Abstracts

An Evaluation of HEMT Potential for Millimeter-Wave Signal Sources Using Interpolation and Harmonic Balance Techniques

Y. Kwon, D. Pavlidis and M.N. Tutt. "An Evaluation of HEMT Potential for Millimeter-Wave Signal Sources Using Interpolation and Harmonic Balance Techniques." 1991 Microwave and Guided Wave Letters 1.12 (Dec. 1991 [MGWL]): 365-367.

A large-signal analysis method based on harmonic balance technique and 2-D cubic spline interpolation function has been developed and applied to the prediction of InP-based HEMT oscillator performance for frequencies extending up to submillimeter-wave range. The large-signal analysis method uses a limited number of dc and small-signal S-parameter data and allows the accurate characterization of HEMT large-signal behavior. The method has been validated experimentally using load-pull measurement. Oscillation frequency, power performance and load requirements are discussed, predicting the operation capability to 300 GHz using state-of-the-art devices (f/sub max/~450 GHz).

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