Title : Method to Inhibit the Formation of Ion Implantation Induced Edge Defects

Abstract of the Invention

A method to determine a desired thickness for a surface layer through which ion implantation will take place in order to control the shape of the implantation profile to minimize the formation of flaws includes choosing a maximum angle θ between solid phase epitaxial regrowth fronts, determining a projected range of ion implantation distance Rp into the substrate and a projected standard deviation ΔRp along a first axis direction and a projected standard deviation ΔY along a second axis direction. These values are then substituted into the following equation to solve for thickness t of the surface layer: $t = Rp + \cos\theta[[(\Delta Y \sin\theta)^2 + (\Delta Rp \cos\theta)^2]^{0.5}]$ After the layer is placed onto the substrate, the implantation step is carried out. Annealing is then performed to recrystallize the amorphous zone. The morphology of the surface being implanted through can also be modified in order to control the directions of recrystallization upon annealing.

(Fig. 16)

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