

The opinion in support of the decision being entered today
(1) was not written for publication in a law journal and
(2) is not binding precedent of the Board.

Paper No. 19

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte DONALD L. PLUMTON and TAE S. KIM

Appeal No. 1998-2962
Application No. 08/485,079

ON BRIEF

Before KRASS, BARRETT and GROSS, Administrative Patent Judges.

KRASS, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the final rejection of claims 10-15¹, all of the pending claims.

The invention is directed to both a vertical FET and a heterojunction bipolar transistor, each having, respectively, a drain or collector made of a III-V semiconductor material with a surface having a crystal plane orientation of (100) within 0.5°.

¹The appendix to the brief indicates a claim "1" on appeal but this clearly refers to claim "10."

Representative independent claim 10 is reproduced as follows:

10. A vertical field effect transistor, comprising:

(a) a drain made of a first III-V semiconductor material and with a surface having a crystal plane orientation tilted $0 \pm 0.5^\circ$ from the (100) direction;

(b) gate fingers on said drain and made of a second III-V semiconductor material, said fingers with sidewalls substantially perpendicular to said surface;

(c) channel regions between said fingers and made of a third III-V semiconductor material; and

(d) a source on said gate fingers and channel regions and made of a fourth III-V semiconductor material.

The examiner relies on the following references:

Rode	4,050,964	Sep. 27, 1977
Lüth	5,122,853	Jun. 16, 1992
Miyazawa	JP 63-252,475	Oct. 19, 1988

Claims 10-12 stand rejected under 35 U.S.C. § 103 as unpatentable over Lüth and Rode. Claims 14 and 15 stand rejected under 35 U.S.C. § 103 as unpatentable over Miyazawa and Rode. Further, claims 10-13 stand rejected under the judicially created doctrine of "non-obvious" double patenting "in view of copending application Serial No. 08/474,612" because "there are no statutory or administrative

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reasons why applicant was prevented from presenting said claims for examination in said copending application. *In re Schneller*, 158 USPQ 210 (CCPA 1968).” [Examiner's answer, page 4].

Reference is made to the brief and answer for the respective positions of appellants and the examiner.

OPINION

We turn first to the double patenting rejection.

The examiner clearly has a rational basis for making this rejection. The subject matter claimed in the instant application appears to have been disclosed in Application Serial No. 08/474,612. In any event, appellants point to nothing within the instant claimed subject matter which was not disclosed in Application Serial No. 08/474,612. Accordingly, the instant claimed subject matter could have been claimed in Application Serial No. 08/474,612 but, for whatever reason, appellants chose not to do so. Public policy would appear to dictate that, should Application Serial No. 08/474,612 mature into a patent, patent protection should not extend beyond the term of such patent by a later patent directed to subject matter appellants could have claimed in that application but chose not to so claim. We also note in passing, that the instant application does not appear to be in the same chain of applications to which Serial No. 08/474,612 belongs.

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Moreover, appellants do not positively argue the double patenting rejection, observing only that arguments cannot yet be made because the claims of Application Serial No. 08/474,612 “may change” [brief-page 4]. Appellants parenthetically muse that the claims of 08/474,612 are “directed to equivalence of the crystal orientations of the gate finger sidewalls and the drain surface and this has no suggestion of the (100) within 0.5° of claims 10-13” [brief-page 4]. However, this does not address the issue of disclosure of the instant claimed subject matter in 08/474,612 in the *Schneller* context.

Accordingly, the rejection of claims 10-13 under double patenting is sustained.

With regard to the rejection of claims 10-12 under 35 U.S.C. § 103 in view of Lüth and Rode, we will also sustain this rejection.

The examiner indicates that the difference between the instant claimed invention and that disclosed by Lüth is the former’s recitation of a substrate that is tilted within 0.5 degrees from the (100) crystal plane. However, the examiner relies on Rode, which appears to teach the claimed range of orientation [see claim 4 of Rode] and the examiner concludes that it would have been obvious to tilt Lüth’s substrate within 0.5 degrees from the (100) crystal plane as suggested by Rode.

Appellants argue only that since Lüth uses a vapor phase growth of the semiconductor materials and Rode uses a liquid phase growth, the references cannot be combined. However, it appears that Rode, alone, would have suggested the claimed subject matter and appellants do not even address the merits of the Rode disclosure of the claimed range of orientation. Moreover, while appellants argue that one would not combine a “vapor phase growth” reference with a “liquid phase growth” reference, appellants do not explain why such teachings are not combinable or why an artisan would not find anything in a vapor phase growth environment applicable to anything in a liquid phase growth environment.

Even assuming, arguendo, that one would not “combine” the references, appellants have not explained why the artisan viewing the range of orientation taught by Rode would not have been led to employ such an angle in Lüth.

Thus, we will sustain the rejection of claims 10-12 under 35 U.S.C. § 103 over Lüth and Rode because, in our view, the examiner makes out a prima facie case of obviousness which has not been successfully rebutted by any argument of appellants.

We now turn to the rejection of claims 14 and 15 under 35 U.S.C. § 103 in view of Miyazawa and Rode. We will not sustain this rejection because, as appellants argue at page 3 of the brief, Miyazawa fails to show the extrinsic base fingers with sidewalls

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perpendicular to the collector with surface oriented (100) within 0.5°. Appellants point out that Miyazawa has implanted extrinsic base regions 11 in the collector 2, and not extrinsic base fingers on the collector with sidewalls perpendicular to the (100) surface. The examiner's response is merely to dismiss the argument as attacking the applied references individually. However, since appellants point out claimed subject matter which is apparently missing from Miyazawa and that subject matter is not provided for by Rode, the argument is really that the argued distinction is missing from either reference. Since the examiner has not pointed to anything in either reference that suggests the claimed extrinsic base fingers with sidewalls perpendicular to the collector with surface oriented (100) within 0.5°, the examiner has not established a prima facie case of obviousness with regard to the subject matter of claims 14 and 15.

We have sustained the rejection of claims 10-12 under 35 U.S.C. § 103 and the rejection of claims 10-13 under double patenting. We have not sustained the rejection of claims 14 and 15 under 35 U.S.C. § 103.

Accordingly, the examiner's decision is affirmed-in-part.

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

AFFIRMED-IN-PART

ERROL A. KRASS)
Administrative Patent Judge)
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) BOARD OF PATENT
LEE E. BARRETT) APPEALS AND
Administrative Patent Judge) INTERFERENCES
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