

CORRECTED VERSION

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
18 November 2010 (18.11.2010)

(10) International Publication Number
WO 2010/132319 A8

PCT

- (51) **International Patent Classification:**
H01L 21/8234 (2006.01) *H01L 21/28* (2006.01)
H01L 21/3115 (2006.01) *H01L 29/51* (2006.01)
- (21) **International Application Number:**
PCT/US2010/034164
- (22) **International Filing Date:**
10 May 2010 (10.05.2010)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
102009021486.0 15 May 2009 (15.05.2009) DE
12/775,555 7 May 2010 (07.05.2010) 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, BR, BW, BY, BZ,
CA, CH, CL, CN, CO, CR, CU, CZ, DK, DM, DO, DZ,
EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN,
HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR,
KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME,
MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO,
NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE,
SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT,
TZ, UA, UG, US, UZ, VC, VN, 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, SD, SL, SZ, TZ, UG,
ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, 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, SE, SI, SK,
SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ,
GW, ML, MR, NE, SN, TD, TG).
- Published:**
— with international search report (Art. 21(3))

Published:

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

(48) Date of publication of this corrected version:

11 August 2011

[Continued on next page]

- (54) Title: ADJUSTING THRESHOLD VOLTAGE FOR SOPHISTICATED TRANSISTORS BY DIFFUSING A GATE DIELECTRIC CAP LAYER MATERIAL PRIOR TO GATE DIELECTRIC STABILIZATION

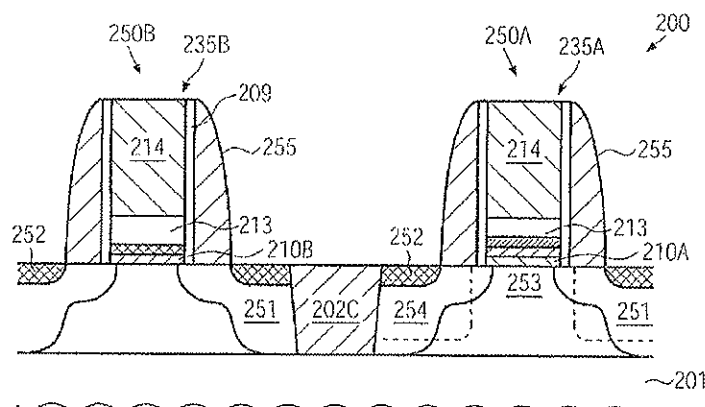


FIG. 2i

- (57) Abstract:** Sophisticated gate electrode structures may be formed by providing a cap layer (121) including a desired species that may diffuse into the gate dielectric material (110) prior to performing a treatment for stabilizing the sensitive gate dielectric material (110). In this manner, complex high-k metal gate electrode structures may be formed on the basis of reduced temperatures and doses for a threshold adjusting species compared to conventional strategies. Moreover, a single metal-containing electrode material may be deposited for both types of transistors.

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