

Abstract of the Disclosure

HIGH VOLTAGE SILICON RECTIFIER WITH OPTIMUM
PLACEMENT OF SILICON-GERMANIUM LAYERS

A high voltage silicon rectifier includes a substrate portion and an epitaxial mesa portion that is a frustrum of a pyramid with a substantially square cross section and side walls that make a forty five degree angle with the substrate portion. The mesa portion includes three germanium doped layers that introduce strain to speed up recombination of charge carriers. The topography of the base region of the rectifier has a high-low junction that includes a central portion that is deeper in the mesa than the germanium-doped layers and an edge portion that is shallower in the mesa than the germanium-doped layers and forms a positive bevel angle with the tapered side walls of the mesa.

Figure 1