ABSTRACT

SIZE DOWN TRENCHES BY ETCHING WITHOUT SACRIFICING VERTICAL PROFILE

A method of etching trenches through a low-k material layer using a hard mask wherein the trenches are sized down from the mask size by etching without sacrificing a vertical trench profile is described. A low-k dielectric material is provided over a region to be contacted on a substrate. A hard mask layer is deposited overlying the dielectric material. A mask is formed over the hard mask layer wherein the mask has a first opening of a first width. A second opening is etched in the hard mask layer where it is exposed by the mask wherein the second opening has a second width smaller than the first width and wherein the second opening has inwardly sloping sidewalls. A trench is etched through the dielectric layer to the region to be contacted through the second opening whereby the trench has a width equal to the second width. The trench is filled with a metal layer to complete fabrication of the integrated circuit device.

(FIGURE 2 IS SUGGESTED FOR PUBLICATION)