Abstracts

Low-Noise InGaAs HEMT Using the New Off-Set Recess Gate Process

O. Ishikawa, K. Nishii, T. Matsuno, C. Azuma, Y. Ikeda, S. Nanbu and K. Inoue. "Low-Noise InGaAs HEMT Using the New Off-Set Recess Gate Process." 1989 MTT-S International Microwave Symposium Digest 89.3 (1989 Vol. III [MWSYM]): 979-982.

Low noise InGaAs HEMT (high electron mobility transistor) with noise figure of 0.68 dB at 12 GHz has been developed using the new off-set recess gate process. The pseudomorphic n-AlGaAs / InGaAs HEMT structure was grown on the semi-insulating GaAs substrate by MBE. The new off-set recess gate process make it possible to decrease the source and gate resistance. The breakdown voltage between gate and drain became higher than 6V. Gm of 510mS/mm at minimum noise bias point has been obtained in a 0.2µm gate InGaAs HEMT. The minimum noise figure and associated gain of the device are 0.68dB and 10.4dB at Vds=2V, Ids=16mA and f=12GHz, respectively. Three stage amplifier using the new HEMT at the head has showed the minimum noise figure of 1.2dB and the maximum gain of 31dB.

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