Abstracts

Characterization of Linear and Nonlinear Properties of GaAs MESFET's for Broad-Band Control Applications

R.J. Gutmann and D.J. Fryklund. "Characterization of Linear and Nonlinear Properties of GaAs MESFET's for Broad-Band Control Applications." 1987 Transactions on Microwave Theory and Techniques 35.5 (May 1987 [T-MTT]): 516-521.

GaAs MESFET’s designed for control applications have improved switching performance compared to FET’s designed for low-noise or high-power amplifiers. A broad-band switching cutoff frequency figure of merit close to 500 GHz has been achieved with both epitaxial and ion-implanted devices having n/sup +/ surface layers and/or channel dopings above 2.0 X 10/sup 17/ cm/sup -3/. Power handling under CW conditions is limited in the nonconducting state (FET dc biased into pinchoff) by the difference between the gate breakdown voltage and the pinchoff voltage, while conducting-state power handling is limited by the open-channel current-handling capability. For optimum switching frequency figure of merit, individual gate finger widths greater than those used in amplifier devices for the same maximum frequency of operation are necessary. The large (~5 k Omega) resistor in series with the gate has important ramifications in optimizing the power-handling capability for broad-band applications.

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