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(71) Applicant *(for all designated States except US)*: **ADVANCED MICRO DEVICES, INC.** [US/US]; One AMD Place, Mail Stop 68, P.O. Box 3453, Sunnyvale, CA 94088-3453 (US).

(72) Inventors; and

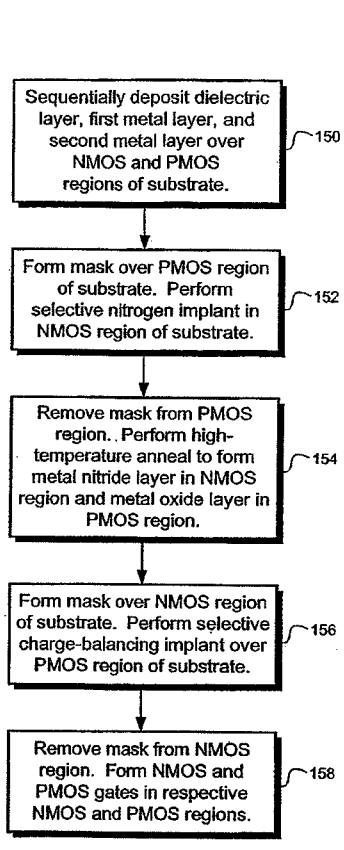
(75) Inventors/Applicants *(for US only)*: **XIANG, Qi** [CN/US]; 1119 Thames Drive, San Jose, CA 95129 (US). **ZHONG, Huicai** [CN/US]; 509 Popula Blvd., Wappingers Falls, NY 12509 (US). **GOO, Jung-Suk** [KR/US]; 100 Escondido Village, #D, Stanford, CA 94305 (US). **HOLBROOK, Allison, Kay** [US/US]; 21187 Almaden Road, San Jose, CA 95120 (US). **JEON, Joong, S.** [US/US]; 10705 Flora Vista Avenue, Cupertino, CA 95014 (US). **KLUTH, George, Jonathan** [US/US]; 112 Heritage Village Way, Campbell, CA 95008 (US).

(74) Agent: **COLLOPY, Daniel, R.**; One AMD Place, Mail Stop 68, P.O. Box 3453, Sunnyvale, CA 94088-3453 (US).

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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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