

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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 27

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte TAKASHI KASUGA and YOICHI TOMO

Appeal No. 96-0061
Application No. 08/018,313¹

HEARD: May 4, 1999

Before JOHN D. SMITH, PAK and KRATZ, Administrative Patent Judges.

PAK, Administrative Patent Judge.

DECISION ON APPEAL

Takashi Kasuga et al. (appellants) appeal from the examiner's refusal to allow claims 1 through 14, which are all of the claims pending in the application.

¹ Application for patent filed February 16, 1993.

Appeal No. 96-0061
Application No. 08/018,313

Claims 1 and 8 are representative of the subject matter on appeal and read as follows:

1. A method for forming contact holes in a layer of a semiconductor device, comprising the steps of:

forming the layer to be etched on a substrate, said layer having a stepped surface;

coating a negative resist film on the layer until the stepped surface of the layer has a flat surface;

patterning the negative resist film to correspond to the contact holes;

and

etching the layer by anisotropic etching using the resist film as an etching mask.

8. A method for forming contact holes comprising the steps of:

forming an insulating layer to be etched on a substrate, said insulating layer having a stepped surface;

coating a negative resist film on the insulating layer until the stepped surface has a flat surface, said negative resist film having an absorptivity of $0.50 \mu\text{m}^{-1}$ or above to a KrF excimer laser;

patterning the negative resist film to correspond to at least two contact holes, one of the contact holes being formed on an upper portion of the stepped surface, and the other being formed on a lower portion of the stepped surface; and

Appeal No. 96-0061
Application No. 08/018,313

etching the insulating layer by an anisotropic etching using the resist film as a mask to thereby form contact holes in the insulating layer.

The references of record relied upon by the examiner are:

Nanda et al. (Nanda) 1990	4,978,419	Dec. 18,
Ehrlich 1994	5,310,624	May 10,

The appealed claims stand rejected as follows²:

(1) Claims 1 through 14 under 35 U.S.C. § 112, first paragraph, for lacking an enabling disclosure for the claimed subject matter; and

(2) Claims 1 through 14 under 35 U.S.C. § 103 as unpatentable over the combined teachings of Nanda and Ehrlich.

We reverse the examiner's decision rejecting claims 1 through 14 under 35 U.S.C. § 112, first paragraph, for essentially those reasons set forth by appellants in the Brief and the Reply Brief. We only add that the examiner's assertions at page 4 of the Answer and pages 1 through 3 of the Supplemental Answer (Examiner's Response to Applicant's [sic, Appellants'] Reply Brief) do not demonstrate that undue

² According to the examiner (Answer, page 2), both the rejections based on 35 U.S.C. § 112, second paragraph, and 35 U.S.C. § 112, fourth paragraph, had been withdrawn.

Appeal No. 96-0061
Application No. 08/018,313

experimentation is needed to determine the claimed absorptivity.³

We also reverse the examiner's decision rejecting claims 1 through 14 under 35 U.S.C. § 103 for the reasons set forth in the Brief. We only add that the prior art references relied upon by the examiner do not describe, nor would have suggested, coating a negative resist directly onto a layer having a stepped surface as required by independent claims 1 and 8. The functional language "coating a negative resist film . . . until the stepped surface of the layer has a flat surface" recited in claims 1 and 8 requires that the negative resist be directly on the layer having a stepped surface.

In view of the foregoing, the decision of the examiner is reversed.

³ Note that only claims 2, 3 and 8 recite the absorptivity of a negative resist material.

Appeal No. 96-0061
Application No. 08/018,313

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

REVERSED

JOHN D. SMITH)	
Administrative Patent Judge)	
)	
)	
)	
)	BOARD OF PATENT
CHUNG K. PAK)	APPEALS
Administrative Patent Judge)	AND
)	INTERFERENCES
)	
)	
PETER F. KRATZ)	
Administrative Patent Judge)	

jrg

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