Reconfigurable Memristor and CNFET based Four Quadrant Multiplier for Low Power Applications

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Abstract

In this paper, a reconfigurable, low power four quadrant memristor and carbon nanotube field effect Transistor (CNFET) based analog multiplier is proposed. The circuit is verified by extensive HSPICE simulations using experimentally verified memristor and Stanford CNFET models that have been calibrated for 90% accuracy at the 32nm technology node. The proposed multiplier has an input range of ±0.25V, extremely large bandwidth of 30.5 GHz, and consumes just 43.8μW of power along with low total harmonic distortion (THD% ≤0.75) and significant noise suppression at a supply voltage of ±0.3V.

References


Index Terms

Computer Science

Circuits and Systems

Keywords

CNFET; memristor (M); analog multiplier; amplitude modulation; low power.