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LOW COST METHOD OF FABRICATING EPITAXIAL SEMICONDUCTOR DEVICES

ABSTRACT OF THE DISCLOSURE

Significant reductions in the cost of fabrication of epitaxial semiconductor devices without sacrifice of functional characteristics is achieved by eliminating the conventional but costly polishing procedure, instead subjecting the substrate to grinding, cleaning and etching processes in which the grinding removes material from the surface to a depth of at least 65 microns and the etching further removes material to a depth of about 6-10 microns, the grinding preferably being carried out in two steps, the first being a coarse step and the second being a fine step, with the rotated grinding elements dwelling at their respective last grinding positions for a short period of time. The result is the equivalent of the prior art polishing procedure which took considerably longer to carry out and which therefore was much more costly. Complementing this grinding procedure is an improved and cost effective epitaxial process utilizing a unique two-step hydrochloric gas high temperature etch and a faster growth rate process with shorter cycle steps. In addition, oxygen control and "gettering" capabilities result in a total process improving the economics of formation of epitaxial semiconductor devices.

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