

## PROCESS FOR THINNING THE SURFACE LAYER OF AN SOI SUBSTRATE

### ABSTRACT

The invention relates to a process for thinning a surface layer of an SOI substrate, comprising:

a) a step of measuring the thickness of the surface layer, to obtain its average thickness ( $E_{\text{mean}}$ ) and its thickness non-uniformity ( $U$ ),

then the following steps, performed in a single-wafer chemical processing tool:

b) applying  $n$  cycles, with  $n$  a integer greater than or equal to 1, of oxidation and etching, to a front side of the surface layer, each cycle involving dispensing ozonated water then dispensing hydrofluoric acid,

c) carrying out a non-uniform etch on the front side of the surface layer, this involving dispensing a silicon-etching solution, in a central region, for a time, called the non-uniform etching time ( $t_{\text{nu}}$ ),

d) carrying out a uniform etch on the front side of the surface layer, this involving dispensing a silicon-etching solution with a sweeping movement from the edge to the center of the surface layer and back again, for a time, called the uniform etching time ( $t_{\text{u}}$ ).

Given the average thickness ( $E_{\text{mean}}$ ) and the thickness non-uniformity ( $U$ ),

the number of cycles ( $n$ ), the non-uniform etching time ( $t_{\text{nu}}$ ) and the uniform etching time ( $t_{\text{u}}$ ) are determined, before carrying out steps b), c) and d), on the basis of a model relating them to an average etched thickness of the surface layer and to an average etching non-uniformity defined as the difference between an average etched thickness in a central region and in a peripheral region of the surface layer.

Figure to be published with the abstract: No figure