Abstracts

A Low-Noise Ku-Band AlGaAs/GaAs HBT Oscillator

N. Hayama, S.R. Lesage, M. Madihian and K. Honjo. "A Low-Noise Ku-Band AlGaAs/GaAs HBT Oscillator." 1988 MTT-S International Microwave Symposium Digest 88.2 (1988 Vol. II [MWSYM]): 679-682.

This paper describes design consideration, fabrication and performance for the first low phase noise Ku-band oscillator implemented using a fully self-aligned AlGaAs/GaAs heterojunction bipolar transistor (HBT). The transistor has a measured collector current 1/f noise power density of 10/sup -19/A²Hz at f=400Hz for a collector current of 1.2mA. On the other hand, the developed free-running oscillator represents an output power of 6dBm at 15.5GHz with a SSB FM noise of -65dBc/Hz at 10kHz off-carrier. The noise level is 24dB lower than that for a GaAs FET oscillator, and 2dB lower than that for a Si VCO, respectively. These experimental results give an indication of the low noise, high frequency oscillator performance available with HBTs.

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