Abstract

It is observed that there are two limitations with conventional MOSFET, especially Sub threshold swings and high Ioff current. Subthreshold has minimum value of 60 mV/decade [1]. But we cannot get lower sub-threshold swing than this value with conventional MOSFET. These limitations are overcome by Tunnel Field effect transistors (TFET). TFET is working on tunneling effect, which requires less input voltages to decrease band gap due to presence of p-i-n region. Also there are very low OFF- current in TFET and hence low power consumption. The TFET works on band-to-band tunneling (BTBT) principle. In this paper, principle operation of TFET has been studied, and then simulation of the TFET using Sentaurus TCAD software.
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