



Criando clones de Arduino

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github.com/fkuhne/aday18



Agenda

- Investimento
- Open Hardware e Open Software
- Circuito Completo X Mínimo
- Bootloader
- Montagem do circuito
 - Em protoboard
 - Em PCI

Investimento



Arduino UNO R3 - ORIGINAL ITÁLIA + Cabo USB

Código: 05733

Mais Vendido

Poucas Unidades

ADICIONAR CASE:

Nenhum

de: R\$ 139,00 (Desconto de 7%)

Quantidade:

R\$ 128,90

+ 5% de desconto no boleto

1

COMPRAR

Adicionar aos favoritos

Parcelamento

À vista R\$ 128,90	7x de R\$ 20,68
2x de R\$ 67,36	8x de R\$ 18,36
3x de R\$ 45,56	9x de R\$ 16,55
4x de R\$ 34,67	10x de R\$ 15,10
5x de R\$ 28,14	11x de R\$ 13,92
6x de R\$ 23,79	12x de R\$ 12,94

Via PagSeguro



😊 Avaliações ★★★★★ | 💬 Comentários (2)

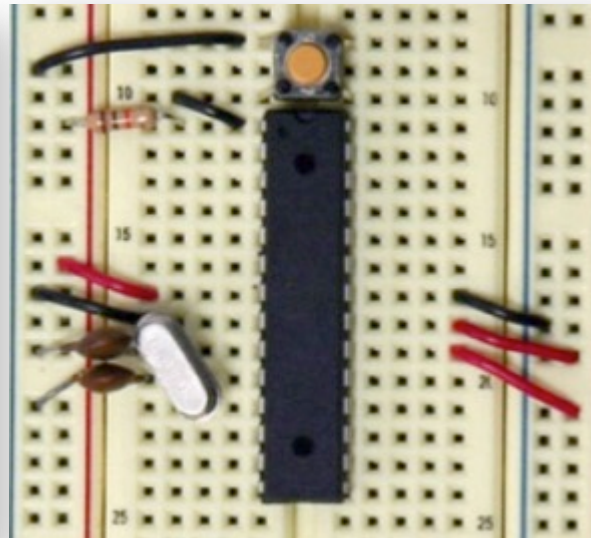
Investimento

- Preço de um clone UNO em POA: R\$48
- eBay: R\$13

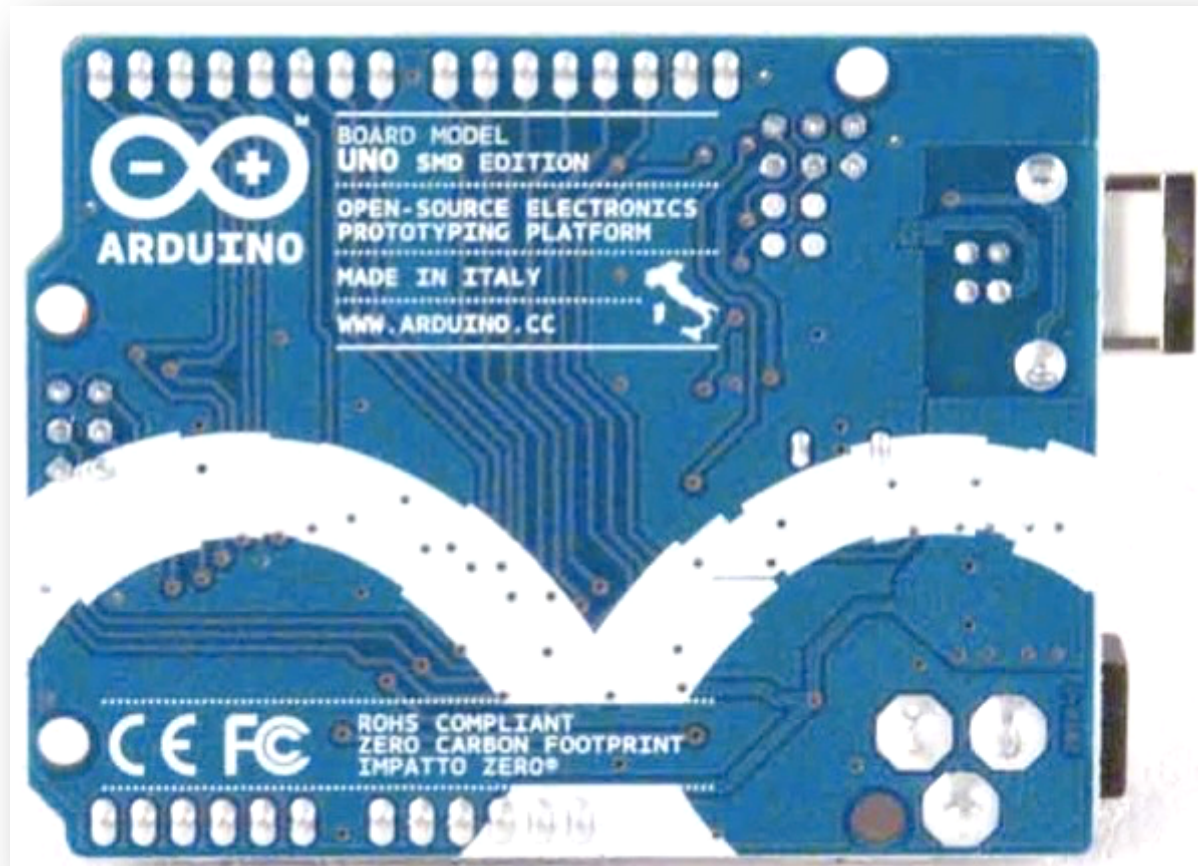


Investimento

- Kit *standalone*: R\$22
- eBay: Atmega328P: R\$ 6

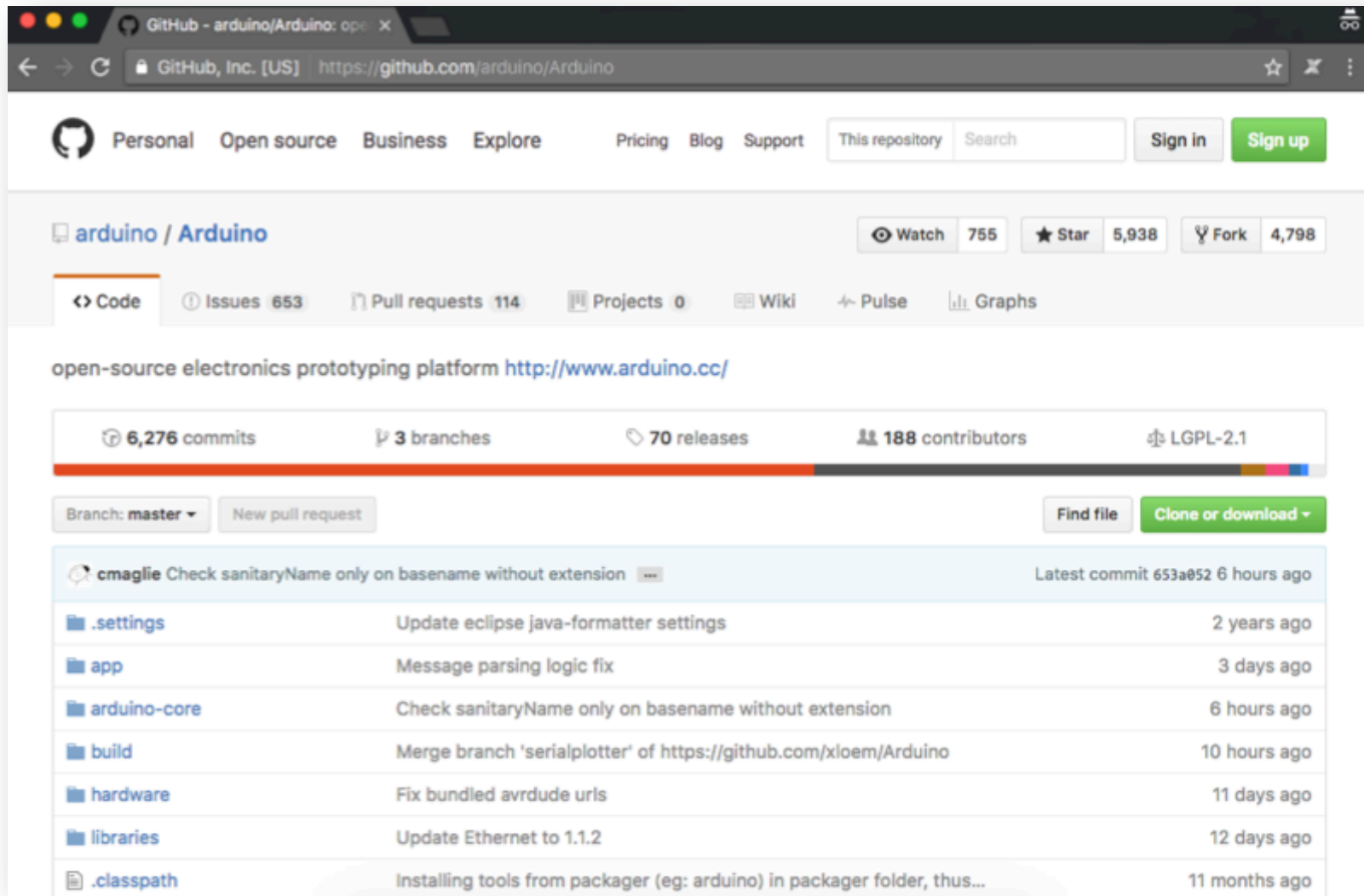


Arduino: Open SW E HW



Arduino: Open SW E HW

<https://github.com/arduino>



The screenshot shows the GitHub repository page for Arduino. The browser address bar displays "GitHub, Inc. [US] https://github.com/arduino/Arduino". The repository name "arduino / Arduino" is shown with 755 watchers, 5,938 stars, and 4,798 forks. The repository description is "open-source electronics prototyping platform http://www.arduino.cc/". The repository statistics bar shows 6,276 commits, 3 branches, 70 releases, 188 contributors, and the LGPL-2.1 license. The "master" branch is selected. A table of recent commits is displayed, including a commit by cmaglie titled "Check sanitaryName only on basename without extension" 6 hours ago, and several other commits related to settings, message parsing, and hardware updates.

GitHub - arduino/Arduino: open-source electronics prototyping platform <http://www.arduino.cc/>

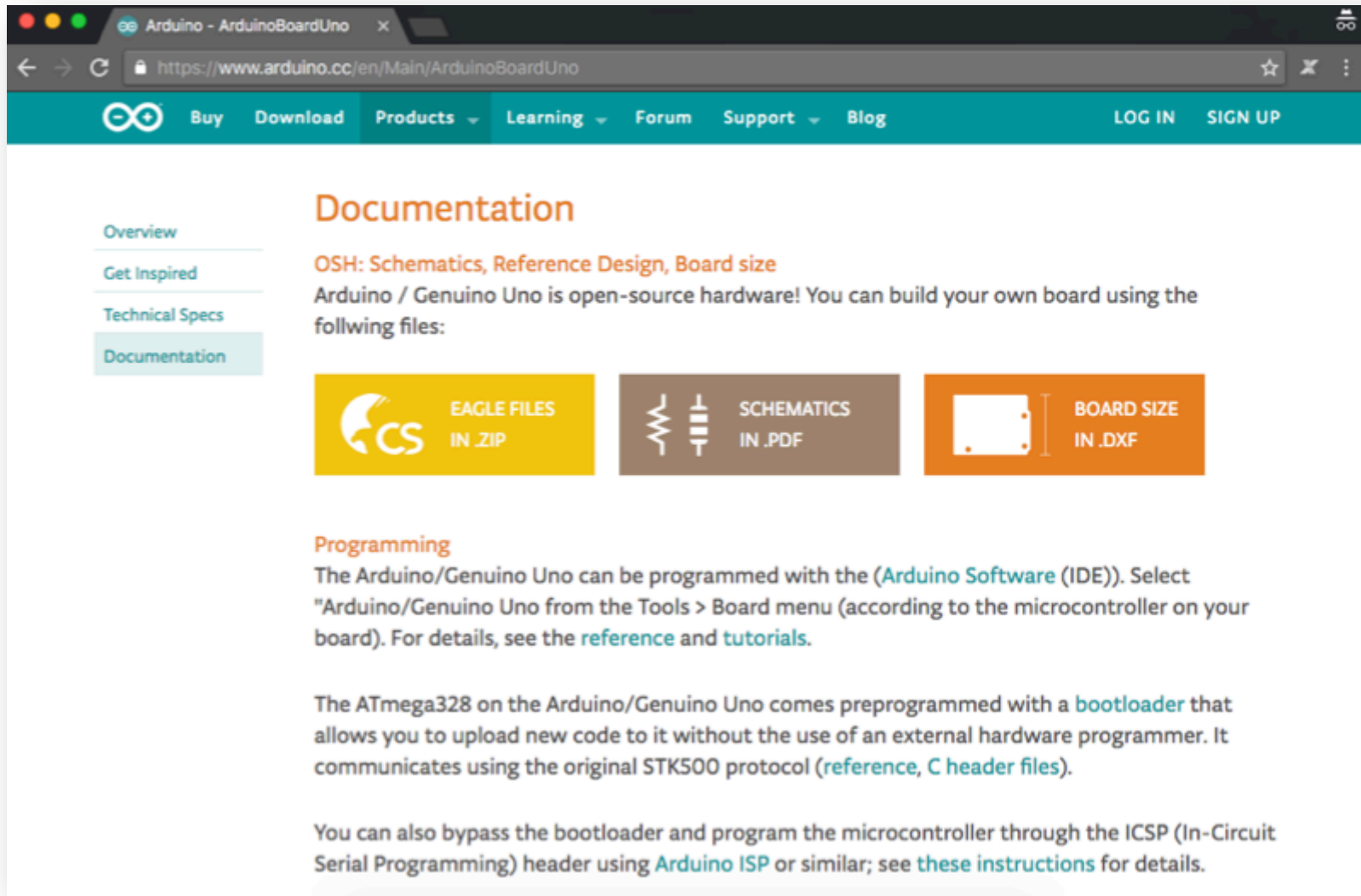
6,276 commits 3 branches 70 releases 188 contributors LGPL-2.1

Branch: master New pull request Find file Clone or download

Commit	Message	Time
cmaglie	Check sanitaryName only on basename without extension	Latest commit 653a052 6 hours ago
	Update eclipse java-formatter settings	2 years ago
	Message parsing logic fix	3 days ago
	Check sanitaryName only on basename without extension	6 hours ago
	Merge branch 'serialplotter' of https://github.com/xloem/Arduino	10 hours ago
	Fix bundled avrdude urls	11 days ago
	Update Ethernet to 1.1.2	12 days ago
	Installing tools from packager (eg: arduino) in packager folder, thus...	11 months ago

Arduino: Open SW E HW

<https://www.arduino.cc/en/Main/ArduinoBoardUno>



The screenshot shows the Arduino website's page for the ArduinoBoardUno. The browser address bar displays the URL <https://www.arduino.cc/en/Main/ArduinoBoardUno>. The website's navigation bar includes links for Buy, Download, Products, Learning, Forum, Support, and Blog, along with LOG IN and SIGN UP buttons. On the left, a sidebar menu lists Overview, Get Inspired, Technical Specs, and Documentation (which is highlighted). The main content area is titled "Documentation" and features a section for "OSH: Schematics, Reference Design, Board size". This section states that the Arduino/Genuino Uno is open-source hardware and provides links to download files: EAGLE FILES IN .ZIP, SCHEMATICS IN .PDF, and BOARD SIZE IN .DXF. Below this, a "Programming" section explains that the board can be programmed with the Arduino Software (IDE) and provides instructions on selecting the board from the Tools > Board menu. It also mentions the ATmega328 microcontroller, its bootloader, and the STK500 protocol. A final paragraph notes that the bootloader can be bypassed using the ICSP header and provides a link to instructions.

Arduino - ArduinoBoardUno

← → ↻ <https://www.arduino.cc/en/Main/ArduinoBoardUno> ☆ ✕ ⋮


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Overview
Get Inspired
Technical Specs
Documentation


Documentation

OSH: Schematics, Reference Design, Board size

Arduino / Genuino Uno is open-source hardware! You can build your own board using the following files:

 EAGLE FILES
IN .ZIP

 SCHEMATICS
IN .PDF

 BOARD SIZE
IN .DXF

Programming

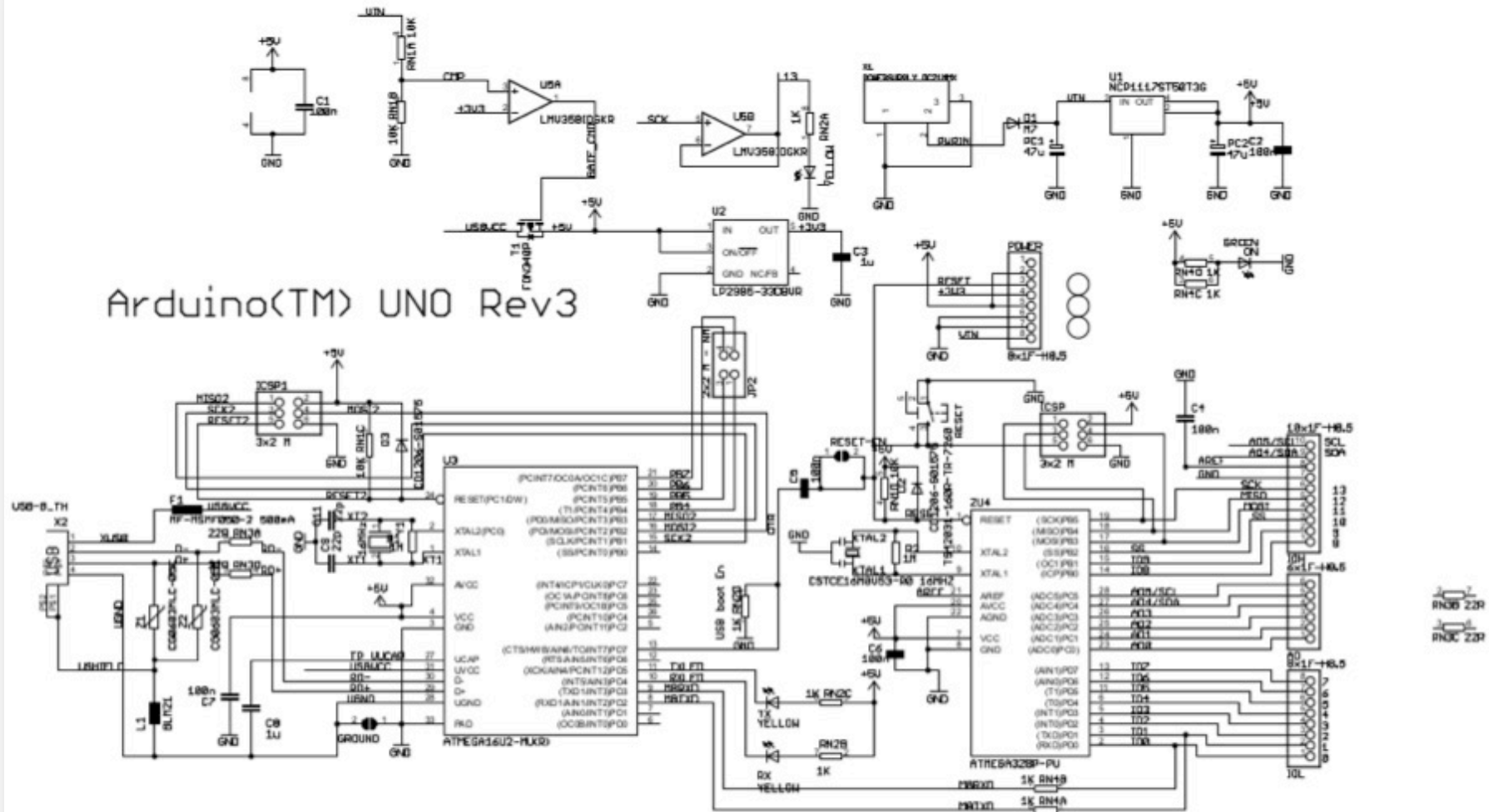
The Arduino/Genuino Uno can be programmed with the (Arduino Software (IDE)). Select "Arduino/Genuino Uno from the Tools > Board menu (according to the microcontroller on your board). For details, see the [reference](#) and [tutorials](#).

The ATmega328 on the Arduino/Genuino Uno comes preprogrammed with a [bootloader](#) that allows you to upload new code to it without the use of an external hardware programmer. It communicates using the original STK500 protocol ([reference](#), [C header files](#)).

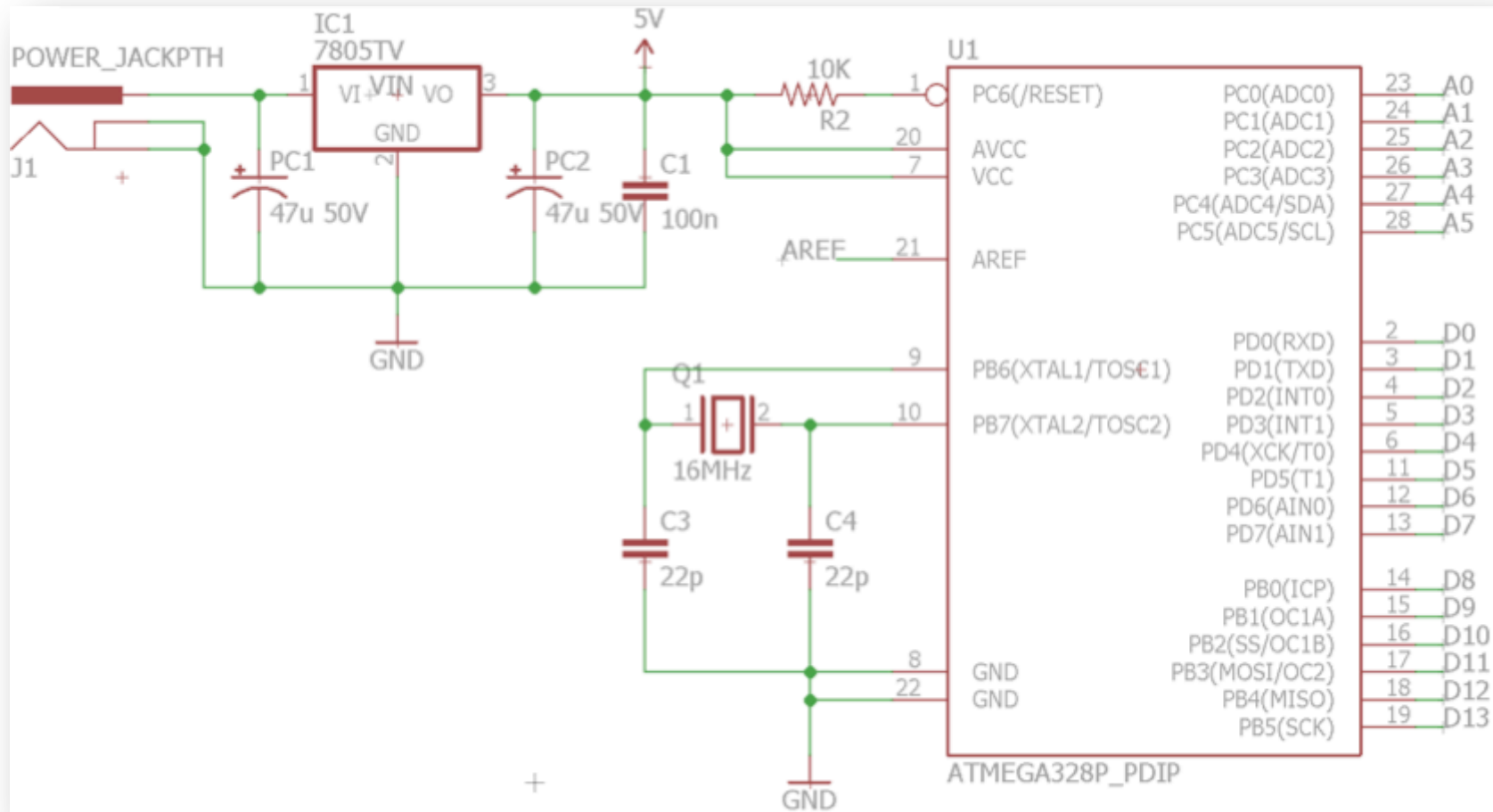
You can also bypass the bootloader and program the microcontroller through the ICSP (In-Circuit Serial Programming) header using [Arduino ISP](#) or similar; see [these instructions](#) for details.

Circuito Completo

Arduino(TM) UNO Rev3

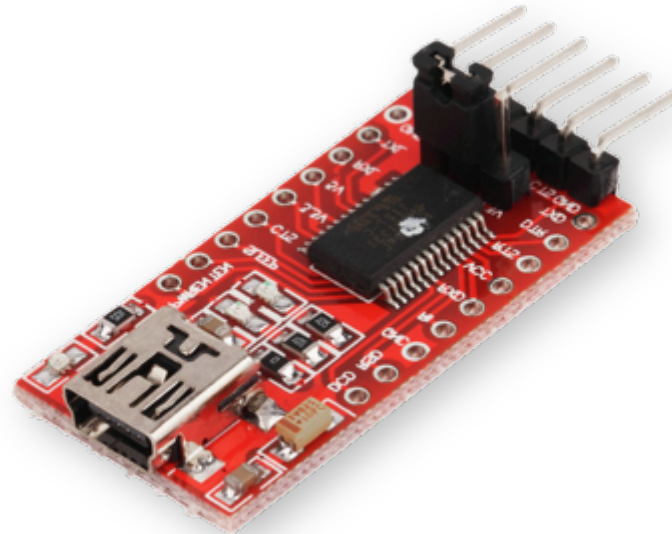


Circuito Mínimo (sem FTDI)



Circuito Mínimo (sem FTDI)

- FTDI: conversor serial/USB
- Necessário quando vamos comunicar com o PC e gravar *sketches*
- Pode ser compartilhado com várias placas!
- Em POA: R\$34
- E-bay: R\$6
- Cabo!! (mini USB B)



Bootloader

- Programa que gerencia o carregamento de *sketches* via conexão com o Arduino IDE
- Ocupa 512 bytes na memória flash
- <http://www.arduino.cc/en/Hacking/Bootloader>

Bootloader

- Como gravar o bootloader em um chip novo?
- É necessário um hardware externo: *In System Programmer* (ISP)
- Método usado aqui: *Arduino ISP*:
<http://www.arduino.cc/en/Tutorial/ArduinoISP>

Arduino ISP:

- Criando um *Arduino ISP*:

1º) Conectar um (outro) Arduino no PC

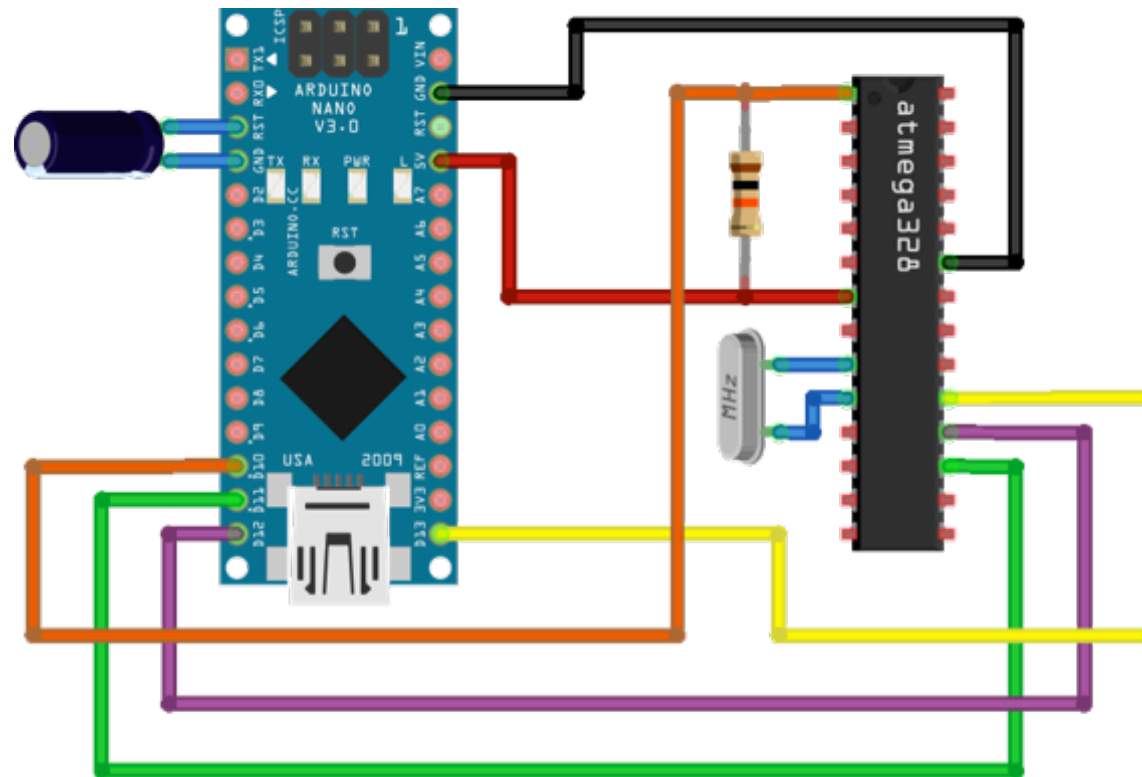
2º) Gravar o sketch *ArduinoISP*

3º) Adicionar um capacitor de 10uF entre o RST e o GND

Pronto! Temos um gravador de AVR's! :)

Bootloader

4º) Conectar o Arduino ISP ao Atmega (conexão SPI):

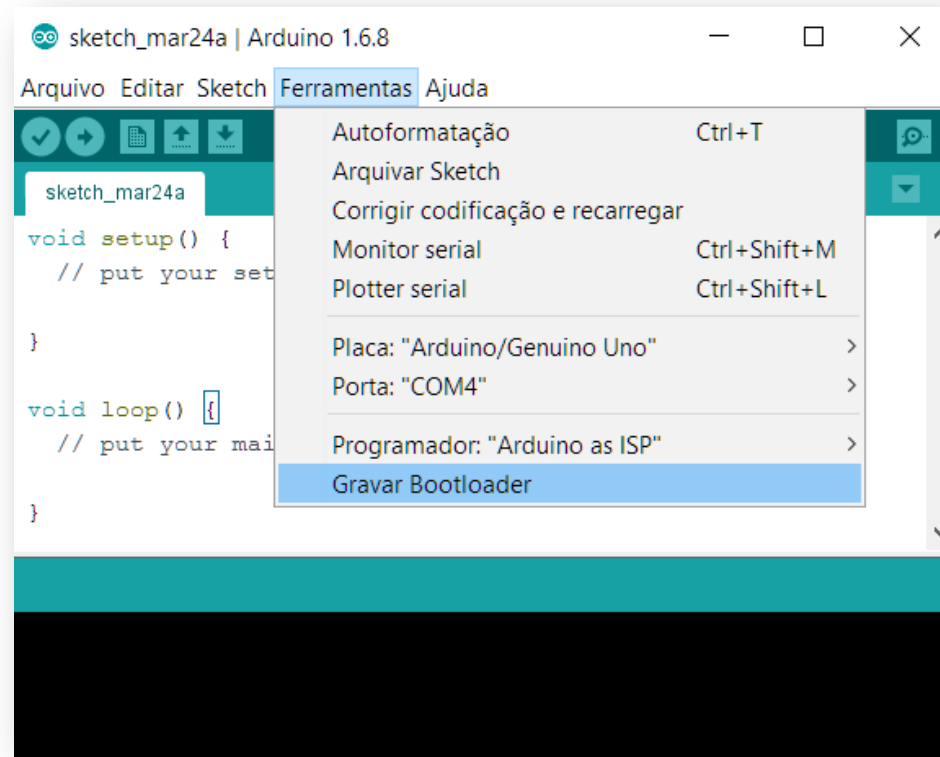


Gravando o bootloader

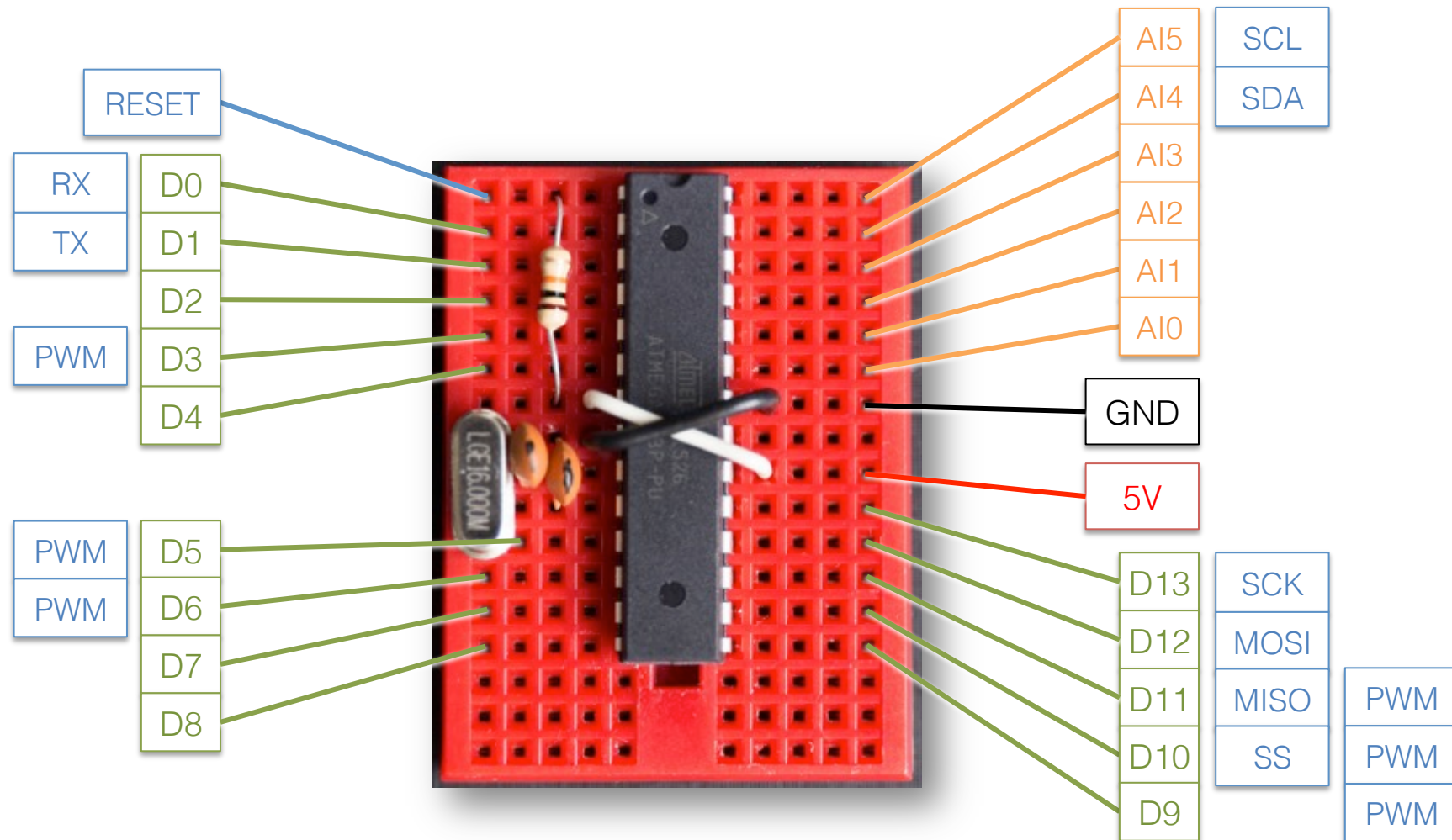
5º) Selecionar placa (Uno) e porta serial

6º) Selecionar programador “Arduino as ISP”

7º) Selecionar “Gravar Bootloader”:

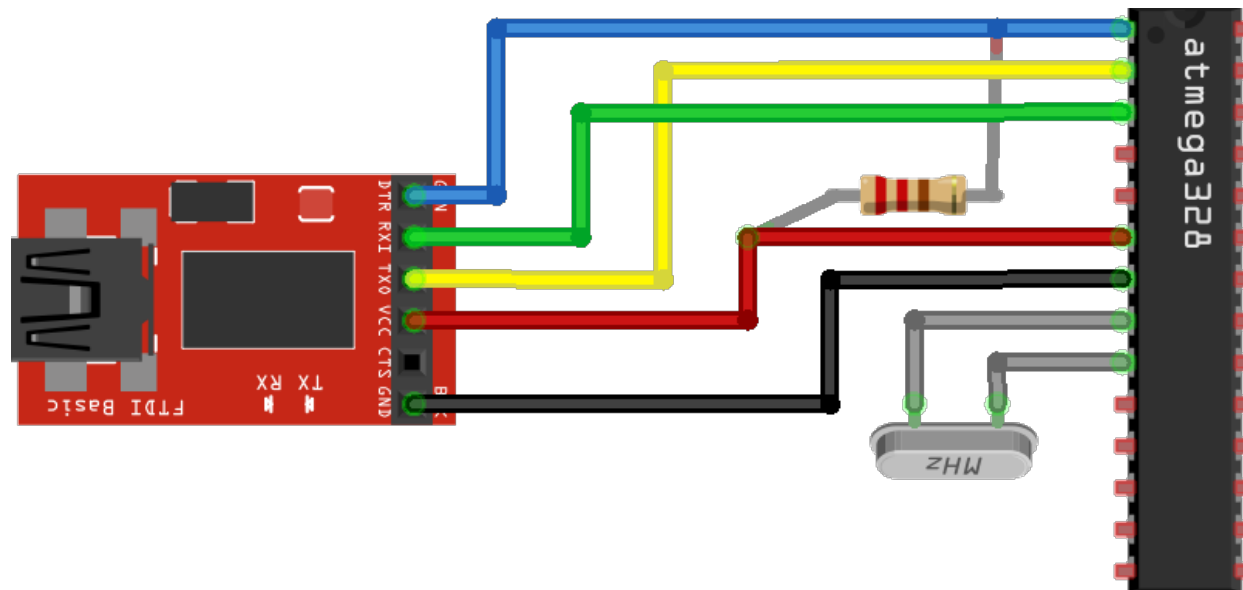


Montagem em Protoboard

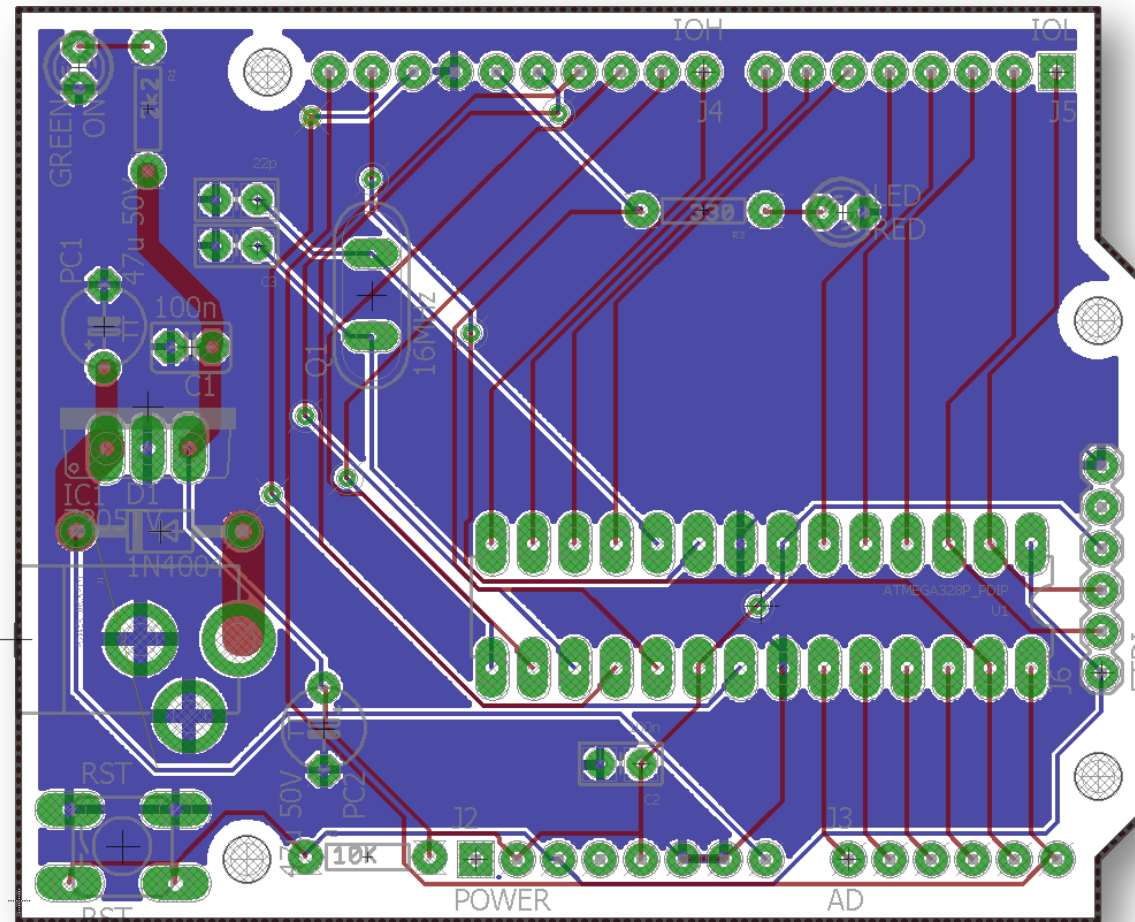


Montagem em Protoboard

- Conexão com a placa FTDI:

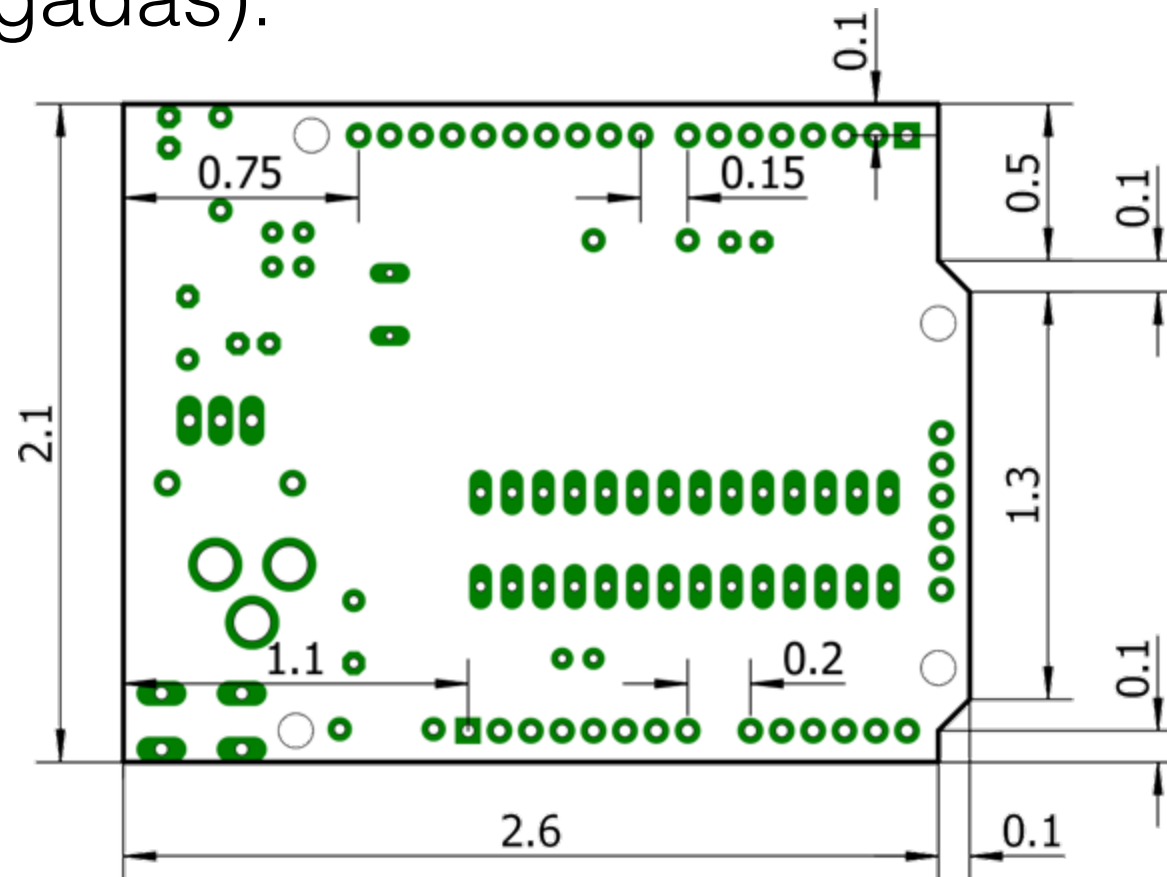


Montagem em PCI

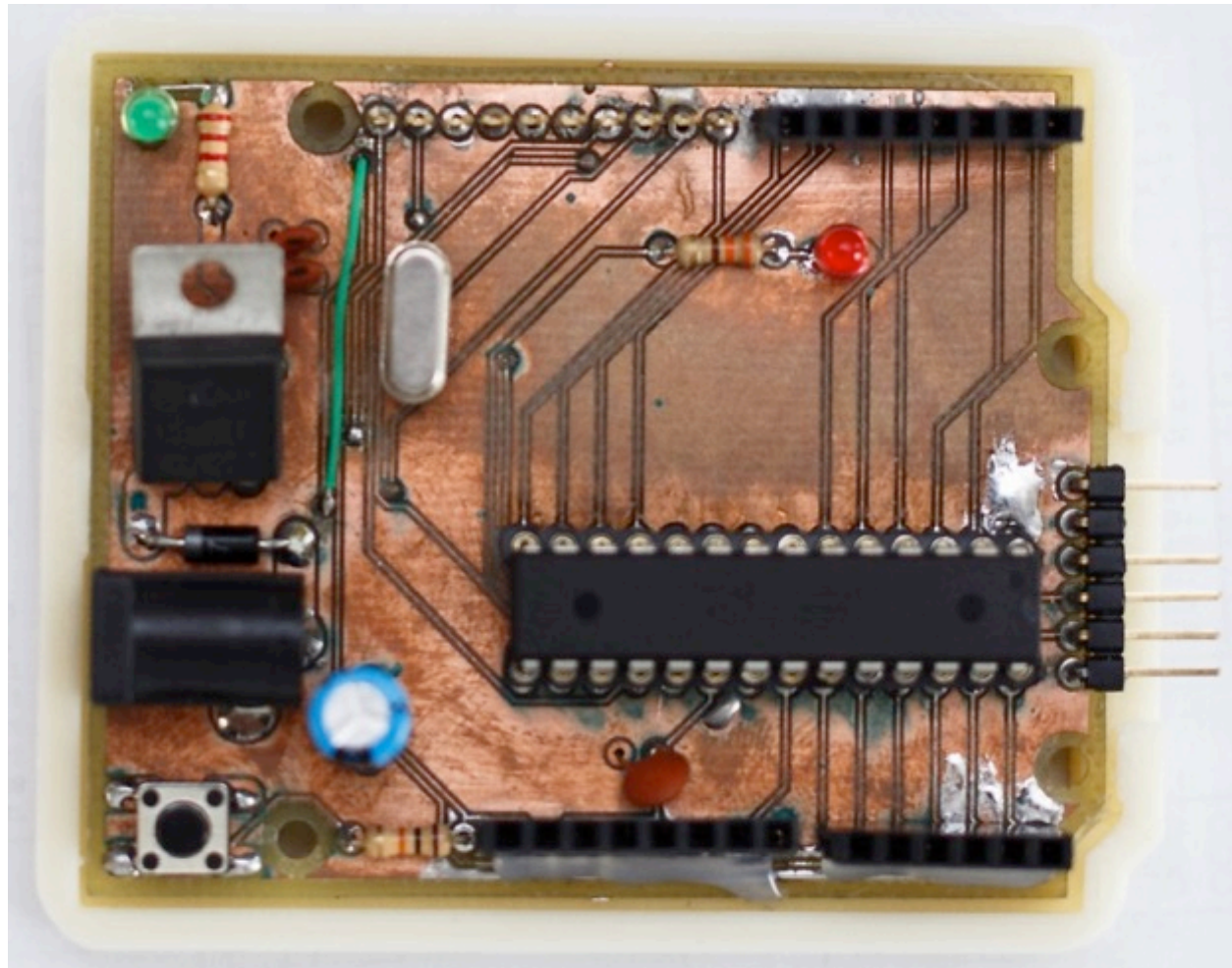


Montagem em PCI

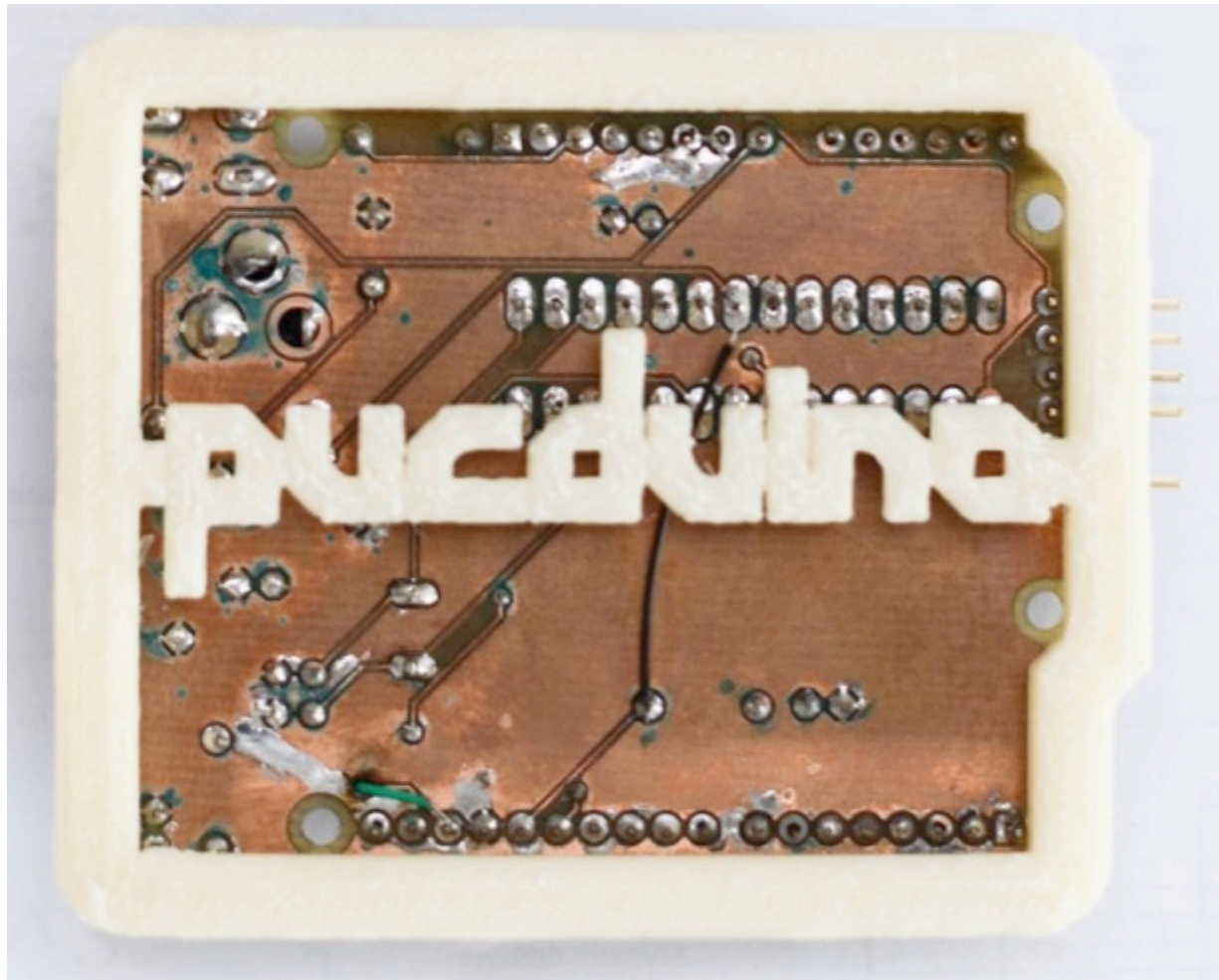
- Dimensões de um Arduino Uno (em polegadas):



Montagem em PCI



Montagem em PCI



Recursos utilizados neste projeto

- Kit standalone Webtrônico:
www.webtronico.com/arduinos/placas-arduino/kit-arduino-standalone.html
- Arduino Pinouts:
pighixxx.com/atmega328v3_0.pdf
pighixxx.com/unov3pdf.pdf
pighixxx.com/nanopdf.pdf
- Fritzing:
fritzing.org
- EAGLE:
www.cadsoftusa.com/download-eagle
- Lib componentes Sparkfun:
github.com/sparkfun/SparkFun-Eagle-Libraries

Recursos utilizados neste projeto

- Fabricação da PCB no LEE (LPKF)
- Gravação do bootloader: Arduino Nano
- FTDI
- Componentes diversos (resistores, capacitores, LEDs, protoboards) roubados do LEE ou comprados no eBay

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