High-field Injection Modification of Nano-thickness Dielectric Films in the MOS Devices

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The study of the processes of change of the charge state of MOS-structures with multi-layer nano-thickness gate dielectric on the basis of thermal film SiO2, dope phosphorus, under high-field injection modifications performed by different modes of injection was carried out. Evaluation time and temperature stability of the charge state of the dielectric film after the modification is complete. It is found, that the negative charge that accumulates in the film phosphor-silicate glass (PSG) in MOS-structures with a two-layer gate dielectric SiO2-PSG in the process of high-field tunnel injection of electrons, can be used to modify the electrical characteristics of devices having such a structure. A method of modifying the electrical characteristics of MOS structures by high-field tunneling injection of electrons into the dielectric constant in the mode of occurrence of the injection current was proposed. The method allows to directly during the modification of the monitor of change of the parameters of MOS-structures. It is shown, that for getting of devices with high-temperature stability after the modification of the charge state by the injection of electrons their need to annealing at temperatures about 200 °

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