Abstracts

Investigation and application to LNA of an InP-HEMT operated at ultra low DC power levels

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The noise and gain for an InP HEMT were investigated as a function of DC power consumption. A special chip carrier in mixed coplanar waveguide/microstrip technology was developed for easy handling of the chip and to minimize the mounting parasitics. A complete S parameter and noise parameter model for the transistor and the carrier have been extracted. Measurements of the transistor mounted on the carrier gave an associated gain of 10 dB and noise figure lower than 0.7 dB at a DC power level of 200 /spl mu/W at 10 GHz. An X band one-stage amplifier with low DC consumption based on this transistor was built. The amplifier had a gain of 8-10 dB for the frequency range 8-12 GHz at V/sub ds/=0.35 V, I/sub ds/=3.9 mA. The noise figure of the complete amplifier was measured to 1.6 dB at 10 GHz. The HEMT was manufactured in our own laboratory process.

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