ECE 422/522 Study Guide #2 January 14 2013

Tasks for this week:

Study Chapter 8, starting with the key points listed on page 359 and 360. Note the key missing piece in the discussion of the current mirror involving different size transistors.

Homework:

Problems 8.1 8.5 8.9. Using the material in section 8.5.2, design a practical emitter follower using a 2N3904 with low frequency input resistance greater than 10k and output resistance less than 10 ohms. Describe in words what is meant by “overshoot and ringing” in the sentence in the middle of page 353. Compare performance using the key points on pages 352 and 353 with results from LTspice. Starting with a blank sheet of paper, sketch the Hybrid Pi and T models and fill in the expressions for all the elements.

Study Material:

All of Chapter 8. This week we will focus on the material through section 8.5.2. Next week we will explore $F_t$, single transistor amplifiers the bipolar differential pair described in 8.5.3, and LTspice modeling.

Next Graded Exercise

There will be an ungraded Quiz in class on Monday January 21. No notes, no calculators. Topics will all be from Chapter 8. Expect 4 problems, one each on:

gm Vt Ic rp Va and ro (expressions in small signal table on top of page 345)
Hybrid p and T models
Simple current mirror
Emitter Follower

A practice quiz will be posted on-line on Wednesday January 16.