

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

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte DIANE C. BOYD, STUART M. BURNS, HUSSEIN I. HANAFI,
YUAN TAUR and WILLIAM C. WILLE

Appeal No. 2001-0555
Application No. 09/026,093

ON BRIEF

Before LALL, DIXON, and BLANKENSHIP, Administrative Patent Judges.
LALL, 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 1-13, claims 14-39 having been non-elected.

According to Appellants (brief at pages 3 and 4), the

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Specifically, appellants' claimed MOSFET comprises a drain region and a source region adjacent to a channel region; a thin gate oxide situated on the channel region, said thin gate oxide having a thickness of less than 5 nm; a gate conductor having a gate length of less than 0.1 μm situated on the gate oxide, said gate conductor having vertical side walls and the junctions between the source region and the channel region, and the drain region and the channel region and the drain region, the channel region being abrupt.

The following claim 1 further illustrates the invention.

1. A metal oxide semiconductor field effect transistor (MOSFET) comprising:

a drain region and a source region adjacent to a channel region;

a thin gate oxide situated on the channel region, said thin gate oxide having a thickness of less than 5 nm;

a gate conductor having a length of less than 0.1 μm situated on the gate oxide, said gate conductor having vertical side walls and the junctions between the source region and the channel region and the drain region and the channel region being abrupt.

The Examiner relies on the following references:

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Claims 1-3 and 6-13 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Lui.

Claim 4 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Lui and Hunter.

Claim 5 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Lui and Yoshitomi.

Rather than repeat the arguments of Appellants and the Examiner, we make reference to the brief (paper no. 14), the reply brief (paper no. 16) and the answer (paper no. 15) for the respective details thereof.

OPINION

We have considered the rejections advanced by the Examiner and the supporting arguments. We have, likewise, reviewed the Appellants' arguments set forth in the briefs.

We reverse.

REJECTION UNDER 35 U.S.C. § 103

As a general proposition, in an appeal involving a rejection

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is then determined on the basis of the evidence as a whole and the relative persuasiveness of the arguments. See In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992); 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).

The claims on appeal are rejected under three different combinations of references.

Liu

In response to the Examiner's rejection of claims 1-3 and 6-13 over Liu (answer at pages 3 and 4), Appellants argue (brief at page 6) that "in the applied reference, [Liu] the gate length is reported to be 0.5 μm or less. Thus, length of the Liu gate is approximately 5 times larger than the presently claimed gate length;"

The Examiner responds (answer at page 11) that

[w]hile it is agreed that the gate electrode of Liu may be 0.5 μm in length, that is merely the

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gate having an actual length smaller than 0.1 μm , it is considered a well founded combination which makes obvious the invention of claim 5 (and appealed claim 1). As such, the limitation that the gate length be less than 0.1 μm is considered met by the combination of Liu and Yoshitomi et al..

In our view, the Examiner seems to admit that Liu does not teach the length of the gate being less than 0.1 μm as recited in claim 1. Even though the Examiner makes a general allegation that since Liu recites that the gate length could be anything less than 0.5 μm , there is no incentive or suggestion in Liu which would lead an artisan to come up with the recited gate length being 0.1 μm or less. Furthermore, we keep in mind that the rejection on appeal is over Liu alone and not over Liu and Yoshitomi et al. Therefore, for the analysis of claim 1 under this rejection, the teaching Yoshitomi is not considered.

Appellants further argue (brief at page 7) that "[t]he disclosure of Liu fails to mention anywhere therein that the junctions between the source/channel and the drain/channel regions are abrupt [as recited in claim 1]." The Examiner

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regions do not show an abrupt region between the vertical walls and the source and drain region, the resulting abruptness of the region between the vertical wall and the source or the drain must be the same as claimed by Appellants, since the process of manufacture disclosed in Liu is the same as the process described in the specification of Appellants (figures 3A-3L).

Appellants strongly argue (brief at pages 3-6) that the process disclosed by Appellants is different from the process disclosed by Liu, and the Examiner's position that the Liu's process results in the claimed structure is without any justification.

We are of the view that just because Liu's process of manufacturing a MOSFET comprises the same basic process steps such as selective etching and the depositing of a mask etc., that does not constitute that the two processes are identical. Therefore, the Examiner has not met the burden of showing that the two processes are indeed identical and will result in the same final structure.

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Liu and Hunter

The Examiner adds the teaching of Hunter to Liu for rejecting claim 4 at pages 4 and 5 of the Examiners's answer. However, since Hunter does not cure the deficiency of Liu noted above, we cannot sustain the obviousness rejection of claim 4 over Liu and Hunter.

Liu and Yoshitomi

The teaching of Yoshitomi disclosing the recited length of the gate in claim 5 is added to Liu for the rejection of claim 5. However, we agree with Appellants that Yoshitomi does not cure the deficiency of Liu, and furthermore there is no suggestion or motivation provided by either Liu or Yoshitomi to make the combination. Therefore, the rejection of claim 5 over Liu and Yoshitomi is also not sustainable.

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The decision of the Examiner rejecting claims 1-13 under
35 U.S.C. § 103 is reversed.

REVERSED

PARSHOTAM S. LALL)	
Administrative Patent Judge)	
)	
)	
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)	BOARD OF PATENT
JOSEPH L. DIXON)	APPEALS
Administrative Patent Judge)	AND
)	INTERFERENCES
)	
)	
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HOWARD B. BLANKENSHIP)	
Administrative Patent Judge)	

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