(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
05 March 2026 (05.03.2026)

WIPO | PCT

(10) International Publication Number
WO 2026/044792 A1

(51) International Patent Classification:
H01L 25/065 (2023.01) *H01L 25/00* (2006.01)
H01L 23/00 (2006.01) *H10B 43/50* (2023.01)
H01L 25/18 (2023.01) *H01L 21/768* (2006.01)

(21) International Application Number:
PCT/CN2024/116337

(22) International Filing Date:
02 September 2024 (02.09.2024)

(25) Filing Language: English

(26) Publication Language: English

(71) Applicant: **YANGTZE MEMORY TECHNOLOGIES HOLDING CO., LTD.** [CN/CN]; Room 1701, Building A, Overseas Talent Building, No. 999 Gaoxin Avenue, East Lake High-tech Development Zone, Wuhan, Hubei 430000 (CN).

(72) Inventors: **MIAO, Lina**; Room 1701, Building A, Overseas Talent Building, No. 999 Gaoxin Avenue, East Lake High-tech Development Zone, Wuhan, Hubei 430000 (CN). **XIAO, Liang**; Room 1701, Building A, Overseas Talent Building, No. 999 Gaoxin Avenue, East Lake High-tech Development Zone, Wuhan, Hubei 430000 (CN). **XIAO, Wenjing**; Room 1701, Building A, Overseas Talent Building, No. 999 Gaoxin Avenue, East Lake High-tech Development Zone, Wuhan, Hubei 430000 (CN). **ZHOU, Wen-Bin**; Room 1701, Building A, Overseas Talent Building, No. 999 Gaoxin Avenue, East Lake High-tech Development Zone, Wuhan, Hubei 430000 (CN). **HUO, ZongLiang**; Room 1701, Building A, Overseas Talent Building, No. 999 Gaoxin Avenue, East Lake High-tech Development Zone, Wuhan, Hubei 430000 (CN).

(54) Title: MEMORY DEVICES AND FABRICATION METHODS THEREOF

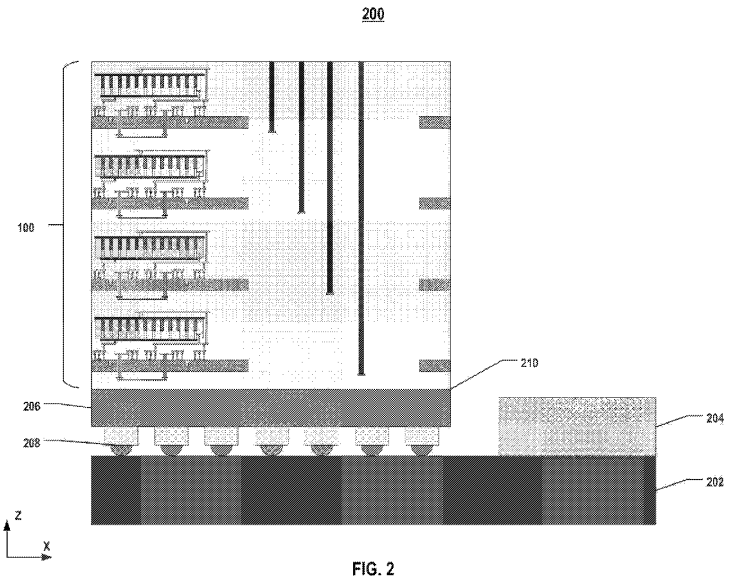

FIG. 2

(57) Abstract: A memory device includes a first semiconductor chip, a second semiconductor chip, a first contact structure, and a second contact structure. The first semiconductor chip includes a first semiconductor structure and a first dielectric layer penetrating the first semiconductor structure. The second semiconductor chip stacks with the first semiconductor chip along a first direction, and the second semiconductor chip includes a second semiconductor structure and a second dielectric layer penetrating the second semiconductor structure. The first contact structure extends along the first direction in the first dielectric layer and is in contact with a first metal layer of the first semiconductor chip. The second contact structure extends along the first direction in the first dielectric layer and the second dielectric layer and is in contact with a second metal layer of the second semiconductor chip. The first dielectric layer and the second dielectric layer are aligned in the first direction.

WO 2026/044792 A1

[Continued on next page]

(74) **Agent: NTD UNIVATION INTELLECTUAL PROPERTY AGENCY LTD.**; 10th Floor, Tower C, Beijing Global Trade Center 36 North Third Ring Road East, Dongcheng District, Beijing 100013 (CN).

(81) **Designated States** *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CV, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IQ, IR, IS, IT, JM, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, MG, MK, MN, MU, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, ZA, ZM, ZW.

(84) **Designated States** *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, CV, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SC, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, ME, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Published:

— *with international search report (Art. 21(3))*