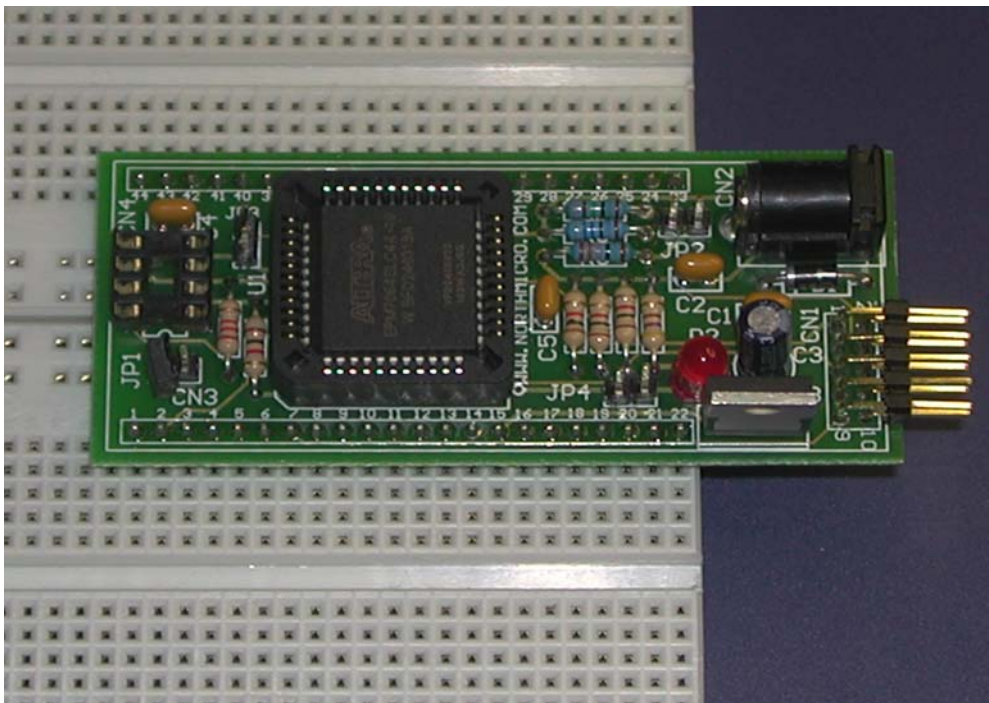


NM201: MAX44 - Altera FPGA/CPLD Development Board

Assembly Manual



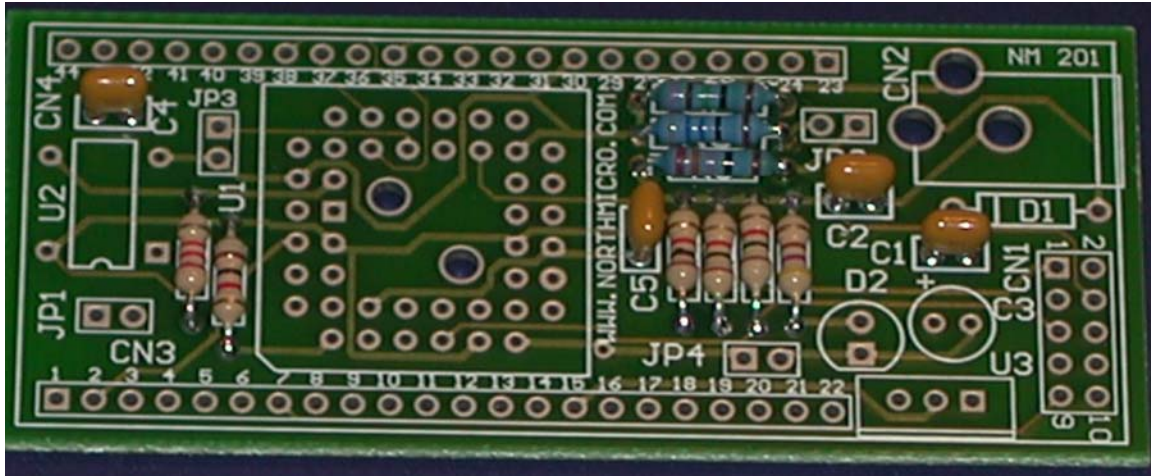
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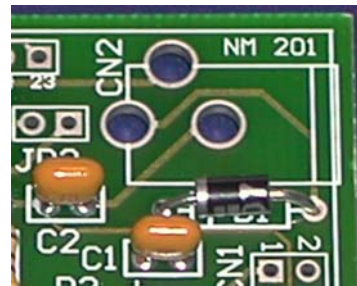
Solder the 0.1uF capacitors into C1, C2, C4, and C5.

Solder the following resistors into place:

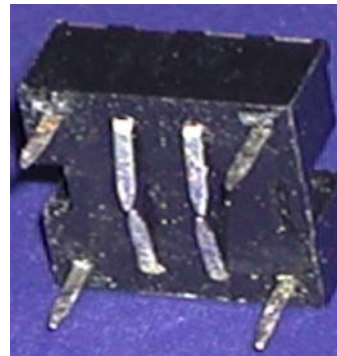
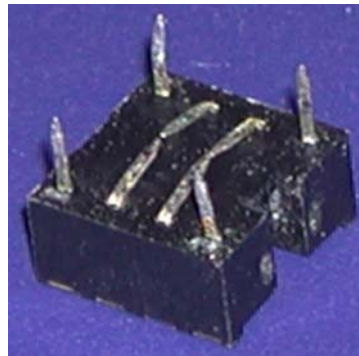
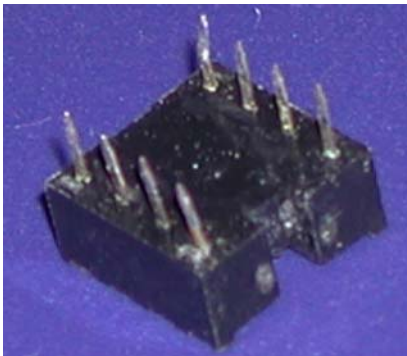
1K Ω in R1, R2, R3, R4 (brown-black-red-gold)	715 Ω in R7 (violet-brown-green-black-brown)
470 Ω in R5 (yellow-violet-brown-gold)	866 Ω in R8 (grey-blue-blue-black-brown)
237 Ω in R6 (red-orange-violet-black-brown)	2.2K Ω in R9 (red-red-red-gold)



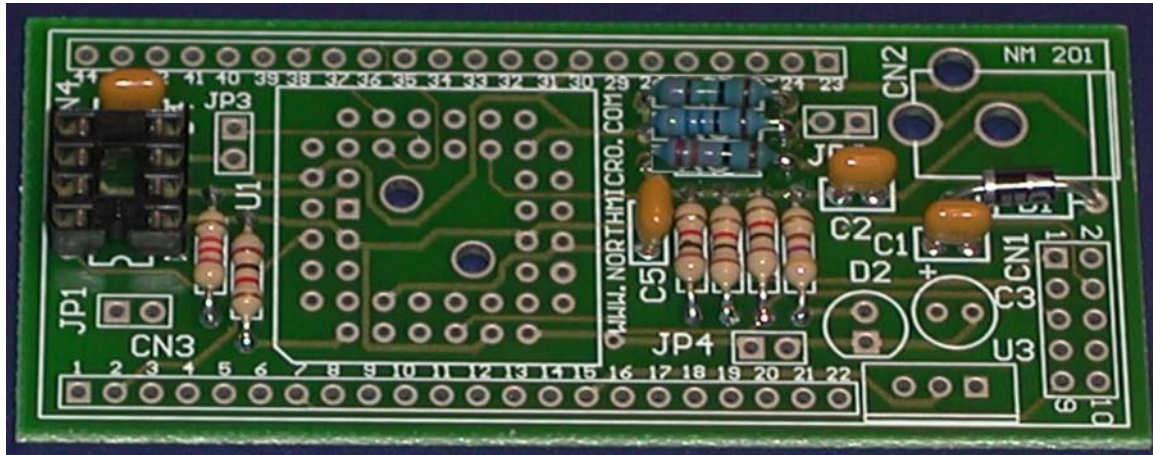
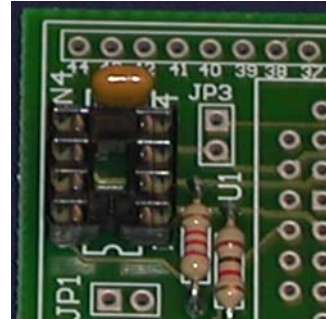
Solder the 1N4005 into D1. Note the orientation of the band on the diode



Bend the middle 2 pins on each side of the 8 pin dip socket straight forward, flush with the bottom of the socket.



Solder the 8 pin socket into U2. Note the orientation of the notch on the end of the dip socket matches the notch on the board.



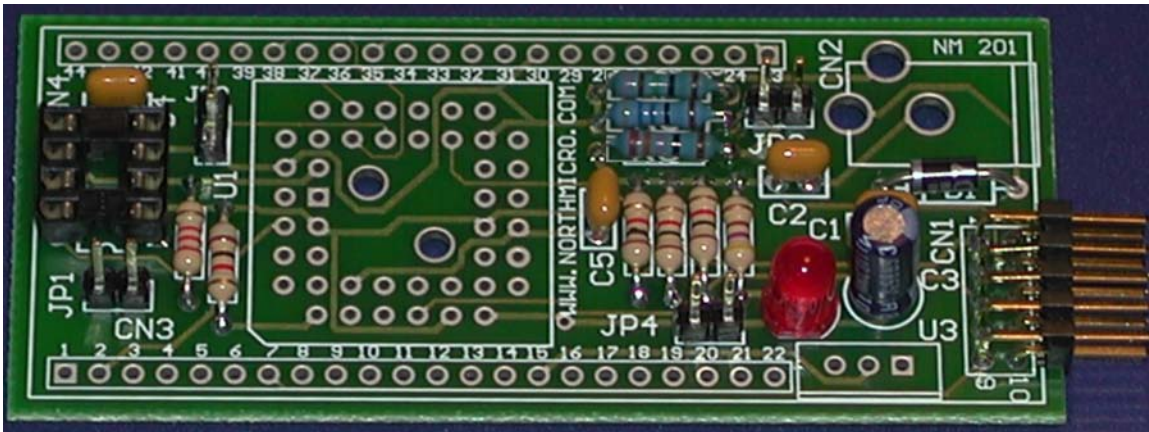
Cut two 2 pin headers from each of the 26 pin header strips, leaving two 22 pin header strips and four 2 pin headers.

Insert the 2 pin headers JP1, JP2, JP3, and JP4 and solder one leg of each header. Make sure that each header is perpendicular to the board. If a header is not perpendicular then reheat the solder joint and straighten the header with the other pin (not the hot soldered one). When all headers are perpendicular, solder the other pin of each one.

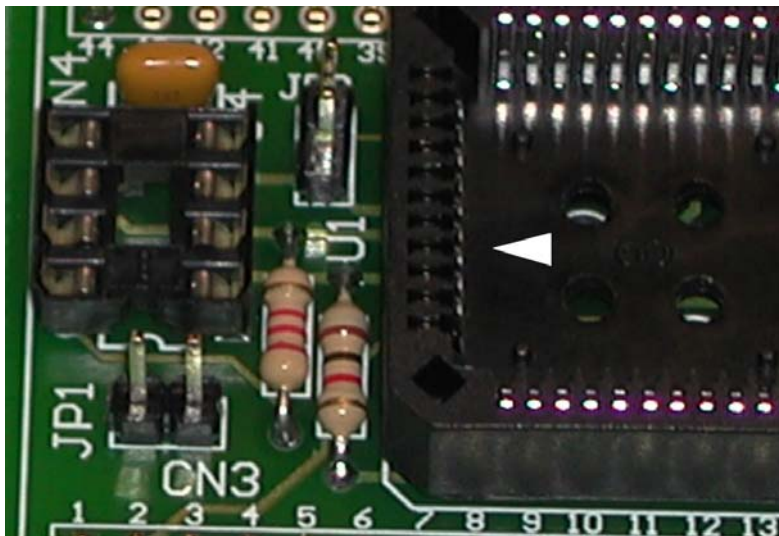
Solder the red LED into D2. The flat side of the LED should match up with the flat side of D2.

Solder the right angled 10 pin connector (5x2) into CN1. The right angled pins go into the board as shown below.

Solder the 10uF capacitor into C3. If there is a negative band on the capacitor, make sure it is pointed to the right, (towards the CN1 connector), as shown below.



Solder the 44 pin PLCC into U1. Make sure the small arrow (shown in white below) points towards the 8 pin dip.

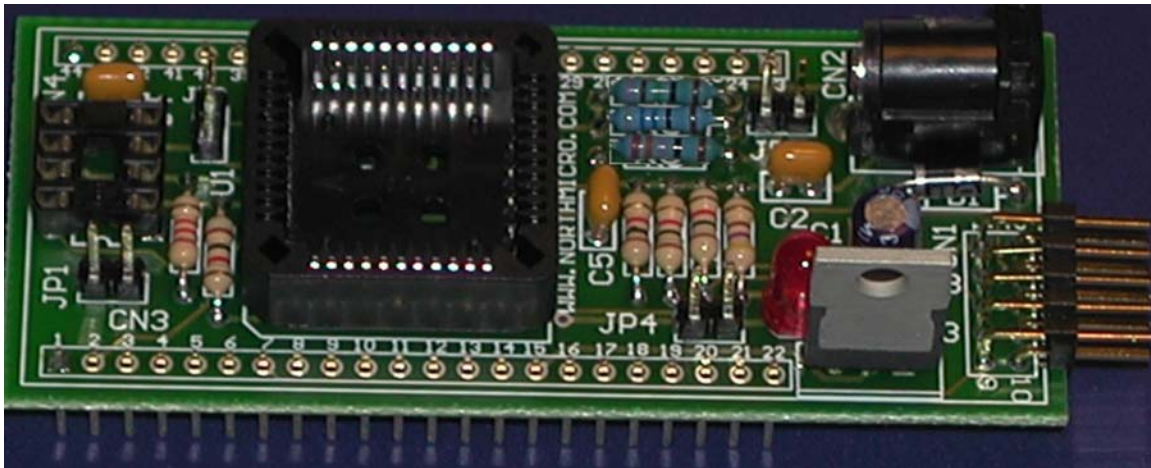


Solder the DC power jack into CN2 and the LM317 voltage regulator into U3. Note the orientation of the regulator as shown below.

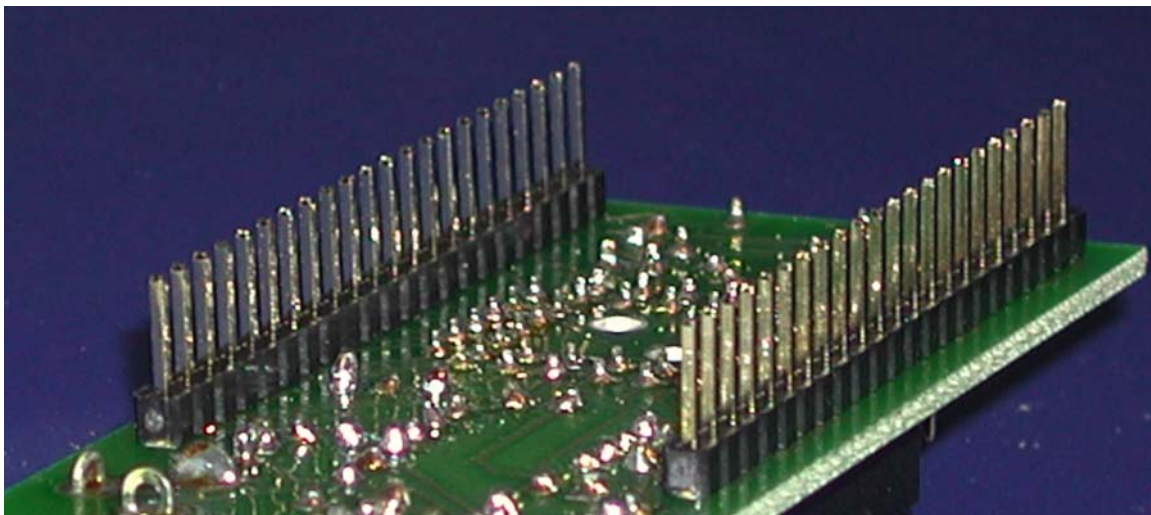
From the bottom of the board, insert a 22 pin header into the row of holes on each side. Note that the long side of the headers are pointing down, away from the board.

Make sure the 2 rows of headers are perpendicular to the board and solder pins 1 and 44 from the top of the board.

If the headers are not perpendicular, reheat the solder on pin1 or pin 44 and straighten the header. Be careful not to touch the pin you are soldering.



It is very important to make sure that the headers are perpendicular to the board before soldering all the pins.



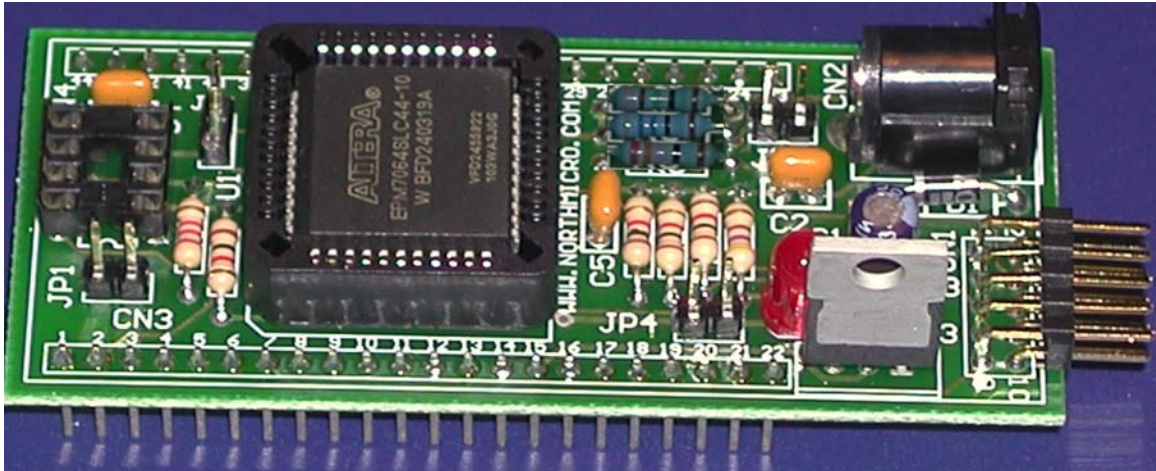
When you are sure that the pins are perpendicular to the board, solder all the other pins of the headers from the top.

Before plugging in the CPLD:

Visually inspect all solder connections and make sure that there are no solder bridges between pins.

If everything looks good, plug in a 9 volt, center positive adaptor.

Measure the voltage between pin 22 and 23 of the headers CN3 and CN4. With no jumper on JP2, you should measure 5 volts. With a jumper on JP2, you should measure 3.3 volts.



Unplug the NM201 board. Orient your CPLD over the socket. Make sure that the dimple on the chip (indicating pin 1) lines up with the arrow of the socket. Press firmly on the center of the chip to snap it into place.

If you plugged in the 5 volt Altera EPM7064SLC44-10 part you must not have jumpers on JP2, JP3, or JP4.

If you plugged in the 3.3 volt Altera EPM3064ALC44-10 part you must plug jumpers into JP2, JP3, and JP4. **These must not be removed while a 3.3 volt part is plugged in.**

If you plugged in a 3.3 volt Altera EPM7064AE part you must plug a jumper into JP2 only. **Do not place jumpers on JP3 and JP4. JP2 must not be removed while the 3.3 volt part is plugged in.**

If you plug a crystal oscillator into the 8 pin dip at U2, you may temporarily disable it by placing a jumper on **JP1**.

The following 44 pin PLCC parts are currently supported:

3.3 volt	Jumpers ON	5 volt	Jumpers ON
EPM7032AE	JP2	EPM7032S	
EPM7064AE	JP2	EPM7064S	
EPM3032A	JP2 JP3 JP4		
EPM3064A	JP2 JP3 JP4		

Parts List:

C1, C2, C4, C5	0.1uF capacitors		CN1	5x2 right angled header
R1, R2, R3, R4	1K Ω resistors		C3	10uF capacitor
R5	470 Ω resistor		U1	44 pin PLCC socket
R6	237 Ω resistor		CN2	DC power jack
R7	715 Ω resistor		U3	LM317 voltage regulator
R8	866 Ω resistor		CN3, CN4	22 pin headers – cut from the 26 pin headers
R9	2.2K Ω resistor			Jumpers x 4
D1	1N4005 diode		U1 (NM201K5)	EPM7064SLC44-10
U2	8 pin IC socket		U1 (NM201K3)	EPM3064ALC44-10
JP1, JP2, JP3, JP4	2 pin headers – 2 from each of the 26 pin headers			NM201 Circuit Board
D2	Red led			