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(54) **SEMICONDUCTOR DEVICE AND DATA
STORAGE SYSTEM INCLUDING
SEMICONDUCTOR DEVICE**

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ABSTRACT

A semiconductor device including first gate electrodes stacked on a substrate and spaced apart from each other, a first channel structure passing through the first gate electrodes, the first channel structure including a first channel layer, a first dielectric layer between the first channel layer and the first gate electrodes, a first buried insulating layer filling an interior of the first channel layer, an auxiliary channel layer covering at least a portion of the first channel layer and the first dielectric layer, and a first channel pad on the first buried insulating layer, and isolation regions passing through the first gate electrodes, the isolation regions and spaced apart from each other may be provided. The auxiliary channel layer may be in contact with the first channel pad. The first channel pad may be spaced apart from the first dielectric layer by the auxiliary channel layer.

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