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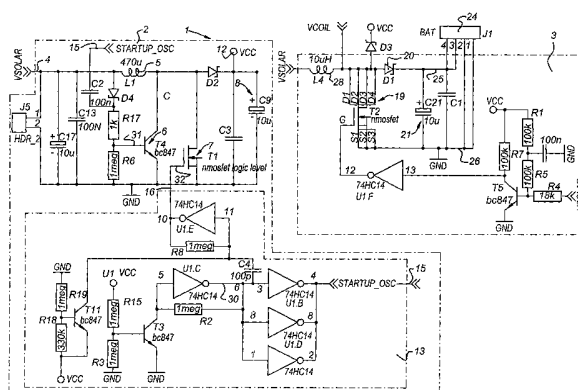
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20 March 2003

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.

(54) Title: VOLTAGE CONVERTING CIRCUIT



(57) Abstract: The invention relates to a voltage converting circuit (2) having: -an input terminal (11) for connection to a varying voltage or current source, and an output terminal (12) with a supply voltage, -an inductive element (5) being with a first terminal connected to the input terminal and with a second terminal to a capacitive element (8) and to the output terminal (12), the capacitive element (8) being with one terminal connected to a reference voltage (9), -a first switch (6) being with a first terminal connected to the second terminal of the inductive element (5), and with a second terminal to the reference voltage (9), the first switch (6) comprising a gate electrode (31) for opening and closing of the switch when a control voltage of a first level is applied to the gate, -an oscillator (13) comprising a power input (14) connected to the output terminal (12), a start-up output (15) connected to the gate electrode (31) of the first switch (6) for supplying a pulse-like signal to the gate electrode (31) and an oscillator output (16), and -a second switch (7) connected in parallel with the first switch (6), the second switch having a gate electrode (32) connected to the oscillator output (16), wherein the first switch (6) remains opened when the supply voltage at the output terminal (12) reaches a predetermined level, and the second switch (7) is operated by the oscillator output (16) at a second voltage level that is higher than the first voltage level.



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INTERNATIONAL SEARCH REPORT

International Application No

PCT/NL 02/00069

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H02M3/155

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 H02M

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, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 659 241 A (SACHITO HORIUCHI ET AL.) 19 August 1997 (1997-08-19)	1,2
Y	abstract figure 1 column 2, line 31 - line 49	3
X	EP 0 685 921 A (SGS-THOMSON MICROELECTRONICS) 6 December 1995 (1995-12-06) abstract figure 4	1,2

 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.

"G" document member of the same patent family

Date of the actual completion of the international search

27 May 2002

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04.12.02

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/NL 02/00069

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	PATENT ABSTRACTS OF JAPAN vol. 015, no. 240 (E-1079), 20 June 1991 (1991-06-20) & JP 03 074169 A (FUJI ELECTRIC CO. LTD.), 28 March 1991 (1991-03-28) abstract ---	1,2
A	US 5 825 163 A (SERGE PONTAROLLO) 20 October 1998 (1998-10-20) figure 2 column 3, line 36 - line 60 ---	1,2
A	PATENT ABSTRACTS OF JAPAN vol. 016, no. 472 (E-1272), 30 September 1992 (1992-09-30) & JP 04 168972 A (SONY CORP.), 17 June 1992 (1992-06-17) abstract ---	1,2
A	EP 0 443 155 A (JUNGHEINRICH AKTIENGESELLSCHAFT) 28 August 1991 (1991-08-28) abstract figure 1 ---	1,2
Y	US 4 445 055 A (MANFRED BETE) 24 April 1984 (1984-04-24) abstract figure 1 column 4, line 38 - line 40 ---	3
A	US 4 890 021 A (CHARLES S. WALKER ET AL.) 26 December 1989 (1989-12-26) abstract figures 1,8 column 2, line 44 - line 46 ---	3
A	US 5 691 632 A (TETUSHI OTAKE) 25 November 1997 (1997-11-25) figures 1-4 column 4, line 27 - line 32 column 5, line 44 - line 48 ---	3
A	US 5 621 620 A (HARUHIKO MACHIDA ET AL.) 15 April 1997 (1997-04-15) figure 1 column 3, line 46 - line 52 ---	3
P,X	PATENT ABSTRACTS OF JAPAN vol. 2000, no. 26, 1 July 2002 (2002-07-01) & JP 2001 251849 A (ROHM CO. LTD.), 14 September 2001 (2001-09-14) abstract -----	1,2

INTERNATIONAL SEARCH REPORT

International application No.
PCT/NL 02/00069

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.:

1-3

Remark on Protest

- The additional search fees were accompanied by the applicant's protest.
- No protest accompanied the payment of additional search fees.

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-3

A voltage converting circuit,
with a diode connected between a second terminal of an
inductive element and a gate electrode of a converter switch.

2. Claim : 4

A voltage converting circuit,
with a capacitive element connected between the output of an
oscillator and the gate of a converter switch.

Continuation of Box 3.

Claims Nos.: 5-7

Due to an error in the Caesar software, the original explanation has been lost.

In short the argumentation is:

Claim 5:

Circuit function seems wrong as the "third switch" will just short circuit the output of the first converter when conducting. Further there exist a possibility for reverse energy feedback through the coil 28 to the input source. No appropriate conversion function is likely from the second converter stage as claimed.

Claim 6: Should probably be dependent on claim 5.

Claim 7: Lacks clarity as dependent on claim 5.

The applicant's attention is drawn to the fact that claims, or parts of claims, relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/NL 02/00069

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