Abstracts

An Analytical Model for I-V and Small-Signal Characteristics of Planar-Doped HEMT's

G.-W. Wang and L.F. Eastman. "An Analytical Model for I-V and Small-Signal Characteristics of Planar-Doped HEMT's." 1989 Transactions on Microwave Theory and Techniques 37.9 (Sep. 1989 [T-MTT] (Special Issue on FET Structures Modeling and Circuit Applications)): 1395-1400.

An analytical current-voltage model for planar-doped HEMT's has been developed. This compact model is able to cover the complete HEMT I-V characteristics, including the current saturation region and the parasitic conduction in the electron-supplying layer. Analytical expressions of small-signal parameters and current gain cutoff frequency (f/sub t/) are derived from the I-V model. Modeling results of a 0.1-µm-gate planar-doped AlInAs/GaInAs HEMT show excellent agreement with measured characteristics. Threshold voltages and parasitic conduction in planar-doped and uniformly doped HEMT's are also compared and discussed.

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