

Abstracts

A Two-Stage IMPATT-Diode Amplifier

H.A. Willing. "A Two-Stage IMPATT-Diode Amplifier." 1973 Transactions on Microwave Theory and Techniques 21.11 (Nov. 1973 [T-MTT] (Special Issue on Solid-State Microwave Power Amplifiers)): 707-716.

The system aspects and packaging of a two-stage FM IMPATT-diode amplifier are described. The amplifier combines the output power of 4 IMPATT diodes in the final stage to provide an output power of greater than 4 W at 6 GHz. The system has a locking bandwidth of greater than 200 MHz with a 16-dB gain and a noise figure of less than 50 dB. Both the design and the experimental performance of the amplifier and each of its stages are discussed. The noise characterization of IMPATT-diode amplifiers, operating as injection-locked oscillators or stable amplifiers, determined the mode of operation for each stage. Included in the paper are experimental results of large-signal noise characterization of both Si and GaAs IMPATT diodes, as are the noise characteristics related to the output power and gain.

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