Abstracts

A Low Noise, Phase Linear Distributed Coplanar Waveguide Amplifier (Short Papers)

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Details of the design, fabrication, and measured data for an InGaAs high electron mobility transistor (HEMT) decade-bandwidth distributed coplanar waveguide (CPW) amplifier are presented. Comparison to a similar microstrip design is made. The design methodology highlights described here include CPW transmission line loss modeling. The circuit features the best reported CPW distributed amplifier noise figure and phase performance over 2-20 GHz as well as an on-chip bias network and low dc power consumption. The minimum measured noise figure is 2.1 dB with 11 dB maximum gain. The measured phase linearity is less than ±5° over 2-20 GHz which makes this circuit well suited for system phased array applications where phase matching and linearity are a primary concern.

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