

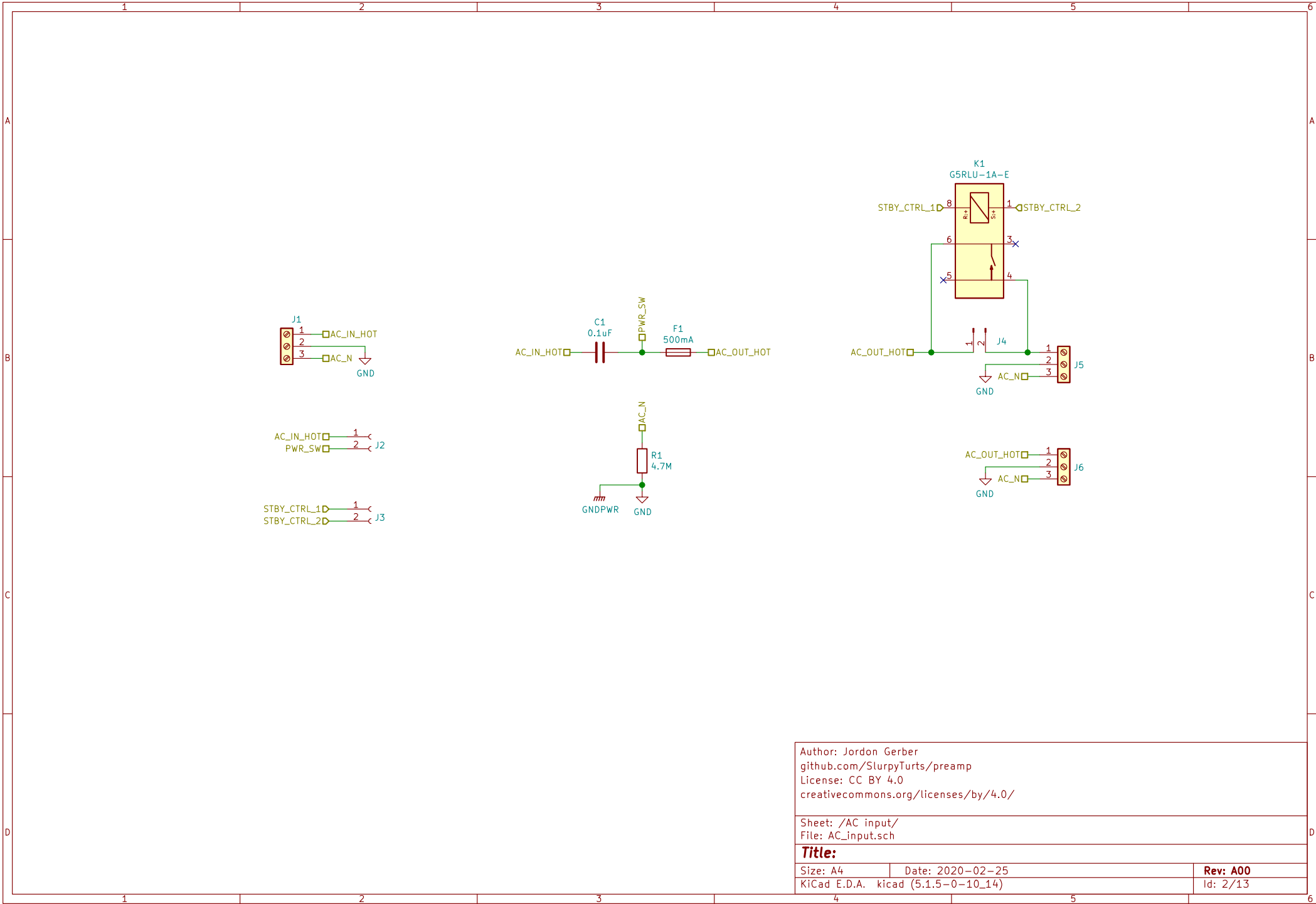
Author: Jordan Gerber
github.com/SlurpyTurts/preamp
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Sheet: /
 File: preamp.sch

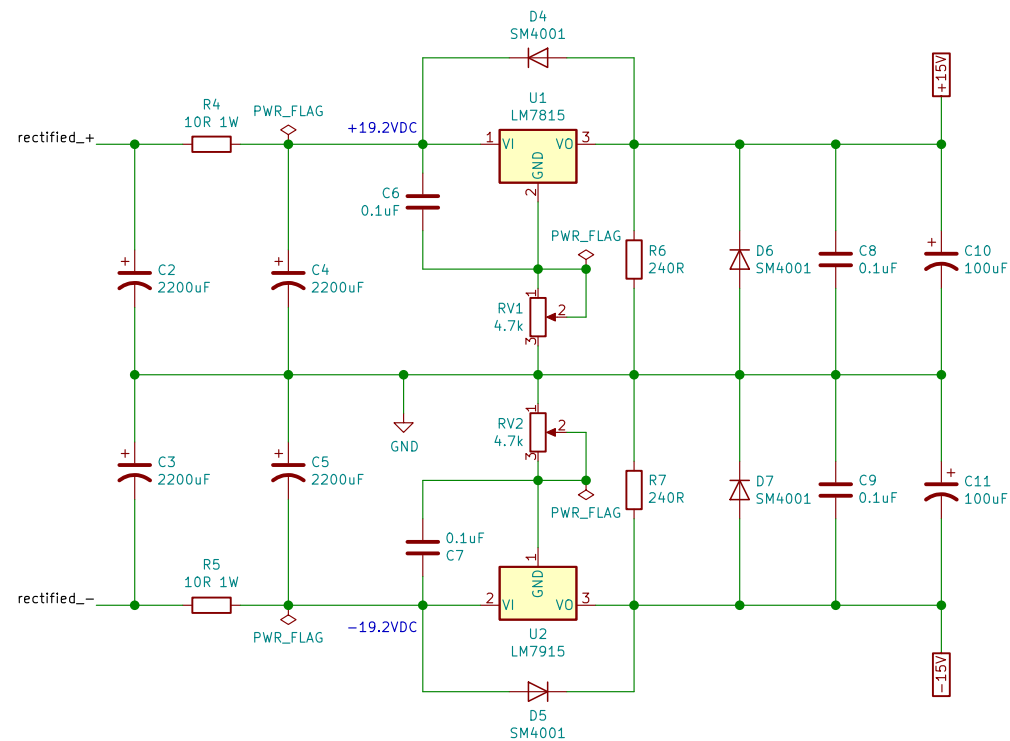
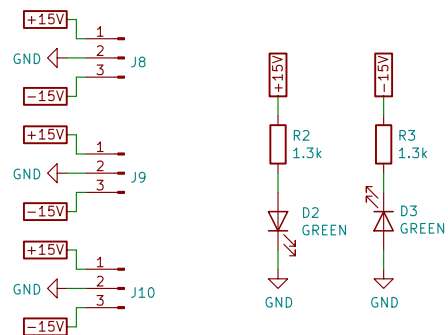
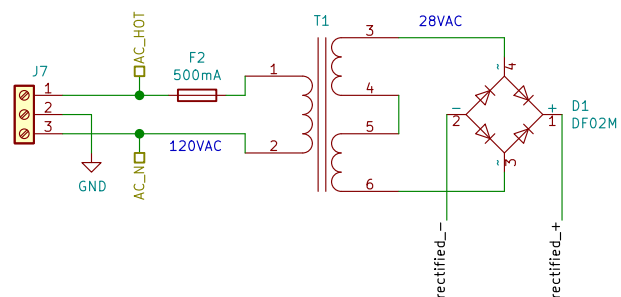
Title: Preamp

Size: A4 Date: 2020-02-25
 KiCad E.D.A. kicad (5.1.5-0-10_14)

Rev: A00
 Id: 1/13



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Sheet: /AC input/ File: AC_input.sch		
Title:		
Size: A4	Date: 2020-02-25	Rev: A00
KiCad E.D.A. kicad (5.1.5-0-10_14)		Id: 2/13



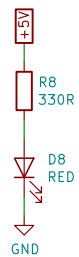
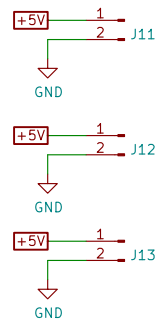
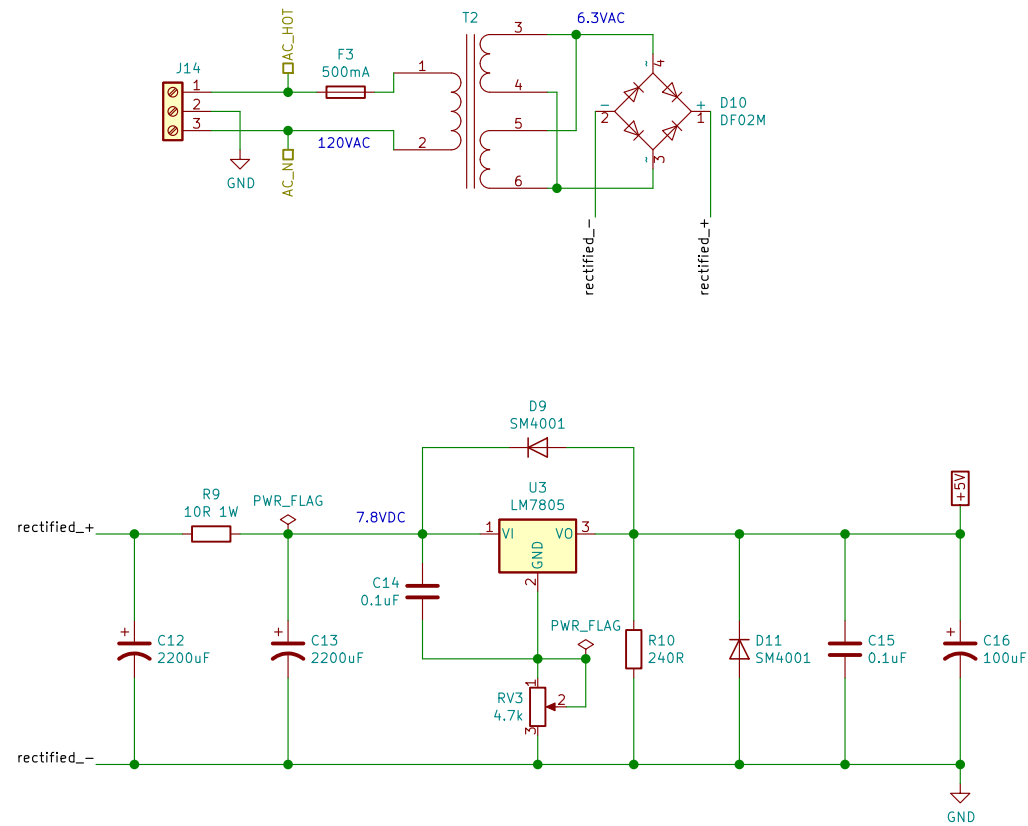
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Sheet: /+-15V PWR SUPPLY/
 File: +-15V_PWR_SUPPLY.sch

Title: 15V Power Supply

Size: A4 Date: 2020-02-25
 KiCad E.D.A. kicad (5.1.5-0-10_14)

Rev: A00
 Id: 3/13



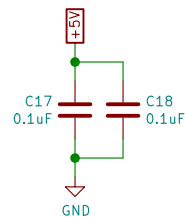
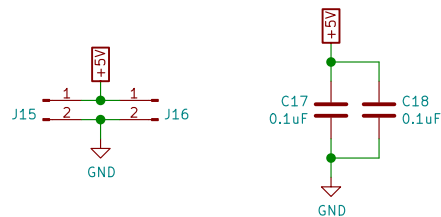
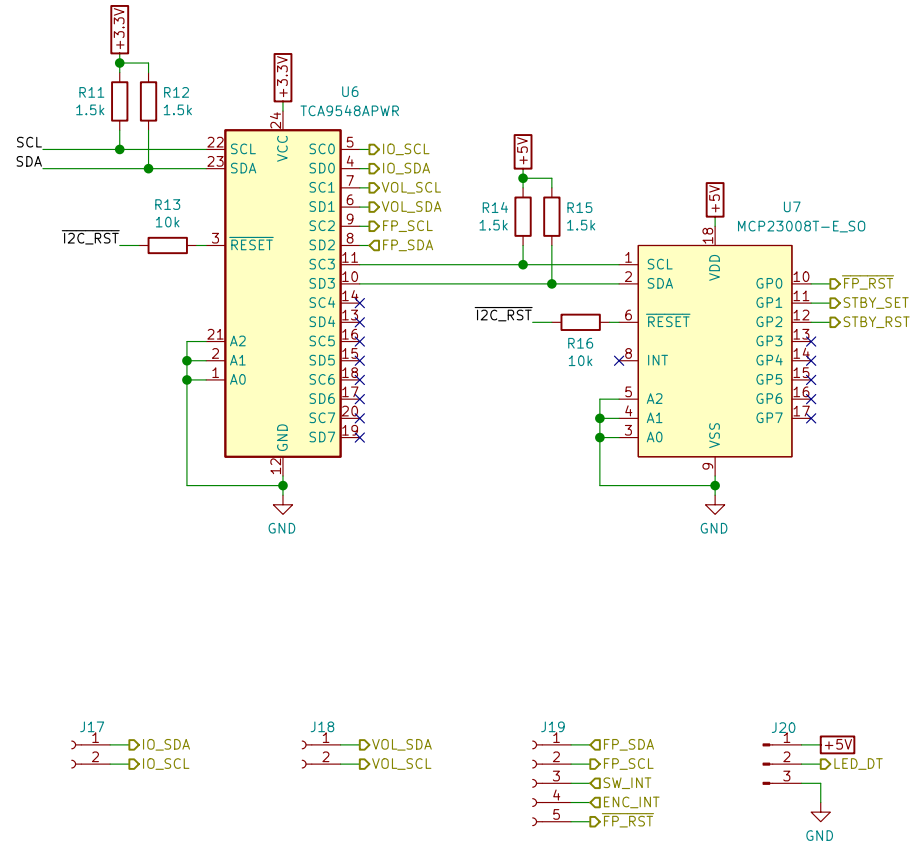
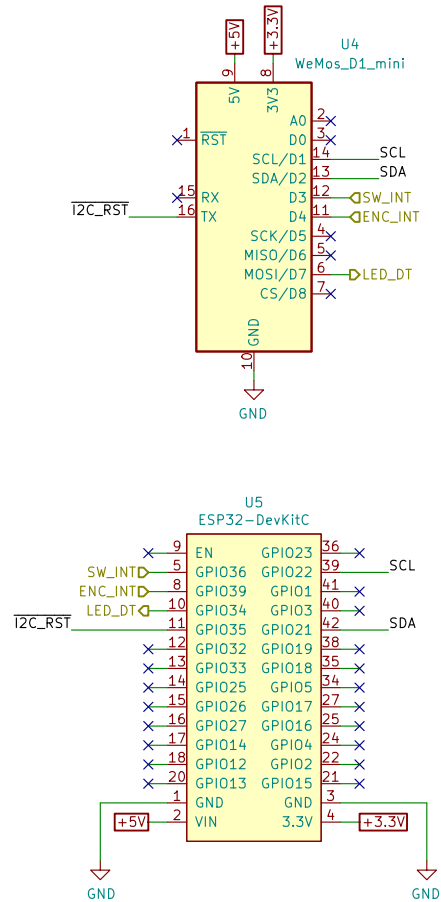
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Sheet: /5V supply/
 File: 5V_supply.sch

Title: 5V Power Supply

Size: A4 Date: 2020-02-25
 KiCad E.D.A. kicad (5.1.5-0-10_14)

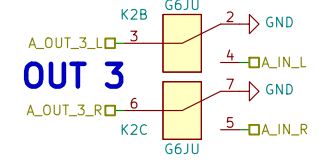
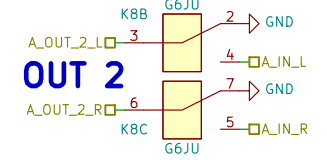
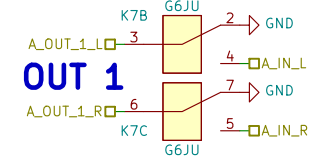
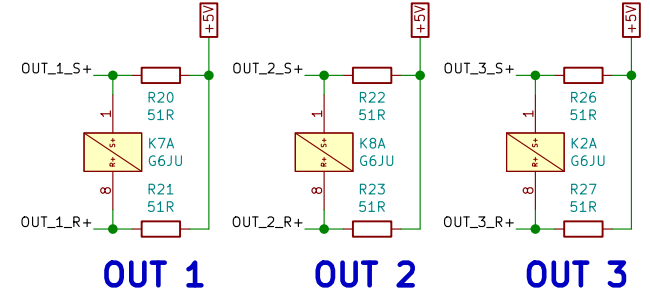
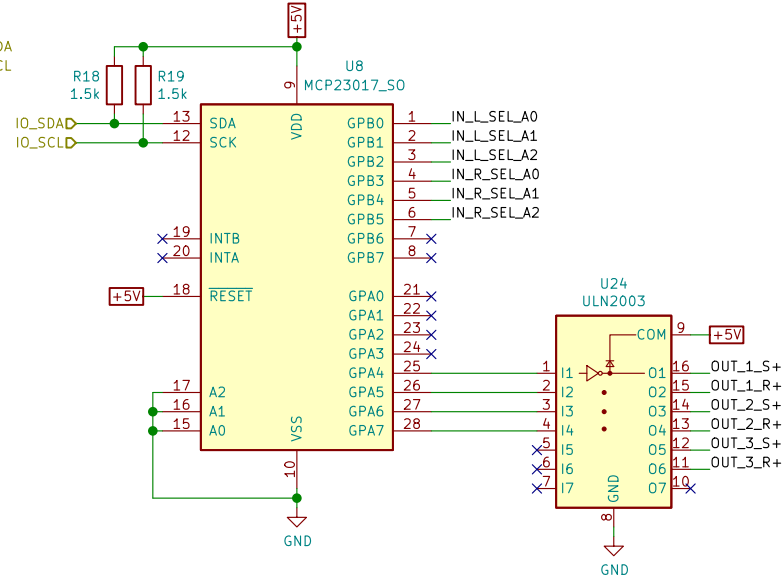
Rev: A00
 Id: 4/13



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Sheet: /MCU/ File: MCU.sch	
Title: Preamp MCU Board	
Size: A4	Date: 2020-02-25
KiCad E.D.A. kicad (5.1.5-0-10_14)	Rev: A00 Id: 5/13

J44
1 IO_SDA
2 IO_SCL

J26
1 GND
2 A_IN_1_L
3 A_IN_1_R
4 A_IN_2_L
5 A_IN_2_R
6 A_IN_3_L
7 A_IN_3_R
8 A_IN_4_L
9 A_IN_4_R
10 A_IN_5_L
11 A_IN_5_R
12 A_IN_6_L
13 A_IN_6_R
14 A_IN_7_L
15 A_IN_7_R
16 A_IN_8_L
17 A_IN_8_R
18 GND



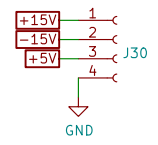
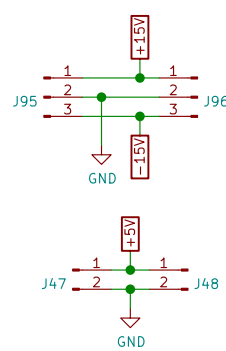
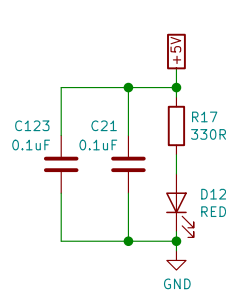
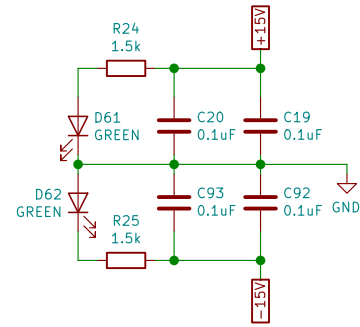
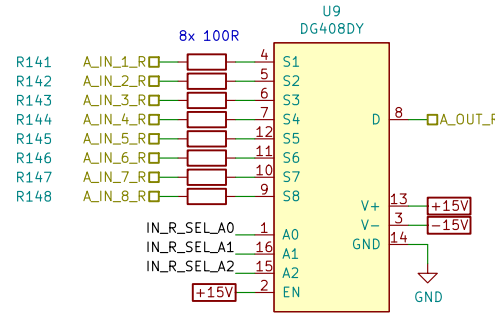
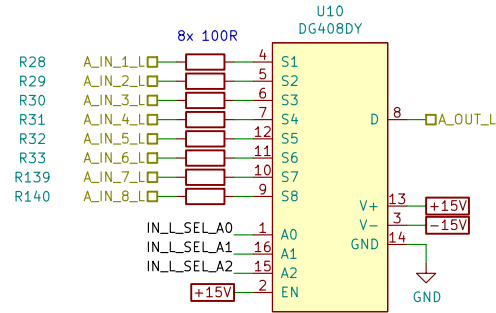
Sends to amp / tone / etc

A_OUT_L 1
GND 2
A_OUT_R 3
J43

Receives from gain stage

A_IN_L 1
GND 2
A_IN_R 3
J42

J27
1 GND
2 A_OUT_1_L
3 A_OUT_1_R
4 A_OUT_2_L
5 A_OUT_2_R
6 A_OUT_3_L
7 A_OUT_3_R
8 GND



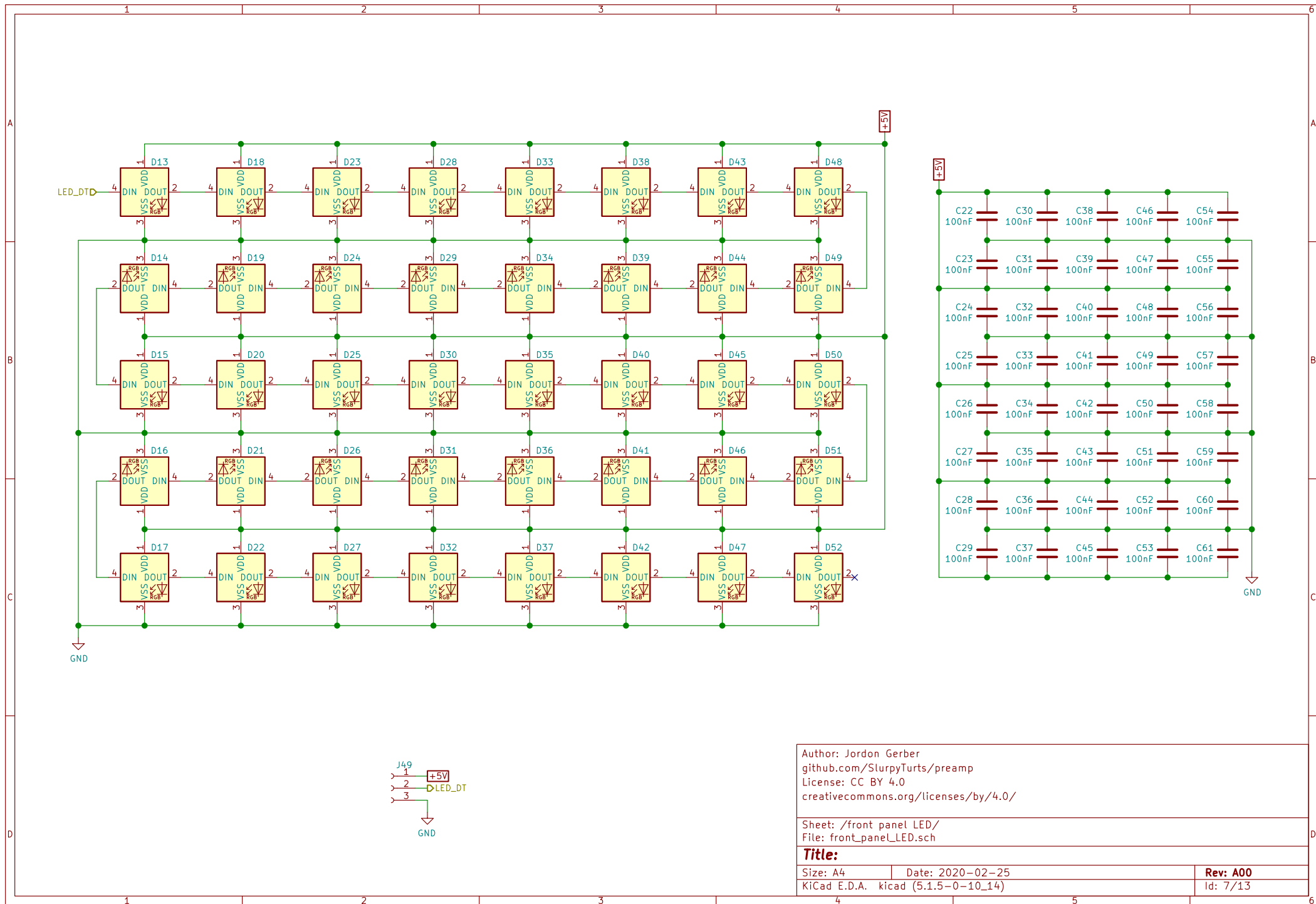
Author: Jordan Gerber
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Sheet: /input selector/
File: input_selector.sch

Title: IO Relay Select Board

Size: A4 Date: 2020-02-25
KiCad E.D.A. kicad (5.1.5-0-10_14)

Rev: A00
Id: 6/13



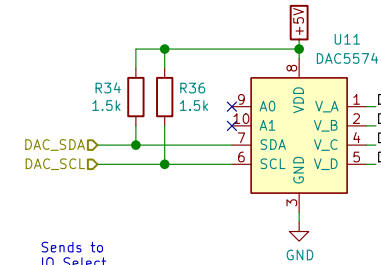
Author: Jordon Gerber github.com/SlurpyTurts/preamp License: CC BY 4.0 creativecommons.org/licenses/by/4.0/		
Sheet: /front panel LED/ File: front_panel_LED.sch		
Title:		
Size: A4	Date: 2020-02-25	Rev: A00
KiCad E.D.A. kicad (5.1.5-0-10_14)		Id: 7/13

Buffered DAC output max approx. 0.78V
 $5V \cdot (2k / (6.34k + 6.49k))$

Per VCA Manufacturer's spec, 6mV per dB attenuation
 for max 0.78V, $0.78 / 0.006 = 130dB$ range
 $130dB / 256 \text{ steps} = 0.51dB / \text{step}$

178k offset resistor shifts output up by approx. 30dB
 control range becomes -100dB to +30dB

J51
 1 DAC_SDA
 2 DAC_SCL



Sends to
 IO Select

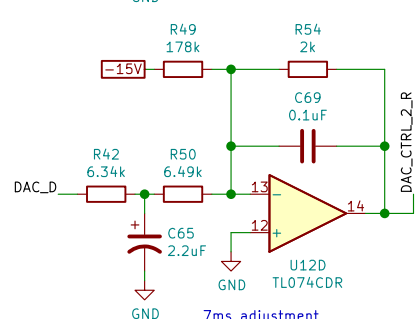
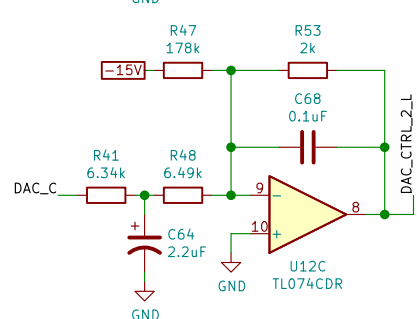
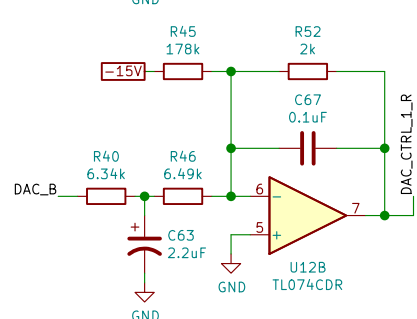
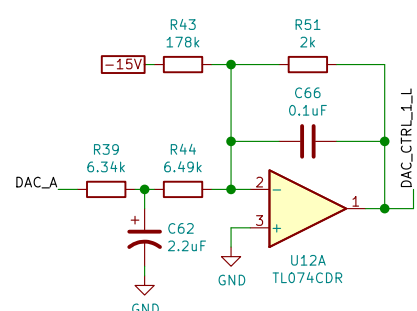
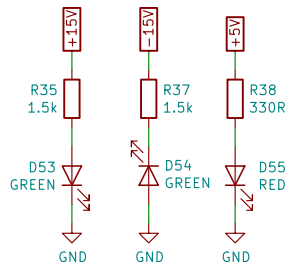
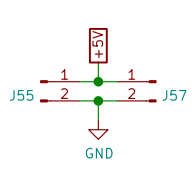
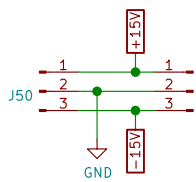
OUT_1_L
 1
 2
 3 J52

OUT_1_R
 1
 2
 3 J52

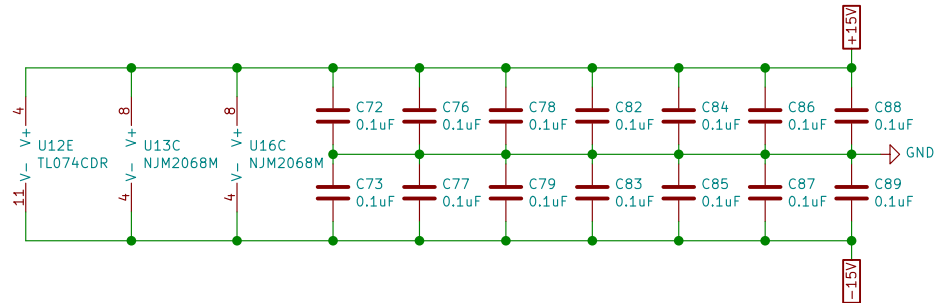
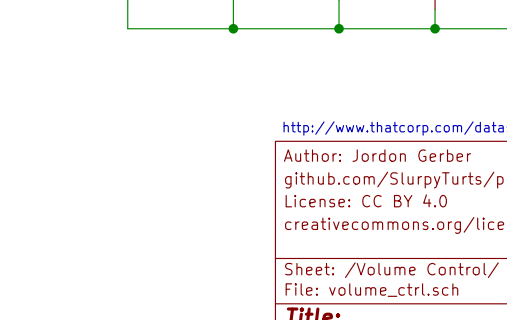
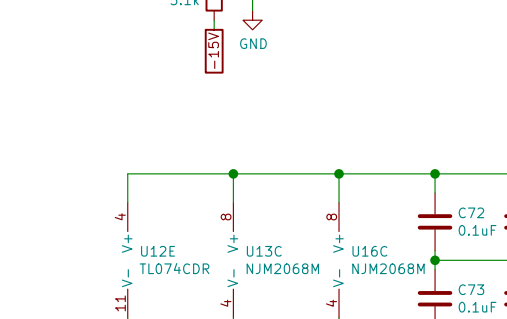
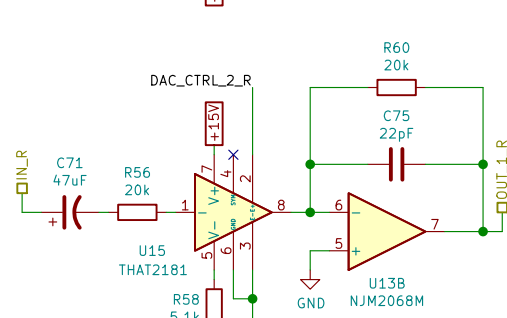
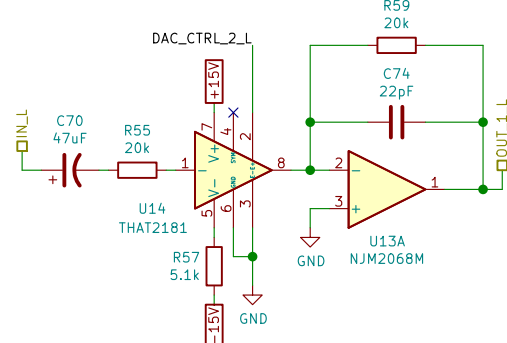
Send to
 Headphone Amp

OUT_2_L
 1
 2
 3 J38

OUT_2_R
 1
 2
 3 J38



7ms adjustment
 between DAC output level



<http://www.thatcorp.com/datashts/dn02.pdf>

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Sheet: /Volume Control/
 File: volume_ctrl.sch

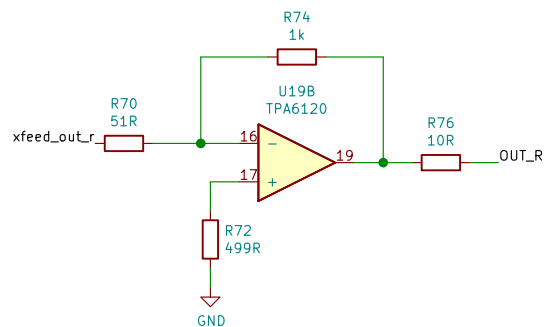
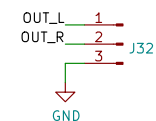
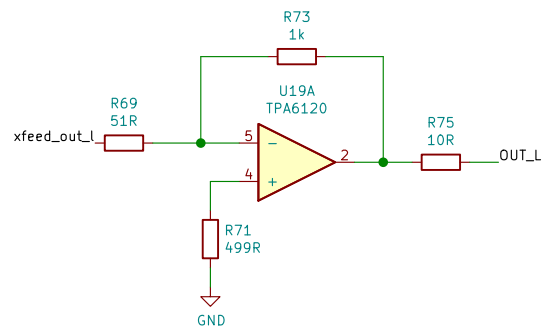
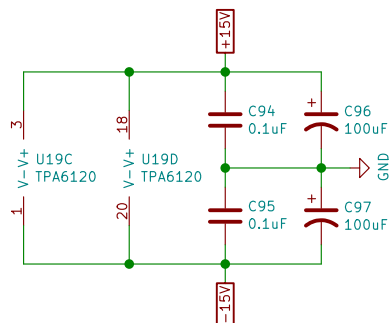
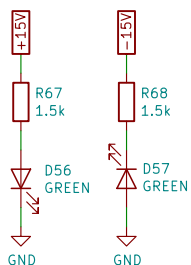
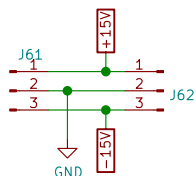
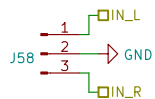
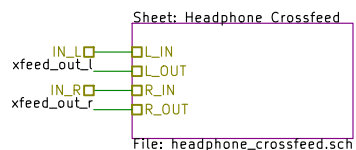
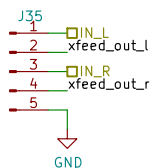
Title:

Size: A4
 KiCad E.D.A. kicad (5.1.5-0-10_14)

Date: 2020-02-25

Rev: A00

Id: 8/13



crosstalk: <https://headwizememorial.wordpress.com/2018/03/09/an-acoustic-simulator-for-headphone-amplifiers/>
amp: https://www.nutsvolts.com/magazine/article/precision_stereo_headphone_amplifier

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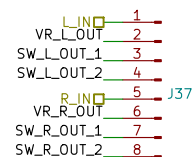
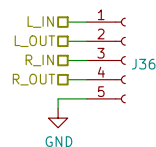
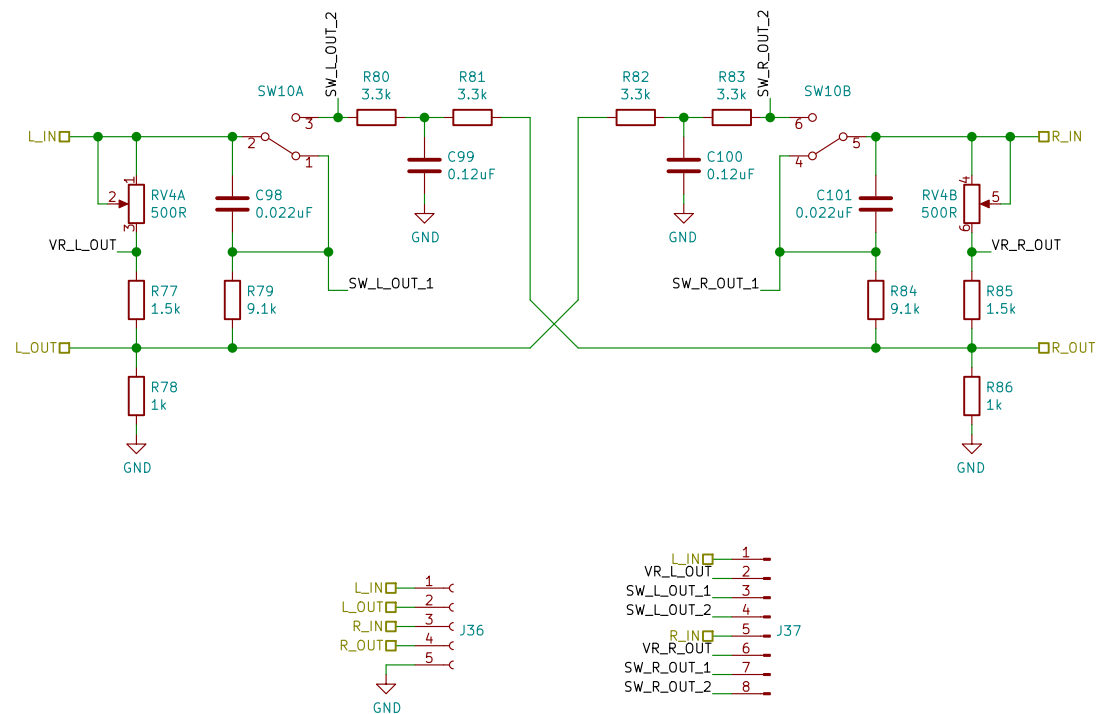
Sheet: /headphone amp/
File: headphone_amp.sch

Title: Headphone Amplifier Board

Size: A4
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Date: 2020-02-25

Rev: A00
Id: 9/13



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Sheet: /headphone amp/Headphone Crossfeed/
 File: headphone_crossfeed.sch

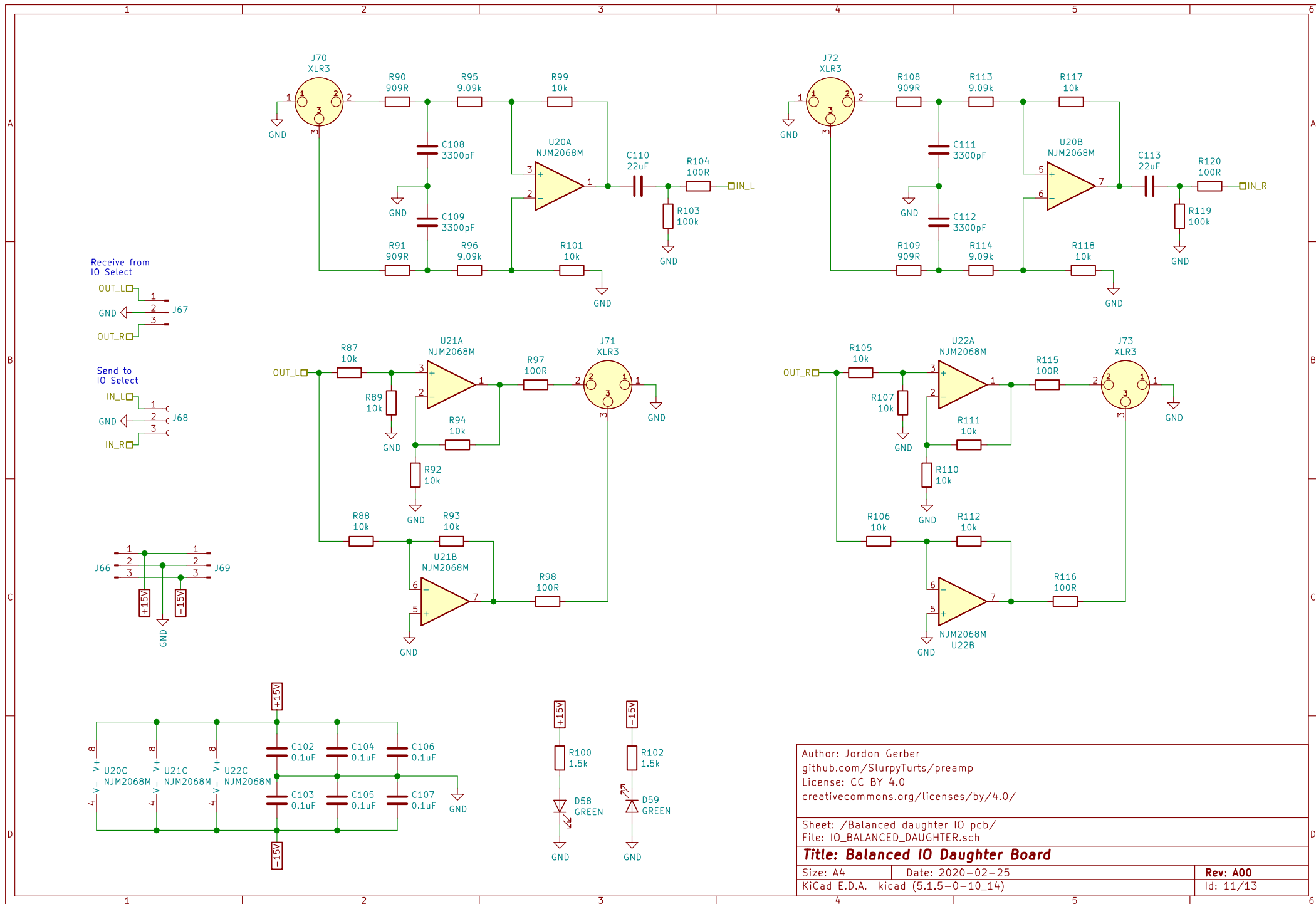
Title: Headphone Crosstalk

Size: A4 Date: 2020-02-25

KiCad E.D.A. kicad (5.1.5-0-10_14)

Rev: A00

Id: 10/13



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Sheet: /Balanced daughter IO pcb/
 File: IO_BALANCED_DAUGHTER.sch

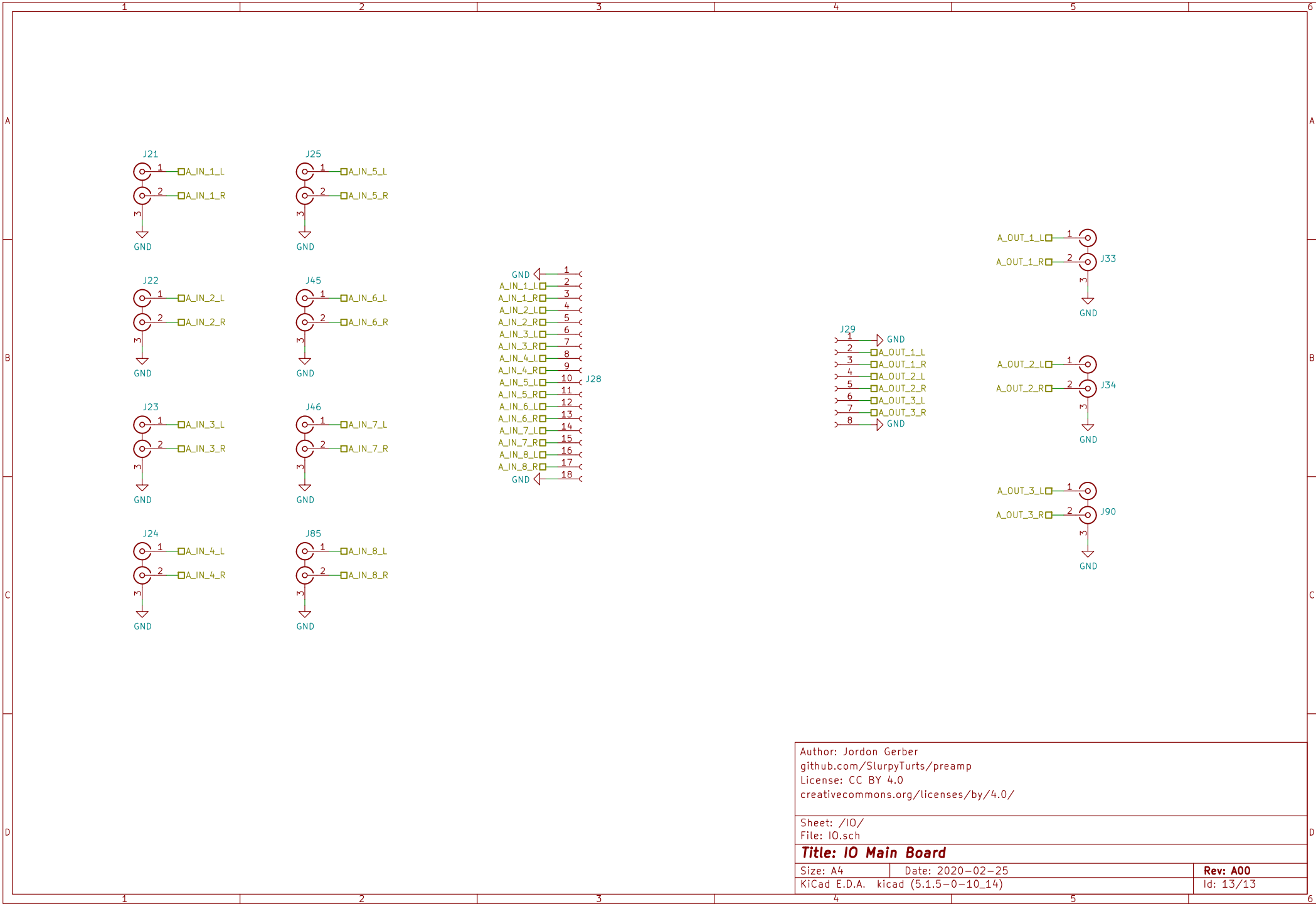
Title: Balanced IO Daughter Board

Size: A4
 KiCad E.D.A. kicad (5.1.5-0-10_14)

Date: 2020-02-25

Rev: A00

Id: 11/13



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Sheet: /IO/
File: IO.sch

Title: IO Main Board

Size: A4 Date: 2020-02-25

KiCad E.D.A. kicad (5.1.5-0-10_14)

Rev: A00

Id: 13/13