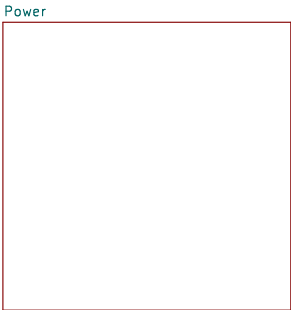


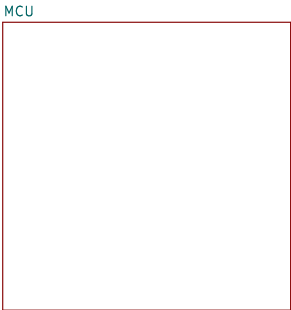
# Mixed–Signal Demo PCB

## [1] Power



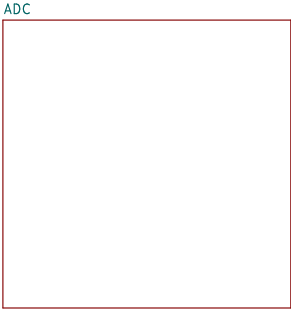
File: Power.kicad\_sch

## [2] MCU



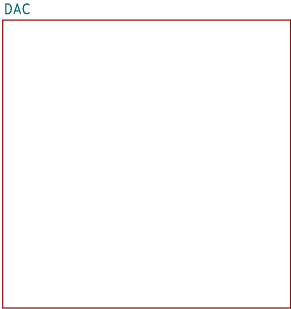
File: MCU.kicad\_sch

## [3] ADC



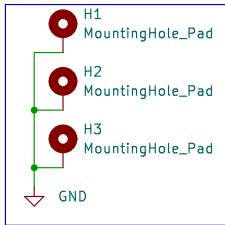
File: ADC.kicad\_sch

## [4] DAC



File: DAC.kicad\_sch

### Mounting Holes (M3)



### Fiducials

- Fiducial1
- Fiducial2
- Fiducial3
- Fiducial4

### Tooling Holes

- Tooling–Hole1
- Tooling–Hole2
- Tooling–Hole3
- Tooling–Hole4

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Sheet: /  
File: MixedSignalKicad.kicad\_sch

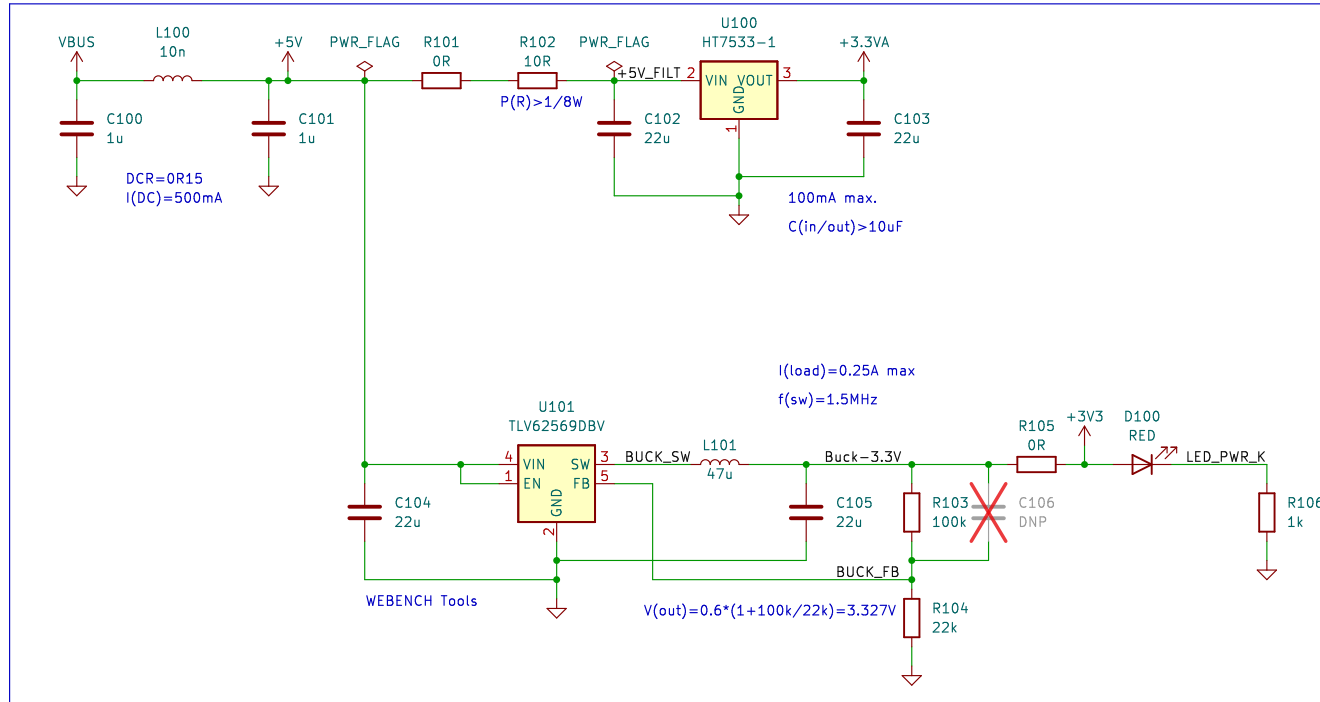
Title: Mixed Signal PCB

Size: A4 Date: 2024–04–14  
KiCad E.D.A. kicad 7.0.8

Rev: 1.0  
Id: 1/5

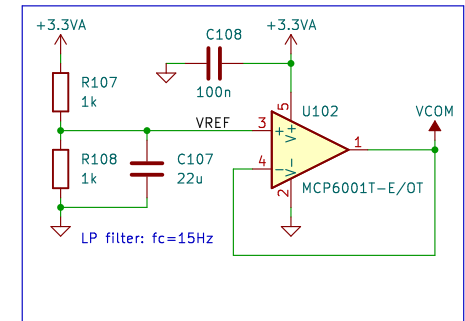
# [1] Power

## Input Filtering & Analogue and Digital Supplies



VBUS power comes from USB Type C connector (schematic page 2)

## Bias Generator



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Sheet: /Power/  
File: Power.kicad\_sch

Title: Mixed Signal PCB

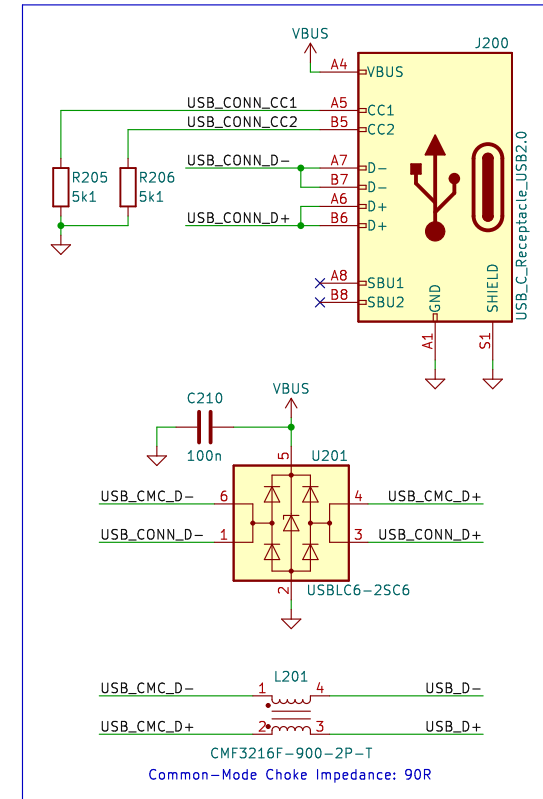
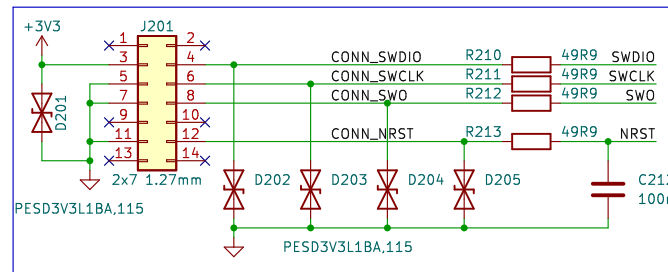
Size: A4 Date: 2024-04-14

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Rev: 1.0

Id: 2/5

## D



Signal Path:  
Connector <=> ESD Protection <=> Common-Mode Choke <=> Pull-Up <=> MCU

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Sheet: /MCU/

File: MCU.kicad\_sch

**Title: Mixed Signal PCB**

Size: A4	Date: 2024-04-14
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Size: 7.1	Date: 7.1
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Rev: 1.0

Id: 3/5

### [3] ADC & Analogue Front-End

Analogue Front-End

MCP6001: I/O Rail-to-Rail, Single-Supply (1V8 to 5V), high-impedance input CMOS, low bias currents, unity gain stable

$R_{in} = 1.1M$   
RF filter:  $f_c = 1.1MHz$

HP filter:  $f_c = 0.723 Hz$

3rd order Butterworth anti-aliasing (low-pass filter)  $f_c = 25kHz$

Single-ended to 'balanced' conversion  
Both ADC inputs should be at same VCOM

Input voltage must be in  $-1.65V$  to  $+1.65V$  range!

14-Bit S/H ADC

$V_{ref} = 3V3$   
Vref filter:  $f_c = 319Hz$   
 $P(R_{max}) = 0.1W \rightarrow I(R_{max}) = 45mA$

ADC1415626C1MM\_NOPB

Rev: 1.0

### [3] ADC & Analogue Front-End

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ADC1415626C1MM\_NOPB

Rev: 1.0

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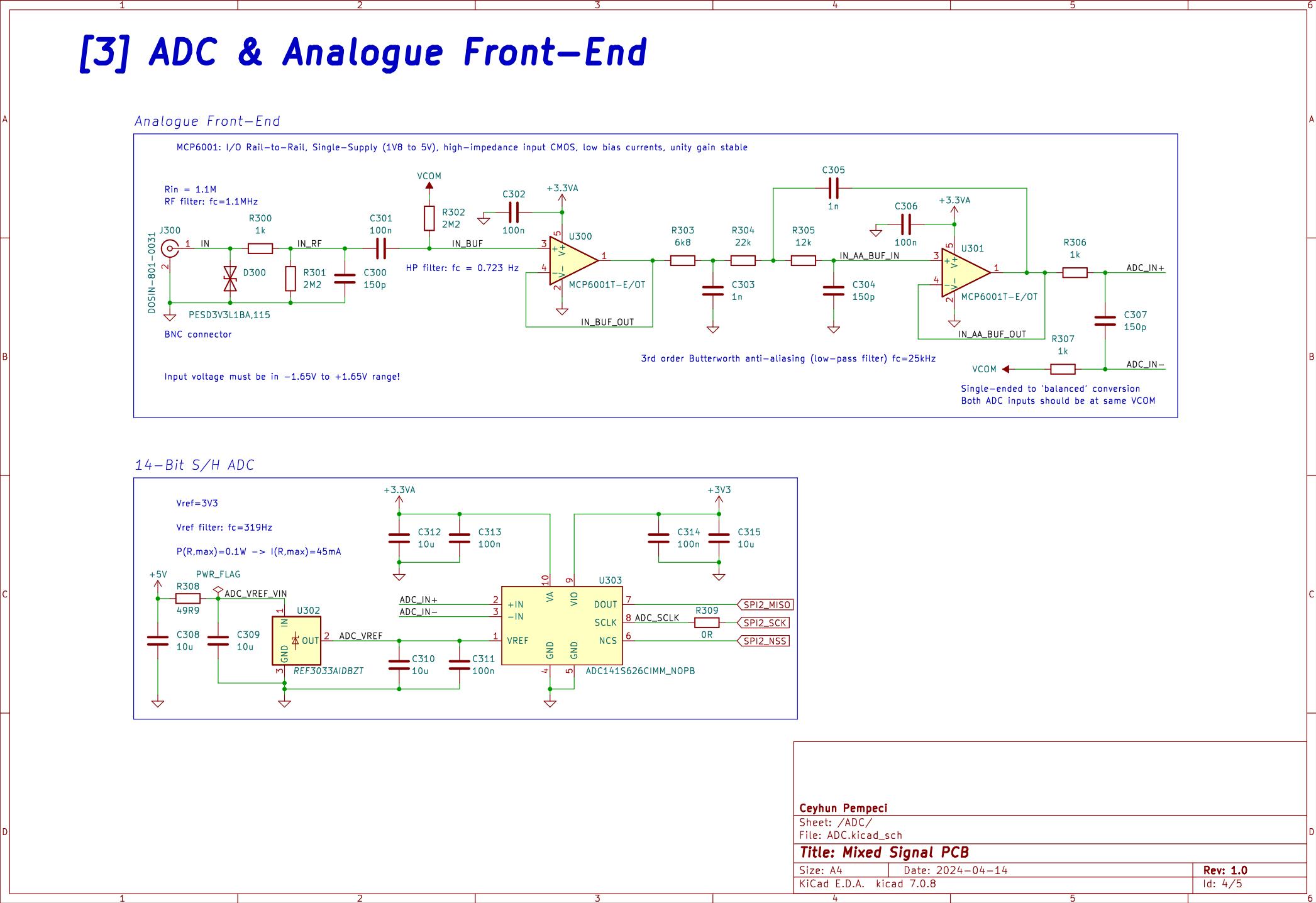
Input voltage must be in  $-1.65V$  to  $+1.65V$  range!

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ADC1415626C1MM\_NOPB

Rev: 1.0



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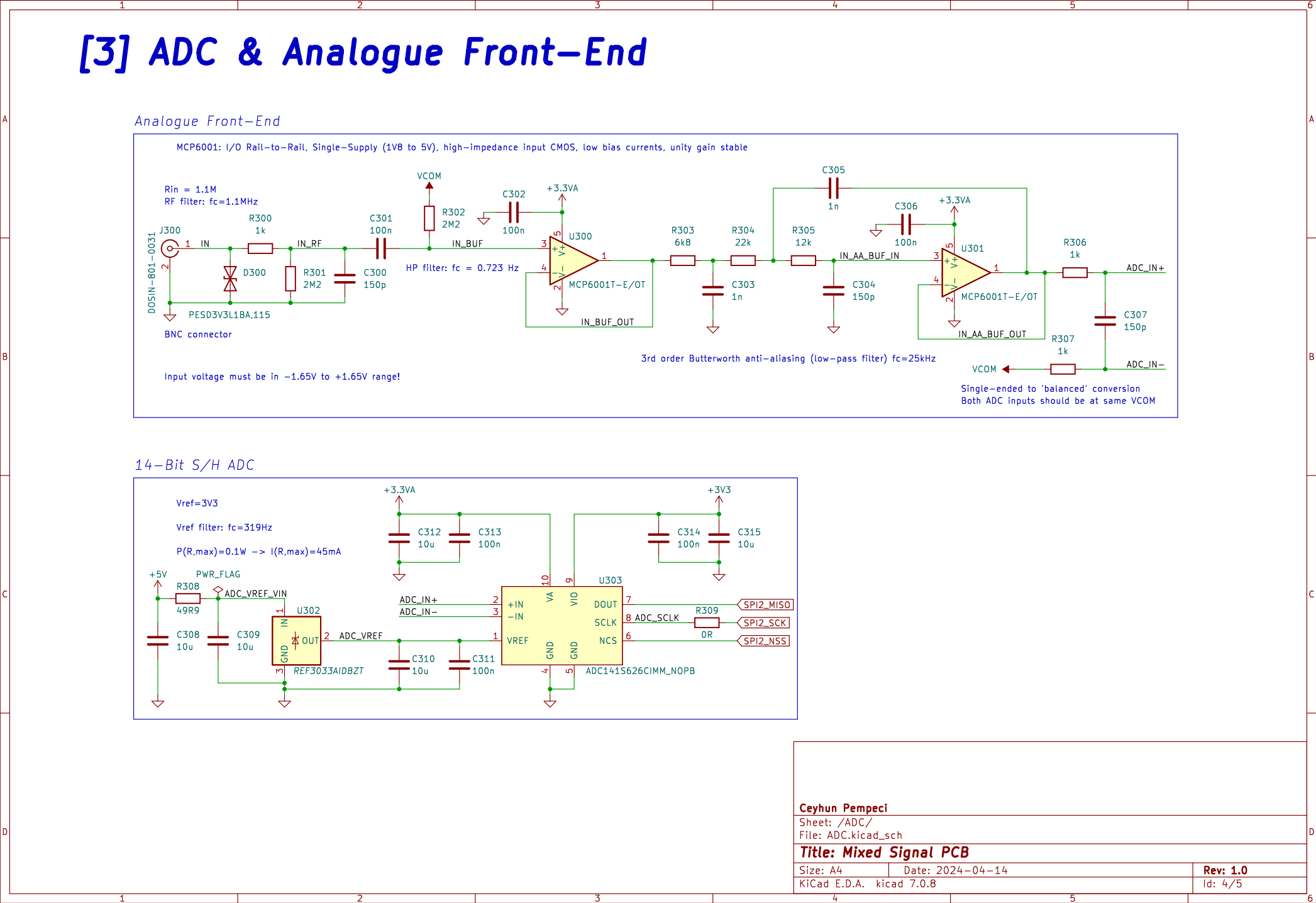
Input voltage must be in  $-1.65V$  to  $+1.65V$  range!

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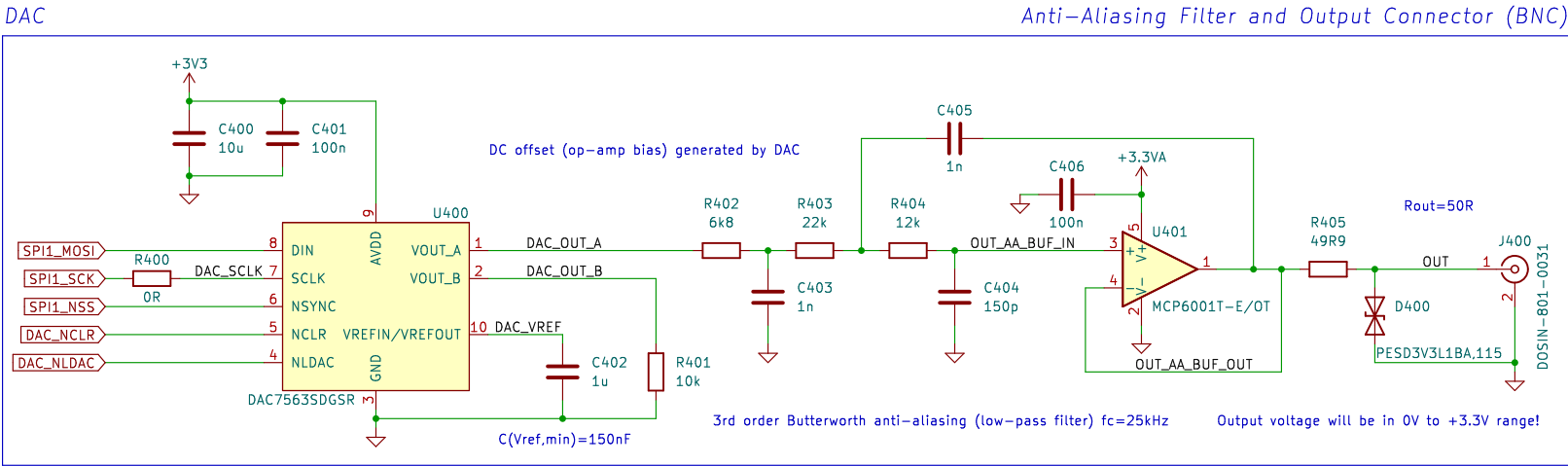
ADC1415626C1MM\_NOPB

Rev: 1.0



<b>Ceyhun Pempeci</b>		
Sheet: /ADC/ File: ADC.kicad_sch		
<b>Title: Mixed Signal PCB</b>		
Size: A4	Date: 2024-04-14	<b>Rev: 1.0</b>
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# [4] DAC & Analogue Output Circuitry



Ceyhun Pempeci

Sheet: /DAC/

File: DAC.kicad\_sch

**Title: Mixed Signal PCB**

Size: A4 Date: 2024-04-14

KiCad E.D.A. kicad 7.0.8

**Rev: 1.0**

Id: 5/5