A VARIABLE TRANSCONDUCTANCE AMPLIFIER

Abstract: A variable transconductance amplifier (100) including a variable attenuator stage (101A or 101B) coupled to a transconductance stage (103A or 103B). The variable attenuator (101A) includes first and second differential to single-ended transconductance stages (205, 207), each biased by a current device (201, 203). The variable attenuator (101A) receives a differential input voltage signal (VIN+, VIN-) and develops a current signal (Ib). At least one reactive element (R1) is coupled between the pair of differential to single-ended transconductance stages. The transconductance stage (103A) includes first and second differential pairs (Q11-Q14) each having first and second control terminals and first and second output terminals. The first and second differential pairs are coupled to the first and second differential to single-ended transconductance stages, respectively, of the variable attenuator. The output terminals of the first and second differential pair are cross-coupled to develop a differential output current signal (IOUT+, IOUT-). The stages include electronically controllable current devices so that the overall transconductance may be when the input signal increases without distorting the output signal.
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7  H03G1/00

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  H03G

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic database consulted during the international search (name of database and, where practical, search terms used)
EPO-Internal, PAJ, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>US 5 157 350 A (RUBENS HARVEY) 20 October 1992 (1992-10-20) figures 3,2</td>
<td>1</td>
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<td>A</td>
<td>US 4 458 210 A (HORL MANFRED) 3 July 1984 (1984-07-03) figure 2</td>
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<td>A</td>
<td>US 5 880 631 A (SAHOTA GURKANWAL S) 9 March 1999 (1999-03-09)</td>
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Further documents are listed in the continuation of box C.

X Patent family members are listed in annex.

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Date of the actual completion of the international search
4 September 2003

Date of mailing of the international search report
10/09/2003

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<tr>
<th>Patent document cited in search report</th>
<th>Publication date</th>
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<tr>
<td>US 6078219 A</td>
<td>20-06-2000</td>
<td>NONE</td>
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Form PCT/ISA/210 (patent family annex) (July 1992)