UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte CHAD WEINTRAUB, JAMES F. BULLER, DERICK WRISTERS, and JON CHEEK

Appeal No. 2006-2807
Application No. 10/284,651

ON BRIEF

Before KRASS, BLANKENSHIP, and HOMERE, Administrative Patent Judges.

BLANKENSHIP, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the examiner's final rejection of claims 1-16 and 21-24, which are all the claims remaining in the application.

We affirm.

BACKGROUND

The invention relates to a method for manufacturing semiconductor components. According to appellants, an asymmetric (angled) implant is provided that reduces the source-drain resistance of the transistor and decreases the gate-to-drain tunneling current. (Spec. at 3.) Representative claim 1 is reproduced below.

1. A method for manufacturing a semiconductor component, comprising:

providing a semiconductor material of a first conductivity type having a major surface;

forming a gate structure on the major surface, wherein the gate structure has first and second sides and a top surface, and wherein the gate structure does not include spacers;

implanting a dopant of a second conductivity type into the semiconductor material to form first and second doped extension regions, wherein the implant forming the first and second doped extension regions is limited to a single angled implant that makes an angle of less than 90 degrees with respect to a direction perpendicular to the major surface, and wherein the first doped extension region is adjacent the first side of the gate structure and extends under the gate structure, and the second doped extension region is laterally spaced apart from the second side of the gate structure without implanted dopant underlying the second side of the gate structure so as to form an asymmetric dopant profile;

forming first and second spacers adjacent the first and second sides of the gate structure, respectively; and

forming first and second doped regions in the semiconductor material, the first doped region aligned to the first spacer and the second doped region aligned to the second spacer.

The examiner relies on the following references:

Pimbley et al. (Pimbley)	US 4,613,882	Sep. 23, 1986
Alvis et al. (Alvis)	US 5,935,867	Aug. 10, 1999

Huster et al. (Huster)	US 6,242,329 B1	Jun. 5, 2001
Yu	US 6,465,315 B1	Oct. 15, 2002 (filed Jan. 3, 2000)

Claims 1, 4, 5, 9, 10, 13, 21, 23, and 24 stand rejected under 35 U.S.C. § 102 as being anticipated by Yu.

Claims 2, 3, 11, 12 stand rejected under 35 U.S.C. § 103 as being unpatentable over Yu and Alvis.

Claim 6 stands rejected under 35 U.S.C. § 103 as being unpatentable over Yu and Pimbley.

Claims 7, 8, 14-16, and 22 stand rejected under 35 U.S.C. § 103 as being unpatentable over Yu and Huster.

We refer to the Final Rejection (mailed Feb. 9, 2005) and the Examiner's Answer (mailed Jan. 20, 2006) for a statement of the examiner's position and to the Brief (filed Oct. 28, 2005) and the Reply Brief (filed Mar. 14, 2006) for appellants' position with respect to the claims which stand rejected.

OPINION

In the rejection of the claims under 35 U.S.C. § 102 as being anticipated by Yu, the examiner reads claim 1 on the disclosure of Yu as set forth at pages 4 and 5 of the Answer. Appellants submit, in the Brief, that the claim distinguishes over Yu because of the requirement that the implant to form first and second doped extension regions is

"limited to a single angled implant," in the terms of the claim. Further, appellants argue that the implanting step represented by Figure 3 and column 6, lines 10 through 22 of Yu does not read on the claimed implanting step. According to appellants, Yu teaches an angled implant followed by the formation of a source/drain extension implant by vertical implanting. Further, according to appellants, reference numerals 23 and 25 of Yu identify the source and drain extension regions. (Brief at 12-13.)[1]

The examiner, in the responsive arguments section of the Answer, makes clear that the claim is deemed to read on the single angled implant of Figure 3, and argues that the claim does not exclude later, additional steps relating to implanting. The examiner further makes clear that the regions 66, 68 in Figure 3 of the reference are deemed to correspond to the "first and second doped extension regions" of the claim.

Appellants seem to acknowledge, in the Reply Brief, that limitations from the specification cannot be read into the claims. However, appellants believe that to one skilled in the art, the extension regions as claimed are clearly source and drain

[1] Appellants also complain in the Brief (at 15-16) of the examiner's refusal to enter an amendment after final rejection. However, decisions within the primary examiner's discretion, such as whether or not to enter an amendment after final rejection, are not subject to our review. See In re Berger, 279 F.3d 975, 984-85, 61 USPQ2d 1523, 1529 (Fed. Cir. 2002) (issue of examiner's refusal to enter amendment after final may be the subject of a petition, but may not be reviewed by the Board in connection with a rejection of claims); 37 CFR § 1.127 ("From the refusal of the primary examiner to admit an amendment, in whole or in part, a petition will lie to the Director under § 1.181.").

extension regions. (Reply Brief at 4). Appellants also submit (id. at 4-5) that one skilled in the art would interpret the claim language of a doped extension region to be a source or drain extension region without referring to the specification. Appellants suggest that the examiner is arbitrarily defining limitations of the claim. Appellants contend that Yu teaches in Figure 5, and in column 6, lines 40 through 46, that substrate 14 in Figure 5 is subjected to a source/drain extension implant. (Id. at 8.)

Yu describes extensions 23 and 25 (Fig. 1) that are integral or connected with regions 22 and 24, respectively. The extensions are preferably thinner than regions 22 and 24. All of regions 22 through 25 have the same dopant concentration. Col. 4, ll. 13-24. In Figure 5, substrate 14 is subjected to a source/drain extension implant by implanting dopants into source location 60 and drain location 63 of substrate 14. In later steps represented by Figure 6A, spacers 26 are formed and a deep source/drain implant is provided for forming source region 22 and drain region 24. Col. 6, ll. 40-60.

We observe that in Yu extensions 23 and 24 are shown in Figure 5 as contiguous with the relatively flat layers (i.e., "regions") 78 and 80, respectively. In later steps (e.g., Fig. 6) extensions 23 and 25 are shown as relatively thinner portions of the respective source and drain regions. In appellants' disclosure, source extension region 126A and drain extension region 128A are shown in an intermediate step (Fig. 4) as contiguous with relatively flat layers (i.e., doped regions) 126 and 128. (Spec. at 5, ll. 12-20.) In later steps (e.g., Fig. 5), the regions become contiguous with source and drain regions 146, 148. (E.g., spec. at 7, l. 2.) Further, we note a similar sequence in structures

described by Huster, a reference applied against claims other than claim 1. See Huster at Figs. 5, 6, 7; extension regions 118, 124.

Instant claim 1 does not recite a step of providing a source/drain extension implant. Nor does the claim recite source and drain extension regions. The claim recites implanting a dopant of a second conductivity type into the semiconductor material to form first and second doped extension regions.

On this record, we consider the examiner's interpretation as to what may constitute an "extension region" as set forth in claim 1 to be reasonable. Appellants have not provided a satisfactory definition of "extension region" that would distinguish over the structure described by Yu. Instant claim 1 does not require that the first and second doped extension regions become, after additional steps, part of the source and drain regions. Nor does the claim require that the doped extension regions be continuous with the first and second doped regions in the final recited step of forming first and second doped regions in the semiconductor material. Nor does the claim require that the doped extension regions be present during the final (or penultimate, for that matter) step of the claim.[2]

[2] Although the determination is not necessary in view of the scope of claim 1, it is not clear that merely calling the first and second doped extension regions "source and drain" extension regions would serve to distinguish claim 1, in its present form, over the reference.

We acknowledge the possibility that the artisan might consider the "first and second doped extensions regions," by definition, to distinguish over the reference. To whatever extent appellants' remarks might reflect the belief that an art-recognized definition of "extension regions" cannot be met by the corresponding structures in Yu that are identified by the examiner, appellants have not provided evidence in support of the view. Arguments of counsel are not evidence. See, e.g., Meitzner v. Mindick, 549 F.2d 775, 782, 193 USPQ 17, 22 (CCPA 1977); In re Pearson, 494 F.2d 1399, 1405, 181 USPQ 641, 646 (CCPA 1974). We make our determinations with respect to the artisan's understanding of the term based on the evidence that is before us -- e.g., appellants' disclosure and the references that have been applied.

We have considered all of appellants' arguments but are not persuaded of error in the rejection of instant claim 1. We sustain all the rejections because appellants rely on the arguments that apply to representative claim 1, and thus fail to demonstrate error in the rejection of any claim. See 37 CFR § 41.37(c)(1)(vii).

CONCLUSION

The rejection of claims 1, 4, 5, 9, 10, 13, 21, 23, and 24 under 35 U.S.C. § 102 and the rejection of claim 2, 3, 6-8, 11, 12, 14-16, and 22 under 35 U.S.C. § 103 are affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a). See 37 CFR § 1.136(a)(1)(iv).

AFFIRMED

ERROL A. KRASS Administrative Patent Judge	)
HOWARD B. BLANKENSHIP Administrative Patent Judge	) BOARD OF PATENT) APPEALS) AND) INTERFERENCES
JEAN R. HOMERE Administrative Patent Judge	)

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