ABSTRACT

SACRIFICIAL STOP LAYER AND ENDPOINT FOR METAL CMP

A new method of metal plug metallization utilizing a sacrificial layer as a CMP stop to protect the oxide layer from damage during CMP is described. Semiconductor device structures are provided in and on a semiconductor substrate. An insulating layer covers the semiconductor device structures. A sacrificial titanium nitride layer is deposited overlying the insulating layer. An opening is etched through the sacrificial layer and the insulating layer to one of the semiconductor device structures. A glue layer is deposited conformally over the surface of the sacrificial layer and within the opening. A barrier layer is deposited overlying the glue layer. A metal layer is deposited overlying the barrier layer. Chemical mechanical polishing is used to polish away the metal layer, barrier layer, and glue layer overlying the insulating layer wherein the sacrificial layer acts as a polish stop and an endpoint detector and protects the insulating layer from the polishing thereby preventing erosion and dishing to complete formation of said metal plug metallization in the fabrication of an integrated circuit.

(FIGURE 3 IS SUGGESTED FOR PUBLICATION)