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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/328,010	12/16/2011	Chung-Kuang Chen	DEEMIC-PT004	3993

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VOLPE AND KOENIG, P.C.
UNITED PLAZA
30 SOUTH 17TH STREET
PHILADELPHIA, PA 19103

EXAMINER	
RADKE, JAY W	

ART UNIT	PAPER NUMBER
2827	

NOTIFICATION DATE	DELIVERY MODE
02/20/2014	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

eoffice@volpe-koenig.com

Office Action Summary	Application No. 13/328,010	Applicant(s) CHEN ET AL.	
	Examiner JAY RADKE	Art Unit 2827	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12/26/13*.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5)☒ Claim(s) *1-17* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1 and 11-17* is/are rejected.

8)☒ Claim(s) *2-10* is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

1. The present application is being examined under the pre-AIA first to invent provisions.

DETAILED ACTION

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of pre-AIA 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1 and 11-17 are rejected under pre-AIA 35 U.S.C. 102b as being anticipated by Lee (US 2009/0323420 A1; hereinafter "Lee").

Regarding claim 1: Lee (FIG. 8a, 8b, 9; [0055-0059]) teaches a sense amplifier, comprising:

a first switch (BLC transistor 840) having a first terminal (upper S/D terminal), a second terminal (lower S/D terminal) and a control terminal receiving a first bias (BLC);

a second switch (828) having a first terminal (upper S/D terminal) electrically connected to the first terminal of the first switch, a second terminal (lower S/D terminal) and a control terminal receiving a second bias (STB);

a third switch (826) having a first terminal (upper S/D terminal), a second terminal (lower S/D terminal) electrically connected to the first terminal of the first switch and a control terminal receiving a third bias (T2);

a holding path including the second switch (the path through 828 and 832); and

a fourth switch (832) controlling a turn-on and a turn-off of the holding path and having a first terminal (upper S/D terminal) directly electrically connected to the second terminal of the second switch, a second terminal (lower S/D terminal) that is not directly electrically connected to a power supply or a common ground and a control terminal receiving a sensing signal (SEN 830).

Regarding claim 11: Lee (FIG. 8a, 8b, 9; [0055-0059]) teaches a sense amplifier comprising:

a switch circuit (FIG. 8a) having a main control switch (840), a sensing switch (826) and a holding switch (828), wherein the three switches have a first bias (BLC), a second bias (T2), and a third bias (STB) respectively; and

an auxiliary control switch (832) having a first terminal (upper S/D terminal) directly electrically connected to the holding switch to control an operation of the holding switch and a second terminal (lower S/D terminal) that is not directly electrically connected to a power supply or a common ground.

Regarding claim 12: Lee teaches the sense amplifier further comprising a sensing and pre-charging path including the main control switch (840) and the sensing switch (826), sensing a potential value of a storage cell connected to a bit line of a memory and generating a sensing signal (SEN 830) according to the potential value, wherein the

switch circuit includes the main control (840), the sensing (826) and the holding (828) switches clamping the bit line according to the first to the third bias respectively.

Regarding claim 13: Lee teaches the sense amplifier further comprising a holding path including the holding switch (828) and the auxiliary control switch (832) electrically connected to the holding switch and receiving the sensing signal (SEN 830) to control a turn-on and a turn-off of the holding path accordingly.

Regarding claim 14: Lee teaches a sense amplifier according to Claim 12, wherein the memory is a flash memory (NAND string 712 is a type of FLASH memory).

Regarding claim 15: Lee (FIG. 8a) teaches a method for operating a sense amplifier comprising steps of:

forming a holding path including a main control switch (840) and a holding switch (828); and

providing an auxiliary control switch (832) having a first terminal (upper S/D terminal) directly electrically connected to the holding switch to control a turn-on and a turn-off of the holding path, and a second terminal (lower S/D terminal) that is not directly electrically connected to a power supply or a common ground.

Regarding claim 16: Lee (FIG. 8a, 8b, 9; [0055-0059]); teaches a method according to Claim 15 further comprising steps of:

forming a sensing and pre-charging path including the main control switch (840) and a sensing switch (826);

sensing a potential value of a storage cell connected to a bit line of a memory via the sensing and pre-charging path ([0057-0058]); and

generating a sensing signal (SEN 830) according to the potential value.

Regarding claim 17: Lee teaches a method, wherein the step of providing an auxiliary control switch further comprising a step of controlling the turn-on and the turn-off of the holding path according to the sensing signal (SEN 830 drives the control gate of transistor 832, which is in series with 828; hence, controlling the turn-on and turn-off of the path through 828).

Allowable Subject Matter

4. Claims 2-10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claim 2: The prior art made of record and considered pertinent to the applicant's disclosure, taken individually or in combination, does not teach or suggest the claimed limitation of the holding path pre-charges a memory in combination with the other limitations thereof as is recited in the claim.

Regarding claim 3: The prior art made of record and considered pertinent to the applicant's disclosure, taken individually or in combination, does not teach or suggest the claimed limitation of the holding path pre-charges a memory and, when the second and fourth switches are turned on, the bit line is pre-charged to a first predetermined potential value in combination with the other limitations thereof as is recited in the claim. Claims 4-10 depend on claim 3.

Response to Arguments

5. Applicant's arguments with respect to claims 1-17 have been considered but are moot because the arguments do not apply to any of the references being used in the current rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JAY RADKE whose telephone number is (571)270-1622. The examiner can normally be reached on Monday-Friday 7:30AM-5:00PM EST, Alternate Fri off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian can be reached on (571)272-1852. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JAY RADKE/
Examiner, Art Unit 2827

/HUAN HOANG/

Primary Examiner, Art Unit 2827