Abstracts

On-wafer load pull characterization of W-band InP HEMT unit cells for CPW MMIC medium power amplifiers

D.W. Baker, R.S. Robertson, R.T. Kihm, M. Matloubian, M. Yu and R. Bowen. "On-wafer load pull characterization of W-band InP HEMT unit cells for CPW MMIC medium power amplifiers." 1999 MTT-S International Microwave Symposium Digest 99.4 (1999 Vol. IV [MWSYM]): 1743-1746 vol.4.

A W-Band on-wafer, vector source and load pull system has been implemented and applied to the systematic determination of the optimum, large signal, input and output impedances of indium phosphide (InP) HEMT cells as a function of bias and high power RF drive. The large signal optimization of a variety of device styles and sizes, so as to achieve a priori W-band power and gain goals, resulted in an optimal HEMT cell geometry and first pass design success of W-band, finite ground coplanar waveguide (FGCPW) medium power amplifiers. These state-of-the-art amplifiers employing single 150 /spl mu/m and 250 /spl mu/m device cells deliver output powers of 13.8 dBm and 16.7 dBm with efficiencies of 23% and 17.5%, respectively.

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