

ABSTRACT

The embodiments of the invention provides a semiconductor device and a method for manufacturing it. The semiconductor device provided by the embodiments of the invention comprises: a first electrode layer; a substrate layer positioned on the first electrode layer; an epitaxy layer positioned on the substrate layer and comprising a first surface far from the substrate layer; a plurality of well regions disposed by extending from the first surface into the epitaxy layer and orthographic projections thereof on the first surface are spaced from each other; a second electrode layer, comprising first metal layers, each disposed between adjacent two of the well regions on the first surface and forms a Schottky contact with the epitaxy layer, wherein the Schottky contact has variable barrier height. The semiconductor device provided by the embodiments of the invention may improve the forward conduction ability without affecting the reverse blocking ability.

FIG. 1