ABSTRACT

METHOD OF FABRICATION OF LOW LEAKAGE CAPACITOR

A capacitor element of a semiconductor device used for high density semiconductor circuits is formed by the steps of forming the bottom plate of the capacitor, submitting the top of the bottom plate to plasma treatment in an oxidizing medium where nitrogen and oxygen are present, depositing a dielectric layer and submitting the top of the dielectric layer to plasma treatment in an oxidizing medium where nitrogen and oxygen are present. Various materials are used for the plasma treatment in an oxidizing medium where nitrogen and oxygen are present. While the present invention uses amorphous silicon as the dielectric material, plasma treatment in an oxidizing medium where nitrogen and oxygen are present can readily applied to a number of other dielectric materials. The objective in constructing capacitors for semiconductor circuits is to reduce the thickness of the dielectric material as much as possible and use a dielectric material for the dielectric which has a high dielectric constant, this increases the value of the capacitor electrical charge which can be carried by the capacitor. The objective of the present invention is to eliminate the leakage current between the plates of a capacitor so that the capacitor can maintain a high voltage between the top and the bottom plate.

(FIGURE 1 IS SUGGESTED FOR PUBLICATION)