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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
16 August 2007 (16.08.2007)

PCT

(10) International Publication Number
WO 2007/092176 A2

(51) International Patent Classification: Not classified

(21) International Application Number:
PCT/US2007/002150

(22) International Filing Date: 26 January 2007 (26.01.2007)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
11/347,153 3 February 2006 (03.02.2006) US

(71) Applicant: **MICRON TECHNOLOGY, INC.** [US/US]; 8000 South Federal Way, Boise, ID 83707-0006 (US).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **AKRAM, Salman** [US/US]; 1463 East Regatta, Boise, ID 83706 (US). **HIATT, William, Mark** [US/US]; 1137 West Stafford Drive, Eagle, ID 83616 (US). **OLIVER, Steve** [CA/CA]; 2233 East Roanoke Avenue, Boise, ID 83712 (US). **WOOD, Alan, G.** [US/US]; 1366 East Versailles Court, Boise, ID 83706 (US). **RIGG, Sidney, B.** [US/US]; 2477 North Leann Way, Meridian, ID 83642 (US). **WARK, James, M.** [US/US]; 4119 West Quail Ridge Drive, Boise, ID 83703 (US). **KIRBY, Kyle, K.** [US/US]; 10681 North Sagecrest Place, Boise, ID 83703 (US).

(74) Agents: **POWER, Brick, G.** et al.; Traskbritt, P.o. Box 2550, 230 South 500 East, Suite 300, Salt Lake City, UT 84110 (US).

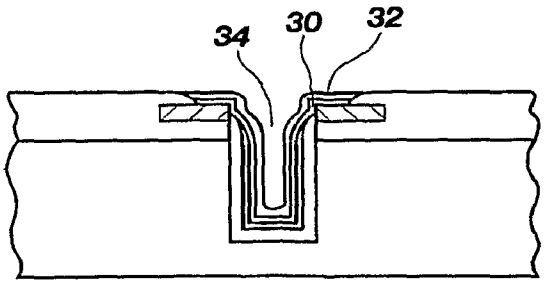
(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR,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

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: METHODS FOR FABRICATING AND FILLING CONDUCTIVE VIAS AND CONDUCTIVE VIAS SO FORMED



(57) Abstract: Methods for forming conductive vias include forming one or more via holes in a substrate. The via holes may be formed with a single mask, with the protective layers, bond pads, or other features of the substrate acting as hard masks in the event that a photomask is removed during etching processes. The via holes may be configured to facilitate adhesion of a dielectric coating that includes a low-K dielectric material to the surfaces thereof. A barrier layer may be formed over surfaces of each via hole. A base layer, which may comprise a seed material, may be formed to facilitate the subsequent, selective deposition of conductive material over the surfaces of the via hole. The resulting semiconductor devices, intermediate structures, and assemblies and electronic devices that include the semiconductor devices that result from these methods are also disclosed.

WO 2007/092176 A2