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(54) **METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE AND WAFER**

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See application file for complete search history.

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(57) **ABSTRACT**

A method of manufacturing semiconductor device and a wafer are provided in accordance with embodiments of the present invention, which relates to semiconductor technology. The method includes: providing a substrate, and forming a gate oxide layer and a polysilicon layer on a first surface of the substrate; etching the polysilicon layer by use of a patterned mask so as to form a polysilicon gate with reentrants; depositing a tensile stress film on a second surface of the substrate before etching the polysilicon layer. The tensile stress film can be deposited on the second surface of the substrate for generating the tensile stress for the wafer. Thus, a polysilicon gate with reentrants can be formed in etching process. In this way, semiconductor devices can have smaller gate-source/drain overlap capacitance and better TDDB parameters, and the performance of the devices can be improved.

10 Claims, 11 Drawing Sheets

