

# Fast, Compact, High Strength Magnetic Pulse Generator

EE 492 Weekly Report

May 15-30

Week 11

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>

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## Weekly Summary

This week, we began our final stages of testing. We ran into minor setbacks; however, we were able to quickly overcome these issues. Our team gave two presentations this week - one presentation to our advisor and one presentation to the senior design professor. We were given constructive feedback and have made changes to our presentation accordingly.

## Meeting Notes

### 3/23 Populating PCBs

**Duration:** 3 hours    **Members Present:** Alain and Meiyong

**Purpose and Goals:** Populate a couple of boards using the reflow soldering method with the components we have.

**Achievements:** Populated two boards, had to put the boards through the reflow oven twice since the first time through not all the components were soldered on.

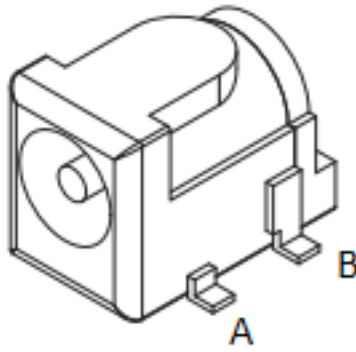
### 03/24 Testing New PCB

**Duration:** 2.5 hours    **Members Present:** Brittany, Adam, Alain + Advisor

**Purpose and Goals:** Meet with advisor to test new PCB and obtain Vgs graphs.

**Achievements:** Tested the new board, obtained Vgs graphs, discovered issue with the DC Barrel Jack being installed incorrectly

DC Barrel Jack has 4 pins that are soldered. The pin we assumed was ground is not grounded. View the picture below.

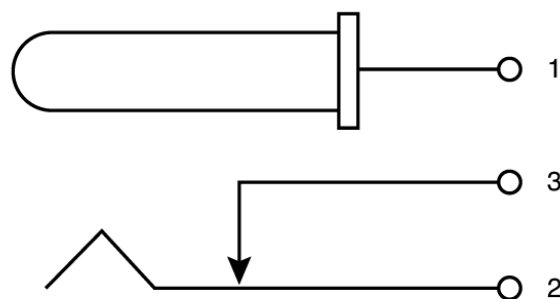


**A - We assumed this was ground on our board when doing the layout**

**B - We assumed this was a wedge inside that indicates where something is plugged in or not**  
**We had them backwards. A and B need to be jumped together on current boards.**

View [datasheet](#) for more info or speak to Adam/Brittany/Alain

Discovered the DC voltage supply (three pin barrel socket) was incorrectly wired. Two of the three pins will be shorted when the power cord is not inserted into the barrel socket. When it's plugged in, one of those two pins will be floating which usually goes to a battery (or in our case, ground) and the remaining two pins will be connected to the plug. The way our board was originally designed, this was not the case. We were able to test this with a continuity meter: when we unplugged the cord, these pins were an open circuit. When the cord was plugged into it, these pins were connected together. The circuit diagram below helps to see a visual of what's going on. Here, pin 3 will go to ground and pin 2 & 1 to the circuit. When you plug in the cord, 1 & 2 would provide the power to the circuit and ground will be disconnected. We were able to fix this problem by connecting two of the pins that were not originally connected.



Circuit Diagram

We were able to obtain Vgs graphs for the new PCB. Also, we tested our coil with our advisor's interferometer for the first time to see if the polarity test resulted in the correct form. Our results were not as successful as we had hoped; however, much more testing needs to be done.

[03/25 1st Rough Draft for Presentation](#)

**Duration:** 3 hours      **Members Present:** Brittany, Adam

**Purpose and Goals:** Complete 1st rough draft for the presentation in order for the group to start preparing for the next day's presentation.

**Achievements:** All purposes and goals were met.

### 03/25 Presentation Group Meeting

**Duration:** 1 hour      **Members Present:** Brittany, Adam, Alain, Megan, Greg

**Purpose and Goals:** Run through presentation to give to advisor for the next day. Make changes as necessary.

**Achievements:** Ran through presentation requirements for each member.

### 03/26 Present to Advisor

**Duration:** 1.5 hours      **Members Present:** Brittany, Adam, Alain, Megan, Greg, Meiyong

**Purpose and Goals:** Give final presentation to advisor.

**Achievements:** Gave presentation and received feedback.

### 03/26 Presentation Changes

**Duration:** 3 hours      **Members Present:** Brittany, Greg, Megan, Alain

**Purpose and Goals:** After presenting to advisor, we were given feedback and suggestions in order to improve our final presentation. Those changes need to be made before the end of the day in order to be prepared for the next day's presentation to senior design professor.

**Achievements:** Made necessary changes to presentation.

### 03/27 Present to Senior Design Professor

**Duration:** 1 hour      **Members Present:** Brittany, Adam, Alain, Megan, Greg, Meiyong

**Purpose and Goals:** Give final presentation to senior design professor.

**Achievements:** Presented to Dr. George Amariuca.

## **Pending Issues**

N/A

## **Plans for Next Week**

**Adam:** Continue working on Final Document and work on improving the design so we can use our board with John's system.

**Greg:** Final Doc and poster.

**Meiyong:** Final document and poster design, upload videos/updates on to the website.

**Brittany:** Work to complete final design document, make changes to presentation based on comment and opinions of advisor and senior design professor. Reach 500 gauss.

**Megan:** Work on completing final design document, meet with John about coil resistance, and work with Adam and John on finding the right coil.

**Brandon:** Have user guide ready to show advisor, catch up on what I missed last week.

**Alain:** Attend team meeting, final document, wait to hear comments from advisor and improve design and presentation.

## Individual Contributions This Week

**Adam:** 03/24 Meeting with John (2.25 hrs), 03/25 1st Rough Draft for Presentation (3 hrs), 03/25 Presentation Group Meeting (1 hr), 03/26 Presentation to Advisor (1.5 hrs), 03/26 Presentation Changes (3 hrs), 03/27 Presentation Changes (2 hrs), 03/27 Present to Senior Design Professor (1 hr).

**Greg:** 03/25 Presentation Group Meeting (1 hr), 03/26 Presentation to Advisor (1.5 hrs), 03/26 Presentation Changes (3 hrs), 03/27 Present to Senior Design Professor (1 hr).

**Meiyong:** Met with Alain to populate a couple of PCBs using the reflow soldering method (3 hrs), 03/26 Presentation to Advisor (1.5 hrs), 03/27 Present to Senior Design Professor (1 hr).

**Brittany:** Multiple meetings: 03/24 Testing New PCB (2.5 hrs), 03/25 1st Rough Draft for Presentation (3 hrs), 03/25 Presentation Group Meeting (1 hr), 03/26 Presentation to Advisor (2 hrs), 03/26 Presentation Changes (2 hrs), 03/27 Present to Senior Design Professor (1 hr).

Weekly report finishes (1 hr). Worked on power point presentation at home (1.5 hrs).

**Megan:** 03/25 Presentation Group Meeting (1 hr), 03/26 Presentation to Advisor (1.5 hrs), 03/26 Presentation Changes (3 hrs), 03/27 Present to Senior Design Professor (1 hr).

**Brandon:** Out due to illness.

**Alain:** Meeting with Meiyong reflow soldered two boards(3hrs), 3/24 Testing board meeting (2.25hrs), Testing our second circuit board with John on 3/25 and replaced 50Ω by 10KΩ(2hrs), wrote and improved presentation on One Drive(1hr), Kept in touch with LEE to order missing parts LED's diode, resistor, DC jack and get rubber feet (0.5hr), 03/25 and 03/26 preparation for presentation(2 hrs), 03/27 Changes on powerpoint pictures, preparation for presentation(1.25 hrs), Team presentation to George(1hr ), presented to John Advisor(1.5 hr).

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

**Adam:** 13.75 hrs / 37.5 hrs

**Greg:** 6.5 hrs / 25.5 hrs

**Meiyong:** 5.5 hrs / 28.75 hrs

**Brittany:** 14 hrs / 32.5 hrs

**Megan:** 6.5 hrs / 25.25 hrs

**Brandon:** 0 hrs / 35 hrs

**Alain:** 14.5 hrs / 34.75 hrs