

# E1.03 – Orange Sunshine Effects Pedal

# Andreas Sims (PM), Rex Davis, Bennett McRae



### Overview

Guitar effects pedals are used to modify the sonic output of a guitar, producing desirable tones. Our project is to take two effects pedals, a compression effect and a distortion effect, and combine them into a single pedal. Both effects can be fully bypassed, or the signal routed through just one effect or both effects in series.

# Feature Requirements

- 9VDC from Battery or Power Supply
- ½" Mono Input/Output Jacks
- True Bypass Footswitch
- Customized PCB Initial Design
- Stretch Goal: Toggle switch to change cascade order

### Characterization Plan

Characterization Key

Andreas Sims

Rex Davis

Shared

Bennett McRae

Target current draw to

allow for minimum 9V

battery life of 8 hours.

- Input & Output Impedance
- Frequency Response
- Orange Squeezer DC Transfer function
- Total Harmonic Distortion with percentage of even vs odd Harmonics
- Current Draw to target minimum 9V Battery life
- Signal to Noise Ratio

# Simulation Plots JOONY JOONY

### Top-Level Block Diagram Orange Sunshine Pedal Enclosure 9 Volt Power 50mV/300mV input at 65.4 OD 250 Effect Hz, 329.6 Hz and 2793.8 Hz for testing or instrument Output Jack input for demonstration. -Effect Bypas 9V Battery AC/DC Transformer 9V DC Power Input: 120V 35A Max DC Power Jack Output: 9V 1700mA Max

# Effect Schematics

Determine Orange

Squeezer DC transfer

Determine input

and output

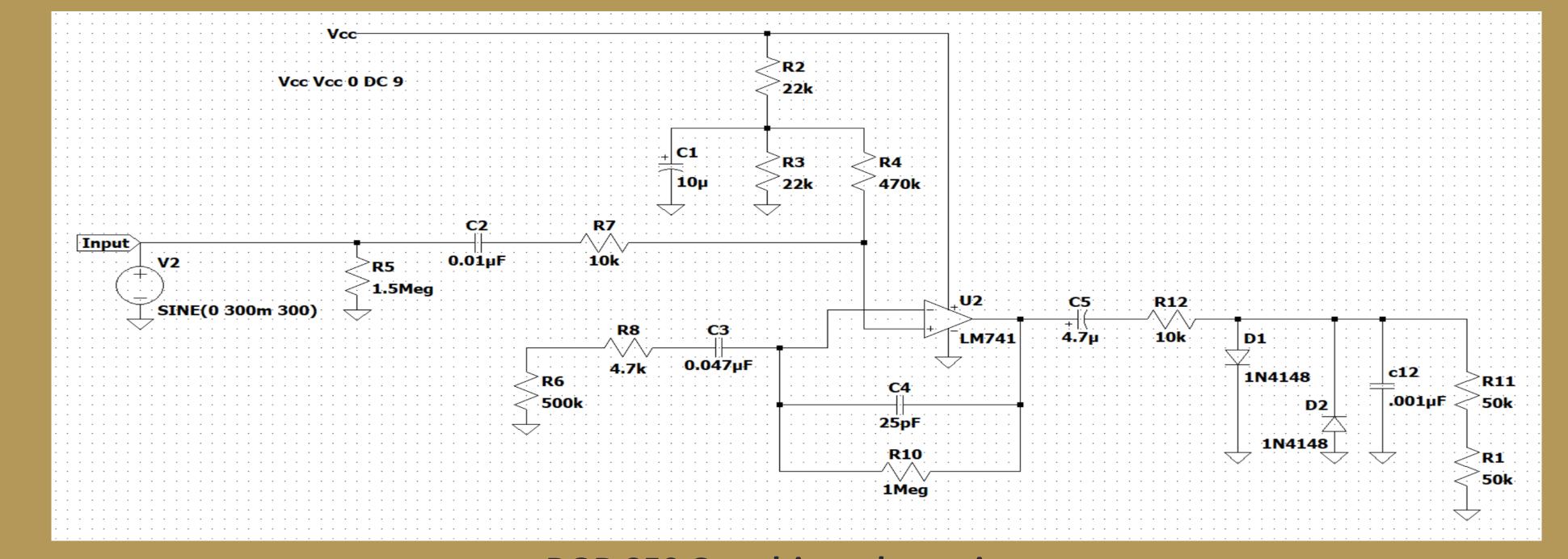
impedance values.

Analyze signal to noise ratio. Keep to

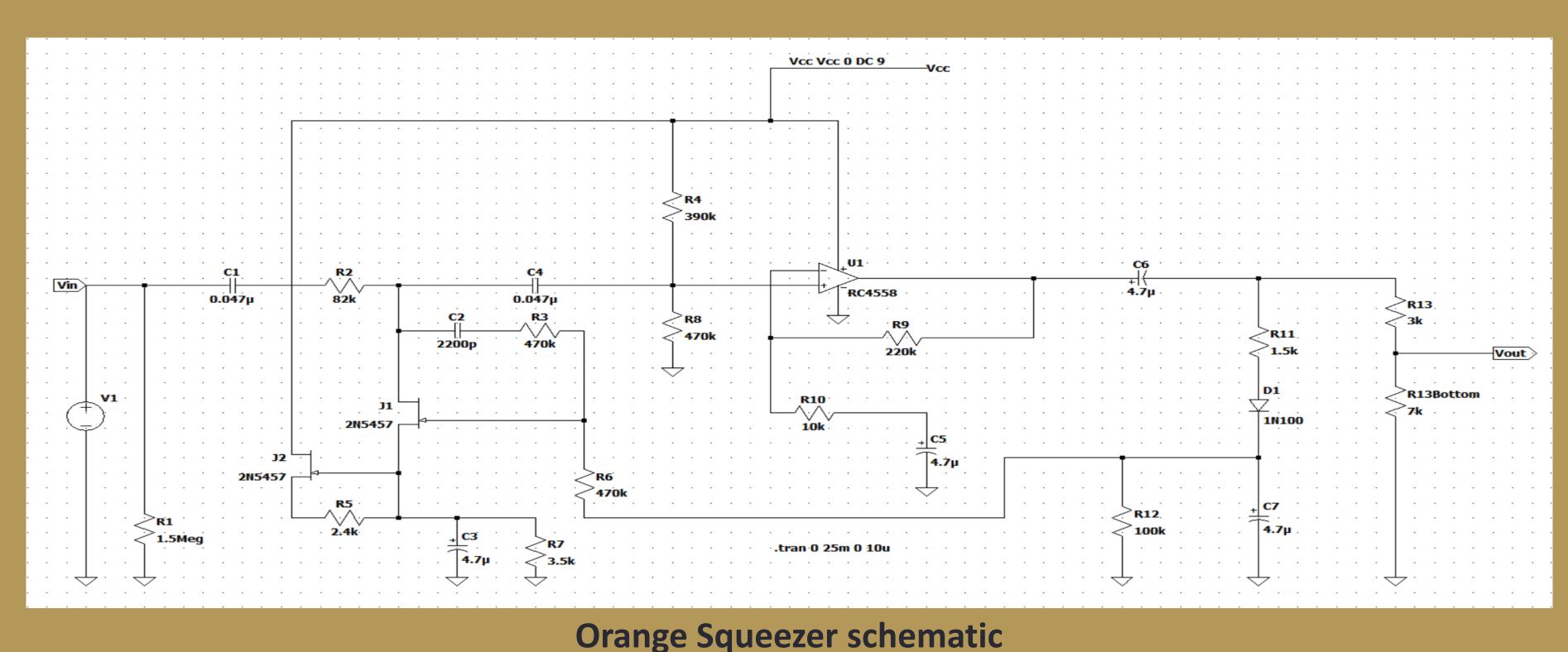
acceptable level.

Harmonic Distortion

(THD) with percentage of



### DOD 250 Overdrive schematic



### Meet the Team



Andreas Sims Bennett McRae

Rex Davis

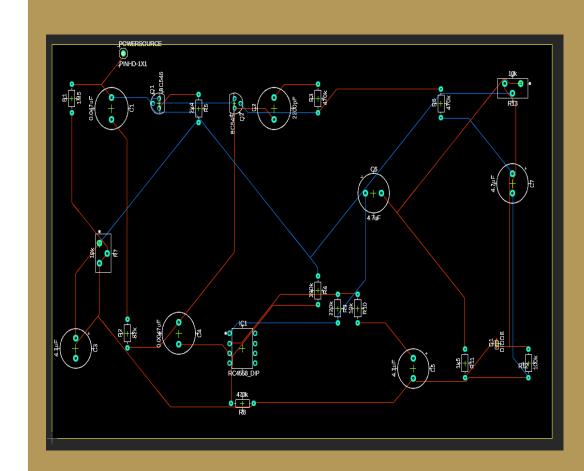
### First Semester Achievements

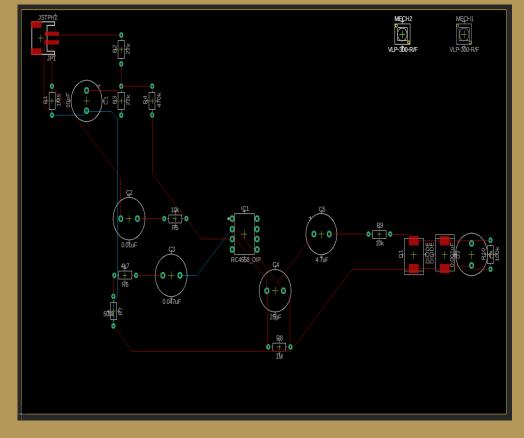
- Assembled/Tested the OSQ/DOD Kits
- Developed characterization plan
- Completed OSQ/DOD simulations
- Completed initial custom PCB design
- Demonstrated individual effects using kits

### Second Semester Goals

- Complete PCBs
- Design and fabricate enclosure
- Complete characterization in accordance with plan
- Demonstrate completed pedal through guitar amp
- Implement stretch goal of adding toggle switch to change effect cascade order.

# PCB Design





Orange Squeezer PCB

**DOD 250 Overdrive PCB** 

# Acknowledgements

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