

## LOCAL MECHANICAL STRESS RELAXATION OF IN GUNN DIODES IRRADIATED BY PROTONS

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Local mechanical stresses may be introduced into the active layers of Gunn diodes during the manufacturing process, for instance, when ohmic contacts forming or thermocompression assembling. Relaxation of mechanical stresses during operation and / or under the influence of ionizing radiation can lead to failure of devices based on Gunn diodes.

The purpose of this paper is research local mechanical stress relaxation in active layers of Gunn diodes during strict thermocompression assembling mode, further thermal annealing and proton irradiation.

Matters of research are 3 cm band Gunn Diodes based on n<sup>+</sup>-n-n<sup>+</sup>-n<sup>++</sup> GaAs epitaxial structure by standard sandwich technology using thermocompression assembling in metal-ceramic body with upper crystal mounting.

Two groups of Gunn diodes are produced. Optimal thermocompression assembling mode is used in first group. Strict thermocompression assembling mode (higher temperature and pressure) is used in second group.

The basic parameters of Gunn diodes for observable group and their changes are presented at further thermal annealing, irradiated by protons of 65 MeV and in storage.

Probable causes of observable phenomena are discussed. In conclusion the main results of research are formulated.

**Keywords:** *Gunn diodes, thermocompression assembling, mechanical stresses, relaxation, proton irradiation.*