In labs 3 and 4 we will build and test the boost converter power supply shown in Figure 1. The design of the circuit is covered in the homework. For lab 3, we will build the high-current portion of the circuit. The layout of this part is very important. Even if you wire the entire circuit correctly, the circuit may not function if you have a poor layout.

We will construct the portion of the circuit shown in Figure 2. This portion contains two high-current loops:

You must construct your board so that these loops have as little cross-sectional area as possible.

When you layout and construct your board, you must remember the following:
1. MOSFET’s are static sensitive. Ask me how to handle them without destroying them.
2. Use banana plug connectors to for the input and output power connections.
3. Remember that the gate connections should be as short as possible. We will not connect the gates in this lab, but you need to keep this in mind.
4. Use bus-bar wire for as many connections as possible.
5. See my example layout before starting yours. Example photos of a good layout are shown on the next page.
6. You will choose the inductor (L) for this lab. Available inductors are:
   a. Coilcraft p/n PCV-2-274-10, 270 µH Inductor
   b. Coilcraft p/n PCV-2-394-05L, 394 µH Inductor
   c. Coilcraft p/n PCV-2-564-08L, 564 µH Inductor
7. For the 0.1 µF poly capacitors in this circuit, use the ones labeled as “supply bypass” in the parts bins. There is no need to use expensive 2% capacitors for these parts.
8. Construct everything shown in Figure 2 with the exception of R3 and R5.
Figure 1

Ct, Rr, Rd set the ramp frequency
Css is the soft start capacitor

Positive Input
Input 12 - 14 Volts

Ground Input

Ground Out
Input 12 - 14 Volts

Ground Input

Figure 2