ABSTRACT

METHOD TO FORM CoSi2 ON SHALLOW JUNCTION BY Si IMPLANTATION

A new method for forming a cobalt disilicide film on shallow junctions with reduced silicon consumption in the fabrication of an integrated circuit is described. A semiconductor substrate is provided having silicon regions to be silicided. A cobalt layer is deposited overlying the semiconductor substrate and subjected to a first rapid thermal process whereby the cobalt is transformed to cobalt monosilicide where it overlies the silicon regions and wherein the cobalt not overlying the silicon regions is unreacted. The unreacted cobalt layer is removed. A dielectric layer is deposited overlying the substrate and the cobalt monosilicide layer. Silicon ions are implanted through the dielectric layer into the cobalt monosilicide layer. The substrate is subjected to a second rapid thermal process whereby the cobalt monosilicide is transformed to cobalt disilicide wherein the silicon ions implanted into the cobalt monosilicide layer act as a main (not sole) silicon source for the transformation to complete formation of a cobalt disilicide film in the manufacture of an integrated circuit.

9FIGURE 1 IS SUGGESTED FOR PUBLICATION}