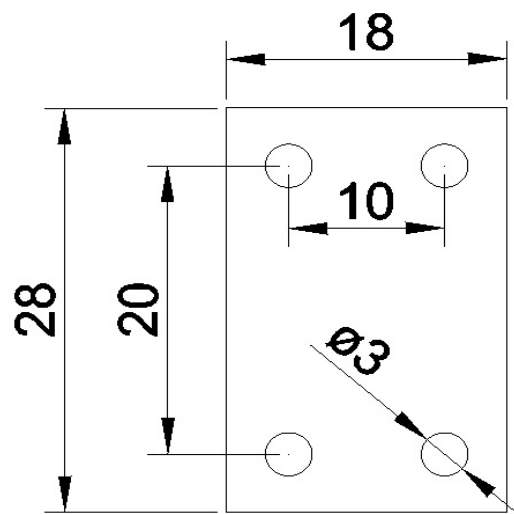
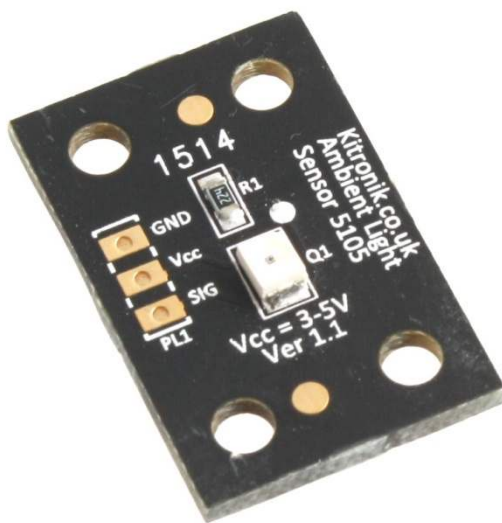


## Ambient Light Sensor Breakout - [5105](#)

### Circuit Overview

This circuit uses the SFH 320-3/4-Z phototransistor and provides an analogue signal which gives a representation of the levels of light that are falling on the phototransistor on the board. This is achieved by creating a potential divider using a 2.2M resistor and the phototransistor. As the light level increases, the resistance of the phototransistor decreases, which increases the voltage at the SIG pin. So by reading the voltage at the SIG pin you can determine how much light the phototransistor is being exposed to.



(Measurements in mm)

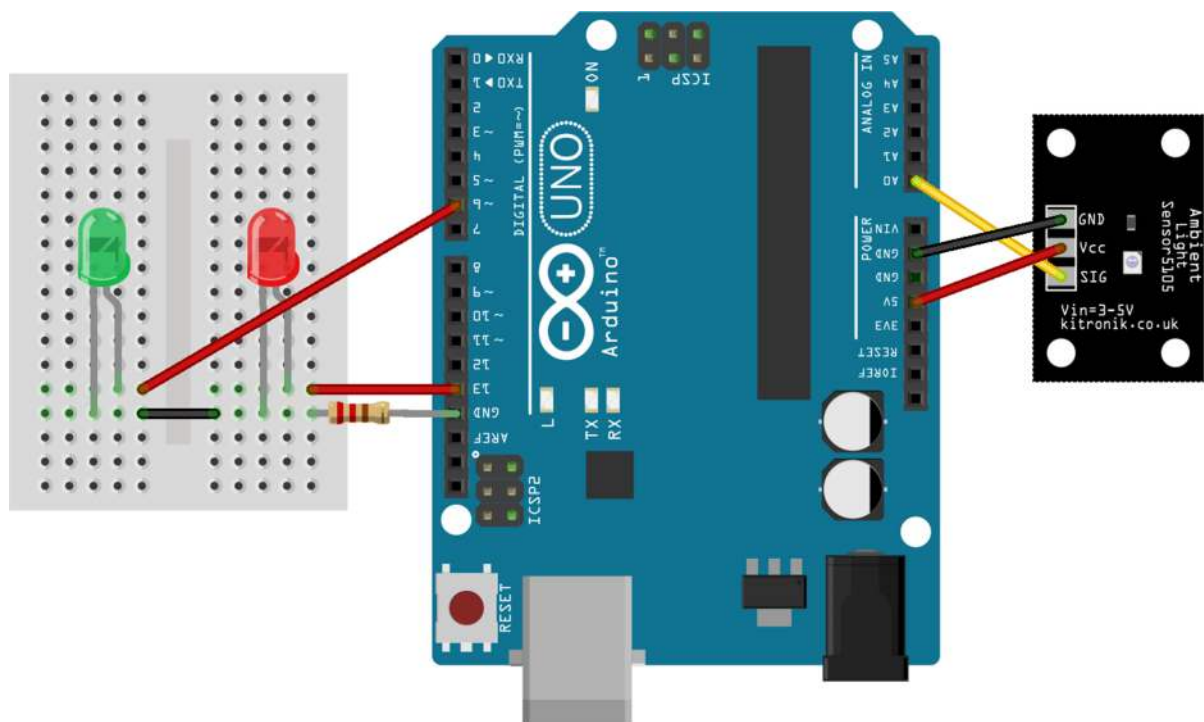
### Electrical Characteristics

	Min	Typical	Max
Supply Voltage	0.6V	3-5V	6V
SIG output	0.3V @Vcc = 5V		4.9V@Vcc = 5V
Current Consumption		<10mA	
Spectral Range of Sensitivity	450nm		1150nm

### Pinout

Vcc	Supply Voltage
SIG	Analogue Out
GND	Ground

## Arduino Schematic



Made with  Fritzing.org

This board is very simple to connect to the Arduino. Simply connect the SIG pin to an analogue input (yellow wire), the GND pin to the power ground on your Arduino (black wire) and the Vcc pin to either 5V or 3V3 depending on the operating voltage of your microprocessor (red wire). If you are unsure what this is you can check by using a multi-meter to measure the voltage across AREF and GND on your Arduino.

The code on the next page can be used in conjunction with the circuit on the previous page to test the breakout board. Upon uploading the code the red LED should blink twice then turn on for 5 seconds. During this time the light sensor is being calibrated to the light levels in the room so make sure not to cover it. When the sensor has been calibrated the green LED will turn on. If you reduce the level of light falling on the phototransistor (for example by covering it with your hand) the green LED should fade. If you completely cover the light sensor with your hand the LED should turn off, and when you remove your hand the LED should turn back on.

## Arduino Connections

Light Sensor Board	Arduino
SIG	A0
Vcc	5V or 3V depending on your AREF (see previous page for details)
GND	Ground

## Arduino Sketch

This sketch is available as a download from the website.

```
// constants:

const int sensorPin = A0;    // pin that the sensor is attached to
const int ledPin = 6;       // pin that the LED is attached to
const int calibPin = 13;    // pin that the calibration LED is attached to
const int calibTime = 5000; // time to measure light levels and
                             // calibrate (ms)

// variables:
int sensorValue = 0;        // the sensor value
int sensorMin = 1023;      // minimum sensor value
int sensorMax = 0;         // maximum sensor value

void setup() {
  // turn on LED to signal the start of the calibration period:
  pinMode(calibPin, OUTPUT);
  digitalWrite(calibPin, HIGH);

  // calibrate during the first five seconds
  while (millis() < calibTime) {
    sensorValue = analogRead(sensorPin);

    // record the maximum sensor value
    if (sensorValue > sensorMax) {
      sensorMax = sensorValue;
    }

    // record the minimum sensor value
    if (sensorValue < sensorMin) {
      sensorMin = sensorValue;
    }
  }

  // signal the end of the calibration period
  digitalWrite(calibPin, LOW);
}

void loop() {
  // read the sensor:
  sensorValue = analogRead(sensorPin);

  // map the sensor value to a value between 0 and 255 (acceptable values
  // for PWM output
  sensorValue = map(sensorValue, sensorMin, sensorMax, 0, 255);

  // fade the LED using the calibrated value:
  analogWrite(ledPin, sensorValue);
}
```

Use this sketch in conjunction with the [Arduino hook-up guide](#) on the previous page.