Abstracts

A Family of 2-20GHz Broadband Low Noise AlGaAs HEMT MMIC Amplifiers

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Rapid advances in AlGaAs High Electron Mobility Transistor (HEMT) processing technology have made HEMT MMIC technology possible. This paper presents design and development information on a family of broadband, low noise amplifiers. Amplifiers covering the 2-20 GHz frequency band have been developed, and achieve noise figures comparable to their counterpart in hybrid HEMT technology. The amplifiers are configured in a cascadable design, with simultaneous low input and output VSWR, and flat gain response. Performance results include measured and modeled data for a 2-7 GHz LNA with 2.5 dB noise figure, a 2-20 GHz distributed amplifier with 9.5 dB flat gain, less than 3.5 dB noise figure, and a 5-11 GHz balanced LNA with 10dB gain, less than 2.5dB noise figure (6-11 GHz). Other octave band balanced amplifier designs are currently being fabricated (2-7GHz, 9-19GHz) and performance results are expected January '89. A preliminary temperature step-stress reliability evaluation on the discrete process HEMT device is also presented.

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