

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
21 September 2006 (21.09.2006)

PCT

(10) International Publication Number
WO 2006/099161 A3

(51) International Patent Classification:
G05F 1/10 (2006.01) **G05F 3/02** (2006.01)

(74) Agent: **STATTLER, John**; Stattler - Suh, PC, 60 South Market Street, Suite 480, San Jose, CA 95113 (US).

(21) International Application Number:
PCT/US2006/008633

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(22) International Filing Date: 10 March 2006 (10.03.2006)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/660,728 11 March 2005 (11.03.2005) US

(71) Applicants (for all designated States except US): **RF-STREAM CORPORATION** [JP/JP]; 25 F, Namba Parks Tower, 2-10-70 Namba-naka, Naniwa-ku, Osaka 556-0011 (JP). **RFSTREAM AMERICA, INC.** [US/US]; 2465 Latham Street, Suite 110, Mountain View, CA 94040 (US).

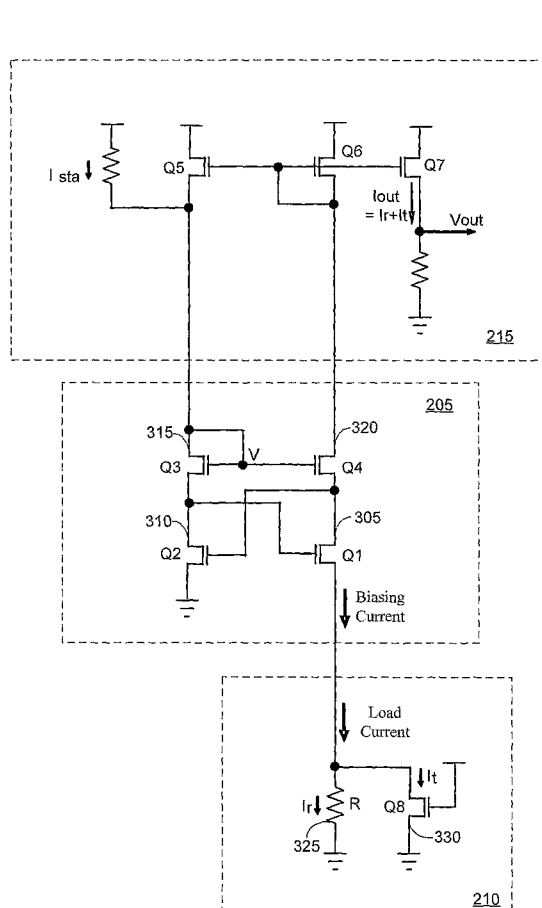
(71) Applicant and

(72) Inventor: **KAMATA, Takatsugu** [JP/JP]; 25-7-604 Chigasaki-Chyuo Tsuzuki-ku, Yokohama, Kanagawa 224-0032 (JP).

(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, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: A MOSFET TEMPERATURE COMPENSATION CURRENT SOURCE



(57) Abstract: A current source generates a constant current using metal oxide semiconductor (MOS) transistors. A biasing circuit generates a biasing current based on the transconductance of the MOS transistors. A load circuit, comprising a resistor coupled in parallel with a MOS transistor, generates a constant load current from the biasing current. The load current comprises the sum of a resistor current, which flows through the resistor, and a MOS current that flows through the transistor. The load current is constant because variations of the resistor current offset variations of the MOS current across temperature or process variations. A current mirror circuit generates an output current for the current source equal to a sum of the resistor current and the MOS current, the output current being approximately constant in value across temperature or process variations.



Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

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

10 January 2008

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US06/08633

A. CLASSIFICATION OF SUBJECT MATTER

IPC: G05F 1/10(2006.01),3/02(2006.01)

USPC: 327/543

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)

U.S. : 327/543, 538, 541

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
NONE

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EAST; US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT IBM_TEB, 327/538.ccllc. or 327/541.ccls.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X,P	US 6,911,861 B2 (DENG) 28 June 2005 (28.06.2005) see entire document	1-4, 6, 10-13, 15-18, 20
X,E	US 7,224,210 B2 (GARLAPATI et al) 29 May 2007 (29.05.2007) see entire document	1-4, 6, 7, 10-13, 15-18, 20
A	US 6,407,622 B1 (OPRIS) 18 June 2002 (18.06.2002) see entire document	1-20

☐ 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

"E" earlier application or patent 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 another 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

"&"

document member of the same patent family

Date of the actual completion of the international search

08 November 2007 (08.11.2007)

Date of mailing of the international search report

16 NOV 2007

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Facsimile No. (571) 273-3201

Authorized officer

Jose Dees

Telephone No. 571-272-1569