

(51) International Patent Classification:  
*G11C 7/10* (2006.01) *G11C 7/22* (2006.01)(21) International Application Number:  
PCT/US2011/023997(22) International Filing Date:  
8 February 2011 (08.02.2011)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
12/702,767 9 February 2010 (09.02.2010) US(71) Applicant (for all designated States except US):  
MOSYS, INC. [US/US]; 3302 Olcott Street, Santa Clara,  
California 95054 (US).

(72) Inventor; and

(75) Inventor/Applicant (for US only): SIKDAR, Dipak [IN/  
US]; 3480 Granada Avenue, #261, Santa Clara, California  
95051 (US).(74) Agent: KIVLIN, Noël, B.; Meyertons, Hood, Kivlin,  
Kowert & Goetzel, P.C., P.O. Box 398, Austin, TX  
78767-0398 (US).(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, 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, 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, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD,  
SE, SG, SK, SL, SM, ST, SV, SY, TH, 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, LR, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG,  
ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, 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,

[Continued on next page]

(54) Title: MEMORY DEVICE INCLUDING A MEMORY BLOCK HAVING A FIXED LATENCY DATA OUTPUT

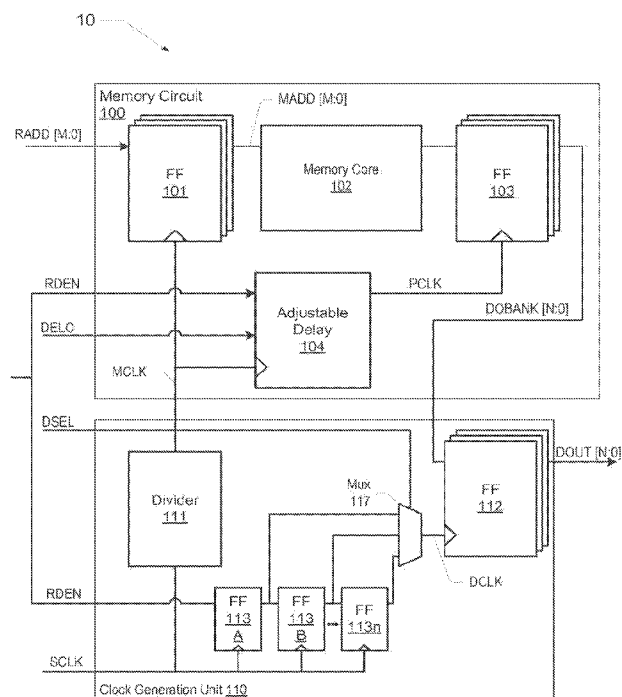


FIG. 1

(57) Abstract: A memory block includes a memory circuit and a clock generation unit. The memory circuit may output read data in response to being clocked by a clock signal having a selectable delay that may be dependent upon a time taken for the read data to be output by a memory core after the read command is received at the memory block. The clock generation unit may cause the read data to be provided as an output of the memory block in response to being clocked by a selected data clock signal. The data clock signal may be selected from one of several clock edges generated by one of several clock edges of a system clock such that regardless of the frequency of the system clock, the read data is provided by the memory block a pre-determined amount of time after the read command is received at the memory block.



SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

— *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))*

**Published:**

— *with international search report (Art. 21(3))*

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

10 November 2011

## INTERNATIONAL SEARCH REPORT

International application No.  
**PCT/US2011/023997****A. CLASSIFICATION OF SUBJECT MATTER***G11C 7/10(2006.01)i, G11C 7/22(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)

IPC : 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

Japanese utility models and applications for utility models

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

eKOMPASS(KIPO internal) &amp; Keywords: bank, latency, read, clock

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2007-0019481 A1 (PARK) 25 January 2007 See abstract, claim 27, paragraph 85-87,89,99,101, figures 8-11.	1-21
A	US 2008-0232179 A1 (KWAK) 25 September 2008 See abstract, paragraph 18,1931,32, figures 2,5.	1-21
A	US 2006-0140044 A1 (KANG) 29 June 2006 See abstract, paragraph 23-31,figure 3.	1-21
A	KR 10-2008-0074361 A (SAMSUNG ELECTRONICS CO., LTD.) 13 August 2008 See abstract, paragraph 38-45, figure 4.	1-21

☐ 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

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"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

"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

"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

"&amp;" document member of the same patent family

Date of the actual completion of the international search

31 AUGUST 2011 (31.08.2011)

Date of mailing of the international search report

**31 AUGUST 2011 (31.08.2011)**

Name and mailing address of the ISA/KR

Korean Intellectual Property Office  
Government Complex-Daejeon, 189 Cheongsu-ro,  
Seo-gu, Daejeon 302-701, Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

YOON, Nan Young

Telephone No. 82-42-481-8188



**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

**PCT/US2011/023997**

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2007-0019481 A1	25.01.2007	KR 10-0609621 B1 US 7486575 B2	08.08.2006 03.02.2009
US 2008-0232179 A1	25.09.2008	US 2010-0103754 A1 US 7656745 B2	29.04.2010 02.02.2010
US 2006-0140044 A1	29.06.2006	JP 2006-190434 A JP 4707461 B2 KR 10-0638747 B1 KR 10-2006-0075060 A US 7212465 B2	20.07.2006 25.03.2011 30.10.2006 04.07.2006 01.05.2007
KR 10-2008-0074361 A	13.08.2008	US 2008-0192563 A1 US 7751261 B2	14.08.2008 06.07.2010