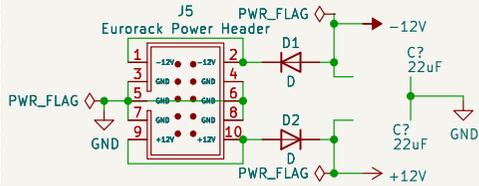
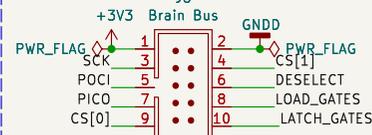


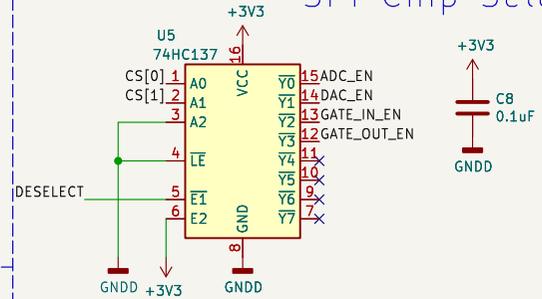
Eurorack Power



Bus to uController

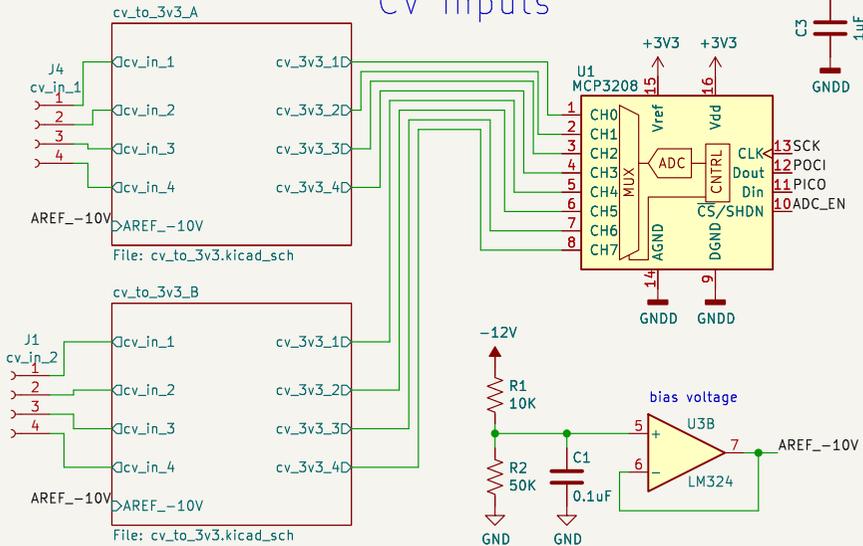


SPI Chip Select DeMux

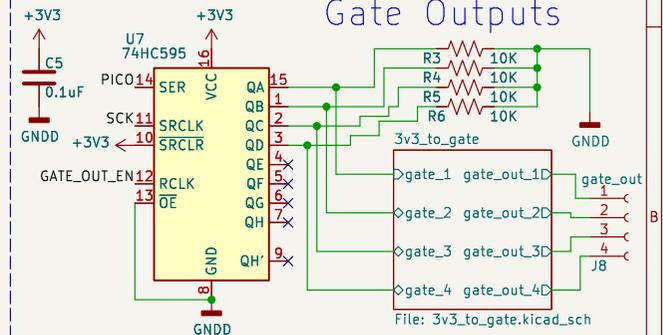


8 CV input stages
 12 Gate input stages
 4 CV output stages
 4 Gate output stages
 Two power supplies used:
 (1) -12V, GND, +12V Eurorack rails for parts of gain staging.
 (2) +3.3V and GND for 3V3 logic used in some gain staging (rail-to-rail opamps), ADC/DAC/DeMuxes/Muxes

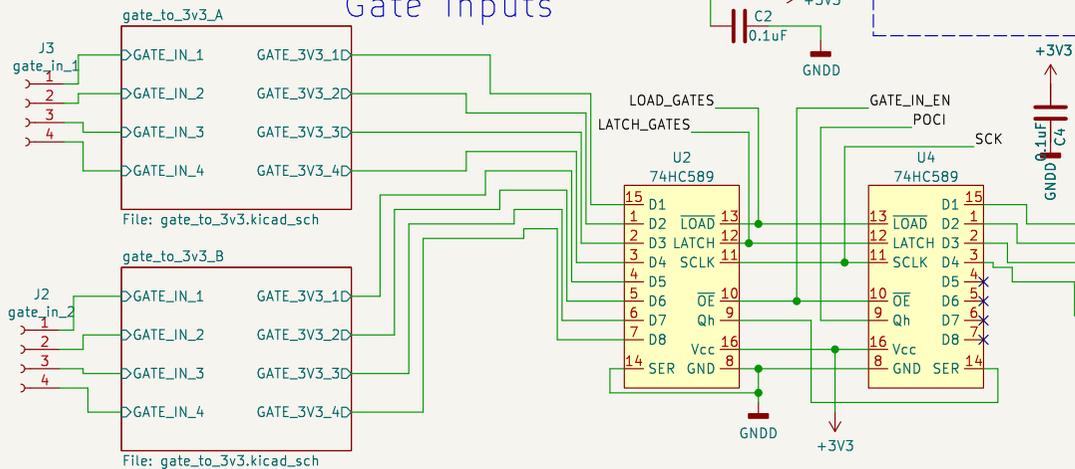
CV Inputs



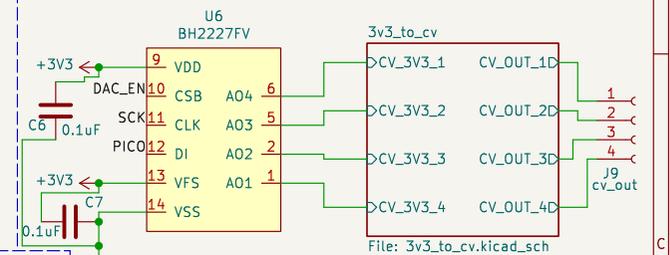
Gate Outputs



Gate Inputs



CV Outputs

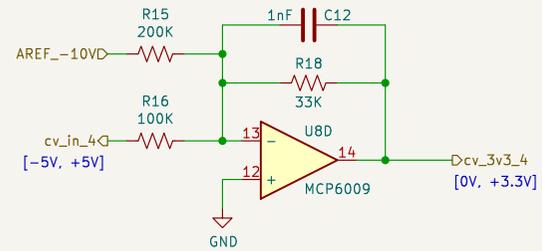
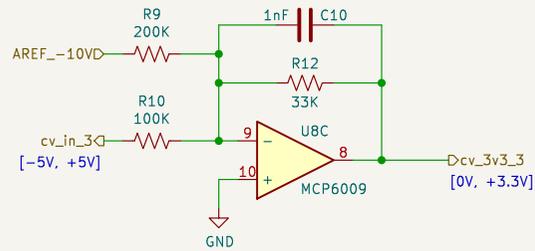
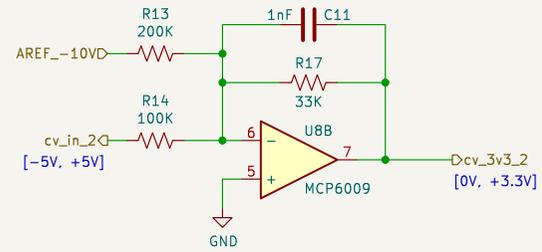
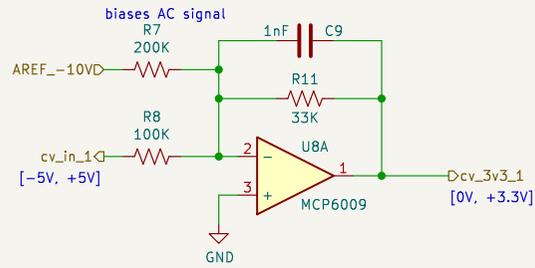


- H1 MountingHole
- H2 MountingHole
- H3 MountingHole

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 File: eurorack_to_3v3.kicad_sch
Title: Big One, Little One
 Size: A4 Date:
 KiCad E.D.A. 9.0.0 Rev: 1
 Id: 1/8

design adapted from Mutable Instruments (Marbles)

Simulation:
<https://tinyurl.com/yaf9ssdv>



convert [-5V, 5V] CV to [0V, 3.3V] CV

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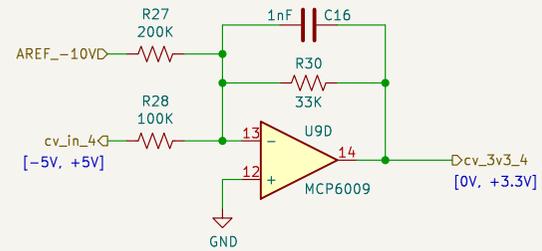
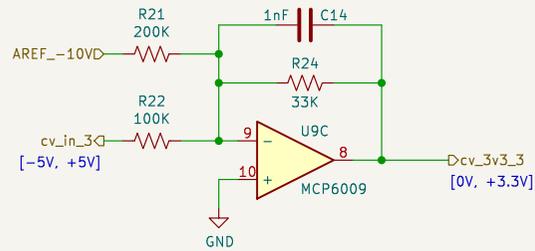
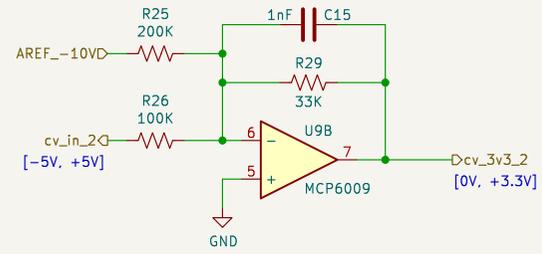
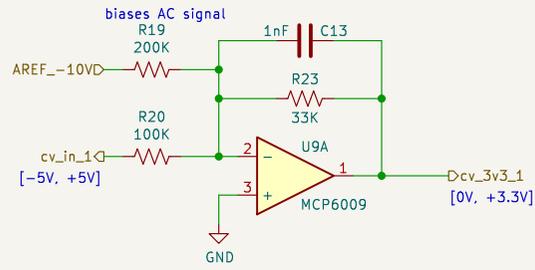
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KiCad E.D.A. 9.0.0

Rev: 1
Id: 2/8

design adapted from Mutable Instruments (Marbles)

Simulation:
<https://tinyurl.com/yaf9ssdv>



convert [-5V, 5V] CV to [0V, 3.3V] CV

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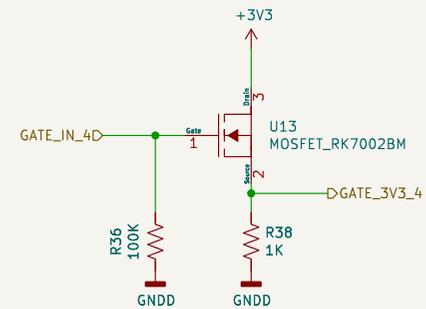
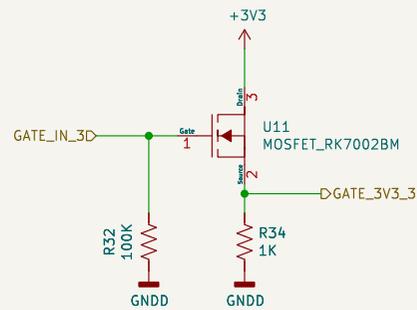
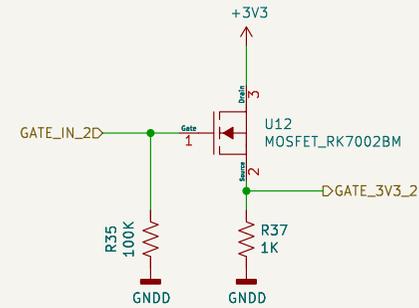
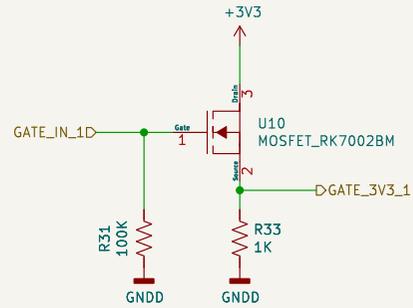
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Rev: 1
Id: 3/8

Gate To 3V3

Each gate input is a high impedance (100K) input driving an N-Channel MOSFET which converts a pulse of arbitrary voltage to a 3.3V pulse. A pull-down resistor keeps the output low when the MOSFET is in the open state.

Simulation:
<https://tinyurl.com/y5gbk7v4>



convert [0V, 8V] gate to [0V, 3.3V] gate

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Title: Big One, Little One

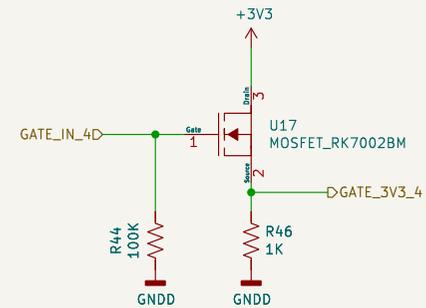
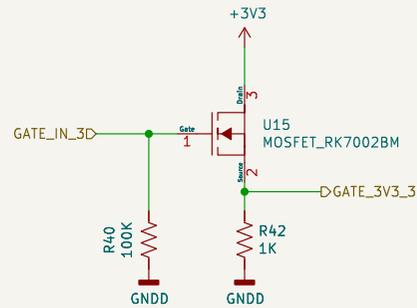
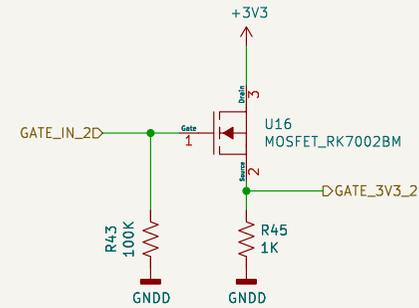
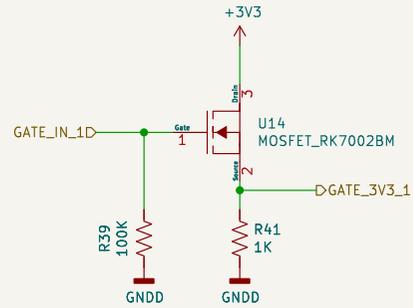
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Rev: 1
Id: 4/8

Gate To 3V3

Each gate input is a high impedance (100K) input driving an N-Channel MOSFET which converts a pulse of arbitrary voltage to a 3.3V pulse. A pull-down resistor keeps the output low when the MOSFET is in the open state.

Simulation:
<https://tinyurl.com/y5gbk7v4>



convert [0V, 8V] gate to [0V, 3.3V] gate

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Title: Big One, Little One

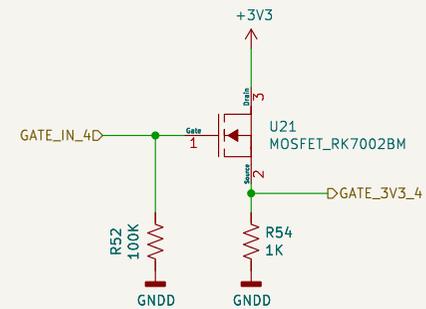
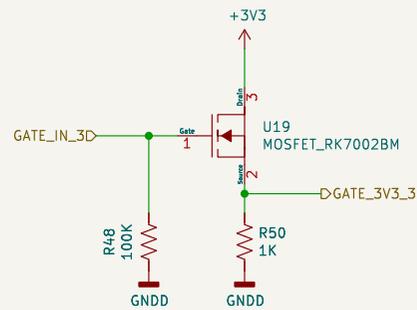
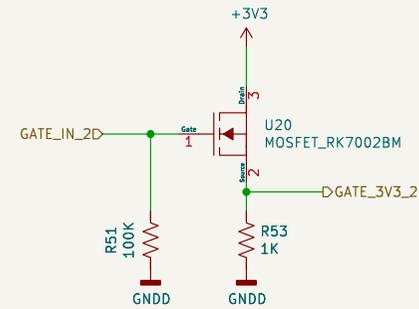
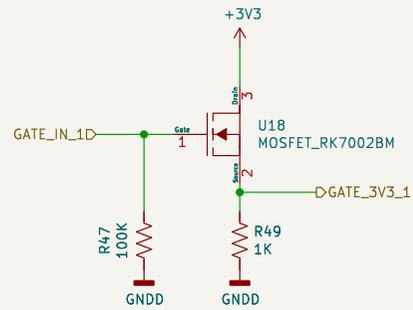
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Rev: 1
Id: 5/8

Gate To 3V3

Each gate input is a high impedance (100K) input driving an N-Channel MOSFET which converts a pulse of arbitrary voltage to a 3.3V pulse. A pull-down resistor keeps the output low when the MOSFET is in the open state.

Simulation:
<https://tinyurl.com/y5gbk7v4>



convert [0V, 8V] gate to [0V, 3.3V] gate

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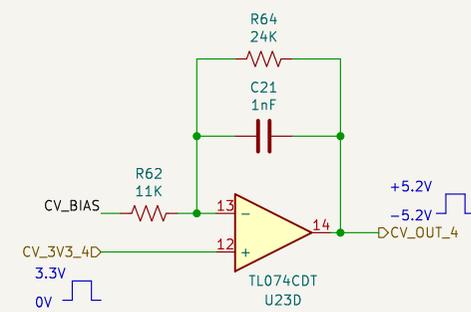
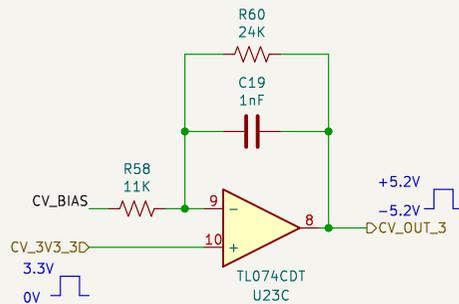
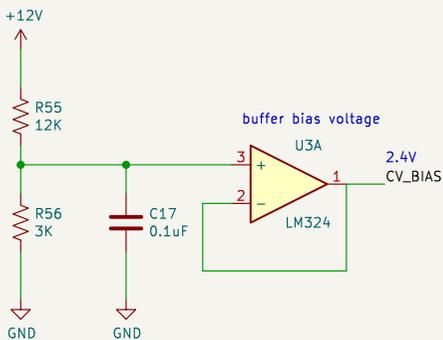
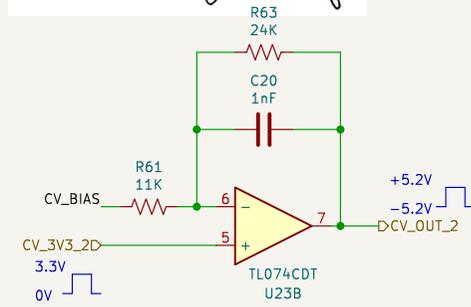
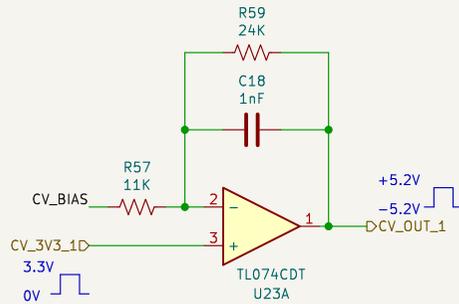
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Rev: 1
Id: 6/8

Non-inverting amplifiers with DC offset.
 Each amplifier has Gain = 3.18 and a bias voltage of 2.4V. Note that the CV output range is a little over the [-5V, +5V] standard. I'm assuming that connected devices can handle CV within the entire [-12V, +12V] range. Otherwise, if output range was below 5V, this circuit would not be able to control the entire CV range of connected instruments (unable to reach max/min parameter values).

Simulation is here:
<https://tinyurl.com/yad6ehse>



scales [0V, 3.3V] to [-5V, +5V] CV

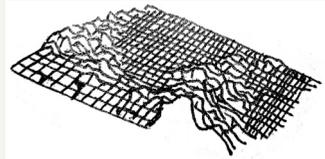
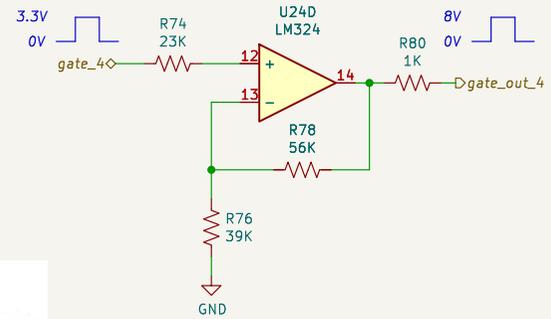
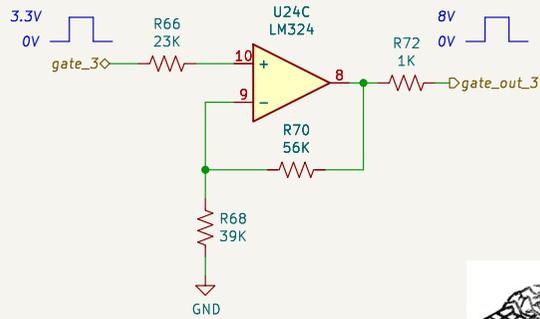
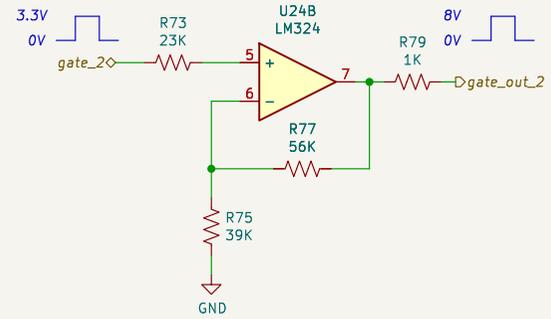
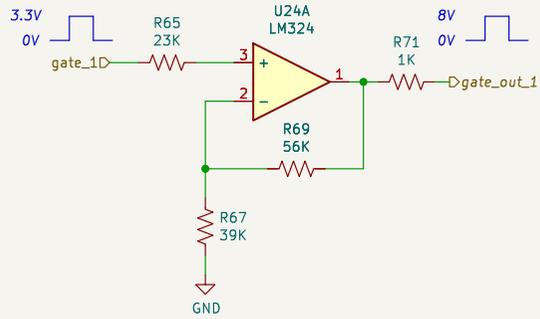
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Rev: 1
 Id: 7/8

Simulation:
<https://tinyurl.com/y9Bztonn>



scales 3.3V gates to 8V gates

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Rev: 1
Id: 8/8