

Soldering LAB Worksheet for SD401

Name _____

Group# _____

Date _____

Use the *Digi-key.com* website to answer the following questions using Datasheets

LED's

On your Soldering Board are two discrete LEDs, assuming a Red LED was used and the manufactures part# is WP7113SRD/J4 for this device and 20mA of forward current is being used as a reference.

What is the typical V_f of this device? _____

What is the Typical Luminous Intensity of the LED in milli candles? _____

What is the Max DC Forward current this device is rated for? _____

What is the Dominant Wavelength of this device? _____

What is the cost to purchase this LED in 1 lot vs 10 lot pricing?

Price of LED's x 1 lot = \$ _____ Price of LED's x 10 lot = \$ _____ Cost
differential of the total = \$ _____ (how much to save buying in quantity)

IC Packages

Using a PIC Microcontroller in SD401 required a PIC18F2620-I/SP be used

What is the Digi-key part# _____?

How many I/O ports does this microcontroller have? _____

How many 10-Bit A/D (ch) does this I.C. have? _____ -

How many leads (Pins) are on this package? _____

What page of the datasheet will you find the Package outline dimensions/ pitch etc.

Page # _____

Soldering with Unleaded Solder

This lab project required Soldering and Leaded Solder was used, part# KE1116-ND

What does 1 # of solder (Leaded) Cost \$ _____

What is its composition? _____

What does the first number of the composition stand for? _____

What does the second number of the composition stand for?

What is the melting point of this solder in degrees Celsius? _____

What is the shelf life of this Solder? _____

Trace width Calculations

Using Digi-keys Conversion Calculator for length and trace width answer the following

Calculate the required trace width in mils of a trace 2121 mils long carrying 650mA of current

with a thickness of 1 oz/ft² and a temperature rise of 20 deg F from an ambient room temperature of 68 deg F.

the External Required Trace width would be? - _____ mils

With the same information, use copper thickness of 0.5oz/ft²

The External Required trace width would be? _____ mils

With the same information, use copper thickness of 2oz/ft²

The External Required Trace width would be? _____ mils

Once the Through Hole PCB Soldering Kit has been completed

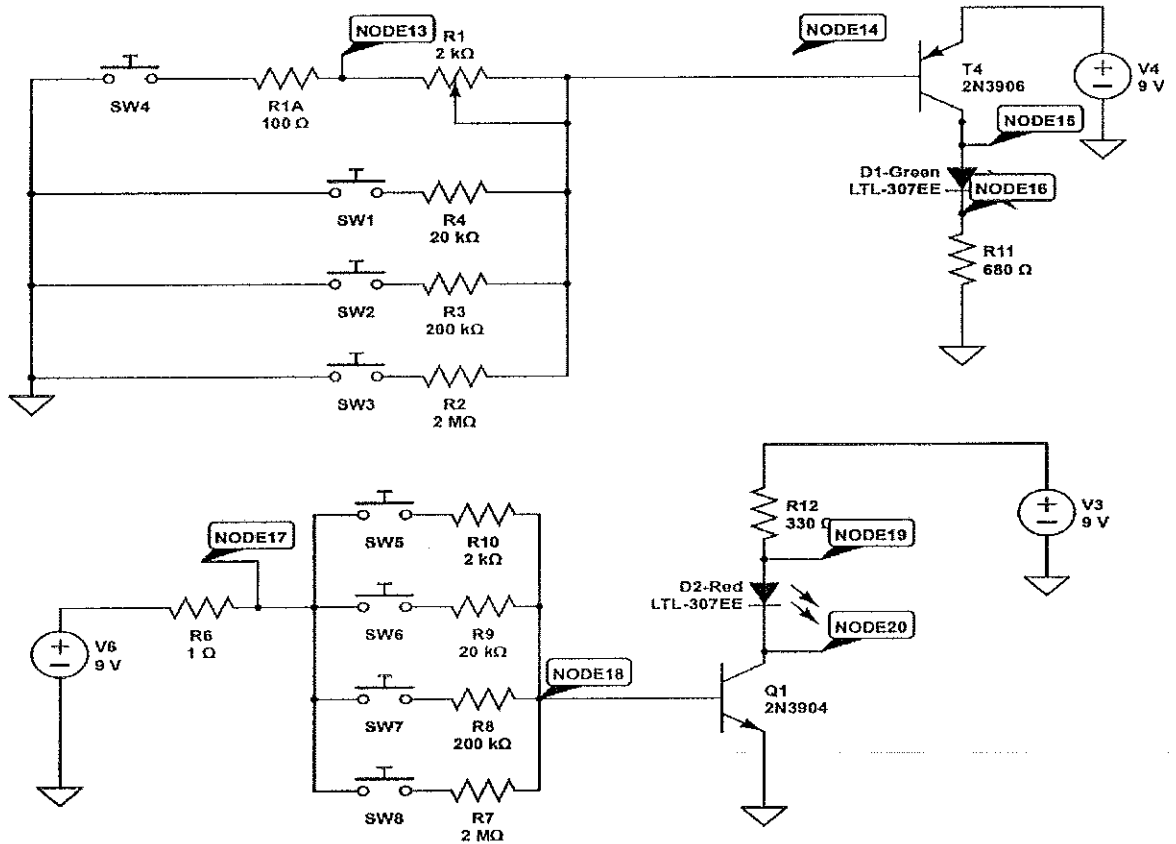
The Kit and the worksheet should be turned in to Dr. Glower or Jeff Erickson before Week 12

(1 Worksheet + 1 Practice Solder Board per Student) You may keep the Boards once graded

Soldering LAB Worksheet for SD401

Using the Following Schematic, add the following through hole components and solder the board

using unleaded (60/40 or 63/37 rosin core solder).



With SW8 Closed, will Q1 be in the
Cutoff region?
Saturation region?
Active Region?

With SW5 Closed, will Q1 be in the
Cutoff region?
Saturation Region?
Active Region?

With SW1 Closed, will T4 be in the
 Cutoff region?
 Saturation region?
 Active Region?

With SW2 Closed, will T4 be in the
 Cutoff region?
 Saturation Region?
 Active Region?

 If Q1 is Saturated (on) the Voltage drop from Vce should be (circle one) 9V 5V 2V 0.7V
 0.2V 0V

If Q1 is Saturated the Voltage drop from Base to Emitter (Vbe) should be 9V 5V 2V 0.7V
 0.2V 0V

If T4 is in the Cutoff region the voltage measured at the Collector should be (circle one) 9V 5V
 2V 0.7V 0.2V 0V

If the LED D1 green was designed for 10mA, but measured 6mA, how would you increase the
 current to designed specifications (10mA)?

If T4 is in the Active region (voltage measured is 5.2V), would the LED still be on?

