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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
8 May 2008 (08.05.2008)

PCT

(10) International Publication Number
WO 2008/054680 A3

(51) International Patent Classification:
H01L 23/485 (2006.01) *H01L 21/60* (2006.01)

(21) International Application Number:
PCT/US2007/022683

(22) International Filing Date: 26 October 2007 (26.10.2007)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10 2006 051 491.2 31 October 2006 (31.10.2006) DE
11/752,519 23 May 2007 (23.05.2007) US

(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)*: **LEHR, Matthias** [DE/DE]; Jacobistr 4, 01309 Dresden (DE). **KUECHENMEISTER, Frank** [DE/DE]; Altfrankener Str 11, 01159 Dresden (DE). **LEHMANN, Lothar** [DE/DE]; Pestalozzistr 55, 01445 Radebeul (DE). **WIELAND, Marcel** [DE/DE]; Meissner Strasse 57, 01445 Radebeul (DE). **PLATZ, Alexander** [DE/DE]; Schlossallec 14, 01468 Moritzburg (DE). **WALTER, Axel** [DE/DE]; Horst Vieth Str 7, 01445 Radebeul (DE). **JUNGNICKEL, Gotthard** [DE/DE]; Zur Sternwarte 9, 01454 Radebeul (DE).

(74) Agent: **DRAKE, Paul, S.**; Advanced Micro Devices, Inc., 5204 East Ben White Boulevard, Mail Stop 562, Austin, TX 78741 (US).

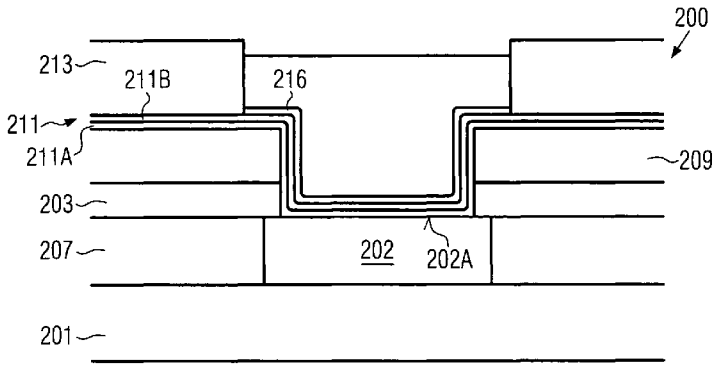
(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, 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, 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, MT, 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:
— *with international search report*
— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

(88) Date of publication of the international search report:
26 June 2008

(54) Title: A METALLIZATION LAYER STACK WITHOUT A TERMINAL ALUMINUM METAL LAYER



(57) Abstract: By directly forming an underbump metallization layer (211) on a contact region (202A) of the last metallization layer, the formation of any other terminal metals, such as aluminum and corresponding adhesion/barrier layers, may be avoided. Consequently, the thermal and electrical behavior of the resulting bump structure (212) may be improved, while process complexity may be significantly reduced.

WO 2008/054680 A3