

Mechanisms of current formation in nBn structures based on HgCdTe with a superlattice in the barrier region

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Over a wide temperature range, a study was carried out of the mechanisms of formation of dark current and photocurrent in an nBn structure based on n-HgCdTe, grown by molecular beam epitaxy, with a superlattice in the barrier region. The influence of different levels of constant illumination on the electrical characteristics of structures was studied. The behavior of the bulk current component J_B and the surface leakage current component J_S was analyzed at various bias voltages and temperatures. The study showed a strong dependence of dark current density on temperature. A significant effect of constant illumination with an IR LED on the current density value has been demonstrated. The dominance of current components J_B over J_S is shown throughout the entire range of bias voltages and temperatures studied.

Keywords: HgCdTe, molecular beam epitaxy, barrier structure, nBn, superlattice, current components.

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