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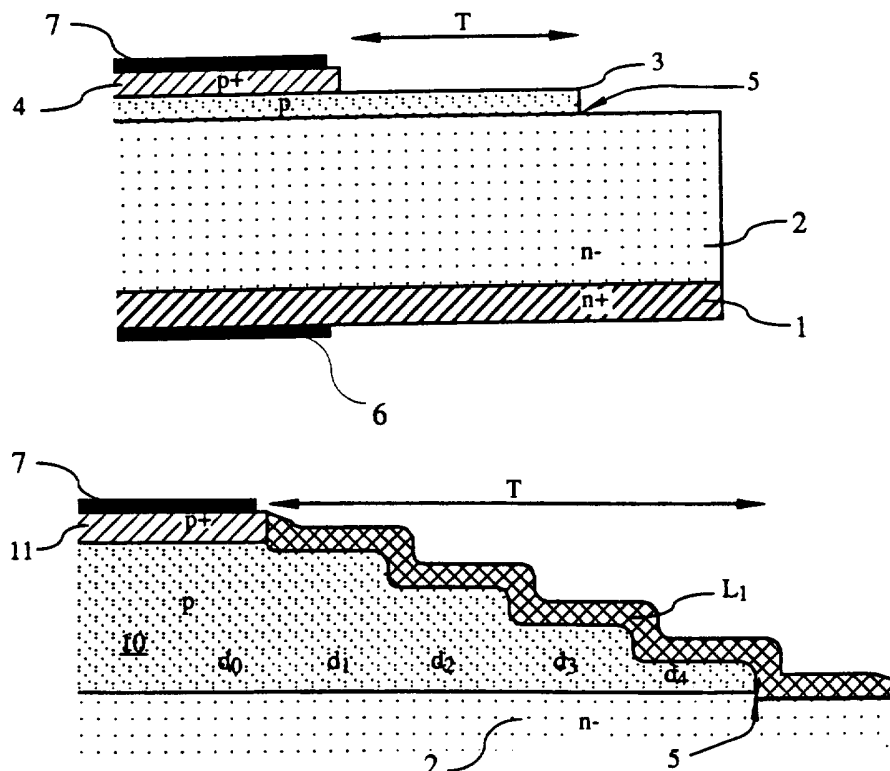
INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(30) Priority Data: 520,689 30 August 1995 (30.08.95) US			
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(74) Agent: LUNDBLAD VANNESJÖ, Katarina; Asea Brown Boveri AB, Patent, S-721 78 Västerås (SE).			

(54) Title: SiC SEMICONDUCTOR DEVICE COMPRISING A PN JUNCTION WITH A VOLTAGE ABSORBING EDGE

(57) Abstract

A semiconductor component, which comprises a pn junction, where both the p-conducting and the n-conducting layers of the pn junction constitute doped silicon carbide layers and where the edge of at least one of the conducting layers of the pn junction, exhibits a stepwise or uniformly decreasing total charge or effective surface charge density from the initial value at the defined working junction to a zero or almost zero total charge at the outermost edge of the junction following a radial direction from the central part of the junction towards the outermost edge.



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INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 96/01073

A. CLASSIFICATION OF SUBJECT MATTER

IPC6: H01L 29/06, H01L 29/24, H01L 29/36, H01L 21/04, H01L 21/302 // H01L 29/74
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: H01L

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)

DIALOG: 350,351

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4667393 A (GIUSEPPE FERLA ET AL), 26 May 1987 (26.05.87), column 2, line 47 - column 4, line 57, figure 1, abstract	1-3,5,7
Y		8-12,23
A		4,6,13-22
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X	US 4642669 A (PETER ROGGWILLER ET AL), 10 February 1987 (10.02.87), column 1, line 31 - line 48; column 3, line 38 - column 4, line 28, figures 2,3,4	1-3,5,13
Y		8-12,23
A		4,6,7,14-22
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☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

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"A" document defining the general state of the art which is not considered to be of particular relevance

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"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

12 March 1997

Date of mailing of the international search report

13 -03- 1997

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Swedish Patent Office

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 96/01073

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 3697829 A (GERALD C. HUTH ET AL), 10 October 1972 (10.10.72), column 5, line 24 - column 6, line 55, figures 1,20, abstract	1-3,5
Y		8-12,23
A		4,6,7,13-22
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A	US 4375125 A (STEPHEN W. BYATT), 1 March 1983 (01.03.83), figure 3, abstract	1,6
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A	DE 211598 A1 (AKADEMIE DER WISSENSCHAFTEN DER DDR), 24 April 1985 (24.04.85), claims 1,2	1,6
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A	US 5449925 A (BANTVAL J. BALIGA ET AL), 12 Sept 1995 (12.09.95), figure 2D, abstract	1-23
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A	US 4927772 A (STEPHEN D. ARTHUR ET AL), 22 May 1990 (22.05.90), column 3, line 45 - column 4, line 4, figure 2, abstract	1-23
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A	WO 9532524 A1 (ABB RESEARCH LTD.), 30 November 1995 (30.11.95), figure 3, abstract	1-23
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INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE96/01073

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:

Through the completed Search it has been found that the independent claims 1, 8 and 13 lacks inventive step. Thus are the dependent claims related to said claims and the independent claims 15 and 18 are subject to lack of unity on invention a posteriori according to PCT Rule 13.2 and PCT/GEN/11 Rev.1 Annex B Part 1(c)(ii).

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.

INTERNATIONAL SEARCH REPORT

Information on patent family members

03/02/97

International application No.

PCT/SE 96/01073

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US-A- 4667393	26/05/87	FR-A- 2569495 GB-A- 2163597 JP-B- 7093312 JP-A- 61059868	28/02/86 26/02/86 09/10/95 27/03/86
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US-A- 4375125	01/03/83	CA-A- 1165013 DE-A- 3108335 FR-A,B- 2477771 GB-A,B- 2071411 JP-A- 56140671 NL-A- 8101018	03/04/84 08/04/82 11/09/81 16/09/81 04/11/81 01/10/81
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