Fast, Compact, High Strength Magnetic Pulse Generator

EE 492 Weekly Report | May 15-30 | Week 6

Advisors: Mani Mina, John Pritchard, Robert Bouda
Client: High Speed Systems Engineering Lab
Members: Team Leader – Adam Kaas
Team Webmaster – Gregory Fontana, Meiyong Himmtann
Team Communication Leader – Brittany Duffy
Team Key Concept Holder – Megan Sharp, Brandon Dixon
Team Commissioner – Alain Ndoutoume
Website: http://may1530.ece.iastate.edu

Weekly Summary

This week, our team decided we will need to have our prototype working by the end of two weeks. A large amount of testing has been done, and we feel as if we are getting closer to a solution. We were able to meet with our advisor this week and discuss alternatives.

Meeting Notes

2/15 Testing

Duration: 1 hour **Members Present:** Alain, Adam, Greg, Brittany, Megan
Purpose and Goals: Verify whether or not our MOSFET is functioning using the breakout board created.

Achievements: We verified the MOSFET is functioning by running a 1us pulse width, 2.5V at 1 kHz signal into the gate of the MOSFET, 10 V DC signal to the drain, and used a 10 Ohm resistor between the source and ground. We measured the voltage across that resistor and were able to see an output on the O-scope that resembled the pulse.

2/19 Group meeting with core members

Duration: 1 hour **Members Present:** All
Purpose and Goals: Discuss timeline and how we can make progress.

Achievements: As a team, we have decided that it is vital to begin working at least 5-8 hours per week per person. We discussed the importance of communication as a team to let others know what you're doing for the project and when. Our current prototype needs to be working within two weeks for us to hit certain deadlines.

2/19 Meeting with John

Duration: 0.5 hour **Members Present:** Adam
Purpose and Goals: Discuss what needs to be done to finish our project on time

Achievements:

1. John and Greg and Brittany meet up to figure out why the circuit isn't working.
2. John and Megan and Adam meet up in the 418 lab and use the Network Analyzer to test impedance of coil(s) at different frequencies.
3. John and Brandon meet up to discuss challenges of having larger board.

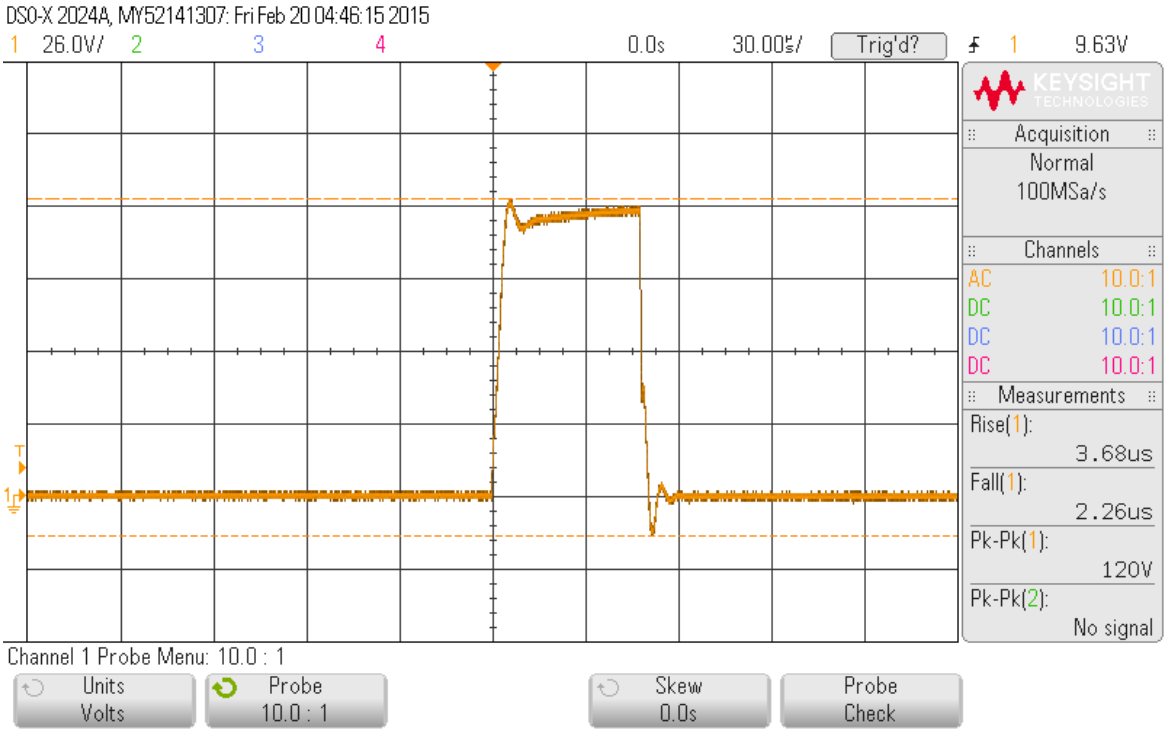
4. John and Meiyong and Alain will sit down with Lee.

2/20 Testing

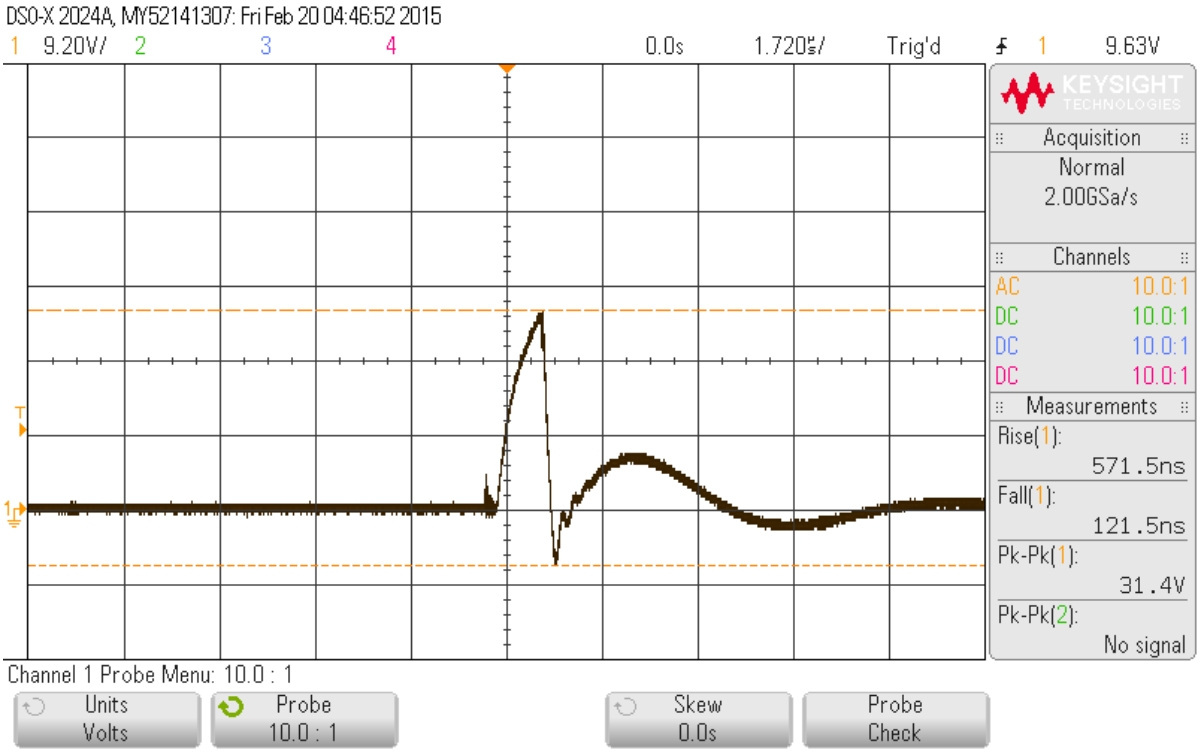
Duration: 1.5 hours **Members Present:** Brittany, Greg, Adam, Meiyong + John
Purpose and Goals: Meet with our advisor to discuss roadblocks and how we can move forward.

Achievements:
We were able to set up and conduct testing for our advisor. Ultimately, better results were not obtained, and we decided another meeting would be required to further discover the challenges we are experiencing with our project.

With 48us pulse width



With 1us pulse width



Pending Issues

Our circuit is not outputting as expected, and after much testing, we are still unsure why.

Plans for Next Week

Adam: Continue to investigate the reasons our circuit is not performing as expected
Greg: Continue to investigate the reasons our circuit is not performing as expected
Meiyong: Help continue testing and investigating the reasons our circuit is not performing as expected
Brittany: Continue to investigate the reasons our circuit is not performing as expected
Megan: Will have a coil meeting with John and Adam on 2/25/15, since we've now got a signal, this will be something that needs to be done.
Brandon: Help with testing and alter board prototype board as necessary.
Alain: Work on testing different parts of the circuit with team, ordering new parts, soldering new circuit board, save and interpret testing results.

Individual Contributions This Week

Adam: Attended 2/15 testing (1 hr), Created breadboarded version of circuit (1.5 hr), Attended 2/20 testing (1.5 hr), Met with John to discuss future progress (0.5 hr), Attended core team meeting (1 hr)
Greg: Attended 2/15 testing (1 hr), Attended 2/20 testing (1.5 hr), Attended core team meeting (1 hr)
Meiyong: Soldered on components to prototype (2.25hr), Attended 2/20 testing (1 hr), Attended core team meeting (1 hr)
Brittany: Attended 2/15 testing (1 hr), Attended 2/20 testing (1.5 hr), Attended core team meeting (1 hr)
Megan: Attended 2/15 testing (1 hr), Attended core team meeting (1 hr), Helped Meiyong with soldering (0.5 hr)
Brandon: Attended core team meeting (1 hr), found DC barrel jacks to replace pin-headers (1 hr), altered footprint for tantalum capacitor to better fit the pads (.5 hr).
Alain: Attended 2/15 testing (1 hr), Assisted Meiyong soldering prototype (0.5hr), Attended core team meeting (1 hr)

Total Contributions for Project (This Week / Total for Semester)

Adam: 5.5 hrs / 8.5 hrs
Greg: 3.5 / 8 hrs
Meiyong: 4.25 hrs / 9.25 hrs
Brittany: 3.5 hrs / 11 hrs
Megan: 2.5 hrs / 7 hrs
Brandon: 2.5 hrs / 7 hrs
Alain: 2.5 hrs /6.5 hrs