Abstracts

The AlInAs-GaInAs HEMT for Microwave and Millimeter-Wave Applications

U.K. Mishra, A.S. Brown, M.J. Delaney, P.T. Greiling and C.F. Krumm. "The AlInAs-GaInAs HEMT for Microwave and Millimeter-Wave Applications." 1989 Transactions on Microwave Theory and Techniques 37.9 (Sep. 1989 [T-MTT] (Special Issue on FET Structures Modeling and Circuit Applications)): 1279-1285.

This paper reviews the status of lattice-matched and pseudomorphic A1InAs-GaInAs HEMT's grown on InP substrates. The best lattice-matched devices with 0.1 µm gate length had a transconductance /sub m/ = 1080 mS/mm and unity current gain cutoff frequency f/sub T/ = 178 GHz, whereas similar pseudomorphic HEMT's had g/sub m/ = 1160 mS/mm and f/sub T/ = 210 GHz. Single-stage V-band amplifiers demonstrated 1.3 and 1.5 dB noise figures and 9.5 and 8.0 dB associated gains for the lattice-matched and pseudomorphic HEMT's, respectively. The best performance achieved was F/sub min/ = 0.8 dB with G/sub a/ = 8.7 dB.

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