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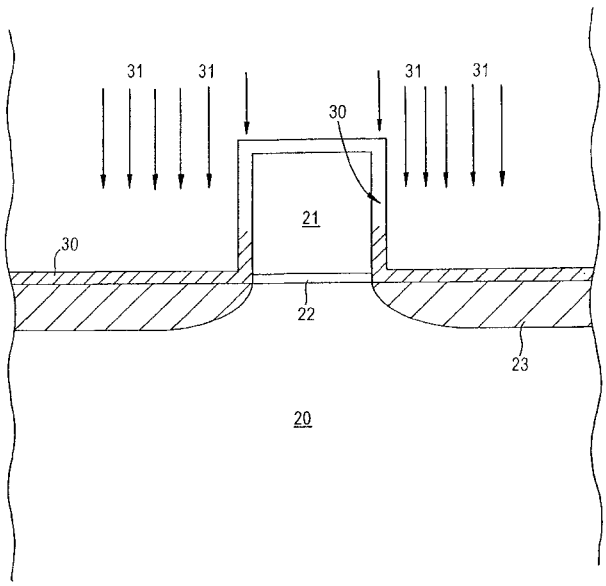
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(54) Title: ION IMPLANTATION OF SILICON OXID LINER TO PREVENT DOPANT OUT-DIFFUSION FROM SO URCE/DRAIN EXTENSIONS



(57) Abstract: Semiconductor devices with improved transistor performance are fabricated by ion-implanting (31) a dopant into the oxide liner (30) to prevent or substantially reduce dopant out-diffusion from the shallow source/drain extensions. Embodiments include ion implanting a P-type dopant, such as B or BF_2, using the gate electrode (21) as a mask, to form shallow source/drain extension (23), depositing a conformal oxide liner (30), and ion implanting (31) the P-type impurity into the oxide liner (30) at substantially the same dopant concentration as in the shallow source/drain extensions (23). Subsequent processing includes depositing a spacer layer, etching to form sidewall spacers (40), ion implanting to form deep moderate or heavy source/drain implants (41) and activation annealing.

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