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(54) **SEMICONDUCTOR DEVICE AND CONTROL METHOD OF CHARGING BATTERY**

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(57) **ABSTRACT**

Provided is a semiconductor device capable of stably estimating an internal temperature of a battery. A semiconductor device coupled to a battery calculates entropy heat of the battery at a predetermined time by using a charging current of the battery and an internal temperature of the battery at a time before a predetermined time, calculates a heat generation amount of the battery from the charging current of the battery, calculates a heat radiation amount of the battery based on a temperature difference between the internal temperature at the time before the predetermined time and a surface temperature of the battery, and estimates an internal temperature of the battery at the predetermined time by using the entropy heat, the heat generation amount and the heat radiation amount.