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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
4 June 2009 (04.06.2009)

PCT

(10) International Publication Number
WO 2009/070406 A3

(51) **International Patent Classification**:
G11C 16/26 (2006.01) *G11C 16/34* (2006.01)
G11C 16/02 (2006.01)

(21) **International Application Number**:
PCT/US2008/081479

(22) **International Filing Date**:
28 October 2008 (28.10.2008)

(25) **Filing Language**: English

(26) **Publication Language**: English

(30) **Priority Data**:
11/944,168 21 November 2007 (21.11.2007) 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, CN, CO, CR, CU, CZ, DE, 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, ST, 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,

[Continued on next page]

(54) **Title**: METHOD AND APPARATUS FOR READING DATA FROM FLASH MEMORY

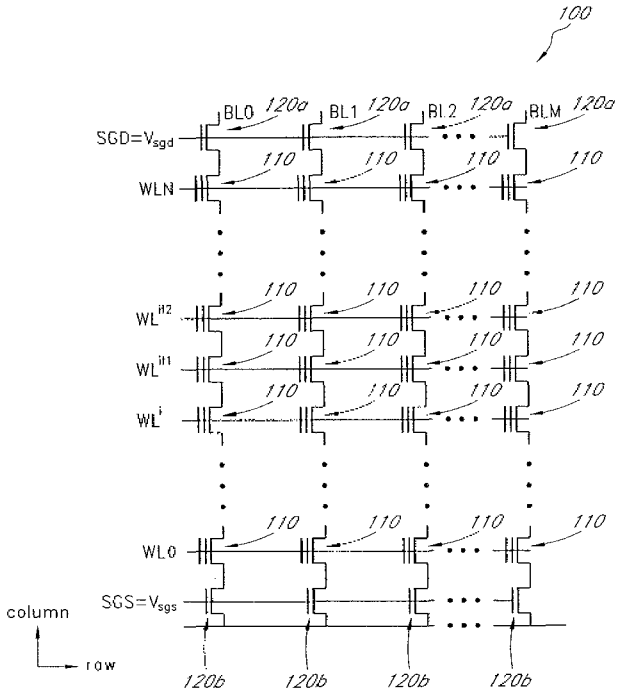


FIG. 1

(57) **Abstract**: Methods and apparatus are disclosed, such as those involving a flash memory device that includes an array (100) of memory cells. One such method includes detecting values of charges stored in selected memory cells in the memory cell array. The method also includes processing the detected values in accordance with a Viterbi algorithm so as to determine data stored in the selected memory cells. In one embodiment, the flash memory cell array (100) includes word lines WLO-WLN and bit lines BLO-BLM. Detecting the values of charges includes detecting values of charges stored in a selected row of memory cells by selecting one of the word lines. The Viterbi algorithm provides correct data where inter-signal interference between the cells affects the accuracy of read data. For example, the Viterbi algorithm can be used to supplement error correction codes (ECC).

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ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, NO, 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 (Art. 21(3))*

— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

(88) Date of publication of the international search report:
13 August 2009

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2008/081479

A. CLASSIFICATION OF SUBJECT MATTER

G11C 16/26(2006.01)i, G11C 16/02(2006.01)i, G11C 16/34(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC8 : G11C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean Utility models and applications for Utility models since 1975

Japanese Utility models and applications for Utility models since 1975

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKIPASS(KIPO internal) "Viterbi", "flash or ram or rom or memory", "ECC or error correcting or error correction"

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2003-0156454 A1 (JIAN WEI et al.) 21 August 2003 see abstract, pages 1-7, and figures 1-5.	1-20
A	US 2007-0266295 A1 (KEVIN M. CONLEY) 15 November 2007 see abstract, pages 4-5, and figures 4-7.	1-20
A	US 7,061,804 B2 (DEXTER TAMIO CHUN et al.) 13 June 2006 see abstract, column 5 line 41 - column 6 line 50, column 10 line 40 - column 11 line 57, and figure 3, 7-8.	1-20
A	US 2007-0061689 A1 (JIHOON PARK et al.) 15 March 2007 see abstract, pages 2-6, and figures 1-5.	1-20

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
26 JUNE 2009 (26.06.2009)	**29 JUNE 2009 (29.06.2009)**

Name and mailing address of the ISA/KR

Korean Intellectual Property Office
Government Complex-Daejeon, 139 Seonsa-ro, Seo-gu, Daejeon 302-701, Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

LEE, OK WOO

Telephone No. 82-42-481-5761

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2008/081479

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