Abstracts

Photovoltaic-p-i-n diodes for RF control-switching application

C.K. Sun, C.T. Chang, R. Nguyen and D.J. Albares. "Photovoltaic-p-i-n diodes for RF control-switching application." 1999 Transactions on Microwave Theory and Techniques 47.10 (Oct. 1999 [T-MTT]): 2034-2036.

A photovoltaic-p-i-n diode switch, consisting of two back-to-back p-i-n diodes which can be forward biased to the ON state by photovoltaic cell photocurrents, is introduced for optically controlling RF signals. Without light, the switch is in the OFF state and isolation is determined by the diode junction capacitance. We report a device operating in the VHF range and handling 25 W. With 40 mA photocurrent injected into each diode, the measured insertion loss at 25-W input power is /spl ap/0.08 dB, mainly limited by the diode series resistance; its capacitance was 380 fF. Experiments indicate that low insertion loss requires the signal period /spl Lt/ carrier lifetime so that carrier sweep out in the I-region does not reduce conductivity.

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