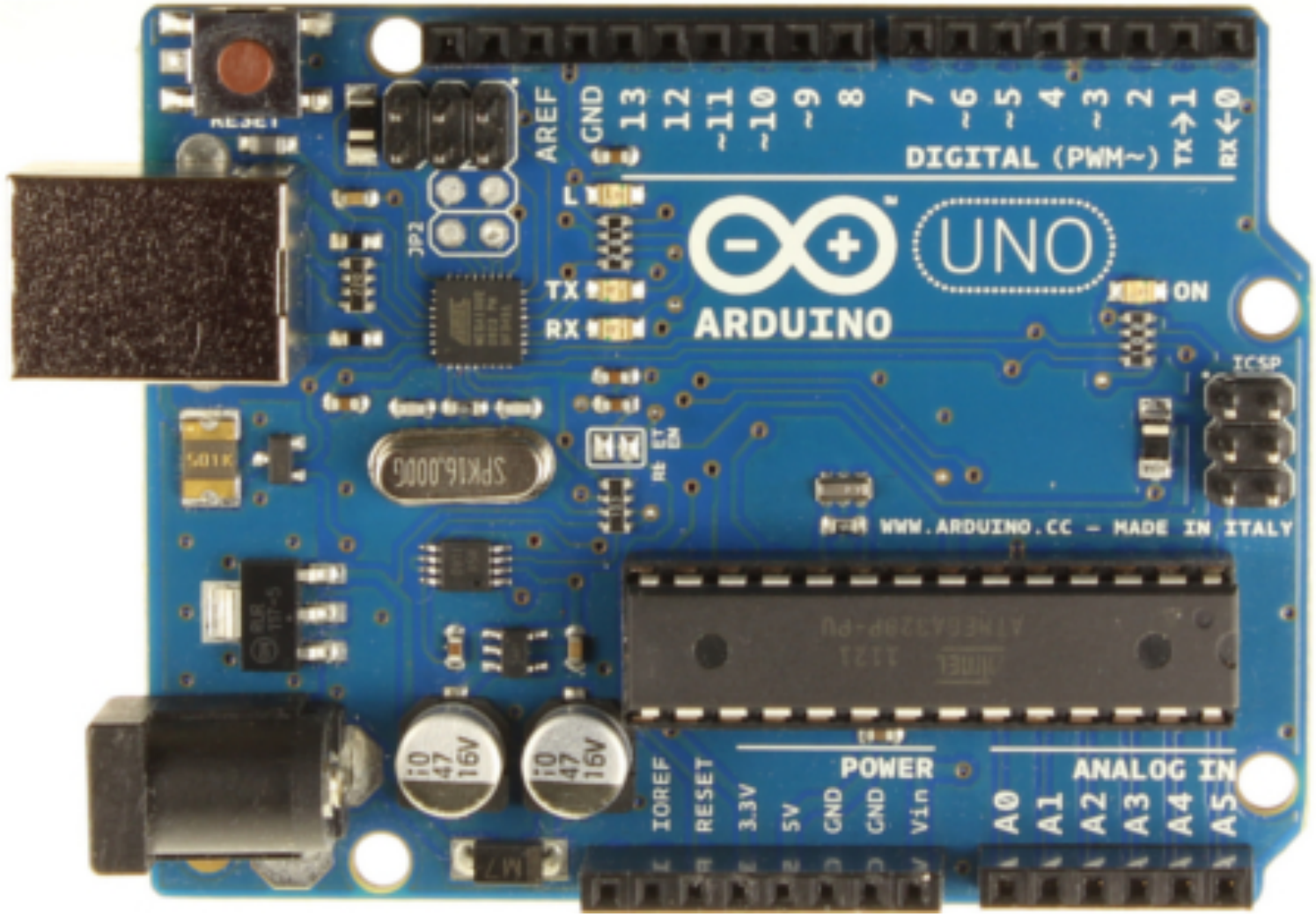
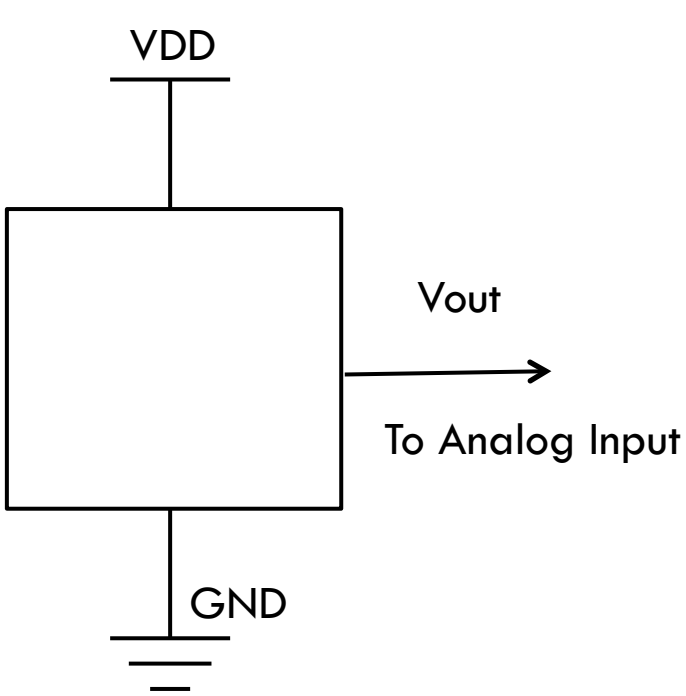
ARDUINO UNO

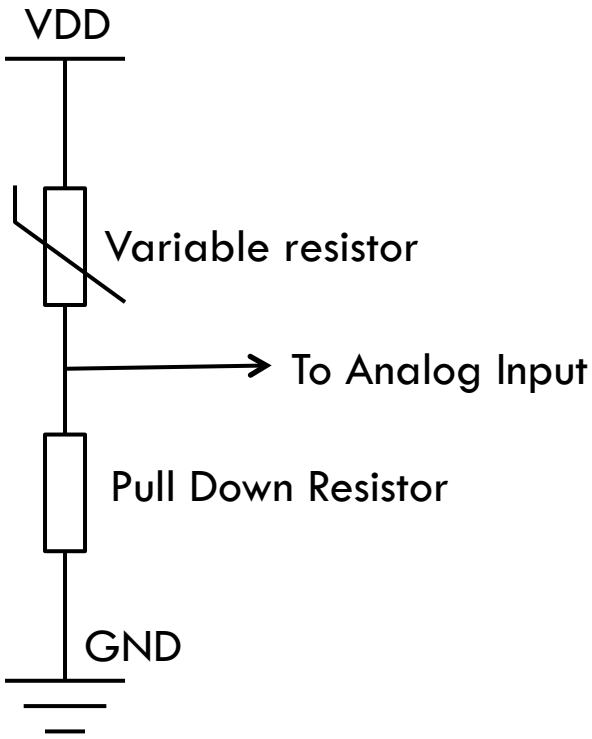
Connecting Sensors/Actuators

The board

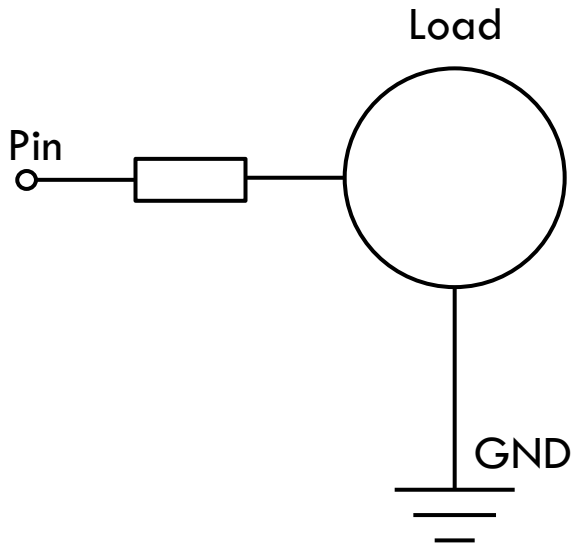

AREF
GND
13
12
~11
~10
~9
8
7
~6
~5
4
~3
2
TX→1
RX←0
DIGITAL (PWM~)
L
TX
RX
ARDUINO
UNO
ON
ICSP
WWW.ARDUINO.CC – MADE IN ITALY
POWER
ANALOG IN
IOREF
RESET
3.3V
5V
GND
GND
Vin
A0
A1
A2
A3
A4
A5

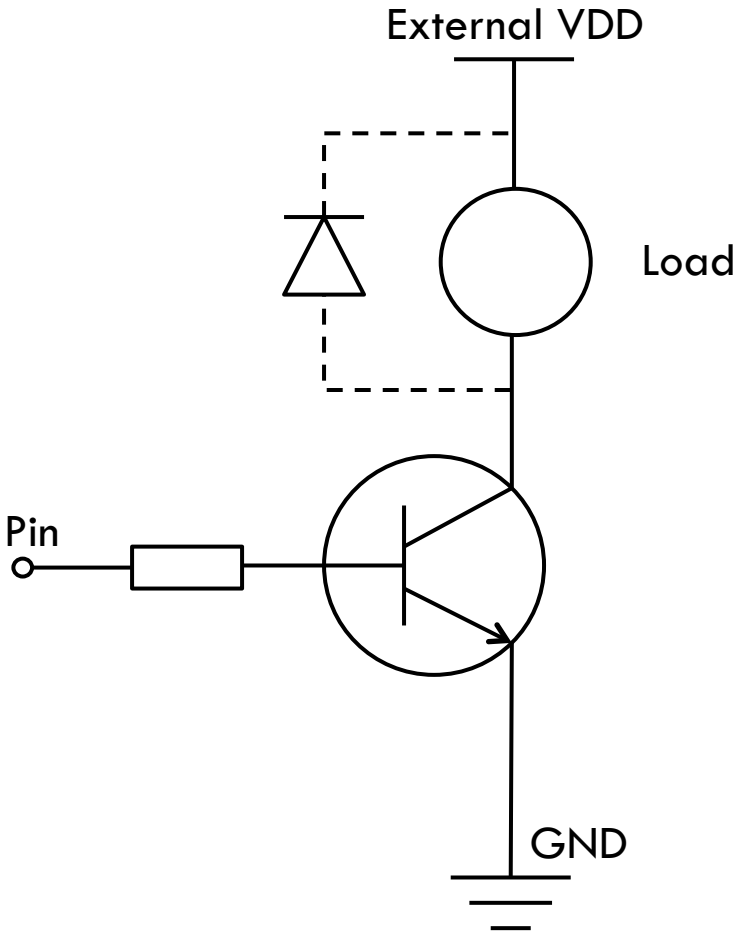
Connecting a sensor





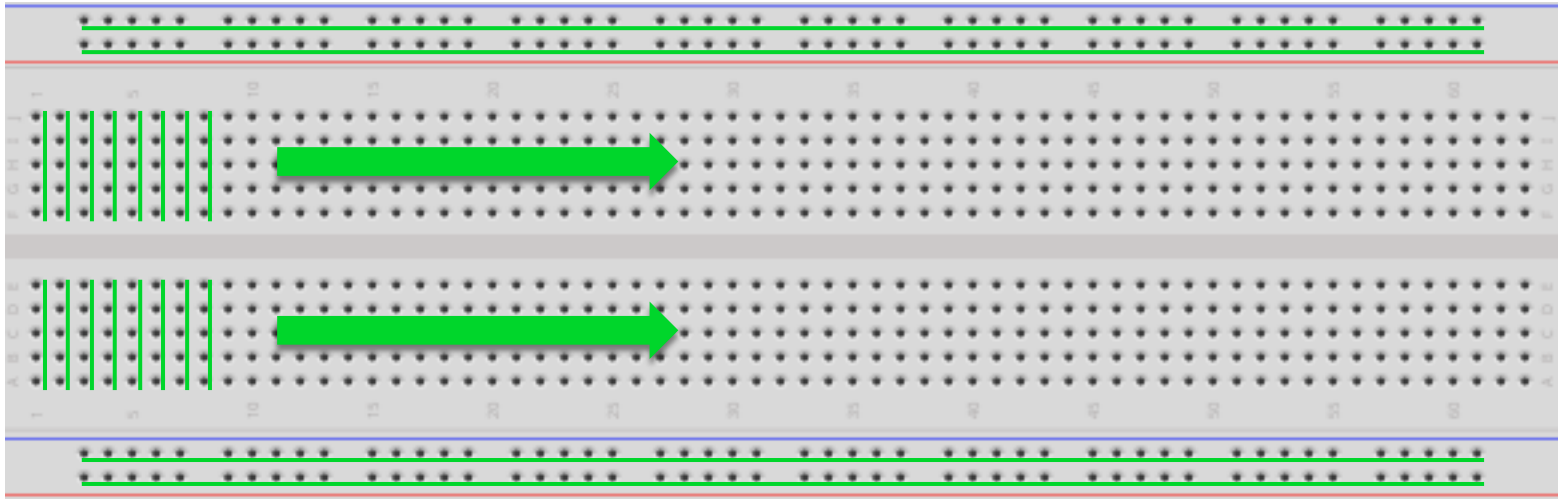
Connecting an actuator or a load





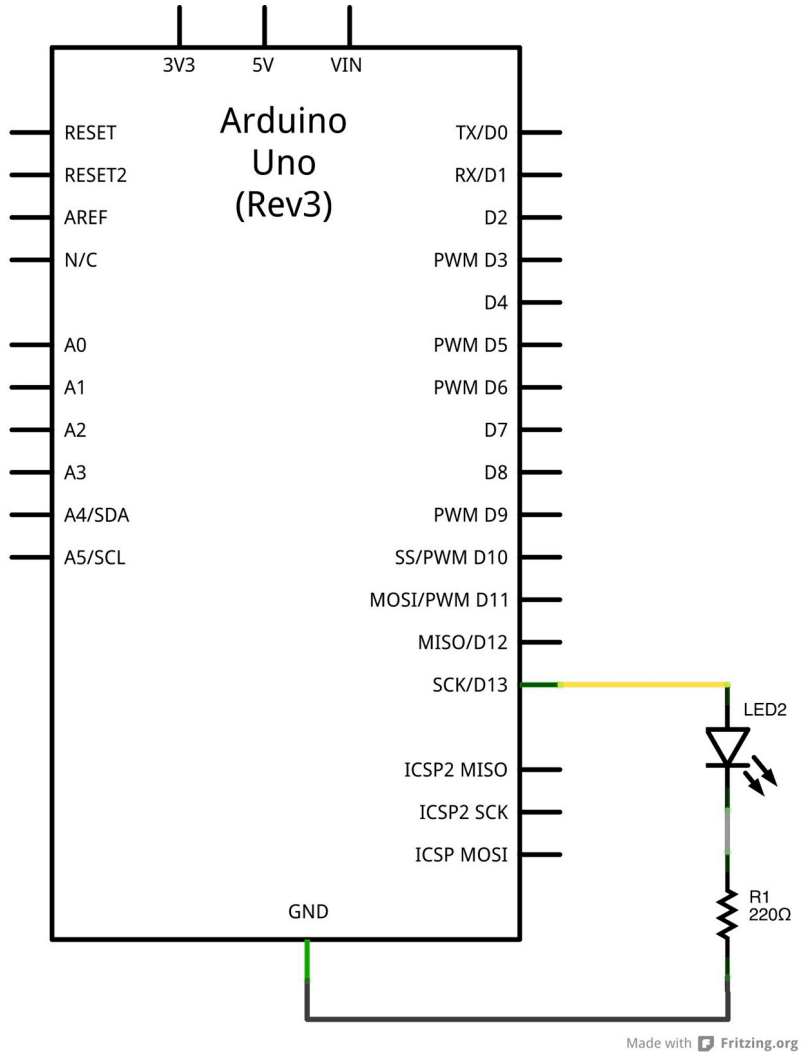
Breadboard

- Useful for rapid prototyping
- Holes connected by green lines are short-circuited

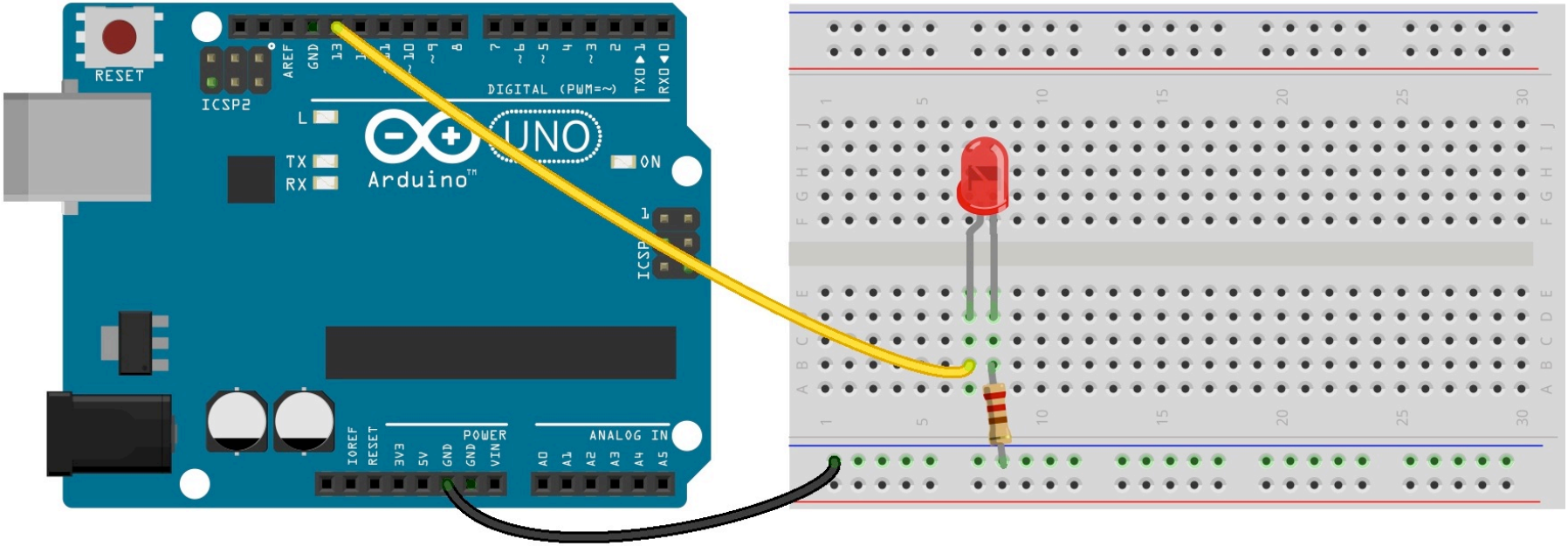


A preliminary example with Fritzing

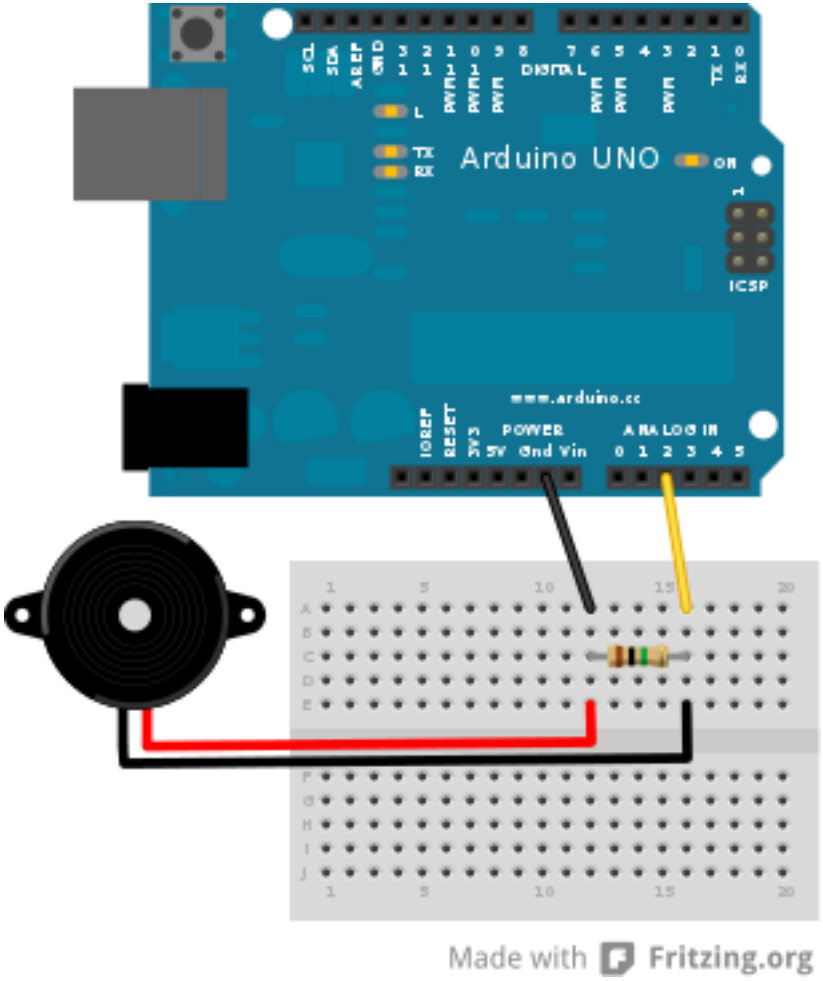
Fritzing is an open-source hardware initiative that makes electronics accessible as a creative material for anyone. They offer a software tool, a community website and services to support designers and artists ready to move from physical prototyping to actual product.



A preliminary example with Fritzing

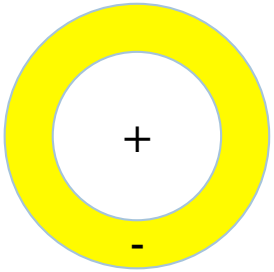


Other examples: Piezo



Can act as input or output (knock sensor or buzzer).

In the picture there is the knock sensor configuration

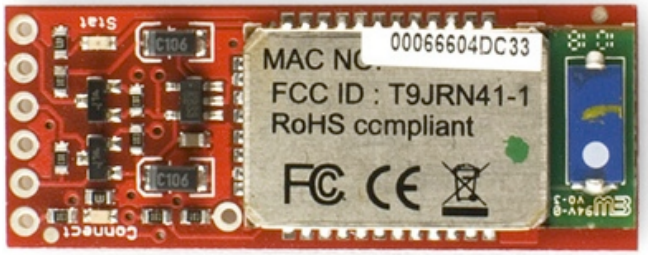


Temperature sensor: LM35

LM35DZ (TO-92 Package) is a precision integrated-circuit temperature sensor, whose output voltage is linearly proportional to the Celsius (Centigrade) temperature (Linear + 10.0 mV/°C scale factor). As it draws only 60 μA from its supply, it has very low self-heating, less than 0.1°C in still air. The LM35 is rated to operate over a −55°C to +150°C temperature range.

BT Module: BlueSMiRF

- Can communicate with any other Bluetooth device that supports SPP
- Recognized as "FireFly-XXXX" with XXXX last part of MAC address
- Pairing password is 1234
- Baud rate is 9600 symbols/s (default was 115200 symbols/s)



https://www.sparkfun.com/products/12582

BT Module: BlueSMiRF

- Test it with a BT terminal e.g. *GetBlue Demo* (Android app).

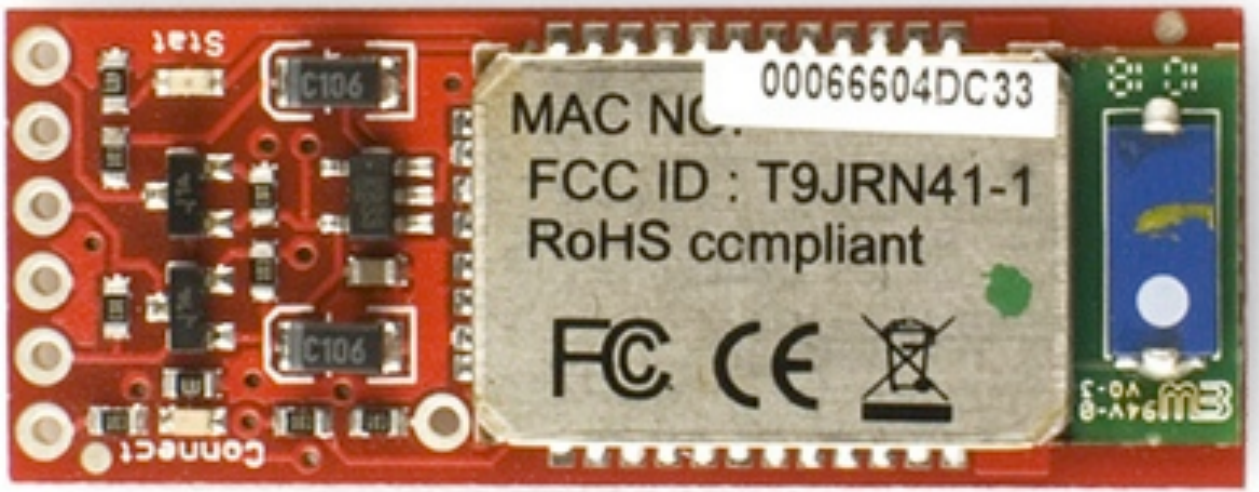
GetBlue Demo settings:

- Source => BT
- Destination => None
- Bidirectional mode.

BT Module: BlueSMiRF

Pin Names:

RTS – O
RX – I
TX – O
GND
VCC
CTS–I



VCC range goes from 3.3V to 6 V

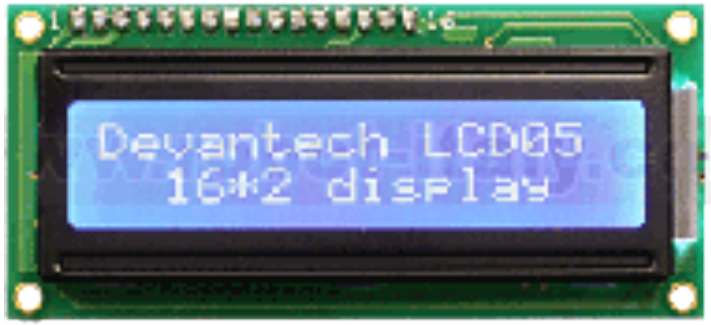
Remember:

BlueSMiRF TX => Arduino RX

BlueSMiRF RX => Arduino TX

LCD Module: LCD05

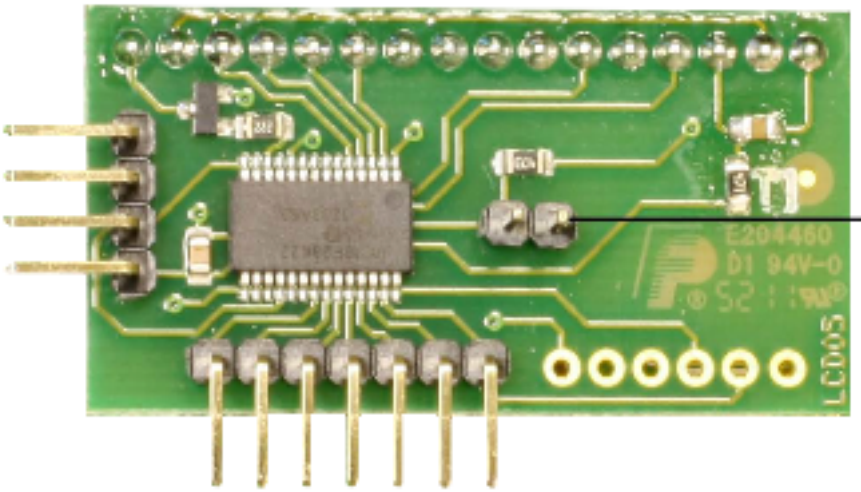
- Adjustable backlight and contrast with software commands
- 100 byte FIFO buffer
- Start-up screen can be personalised
- 20x4 or 16x2 screens can be used
- Keypad automatically scanned
- Array of useful commands
- Custom character generation
- Supports I2C/Serial modes
- 5 useable addresses for I2C



LCD Module: LCD05

PIN names:

VCC (5V)
SDA/TX
SCL/RX
GND



Mode:
Open =>I2C
Closed => Serial

Keypad connections
(see link below)

Remember:
LCD TX => Arduino RX
LCD RX => Arduino TX

http://www.robot-electronics.co.uk/htm/Lcd05tech.htm

RFID Module: Parallax RFID Reader

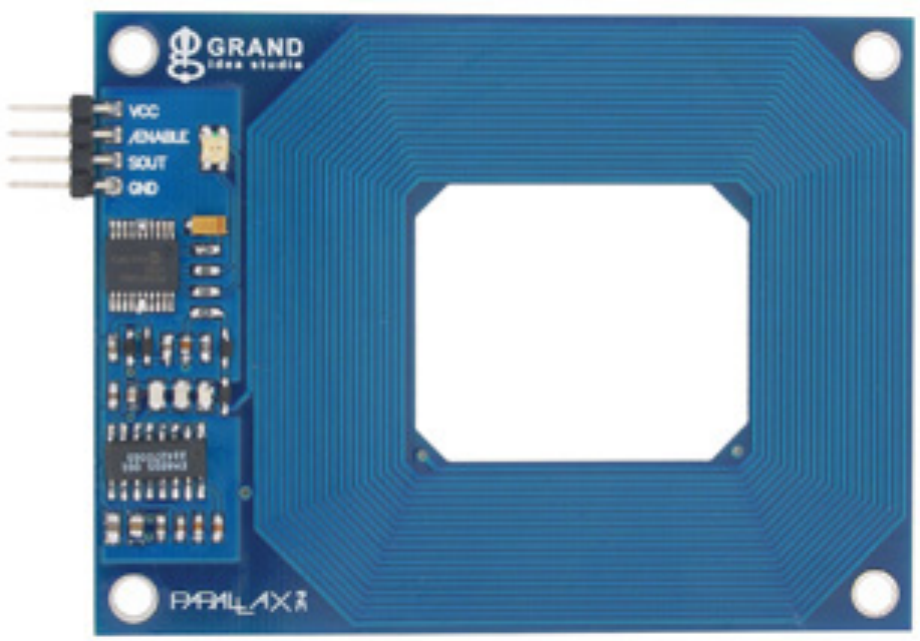
- Serial RFID Reader
- Baud rate 2400 symbols/s
- /ENABLE (LOW means: device enabled)
- Tags length is 12 bytes:

  \n + data + \r
  - \n = 0x0A = 10 => 1 byte
  - data => 10 bytes ID
  - \r = 0x0D = 13 => 1 byte

RFID Module: Parallax RFID Reader

PIN names:

VCC (5V)
/Enable
TX
GND



Remember: RFID TX => Arduino RX