Sanguino.cc
so bleeding edge, we had to make it red.

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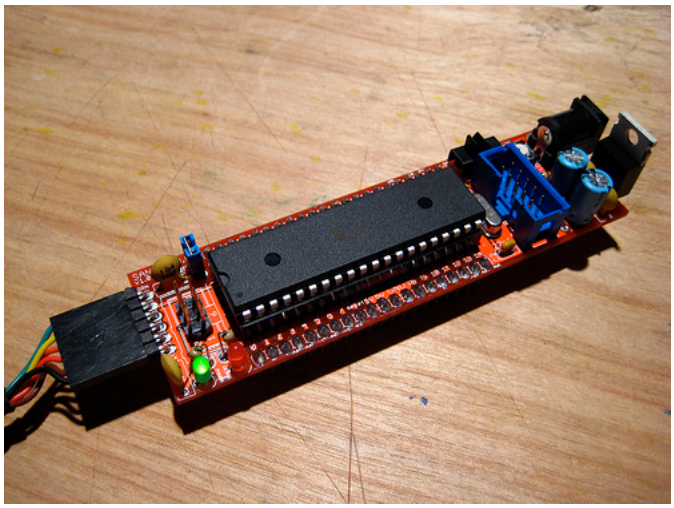
Arduino
RepRap
NYC Resistor
RRRF
Lady Ada

Designed By:
Zach Hoeken

Sanguino v1.0 Assembly

Introduction

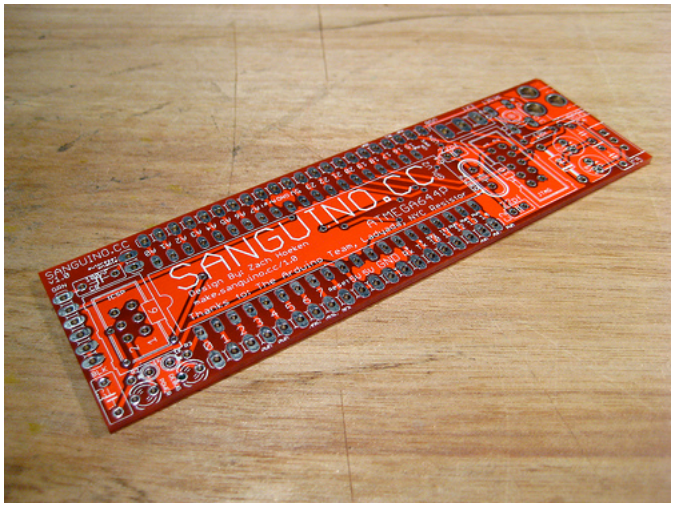


This is the Sanguino board. It is an Arduino compatible board based on the atmega644P. This page will tell you how to assemble one, probably from a kit that you bought somewhere. Once you are done, you'll have a sweet little board you can use for prototyping, hacking, or even for a permanent project.

The Sanguino has some awesome features like:

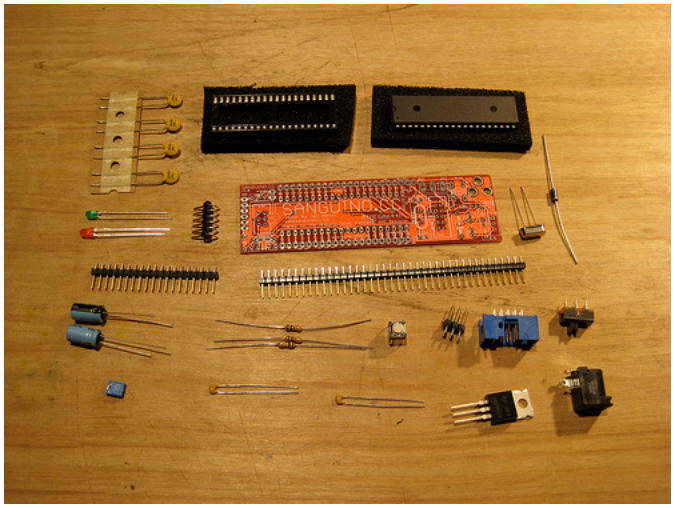
- 64K of flash space
- 4K of RAM
- 2K of EEPROM
- 2 hardware serial ports
- 32 GPIO pins
- 6 PWM pins
- 8 analog pins
- I2C, SPI, etc.

PCB



This is the Sanguino PCB. You can download the files used to make it at the bottom of the page.

Components



Bill of Materials

NYC Resistor Master BOM published via Google Docs

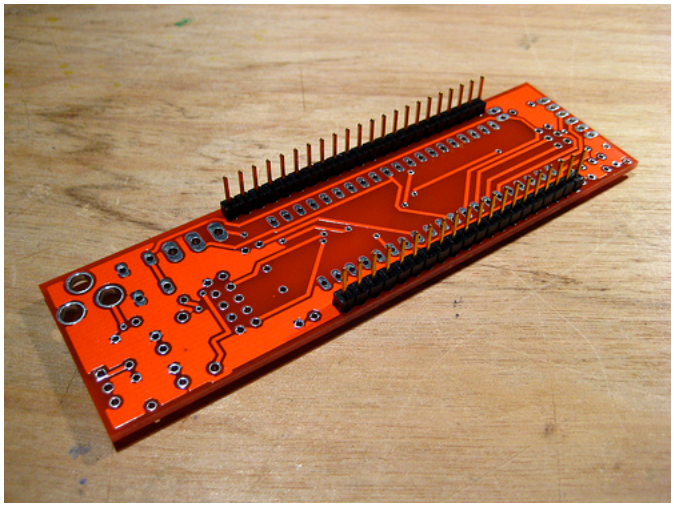
Sanguino v1.0

ID	Item	Qty
	Sanguino v1.0 PCB	
C1, C2	22pf ceramic capacitor	
C3,C4,C5,C8	100 nF ceramic capacitor	
C6,C7	100 uF electrolytic capacitor	
D1	1N4004	
DEBUG	3mm red LED	
POWER	3mm green LED	
IC1	ATmega644P	
	40 pin DIP socket	
IC2	7805	
	.100 breakaway header	
	.100 breakaway header (right-angle)	
Q1	16mhz crystal	
R1	10K ohm resistor	
R2, R3	1K ohm resistor	
	Omron B3F-1000 Button	
	6 pin IDC header	
	10 pin IDC header	

Sanguino v1.0

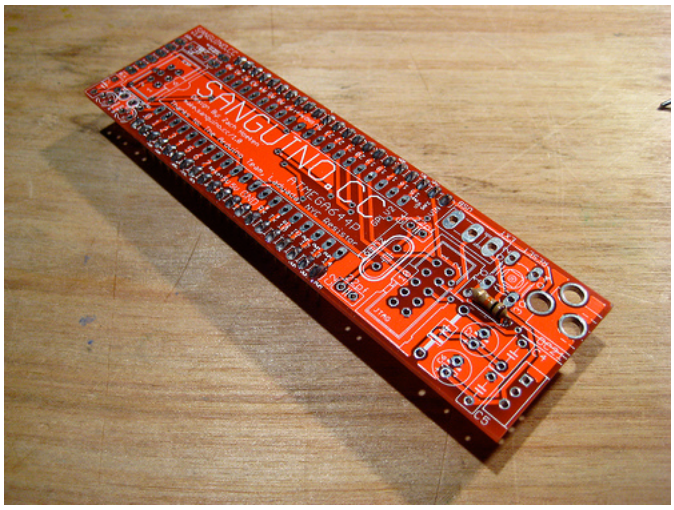
Make It!

Solder Pin Headers



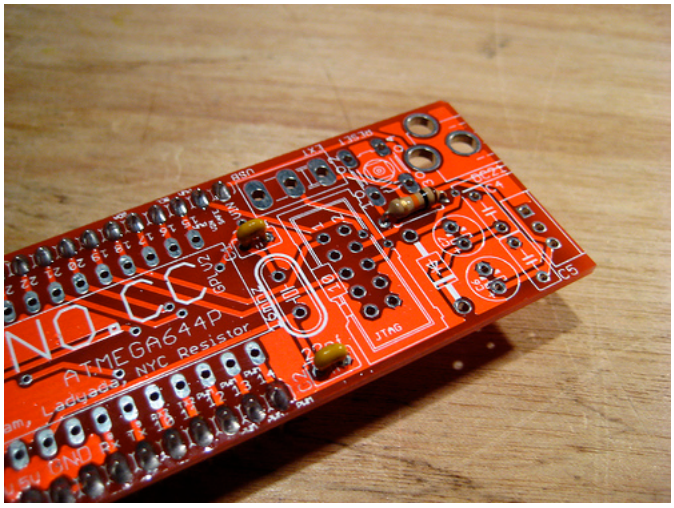
The pin headers are supposed to point down so you can insert the Sanguino into a breadboard. Make sure they are soldered in straight (perpendicular to the board.) An easy way to do this is to solder in one pin on each end of the row so that you can easily adjust them. Once they are straight, solder the rest of the pins.

10K resistor



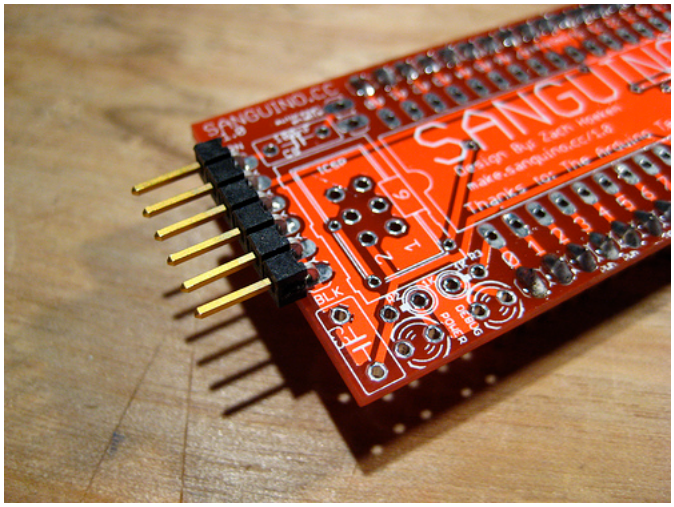
Solder the resistor in any orientation. It is marked brown / black / orange.

33pF capacitors



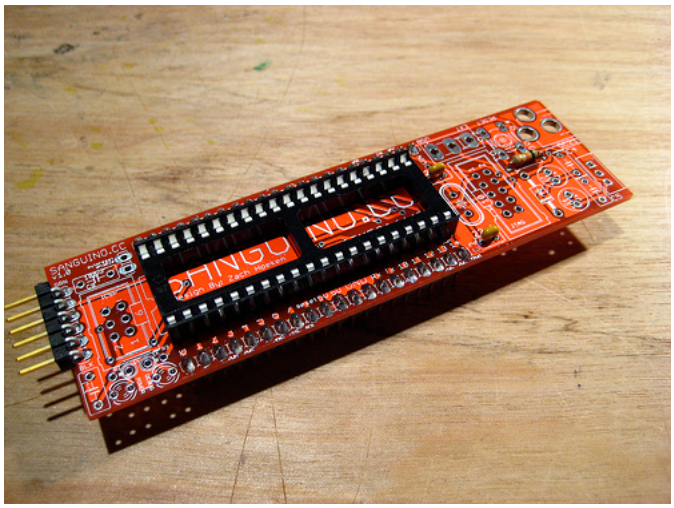
These are the tiny yellow capacitors. They can be soldered in any orientation.

Serial Headers



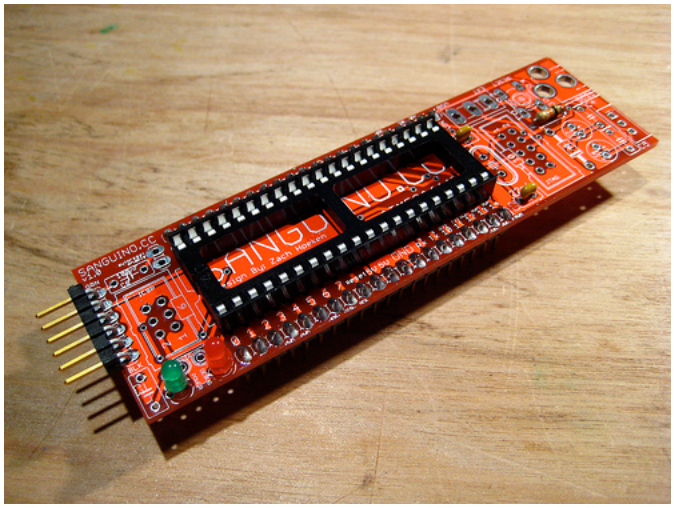
Solder in the right-angle headers into the end of the board as shown.

40-pin DIP Socket



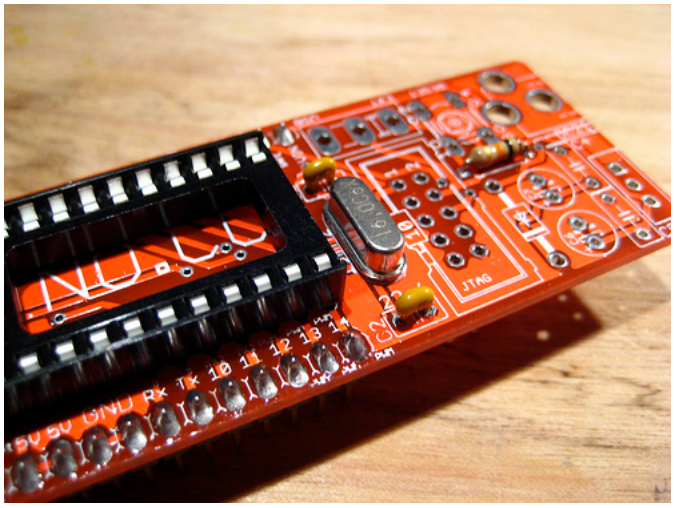
Line up the DIP socket so that the dimple on one end lines up with the dimple on the silkscreen. Solder each pin in.

Red and Green LEDs



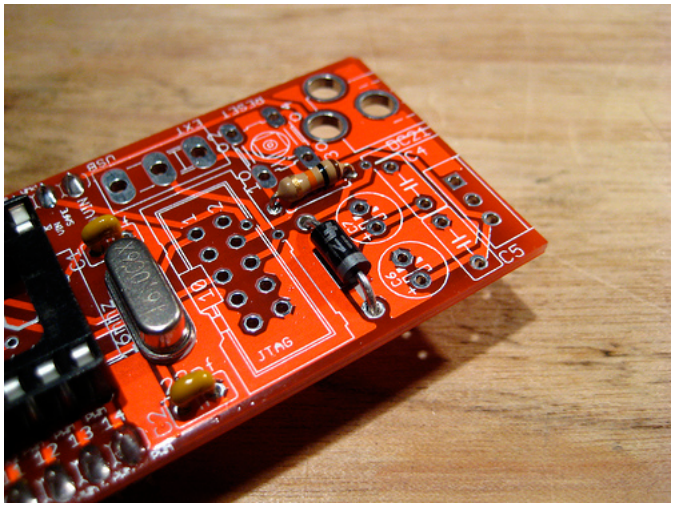
The LEDs need to be inserted in the proper orientation. The short leg of the LED goes into the flat side of the LED silkscreen.

16mhz Crystal



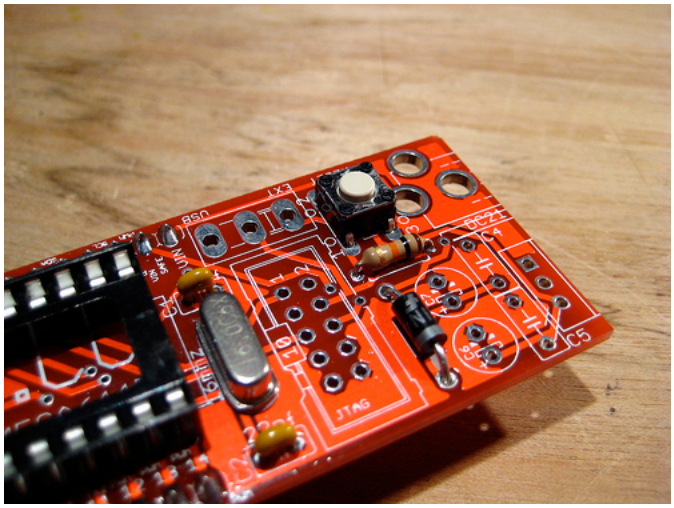
This is the crystal oscillator. It may be soldered in any orientation.

1N4001



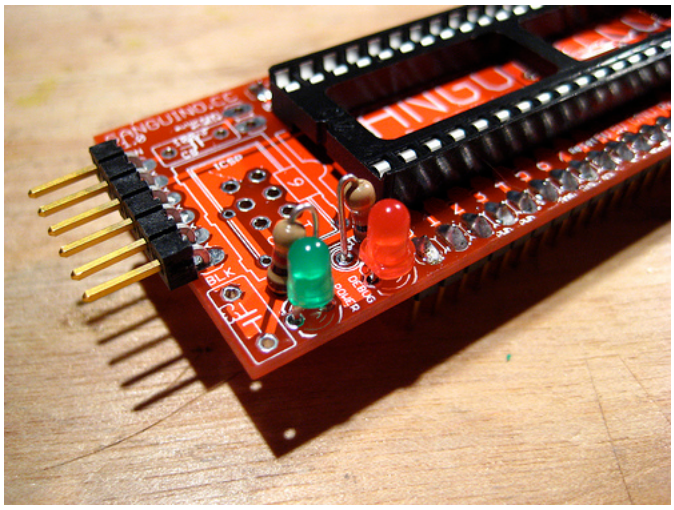
This is the polarity protection diode. It needs to be soldered in in the proper orientation. There is a band on the diode. Line it up with the band on the silkscreen and solder it in.

Reset Button



The button can only be inserted into the PCB in one orientation. Insert it and then solder it in.

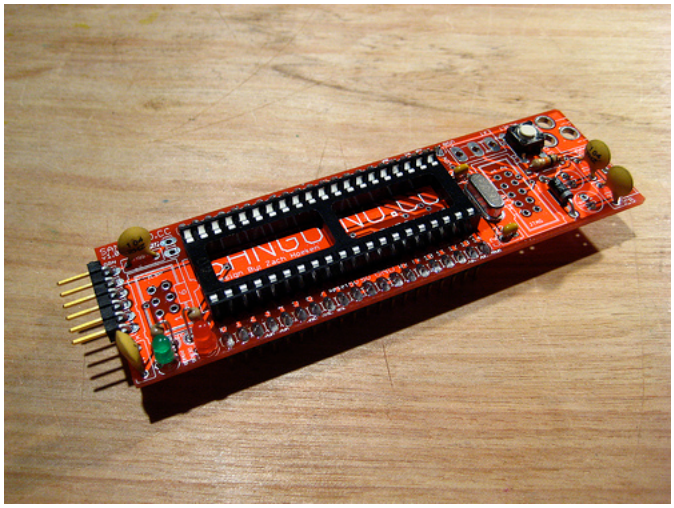
1K Resistors



These are the resistors for the LEDs. They need to be

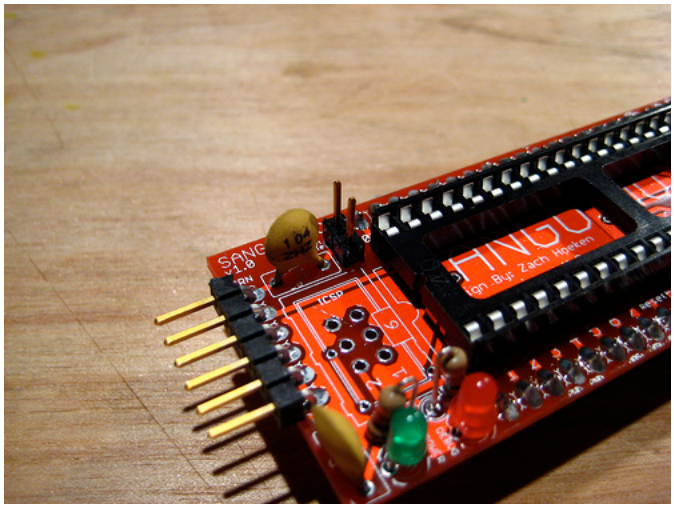
mounted vertically, so bend one lead over and solder the resistors into the board.

100nF Ceramic Capacitors



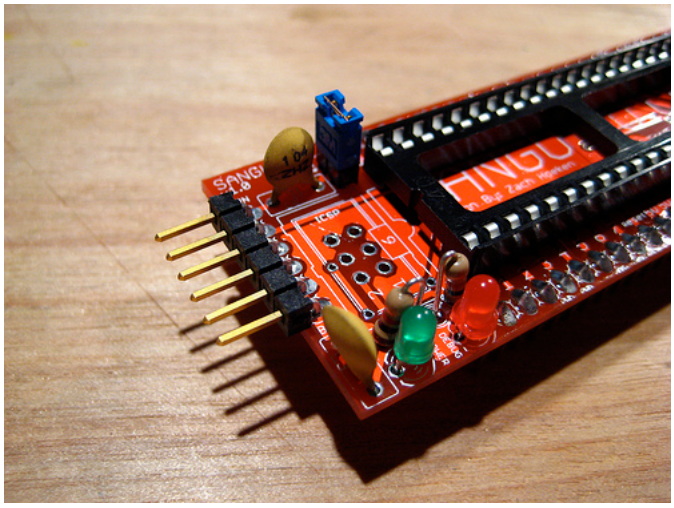
The ceramic capacitors can be soldered in any orientation. There are 4 of them. Solder them all in.

Auto Reset Jumper Header



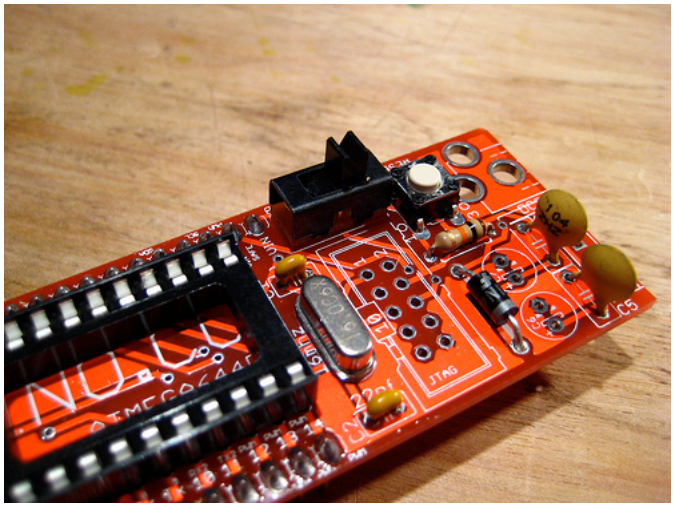
This is the jumper to enable/disable autoreset. Solder in a 2-pin header. It helps if its soldered in straight.

Auto Reset Jumper



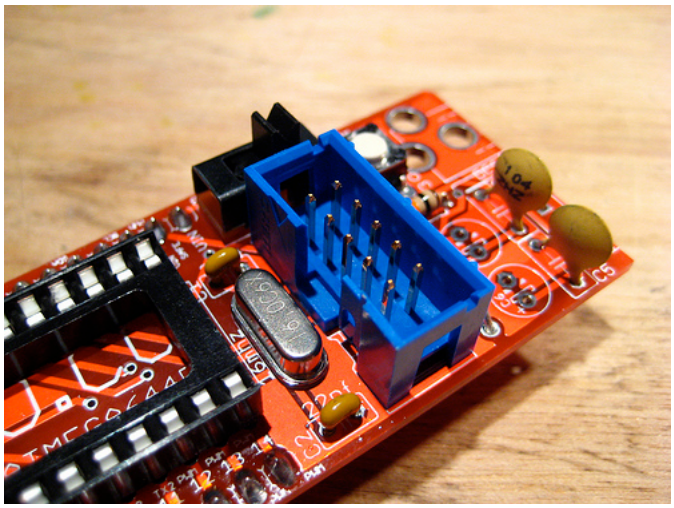
Put the jumper onto the header you just soldered it on. This enables the auto-reset functionality.

Power Selector



This switch allows you to choose between USB and External power. Solder it in any orientation.

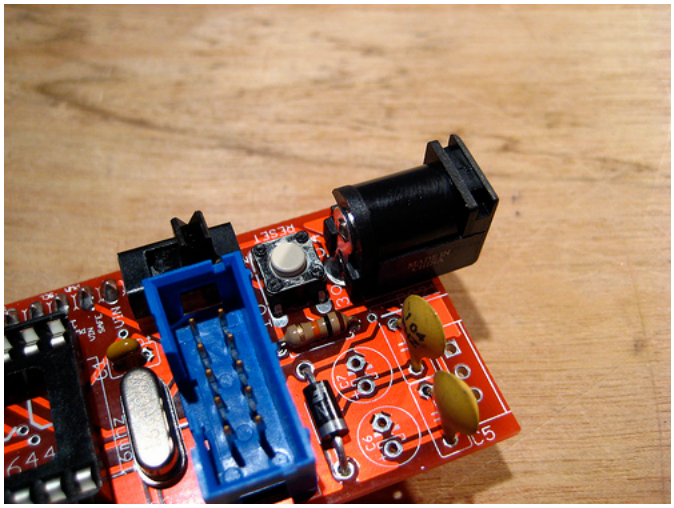
JTAG Header



This is the header to access the JTAG functionality. There is a notch in the IDC header that should line up with the

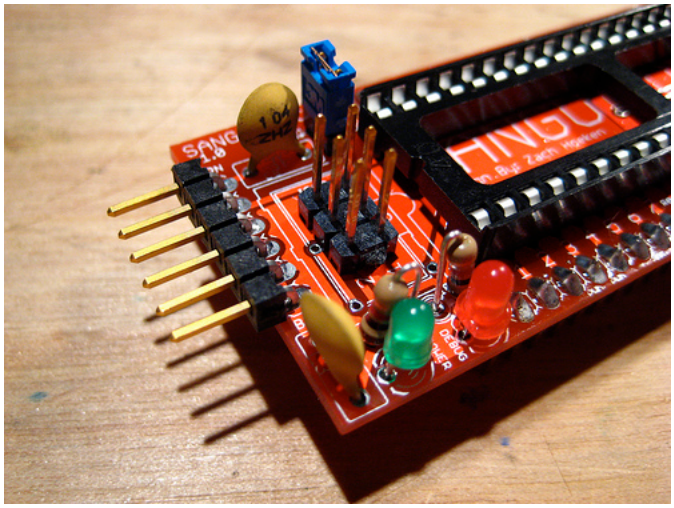
silkscreen.

DC Power Jack



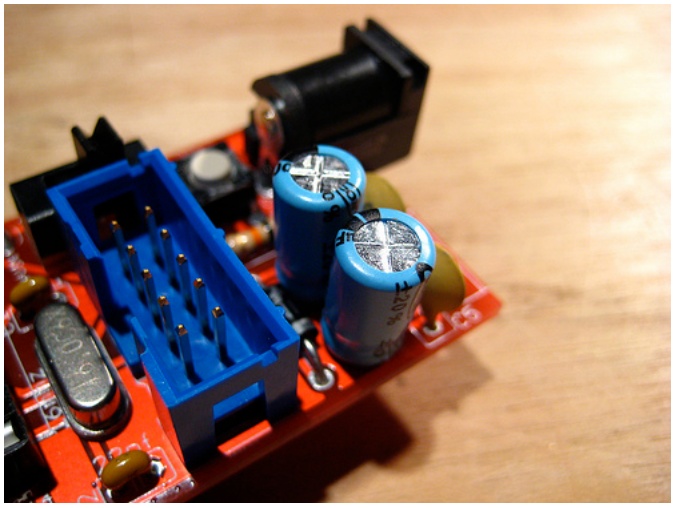
This is the jack for power input. It will take quite a bit of solder to solder it into place, so don't be shy.

ICSP Header



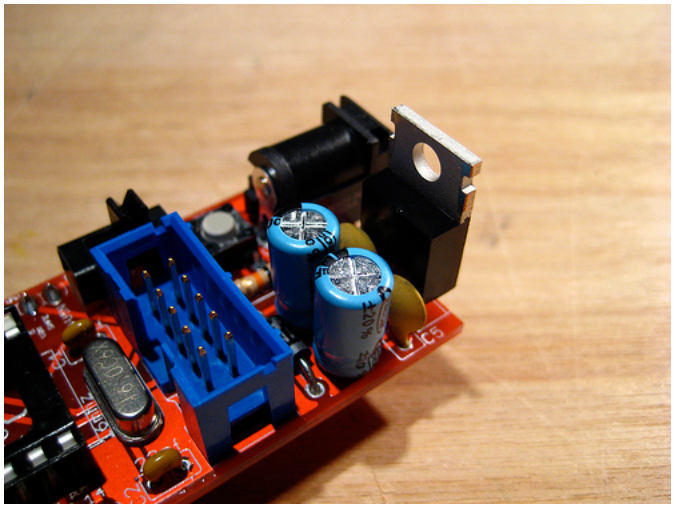
This is the header to directly flash the atmega644P chip. The pins can be soldered in any direction.

100uF Electrolytic Capacitors



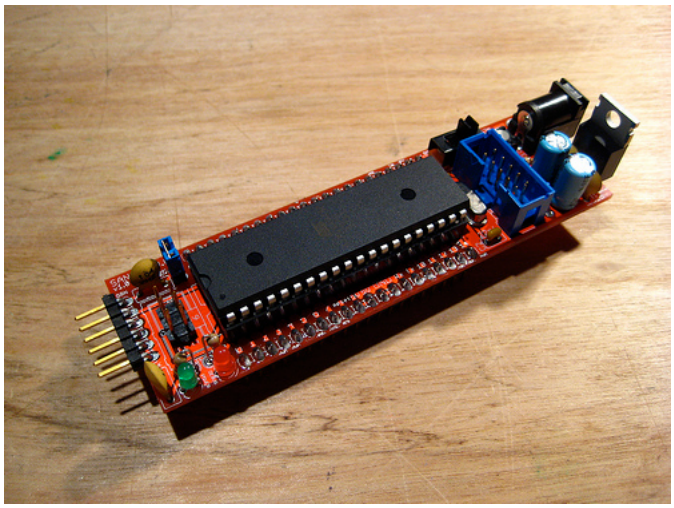
These capacitors need to be soldered in the proper orientation. One side is marked as negative. The other pin is positive. Insert the positive leg in the side marked positive. It should look like that pictures.

7805



This is the power regulator. Solder it so that the metal backing tab faces outwards.

Insert atmega644P



Now is time to insert the atmega644P chip. Line the dimple up with the socket (and more importantly the silkscreen). Take care to not break / severely bend any legs as you insert it.

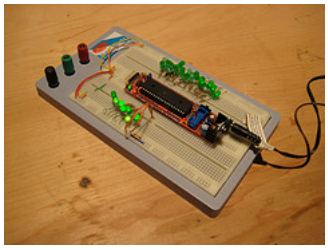
Use It!

Software

The Sanguino is compatible with Arduino, meaning that with slight modifications, the Arduino host software can be used to program and upload sketches to the Sanguino. In order to do that, you should check out the page on using your Sanguino which describes setting up the software and how to program for it.

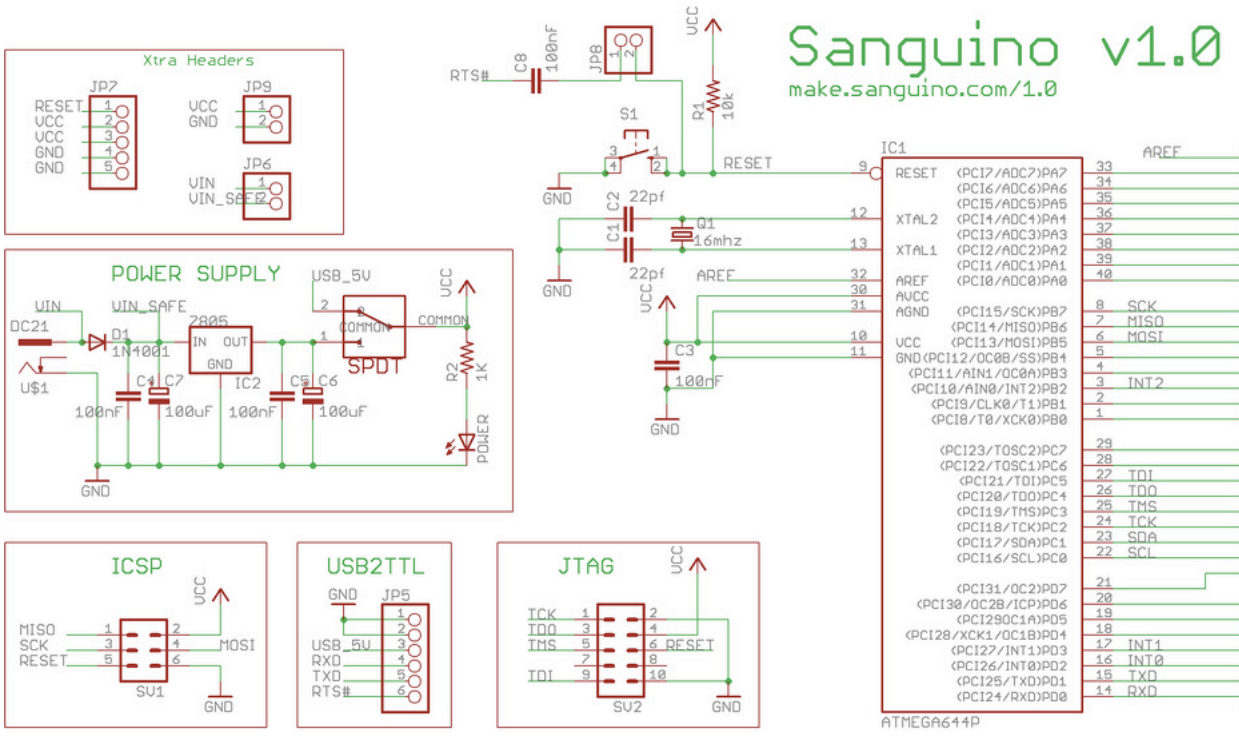
Prototyping

The Sanguino which was partially inspired by the Boarduino is perfect for use with a large dual breadboard that is very common. It can simply straddle the breadboard and then you'll have tons of room for experimentation. The picture shows it being used for that very purpose.

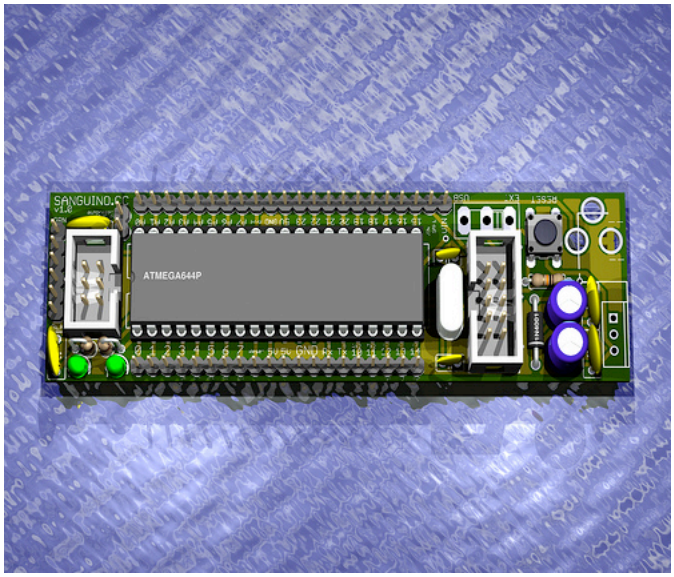


Files

Schematic



Eagle Files



The files used to make this board are available from Google Code

They contain:

- Eagle schematic and board layout
- GERBER files used to manufacture board
- 3D rendering of circuit
- POVRay scene file of circuit
- PDF outputs of circuit
- PS outputs of circuit
- PNG outputs of circuit

Project Hosting

This project uses Google Code to host our project release files. You can view a list of the latest files here

Subversion

All of the latest, up-to-date files are stored in Subversion