

COMPARATIVE STUDY OF THERMAL NOISE OF Si SURROUNDING GATE MOSFET (SGMOSFET) WITH DIFFERENT GATE OXIDES

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ABSTRACT

In the modern electronic applications, the use of low power, low noise devices plays an important role. The most promising device in the nanoscale range are based on multiple gate structures such as Surrounding Gate (SG) MOSFETs. These devices could be used for high frequency applications due to the significant increase in the transition frequency. In this paper, compact thermal noise models valid in all regions of operation for SG MOSFETs have been developed and experimentally verified. In this paper we give the thermal noise performance of various substrates with respect to different oxides and propose best cases.

KEYWORDS: Compact Noise Modeling, SG MOSFETs, Thermal Noise, Silicon di Oxide, Silicon Nitride, Alumina