

# Graphite Strain Sensor

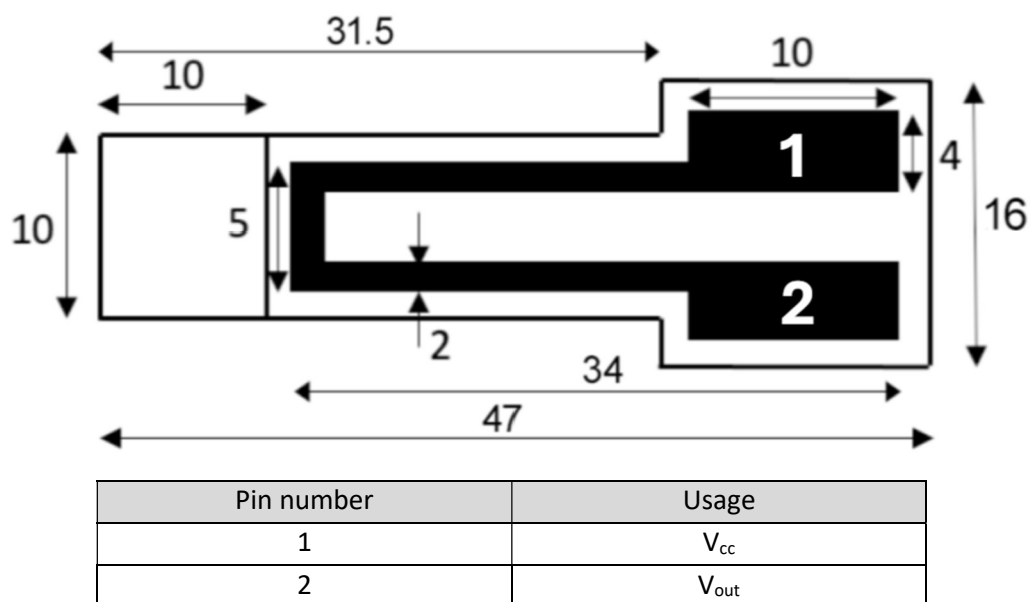
## I. General Description

This low-tech strain sensor is made of paper and different tones of pencil. It is based on Pencil Drawn Strain Gauges and Chemiresistors on Paper (Lin et al., 2014, DOI:10.1038/srep03812). Pencils leave a percolated network of graphite powder with an associated reversible resistance when submitted to strain. The goal is to build a light and low impact sensor with a minimal resource consumption to reduce its impact during processing and fabrication.

## II. Specifications

Name	Graphite Strain Sensor
Type	Strain Sensor
Materials	Paper (thickness : 0.2mm) Graphite (Carbon)
Graphite compatibility	2H, HB, 2B
Sensor type	Passive
Measurement	Resistive measure
Output Signal	Analog
Power Supply	5 V

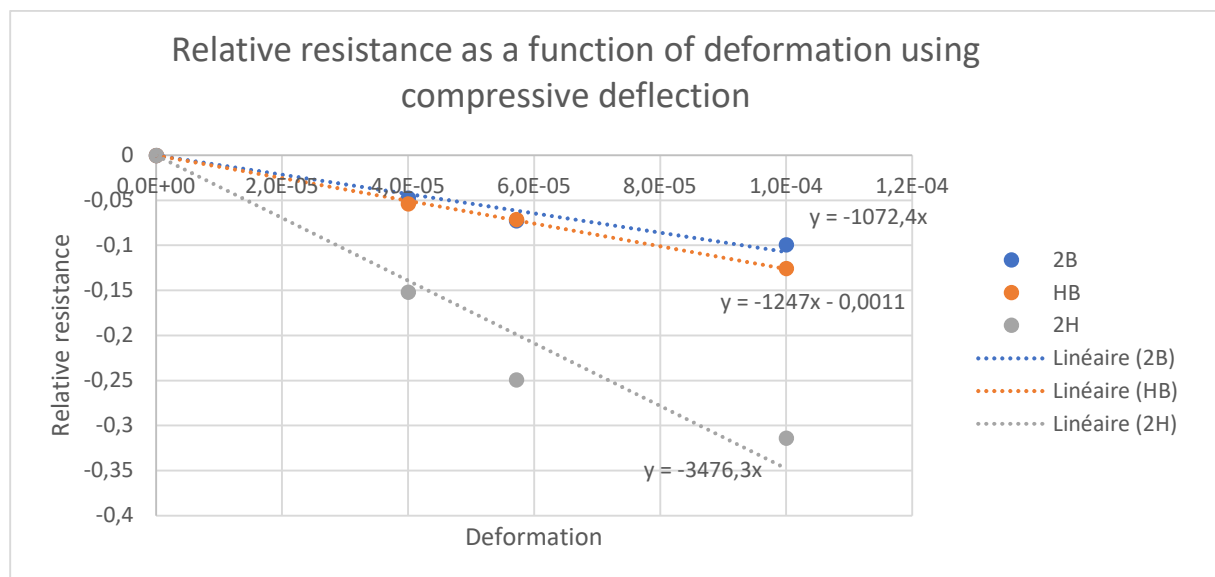
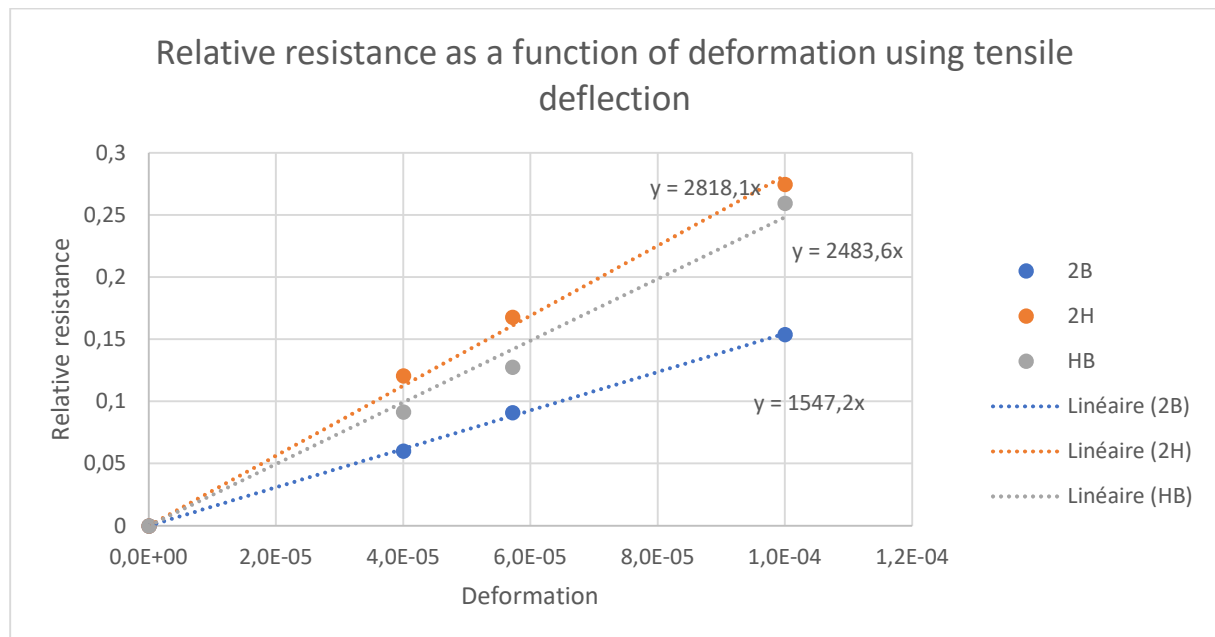
### III. Dimensions



### IV. Electrical Characteristics

Parameter	Unit	Value		
		Min	Typical	Max
$V_{cc}$	V	3.3	5	-
$R(2B)$	$M\Omega$	15.1	15.8	16.4
$R(2H)$	$M\Omega$	16.2	17.3	18.4
$R(HB)$	$M\Omega$	8.8	9.5	10.2

## Characteristic graphs of relative resistances in standard test conditions



## V. Typical application

The resistance of the sensor is in the mega-ohm range, which means that a transimpedance amplifier is needed to perform the measurement.

Example of integration:

