

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(2) is not binding precedent of the Board.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. 26

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte MARCANTONIO MANGIAGLI
and ROSARIO POGLIESE

Appeal No. 95-4927
Application 08/216,772¹

HEARD: November 6, 1998

Before MARTIN, BARRETT, and TORCZON, Administrative Patent
Judges.

MARTIN, Administrative Patent Judge.

¹ Application for patent filed March 23, 1994, as a continuation
of Application Serial No. 07/872,777, filed April 23, 1992 (abandoned).
Appellants claim the benefit under 35 U.S.C. § 119 of the following
application:

Italy

CT 91A 000010

April 26, 1991

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Serial No. 08/216,772

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134 from the examiner's rejection of claims 1 and 3-12, all of pending application claims, under 35 U.S.C. § 103. We affirm.

Appellants' Figure 1 is a copy of Figure 12 of Spairisano et al. U.S. Patent 4,888,307, which is a perspective view of a resin-encapsulated, three-lead semiconductor device appellants describe as capable of resisting voltages up to 1,500 volts AC (Spec. at 2, lines 11-16).²

Appellants' invention is a resin-encapsulated semiconductor device package designed to withstand voltages of at least 2,250 volts AC (Spec. at 3, lines 3-6). Referring to the three-lead embodiment shown in appellants' Figures 2-4, the center lead 27 extends in a first plane from the body of the package while the other leads 28 and 29 each have two 90° bends therein so that their outer end portions lie in a second plane. Furthermore, a portion of center lead 27 adjacent to

² Although the leads in these figures and in Spairisano et al. Figures 1 and 5 appear to be in two different planes, that appears to be a drawing error, because the leads are not shown in different planes in Spairisano et al.'s elevation views, nor are they described in the specification as being so disposed.

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the body of the package is coated with insulating material 21 over a length L in order to ensure (1) that the clearance distance M (Fig. 3) in air between the exposed parts of the center lead and the other leads is not less than the distance between the outer ends of the center lead and the other leads (Spec. at 7, lines 23-33) and (2) that the creepage distance N (equal to e+f+g in Fig. 3) is not less than a predetermined value (Spec. at 8, lines 2-10). Figure 5 shows a five-lead embodiment having two partly insulated leads alternating with three bent leads.

Claim 1, the sole independent claim, reads as follows:

1. A package for an integrated circuit device, comprising:

a plurality of conductive leads projecting from one side of said insulating body, each of said conductive leads having a tip end distal from said insulating body, wherein the tip ends of said conductive lead [sic, leads] are separated from each of the remaining tip ends by a distance equal to at least a selected value;

alternating ones of said leads having an insulating coating covering a portion of their length extending from said insulating body toward the tip end thereof;

the remaining leads having bends to space them away from the alternating ones of said leads;

wherein the distance between all uninsulated portions of any pair of leads is always greater than the

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selected distance value between the tip ends, and wherein each of said remaining leads has two bends, a first for angling the lead away from a plane containing said alternating ones of leads, and a second for angling the lead into a plane parallel with the plane containing said alternating ones of leads.

In the reply brief (at 3), appellants agree with the examiner's statement (Answer at 2) that claims 1 and 3-12 stand or fall together. Accordingly, we will specifically address only claim 1.

We note at the outset that claim 1's recitations of "alternating ones of said leads having an insulating coating" and "the remaining leads having bends" (our emphasis) limit the claim to devices having at least two insulated leads and at least two bent leads, which means the claim reads on the five-lead Figure 5 embodiment but not on the three-lead embodiment of Figures 2-4.³ Also, although the second paragraph of the claim, by reciting that the tip ends are separated by "a distance equal to at least a selected value," permits the tip ends to be separated by a distance equal to or greater than a selected value, the last paragraph requires the

³ This also means claim 6, which specifies that the package "has exactly three leads," fails to further limit claim 1.

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tip ends to be separated by a distance greater than the selected value: "the distance between all uninsulated portions of any pair of leads is always greater than the selected distance value between the tip ends" (our emphasis). The claims stand rejected under 35 U.S.C. § 103 as unpatentable for obviousness over Mizuguchi in view of Yasui. Figure 1 of Mizuguchi shows a prior art resin-encapsulated semiconductor device which includes external leads 2-4 extending in what appears to be a single plane from a resin housing 1. Referring to Figure 2, which is an internal view of the prior art device, the center lead 3 has two 90° bends therein so that its outer portion lies in the same plane as leads 2 and 4, which are flat. The inner ends of leads 2 and 4 are connected by internal leads 6 and 7 to the semiconductor element 5. Mizuguchi attributes two problems to this prior art construction. The first is that linear shape of the outer leads 2 and 4 minimizes the amount of the leads that is covered by the resin mold, thereby reducing the support strength of the leads (translation at p. 3, lines 15-19). The second is that the large vertical distance between the semiconductor element and the inside ends of leads 2 and 4

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results in long internal leads 6 and 7 having an inductance that detracts from the high-frequency operation of the semiconductor device (p. 3, lines 19-27). Mizuguchi solves both of these problems by forming each of leads 2 and 4 with a pair of 90E bends (9, 10) as shown in Figure 3 so as to reduce the length of the internal leads 6 and 7 and provide bends for inclusion within the resin body in order to increase the mechanical support for leads 2 and 4 (p. 4, line 19 to p. 5, line 5).

Yasui shows various resin semiconductor housings designed to reduce current leakage between leads and along the surface of the housing during operation in a moist atmosphere (col. 1, lines 39-56; col. 2, lines 1-6). This is achieved in the embodiment of Figures 3A and 3B by enclosing a portion of the center lead adjacent to the housing with resin, thereby creating steps 28 in the housing surface which increase the surface distance between adjacent leads (col. 3, lines 13-19).

Inasmuch as the statement of the rejection does not appear in the December 23, 1994, final Office action, we look to the preceding Office action, dated June 23, 1994, wherein

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the examiner argued (at 3) that it would have been obvious "to modify the high voltage device of [Figure 3A] of Yasui by bending [alternate] leads approximately 90E to safeguard the electrical integrity of the leads." In response to appellants' observation that neither reference discloses leads located in two different planes (Brief at 6-7), the examiner explained in the Answer (at 4) that it would have been obvious to position the tips of alternate leads in different planes, citing In re Japikse, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950), for the proposition that rearranging the parts of an invention involves only routine skill in the art. In the reply brief (at 4), appellants correctly argue that Japikse does not support this broad proposition⁴ and "request[] the examiner to show where in the prior art it would have been obvious to one of ordinary skill in the art to position tips of electrically conductive leads in different planes[,] as required by the M.P.E.P. § 706.02(a)." This request is inconsistent with the prior art identified in appellants' Information Disclosure

⁴ The Japikse court held that the board did not err in concluding that it would have been obvious to shift the starting switch disclosed by a Cannon reference to a different position because the operation of the device would not thereby be modified. 181 F.2d at 1023, 86 USPQ at 73.

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Statement,⁵ namely, Japan Application No. JP 631690050, of which an English language translation of the abstract was provided. The abstract indicates, and the drawings show, leads being bent so as to have their exterior end portions alternately disposed in first and second parallel planes.

Appellants also give several reasons why the rejection must fail even if it is assumed that the prior art teaches positioning the leads in different planes. The first reason is that Mizuguchi shows all leads in the same plane and thus "teaches away" from disposing the leads in different planes (Reply Brief at 6; Brief at 7). This argument is unconvincing because Mizuguchi does not indicate that the leads should not or cannot be disposed in different planes. See Para-Ordnance Mfg. v. SGS Importers Int'l, 73 F.3d 1085, 1090, 37 USPQ2d 1237, 1241 (Fed. Cir. 1995) (holding that the Browning Hi-Power handgun does not teach away from the claimed invention; while it fails to disclose a converging frame, it does not warn a person against using convergence).

⁵ Paper No. 7.

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Appellants next argue that even if the prior art teachings are combined, the resultant device would fail to satisfy claim 1 because the bends in the two outer leads (the claimed "remaining leads") would be contained within the insulating body rather than being external to it, which appellants contend is a requirement of the claim. In support of this claim construction, appellants cite the claim's recitation of the leads as "projecting from one side of said insulating body" and the definition of "project" in Webster's New Collegiate Dictionary 940 as meaning to jut out or protrude (Brief at 5-6). Inasmuch as appellants' specification fails to set forth a definition of the term "lead," it is appropriate for appellants to rely on a dictionary definition to aid in interpreting that term. See In re Morris, 127 F.3d 1048, 1054, 44 USPQ2d 1023, 1027 (Fed. Cir. 1997):

the PTO applies to the verbiage of the proposed claims the broadest reasonable meaning of the words in their ordinary usage as they would be understood by one of ordinary skill in the art, taking into account whatever enlightenment by way of definitions or otherwise that may be afforded by the written description contained in the applicant's specification.

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However, the cited definition of "project" does not support appellants' narrow interpretation of the term "lead," because that term is broad enough to encompass a lead having a first portion projecting from (and thus external to) the insulating body and a second portion contained within (and thus internal to) the insulating body. As the examiner correctly notes, the claim does not specify that the bends are in the lead portions which are external to the insulating body (Answer at 5).⁶

Appellants' final argument is that Mizuguchi "does not recognize the problem solved by the currently claimed invention" (Brief at 8). This argument overlooks the fact that the prior art relied on in support of a rejection need not suggest a solution to the particular problem addressed by the applicant. In re Dillon, 919 F.2d 688, 693, 16 USPQ2d 1897, 1901 (Fed. Cir. 1990)(en banc), cert. denied, 500 U.S. 904 (1991).

⁶ We note appellants do not alternatively argue that in the device resulting from the combination of their prior art Figure 1 device, Mizuguchi, and Yasui, the length of the insulated coating on the alternate leads will not be long enough to ensure that the distance between all uninsulated portions of any pair of leads will always be greater than the selected distance value between their respective tip ends, as required by the claim.

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For the foregoing reasons, we are affirming the rejection of claim 1 and the rejection of claims 3-12, which stand or fall (in this case fall) therewith.

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

AFFIRMED

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JOHN C. MARTIN)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
LEE E. BARRETT)	
Administrative Patent Judge)	APPEALS AND
)	
)	INTERFERENCES
)	
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