Abstracts

Very Low Noise and Low Power Operation of Cryogenic AlInAs/GaInAs/InP HFET's

M.W. Pospieszalski, L.D. Nguyen, M. Lui, T. Liu, M.A. Thompson and M.J. Delaney. "Very Low Noise and Low Power Operation of Cryogenic AlInAs/GaInAs/InP HFET's." 1994 MTT-S International Microwave Symposium Digest 94.3 (1994 Vol. III [MWSYM]): 1345-1346.

Cryogenic performance of .1*50 µm gate length AlInAs/GaInAs/InP devices is reported. A noise temperature of less than 10 K (less than five times over quantum limit hf/k) is demonstrated at 40 GHz with a power consumption of less than .6 mW under optimal noise bias condition. With about 5K penalty in noise performance at 40 GHz, the devices could be operated with as little as 60 µW total power consumption. An interpretation of the measured noise performance with the help of a noise model, room temperature S-parameters and dc characteristics (measured at room and cryogenic temperatures) is offered.

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