ABSTRACT

SEMICONDUCTOR DEVICE AND PRODUCTION METHOD THEREOF

A method for producing a semiconductor device includes preparing a structure having a substrate, a planar semiconductor layer and a columnar semiconductor layer, forming a second drain/source region in the upper part of the columnar semiconductor layer, forming a contact stopper film and a contact interlayer film, and forming a contact layer on the second drain/source region. The step for forming the contact layer includes forming a pattern and etching the contact interlayer film to the contact stopper film using the pattern to form a contact hole for the contact layer and removing the contact stopper film remaining at the bottom of the contact hole by etching. The projection of the bottom surface of the contact hole onto the substrate is within the circumference of the projected profile of the contact stopper film formed on the top and side surface of the columnar semiconductor layer onto the substrate.

Figure 43