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Method for measuring the electrical conductivity of diffusion-doped semiconductors and the resistance of metal-semiconductor contacts

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Diffusion, epitaxy and ion bombardment methods produce semiconductor layers in which the impurity content and hence the conductivity change with depth. The paper proposes a technique for measuring the resistance of contacts to semiconductor structures that are inhomogeneous in depth. The proposed technique also allows you to quickly measure the electrical conductivity of the samples. The theoretical substantiation of the technique was made by solving the boundary value problems of electrodynamics with the corresponding boundary conditions. Problems are solved for the case when the electrical conductivity in the sample changes with depth according to an exponential law, and is also described by the Gaussian distribution function.

Keywords: inhomogeneous semiconductor, diffusion in semiconductors, electrical conductivity, probe measurements.

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