Abstracts

A High Performance and Low DC Power V-Band MMIC LNA Using 0.1 µm InGaAs/InAlAs/InP HEMT Technology

R. Lai, K.W. Chang, H. Wang, K. Tan, D.C. Lo, D.C. Streit, P.H. Liu, R. Dia and J. Berenz. "A High Performance and Low DC Power V-Band MMIC LNA Using 0.1 µm InGaAs/InAlAs/InP HEMT Technology." 1993 Microwave and Guided Wave Letters 3.12 (Dec. 1993 [MGWL]): 447-449.

We report the design and performance of state-of-the-art V-band MMIC LNA's using 0.1-µm gate length pseudomorphic In/sub 0.60/Ga/sub 0.40/As/In/sub 0.52/Al/sub 0.48/As/InP HEMT's. The three-stage V-band LNA demonstrated an average of 3.0 dB noise figure between 56-64 GHz with 24-25.5 dB associated gain with a noise figure of 2.7 dB measured at 62 GHz. Furthermore, the dc power dissipation of this circuit was only 19.5 mW which is less than one-third the dc power dissipation of InGaAs/AlGaAs/GaAs HEMT versions. These results demonstrate the excellent potential of InP HEMT technology for millimeter-wave and low dc power applications.

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