Abstract

The paper describes the performance analysis, structural design and fabrication of piezoresistive pressure sensor using simulation technique. A polysilicon double nano-wire piezoresistor was fabricated by means of RIE (reactive ion etching). The polysilicon double nanowire pressure sensor has 100x100nm2 cross section area and has a thickness about
10nm. Finite element method (FEM) is adopted to optimize the sensor output and to improve the sensitivity of the polysilicon nanowire Piezoresistive pressure sensor. The double polysilicon nanowire is fabricated in such a way that it forms a bridge between the polysilicon diaphragm and the substrate. The proposed double nanowire polysilicon pressure sensor is compared with single nanowire polysilicon pressure sensor and bulk silicon pressure sensor. The fabricated polysilicon nanowire has high sensitivity of about 160 mV/V.KPa.

Reference

- R. He, P. Yang, “Giant Piezoresistance Effect in Silicon Nanowires”, Nature
Improving the Sensitivity of MEMS Piezoresistive Pressure Sensor using Polysilicon Double Nanowire


Index Terms

Computer Science
Integrated Circuits

Key words
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