Sheet: power

File: power.sch

Sheet: coreboard

File: coreboard.sch

Sheet: mechanics

File: mechanics.sch

Sheet: audio-codec

File: audio-codec.sch

Sheet: audio-inputs

File: audio-inputs.sch

Sheet: audio-outputs

File: audio-outputs.sch

Sheet: audio-headphones

File: audio-headphones.sch

Sheet: control-voltage

File: control-voltage.sch

Sheet: spdif

File: spdif.sch

Sheet: usb

File: usb.sch

Sheet: midi

File: midi.sch

Sheet: control-chain

File: control-chain.sch

Notes

- All resistors named as RA* must have at least 1% tolerance
- All non-polarized capacitors named as CA* must use NP0 Temp. Coef.
- All other non-polarized capacitors should use X7R Temp. Coef.
- Decoupling caps must be placed as close as possible of the IC power pins
- IC's such as the codec, ADC, DAC, headphone amplifier, EEPROM should not be changed to maintain software compatibility

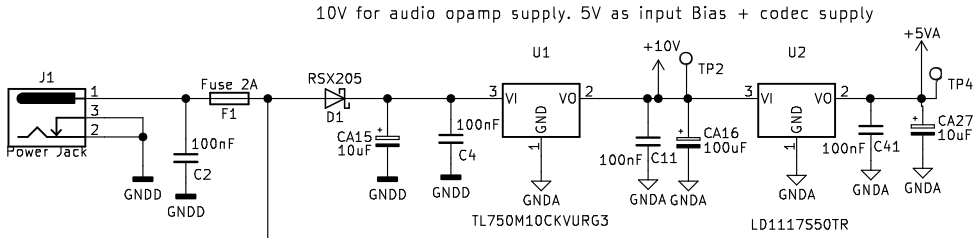
USB outp Power: 500mA
Inp Power: 12V 700mA
https://github.com/moddevices/mod-hw-duoX
DuoX Audio processing board
MOD Devices GmbH

Sheet: /
File: bottom-board.sch

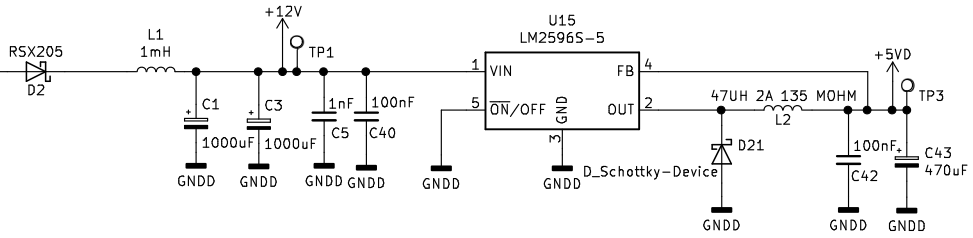
Title: MOD DuoX – Bottom Board

Size: A4	Date: 2021-11-11	**Rev: Rev 1.05**
KiCad E.D.A. kicad 5.1.11-e4df9d881f92ubuntu20.04.1		Id: 1/13

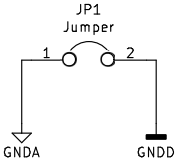
Analog



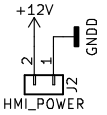
Digital

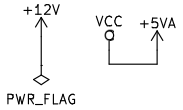


Only to be merged at codec ground



Controller power connector



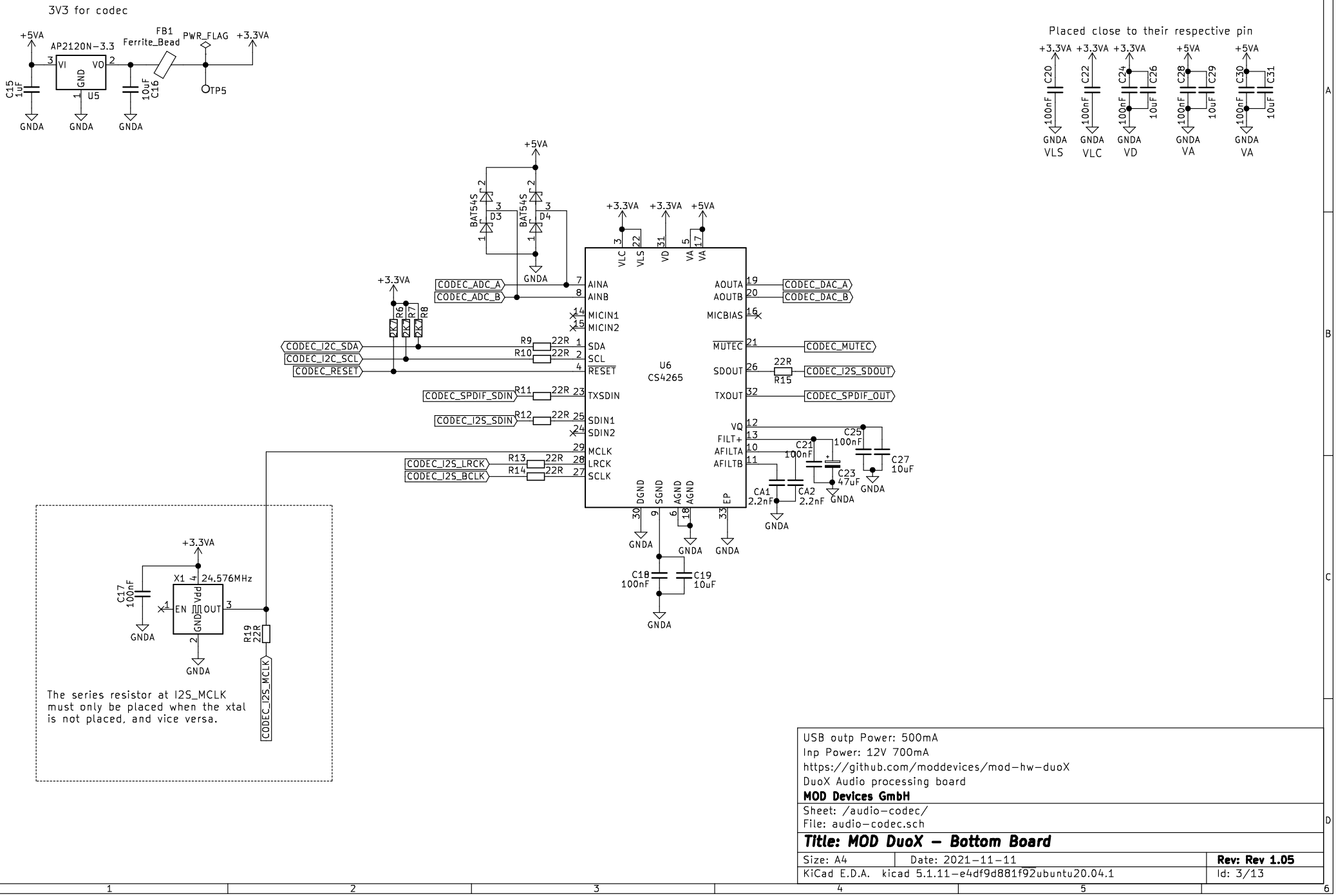


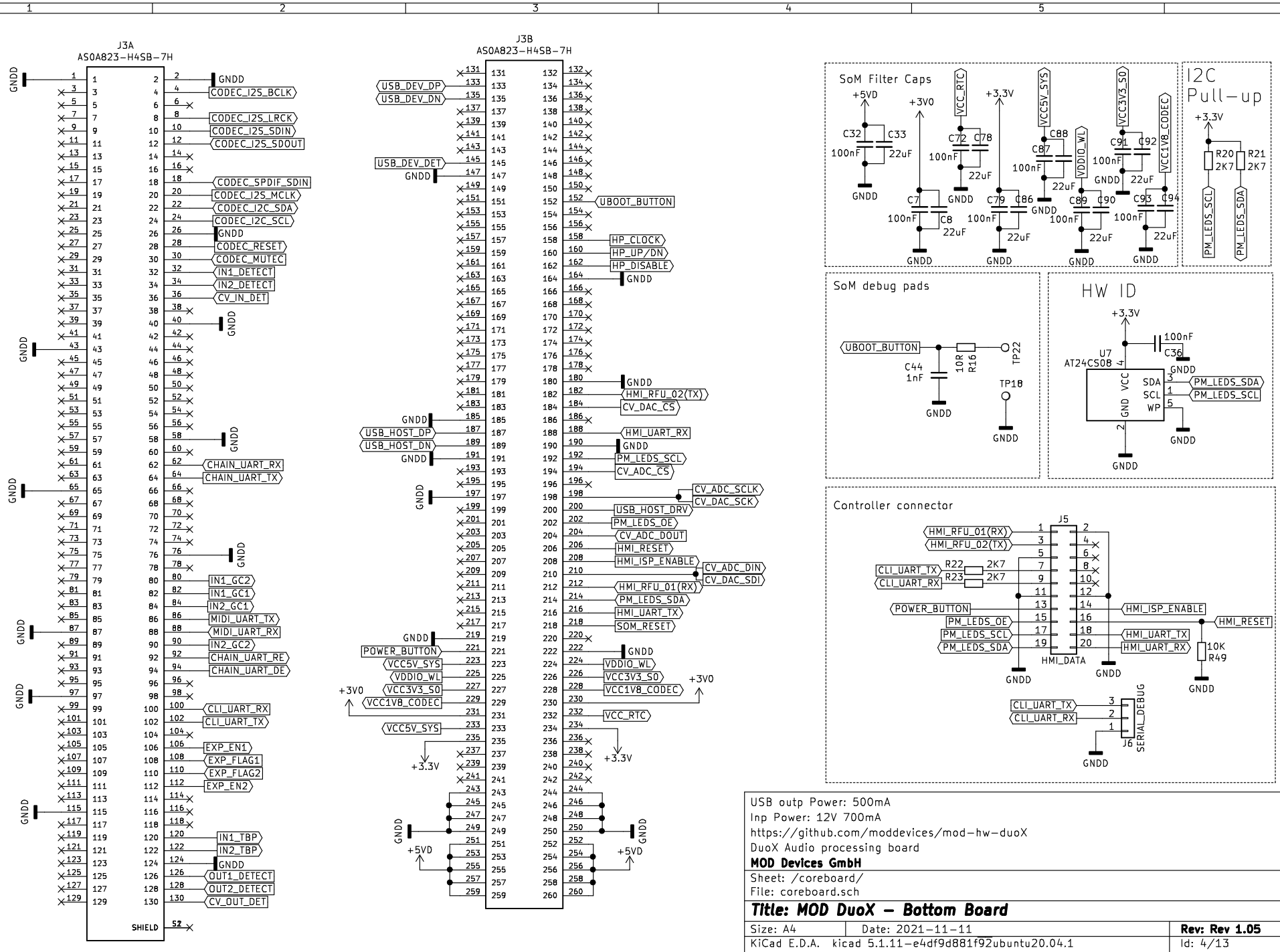
USB outp Power: 500mA
Inp Power: 12V 700mA
https://github.com/moddevices/mod-hw-duoX
DuoX Audio processing board
MOD Devices GmbH

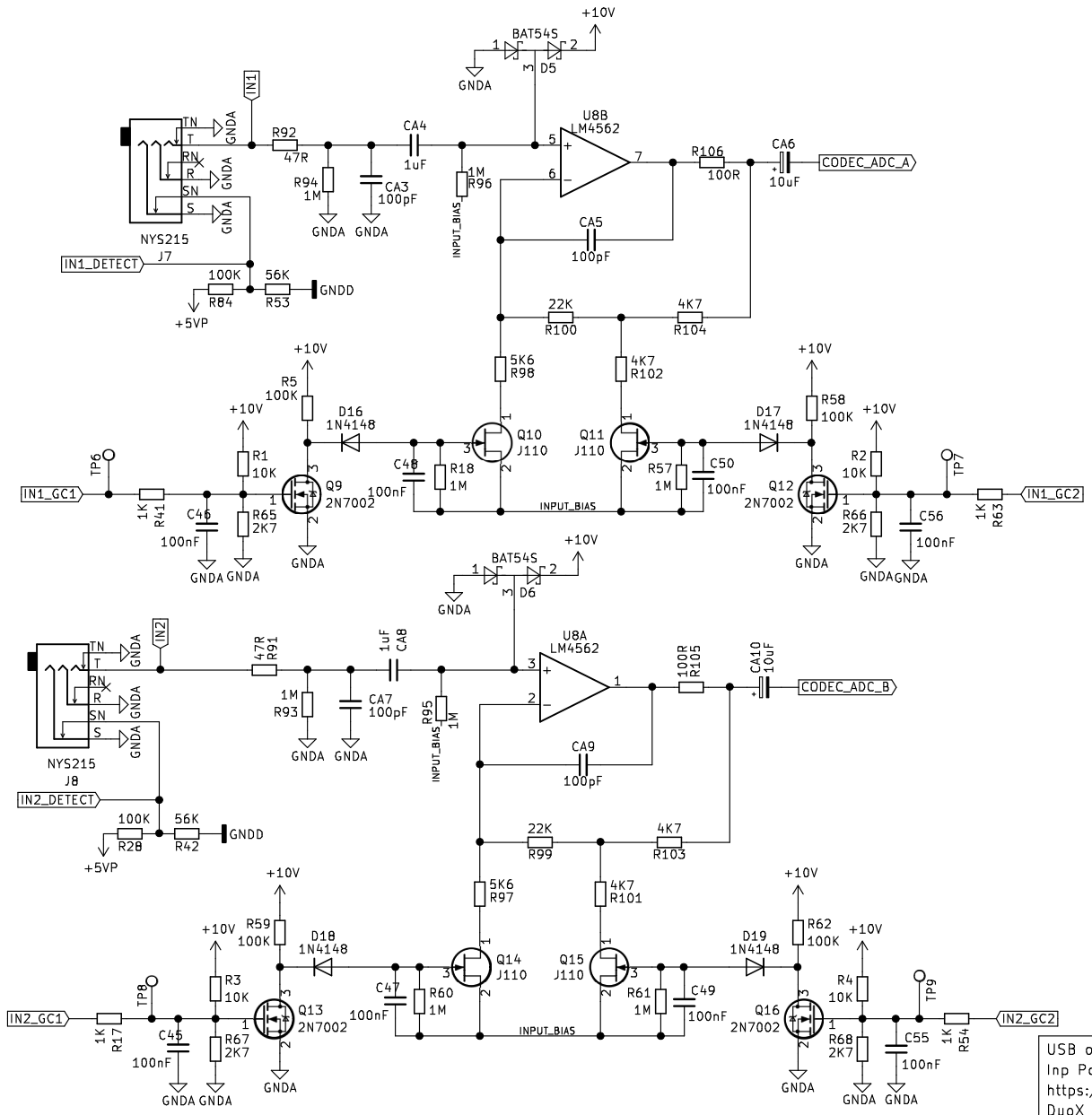
Sheet: /power/
File: power.sch

Title: MOD DuoX – Bottom Board

Size: A4	Date: 2021-11-11	**Rev: Rev 1.05**
KiCad E.D.A. kicad 5.1.11-e4df9d881f92ubuntu20.04.1		Id: 2/13


3V3 for codec
+5VA
AP2120N-3.3
VI
VO
GND
U5
FB1
Ferrite_Bead
PWR_FLAG
+3.3VA
TP5
C15 1uF
C16 10uF
GNDA
Placed close to their respective pin
C20 100nF
C22 100nF
C24 100nF
C26 10uF
C28 100nF
C29 10uF
C30 100nF
C31 10uF
VLS
VLC
VD
VA
BAT54S
D3
D4
U6
CS4265
AINA
AINB
MICIN1
MICIN2
MICBIAS
AOUTA
AOUTB
MUTEC
SDOUT
TXOUT
VQ
FILT+
AFILTA
AFILTB
DGND
SGND
AGND
EP
SDA
SCL
RESET
TXSDIN
SDIN1
SDIN2
MCLK
LRCK
SCLK
CODEC_ADC_A
CODEC_ADC_B
CODEC_DAC_A
CODEC_DAC_B
CODEC_MUTEC
CODEC_I2C_SDOUT
CODEC_SPDIF_OUT
CODEC_I2C_SDA
CODEC_I2C_SCL
CODEC_RESET
CODEC_SPDIF_SDIN
CODEC_I2S_SDIN
CODEC_I2S_LRCK
CODEC_I2S_BCLK
CODEC_I2S_MCLK
R6 2K2
R7 2K2
R8 2K2
R9 22R
R10 22R
R11 22R
R12 22R
R13 22R
R14 22R
R15 22R
C17 100nF
X1 24.576MHz
EN
Vdd
OUT
R19 22R
C18 100nF
C19 10uF
C21 100nF
C23 47uF
C25 100nF
C27 10uF
CA1 2.2nF
CA2 2.2nF
The series resistor at I2S_MCLK must only be placed when the xtal is not placed, and vice versa.
USB outp Power: 500mA
Inp Power: 12V 700mA
https://github.com/moddevices/mod-hw-duoX
DuoX Audio processing board
MOD Devices GmbH
Sheet: /audio-codec/
File: audio-codec.sch
Title: MOD DuoX – Bottom Board
Size: A4
Date: 2021-11-11
Rev: Rev 1.05
KiCad E.D.A. kicad 5.1.11-e4df9d881f92ubuntu20.04.1
Id: 3/13


J3A
AS0A823-H4SB-7H
J3B
AS0A823-H4SB-7H
SoM Filter Caps
I2C Pull-up
SoM debug pads
HW ID
Controller connector
J5
HMI_DATA
SERIAL_DEBUG
U7
AT24CS08
USB outp Power: 500mA
Inp Power: 12V 700mA
https://github.com/moddevices/mod-hw-duoX
DuoX Audio processing board
MOD Devices GmbH
Sheet: /coreboard/
File: coreboard.sch
Title: MOD DuoX – Bottom Board
Size: A4
Date: 2021-11-11
Rev: Rev 1.05
KiCad E.D.A. kicad 5.1.11-e4df9d881f92ubuntu20.04.1
Id: 4/13

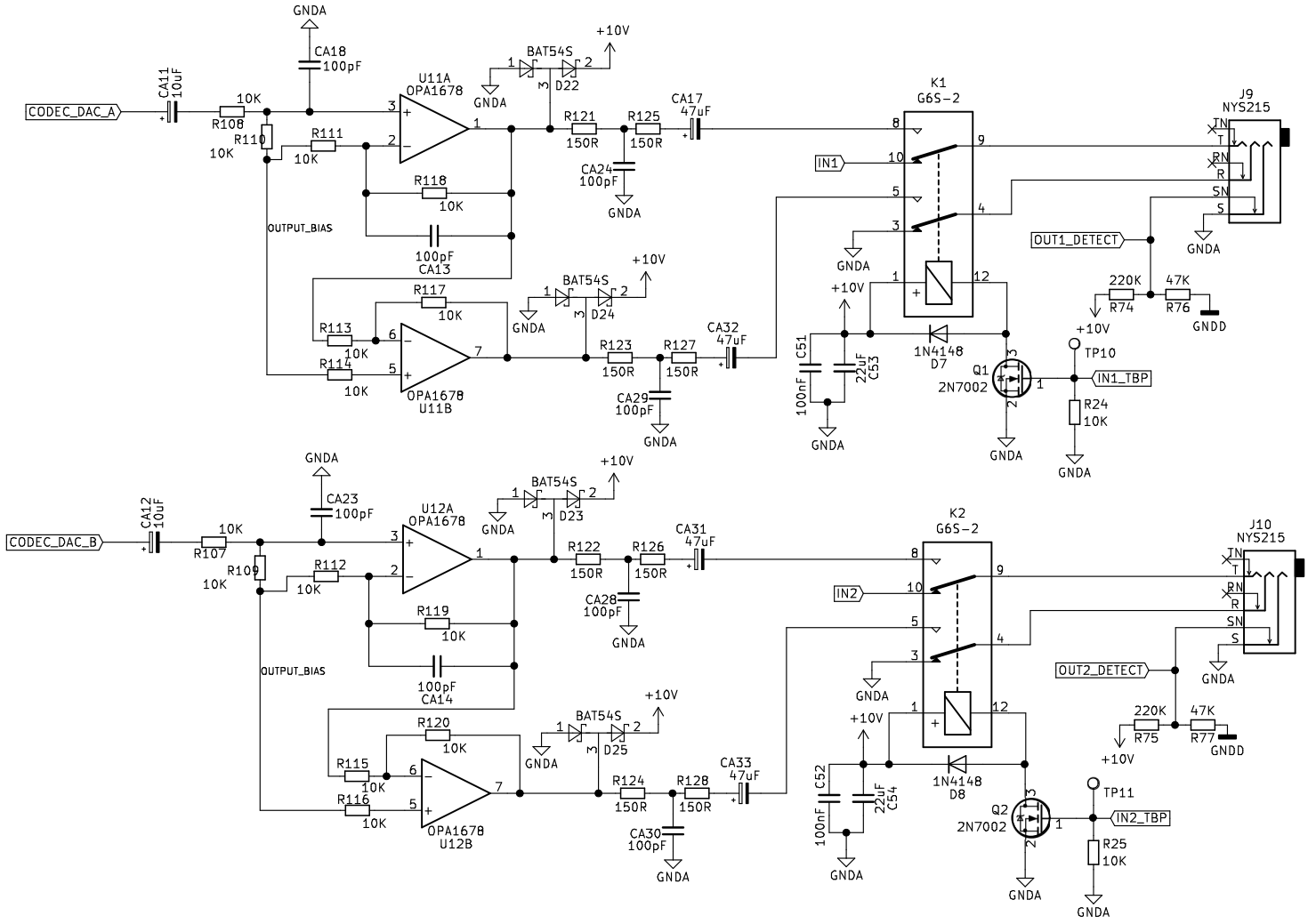


USB outp Power: 500mA
Inp Power: 12V 700mA
https://github.com/moddevices/mod-hw-duoX
DuoX Audio processing board
MOD Devices GmbH

Sheet: /audio-inputs/
File: audio-inputs.sch

Title: MOD DuoX – Bottom Board

Size: A4	Date: 2021-11-11	**Rev: Rev 1.05**
KiCad E.D.A. kicad 5.1.11-e4df9d881f92ubuntu20.04.1		Id: 5/13

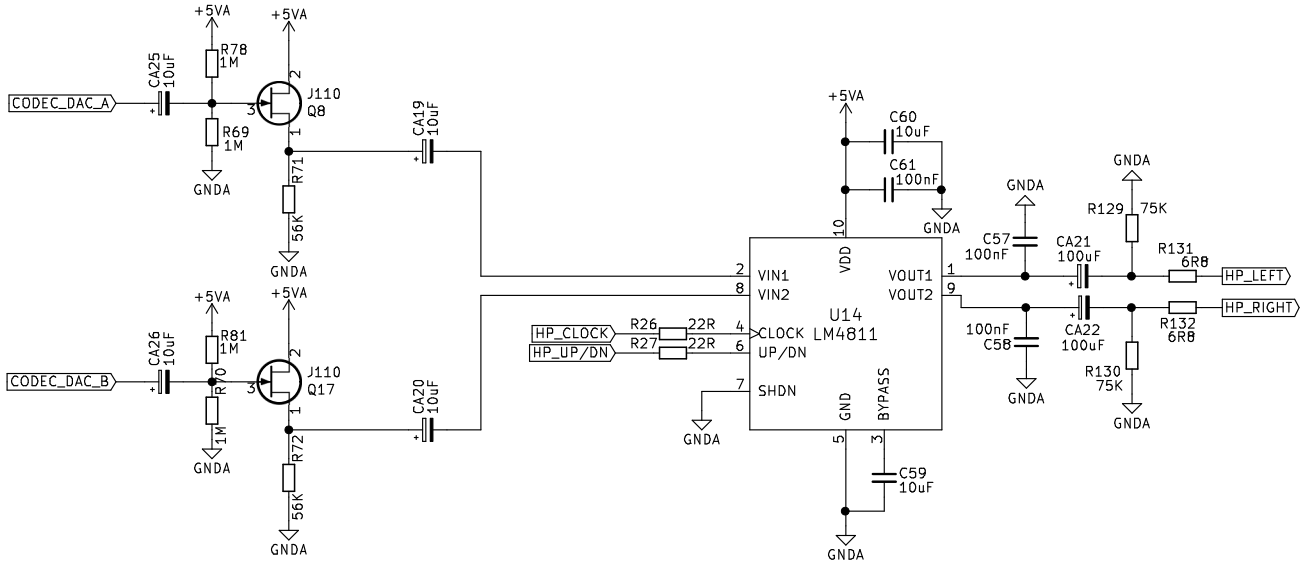


USB outp Power: 500mA
Inp Power: 12V 700mA
https://github.com/moddevices/mod-hw-duoX
DuoX Audio processing board
MOD Devices GmbH

Sheet: /audio-outputs/
File: audio-outputs.sch

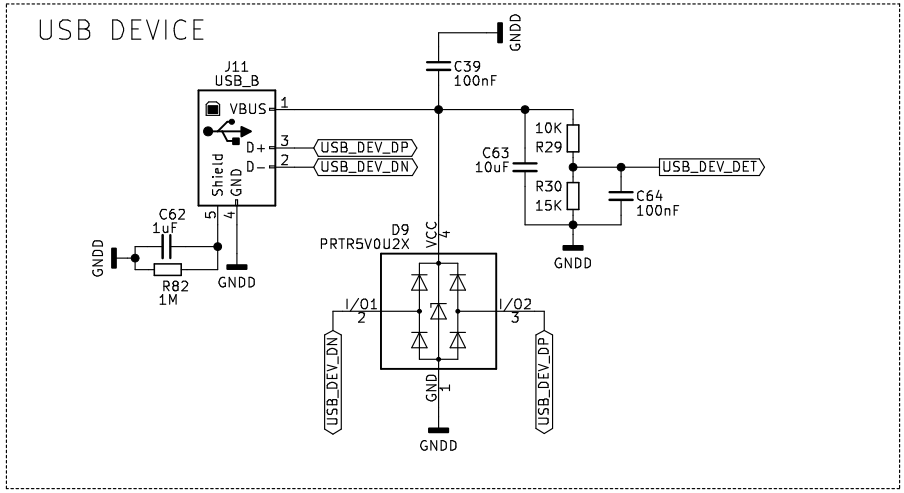
Title: MOD DuoX – Bottom Board

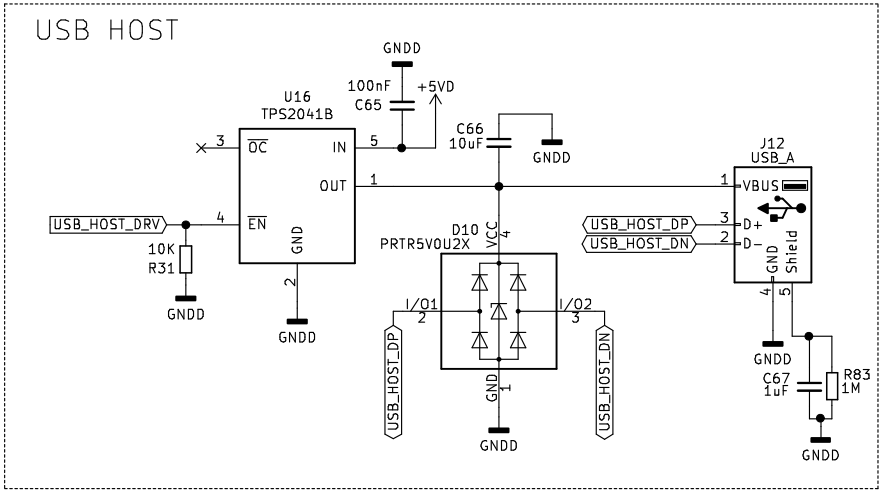
Size: A4	Date: 2021-11-11	**Rev: Rev 1.05**
KiCad E.D.A. kicad 5.1.11-e4df9d881f92ubuntu20.04.1		Id: 6/13



HP circuit values designed for Dual 70mW @ RL=32ohm

USB outp Power: 500mA Inp Power: 12V 700mA https://github.com/moddevices/mod-hw-duoX DuoX Audio processing board **MOD Devices GmbH**		
Sheet: /audio-headphones/ File: audio-headphones.sch		
Title: MOD DuoX – Bottom Board		
Size: A4	Date: 2021-11-11	**Rev: Rev 1.05**
KiCad E.D.A. kicad 5.1.11-e4df9d881f92ubuntu20.04.1		Id: 7/13





USB outp Power: 500mA
Inp Power: 12V 700mA
https://github.com/moddevices/mod-hw-duoX
DuoX Audio processing board
MOD Devices GmbH

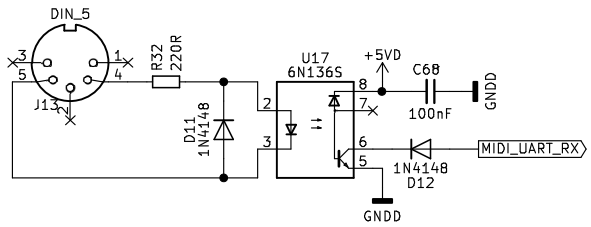
Sheet: /usb/
File: usb.sch

Title: MOD DuoX – Bottom Board

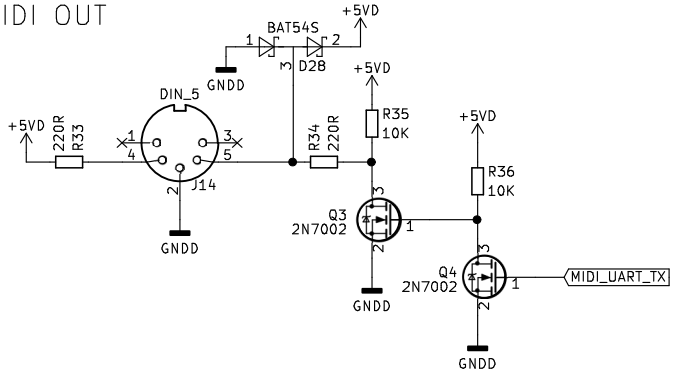
Size: A4	Date: 2021-11-11	**Rev: Rev 1.05**
KiCad E.D.A. kicad 5.1.11-e4df9d881f92ubuntu20.04.1		Id: 8/13

MIDI IN

Opto:
If = 16mA, Vf = 1.4V



MIDI OUT

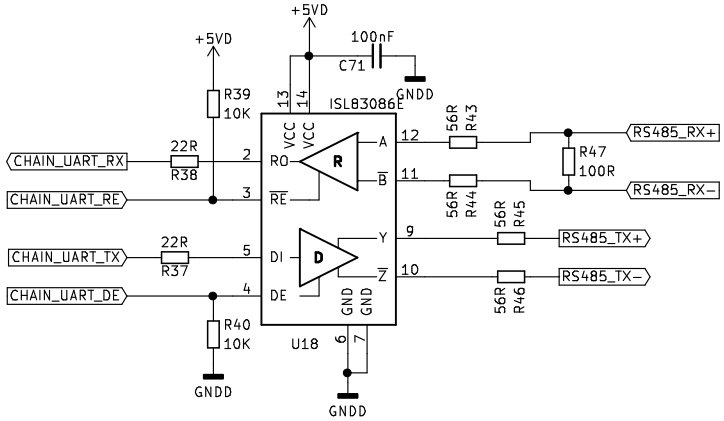


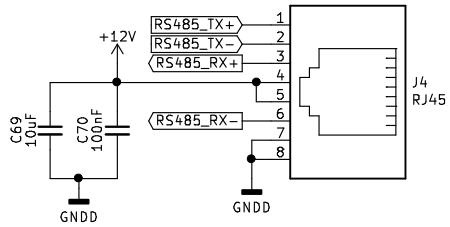
USB outp Power: 500mA
Inp Power: 12V 700mA
https://github.com/moddevices/mod-hw-duoX
DuoX Audio processing board
MOD Devices GmbH

Sheet: /midi/
File: midi.sch

Title: MOD DuoX – Bottom Board

Size: A4	Date: 2021-11-11	**Rev: Rev 1.05**
KiCad E.D.A. kicad 5.1.11-e4df9d881f92ubuntu20.04.1		Id: 9/13





USB outp Power: 500mA
Inp Power: 12V 700mA
https://github.com/moddevices/mod-hw-duoX
DuoX Audio processing board
MOD Devices GmbH

Sheet: /control-chain/
File: control-chain.sch

Title: MOD DuoX – Bottom Board

Size: A4	Date: 2021-11-11	**Rev: Rev 1.05**
KiCad E.D.A. kicad 5.1.11-e4df9d881f92ubuntu20.04.1		Id: 10/13

FIDUCIAL FIDUCIAL FIDUCIAL

FID1 FID2 FID3

HOLE HOLE HOLE HOLE HOLE Standoff Standoff HOLE HOLE

H1 H2 H3 H4 H5 H6 H7 H8 H9

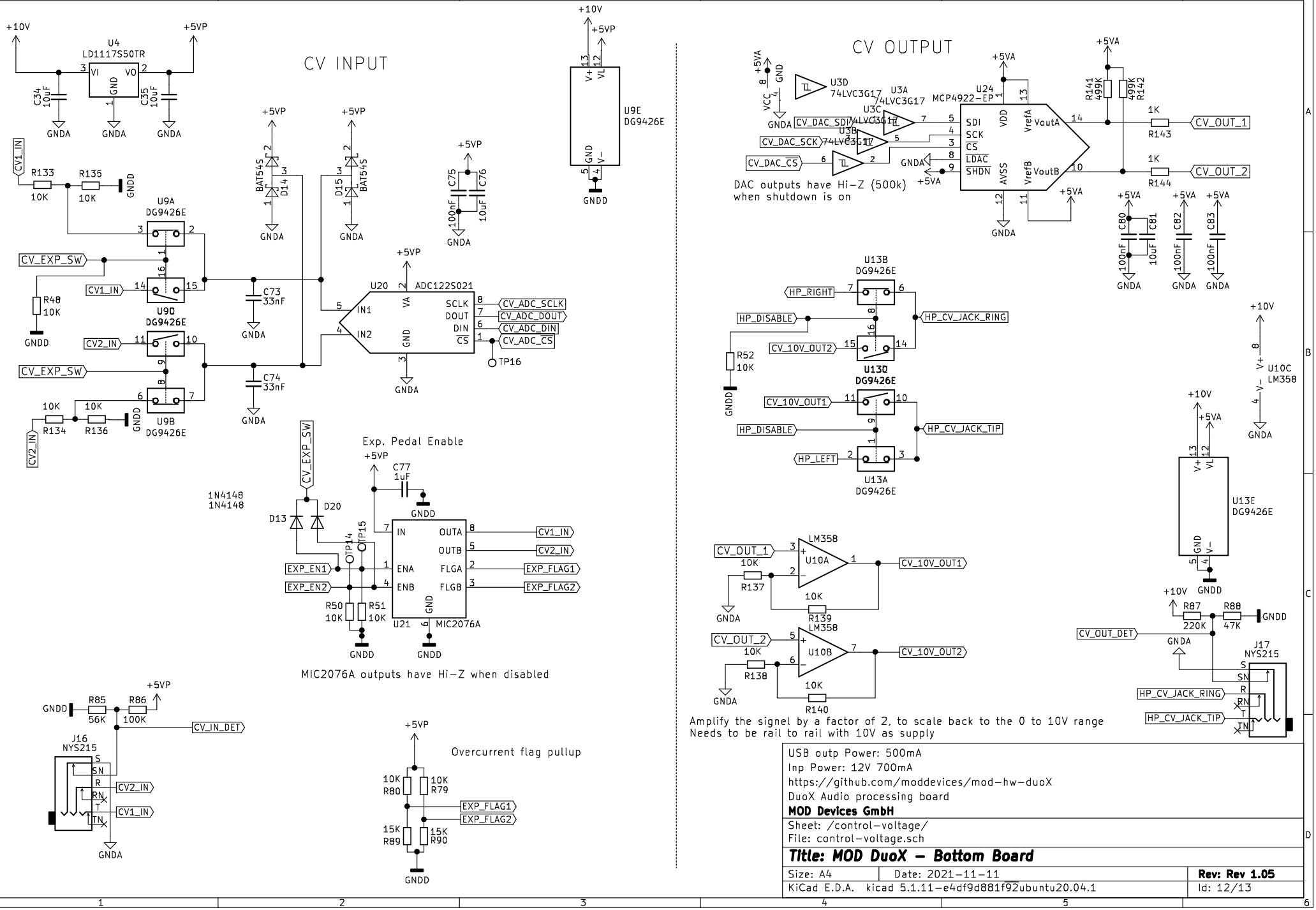
IMG1
Logo

USB outp Power: 500mA
Inp Power: 12V 700mA
https://github.com/moddevices/mod-hw-duoX
DuoX Audio processing board
MOD Devices GmbH

Sheet: /mechanics/
File: mechanics.sch

Title: MOD DuoX – Bottom Board

Size: A4	Date: 2021-11-11	**Rev: Rev 1.05**
KiCad E.D.A. kicad 5.1.11-e4df9d881f92ubuntu20.04.1		Id: 11/13

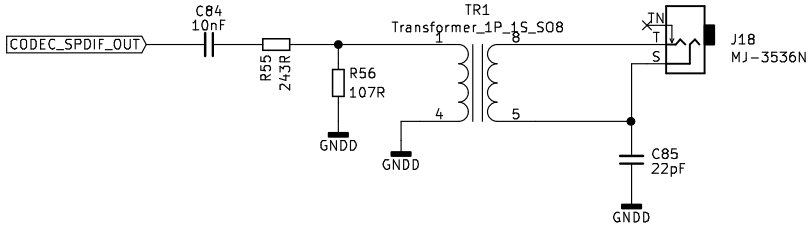


USB outp Power: 500mA
Inp Power: 12V 700mA
https://github.com/moddevices/mod-hw-duoX
DuoX Audio processing board
MOD Devices GmbH

Sheet: /control-voltage/
File: control-voltage.sch

Title: MOD DuoX - Bottom Board

Size: A4	Date: 2021-11-11	**Rev: Rev 1.05**
KiCad E.D.A. kicad 5.1.11-e4df9d881f92ubuntu20.04.1		Id: 12/13



USB outp Power: 500mA
Inp Power: 12V 700mA
https://github.com/moddevices/mod-hw-duoX
DuoX Audio processing board
MOD Devices GmbH

Sheet: /spdif/
File: spdif.sch

Title: MOD DuoX – Bottom Board

Size: A4	Date: 2021-11-11	**Rev: Rev 1.05**
KiCad E.D.A. kicad 5.1.11-e4df9d881f92ubuntu20.04.1		Id: 13/13