

HappyTunes – Class D Amplifier



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Objective

- ❖ Design and deliver a portable speaker with Bluetooth input driven by a Class D amplifier

Background

What is a Class D Amplifier?

- ❖ An amplifier which increases the amplitude of an signal using analog to digital conversion, amplification of the digital signal, and digital to analog conversion to produce an amplified analog signal.

Why use a Class D Amplifier?

- ❖ Highly efficient in terms of power consumption and space
- ❖ Allow for amplification at higher frequencies

Project Overview

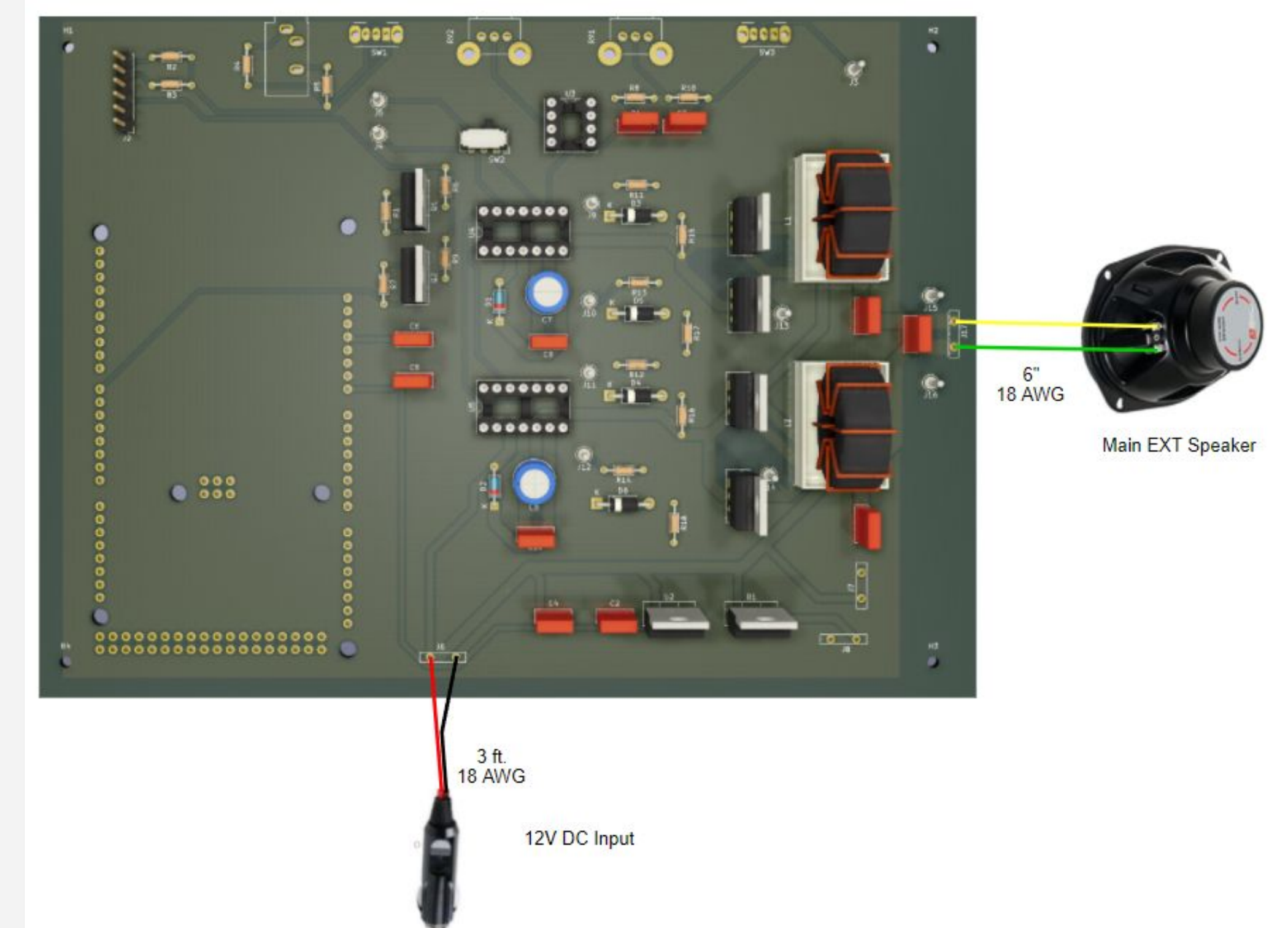
- ❖ Operate on 12V power supply driven by a vehicles battery.
- ❖ Generate an amplified signal with minimal distortion at 18W to a 4 ohm speaker.
- ❖ Connects to audio sources through a Bluetooth connection.

Final Product



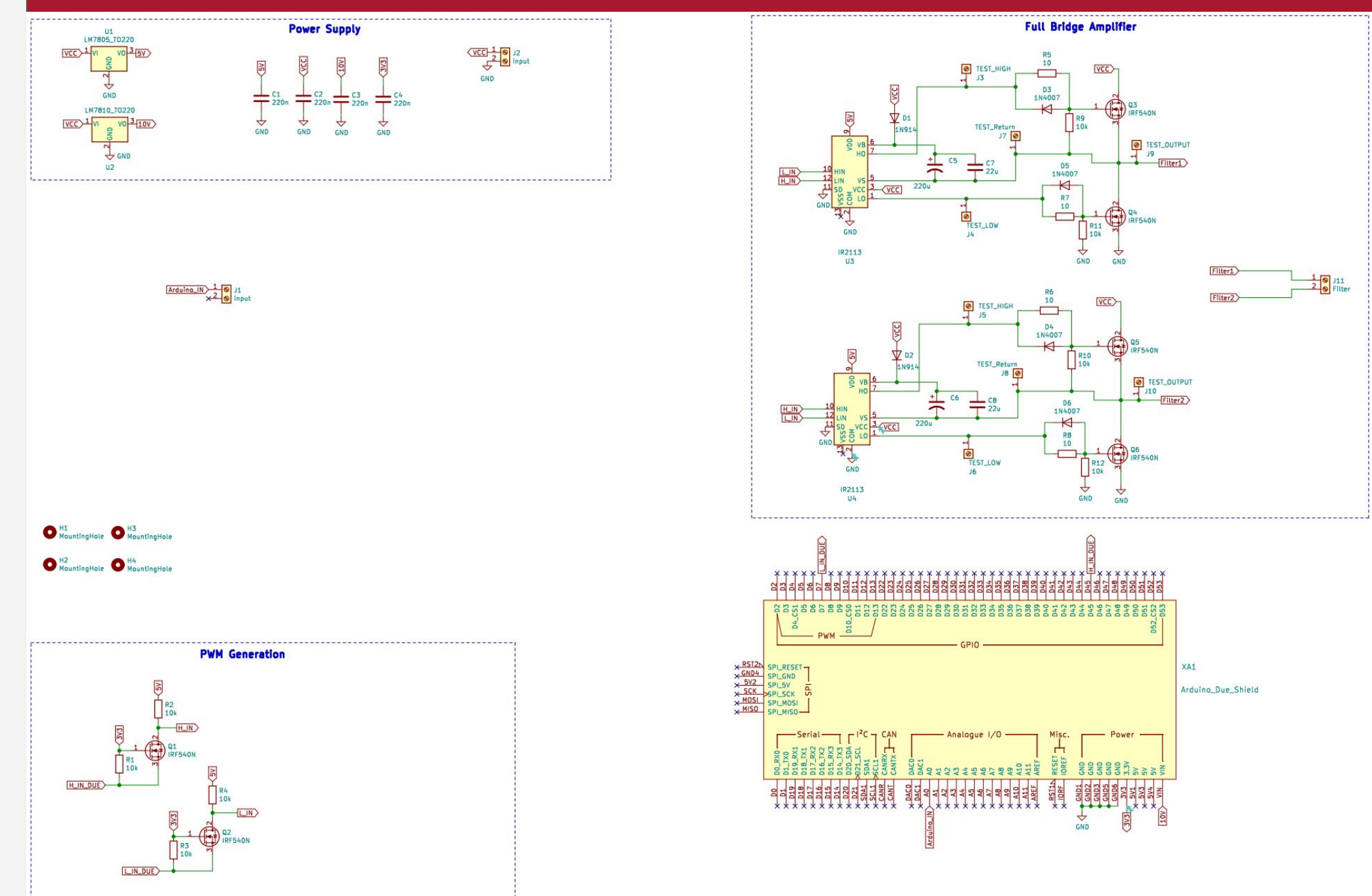
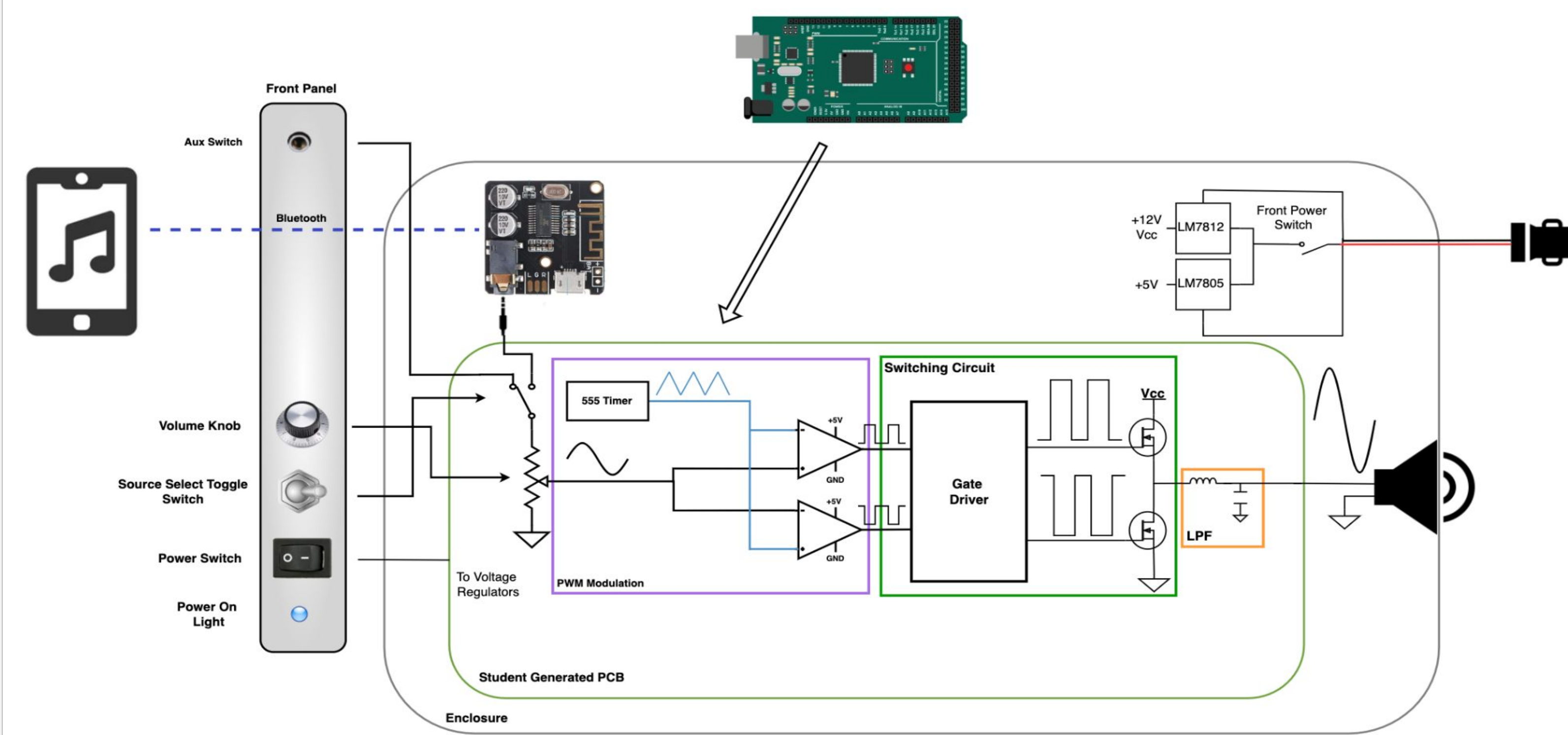
Full Assembly View

PCB Design



KiCAD Rendering of PCB

System Level Description



Schematic

Acknowledgements

- ❖ Instructor: Barry Dorr
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