Abstracts

Millimeter-Wave Integrated Circuits (Jul. 1968 [T-MTT])

S. Mao, S. Jones and G.D. Vendelin. "Millimeter-Wave Integrated Circuits (Jul. 1968 [T-MTT])." 1968 Transactions on Microwave Theory and Techniques 16.7 (Jul. 1968 [T-MTT] (Special Issue on Microwave Integrated Circuits)): 455-461.

Monolithic millimeter-wave integrated circuits have been designed and fabricated on semi-insulating GaAs substrates using microstrip transmission lines. Circuits using hybrid techniques have also been constructed on quartz and ceramics. This paper shows that microstrip-line integrated circuits are feasible at millimeter-wave frequencies. Circuit functions have been constructed and tested in the 25- to 100-GHZ range. The loss in microstrip line on semi-insulating GaAs was found to be less than 0.3 dB//lambda/. Couplers from waveguide to microstrip have been made with transmission losses less than 0.5 dB. Monolithic integrated detectors showed 5-dB better sensitivity than a 1N53 diode in a Philips detector mount. Monolithic diodes delivered 1.5 mW at 28 GHz. The results are encouraging and a fully monolithic integrated receiver is under development.

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