University of British Columbia
Electrical and Computer Engineering
Electrical and Computer Engineering Laboratory II
EECE281/EECE282

Soldering the EECE281 Board

Introduction

In this document, I'll show you, step by step, how to assemble and solder the EECE281 board. Remember, the board not only has to work, it has to look good as well! The board is fairly easy to assemble but you have to pay close attention when soldering the PLCC socket (U1) and the header connector (J2). If you are not careful, these components may end up soldered incorrectly and the circuit render useless!

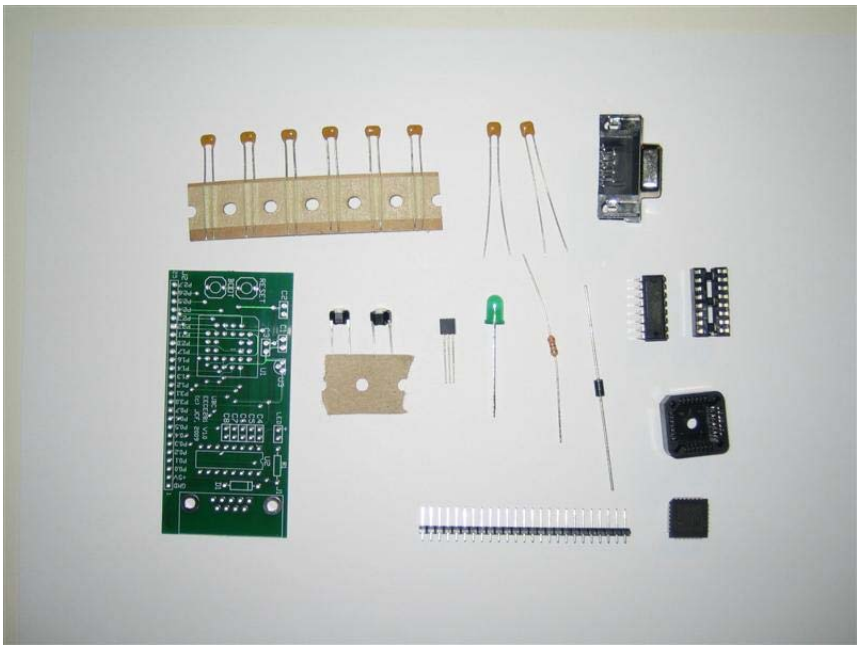
Procedure

Step 1

Gather the components. This is the list of components you need:

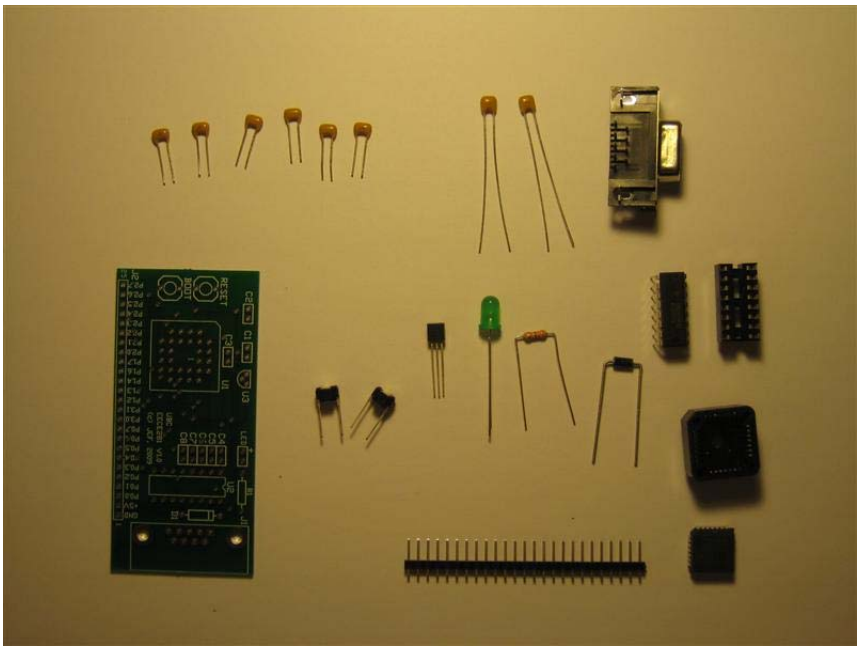
Qty	Supplier's (DigiKey) #	Manufacturer #	Description
1			EECE281 Printed Circuit board (PCB)
1	568-4701-5-ND	P89LPC9351FA	IC 80C51 MCU FLASH 8K 28-PLCC
1	AE10055-ND	A-CCS28-Z-R	IC SOCKET PLCC 28POS TIN
1	A26509-25-ND	4-103741-0-25	CONN HEADR BRKWAY .100 25POS STR
1	A35109-ND	1734348-1	CONN D-SUB RCPT R/A 9POS GOLD/FL
1	296-1402-5-ND	MAX232N	IC DUAL EIA-232 DRVR/RCVR 16-DIP
2	P8070SCT-ND	EVQ-11A04M	SWITCH LIGHT TOUCH 4.3MM 100GF
1	MBR150RLGOSCT-ND	MBR150RLG	DIODE SCHOTTKY 50V 1A DO-41
2	BC1148CT-ND	K104Z15Y5VE5TL2	CAP .10UF 25V CERAMIC +80/-20%
1	MCP1700-3302E/TO-ND	MCP1700-3302E/TO	IC LDO REG 250MA 3.3V TO-92-3
1	3M5475-ND	4816-3004-CP	SOCKET IC OPEN FRAME 16POS .3"
6	BC1151CT-ND	K105Z20Y5VE5TL2	CAP 1.0UF 25V CERAMIC +80/-20%
1	160-1089-ND	LTL-10233W	LED 5MM GREEN DIFFUSED NO FLANGE
1	330QBK-ND	CFR-25JB-330	RES 330 OHM 1/4W 5% CARBON FILM

And here is a picture of all of then put together:



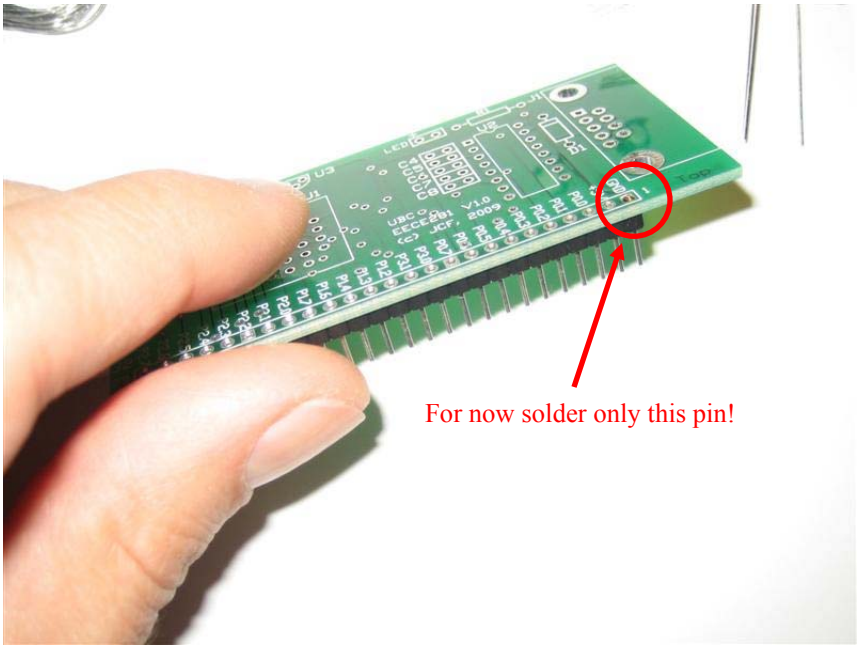
Step 2

"Free" the capacitors and push buttons. Bend both the diode and resistor so they would fit in the PCB at the locations labeled R1 and D1 respectively.



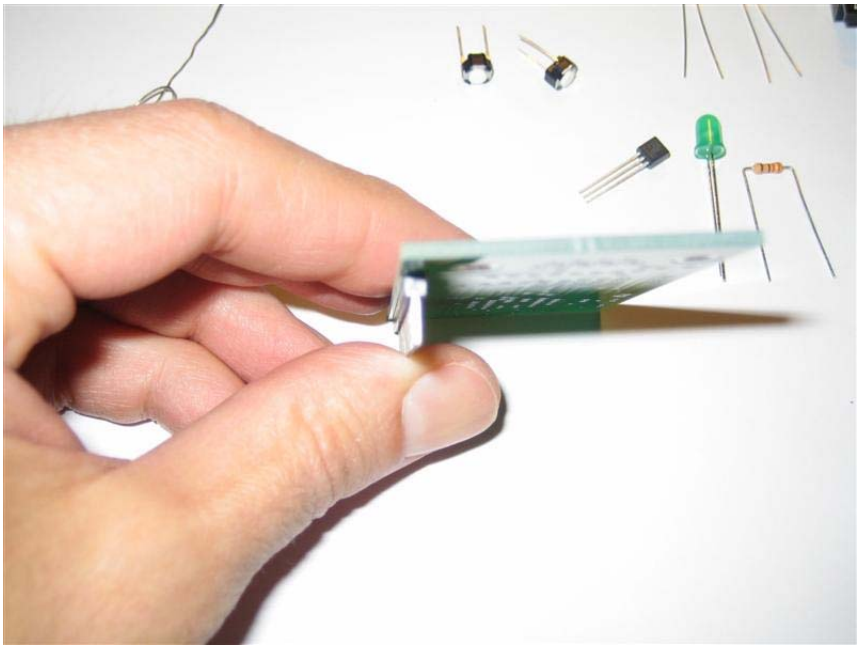
Step 3

Place the header connector in the bottom side of the PCB and solder pin one in the top side as show in the picture.



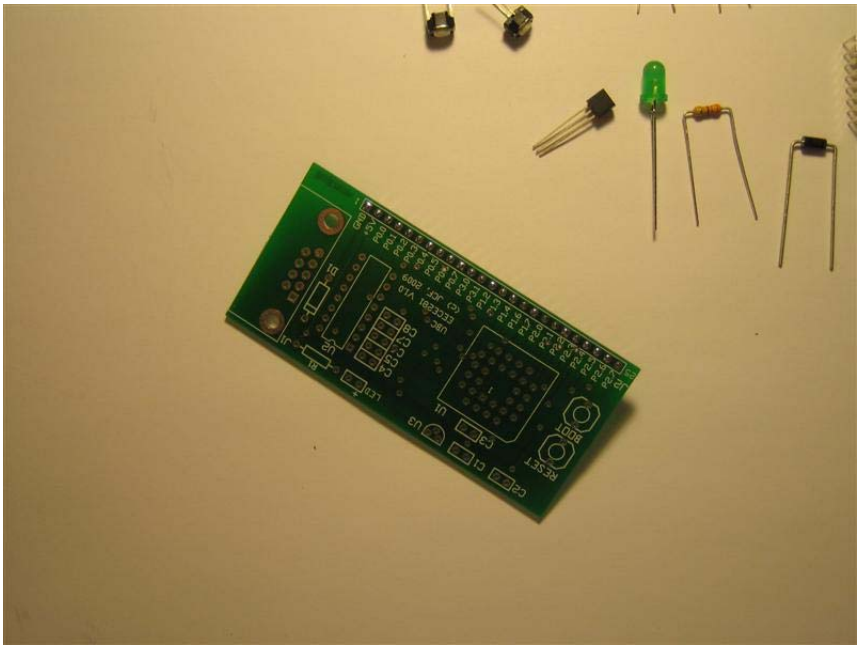
Step 4

Use the solder iron to melt the solder you put in to pin 1 of J1. While the solder is melted, adjust the header connector so it stands perfectly perpendicular to the printed circuit board.



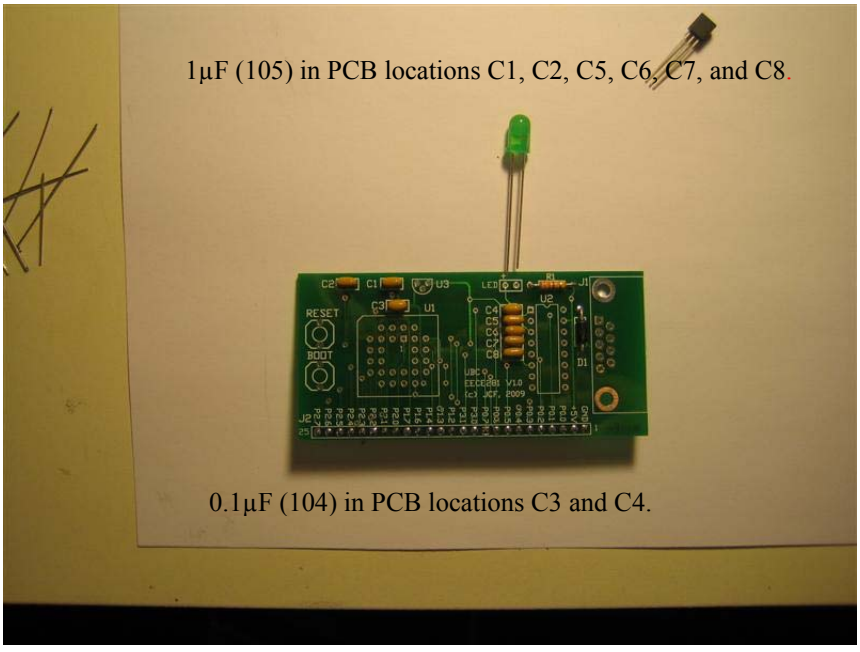
Step 5

Solder the remaining pins of J1.



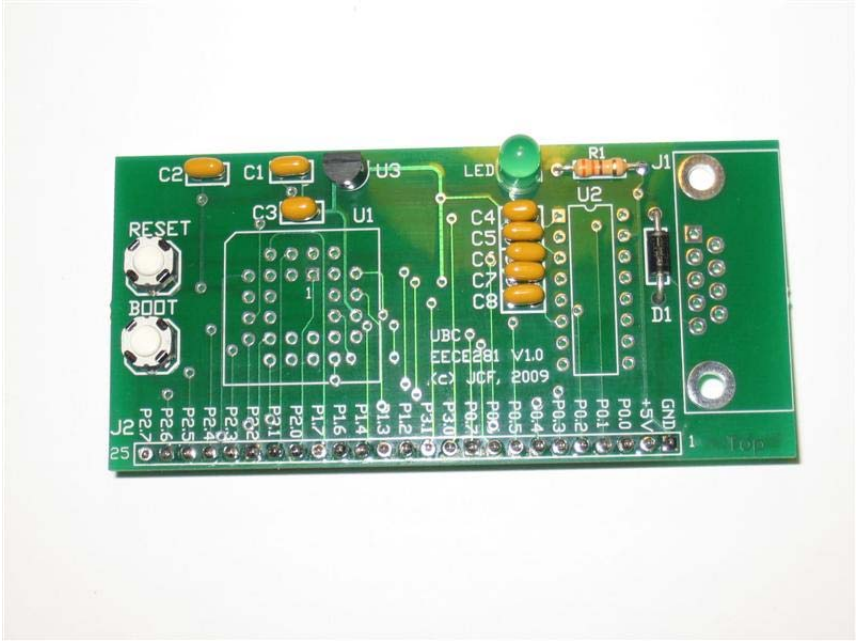
Step 6

Solder six 1µF (105) in PCB locations C1, C2, C5, C6, C7, and C8. Solder two 0.1µF (104) capacitors in PCB locations C3 and C4. Also solder the 330Ω resistor and the MBR150 diode. Pay attention at the orientation of the MBR150 diode. The cathode is clearly indicated in the PCB. Trim the pins in the solder side.



Step 7

Solder the green LED, voltage regulator, and push buttons. Pay attention to the LED polarity: the anode (longer ping) of the LED is marked with a "+" in the PCB. Trim the pins in the solder side.

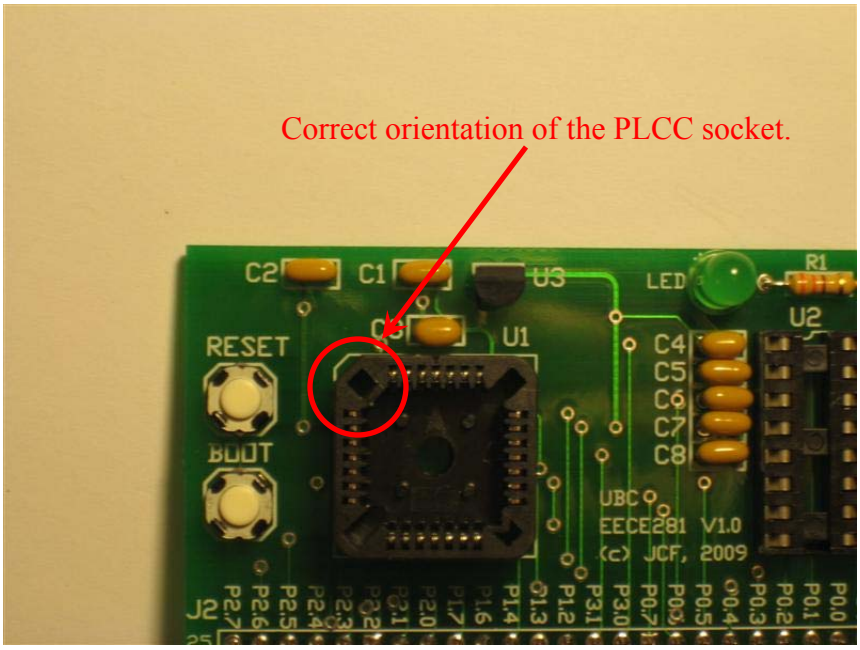


Step 8

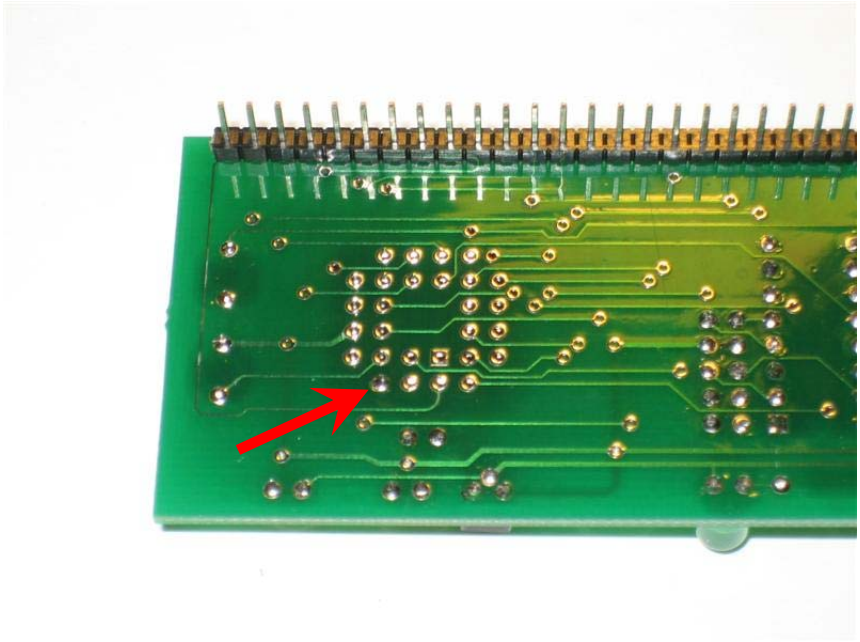
Solder both the 16-pin dip socket and the DB-9 connector.

Step 9

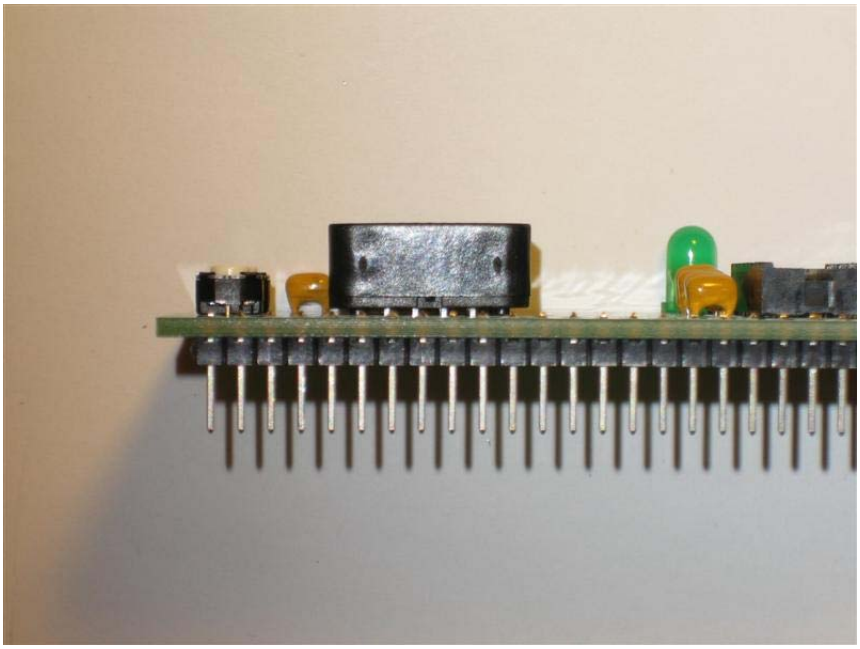
Insert the PLCC socket in the PCB as shown in the picture below. **WARNING: THE FLAT CORNER MUST MATCH THE PCB DRAWING.**



Solder <u>only one pin</u> of the PLCC socket in the solder side of the PCB:



Heat up with the solder iron the pin you just solder in the PLCC socket. While the solder is melted, press the socket down so it fits perfectly in the PCB board as shown in the picture below. Now you can proceed and solder the remaining pins of the PLCC socket.



Step 10

Insert the P89LPC9351 microcontroller and the MAX232 driver IC into their sockets as shown in the picture below. The board is now complete!