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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
3 February 2005 (03.02.2005)

PCT

(10) International Publication Number
WO 2005/011014 A1

(51) International Patent Classification[7]: H01L 51/20, G11C 13/04, 13/02

(21) International Application Number: PCT/US2004/015945

(22) International Filing Date: 21 May 2004 (21.05.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/485,699 9 July 2003 (09.07.2003) US
10/818,261 2 April 2004 (02.04.2004) 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*): **LAN, Zhida** [CA/US]; 10330 N. Foothill Blvd., A14, Cupertino, CA 95014 (US). **VAN BUSKIRK, Michael, A.** [US/US]; 18653 Vessing Road, Saratoga, CA 95070 (US). **BILL, Colin, S.** [GB/US]; 1384 Rosegarden Lane, Cupertino, CA 95014 (US).

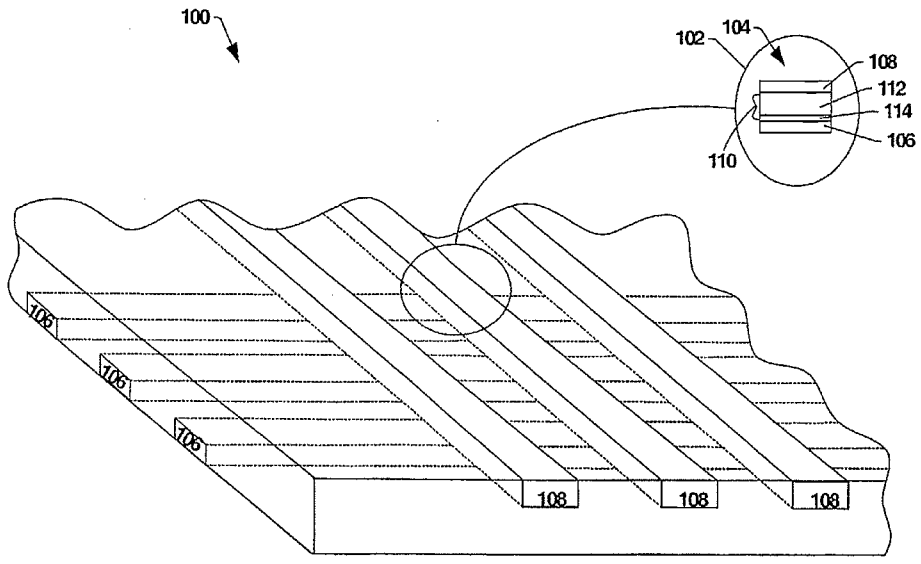
(74) Agent: **COLLOPY, Daniel, R.**; One AMD Place, Mail Stop 68, P.O. Box 3453, Sunnyvale, CA 94088-3453 (US).

(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, 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, 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),

[Continued on next page]

(54) Title: MEMORY DEVICE AND METHODS OF USING AND MAKING THE DEVICE



(57) Abstract: A memory cell (104) made of two electrodes(106, 202, 108, 204) with a controllably conductive media between the two electrodes is disclosed. The controllably conductive media (110) contains an active low conductive layer (112) and passive layer (114). The controllably conductive media (110) changes its impedance when an external stimuli such as an applied electric field is imposed thereon. Methods of making the memory devices/cells, methods of using the memory devices/cells, and devices such as computers containing the memory devices/cells are also disclosed.

WO 2005/011014 A1