Abstracts

W-Band and D-Band Low Noise Amplifiers Using 0.1 Micron Pseudomorphic InAIAs/lnGaAs/lnP HEMTs

P.D. Chow, K. Tan, D. Streit, D. Garske, P. Liu and R. Lai. "W-Band and D-Band Low Noise Amplifiers Using 0.1 Micron Pseudomorphic InAIAs/lnGaAs/lnP HEMTs." 1992 MTT-S International Microwave Symposium Digest 92.2 (1992 Vol. II [MWSYM]): 807-810.

We report the W-band and D-band performance of 0.1 micron T-gate pseudomorphic ln/sub 0.53/Al/sub 0.47/As/ln/sub 0.60/Ga.sub 0.40/As/lnP High Electron Mobility Transistors (HEMTs). The device achieved 1.3 dB noise figure and 8.2 dB associated gain when biased and tuned for minimum noise figure at 95 GHz. It achieved 7.3 dB gain when biased and tuned for gain at 141.5 GHz. This is the highest gain ever reported for a three-terminal semiconductor device in this frequency range. The two-stage hybrid LNA fabricated with these devices demonstrated a minimum noise figure of 2.6 dB and 14.2 dB associated gain at waveguide interface at 92 GHz. This is the lowest reported noise figure for a two-stage LNA at this frequency.

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