

METAL SOURCE/DRAIN SCHOTTKY FIELD EFFECT TRANSISTORS AND SCHOTTKY CMOS

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As conventional CMOS devices are scaled down further and further, it becomes increasingly difficult for said devices to act as the digital switches they are meant to be. Necessarily, the field of emerging research devices focuses its attention on developing devices that exhibit superior performance characteristics at very small scales. Schottky Barrier MOSFETs, or SBMOSFETs, are one type of emerging device which has demonstrated real potential for aggressively-scaled CMOS. The SBMOSFET is very unique in that it is an ambipolar device – it exhibits both NFET-like and PFET-like I-V characteristics from one device. In this investigation, a Metal Source/Drain Schottky Field Effect Transistor (MSD SFET), a form of SBMOSFET, was conceived, designed, fabricated, and tested. This device is the first of its kind to be fabricated at RIT, and its details, as well as some implications regarding Schottky CMOS, will be discussed.