Abstracts

Super Low-Noise HEMTs with a T-Shaped Gate Structure

S. Asai, K. Joshin, Y. Hirachi and M. Abe. "Super Low-Noise HEMTs with a T-Shaped Gate Structure." 1987 MTT-S International Microwave Symposium Digest 87.2 (1987 Vol. II [MWSYM]): 1019-1022.

The low noise property of HEMTs was studied, based on the noise power generated in the devices. 0.5 µm- and 0.25 µm-gate HEMTs were fabricated, to study the noise power generated in the intrinsic region of the devices. In order to leave the extrinsic noise power out of consideration, a T-shaped gate structure was developed to make equal the gate-resistances of these devices. It was shown that the noise power was independent of frequency and strongly dependent on the gate length. The resultant quarter micron gate HEMTs achieved the noise figures of 1.0 dB at room temperature and 0.5 dB at 100K at 20 GHz.

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