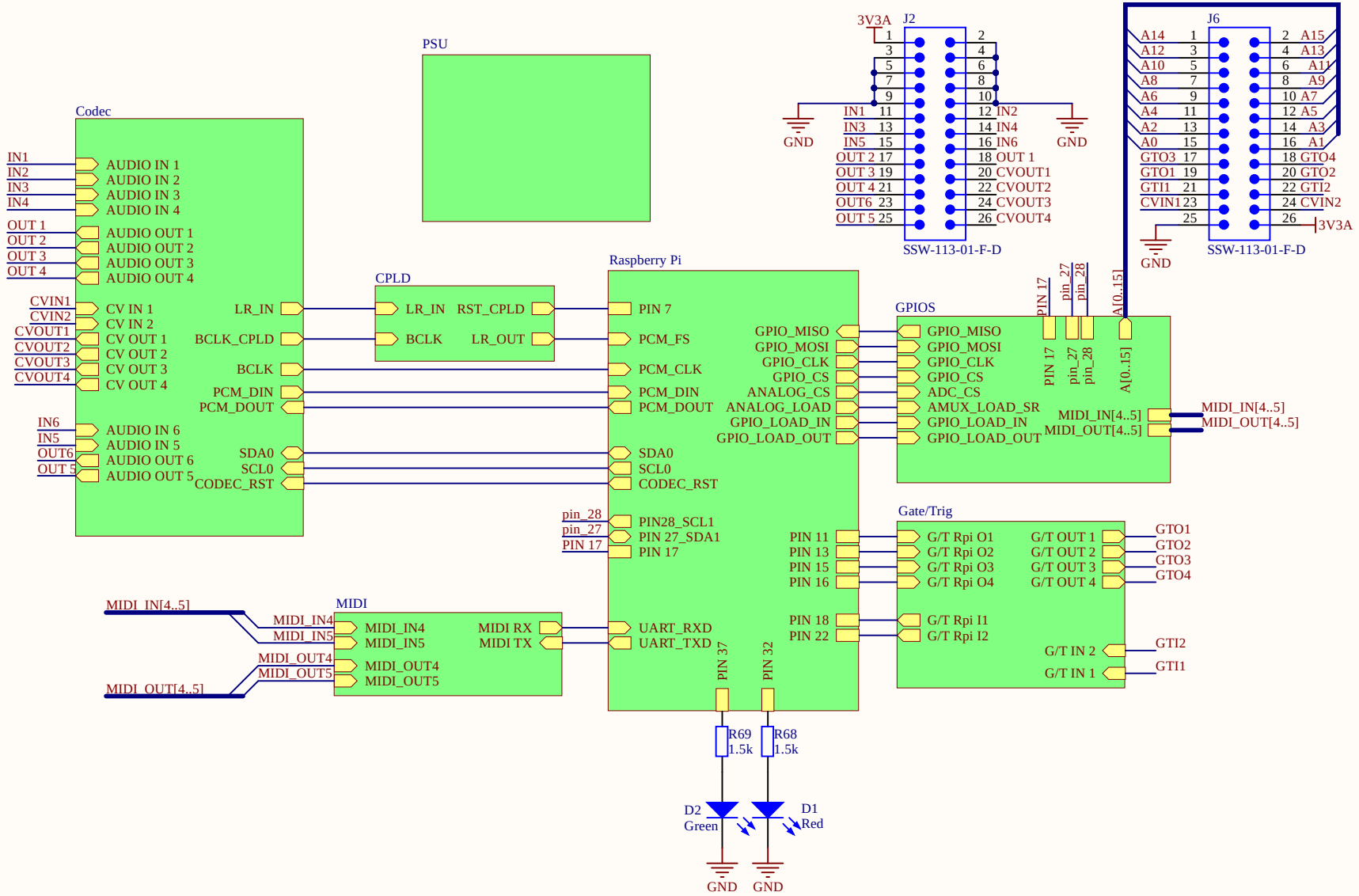
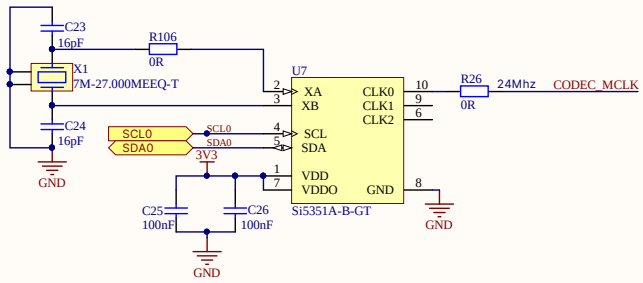
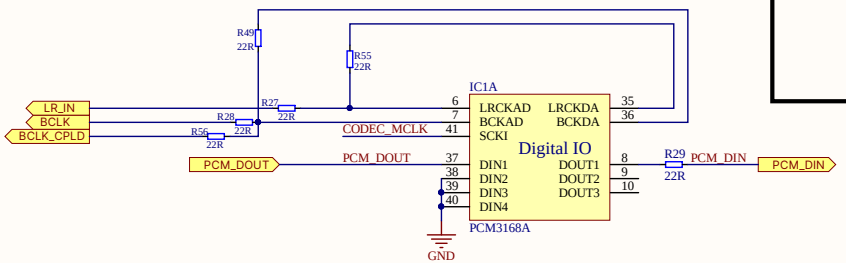

PSU
Codec
IN1
IN2
IN3
IN4
AUDIO IN 1
AUDIO IN 2
AUDIO IN 3
AUDIO IN 4
OUT 1
OUT 2
OUT 3
OUT 4
AUDIO OUT 1
AUDIO OUT 2
AUDIO OUT 3
AUDIO OUT 4
CVIN1
CVIN2
CVOUT1
CVOUT2
CVOUT3
CVOUT4
CV IN 1
CV IN 2
CV OUT 1
CV OUT 2
CV OUT 3
CV OUT 4
LR_IN
BCLK_CPLD
BCLK
PCM_DIN
PCM_DOUT
IN6
IN5
OUT6
OUT 5
AUDIO IN 6
AUDIO IN 5
AUDIO OUT 6
AUDIO OUT 5
SDA0
SCL0
CODEC_RST
CPLD
LR_IN
RST_CPLD
BCLK
LR_OUT
Raspberry Pi
PIN 7
PCM_FS
PCM_CLK
PCM_DIN
PCM_DOUT
SDA0
SCL0
CODEC_RST
pin_28
pin_27
PIN 17
PIN28_SCL1
PIN 27_SDA1
PIN 17
UART_RXD
UART_TXD
PIN 37
PIN 32
GPIO_MISO
GPIO_MOSI
GPIO_CLK
GPIO_CS
ANALOG_CS
ANALOG_LOAD
GPIO_LOAD_IN
GPIO_LOAD_OUT
3V3A
J2
SSW-113-01-F-D
GND
IN1
IN3
IN5
OUT 2
OUT 3
OUT 4
OUT6
OUT 5
IN2
IN4
IN6
OUT 1
CVOUT1
CVOUT2
CVOUT3
CVOUT4
J6
SSW-113-01-F-D
A14
A12
A10
A8
A6
A4
A2
A0
GTO3
GTO1
GTI1
CVIN1
A15
A13
A11
A9
A7
A5
A3
A1
GTO4
GTO2
GTI2
CVIN2
3V3A
GPIOS
GPIO_MISO
GPIO_MOSI
GPIO_CLK
GPIO_CS
ADC_CS
AMUX_LOAD_SR
GPIO_LOAD_IN
GPIO_LOAD_OUT
PIN 17
pin_27
pin_28
A[0..15]
MIDI_IN[4..5]
MIDI_OUT[4..5]
Gate/Trig
PIN 11
PIN 13
PIN 15
PIN 16
PIN 18
PIN 22
G/T Rpi O1
G/T Rpi O2
G/T Rpi O3
G/T Rpi O4
G/T Rpi I1
G/T Rpi I2
G/T OUT 1
G/T OUT 2
G/T OUT 3
G/T OUT 4
G/T IN 2
G/T IN 1
GTO1
GTO2
GTO3
GTO4
GTI2
GTI1
MIDI
MIDI_IN[4..5]
MIDI_OUT[4..5]
MIDI_IN4
MIDI_IN5
MIDI_OUT4
MIDI_OUT5
MIDI RX
MIDI TX
R69
1.5k
R68
1.5k
D2
Green
D1
Red
GND
GND
FID1
FID2
FID3
FID4
FID5
FID6
Top-Level
Elk Pi hat
Rev C
Sheet 1 /15
cc-by-sa
Elk
tech@elk.audio
2019-11-06 16:26:16
Copyright Modern Ancient Instruments Networked AB, dba Elk

## MASTER CLOCK

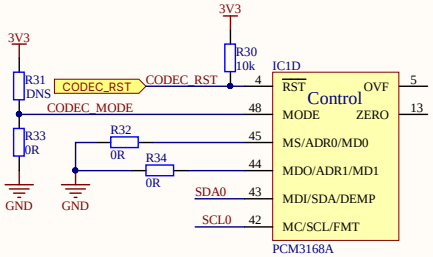



I2C slave address of Si5351 is 0b1100000(R/W) = 0x60 (7-bit)

## SERIAL AUDIO INTERACE

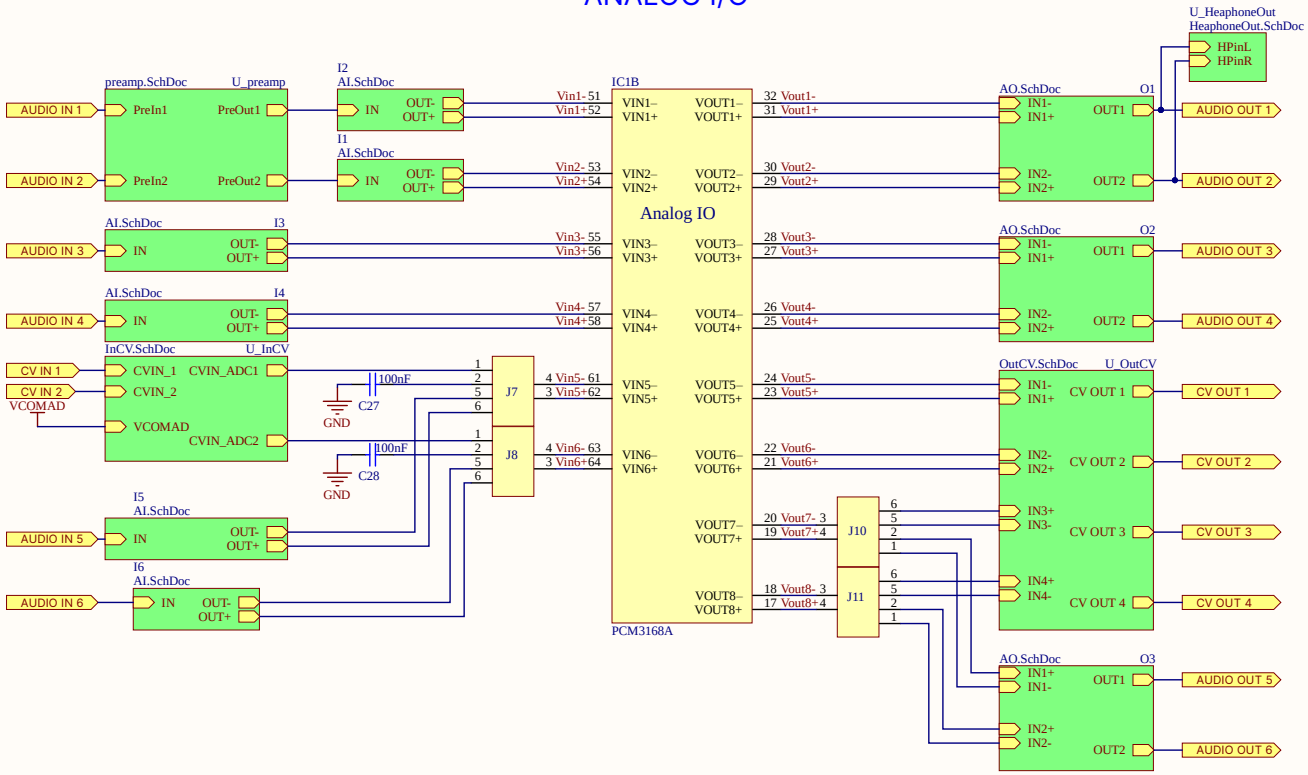



## CONTROL

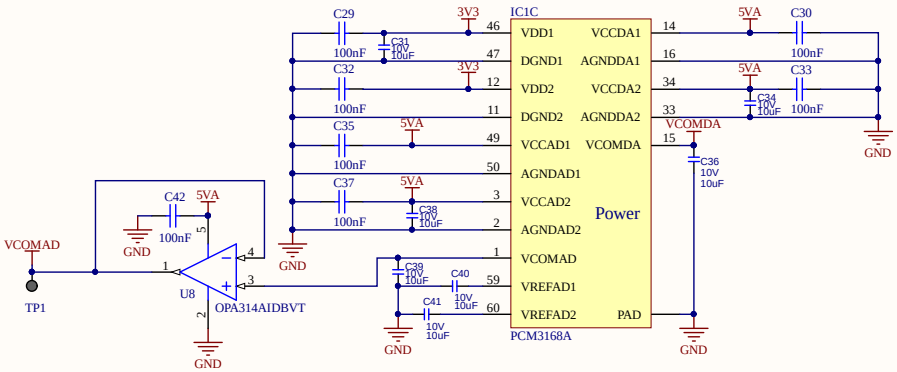



I2C slave address of PCM3168A is 0b1000100(R/W) = 0x44 (7-bit)

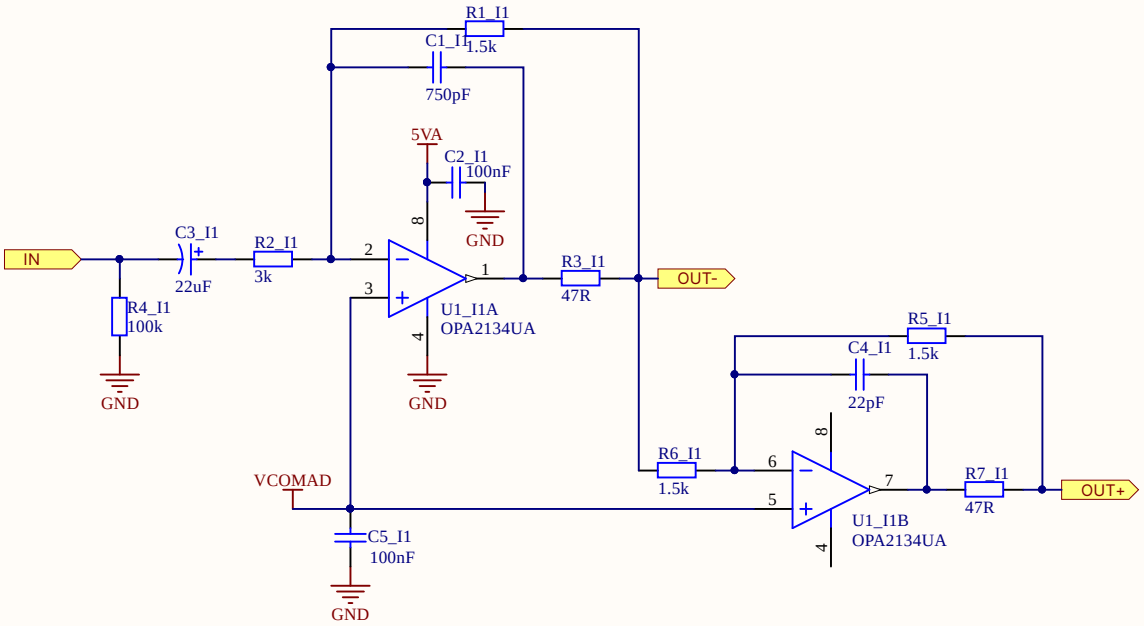
## ANALOG I/O



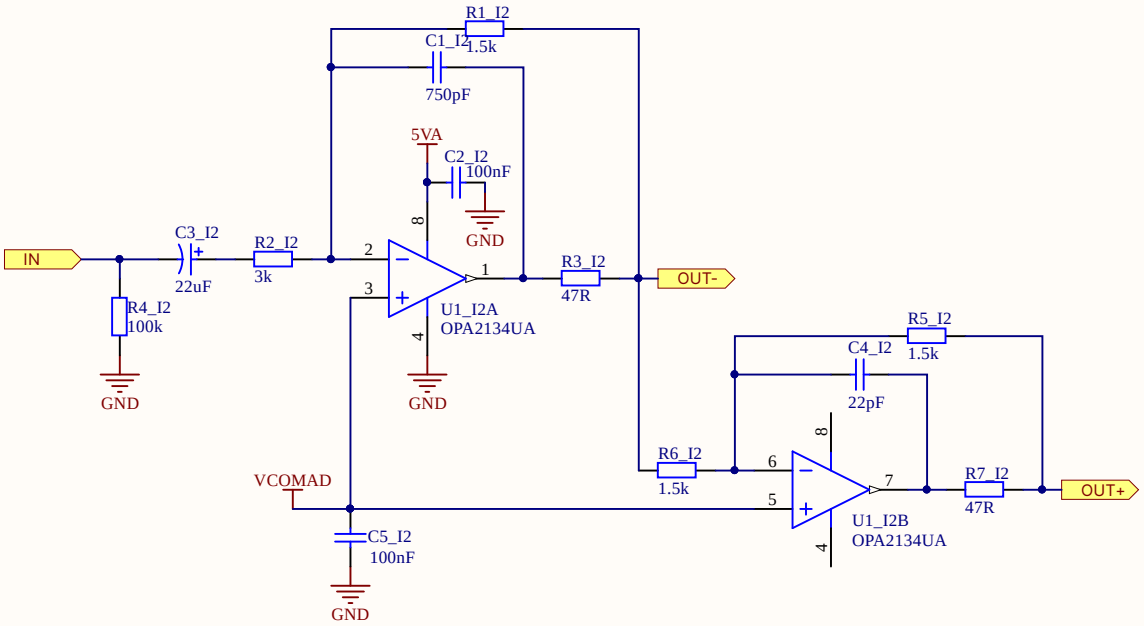

## POWER SUPPLY



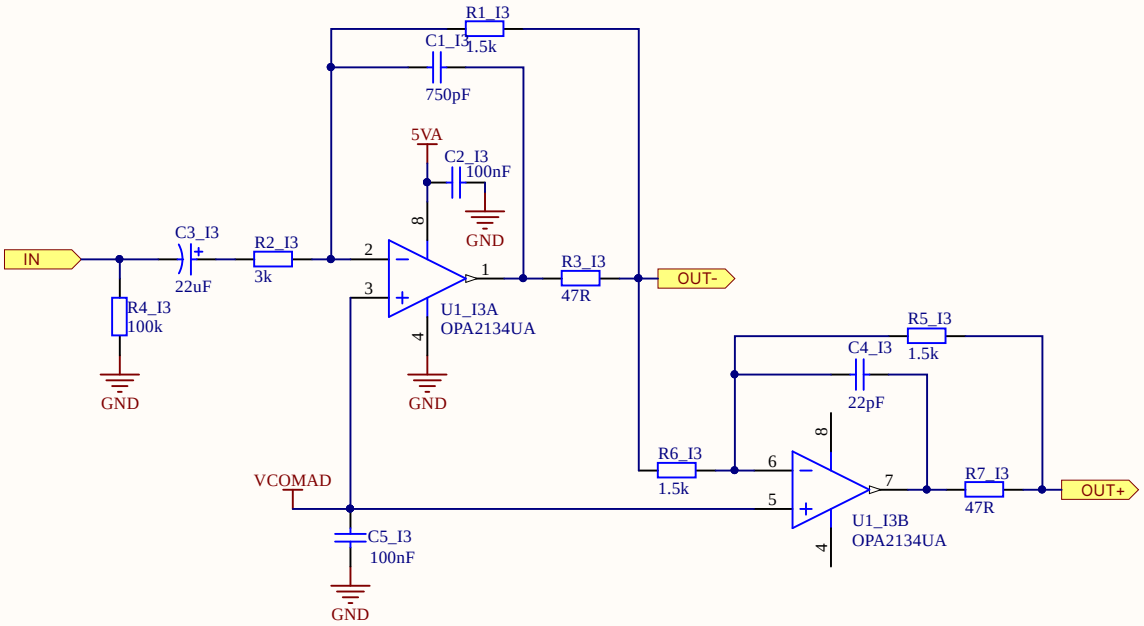

| | | |
|---|---|---|
| **Audio Codec** | | cc-by-sa |
| **Elk Pi hat** | Rev C | Elk |
| | | tech@elk.audio |
| Sheet 1 /15 | 2019-11-06 16:26:17 | |



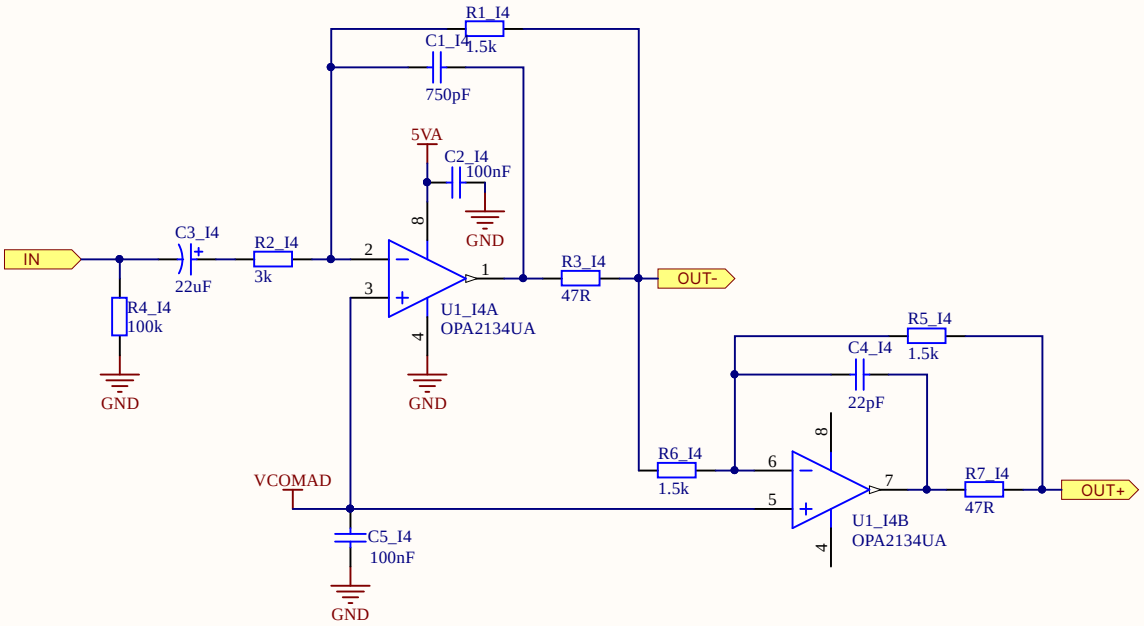

| | | | |
|---|---|---|---|
| **Audio Input Filter** | | **cc-by-sa** Elk tech@elk.audio | Elk |
| **Elk Pi hat** | Rev C | | |
| Sheet 3 /15 | | 2019-11-06 16:26:18 | |



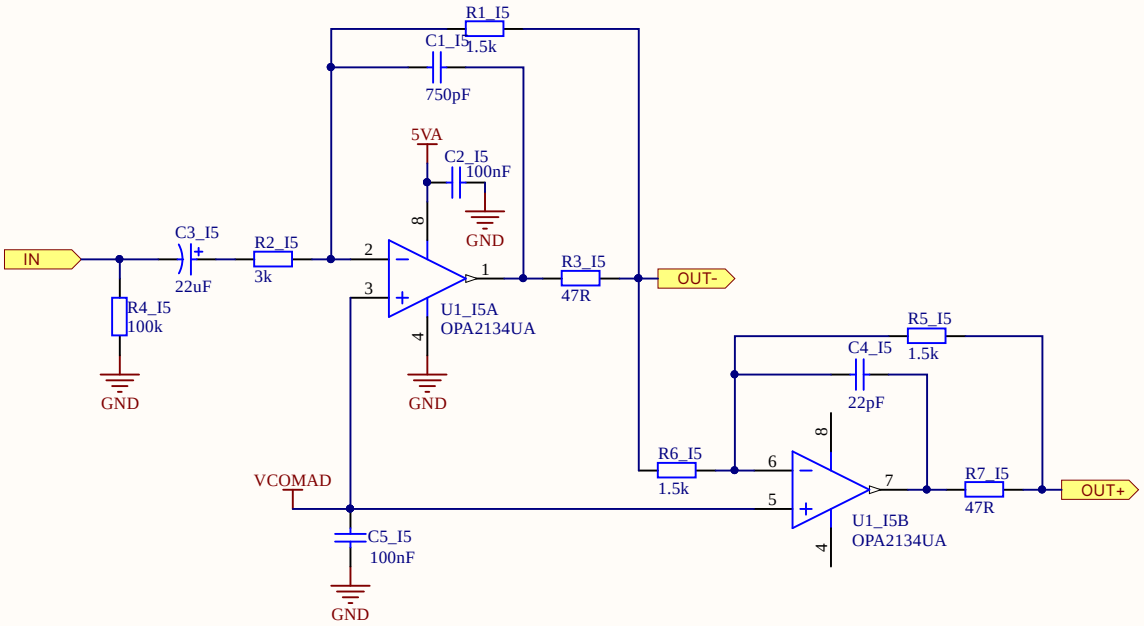

| | | | |
|---|---|---|---|
| **Audio Input Filter** | | **cc-by-sa** Elk tech@elk.audio | Elk |
| **Elk Pi hat** | Rev C | | |
| Sheet 3 /15 | | 2019-11-06 16:26:18 | |



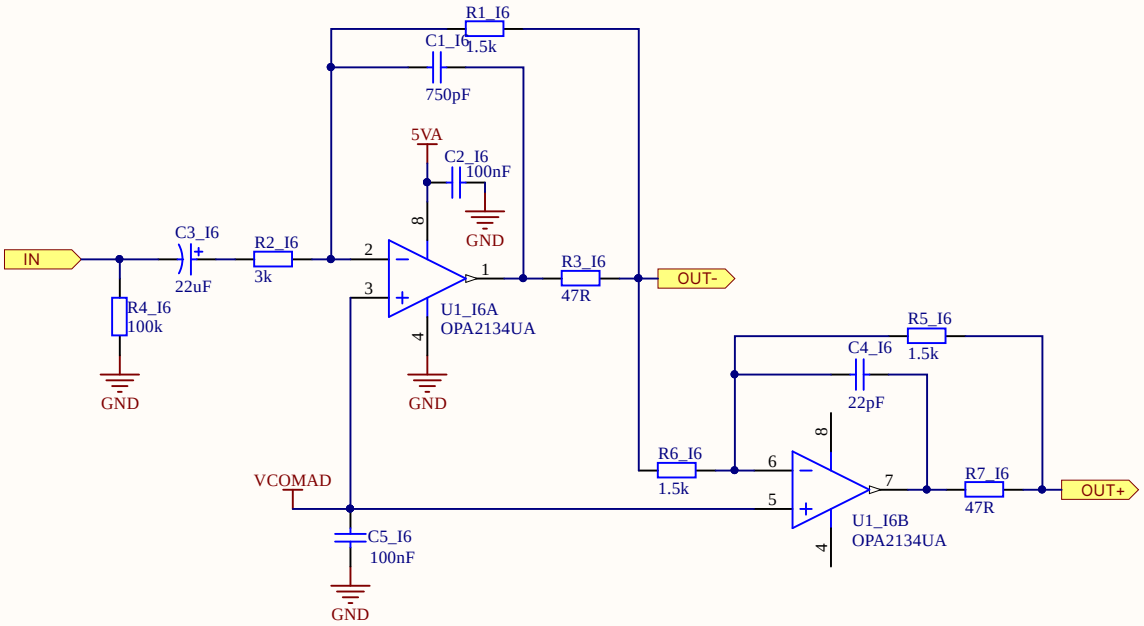

| | | | |
|---|---|---|---|
| **Audio Input Filter** | | **cc-by-sa** Elk tech@elk.audio | |
| **Elk Pi hat** | Rev C | | |
| Sheet 3 /15 | | 2019-11-06 16:26:18 | |



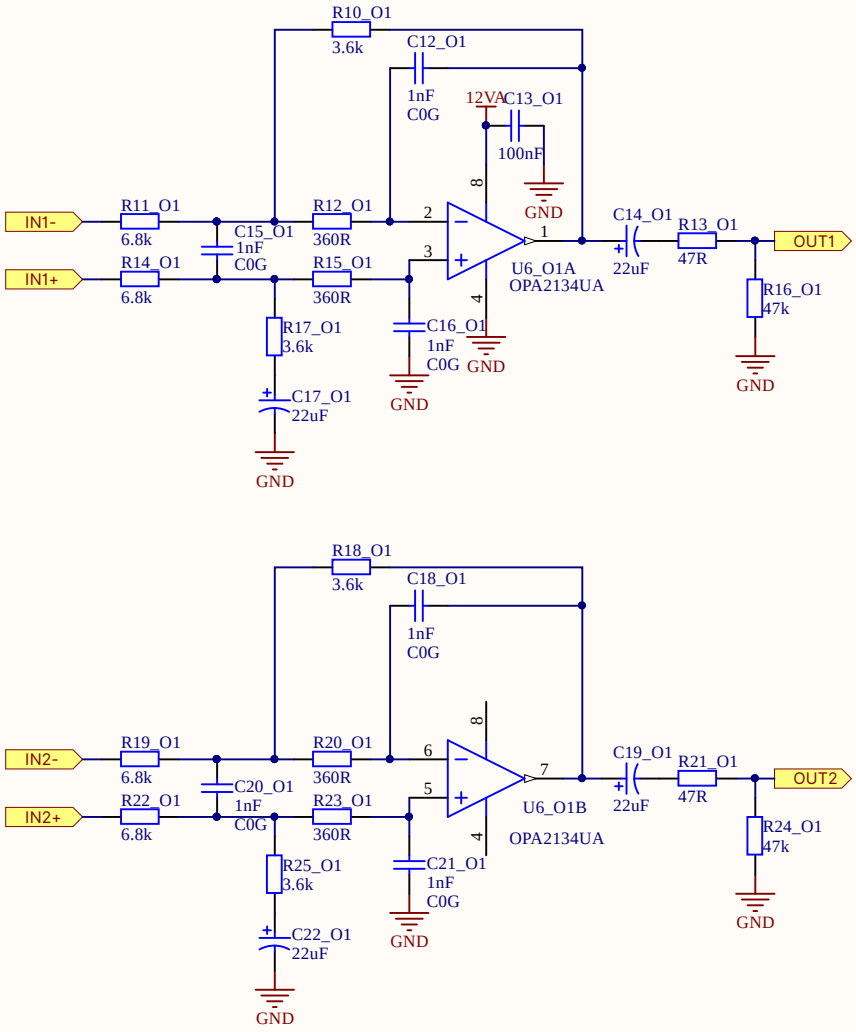

| | | | |
|---|---|---|---|
| **Audio Input Filter** | | **cc-by-sa** Elk tech@elk.audio | Elk |
| **Elk Pi hat** | Rev C | | |
| Sheet 3 /15 | | 2019-11-06 16:26:18 | |



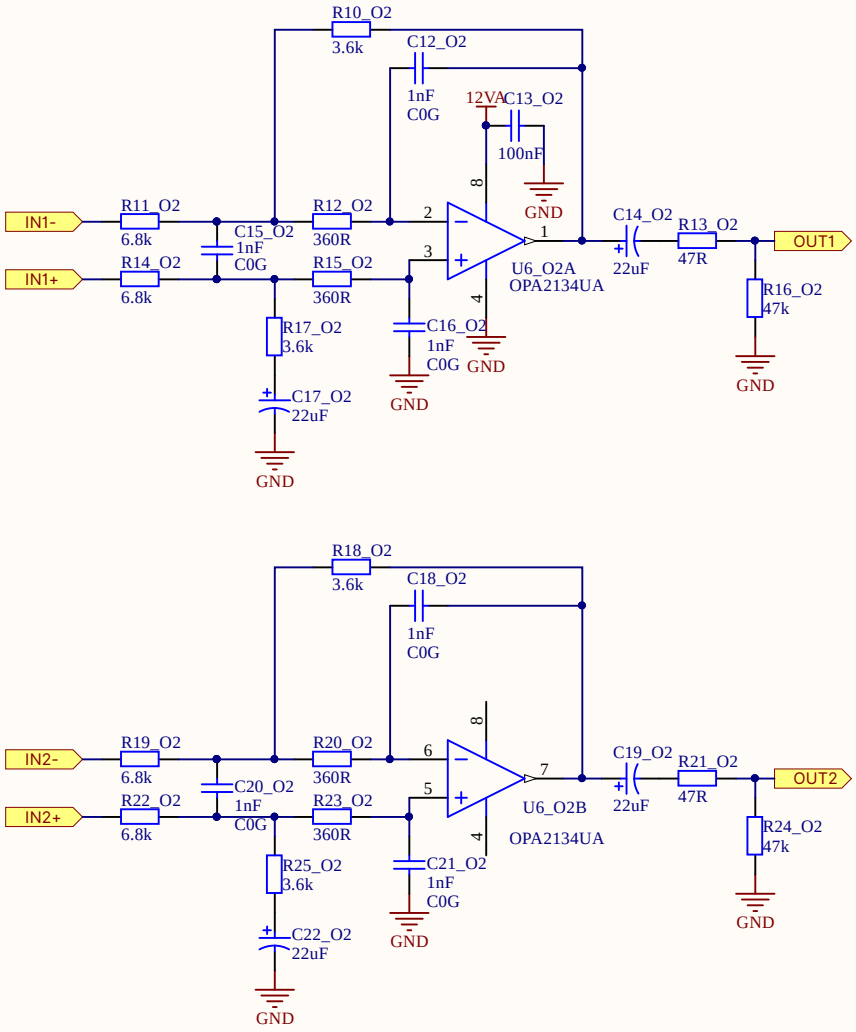

| | | | |
|---|---|---|---|
| **Audio Input Filter** | | **cc-by-sa** Elk tech@elk.audio | Elk |
| **Elk Pi hat** | Rev C | | |
| Sheet 3 /15 | | 2019-11-06 16:26:19 | |



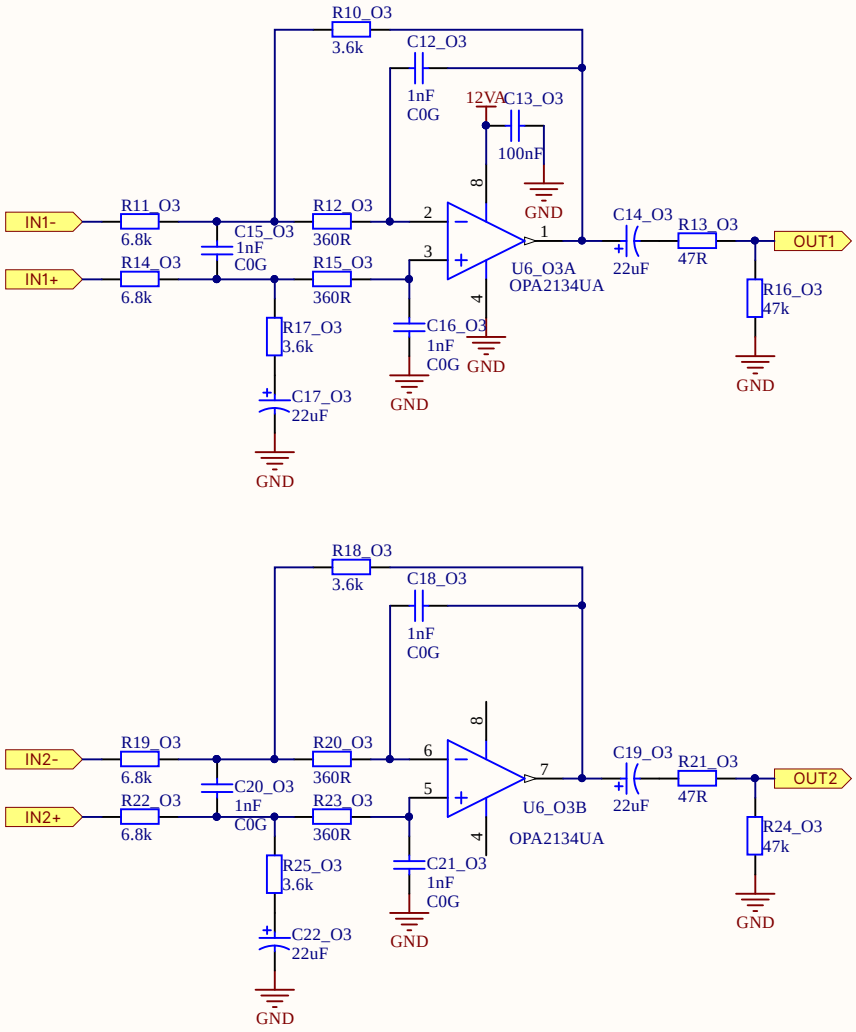

| | | | |
|---|---|---|---|
| **Audio Input Filter** | | **cc-by-sa** Elk tech@elk.audio | Elk |
| **Elk Pi hat** | Rev C | | |
| Sheet 3 /15 | | 2019-11-06 16:26:19 | |



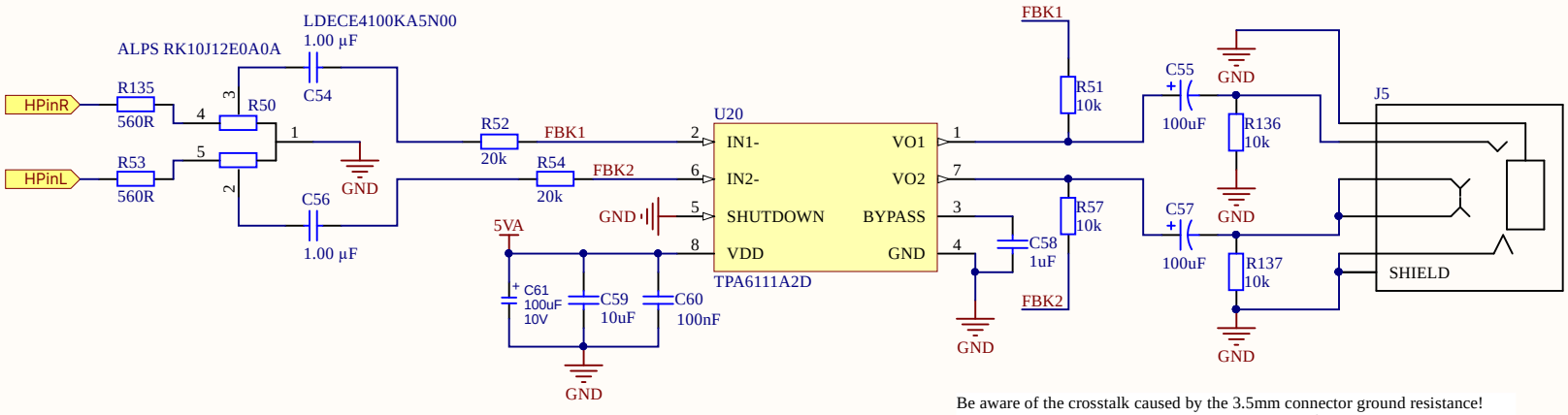

| | | | |
|---|---|---|---|
| **Audio Output Filter** | | cc-by-sa<br>Elk<br>tech@elk.audio | |
| **Elk Pi hat** | Rev C | | |
| Sheet 4 /15 | | 2019-11-06 16:26:19 | |




| | | |
|---|---|---|
| **Audio Output Filter** | | **cc-by-sa** Elk tech@elk.audio |
| **Elk Pi hat** | Rev C | |
| Sheet 4 /15 | | 2019-11-06 16:26:20 |

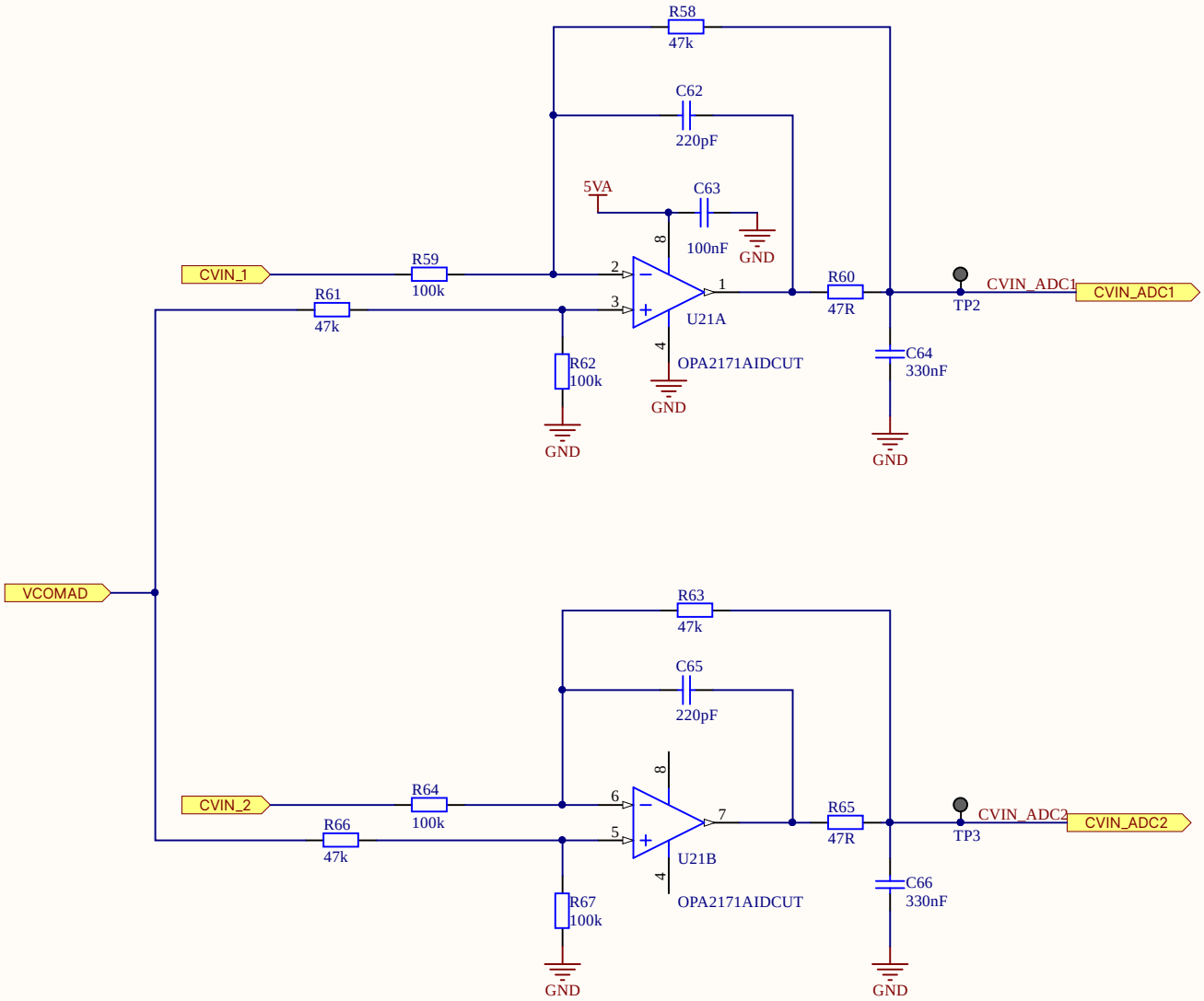



| | | |
|---|---|---|
| **Audio Output Filter** | | **cc-by-sa** Elk tech@elk.audio |
| **Elk Pi hat** | Rev C | |
| Sheet 4 /15 | | 2019-11-06 16:26:20 |

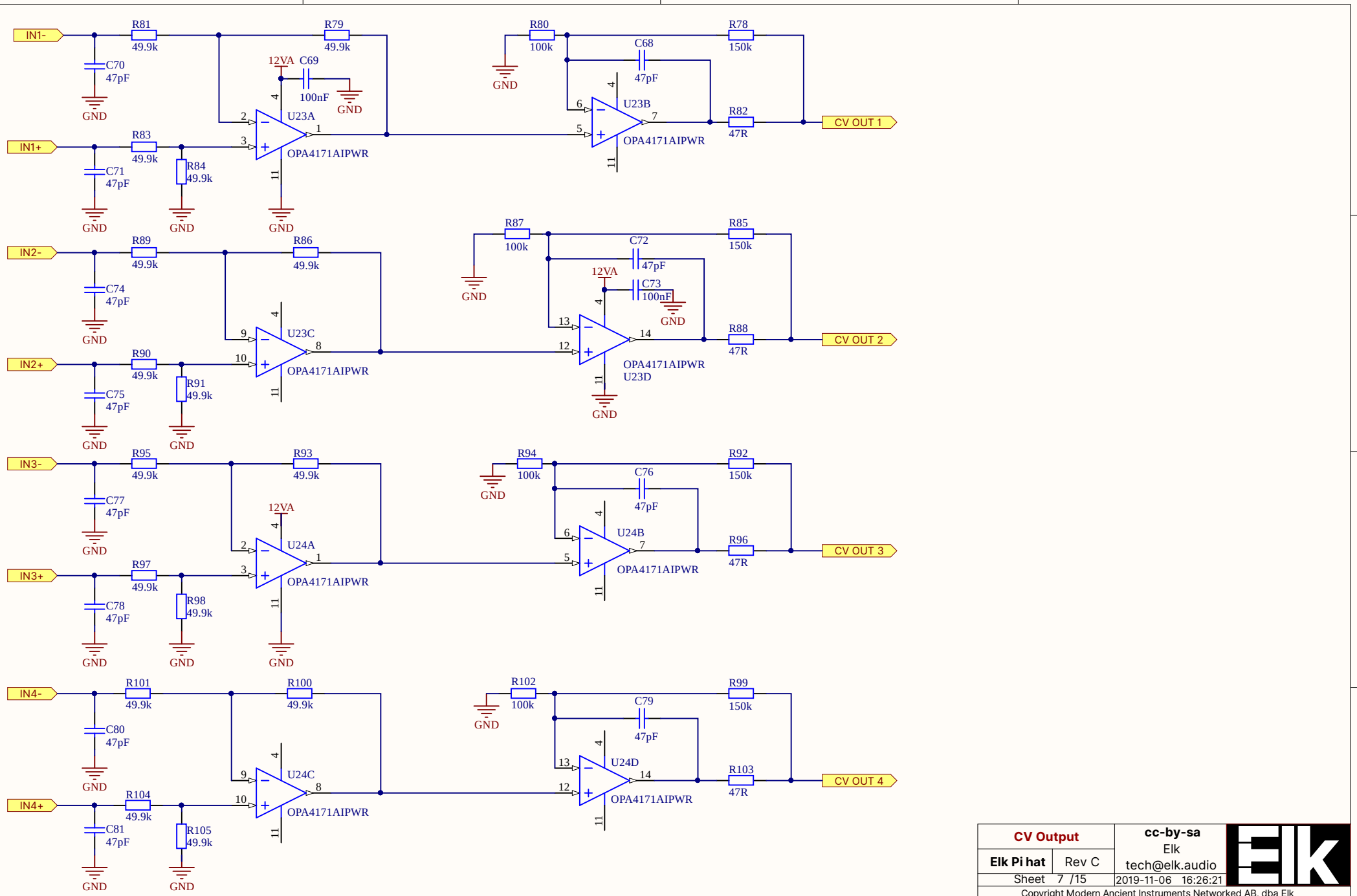



Be aware of the crosstalk caused by the 3.5mm connector ground resistance!
https://m.eet.com/media/1051349/C0438_edited.pdf

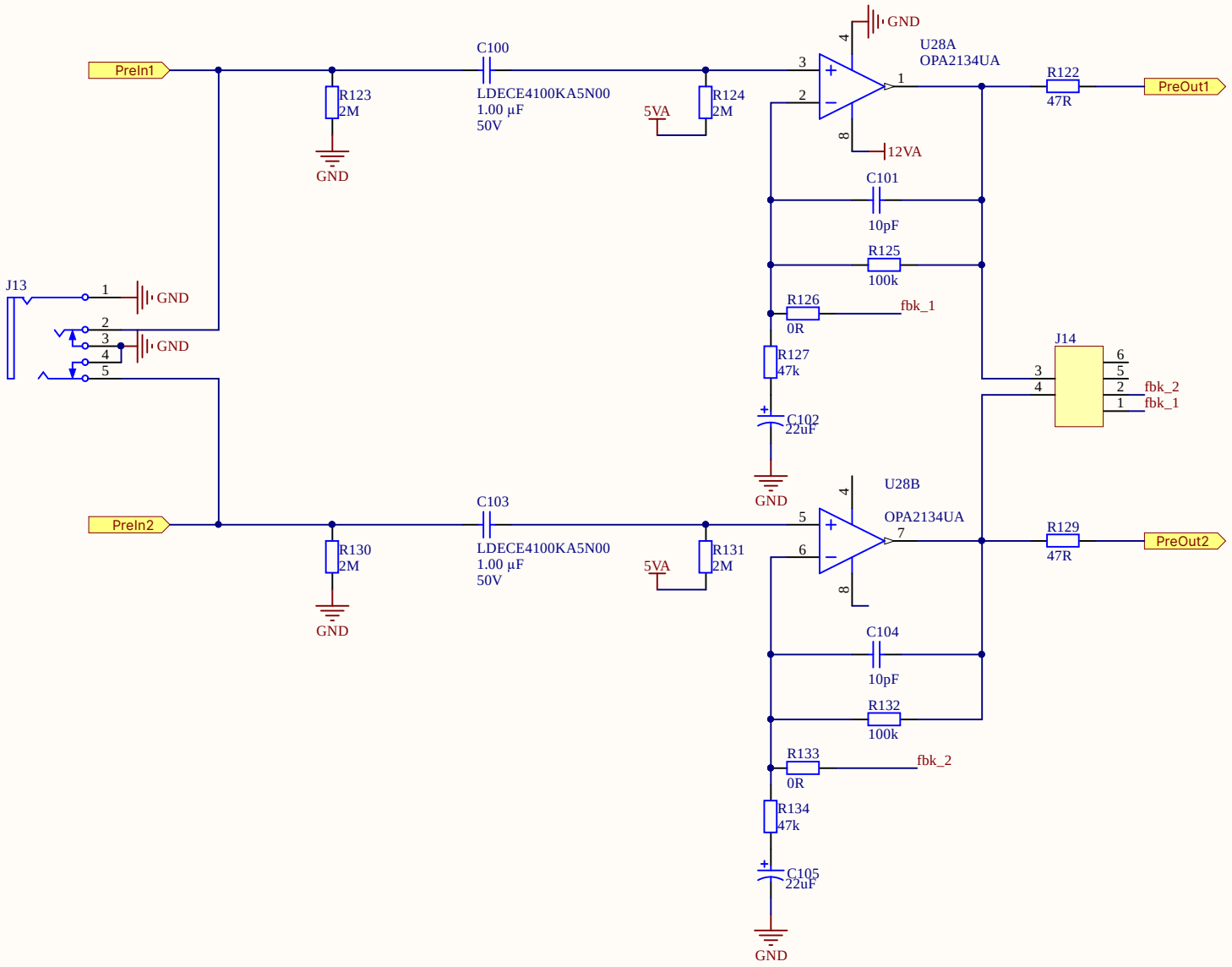
| | | |
|---|---|---|
| **Headphone Output** | | **cc-by-sa** Elk tech@elk.audio |
| **Elk Pi hat** | Rev C | |
| Sheet 5 /15 | | 2019-11-06 16:26:20 |




| | | |
|---|---|---|
| **CV Input** | | **cc-by-sa** Elk tech@elk.audio |
| **Elk Pi hat** | Rev C | |
| Sheet 6 /15 | | 2019-11-06 16:26:20 |

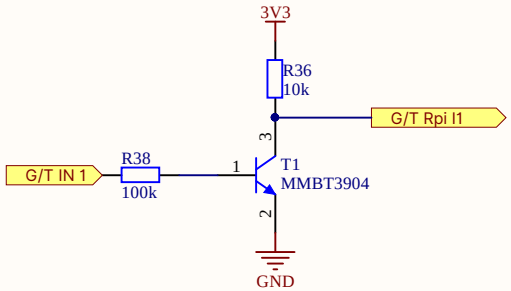


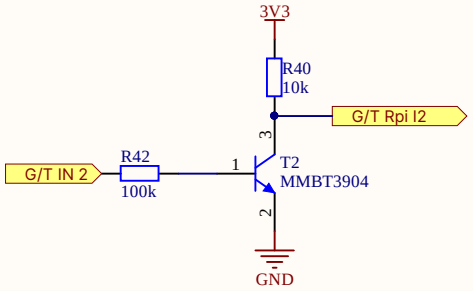

| | | |
|---|---|---|
| **CV Output** | | **cc-by-sa** Elk tech@elk.audio |
| **Elk Pi hat** | Rev C | |
| Sheet 7 /15 | | 2019-11-06 16:26:21 |



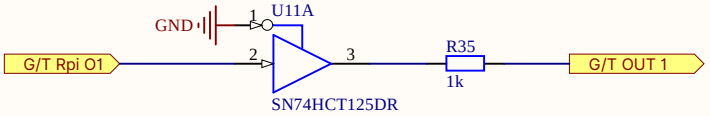

| | | |
|---|---|---|
| **Stereo Preamp** | | **cc-by-sa** Elk tech@elk.audio |
| **Elk Pi hat** | Rev C | |
| Sheet 8 /15 | | 2019-11-06 16:26:21 |

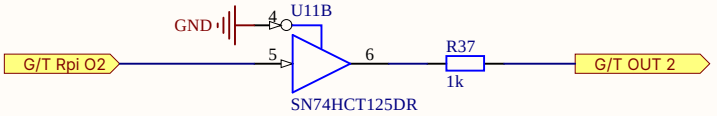
# GATE/TRIGGER INPUT

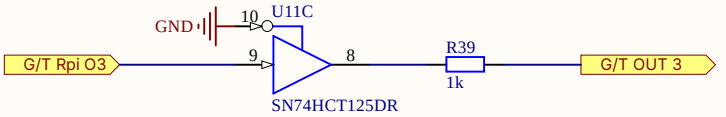


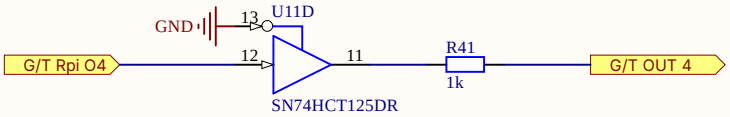



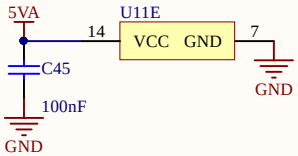

# GATE/TRIGGER OUTPUT



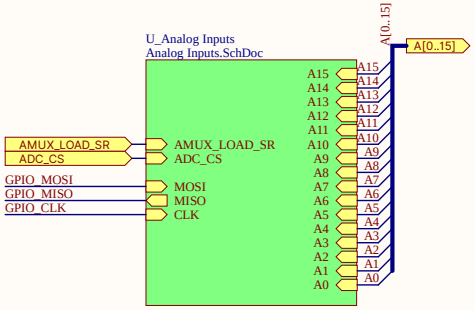



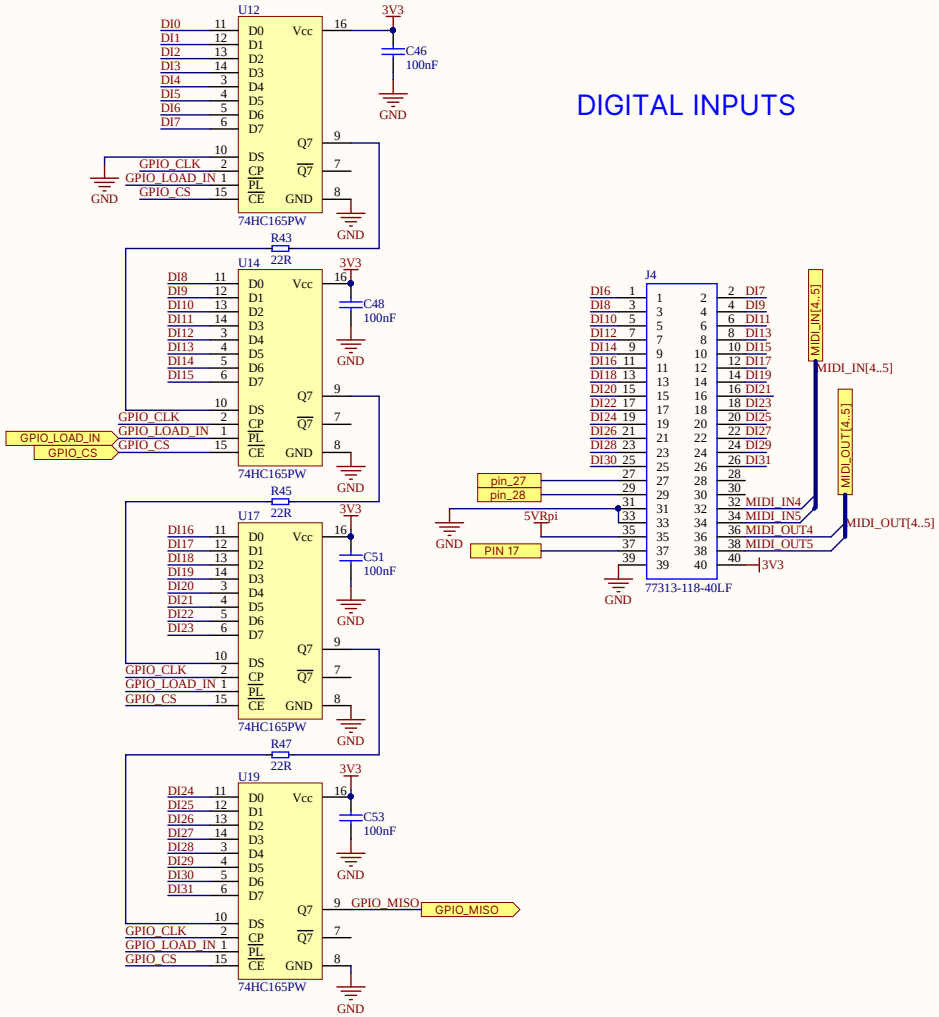




| | | | |
|---|---|---|---|
| **Gate/Trig** | | **cc-by-sa** | |
| **Elk Pi hat** | Rev C | Elk | |
| | | tech@elk.audio | |
| Sheet 9 /15 | | 2019-11-06 16:26:22 | |

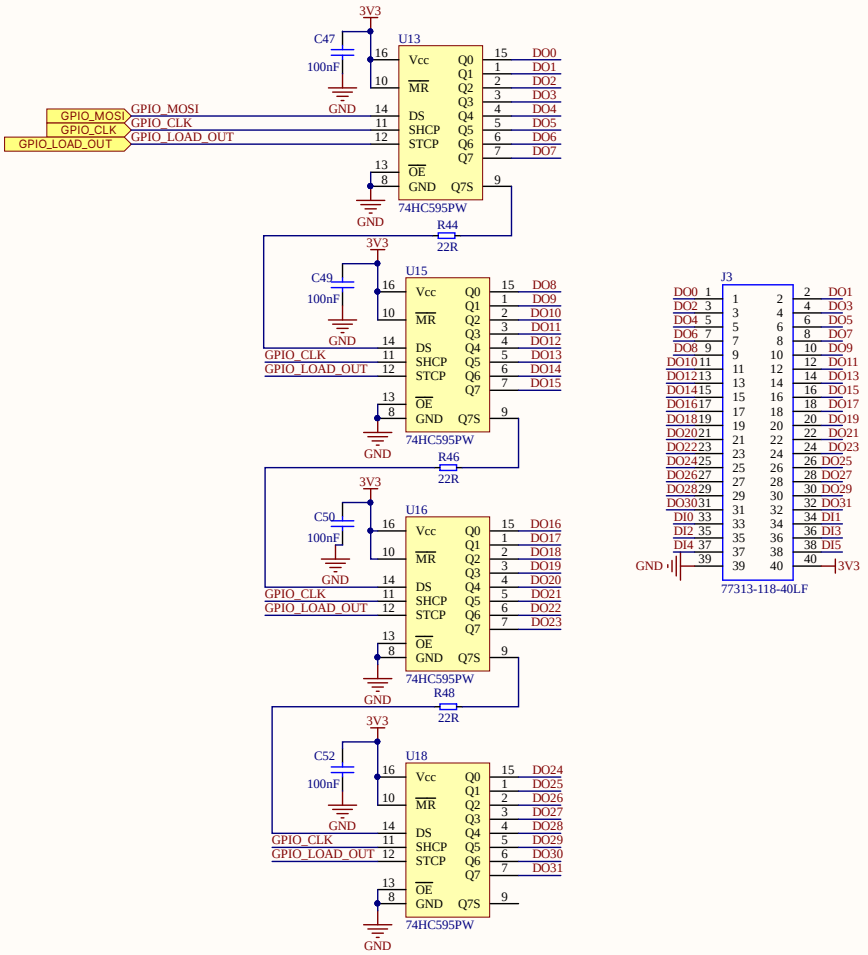



## ANALOG INPUTS

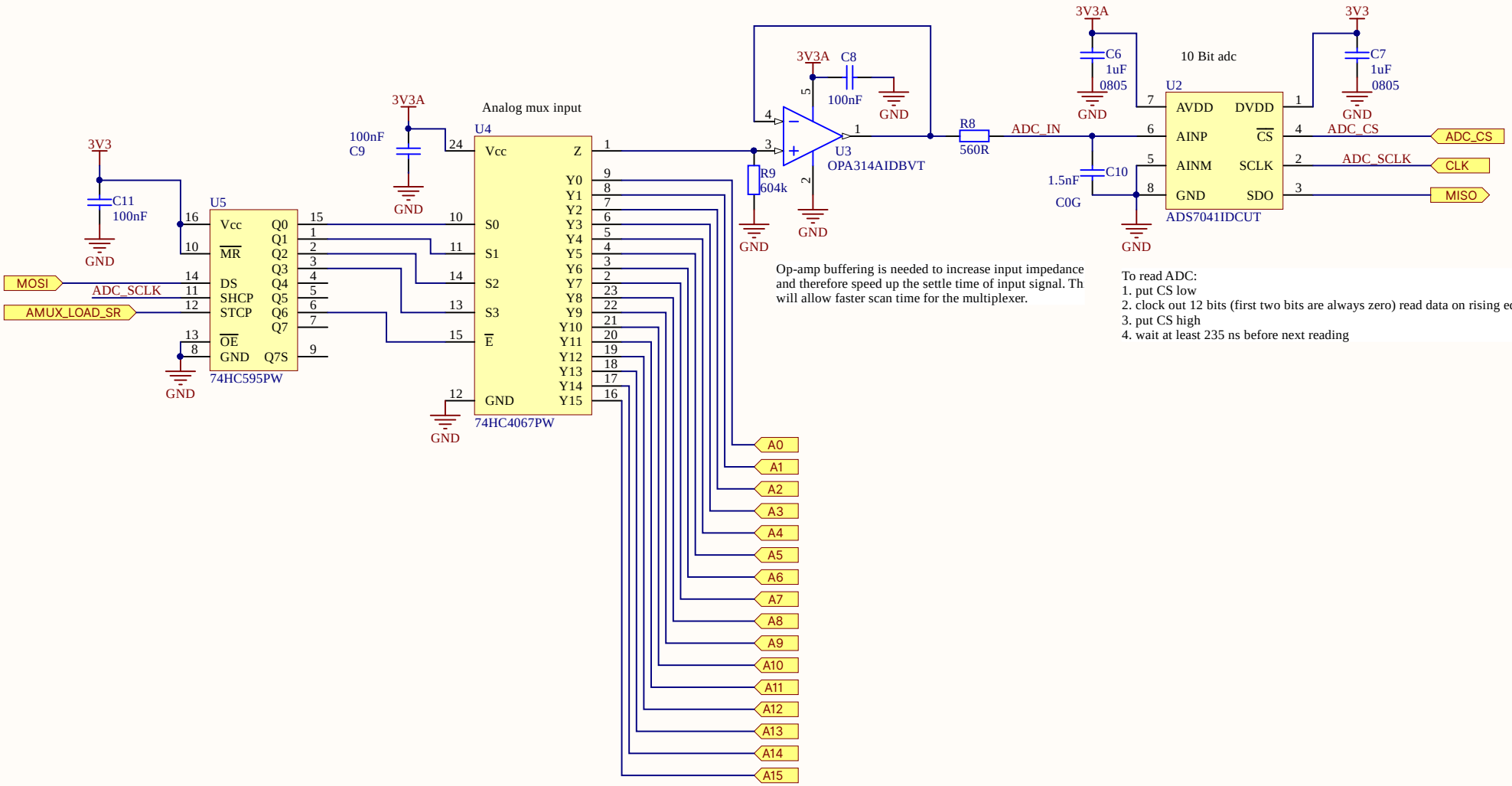



## DIGITAL INPUTS

## DIGITAL OUTPUTS

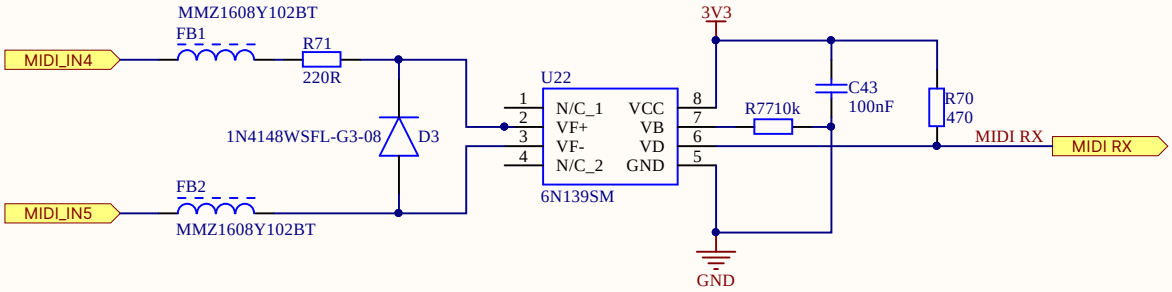



| | | |
|---|---|---|
| **GPIOs** | | cc-by-sa |
| **Elk Pi hat** | Rev C | Elk |
| | | tech@elk.audio |
| Sheet 10/15 | | 2019-11-06 16:26:22 |

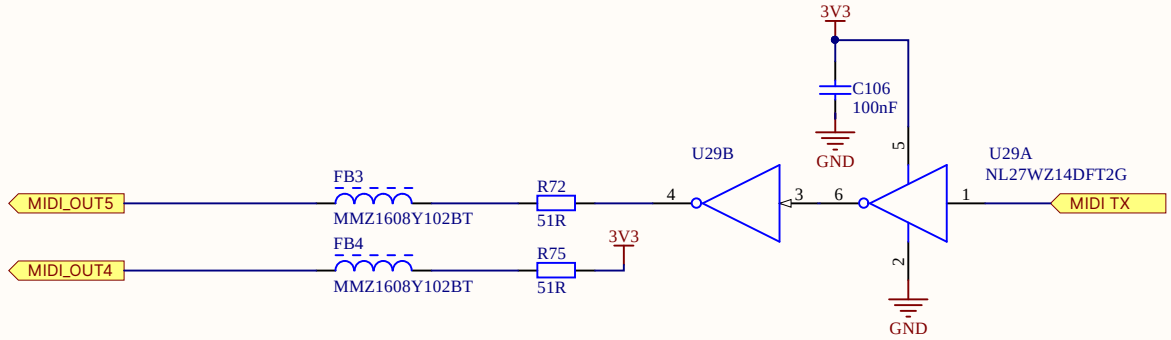



| | | |
|---|---|---|
| **Analog Inputs** | | cc-by-sa |
| **Elk Pi hat** | Rev C | Elk |
| | | tech@elk.audio |
| Sheet 11/15 | | 2019-11-06 16:26:23 |

# MIDI INPUT

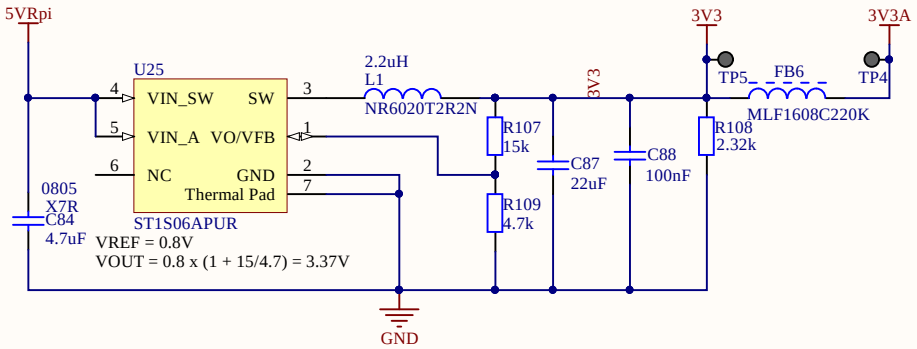



# MIDI OUTPUT

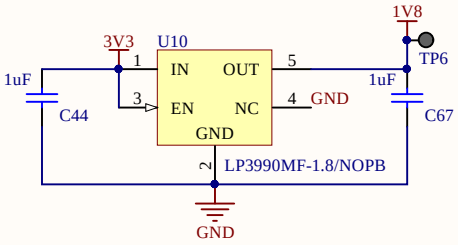



| | | |
|---|---|---|
| **MIDI** | | **cc-by-sa** Elk tech@elk.audio |
| **Elk Pi hat** | Rev C | |
| Sheet 12/15 | | 2019-11-06 16:26:23 |

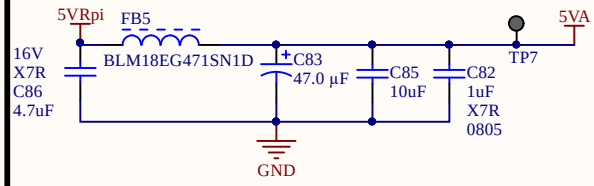
## ANALOG AND DIGITAL 3V3



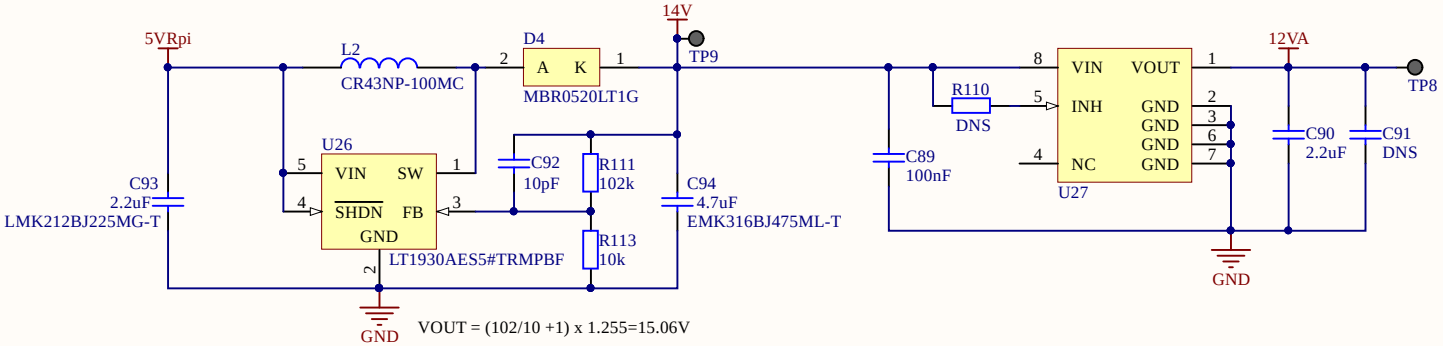

## CPLD CORE VOLTAGE SUPPLY



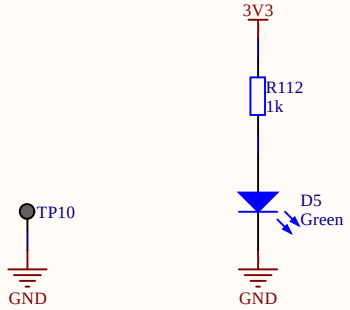

## ANALOG 5V



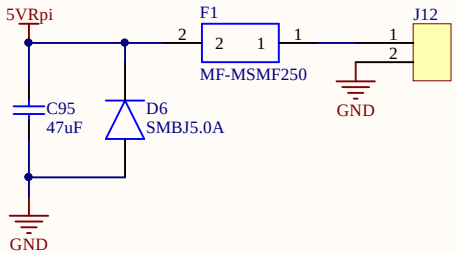

## ANALOG 12V



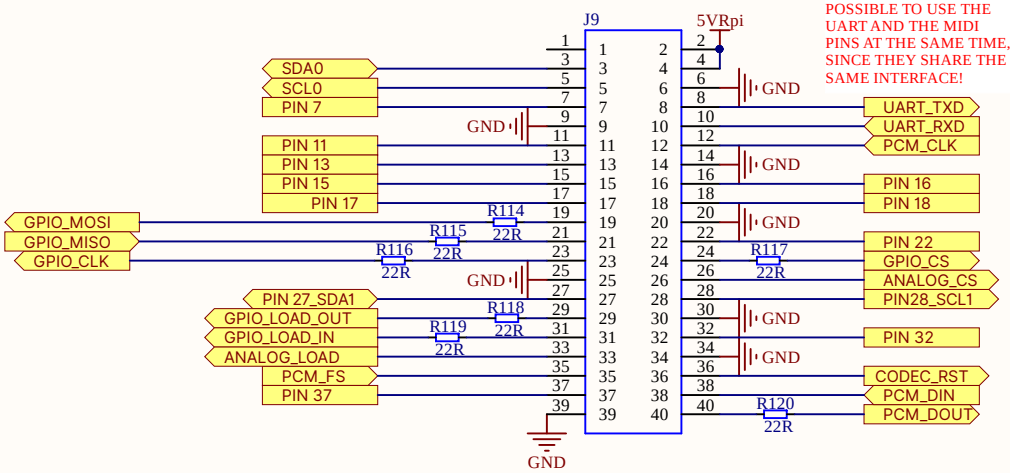

## "ON" LED




## ALTERNATIVE EXTERNAL 5V




| | | |
|---|---|---|
| **Power Supply Unit** | | **cc-by-sa** Elk tech@elk.audio |
| **Elk Pi hat** | Rev C | |
| Sheet 13/15 | 2019-11-06 16:26:24 | |

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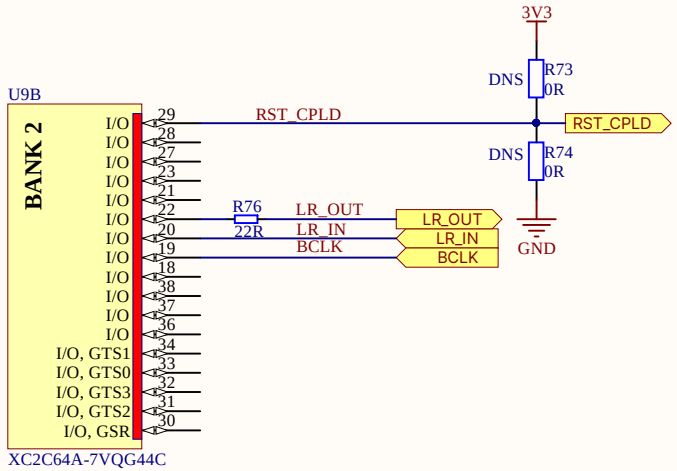
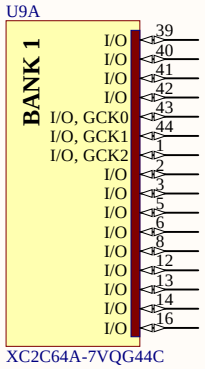
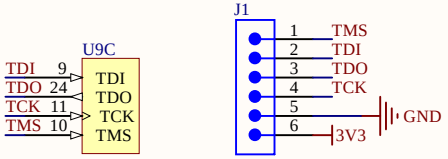
|---|---|---|
| **Raspberry Pi header** | | **cc-by-sa** |
| **Elk Pi hat** | Rev C | Elk |
| | | tech@elk.audio |
| Sheet 14/15 | | 2019-11-06 16:26:24 |

# I/O

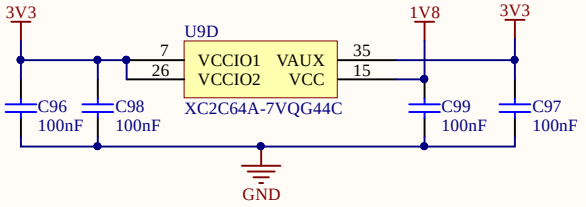


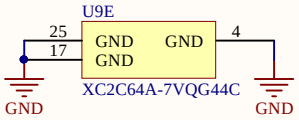




# JTAG




# I/O POWER




| | | |
|---|---|---|
| **CPLD** | | **cc-by-sa** Elk tech@elk.audio |
| **Elk Pi hat** | Rev C | |
| Sheet 15/15 | | 2019-11-06 16:26:24 |