Matthew Vernon
E lab 3 Module
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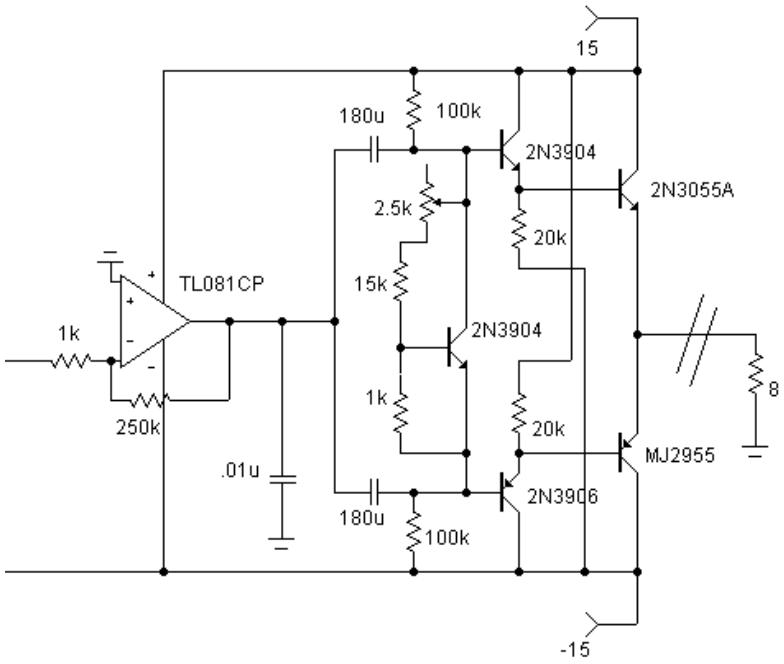
10W Audio Amplifier



Input Voltage: +/-15V
Output Across 8Ω Load: 10W max
Flat Frequency Response: 12.5Hz to 2.5kHz
Input Impedance: 195kΩ
Voltage Gain: 253 V/V

Input Signal: 50mV peak
Frequency Range: 12.5Hz to 100kHz
Half Power Frequencies: 4Hz, 12Hz
Output Impedance: 26.8Ω
Power Gain: 779M W/W

The amplifier is a modified push-pull configuration. The power stage is a class AB complementary pair driven by a complementary pair of emitter followers. Biasing is accomplished through an adjustable V_{BE} multiplier. Bias levels can be adjusted from moderate (eliminating approximately ½ crossover distortion) to well beyond the combined voltage drops of the transistors. Voltage gain is accomplished with a simple op amp inverting amplifier. A capacitor to ground between the stages reduces high frequency noise in the amplifier. The sound quality of amplified audio is high.

Note that the power transistors are not completely matched. The gains are different which results in slightly different positive and negative signal gains. The difference, however, is only 3% for alpha which results in minimal signal distortion.