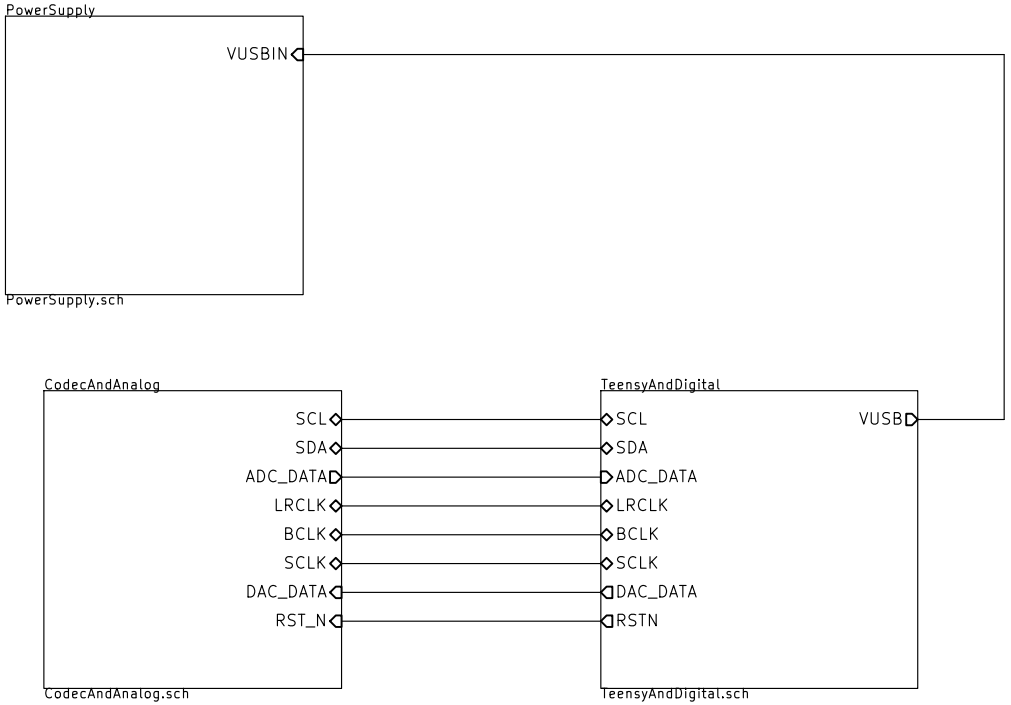
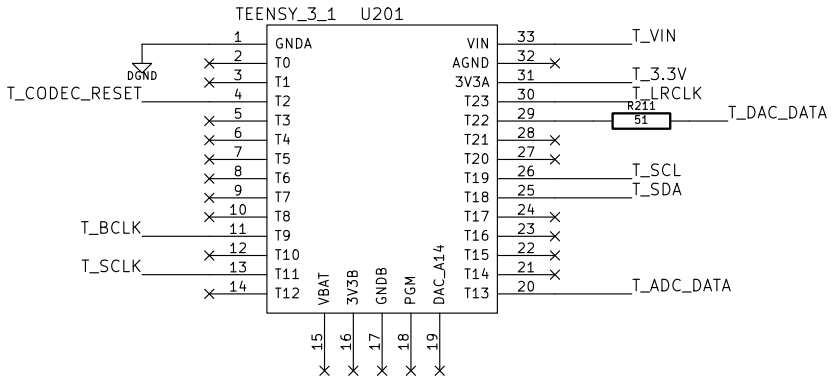
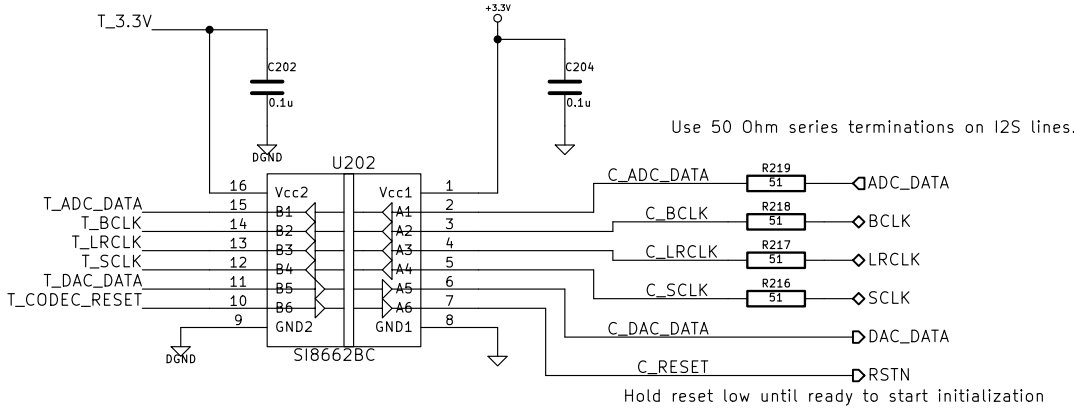
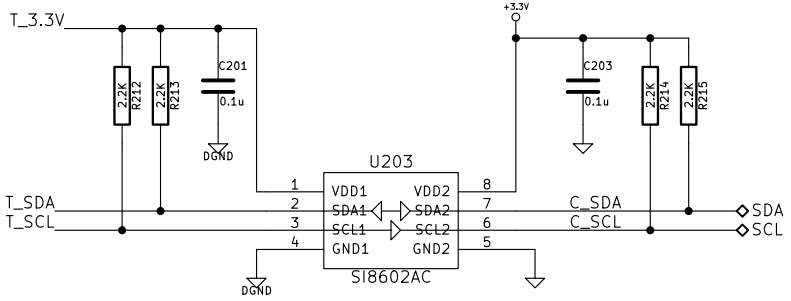


RF William Hollender		
File: SuperAudioBoard.sch		
Sheet: /		
Title: 24 bit audio board for Teensy 3.x		
Size: A4	*Date: 10 may 2015*	*Rev: 0.1a*
KiCad E.D.A.		Id: 1/8

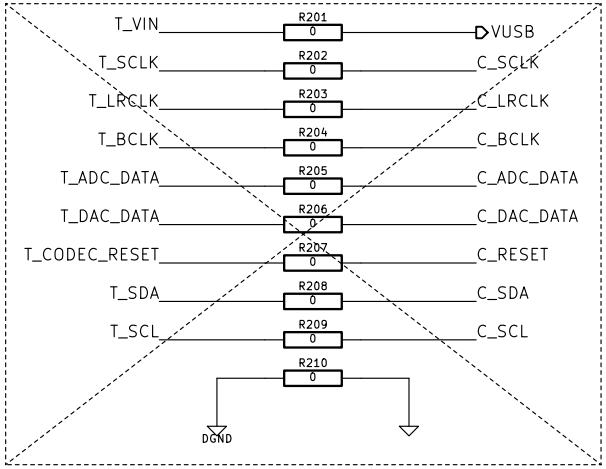




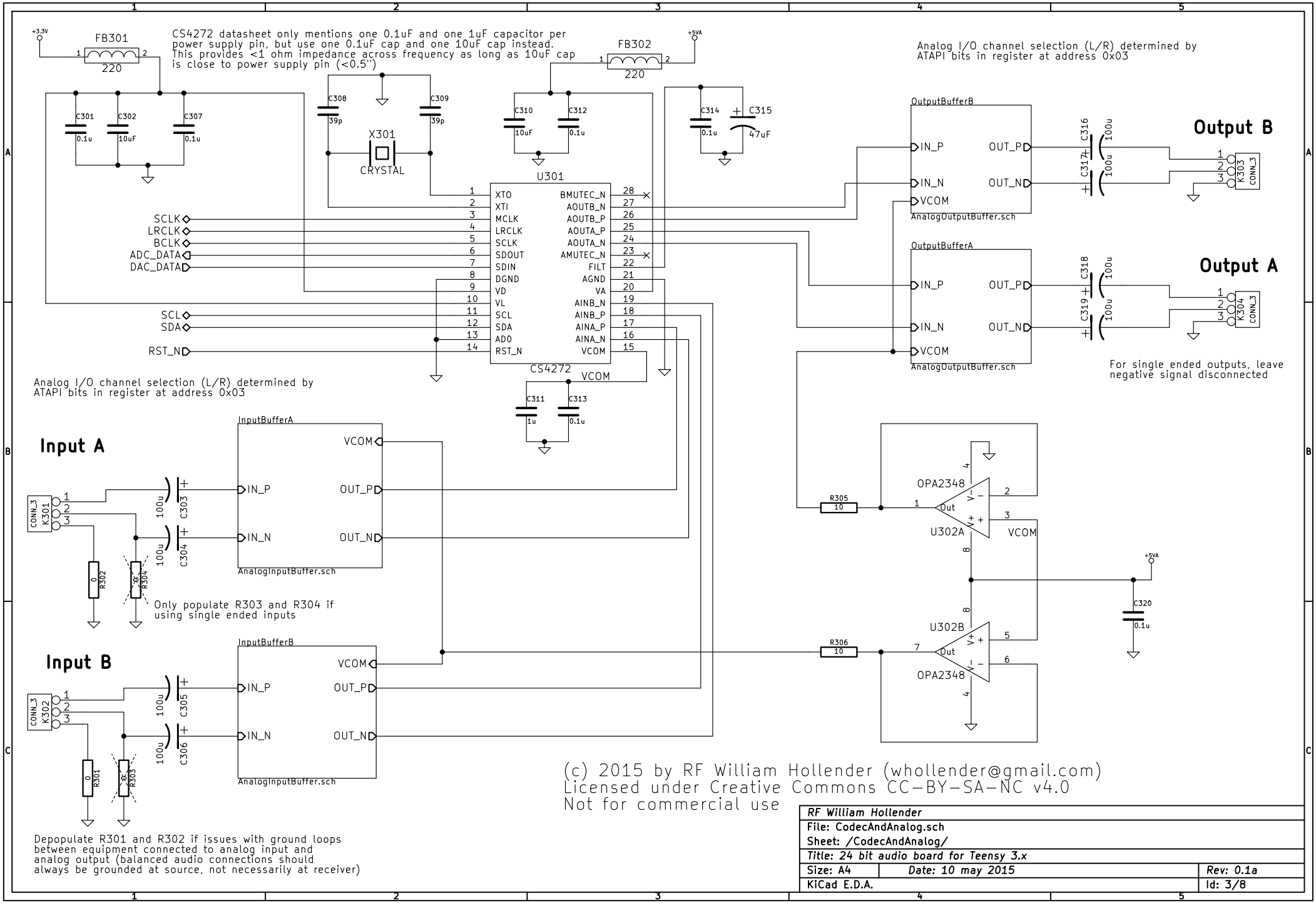


If not using isolators, do not populate U202 and U203, C201–C204 (isolator decoupling caps), and R212/R213 (teensy side I2C pullups).

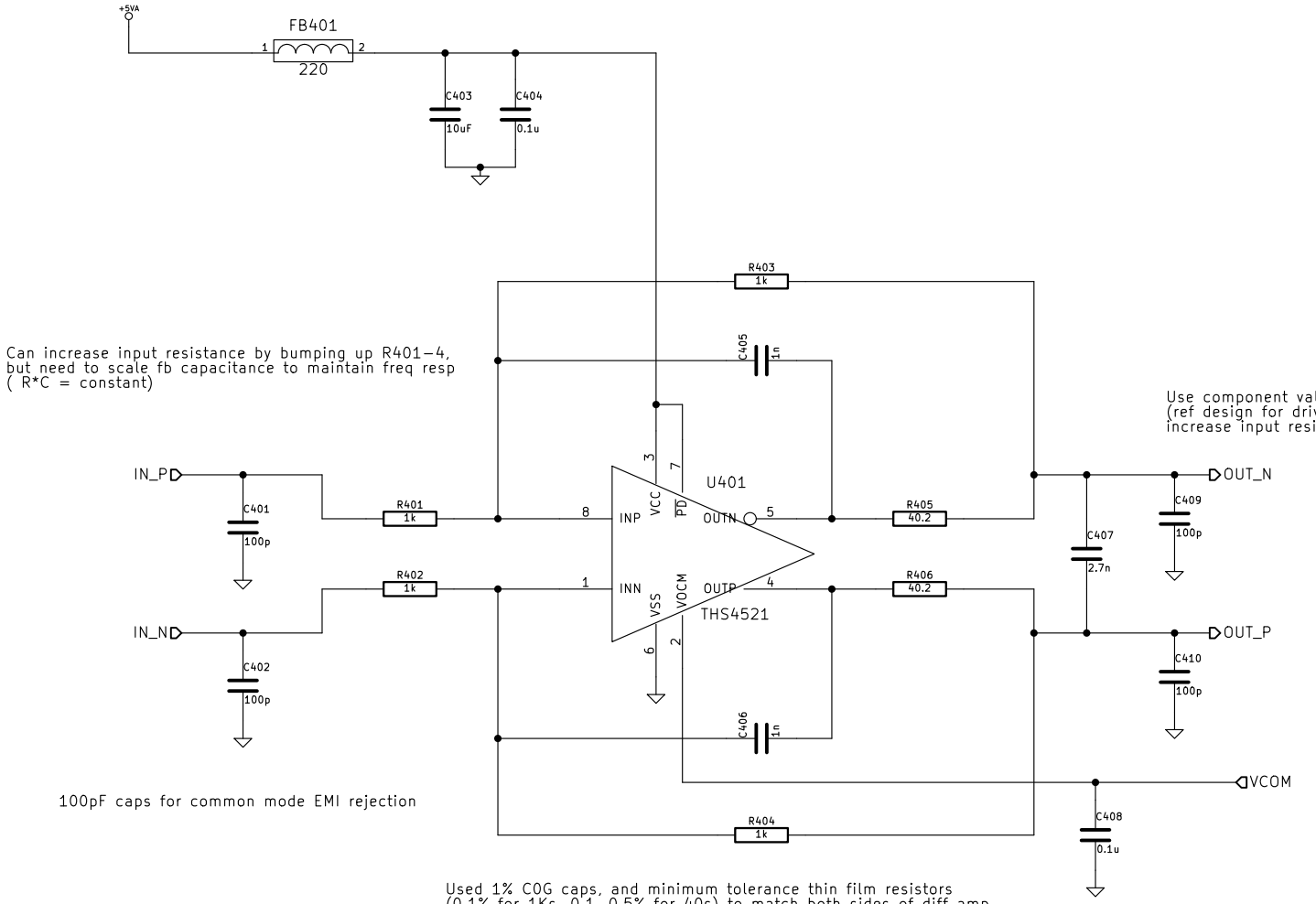
Do not populate jumpers unless isolators are not populated!



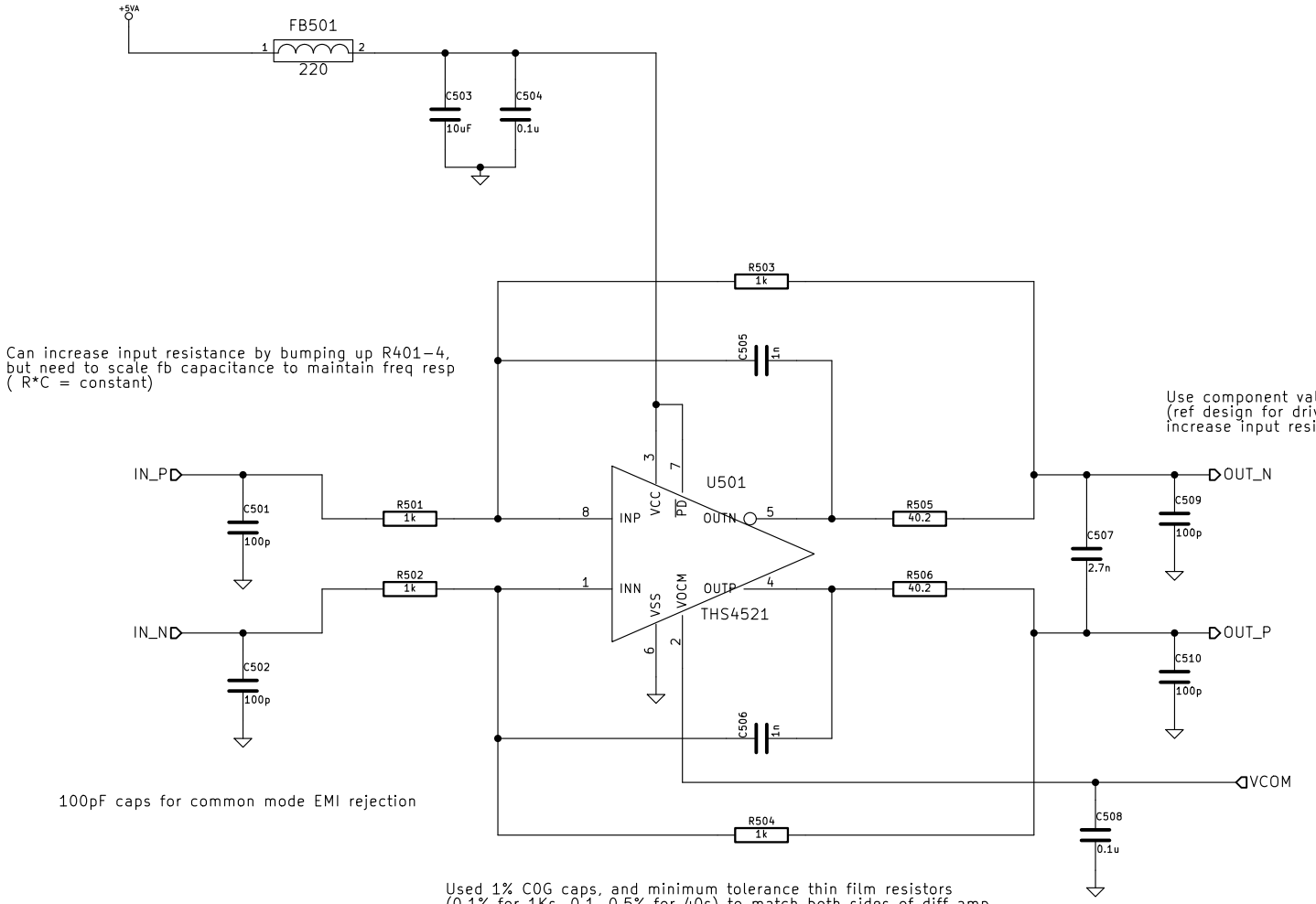
RF William Hollender		
File: TeensyAndDigital.sch		
Sheet: /TeensyAndDigital/		
Title: 24 bit audio board for Teensy 3.x		
Size: A4	*Date: 10 may 2015*	*Rev: 0.1a*
KiCad E.D.A.		Id: 2/8



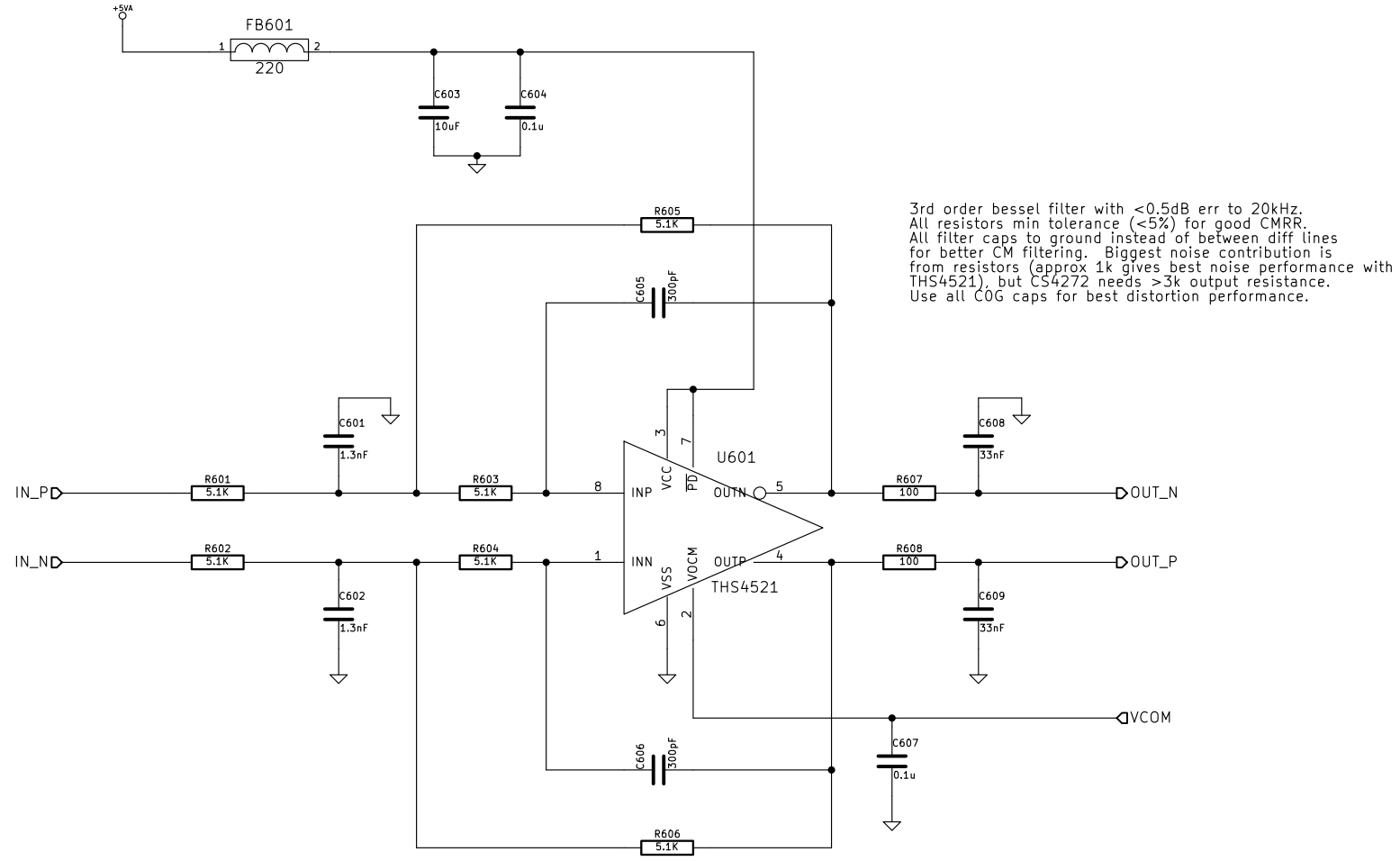
RF William Hollender		
File: CodecAndAnalog.sch		
Sheet: /CodecAndAnalog/		
Title: 24 bit audio board for Teensy 3.x		
Size: A4	Date: 10 may 2015	Rev: 0.1a
KiCad E.D.A.		Id: 3/8



RF William Hollender		
File: AnalogInputBuffer.sch		
Sheet: /CodecAndAnalog/InputBufferA/		
Title: 24 bit audio board for Teensy 3.x		
Size: A4	*Date: 10 may 2015*	*Rev: 0.1a*
KiCad E.D.A.		Id: 4/8

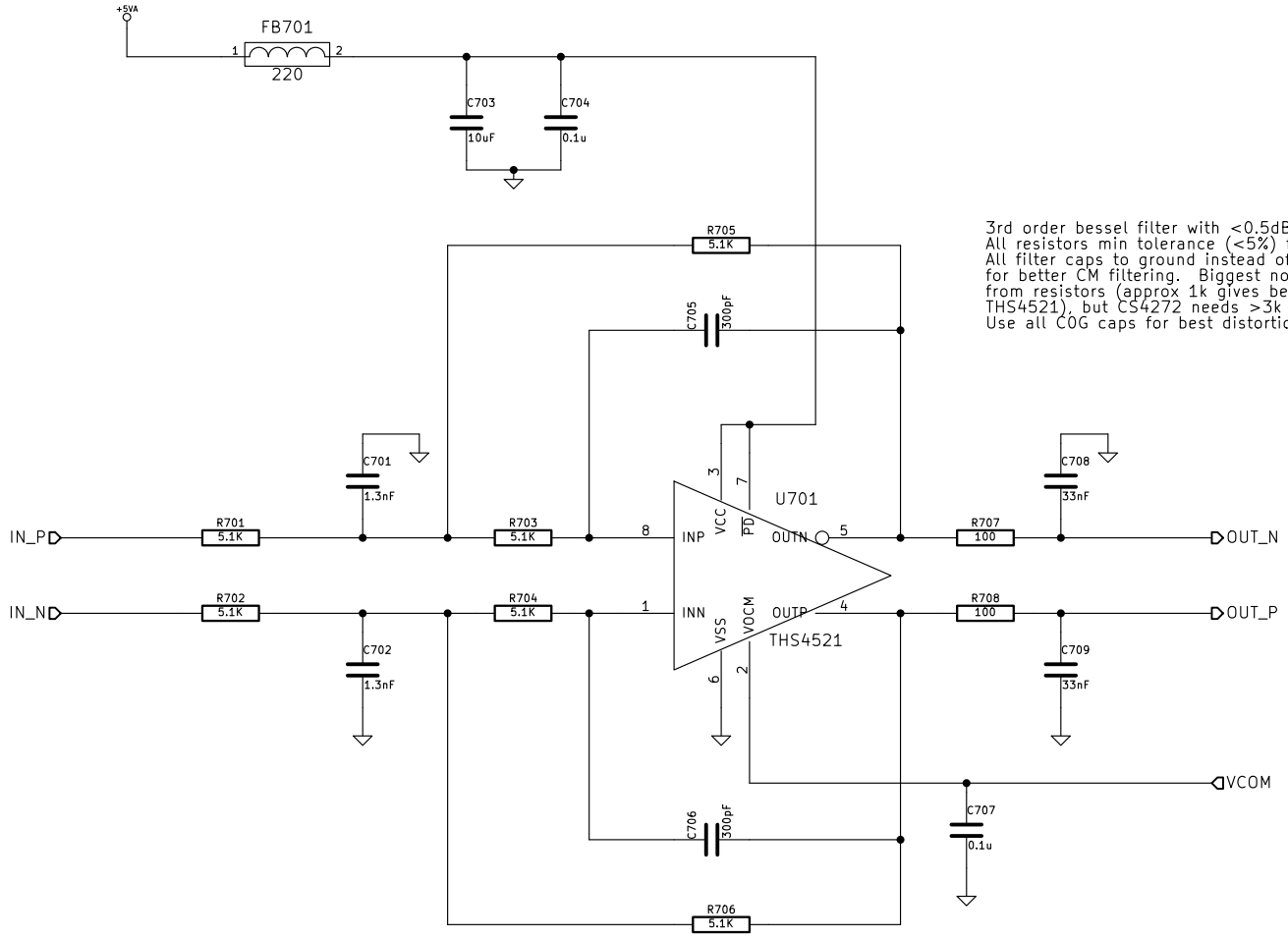


RF William Hollender		
File: AnalogInputBuffer.sch		
Sheet: /CodecAndAnalog/InputBufferB/		
Title: 24 bit audio board for Teensy 3.x		
Size: A4	*Date: 10 may 2015*	*Rev: 0.1a*
KiCad E.D.A.		Id: 5/8



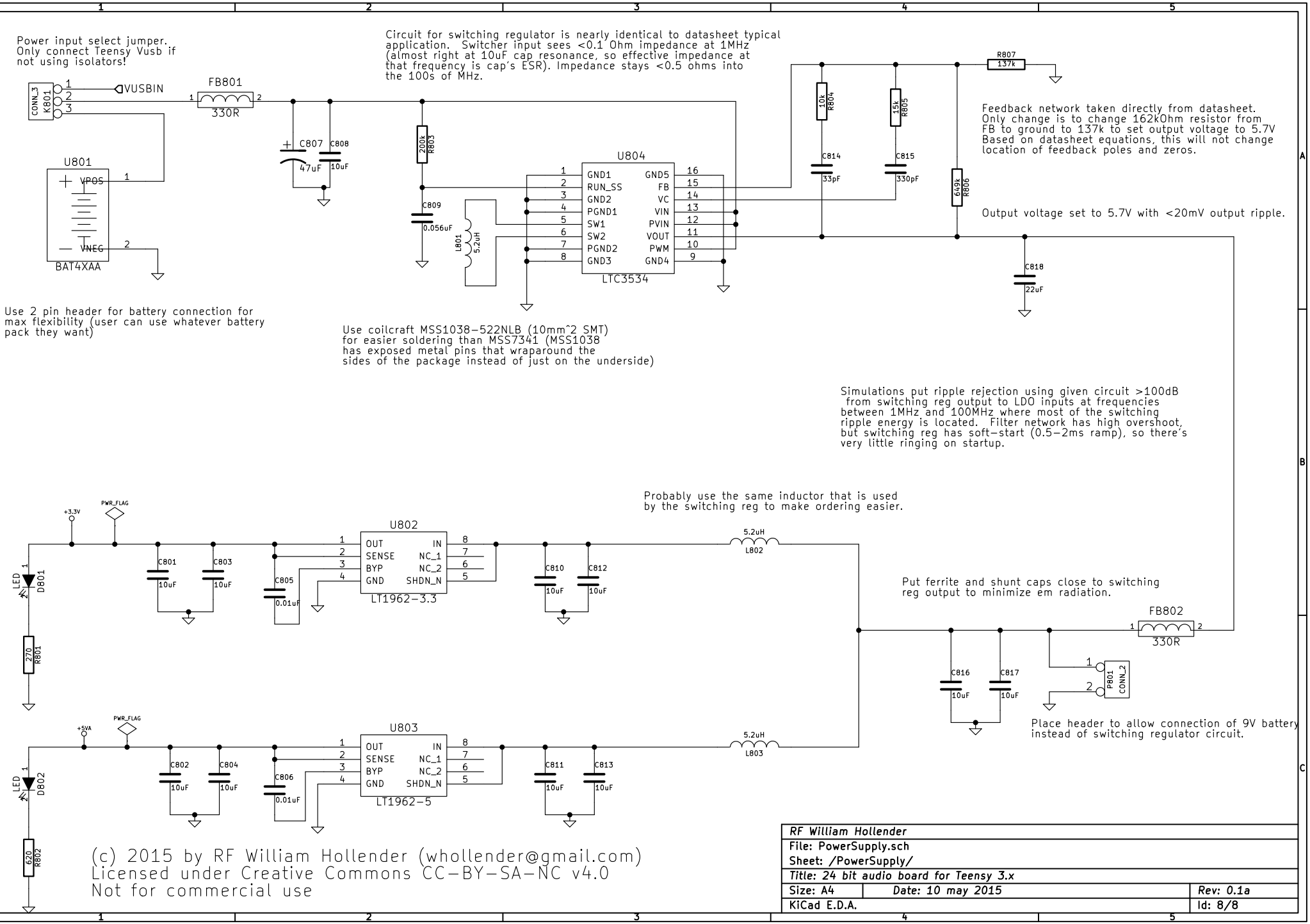
3rd order bessel filter with <0.5dB err to 20kHz.
All resistors min tolerance (<5%) for good CMRR.
All filter caps to ground instead of between diff lines
for better CM filtering. Biggest noise contribution is
from resistors (approx 1k gives best noise performance with
THS4521), but CS4272 needs >3k output resistance.
Use all C0G caps for best distortion performance.

RF William Hollender		
File: AnalogOutputBuffer.sch		
Sheet: /CodecAndAnalog/OutputBufferA/		
Title: 24 bit audio board for Teensy 3.x		
Size: A4	Date: 10 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 C0G caps for best distortion performance.

RF William Hollender		
File: AnalogOutputBuffer.sch		
Sheet: /CodecAndAnalog/OutputBufferB/		
Title: 24 bit audio board for Teensy 3.x		
Size: A4	*Date: 10 may 2015*	*Rev: 0.1a*
KiCad E.D.A.		Id: 7/8


Power input select jumper.
Only connect Teensy Vusb if
not using isolators!
CONN_3
K801
VUSBIN
FB801
330R
U801
VPOS
VNEG
BAT4XAA
C807
47uF
C808
10uF
Use 2 pin header for battery connection for
max flexibility (user can use whatever battery
pack they want)
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.
200k
R803
C809
0.056uF
L801
5.2uH
U804
GND1
RUN_SS
GND2
PGND1
SW1
SW2
PGND2
GND3
GND5
FB
VC
VIN
PVIN
VOUT
PWM
GND4
LTC3534
10k
R804
15k
R805
C814
33pF
C815
330pF
R807
137k
649k
R806
C818
22uF
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 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.
+3.3V
PWR_FLAG
U802
OUT
SENSE
BYP
GND
IN
NC_1
NC_2
SHDN_N
LT1962-3.3
C801
10uF
C803
10uF
C805
0.01uF
C810
10uF
C812
10uF
5.2uH
L802
LED
D801
270
R801
Put ferrite and shunt caps close to switching
reg output to minimize em radiation.
FB802
330R
C816
10uF
C817
10uF
P801
CONN_2
Place header to allow connection of 9V battery
instead of switching regulator circuit.
+5VA
PWR_FLAG
U803
LT1962-5
C802
10uF
C804
10uF
C806
0.01uF
C811
10uF
C813
10uF
5.2uH
L803
LED
D802
620
R802
(c) 2015 by RF William Hollender (whollender@gmail.com)
Licensed under Creative Commons CC-BY-SA-NC v4.0
Not for commercial use
RF William Hollender
File: PowerSupply.sch
Sheet: /PowerSupply/
Title: 24 bit audio board for Teensy 3.x
Size: A4
Date: 10 may 2015
Rev: 0.1a
KiCad E.D.A.
Id: 8/8