METHODS OF ETCHING TRENCHES INTO SILICON OF A SEMICONDUCTOR SUBSTRATE, METHODS OF FORMING TRENCH ISOLATION IN SILICON OF A SEMICONDUCTOR SUBSTRATE, AND METHODS OF FORMING A PLURALITY OF DIODES

ABSTRACT

A method of etching trenches into silicon of a semiconductor substrate includes forming a mask over silicon of a semiconductor substrate, with the mask comprising trenches formed there-through. Plasma etching is conducted to form trenches into the silicon of the semiconductor substrate using the mask. In one embodiment, the plasma etching includes forming an etching plasma using precursor gases which include SF_6, an oxygen-containing compound, and a nitrogen-containing compound. In one embodiment, the plasma etching includes an etching plasma which includes a sulfur-containing component, an oxygen-containing component, and NF_x.

FIGURE 24