US 20240237351A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2024/0237351 A1**

Lim et al. (43) **Pub. Date: Jul. 11, 2024**

(54) **SEMICONDUCTOR DEVICES INCLUDING SEPARATE CHARGE STORAGE LAYERS**

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(21) Appl. No.: **18/581,049**

(22) Filed: **Feb. 19, 2024**

Related U.S. Application Data

(63) Continuation of application No. 16/854,189, filed on Apr. 21, 2020, now Pat. No. 11,937,425.

(30) **Foreign Application Priority Data**

Sep. 3, 2019 (KR) 10-2019-0108801

Publication Classification

(51) **Int. Cl.**

H10B 43/27	(2006.01)
H01L 29/423	(2006.01)
H01L 29/788	(2006.01)
H01L 29/792	(2006.01)
H10B 41/10	(2006.01)
H10B 41/27	(2006.01)
H10B 41/35	(2006.01)
H10B 43/35	(2006.01)

(52) **U.S. Cl.**

CPC ***H10B 43/27*** (2023.02); ***H01L 29/42324*** (2013.01); ***H01L 29/4234*** (2013.01); ***H01L 29/7889*** (2013.01); ***H01L 29/7926*** (2013.01); ***H10B 41/10*** (2023.02); ***H10B 41/27*** (2023.02); ***H10B 41/35*** (2023.02); ***H10B 43/35*** (2023.02)

(57) **ABSTRACT**

Semiconductor devices are provided. A semiconductor device includes gate electrodes on a substrate and stacked perpendicularly to an upper surface of the substrate. The semiconductor device includes interlayer insulating layers alternately stacked with the gate electrodes. Moreover, the semiconductor device includes channel structures passing through the gate electrodes. Each of the channel structures includes a channel layer extending perpendicularly to the upper surface of the substrate, a tunneling insulating layer on the channel layer, charge storage layers on the tunneling insulating layer in respective regions between the gate electrodes and a side surface of the tunneling insulating layer, and first blocking insulating layers on the charge storage layers, respectively. A first layer of the first blocking insulating layers is on an upper surface, a lower surface, and a side surface of a first layer of the charge storage layers.