ABSTRACT

NOVEL AIR BRIDGE PROCESS FOR FORMING AIR GAPS

A method for reducing RC delay in integrated circuits by lowering the dielectric constant of the intermetal dielectric material between metal interconnects or metal damascene interconnects is described. The dielectric constant of the intermetal dielectric is lowered by introducing air into the intermetal dielectric between metal interconnections. An air bridge comprising a porous material, preferably amorphous silicon, porous silicon oxide, or porous silsesquioxane, is deposited over a layer containing a reactive organic material. An oxygen plasma treatment or an anisotropic etching through the pores in the air bridge layer removes at least a portion of the reactive material, leaving air plugs within the intermetal dielectric.

FIGURE 1 IS SUGGESTED FOR PUBLICATION