

**THIS OPINION WAS NOT WRITTEN FOR PUBLICATION**

This opinion (1) was not written for publication and (2) is not binding precedent of the Board.

Paper No. 24

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte INTERNATIONAL RECTIFIER CORP.

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Appeal No. 97-3160  
Reexamination Control No. 90/003,773

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HEARD: 15 October 1997<sup>1</sup>

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Before HAIRSTON, BARRETT, and TORCZON, Administrative Patent Judges.

TORCZON, Administrative Patent Judge.

This is an appeal under 35 U.S.C. § 134 from the final rejection of claims 1-16. (Paper 15.) We reverse.

FINDINGS OF FACT AND CONCLUSIONS OF LAW

FINDINGS OF FACT

We have reviewed the record in its entirety in light of the arguments of Appellant and the examiner. Our decision presumes

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<sup>1</sup> We attach, for completeness, a copy of handouts provided by Appellant's counsel at the hearing. In reaching our decision we have not relied on the handouts except to the extent they simply reflect materials already of record.

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familiarity with the entire record. A preponderance of the evidence of record supports each of the following fact findings.

A. The nature of the case

The Patent and Trademark Office (Office) issued patent number 4,593,302 (Lidow '302) on 3 June 1986. Lidow '302 is based on an application filed 18 August 1980 naming Alexander Lidow and Thomas Herman as inventors. Appellant obtained no benefit under 35 U.S.C. §§ 119 or 120. International Rectifier Corporation, the assignee of record, is the real party in interest. (Paper 16 at 1.)

SGS-Thomson Microelectronics, Inc. filed a request for reexamination of all claims in the 4,593,302 patent on 3 April 1995. (Paper 1 at 1.) The examiner found a substantial new question of patentability affects claims 1-14, all of the original claims, in view of the following references cited by the requester:

Lidow et al. (Lidow '286)	4,376,286	Issued 8 Mar. 1983 Filed 13 Oct. 1978
Lidow et al. (Lidow '725)	5,008,725	Issued 16 Apr. 1991 Filed 14 May 1979
Sakai (Sakai '688)	(JP) 52-106688 (A)	Pub'd 7 Sep. 1977
Sakai (Sakai '284)	(JP) 53-135284 (A)	Pub'd 25 Nov. 1978

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None of these references appears to have been cited in the original examination. Cf. In re Portola Packaging, 110 F.3d 786, 790, 42 USPQ2d 1295, 1299 (Fed. Cir. 1997) ("Reexamination of the same claims in light of the same references does not raise a substantial new question of patentability"). Claim 4 has since been amended and claims 15 and 16 have been added.

Lidow '302 is entitled "Process for manufacture of high power MOSFET with laterally distributed high carrier density beneath the gate oxide". The subject matter of the invention is a configuration for a central high-conductivity region beneath the gate oxide of a high-power metal-oxide semiconductor field-effect transistor (MOSFET). (1:22-25.) According to the disclosure, non-uniform lateral conductivity distribution in this region can cause avalanche breakdowns. (2:28-46.) Appellant addressed this problem by forming the central high-conductivity region so it maintains substantially<sup>2</sup> uniform lateral conductivity distribution. (2:49-58.) Representative claim 1 states the relevant contested limitation as follows:

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<sup>2</sup> At the hearing, counsel for Appellant conceded that the invention would also have some non-uniformity, but that it would be insignificant compared to the prior art.

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said doping concentration in said vertical conductive region having a constant value laterally across said first surface beneath said insulation layer.

B. The rejections

The examiner relied on Lidow '725, Sakai '688 and '284, to reject claims 1-14 under 35 U.S.C. § 103 (Paper 14 at 9) in view of:

Sakai (Sakai '885) (JP) 54-885 (A) Pub'd 6 Jan. 1979

In making this rejection, the examiner relied on a declaration from Richard A. Blanchard<sup>3</sup> and the following reference for "supporting explanations":

Welliver 3,915,767 Issued 28 Oct. 1975

The examiner also relied on the following reference in discussing the rejection (Paper 14 at 6), but did not cite it as a part of the rejection:<sup>4</sup>

S.M. Sze, Semiconductor Devices 397-398 (1985).

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<sup>3</sup> Appellant objects to the inclusion of the Blanchard declaration in the record. (Paper 16 at 4.) Entry of a document is a petitionable matter and thus not properly before us. See MPEP § 1002.02(b)(16) (petition to expunge); In re Voss, 557 F.2d 812, 816, 194 USPQ 267, 270 (CCPA 1977) (No jurisdiction over most petitionable matters.). We must consider all of the evidence of record.

<sup>4</sup> We remind the examiner that all references on which the rejection is based must be positively recited in the rejection. In re Hoch, 428 F.2d 1341, 1342 n.3, 166 USPQ 406, 407 n.3 (CCPA 1970).

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Sakai '885 was cited in the original examination that resulted in the Lidow '302 patent.

The examiner rejected claims 15 and 16 in view of Sakai '688, '284, and '885, Lidow '725, and the following references used in the alternative (Paper 14 at 12):

Glasl et al.	4,029,527	Issued 14 June 1977
Graul et al.	4,216,030	Issued 5 Aug. 1980
Takahashi et al.	4,263,067	Issued 21 Apr. 1981

The examiner again relied on the Blanchard declaration for "supporting explanations".

We note at the outset that the examiner appears to use Sakai '688 and '284 to explain, rather than expand, the teachings of Sakai '885. Cf. In re Baxter Travenol Labs., 952 F.2d 388, 390, 21 USPQ2d 1281, 1284 (Fed. Cir. 1991). The examiner also uses the Blanchard declaration, Sze, and Welliver to explain the Sakai references. (Paper 14 at 9.) The examiner concedes, and we agree, that Lidow '725 does not teach the claimed constant lateral doping concentration in a vertical conductive region under the insulating layer. (Paper 17 at 4.)

Another panel of this Board considered the teachings of Sakai '885 during an appeal in the original examination. It found that

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"layer 42 as formed in the step illustrated in Figure 4a of Sakai ['885] would undoubtedly exhibit a doping concentration having a constant lateral value at any given depth, [but] it is not at all clear from the reference that such a characteristic remains in the devices of Figures 4e or 5. Stated otherwise, the reference does not mention such a characteristic and if it exists, after all processing steps are completed, it would appear to be present by happenstance rather than by design.

The primary question for us on appeal is whether the additional evidence the examiner has marshaled to support his interpretation of Sakai '885 is sufficient to overcome the earlier panel's finding that Sakai '885 does not teach the contested limitation.

The examiner states that the drain regions of Sakai '688 and '284 do not have uniform lateral dopant concentrations.

(Paper 17 at 3-4.) According to the examiner, these embodiments have channel length problems, but Sakai '885 solves the problem.

(Paper 17 at 4.) Sakai '885 says the problem is noise caused by defects produced by ion-implantation of the island region 19, which corresponds to the claimed vertical conductive region.

(Sakai '885 at 5.) Sakai solves the problem by forming the island region as a layer 42 and then diffusing in a ring-shaped region 43. (Sakai '885 at 7-8.) This, however, is precisely the process that the earlier panel found would likely produce distortions in the doping concentration.

The examiner relied on Sze and Welliver to argue that Sakai '885 must have solved the distorting emitter-push effect because the problem and solution were well-known in the art.<sup>5</sup> (Paper 17 at 11-12.) We disagree. One cannot impute the knowledge of a hypothetical person of ordinary skill in the art to a particular inventor. Moreover, it is irrelevant whether Sakai '885 actually solved the problem if the problem and solution would have been obvious to a person having ordinary skill in the art.

Welliver solves the emitter-push problem by using arsenic as the N-dopant instead of phosphorus. (4:1-26.) Welliver uses the affinity between arsenic-doped layer 14 and the boron dopant to limit the diffusion of boron into the underlying silicon 10. (5:1-35.) What is not apparent is why this method would be employed in Sakai '885. Sakai does not disclose any layer equivalent to Welliver's layer 14 through which boron diffuses. Use of arsenic in Sakai's N-type region 42 and boron in the P-

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<sup>5</sup> The examiner also relies on Sze to argue that any distortion in the vertical conductive layer would be visible in Sakai's drawings. (Paper 17 at 11-12.) We are reluctant to ascribe that level of detail to the drawings when it is not clear that Sakai even recognized the problem. Cf. In re Andersen, 743 F.2d 1578, 1581, 223 USPQ 378, 380 (1984) (relying on clear written disclosure over ambiguous drawings).

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type region 43 would likely exacerbate distortions in dopant concentration around the junction between these regions precisely because of the strong affinity between arsenic and boron. Given the lateral juxtaposition of these regions, the distortion would be lateral. The regions' lateral geometry would mean that choice of dopants would have little or no effect on the vertical emitter-push effect. Consequently, we cannot agree with the examiner that the new evidence overcomes the earlier Board panel's finding regarding Sakai '885.

C. Other findings

The level of skill in the pertinent art, to the extent it is contested, is apparent from the cited references. In re GPAC, Inc., 57 F.3d 1573, 1579, 35 USPQ2d 1116, 1121 (Fed. Cir. 1995).

The evidence of industry respect and commercial success for the Lidow '302 patent is not, as counsel for Appellant admitted at the hearing, specific to the subject matter claimed in the '302 patent. At best, it corresponds to a package of patents that includes the '302 patent. (Paper 16 at 19-21.) Consequently, we find that Appellant has not carried its burden of production on these points.

Appellant also contends, citing Manual of Patent Examining Procedure (MPEP) §§ 2242 and 2286, that their successful

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adjudication of the validity of the Lidow '302 patent in court is a secondary consideration. (Paper 16 at 22.) We disagree. Sections 2242 and 2286 relate to the preclusive effect of district court fact findings. The MPEP permits examiners to defer to district court fact findings, but notes that those findings are not controlling. Thus, the district court adjudication is not a secondary consideration, but a source of fact finding for us to consider. Appellant has only identified the district court's findings ¶¶ 19, 90, 98-102, 104, 105, and 147 in Exhibit G as being relevant to this appeal. (Paper 16 at 22.) The district court found (¶ 101) that

Sakai ['885] illustrates that its proposed device should be made by forming central Region 42 prior to the deeper base region illustrated in Figure 5, the lateral concentration of impurities in Sakai ['885]'s central region would be distorted.

The examiner correctly notes that the district court did not consider all of the evidence (e.g., Welliver) that the examiner has marshaled to support Sakai '885 (Paper 17 at 11). Thus, the preclusive effect of the district court findings is very limited. The district court did, however, have the benefit of expert testimony. On the whole, we find the district court's finding to be consistent with our own finding and, thus, slight further support for our finding that Sakai '885 would not have taught one

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skilled in the art to form a vertical conductive region with a substantially constant lateral doping concentration under the insulation layer as claimed.

#### CONCLUSIONS OF LAW

The reexamination was conducted in a manner consistent with the holding of In re Recreative Techs. Corp., 83 F.3d 1394, 38 USPQ2d 1776 (Fed. Cir. 1996). Recreative Techs., involved a rejection maintained solely on the basis of a reference considered during the original examination. We have already noted that those facts do not obtain in this situation. Appellant invites us to read Recreative Techs., to bar any issue previously considered even if based on different evidence. We decline to do so. Subsequent case law confirms that the holding in Recreative Techs., is based on references, not issues. Portola, 110 F.3d at 790, 42 USPQ2d at 1299. Case law also indicates that the holding in Recreative Techs., should be limited to its facts. See In re Lonardo, 119 F.3d 960, 968, 43 USPQ2d 1262, 1268 (Fed. Cir. 1997) (permitting double patenting as the sole basis for a rejection in reexamination). Appellant has not persuaded us that the proscription set in Recreative Techs. applies to the facts before us.

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We found that a preponderance of the evidence of record did not teach or suggest each contested limitation in claim 1. Consequently, we cannot conclude that the subject matter of claim 1 would have been obvious at the time of the invention. Claim 10 contains a comparable limitation so our conclusion extends to it as well. The remaining claims depend directly or indirectly from claim 1 or 10 so our conclusion extends to them as well.

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DECISION

The final rejection of claims 1-16 under section 103 is

REVERSED

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

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