ECEN 405 - Project Report
D-Class Sub-woofer Amplifier

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1 Introduction

Cover the motivation for using a class D in the real world and how it relates to content from ECEN405.

2 Design

Here you should describe how your class D amplifier works, giving details of each subsection. In detail, you should describe the section you designed and the design choices you made. If your team broke up the design of the amplifier in a way that doesn't suit individual parts being discussed, you will need to talk about the whole design in a bit more detail but you should also describe how the work was delegated and why.

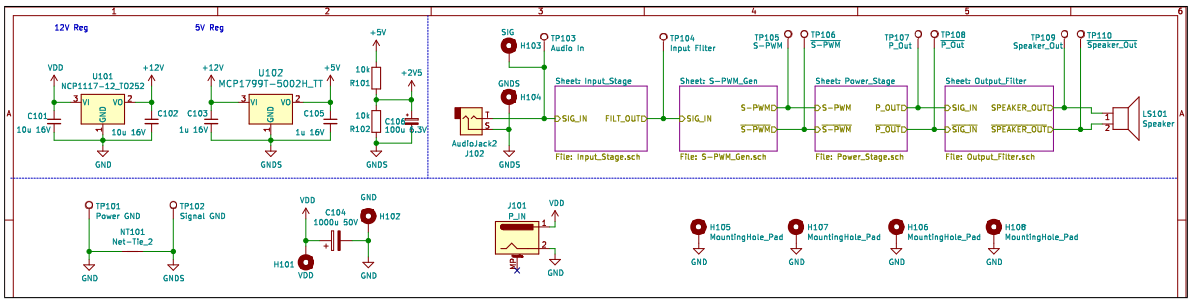

Figure 1: High level design schematic

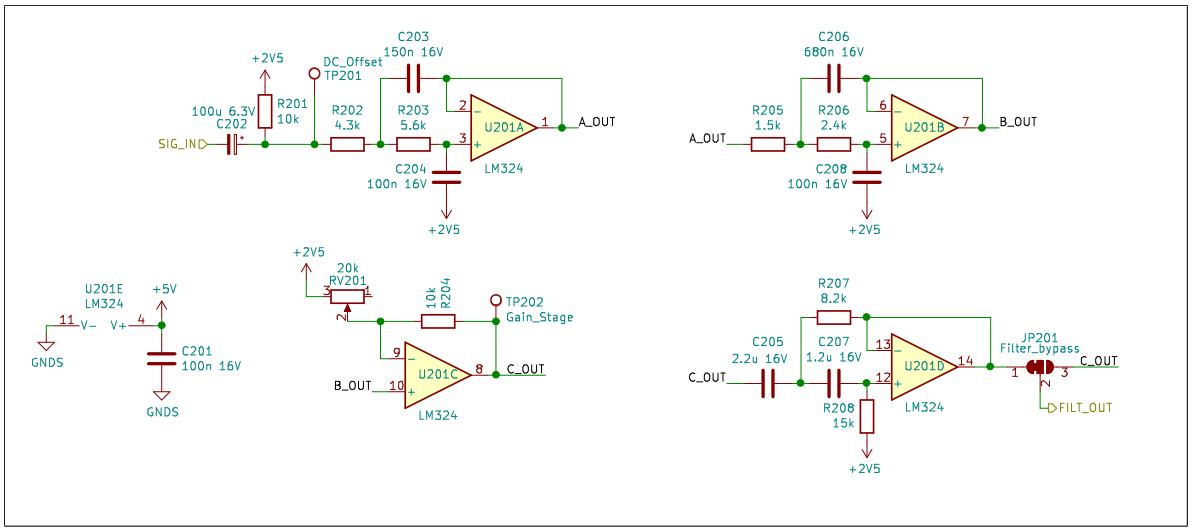

Figure 2: Input filtering schematic

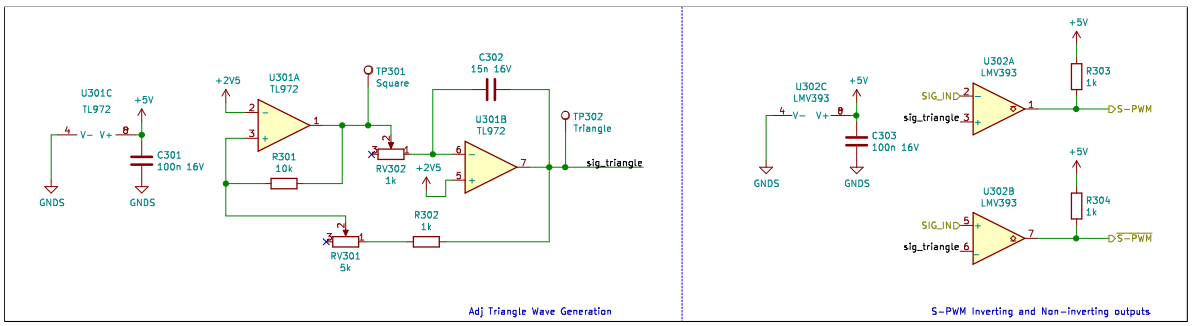

Figure 3: Sampling triangle wave & SPWM generation schematic

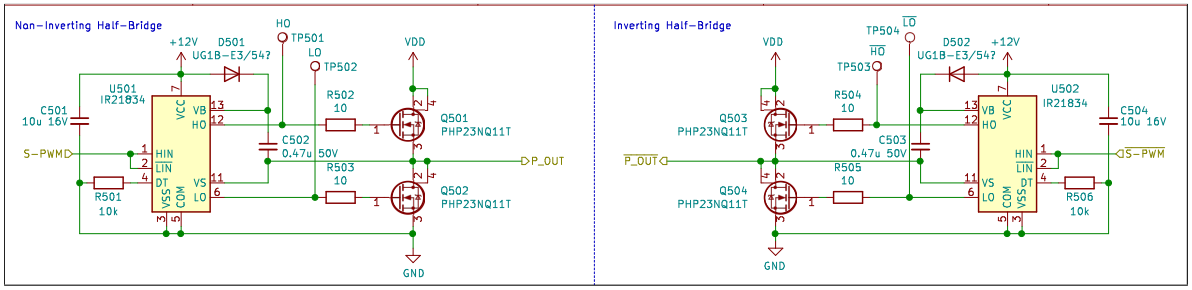

Figure 4: Gate driver schematic

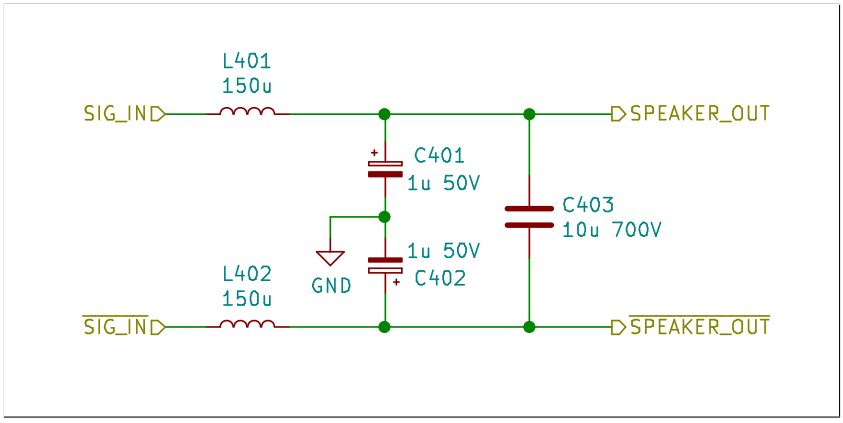

Figure 5: Output filter schematic

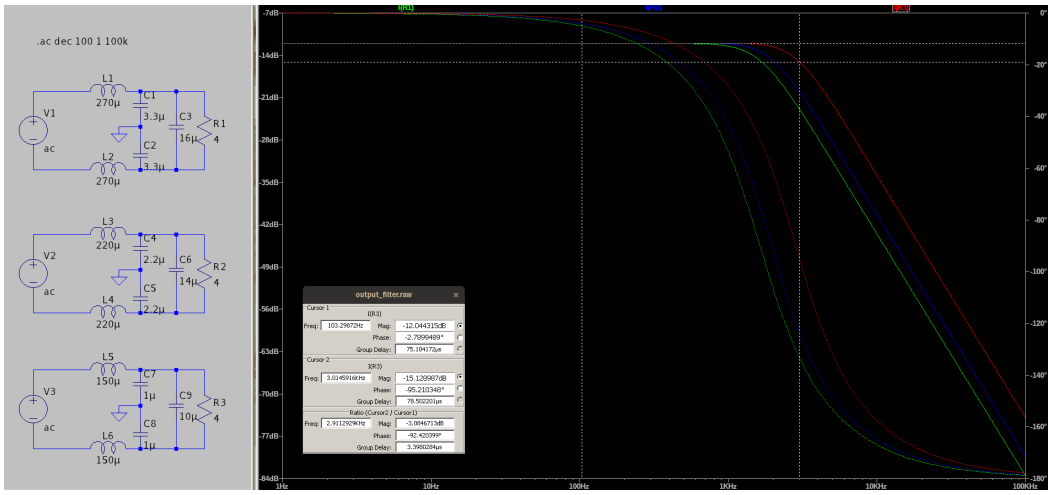

Figure 6: Output Filter Option Simulations

3 Implementation

Here you should discuss the assembly of the amplifier and any problems you faced as a team building the amplifier. Here, the individual components should also be characterised. For example: if you have a filter, what is the response and how does it compare to the calculated? If you have a triangle wave, how does it look? Is it doing what I should? Why? Why not? How do the inputs/outputs of your comparator look? How does the square wave on the gate of the MOSFETs look?

4 Results

Here I would expect to see the results of the whole amp, for example: an output wave, analysis of the efficiency, discuss maximum power output (which may be frequency dependent), and THD.

5 Conclusions

What worked, didn't work? How would you change your approach? Any interesting insights?