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ABSTRACT

A NOVEL STI SCHEME TO PREVENT FOX RECESS DURING PRE-CMP HF DIP

A new method is provided for the creation of STI regions. STI trenches are created in the surface of a substrate following conventional processing. A layer of STI oxide is deposited and, using an exposure mask that is a reverse mask of the mask that is used to create the STI pattern, impurity implants are performed into the surface of the deposited layer of STI oxide. In view of these processing conditions, the layer of STI oxide overlying the patterned layer of etch stop material is exposed to the impurity implants. This exposure alters the etch characteristics of the deposited layer of STI oxide where this STI oxide overlies the patterned layer of etch stop material. The etch rate of the impurity exposed STI oxide is increased by the impurity implantation, resulting in an etch overlying the patterned etch stop layer that proceeds considerably faster than the etch of the STI oxide that is deposited overlying the created STI trenches. With the significantly faster etch of the STI oxide where this oxide has been exposed to impurity implantation, the STI oxide removal can be equalized between the STI oxide that overlies the patterned etch stop layer and the oxide that has been deposited over the STI trenches.

FIGURE 9



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