Abstracts

Physically Based Circuit Model of GaAs MESFET as an Optical Port for Microwave Systems

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A GaAs MESFET large signal equivalent circuit model with optical illumination effects has been developed. The model includes accurate representation of the drain current dependence upon the operating voltages under different operational conditions. The model for the GaAs MESFET was implemented into the well-known circuit simulation program, PSpice. Simulated results obtained are shown to compare well with the measured results with a good fit to measured GaAs MESFET I/V characteristics over a wide bias voltage range and under both dark and illumination conditions. The RF response of the MESFET is also modelled and simulated. Such a circuit model is important in the design of optically controlled microwave circuits involving a GaAs MESFET as an optical interface.

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