

Abstracts

A GaAs Monolithic 6 GHz Low-Noise Amplifier for Satellite Receivers (Mar. 1989 [T-MTT])

R.C. Mott. "A GaAs Monolithic 6 GHz Low-Noise Amplifier for Satellite Receivers (Mar. 1989 [T-MTT])." 1989 *Transactions on Microwave Theory and Techniques* 37.3 (Mar. 1989 [T-MTT]): 565-570.

A design approach and accurate modeling techniques have been developed to realize a GaAs monolithic, 6 GHz, two-stage, low-noise amplifier (LNA) with a measured 1.7 dB noise figure and associated 21 dB gain. This self-biased LNA design, with chip dimensions of 80x135 mil, utilizes an ion-implantation FET model which predicts measured in-band amplifier gain to within 0.5 dB and peak frequency response to within 4 percent. The derived noise parameter estimation process, which uses a Gaussian elimination technique to predict the measured noise figure to within 0.2 dB, reduces a set of complex binomial equations to simple relationships which are easily programmable. A deep-recessed gate realization of this LNA design demonstrates that LNA low-noise performance is achievable under FET saturated drain current conditions.

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