Project Checklist

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Baseline Goals:

1. Power Module
    a. Achieve ±5V from a fully charged, 1.5V D cell battery.
2. Tactile Volume Control:
    a. Volume control voltage: controlled by two touchpads to increase/decrease
    b. Use control voltage used to change audio output volume level, without expectation that volume remains stable over time
3. Amplifier and Filter
    a. Functioning amplifier with limited distortion
    b. Passband filter to eliminate noise
4. All parts function separately.

Expected Goals:

5. Power Module
    a. Achieve ±5V from a fully charged, 1.5V D cell battery.
    b. Achieve at least 60% efficiency of the boost converter, with the rest of the circuit as the load.
6. Tactile Volume Control:
    a. Achieve stable volume control:
        i. volume control voltage stored on capacitor remains stable for the duration of at least one song; audio volume does not change audibly in the absence of user input for the duration of one song
    b. Single LED indicating indicating DC volume voltage
7. Amplifier and Filter
    a. Alter amplifier to limit noise distortions further. Add feedback (Bootstrapping and negative feedback)
    b. Added a “fun filters” effect
    c. LED Output of baseline volume
8. All parts function together.

Stretch Goals:

9. Extra
    a. Manufacture a PCB or design PCB on CAD if not enough shipping time
    b. Machined box for speaker
10. Power Module
    a. Achieve ±5V from a AA battery
    b. Achieve at least 80% efficiency of the boost converter, with the rest of the circuit as the load.
11. Tactile Volume Control:
    a. Add linear soft potentiometer to select volume directly, in addition to the ability to increase and decrease the volume monotonically

    b. Discrete LED display to show DC volume voltage; number of lit LEDs is proportional to the volume control voltage of the musics
12. Amplifier and Filter
    a. Echo Filter
    b. More Speakers