Abstracts

High Gain Monolithic W-Band Low Noise Amplifiers Based on Pseudomorphic High Electron Mobility Transistors

D.-W. Tu, S.W. Duncan, A. Eskandarian, B. Golja, B.C. Kane, S.P. Svensson, S. Weinreb and N.E. Byer. "High Gain Monolithic W-Band Low Noise Amplifiers Based on Pseudomorphic High Electron Mobility Transistors." 1994 Transactions on Microwave Theory and Techniques 42.12 (Dec. 1994, Part II [T-MTT] (1994 Symposium Issue)): 2590-2597.

Five versions of monolithic W-band 0.1 µm AlGaAs/InGaAs/GaAs pseudomorphic High Electron Mobility Transistor, four-stage, Low Noise Amplifiers based on two different designs were developed. These millimeter wave monolithic integrated circuits have produced a minimum noise figure of 3.5 dB with 23.0 dB gain at 92 GHz and a maximum gain of 33.5 dB with a 6.2 dB noise figure at 102 GHz. This is the highest gain yet reported for a single chip W-band amplifier. The chips feature coplanar waveguide circuit elements and compact size for low-cost production, single-polarity bias requirement, and a minimum of DC bonding pads.

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