Double-sided Silicon Wafer Surface Protection Method for Photolithography Process.

Rebecca Horak, Olabode Ajayi, Puteri Megat-Hamari, Bhushan Dharmadhikar

Abstract:

The photolithography process of a double-sided polished (DSP) wafer has always been a challenging task. This work is to investigate an efficient method of DSP surface preparation to protect it from damage during the photoresist spinning, soft and hard bake, and etching processes. Specifically, during the photoresist spinning, suction from the chuck of the photoresist spinner which holds the DSP in position often damages the reverse side of the polished surface. If the surface and pattern feature on the reverse side is not preserved correctly, it always leads to grassing and other undesirable artifacts in the microstructure during fabrication. Different surface coating strategies have been evaluated to protect the DSP surface during the photoresist spin and reduce the baking time. In this paper, we report our observations on the surface conditions and etching processes.