

**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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 16

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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**Ex parte** WILLIAM R. LAFONTAINE, JR.,  
PAUL A. MESCHER  
and CHARLES G. WOYCHIK

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Appeal No. 1997-4415  
Application 08/469,990<sup>1</sup>

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ON BRIEF

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Before JERRY SMITH, FLEMING and RUGGIERO, **Administrative Patent Judges.**

FLEMING, **Administrative Patent Judge.**

**DECISION ON APPEAL**

This is a decision on appeal from the final rejection of claims 10-12, 18 and 19. Claims 13-16 are withdrawn from

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<sup>1</sup>Application for patent filed June 6, 1995. This application is a divisional of Application 08/189,530, filed January 31, 1994. Application 08/189,530 resulted in Appeal No. 96-1846, in which this panel affirmed-in-part the Examiner's rejection. We note that this appeal involves different claims and thereby *res judicata* is not an issue.

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consideration. Claims 1-9, 17 and 20-22 have been canceled.

The invention involves a method for joining a semiconductor integrated circuit chip to a chip carrier substrate and the resulting chip package.

Independent claim 10 is reproduced as follows:

10. A semiconductor chip package, comprising:

a semiconductor integrated circuit chip which includes at least one chip contact pad;

a chip carrier substrate which includes at least one carrier contact pad; and

a mechanical and electrical connection between said chip contact pad and said carrier contact pad, said connection including a region of solder, Characterized In That

said chip carrier substrate is an organic chip carrier substrate and said solder region includes material non-uniformly dispersed within said solder region via solid state diffusion.

The Examiner relies on the following references:

Minetti	4,332,341	June 1,
1982		
Nakao et al. (Nakao)	5,090,609	Feb. 25,
1992		

Claims 10-12, 18 and 19 stand rejected under 35 U.S.C. § 103 as being unpatentable over Minetti in view of Nakao.

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Rather than reiterate the arguments of Appellants and the Examiner, reference is made to the briefs<sup>2</sup> and answer for the respective details thereof.

#### OPINION

We will not sustain the rejection of claims 10-12, 18 and 19 under 35 U.S.C. § 103.

The Examiner has failed to set forth a *prima facie* case. It is the burden of the Examiner to establish why one having ordinary skill in the art would have been led to the claimed invention by the express teachings or suggestions found in the prior art, or by implications contained in such teachings or suggestions. *In re Sernaker*, 702 F.2d 989, 995, 217 USPQ 1, 6 (Fed. Cir. 1983). "Additionally, when determining obviousness, the claimed invention should be considered as a whole; there is no legally recognizable 'heart' of the invention." *Para-Ordnance Mfg. v. SGS Importers Int'l, Inc.*,

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<sup>2</sup> Appellants filed an appeal brief on June 30, 1997. Appellants filed a reply brief on August 22, 1997. On September 17, 1997, the Examiner mailed a communication stating that the reply brief has been considered and entered but no further response by the Examiner is deemed necessary.

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73 F.3d 1085, 1087, 37 USPQ2d 1237, 1239 (Fed. Cir. 1995),  
**cert. denied**, 519 U.S. 822 (1996), **citing W.L. Gore & Assocs.,  
Inc. v. Garlock, Inc.**, 721 F.2d 1540, 1548, 220 USPQ 303, 309  
(Fed. Cir. 1983), **cert. denied**, 469 U.S. 851 (1984).

On pages 4-6 of the brief and in the reply brief,  
Appellants argue that Minetti does not expressly or implicitly  
state or suggest that solid state diffusion may be used on an  
organic substrate. Appellants agreed that Minetti does teach  
liquid-phase diffusion bonding and solid state bonding.  
However, Appellants pointed out that Minetti discloses that  
solid state diffusion is to be only used with ceramic  
substances or metal tape carriers and not organic substrates.  
Appellants further argue that Nakao does not teach explicitly  
or implicitly or even suggest that solid state diffusion may  
be used on organic substrates. Appellants' position is that  
Nakao only teaches bonding techniques for ceramic and organic  
substances using reflow soldering techniques and not solid  
state diffusion.

On page 5 of the Examiner's answer, the Examiner agrees  
that Minetti does not teach using the claimed solid state

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diffusion technique on an organic chip carrier substrate. The Examiner argues that Nakao teaches that chip mount type packages and Tape Automated Bonding (TAB) packages are equivalent structures shown in the art wherein one of ordinary skill in the art routinely designs for both. The Examiner argues because the two chip mounting arrangements were art recognized equivalents at the time the invention was made, one of ordinary skill in the art would have found it obvious to substitute TAB mounting for the chip mounting type package shown by Minetti. The Examiner further argues that the claim is a product-by-process claim and that the process of making the product need not be given patentable weight.

As pointed out by our reviewing court, we must first determine the scope of the claim, "[T]he name of the game is the claim." *In re Hiniker Co.*, 150 F.3d 1362, 1369, 47 USPQ2d 1523, 1529 (Fed. Cir. 1998). In *In re Thope*, 777 F.2d 695, 597, 227 USPQ 964, 966 (Fed. Cir. 1985), our reviewing court also states "[i]f the product in a product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatent-able even though the prior product was made

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by a different process."

Upon our review of claim 10, we find that Appellants have set forth a product-by-process claim. However, we note that the product is not identical to the prior art product as taught in Minetti. In particular, Appellants' claim 10 recites that said chip carrier substrate is an organic chip carrier substrate and said solder region includes material non-uniformly dispersed within said solder region. We note that Minetti's disclosed chip carrier substrate is an organic chip carrier substrate but the solder region includes material uniformly dispersed within the solder region because of the reflowing of the solder to form the bond. Therefore, we find that Minetti's product is not identical to the Appellants' claimed product.

Upon our review of Nakao, we fail to find that Nakao teaches that all the soldering techniques used with mount metal type packages may also be used with TAB packages. In column 5, line 44, through column 7, line 18, Nakao teaches that a reflow solder bonding technique may be used on both ceramic and TAB substrates. We fail to find any suggestion in

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Nakao to suggest to one of ordinary skill in the art to use solid state diffusion bonding of a chip to an organic substrate.

We are not inclined to dispense with proof by evidence when the proposition at issue is not supported by a teaching in a prior art reference or shown to be common knowledge of unquestionable demonstration. Our reviewing court requires this evidence in order to establish a **prima facie** case. **In re Piasecki**, 745 F.2d 1468, 1471-72, 223 USPQ 785, 787-88 (Fed. Cir. 1984); **In re Knapp-Monarch Co.**, 296 F.2d 230, 232, 132 USPQ 6, 8 (CCPA 1961); **In re Cofer**, 354 F.2d 664, 668, 148 USPQ 268, 271-72 (CCPA 1966). Our reviewing court states in **In re Piasecki**, 745 F.2d 1468, 223 USPQ 785, 788 (Fed. Cir. 1984) the following:

The Supreme Court in **Graham v. John Deere Co.**, 383 U.S. 1 (1966), focused on the procedural and evidentiary processes in reaching a conclusion under Section 103. As adapted to ex parte procedure, Graham is interpreted as continuing to place the "burden of proof on the Patent Office which requires it to produce the factual basis for its rejection of an application under section 102 and 103". **Citing In re Warner**, 379 F.2d 1011, 1020, 154 USPQ 173, 177 (CCPA 1967).

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In view of the foregoing, we have not sustained the rejection of claims 10-12, 18 and 19 under 35 U.S.C. § 103. Accordingly, the Examiner's decision is reversed.

**REVERSED**

JERRY SMITH	)	
Administrative Patent Judge	)	
	)	
	)	
	)	BOARD OF PATENT
MICHAEL R. FLEMING	)	
Administrative Patent Judge	)	APPEALS AND
	)	
	)	INTERFERENCES
	)	
JOSEPH F. RUGGIERO	)	
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