United States District Court,
E.D. Texas, Marshall Division.

TESSERA, INC,
Plaintiff.
v.
MICRON TECHNOLOGY, INC. et al,
Defendants.

No. Civ.A. 2:05CV94

March 22, 2006.

Background: Owner of patents related to semiconductor packaging sued manufacturer for infringement.

Holdings: Construing claims, The District Court, Love, United States Magistrate Judge, held that:
(1) requirement that package terminals be "movable" relative to chip contacts meant that they had to be capable of being displaced relative to chip by external loads applied to terminals, and
(2) requirement that layer of material placed between terminals and chip be "compliant" meant that layer had to be appreciably compressible in direction perpendicular to its surface.

Claims construed.

5,679,977, 5,852,326, 6,133,627, 6,433,419, 6,465,893. Construed.

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MEMORANDUM OPINION AND ORDER

LOVE, United States Magistrate Judge.

This claim construction Opinion construes terms in U.S. Patent No. 5,679,977 ("the '977 patent"); 5,852,326 ("the '326 patent"); 6,133,627 ("the '627 patent"); 6,433,419 ("the '419 patent"); 6,465,893 ("the '893 patent").

Background

The patents in suit collectively deal with semiconductor packaging, the technology that protects delicate semiconductor chips ("chips") from the outside environment while allowing the chips to connect to other semiconductor chips and with the devices they support, such as cell phones or computers. Signals emanating from inside the chip are conducted to electrical contacts that are connected to terminals, which are situated on the outside of the package and facilitate communication with the outside. As technology advanced, chips became smaller, faster, and hotter, meaning chip packages had to shrink while resolving the problems posed by cyclical heating and cooling caused by turning devices on and off.

As chips got smaller, the area available to arrange terminals on the packages also shrank, and package engineers developed the ball grid array package ("BGA") which uses tiny solder balls to electrically and mechanically connect the terminals to a substrate on the host device, such as a printed circuit board ("PCB"). These solder balls enable communication between the chip and the device that relies on the chip, so if the solder balls fail, the device fails.

The most common cause of solder ball failure is stress resulting from thermal cycling, the repeated heating and cooling of devices. When a device is turned on, it heats up and the internal components expand to different degrees depending on their coefficients of thermal expansion ("CTE"). The silicon chip embedded in the chip package has a lower CTE than the PCB, thus, the chip package as a whole has a lower CTE than the PCB. Therefore, the solder balls are situated between two components that, when heated, expand at significantly different rates and wrench the solder balls out of shape until the device cools, allowing the solder balls to return to their original size and shape. Over time, this repeated stress can lead solder balls to crack and fail.

Tessera's inventions aim to reduce the stress on the solder balls by allowing the chip package, and the terminals situated thereon, to expand more independently of the chip when heated. A piece of flexible or compliant material is placed between the chip and the package substrate so that the package substrate is less restricted from expanding when heated. The flexible interposer or compliant layer facilitates this expansion, and allows the terminals situated on the package substrate to move relative to the chip contacts. Flexible leads connecting the chip contacts to the terminals enable the relative movement between these components, and may be encased in a compliant encapsulant that protects the leads, but does not prevent them from moving to accommodate the relative shift between the contacts and terminals.

Applicable Law

[1] [2] "It is a 'bedrock principle' of patent law that 'the claims of a patent' define the invention to which the patentee is entitled the right to exclude." Phillips v. AWH Corp., 415 F.3d 1303, 1312 (Fed.Cir.2005) (en banc) (quoting Innova/Pure Water Inc. v. Safari Water Filtration Sys., Inc., 381 F.3d 1111, 1115 (Fed.Cir.2004)). In claim construction, courts examine the patent's intrinsic evidence to define the patented invention's scope. *See* id.; C.R. Bard, Inc. v. U.S. Surgical Corp., 388 F.3d 858, 861 (Fed.Cir.2004); Bell Atl. Network Servs., Inc. v. Covad Communications Group, Inc., 262 F.3d 1258, 1267 (Fed.Cir.2001). This intrinsic evidence includes the claims themselves, the specification, and the prosecution history. *See* Phillips, 415 F.3d at 1314; C.R. Bard, Inc., 388 F.3d at 861. Courts give claim terms their ordinary and accustomed meaning as understood by one of ordinary skill in the art at the time of the invention in the context of the entire patent. Phillips, 415 F.3d at 1312-13; Alloc, Inc. v. Int'l Trade Comm'n, 342 F.3d 1361, 1368 (Fed.Cir.2003).

[3] The claims themselves provide substantial guidance in determining the meaning of particular claim terms. Phillips, 415 F.3d at 1314. First, a term's context in the asserted claim can be very instructive. Id. Other asserted or unasserted claims can also aid in determining the claim's meaning because claim terms are typically used consistently throughout the patent. Id. Differences among the claim terms can also assist in understanding a term's meaning. Id. For example, when a dependent claim adds a limitation to an independent claim, it is presumed that the independent claim does not include the limitation. Id. at 1314-15.

[4] [5] [6] Claims "must be read in view of the specification, of which they are a part." Id. (quoting Markman v. Westview Instruments, Inc., 52 F.3d 967, 978 (Fed.Cir.1995)). "[T]he specification 'is always

highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.' " Id. (quoting Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1582 (Fed.Cir.1996)); Teleflex, Inc. v. Ficosa N. Am. Corp., 299 F.3d 1313, 1325 (Fed.Cir.2002). This is true because a patentee may define his own terms, give a claim term a different meaning than the term would otherwise possess, or disclaim or disavow the claim scope. Phillips, 415 F.3d at 1316. In these situations, the inventor's lexicography governs. Id. Also, the specification may resolve ambiguous claim terms "where the ordinary and accustomed meaning of the words used in the claims lack sufficient clarity to permit the scope of the claim to be ascertained from the words alone." Teleflex, Inc., 299 F.3d at 1325. But, "although the specification may aid the court in interpreting the meaning of disputed claim language, particular embodiments and examples appearing in the specification will not generally be read into the claims." Comark Communications, Inc. v. Harris Corp., 156 F.3d 1182, 1187 (Fed.Cir.1998); *see also* Phillips, 415 F.3d at 1323. The prosecution history is another tool to supply the proper context for claim construction because a patent applicant may also define a term in prosecuting the patent. Home Diagnostics, Inc., v. LifeScan, Inc., 381 F.3d 1352, 1356 (Fed.Cir.2004) ("As in the case of the specification, a patent applicant may define a term in prosecuting a patent.").

[7] Although extrinsic evidence can be useful, it is "less significant than the intrinsic record in determining 'the legally operative meaning of claim language.' " Phillips, 415 F.3d at 1317 (quoting C.R. Bard, Inc., 388 F.3d at 862). Technical dictionaries and treatises may help a court understand the underlying technology and the manner in which one skilled in the art might use claim terms, but technical dictionaries and treatises may provide definitions that are too broad or may not be indicative of how the term is used in the patent. Id. at 1318. Similarly, expert testimony may aid a court in understanding the underlying technology and determining the particular meaning of a term in the pertinent field, but an expert's conclusory, unsupported assertions as to a term's definition is entirely unhelpful to a court. Id. Generally, extrinsic evidence is "less reliable than the patent and its prosecution history in determining how to read claim terms." Id.

The Terms

Four disputed terms were set to be heard on January 12, 2006, but during the hearing, the parties agreed on a construction of "flexible leads." Some of the remaining terms have been construed by other Courts, and the Court will refer to those constructions as follows: *Samsung Electronics Co. Ltd. v. Tessera Technologies Inc.,* Case No. C 02-05837 CW (N.D.Cal.) ("the *Samsung* case" or "*Samsung*"), the disputed terms "moveable," and "compliant, compliant layer, compliant material," were construed; *In the Matter of Certain Semiconductor Chips With Minimized Chip Package Size and Products Containing Same,* Investigation No. 337-TA-432 ("the ITC case"), the disputed terms "moveable," and "terminal," were construed; *Texas Instruments, Inc. v. Tessera Techs., Inc.,* Civ. No. C 00-2114 CW (N.D.Cal) ("the *TI* case" or "*TI*"), the disputed term "moveable," was construed.

Flexible Leads

[8] At the Markman hearing, the parties agreed to construe "flexible leads" to mean, "leads possessing sufficient flexibility to accommodate movement of the terminals relative to the chip contacts."

Terminal

[9] The parties agree that a terminal is, "an endpoint for the connection of the package to the outside." Tessera would add a limitation that, "the terminal itself could not be made of solder, because it would melt and lose its shape during solder reflow." FN1 Tessera offers two arguments in support of its construction. First, Tessera argues that the first sentence, left on its own, may allow Defendants to "conflate terminals with solder balls," or "turn 'terminals' into a moving target," and the second sentence would properly characterize terminals as components distinct from the material that serves to physically and electrically connect the terminal to the PCB.FN2 Plaintiff's Opening Brief, p. 29. Second, Tessera argues that its construction should be treated as intrinsic evidence because the ITC adopted this construction, and Tessera submitted the ITC opinion with its application for two of the patents in suit. By virtue of its submission, Tessera argues, this construction became a part of the prosecution history and deserves deference as intrinsic evidence.

FN1. Tessera's entire proposed additional language is as follows: One of ordinary skill in the art would understand that the terminal itself could not be made of solder, because it would melt and lost its shape during solder reflow, which could break the electrical connection between the contact and the terminal.

FN2. After the Markman hearing, the parties attempted to reach a compromise concerning the second sentence, and Plaintiff agreed to drop the reference to solder so long as some negative limitation remained that distinguished terminals from the material connecting the terminal to the circuit board. The Court will focus its discussion on the negative limitation rather than the language about solder balls. *See* Doc. 167 and 169.

[10] Although Tessera cites no authority to suggest that the ITC's construction of "terminal" became a part of the prosecution history merely because it was submitted to the Patent and Trademark Office ("PTO"), the Court notes that prior art references submitted to the PTO during prosecution are considered part of the intrinsic record. *See* Kumar v. Ovonic Battery Co., Inc., 351 F.3d 1364, 1368 (Fed.Cir.2003). But the ITC's construction is distinguishable from the prior art reference relied upon for claim construction in Kumar. First, the ITC's construction is not prior art. Second, Tessera did not highlight the construction to the PTO during patent prosecution and it is unlikely that the PTO relied upon two sentences in a 54 page claim construction section of a 357 page ITC document. Further, the ITC Court deferred to an expert witness in choosing its construction, and provided no further support for its election. *See* Phillips, 415 F.3d at 1318 (noting that, "conclusory, unsupported assertions by experts as to the definition of a claim are not useful to a court"). Without any discussion clarifying why the ITC chose its construction, the PTO would have had little reason to rely on the statement.

The Court may consider the ITC opinion in the interest of promoting, "uniformity in the treatment of a given patent," Markman, 517 U.S. at 390, 116 S.Ct. 1384. However, at least one Article III Court has adopted the contrary construction Defendants advocate, and for two additional reasons, the Court will not defer to the ITC construction. *See Samsung; see also* Texas Instruments Inc. v. Linear Tech. Corp., 182 F.Supp.2d 580, 589 (E.D.Texas 2002) (Court may elect to defer to previous claim constructions on a case by case basis). First, as discussed previously, the ITC Court did not explain why it elected its construction, and the Court is reluctant to defer to a decision whose basis is largely unknown. Second, the two previous constructions are different, so the interest of uniformity does not weigh in favor of one construction over another. *See Samsung* and *ITC*. Thus, the Court will elect a construction that is best supported by the entirety of the intrinsic evidence.

Plaintiff argues that its construction will prevent the confusion that could arise if Defendants muddle the distinction between terminals and the surrounding elements. Further, Plaintiff contends that the intrinsic record, "could not have more plainly communicated that 'terminals' as used in the patents in suit are not solder balls," and highlights several instances in the '977 specification that describe terminals as distinct components from the material disposed between the terminals and the substrate. Tessera's Opening Brief, p. 28-29. During prosecution of the '419 patent, Tessera distinguished a piece of prior art that utilized solder balls, but not terminals. '419 Prosecution History, 8/20/01 Response at 7. Similarly, the claims treat terminals as distinct from the surrounding components, including the material disposed between the terminals and the substrate. Although the Court agrees that the intrinsic record describes that terminals are not solder balls, that fact does not lead the Court to share Tessera's conclusion that the definition should include a negative limitation distinguishing solder balls from terminals.

The claims and specification clearly communicate that terminals retain their autonomy in the completed assembly without using negative limitations, and Defendants' construction closely tracks the claims and specification. Despite Tessera's suggestion that Defendants' construction leaves the door open for confusion, Defendants' construction invites no more confusion about the relationship between terminals and the surrounding components than a construction of any other component that is closely integrated with other components. Thus, the absence of a negative limitation does not render the construction particularly susceptible to confusion.

The Court is similarly unpersuaded that a negative limitation is the proper way to prevent Defendants from blurring the line between terminals and the material disposed between the package and the PCB. Defendants acknowledge that terminals are distinct components whether they are bonded to solder or another material that serves to connect the package to the PCB, and if they attempted to change their stance at trial Plaintiff can refute those arguments.FN3 However, the Court is reluctant to adopt a construction in order to cure confusion that may or may not arise particularly when the additional limitation may cause its own confusion.

FN3. The Court will look very unfavorably upon any attempt by Defendants to depart from the construction adopted in this order.

Therefore, the Court adopts Defendants construction that a terminal is, "an endpoint for the connection of the package to the outside."

Moveable

[11] As with "terminal," the parties agree on the first portion of the construction,FN4 but in this case, it is Defendants who advocate a second sentence containing a negative limitation.FN5 Their limitation tracks several disclaimers Tessera made during patent prosecution and the *TI* and *Samsung* cases to distinguish its invention from prior art that relied on CTE matching or deformable solder balls. Although Tessera seems to acknowledge that its invention does not claim CTE matching or deformable solder balls, Defendants maintain that this limitation is necessary to prevent Tessera from disavowing its disclaimers at trial and contending that the movement covered by its patent is that addressed by CTE matching and deformable solder balls. For reasons similar to those described above, the Court is not convinced that a negative limitation has a place in a proper construction of "moveable."

FN4. The first sentence reads, "In the operation of the assembly, the terminals are capable of being displaced relative to the chip by external loads applied to the terminals, to the extent that the displacement appreciably relieves mechanical stresses, such as those caused by differential thermal expansion which would be present in electrical connections absent such displacement."

FN5. Defendants' second sentence reads, "The relief of mechanical stress due to CTE matching and/or deformable solder balls is not the claimed movement."

The plain language of both the claims and specifications describe the type of movement encompassed by the term "moveable." For example, the '977 patent at claims 17-18 describe that, "said terminals ... being movable with respect to the chip to compensate for differential thermal expansion of the chip and substrate," and the '627 patent at claim 1 describes, "said terminals being movable with respect to said central contacts so as to compensate for thermal expansion of said chip." See also '977 Specification at 4:62-65; 5:21-22; 20:34-36 (describing that the contacts are movable relative to the terminals).

During prosecution of the '419 and '893 patents, Tessera assured the patent office that its technology solved the problem of strain due to thermal cycling in a different way than the Lin patent which relied upon CTE matching and deformable solder balls. CTE matching between the substrateand the circuit board aims to reduce the relative movement between the terminals and the contacts on the circuit board during thermal cycling by ensuring that the package substrate and the PCB expand to the same or similar degree when heated, thereby lessening the strain on the solder balls disposed between the two components. Deformable solder balls are designed to weather the remaining relative movement better than a more brittle component, and in that way, work in conjunction with the CTE matched PCB and package substrate to reduce wear due to thermal cycling. The key point being that the movement targeted by the Lin patent was between the terminals and the circuit board, but the movement described in Tessera's patents is the relative movement between the terminals and the chip contacts.

Defendants request the additional language to ensure that Tessera does not change its position at trial and disavow the disclaimers it made before the PTO in an attempt to muddle the distinction between the claimed movement in these patents and the claimed movement in the Lin patent. However, Defendants' limitation would inject unnecessary confusion into an otherwise helpful and legally appropriate construction.FN6 First, the sentence is technically incorrect because it implies that "relief of mechanical stress due to CTE matching and/or deformable solder balls" is a type of movement, but a person skilled in the art would understand that relieving mechanical stress and movement are separate concepts. Second, the sentence aims to resolve an issue that came up in the *Samsung* and *TI* cases, but that may or may not arise at this trial. If the issue does not arise, the construction would create confusion by inviting the jury to divert its attention away from the claimed movement and toward a red herring. The Court is not inclined to risk that confusion especially where Defendants appear to be attempting to use claim construction as a plank in its trial strategy without any concomitant benefit to the jury. *See* Sulzer Textil A.G. v. Picanol N.V., 358 F.3d 1356, 1366 (Fed.Cir.2004)(explaining that a clear claim construction is necessary for a jury to "intelligently determine the questions presented"). Even assuming Defendants' construction was not confusing and offered for an improper purpose, the Court would likely adopt the agreed portion of the construction because it is amply supported by the intrinsic evidence.

FN6. Both the ITC and *TI* Courts adopted constructions similar to Tessera's proposed construction, which lacks Defendants' proposed additional language.

Thus, the Court construes the term "movable" to mean "[i]n the operation of the assembly, the terminals are capable of being displaced relative to the chip by external loads applied to the terminals, to the extent that the displacement appreciably relieves mechanical stresses, such as those caused by differential thermal expansion which would be present in electrical connections absent such displacement."

Compliant, Compliant Layer, Compliant Material

[12] The term "compliant" appears in the intrinsic record several times to describe materials or layers of materials with differing functions, and the parties have developed sharply divergent constructions as a result of the term's broad use. Tessera suggests that "compliant" should be defined as, "[y]ielding to applied force," but Defendants argue that Tessera's definition is unhelpful because all materials in the universe yield to applied force, and submit that "compliant" should be defined as, "[a] layer/material, such as soft rubber, that can be appreciably compressed in the direction toward the chip sufficient to accommodate tolerances in typical semiconductor components and test equipment."

[13] The Court finds that Tessera's construction would not provide sufficient guidance to a juror struggling to understand "compliant." *See* Sulzer 358 F.3d at 1366. If all known materials yield to an applied force, the term compliant provides no limitation and is effectively read out of the patent, rendering its presence superfluous and potentially confusing to a jury. *See* Curtiss-Wright Flow Control Corp v. Velan, Inc., 438 F.3d 1374, 1379 (Fed Cir.2006) (rejecting a construction so broad as to render the limitation "nearly meaningless"). In addition to being unhelpful and possibly confusing, Tessera's construction is simply a modified dictionary definition, which after Phillips, is suspect in cases where the ordinary meaning of the claim language is not readily apparent to those not skilled in the art. Phillips, 415 F.3d at 1314; *see also* Brown v. 3M, 265 F.3d 1349, 1352 (Fed.Cir.2001). Here, the meaning of the term compliant is not readily apparent because the patentee has used the term idiosyncratically and the Court must look to the claims, specification, and prosecution history to determine what a person skilled in the art would understand compliant to mean. Phillips, 415 F.3d at 1314; Innova /Pure Water, Inc. v. Safari Water Filtration Systems, Inc., 381 F.3d 1111, 1116 (Fed.Cir.2004).

However, arriving at an appropriate and reasonably precise construction of compliant is not easily done because the construction must be exclusive enough to be helpful while successfully accommodating the myriad of uses of the term in the patents in suit. For example, a compliant layer can facilitate movement of the terminals in a parallel or perpendicular direction with regard to the chip (*ITC Order* at 154; '977 Specification at 7:57-61; '977 Patent Figure 3); a compliant encapsulate allows the flexible lead to facilitate the movement of the terminal relative to the chip as the interposer buckles and wrinkles during thermal

cycling ('977 Specification 11:13-17); compliant material may include elastomers or elastomeric material (*Id*. at 17:40-42, '977 Claim 3), a compliant layer may incorporate adhesives (*Id*. at 22:1-2) or be incorporated by a flexible sheetlike element ('977 Claims 1-2), and compliant materials can even include intermittent holes ('977 Claim 4). Tessera's construction does not exclude any of these uses, but its wording is overly broad and unhelpful.

Although much of Defendants' construction is unnecessary and confusing, the concept that compliance requires compressibility is born out by the intrinsic evidence. Despite their differences, both parties' constructions embrace the idea that a compliant material or layer must yield because compliance is closely related to movement, and the Court agrees that this concept is at the heart of compliance. After reviewing the intrinsic evidence, the Court finds that compliance necessarily requires compressibility in a direction perpendicular to the substance's surface.

[14] Tessera disputes that compliance necessarily implies compressibility, and points out that the '977 specification provides for a "compliant, compressible layer." '977 Prosecution History, 10:43-44. If compliance necessarily implied compressibility, Tessera argues, "compressibility" would not have been included. Further, '627 Claim 4 provides, "[a] chip assembly as claimed in claim 1, wherein said dielectric element includes a compliant layer of a low modulus material, said compliant layer being disposed beneath said terminals," and Claim 7 provides, "[a] chip assembly as claimed in claim 4, wherein said compliant layer is formed from a compressiblefoam." When a dependent claim contains a limitation, a presumption arises that the limitation was not present in the independent claim. Phillips, 415 F.3d at 1314-1315; Liebel-Flarsheim Co. v. Medrad, Inc., 358 F.3d 898, 910 (Fed.Cir.2004). However, "that presumption can be overcome if the circumstances suggest a different explanation, or if the evidence favoring a different claim construction is strong." Medrad, 358 F.3d at 910. Here, claim 7 adds the additional limitation of specifying the type of compliant material-namely foam. Thus, Tessera's claim differentiation argument is without merit. Moreover, in this case, the evidence favoring a different construction is sufficiently clear to overcome any presumption and Tessera's reference to a "compliant, compressible layer" in the '977 specification.

Specifically, the Defendants highlight evidence from the prosecution of the parent application to the patents-in-suit and a divisional of that parent application whereby Tessera repeatedly defined that materials and layers are compliant because they deform by compressing in the direction perpendicular to their surfaces. For example, Defendants point to the prosecution history and specification of a divisional of the parent to the patents in suit, U.S. Patent No. 5,346,861 ("the '861 patent"). In Tessera's Response to the PTO distinguishing the Saito reference, it expressly defined compliant as, "compressible in the directions perpendicular to its first and second surfaces." App. No. 865,984-10/26/92 Amendment and Response at 8. See also, App. No. 673,020-1/10/92 Amendment and Response at 10-11 (explaining to the examiner that an ordinary sheet of note pad paper, placed atop the examiner's desk, was flexible, but not compliant because it was not appreciably compressible to forces applied perpendicular to its surface.). The '861 patent specification further provides that, "soft materials and foams provide a highly compliant interposer, i.e., an interposer which is readily compressible in the directions perpendicular to its surfaces and which therefore permits movement of the terminals in these directions." '861 Specification 14:40-46.

Defendants' evidence is express and on point, and the claims and specification require the same conclusion. It is clear that compliance is inextricably intertwined with movement, and that while compliant materials and layers can be flexible, they must be appreciably compressible in order to facilitate movement by some means other than just flexibility. Based on a thorough reading of the patents in conjunction with the express guidance in the prosecution history regarding compressibility, the Court is of the opinion that compliance necessarily implies compressibility, and construes a compliant layer/material to mean, "a layer/material that is appreciably compressible in a direction perpendicular to its surface."

CONCLUSION

For the foregoing reasons, the Court interprets the claim language in this case in the manner set forth above. For ease of reference, the Court's claim interpretations are set forth in a table as Appendix A.

So ORDERED.

Appendix A

Claim Language in U.S. Patent No. 5,679,977	Court's Construction
17. A semiconductor chip assembly comprising:	
(a) a semiconductor chip having a plurality of surfaces and having contacts on at least one said surface;	
(b) a plurality of **terminals**, at least some of said **terminals** overlying one said surface of said chip;	**Terminal:** an endpoint for the connection of the package to the outside
(c) a layer of a **compliant material** disposed between said **terminals** and said chip and supporting at least some of said **terminals** above said one said surface of said chip; and	**Terminal:** an endpoint for the connection of the package to the outside
	Compliant Material: a material that is appreciably compressible in a direction perpendicular to its surface
(d) **flexible leads** interconnecting said **terminals** with said contacts on said chip so that said **terminals** are **movable** with respect to said contacts.	**Terminal:** an endpoint for the connection of the package to the outside **Flexible Leads:** leads possessing sufficient flexibility to accommodate movement of the terminals relative to the chip
	Movable: in the operation of the assembly, the terminals are capable of being displaced relative to the chip by external loads applied to the terminals, to the extent that the displacement appreciably relieves mechanical stresses, such as those caused by differential thermal expansion which would be present in electrical connections absent such displacement
18. A semiconductor chip assembly comprising:	
(a) a semiconductor chip having a front surface and having contacts on said front surface;	
(b) a plurality of **terminals**, at least some of said **terminals** overlying said front surface of said chip;	**Terminal:** an endpoint for the connection of the package to the outside
(c) a layer of **compliant material** disposed between said **terminals** and said chip and supporting at least some of said **terminals** above said front surface; and	**Terminal:** an endpoint for the connection of the package to the outside
	Compliant Material: a material that is appreciably compressible in a direction perpendicular to its surface
(d) **flexible leads** interconnecting said **terminals** with said contacts on said chip so that said **terminals** are **movable** with respect to said contacts.	**Terminal:** an endpoint for the connection of the package to the outside **Flexible Leads:** leads possessing sufficient flexibility to accommodate movement of the terminals relative to the chip
	Movable: in the operation of the assembly, the terminals are capable of being displaced relative to the chip by external loads applied to the terminals, to the extent that the displacement appreciably relieves mechanical stresses, such as those caused by differential thermal expansion which would be present in electrical connections absent

	such displacement
Claim Language in U.S. Patent No. 6,133,627	**Court's Construction**
1. A semiconductor chip assembly comprising:	
(a) a semiconductor chip having a front surface defining the top of the chip, said front surface including a central region and a peripheral region surrounding said central region, whereby said central region is disposed inwardly of said peripheral region, said chip having central contacts disposed in said central region of said front surface;	
(b) a dielectric element overlying said chip front surface, said dielectric element having a first surface facing toward said chip and a second surface facing away from said chip, said dielectric element having a hole encompassing said central contacts and an edge bounding said hole;	
(c) a plurality of **terminals** disposed on said dielectric element for interconnection to a substrate and overlying said chip front surface; and	**Terminal:** an endpoint for the connection of the package to the outside
(d) a plurality of central contact leads extending between at least some of said central contacts and at least some of said **terminals**, each said central contact lead having a	**Terminal:** an endpoint for the connection of the package to the outside.
terminal end connected to one of said **terminals** and a contact end extending to one of said central contacts, said **terminals** being **movable** with respect to said central contacts so as to compensate for thermal expansion of said chip.	**Movable:** in the operation of the assembly, the terminals are capable of being displaced relative to the chip by external loads applied to the terminals, to the extent that the displacement appreciably relieves mechanical stresses, such as those caused by differential thermal expansion which would be present in electrical connections absent such displacement
4. A chip assembly as claimed in claim 1, wherein said dielectric element includes a **compliant layer** of a low modulus material, said **compliant layer** being disposed beneath	**Terminal:** an endpoint for the connection of the package to the outside
said **terminals**.	**Compliant Layer:** a layer that is appreciably compressible in a direction perpendicular to its surface
9. A chip assembly as claimed in claim 1, wherein some of said **terminals** are disposed adjacent the edge bounding said hole.	**Terminal:** an endpoint for the connection of the package to the outside
10. A chip assembly as claimed in claim 1, wherein said plurality of **terminals** are disposed at said second surface of said dielectric element.	Terminal: an endpoint for the connection of the package to the outside
11. A chip assembly as claimed in claim 1 wherein the contact leads include wire bonds.	
12. A semiconductor chip assembly comprising:	
(a) a semiconductor chip having a front surface defining the top of the chip, said front surface including a central region and a peripheral region surrounding said central region, whereby said central region is disposed inwardly of said peripheral region, said chip having central contacts disposed in said central region of said front surface;	
(b) a dielectric element overlying said chip front surface, said dielectric element having a first surface facing toward said chip and a second surface facing away from said chip;	
(c) a plurality of **terminals** disposed on said dielectric element for interconnection to a substrate and overlying	**Terminal:** an endpoint for the connection of the package to the outside

said chip front surface, said **terminals** being electrically	
connected to said central contacts and being **movable** with respect to said central contacts so as to compensate for thermal expansion of said chip.	**Movable**: in the operation of the assembly, the terminals are capable of being displaced relative to the chip by external loads applied to the terminals, to the extent that the displacement appreciably relieves mechanical stresses, such as those caused by differential thermal expansion which would be present in electrical connections absent such displacement
15. A chip assembly as claimed in claim 12 wherein said plurality of **terminals** are disposed at said second surface of said dielectric element.	**Terminal:** an endpoint for the connection of the package to the outside
16. A chip assembly as claimed in claim 12 wherein said dielectric element includes as **compliant layer** disposed between said **terminals** and said front surface of said chip.	**Terminal:** an endpoint for the connection of the package to the outside
	Compliant Layer: a layer that is appreciably compressible in a direction perpendicular to its surface
Claim Language in U.S. Patent No. 5,852,326	**Court's Construction**
1. A semiconductor assembly comprising:	
a semiconductor chip having oppositely facing front and rear surfaces and edges extending between said front and rear surfaces, said chip further having contacts on a peripheral region of said front surface;	
a backing element having electrically conductive **terminals** and lead portions thereon, wherein said lead portions are connected to said **terminals**, said backing element overlying said rear surface of said semiconductor chip such that at least some of said **terminals** overlie said rear surface of said chip;	**Terminal:** an endpoint for the connection of the package to the outside
bonding wires connected to said contacts on said front surface of said chip, said bonding wires extending downwardly alongside said edges of said chip and being connected to the lead portions on the backing element;	
wherein said **terminals** are **movable** with respect to said chip.	**Terminal:** an endpoint for the connection of the package to the outside
	Movable: in the operation of the assembly, the terminals are capable of being displaced relative to the chip by external loads applied to the terminals, to the extent that the displacement appreciably relieves mechanical stresses, such as those caused by differential thermal expansion which would be present in electrical connections absent such displacement
2. The semiconductor assembly as claimed in claim 1, wherein said backing element includes a polymeric dielectric material.	
6. The semiconductor assembly as claimed in claim 1, wherein said chip contacts define a first center-to-center distance between adjacent chip contacts and said **terminals** define a second center to center distance between adjacent **terminals** said second center to center distance being larger than said first center to center distance.	**Terminal:** an endpoint for the connection of the package to the outside
12. The semiconductor assembly as claimed in claim 1,	

wherein:	
a) said backing element has a top surface facing toward the chip and a bottom surface facing away from the chip; and	
b) said lead portions and **terminals** are located on said bottom surface of said backing element.	**Terminal:** an endpoint for the connection of the package to the outside
16. The semiconductor assembly as claimed in claim 1, wherein said bonding wires are connected on at least one end by ultrasonic or thermosonic energy.	
17. The semiconductor assembly as claimed in claim 1 or claim 4, further comprising a **compliant layer** disposed between said backing element and said rear surface of said chip	**Terminal:** an endpoint for the connection of the package to the outside
to facilitate the movement of said **terminals**.	**Compliant Layer:** a layer that is appreciably compressible in a direction perpendicular to its surface
18. The semiconductor assembly as claimed in claim 17, wherein said **compliant layer** is comprised of a low-modulus material	**Compliant Layer:** a layer that is appreciably compressible in a direction perpendicular to its surface
19. The semiconductor assembly as claimed in claim 17, wherein said **compliant layer** is disposed between said **terminals** and said chip.	**Terminal:** an endpoint for the connection of the package to the outside
	Compliant Layer: a layer that is appreciably compressible in a direction perpendicular to its surface
21. The semiconductor assembly as claimed in claim 17, further comprising a dielectric encapsulant covering at least a portion of said bonding wires and at least a portion of said edges and said front surface of said chip.	
24. The semiconductor assembly as claimed in claim 1, wherein said **terminals** are **movable** in a direction parallel to said rear surface of said chip.	**Terminal:** an endpoint for the connection of the package to the outside
	Movable: in the operation of the assembly, the terminals are capable of being displaced relative to the chip by external loads applied to the terminals, to the extent that the displacement appreciably relieves mechanical stresses, such as those caused by differential thermal expansion which would be present in electrical connections absent such displacement
25. The semiconductor assembly as claimed in claim 1 or claim 24, wherein the **terminals** are **movable** in a direction perpendicular to said rear surface of said chip.	**Terminal:** an endpoint for the connection of the package to the outside
	Movable: in the operation of the assembly, the terminals are capable of being displaced relative to the chip by external loads applied to the terminals, to the extent that the displacement appreciably relieves mechanical stresses, such as those caused by differential thermal expansion which would be present in electrical connections absent such displacement
26. The semiconductor assembly as claimed in claim 1, further comprising a dielectric encapsulant covering at least a portion of said bonding wires and at least a portion of said edges and said front surface of said chip.	
29. The semiconductor assembly as claimed in claim 1, wherein said lead portions and said **terminals** are formed by photochemical etching or by electro-deposition techniques.	**Terminal:** an endpoint for the connection of the package to the outside

Claim Language in U.S. Patent

No. 6,433,419	Court's Construction
1. A semiconductor assembly comprising:	
a) a semiconductor chip having a front surface, a rear surface and contacts on said front surface, said semiconductor chip having a coefficient of thermal expansion;	
b) a substrate adapted to physically support the chip and electrically interconnect the chip with other elements of a circuit, said substrate having a set of contact pads thereon, said substrate having a coefficient of thermal expansion, said semiconductor chip overlying said substrate so that said chip overlies at least some of said contact pads of said set and so that said rear surface of said chip faces toward said substrate and said contact pads;	
c) a backing element having electrically conductive **terminals** and electrically conductive lead portions electrically connected to said **terminals** and to said contacts on	**Terminal:** an endpoint for the connection of the package to the outside
said chip, said backing element having a central region aligned with said chip and disposed between said rear surface of said chip and said substrate, said **terminals** of said backing element being bonded to said contact pads on said substrate, at least some of said **terminals** of said backing element being disposed in said central region of said backing element and being **movable** with respect to the chip to compensate for differential thermal expansion of the chip and substrate.	**Movable:** in the operation of the assembly, the terminals are capable of being displaced relative to the chip by external loads applied to the terminals, to the extent that the displacement appreciably relieves mechanical stresses, such as those caused by differential thermal expansion which would be present in electrical connections absent such displacement
2. A semiconductor assembly comprising:	
a) a semiconductor chip having a front surface, a rear surface and contacts on said front surface, said semiconductor chip having a coefficient of thermal expansion;	
b) a substrate adapted to physically support the chip and electrically interconnect the chip with other elements of a circuit, said substrate having a set of contact pads thereon, said substrate having a coefficient of thermal expansion, said semiconductor chip overlying said substrate so that said chip overlies at least some of said contact pads of said set and so that said rear surface of said chip faces toward said substrate and said contact pads;	
c) a backing element having **terminals** and having electrically conductive lead portions electrically connected to said **terminals**, said backing element having a central region	**Terminal:** an endpoint for the connection of the package to the outside
aligned with said chip and disposed between said rear surface of said chip and said substrate, said **terminals** of said backing element being bonded to said contact pads on said substrate, at least some of said **terminals** of said backing element being disposed in said central region of said backing element and being **movable** with respect to the chip to compensate for differential thermal expansion of the chip and substrate; and	**Movable:** in the operation of the assembly, the terminals are capable of being displaced relative to the chip by external loads applied to the terminals, to the extent that the displacement appreciably relieves mechanical stresses, such as those caused by differential thermal expansion which would be present in electrical connections absent such displacement
d) bonding wires electrically connecting said contacts on said chip and said lead portions of said backing element.	
3. A semiconductor assembly comprising:	

a) a semiconductor chip having a front surface, a rear surface and contacts on said front surface, said semiconductor chip having a coefficient of thermal expansion;	
b) a substrate adapted to physically support the chip and electrically interconnect the chip with other elements of a circuit, said substrate having a set of contact pads thereon, said substrate having a coefficient of thermal expansion, said semiconductor chip overlying said substrate so that said chip overlies at least some of said contact pads of said set and so that said rear surface of said chip faces toward said substrate and said contact pads;	
c) a backing element having **terminals** and having electrically conductive lead portions connected to said **terminals**, said backing element having a central region aligned with said chip and disposed between said rear surface of said chip and said substrate, at least some of said **terminals** of said backing element being disposed in said central region, and bonded to said contact pads on said substrate; and	**Terminal:** an endpoint for the connection of the package to the outside
d) a **compliant layer** disposed between said rear surface of said chip and said backing element, said **compliant layer** facilitating movement of said **terminals** in said central	**Terminal:** an endpoint for the connection of the package to the outside
region of said backing element with respect to the chip to compensate for differential thermal expansion of the chip and substrate.	**Compliant Layer:** a layer that is appreciably compressible in a direction perpendicular to its surface
4. A semiconductor assembly comprising:	
a) a semiconductor chip having a front surface, a rear surface and contacts on said front surface, said semiconductor chip having a coefficient of thermal expansion;	
b) a substrate adapted to physically support the chip and electrically interconnect the chip with other elements of a circuit, said substrate having a set of contact pads thereon, said substrate having a coefficient of thermal expansion, said semiconductor chip overlying said substrate so that said chip overlies at least some of said contact pads of said set and so that said rear surface of said chip faces toward said substrate and said contact pads;	
c) a backing element having **terminals** and having electrically conductive lead portions connected to said **terminals**, said backing element having a central region aligned with said chip and disposed between said rear surface of said chip and said substrate, at least some of said **terminals** of said backing element being disposed in said central region, and bonded to said contact pads on said substrate;	**Terminal:** an endpoint for the connection of the package to the outside
d) bonding wires electrically connecting said contacts on said chip and said lead portions of said backing element; and	
e) a **compliant layer** disposed between said rear surface of said chip and said backing element, said **compliant layer** facilitating movement of said **terminals** in said central	**Terminal:** an endpoint for the connection of the package to the outside

region of said backing element with respect to the chip to compensate for differential thermal expansion of the chip and substrate.	**Compliant Layer:** a layer that is appreciably compressible in a direction perpendicular to its surface
5. A semiconductor assembly comprising:	
a) a semiconductor chip having a front surface, a rear surface and contacts on said front surface, said semiconductor chip having a coefficient of thermal expansion;	
b) a substrate adapted to physically support the chip and electrically interconnect the chip with other elements of a circuit, said substrate having a set of contact pads thereon, said substrate having a coefficient of thermal expansion, said semiconductor chip overlying said substrate so that said chip overlies at least some of said contact pads of said set and so that said rear surface of said chip faces toward said substrate and said contact pads;	
c) a backing element having electrically conductive **terminals** and electrically conductive lead portions electrically connected to said **terminals** and to said contacts on	**Terminal:** an endpoint for the connection of the package to the outside
said chip, said backing element having a central region aligned with said chip and disposed between said rear surface of said chip and said substrate, at least some of said **terminals** of said backing element being disposed in said central region of said backing element, said **terminals** in said central region of said backing element being engaged with said contact pads on said substrate, said **terminals** in said central region of said backing element being **movable** with respect to the chip to compensate for differential thermal expansion of the chip and substrate.	**Movable:** in the operation of the assembly, the terminals are capable of being displaced relative to the chip by external loads applied to the terminals, to the extent that the displacement appreciably relieves mechanical stresses, such as those caused by differential thermal expansion which would be present in electrical connections absent such displacement
6. A semiconductor assembly comprising:	
a) a semiconductor chip having a front surface, a rear surface and contacts on said front surface, said semiconductor chip having a coefficient of thermal expansion;	
b) a substrate adapted to physically support the chip and electrically interconnect the chip with other elements of a circuit, said substrate having a set of contact pads thereon, said substrate having a coefficient of thermal expansion, said semiconductor chip overlying said substrate so that said chip overlies at least some of said contact pads of said set and so that said rear surface of said chip faces toward said substrate and said contact pads;	
c) a backing element having **terminals** and having electrically conductive lead portions electrically connected to said **terminals**, said backing element having a central region	**Terminal:** an endpoint for the connection of the package to the outside
aligned with said chip and disposed between said rear surface of said chip and said substrate, at least some of said **terminals** of said backing element being disposed in said central region of said backing element, said **terminals** in said central region of said backing element being engaged with said contact pads on said substrate, said **terminals** in said central region of said backing element being **movable** with respect to the chip to compensate for	**Movable:** in the operation of the assembly, the terminals are capable of being displaced relative to the chip by external loads applied to the terminals, to the extent that the displacement appreciably relieves mechanical stresses, such as those caused by differential thermal expansion which would be present in electrical connections absent such displacement

differential thermal expansion of the chip and substrate; and	
d) bonding wires electrically connecting said contacts on said chip and said lead portions of said backing element.	
7. A semiconductor assembly comprising:	
a) a semiconductor chip having a front surface, a rear surface and contacts on said front surface, said semiconductor chip having a coefficient of thermal expansion;	
b) a substrate adapted to physically support the chip and electrically interconnect the chip with other elements of a circuit, said substrate having a set of contact pads thereon, said substrate having a coefficient of thermal expansion, said semiconductor chip overlying said substrate so that said chip overlies at least some of said contact pads of said set and so that said rear surface of said chip faces toward said substrate and said contact pads;	
c) a backing element having **terminals** and having electrically conductive lead portions connected to said **terminals**, said backing element having a central region aligned with said chip and disposed between said rear surface of said chip and said substrate, at least some of said **terminals** of said backing element being disposed in said central region of said backing element and engaged with said contact pads on said substrate; and	**Terminal:** an endpoint for the connection of the package to the outside
d) a **compliant layer** disposed between said rear surface of said chip and said backing element, said **compliant layer** facilitating movement of said **terminals** in said central	**Terminal:** an endpoint for the connection of the package to the outside
region of said backing element with respect to the chip to compensate for differential thermal expansion of the chip and substrate.	**Compliant Layer:** a layer that is appreciably compressible in a direction perpendicular to its surface
8. A semiconductor assembly comprising:	
a) a semiconductor chip having a front surface, a rear surface and contacts on said front surface, said semiconductor chip having a coefficient of thermal expansion;	
b) a substrate adapted to physically support the chip and electrically interconnect the chip with other elements of a circuit, said substrate having a set of contact pads thereon, said substrate having a coefficient of thermal expansion, said semiconductor chip overlying said substrate so that said chip overlies at least some of said contact pads of said set and so that said rear surface of said chip faces toward said substrate and said contact pads;	
c) a backing element having **terminals** and having electrically conductive lead portions electrically connected to said **terminals**, said backing element having a central region aligned with said chip and disposed between said rear surface of said chip and said substrate, at least some of said **terminals** of said backing element being disposed in said central region of said backing element and engaged with said contact pads on said substrate;	**Terminal:** an endpoint for the connection of the package to the outside
d) bonding wires electrically connecting said contacts on said chip and said lead portions of said backing element;	

e) a **compliant layer** disposed between said rear surface of said chip and said backing element, said **compliant layer** facilitating movement of said **terminals** in said central	**Terminal:** an endpoint for the connection of the package to the outside
region of said backing element with respect to the chip to compensate for differential thermal expansion of the chip and substrate.	**Compliant Layer:** a layer that is appreciably compressible in a direction perpendicular to its surface
9. An assembly as claimed in any of claims 1-4, further comprising solder masses disposed between said **terminals** of said backing element and said contact pads of said substrate, said **terminals** of said backing element being bonded to said contact pads of said substrate by said solder masses.	**Terminal:** an endpoint for the connection of the package to the outside
10. An assembly as claimed in any of claims 1-8 wherein said coefficient of expansion of said substrate is different than the coefficient of expansion of said chip.	
11. An assembly as claimed in any of claims 1-8 wherein said substrate is a circuit panel.	
14. An assembly as claimed in claim 3 or claim 4 or claim 7 or claim 8 wherein said **compliant layer** incorporates an adhesive.	**Compliant Layer:** a layer that is appreciably compressible in a direction perpendicular to its surface
15. An assembly as claimed in any of claims 1-8, wherein:	
a) said backing element has a top surface facing toward the chip and a bottom surface facing away from the chip; and	
b) said lead portions and **terminals** are disposed at said bottom surface of said backing element.	**Terminal:** an endpoint for the connection of the package to the outside
19. An assembly as claimed in any of claims 1-8, wherein said chip contacts define a first center-to-center distance between adjacent chip contacts and said contact pads define a second center to center distance between adjacent contact pads, said second center to center distance being larger than said first center to center distance.	
22. An assembly as claimed in any of claims 1-8, wherein said **terminals** are **movable** in a direction parallel to said rear surface of said chip.	**Terminal:** an endpoint for the connection of the package to the outside
	Movable: in the operation of the assembly, the terminals are capable of being displaced relative to the chip by external loads applied to the terminals, to the extent that the displacement appreciably relieves mechanical stresses, such as those caused by differential thermal expansion which would be present in electrical connections absent such displacement
23. An assembly as claimed in claim 22 wherein the **terminals** are **movable** in a direction perpendicular to said rear surface of said chip.	**Terminal:** an endpoint for the connection of the package to the outside
	Movable: in the operation of the assembly, the terminals are capable of being displaced relative to the chip by external loads applied to the terminals, to the extent that the displacement appreciably relieves mechanical stresses, such as those caused by differential thermal expansion which would be present in electrical connections absent such displacement
24. An assembly as claimed in claim 2 or claim 4 or claim 6 or claim 8, further comprising a dielectric encapsulant covering at least a portion of said bonding wires and at	

least a portion of said front surface of said chip.	
27. An assembly as claimed in claim 1 or claim 3 or claim 5 or claim 7, further comprising a dielectric encapsulant covering at least a portion of the electrical connections between the contacts on the chip and the lead portions of said backing element, and covering at least a portion of said front surface of said chip.	
Claim Language in U.S. Patent No. 6,465,893	**Court's Construction**
1. A semiconductor chip assembly, comprising:	
(a) a first semiconductor chip having a front surface, a rear surface and contacts on said front surface;	
(b) a second semiconductor chip having a front surface, a rear surface and contacts on said front surface, said rear surface of said second semiconductor chip being juxtaposed with said front surface of said first semiconductor chip;	
(c) a first backing element having electrically conductive first **terminals**, said first backing element being juxtaposed with said rear surface of said first semiconductor chip so that at least some of said **terminals** overlie said rear surface of said first semiconductor chip, at least some of said contacts on said first and said second semiconductor chips being electrically connected to at least some of said **terminals**; and	**Terminal:** an endpoint for the connection of the package to the outside
(d) a substrate having contact pads thereon, said first **terminals** being connected to said contact pads of said substrate, said substrate being adapted to connect the assembly with other elements of a circuit, at least some of said first **terminals** overlying said rear surface of said first semiconductor chip.	**Terminal:** an endpoint for the connection of the package to the outside
2. The assembly as claimed in claim 1 wherein said first **terminals** are **movable** with respect to said first chip to compensate for differential thermal expansion of said first	**Terminal:** an endpoint for the connection of the package to the outside
chip and said substrate.	**Movable:** in the operation of the assembly, the terminals are capable of being displaced relative to the chip by external loads applied to the terminals, to the extent that the displacement appreciably relieves mechanical stresses, such as those caused by differential thermal expansion which would be present in electrical connections absent such displacement
3. The assembly as claimed in claim 2 wherein said first semiconductor chip and said substrate have different coefficients of thermal expansion.	
4. The assembly as claimed in claim 1 wherein said first backing element has electrically conductive lead portions thereon connected to said **terminals** and wherein said **terminals** are electrically connected to at least some of said contacts on said first and second semiconductor chips through said lead portions.	**Terminal:** an endpoint for the connection of the package to the outside
5. The assembly as claimed in claim 4 further comprising first bonding wires extending between at least some of said contacts of said first semiconductor chip and said lead portions so that said terminals of said first backing element	**Terminal:** an endpoint for the connection of the package to the outside

are electrically connected to at least some of the contacts on said first semiconductor chip through said lead portions and said first bonding wires.	
6. The assembly as claimed in claim 5, further comprising a dielectric encapsulant covering at least a portion of said first bonding wires.	
8. The assembly as claimed in claim 1, further comprising a dielectric encapsulant covering at least a portion of the electrical connections between the contacts on the chip and the **terminals** of said first backing element.	**Terminal:** an endpoint for the connection of the package to the outside
13. The assembly as claimed in any of claims 1 through 11, further comprising a first **compliant layer** disposed between said backing element and said rear surface of said first semiconductor chip.	**Compliant Layer:** a layer that is appreciably compressible in a direction perpendicular to its surface
14. The assembly as claimed in claim 13, further comprising a second **compliant layer** disposed between said front surface of said first semiconductor chip and said rear surface of said second semiconductor chip.	
15. The assembly as claimed in claim 13 wherein said first **compliant layer** incorporates an adhesive.	**Compliant Layer:** a layer that is appreciably compressible in a direction perpendicular to its surface
16. The assembly as claimed in any of claims 1 through 11 wherein said **terminals** of said first backing element are engaged with said contact pads of said substrate.	**Terminal:** an endpoint for the connection of the package to the outside
17. The assembly as claimed in claim 1 wherein said **terminals** of said first backing element are bonded to contact pads of said substrate.	**Terminal:** an endpoint for the connection of the package to the outside
18. The assembly as claimed in claim 1, wherein said **terminals** of said backing element are solder-bonded to said contact pads of said substrate.	**Terminal:** an endpoint for the connection of the package to the outside
19. The assembly as claimed in any of claims 1 through 11, wherein said substrate is a circuit panel.	
22. The assembly as claimed in any of claims 4 through 6, wherein:	
a) said first backing element has a top surface facing toward the chip and a bottom surface facing away from the chip; and	
b) said lead portions and **terminals** are disposed at said bottom surface of said first backing element.	**Terminal:** an endpoint for the connection of the package to the outside
29. The assembly as claimed in any of claims 1 through 11, wherein said **terminals** are **movable** in a direction parallel to said rear surface of said chip.	**Terminal:** an endpoint for the connection of the package to the outside
	Movable: in the operation of the assembly, the terminals are capable of being displaced relative to the chip by external loads applied to the terminals, to the extent that the displacement appreciably relieves mechanical stresses, such as those caused by differential thermal expansion which would be present in electrical connections absent such displacement
30. The assembly as claimed in any of claims 1 through 11 wherein the terminals are movable in a direction perpendicular to said rear surface of said chip.	**Terminal:** an endpoint for the connection of the package to the outside
	Movable: in the operation of the assembly, the terminals are capable of being displaced relative to the chip by external loads applied to the terminals, to the extent that the displacement appreciably relieves mechanical stresses,

such as those caused by differential thermal expansion which would be present in electrical connections absent such displacement

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