

The opinion in support of the decision being entered today was *not* written for publication and is *not* binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* MASAKO WATANABE, KAZUAKI ANO  
and MASAZUMI AMAGAI

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Appeal 2006-2676  
Application 10/341,140  
Technology Center 2800

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Decided: March 5, 2007

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Before JAMES D. THOMAS, KENNETH W. HAIRSTON, and JEAN R. HOMERE, *Administrative Patent Judges*.

THOMAS, *Administrative Patent Judge*.

DECISION ON APPEAL

Pursuant to 35 U.S.C. § 134, Appellants have appealed to the Board from the Examiner's Final Rejection of claims 1-8 and 15.

Representative independent claim 1 is reproduced below:

1. A semiconductor device comprising:

a semiconductor chip; and

a chip mounting substrate having first and second opposing surfaces, and via holes for penetrating between said first and second surfaces;

said semiconductor chip being mounted on said first surface in electrical connection with said via holes; said chip mounting substrate having a thickness  $t$  between said surfaces at side via holes; said via holes having an inner diameter  $D_v$ ; and said thickness and via holes being relatively dimensioned according to the following relationship:

$$D_v - 3.75xt + 0.095 > 0.$$

The following reference is relied on by the Examiner:

Takashima US 6,281,571 B1 Aug. 28, 2001

Claims 1, 2 and 15 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Takashima. The remaining claims on appeal, claims 3 through 8, stand rejected under 35 U.S.C. § 103. As evidence of obviousness of these claims, the Examiner relies on Takashima alone.

Rather than repeat the positions of the Appellants and the Examiner, reference is made to the Brief (no Reply Brief has been filed) for Appellants' positions, and to the Answer for the Examiner's positions.

## OPINION

We affirm.

At the outset, we note that Appellants present no arguments as to any dependent claim on appeal, whether rejected under 35 U.S.C. § 102 or 103. Appellants' brief arguments at page 4 of the Brief address only the features of independent claims 1 and 15 on appeal.

The Examiner has correlated the features of claims 1 and 15 on appeal based upon the teachings and showings of figures 10 through 28 of Takashima, with a particular emphasis upon the showing in figure 25 and the corresponding discussion at column 14, lines 37 through 61. A corresponding discussion appears to exist in the Summary of the Invention at column 6, line 50 through column 7, line 16.

Each of independent claims 1 and 15 on appeal recite a particular relationship of the inner diameter  $D_v$  of the via holes and the thickness  $t$  of an underlining chip mounting substrate. In these claims, this relationship is recited to be greater than zero.

As to these features, the Examiner's restatement of the rejection in the Responsive Arguments beginning at page 6 of the Answer persuasively indicates that according to the dimensions shown in figure 25 and discussed in the various parts of Takashima associated with figures 10 through 28, they do correlate in such a manner as to yield a broadly recited, relative dimension of this inner diameter and chip mounting substrate thickness greater than zero. In Takashima the corresponding thickness is labeled as B of an underlining substrate 22 and the corresponding inner diameter is labeled as element A of a through (via) hole 27. For the optimization features of Takashima to be met, the ratio of B/A must be less than or equal to 0.3, which clearly is greater than zero as required by independent claims 1 and 15 on appeal. Appellants' arguments at page 4 of the Brief are misplaced since they effectively admit in part that Takashima meets the features of claim 1 on appeal.

Correspondingly, in urging at page 4 of the Brief that the requirement of claim 15 of the corresponding thickness  $t$  being only approximately 0.05mm is not met, we note that the artisan, viewing the teachings of Takashima and the showings of the corresponding figures relied upon by the Examiner, clearly would have recognized that the thickness may be of that value set forth in claim 15. The reference compellingly teaches that all that is required is the relationship  $B/A$ , as noted earlier, be a certain value. This clearly could have been easily achievable when the thickness  $B$  of the substrate is of the value given in claim 15. It is clear to us that the artisan would not limit the teaching value of figure 25 relied upon by the Examiner to the three test samples listed there of various parameters.

In view of the foregoing, the decision of the Examiner rejecting various claims under 35 U.S.C. § 102 and 35 U.S.C. § 103 is affirmed.

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Application 10/341,140

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR §1.136(a). See 37 CFR § 1.136(a)(1)(iv).

AFFIRMED

PGC

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