

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. 19

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte LINDOR E. HENRICKSON and SHELDON ARONOWITZ

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Appeal No. 1998-2044  
Application No. 08/719,773

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ON BRIEF

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Before HAIRSTON, JERRY SMITH and BARRETT, Administrative Patent Judges.

JERRY SMITH, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on the appeal under 35 U.S.C. § 134 from the examiner's rejection of claims 10-23. Claims 1-9 stand withdrawn from consideration as being directed to a nonelected invention.

The disclosed invention pertains to the art of field effect transistors (FETs). More specifically, the invention forms both a buried channel region and a surface channel region between the source and drain regions of the transistor.

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Such a structure is disclosed to exhibit better performance characteristics than conventional FETs.

Representative claim 10 is reproduced as follows:

10. A semi-conductor device comprising:

a semiconductor substrate of a first conductivity type;

a source region and a drain of a second conductivity type formed in the substrate and separated by a channel length;

a buried channel region of the second conductivity type formed between the source region and the drain region; and

a surface channel region of the first conductivity type formed between the source region and the drain region, said surface channel region having a surface channel length less than the channel length between said source and drain regions.

The examiner relies on the following references:

Kagami 1986 (Japanese Kokai Koho)	61-256769	Nov. 14,
Yazawa et al. (Yazawa) 1987 (Japanese Kokai)	62-241378	Oct. 22,

Claim 16 stands rejected under 35 U.S.C. § 112, second paragraph, for failing to particularly point out and distinctly claim the invention. Claims 10-23<sup>1</sup> stand rejected

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<sup>1</sup> Although the final rejection and the examiner's answer list only claims 16-23 as being rejected under 35 U.S.C. § 103, this appears to be a typographical error. We will consider all the pending claims as subject to this rejection

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under 35 U.S.C. § 103. As evidence of obviousness the examiner offers Kagami and Yazawa<sup>2</sup> taken together.

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

OPINION

We have carefully considered the subject matter on appeal, the rejections advanced by the examiner, the arguments in support of the rejections and the evidence of obviousness relied upon by the examiner as support for the obviousness rejection. We have, likewise, reviewed and taken into consideration, in reaching our decision, the appellants' arguments set forth in the briefs along with the examiner's rationale in support of the rejections and arguments in rebuttal set forth in the examiner's answer.

It is our view, after consideration of the record before us, that claim 16 particularly points out the invention in a

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just as appellants did in the brief.

<sup>2</sup> Our understanding of Kagami and Yazawa is based upon translations provided to us by the Scientific and Technical Information Center of the Patent and Trademark Office. Copies of these translations are attached to this decision.

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manner which complies with 35 U.S.C. § 112. We are also of the view that the collective evidence relied upon and the level of skill in the particular art would not have suggested to one of ordinary skill in the art the obviousness of the invention as set forth in claims 10-23. Accordingly, we reverse.

We consider first the rejection of claim 16 under the second paragraph of 35 U.S.C. § 112. The examiner's rejection states the following:

The claim contradicts the base claim since the surface channel must run along the surface by definition. Clarification is required [answer, page 4].

Appellants argue that the channel region of their invention is formed by buried channel region 24 and surface channel region 26 (Figures 1 and 2). Appellants note that surface channel region 26 clearly has a length between 20% and 50% of the channel length of both regions combined [brief, pages 5-6].

The general rule is that a claim must set out and circumscribe a particular area with a reasonable degree of precision and particularity when read in light of the disclosure as it would be by the artisan. In re Moore, 439

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F.2d 1232, 1235, 169 USPQ 236, 238 (CCPA 1971). Acceptability of the claim language depends on whether one of ordinary skill in the art would understand what is claimed in light of the specification. Seattle Box Co., v. Industrial Crating & Packing, Inc., 731 F.2d 818, 826, 221 USPQ 568, 574 (Fed. Cir. 1984).

We fail to understand the examiner's arguments regarding the difference between channel regions and carrier locations. It is clear from the specification in this application that the channel region labeled 24 forms a buried channel region and the channel region labeled 26 forms a surface channel region. Claim 16 simply further limits the recitation in claim 10 to the effect that the surface channel region has a length between 20% and 50% of the total channel length between the source and drain regions. We agree with appellants that the artisan having considered the specification of this application would have no difficulty ascertaining the scope of the invention recited in claim 16. Therefore, the rejection of claim 16 under the second paragraph of 35 U.S.C. § 112 is not sustained.

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We now consider the rejection of claims 10-23 under 35 U.S.C. § 103 as unpatentable over the teachings of Kagami and Yazawa. In rejecting claims under 35 U.S.C. § 103, it is incumbent upon the examiner to establish a factual basis to support the legal conclusion of obviousness. See In re Fine, 837 F.2d 1071, 1073, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). In so doing, the examiner is expected to make the factual determinations set forth in Graham v. John Deere Co., 383 U.S. 1, 17, 148 USPQ 459, 467 (1966), and to provide a reason why one having ordinary skill in the pertinent art would have been led to modify the prior art or to combine prior art references to arrive at the claimed invention. Such reason must stem from some teaching, suggestion or implication in the prior art as a whole or knowledge generally available to one having ordinary skill in the art. Uniroyal, Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438 (Fed. Cir.), cert. denied, 488 U.S. 825 (1988); Ashland Oil, Inc. v. Delta Resins & Refractories, Inc., 776 F.2d 281, 293, 227 USPQ 657, 664 (Fed. Cir. 1985), cert. denied, 475 U.S. 1017 (1986); ACS Hosp. Sys., Inc. v. Montefiore Hosp., 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). These showings by the

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examiner are an essential part of complying with the burden of presenting a prima facie case of obviousness. Note In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). If that burden is met, the burden 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 Id.; 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). Only those arguments actually made by appellants have been considered in this decision. Arguments which appellants could have made but chose not to make in the brief have not been considered [see 37 CFR § 1.192(a)].

With respect to all the claims on appeal, the examiner points to the n+ region 27 of Kagami as interrupting the surface channel region. The examiner thus finds that the surface channel region in Kagami is less than the length between the source and the drain. The examiner cites Yazawa

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as teaching a shortened surface channel and a buried layer for carrier confinement. The examiner finds that it would have been obvious to the artisan to combine the teachings of Kagami and Yazawa [answer, page 4].

Appellants make the following arguments: 1) appellants argue that Yazawa does not disclose a surface channel region as asserted by the examiner, but only a buried channel region; 2) appellants argue that Kagami teaches only a surface channel region with no buried channel region; 3) appellants argue that there would be no basis for combining Kamagi's surface channel features with Yazawa because Yazawa seeks to avoid any surface current; and 4) appellants argue that Yazawa teaches away from the alignment recited in claims 17-23 [brief, pages 7-11].

The examiner responds that the area under n+ region 27 in Kagami is a buried channel within appellants' definition of the term [answer, pages 5-6]. Appellants respond that there is no buried channel in the Kagami device [reply brief].

We basically agree with each of appellants' arguments set forth above. We do not accept the examiner's position that the impurity region 27 of Kagami creates a buried channel region within appellants' own definition. Appellants have

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argued that the impurity region 27 merely changes the electric field along the surface channel region between the source and drain regions, but that the impurity region does not create a buried channel region [reply brief]. The examiner has ignored this argument, and consequently, we have no reasoning of record to rebut this argument. On this record, we agree with appellants that Kagami does not disclose a buried channel region. We also agree with appellants' argument that there is no motivation to combine the teachings of Kagami with Yazawa. Yazawa seeks to eliminate a surface channel region whereas Kagami seeks to create a surface channel region. These two references are at cross purposes with each other, and the only motivation to combine their teachings comes from an improper attempt to recreate the claimed invention in hindsight. Even if the teachings of Kagami and Yazawa could be combined, the examiner has not identified how such a combination obviously results in the claimed invention.

Since these arguments of appellants apply to each of independent claims 10 and 17, we do not sustain the rejection of any of claims 10-23 under 35 U.S.C. § 103 as proposed by

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the examiner. Therefore, the decision of the examiner  
rejecting claims 10-23 is reversed.

REVERSED

KENNETH W. HAIRSTON	)	
Administrative Patent Judge	)	
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	)	BOARD OF PATENT
JERRY SMITH	)	APPEALS
Administrative Patent Judge	)	AND
	)	INTERFERENCES
	)	
	)	
	)	
LEE E. BARRETT	)	
Administrative Patent Judge	)	

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