

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(2) is not binding precedent of the Board.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. 43

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte TOSHIMITSU ISHIKAWA and  
KAZUICHI KOMENAKA

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Appeal No. 1997-1693  
Application 08/254,667<sup>1</sup>

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HEARD: October 20, 1999

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Before THOMAS, RUGGIERO, and HECKER, Administrative Patent  
Judges.

RUGGIERO, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the final rejection of

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<sup>1</sup> Application for patent filed June 6, 1994. According to applicants, the application is a continuation of Application 07/920,168, filed July 27, 1992, now abandoned; which is a continuation of Application 07/618,896, filed November 28, 1990, now abandoned.

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claims 5-9 and 12. Claims 1-4 have been canceled. Pending claims 10 and 11 stand withdrawn from consideration as being directed to a nonelected invention.

The claimed invention relates to a plastic mold type semiconductor device in which the end portions of the inner leads are located in an upper region of the mold body spatially apart from the semiconductor chip. As described by Appellants at page 4 of the specification, such an arrangement serves to prevent damage to the chip resulting from pressure exerted during a wire bonding operation.

Claim 5 is illustrative of the invention and reads as follows:

5. A plastic mold type semiconductor device comprising:  
a bed of a lead frame;

a semiconductor chip having electrodes on the periphery of an upper surface thereof, said semiconductor chip being supported by the bed and having an edge defining one end of said semiconductor chip, said edge being substantially perpendicular with respect to said upper surface;

a mold body in which said semiconductor chip is sealed, said mold body having an interior region defined within said mold body, said interior region being further defined by an upper region above said semiconductor chip and a lower region below said semiconductor chip, said upper region being further defined by a first upper region and a second upper region

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contiguous with said first upper region and abutting said first upper region along a plane passing through said edge of said semiconductor chip, wherein said plane is perpendicular with respect to said upper surface of said semiconductor surface, and said first upper region extends exteriorly with respect to said semiconductor chip and said second upper region extends above said semiconductor chip;

leads, each having an outer lead portion projecting from said mold body and an inner lead portion extending into the upper region of said mold body spatially apart from the upper surface of said semiconductor chip within said mold body, said inner lead portion extending through both said first upper region and said second upper region; and

bonding wires for connecting said electrodes of said semiconductor chip to corresponding points on said inner lead portions, said points being located in said first upper region in a location exterior of said semiconductor chip and spatially apart from said semiconductor chip.

The Examiner relies on the following prior art:

Takahashi et al. (Takahashi)	5,198,883	Mar. 30, 1993
	(filed Jul. 19,	
1989)		
Itaru (Japanese Kokai) <sup>2</sup>	62-296541	Dec. 23, 1987

Claims 5-9 and 12 stand finally rejected under 35 U.S.C.

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<sup>2</sup> A copy of the translation provided by the U. S. Patent and Trademark Office, December 1966, is included and relied upon for this decision.

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§ 103 as being unpatentable over Takahashi in view of Itaru.<sup>3</sup>

Rather than reiterate the arguments of Appellants and the Examiner, reference is made to the Briefs<sup>4</sup> and Answers for the respective details thereof.

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<sup>3</sup> Since both Appellants and the Examiner refer to the Japanese patent publication by the inventor's given name, Itaru, rather than the surname, Maeda, we will do so also in this decision to maintain consistency.

<sup>4</sup> The Appeal Brief was filed July 11, 1996. In response to the Examiner's Answer dated December 24, 1996, a Reply Brief was filed February 24, 1997 which was acknowledged and entered by the Examiner without further comment on March 24, 1997.

OPINION

It is our view, after consideration of the record before us, that the collective evidence relied upon and the level of skill in the particular art would not have suggested to one of ordinary skill in the art the obviousness of the invention as set forth in claims 5-9 and 12. Accordingly, we reverse.

With respect to independent claim 5, the Examiner, as the basis for the obviousness rejection, proposes to modify the semiconductor chip package structure of Takahashi by relying on Itaru to supply the missing teaching of "exterior" wire bonding. We note that the relevant portion of independent claim 5 recites:

bonding wires for connecting said electrodes of said semiconductor chip to corresponding points on said inner lead portions, said points being located in said first upper region in a location exterior of said semiconductor chip and spatially apart from said semiconductor chip.

In the Examiner's view, the skilled artisan would find it obvious to wire bond the leads in Takahashi at an "exterior" location since Itaru establishes that "it is known in the art to wire bond leads away from the chip at an 'exterior' portion" (Answer, page 5).

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In response, Appellants assert (Brief, pages 4 and 5) a lack of suggestion or motivation in the references for combining or modifying teachings to establish a prima facie case of obviousness. After careful review of the Takahashi and Itaru references, we are in agreement with Appellants' stated position in the Brief. The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification. In re Fritch, 972 F.2d 1260, 1266 n.14, 23 USPQ2d 1780, 1784 n.14 (Fed. Cir. 1992). The Takahashi reference, as correctly pointed out by the Examiner (Answer, page 3), discloses a plastic package with a chip mounted on a bed or paddle of a lead frame. Itaru, on the other hand, discloses a structure in which the chip bed is eliminated and the chip is bonded through an insulating film directly to the top surface of the inner leads. In our view, these structural teachings are so opposite in approach that any motivation to combine them must have resulted from an improper attempt to reconstruct Appellants' invention in hindsight. In addition, the Examiner's attempt to address the

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claim language by suggesting (Answer, page 5) that Itaru's chip package can be "flipped over" so that the upper and lower regions are reversed only serves to support Appellants' position as to nonobviousness of the proposed combination. We are in agreement with Appellants, for all of the reasons expressed at page 2 of the Reply Brief, that the flipped over version of Itaru cannot function in the same manner as the original structure illustrated in Itaru's Figure 2.

In summary, we are left to speculate why one of ordinary skill would have found it obvious to modify the applied prior art to make the combination suggested by the Examiner. The only reason we can discern is improper hindsight reconstruction of Appellants' claimed invention. In order for us to sustain the Examiner's rejection under 35 U.S.C. § 103, we would need to resort to speculation or unfounded assumptions or rationales to supply deficiencies in the factual basis of the rejection before us. In re Warner, 379 F.2d 1011, 1017, 154 USPQ 173, 178 (CCPA 1967), cert. denied, 389 U.S. 1057 (1968), reh'g denied, 390 U.S. 1000 (1968). Since we are of the view that the prior art applied by the Examiner does not support the rejection, we do not

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sustain the rejection of independent claim 5, nor of

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dependent claims 6-9 and 12. Therefore, the Examiner's  
decision rejecting claims 5-9 and 12 under 35 U.S.C. § 103 is  
reversed.

REVERSED

JAMES D. THOMAS	)	
Administrative Patent Judge	)	
	)	
	)	
	)	BOARD OF PATENT
JOSEPH F. RUGGIERO	)	APPEALS AND
Administrative Patent Judge	)	INTERFERENCES
	)	
	)	
STUART N. HECKER	)	
Administrative Patent Judge	)	

JFR:svt

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