ABSTRACT

A semiconductor device is provided. The semiconductor device includes: a first substrate; an active pattern extending on the first substrate; a gate electrode extending on the active pattern; a source/drain region on the active pattern; a first interlayer insulating layer on the source/drain region; a sacrificial layer on the first substrate; a lower wiring layer on a lower surface of the sacrificial layer; a through via trench extending to the lower wiring layer by passing through the first interlayer insulating layer and the sacrificial layer in a vertical direction; a through via inside the through via trench and connected to the lower wiring layer; a recess inside the sacrificial layer and protruding from a sidewall of the through via trench in the second horizontal direction; and a through via insulating layer extending along the sidewall of the through via trench and into the recess.

FIG. 4