Lab 2a Lecture Notes

Wednesday, October 27, 2021 3:37 PM

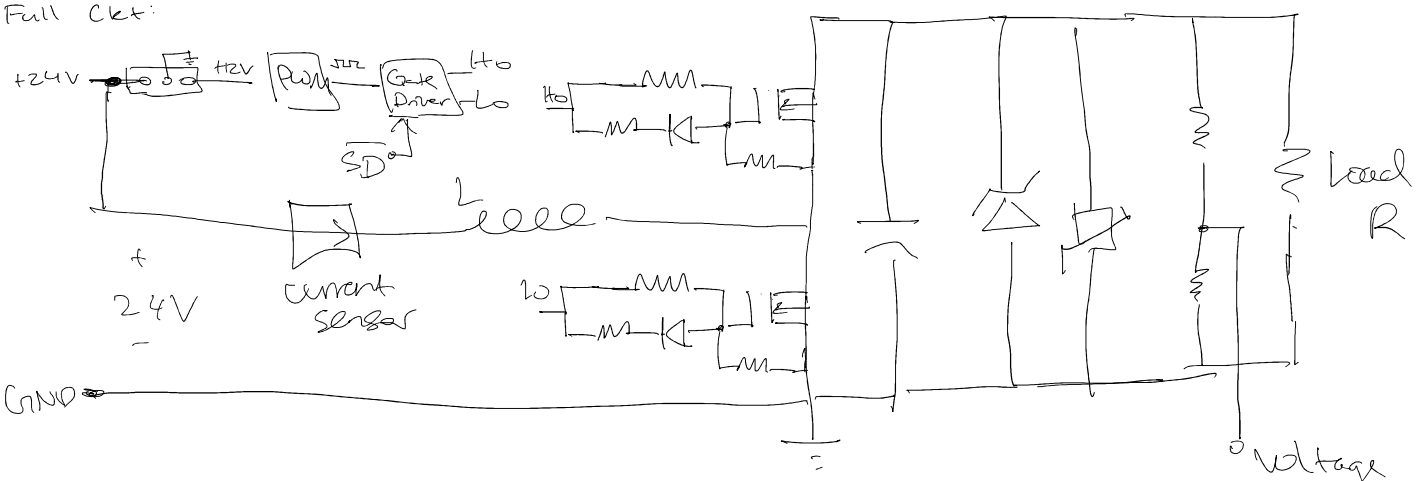
Logistics:

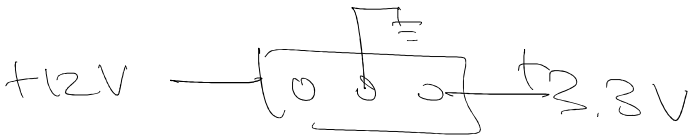
- Lab 1B deadtime question see announcement
- Lab 1 report due 2 weeks after lab 1C

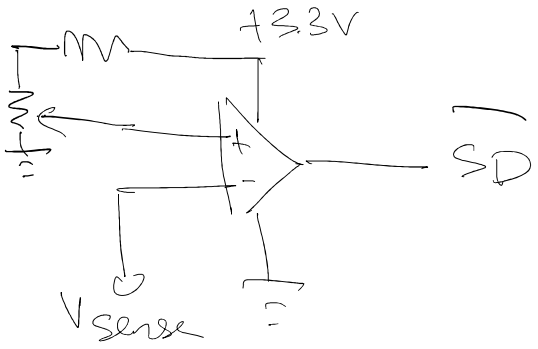
Lab 2A: current sensing and overvoltage protection.

1. Layout all components. Do not need to solder.

Full Ckt:







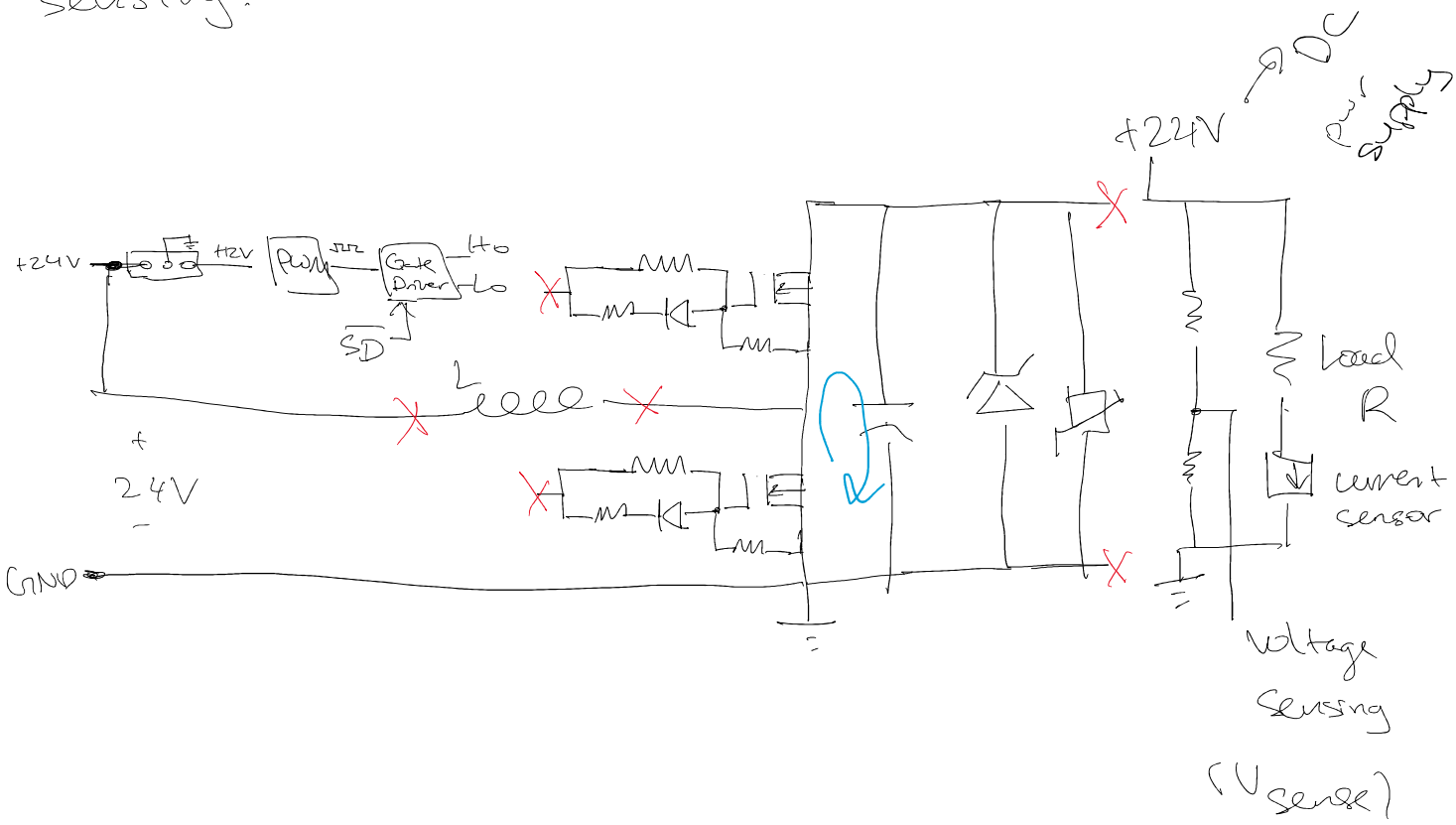
overvoltage protection

Ckt

For Lab 2A:

do NOT connect gate driver to MOSFETS or output capacitor, diode, MOV to load.

Jump power supply to load to test sensing.



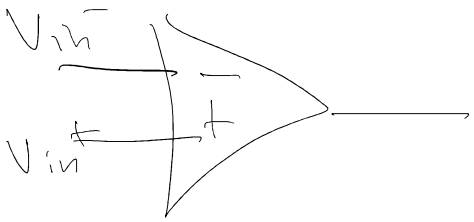
size output voltage divider to handle 0-60V. Vsense [0, 3.3V]

So at 60V, output 3.3V. Test with [20-30]V.

Note: current sensor on load just to test it. will move to L later.

Note: load [100-400] Ω. Can change to test different currents.

Comparator Review:



$V_{in}^- > V_{in}^+$ LOW

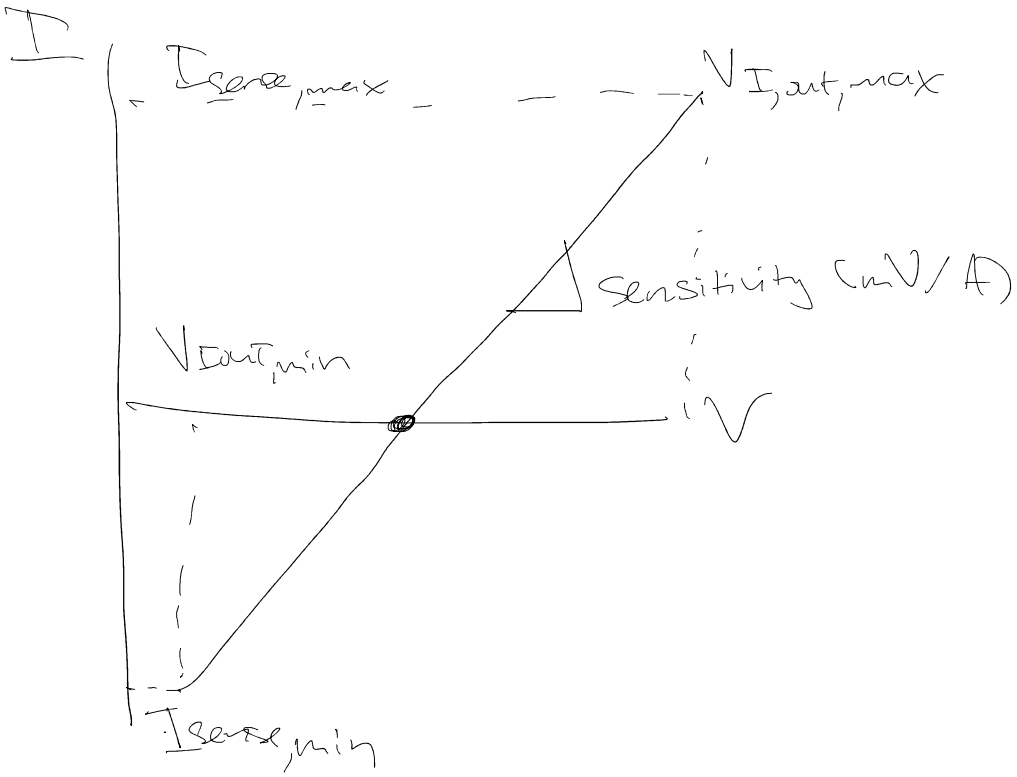
$V_{in}^- < V_{in}^+$ HIGH

Layout considerations:

- keep switching nodes SMALL
- switch node drawn in blue

Note: load resistors may get hot

current sensor sensitivity:



find in datasheet