Selective STI Stress Relaxation Through Ion Implantation

Abstract

A first example embodiment comprises the following steps and the structure formed therefrom. A trench having opposing sidewalls is formed within a substrate. A stress layer having an inherent stress is formed over the opposing trench sidewalls. The stress layer having stress layer sidewalls over the trench sidewalls. Ions are implanted into one or more portions of the stress layer to form ion-implanted relaxed portions with the portions of the stress layer that are not implanted are un-implanted portions, whereby the inherent stress of the one or more ion-implanted relaxed portions of stress layer portions is relaxed.

Fig. 13