



- (51) **International Patent Classification:**  
**G06F 13/16** (2006.01)      **G06F 12/00** (2006.01)  
**G06F 11/30** (2006.01)      **H01L 21/00** (2006.01)
- (21) **International Application Number:**  
PCT/US2010/021820
- (22) **International Filing Date:**  
22 January 2010 (22.01.2010)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**  
12/359,039      23 January 2009 (23.01.2009)      US
- (71) **Applicant (for all designated States except US):** **MI-CRON TECHNOLOGY, INC.** [US/US]; 8000 So. Federal Way, Boise, Idaho 83716-9632 (US).
- (72) **Inventor; and**
- (75) **Inventor/Applicant (for US only):** **JEDDELOH, Joe M.** [US/US]; 4302 Reiland Lane, Shoreview, Minnesota 55126 (US).
- (74) **Agents:** **MADDEN, Robert B.** et al.; Schwegman, Lundberg, & Woessner, P.A., P.O. Box 2938, Minneapolis, Minnesota 55402-0938 (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, 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, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, SM, 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))

[Continued on next page]

(54) Title: MEMORY DEVICE POWER MANAGERS AND METHODS

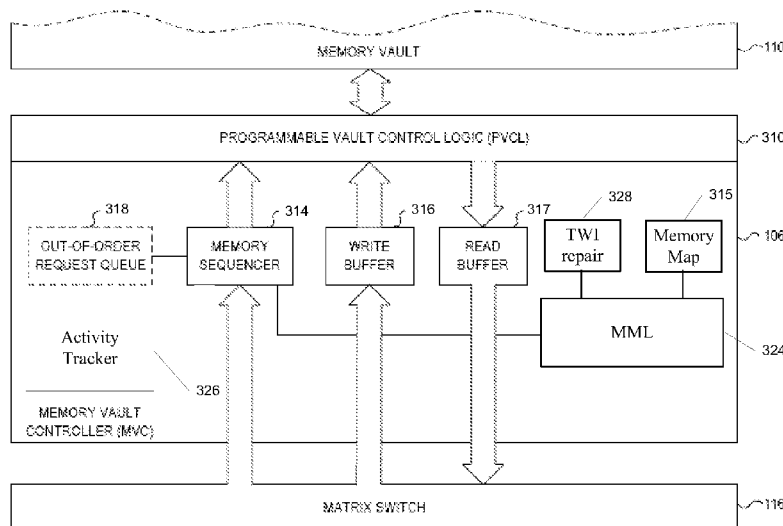


FIG. 3

(57) **Abstract:** Memory devices and methods are described that include a stack of memory dies and an attached logic die. Method and devices described provide for power management of portions of a stack of memory dies. Additional devices, systems, and methods are disclose.

WO 2010/085657 A3

**(88)** Date of publication of the international search report:  
21 October 2010

**A. CLASSIFICATION OF SUBJECT MATTER***G06F 13/16(2006.01)i, G06F 11/30(2006.01)i, G06F 12/00(2006.01)i, H01L 21/00(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)

G06F 13/16; G06F 12/00; G06F 13/00; G11C 11/24; G11C 5/02; H01L 23/48

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: memory, array, logic, power

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	US 2005-0146919 A1 (ROBERT ELLIS et al.) 07 July 2005 See abstract; paragraphs [0016]-[0025]; figure 1; and claims 1, 9.	1-7, 11-12, 15, 17-18 8-10, 13-14, 16 , 19-24
A	US 2007-0070669 A1 (ELY TSERN) 29 March 2007 See abstract; paragraphs [0033]-[0035], [0069]-[0071]; and figures 1, 10-12.	1-24
A	US 2005-0189639 A1 (HISASHI TANIE et al.) 01 September 2005 See abstract; paragraphs [0033], [0053]-[0054]; and figures 1, 4A, 4B.	1-24
A	US 2008-0140912 A1 (ASHISH A. PANDYA) 12 June 2008 See abstract; paragraphs [0093]-[0095]; and figures 13a, 13b.	1-24
A	US 2002-0091890 A1 (MICHAEL FARMWALD et al.) 11 July 2002 See abstract; paragraphs [0022], [0065], [0110]-[0113]; figures 2, 4; and claims 1-3.	1-24

 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

27 AUGUST 2010 (27.08.2010)

Date of mailing of the international search report

**27 AUGUST 2010 (27.08.2010)**

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

KIM, Keun Mo

Telephone No. 82-42-481-5693



**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

**PCT/US2010/021820**

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2005-0146919 A1	07.07.2005	CN 1902709 A	24.01.2007
		CN 1902709 C0	24.01.2007
		EP 1700311 A1	13.09.2006
		JP 2007-517354 A	28.06.2007
		JP 2007-517354 T	28.06.2007
		US 7085152 B2	01.08.2006
		WO 2005-066968 A1	21.07.2005
US 2007-0070669 A1	29.03.2007	CN 101310338 A	19.11.2008
		CN 101310338 C0	19.11.2008
		EP 1929479 A2	11.06.2008
		JP 2009-510562 A	12.03.2009
		JP 2009-510562 T	12.03.2009
		JP 2010-524089 A	15.07.2010
		US 2007-0088995 A1	19.04.2007
		US 2008-0080261 A1	03.04.2008
		US 2008-0144411 A1	19.06.2008
		US 7464225 B2	09.12.2008
		US 7562271 B2	14.07.2009
		US 7729151 B2	01.06.2010
		WO 2007-038225 A2	05.04.2007
WO 2007-038225 A3	14.06.2007		
WO 2008-124503 A1	16.10.2008		
US 2005-0189639 A1	01.09.2005	CN 1665027 A	07.09.2005
		CN 1665027 C0	13.08.2008
		JP 04-205613 B2	07.01.2009
		JP 2005-244143 A	08.09.2005
		KR 10-0602106 B1	19.07.2006
		KR20050088917A	07.09.2005
		TW 249238 B	11.02.2006
		US 7119428 B2	10.10.2006
US 2008-0140912 A1	12.06.2008	US 2008-0140600 A1	12.06.2008
		US 2008-0140631 A1	12.06.2008
		US 2008-0140632 A1	12.06.2008
		US 2008-0140661 A1	12.06.2008
		US 2008-0140662 A1	12.06.2008
		US 2008-0140911 A1	12.06.2008
		US 2008-0140917 A1	12.06.2008
		US 2008-0140991 A1	12.06.2008
		US 2008-140912 A1	12.06.2008
		US 2009-0049230 A1	19.02.2009
WO 2008-073824 A1	19.06.2008		
US 2002-0091890 A1	11.07.2002	EP 0525068 A1	22.03.2000
		EP 0525068 A4	20.09.1995
		EP 0525068 B1	19.04.2000
		EP 0994420 A2	19.04.2000

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

**PCT/US2010/021820**

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
		EP 0994420 A3	07.06.2000
		EP 0994420 B1	04.01.2006
		EP 1004956 A2	31.05.2000
		EP 1004956 A3	21.06.2000
		EP 1004956 B1	03.01.2001
		EP 1004956 B2	11.02.2009
		EP 1022641 A1	26.07.2000
		EP 1022641 B1	07.03.2007
		EP 1022642 A1	26.07.2000
		EP 1022642 B1	05.09.2001
		EP 1197830 A2	17.04.2002
		EP 1197830 A3	21.09.2005
		EP 1197830 B1	04.10.2006
		EP 1640847 A2	29.03.2006
		EP 1640847 A3	31.05.2006
		EP 1640847 B1	13.06.2007
		EP 1816569 A2	08.08.2007
		EP 1816569 A3	26.09.2007
		EP 1816569 B1	07.01.2009
		EP 1816570 A2	08.08.2007
		EP 1816570 A3	15.08.2007
		EP 1830241 A1	05.09.2007
		EP 1830241 B1	25.06.2008
		JP 03-404383 B2	28.02.2003
		JP 03-414393 B2	04.04.2003
		JP 03-550143 B2	04.08.2004
		JP 2001-273765 A	05.10.2001
		JP 2003-203008 A	18.07.2003
		KR 10-0201057 B1	15.06.1999
		US 2001-0009276 A1	26.07.2001
		US 2001-0009531 A1	26.07.2001
		US 2001-0023466 A1	20.09.2001
		US 2001-0030904 A1	18.10.2001
		US 2002-0001253 A1	03.01.2002
		US 2002-0004867 A1	10.01.2002
		US 2002-0015351 A1	07.02.2002
		US 2002-0016876 A1	07.02.2002
		US 2002-0046314 A1	18.04.2002
		US 2002-0087777 A1	04.07.2002
		US 2002-0099896 A1	25.07.2002
		US 2002-0141281 A1	03.10.2002
		US 2002-0147877 A1	10.10.2002
		US 2003-0005208 A1	02.01.2003
		US 2004-0114454 A1	17.06.2004
		US 2005-0030802 A1	10.02.2005
		US 2005-0033903 A1	10.02.2005
		US 2005-0141332 A1	30.06.2005
		US 2006-0039213 A1	23.02.2006
		US 2007-0137080 A1	21.06.2007
		US 5243703 A1	07.09.1993

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

**PCT/US2010/021820**

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
		US 5319755 A1	07.06.1994
		US 5408129 A1	18.04.1995
		US 5473575 A1	05.12.1995
		US 5499385 A1	12.03.1996
		US 5513327 A1	30.04.1996
		US 5606717 A1	25.02.1997
		US 5638334 A1	10.06.1997
		US 5657481 A1	12.08.1997
		US 5809263 A1	15.09.1998
		US 5841580 A1	24.11.1998
		US 5841715 A1	24.11.1998
		US 5915105 A1	22.06.1999
		US 5928343 A1	27.07.1999
		US 5953263 A1	14.09.1999
		US 5954804 A1	21.09.1999
		US 5983320 A1	09.11.1999
		US 5995443 A1	30.11.1999
		US 6032214 A1	29.02.2000
		US 6032215 A1	29.02.2000
		US 6034918 A1	07.03.2000
		US 6035365 A1	07.03.2000
		US 6038195 A1	14.03.2000
		US 6044426 A1	28.03.2000
		US 6049846 A1	11.04.2000
		US 6067592 A1	23.05.2000
		US 6085284 A1	04.07.2000
		US 6101152 A1	08.08.2000
		US 6128696 A1	03.10.2000
		US 6182184 B1	30.01.2001
		US 6185644 B1	06.02.2001
		US 6260097 B1	10.07.2001
		US 6266285 B1	24.07.2001
		US 6304937 B1	16.10.2001
		US 6314051 B1	06.11.2001
		US 6324120 B2	27.11.2001
		US 6378020 B2	23.04.2002
		US 6415339 B1	02.07.2002
		US 6426916 B2	30.07.2002
		US 6452863 B2	17.09.2002
		US 6513081 B2	28.01.2003
		US 6546446 B2	08.04.2003
		US 6564281 B2	13.05.2003
		US 6570814 B2	27.05.2003
		US 6584037 B2	24.06.2003
		US 6598171 B1	22.07.2003
		US 6684285 B2	27.01.2004
		US 6697295 B2	24.02.2004
		US 6715020 B2	30.03.2004
		US 6728819 B2	27.04.2004
		US 6751696 B2	15.06.2004

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

**PCT/US2010/021820**

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
		US 6807598 B2	19. 10. 2004
		US 6975558 B2	13. 12. 2005
		US 7110322 B2	19. 09. 2006
		US 7209997 B2	24. 04. 2007
		US 7510346 B2	31. 03. 2009
		WO 91-16680 A1	31. 10. 1991