

E157 Lecture 7 Day Plan

Any questions before quiz

Quiz + Team Quiz + Talk through solution

We're trying to schedule office hours / homework parties again:

- Why? No office hours at crunch time. Some folks hanging outside my office. HW parties.
- New one, with evening/weekend for HW parties, DO FILL THIS OUT:
<https://www.when2meet.com/?26533345-lqvhG>
- Old one, for reference, DON'T FILL OUT AGAIN:
<https://www.when2meet.com/?26083240-Qc1NP>

Lab 1 grades released!

- Grades are released, I'm happy to chat if you want to talk about any part of them.
- Mostly solid lab notebook practice, nice! Review before lab 2 comes in.
- Allowed to resubmit once. Before fall break deadline. Include a changelog at the top.

Lab 2 debrief ← is this better Monday?

- Parasitic reflections look like little extra bumps
- Small parasitic inductance and big parasitic inductance
- Why does a short at the end of a tline look like a big parasitic L? Smith Chart rotation
- Don't recommend modulation for part 3

Design a L-match checking against

<https://www.analog.com/en/design-center/interactive-design-tools/rf-impedance-matching-calculator.html>

https://www.will-kelsey.com/smith_chart/

- $5\text{Grad/s}=795\text{MHz}$, $Rl=10\text{ ohm}$
- $Q_{\text{desired}} = \sqrt{50/10-1}=2$
- $L_{\text{series}} = 4\text{nH}$, $C_{\text{shunt}} = 8\text{pF}$ OR $L_{\text{shunt}}=5\text{nH}$, $C_{\text{series}}=10\text{pF}$

Lab practice discussion – designing while using a live Smith Chart,

- start w/ 0 Ohm in all positions you intend to populate so you can see load
- Pick next component after each soldering job, accounting for existing parasitics.
- Watch where you land on the Smith Chart after each solder job.
- Really helpful for matching networks, harder for filters where everything needs to be right.

Parasitics discussion –

- Pads have parasitic C to ground
- Amplifiers have shunt C b/c of transistors,
- Vias have series L b/c they close current loops