PROCESS FOR ACHIEVING CONTROLLED PRECIPITATION PROFILES IN SILICON WAFERS

ABSTRACT

The object of the invention is a process for the treatment of silicon wafers to achieve therein controlled precipitation profiles for the manufacture of electronic components, comprising the following fundamental operations: a) subjecting the wafers to a preliminary thermal treament, at a temperature between 950°C and 1150°C, in particular at about 1100°C, for a duration of about 15 minutes; b) after a standard chemical corrosion (etching) treatment, subjecting pairs of coupled wafers in a close reciprocal theraml contact to a rapid thermal annealing treatment, at a temperature between 1200°C and 1275°C for a duration of some tens of seconds; c) subjecting the wafers to a further extended thermal treatment at a temperature between 900°C and 1000°C, and, finally, d) extracting the wafers from the furnace and subjecting the surfaces that were in a close reciprocal contact during the rapid annealing treatment to a surface polishing. The resulting wafers have a profile of the density of the precipitates that presents a concentration peak in proximity to a surface (trapping zone) and a very low concentration plateau in proximity to the other surface (active zone).

FIGURE 1