Abstracts

Modeling the GaAs MESFET's Response to Modulated Light at Radio and Microwave Frequencies

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In recent years, the usefulness of the MESFET as an optically sensitive microwave element on MMIC's has generated much interest. A theoretical model for the device under steady illumination has been developed previously by the authors. This paper presents an extension of that model to include sinusoidally modulated illumination up to the microwave range. The dependence of the response on the bias conditions, the wavelength, intensity and modulation frequency of the optical input, and the particulars of device structure are incorporated in the model. The importance of the internal photovoltaic effect, not properly accounted for in previous works, is emphasized. The theoretical model is validated by experimental results.

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