Abstracts

Techniques for the Measurement of Complex Microwave Conductivity and the Associated Errors

A.N. Datta and B.R. Nag. "Techniques for the Measurement of Complex Microwave Conductivity and the Associated Errors." 1970 Transactions on Microwave Theory and Techniques 18.3 (Mar. 1970 [T-MTT]): 162-166.

Complex microwave conductivity of 9 Omega /spl dot/ cm p-type silicon samples has been measured using conventional reflection and transmission bridges to examine their relative advantages and disadvantages. An attempt has been made to improve the reflection results from an analysis of the parameters of a circle diagram for reflection coefficient obtained on using a variable reactive termination after the semiconductor-filled waveguide section. In conformity with the calculated accuracy attainable from different types of measurement under the actual experimental condition, using commercial standards, the dielectric constant for the sample was found to be scattered over a region of ±0.4. It has been concluded that because of lack of accuracy in commercial standards for attenuation and phase shift, the potential accuracy of the conventional microwave methods falls too short of its mark to make any detinite conclusion about the effective mass of carriers in semiconductors at room temperatures.

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