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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
17 November 2022 (17.11.2022)

WIPO | PCT

(10) International Publication Number
WO 2022/240503 A1

(51) International Patent Classification:
H01L 21/285 (2006.01) *C23C 16/04* (2006.01)
H01L 21/768 (2006.01) *C23C 16/06* (2006.01)
C23C 16/02 (2006.01) *C23C 16/52* (2006.01)

(21) International Application Number:
PCT/US2022/024105

(22) International Filing Date:
08 April 2022 (08.04.2022)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
17/316,649 10 May 2021 (10.05.2021) US

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(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, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, IT, JM, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, 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, GH, GM, KE, LR, LS, MW, MZ, NA, RW, 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, 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:** METHODS OF FORMING VOID AND SEAM FREE METAL FEATURES

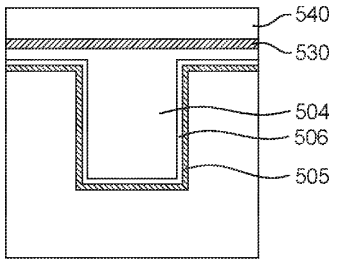


FIG. 5E

(57) **Abstract:** Embodiments herein are generally directed to methods of forming high aspect ratio metal contacts and/or interconnect features, e.g., tungsten features, in a semiconductor device. Often, conformal deposition of tungsten in a high aspect ratio opening results in a seam and/or void where the outward growth of tungsten from one or more walls of the opening meet. Thus, the methods set forth herein provide for a desirable bottom up tungsten bulk fill to avoid the formation of seams and/or voids in the resulting interconnect features, and provide an improved contact metal structure and method of forming the same. In some embodiments, an improved overburden layer or overburden layer structure is formed over the field region of the substrate to enable the formation of a contact or interconnect structure that has improved characteristics over conventionally formed contacts or interconnect structures.

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