Nanoprecision process for improving thickness uniformity of top silicon layer of silicon-on-insulator wafer by using a multi-electrode plasma generator

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Abstract

In order to use the silicon-on-insulator (SOI) wafer as the substrate in nanodevices, a very thin and uniform top silicon layer is required. We attempt to improve the silicon layer of commercially available SOI wafer via a numerically controlled thinning process by using atmospheric-pressure plasma. Furthermore, to realize a high-efficiency process, we developed a multi-electrode plasma generator capable of processing the entire surface of the wafer simultaneously, and succeeded in improving the P-V value of the thickness of silicon layer from 2.85 nm to 0.86 nm within about 10 min.

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