United States District Court,
N.D. California.

MICREL INC,
Plaintiff.
v.
MONOLITHIC POWER SYSTEMS, INC., Michael R. Hsing, James C. Moyer, and Does 1 through 20,
Defendants.

No. C 04-04770 JSW

June 28, 2006.

Mark E. Miller, Darin W. Snyder, Michael Sapoznikow, Thomas B. Rees, III, O'Melveny & Myers LLP, San Francisco, CA, for Plaintiff.

Thomas J. Friel, Jr., Cooley Godward LLP, San Francisco, CA, Jeffery Anne Tatum, General Counsel Services, Aptos, CA, Matthew J. Brigham, Sayuri K. Sharper, Cooley Godward LLP, Palo Alto, CA, for Defendants.

CLAIMS CONSTRUCTION ORDER

JEFFREY S. WHITE**, District Judge.**

A claim construction hearing to construe the disputed terms of U.S. Patent No. 5,517,046 (the '046 Patent) and U.S. Patent No. 5,556,796 (the ' 796 Patent) pursuant to Markman v. Westview Instruments, Inc., 517 U.S. 370 (1996), was held on June 20, 2006 before this Court. Having carefully reviewed the parties' papers, heard the parties' arguments and considered the relevant legal authority, and good cause appearing, the Court will now construe the disputed claim terms within the patent.

BACKGROUND

Plaintiff Micrel, Inc. ("Micrel") seeks to prevent Defendant Monolithic Power Systems, Inc. ("MPS") from infringing Micrel's patents. The '046 Patent claims a transistor structure, which includes an enhanced drift region which acts to reduce the electrical resistance between the source and the drain when the transistor is turned on without significantly reducing the breakdown voltage. *(See* '046 Patent at Abstract). The '796 Patent relates to methods for fabricating regions on a computer chip. *(See* '796 Patent at Abstract.)

At the hearing, the parties agreed on the order for performing the steps in Claims 1 and 12 of the '796 Patent. The parties agree that the steps are performed in the order stated in the claim, provided however, that this construction does not necessarily preclude whether additional steps may be performed or whether steps may be repeated. That is an issue to be determined pursuant to an infringement analysis. Therefore, the Court will not construe the order of these two claims.

ANALYSIS

A. Legal Standard.

"It is a bedrock principle of patent law that the claims of a patent define the invention to which the patentee is entitled the right to exclude." Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc., 381 F.3d 1111, 1115 (Fed.Cir.2004). The interpretation of the scope and meaning of disputed terms in patent claims is a question of law and exclusively within the province of a court to decide. Markman v. Westview Instruments, Inc., 517 U.S. 370, 372 (1996). The inquiry into the meaning of the claim terms is "an objective one." Innova/Pure Water, 381 F.3d at 1116. As a result, a court undertaking the construction of disputed terms "looks to those sources available to the public that show what a person of skill in the art would have understood the disputed claim language to mean." *Id*. In most cases, a court's analysis will focus on three sources: the claims, the specification, and the prosecution history. Markman v. Westview Instruments, Inc., 52 F.3d 967, 979 (Fed.Cir.1995) (en banc), *aff'd,* 517 U.S. 370 (1996). However, on occasion, reliance on extrinsic evidence regarding the relevant scientific principles, the meaning of technical terms, and the state of the art at the time at the time the patent issued is appropriate.

The starting point of the claim construction analysis is an examination of the specific claim language. A court's "claim construction analysis must begin and remain centered on the claim language itself, for that is the language that the patentee chose to particularly point out and distinctly claim the subject matter which the patentee regards as his invention." Innova/Pure Water, 381 F.3d at 1116 (internal quotations and citations omitted). Indeed, in the absence of an express intent to impart a novel meaning to a term, an inventor's chosen language is given its ordinary meaning. York Prods., Inc. v. Cent. Tractor Farm & Family Center, 99 F.3d 1568, 1572 (Fed.Cir.1996). Thus, "[c]laim language generally carries the ordinary meaning of the words in their normal usage in the field of the invention." Invitrogen Corp. v. Biocrest Mfg., L . P., 327 F.3d 1364, 1367 (Fed.Cir.2003) ("Claim language generally carries the ordinary meaning of the words in their normal usage in the field of invention."); *see also* Renishaw v. Marposs Societa' per Azioni, 158 F.3d 1243, 1248 (Fed.Cir.1998) (recognizing that "the claims define the scope of the right to exclude; the claim construction inquiry, therefore, begins and ends in all cases with the actual words of the claim"). A court's final construction, therefore, must accord with the words chosen by the patentee to mete out the boundaries of the claimed invention.

A court also may look to intrinsic evidence, including the written description, the drawings, and the prosecution history, if included in the record, to provide context and clarification regarding the intended meaning of the claim terms because the claims do not stand alone. Teleflex, Inc. v. Ficosa N. Am. Corp., 299 F.3d 1313, 1324-25 (Fed.Cir.2002). Rather, "they are part of 'a fully integrated written instrument.' " Phillips v. AWH Corp., 415 F.3d 1303, 1315 (Fed.Cir.2005) (en banc) (quoting Markman, 52 F.3d at 978). The specification "may act as a sort of dictionary, which explains the invention and may define the terms used in the claims." Markman, 52 F.3d at 979. The specification also can indicate whether the patentee intended to limit the scope of a claim, despite the use of seemingly broad claim language. SciMed Life Sys., Inc. v. Advanced Cardiovascular Sys., Inc., 242 F.3d 1337, 1341 (Fed.Cir.2001) (recognizing that when the specification "makes clear that the invention does not include a particular feature, that feature is deemed to be outside the reach of the claims of the patent, even though the language of the claims, read without reference to the specification, might be considered broad enough to encompass the feature in question").

Intent to limit the claims can be demonstrated in a number of ways. For example, if the patentee "acted as his own lexicographer," and clearly and precisely "set forth a definition of the disputed term in either the specification or the prosecution history," a court will defer to that definition. CCS Fitness, Inc. v. Brunswick Corp., 288 F.3d 1359, 1366 (Fed.Cir.2002). All that is required to so limit the claims is for the patentee to set out the alternative meaning in the specification "in a manner sufficient to give one of ordinary skill in the art notice of the change from ordinary meaning." Innova/Pure Water, 381 F.3d at 1117. In addition, a court will adopt an alternative meaning of a term "if the intrinsic evidence shows that the patentee distinguished that term from prior art on the basis of a particular embodiment, expressly disclaimed subject matter, or described a particular embodiment as important to the invention." CCS Fitness, 288 F.3d at 1367. Likewise, the specification may be used to resolve ambiguity "where the ordinary and accustomed meaning of the words used in the claims lack sufficient clarity to permit the scope of the claim to be ascertained from

the words alone." Teleflex, 299 F.3d at 1325.

However, limitations from the specification (such as from the preferred embodiment) may not be read into the claims, absent the inventor's express intention to the contrary. Id. at 1326; *see also* CCS Fitness, 288 F.3d at 1366 ("[A] patentee need not 'describe in the specification every conceivable and possible future embodiment of his invention.' "); Virginia Panel Corp. v. MAC Panel Co., 133 F.3d 860, 866 (Fed.Cir.1997) ("[I]t is well-settled that device claims are not limited to devices which operate precisely as the embodiments described in detail in the patent."). To protect against this result, a court's focus should remain on understanding how a person of ordinary skill in the art would understand the claim terms. Phillips, 415 F.3d at 1323.

If the analysis of the intrinsic evidence fails to resolve any ambiguity in the claim language, a court then may turn to extrinsic evidence, such as expert declarations and testimony from the inventors. Intel Corp. v. VIA Techs., Inc., 319 F.3d 1357, 1367 (Fed.Cir.2003) ("When an analysis of *intrinsic* evidence resolves any ambiguity in a disputed claim term, it is improper to rely on extrinsic evidence to contradict the meaning so ascertained.") (emphasis in original). When considering extrinsic evidence, a court should take care not to use it to vary or contradict the claim terms. Rather, extrinsic evidence is relied upon more appropriately to assist in determining the meaning or scope of technical terms in the claims. Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1583 (Fed.Cir.1996).

Dictionaries also may play a role in the determination of the ordinary and customary meaning of a claim term. The Federal Circuit recently reiterated that "[d]ictionaries or comparable sources are often useful to assist in understanding the commonly understood meanings of words...." Phillips, 415 F.3d at 1322. The *Phillips* court, however, also admonished that district courts should be careful not to allow dictionary definitions to supplant the inventor's understanding of the claimed subject matter. "The main problem with elevating the dictionary to ... prominence is that it focuses the inquiry on the abstract meaning of the words rather than on the meaning of claim terms within in the context of the patent." *Id*. at 1321. Accordingly, dictionaries necessarily must play a role subordinate to the intrinsic evidence.

In addition, a court has the discretion to rely upon prior art, whether or not cited in the specification or the file history, but only when the meaning of the disputed terms cannot be ascertained from a careful reading of the public record. Vitronics, 90 F.3d at 1584. Referring to prior art may make it unnecessary to rely upon expert testimony, because prior art may be indicative of what those skilled in the art generally understood certain terms to mean. *Id*.

B. Claim Construction.

1. "being self-aligned with said conductive gate when forming said first region"

Claim 1 of the '046 Patent claims, in pertinent part, "[a] lateral DMOS transistor structure comprising: ... a first region formed completely within said semiconductor material of said first conductivity type, said first region being self-aligned with said conductive gate when forming said first region...." *(See* '046 Patent at 7:20-29.) Micrel proposes that "being self-aligned with said conductive gate when forming said first region" be construed to mean "being formed using the conductive gate as a mask so that the relative position of the first region is controlled by the position of the conductive gate." MPS proposes that this term be construed as: "fabricated by first forming a conductive gate which then blocks the introduction of dopants when forming the first region such that (1) dopants are allowed to be introduced to the surface covered by the conductive gate and (2) the first region extends from the gate to where the second region will be formed."

The crux of the parties's dispute centers around the meaning of "self-aligned with." Both parties agree that the enhanced drift region or "first region" being "self-aligned with" the conductive gate means that the conductive gate controls the position of the enhanced drift region. What the parties dispute is whether the

position of the enhanced drift region is fixed or relative with respect to the gate and thus whether the claim language allows for or precludes the use of gate edge spacers attached to the gate before the enhanced drift region is formed. (Opp. at 8; Reply at 1.) In other words, MPS argues that the language of Claim 1 precludes the use of gate edge spacers, and thus, the enhanced drift region or the "first region" forms adjacent to the gate. Micrel argues that the specification describes the use of gate edge spacers and that the location of both the spacers and the enhanced drift region are set off of or relative to the gate.

The specification of the '046 Patent teaches that:

Well known gate edge spacers may be formed, if desired, prior to the P doping process to prevent the P doping from subsequently diffusing too far under the gate. P-type dopants are then implanted to form the body regions and then driven in.

An N dopant is then used to form the N enhanced drift regions 31....

('046 Patent at 5:18-23.) The Court finds that there is nothing inherent in the phrase "self-aligned" which requires that the enhanced drift region be formed in an absolute location, as opposed to being set in relation to the gate. On the other hand, if the Court construes "self-aligned" narrowly to require the enhanced drift region be set in a particular or absolute location, the use of gate edge spacers, which are included in a preferred embodiment, would be excluded. FN1 Generally, courts should not construe terms in a manner that would exclude a preferred embodiment. Rexnord Corp. v. Laitram Corp., 274 F.3d 1336, 1342 (Fed.Cir.2001) ("a claim construction that would exclude the preferred embodiment is rarely, if ever, correct and would require highly persuasive evidentiary support ..."). More importantly, the Court finds that there is no language in the specification or in the claims which specifically disclaims or precludes the use of spacers in the ' 046 Patent.

FN1. At the hearing, for the first time, MPS argued that the preferred embodiment only addresses the use of gate edge spacers on one side of the gate with respect to P-type dopants which form the body regions. Given that the specification discusses implanting N-type dopants after implanting P-type dopants while the gate edge spacers are in place, construing this language to include a gate edge spacer only on one side of the gate would be reading it too narrowly. *(See* '046 Patent at 5:18-27.)

MPS relies heavily on the prosecution history to support its proposed construction of "self-aligning with," but its reliance is misplaced. To overcome the Patent Office's initial rejection of Claim 1, the inventors amended the claim from "a first region formed in said semiconductor material" to "a first region formed completely within said semiconductor material of said first conductivity type, said first region being self-aligned with said conductive gate when forming said first region." (Declaration of Thomas Rees, Ex. B at MIC000127.) In explaining why these changes made the claim patentable, the inventors explained the claim was amended "to emphasize that the 'first region' (enhanced drift region 31) is self-aligned with the conductive gate 26. Conductive gate 26 is therefore formed before enhanced drift region 31 is formed, and the gate acts as a mask when ions are implanted to form enhanced drift region 31." *(Id.)* A further examination of the prosecution history reveals that the inventors amended Claim 1 in an effort to distinguish prior art in which the drain region was formed before the gate. *(Id.,* Ex. B at MIC000127-28.) The issue the inventors were addressing by amending the claim language was the timing in which the enhanced drift region is formed, not its location. *(Id.)* Thus, the prosecution history does not speak to whether using the gate as a mask precludes the use of gate edge spacers attached to the gate, and therefore, does not assist MPS.

Accordingly, the Court concludes that "self-aligned with" does not require the enhanced drift region to be in a fixed location, but rather, merely teaches that the location of the enhanced drift region is controlled by the gate. Whether gate edge spacers are attached to gate would not alter the fact that the gate controls the

location of the enhanced drift region. If gate edge spacers are used, then the location of both the gate edge spacers and the enhanced drift region would be set in relation to the gate. Thus, the Court construes the disputed term to mean **"being formed using the conductive gate as a mask so that the relative position of the first region is controlled by the position of the conductive gate."**

2. "enhanced drift region"

Claim 1 of the '046 Patent claims, in pertinent part:

a first region formed completely within said semiconductor material of said first conductivity type, said first region being self-aligned with said conductive gate when forming said first region, and said first region being of first conductivity type and having a second dopant concentration to form an enhanced drift region of said DMOS transistor, wherein said second dopant concentration is greater than said first dopant concentration;

...

wherein said first region acts to reduce an ON-resistance of said DMOS transistor as compared to said DMOS transistor lacking said first region.

(*See* '046 Patent at 7:26-58.) Micrel contends that "enhanced drift region" is a label for the region defined by the claim limitations and therefore needs no further construction. MPS proposes that this term be construed as: "region, distinct from the second region, which is more highly doped than the drift region formed by the semiconductor material and substantially reduces on-resistance (e.g.20-30%)."

The crux of the dispute between the parties is whether the '046 Patent requires the enhanced drift region to reduce the on-resistance by a certain degree, e.g. "significantly" or "substantially," or whether it merely requires some reduction. The claim language at issue does specify that the enhanced drift region "significantly reduce" or "substantially reduce" the on-resistance, but rather, merely provides that it "reduce" the on-resistance. *(See* '046 Patent at 7:56-58.) Although a court may limit the claim language if the specification clearly sets forth a definition of the disputed term, *see* CCS Fitness, 288 F.3d at 1366, the specification here does not do so. In most places where the function or purpose of the "enhanced drift region" is discussed, the specification of the '046 Patent teaches that it "significantly" or "substantially" reduces on-resistance. *(See* '046 Patent at Abstract, 1:64-65, 3:22-24, 5:24-25.) However, in discussing the implantation of phosphorus ions to create the enhanced drift region, the specification also teaches that the dosage may be as low as 5E11 "for advantageous results to occur." *(See* id. at 3:29-30.) Thus, the Court concludes that the specification does not provide sufficient support to read a limitation into the claim language to require that the enhanced drift region reduce on-resistance to a significant or substantial degree.

In addition to construing "enhanced drift region" to reduce on-resistance substantially, MPS argues that this term should be construed as a "region, distinct from the second region, which is more highly doped than the drift region formed by the semiconductor material." Micrel does not dispute that the enhanced drift region is distinct from the second region and that the second region is more highly doped than the enhanced drift region. Rather, Micrel argues that construing the enhanced drift region in this manner would be redundant because the claim language already make clear that the second region is distinct from and more highly doped than the enhanced drift region (the first region). *(See* '046 Patent at 7:26-37.) The Court agrees. Therefore, the Court will not define "enhanced drift region" beyond how it is already described in Claim 1.

3. "having said third dopant concentration"

Claim 1 of the '046 Patent claims, in pertinent part:

a second region formed in said semiconductor material, said second region being of said first conductivity type and having a third dopant concentration greater than said second dopant concentration to form a drain region ...

...

a fourth region formed in said semiconductor material, said fourth region being of said first conductivity type and having said third dopant concentration to form a source region.

(*See* '046 Patent at 7:34-54.) MPS contends that "having said third dopant concentration" should be construed to mean "intending to have the same dopant concentration as the second region and implanted at the same time as the second region." Micrel initially argued that "having said third dopant concentration" should be construed to mean "having substantially the same dopant concentration as the second region." However, at the hearing Micrel informed the Court that it agreed with the portion of MPS's proposed construction defining the disputed term as "intending to have the same dopant concentration as the second region." Thus, the only issue for the Court is whether the disputed term should also be construed to as "implanted at the same time as the second region."

In support of its proposed construction, MPS points to a reference in the specification regarding one preferred embodiment stating "[a] second phosphorus or implantation process is then used to form the N source 32 and N drain region 34." The specification merely provides that the source and drain regions may be formed by using the same doping or implantation process, but cannot be read to require or limit the '046 Patent to this method. MPS also relies on the figures in the '046 Patent showing the source and drain regions (the second and fourth regions) at the same depth. However, Micrel explained at the hearing that there are methods to ensure that the source and the drain regions form at the same depth other than by doping those regions at the same time. For example, the depth of the source and the drain could be controlled by the energy level at which these regions are created. Therefore, the Court concludes that the intrinsic evidence does not support MPS's proposed construction to require that the source and drain regions (the second and forth regions) be formed at the same time, and thus limits the construction of the disputed term to **"intending to have the same dopant concentration as the second region."**

4. "row"

Claims 9 and 19 of the '046 Patent claim, in pertinent part:

a first conductive strip of material overlying and electrically contacting central portions of a first row of said source regions ...; and

a second conductive strip of material overlying and electrically contacting central portions of a second row of drain regions adjacent to said first row of said source regions ...

('046 Patent at 8:32-39, 10:19-28.) Micrel contends that "row" be construed as "a linearly organized group," and MPS argues it should be construed as "a straight line." Other than the above quoted language from Claims 9 and 19, the '046 Patent does not describe or discuss "row" and thus, provides no guidance on its meaning. Both Micrel and MPS point to various dictionary definitions which define row as follows: (1) "a number of objects arranged in a usu. straight line;" (2) "a continuous extent of length, straight or curved, without breadth or thickness;" (3) "a number of people or things arranged as to form a line, esp. a straight line;" and (4) "a series of objects place next to each other, usually in a straight line." *(See* Final Joint Claim Construction and Prehearing Statement, Ex. A at 5.) While all of these definitions would include a "straight line," none of them require that a row be limited to a straight line. Thus, these definitions provide support for the broader construction proposed by Micrel, "a linearly organized group." Because the ordinary meaning of "row" includes, but is not limited to straight lines, and because there is nothing in the '046 Patent

which limits row to straight lines, Court adopts Micrel's proposed construction for row. According, the Court construes "row" to mean **"a linearly organized group."**

5. "selectively mask one or more of said second portions from dopants in a subsequent doping step"

Claim 1 of '796 Patent claims, in pertinent part: "(5) forming a masking layer to selectively mask one or more of said second portions from dopants in a subsequent doping step...." *(See* '796 Patent at 5:33-35.) Micrel proposes that the Court construe "selectively mask one or more of said second portions from dopants in a subsequent doping step" to mean "selectively shield at least a portion of one of said second portions from dopants implanted during a doping process conducted after forming the masking layer (shield)." MPS argues that the Court should construe the disputed term as "select where a third doped region (different that the first and second doped regions) is to be formed, with a boundary defined by the oxide over the first doped regions, by protecting one or more of the second portions from the dopants deposited in step (6)." At the hearing, the Court proposed construing the term to as "selectively shield at least one or more of said second portions from dopants implanted during a doping process conducted after forming the masking layer (shield)."

With the exception of the phrase "a portion of one of said second portion," the Court finds that the construction proposed by Micrel is supported by the intrinsic evidence. Micrel informed the Court at the hearing that it would accept the Court's modification of its proposed construction. The Court concludes that MPS's proposed construction is not supported by the intrinsic evidence. MPS's construction inserts a "third doped region," which would add a limitation that is not supported by the claim language by requiring the formation of a third region and would import into step five conduct which is set out in other steps, i.e. depositing dopants. Therefore, the Court adopts Micrel's proposed construction with the modification regarding "a portion of one of said second portion," and accordingly construes "selectively mask one or more of said second portions from dopants in a subsequent doping step" to mean **"selectively shield at least one or more of said second portions from dopants implanted during a doping process conducted after forming the masking layer (shield)."**

6. "second doped regions being self-aligned with said first doped regions"

Claim 1 of '796 Patent claims, in pertinent part:

(6) depositing dopants of a second conductivity type into said second regions not masked by said first making layer to form second doped region, said oxide masking said first doped portions from dopants during this step, said second doped regions being self-aligned with said first doped regions, wherein said first doped regions are N-wells and said second doped regions are P-type regions.

(*See* '796 Patent at 5:36-43.) Micrel proposes that the Court construe "second doped regions being self-aligned with said first doped regions" to mean "first and second doped regions being formed using the same mask to control the relative locations of said regions." MPS argues that the Court should construe the dispute term as "second doped regions are fabricated by using the oxide over the first doped regions, where the boundaries of the oxide are the same as the boundaries of the first doped regions, to define a boundary of the second doped regions."

The Court already construed "self-aligned" in the '046 Patent. In the context of self-aligning with a gate, which acted as a mask to shield dopants, the Court determined that the gate controlled the location of the region being doped. In Claim 1 of the '796 Patent, the oxide mask shields the dopants and thus controls the location of the doped regions. Micrel's proposed construction of the disputed term here is consistent with the Court's construction in the related '046 Patent. MPS's proposed construction here is similar to the construction urged by MPS of "self-aligned" in the '046 Patent. MPS proposes that the disputed term here be construed to create fixed boundaries of the regions, a construction the Court already rejected as

unsupported. Therefore, the Court construes "second doped regions being self-aligned with said first doped regions" to mean "**first and second doped regions being formed using the same mask to control the relative locations of said regions.**"

CONCLUSION

Based on the analysis set forth above, the Court adopts the foregoing constructions of the disputed terms. Pursuant to Patent Standing Order para. 13, the parties are ordered to submit a further joint case management report within twenty-one days of the filing of this Order.

IT IS SO ORDERED.

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