Abstracts

A High Performance W-Band Monolithic Pseudomorphic InGaAs HEMT LNA

H. Wang, G.S. Dow, K. Tan, J. Berenz, T.N. Ton, T.S. Lin, P. Liu, D. Streit, P.D. Chow and B. Allen. "A High Performance W-Band Monolithic Pseudomorphic InGaAs HEMT LNA." 1991 MTT-S International Microwave Symposium Digest 91.3 (1991 Vol. III [MWSYM]): 943-946.

A high performance W-band monolithic two-stage LNA based on pseudomorphic InGaAs/GaAs HEMT devices has been developed. This amplifier has a measured small signal gain of 13.3 dB at 94 GHz and 17 dB at 89 GHz. The noise figure is 5.5 dB from 91 to 95 GHz. This is the best reported performance of a W-band monolithic LNA. The measured results of this MMIC LNA even rival some of the recently reported hybrid LNAs. A rigorous analysis procedure was incorporated in the design, including accurate active device modeling and full-wave EM analysis of passive structures. The first pass success of this LNA chip design indicates the importance of a rigorous analysis/design methodology in the millimeter wave monolithic IC development.

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