

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
14 August 2025 (14.08.2025)



(10) International Publication Number
WO 2025/170693 A1

(51) International Patent Classification:

H01L 21/768 (2006.01) H01L 21/285 (2006.01)
H01L 21/02 (2006.01)

(21) International Application Number:

PCT/US2025/010601

(22) International Filing Date:

07 January 2025 (07.01.2025)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

18/438,146 09 February 2024 (09.02.2024) US

(71) Applicant: **APPLIED MATERIALS, INC.** [US/US];
3050 Bowers Avenue, M/S 1241, Santa Clara, California
95054 (US).

(72) Inventors: **CHEN, Zhijun**; 3050 Bowers Avenue, M/
S 1241, Santa Clara, California 95054 (US). **FISH-**
BURN, Fredrick; 3050 Bowers Avenue, M/S 1241, San-
ta Clara, California 95054 (US). **MAKALA, Raghuv**
S.; 3050 Bowers Avenue, M/S 1241, Santa Clara, Califor-
nia 95054 (US). **PRANATHARTHIHARAN, Balasubra-**
manian; 3050 Bowers Avenue, M/S 1241, Santa Clara, Cal-
ifornia 95054 (US).

(74) Agent: **HUNTER, Alexa** et al.; Kilpatrick Townsend &
Stockton LLP, Mailstop: IP Docketing - 22, 1100 Peachtree
Street, Suite 2800, Atlanta, Georgia 30309 (US).

(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, UY, 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))

(54) Title: METAL SIGNAL OR POWERLINE SEPARATION THROUGH SELECTIVE DEPOSITION IN ADVANCED MEMORY DEVICES

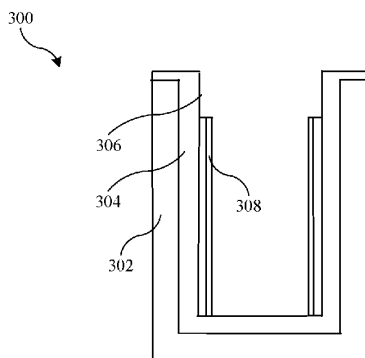


FIG. 3D

(57) Abstract: The present technology includes methods and systems for forming advanced memory structures, and the resulting devices. Methods include forming a dielectric material layer over a first sidewall, a second sidewall, and a bottom wall, of one or more features, where the first sidewall is spaced apart from the second sidewall and the bottom wall is disposed between the first sidewall and the second sidewall. Methods include depositing a liner material directly on the dielectric material layer on the first sidewall, the second sidewall, and the bottom wall. Methods include removing at least a portion of the liner material from the bottom wall. Methods include selectively depositing a conductive material on a remaining portion of the liner material.

WO 2025/170693 A1