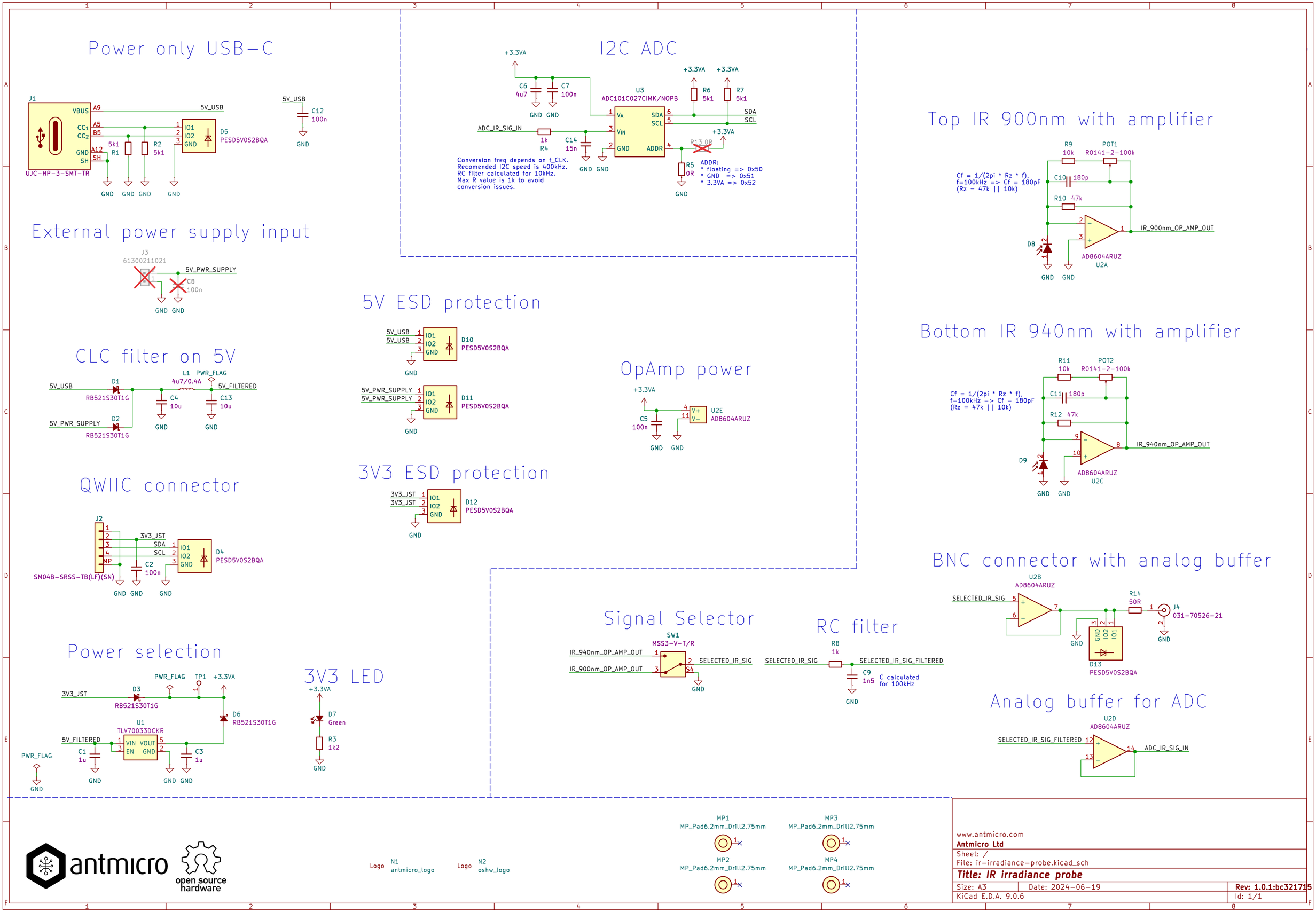
Power only USB-C
J1
UJC-HP-3-SMT-TR
VBUS
A9
5V_USB
CC1
CC2
A5
B5
5k1
R1
R2
5k1
GND
SH
A12
IO1
IO2
GND
D5
PESD5V0S2BQA
C12
100n
GND
External power supply input
J3
61300211021
5V_PWR_SUPPLY
C8
100n
CLC filter on 5V
5V_USB
D1
RB521S30T1G
L1
4u7/0.4A
PWR_FLAG
5V_FILTERED
C4
10u
C13
10u
5V_PWR_SUPPLY
D2
RB521S30T1G
QWIIC connector
J2
SM04B-SRSS-TB(LF)(SN)
3V3_JST
SDA
SCL
MP
C2
100n
D4
PESD5V0S2BQA
Power selection
3V3_JST
D3
RB521S30T1G
PWR_FLAG
TP1
+3.3VA
D6
RB521S30T1G
U1
TLV70033DCKR
5V_FILTERED
VIN
VOUT
EN
GND
C1
1u
C3
1u
PWR_FLAG
5V ESD protection
5V_USB
D10
PESD5V0S2BQA
5V_PWR_SUPPLY
D11
PESD5V0S2BQA
3V3 ESD protection
3V3_JST
D12
PESD5V0S2BQA
I2C ADC
+3.3VA
C6
4u7
C7
100n
U3
ADC101C027CIMK/NOPB
VA
VIN
GND
SDA
SCL
ADDR
R6
5k1
R7
5k1
ADC_IR_SIG_IN
1k
R4
C14
15n
R13 0R
R5
0R
Conversion freq depends on f_CLK.
Recomended I2C speed is 400kHz.
RC filter calculated for 10kHz.
Max R value is 1k to avoid
conversion issues.
ADDR:
* floating => 0x50
* GND => 0x51
* 3.3VA => 0x52
3V3 LED
+3.3VA
D7
Green
R3
1k2
OpAmp power
+3.3VA
C5
100n
U2E
AD8604ARUZ
V+
V-
Signal Selector
SW1
MSS3-V-T/R
IR_940nm_OP_AMP_OUT
IR_900nm_OP_AMP_OUT
SELECTED_IR_SIG
S4
RC filter
R8
1k
SELECTED_IR_SIG
SELECTED_IR_SIG_FILTERED
C9
1n5
C calculated
for 100kHz
Top IR 900nm with amplifier
R9
10k
POT1
R0141-2-100k
Cf = 1/(2pi * Rz * f),
f=100kHz => Cf = 180pF
(Rz = 47k || 10k)
C10
180p
R10 47k
IR_900nm_OP_AMP_OUT
D8
AD8604ARUZ
U2A
Bottom IR 940nm with amplifier
R11
10k
POT2
R0141-2-100k
Cf = 1/(2pi * Rz * f),
f=100kHz => Cf = 180pF
(Rz = 47k || 10k)
C11
180p
R12 47k
IR_940nm_OP_AMP_OUT
D9
AD8604ARUZ
U2C
BNC connector with analog buffer
U2B
AD8604ARUZ
SELECTED_IR_SIG
R14
50R
J4
031-70526-21
D13
PESD5V0S2BQA
Analog buffer for ADC
U2D
AD8604ARUZ
SELECTED_IR_SIG_FILTERED
ADC_IR_SIG_IN
Logo
N1
antmicro_logo
Logo
N2
oshw_logo
MP1
MP_Pad6.2mm_Drill2.75mm
MP2
MP_Pad6.2mm_Drill2.75mm
MP3
MP_Pad6.2mm_Drill2.75mm
MP4
MP_Pad6.2mm_Drill2.75mm
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Sheet: /
File: ir-irradiance-probe.kicad_sch
Title: IR irradiance probe
Size: A3
Date: 2024-06-19
Rev: 1.0.1:bc321715
KiCad E.D.A. 9.0.6
Id: 1/1