Abstracts

Monolithic V-Band Pseudomorphic-MODFET Low-Noise Amplifiers (1989 [MCS])

G. Metze, A. Cornfeld, J. Singer, H. Carlson, E. Chang, T. Kirkendall, G. Dahrooge, J. Bass, H.-L. Hung and T. Lee. "Monolithic V-Band Pseudomorphic-MODFET Low-Noise Amplifiers (1989 [MCS])." 1989 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 89.1 (1989 [MCS]): 111-116.

V-band, low-noise MMICs based on pseudomorphic modulation-doped FETs (P-MODFETs) have been developed for the first time and have yielded noise figures that are believed to be the lowest reported for any millimeter-wave MMIC. Single-stage low-noise amplifiers with P-MODFETs as active elements (gate dimensions 0.35 x 60 W) exhibited minimum noise figures of 3.9 dB at 58 GHz, with an associated gain of 3.5 dB. Dual-stage MMICS had minimum noise figures of 5.3 dB at 58 GHz, with an associated gain of 8.2 dB, and maximum gain of 10.4 dB at 59.5 GHz. Further, a cascaded four-stage amplifier (two dual-stage MMIC modules) exhibited a 5.8-dB minimum noise figure at 58 GHz, with an associated gain of 18.3 dB, and 21.1 dB of maximum gain. Device processing uniformity, as well as DC and RF reliability data, are also presented.

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