ABSTRACT

METHOD OF FIELD ISOLATION IN SILICON-ON-INSULATOR TECHNOLOGY

A method of fabricating an SOI transistor device comprises the following steps. a silicon semiconductor structure is provided. A silicon oxide layer is formed over the silicon semiconductor structure. A silicon-on-insulator layer is formed over the oxide layer. A well is implanted in the silicon-on-insulator layer. A gate oxide layer is grown over the silicon-on-insulator layer. A polysilicon layer is deposited over the gate oxide layer. The polysilicon layer, gate oxide layer, and silicon oxide layer are patterned and etched to form trenches. The trenches are filled with an isolation material to at least a level even with a top surface of the polysilicon layer to form raised shallow trench isolation regions (STIs). The polysilicon layer is patterned and the non-gate portions are removed polysilicon adjacent the raised STIs forming a gate conductor between the raised STIs with the gate conductor and said raised STIs having exposed sidewalls. The gate oxide layer is removed between the gate conductor and the raised STIs, and outboard of the raised STIs. The source and drain are formed in the silicon-on-insulator layer adjacent the gate spacers. Silicide regions may then be formed on the source and drain.

(FIGURE 1 IS SUGGESTED FOR PUBLICATION)