

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 28

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte TOSHIHIKO IWANAGA, MASUMITSU INO, KIKUO
KAISE, TAKENOBU URAZONO, and HIROYUKI IKEDA

Appeal No. 1997-4035
Application No. 08/274,475

ON BRIEF¹

Before HAIRSTON, LALL, and GROSS, Administrative Patent Judges.
GROSS, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 1 through 11 and 24. Claims 12 through 23 have been withdrawn from consideration.²

¹ We observe that on March 13, 2000 (paper no. 27), appellant filed a waiver of the oral hearing set for April 7, 2000.

² We note that appellants state on page 2 of the Brief that claims 12 through 23 have been canceled, but we find no evidence in the record that any claims have been canceled.

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Appellants' invention relates to a thin film semiconductor device having a hygroscopic interlayer insulating layer on the active region and a cap layer on the hygroscopic layer for blocking hydrogen diffusion. Claim 24 is illustrative of the claimed invention, and it reads as follows:

24. A thin film semiconductor device comprising:

an insulating substrate;

a thin film transistor formed on the insulation substrate having an active region;

a hygroscopic interlayer insulating layer formed on the active region; and a cap layer substantially impermeable to hydrogen formed on the interlayer insulating layer.

The prior art references of record relied upon by the examiner in rejecting the appealed claims are:

Blake	4,906,587	Mar. 06,
1990		
Konishi et al. (Konishi)	4,943,837	Jul.
24, 1990		

Claims 1 through 11 and 24 stand rejected under 35 U.S.C. § 103 as being unpatentable over Konishi in view of Blake.

Reference is made to the Examiner's Answer (Paper No. 20, mailed May 30, 1997) for the examiner's complete reasoning in support of the rejections, and to appellants' Brief (Paper No.

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19, filed May 5, 1997) and Reply Brief (Paper No. 21, filed August 4, 1997) for appellants' arguments thereagainst.

OPINION

We have carefully considered the claims, the applied prior art references, and the respective positions articulated by appellants and the examiner. As a consequence of our review, we will reverse the obviousness rejection of claims 1 through 11 and 24.

The only issue in this case is whether Konishi's aluminum source and drain electrodes, 20 and 30, respectively, meet the claimed cap layer. There are only two independent claims, 1 and 24, each of which requires that the cap layer be formed on the hygroscopic interlayer insulating layer. Further, the cap layer is "for blocking hydrogen diffusion" (for claim 1) or is "substantially impermeable to hydrogen" (for claim 24).

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The examiner asserts (Answer, page 4) that elements 20 and 30 of Konishi "meet the claim limitation of being on the insulating film and they also do not allow hydrogen diffusion." Konishi's electrodes 20 and 30 are formed of an aluminum film that is 6000 to 8000 D in thickness. Appellants disclose (specification, page 13) that the capping layer in the first embodiment is an aluminum film deposited to "a thickness of 300nm [or 3000 D] or more to impart a sufficiently high preventive

function against the diffusion of hydrogen." Since Konishi's electrodes are aluminum with more than the disclosed thickness, we agree that they must block hydrogen diffusion and be impermeable to hydrogen.

However, we cannot agree that elements 20 and 30 are a "cap layer ... formed on the interlayer insulating layer." Neither of electrodes 20 and 30 is really a layer, nor is either formed on the interlayer insulating layer (phosphosilicate glass layer 7). The source and drain electrodes do overlap layer 7 at their edges, but a slight

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overlap is insufficient to constitute being "on" the interlayer insulating layer. Accordingly, Konishi does not meet all of the limitations of the independent claims.

We note that the rejection also relies upon Blake. However, Blake does not relate to hydrogenation and does not teach forming a cap layer on an interlayer insulating layer. Thus, the examiner cited Blake merely for the material of the source and drain electrodes. Consequently, Blake does not cure the deficiencies of Konishi. Therefore, we cannot sustain the obviousness rejection of claims 1 through 11 and 24.

CONCLUSION

The decision of the examiner rejecting claims 1 through 11 and 24 under 35 U.S.C. § 103 is reversed.

REVERSED

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KENNETH W. HAIRSTON)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
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Administrative Patent Judge)	AND
)	INTERFERENCES
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