Abstracts

Simulation of HEMT DC Drain Current and 1 to 50 GHz S-Parameters as a Function of Gate Bias (Short Papers)

S.J. Mahon, M.J. Chivers and D.J. Skellern. "Simulation of HEMT DC Drain Current and 1 to 50 GHz S-Parameters as a Function of Gate Bias (Short Papers)." 1993 Transactions on Microwave Theory and Techniques 41.6 (Jun./Jul. 1993 [T-MTT]): 1065-1067.

The usefulness over an extended range of a HEMT model previously validated for 1 to 25 GHz s-parameter model is shown. Experimental and simulation results for the dc drain current and 1-50 GHz s-parameters of a pseudomorphic 0.32-µm-gate AlGaAs/InGaAs/GaAs HEMT are presented. The model predicts the device's dc current and s-parameters as a function of the applied gate bias with good accuracy. The core of the model is directly dependent on the HEMT wafer structure and the physical gate length. As part of the modeling procedure, a value of (1.77 ± 0.07) x 10/sup 5/ m. s-1 is found, confirming the results of other research, for the electron velocity in undoped pseudomorphic In/sub 0.15, Ga/sub 0.85/As under /spl ap/ 0.3µm gates.

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