



(19) **United States**

<sup>(12)</sup> **Patent Application Publication**  
**Zhang et al.**

(10) **Pub. No.: US 2024/0215235 A1**

(43) **Pub. Date:** **Jun. 27, 2024**

(54) **MEMORY DEVICES AND METHODS FOR FORMING THE SAME**

(71) Applicant: **YANGTZE MEMORY TECHNOLOGIES CO., LTD.**, Wuhan (CN)

(72) Inventors: **Kun Zhang**, Wuhan (CN); **Yuancheng Yang**, Wuhan (CN); **Wenxi Zhou**, Wuhan (CN); **Zhiliang Xia**, Wuhan (CN); **Dongxue Zhao**, Wuhan (CN); **Tao Yang**, Wuhan (CN); **Lei Liu**, Wuhan (CN); **Di Wang**, Wuhan (CN); **Zongliang Huo**, Wuhan (CN)

(21) Appl. No.: 18/092,777

(22) Filed: **Jan. 3, 2023**

(30) **Foreign Application Priority Data**

Dec. 26, 2022 (CN) ..... 202211686619.3

## Publication Classification

(51) **Int. Cl.**

**H10B 41/40** (2006.01)

**H01L 23/528** (2006.01)

**H10B 41/27** (2006.01)

**H10B 43/27** (2006.01)

*H10B 43/40* (2006.01)

(52) U.S. Cl.

CPC ..... ***H10B 41/40*** (2023.02); ***H01L 23/5283***  
(2013.01); ***H10B 41/27*** (2023.02); ***H10B***  
***43/27*** (2023.02); ***H10B 43/40*** (2023.02)

(57)

## ABSTRACT

A memory device includes an array of memory cells disposed on a first side of a first semiconductor layer, and a pad-out structure disposed on the array of memory cells. Each of the memory cells includes a semiconductor body extending in a first direction, a first terminal in contact with the first side of the first semiconductor layer and a second terminal are formed at both ends of the semiconductor body; a word line extending in a second direction perpendicular to the first direction; and a plate line extending in the second direction.

