Name_____
Date_____

Assignment #1 – Introduction to schematics & breadboarding

Objectives

- Students will be able to read and understand basic electrical schematics.
- Students will be able to understand how solderless breadboards are connected internally.
- Students will be able to lay out a circuit on a solderless breadboard, given an electrical schematic.

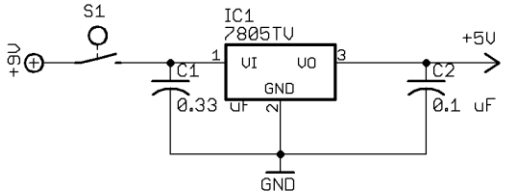
Materials

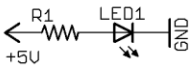
- Breadboard
- Jumpers
- 22 AWG solid copper wire
- Wire strippers
- Non-serrated needle nose pliers
- 9 V battery clip
- LM7805 +5V voltage regulator
- 0.33 µF electrolytic capacitor
- 0.1 µF electrolytic capacitor
- 1 kΩ resistor
- Red LED
- Switch
- 9 V battery

Directions

- Document everything in your lab notebook.
- Read the provided schematic (provided on page 2).
- Use the schematic to assemble the circuit on the breadboard.
  - Place power supply circuit in the upper left hand corner of the breadboard.
  - Attach the battery clip to the red and black terminals of the breadboard.
  - Place the power indicator LED directly below the power supply circuit.
  - Use wires of exact length
- Connect all positive busses together.
- Connect all negative busses together.
- When complete, have Mr. Evans inspect the circuit. After inspection you will be provided a battery and you will demonstrate that the circuit functions correctly.
- Place the PIC18F45K22 in the center of the breadboard.
  - Connect all V_{DD} pins to +5V.
  - Connect all V_{SS} pins to GND.
  - Connect Master Clear (MCLR) to +5V via a kΩ resistor
- Place a 5 pin header above the PIC18F45K22 in a vertical orientation.
  - The top will correspond to Pin 1 on the PICKIT™ 3 Programmer
  - The header will connect to the PICKIT 3.
  - Make all appropriate connections (Pin 6 is not used).

Schematic





Parts List

IC1 – LM7805 +5V voltage regulator
S1 – SPST switch
C1 – 0.33 µF electrolytic capacitor
C2– 0.1 µF electrolytic capacitor
R1 – 1 kΩ resistor
LED1 – Red LED

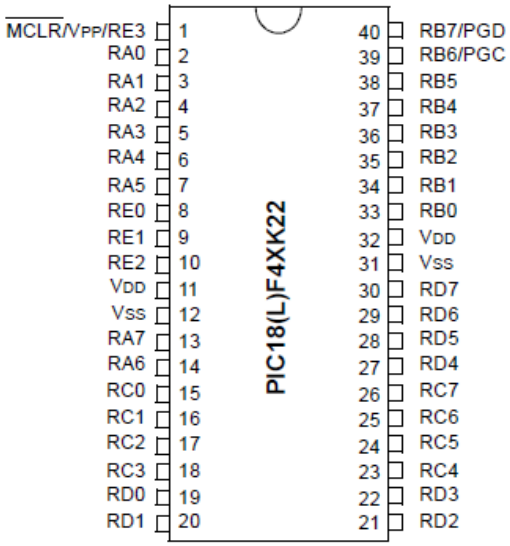


FIGURE 1-2: PICKIT™ 3 PROGRAMMER CONNECTOR PINOUT