

ABSTRACT

SEMICONDUCTOR DEVICE AND CONTROL METHOD OF THE SAME

A semiconductor device includes a transistor (121), a diode (122), a first detection circuit (152), a second detection circuit (153), a calculation circuit (154), and a determination circuit (155). The diode is connected in reverse parallel with the transistor. The first detection circuit is configured to detect a change rate of a gate voltage of the transistor with respect to time. The second detection circuit is configured to detect a gate current of the transistor. The calculation circuit is configured to calculate a gate capacitance based on the change rate of the gate voltage with respect to time, and the gate current. The determination circuit is configured to determine, based on a determination result of the gate capacitance when a charge is injected to a gate of the transistor, whether a current flows to the diode or to the transistor.

Selected drawing: FIG. 1.