ABSTRACT

CREATION OF MULTIPLE GATE OXIDE WITH HIGH THICKNESS RATIO IN FLASH MEMORY PROCESS

A new method is provided for the creation of an oxide layer that contains three different thicknesses. A first layer of oxide is grown on the surface of a substrate; a first layer of photoresist is deposited and patterned thereby partially exposing the surface of the underlying first layer of oxide. A nitrogen implant is performed into the surface of the underlying substrate; the photoresist mask of the first layer of photoresist is removed. A second layer of photoresist is deposited and patterned, the first layer of oxide is removed from above and surrounding the implanted regions of the substrate. The second mask of resist is removed. The first layer of oxide is reduced in thickness, its thickness is restored to a first thickness by a blanket growth of a second layer of oxide over the exposed surface of the substrate (where no ion implant has been performed) to a third thickness, over the surface of the substrate where the ion implant has been performed to a second thickness and over the surface of the first layer of oxide thereby restoring this layer of oxide to its original first thickness.

(FIGURE 1 IS SUGGESTED FOR PUBLICATION)