Abstracts

W-Band Quasioptical Integrated PIN Diode Switch

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A quasioptical reflection/transmission switch using 464 PIN diodes in a 2.3-cm diameter grid array has been designed and tested. In the reflection state (diodes off), reflection loss was less than 0.5 dB at 94 GHz, and transmission loss exceeded 20 dB over a 12-GHz bandwidth. In the transmission state (diodes on), the array's transmission loss fell to as little as 3.7 dB, with a corresponding return loss of 9 dB, at 94 GHz. Potential applications of this new component include radar T/R switches, communications signal path routing, and electronic replacements for mechanical Dicke-switching choppers in millimeter-wave radiometers. Advantages include the ability to switch multiple beams simultaneously, and potentially high power-handling capability.

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