ABSTRACT

A MODIFIED BURIED CONTACT PROCESS FOR IC DEVICE FABRICATION

A new method of forming a butted contact and a buried contact having low contact resistance in the fabrication of integrated circuits is described. A first layer of polysilicon is deposited over a gate silicon oxide layer over the surface of a semiconductor substrate. The first polysilicon and gate oxide layers are etched away to provide an opening to the substrate. A second polysilicon layer is deposited over the first polysilicon layer and the substrate within the opening and doped whereby the buried contact junction is formed in the substrate underlying the doped second polysilicon layer. The second polysilicon layer is planarized. The first and second polysilicon layers are etched away to provide an opening overlying a portion of the buried contact junction wherein a trench is etched into the substrate where the substrate is not covered by the gate oxide layer. An oxide layer is deposited over the second polysilicon layer and within the trench. The oxide layer is etched away wherein the trench and a portion of the second polysilicon layer overlying the buried contact junction and adjacent to the trench are exposed and whereby the oxide is removed from the trench. A third polysilicon layer is deposited over the oxide layer and the second polysilicon layer and the trench exposed within the opening. The third polysilicon layer is patterned to form a butted contact with the second polysilicon layer exposed within the opening.

(FIGURE 4 SI SUGGESTED FOR PUBLICATION)