

عنوان مقاله:

Analysis on Radio-Frequency Modeling of Double- and Single-Gate Square-Shaped Extended Source TFETs

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خلاصه مقاله:

In this paper, the radio-frequency (RF) performances and small-signal parameters of double-gate (DG) square-shaped extended source tunneling field-effect transistors (TFETs) are investigated and compared with those of single-gate (SG) square-shaped extended source TFETs in terms of their cut-off and maximum oscillation frequencies and small-signal parameters. By using of a nonquasi-static (NQS) radio-frequency model, the small-signal parameters have been extracted. The results show that the DG square-shaped extended source TFET has higher transconductance, cut-off and maximum oscillation frequencies than single gate structure. The modeled Y-parameters are in close agreement with the extracted parameters for high frequency range up to the cut-off frequency. Results suggest that the DG square-shaped extended source TFETs seem to be the most optimal ones to replace MOSFET for ultralow power applications and RF devices

کلمات کلیدی:

Double-gate (DG), radio-frequency (RF), nonquasistatic (NQS), extended source, tunneling field-effect transistor (TFET)

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