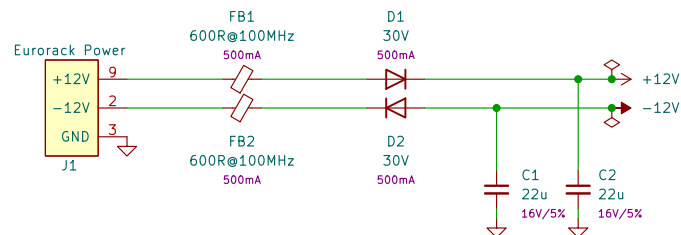
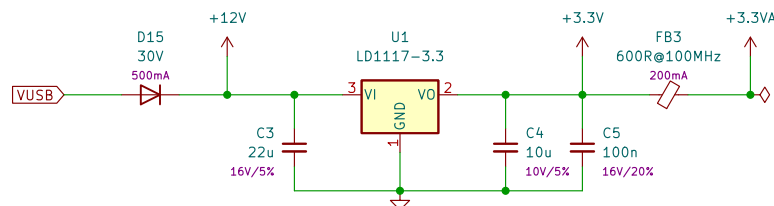


Power input



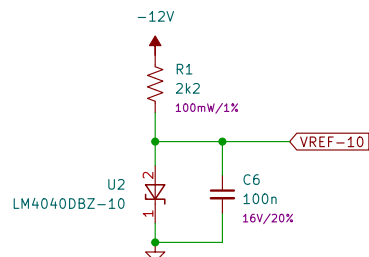
3.3V regulator

Power consumption: 65–100mA, 0.7–1.2W
 Power dissipated: 0.8W
 Maximum rated junction temperature: 125 °C
 Junction to ambient thermal resistance: 100 °C/W
 Maximum temperature rise without heatsink: 80 °C
 Schottky to allow USB to power the microcontroller for firmware updates.

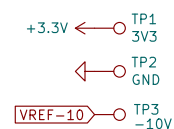


–10V reference

Cathode current:
 Range: 75 uA to 15 mA
 Simulated: 660 uA



Test points



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/Power/

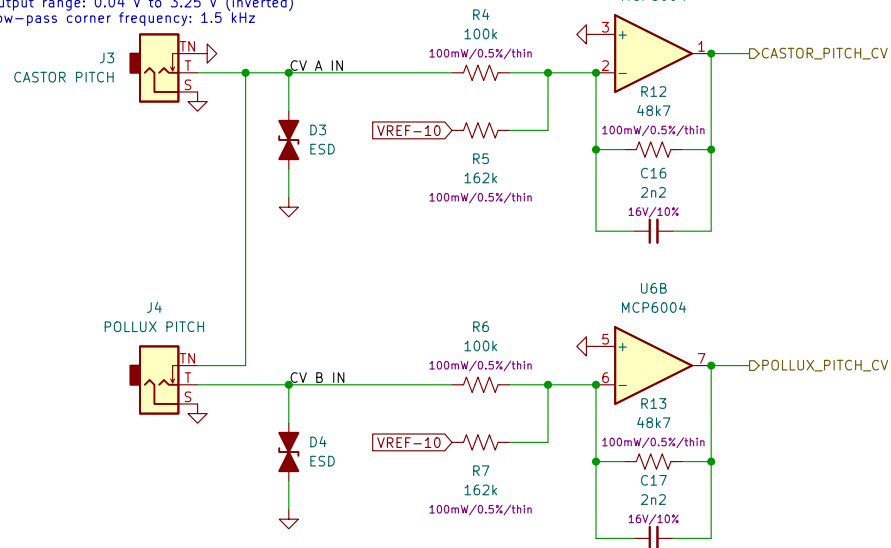
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Page 2/8

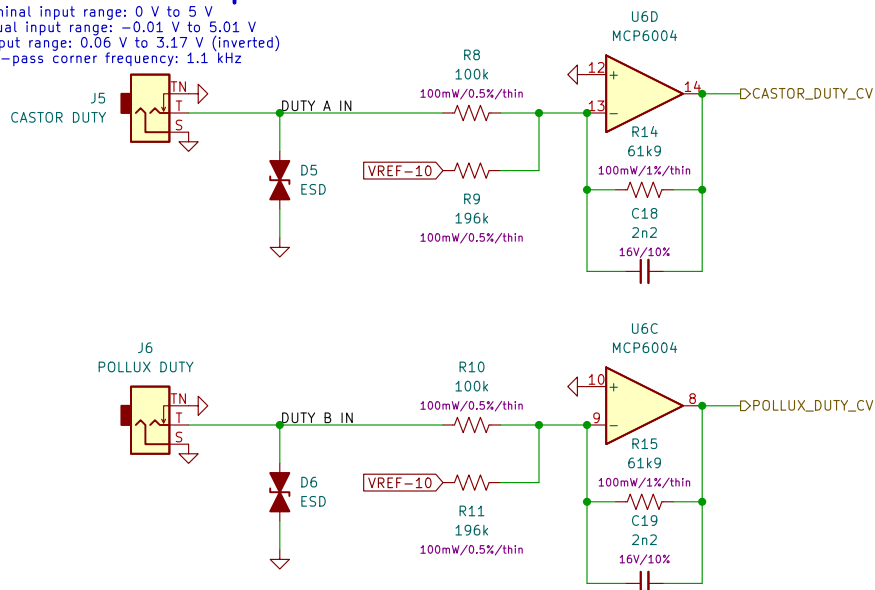
Pitch CV inputs

Nominal input range: 0 V to 6 V
Actual input range: -0.5 V to 6.1 V
Output range: 0.04 V to 3.25 V (inverted)
Low-pass corner frequency: 1.5 kHz



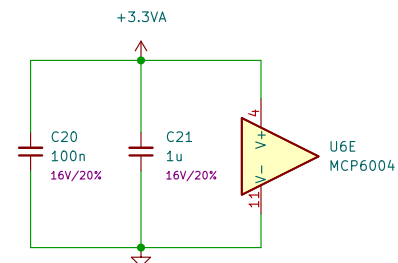
Pulse width CV inputs

Nominal input range: 0 V to 5 V
Actual input range: -0.01 V to 5.01 V
Output range: 0.06 V to 3.17 V (inverted)
Low-pass corner frequency: 1.1 kHz



Power & bypassing

Consumption: 4mA (max, est)



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/Analog inputs/

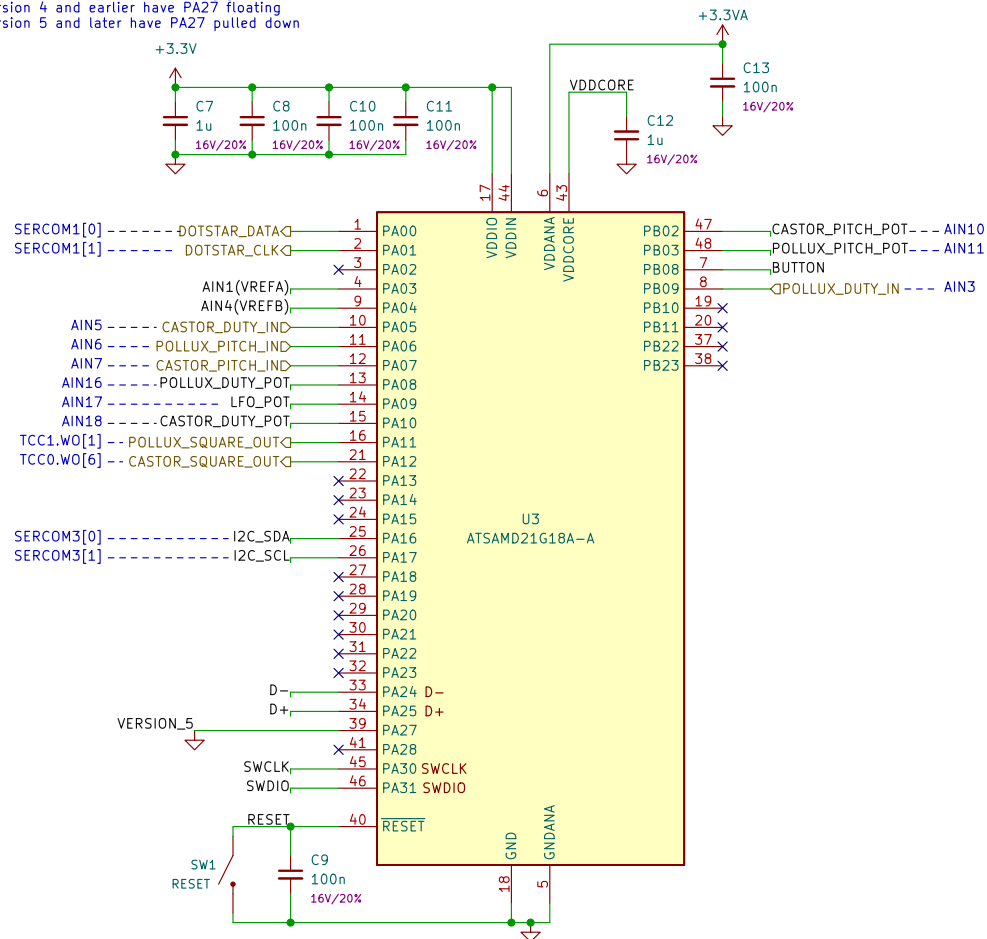
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Page 3/8

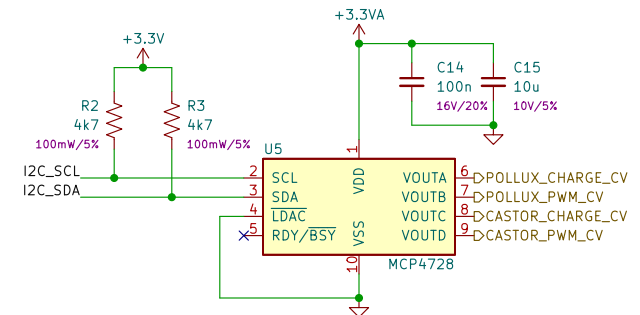
Microcontroller

Power consumption: 10 mA (estimated)
I2C on SERCOM3
Dotstar SPI on SERCOM1
Oscillator 1 output on TCC0.WO[6]
Oscillator 2 output on TCC1.WO[1]
Version 4 and earlier have PA27 floating
Version 5 and later have PA27 pulled down

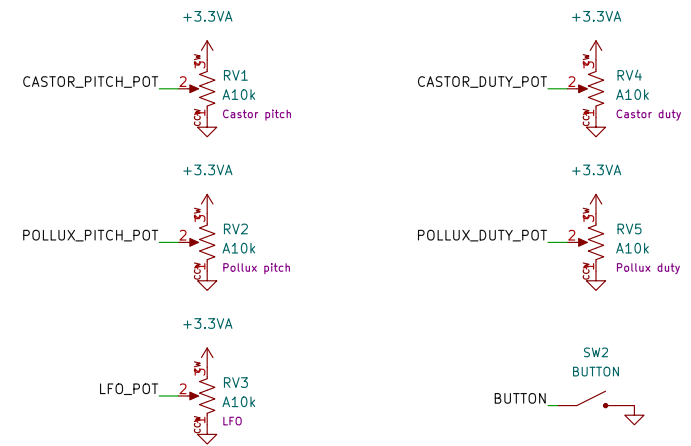


12-bit DAC

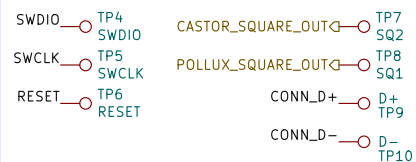
Power consumption: 1.5 mA (estimated)
I2C on SERCOM3
LDAC tied low to immediately update all voltage outputs
I2C pull-ups for fast mode, could likely be as high as 10kOhm



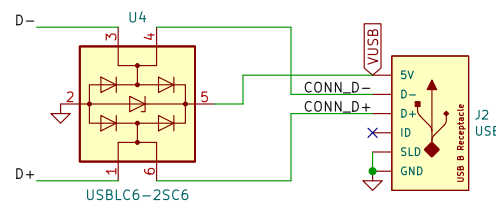
Potentiometers & button



Test points



USB



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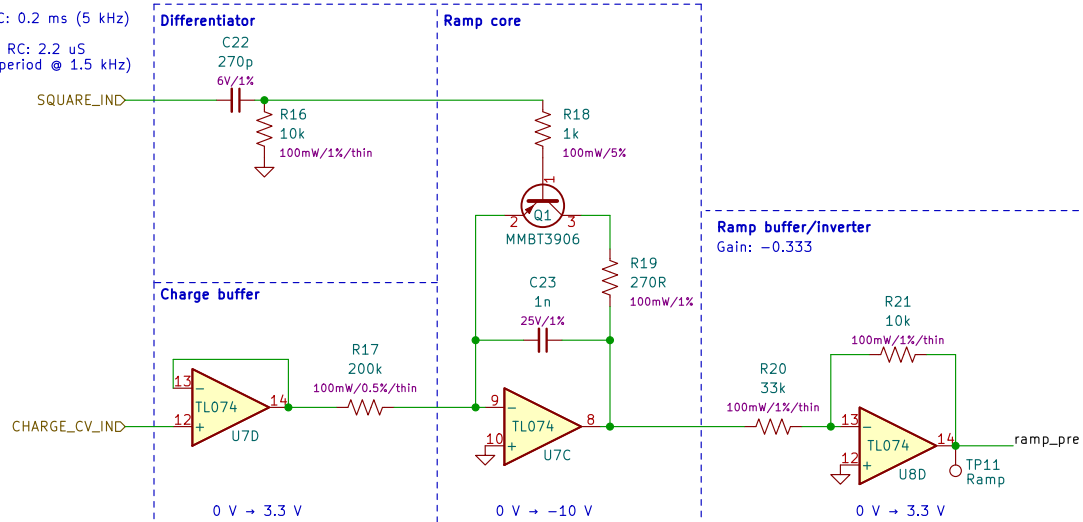
Page 3/8

Sawtooth waveshaper

Differentiator RC: 2.7 μ s
(0.4% of period @ 1.5 kHz)

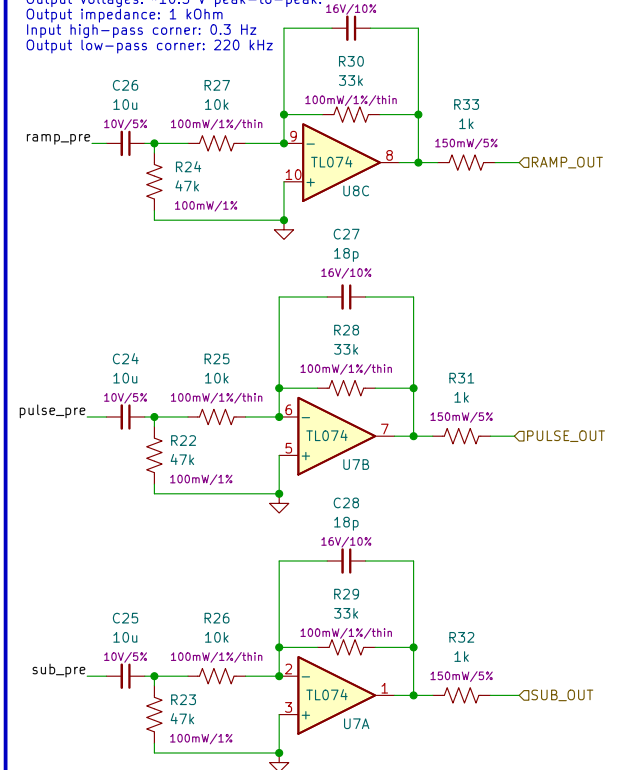
Charge RC: 0.2 ms (5 kHz)

Discharge RC: 2.2 μ s
(0.3% of period @ 1.5 kHz)



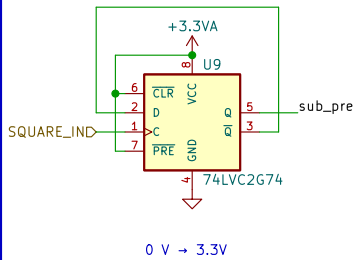
Output amplifiers

Input voltages: 0 V \rightarrow 3.3 V (AC coupled) C29
Gain: -3.3
Output voltages: -10.5 V peak-to-peak. 18p
Output impedance: 1 kOhm
Input high-pass corner: 0.3 Hz
Output low-pass corner: 220 kHz



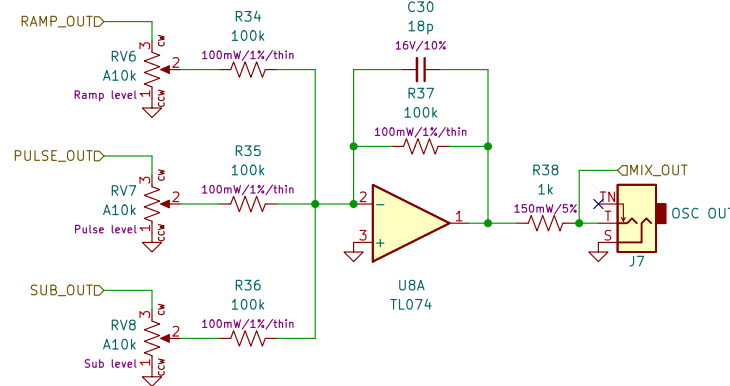
Suboctave clock divider

Power consumption: 1mA (estimated)



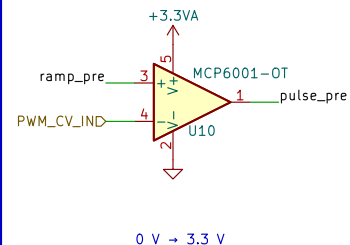
Waveform mixer

Gain: -1
Output low-pass corner: 88 kHz

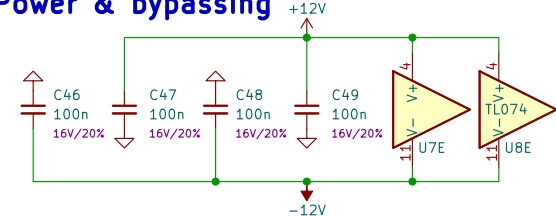


Pulse comparator

Power consumption: 1mA (estimated)



Power & bypassing



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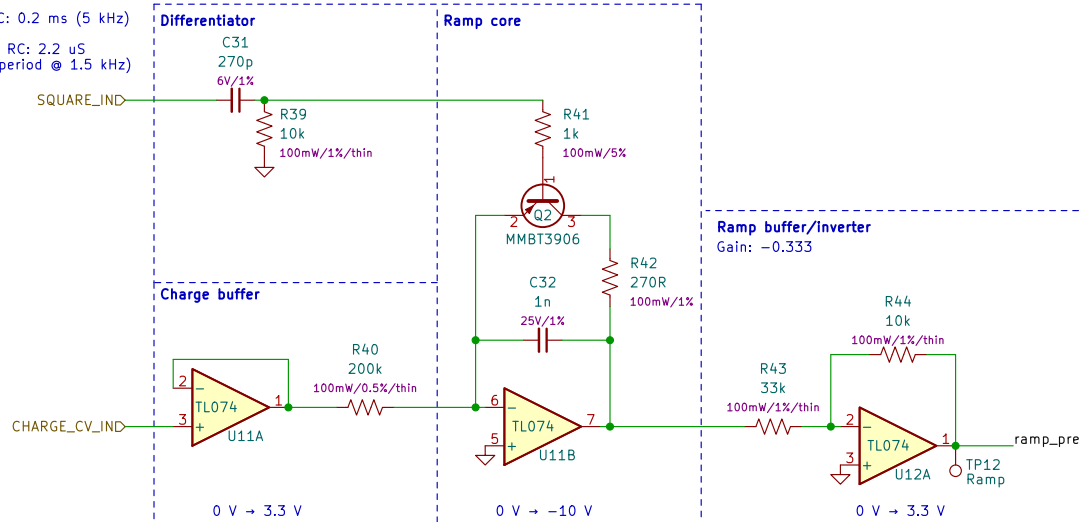
Page 4/8

Sawtooth waveshaper

Differentiator RC: 2.7 μ s
(0.4% of period @ 1.5 kHz)

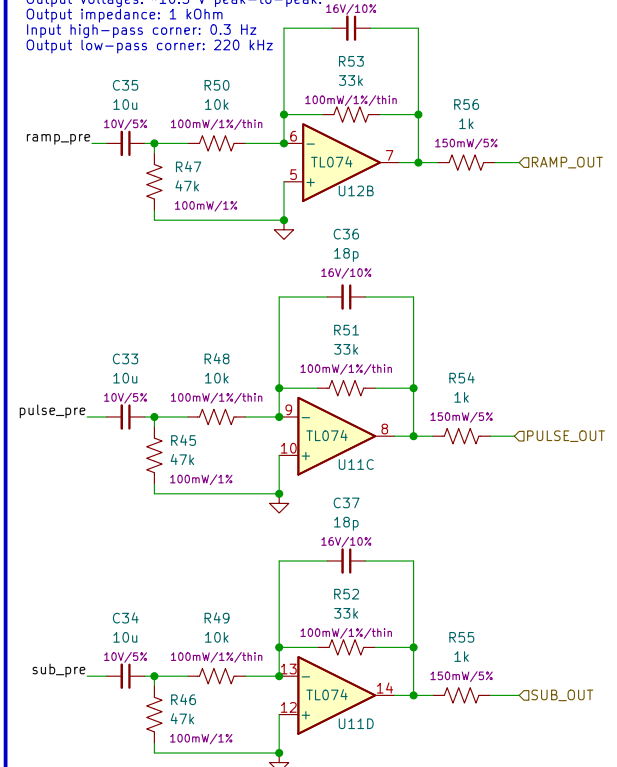
Charge RC: 0.2 ms (5 kHz)

Discharge RC: 2.2 μ s
(0.3% of period @ 1.5 kHz)



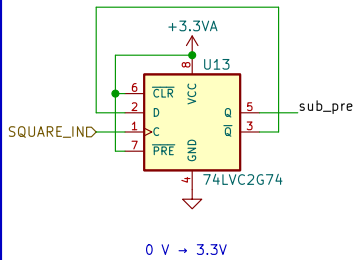
Output amplifiers

Input voltages: 0 V \rightarrow 3.3 V (AC coupled) C38
Gain: -3.3
Output voltages: -10.5 V peak-to-peak. 18p
Output impedance: 1 kOhm
Input high-pass corner: 0.3 Hz
Output low-pass corner: 220 kHz



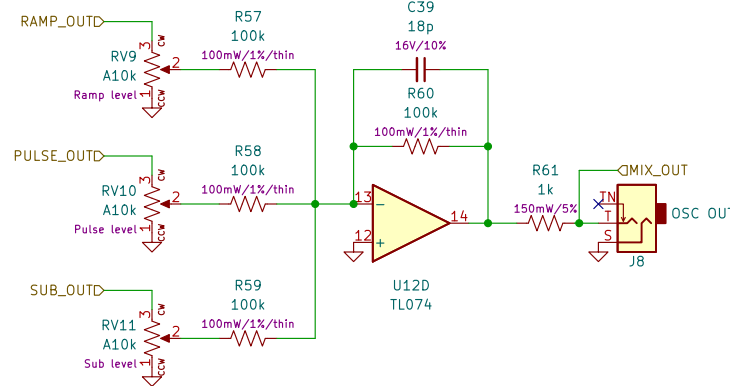
Suboctave clock divider

Power consumption: 1mA (estimated)



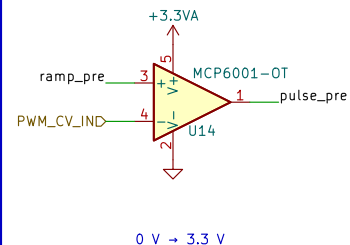
Waveform mixer

Gain: -1
Output low-pass corner: 88 kHz

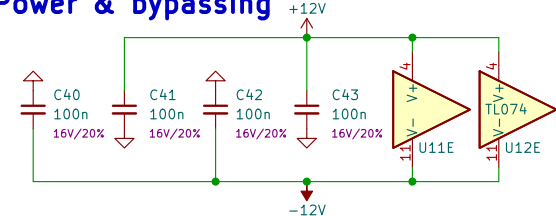


Pulse comparator

Power consumption: 1mA (estimated)



Power & bypassing



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/Pollux/

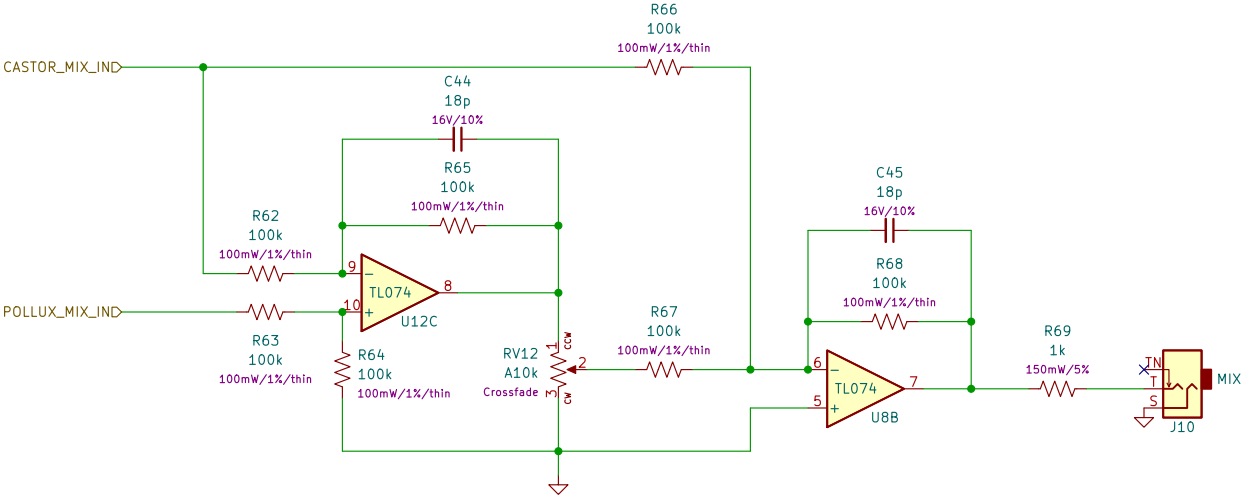
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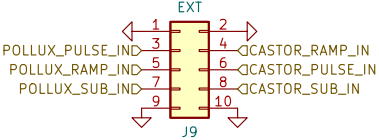
Page 5/8

Crossfade mixer

Output low pass corner frequency: 88 kHz



Expansion header



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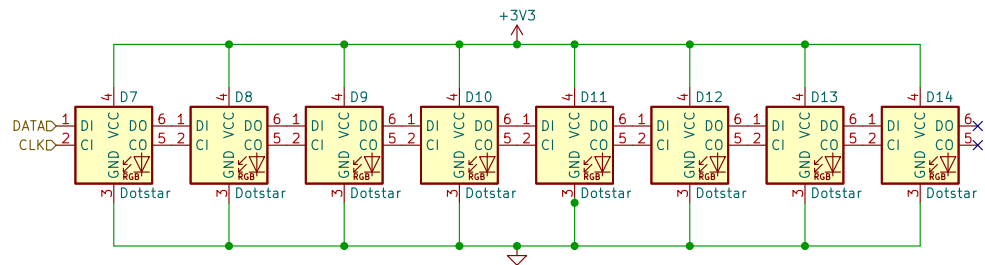
/Mixer & outputs/

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RGB LEDs



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/LEDs/

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Page 7/8