

Title of Invention: SEMICONDUCTOR DEVICE PRODUCTION METHOD
AND SEMICONDUCTOR DEVICE

ABSTRACT

A semiconductor device production method includes a first step of forming a planar silicon layer (107) on a silicon substrate (101) and forming first and second pillar-shaped silicon layers (104, 105) on the planar silicon layer, a second step of forming a gate insulating film (113) around the first and second pillar-shaped silicon layers, forming a metal film (115) and a polysilicon film (116) around the gate insulating film, controlling a thickness of the polysilicon film to be smaller than a half of a distance between the first and second pillar-shaped silicon layers, depositing a third resist (117), exposing the polysilicon film on side walls of upper portions of the first and second pillar-shaped semiconductor layers, removing the exposed polysilicon film by etching, stripping the third resist, and removing the metal film by etching, and a third step of forming a fourth resist (118) for forming a gate line (119c) and performing anisotropic etching to form a gate line, a first gate electrode, and a second gate electrode.

Fig. 1