

The thermal drift characteristics of piezoresistive pressure sensor

Otmani, R.; Benmoussa, N.; Benyoucef, B.

Abstract :

Piezoresistive pressure sensors based on silicon have a large thermal drift because of their high sensitivity to temperature. The study of the thermal behavior of these sensors is essential to define the parameters that cause the output characteristics drift. In this study, we adopted two different holes mobility models to determine how the temperature affect the sensor's gauges values. We calculated the thermal coefficients for both mobility models and we compared them with experimental results. Finally, we calculated the effect of temperature and doping concentration on the output characteristics of the sensor. This study allows us to predict the sensor behavior against temperature and to minimize this effect by optimizing the doping concentration.

Keywords : Carriers Mobility; Piezoresistivity; Piezoresistive coefficients; Pressure; Sensor; Silicon; Thermal drift.

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