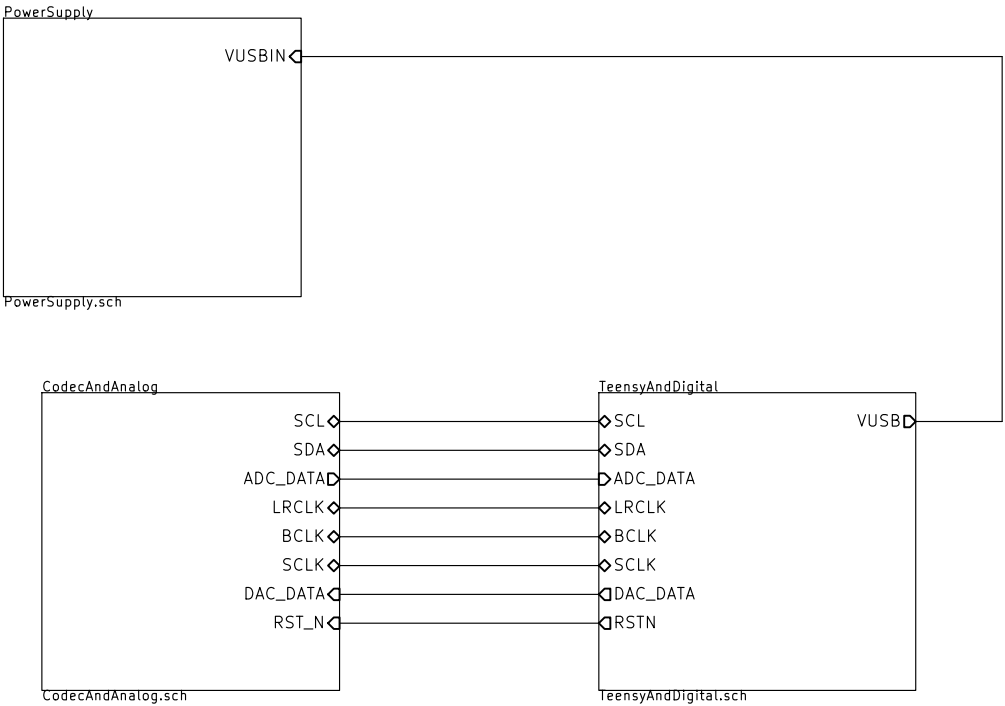
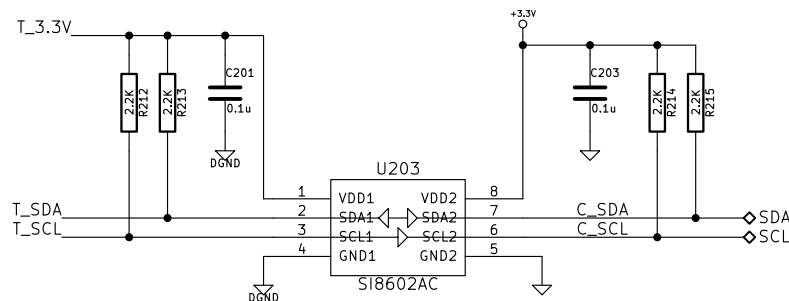
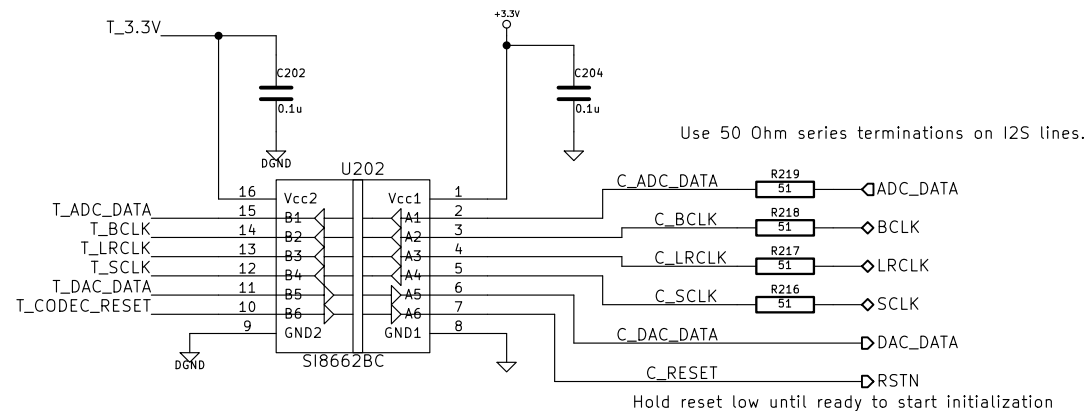
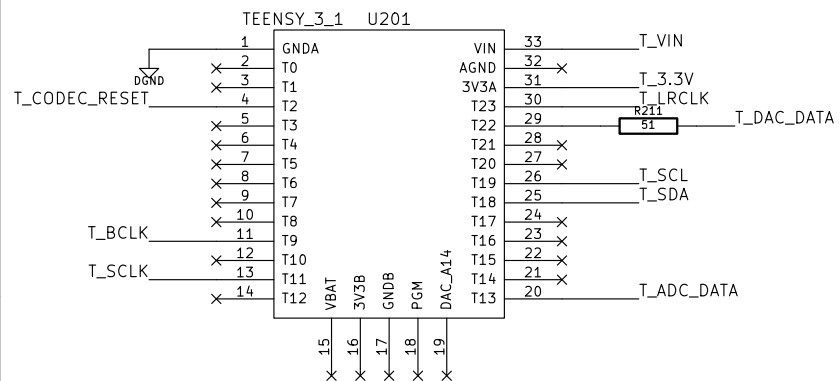


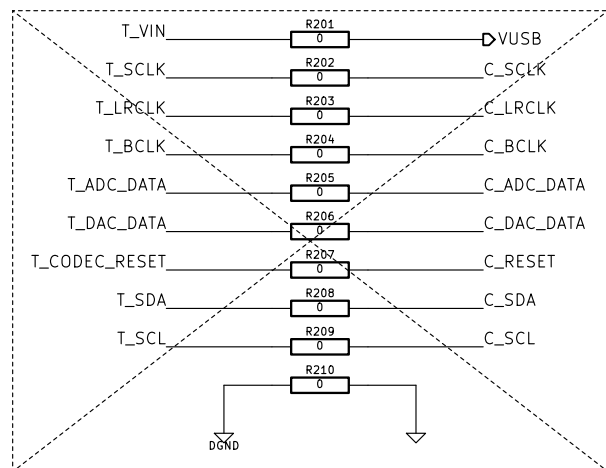
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RF William Hollender		
File: SuperAudioBoard.sch		
Sheet: /		
Title: 24 bit audio board for Teensy 3.x		
Size: A4	Date: 7 may 2015	Rev: 0.1a
KiCad E.D.A.		Id: 1/8

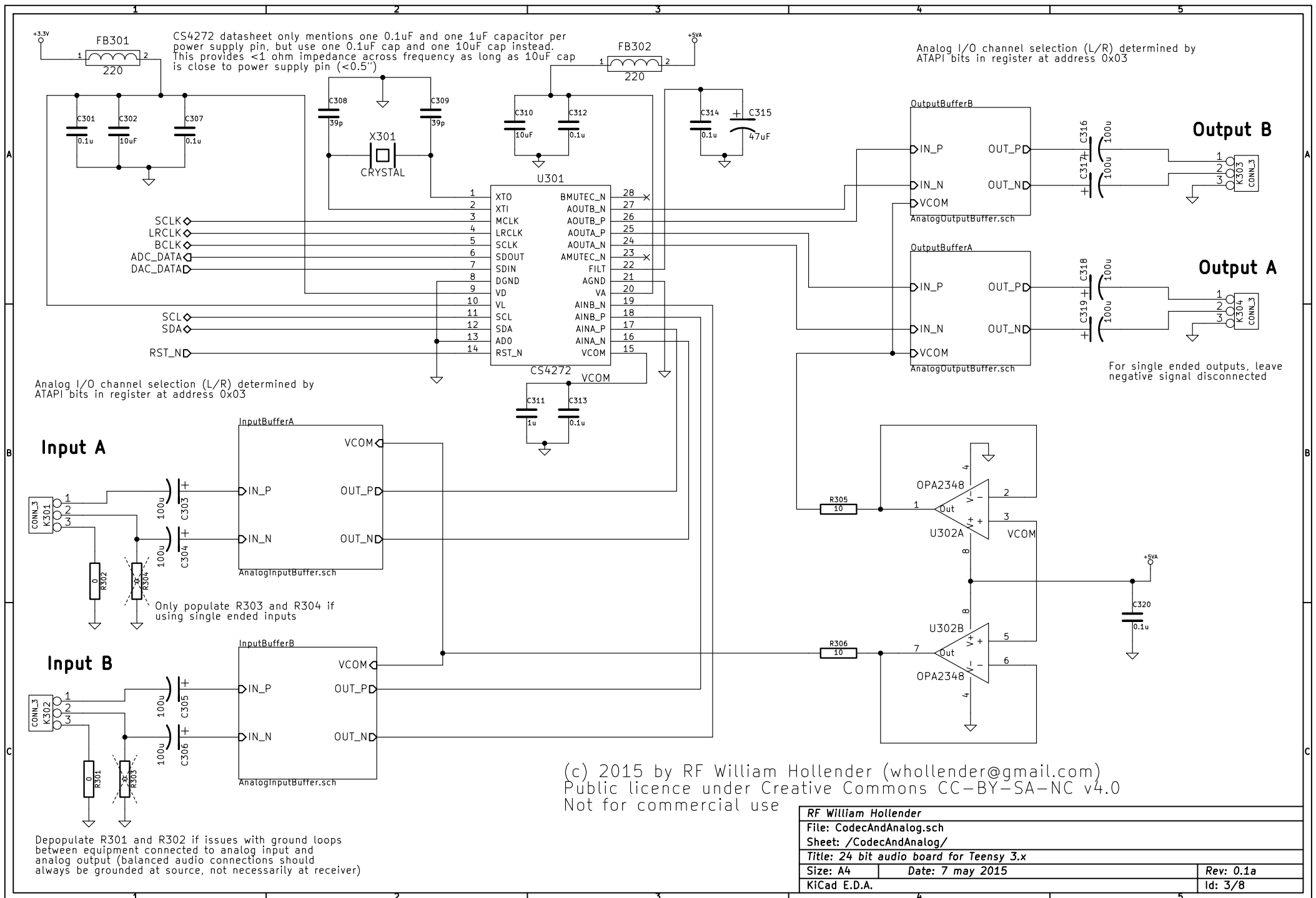


Do not populate jumpers unless isolators are not populated!



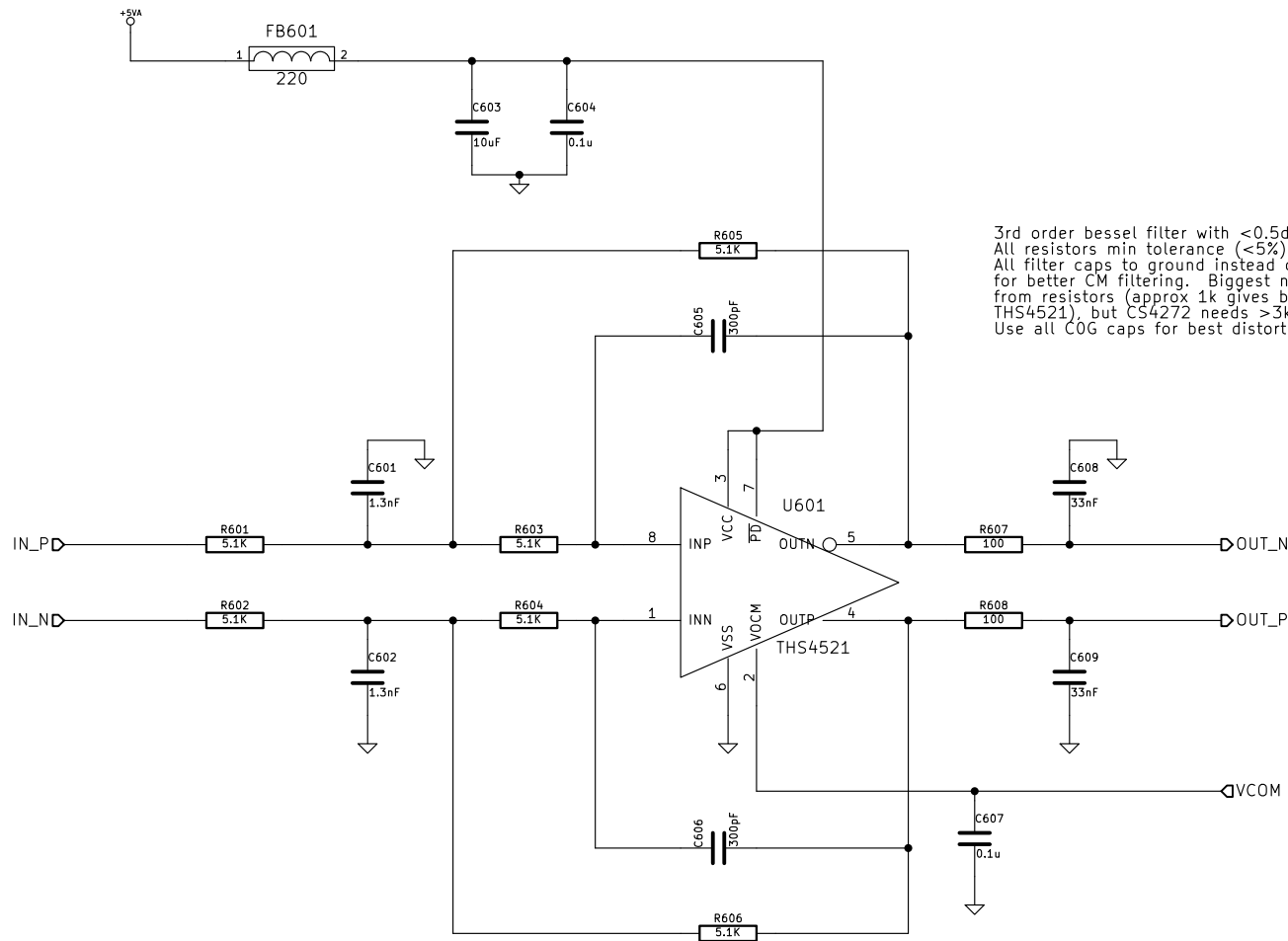
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RF William Hollender		
File: TeensyAndDigital.sch		
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Title: 24 bit audio board for Teensy 3.x		
Size: A4	Date: 7 may 2015	Rev: 0.1a
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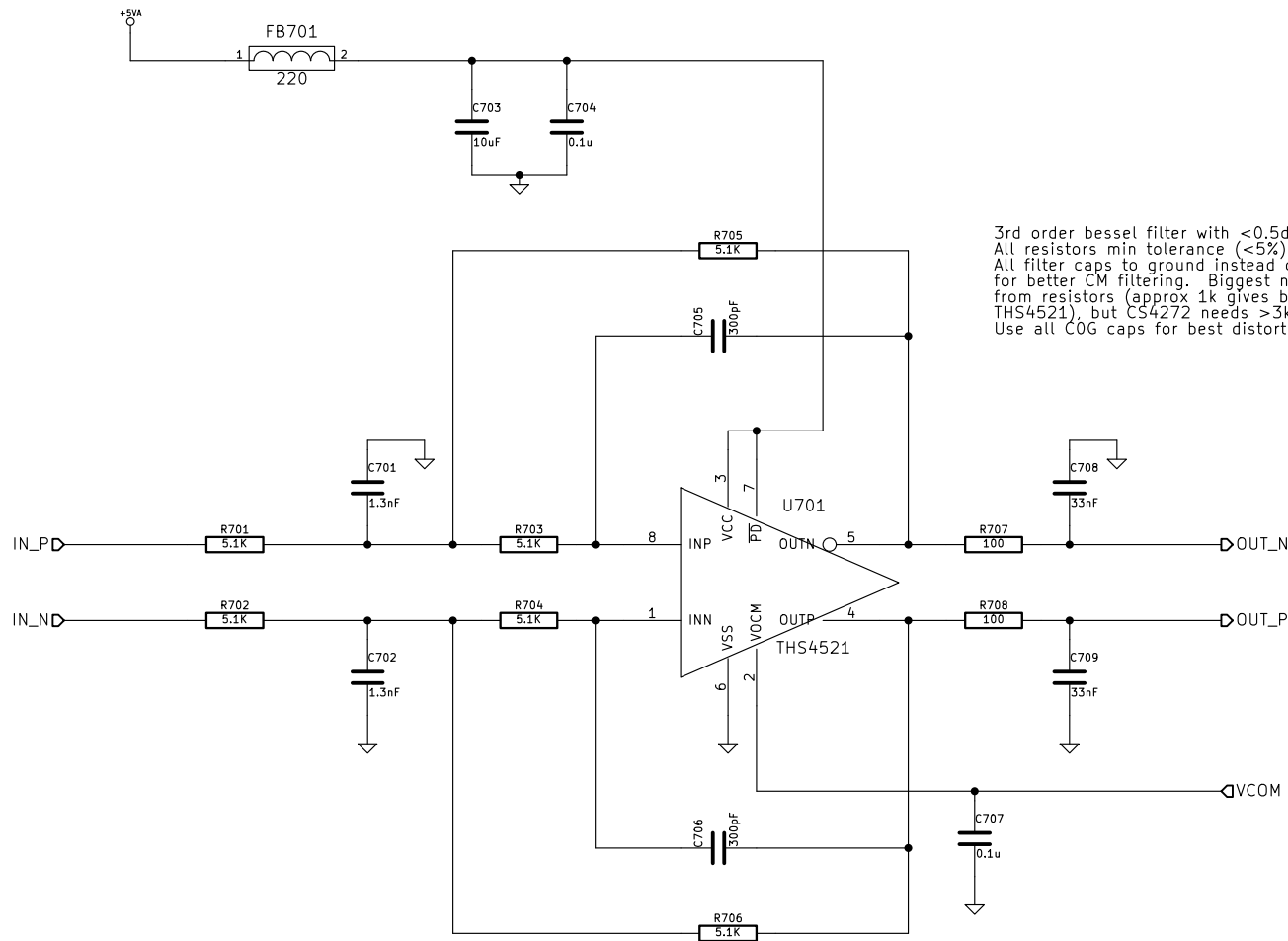
RF William Hollender		
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Title: 24 bit audio board for Teensy 3.x		
Size: A4	Date: 7 may 2015	Rev: 0.1a
KiCad E.D.A.		Id: 3/8



3rd order bessel filter with <0.5dB err to 20kHz.
 All resistors min tolerance (<5%) for good CMRR.
 All filter caps to ground instead of between diff lines
 for better CM filtering. Biggest noise contribution is
 from resistors (approx 1k gives best noise performance with
 THS4521), but CS4272 needs >3k output resistance.
 Use all COG caps for best distortion performance.

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RF William Hollender		
File: AnalogOutputBuffer.sch		
Sheet: /CodecAndAnalog/OutputBufferA/		
Title: 24 bit audio board for Teensy 3.x		
Size: A4	Date: 7 may 2015	Rev: 0.1a
KiCad E.D.A.		Id: 6/8



3rd order bessel filter with <0.5dB err to 20kHz.
 All resistors min tolerance (<5%) for good CMRR.
 All filter caps to ground instead of between diff lines
 for better CM filtering. Biggest noise contribution is
 from resistors (approx 1k gives best noise performance with
 THS4521), but CS4272 needs >3k output resistance.
 Use all COG caps for best distortion performance.

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RF William Hollender		
File: AnalogOutputBuffer.sch		
Sheet: /CodecAndAnalog/OutputBufferB/		
Title: 24 bit audio board for Teensy 3.x		
Size: A4	Date: 7 may 2015	Rev: 0.1a
KiCad E.D.A.		Id: 7/8

Power input select jumper.
Only connect Teensy Vusb if
not using isolators!

Circuit for switching regulator is nearly identical to datasheet typical
application. Switcher input sees <0.1 Ohm impedance at 1MHz
(almost right at 10uF cap resonance, so effective impedance at
that frequency is cap's ESR). Impedance stays <0.5 ohms into
the 100s of MHz.

Feedback network taken directly from datasheet.
Only change is to change 162kOhm resistor from
FB to ground to 137k to set output voltage to 5.7V
Based on datasheet equations, this will not change
location of feedback poles and zeros.

Output voltage set to 5.7V with <20mV output ripple.

Use 2 pin header for battery connection for
max flexibility (user can use whatever battery
pack they want)

Use coilcraft MSS1038-522NLB (10mm*2 SMT)
for easier soldering than MSS7341 (MSS1038
has exposed metal pins that wraparound the
sides of the package instead of just on the underside)

Simulations put ripple rejection using given circuit >100dB
from switching reg output to LDO inputs at frequencies
between 1MHz and 100MHz where most of the switching
ripple energy is located. Filter network has high overshoot,
but switching reg has soft-start (0.5-2ms ramp), so there's
very little ringing on startup.

Probably use the same inductor that is used
by the switching reg to make ordering easier.

Put ferrite and shunt caps close to switching
reg output to minimize em radiation.

Place header to allow connection of 9V battery
instead of switching regulator circuit.

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RF William Hollender		
File: PowerSupply.sch		
Sheet: /PowerSupply/		
Title: 24 bit audio board for Teensy 3.x		
Size: A4	Date: 7 may 2015	Rev: 0.1a
KiCad E.D.A.		Id: 8/8