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The improvement of quality and reliability of integrated circuit components by pulse photon annealing and stimulated diffusion in semiconductors

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Abstract

New physical and technological methods of the radiation-stimulated diffusion of impurities and defects, based on the combined action of gamma-radiation (α , βe^-) ion implantations, and pulse photon annealing in semiconductors, are described in this paper. The methods are successfully used for the formation and considerable improvement of the quality and reliability of semiconductor devices and components of integrated circuits: ohmic contacts, Schottky diodes, avalanche diodes, CMOS-transistors, and deep and ultra-shallow p-n junctions on Si, GaAs and InP.