Abstracts

Modeling the Optical Switching of MESFET's Considering the External and Internal Photovoltaic Effects

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One of the aspects of the merging of microwave and optical technologies is the use of optical signals to switch electronic circuits in general and microwave circuits in particular (including MMIC). During the last decade, the feasibility of optical switching of MMIC's has been demonstrated. This paper presents a novel model for the optical switching of the MESFET, which is the building block of MMIC's. The model predicts the optical switching performance as a function of the optical signal parameters, the bias level, and the device physics and geometry. The results and conclusions from the theory are verified by measurements. The new model can serve as a design tool for designing an optimal MESFET for optical switching purposes.

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