DAC interface

File: DAC_interface.kicad_sch

MCU interface

File: MCU_sch.kicad_sch

Output Stage

File: output_stage.kicad_sch

Power Supplies

File: power.kicad_sch

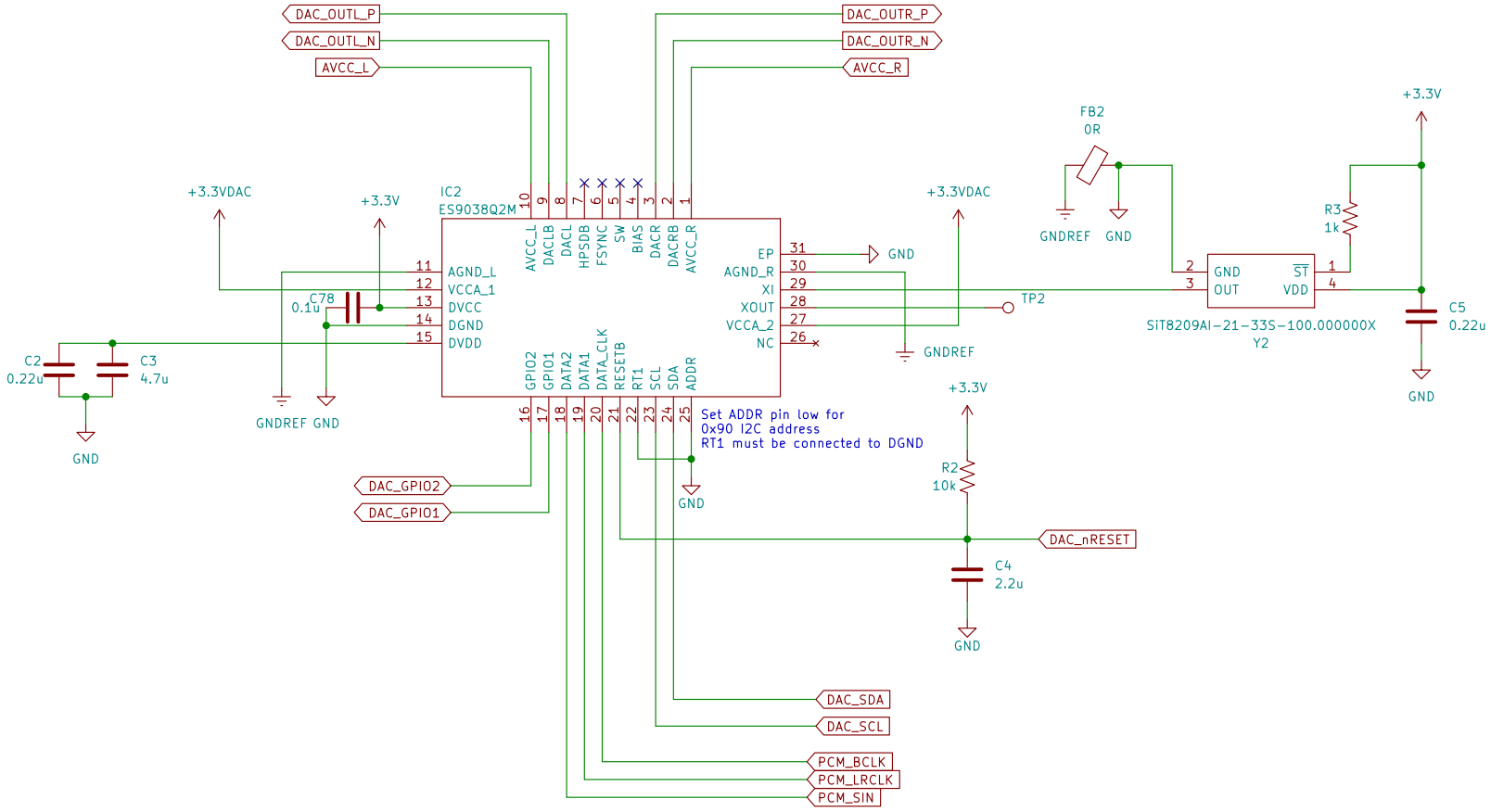
Connectors

File: connectors.kicad_sch

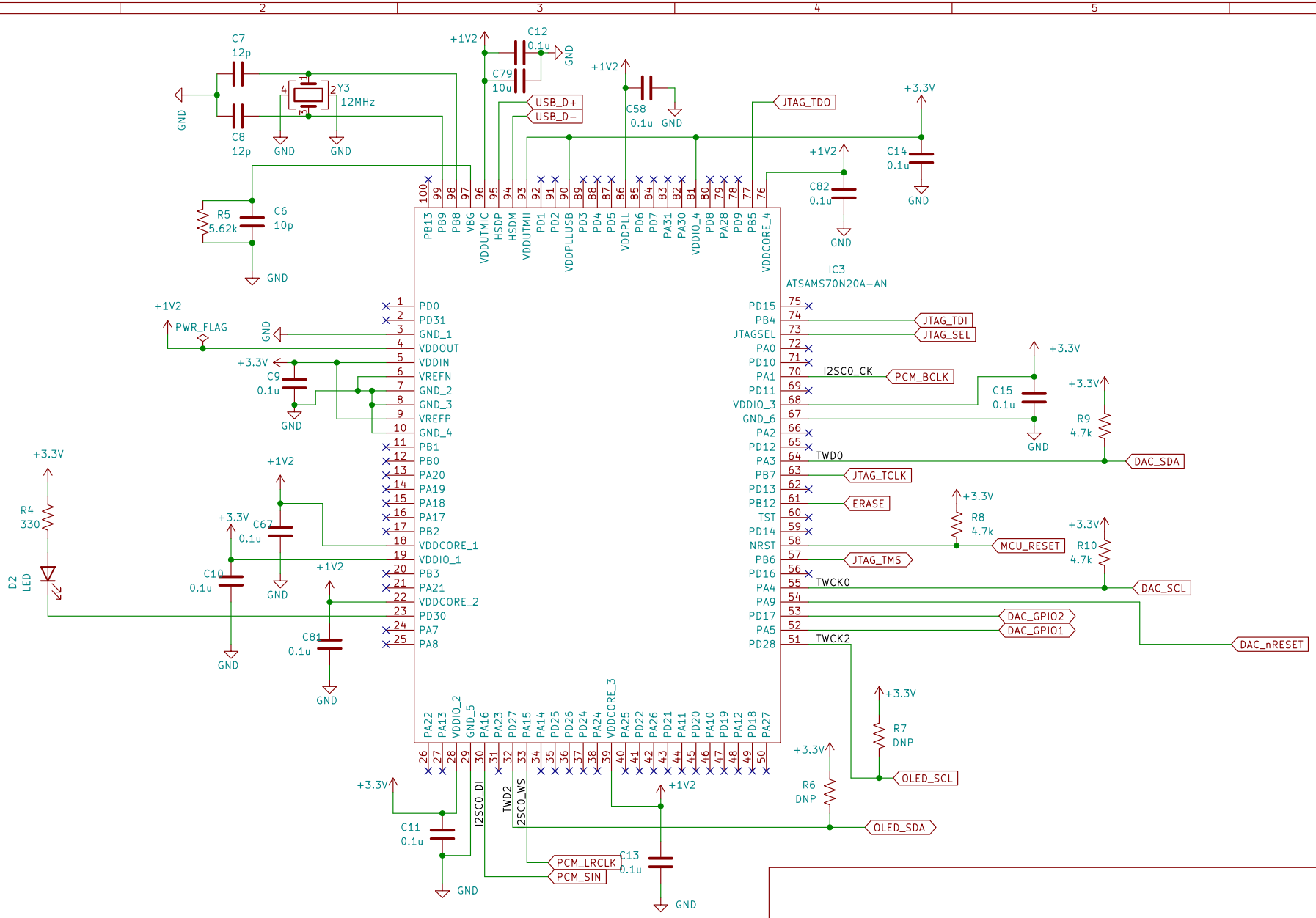
Sheet: /
File: steDAC.kicad_sch

Title: SteDAC overall sheet

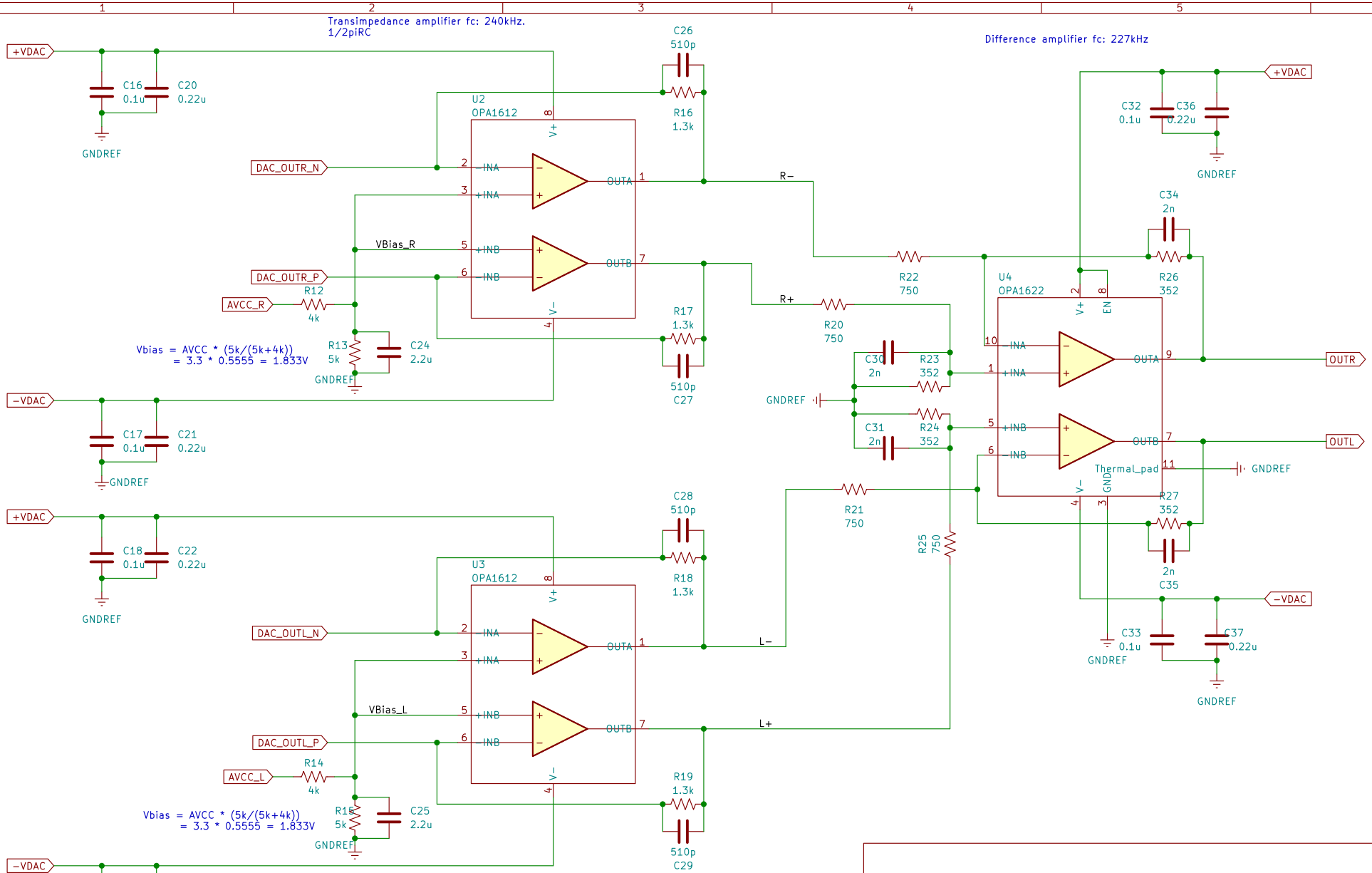
Size: A4	Date:	**Rev:**
KiCad E.D.A. kicad (6.0.0)		Id: 1/6

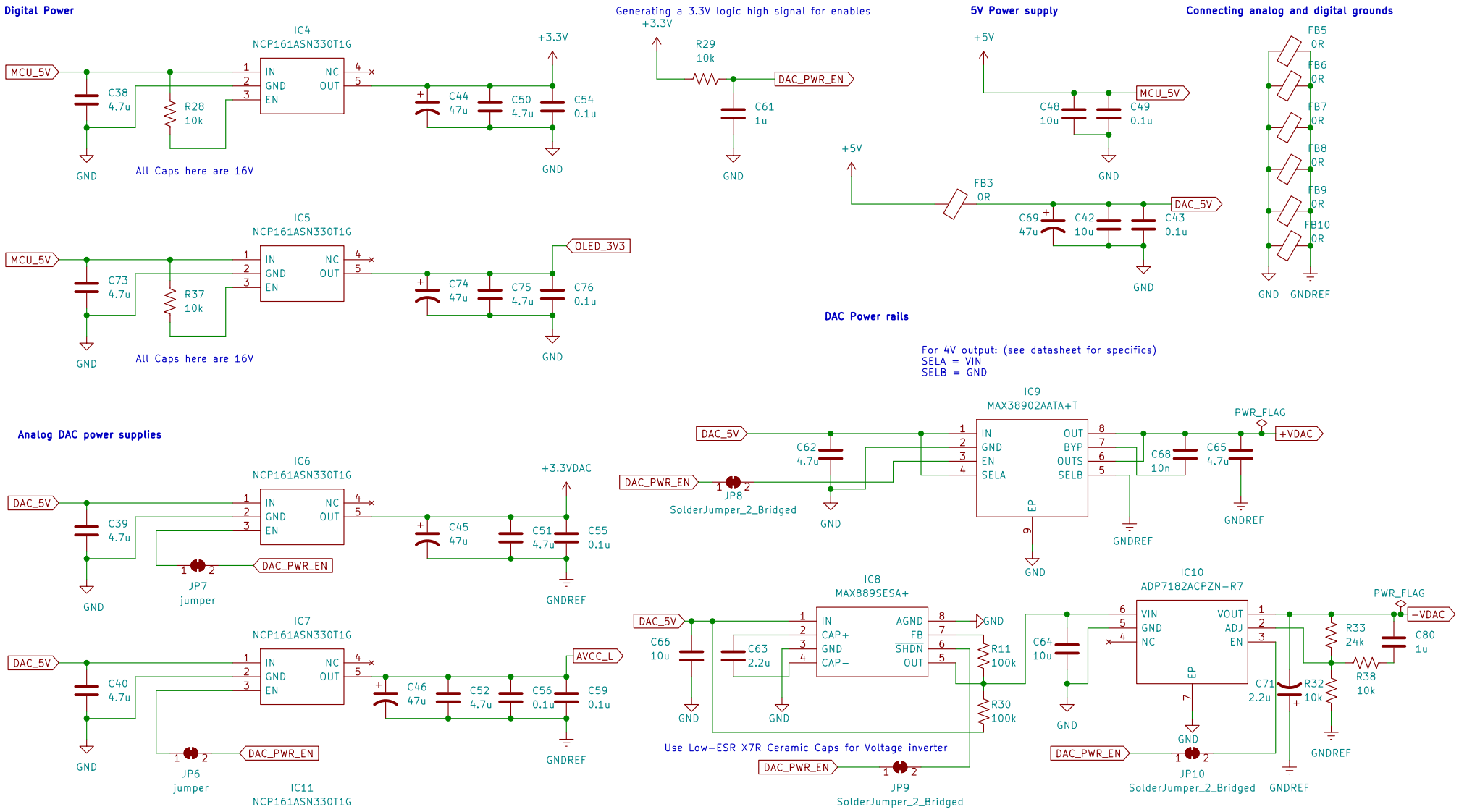


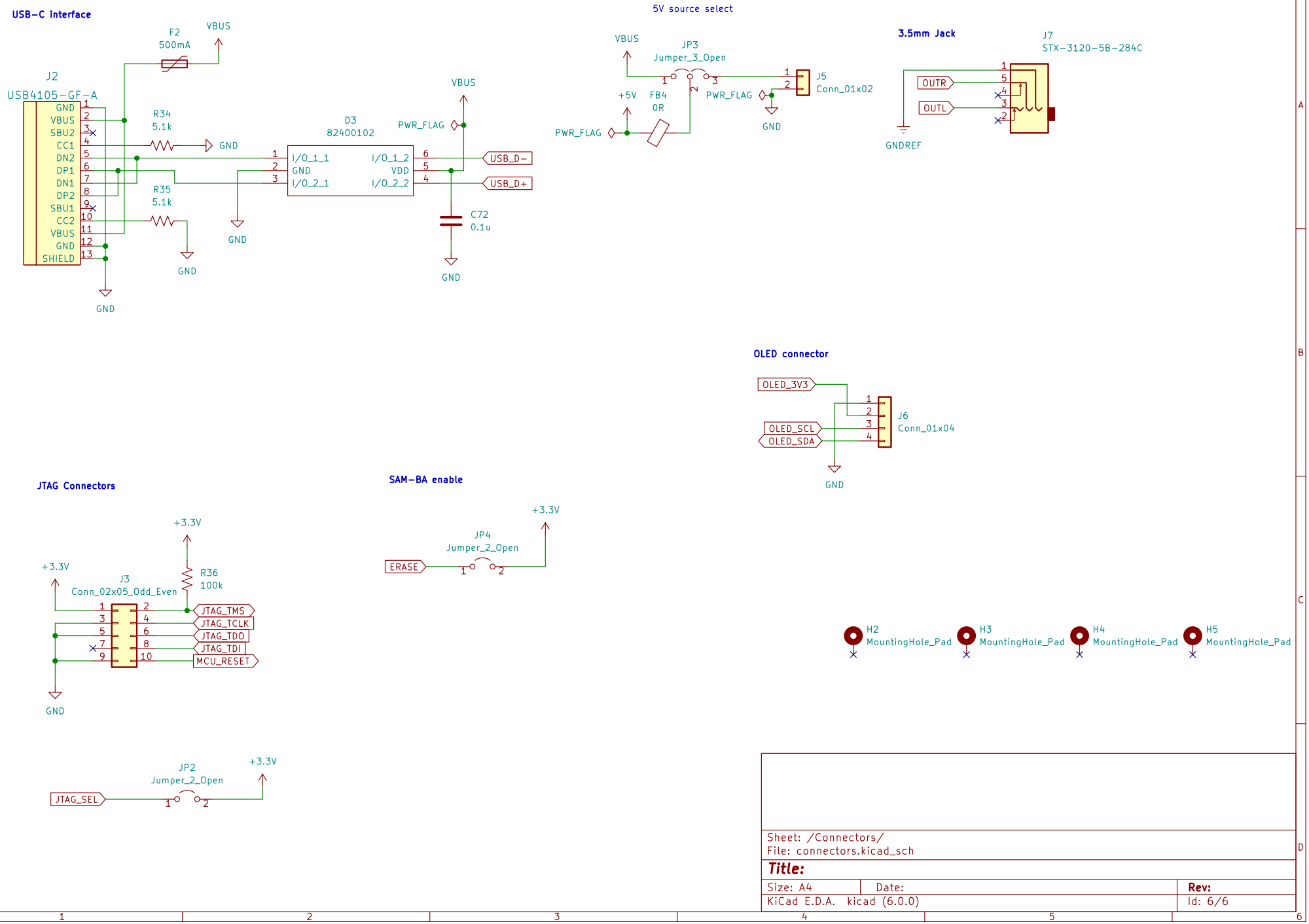
Sheet: /DAC interface/		
File: DAC_interface.kicad_sch		
Title: ES9038Q2M DAC Interface		
Size: A4	Date:	**Rev:**
KiCad E.D.A. kicad (6.0.0)		Id: 3/6



Sheet: /MCU interface/	
File: MCU_sch.kicad_sch	
Title: PIC32 Interface	
Size: A4	Date:
KiCad E.D.A. kicad (6.0.0)	Rev: Id: 3/6


Transimpedance amplifier fc: 240kHz.
1/2piRC
Difference amplifier fc: 227kHz
+VDAC
−VDAC
GNDREF
C16 0.1u
C20 0.22u
C17 0.1u
C21 0.22u
C18 0.1u
C22 0.22u
C19 0.1u
C23 0.22u
U2
OPA1612
U3
OPA1612
U4
OPA1622
DAC_OUTR_N
DAC_OUTR_P
DAC_OUTL_N
DAC_OUTL_P
AVCC_R
AVCC_L
R12 4k
R14 4k
R13 5k
R15 5k
C24 2.2u
C25 2.2u
VBias_R
VBias_L
Vbias = AVCC * (5k/(5k+4k))
= 3.3 * 0.5555 = 1.833V
C26 510p
C28 510p
R16 1.3k
R18 1.3k
R17 1.3k
R19 1.3k
C27 510p
C29 510p
R−
R+
L−
L+
R22 750
R20 750
R21 750
R25 750
C30 2n
C31 2n
R23 352
R24 352
C32 0.1u
C36 0.22u
C34 2n
C35 2n
R26 352
R27 352
C33 0.1u
C37 0.22u
Thermal_pad
OUTR
OUTL
Sheet: /Output Stage/
File: output_stage.kicad_sch
Title: Output Stage
Size: A4
Date:
Rev:
KiCad E.D.A. kicad (6.0.0)
Id: 4/6


Digital Power
IC4
NCP161ASN330T1G
MCU_5V
C38
4.7u
R28
10k
GND
All Caps here are 16V
C44
47u
C50
4.7u
C54
0.1u
+3.3V
IC5
NCP161ASN330T1G
MCU_5V
C73
4.7u
R37
10k
GND
All Caps here are 16V
C74
47u
C75
4.7u
C76
0.1u
OLED_3V3
Generating a 3.3V logic high signal for enables
+3.3V
R29
10k
DAC_PWR_EN
C61
1u
GND
5V Power supply
+5V
C48
10u
C49
0.1u
MCU_5V
GND
+5V
FB3
0R
C69
47u
C42
10u
C43
0.1u
DAC_5V
GND
Connecting analog and digital grounds
FB5
0R
FB6
0R
FB7
0R
FB8
0R
FB9
0R
FB10
0R
GND
GNDREF
DAC Power rails
For 4V output: (see datasheet for specifics)
SELA = VIN
SELB = GND
IC9
MAX38902AATA+T
DAC_5V
C62
4.7u
DAC_PWR_EN
JP8
SolderJumper_2_Bridged
GND
IN
GND
EN
SELA
OUT
BYP
OUTS
SELB
EP
C68
10n
C65
4.7u
PWR_FLAG
+VDAC
GNDREF
Analog DAC power supplies
IC6
NCP161ASN330T1G
DAC_5V
C39
4.7u
GND
DAC_PWR_EN
JP7
jumper
C45
47u
C51
4.7u
C55
0.1u
+3.3VDAC
GNDREF
IC7
NCP161ASN330T1G
DAC_5V
C40
4.7u
GND
DAC_PWR_EN
JP6
jumper
C46
47u
C52
4.7u
C56
0.1u
C59
0.1u
AVCC_L
GNDREF
IC11
NCP161ASN330T1G
DAC_5V
C41
4.7u
GND
DAC_PWR_EN
JP5
jumper
C47
47u
C53
4.7u
C57
0.1u
C60
0.1u
AVCC_R
GNDREF
IC8
MAX889SESA+
DAC_5V
C66
10u
GND
C63
2.2u
GND
IN
CAP+
GND
CAP−
AGND
FB
SHDN
OUT
GND
R11
100k
R30
100k
Use Low−ESR X7R Ceramic Caps for Voltage inverter
DAC_PWR_EN
JP9
SolderJumper_2_Bridged
IC10
ADP7182ACPZN−R7
C64
10u
GND
VIN
GND
NC
VOUT
ADJ
EN
EP
C71
2.2u
R33
24k
R32
10k
R38
10k
C80
1u
PWR_FLAG
−VDAC
GNDREF
DAC_PWR_EN
JP10
SolderJumper_2_Bridged
GNDREF
Sheet: /Power Supplies/
File: power.kicad_sch
Title: Power Supplies
Size: A4
Date:
Rev:
KiCad E.D.A. kicad (6.0.0)
Id: 5/6


USB-C interface
F2
500mA
VBUS
J2
USB4105-GF-A
GND
VBUS
SBU2
CC1
DN2
DP1
DN1
DP2
SBU1
CC2
VBUS
GND
SHIELD
R34
5.1k
R35
5.1k
GND
D3
82400102
I/O_1_1
GND
I/O_2_1
I/O_1_2
VDD
I/O_2_2
PWR_FLAG
USB_D-
USB_D+
C72
0.1u
5V source select
JP3
Jumper_3_Open
+5V
FB4
0R
J5
Conn_01x02
3.5mm Jack
J7
STX-3120-5B-284C
OUTR
OUTL
GNDREF
OLED connector
OLED_3V3
OLED_SCL
OLED_SDA
J6
Conn_01x04
JTAG Connectors
J3
Conn_02x05_Odd_Even
R36
100k
JTAG_TMS
JTAG_TCLK
JTAG_TDO
JTAG_TDI
MCU_RESET
SAM-BA enable
JP4
Jumper_2_Open
ERASE
JP2
Jumper_2_Open
JTAG_SEL
H2
MountingHole_Pad
H3
MountingHole_Pad
H4
MountingHole_Pad
H5
MountingHole_Pad
Sheet: /Connectors/
File: connectors.kicad_sch
Title:
Size: A4
Date:
Rev:
KiCad E.D.A. kicad (6.0.0)
Id: 6/6