Abstracts

Quasioptical Millimeter-Wave Hybrid and Monolithic PIN Diode Switches

K.D. Stephan, F.H. Spooner and P.F. Goldsmith. "Quasioptical Millimeter-Wave Hybrid and Monolithic PIN Diode Switches." 1993 Transactions on Microwave Theory and Techniques 41.9 (Oct. 1993 [T-MTT] (Special Issue on Quasi-Optical Techniques)): 1791-1798.

The PIN diode switch is an essential building block in many microwave and millimeter-wave systems. In this paper we report the development of a new type of quasioptical PIN diode switch. First, we briefly describe the quasioptical imaging application which motivated the development of the switch. Next, we explain the theory of switch operation in both its reflection and transmission modes. We present experimental results from measurements of both hybrid and monolithic circuits in the millimeter-wave range. The hybrid version exhibits losses in the reflection mode of 1 dB or less and isolation of 20 dB or more. Performance of the monolithic version is comparable, despite a PIN diode yield of less than 80%.

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