

ABSTRACT

A three-dimensional semiconductor device including: a conductive layer on a substrate and including a first conductivity-type impurity; a base layer on the conductive layer; a stack including a lower insulating film, and gate electrodes and mold insulating layers on the lower insulating film, wherein the base layer includes a high dielectric material; a vertical structure including a channel layer penetrating the stack structure and a vertical insulating layer between the channel layer and gate electrodes, the vertical structure having a first area in the base layer; a conductive film extending along a surface of the channel layer from a bottom of the first area adjacent to the conductive layer, the conductive film including the first conductivity-type impurity; and an isolation structure penetrating the stack, base layer and conductive layer, and extending parallel to an upper surface of the substrate, the isolation structure having a second area in the base layer.

FIG. 3