Western New England University
CPE 427

Lab 1

Power Supply Circuit and Reset Circuit

Our first tech memo will begin the process of demonstrating that your PCB is functional. We start with verifying the 5-volt regulator as well as the ISP interface. The memo should provide *stand-alone* evidence that your solution works. Scope captures and schematics are placed in an appendix, while the text of the memo refers to them and supports the premise that your solution works.

Part I - Power Supply Circuit

The microcontroller will be powered by a battery. You will need to construct a conditioning circuit that will provide the necessary 5 volts for your system. The circuit shown in Figure 1 will provide a possible implementation. Be sure to refer to the *suggested* board layout since the 7805 will require a heat sink. Test your circuit with a variety of input voltages between 8 volts and 14 volts. Use scope traces to capture your system's performance. Write a one-page tech memo documenting your results.

SW2 is a *power switch* to disconnect your circuit from the battery.
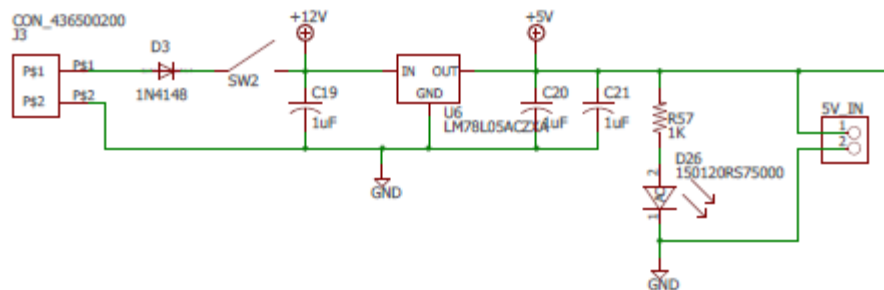

Figure 1
Power Conditioning Circuit

Part II - Reset Circuit, ISP and LED blink
As in Part I, obtain the necessary components from your parts kit. Verify that the reset pulse you see is *as expected.* Next, verify you can program the ATMEGA8 and *blink* the LED on PB0. The microcontroller has an external 8 MHz oscillator.
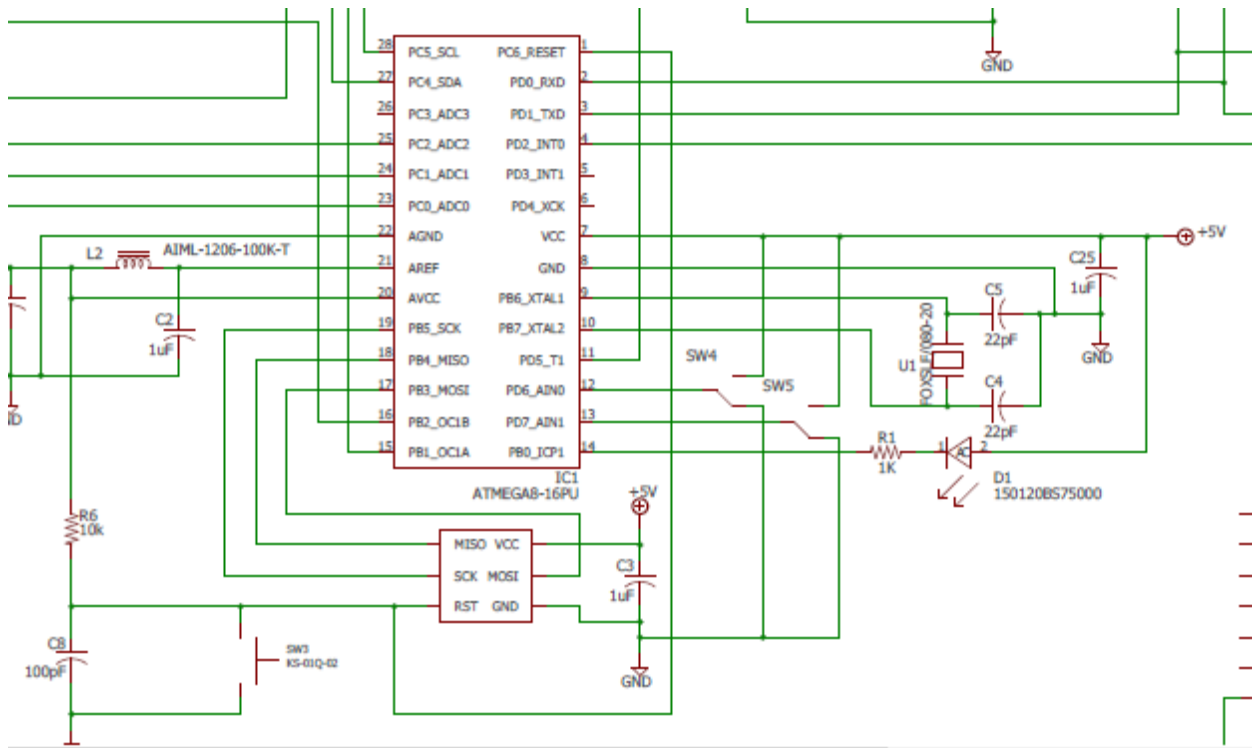
Figure 2 Reset Circuit
Initially you may use the on-board oscillator, then move to the external crystal.