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

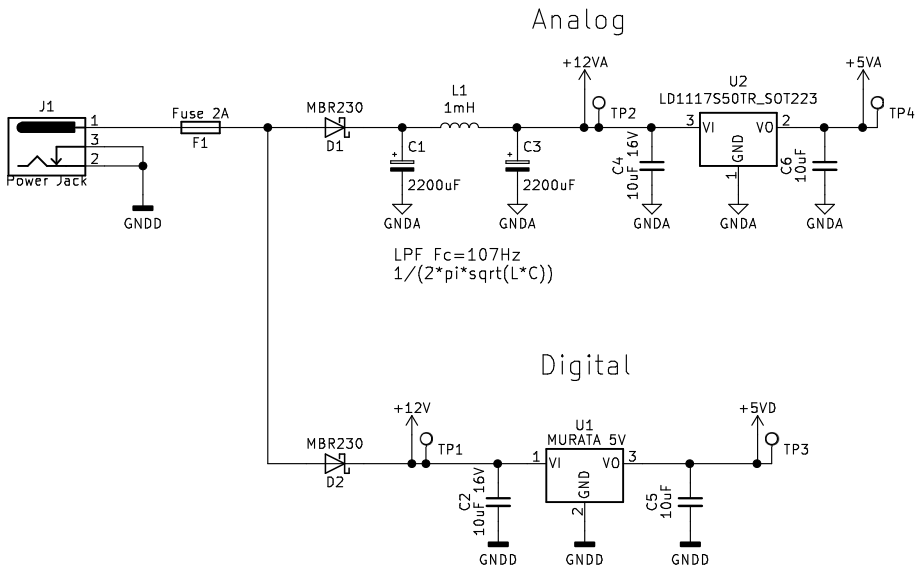
- All resistors named as RA* must have at least 1% tolerance
- All non-polarized capacitors named as CA* must use NP0 Temp. Coef.
- All other non-polarized capacitors should use X7R Temp. Coef.
- Decoupling caps must be placed as close as possible of the IC power pins

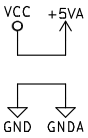
USB outp Power: 1.5A
Inp Power: 12V 700mA
https://github.com/moddevices/mod-hw-duoX
DuoX Audio processing board
MOD Devices GmbH

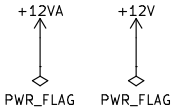
Sheet: /
File: bottom-board.sch

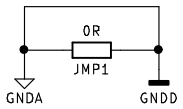
Title: MOD DuoX - Bottom Board

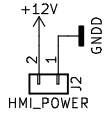
Size: A4	Date: 2019-12-19	**Rev: Rev 1.1**
KiCad E.D.A. kicad 5.1.5-52549c584ubuntu18.04.1		Id: 1/13









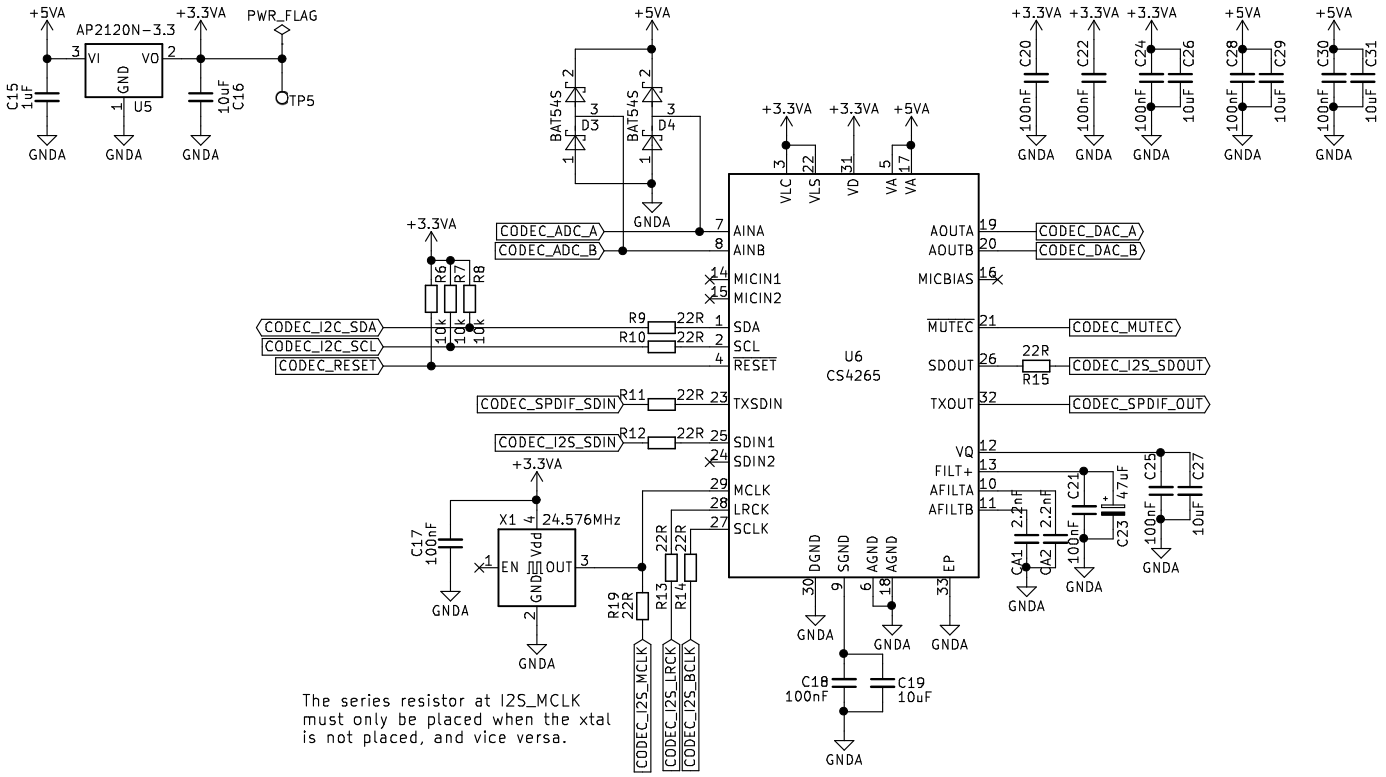


MOD

Sheet: /power/
File: power.sch

Title: MOD Duo – Bottom Board

Size: A4	Date:	**Rev:**
KiCad E.D.A. kicad 5.1.5-52549c584ubuntu18.04.1		Id: 2/13

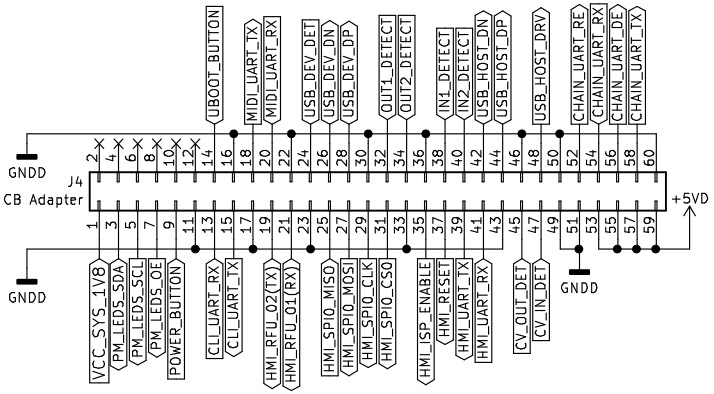


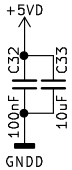
MOD

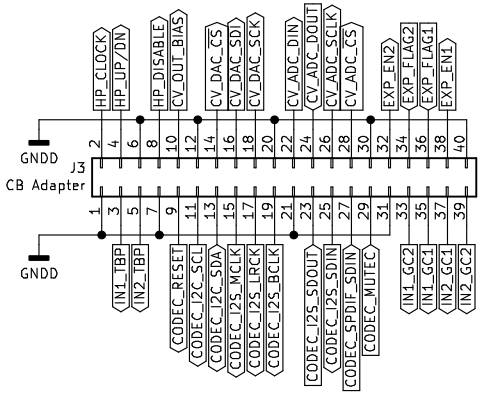
Sheet: /audio-codec/
File: audio-codec.sch

Title: MOD Duo – Bottom Board

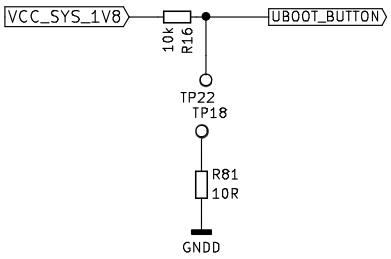
Size: A4	Date:	**Rev:**
KiCad E.D.A. kicad 5.1.5-52549c584ubuntu18.04.1		Id: 3/13



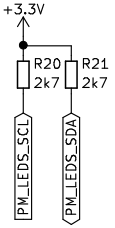




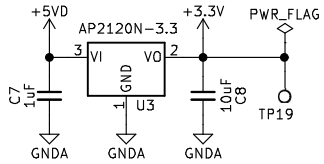
By connecting the 2 test pins the board boots in revocery mode



Pull-up

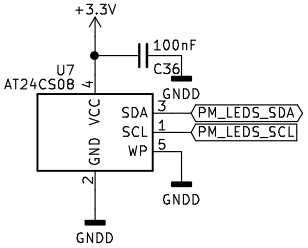


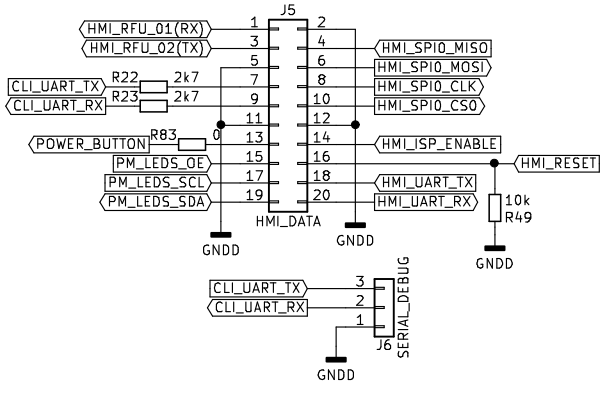
POWER



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

HW ID



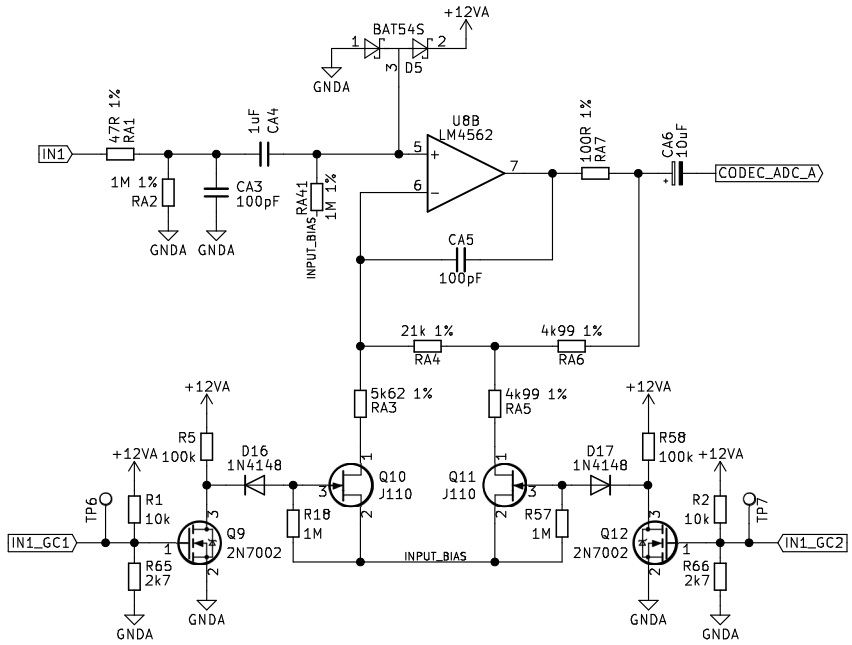


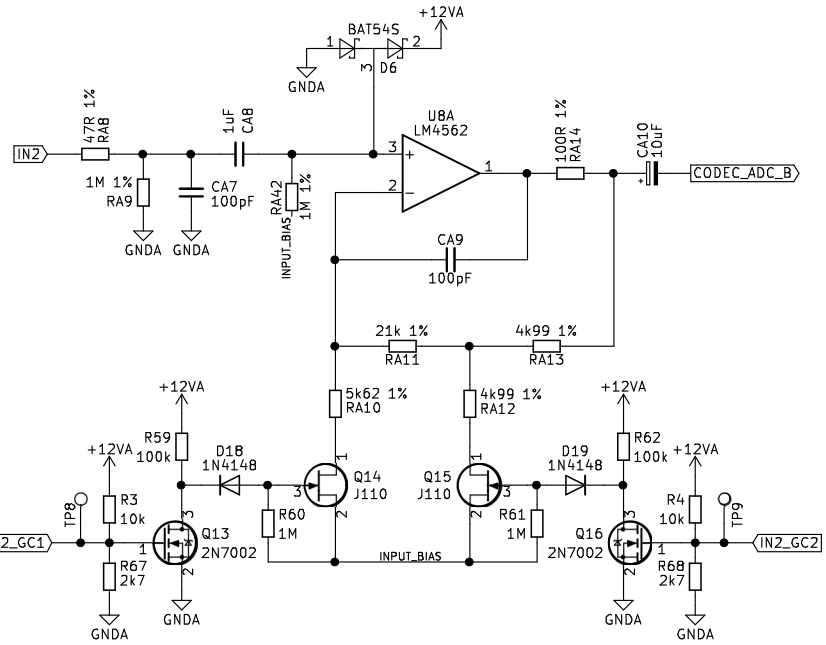
MOD

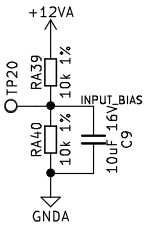
Sheet: /coreboard/
File: coreboard.sch

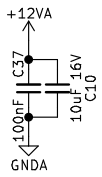
Title: MOD DuoX – Bottom Board

Size: A4	Date: 2020-02-19	**Rev: 2.1**
KiCad E.D.A. kicad 5.1.5-52549c584ubuntu18.04.1		Id: 4/13

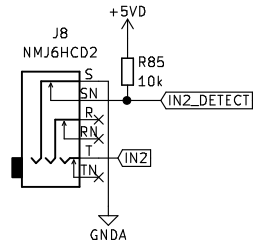


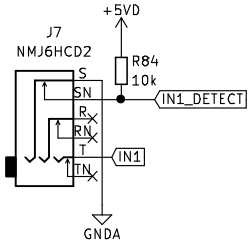






Op Amp Bypass capacitors





GC2, GC1	GAIN (dB)
1, 1	0.0
1, 0	6.0
0, 1	15.0
0, 0	20.4

The gain calculation includes the RDSon value

J110: RDSon = 18R

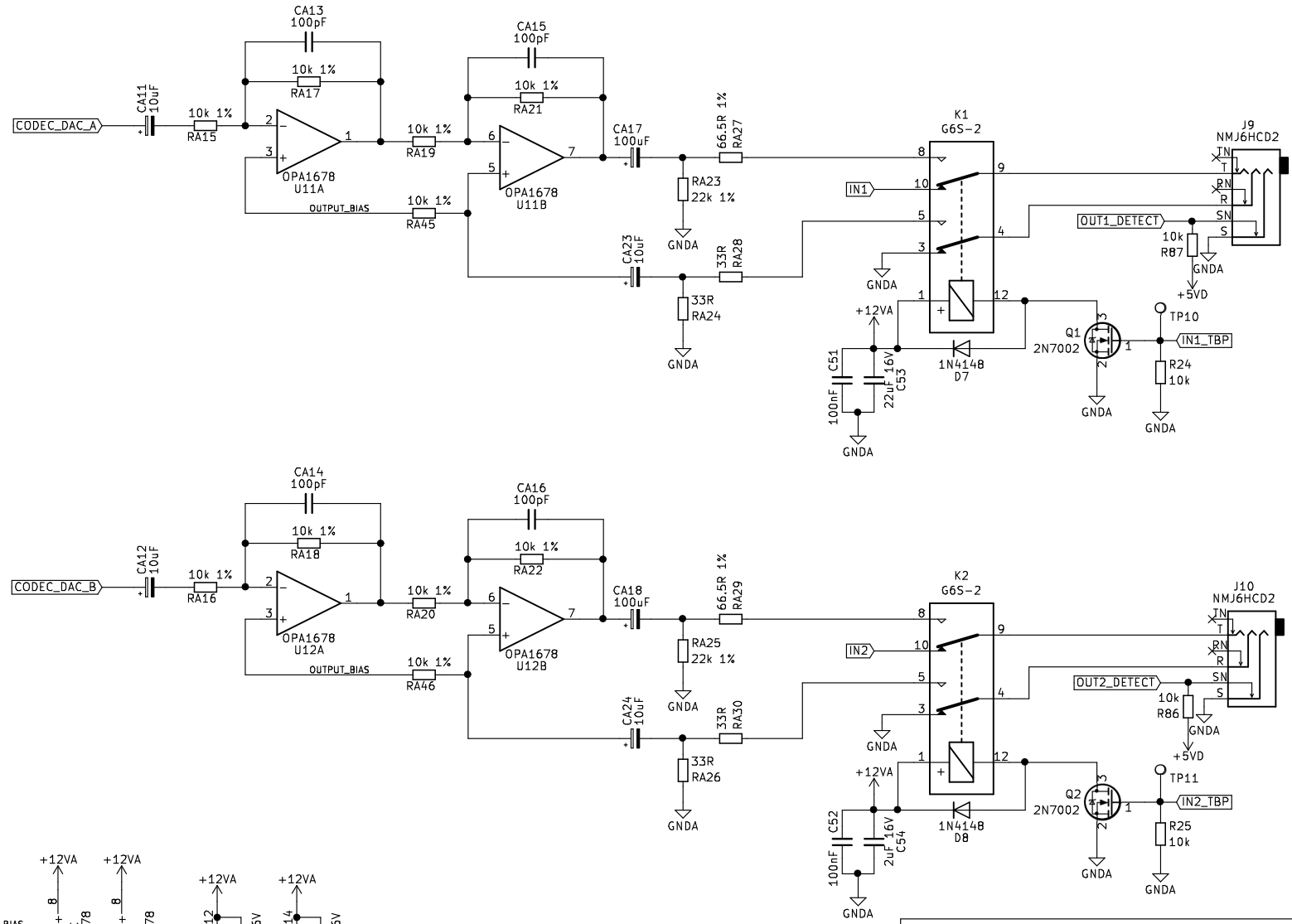
The CODEC only presents optimal dynamic range and THD+N for PGA setting: −12dB to +6dB.

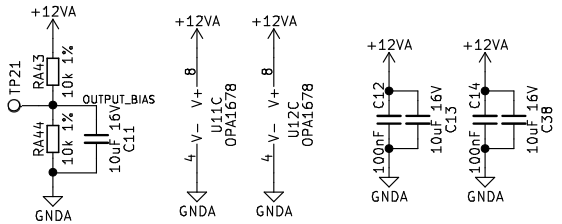
MOD

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

Title: MOD Duo – Bottom Board

Size: A4	Date:	**Rev:**
KiCad E.D.A. kicad 5.1.5-52549c584ubuntu18.04.1		Id: 5/13





Op Amp Bypass capacitors

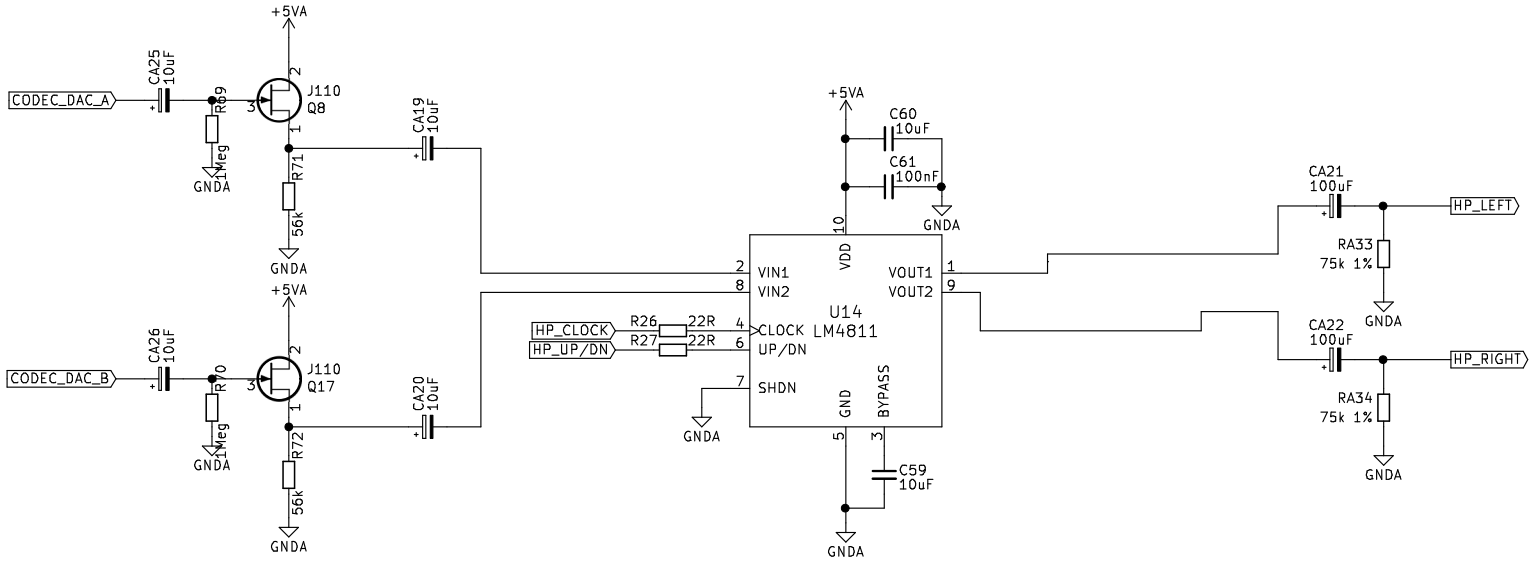
*** The outputs are not balanced ***

.....

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.

.....

MOD		
Sheet: /audio-outputs/		
File: audio-outputs.sch		
Title: MOD Duo - Bottom Board		
Size: A4	Date:	**Rev:**
KiCad E.D.A. kicad 5.1.5-52549c584ubuntu18.04.1		Id: 6/13



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

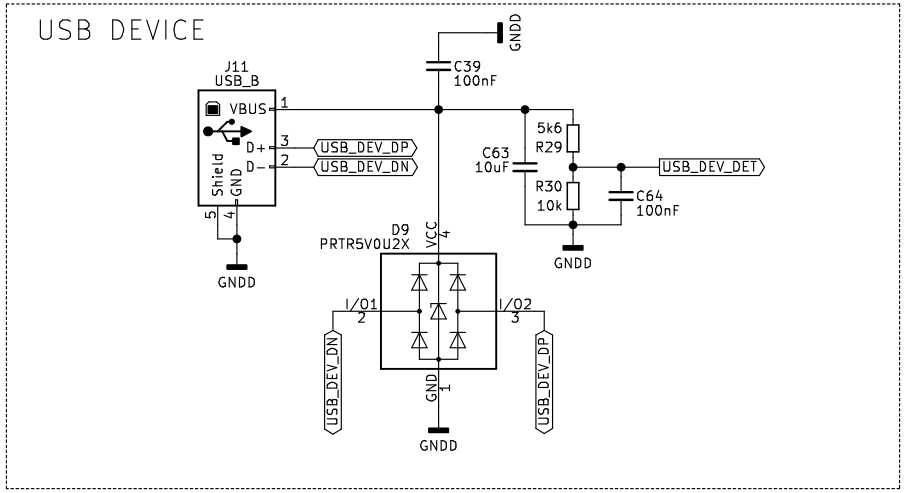
MOD

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

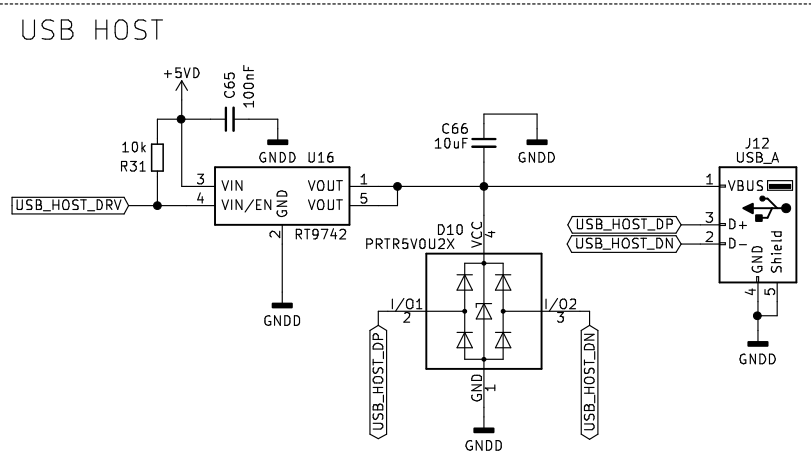
Title: MOD Duo - Bottom Board

Size: A4	Date:	**Rev:**
KiCad E.D.A. kicad 5.1.5-52549c584ubuntu18.04.1		Id: 7/13

USB DEVICE



USB HOST



MOD

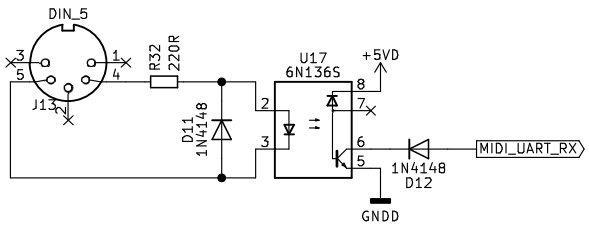
Sheet: /usb/
File: usb.sch

Title: MOD Duo – Bottom Board

Size: A4	Date:	**Rev:**
KiCad E.D.A. kicad 5.1.5-52549c584ubuntu18.04.1		Id: 8/13

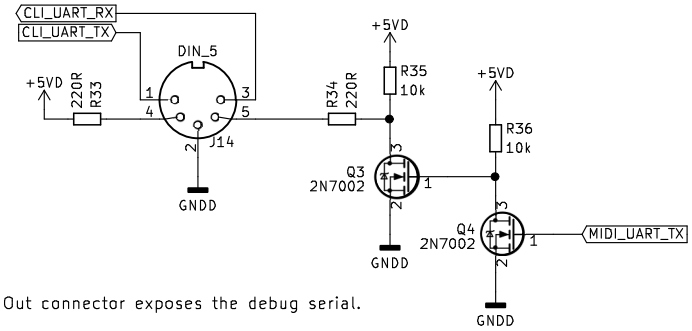
MIDI IN

Opto:
If = 16mA, Vf = 1.4V



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

MIDI OUT



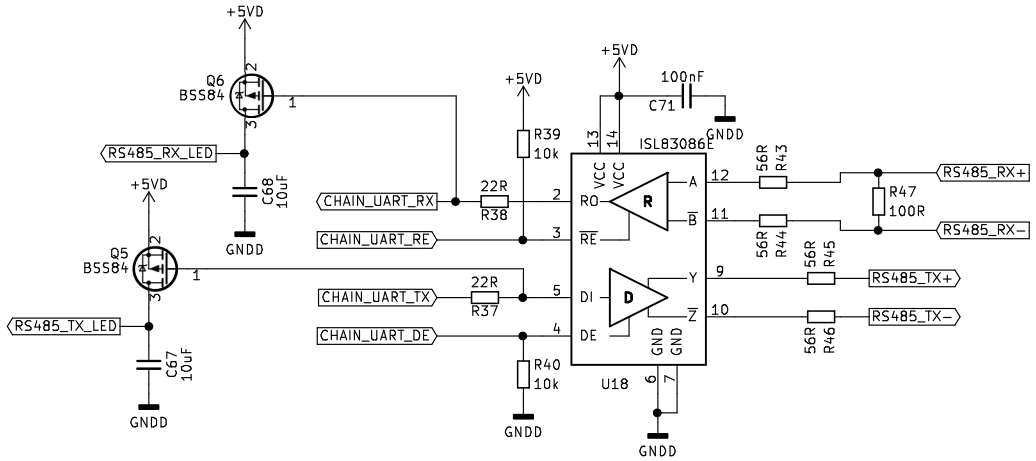
MIDI Out connector exposes the debug serial.

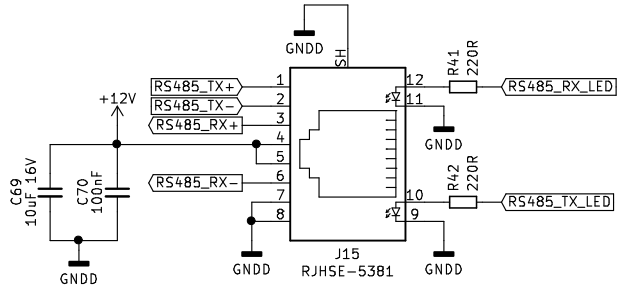
MOD

Sheet: /midi/
File: midi.sch

Title: MOD Duo – Bottom Board

Size: A4	Date:	**Rev:**
KiCad E.D.A. kicad 5.1.5-52549c584ubuntu18.04.1		Id: 9/13





MOD

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

Title: MOD Duo — Bottom Board

Size: A4	Date:	**Rev:**
KiCad E.D.A. kicad 5.1.5-52549c584ubuntu18.04.1		Id: 10/13

FIDUCIAL FIDUCIAL FIDUCIAL

FID1 FID2 FID3

HOLE HOLE HOLE HOLE HOLE Standoff Standoff

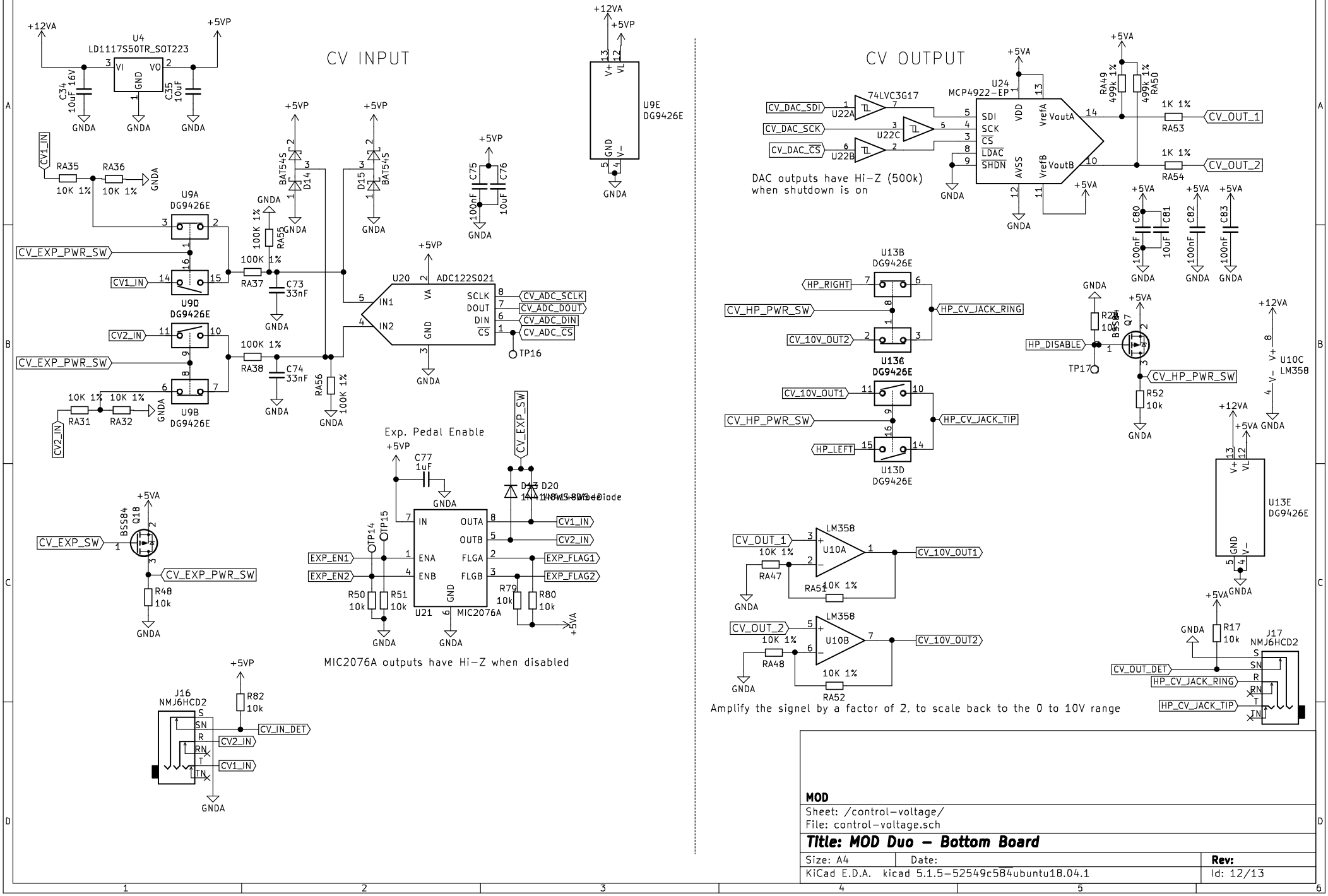
H1 H2 H3 H4 H5 H6 H7

IMG1
Logo

Sheet: /mechanics/
File: mechanics.sch

Title:

Size: A4	Date:	**Rev:**
KiCad E.D.A. kicad 5.1.5-52549c584ubuntu18.04.1		Id: 11/13



MOD

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

Title: MOD Duo – Bottom Board

Size: A4	Date:	**Rev:**
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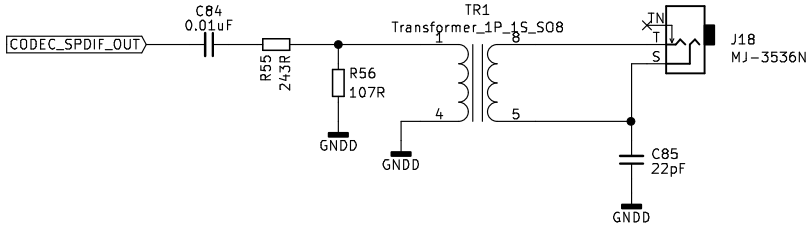

MOD

Sheet: /spdif/
File: spdif.sch

Title: MOD Duo – Bottom Board

Size: A4	Date:	**Rev:**
KiCad E.D.A. kicad 5.1.5-52549c584ubuntu18.04.1		Id: 13/13