Abstracts

Modeling of Planar Varactor Frequency Multiplier Devices with Blocking Barriers

U. Lieneweg, T.J. Tolmunen, M.A. Frerking and J. Maserjian. "Modeling of Planar Varactor Frequency Multiplier Devices with Blocking Barriers." 1992 Transactions on Microwave Theory and Techniques 40.5 (May 1992 [T-MTT]): 839-845.

Models for optimization of planar frequency triplers with symmetrical C -- V curves are presented. Role and limitation of various blocking barriers (oxide, Mott, heterojunction) are discussed. Devices with undoped drift regions (BIN) have moderate efficiency but a broad range of power operation, whereas devices with doped drift regions (BNN) have high efficiency in a narrow power window. In particular, an upper power limit of the BNN is caused by electron velocity saturation. Implementations in SiO/sub 2/Si and AIAs/GaAs and means for increasing the power of BNN structures are considered.

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