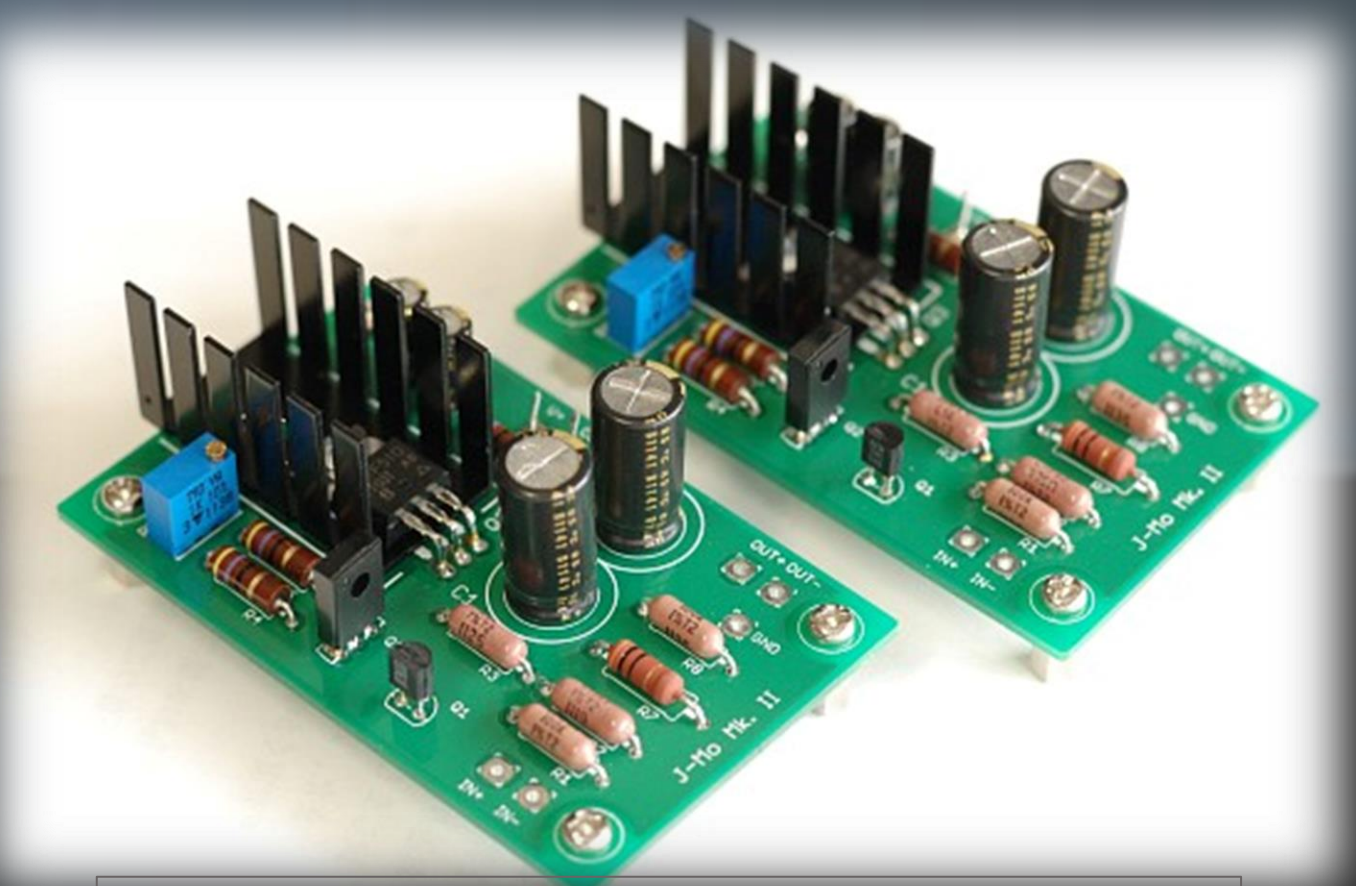


# Group E1.02 – JFET Headphone Amplifier Characterization and Comparison

Chris Thomas, Aldo Sanchez Alvarado, Jessica Wright



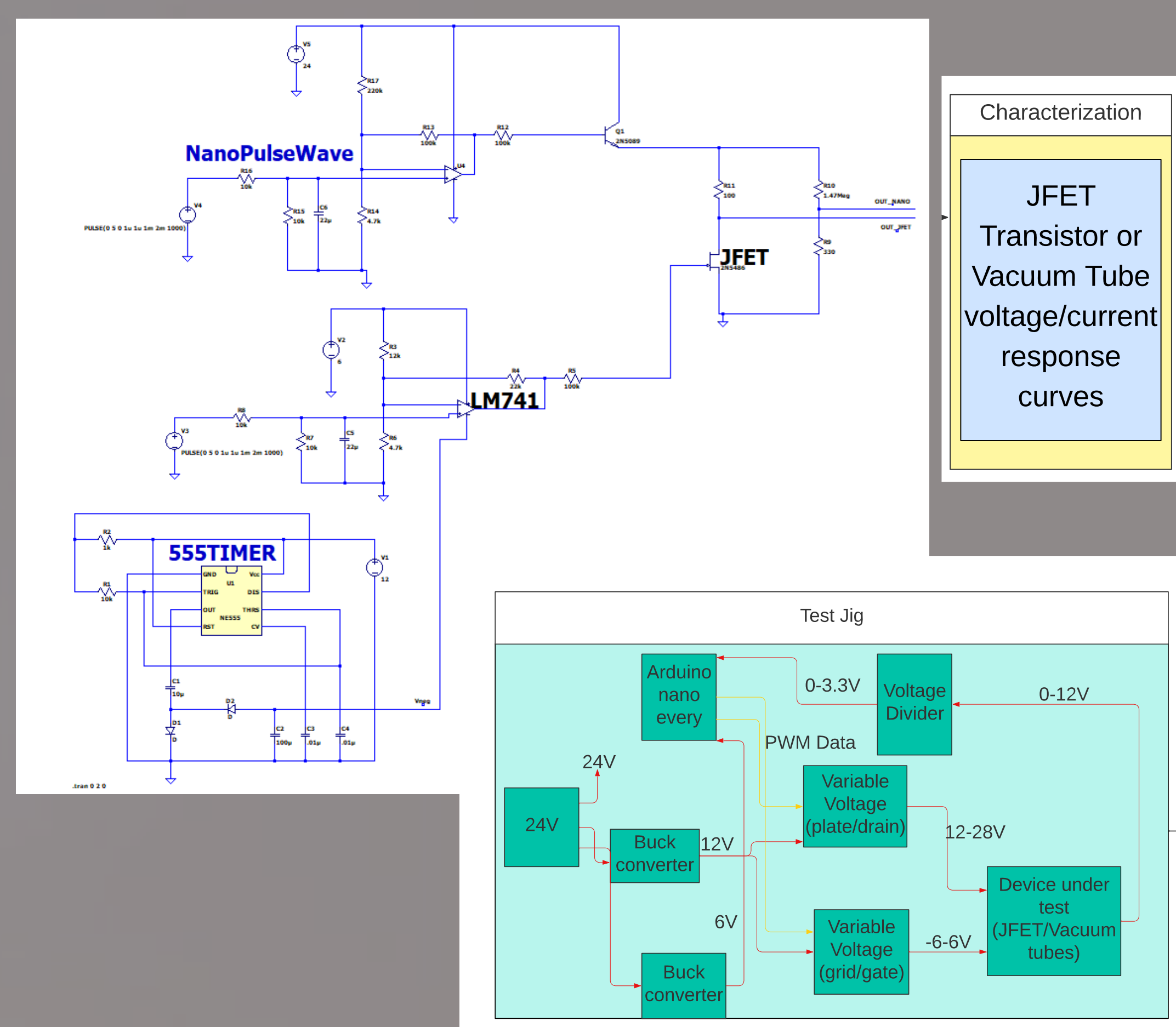
<https://phonoclone.com/diy-jmo2.html>

## Meet the Team



Jess Chris Aldo

## Test Jig



Characterization  
JFET Transistor or Vacuum Tube voltage/current response curves

## Overview

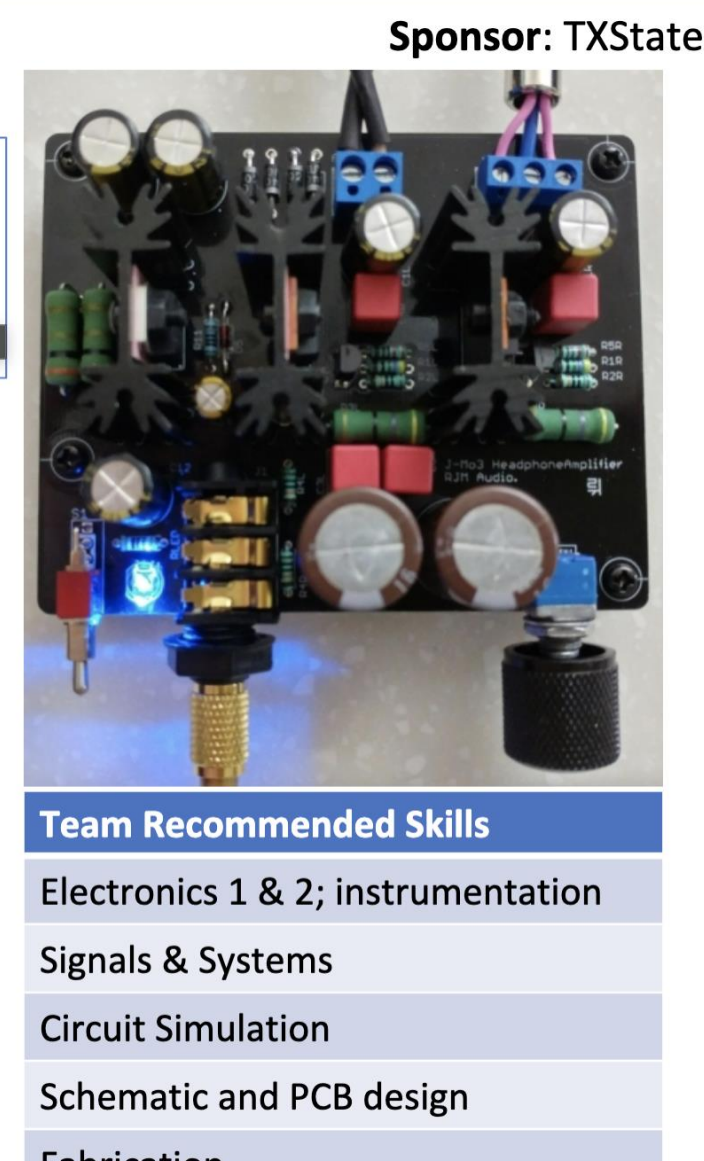
A direct comparison between a JFET solid state amplifier and a vacuum tube amplifier using:  
- Characterization  
- Survey comparison

### JFET Headphone Amplifier

**Description**  
Low-voltage JFET headphone amplifier and component characterization test jig. Custom PCBs. Perform full audio characterization and comparison to an off-the-shelf amplifier design.

- Performance Criteria Phases**
- Part 1 (D1)
- Successful build of an off-the-shelf amplifier design.
  - Amplifier and test jig simulation results.
  - Amplifier and test jig functional breadboard.
  - Create detailed characterization plan and start characterization.
  - Matching JFET pair characterization data.
  - Completed amplifier and test jig schematics and PCB layout

- Part 2 (D2)
- Complete custom PCB amplifier and test jig fabrication.
  - Audio Characterization Test Procedure Manual
  - Complete amplifier audio characterization and comparison to an off-the-shelf amplified design.
  - JFET component characterization data.
  - Demonstrate at Senior Design Day

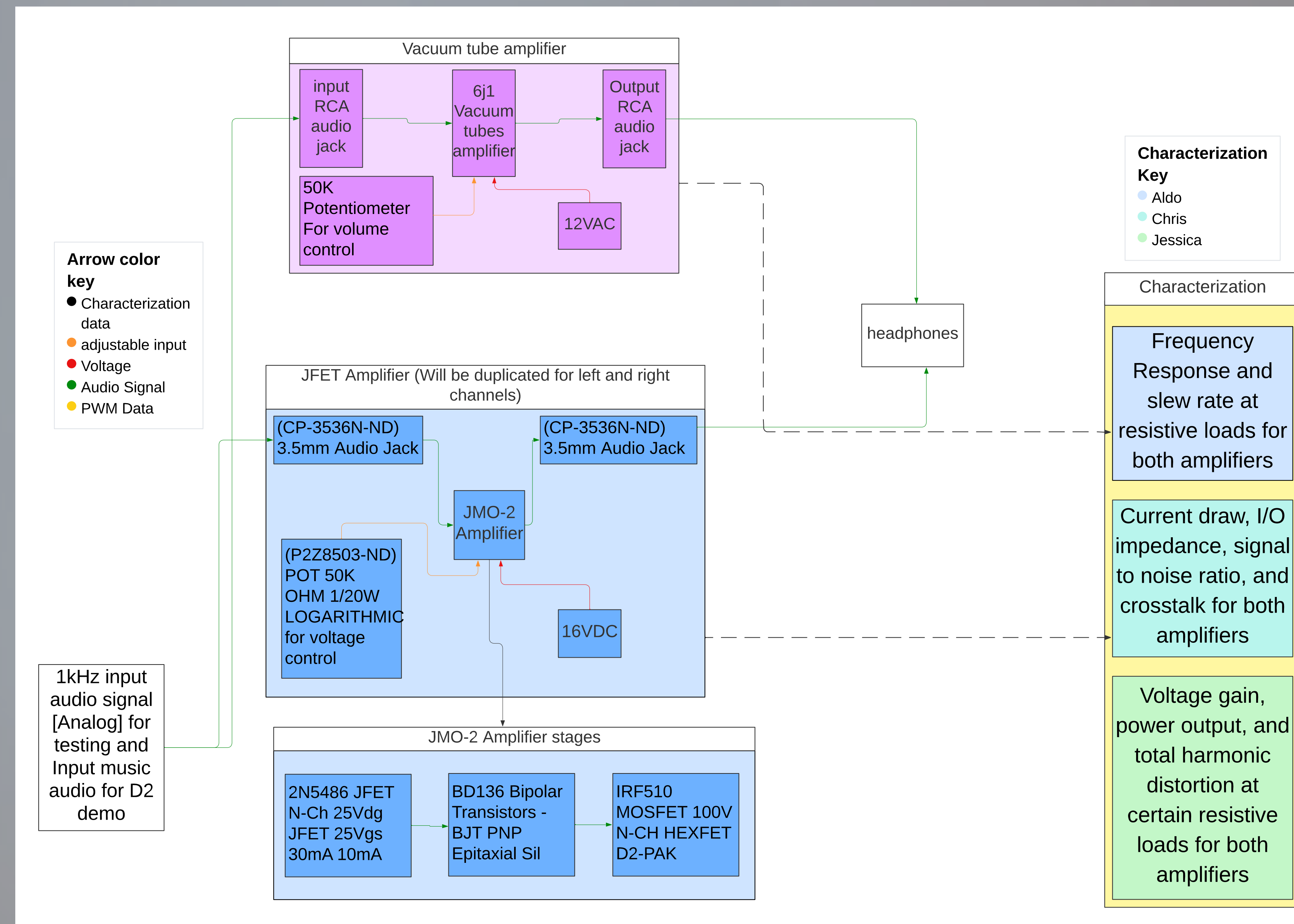


Sponsor: TXState

**Team Recommended Skills**

- Electronics 1 & 2; instrumentation
- Signals & Systems
- Circuit Simulation
- Schematic and PCB design
- Fabrication

## Vacuum Tube or JFET? YOU Decide!



## Characterization Tests

Chris	Jess	Aldo
Current draw	Voltage Gain	Frequency Response
I/O Impedance	Power Output	Slew Rate
Signal to noise ratio	Total Harmonic Distortion	
Crosstalk	Test Jig I-V Characteristics	

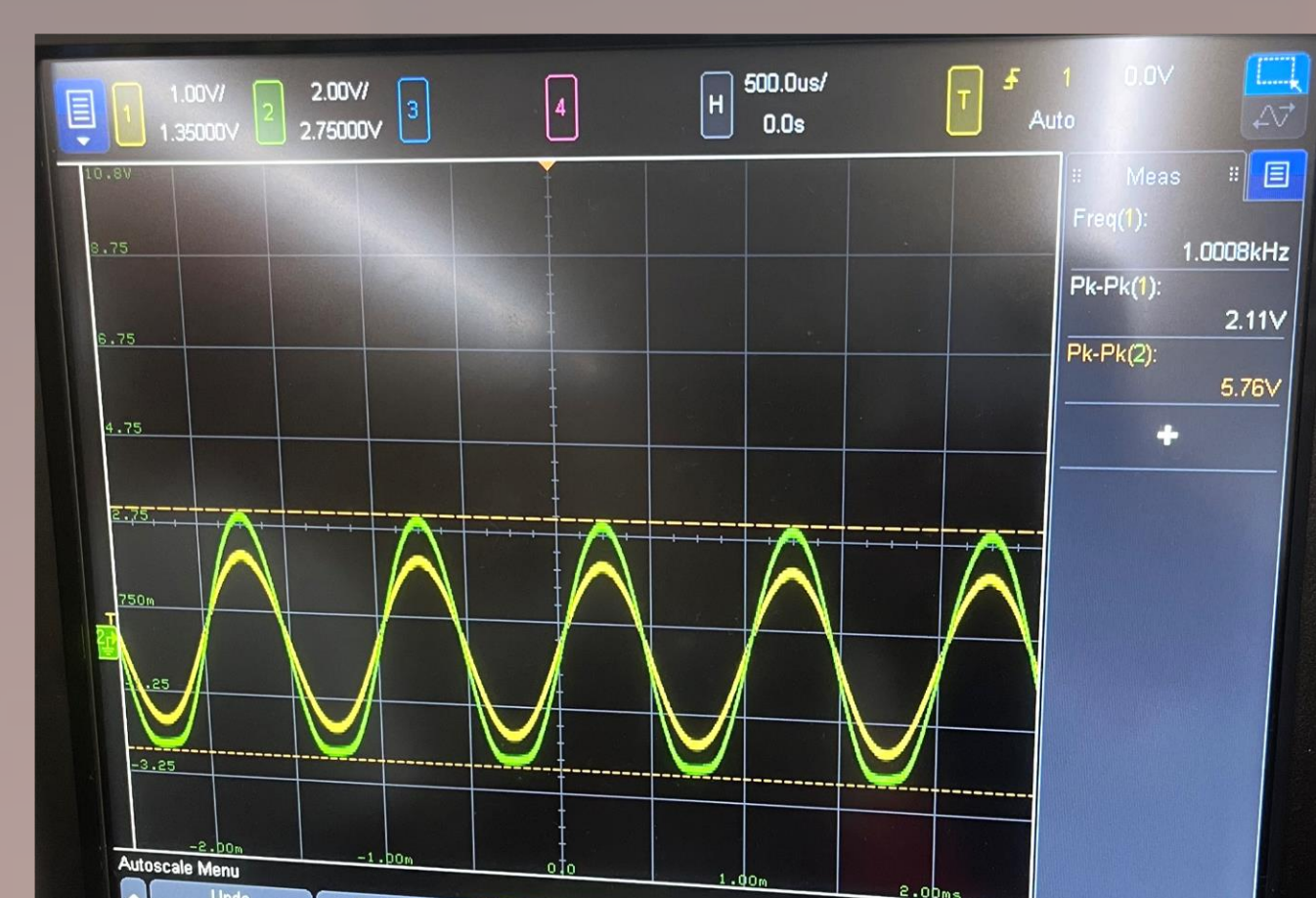
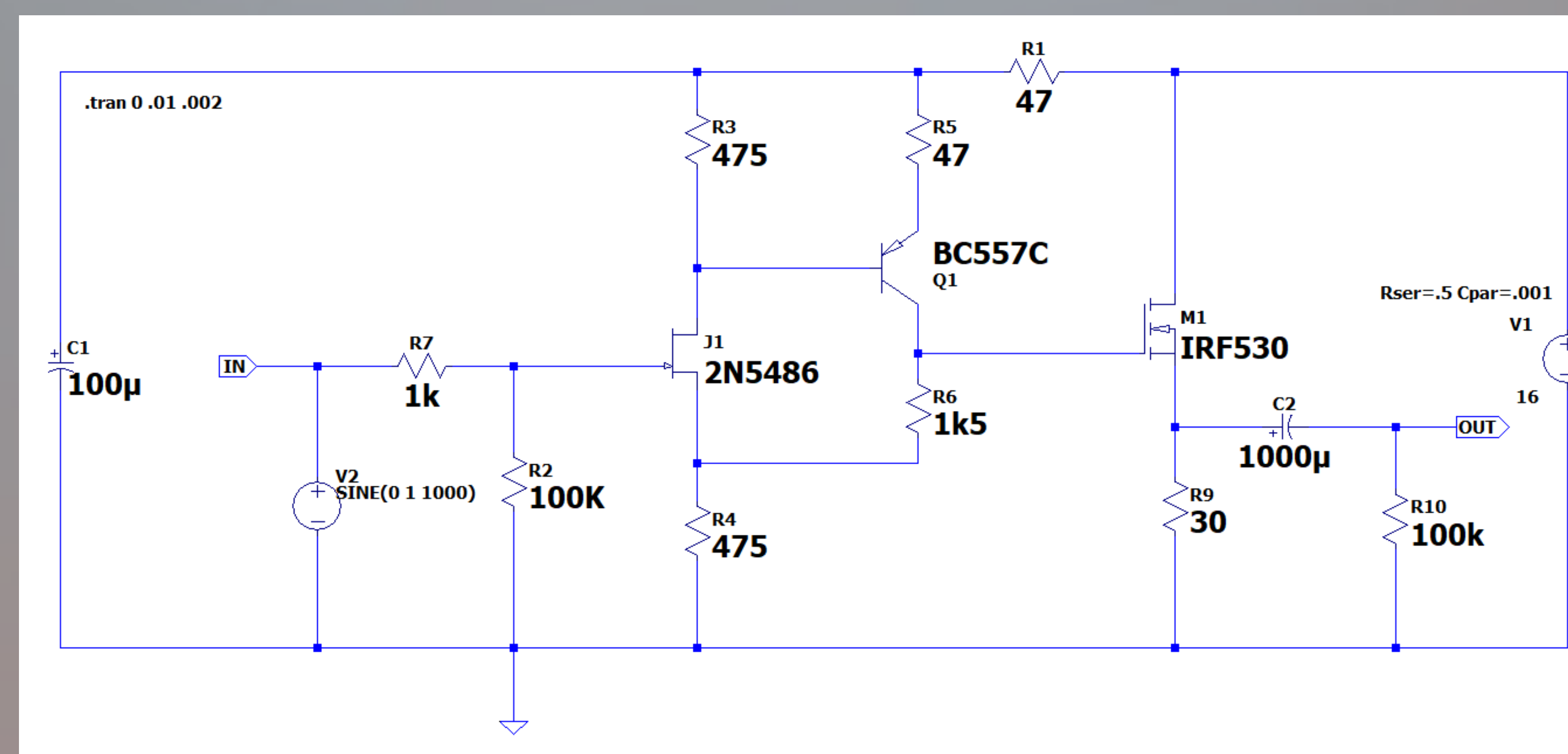
## Why Compare?

- Understand the industry standards for Class A amplifiers and why JFET amplifiers are becoming more common.

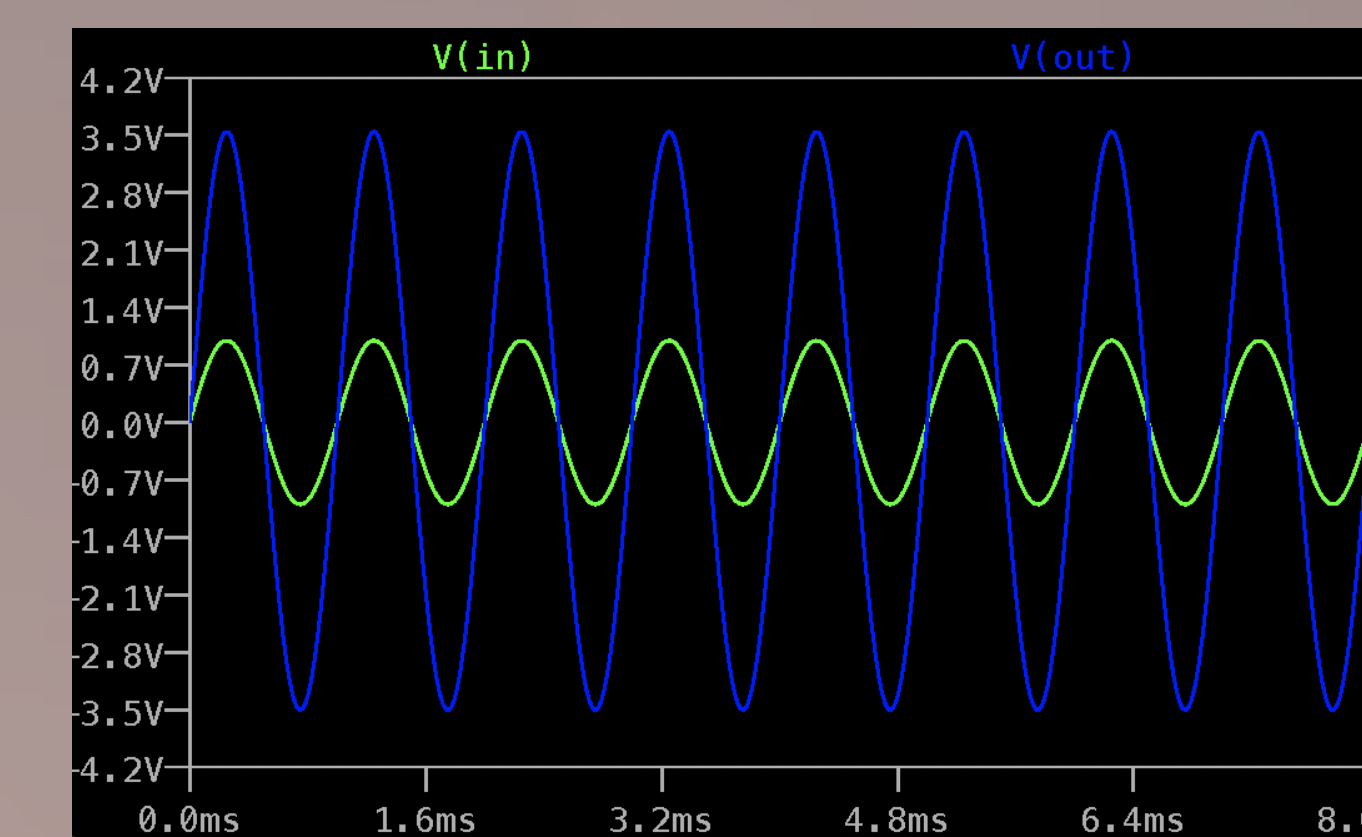
## Acknowledgements

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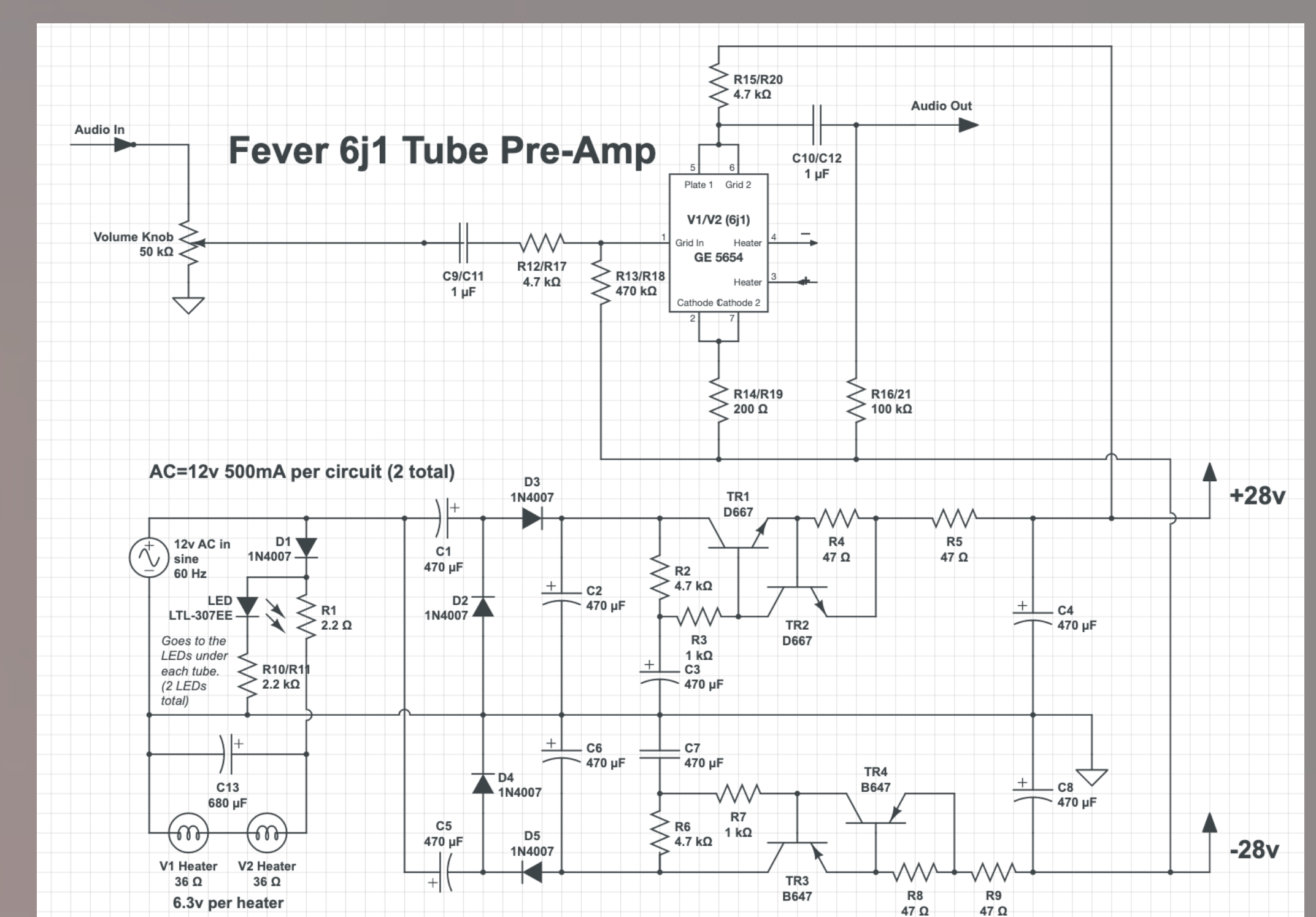
## JFET Amplifier Schematic



## Gain Analysis



## Vacuum Tube Amplifier



<https://www.circuitlab.com/circuit/9vnehk/fever-6j1-tube-pre-amp-circuit/>