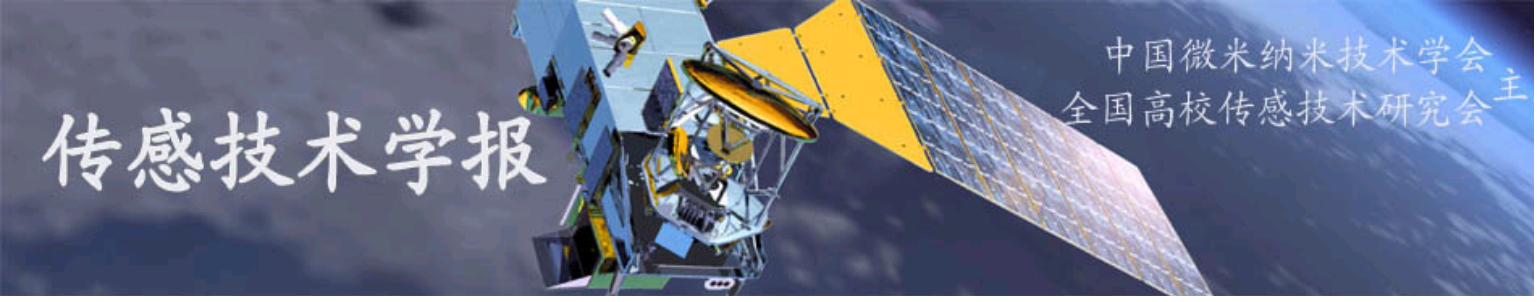

MOS器件二次击穿行为的电路级宏模块建模

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摘　要：

采用一种利用TCAD仿真提取MOS器件在静电放电现象瞬间大电流情况下的电学参数，对MOS器件二次击穿行为进行电路级宏模块建模。MOS器件是一种重要静电放电防护器件，被广泛地应用为集成电路输入输出口的静电保护器件。用TCAD仿真工具对MOS器件的二次击穿进行宏模块建模，该模型能够正确反映M件二次击穿的深刻机理，具有良好的精确性和收敛性，这对在电路级以及系统级层面上仿真静电放电防护网络的抗静电冲击能力有重要意义。

关键词：MOS; 二次击穿；电路级；宏模块; 建模

A Model of MOSFET’s Second Breakdown Action in Circuit-Level

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Abstract:

A method to exact the electrical parameters and model the second breakdown action of MOSFET’s under ESD （Electro-Static Discharge） on circuit-level, using TCA simulation, is presented. MOSFET is one of the most important ESD protection devices, and is widely used as I/O protection device in integrated circuits. We present an accurate macro model of the MOSFET based on deep analyzing of the physical mechanism of the second breakdown, using TCAD simulation. This macro model owns fi convergency and accuracy which are of importance to the simulation of the ESD protection ability of the ESD protection network on circuit and system level.

Keywords: MOS；second breakdown；circuit-level；macro block；modeling

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