

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 17

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte DERICK J. WRISTERS, ROBERT DAWSON,
H. JIM FULFORD, JR., MARK I. GARDNER,
FREDERICK N. HAUSE, MARK W. MICHAEL, and
BRADLEY T. MOORE

Appeal No. 1999-1517
Application No. 08/837,523

ON BRIEF

Before BARRETT, LALL, and BARRY, Administrative Patent Judges
LALL, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the Examiner's final rejection¹ of claims 1 through 30. Claims 31 through 35 have been canceled.

¹ An amendment after final rejection was filed as paper no. 9, however its entry was refused by the examiner (see paper no. 10).

The disclosed invention is directed to providing an appropriate doping level of ions by forming a source, a drain and a gate using a single diffusion step. The technique provides for the normal doping of the source/drain region. After the formation of the gate structure, side spacers are formed beside the gate structure. After a layer of silicon dioxide is applied to the surface of the gate structure and the substrate, a polysilicon layer with doping ions embedded therein is applied to the surface of the silicon oxide layer. A heat treatment causes the doping ions embedded in the polysilicon layer to diffuse through the silicon layer into the substrate where the source/drain regions are formed, and to diffuse into the gate structure, whereby the upper portion of the gate structure becomes conducting and the gate electrode is formed by the same heat treatment. A further understanding of the invention can be obtained by the reading of the following claim.

11. A method of making an IGFET, comprising the steps of:

providing a device region of a first conductivity type in a semiconductor substrate;

forming a gate insulator on the device region;

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112, first paragraph, for failure to provide an adequate written description. Claims 1 through 30 stand rejected under 35 U.S.C.

§ 103 over Byun or Ehinger. However, the rejection of claims 11

though 30 under 35 U.S.C. § 103 has been withdrawn by the examiner (answer page 5) because, according to the examiner, all of the limitations of the claims cannot be examined due to the problems relating to the 35 U.S.C. § 112, first paragraph rejection.

Rather than repeat the arguments of appellants and the examiner, we make reference to the briefs² and the answer for the respective details thereof.

OPINION

We have considered the rejections advanced by the examiner and the supporting arguments. We have, likewise considered appellants' arguments set forth in the briefs.

² A reply brief was filed (paper no. 14) and was entered into the record without further response by the examiner (see paper no. 15).

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We affirm.

We will consider the two rejections separately.

Rejection under 35 U.S.C. § 112, first paragraph

Claims 11 through 30 are rejected for failing to provide an adequate written description of the invention (answer at page 3). According to the examiner, the specification as originally filed

does not provide adequate support for the phrase "without driving essentially any dopant of the first conductivity type through the insulating layer" see independent claims 11 and 30, id.

The written description requirement serves "to ensure that the inventor had possession, as of the filing date of the application relied on, of the specific subject matter later claimed by him; how the specification accomplishes this is not material." In re Wertheim, 541 F.2d 257, 262, 191 USPQ 90, 96 (CCPA 1976). In order to meet the written description requirement, the appellants do not have to utilize any

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particular form of disclosure to describe the subject matter claimed, but "the description must clearly allow persons of ordinary skill in the art to recognize that [he or she] invented what is claimed." In re Gosteli, 872 F.2d 1008, 1012, 10 USPQ2d 1614, 1618 (Fed. Cir. 1989). Put another way, "the applicant must . . . convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention." Vas-Cath, Inc. v. Mahurkar, 935 F.2d 1555, 1563-64, 19 USPQ2d 1111, 1117 (Fed. Cir. 1991). Finally, "(p]recisely how close the original description must come to comply with the

description requirement of section 112 must be determined on a case-by-case basis." Eiselstein v. Frank, 52 F.3d 1035, 1039, 34 USPQ2d 1467, 1470 (Fed. Cir. 1995) (quoting Vas-Cath, 935 F.2d at 1561, 19 USPQ2d at 1116).

Appellants make reference to various parts of the specification which purport to provide the meaning for the phrase "without driving essentially any dopant of the first conductivity type through the insulating layer", the phrase which the examiner has found to be lacking support in the

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written description of the invention. We have evaluated the various references made by appellants on page 9 of the principal brief and also on pages 4 and 5 of the reply brief. We do not find adequate support for the written description of the phrase recited above. Appellants' first reference for this description is on page 6 of the specification, where it is stated (page 6, lines 10 to 11) that "at this point in the process, polysilicon gate 110 and device region 102 are essentially devoid of P-type doping." Appellants also make reference to lines 12 and 13 on page 3 of the specification. Both references to the specification refer to only the status of a process before the claimed process is conducted.

As pointed out by the examiner (answer at page 7), "[t]he diffusion step is not shown until Figure 1G and is not described in the specification until page 6, line 14 of the specification." (Emphasis in original.) Appellants also make reference to various other parts of the specification at page 4 of the reply brief. For example, appellants state, id, that "[a]s a result of this process, . . . Page 6, lines 21-22.

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'However, essentially none of the boron in polysilicon gate 110 or spaces [sic, spacers] 112 diffuses into device region 102.'" We do not agree with appellants' assertion that this satisfies the written description requirement in the instant case. The boron is defined to be an element of second conductivity in the specification and not of first conductivity as recited in the phrase under discussion. Therefore, we agree with the examiner and find that the specification lacks an adequate written description of the recited phrase. We sustain the rejection of claim 11, and its dependent claims 12 to 29, under 35 U.S.C. § 112, first paragraph. Claim 30, containing the same phrase, also falls with claim 11.

Rejection under 35 U.S.C. § 103

Claims 1 through 10 are rejected under 35 U.S.C. § 103 as being obvious over Byun and Ehinger.

In our analysis here, we are guided by the general proposition that in an appeal involving a rejection under 35 U.S.C. § 103, an examiner is under a burden to make out a prima facie case of obviousness. If that burden is met, the

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burden of going forward then shifts to the applicant to overcome the prima facie case with argument and/or evidence. Obviousness is then determined on the basis of the evidence as a whole and the relative persuasiveness of the arguments. See In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992); In re Hedges, 783 F.2d 1038, 1039, 228 USPQ 685, 686 (Fed. Cir. 1986); In re Piasecki, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984); and In re Rinehart, 531 F.2d 1048, 1052, 189 USPQ 143, 147 (CCPA 1976). We are further guided by the precedent of our reviewing court that the limitations from the disclosure are not to be imported into the claims. In re Lundberg, 244 F.2d 543, 548, 113 USPQ 530, 534 (CCPA 1957); In re Queener, 796 F.2d 461, 464, 230 USPQ 438, 440 (Fed. Cir. 1986). We also note that the arguments not made separately for any individual claim or claims are considered waived. See 37 CFR § 1.192(a) and (c). Cf. In re Baxter Travenol Labs., 952 F.2d 388, 391, 21 USPQ2d 1281, 1285

(Fed. Cir. 1991) ("It is not the function of this court to

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examine the claims in greater detail than argued by an appellant, looking for nonobviousness distinctions over the prior art."); In re Wiechert, 370 F.2d 927, 936, 152 USPQ 247, 254 (CCPA 1967)("This court has uniformly followed the sound rule that an issue raised below which is not argued in that court, even of it has been properly brought here by reason of appeal is regarded as abandoned and will not be considered. It is our function as a court to decide disputed issues, not to create them.").

The examiner at pages 4 and 5 of the answer states that "it would have been obvious . . . to form an insulating layer between the source/drain/gate regions and the substrate in the primary reference of Byun et al. as disclosed by Ehinger et al. because this would allow for better control over the depth and the concentration of the source/drain/gate regions." Appellants argue (brief at page 5) that "nowhere in the Byun reference is the possible diffusion of ions into the gate electrode discussed or even suggested." The examiner's response, page 5 of the answer is that "[a]pplicant appears to admit on page 5, lines 19-21, that gate electrode 23 will inherently be doped to some

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extent during the diffusion to form the source and drain region . . . , but [as to the other specifics] there is nothing in the claim that specifies to what extent the gate electrode needs to be doped, only that it is doped to some extent."

(Emphasis in original.) We agree with the examiner's position that, in Figure

2b of the Byun reference, layer 24 is the doped diffusion layer and covers substrate 21 as well as gate electrode 23.

In the next step, when the thermal process occurs, the diffusion of the doping material takes place as to substrate 21 and also with respect to gate electrode 23. The resulting structure shown in Figure 2C of Byun has source/drain at 25 and an electrode 23 with dopant in it. There is no indication in the reference which shows that such a diffusion of the dopant will be prevented from occurring as to gate 23.

As to the Ehinger reference, appellants argue (brief at page 8) that "[n]o indication is given in the Ehinger reference, that a diffusion of doping ions occurs into the adjacent (base) terminal (251 in Fig. 4 and 55 in Fig. 7 of the Ehinger reference)." However, we agree with the

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examiner's position that the Ehinger reference is used only to show that an intermediate

layer between the doped diffusion layer and the substrate is introduced for the purpose of controlling of diffusion of the dopant into the substrate and the gate. This teaching is clearly disclosed by Ehinger (see page 7 of the translation of the Ehinger reference).

Appellants also argue (brief at page 8) that "the added limitation of the sidewall spacers provides a further and a functional limitation." However, within claims 1 through 10, which are being considered on merits, we find no such limitations. Therefore, the arguments relating to the sidewall spacers are not commensurate in scope with the claims on review in this appeal.

Therefore, we sustain the obviousness rejection of claims 1 through 10 over Byun and Ehinger.

In conclusion, we affirm the decision of the examiner rejecting claims 1 through 30 under 35 U.S.C. § 112, first paragraph. We also affirm the examiner's decision rejecting

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claims 1 through 10 under 35 U.S.C. § 103.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED

LEE E. BARRETT)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
PARSHOTAM S. LALL)	APPEALS AND
Administrative Patent Judge)	INTERFERENCES
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LANCE LEONARD BARRY)	
Administrative Patent Judge)	

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SKJERVEN, MORRILL, MACPHERSON, LLP
25 METRO DRIVE
SUITE 700
SAN JOSE, CA 95110