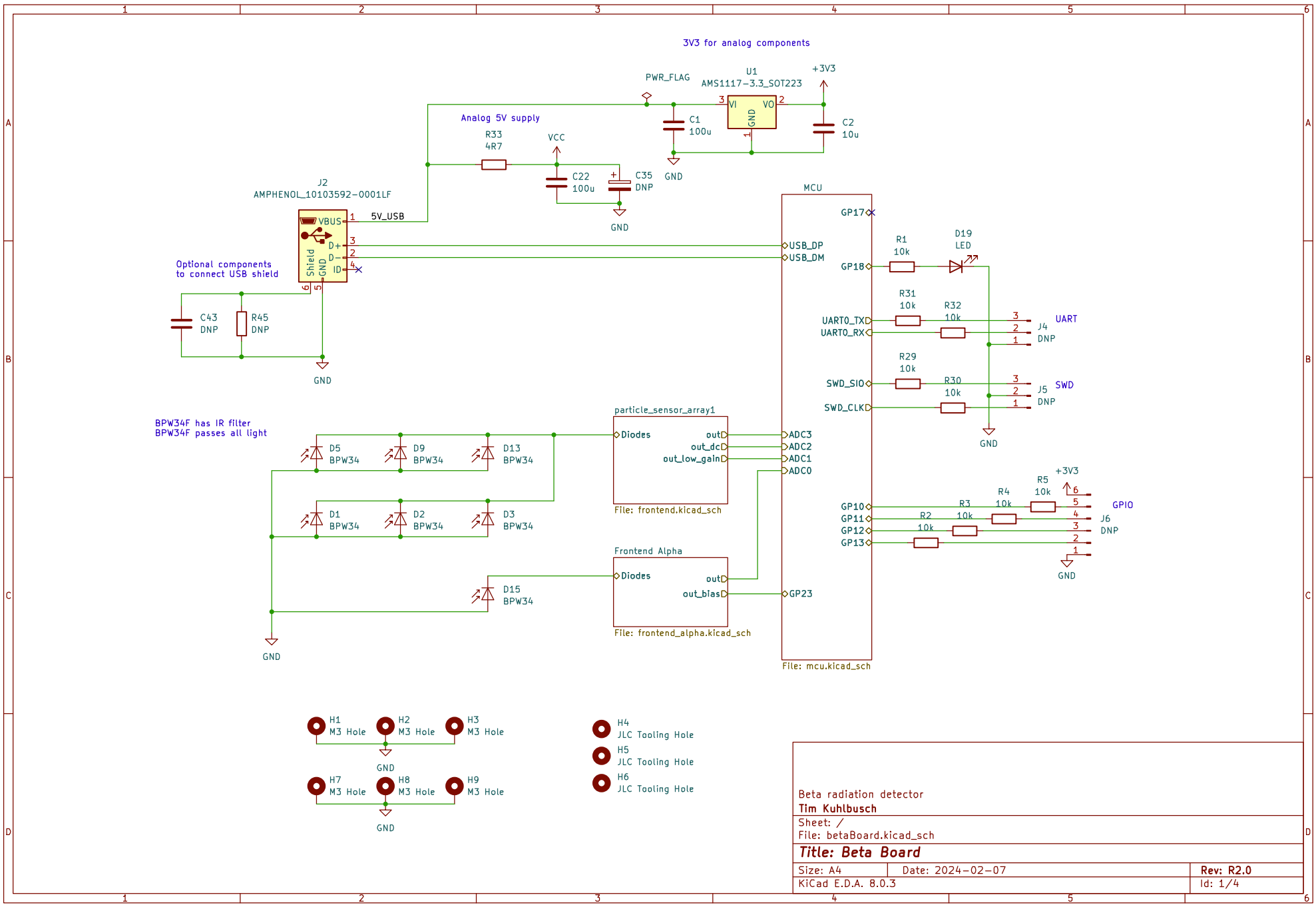
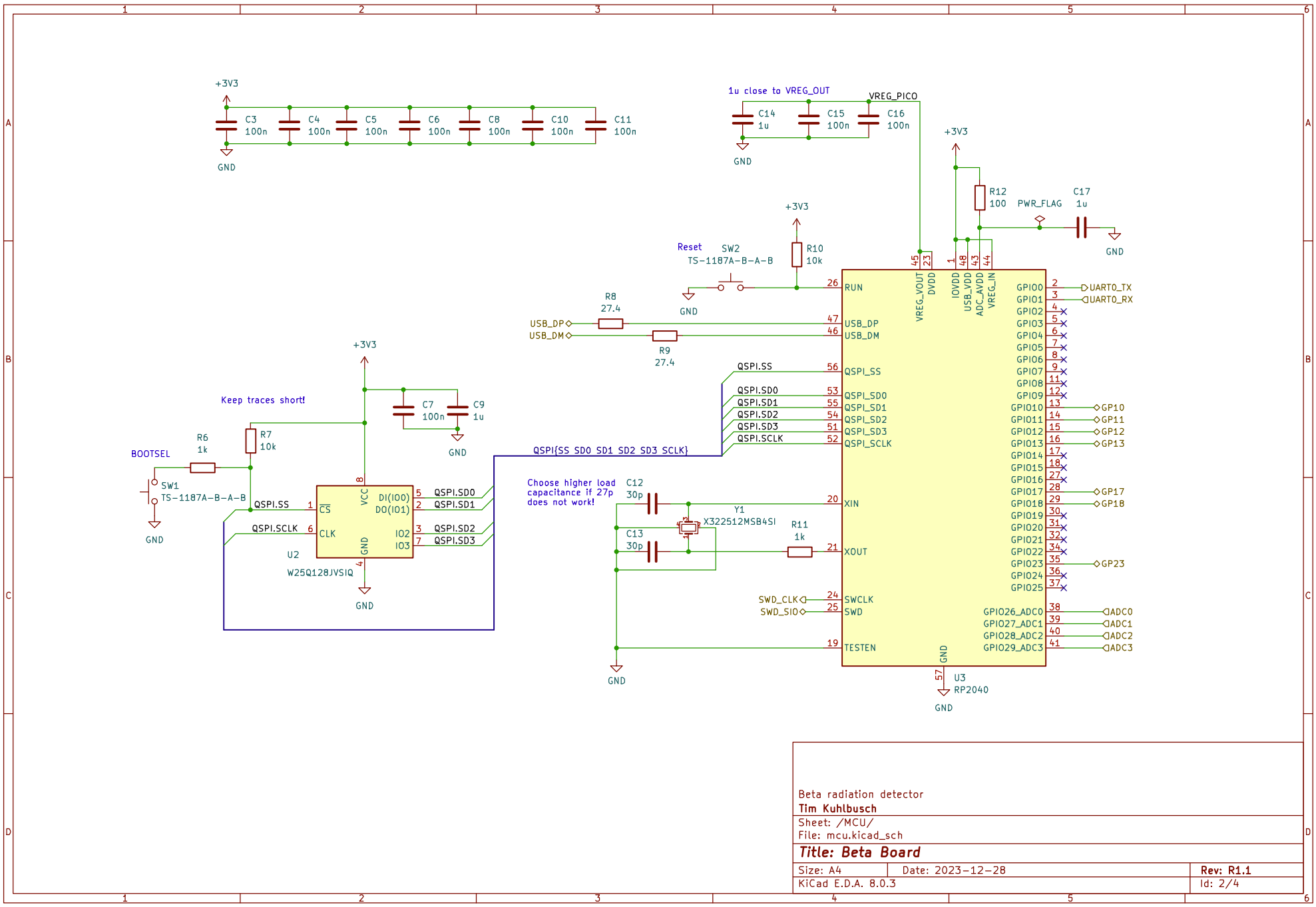

3V3 for analog components
PWR_FLAG
U1
AMS1117-3.3_SOT223
+3V3
VI
VO
GND
C1
100u
C2
10u
Analog 5V supply
R33
4R7
VCC
C22
100u
C35
DNP
GND
J2
AMPHENOL_10103592-0001LF
VBUS
D+
D-
ID
Shield
GND
5V_USB
Optional components
to connect USB shield
C43
DNP
R45
DNP
GND
MCU
GP17
GP18
USB_DP
USB_DM
R1
10k
D19
LED
R31
10k
R32
10k
UART0_TX
UART0_RX
J4
UART
DNP
R29
10k
R30
10k
SWD_SIO
SWD_CLK
J5
SWD
DNP
GND
BPW34F has IR filter
BPW34F passes all light
particle_sensor_array1
Diodes
out
out_dc
out_low_gain
ADC3
ADC2
ADC1
ADC0
File: frontend.kicad_sch
D5
BPW34
D9
BPW34
D13
BPW34
D1
BPW34
D2
BPW34
D3
BPW34
D15
BPW34
GND
Frontend Alpha
Diodes
out
out_bias
GP23
File: frontend_alpha.kicad_sch
File: mcu.kicad_sch
GP10
GP11
GP12
GP13
R5
10k
R4
10k
R3
10k
R2
10k
+3V3
GPIO
J6
DNP
GND
H1
M3 Hole
H2
M3 Hole
H3
M3 Hole
GND
H7
M3 Hole
H8
M3 Hole
H9
M3 Hole
GND
H4
JLC Tooling Hole
H5
JLC Tooling Hole
H6
JLC Tooling Hole
Beta radiation detector
Tim Kuhlbusch
Sheet: /
File: betaBoard.kicad_sch
Title: Beta Board
Size: A4
Date: 2024-02-07
Rev: R2.0
KiCad E.D.A. 8.0.3
Id: 1/4



Beta radiation detector

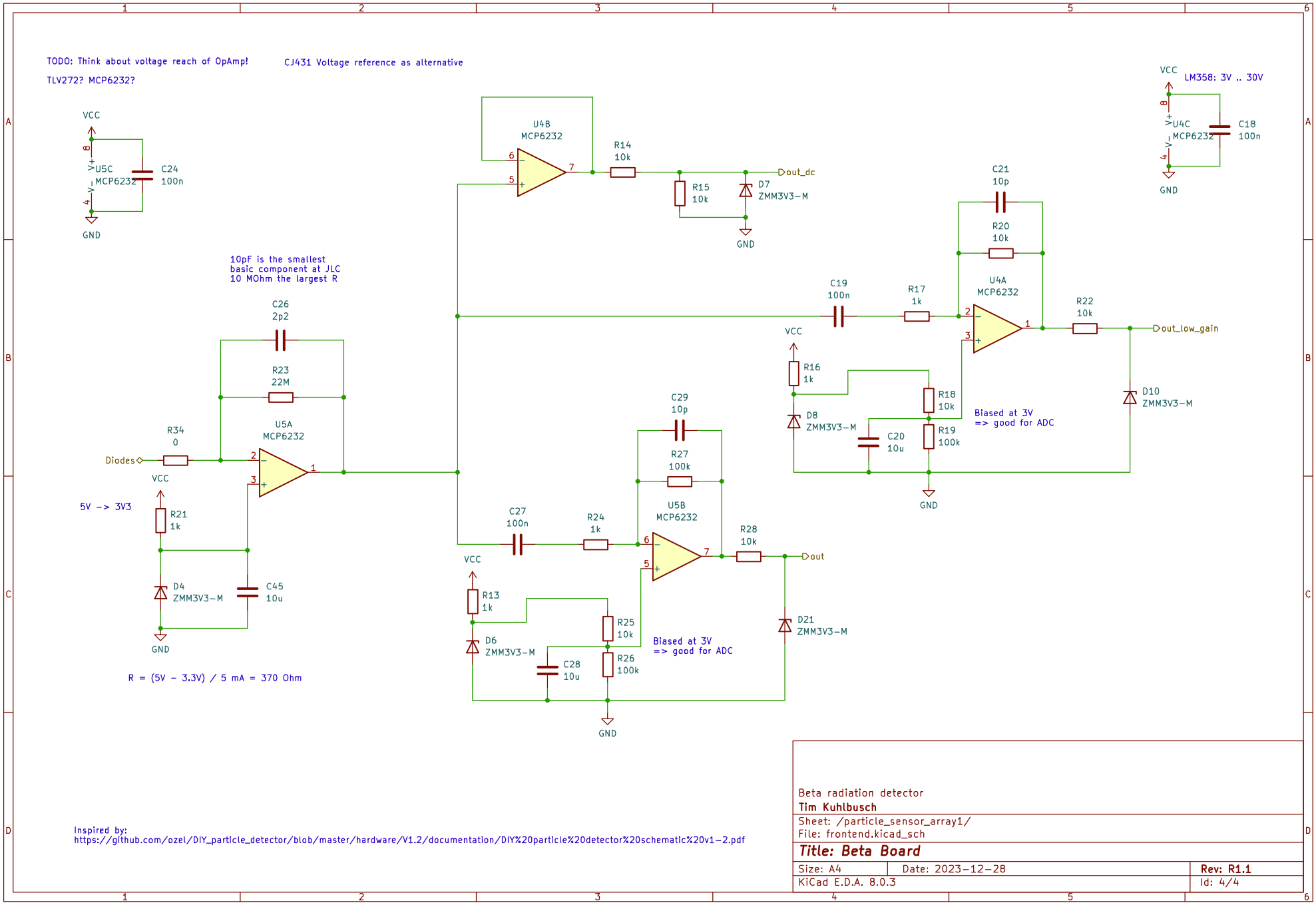
Tim Kuhlbusch

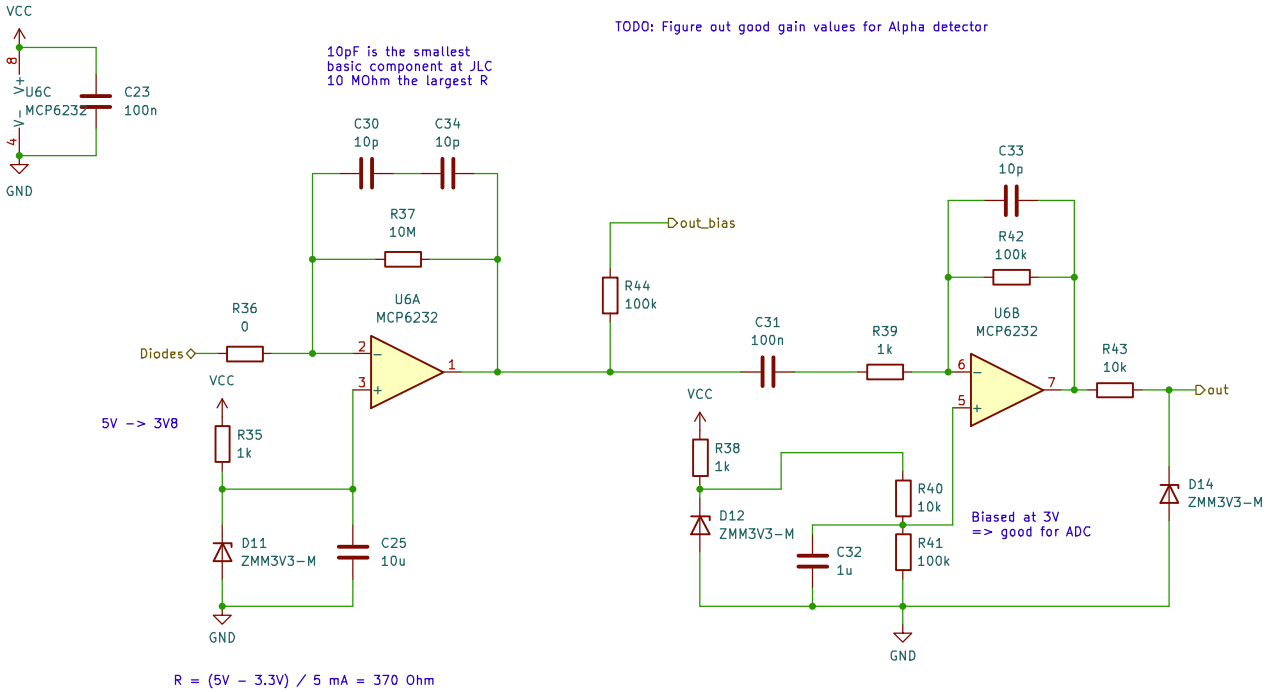
Sheet: /MCU/

File: mcu.kicad_sch

Title: Beta Board

Size: A4	Date: 2023-12-28	**Rev: R1.1**
KiCad E.D.A. 8.0.3		Id: 2/4


TODO: Think about voltage reach of OpAmp!
TLV272? MCP6232?
CJ431 Voltage reference as alternative
VCC
U5C
MCP6232
C24
100n
GND
U4B
MCP6232
R14
10k
R15
10k
D7
ZMM3V3-M
out_dc
VCC
LM358: 3V .. 30V
U4C
MCP6232
C18
100n
GND
10pF is the smallest
basic component at JLC
10 MOhm the largest R
C26
2p2
R23
22M
U5A
MCP6232
R34
0
Diodes
VCC
5V -> 3V3
R21
1k
D4
ZMM3V3-M
C45
10u
GND
R = (5V - 3.3V) / 5 mA = 370 Ohm
C19
100n
R17
1k
U4A
MCP6232
C21
10p
R20
10k
R22
10k
out_low_gain
VCC
R16
1k
D8
ZMM3V3-M
R18
10k
R19
100k
C20
10u
Biased at 3V
=> good for ADC
D10
ZMM3V3-M
GND
C29
10p
R27
100k
U5B
MCP6232
C27
100n
R24
1k
R28
10k
out
VCC
R13
1k
D6
ZMM3V3-M
R25
10k
R26
100k
C28
10u
Biased at 3V
=> good for ADC
D21
ZMM3V3-M
GND
Inspired by:
https://github.com/ozel/DIY_particle_detector/blob/master/hardware/V1.2/documentation/DIY%20particle%20detector%20schematic%20v1-2.pdf
Beta radiation detector
Tim Kuhlbusch
Sheet: /particle_sensor_array1/
File: frontend.kicad_sch
Title: Beta Board
Size: A4
Date: 2023-12-28
Rev: R1.1
KiCad E.D.A. 8.0.3
Id: 4/4



Sheet: /Frontend Alpha/		
File: frontend_alpha.kicad_sch		
Title:		
Size: A4	Date:	**Rev:**
KiCad E.D.A. 8.0.3		Id: 1/4