

Fabrication of HfSiON Gate Dielectrics by Plasma Oxidation and Nitridation, Optimized for 65nm node Low Power CMOS Applications

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75 Word Abstract

Fabrication process of HfSiON gate dielectrics by plasma oxidation of CVD Hf silicate followed by plasma nitridation was developed. Thanks to the high quality ultrathin interfacial layer formed by internal plasma oxidation, electron mobility of 240 cm²/Vs @ 0.8 MV/cm (85% of SiO₂) and hole mobility of 73 cm²/Vs @ 0.5 MV/cm (93% of SiON) were successfully achieved. The developed process will be promising for the production of low power CMOS devices in the near future.