ABSTRACT

ATTENUATION OF REFLECTING LIGHTS BY SURFACE TREATMENT

A new method of avoiding resist notching in the formation of a polysilicon gate electrode in the fabrication of an integrated circuit device is described. Bare active areas are provided surrounded by field oxide isolation on a semiconductor substrate wherein the surface of the substrate has an uneven topography due to the uneven interface between the active areas and the isolation. A polysilicon layer is deposited over the active areas and the field oxide isolation of the substrate. The surface of the polysilicon layer is roughened using a plasma etching process wherein pits are formed on the surface which act as light traps. The roughened polysilicon layer is covered with a layer of photoresist. Portions of the photoresist layer are exposed to actinic light wherein reflection lights from the actinic light are trapped in the pits. The reflection lights do not reflect onto the unexposed portion of the photoresist layer. The photoresist layer is developed and patterned to form the desired photoresist mask for the polysilicon layer wherein the absence of reflection lights reflecting onto the unexposed portion of the photoresist results in the notch-free photoresist mask in the formation of a polysilicon gate electrode in the fabrication of an integrated circuit device.

(FIGURE 3 IS SUGGESTED FOR PUBLICATION)