

# E2.02 - OrangeBreaker

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Advisor: Dr. C.R. Compeau



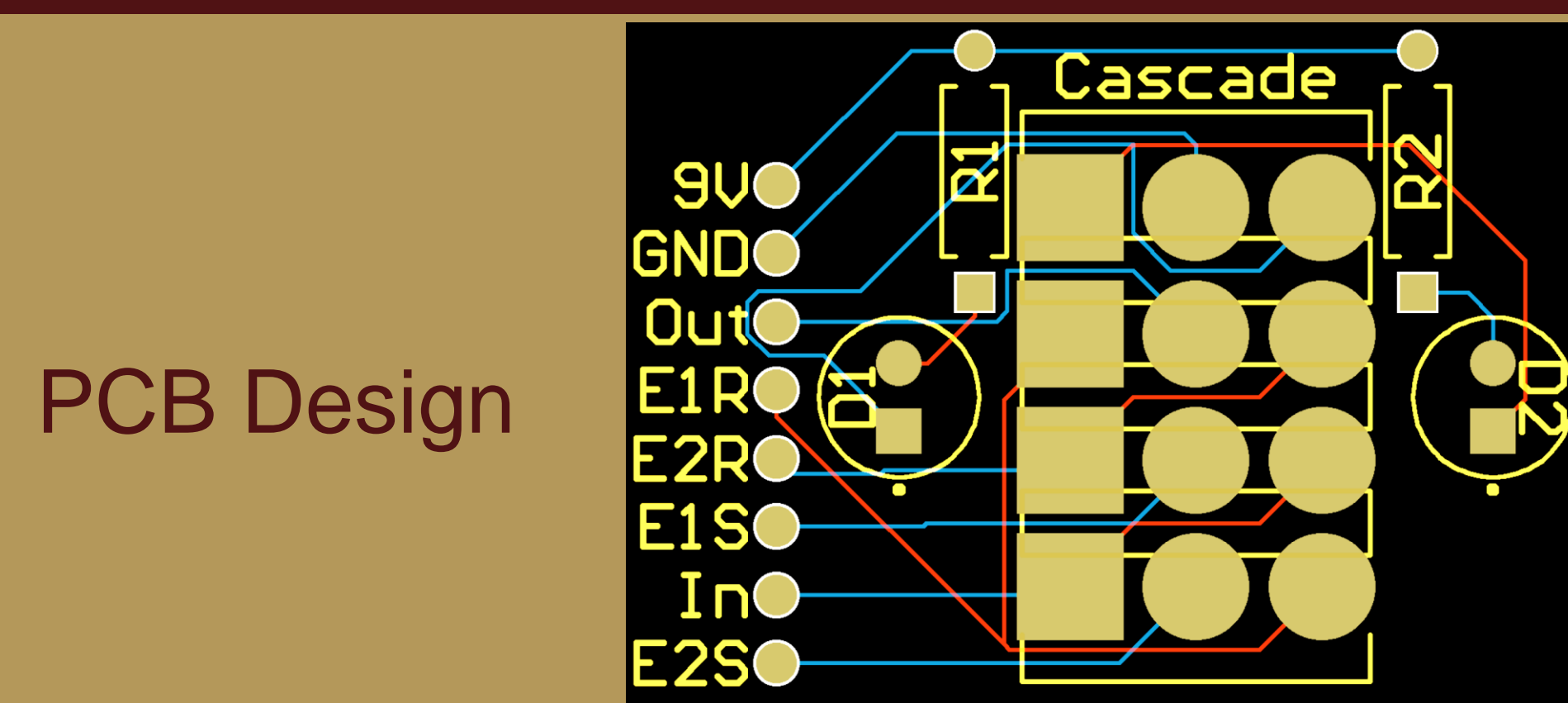
## Project Overview

- Simulate and implement two iconic solid-state analog effects pedals on custom PCBs
- Characterize their electrical performance
- Fabricate a custom enclosure to house both effects
- Demonstrate operation at common frequencies and signal amplitudes of a guitar

## D2 Requirements

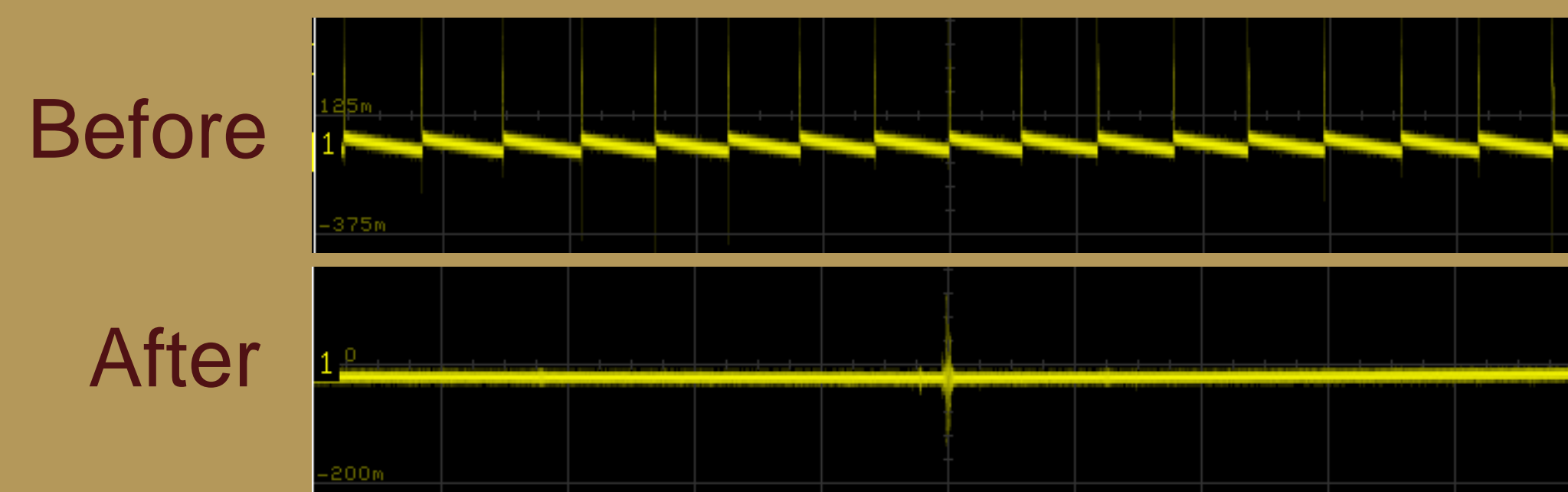
- Simulations
- Custom PCBs with bypass capability
- Full Characterization
- Custom Enclosure Housing Both Effects
- Project Demonstration

## Cascade Switch

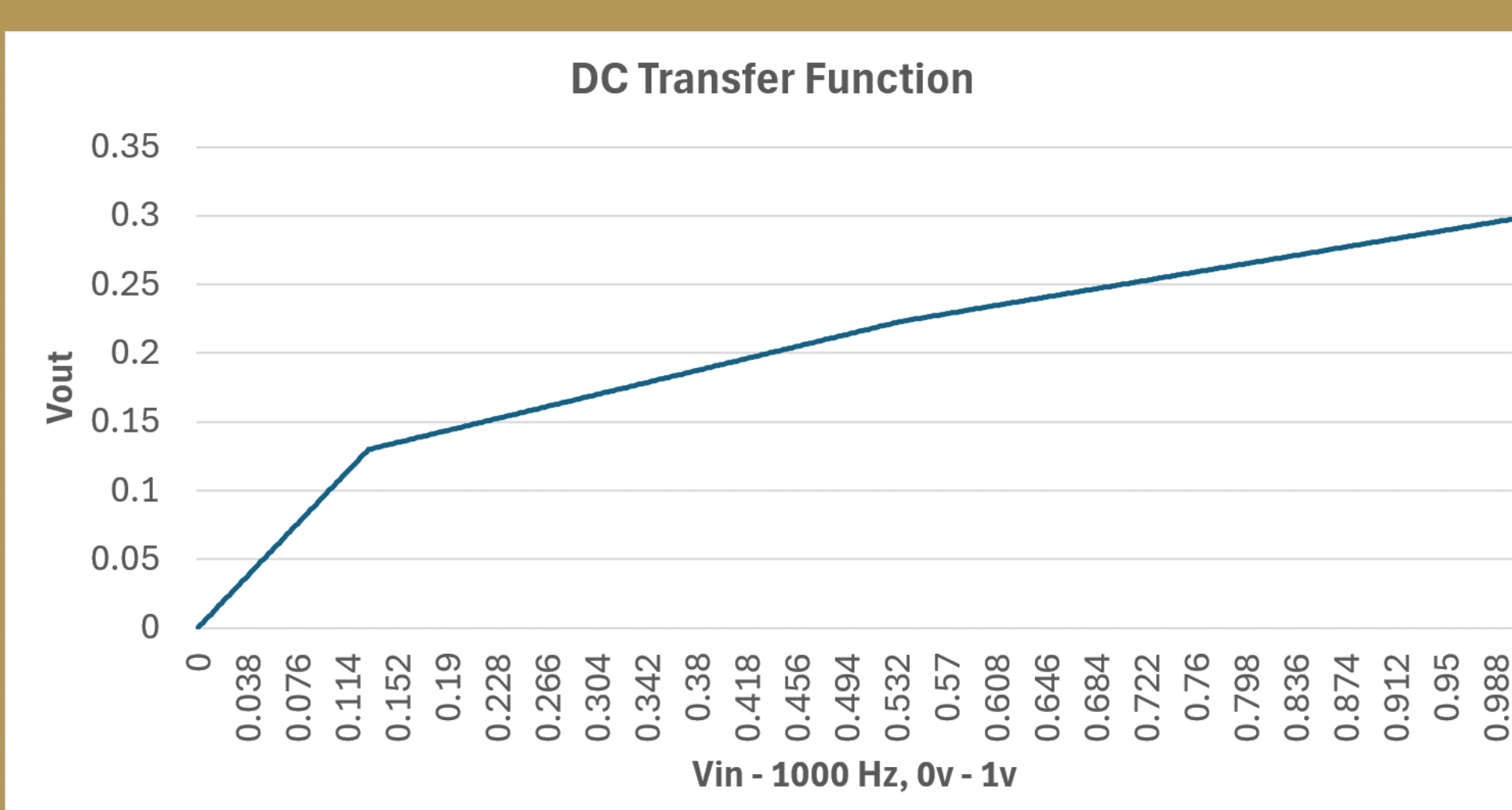


PCB Design

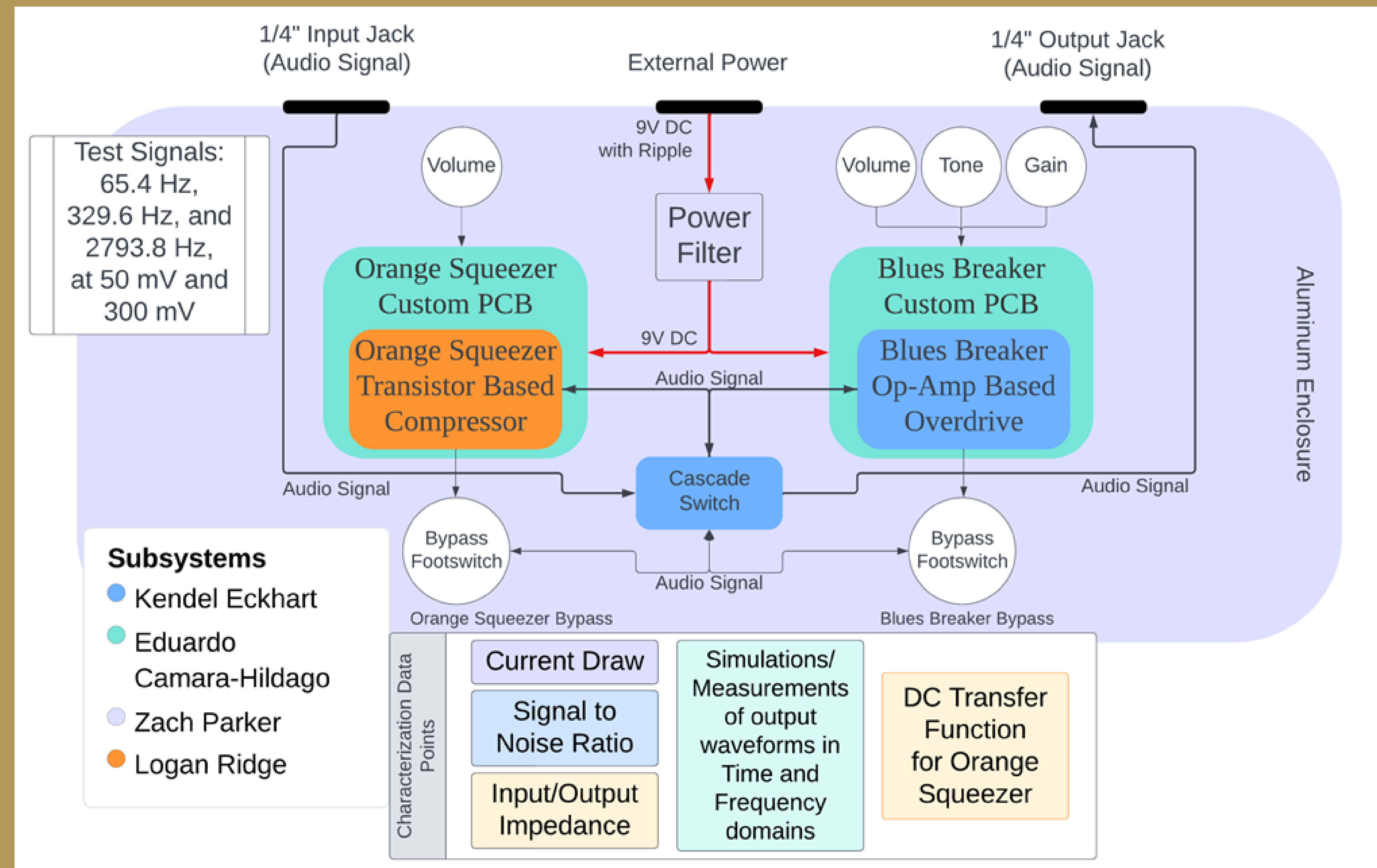
## Power Filter



## DC Transfer Function



## Top Level Block Diagram

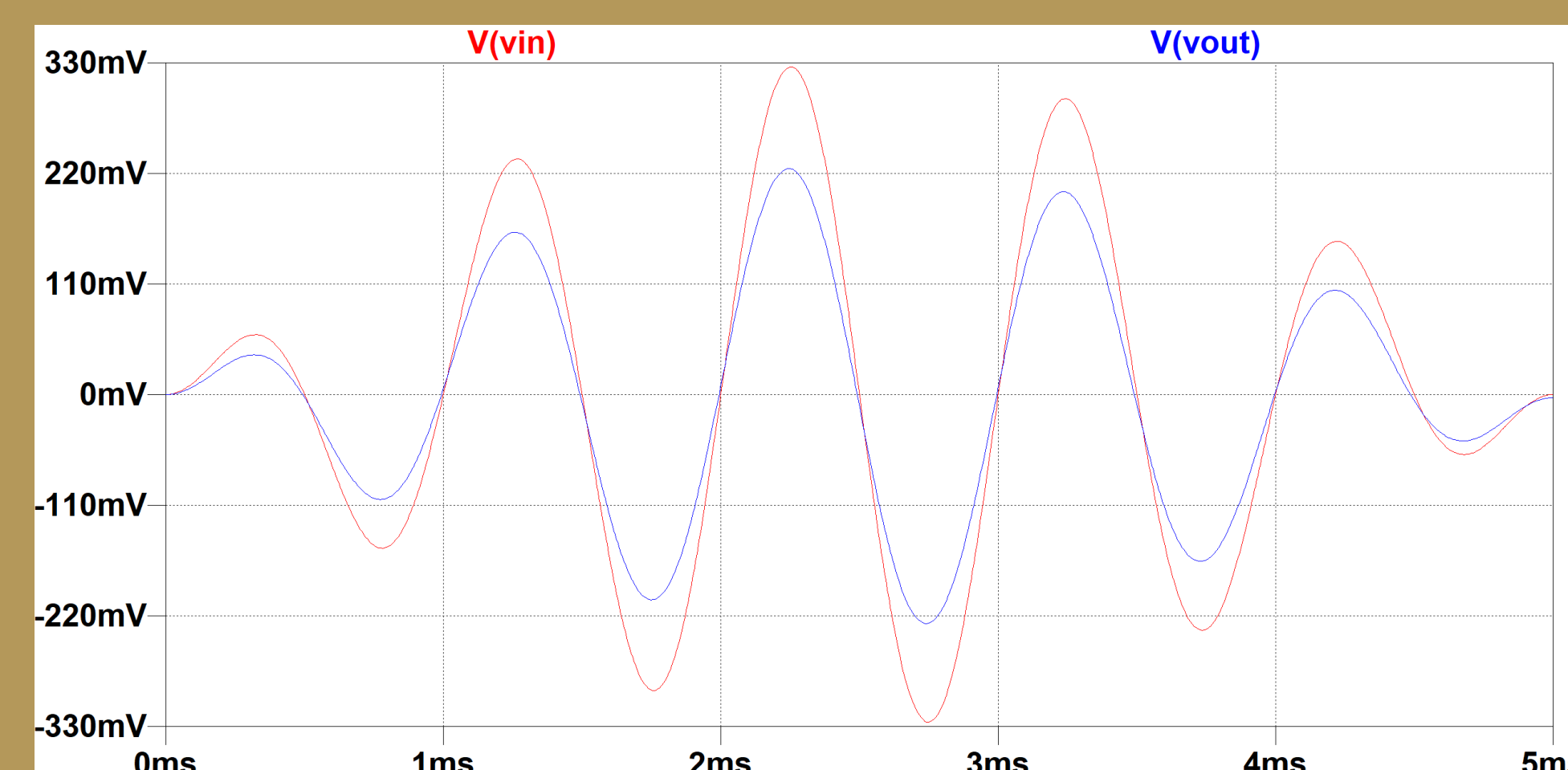


### Subsystems

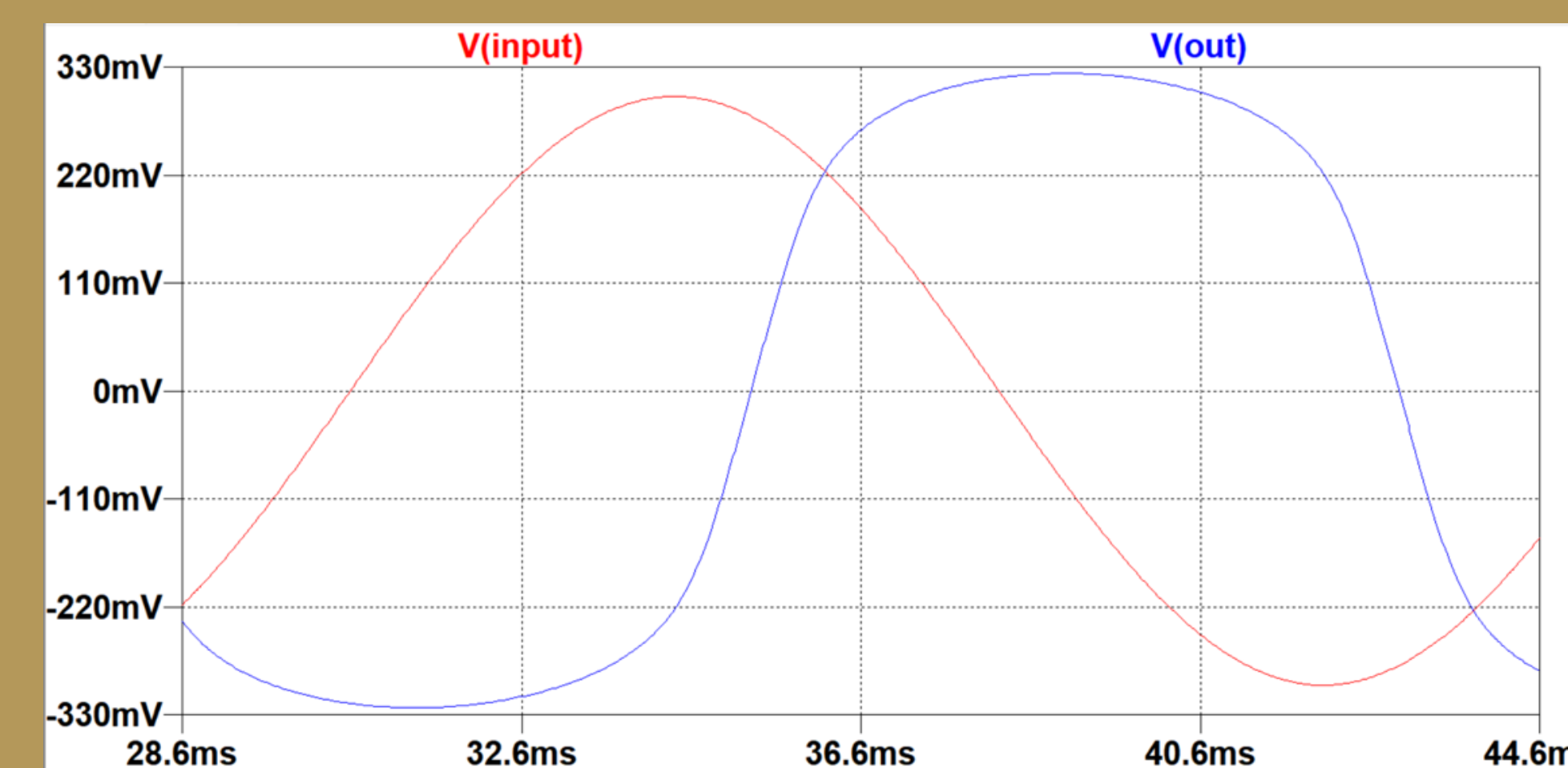
- Kendel Eckhart
- Eduardo Camara-Hildago
- Zach Parker
- Logan Ridge

## Characterization

Parameter	Orange Squeezer	Blues Breaker	Description
Current Draw	8.672 mA	8.384 mA	Current Drawn by Subsystem, Used to Determine Battery Life.
Input Impedance	1.67 MΩ	1.362 MΩ	Input Impedance of the Subsystem
Output Impedance	9.17 kΩ	24 kΩ	Output Impedance of the Subsystem
Total Harmonic Distortion	4.85 % (Purely odd Harmonics)	22.243 % (Purely odd Harmonics)	Distortion present in the output. Percentage of Even vs. Odd Harmonics.
Signal-to-Noise Ratio	42.5 dB	48.75 dB	Ratio of Desired Signal to Background Noise



Orange Squeezer



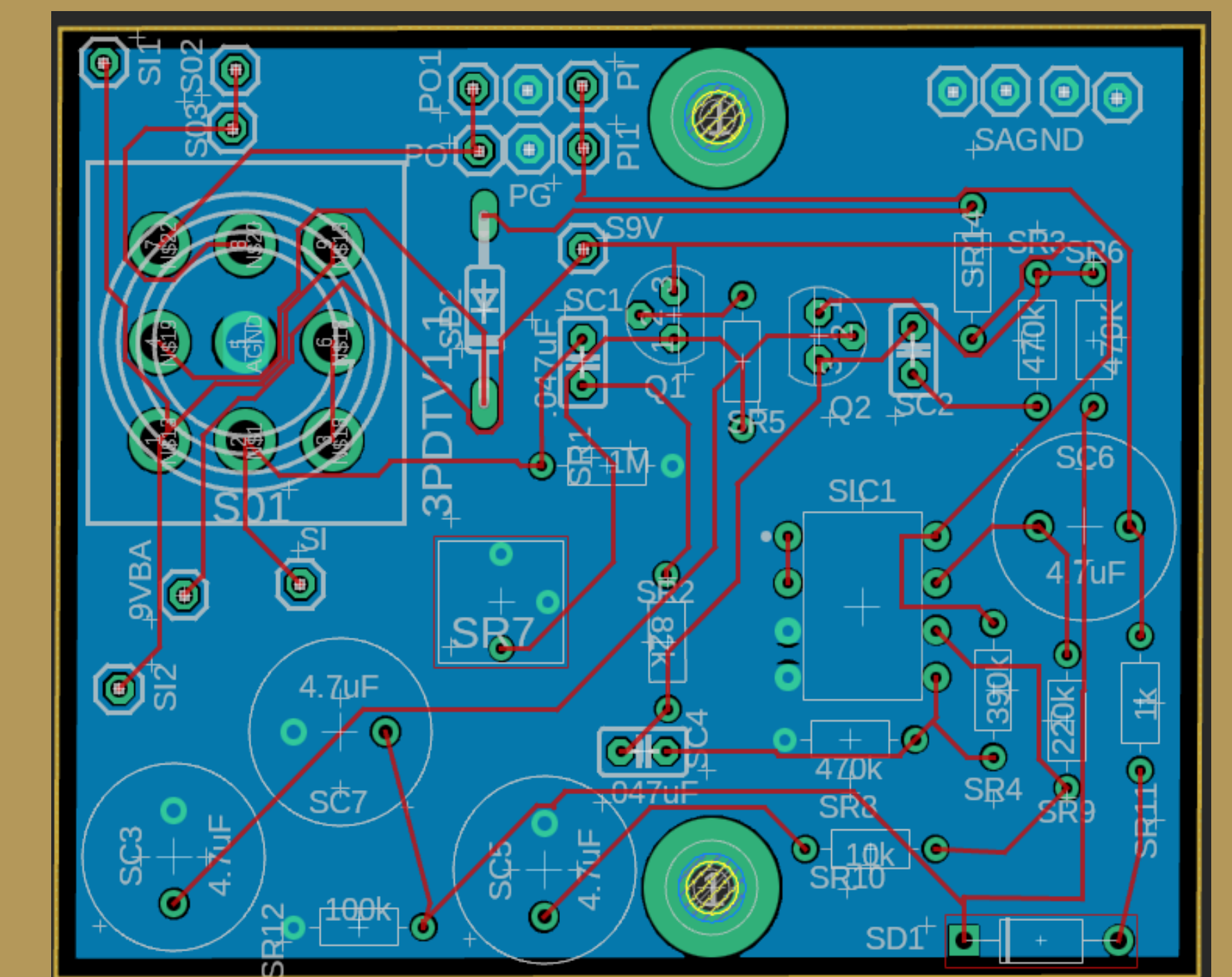
Blues Breaker

## Meet the Team

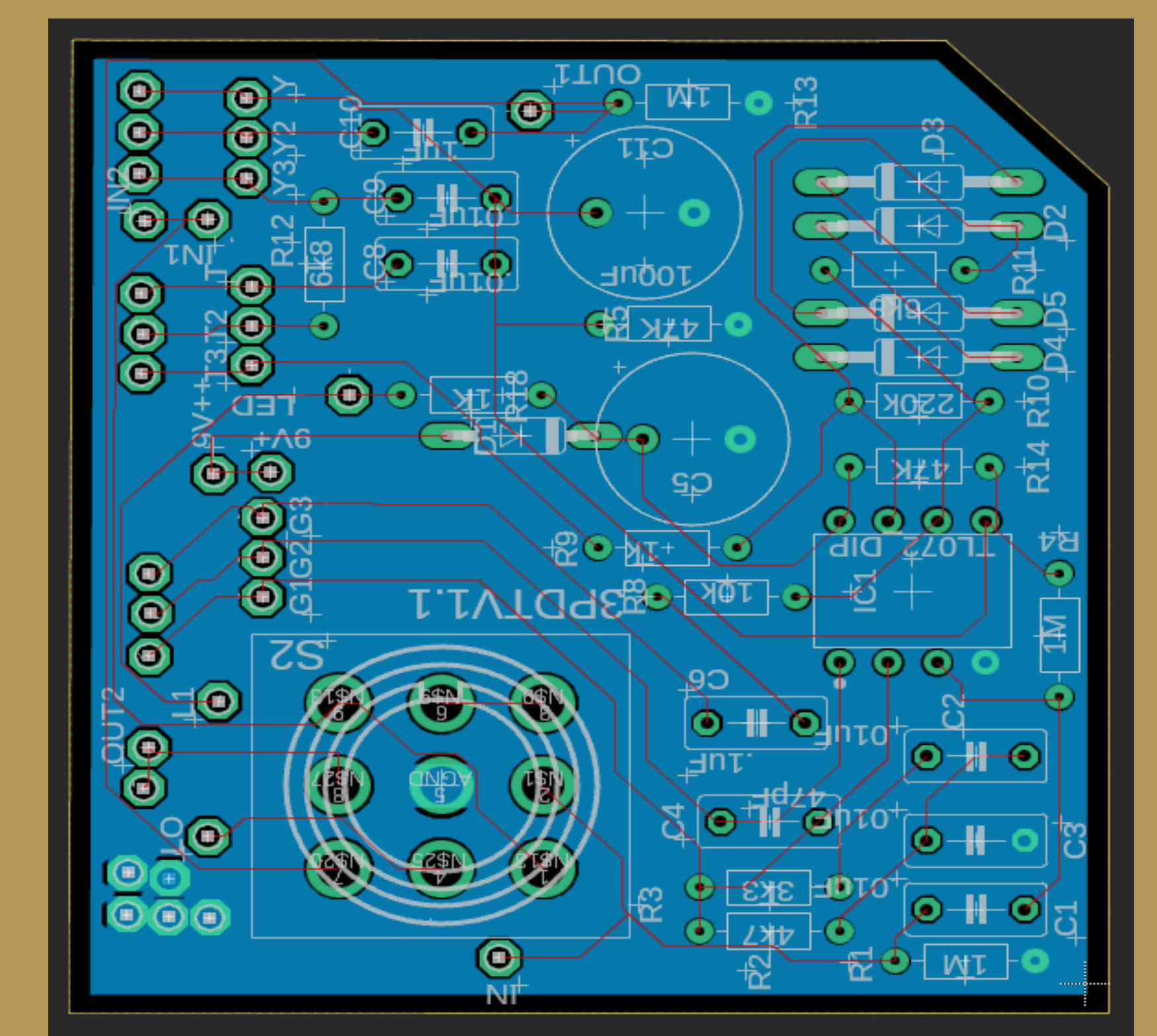


From L-R: Eduardo Camara-Hidalgo, Kendel Eckhart, Zach Parker, Logan Ridge

## PCBs



Orange Squeezer PCB



Blues Breaker PCB

## Acknowledgements

Faculty Advisor  
Sponsor

Dr. C. R. Compeau  
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