PCT WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 : H03G 7/06 | A3

(11) International Publication Number: WO 97/33366

(43) International Publication Date: 12 September 1997 (12.09.97)

(21) International Application Number: PCT/IB97/00200

(22) International Filing Date: 5 March 1997 (05.03.97)

(30) Priority Data:
196 08 861.5 7 March 1996 (07.03.96) DE

(71) Applicant: PHILIPS ELECTRONICS N.V. [NL/NL]; Groenewoudseweg 1, NL-5621 BA Eindhoven (NL).

(71) Applicant *(for DE only)*: PHILIPS PATENTVERWALTUNG GMBH [DE/DE]; Röntgenstrasse 24, D-22335 Hamburg (DE).

(71) Applicant *(for SE only)*: PHILIPS NORDEN AB [SE/SE]; Kottbygatan 7, Kista, S-164 85 Stockholm (SE).

(72) Inventor: DICK, Burkhard; Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).

(74) Agent: PETERS, Carl, H.; Internationaal Octrooibureau B.V., P.O. Box 220, NL-5600 AE Eindhoven (NL).

(81) Designated States: CN, JP, KR, SG, European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).

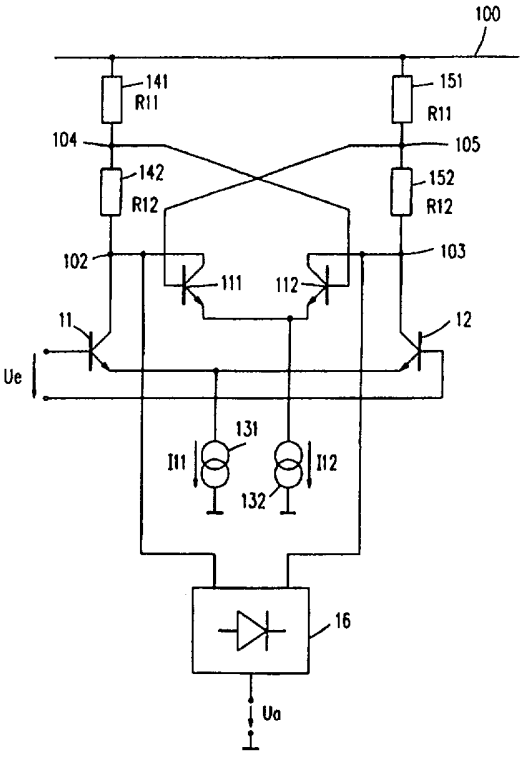
Published
With international search report.
Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.

(88) Date of publication of the international search report:
30 October 1997 (30.10.97)

(54) Title: CIRCUIT ARRANGEMENT COMPRISING A LOGARITHMIC TRANSFER FUNCTION

(57) Abstract

A description is given of a circuit arrangement comprising a logarithmic transfer function between an input signal and an output signal in a predefined level range of the input signal, comprising a pair of amplifier elements forming a first differential amplifier, the main current paths of which amplifier elements are connected, on the one hand, to each other and to a first current source and on the other hand, to working impedances subdivided by respective taps, and the control terminals of which amplifier elements are supplied with the input signal; a pair of amplifier elements forming a second differential amplifier, the main current paths of which amplifier elements are connected, on the one hand, to each other and to a second current source and on the other hand, to the connections of the main current paths of the first differential amplifier and the working impedances, and whose control terminals are cross-connected to the taps of the working impedances; and a rectifier stage whose input is connected to the connections of the main current paths of the differential amplifiers and the working impedances and whose output signal is tapped from its output. This circuit arrangement has a very low power consumption and low circuit complexity.



FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AM	Armenia	**GB**	United Kingdom	**MW**	Malawi
AT	Austria	**GE**	Georgia	**MX**	Mexico
AU	Australia	**GN**	Guinea	**NE**	Niger
BB	Barbados	**GR**	Greece	**NL**	Netherlands
BE	Belgium	**HU**	Hungary	**NO**	Norway
BF	Burkina Faso	**IE**	Ireland	**NZ**	New Zealand
BG	Bulgaria	**IT**	Italy	**PL**	Poland
BJ	Benin	**JP**	Japan	**PT**	Portugal
BR	Brazil	**KE**	Kenya	**RO**	Romania
BY	Belarus	**KG**	Kyrgystan	**RU**	Russian Federation
CA	Canada	**KP**	Democratic People's Republic of Korea	**SD**	Sudan
CF	Central African Republic			**SE**	Sweden
CG	Congo	**KR**	Republic of Korea	**SG**	Singapore
CH	Switzerland	**KZ**	Kazakhstan	**SI**	Slovenia
CI	Côte d'Ivoire	**LI**	Liechtenstein	**SK**	Slovakia
CM	Cameroon	**LK**	Sri Lanka	**SN**	Senegal
CN	China	**LR**	Liberia	**SZ**	Swaziland
CS	Czechoslovakia	**LT**	Lithuania	**TD**	Chad
CZ	Czech Republic	**LU**	Luxembourg	**TG**	Togo
DE	Germany	**LV**	Latvia	**TJ**	Tajikistan
DK	Denmark	**MC**	Monaco	**TT**	Trinidad and Tobago
EE	Estonia	**MD**	Republic of Moldova	**UA**	Ukraine
ES	Spain	**MG**	Madagascar	**UG**	Uganda
FI	Finland	**ML**	Mali	**US**	United States of America
FR	France	**MN**	Mongolia	**UZ**	Uzbekistan
GA	Gabon	**MR**	Mauritania	**VN**	Viet Nam

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB 97/00200

A. CLASSIFICATION OF SUBJECT MATTER

IPC6: H03G 7/06
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)

IPC6: H03G, H03F

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

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPIL, EDOC, JAPIO

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5471166 A (KATSUJI KIMURA), 28 November 1995 (28.11.95), abstract ---	1-8
A	EP 0505751 A2 (NEC CORPORATION), 30 Sept 1992 (30.09.92), abstract ---	1-8
A	EP 0599399 A1 (PHILIPS ELECTRONICS N.V.), 1 June 1994 (01.06.94), abstract --- --------	1-8

☐ 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" erlier 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	Date of mailing of the international search report
3 Sept 1997	09-09-1997
Name and mailing address of the ISA/ Swedish Patent Office Box 5055, S-102 42 STOCKHOLM Facsimile No. +46 8 666 02 86	Authorized officer Viktor Skoog Telephone No. +46 8 782 25 00

Form PCT/ISA/210 (second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

Information on patent family members

06/08/97

International application No.
PCT/IB 97/00200

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5471166 A	28/11/95	CA 2127856 A	14/01/95
		GB 2280053 A,B	18/01/95
		GB 9414054 D	00/00/00
		JP 7030352 A	31/01/95
EP 0505751 A2	30/09/92	AU 651432 B	21/07/94
		AU 1125892 A	03/09/92
		CA 2062010 A,C	29/08/92
		JP 4273708 A	29/09/92
		US 5561392 A	01/10/96
EP 0599399 A1	01/06/94	JP 6213676 A	05/08/94
		US 5296761 A	22/03/94