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6H-SiC NMOS与PMOS温度特性分析

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摘要 考虑界面态电荷高斯分布模型以及Poole-Frenkel效应，对SiC MOSFET补偿电流源模型进行了修正，分析了造成6H-SiC NMOS与PMOS器件补偿电流源变化的原因．结果表明：界面态电荷的非均匀分布造成由阈值电压漂移引起的输出漏电流改变量随温度的升高逐渐减小；漏衬界面缺陷是造成体漏电流较大(达到微安量级)的主要因素，且缺陷密度越大，该值随温度增长的速度越快．

关键词 碳化硅 补偿电流源 冻析效应 普尔-弗兰克效应 体漏电流

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Analyses of the temperature properties of the 6H-SiC NMOS and PMOS

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Abstract

<FONT face=Verdana>The analytical model which comprises the temperature compensation for the SiC MOSFET is modified by considering the Gauss model of interface state density and the Poole-Frenkel effect. The simulation results for the 6H-SiC NMOS and PMOS show that as the non-uniformity distribution of interface state density, the percentage of current change due to the threshold voltage becomes smaller when the temperature is increased; the main reason for the large leakage current is the existence of surface defects. The larger the defect density, the more rapidly the current value increases with the temperature.
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Key words SiC compensating current elements freeze-out effect Poole-Frenkel effect body leakage current

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