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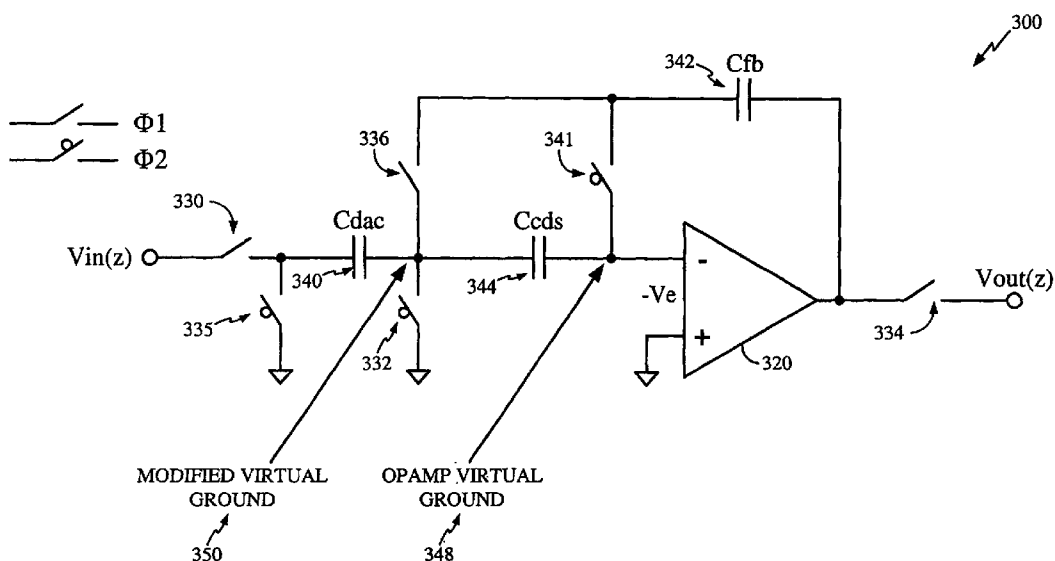
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For two-letter codes and other abbreviations, refer to the "Guid-
ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.

(54) Title: FILTERING APPLICABLE TO DIGITAL TO ANALOG CONVERTER SYSTEMS



(57) Abstract: Switched-capacitor filter for filtering the output signal of a digital-to-analog converter augmented with Direct Charge Transfer (DCT) techniques. A digital-to-analog converter augmented with DCT and correlated double sampling (CDS) techniques. A digital to analog converter augmented with Postfilter Droop Compensation. In one embodiment, an electronic system includes a digital-to-analog converter (DAC) having a DAC output (Vin); and an analog postfilter having a postfilter input coupled to the DAC output; said analog postfilter (300) including a first direct charge transfer coupled filter said postfilter employing the CDS technique.

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 03/20403

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 H03H19/00

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 7 H03H H03M

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 practical, search terms used)

EPO-Internal, INSPEC, WPI Data, COMPENDEX, PAJ, IBM-TDB

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 967 719 A (ST MICROELECTRONICS SRL) 29 December 1999 (1999-12-29)	1,9-11, 18,19, 22,23
Y	column 1, line 20 - line 21 column 4, line 38 - line 43; figures 1,5,6	2-8, 13-15, 20,21, 24-36
Y	--- NAGARAJ K ET AL: "Switched-capacitor circuits with reduced sensitivity to amplifier gain" IEEE TRANSACTIONS ON CIRCUITS AND SYSTEMS, MAY 1987, USA, vol. CAS-34, no. 5, pages 571-574, XP002258353 ISSN: 0098-4094 page 571 -page 572; figure 3 --- -/--	2,3,20, 21

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in 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 document 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 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

1 June 2004

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International Application No

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 6 011 501 A (PAULOS JOHN JAMES ET AL) 4 January 2000 (2000-01-04) column 5, line 31 - line 67; figures 1A,4C ---	9,23
Y	DESSOUKY M ET AL: "Very low-voltage fully differential amplifier for switched-capacitor applications" 2000 IEEE INTERNATIONAL SYMPOSIUM ON CIRCUITS AND SYSTEMS. EMERGING TECHNOLOGIES FOR THE 21ST CENTURY. PROCEEDINGS (IEEE CAT NO.00CH36353), ISCAS 2000 GENEVA. 2000 IEEE INTERNATIONAL SYMPOSIUM ON CIRCUITS AND SYSTEMS. EMERGING TECHNOLOGIES FOR THE 21, pages 441-444 vol.5, XP002282739 2000, Lausanne, Switzerland, Presses Polytech. Univ. Romandes, Switzerland ISBN: 0-7803-5482-6 page V-441; figure 1 ---	4-8, 13-15, 24-36
A	US 4 599 573 A (SENDEROWICZ DANIEL) 8 July 1986 (1986-07-08) figure 6A -----	4-8, 13-15, 24-36

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 03/20403

Box I Observations where certain claims were found unsearchable (Continuation of item 1 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 II Observations where unity of invention is lacking (Continuation of item 2 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 fee, this Authority did not invite payment of any additional fee.
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.
- ☒ 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: 1-3,9-11,18-23

This group of claims relates to an analog postfilter including two direct charge transfer (DCT) filters, improved by correlated double sampling (DCS) and droop compensation

2. Claims: 4-8,12-17,24-36

This group of claims relates to an analog postfilter including two direct charge transfer (DCT) filters, improved by a dual common mode switching matrix