conditions of the epitaxy process to minimize thermal stress on the substrate to be treated. The setup method ensures a high reproducibility of the receiving substrates behavior after the epitaxy process is applied, especially with respect to the absence (or very low occurrence) of slip line defects on the final structures.

BRIEF DESCRIPTION OF THE INVENTION

A first aspect of the present invention provides a setup method for an epitaxy process intended to form a useful layer on a receiving substrate in an epitaxy equipment, said layer and said substrate comprising silicon. The setup method is performed before treating the receiving substrate, and comprises:

a) selecting a type of test substrate among silicon-based wafers, test substrate being different from the receiving substrate:

- having a thickness between 20% and 40% less than a usual thickness for a given substrate diameter, 725 microns and 775 microns being respectively the usual thicknesses for diameters of 200mm and 300mm, and/or
- having an interstitial oxygen concentration of less than 10 ppma ASTM'79, and/or
- comprising a SOI stack including a dielectric layer with a thickness ranging between 0,5 and 5,0 microns, and a thin film of monocrystalline silicon with a thickness less than or equal to 300nm;

b) fixing initial temperature conditions, said conditions defining temperatures to be applied to -at least- two areas of the substrate to be processed in the epitaxy equipment;

c) forming the useful layer on a test substrate of the selected type, by applying the epitaxy process with the initial temperature conditions, leading to obtaining an initial test structure; then, measuring slip line defects on said initial test structure;

- the quantity of slip lines defects is targeted to correspond to a slip line cumulated length of less than 20mm, preferentially less than 5mm;
- the temperature conditions define temperatures to be applied to a central area and to a peripheral area of the substrate to be processed in the epitaxy equipment;
- the temperature conditions define temperature offset(s) to be applied between a central area and three peripheral areas of the substrate to be processed in the epitaxy equipment;
- the variation of the temperatures to be applied to the -at least- two areas of the substrate, between initial temperature conditions and new temperature conditions, is ranging from -30°C to +30°C;
- the epitaxy process involves temperatures between 600°C and 1200°C, in an atmosphere comprising at least one gas selected from TCS, DCS, SiH4, SiCl4, Si2H4, Si3H8, GeH4, and at a pressure between ultra-high vacuum and atmospheric pressure;
- the useful layer formed during the epitaxy process is made of silicon and has a thickness of between 0,3 micron and 30 microns;
- the useful layer formed during the epitaxy process is made of silicon germanium and has a thickness between 50nm and 1000nm.

A second aspect of the invention provides an epitaxy method implementing an epitaxy process intended to form a useful layer on a receiving substrate in an epitaxy equipment, said layer and said substrate comprising silicon; the setup method as previously stated is performed before treating the receiving substrate and the receiving substrate is an SOI substrate.