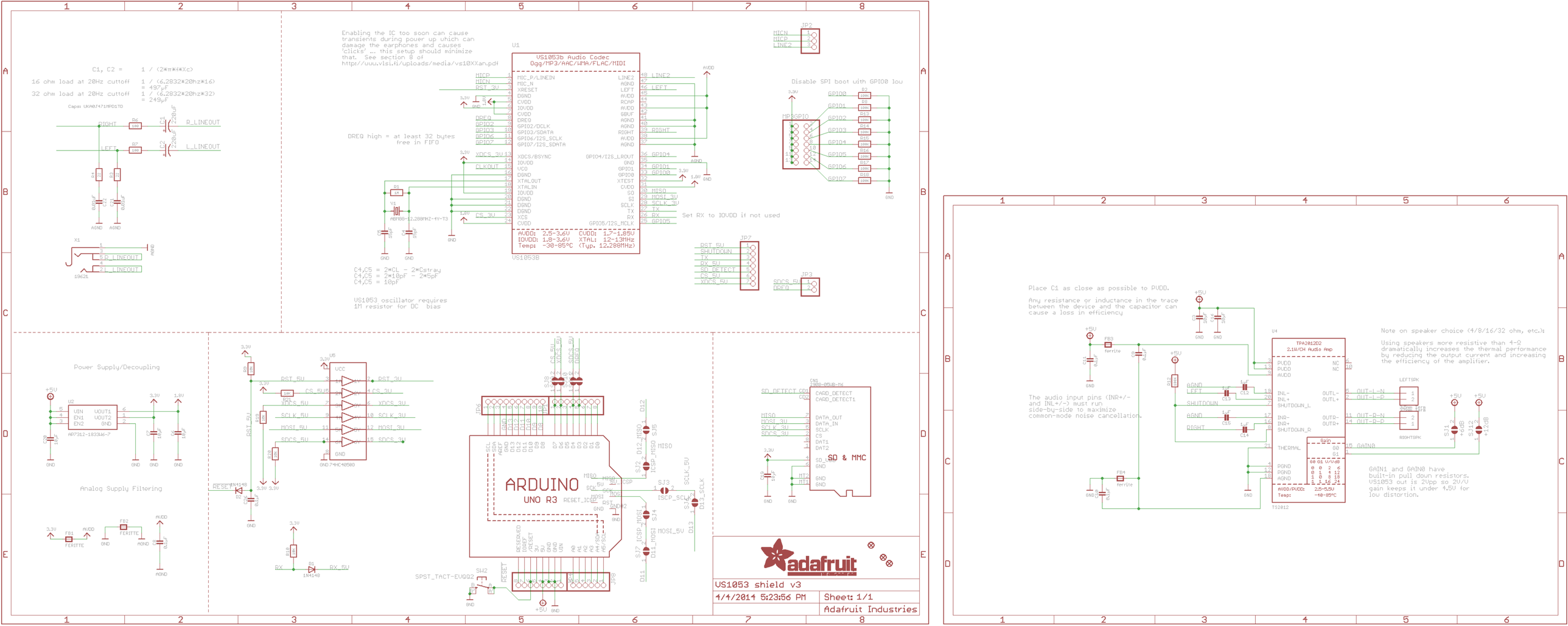

Enabling the IC too soon can cause transients during power up which can damage the earphones and causes 'clicks' ... this setup should minimize that. See section 8 of http://www.vlsi.fi/uploads/media/vs10XXan.pdf
C1, C2 = 1 / (2*π*f*Xc)
16 ohm load at 20Hz cuttoff 1 / (6.2832*20hz*16) = 497µF
32 ohm load at 20Hz cuttoff 1 / (6.2832*20hz*32) = 249µF
Caps: UKA0J471MPD1TD
R_LINEOUT
L_LINEOUT
DREQ high = at least 32 bytes free in FIFO
U1
VS1053b Audio Codec
Ogg/MP3/AAC/WMA/FLAC/MIDI
AVDD: 2.5-3.6V CVDD: 1.7-1.85V
IOVDD: 1.8-3.6V XTAL: 12-13MHz
Temp: -30-85°C (Typ. 12.288MHz)
VS1053B
Disable SPI boot with GPIO0 low
Set RX to IOVDD if not used
C4,C5 = 2*CL - 2*Cstray
C4,C5 = 2*10pF - 2*5pF
C4,C5 = 10pF
VS1053 oscillator requires 1M resistor for DC bias
Power Supply/Decoupling
Analog Supply Filtering
ARDUINO
UNO R3
SD & MMC
adafruit
VS1053 shield v3
4/4/2014 5:23:56 PM
Sheet: 1/1
Adafruit Industries
Place C1 as close as possible to PVDD.
Any resistance or inductance in the trace between the device and the capacitor can cause a loss in efficiency
The audio input pins (INR+/- and INL+/-) must run side-by-side to maximize common-mode noise cancellation.
Note on speaker choice (4/8/16/32 ohm, etc.):
Using speakers more resistive than 4-Ω dramatically increases the thermal performance by reducing the output current and increasing the efficiency of the amplifier.
GAIN1 and GAIN0 have built-in pull down resistors. VS1053 out is 2Vpp so 2V/V gain keeps it under 4.5V for low distortion.
TPA2012D2
2.1W/CH Audio Amp
TS2012