

A self-rectifying memristor model for simulation and ReRAM applications

ABSTRACT

In this paper, a self-rectifying memristor (SRM) model is proposed for memristive circuit simulations. This model is based on the behavior of voltage controlled, bipolar memristors that exhibit diode-like rectification behavior when reverse biased. Such unique feature can solve the sneak path problem in crossbar memristive memory structures without requiring additional cell selectors. The results show that the proposed model satisfies the basic memristor's i-v characteristics and fits many different memristor devices adequately. The proposed model is implemented in Verilog-A so that it is conveniently incorporated into various memristor applications with different circuit simulators

Keyword: Memristor model; ReRAM; Self-rectifying memristor; Sneak path current