LANTHANUM OXIDE-BASED DIELECTRICS FOR INTEGRATED CIRCUIT CAPACITORS

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ABSTRACT

Lanthanum oxide-based gate dielectrics are provided for integrated circuit field effect transistors. The gate dielectrics may include lanthanum oxide, preferably amorphous lanthanum oxide and/or an alloy of lanthanum oxide and silicon oxide, such as lanthanum silicate (La₂SiO₅). Lanthanum oxide-based dielectrics may be fabricated by evaporating lanthanum on a silicon surface of an integrated circuit substrate. The lanthanum may be evaporated in the presence of oxygen. Lanthanum and silicon may be co-evaporated. An anneal then may be performed. Lanthanum oxide-based dielectrics also may be used for integrated circuit capacitors.

18 Claims, 9 Drawing Sheets