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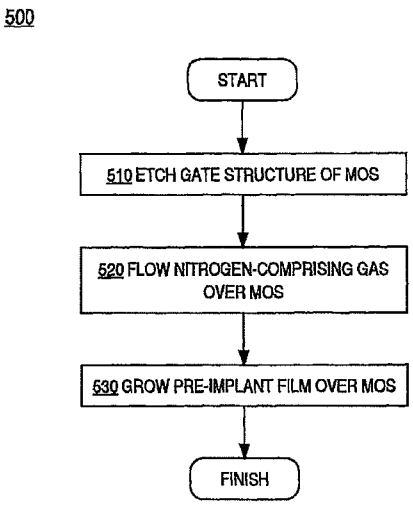
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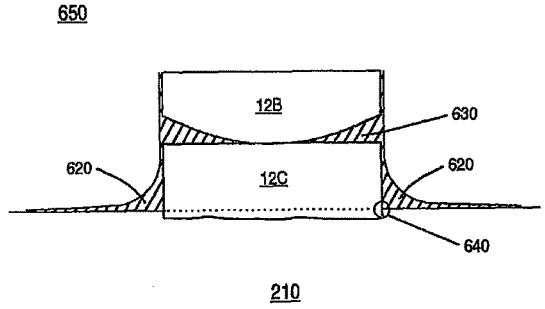
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(54) Title: NITROGEN OXIDATION OF ETCHED MOS GATE STRUCTURE





(57) Abstract: A method of manufacturing a metal oxide semiconductor (500). A gate structure of the metal oxide semiconductor is etched (510). A nitrogen-comprising gas, which may be NO or N_2O, is made to flow over the metal oxide semiconductor (500). A pre-implant film (620) is grown over the edges of the gate structure. The pre-implant film may repair damage to a gate stack edge caused by an etching process. The film may be substantially silicon nitride. Beneficially, such a film may be thinner than a conventional silica oxide film. A thinner film does not deleteriously contribute to non-uniformities in a tunnel oxide. A non-uniform tunnel oxide may result in a non-uniform field between a gate and a channel. Non-uniform fields may have numerous deleterious effects. Advantageously, embodiments of the present invention overcome prior art deficiencies in repairing gate stack edge defects. In this novel manner, gate stack edge defects may be physically repaired without deleterious consequences to the electrical behavior of a metal oxide semiconductor device. The novel application of silicon nitride to this application allows thin repair layers to be grown. Advantageously, semiconductors manufactured using embodiments of the present invention may utilize smaller process feature sizes, resulting in denser arrays of semiconductor devices, resulting in lower costs for such devices and realizing a competitive advantage to practitioners of the improvements in the arts herein described.

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