ABSTRACT

A METHOD TO PREVENT DEGRADATION OF LOW DIELECTRIC CONSTANT MATERIAL IN COPPER DAMASCENE INTERCONNECTS

A method of fabricating trenches has been achieved. The method may be applied to damascene and dual damascene contacts to prevent damage to organic low dielectric constant materials due to photoresist ashing. A semiconductor substrate is provided. A first dielectric layer is deposited overlying the semiconductor substrate. A first etch stopping layer is deposited overlying the first dielectric layer. A second etch stopping layer is deposited overlying the first etch stopping layer. An optional anti-reflective coating is applied. A photoresist layer is deposited. The photoresist layer is patterned to define openings for planned trenches. The second etch stopping layer is etched through to form a hard mask for the planned trenches. The photoresist layer is stripped away by ashing where the first etch stopping layer protects the first dielectric layer from damage due to the presence of oxygen radicals. The first etch stopping layer is etched through to complete the trenches, and the integrated circuit device is completed.

(FIGURE 5 IS SUGGESTED FOR PUBLICATION)