

by **Bitty** on April 13, 2008

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## Intro:

### step 1: Get the kit

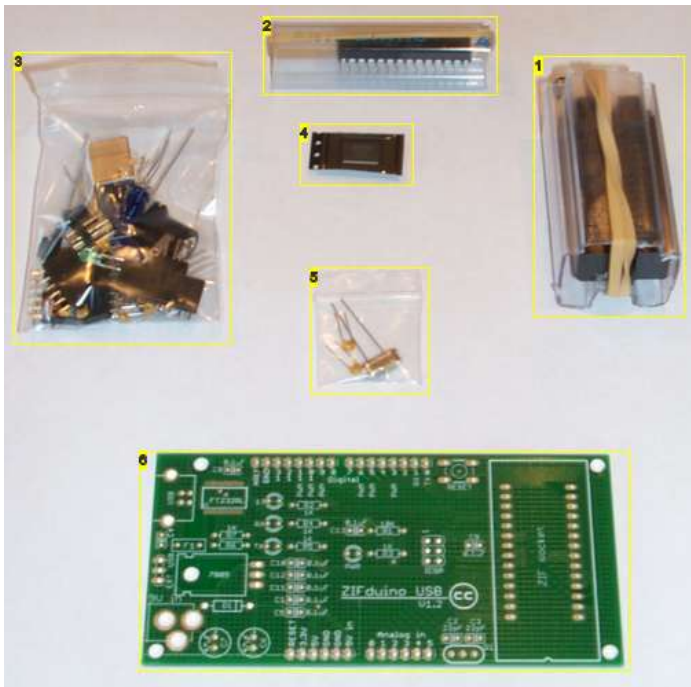
The kit comes in two flavors. The board itself, and the full kit. There is also an option to have the FT232RL chip pre-soldered if you're not comfortable working with SMT parts.

The kit can be purchased at <http://www.bittyware.com> .

Parts included:

- (1) ZIFduino board
- (1) FT232RL chip
- (2) 47 uF radial capacitors
- (9) 0.1 uF ceramic capacitors
- (2) 22 pF ceramic capacitors
- (6) 1 K ohm resistors
- (1) 10 K ohm resistors
- (4) 3mm T1 LEDs
- (1) 16 MHz crystal
- (1) 1N4004 diode
- (1) Resettable fuse
- (1) 7805 voltage regulator
- (1) Pushbutton
- (1) USB B connector
- (1) Power jack
- (1) 3 pin single row male header
- (1) Shorting block
- (1) 6 pin dual row male header
- (2) 6 pin female headers
- (2) 8 pin female headers
- (1) 28 pin ZIF socket
- (1) ATMEGA168-20PU chip

The crystal and the 22 pF capacitors are in their own separate bag to prevent mixing up the capacitors.



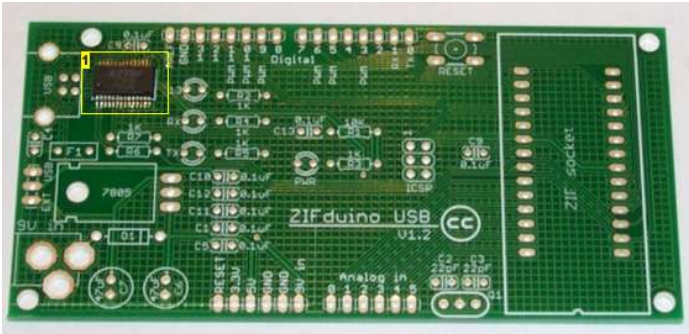
#### Image Notes

- 1. ZIF socket
- 2. ATMEGA168-20PU
- 3. The rest of the parts
- 4. FT232RL
- 5. Crystal and caps
- 6. ZIFduino board

## step 2: FT232RL

If you chose to have it pre-mounted, you can skip this step and the next.

Solder the FT232RL in place. There are a number of great tutorials for soldering surface mount parts all over the web. SparkFun has some good ones on their tutorials page , starting about half way down.



### Image Notes

1. Mounted FT232RL

## step 3: Test your work

I always like to test the chip before moving too much further. At this point it'll be much easier to correct any problems.

Solder the C4 capacitor, followed by the F1 fuse, then the 3 pin male header.

Slide the shorting block onto the header, shorting the center pin with the one labeled USB.

Now solder the USB B jack in place. Solder all six pins, making sure you have a good pool of solder on the two larger pins. These are to ensure a strong mechanical connection, so be sure to fill the holes completely.

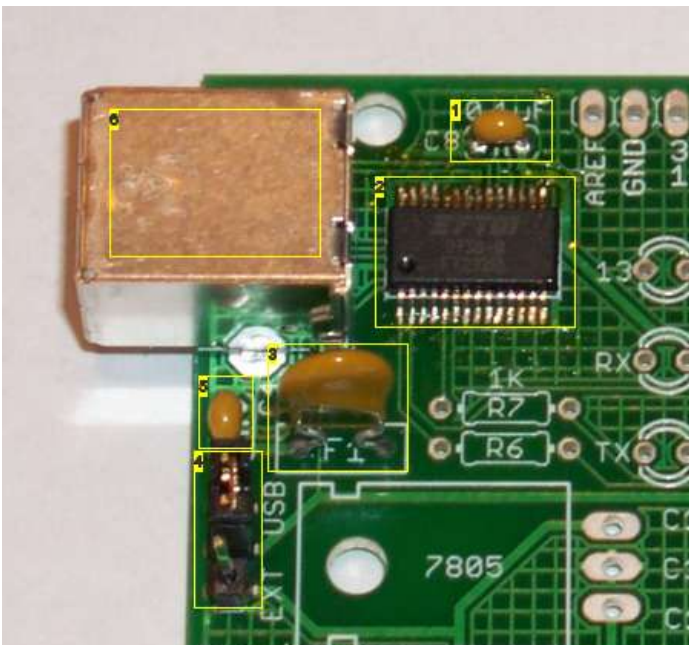
Take the board to your computer and go to <http://www.ftdichip.com/Drivers/VCP.htm> . There you will find the drivers needed for your platform. Extract them to the location of your choice and make a note of where they are. If you already have the drivers installed, you can skip this part.

I'm assuming a Windows environment here, but there are installation guides for others at the FTDI site.

Plug the board into your computer, and you should be greeted with the New Hardware Wizard. Point the wizard to the driver location noted above. After they're installed, you will see a new COM port in Device manager. You've just successfully installed the FT232RL.

If you don't get the New Hardware Wizard and you don't see a new COM port in Device Manager, you'll need to check your work. Take a look at all the pins under magnification and make sure they're all soldered in place and you don't have any lifted pins. Also check for solder bridges.

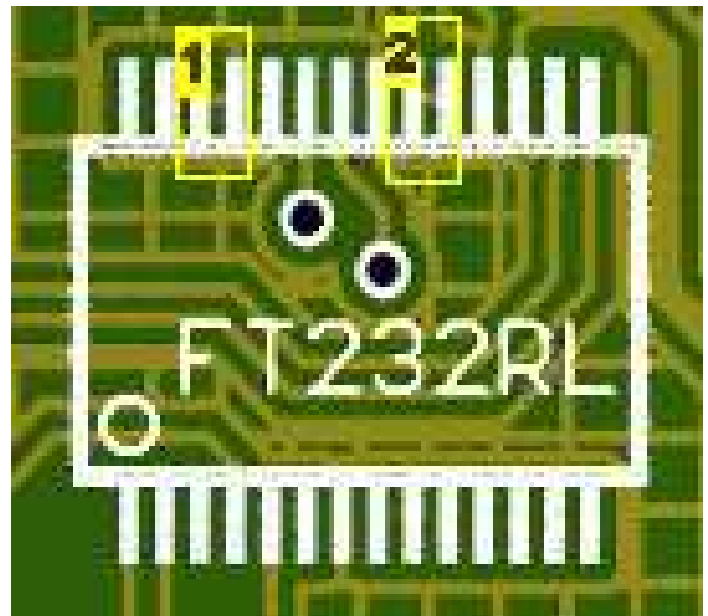
NOTE: There are two sets of pins that are intentionally bridged. Don't try to remove those or you'll have problems.



### Image Notes

1. Ignore this, I got ahead of myself
2. FT232RL
3. Resettable fuse
4. 3 pin male header and shorting block

<http://www.instructables.com/id//>



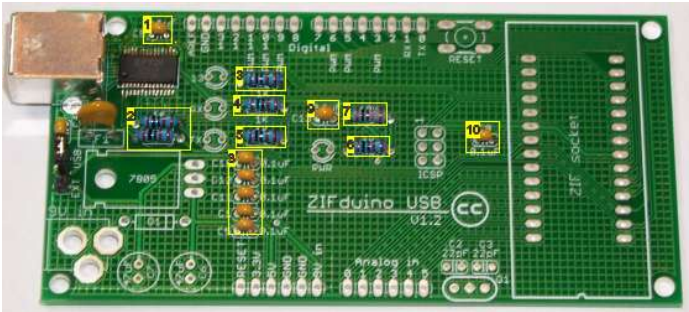
### Image Notes

1. Bridged
2. Bridged

5. 0.1 uF capacitor
6. USB B jack

#### step 4: Capacitors and Resistors

Next, install the rest of the 0.1 uF capacitors and the resistors.

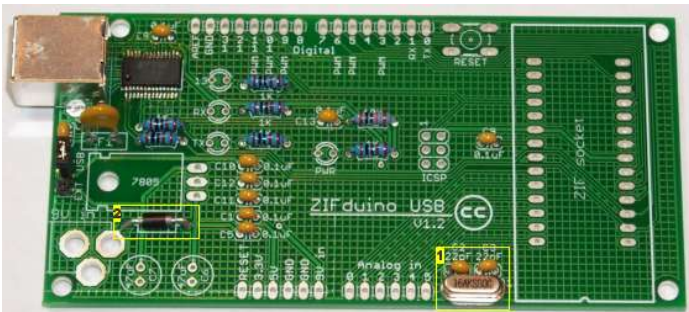


#### Image Notes

1. 0.1 uF
2. (2) 1 K ohms
3. 1 K ohm
4. 1 K ohm
5. 1 K ohm
6. 1 K ohm
7. 10 K ohm
8. (5) 0.1 uF
9. 0.1 uF
10. 0.1 uF

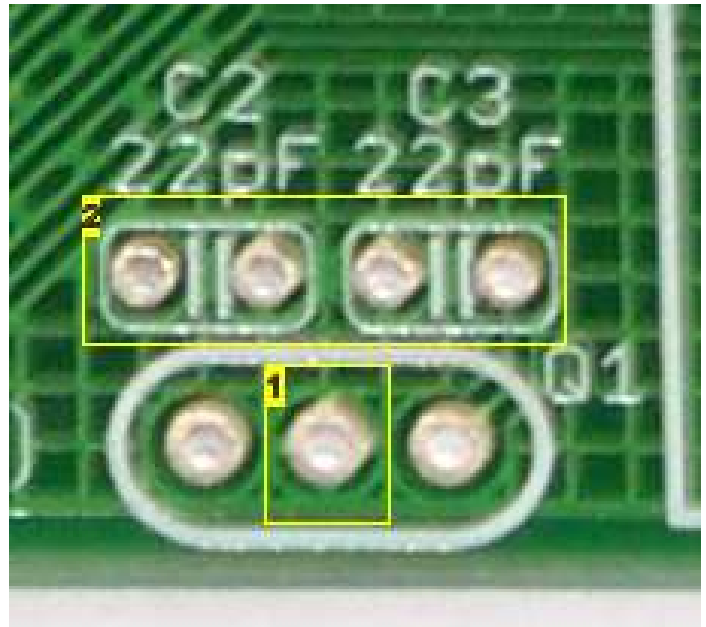
#### step 5: Add the crystal, caps and diode

The crystal and 22 pF caps are in a separate bag to ensure they stay together. You'll note that there are three holes where the crystal goes. This gives the option to use an oscillator instead of the crystal/caps combination. When installing the crystal, be sure to insert the leads in the two outside holes. Next, install the diode. Be sure to have the stripe on the right side.



#### Image Notes

1. The crystal and caps
2. 1N4004 diode

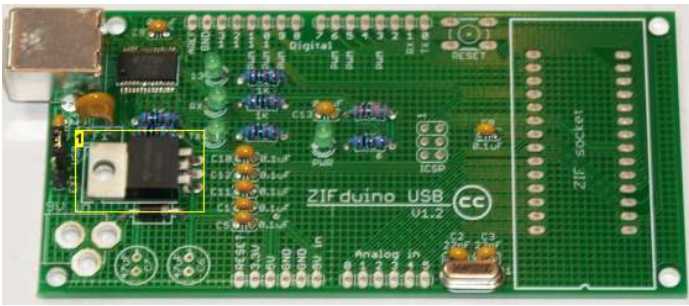


#### Image Notes

1. Avoid this when using a crystal
2. Don't use these when installing an oscillator

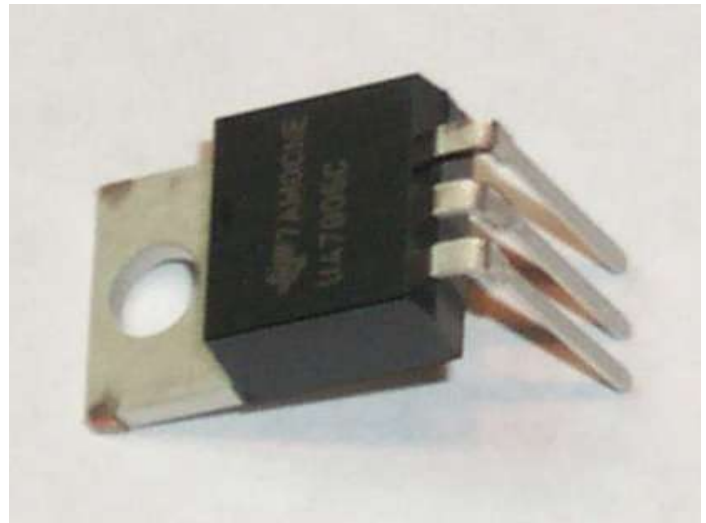
### step 6: Install the voltage regulator

Next, install the voltage regulator. It lies best on the board if you bend the pins before mounting it.



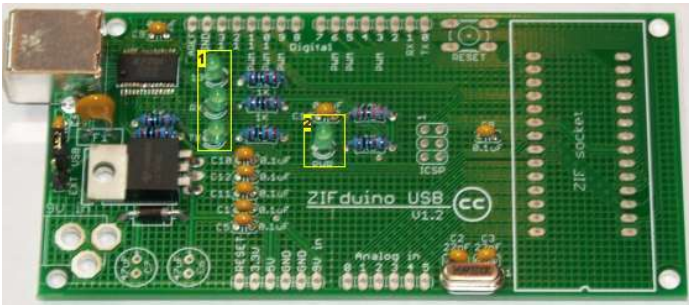
#### Image Notes

1. 7805 voltage regulator



### step 7: Install the LEDs

Now install the LEDs.

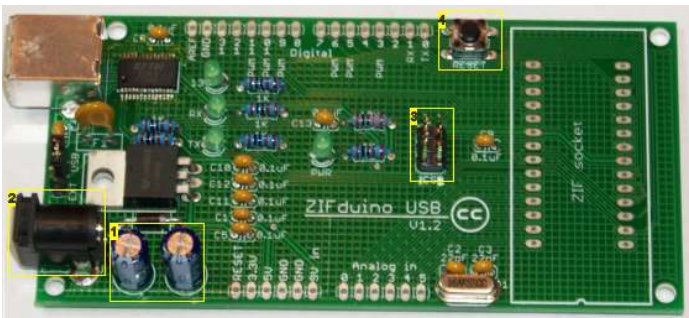


#### Image Notes

1. LEDs
2. LED

### step 8: Caps, power jack, header and button

Now install the 47 uF capacitors, the power jack, the 6 pin dual row male header and the reset button.



#### Image Notes

1. 47 uF caps
2. Power jack
3. 6 pin dual row male header
4. Reset pushbutton

## step 9: Install the female headers

Next, install the female headers.



### Image Notes

1. (2) 6 pin female headers
2. (2) 8 pin female headers

## step 10: The ZIF socket

Finally, install the ZIF socket.

You're done! Drop the ATmega chip in the socket (making sure 1 is at the bottom of the board) and plug it back into your computer. After a few seconds pause, pin 13 should start flashing.

Head on over to <http://www.arduino.cc/> and hit the Getting Started link. There you'll find several quick-start articles and software to get you going.



### Image Notes

1. The ZIF socket

## Related Instructables



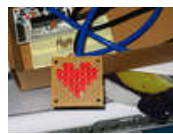
**Help: An Absolute Beginner's Guide to 8-Bit AVR Programming- AVR Dragon** by PopSci



**Arduino gift guide** (slideshow) by pt



**How to have fun with Arduino (and become a Geek in the process)** by john otto



**Arduino Charliplexed Heart, just in time for Valentines Day.** by jaypee4227



**Getting started with ubuntu and the AVR dragon** by }{itch



**Assembling the Dragon Rider 500 for use with the AVR Dragon** by barney\_1



**Arduino: Making a set of traffic lights** by unknowndomain



**Arduino ProtoShield from "Household" Items (<\$5)** by br3ttb

# Comments

3 comments [Add Comment](#)



**Tweeks\_tx** says:

Jun 22, 2008. 1:41 PM [REPLY](#)

No problem.. great little board!

I'll have to check out the SpakFun's SMT directions. :)

BTW.. I also have a more gallery style set of directions here with a video at the end showing some fun blinky lights:

[http://theweeks.org/rockets/2008-06\\_ZIFDUINO/](http://theweeks.org/rockets/2008-06_ZIFDUINO/)

VIDEO: [http://theweeks.org/rockets/2008-06\\_ZIFDUINO/video/dscf2001.flv.html](http://theweeks.org/rockets/2008-06_ZIFDUINO/video/dscf2001.flv.html)

Cheers Bitty,

Tweeks



**Tweeks\_tx** says:

Jun 18, 2008. 1:01 PM [REPLY](#)

Nice job Botty.. and I love your design and great pics.. But this tutorial is probably not detailed enough for the hardware n00b (esp those not used to soldering, much less soldering SMT soldering). I didn't even know about these instructions when I built mine.. so I went ahead and took a little extra time and wrote my own. :v) Here they are:

Assembling a ZIFduino 1/4-controller Dev Board Kit

[http://xcssa.org/files/2008-06\\_zifduino/](http://xcssa.org/files/2008-06_zifduino/)

Comments/feedback welcome.

Enjoy..

Tweeks



**Bitty** says:

Jun 19, 2008. 9:10 AM [REPLY](#)

Very nice set of instructions there, thanks for sharing. I avoided the step-by-step SMT soldering part here because the folks over at SparkFun show it better than I ever could. Using their technique and a little practice, you can get that little bugger mounted in just a couple minutes.

I love that huge LED you put on pin 13. :P