



(43) International Publication Date  
5 February 2015 (05.02.2015)

- (51) International Patent Classification:  
G11C 7/24 (2006.01) G11C 17/12 (2006.01)
- (21) International Application Number:  
PCT/US2014/048061
- (22) International Filing Date:  
24 July 2014 (24.07.2014)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:  
13/953,511 29 July 2013 (29.07.2013) 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, BN, BR, BW, BY,  
BZ, CA, CH, CL, 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, IR, IS, JP, KE, KG, 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, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA,  
SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM,

[Continued on next page]

(54) Title: MASK-PROGRAMMED READ ONLY MEMORY WITH ENHANCED SECURITY

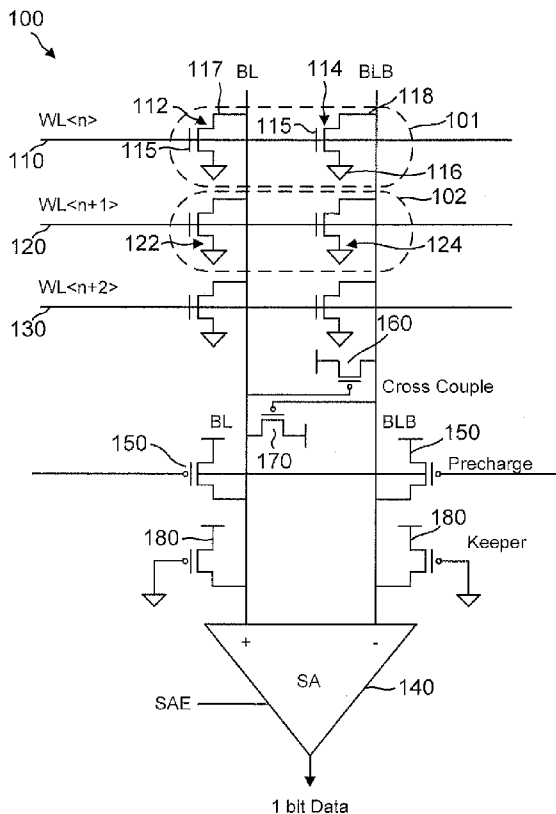


FIG. 1

(57) Abstract: A mask-programmed read-only memory (MROM) has a plurality of column line pairs, each having a bit line and a complement bit line. The MROM includes a plurality of memory cells corresponding to a plurality of intersections between the column line pairs and a plurality of word lines. Each memory cell includes a high Vt transistor and a low Vt transistor.

WO 2015/017253 A3



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, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

**Declarations under Rule 4.17:**

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))

**Published:**

- with international search report (Art. 21(3))

**(88) Date of publication of the international search report:**

13 August 2015

INTERNATIONAL SEARCH REPORT

International application No  
PCT/US2014/048061

A. CLASSIFICATION OF SUBJECT MATTER  
INV. G11C7/24 G11C17/12  
ADD.  
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)  
G11C

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

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y A	US 4 599 704 A (MAZIN MOSHE [US]) 8 July 1986 (1986-07-08) column 5, line 56 - line 65; figure 1	1,2,10, 16-19 6-9,11, 12,15 4,5,13, 14,20
Y A	----- US 4 541 074 A (NAKANO MOTOO [JP]) 10 September 1985 (1985-09-10) column 1, line 16 - line 27; figures 1,6	1,3,10, 16 4,5,13, 14,20
Y A	----- US 2006/013041 A1 (LIN CHIN-HSI [TW]) 19 January 2006 (2006-01-19) paragraph [0045] - paragraph [0046]; claim 5; figures 5,6 ----- -/--	1,3,10, 11,16 4,5,13, 14,20

Further documents are listed in the continuation of Box C.

See patent family annex.

\* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"E" earlier application or patent but published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search  6 May 2015	Date of mailing of the international search report  13/05/2015
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Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer  Wolff, Norbert
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## INTERNATIONAL SEARCH REPORT

International application No  
PCT/US2014/048061

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5 309 389 A (GOLKE KEITH W [US] ET AL) 3 May 1994 (1994-05-03) column 2, line 63 - column 3, line 6; figure 1	6,7
Y	----- US 7 626 878 B1 (LIN HWONG-KWO [US] ET AL) 1 December 2009 (2009-12-01) column 4, line 21 - column 5, line 20; figure 3	8,12
Y	----- US 5 959 467 A (NOLAN III JOSEPH G [US] ET AL) 28 September 1999 (1999-09-28) column 1, line 53 - line 56; figure 1	9
Y	----- US 2001/002884 A1 (HIRAKI MITSURU [JP] ET AL) 7 June 2001 (2001-06-07) paragraph [0128] - paragraph [0130]; figures 9,24	15
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# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US2014/048061

## Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1.  Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2.  Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
  
3.  Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1.  As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
  
2.  As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
  
3.  As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
  
4.  No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

### Remark on Protest

- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- No protest accompanied the payment of additional search fees.

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-5, 10, 13, 14, 16-20

Leakage reduction by choke device in MROM

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2. claims: 6-9, 11, 12, 15

Timing of sense operation in MROM

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# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2014/048061

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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