BESCHWERDEKAMMERN DES EUROPÄISCHEN PATENTAMTS

BOARDS OF APPEAL OF THE EUROPEAN PATENT OFFICE

CHAMBRES DE RECOURS DE L'OFFICE EUROPEEN DES BREVETS

Internal distribution code:
(A) [ ] Publication in OJ
(B) [ ] To Chairmen and Members
(C) [ ] To Chairmen
(D) [X] No distribution

Datasheet for the decision of 31 January 2013

Case Number: T 1346/09 - 3.4.01

Application Number: 02713133.3

Publication Number: 1381875

IPC: G01R 31/316

Language of the proceedings: EN

Title of invention:
Integrated circuit with power supply test interface

Applicant:
NXP B.V.

Headword:
-

Relevant legal provisions (EPC 1973):
EPC Art. 56

Keyword:
"Inventive step (no)"

Decisions cited:
-

Catchword:
-

Europäisches Patentamt | European Patent Office | Office européen des brevets

Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 1346/09 - 3.4.01

D E C I S I O N
of the Technical Board of Appeal 3.4.01
of 31 January 2013

Appellant: (Applicant)
NXP B.V.
High Tech Campus 60
NL-5656 AG Eindhoven (NL)

Representative:
Williamson, Paul Lewis
NXP Semiconductors
Intellectual Property and Licensing
Red Central
60 High Street
Redhill, Surrey RH1 1SH (GB)

Decision under appeal:
Decision of the Examining Division of the European Patent Office posted 3 February 2009 refusing European patent application No. 02713133.3 pursuant to Article 97(2) EPC.

Composition of the Board:

Chairman: G. Assi
Members: H. Wolfrum
J. Geschwind

Summary of Facts and Submissions

I. European patent application 02 713 133.3 (publication No. WO 02/082109 / EP 1 381 875) was refused by a decision of the examining division dispatched on 3 February 2009, on the grounds of lack of novelty and/or inventive step (Articles 52(1), 54(1) and (2) and 56 EPC 1973) of the subject-matter of independent claims 1 and 13 then on file.

II. The applicant lodged an appeal against the decision and paid the prescribed fee on 30 March 2009. On 29 May 2009 a statement setting out the grounds of appeal was filed. The appellant requested that the decision under appeal be set aside and a patent be granted on the basis of the same set of claims on which the contested decision is based, *ie* claims 1 to 13 as filed with a letter of 20 October 2008.

Furthermore, an auxiliary request for oral proceedings was made.

III. On 14 November 2012 the appellant was summoned to oral proceedings, scheduled to take place on 31 January 2013.

In a communication of 15 November 2012 pursuant to Article 15(1) RPBA, the Board gave a negative preliminary opinion *inter alia* on the issue of inventive step based on documents :

D1 : EP-A-0 415 439, and
D2 : WO-A-97/46891.

IV. By letter of 15 January 2013, the appellant withdrew its request for oral proceedings.

V. Oral proceedings were held as scheduled on 31 January 2013 in the absence of the appellant.

VI. Independent claims 1 and 15 of the appellant's request read as follows :

"*1. An integrated circuit assembly, comprising*
a semi-conductor integrated circuit chip (20) including a plurality of functional circuits (469a-d) and a power supply connection;
a carrier (22) to which the integrated circuit chip is attached;
an external power supply terminal;
a current path (26) on the carrier, connecting the external power supply terminal and the power supply connection;
a magnetic field sensor (28) on the carrier in a vicinity of the current path, but outside the integrated circuit chip, for sensing a magnetic field generated by a current through the current path;
a test-accessible electronic interface to the magnetic field sensor, for testing presence of the current.

13. A carrier (22) for mounting one or more integrated circuit chips, each integrated circuit chip including a plurality of functional circuits (469a-d) the carrier comprising:
a current path (26);
a connection point for electrically connecting a power supply connection of one of the one or more integrated circuits to the current path;

a magnetic field sensor (28) on the carrier in a vicinity of the current path, for sensing a magnetic field generated by a current through the current path; a readout connection coupled to the magnetic field sensor."

Claims 2 to 12 are dependent claims.

VII. To the extent that they are relevant for the present decision, the arguments put forward by the appellant in writing may be summarized as follows :

The claimed invention was distinguished from the prior art according to document D2 in that the magnetic field sensor was placed on the carrier of an integrated circuit assembly, in a vicinity of a current path, and outside an integrated circuit chip of the assembly. The problem to be solved by the present invention was therefore substantially that which was set out on page 2, lines 15-22, of the application as originally filed, *ie* that magnetic field sensors could not always be realized within the integrated circuit chip. In particular, a pick-up coil did not operate satisfactorily on semi-conducting substrates (such as a silicon substrate) and magneto-resistive materials were not always compatible with materials used for integrated circuit chip manufacture. Moreover, sensors within the integrated circuit chip were not suitable for detecting disruptions in a power supply network provided on a carrier outside the chip.

When considering these problems, the skilled person simply had not taken document D1 into consideration, because it did not describe or even relate to

integrated circuit chips. Thus D1 was not at all relevant for the purposes of inventive step. Moreover, even if the skilled person did, for some reason, refer to D1, he had noted that there was no discussion at all therein relating to the fact that magneto-resistive materials were not always compatible with the materials used for integrated circuit chip manufacture, and also absolutely no discussion relating to the fact that a sensor provided on an integrated circuit chip might not be able to identify faults in particular ones of current paths provided in a network of current paths on a carrier.

Reasons for the Decision

1. In the following reference is made to the provisions of the EPC 2000, which entered into force as of 13 December 2007, unless the former provisions of the EPC 1973 still apply to pending applications.

2. The appeal complies with the requirements of Articles 106 to 108 EPC and Rule 99 EPC and is, therefore, admissible.

3. Inventive step

3.1 Undisputed by the appellant, the main difference between the subject-matter of claim 1 on file and an integrated (IC) circuit assembly as known from document D2 (see Figures 1 to 6 and the corresponding description) lies in the provision of a magnetic field sensor on a carrier of the IC assembly outside the IC chip. Whereas claim 1 under consideration requires the

magnetic field sensor to be placed in the vicinity of a current path on the carrier, the known IC assembly foresees the provision of one or more magnetic field sensors (and implicitly a respective test-accessible electronic interface) within the body of the IC chip.

This difference, though, is the immediate consequence of the given task as to which kind or portion of the overall current path is to be tested or monitored. In the case of the IC assembly known from D2, it is specifically intended to test the integrity of a conductor which happens to extend within the body of the IC chip, so that the magnetic field sensor needs to be located at the side of this conductor and thus within the IC chip (D2 : page 1, lines 1-6, 10-15 and 24-28; page 4, line 34 to page 5, line 12; page 5, lines 30-34).

However, should the skilled person instead be faced with the task to test a certain current path on the surface of the carrier of the known assembly, it is perfectly straightforward for him to complement or modify the known assembly by simply providing a magnetic field sensor (also) at the side of this external current path. Such a finding is all the more true as document D1 already provides such an example for the case of individual IC elements mounted on a carrier (D1 : Figures 1A and 1B; column 3, lines 7-31).

3.2 Apparently, the above considerations apply with equal force to a carrier as claimed by present claim 13.

3.3 The appellant's arguments do not convince, first of all because they ignore the fact that the posed problem is

obvious in itself and already implies the claimed solution.

Moreover, contrary to the appellant's view, documents D1 and D2 belong to at least closely related technical fields if not to the same field of monitoring supply currents for semi-conductor devices and IC chips. In this context, it should be borne in mind that the monitoring technique that is taught by both documents (*ie* the detection of currents by means of magnetic field sensors) is in essence independent of the nature and/or complexity of these devices and chips.

3.4 For these reasons, the subject-matter of claims 1 and 13 under consideration lacks an inventive step, contrary to the requirement of Article 52(1) EPC and Article 56 EPC 1973.

Consequently, the appellant's request on file is not allowable.

Order

For these reasons it is decided that :

The appeal is dismissed.

The Registrar The Chairman

R. Schumacher G. Assi