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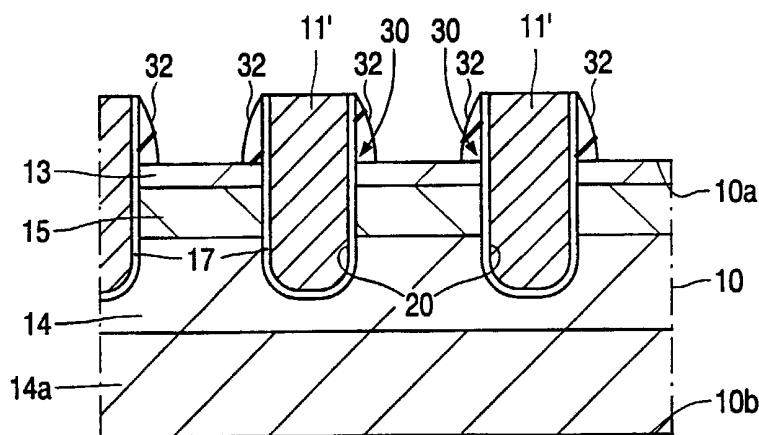
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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: MANUFACTURE OF TRENCH-GATE SEMICONDUCTOR DEVICES



(57) Abstract: In the manufacture of a trench-gate semiconductor device, for example a MOSFET or an IGBT, a starting semiconductor body (10) has two top layers (13, 15) provided for forming the source and body regions. Gate material (11') is provided in a trench (20) with a trench etchant mask (51, Figure 2) still present so that the gate material (11') forms a protruding step (30) from the adjacent surface (10a) of the semiconductor body, and a side wall spacer (32) is then formed in the step (30) to replace the mask (51). The source region (13) is

formed self-aligned with the protruding trench-gate structure with a lateral extent determined by the spacer (32, Figure 5), and the gate (11) is then provided with an insulating overlayer (18, Figure 6). Forming the sidewall spacer (32) when the protruding trench-gate structure has a well-defined edge provided by the gate material (11') allows better definition of the source region (13) compared with a prior-art process in which the gate insulating overlayer is provided in the trench before causing the trench-gate structure to have the protruding step for the sidewall spacer.

INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER

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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 H01L

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	US 5 177 572 A (MURAKAMI Y) 5 January 1993 (1993-01-05) column 9, line 21 -column 10, line 4; figures 3,8A-8F ----	9 1,2,4-7
X A	US 5 378 655 A (HUTCHINGS K M ET AL) 3 January 1995 (1995-01-03) cited in the application column 5, line 22 -column 7, line 16; figures 1-8 ----	9 1,2,4-8
X A	US 5 567 634 A (HEBERT F ET AL) 22 October 1996 (1996-10-22) column 4, line 18 - line 34; figures 4A-4C column 2, line 54 -column 4, line 7; figures 1A-1F,2A-2F -----	9 1-6,8

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☒ Patent family members are listed in annex.

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INTERNATIONAL SEARCH REPORT

information on patent family members

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