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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
26 May 2005 (26.05.2005)

PCT

(10) International Publication Number
WO 2005/048320 A2

(51) International Patent Classification[7]: H01L 21/00

(21) International Application Number: PCT/US2004/028486

(22) International Filing Date: 31 August 2004 (31.08.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10/654,689 4 September 2003 (04.09.2003) US

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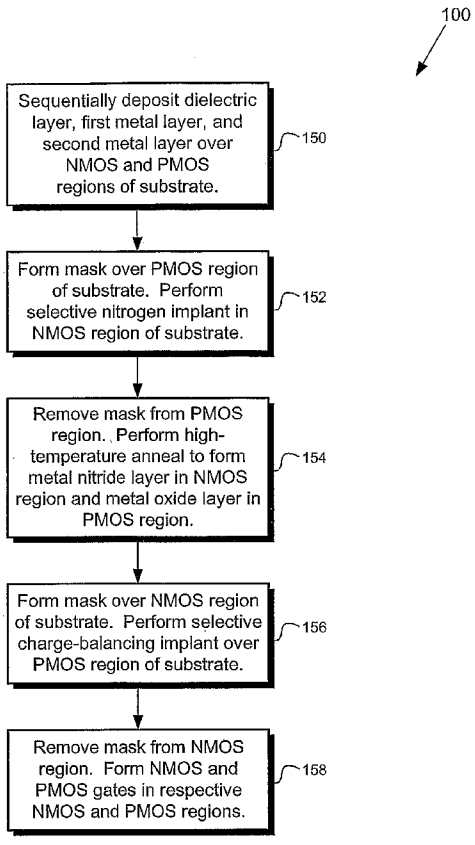
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(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,

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(54) Title: METHOD FOR INTEGRATING METALS HAVING DIFFERENT WORK FUNCTIONS TO FORM CMOS GATES HAVING A HIGH-K GATE DIELECTRIC AND RELATED STRUCTURE



(57) Abstract: According to one exemplary embodiment, a method for integrating first (206) and second metal layers (208) on a substrate (202) to form a dual metal NMOS gate (226) and PMOS gate (228) comprises depositing (150) a dielectric layer (204) over an NMOS region (210) and a PMOS region (212) of the substrate (202). The method further comprises depositing (150) the first metal layer (206) over dielectric layer (204). The method further comprises depositing (150) the second metal layer (208) over the first metal layer (206). The method further comprises implanting (152) nitrogen in the NMOS region (210) of substrate (202) and converting (154) a first portion of the first metal layer (206) into a metal oxide layer (220) and converting a second portion of the first metal layer (206) into metal nitride layer (218). The method further comprises forming (156) the NMOS gate (226) and the PMOS gate (228), where the NMOS gate (226) comprises a segment (234) of metal nitride layer (218) and the PMOS gate (228) comprises a segment (242) of the metal oxide layer (220).

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TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) **Designated States** *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— *without international search report and to be republished upon receipt of that report*

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