VCC: 5V power supply
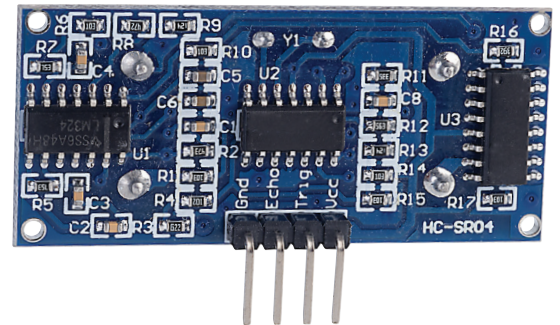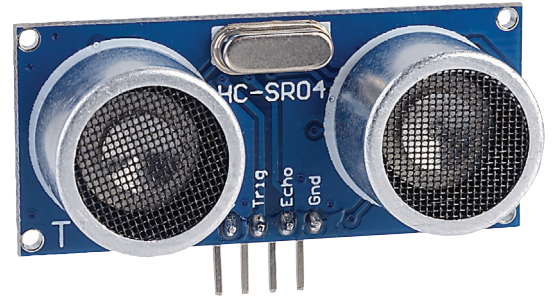
Trig: Trigger pin

Echo: Receive pin

GND: Power ground

Features:
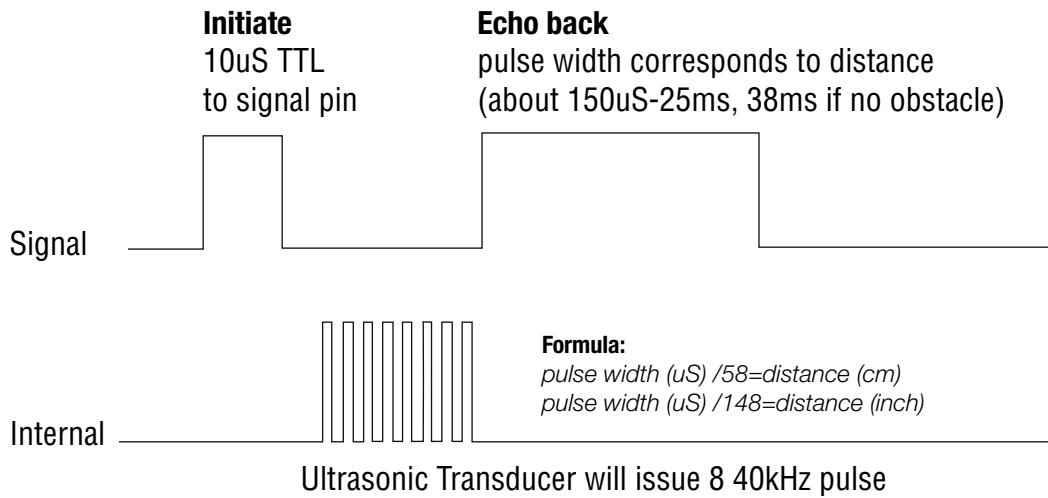
- Power Supply: +5V DC
- Quiescent Current: <2mA
- Working Current: 15mA
- Effectual Angle: <15°
- Ranging Distance: 2cm – 400 cm
- Resolution: 0.3 cm
- Measuring Angle: 30 degree
- Trigger Input Pulse width: 10uS
- Dimension: 45 x 20 x 15mm

Operation:

The timing diagram of HC-SR04 is shown. To start measurement, Trig of SR04 must receive a pulse of high (5V) for at least 10us, this will initiate the sensor will transmit out 8 cycle of ultrasonic burst at 40kHz and wait for the reflected ultrasonic burst. When the sensor detected ultrasonic from receiver, it will set the Echo pin to high (5V) and delay for a period (width) which proportion to distance. To obtain the distance, measure the width (Ton) of Echo pin.

Time   = Width of Echo pulse, in uS (micro second)
        Distance in centimeters = Time / 58
        Distance in inches = Time / 148
        Or you can utilize the speed of sound, which is 340m/s

Initiate
10uS TTL
to signal pin

Echo back
pulse width corresponds to distance
(about 150uS-25ms, 38ms if no obstacle)

Signal

Formula:
pulse width (uS) /58=distance (cm)
pulse width (uS) /148=distance (inch)

Internal

Ultrasonic Transducer will issue 8 40kHz pulse

Note:
Please connect the GND pin first before supplying power to VCC.
Please make sure the surface of object to be detect should have at least 0.5 meter2
for better performance.

www.rapidonline.com
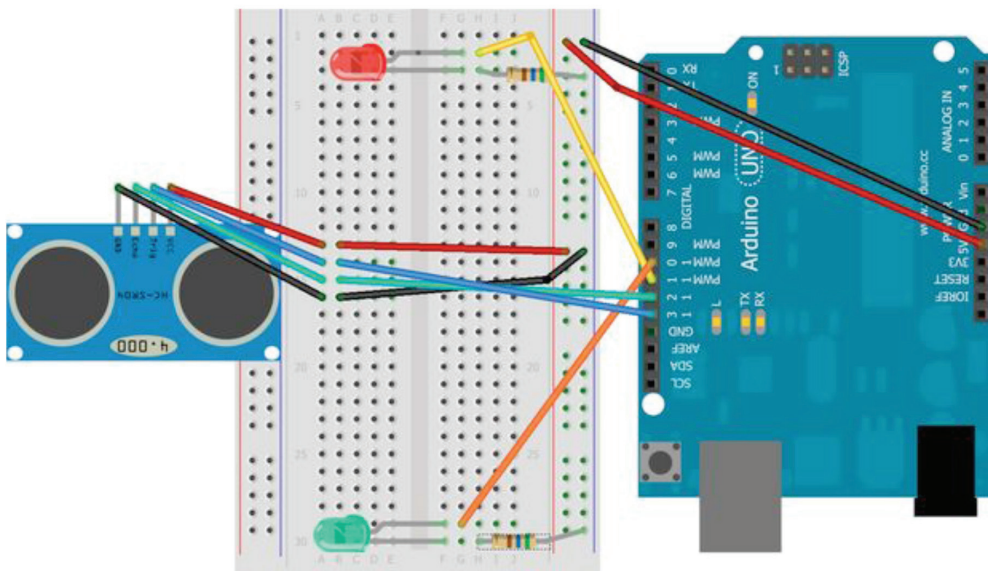
Sample Coding:

```
/*
   HC-SR04 Ping distance sensor]
   VCC to arduino 5v GND to arduino GND
   Echo to Arduino pin 13 Trig to Arduino pin 12
   Red POS to Arduino pin 11
   Green POS to Arduino pin 10
   560 ohm resistor to both LED NEG and GRD power rail
   More info at: http://goo.gl/kJ8GI
   Original code improvements to the Ping sketch sourced from Trollmaker.com
   Some code and wiring inspired by http://en.wikiversity.org/wiki/User:Dstaub/robotcar
   */

#define trigPin 13
#define echoPin 12
#define led 11
#define led2 10

void setup() {
    Serial.begin (9600);
    pinMode(trigPin, OUTPUT);
    pinMode(echoPin, INPUT);
    pinMode(led, OUTPUT);
    pinMode(led2, OUTPUT);
}

void loop() {
    long duration, distance;
    digitalWrite(trigPin, LOW);  // Added this line
    delayMicroseconds(2); // Added this line
    digitalWrite(trigPin, HIGH);
//    delayMicroseconds(1000); - Removed this line
    delayMicroseconds(10); // Added this line
    digitalWrite(trigPin, LOW);
    duration = pulseIn(echoPin, HIGH);
    distance = (duration/2) / 29.1;
    if (distance < 4) {  // This is where the LED On/Off happens
        digitalWrite(led,HIGH); // When the Red condition is met, the Green LED should turn off
    digitalWrite(led2,LOW);
}
    else {
        digitalWrite(led,LOW);
        digitalWrite(led2,HIGH);
    }
    if (distance >= 200 || distance <= 0){
        Serial.println(“Out of range”);
    }
    else {
        Serial.print(distance);
        Serial.println(“ cm”);
    }
    delay(500);
}
```