

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 NPO 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

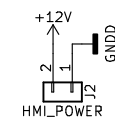
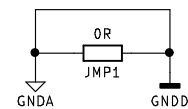
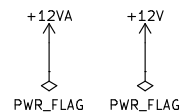
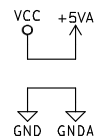
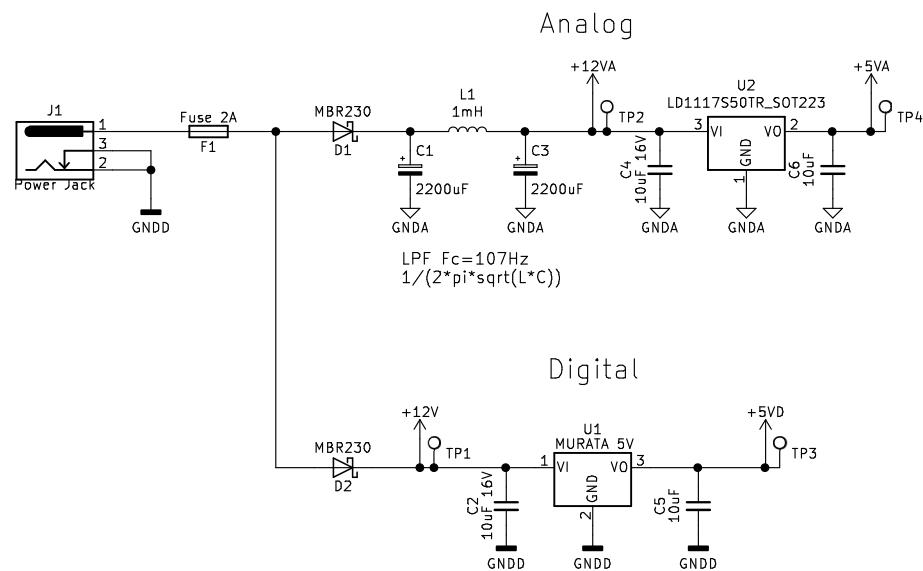
USB outp Power: 1.5A
Inp Power: 12V 700mA
<https://github.com/moddevices/mod-hw-duoX>
DuoX Audio processing board
MOD Devices GmbH

Sheet: /
File: bottom-board.sch

Title: MOD DuoX – Bottom Board

Size: A4 Date: 2020-05-15
KiCad E.D.A. kicad 5.1.5-52549c584ubuntu18.04.1

Rev: Rev 1.2
Id: 1/13



<https://github.com/moddevices/mod-hw-duoX>

DuoX Audio processing board

MOD Devices GmbH

Sheet: /power/

File: power.sch

Title: MOD DuoX – Bottom Board

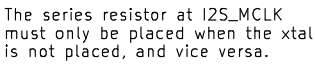
Size: A4

Date: 2020-05-15

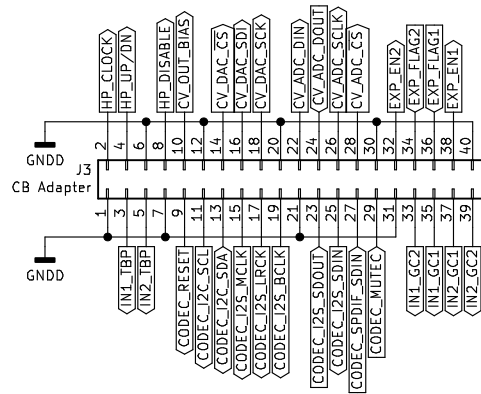
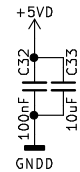
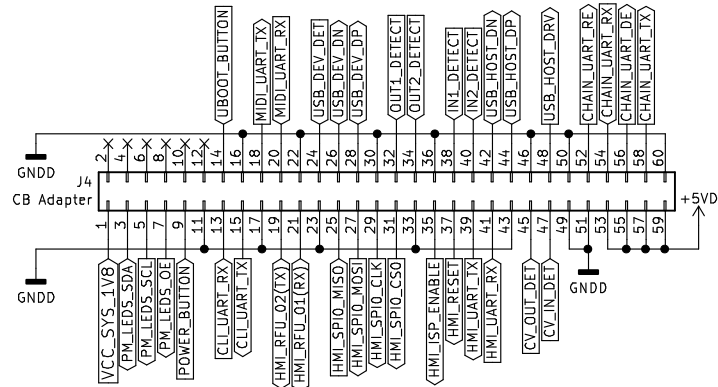
Rev: Rev 1.12

KiCad E.D.A. kicad 5.1.5-52549c584ubuntu18.04.1

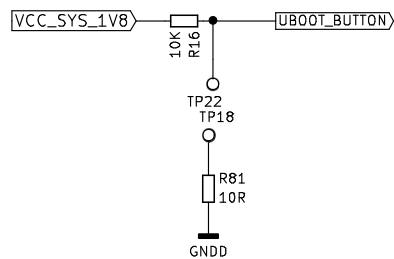
Id: 2/13



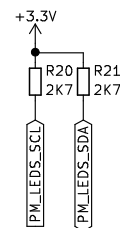
Id: 3/13



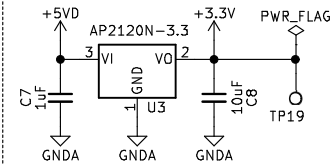
By connecting the 2 test pins the board boots in recovery mode



Pull-up

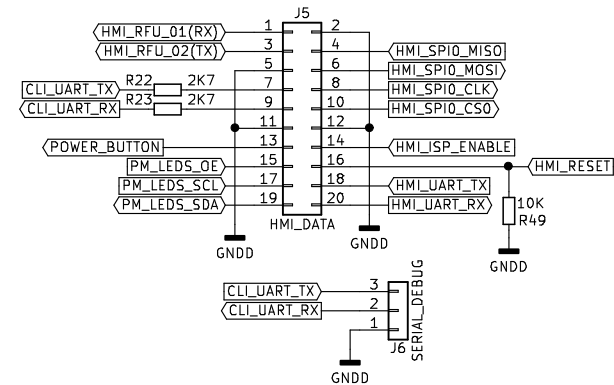
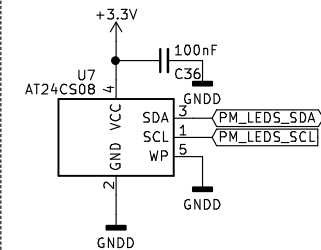


POWER



Used for I/O reference and to power the AT24 memory

HW ID



<https://github.com/moddevices/mod-hw-duoX>

DuoX Audio processing board

MOD Devices GmbH

Sheet: /coreboard/

File: coreboard.sch

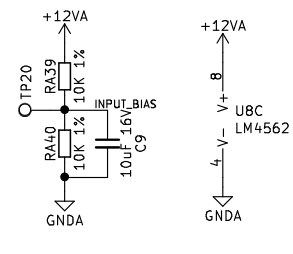
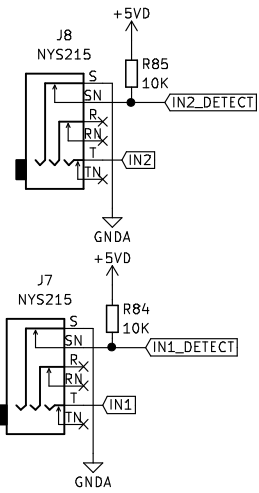
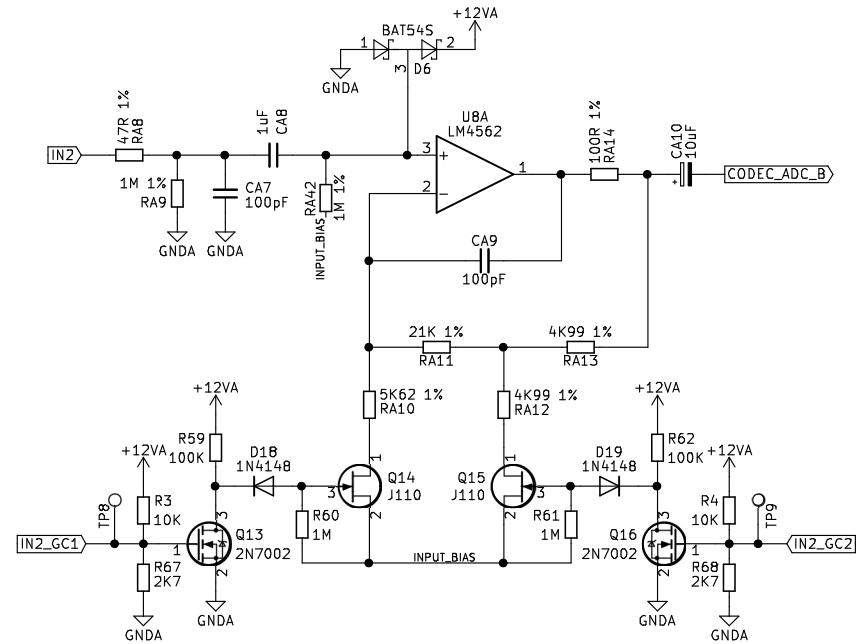
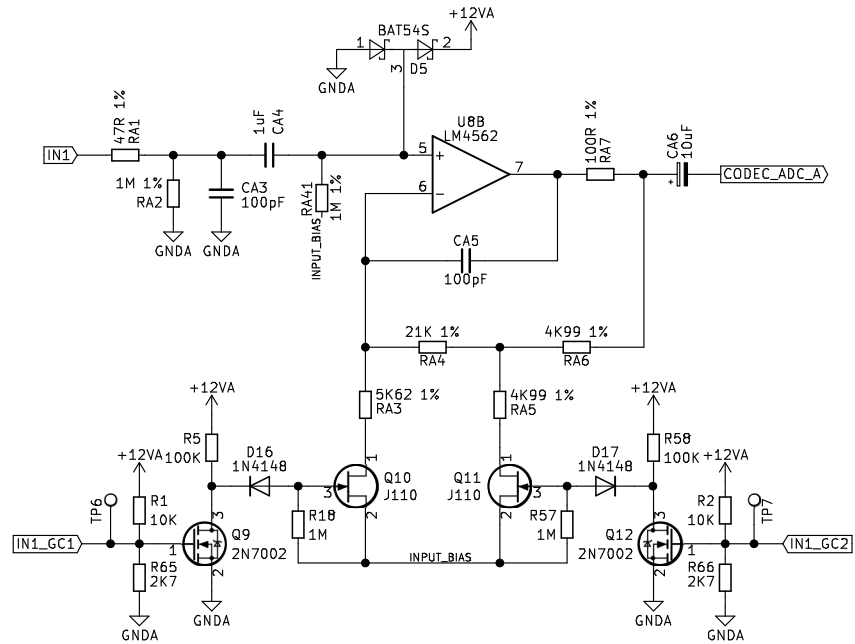
Title: MOD DuoX – Bottom Board

Size: A4 Date: 2020-05-15

KiCad E.D.A. kicad 5.1.5-52549c584ubuntu18.04.1

Rev: Rev 1.12

Id: 4/13



GC2, GC1: GAIN (dB)		The gain calculation includes the RDSon value J110: RDSon = 18R
1, 1	0.0	
1, 0	6.0	
0, 1	15.0	
0, 0	20.4	

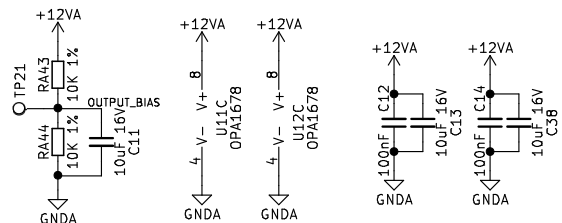
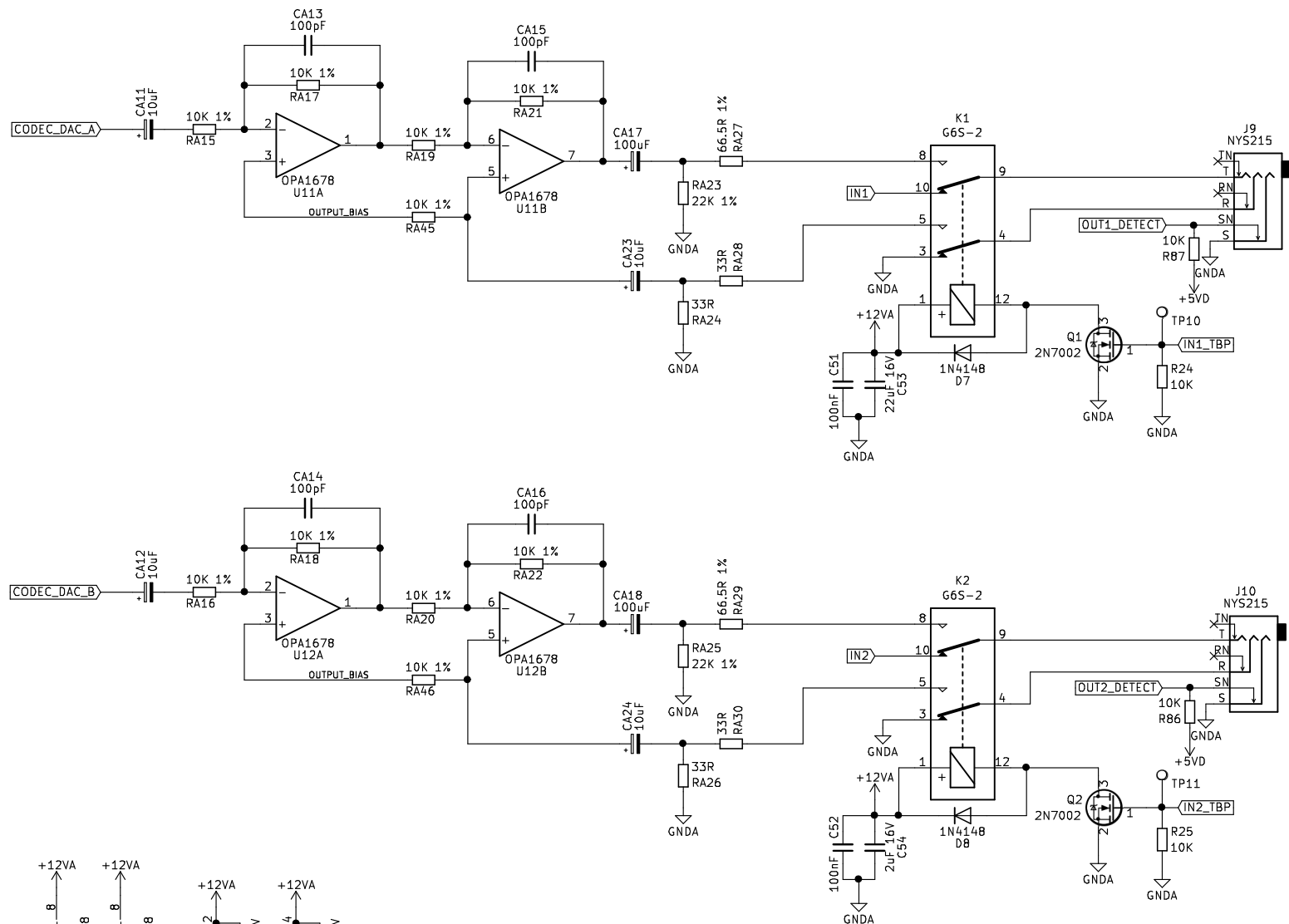
The CODEC only presents optimal dynamic range and THD+N for PGA setting: -12dB to +6dB.

<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: 2020-05-15
 KiCad E.D.A. kicad 5.1.5-52549c584ubuntu18.04.1

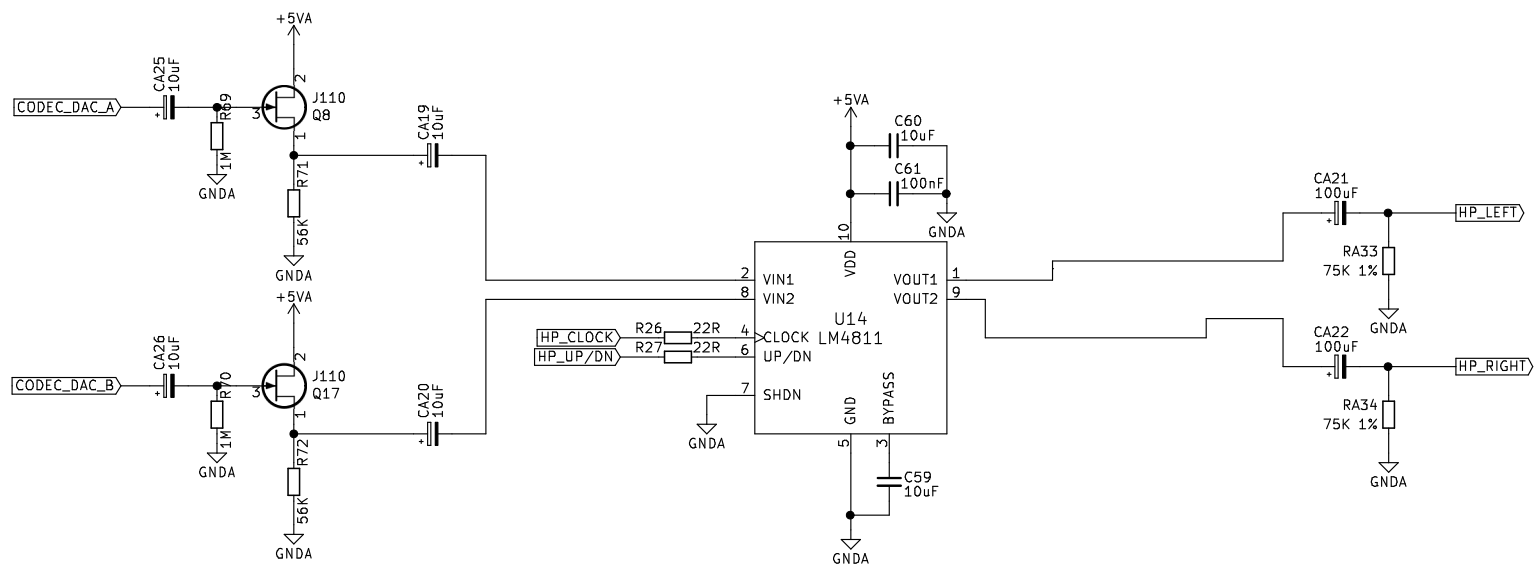
Rev: Rev 1.12
 Id: 5/13



*** The outputs are not balanced ***

.....
 The Ring pin is actually a low impedance input, and any signal on it is added to the output signal. This will make a balanced input see only the signal, and provides exactly the same level (and even ground loop compensation) to an unbalanced input.

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: 2020-05-15	Rev: Rev 1.12
KiCad E.D.A. kicad 5.1.5-52549c584ubuntu18.04.1		Id: 6/13



HP circuit values designed for Dual 70mW @ $R_L=32\Omega$

<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

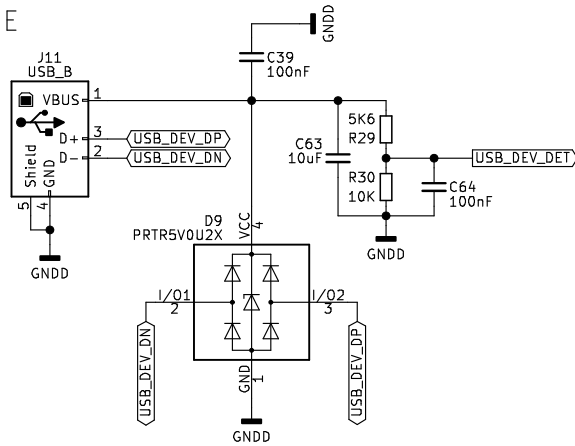
Date: 2020-05-15

Rev: Rev 1.12

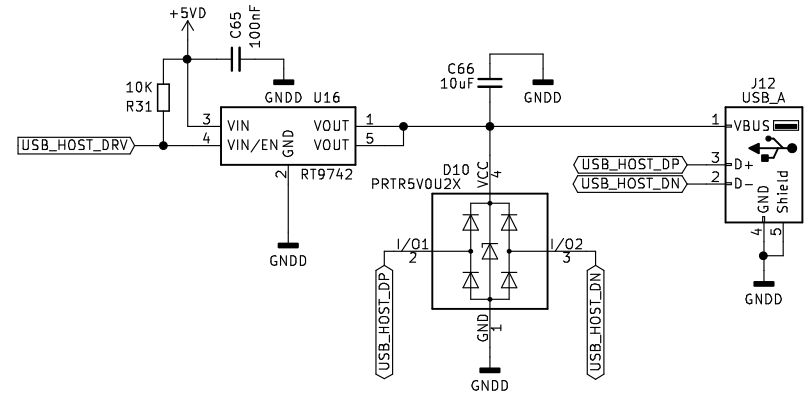
KiCad E.D.A. kicad 5.1.5-52549c584ubuntu18.04.1

Id: 7/13

USB DEVICE



USB HOST



<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: 2020-05-15

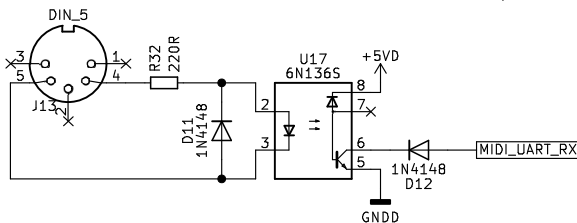
Rev: Rev 1.12

KiCad E.D.A. kicad 5.1.5-52549c584ubuntu18.04.1

Id: 8/13

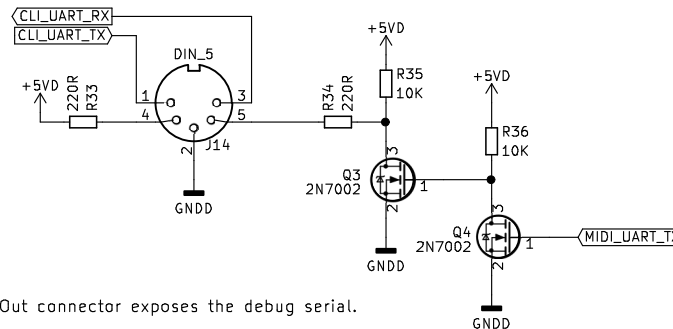
MIDI IN

Opto:
 $I_f = 16\text{mA}$, $V_f = 1.4\text{V}$



MIDI In connector can be used to trigger a special boot mode by connecting pin 3 to GND.

MIDI OUT



MIDI Out connector exposes the debug serial

<https://github.com/moddevices/mod-hw-duoX>

DuoX Audio processing board

MOD Devices GmbH

Sheet: /midi/

File: midi.sch

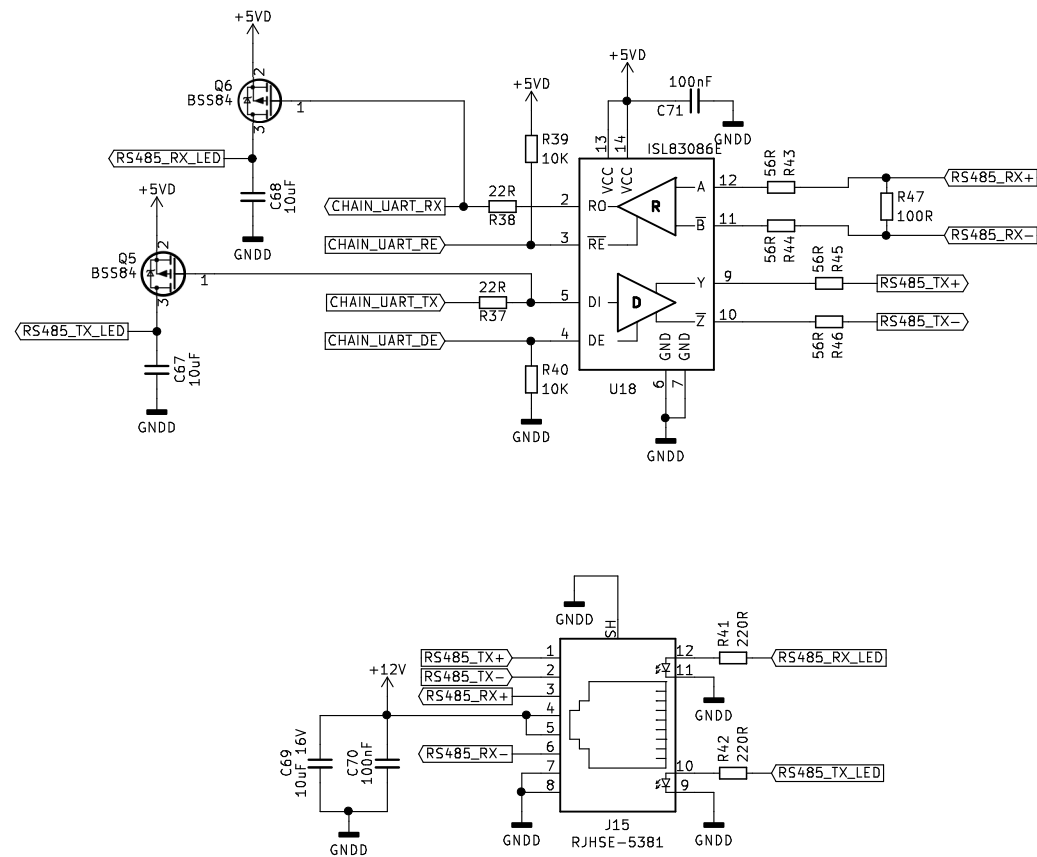
Title: MOD DuoX – Bottom Board

Size: A4	Date: 2020-05-15
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KiCad E.D.A.	kiCad 5.1.5-52549c584ubuntu18.04.1
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Rev: Rev 1.12

Id: 9/13



<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

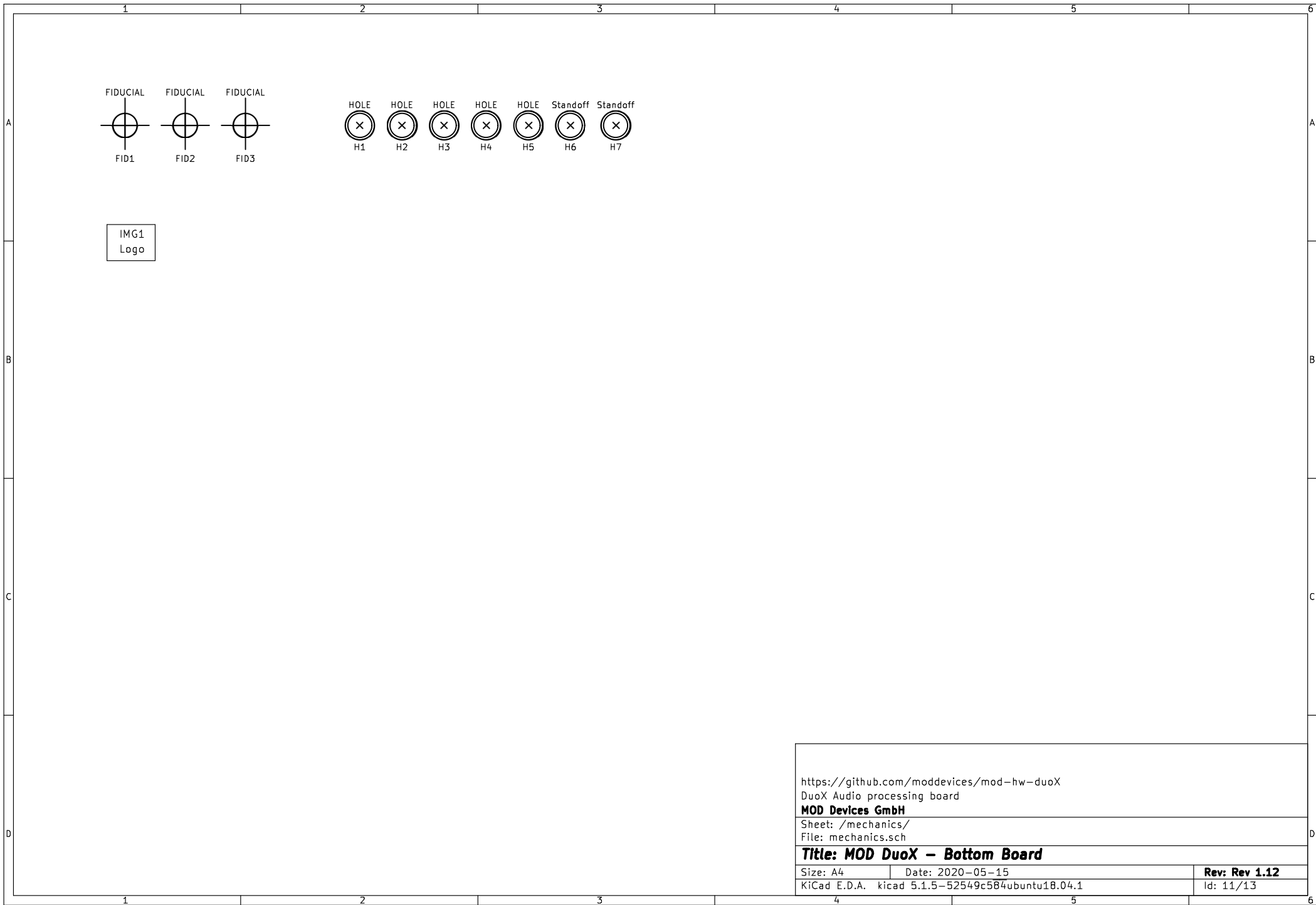
Size: A4

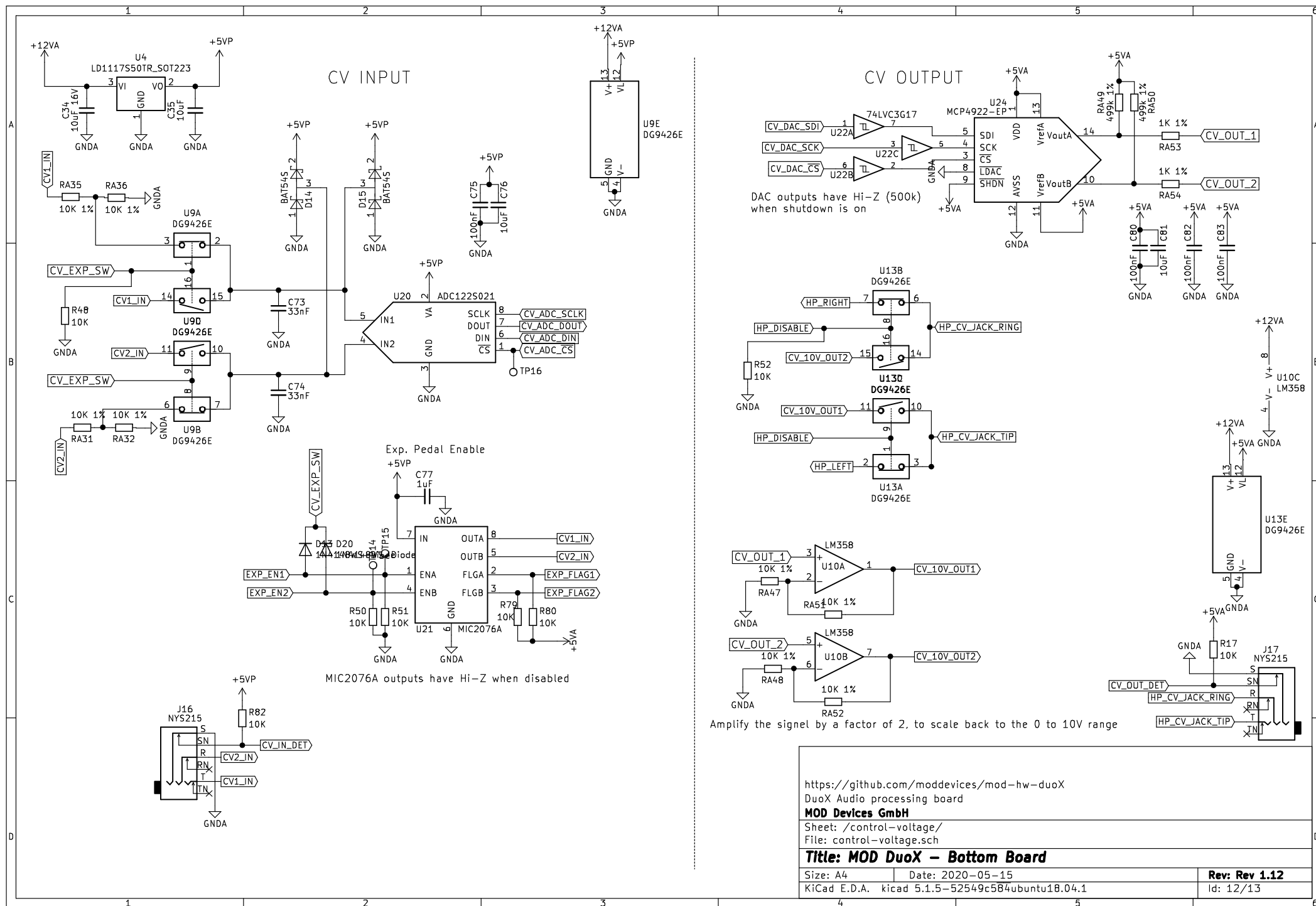
Date: 2020-05-15

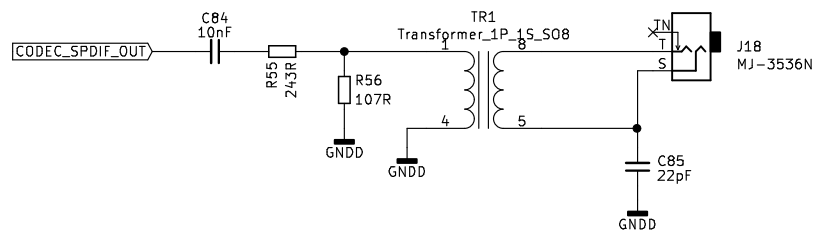
Rev: Rev 1.12

KiCad E.D.A. kicad 5.1.5-52549c584ubuntu18.04.1

Id: 10/13







<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: 2020-05-15

KiCad E.D.A. kicad 5.1.5-52549c584ubuntu18.04.1

Rev: Rev 1.12

Id: 13/13