



US 20240179885A1

(19) **United States**

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

(10) **Pub. No.: US 2024/0179885 A1**

(43) **Pub. Date: May 30, 2024**

(54) **METHOD OF FABRICATING
SEMICONDUCTOR DEVICE**

Publication Classification

(51) **Int. Cl.**
H10B 12/00 (2006.01)

(52) **U.S. Cl.**
CPC **H10B 12/053** (2023.02); **H10B 12/09**
(2023.02); **H10B 12/34** (2023.02)

(71) Applicant: **SEMES CO., LTD.**, Cheonan-si (KR)

(72) Inventors: **Thomas Jongwan KWON**,
Gyeonggi-do (KR); **Hae Won CHOI**,
Daejeon (KR); **Yun Sang KIM**,
Gyeonggi-do (KR); **Chengyeh HSU**,
Busan (KR)

(73) Assignee: **SEMES CO., LTD.**, Cheonan-si (KR)

(21) Appl. No.: **18/495,266**

(22) Filed: **Oct. 26, 2023**

(30) **Foreign Application Priority Data**

Nov. 24, 2022 (KR) 10-2022-0158935

(57) **ABSTRACT**

A method of fabricating a semiconductor device, which is capable of sufficiently filling trenches, is provided. The method includes: providing a substrate having defined thereon a plurality of active regions, which are spaced apart from one another by a device isolation film; forming a plurality of wordline trenches, which extend longitudinally in one direction, by removing portions of the active regions and portions of the device isolation film; forming gate insulating films along inner sidewalls of the wordline trenches; and forming wordlines, which fill portions of the wordline trenches, on the gate insulating films, wherein the forming the wordlines, comprises filling the portions of the wordline trenches with metal layers using a supercritical fluid deposition (SFD) method.

