



US 20240237562A1

(19) **United States**

(12) **Patent Application Publication**
DONG et al.

(10) **Pub. No.: US 2024/0237562 A1**

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

(54) **SEMICONDUCTOR DEVICE AND METHOD
FOR FABRICATING THE SAME**

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

CPC *H10N 70/841* (2023.02); *H10B 63/84*
(2023.02); *H10N 70/883* (2023.02)

(71) Applicant: **SK hynix Inc.**, Icheon-si (KR)

(72) Inventors: **Cha Deok DONG**, Icheon-si (KR);
Keo Rock CHOI, Icheon-si (KR)

(57)

ABSTRACT

(21) Appl. No.: **18/344,723**

(22) Filed: **Jun. 29, 2023**

Semiconductor devices and methods for fabricating semiconductor devices are disclosed. In some implementations, a semiconductor device may include a first electrode layer; a second electrode layer disposed over the first electrode layer and spaced apart from the first electrode layer; and a selector layer disposed between the first electrode layer and the second electrode layer and including an insulating material that contains at least a dopant and carbon, wherein a carbon concentration at a first portion of the selector layer adjacent to the second electrode layer is higher than a carbon concentration at a second portion of the selector layer adjacent to the first electrode layer.

(30) **Foreign Application Priority Data**

Jan. 11, 2023 (KR) 10-2023-0004041

Publication Classification

(51) **Int. Cl.**

H10N 70/00 (2006.01)

H10B 63/00 (2006.01)

