ABSTRACT

METHODS OF FORMING AN INTERCONNECT ON A SEMICONDUCTOR SUBSTRATE

A device and methods of forming an interconnection within a prepatterned channel in a semiconductor device are described. The present invention includes a method of forming an interconnect channel within a semiconductor device. A first dielectric layer is deposited over a substrate and patterned to form a contact opening that is subsequently filled with a contact plug. A second dielectric layer is deposited over the patterned first dielectric layer and the contact plug. The second dielectric layer is patterned to form the interconnect channel, wherein the first dielectric layer acts as an etch stop to prevent etching of the substrate. The present invention also includes a method of forming an interconnect. A dielectric layer is deposited over a substrate and patterned to form an interconnect channel. A metal layer is deposited over the patterned dielectric layer and within the interconnect channel. The metal layer is polished with an alkaline solution to remove the metal layer that does not lie within the interconnect channel to form an interconnect. The present invention further includes a method of forming an interconnect over a silicon nitride layer. The silicon nitride layer is deposited over a semiconductor substrate and patterned to form a contact opening that is subsequently filled with a conductive material. A metal layer is deposited on the patterned silicon nitride layer and the contact plug and patterned to form the interconnect such that all of the interconnect lies on the contact plug and part of the patterned silicon nitride layer.

(Fig. 9)