Abstracts

Bias-Dependent Microwave Characteristics of Atomic Planar-Doped AIGaAs/InGaAs/GaAs Double Heterojunction MODFET's (Short Papers)

Y.K. Chen, G.W. Wang, D.C. Radulescu, A.N. Lepore, P.J. Tasker, L.F. Eastman and E. Strid. "Bias-Dependent Microwave Characteristics of Atomic Planar-Doped AIGaAs/InGaAs/GaAs Double Heterojunction MODFET's (Short Papers)." 1987 Transactions on Microwave Theory and Techniques 35.12 (Dec. 1987 [T-MTT] (1987 Symposium Issue)): 1456-1460.

Double heterojunction AIGaAs/InGaAs/GaAs modulation-doped field effect transistors (MODFET’s) using lattice-strained AIGaAs/InGaAs/GaAs layer structure have been fabricated and evaluated at microwave frequencies for various bias conditions. MODFET’s with a 1-µm gate length show a room-temperature peak extrinsic dc transconductance (g/sub m/) of 400 mS/mm with a full channel current of 610 mA/mm. For 0.3-µm-gate MODFET’s an extrinsic dc g/sub m/ of 505 mS/mm and a full channel current of 720 mA\mm were obtained. Devices having a 1-µm gate length show a maximum available gain cutoff frequency (f/sub max/) of 85 GHz and a current-gain cutoff frequency (f/sub T/) of 22 GHz from S-parameter measurements. The 0.3-µm devices show an f/sub T/ of 45 GHz and an f/sub max/ of 120 GHz. Bias-dependent equivalent circuit models are also discussed.

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