METHOD AND STRUCTURE FOR CONTACT TO COPPER METALLIZATION IN AN INSULATING VIA ON A SEMICONDUCTOR

ABSTRACT

A method for depositing elemental copper (22') in a via (26) on a semiconductor wafer (20) includes providing a wafer (20) having patterned copper (22), depositing an insulating layer (24) on the copper (22), opening a via (26) in the insulating layer (24), placing the wafer (20) in a reducing environment (32) to reduce any copper oxide (28) on the copper (22) in the via (26) to elemental copper (22'), and then depositing a liner layer (52) in contact with the elemental copper (22') in the via (26) without exposing the wafer (20) to an oxidizing environment. The method eliminates splashing copper found in vias cleaned with traditional sputtering. The liner (52) is chosen for its adhesion ability and its ability to prevent copper diffusion.

Fig.2