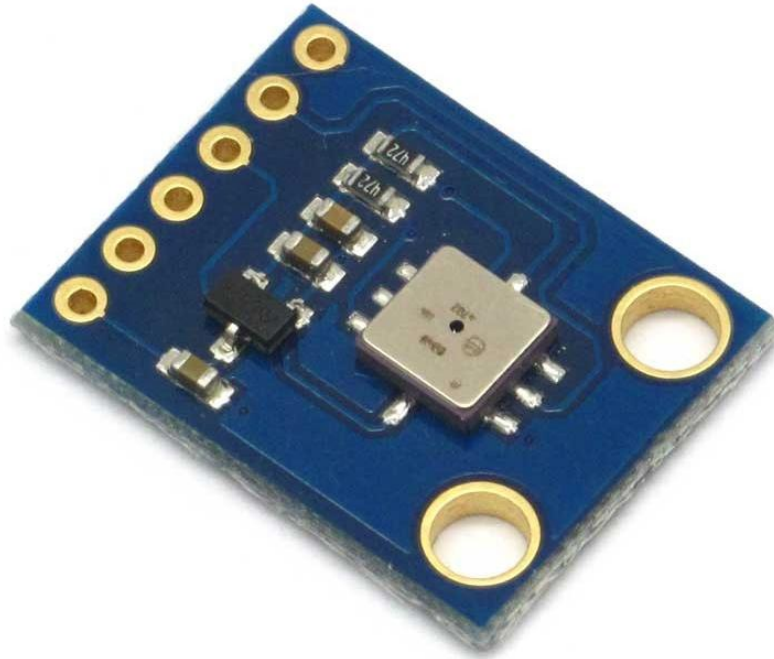


BMP085 BAROMETRIC SENSOR



Description

The BMP085 is a simple sensor specially designed for barometric pressure measurements and also includes temperature measurements. It is a fairly low cost tool that can be used in weather monitoring applications and altitude measurements. As the altitude increases (measured above sea level), the air pressure decreases. This means that in measuring the pressure, the altitude can be determined, reducing cost expense or size of using a GPS device. Also, atmospheric pressure is mainly used in predicting weather which explains why weather-casters frequently talk about the "pressure systems".

The BMP085 is used in mobile phones, PDAs, GPS navigation, and outdoor equipment. With a low altitude noise of merely 0.25m at fast conversion time, the

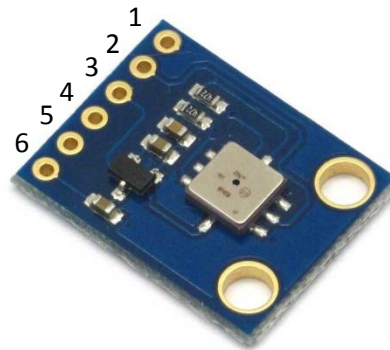
BMP085 offers superior performance. The I2C interface allows for easy system integration with a microcontroller.

Specifications

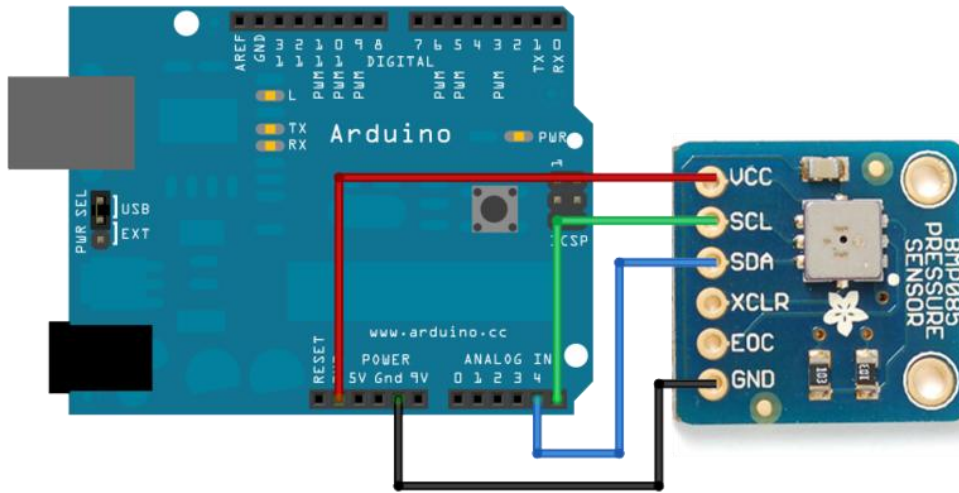
- Pressure range: 300 - 1100hPa (9000 meters above sea level to -500 m)
- Power supply voltage: 1.8V - 3.6V (VDDA) 1.62V - 3.6V (VDDD)
- LCC8 package: lead-free ceramic carrier package (LCC)
- Size: 5.0mmx5.0x1.2mm
- Low power consumption: 5 μ A in standard mode
- High precision: low-power mode, the resolution of 0.06hPa (0.5 m)
- High linear mode, a resolution of 0.03hPa (0.25 meters)
- With temperature output
- I2C interface
- Temperature compensation
- Lead-free, RoHS compliant
- MSL 1
- Reaction time: 7.5ms
- Standby current: 0.1 μ A

Pin Configuration

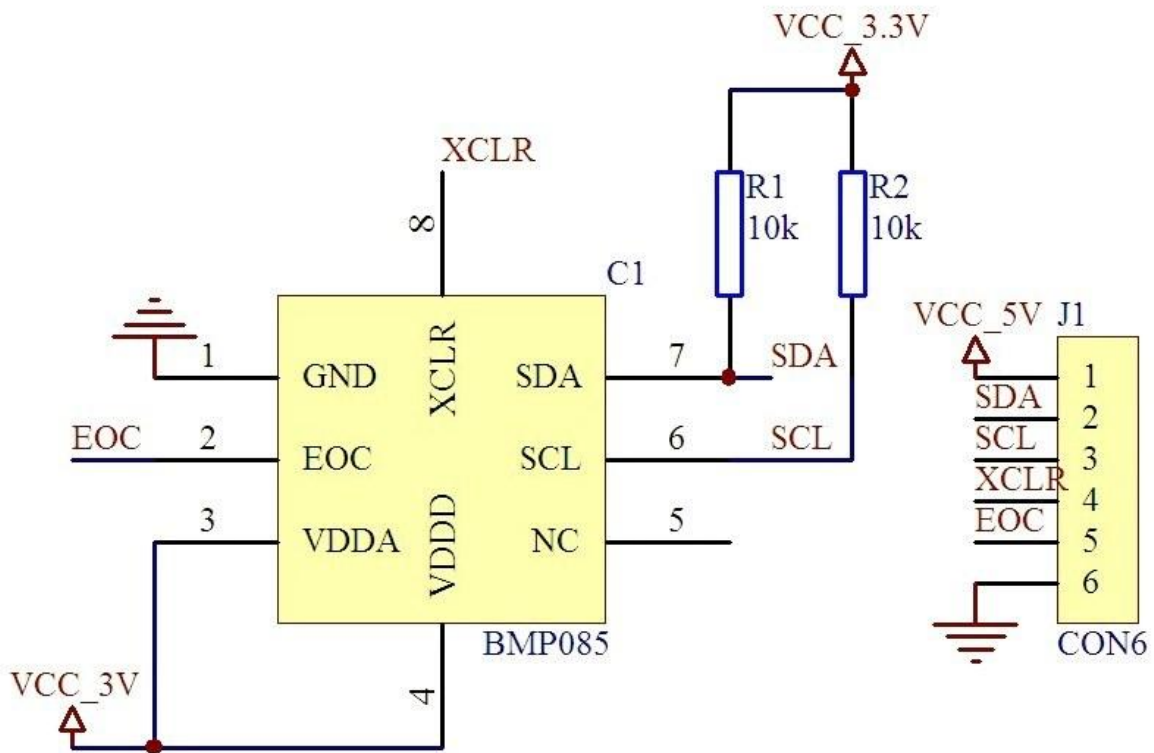
1. VCC: 3.3V DC
2. SDA: I2C data line
3. SCL: I2C clock line
4. XCLR: reset
5. EOC: end-of-conversion
6. GND: ground



Wiring Diagram



Schematic Diagram



Sample Sketch

```
#include "Wire.h"
#include "Adafruit_BMP085.h"

Adafruit_BMP085 bmp;

void setup() {
  Serial.begin(9600);
  bmp.begin();
}

void loop() {
  Serial.print("Temperature = ");
  Serial.print(bmp.readTemperature());
  Serial.println(" *C");

  Serial.print("Pressure = ");
  Serial.print(bmp.readPressure());
  Serial.println(" Pa");

  // Calculate altitude assuming 'standard' barometric
  // pressure of 1013.25 millibar = 101325 Pascal
  Serial.print("Altitude = ");
  Serial.print(bmp.readAltitude());
  Serial.println(" meters");

  Serial.println();
  delay(500);
}
```

How to Test

The components to be used are:

- microcontroller (any compatible arduino)
 - BMP085 barometric sensor
 - Pin connectors
 - Breadboard
 - USB cable
1. Connect the components based on the figure shown in the wiring diagram using pin connectors. VCC pin is connected to the 3.3V power supply, GND pin is connected to the GND, the SCL pin is connected to A5/SCL pin, and the SDA pin is connected to A4/SDA pin.

2. After hardware connection, insert the sample sketch into the Arduino IDE.
3. [Download](#) and import Adafruit_BMP085 into the library.
4. Using a USB cable, connect the ports from the microcontroller to the computer.
5. Upload the program.
6. See the results in the serial monitor.

Testing Results

The serial monitor shows the values of temperature in °C, pressure in Pa (Pascals) and altitude in meters above sea level. The calculated altitude is assumed in standard barometric pressure. For an accurate altitude result, insert the *value* of current sea level pressure in `bmp.readAltitude(value)` function.

Test that the sensor is measuring variations by placing your finger tip over the top of the sensor. Then, the temperature and pressure will increase while the altitude will decrease since the pressure drops as we gain altitude.

