POLYSILICON GATE REOXIDATION IN A GAS MIXTURE OF OXYGEN AND NITROGEN TRIFLUORIDE GAS BY RAPID THERMAL PROCESSING TO IMPROVE HOT CARRIER IMMUNITY AND DEVICE PRODUCED THEREBY

ABSTRACT OF THE DISCLOSURE

A method of forming an FET transistor comprises forming a stack of a gate oxide layer and a control gate electrode on a surface of a doped semiconductor substrate with counterdoped source/drain regions therein. A silicon oxide layer is formed over the stack of the gate oxide layer and the control gate electrode and exposed portions of the semiconductor substrate including the source/drain regions. Then the silicon oxide layer and the corners of the gate oxide layer are fluorinated by rapid thermal processing providing a fluorinated silicon oxide layer. The rapid thermal processing is performed in an atmosphere of NF_3 gas and O_2 gas at a temperature from about 900°C to about 1050°C for a time duration from about 10 seconds to about 50 seconds, and the fluorinated silicon oxide layer has a thickness from about 200Å to about 400Å.

(FIGURE 1 IS SUGGESTED FOR PUBLICATION)

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