PROCESS FOR PLUGGING DEFECTS IN A DIELECTRIC LAYER OF A SEMICONDUCTOR DEVICE

Abstract of the Disclosure

Defects in a thin dielectric layer of a semiconductor device are plugged by a discontinuous layer to maintain integrity of the dielectric without degrading the reliability of the device. In one form of the invention, a semiconductor device (10) includes an oxide layer (14) formed on a substrate material (12). Growth of a nitride layer (18), using CVD techniques, is initiated in any defects (16) in the oxide layer, but growth is terminated prior to entering a continuous growth stage. By plugging the defects with nitride without forming a continuous nitride layer, defect density in thin oxides is reduced without experiencing disadvantages associated with thick oxide-nitride stacks. The invention is also applicable to plugging defects in dielectric layers other than oxide. Furthermore, growth of a discontinuous layer may be achieved with a material other than a nitride using CVD techniques.

(FIG. 2 accompanies this abstract)