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(54) Title: METHOD FOR FORMING SALICIDES

(57) Abstract

Titanium is deposited onto a semiconductor interconnect to form a salicide structure by plasma-enhanced chemical vapor deposition. The reactant gases, including titanium tetrachloride, hydrogen and optionally argon, are combined. A plasma is created using RF energy and the plasma contacts the rotating semiconductor material (11). This causes titanium to be deposited which reacts with exposed silicon to form titanium silicide (67, 68 and 69) without any subsequent anneal. Other titanium deposited on the surface, as well as titanium-rich silicon compositions ($TiSi_x$ wherein X is <2), are removed by chemical etching. If only about 40 Å of titanium is deposited, it will selectively deposit onto the silicon structure without coating the oxide spacers of the interconnect. In this embodiment the need to chemically etch the substrate is eliminated.

