Abstract

Entire encapsulation of Cu interconnects using self-aligned CuSiN film

A method of forming a barrier layer and cap comprised of CuSiN for an interconnect. We provide an interconnect opening in a dielectric layer over a semiconductor structure. We form a CuSiN barrier layer over the sidewalls and bottom of the interconnect opening by reacting with the first copper layer. We then form an interconnect over the CuSiN layer filling the interconnect opening. We can form a CuSiN cap layer on the top surface of the interconnect.

Figure 4