

Determination of the electrical properties of MIS based on the $nB(SL)n$ -structure of HgCdTe in a wide temperature range

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A study was made of the admittance characteristics of a metal-insulator-semiconductor (MIS) structure, in which an nBn structure based on epitaxial $Hg_{1-x}Cd_xTe$ layers grown by the MBE method with a superlattice in the barrier region was used as a semiconductor. The dependences of the concentration of the majority charge carriers and the value of the product of the differential resistance of the space charge region (SCR) on the area of the structure on temperature are plotted. The parameters of the $Al_2O_3/Hg_{1-x}Cd_xTe$ interface, such as the density and characteristic time of recharging of surface states, are determined. On the temperature dependence of the differential conductivity of the SCR, two groups of maxima were found, based on the positions of which the activation energies of charge carriers were determined, one of which corresponds to the band gap of the contact layer.

Keywords: superlattice, $Hg_{1-x}Cd_xTe$, nBn structure, MIS structure, admittance.

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