METHODS OF FORMING FIELD EFFECT TRANSISTORS USING DILUTED HYDROFLUORIC ACID TO REMOVE SACRIFICIAL NITRIDE SPACERS

Abstract of the Disclosure

Methods of forming integrated circuit devices include forming a field effect transistor having a gate electrode, sacrificial nitride spacers on opposing sidewalls of the gate electrode and source/drain regions, which are self-aligned to the sacrificial nitride spacers, on a semiconductor substrate. The sacrificial nitride spacers are selectively removed using a diluted hydrofluoric acid solution having a nitride-to oxide etching selectivity in excess of one. In order to increase charge carrier mobility within a channel of the field effect transistor, a stress-inducing electrically insulating layer is formed on opposing sidewalls of the gate electrode. This insulating layer is configured to induce a net tensile stress (NMOS) or compressive stress (PMOS) in the channel.

Figure 1H