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(54) Title: TREATMENTS TO IMPROVE DEVICE PERFORMANCE

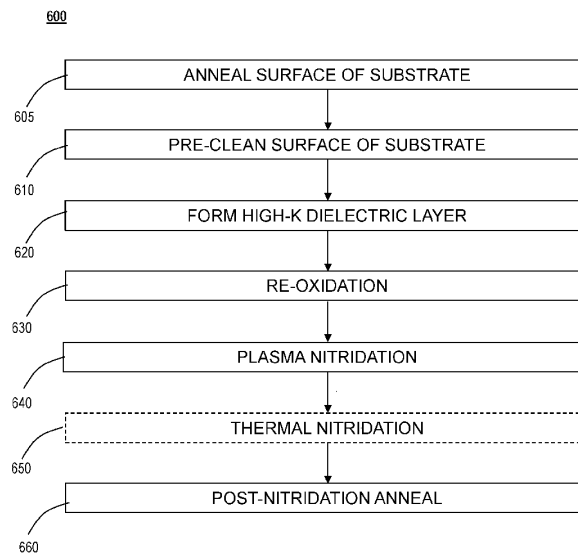


FIG. 6

(57) Abstract: A method of forming a semiconductor structure includes annealing a surface of a substrate in an ambient of hydrogen to smooth the surface, pre-cleaning the surface of the substrate, depositing a high- κ dielectric layer on the pre-cleaned surface of the substrate, performing a re-oxidation process to thermally oxidize the surface of the substrate; performing a plasma nitridation process to insert nitrogen atoms in the deposited high- κ dielectric layer, and performing a post-nitridation anneal process to passivate chemical bonds in the plasma nitridated high- κ dielectric layer.

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