

EE 254
Project 2

Experiments with Standard Power Amplifier Circuits

Build a voltage amplifier using an Op-Amp. Choose a suitable $\pm V_{CC}$ that will also be used for the power amplifier stage (Especially for Classes 'B' and 'AB'). Note the Op-Amp based amplifier will also ensure that the output resistance is small. It is desired to deliver a large amount of power to a small value of load resistor (The assigned load resistor value is available on Blackboard), which is comparable to typical speaker resistance. Build and test the three basic types of Power Amplifier (PA): Classes 'A', 'B' and 'AB'. For each power amplifier, choose an appropriate design (Do you need a separate VCC for your PA?), but use the available complimentary npn/pnp TIP 31 transistors in your design. For each design:

- Provide a detailed design description.
- Complete testing results, including DC Q-point analysis and comparable AC analysis including efficiency calculations, power dissipation, and THD calculations, if any.
- Discussion on problems encountered, solutions found and choices made.

Deliverables:

Project Demonstrations: Project demonstrations will be held in class (PCTR 1030) on Tuesday, October 22, 2013 from 12:00 pm to 2:00 pm.

Report: A detailed handwritten report must include the design and analysis for each type of PA along with supporting measurements, calculations, waveforms, datasheets and supporting information. The report is due at the time of demonstrations.