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A METHOD OF MANUFACTURING AN INSULATED GATE FIELD EFFECT TRANSISTOR

ABSTRACT

A Field Effect Transistor (FET) and a method of forming FETs on a silicon wafer. First, trenches (120) are formed in a surface of the silicon wafer (122). An ONO layer (126) is formed on the surface, lining the trenches (120). Potassium is diffused along the ONO layer (126). Part of the ONO layer (126) is removed to expose the wafer surface with the ONO layer (126) remaining in the trenches (120). Gate oxide is formed on the exposed wafer surface. Finally, FET gates are formed on the gate oxide. An oxide collar is formed along the ONO layer (126) in the trenches above the recessed polysilicon. The polysilicon may be Reactive Ion etched until it is essentially coplanar with the wafer surface. The resulting FET has thicker gate oxide along its sides than in the center of its channel.

Figs. 2A, 2F

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