

AM Radio

November 21, 2017

1 Introduction

In this lab, you will build an AM radio receiver and audio power amplifier.

2 RF Amplifier

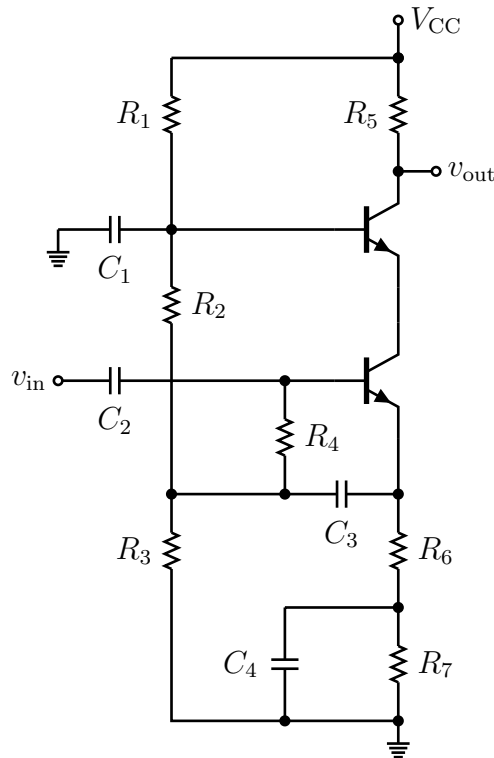


Figure 1: Cascode amplifier with bootstrap.

R_4 is boot-strapped so $R_4 + R_3 || R_2$ does not decrease input impedance for the HF signal. But still hard to get high gain without lower transistor being high beta: R_6 needs to be about 4.6 k Ω but then $R_5 \sim 46$ k Ω limits $I_C^Q \sim 0.1$ mA, which is on low end for the 2N3904.

Maybe use a Darlington pair? With high beta, probably a single emitter resistor suffices with no capacitor.

3 RF Amplifier 2

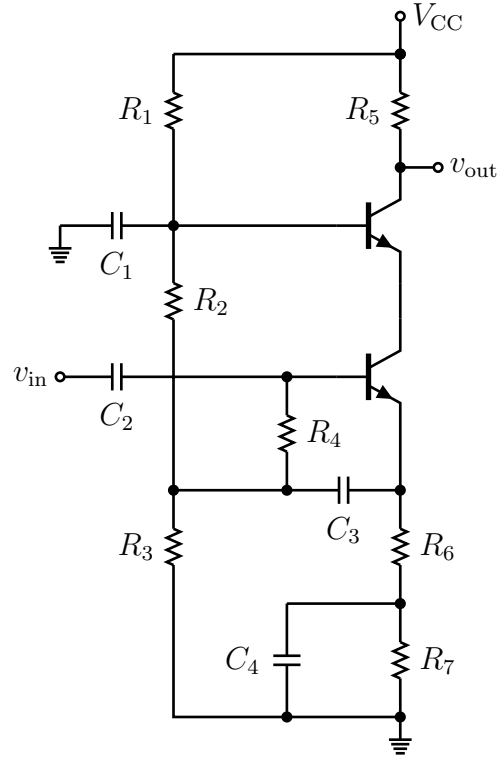


Figure 2: Cascode amplifier with bootstrap.

4 RF Amplifier 2

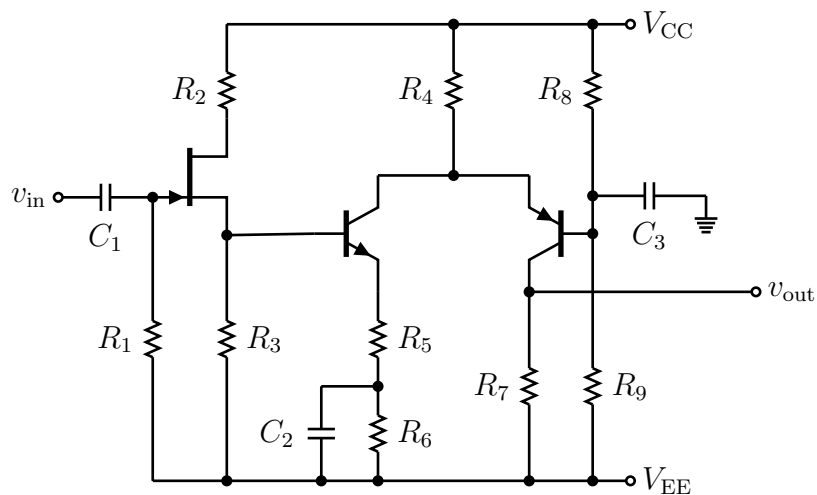


Figure 3: Folded cascode amplifier with FET input buffer.

5 Lab Report

Your report should include all of your measurements and a comparison with your calculation.