

Graphite strain sensor

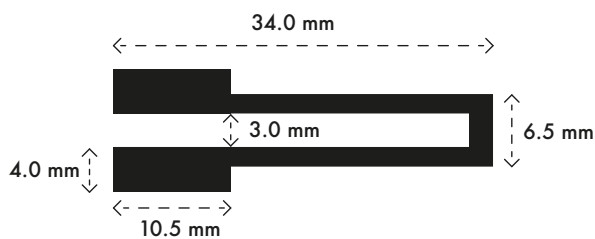
Based on « Pencil Drawn Strain Gauges and Chemiresistors on Paper »¹

Made at INSA Toulouse (France)

Features

- Low-tech sensor
- Low-cost
- *Printable and Replaceable*
- Eco-friendly
- Portable

Dimensions



Description

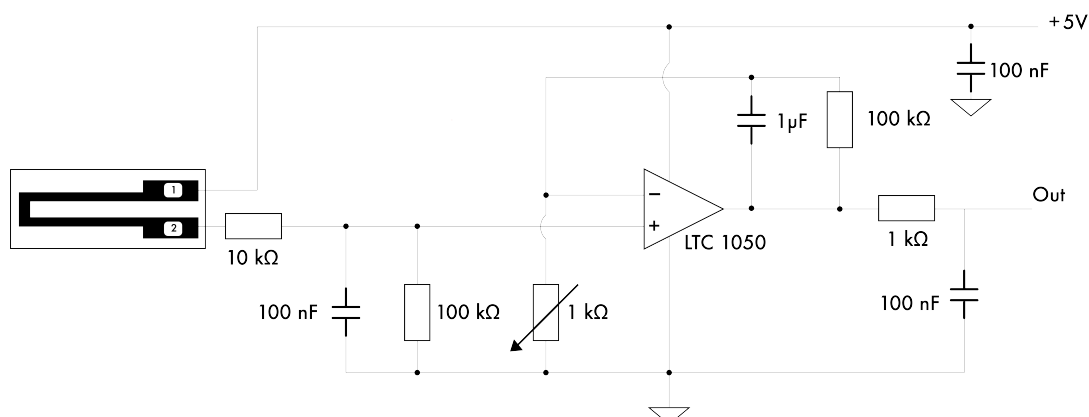
This graphite strain sensor is a low-tech strain sensor based on the paper « Pencil Drawn Strain Gauges and Chemiresistors on Paper » (Zang et al., 2015)¹. It was made by students at INSA Toulouse from the physical engineering department as part of a Sensor Project.

The sensor is made by depositing graphite onto a 80 gsm office paper. Therefore, a conductance property appears on this graphite granular system due to the various size of graphite grains spaced at an inter-grain distance.

When folding the paper, the inter-grain distance change, which change exponentially the conductance. This variations can be measured in order to recover the initial stress applied.

1. Zang, X., Zhang, F., Di, C., & Zhu, D. (2015). Pencil drawn strain gauges and chemiresistors on paper. *Scientific Reports*, 5, Article 10921. <https://doi.org/10.1038/srep10921>

Typical Application



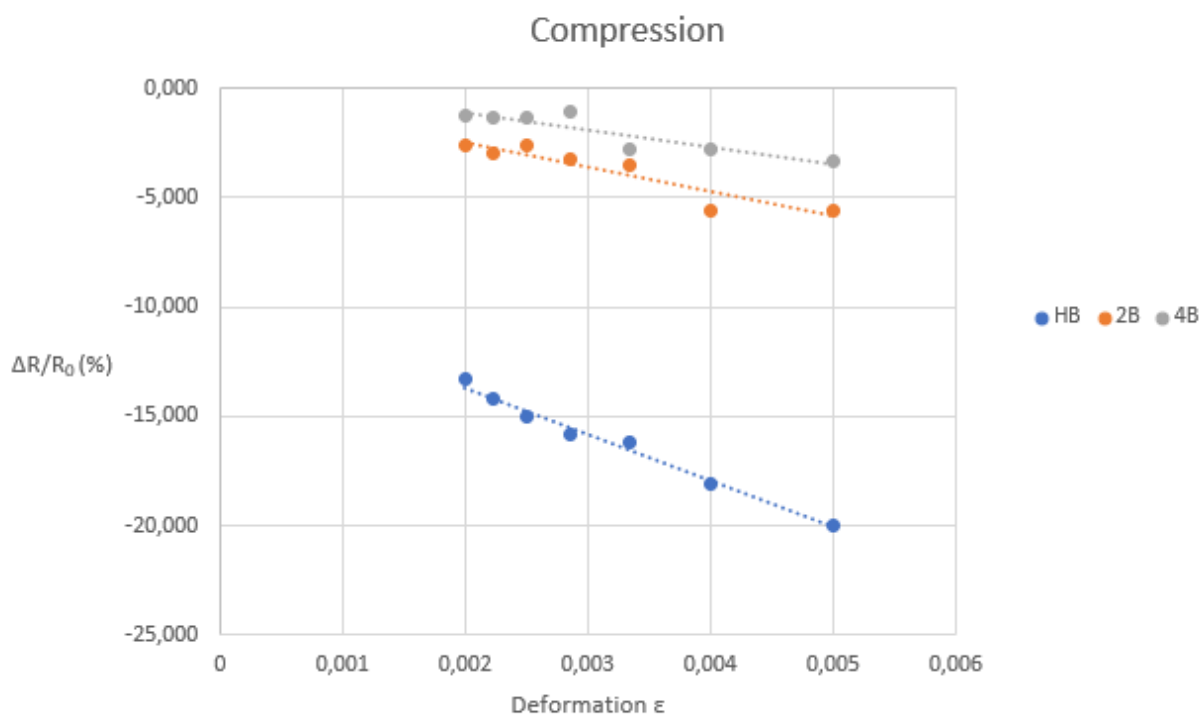
Ratings

Parameter	Rating
V_{cc}	5V
Lifetime $\varepsilon = 0.002$	15-20 uses
Lifetime $\varepsilon = 0.005$	1-2 uses
Temperature	0 °C to 50 °C
Pencil Tone	HB to 4B

Specifications

Pencil Tone	Symbol	Typ.	Unit
Supply Voltage	V_{cc}	5.0	V
HB	R	6	$M\Omega$
2B	R	3.4	$M\Omega$
4B	R	0.9	$M\Omega$

Characteristic in compression



Characteristic in tension

