Abstracts

Low-Noise Cooled GASFET Amplifiers

S. Weinreb. "Low-Noise Cooled GASFET Amplifiers." 1980 Transactions on Microwave Theory and Techniques 28.10 (Oct. 1980 [T-MTT]): 1041-1054.

Measurements of the noise characteristics of a variety of gallium-arsenide field-effect transistors at a frequency of 5 GHz and temperatures of 300 K to 20 K are presented. For one transistor type detailed measurements of dc parameters, small-signal parameters, and all noise parameters (T/sub min/, R/sub opt/, X/sub opt/ g/sub n/) are made over this temperature range. The results are compared with the theory of Pucel, Haus and Statz modified to include the temperature variation. Several low-noise ampifiers are described including one with a noise temperature of 20 K over a 500-MHz bandwidth. A theoretical analysis of the thermal conduction at cryogenic temperatures in a typical packaged transistor is included.

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