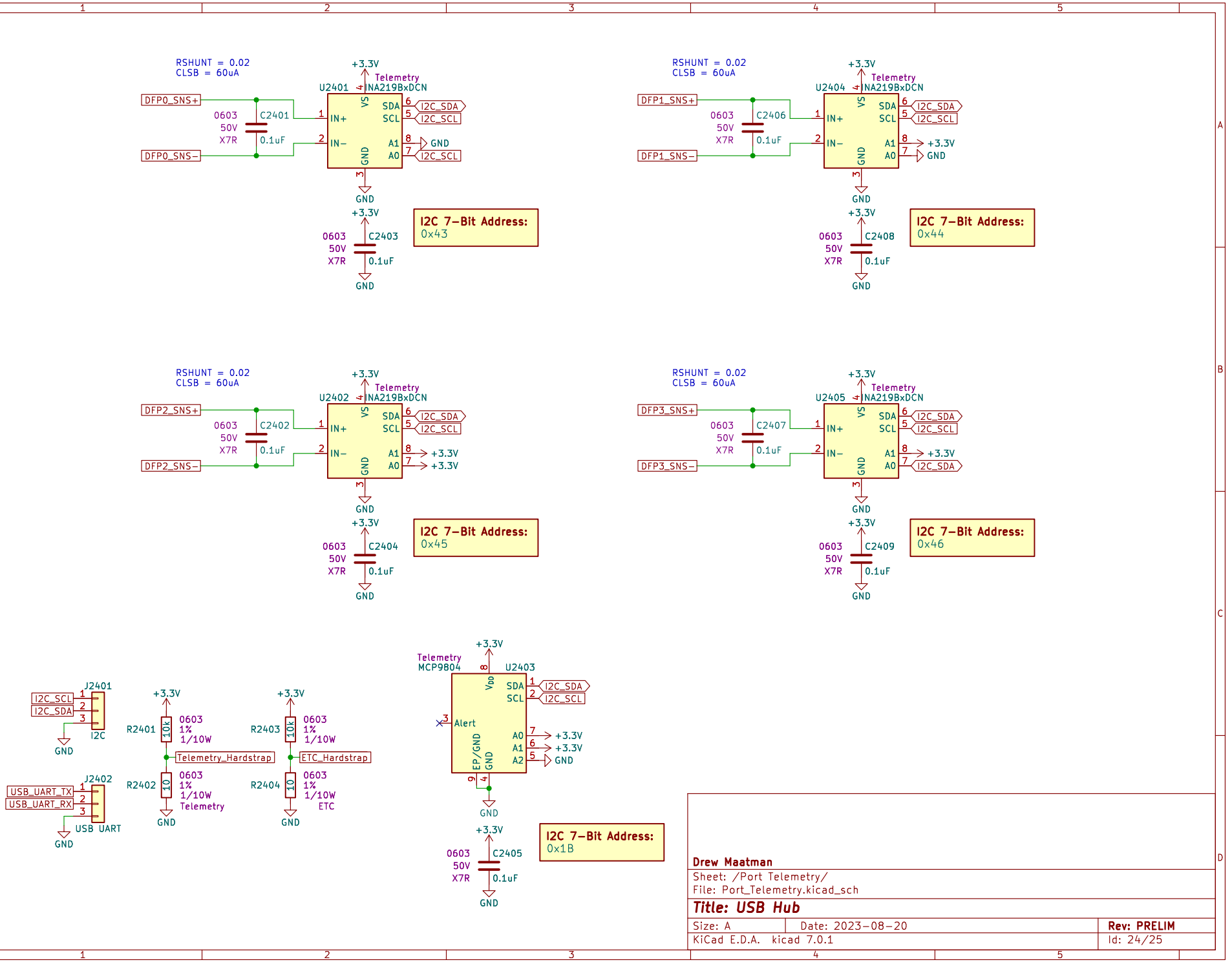
Drew Maatman		
Sheet: /Downstream Port 3/		
File: Downstream_Port_3.kicad_sch		
Title: USB Hub		
Size: A	Date: 2023-08-20	**Rev: PRELIM**
KiCad E.D.A. kicad 7.0.1		Id: 21/25



Drew Maatman		
Sheet: /Upstream Port/		
File: Upstream_Port.kicad_sch		
Title: USB Hub		
Size: A	Date: 2023-08-20	**Rev: PRELIM**
KiCad E.D.A. kicad 7.0.1		Id: 22/25



Drew Maatman		
Sheet: /Port Power Control/		
File: port_power_control.kicad_sch		
Title: USB Hub		
Size: A	Date: 2023-08-20	**Rev: PRELIM**
KiCad E.D.A. kicad 7.0.1		Id: 23/25


RSHUNT = 0.02
CLSB = 60uA
U2401
Telemetry
INA219BxDCN
DFP0_SNS+
DFP0_SNS−
C2401
0603
50V
X7R
0.1uF
C2403
I2C_SDA
I2C_SCL
I2C 7−Bit Address:
0x43
U2404
DFP1_SNS+
DFP1_SNS−
C2406
C2408
+3.3V
GND
I2C 7−Bit Address:
0x44
U2402
DFP2_SNS+
DFP2_SNS−
C2402
C2404
I2C 7−Bit Address:
0x45
U2405
DFP3_SNS+
DFP3_SNS−
C2407
C2409
I2C 7−Bit Address:
0x46
J2401
I2C
J2402
USB UART
USB_UART_TX
USB_UART_RX
R2401
R2402
R2403
R2404
10k
10
1%
1/10W
Telemetry
ETC
Telemetry_Hardstrap
ETC_Hardstrap
U2403
MCP9804
Alert
EP/GND
C2405
I2C 7−Bit Address:
0x1B
Drew Maatman
Sheet: /Port Telemetry/
File: Port_Telemetry.kicad_sch
Title: USB Hub
Size: A
Date: 2023−08−20
Rev: PRELIM
KiCad E.D.A. kicad 7.0.1
Id: 24/25

H2501
3mm Mounting Hole

H2503
3mm Mounting Hole

H2502
3mm Mounting Hole

H2504
3mm Mounting Hole

#4-40 Screw
MK2501

#4-40 Screw
MK2507

#4-40 Screw
MK2502

#4-40 Screw
MK2508

#4-40 Standoff
MK2503

#4-40 Standoff
MK2505

#4-40 Standoff
MK2504

#4-40 Standoff
MK2506

Drew Maatman

Sheet: /Mechanical/
File: mechanical.kicad_sch

Title: USB Hub

Size: A	Date: 2023-08-20	**Rev: PRELIM**
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