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DIFFUSE AND DRIFT MOVEMENT OF ELECTRONS IN N-TYPE SILICON, IRRADIATED BY REACTOR FAST NEUTRONS

The area of temperatures of diffuse and drift movement electrons in n-Si, grown up by Czochralski method after irradiation by the reactor fast neutrons is considered. Temperature dependencies of carrier concentrations in the conducting matrix and in volume of samples are described and the drift barriers determining their specific resistance are calculated. Within the limits of the specified model of the effective environment temperature dependence of specific resistance n-Si ($\rho_0 = 40 \ \Omega \cdot$ cm) after irradiation is described by reactor fast neutrons. It is shown that the account of drift barriers and defects recharges in the space-charge areas of defect clusters describes temperature dependence of specific resistance more precisely. It is confirmed that scattering of carriers on the charged defects and clusters taking into account the drift barriers defines the temperature dependence of mobility electrons in n-Si with introduced defects clusters. C. Herring amendment for mobility of electrons is specified at their diffuse movement in n-type silicon irradiated by reactor fast neutrons. Average concentration of carriers in the sample determined from Hall effect measurements is given.

Keywords: silicon, fast neutron, kinetically coefficients.