

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

VICOR CORPORATION,

Petitioner,

v.

DELTA ELECTRONICS, INC.,

Patent Owner.

PTAB Case No. IPR2024-00705

U.S. Patent No. 9,819,263

PATENT OWNER'S SUR-REPLY TO PETITIONER'S REPLY

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EXHIBIT LIST

Exhibit No.	Description
2001	Declaration of Dr. Joshua Phinney
2002	J. Phinney, Multi-resonant Passive Components for Power Conversion (Doctoral Thesis, Massachusetts Institute of Technology, Oct. 2005) (“Phinney Thesis”)
2003	“IPC 7093 Design and Assembly Process Implementation for Bottom Termination Components,” (Standards Document, IPC, March 2011) (“IPC 7093 Standard”)
2004	“VTM™ Current Multiplier VTM2308S60Z1513T00” (Datasheet), Rev. 1.5, Vicor Corporation (2022) (“VTM Datasheet”)
2005	Declaration of Dr. Joshua Phinney
2006	Deposition of Dr. R. Jacob Baker taken on December 20, 2024 (Condensed)
2007	https://sst.semiconductor-digest.com/2000/10/lead-free-solders-vs-conductive-adhesives/
NEW EXHIBIT	
2008	Deposition of Dr. R. Jacob Baker taken on April 18, 2025 (Condensed)

I. INTRODUCTION

Delta Electronics, Inc. (“Delta” or “Patent Owner”) submits its Sur-Reply in response to Vicor Corp’s (“Petitioner”) Reply.

Petitioner’s Grounds 1A-1C and 2-3 all fail.

Grounds 2 fails because there is no evidence to support a motivation to combine. Petitioner argues that a POSITA would have been motivated to apply Zeng-014’s wrapped conductors to Vinciarelli-218’s body, but Petitioner fails to acknowledge the practicalities of its combination. Petitioner’s combination takes Zeng-014’s wrapped conductor—which provides no conductivity to internal components—and applies them to Vinciarelli-218’s PCB bar codes that use specialized conductors to connect to internal circuitry. For Petitioner’s combination, there would need to be some form of physical and conductive attachment between Vinciarelli-218’s PCB bar codes and Zeng-014’s conductors, *e.g.*, physical force, conductive adhesives, or solder, to bridge the gap. Petitioner fails to adequately address these.

Each of these mechanisms fail. There is no motivation to provide any contact force, *e.g.*, a spring force. Adhesives are more expensive and provide lower conductivity. Solder is, moreover, impractical and is prone to cause physical damage in Petitioner’s proposed combination. There is no motivation to arrive at Petitioner’s creation of Ground 2.

Ground 3 fails for several reasons. While Petitioner argues it never advocated for wrapping Zeng-014's conductors onto Vinciarelli-218's body in Ground 3, this contradicts the literal language of its Petition. Ground 3 lacks motivation and, even if a motivation were inferred, it still fails for the reasons described in Ground 2.

Ground 3 has additional deficiencies. Petitioner argues that a POSITA would have looked at Zeng-014's inductor placed atop its PCB and would have placed an additional inductor below it. The only motivation provided is "symmetry." But, achieving symmetry, in itself, does not provide any tangible benefit; symmetry is merely a physical configuration that arrives at the claims. This is textbook hindsight. Ground 3 further fails because Petitioner mixes and matches embodiments from Vinciarelli-218 across limitations.

Grounds 1A-C fail for additional reasons. They fail to demonstrate that Vinciarelli-664 provides a "first terminal", and a "second terminal" that is "attached to a surface of the first electronic component apart from the carrier, wherein the second terminal of the first connection part is a bonding pad." They, moreover, fail to demonstrate the limitations of [1g], "fabricated by mechanical support of the first component."

Petitioner attempts to cure its failure to identify a "first terminal" in the Petition by relying on an annotation of a different Vinciarelli-664 embodiment

provided for the first time in Reply. This should be rejected. And, for the “second terminal,” Petitioner fails to address its requirements, namely that it is attached to the first electronic component and is a bonding pad. The bonding pad location of the relied-upon embodiment of Vinciarelli-664 does not line up with the portion of the supposed exposed core; there is a mismatch.

Petitioner’s attempt to cure [1g] similarly fails because the second terminal of the connection part is not attached to a surface of the lower exposed core.

Ground 1C further fails because it combines Vinciarelli-664’s bulk processing techniques with Zeng-014’s module-by-module processing techniques. The Reply presents no substantive evidence in support of the position that a POSITA would have made this modification.

Finally, Grounds 1A-C and 3 fail because Petitioner fails to identify the limitation of [1f] which requires that the carrier be placed in the middle third of the device height. Petitioner relies on figures for this location (which is improper). The figures, however, illustrate the carrier outside of the middle third.

This is described below.

II. Ground 2 fails to present a motivation to provide Zeng-014’s conductor on Vinciarelli-218’s body

Ground 2 applies Zeng-014’s wrapped conductors onto Vinciarelli-218’s power module but lacks a motivation. Petitioner fails to address the many practical drawbacks that demonstrate a lack of motivation. Zeng-014 and Vinciarelli-218

are markedly dissimilar; Vinciarelli-218 has PCB bar codes that require specialized adapters to establish electrical connectivity with internal circuitry while Zeng-014's conductors do not provide—and there is no reason to provide—an electrical connection to internal components. To appropriately combine Zeng-014 and Vinciarelli-218—with Zeng-014's conductors wrapping Vinciarelli-218's body—there must be conductive and physical contact between Vinciarelli-218's PCB bar codes and Zeng-014's conductor. There are only three possible physical ways of accomplishing this: (1) direct physical contact; (2) conductive adhesive; or (3) solder. Each, however, has significant drawback demonstrating a lack of motivation. These are described in turn below.

A. Direct physical contact fails

Absent from the Reply is evidence supporting the argument that direct physical contact between Zeng-014's wrapped conductor and Vinciarelli-218's PCB bar codes would have been seen as feasible. For there to be a reliable physical connection between Zeng-014's conductor and Vinciarelli-218's bar codes, there would need to be a contact force pushing the two together to ensure stable contact and electrical conductivity. Petitioner fails to provide this contact force (and any motivation for a contact force) in its Reply or Petition.

In support of its contact argument, Petitioner's Reply generally references Vinciarelli-218's flush mounts and Dr. Phinney's testimony that a contact force is

needed. (Reply at 28-29.) These arguments do not lead to the conclusion Petitioner advocates for and, instead, illustrate the deficiency in Petitioner's motivation.

Vinciarelli-218's flush mount demonstrates the type of contact force that would be necessary to form a reliable connection for Vinciarelli-218's PCB bar codes. Petitioner, however, does not utilize this contact force in its combination using Zeng-014's conductors. Shown below, Vinciarelli-218's body 518 provides a contact force that is applied to the PCB bar codes via its external conductors via a spring type contact force (annotated in red). (Vinciarelli-218 at [0128] ("Terminals 508 formed, e.g. bends 508B (FIG. 22), to provide a pressure fit between a contact area 508A of each terminal 508 and a respective interconnect 511.")) Vinciarelli-218 demonstrates that a contact force—via a spring-type force applied via the external conductor—is necessary to provide reliable physical contact to its PCB bar codes.

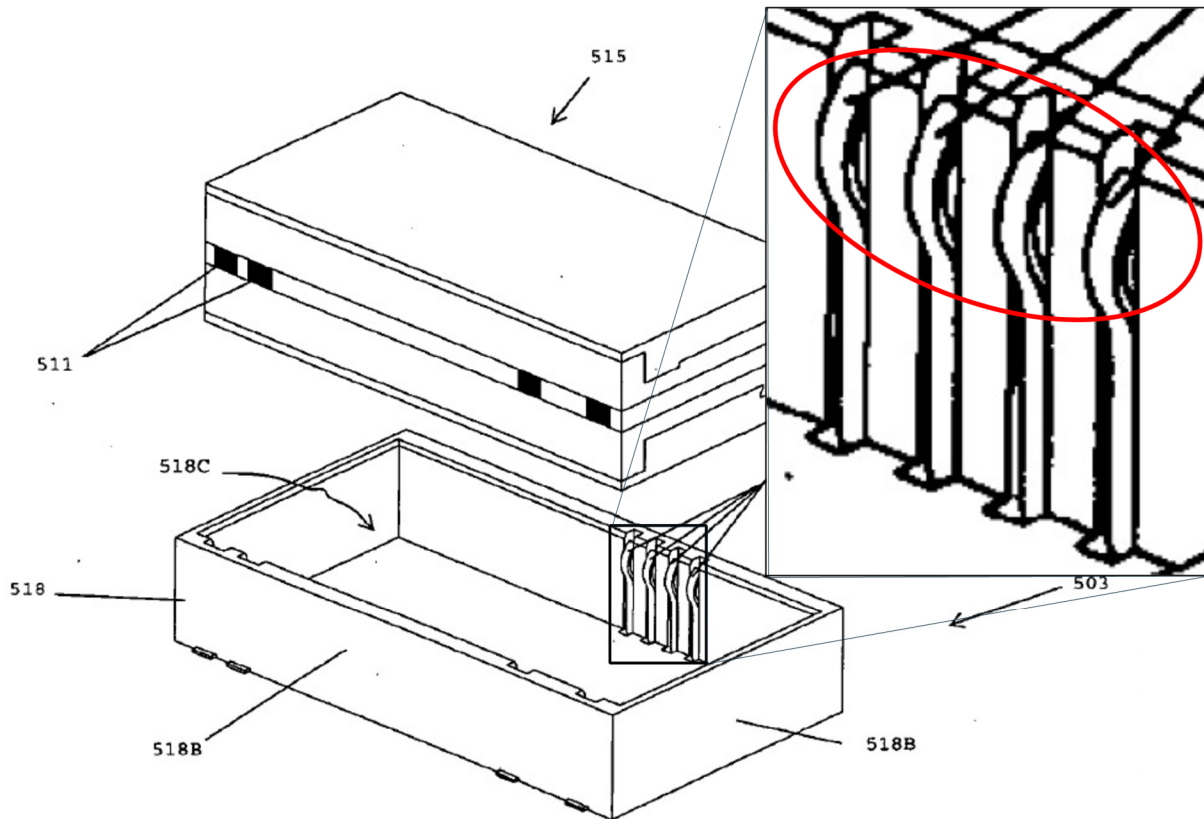


FIG. 21

This type of contact-force teaching is absent from Petitioner's combination which merely wraps Zeng-014's conductor's to Vinciarelli-218's body. Shown below, there is no similar bend to the external conductor—as taught by Vinciarelli-218's flush mount of FIG. 21—onto Zeng-014's conductor in Petitioner's combination. The necessary bend to apply a spring-type force to ensure adequate contact force for the PCB bar codes would theoretically be placed on Zeng-014 conductor in red. Providing such a bend in Zeng-014's conductor to ensure adequate support is not disclosed in the prior art or the Petition, nor is this a practical application of Zeng-014's conductors. Petitioner's supposed motivation

for a contact force extrapolated from Vinciarelli-218 fails.

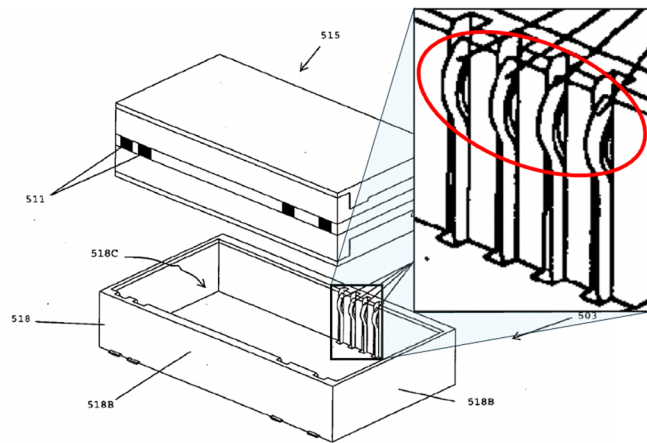


FIG. 21

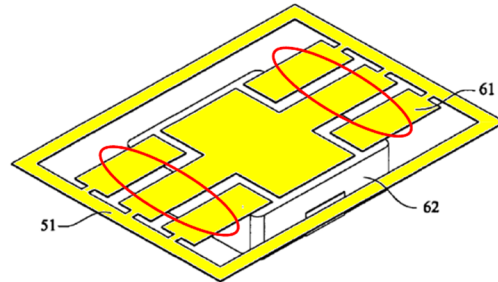


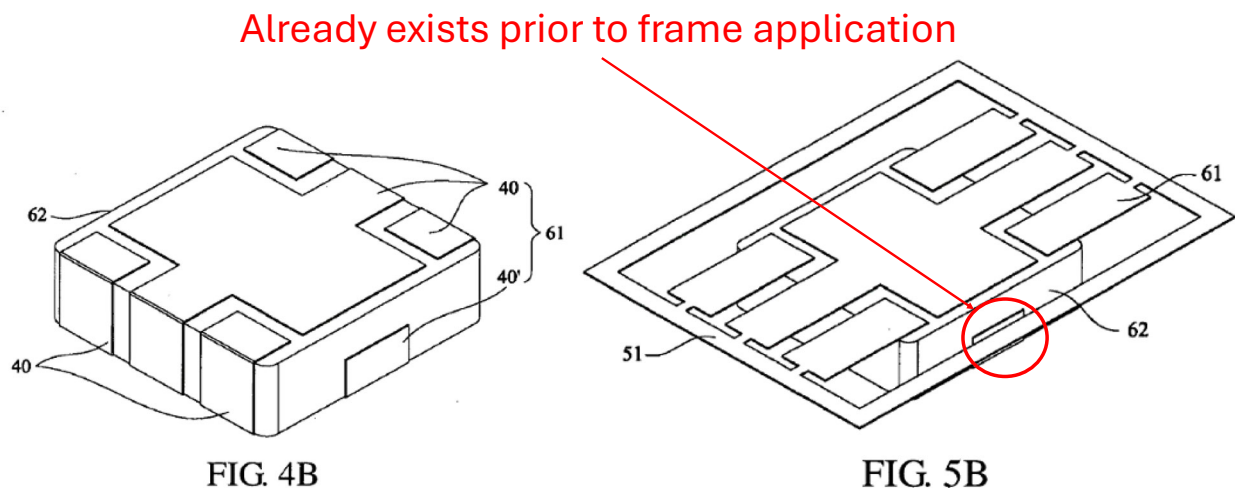
FIG. 5B

Petitioner also relies on Dr. Phinney’s testimony, but that does not lead to the result Petitioner advocates for (and instead leads to the opposite conclusion). Specifically, in Petitioner’s citation to Dr. Phinney at 123:19-128:18, Dr. Phinney was testifying about the contact force supplied by “the little spring contacts” of Vinciarelli-218. (EX1016 at 127:3-4; *see also id.* at 127:17-22 (referring to those spring grooves).) Dr. Phinney testified that Petitioner’s combination lacks “a spring force” that would be necessary to ensure proper electrical conductivity. (*Id.* at 187:13.) Petitioner’s Reply evidence of contact force is lacking.

The lack of a contact force is evident from Petitioner’s reliance on the prior art. As noted, Vinciarelli-218 teaches a contact force, but it is not the type of contact force that would be implemented in Zeng-014’s conductors. Zeng-014, moreover, does not provide its wrapping of its conductor to provide electrical

connectivity to internal components of the inductor via anything akin to Vinciarelli-218's bar-codes.

Instead, the electrical coupling is provided via other contacts that are markedly dissimilar from PCB bar codes. Shown below, electrical contact to internal components is provided by pin conductor 40' (annotated in yellow of Figures 4B and 5C below). (EX1008 at [0059] ("the pin conductor 40' of the first conductive layer 61 shown in FIG. 4A and FIG. 4B is made prior to the formation of the connecting conductor 40."); *see also* EX1016 at 186:19-6 (Dr. Phinney testifying to same and stating Zeng-014's wrapped conductor does not provide electrical contact to internal components.)



The above-annotated conductor is connected to internal coil within the inductor's body. This is described in more detail in FIG. 14. (EX1008 at [0059] ("a process for producing the pin conductor 40' of the inductor 140 are illustrated in FIGS. 14A to 14D.")) As can be seen below, the conductor 143 is part of the

internal coil 142 and is bent onto the external magnetic material portion to provide a connector. (*Id.*)

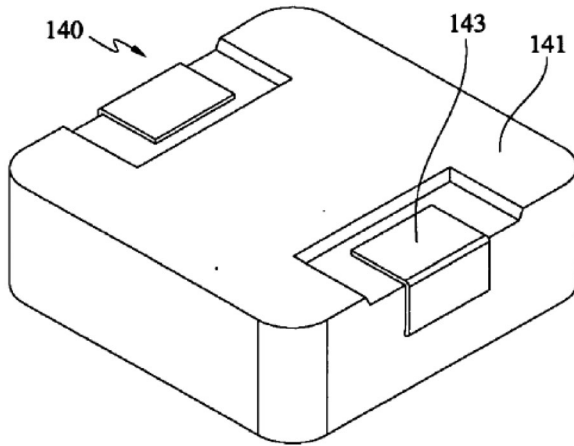


FIG. 14B

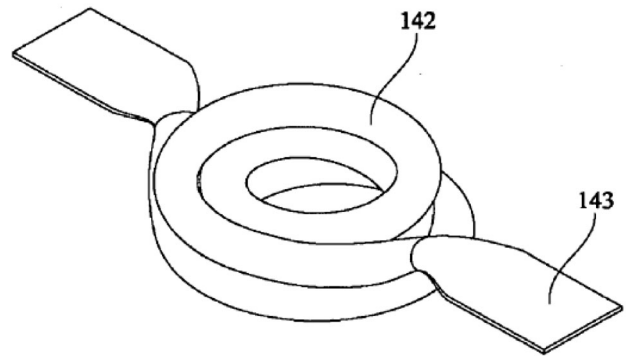


FIG. 14D

The Reply fails to show that Zeng-014 or Vinciarelli-218 contain teachings indicating that Petitioner's proposed combination would provide contact force for a reliable connection. Instead, the evidence demonstrates that a POSITA would not have expected a direct mechanical force to provide a reliable electrical connection, and would look to apply Zeng-014's conductors to Vinciarelli-218's PCB bar codes. (*See also* POR at 69-70.)

B. Adhesives fail

Petitioner's reliance on adhesives fails.

As an initial matter, the Reply fails to address any substantive points Patent Owner raised regarding conductive adhesives. As described in the Patent Owner response, conductive adhesives are more expensive than solder and have less

electrical and thermal conductivity. (POR at 72; EX2005 at ¶163; EX2007.) A POSITA would not have used lesser, and more expensive, techniques such as conductive adhesives to bind the PCB bar codes of Vinciarelli-218 with Zeng-014's wrapped conductor. (EX2005 at ¶163.)

Nonetheless, Vinciarelli-218 provides no teachings that a conductive adhesive with its PCB bar code would be a feasible implementation. Vinciarelli-218 does not describe using conductive adhesives for providing electrical coupling for its PCB bar codes. (EX2008 at 118:2-7.)

Any reliance on conductive adhesives fails.¹

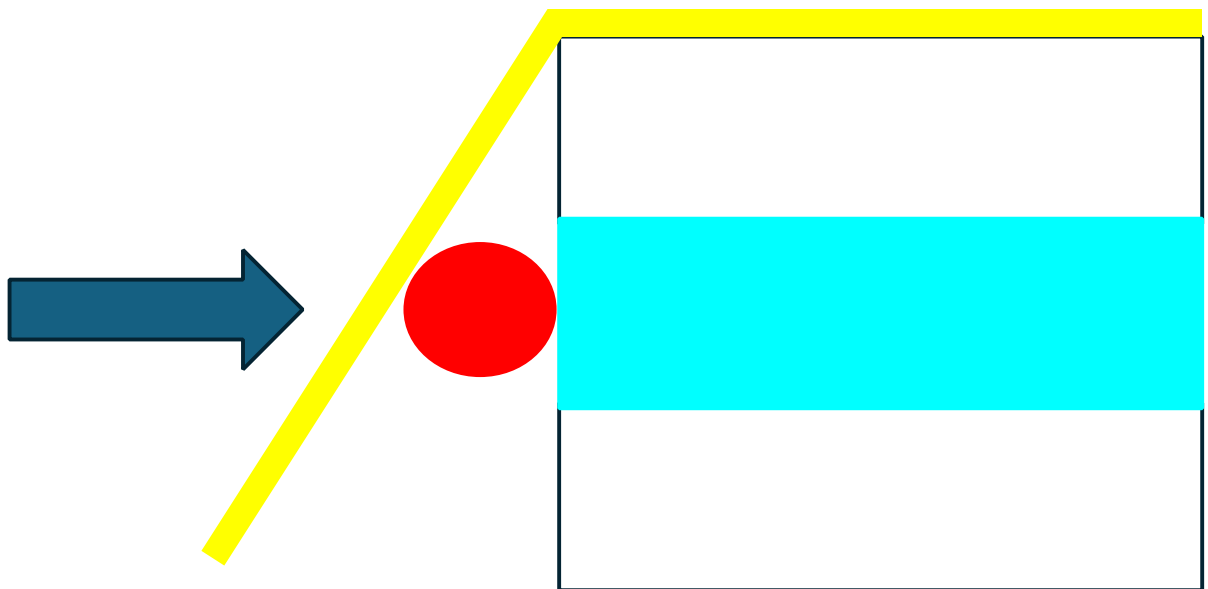
C. Solder fails

Petitioner's reliance on solder to adhere Zeng-014's conductor to Vinciarelli-218's PCB bar codes is also infeasible. Petitioner side-steps how this could be accomplished and instead discusses solder generically.

The physical presence of solder causes significant problems when Zeng-

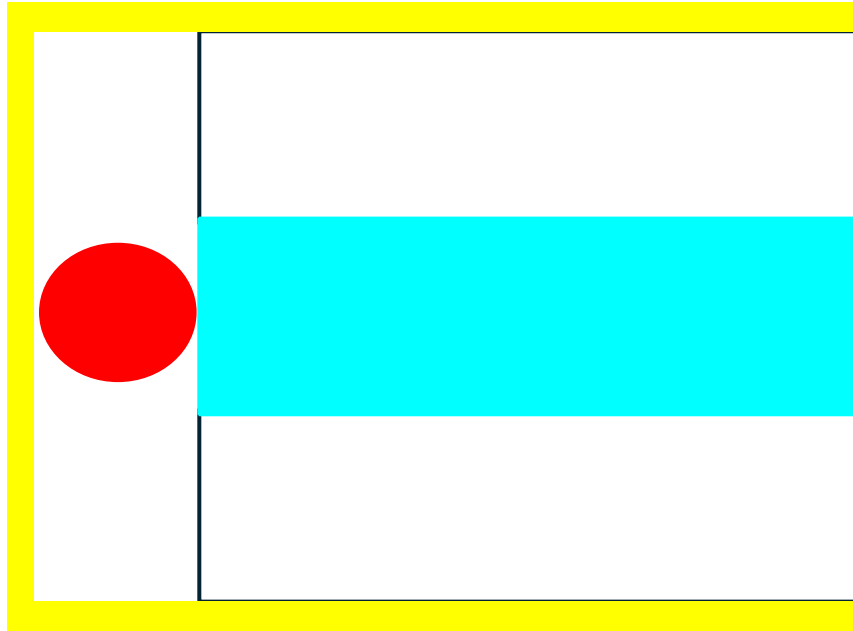
¹ Moreover, any adhesives in combination with a contact force or solder would fail for the same reason as described in the other sections. Adhesives, in addition, would provide an offset due to the physical position they occupy making them not suitable for applying a contact force in the combination of Zeng-014 and Vinciarelli-218.

014's conductors are bent onto Vinciarelli-218's power module. Shown below, solder (red) would take physical space between a conductor (yellow) and the PCB bar codes of the PCB (aqua). The compressive force (blue arrow) needed to bend the conductor of Zeng-014 onto Vinciarelli-218's power module is likely to cause damage to either the lead frame or the device. (POR at 72; EX2005 at ¶163.) And, to the extent it is argued that no damage would result, the bending would need to be so precisely controlled that there would be perfect physical offset between the conductor and the PCB bar codes to not cause damage but also to provide contact. This is impractical. Petitioner provides no explanation regarding these problems, nor does it explain how a POSITA would have been motivated to go through these processes instead of using Vinciarelli-218's preferred technique for its bar codes, conductive adapters.



Even if all the above could theoretically be accomplished without damage,

solder migration would need to be controlled so that it does not spread downward due to reflow. Petitioner provides no explanation regarding a perfect configuration (*e.g.*, such as the one below) could be accomplished.



Lacking any precise detail on actual implementation, the Reply generally refers to Vinciarelli-218's usage of solder. (Reply at 71.) Vinciarelli-218's embodiment, however, demonstrates the impropriety of Petitioner's combination with Zeng-014's conductors. Namely, Vinciarelli-218's Figure 18 depicts the usage of holes in solder joints (annotated red) to provide physical control for any solder to the PCB bar codes (along with physical spacing for solder). (EX1009 at [0120]; *see also* POR at 70-71 (describing how Vinciarelli-218's soldering works without bending).) Petitioner does not provide for any physical control of solder in its combination such as carving joints in Zeng-014's conductor prior to bending

(which would reduce its structural integrity), nor does Petitioner explain how physical space occupied by solder would not be a problem.

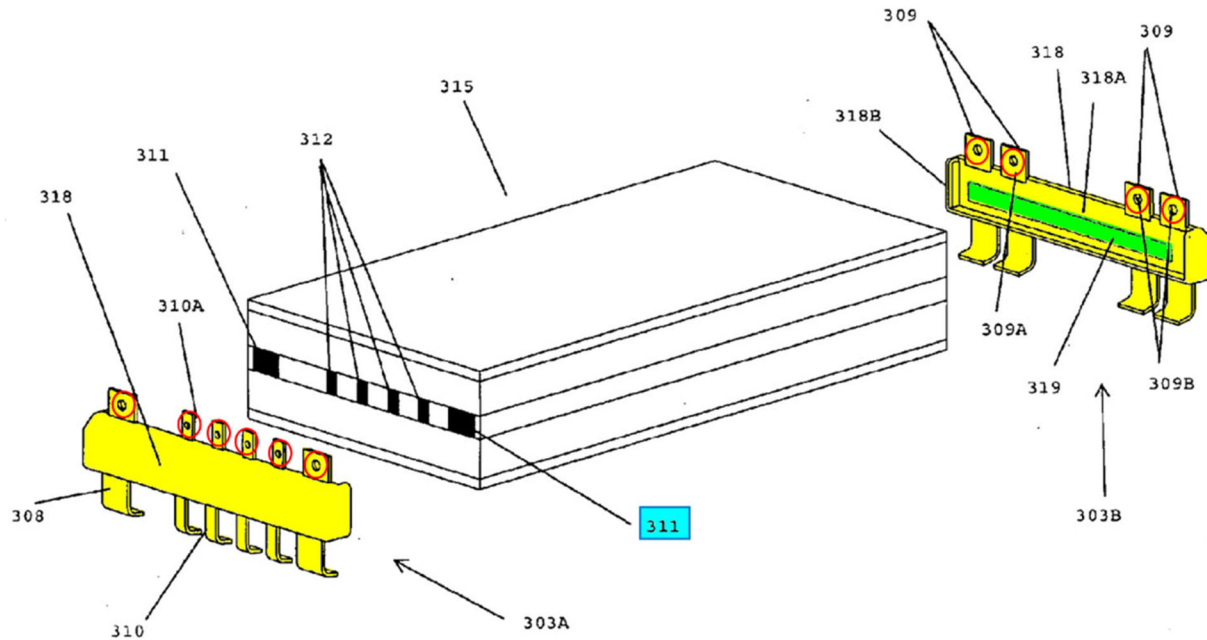


FIG. 18

It is impractical to apply Zeng-014's conductors to Vinciarelli-218's PCB bar codes using solder. A POSITA would thusly have not had a motivation to provide this combination, and Petitioner's piecing together of its combination is hindsight.

D. Petitioner's general motivations fail

Petitioner generally describes "stacking" as a motivation, but its argument suffers from a logical fallacy. Petitioner argues that stacking is desirable, and that would lead to Zeng-014's conductors despite all the problems associated with this technique. Petitioner's argument presupposes that Zeng-014's conductors

themselves are a necessary condition for stacking. Stacking can be accomplished in various other forms by simply using a variation of Vinciarelli-218's adapters. Petitioner's stacking arguments thusly for the reasons described in the Patent Owner Response and for the reasons described herein.

III. Ground 3 fails to present a motivation to combine

Ground 3 fails for the same reasons as Ground 2 described above but also has further deficiencies. This is described in more detail below.

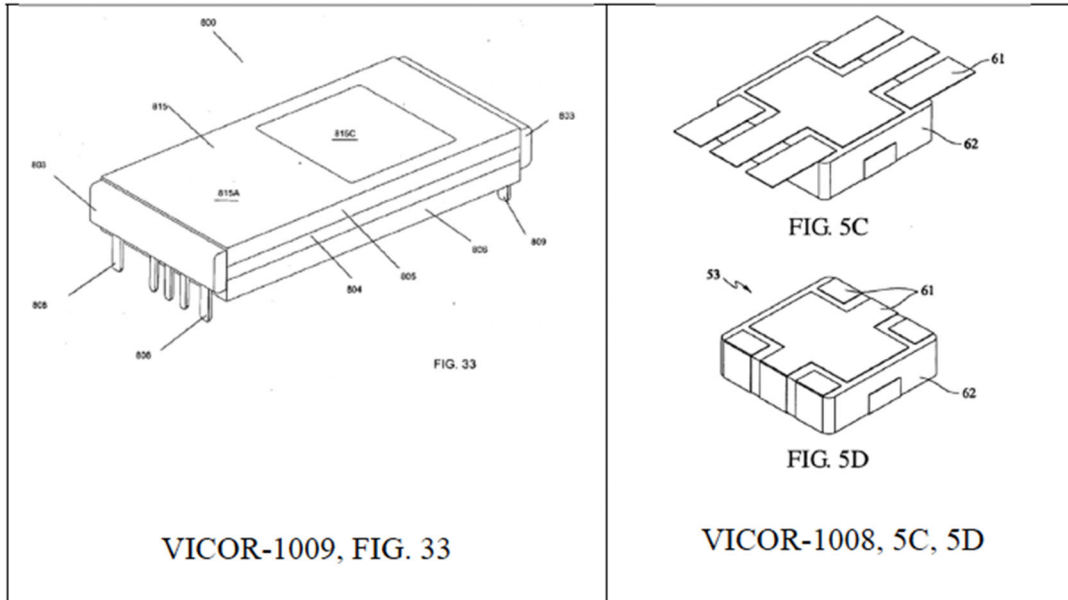
A. Ground 3 fails to present a motivation to provide Zeng-014's conductor onto Vinciarelli-218's body

Ground 3 fails for the same reasons as described with respect to Ground 2.

Petitioner generally argues that Ground 3 does not need to present motivation to apply Zeng-014's conductors to Vinciarelli-218's PCB bar codes. (Reply at 6-7.) This is flatly incorrect.

Petitioner's combination explicitly relies on Zeng-014's conductors being wrapped around a Vinciarelli-218's body for limitation [1g]. This is plainly and unambiguously stated in the Petition, where Vinciarelli-218's connective adapter is replaced by Zeng-014's conductor 61:

In the combination, the entire power converter would take a shape similar to the module of FIG. 33 of Vinciarelli-218 without the adapter and instead with the Zeng-014 conductive layer 61, which would be applied to the entire module rather than one component...



(Pet. at 93.) The argument preceding Petitioner’s [1g] argument further emphasizes Petitioner’s reliance on Zeng-014’s conductors being wrapped onto Vinciarelli-218’s body. The Petition is plain in its wording setting up its Ground 3 combination.

Petitioner’s Reply, which states that it never relied on the form factor of Vinciarelli-218, belies the literal language of the Petition described above. Petitioner cannot—via Reply—recast the literal language of its combination.

As described in the Patent Owner response, Petitioner needed—but failed—to provide a motivation in Ground 3 explaining why a POSITA would have been motivated to apply Zeng-014’s wrapped conductor onto Vinciarelli-218’s device. Petitioner’s Reply doubles-down on this failure, by arguing that Petitioner misread the combination and that “reliance on material from Ground 2 is unnecessary.”

(Reply at 8.) But, as described above, this plainly is not the case because Petitioner explicitly relied on Zeng-014's conductors wrapped onto a Vinciarelli-218's device for limitation [1g]. The Petition (and Reply) fail to present any motivation for wrapping Zeng-014's conductors onto Vinciarelli-218's device for Ground 3.

Nonetheless, even if a motivation were inferred by borrowing analysis from Ground 2, it fails for the reasons described above with respect to Ground 2.

B. Petitioner's Ground 3 has further deficiencies in its motivation to combine

Petitioner's Ground 3 has further deficiencies that its Reply fails to sufficiently address. As described in the Patent Owner Response, there is no motivation to provide symmetry in components to Zeng-014 (POR at 81-83) and Petitioner mixes two separate devices across [1f] and [1g] (*id.* at 79-81).

1. Petitioner provides no motivation to modify Zeng-014 to arrive at [1f]

Petitioner's combination for [1f] argues that Zeng-014 could be made to be symmetrical by providing a second inductor on the opposite end of the PCB board that its inductor currently lies. (POR at 81-83.) No motivation to do so was provided via the Petition. (*Id.*)

The Reply does not provide this motivation. Instead, Petitioner argues that there would be the "benefits of symmetry." (Reply at 11.) But, symmetry in itself

is not—nor is it articulated as—something that provides a specific benefit.

Petitioner arrives at the desired configuration (symmetry) and concludes that this desired configuration, by the nature of the configuration itself, provides a benefit.

Petitioner merely arrives at a physical configuration of the claims, arguing that the physical configuration is the motivation; this is hindsight bias. *KSR Int’l Co. v.*

Teleflex Inc., 550 U.S. 398, 421, (2007) (“A factfinder should be aware, of course, of the distortion caused by hindsight bias and must be cautious of arguments reliant upon ex post reasoning.”) This does not provide a motivation to modify Zeng-014’s device to have symmetrical inductors, nor has any benefit of “symmetry” been articulated by Petitioner.

The rest of Petitioner’s discussion (Reply at 11-12) merely describes the ability to place an inductor on the top and bottom of a carrier. But, whether something can be done, does not address the motivational question regarding why it should be done. Splitting an inductor into two raises problems in itself, including increasing size and decreasing power density, which directly contradicts the objective to reduce size and increase power density. (EX1008 at Background, [0011].)

As a result, Ground 3 lacks any motivation to provide the inductor on the bottom and top of Zeng-014 to meet [1f].

2. Petitioner mixes and matches embodiments to meet [1f] and [1g]

As described in the Patent Owner Response, Petitioner mixes and matches embodiments to arrive at the limitations of [1f] and [1g]. (POR at 79-81.)

Petitioner attempts to excuse this by stating that “[b]oth figures show the same general form factor of a cuboid body.” (Reply at 8-9.) But the fact remains that FIGS. 6 and 33 of Vinciarelli-218 depict entirely different devices.

Petitioner’s attempt to equate the two devices similar fails. Their moldings and encapsulants are different (orange) as are the components (purple). Shown below, FIG. 6’s encapsulant (orange) is not flush throughout the device. (EX1009 at [0087].) The top-most components—which are covered by encapsulant—are annotated in purple.

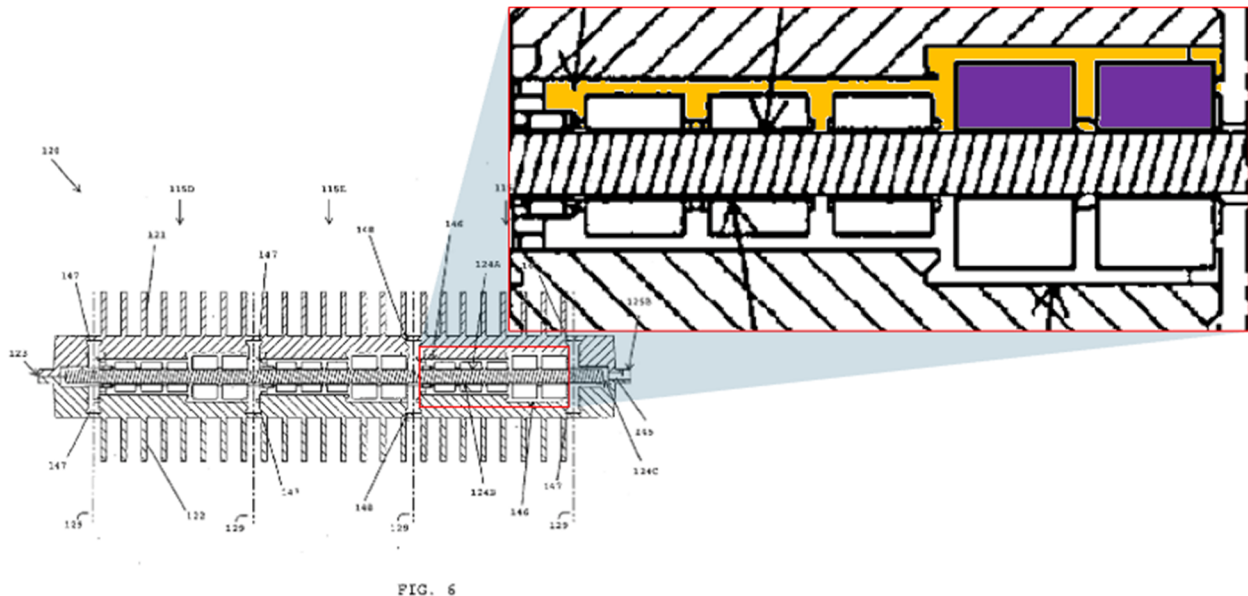
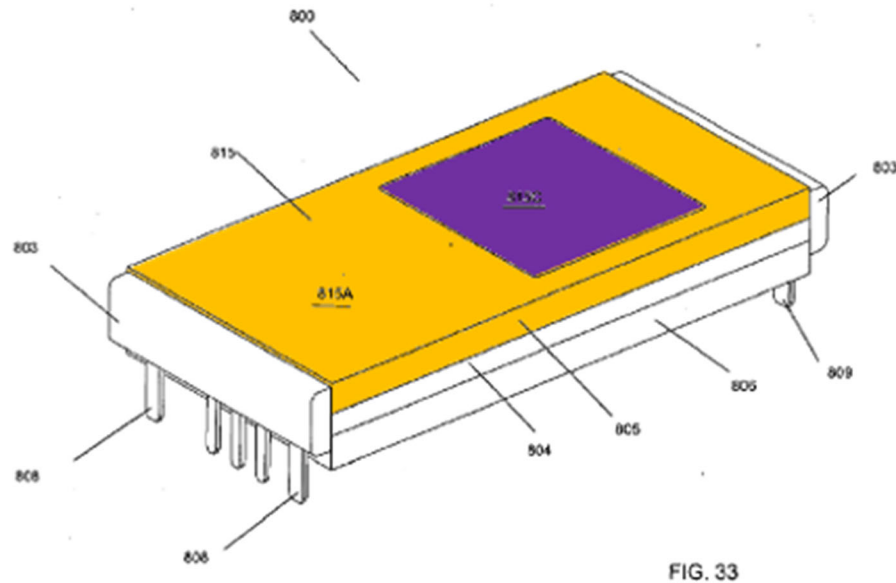


FIG. 33, in contrast, has encapsulant that appears flat across the surface,

along with a single exposed core. These two devices are dissimilar even if FIG. 6's heatsink were removed.



Petitioner's combination for Ground 3 fails because it takes one device to meet limitation [1f] and another to meet [1g] (POR at 79-81) and the Reply does not cure this deficiency.

IV. Ground 1A fails to teach the connection part's two terminals and fabrication by mechanical support of [1d], [1e], and [1g]

Petitioner's Grounds 1A-C fail because Vinciarelli-664 fails to teach the connection part's (1) two terminals of [1d] and [1e]; and (2) fabrication by mechanical support of [1g].

A. Vinciarelli-664 fails to teach connection part's two terminals of [1d] and [1e]

1. Petitioner failed to identify Vinciarelli-664's "first terminal."

While the Reply argues that the "first terminal" was identified via the Petition at page 25, inspection into that page indicates no mention of a "first terminal." In Petitioner's whole analysis of [1d], the "first terminal" is not identified and a "terminal" is only mentioned in a singular instance in reference to "contacts 120-1, 120-2, 121, and 122." (Pet. at 22-23.) There is no identification where on those contacts that the "first terminal" would exist or where it would be "electrically coupled to the upper surface or the lower surface of the carrier" as required by [1d].

Petitioner seeks to remedy the Petition by providing a new annotation to Figure 11. Petitioner's Reply assertion that the annotated figure reflects the words in the Petition at pages 22-26 is incorrect. Moreover, Petitioner's mere presentation of a new annotated figure is illustrative of the Petition's failure to identify the first terminal; if the "first terminal" had been identified in the first instance, it could have easily been demonstrated via Reply by quote from the Petition.

Nonetheless, Ground 1A is an anticipatory ground. Petitioner cannot simply mix and match various embodiments at will. *BlephEx, LLC v. Myco Indus., Inc.*,

24 F.4th 1391, 1400-02 (Fed. Cir. 2022). Nor can it do so, identifying for the first time new limitations in separate embodiments, at the Reply stage. *See* 37 CFR § 42.23(b); *Yita LLC v. MacNeil IP LLC*, 69 F.4th 1356, 1366 (Fed. Cir. 2023) (stating that IPR petitioner may not raise in reply entirely new rationale).

Tellingly, Petitioner's Reply provides this new annotation because the "first terminal" was not identified in the first instance in the Petition. The Petition fails to identify the "first terminal," and Ground 1A fails.

2. Petitioner failed to identify Vinciarelli-664's "second terminal."

Claim [1e] requires that the "second terminal" is "attached to a surface of the first electronic component apart from the carrier, wherein the second terminal of the first connection part is a bonding pad."

Petitioner's Reply fails to demonstrate that the Petition had identified the "second terminal" and its claimed limitations, *i.e.*, that the "second terminal" both be "attached to a surface of the first electronic component apart from the carrier" and that it be a "bonding pad." In attempts to address this deficiency, the Reply addresses the Patent Owner Response depiction of a possible exposed core orientation on the top surface. (Reply at 19.) This orientation, however, is related to the top surface and, as described in the Patent Owner Response, this configuration does not lead to the conclusion that there is similarly an exposed core at the bottom surface of the power supply where the "second terminal" would be

“attached to a surface of the first electronic component” and a “bonding pad.”

(POR at 25.)

Further, while the Reply argues that “[a] symmetrical shield is likewise plated onto the lower exposed core.” (Reply at 19.) The citations at 6:5-9 and 7:13-23 address only the shielding, and this does not describe any exposed core or its configuration related to the shielding. This further does not address the other requirements for the “second terminal,” namely that it be “attached to a surface of the first electronic component” and is a “bonding pad.”

Petitioner’s Reply, moreover, fails to cure the deficiency identified in the Patent Owner Response regarding the placement of Vinciarelli-664’s bonding pad. The Response argued that Vinciarelli-664’s “bonding pad,” if any, would not extend across the bottom surface of the power module and would instead match the location of pad 922. (POR at 24-25; *see also id.* at 21-24.) In other words, there would be no “second terminal” that is both “attached to a surface of the first electronic component” and a “bonding pad” due to the supposed location of the Petitioner’s presumed exposed core and the location of any bonding pad.

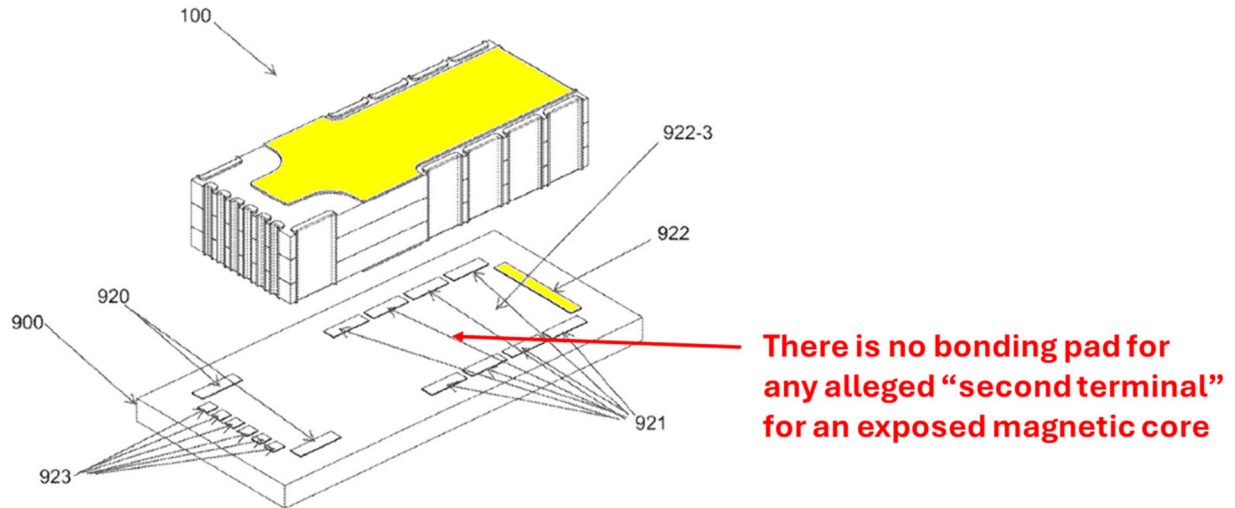


FIG. 2

Petitioner’s Reply touches on this, by arguing that shielding would cover the bottom surface of Vinciarelli-664’s power component. (Reply at 21-22.) This, however, does not solve Petitioner’s problem for the second terminal, that it be both “attached to a surface of the first electronic component” and a “bonding pad.”

The Reply, moreover, attempts to side-step Dr. Baker’s testimony regarding the lack of a shielding depicted in Vinciarelli-664 by stating that he was only referring to product. The full testimony demonstrates that he was being specifically asked about a prior art component, element 122:

Q. What is your understanding as to how the conductor 122 or, rather, the topmost metal is placed onto the device?

A. So I’m not sure that that piece of metal would be considered a carrier in such that it has what the claim requires, where there’s an upper surface and a lower surface, because all I can see is a piece of metal on top of the package. So I didn’t put a lot of thought into that piece

of metal, but it looks like just a piece of metal that's epoxied onto the package.

I don't know if there's an upper surface or lower surface. It could just go beyond the top or wrap around the side. I don't know specifically what that piece of metal is doing.

(EX2006 at 21:2-16; *see also id.* at (20:19-21:1 (showing that Dr. Baker was being asked about page 25 of his declaration); *see also* EX1003 at pg. 25 (showing component 122 of Vinciarelli-664's Figure 1).)

Finally, Petitioner's reliance on datasheets should be summarily dismissed. The datasheets post-date the prior art date of Vinciarelli-664 and provide zero probative value as to the teachings of Vinciarelli-664. Moreover, the datasheet's bonding areas provide no correlation to that of Vinciarelli-664. (EX1017 at 21.) Nonetheless, simply because a shielding extends to the bottom of a device, does not address the limitations that the "second terminal" be both "attached to a surface of the first electronic component" and a "bonding pad."

Petitioner's Ground 1A thusly fails.

B. Vinciarelli-664 fails to teach fabrication of mechanical support of [1g]

Petitioner's Reply analysis regarding limitation [1g] does not cure the deficiencies of Vinciarelli-664 identified via the Patent Owner Response. As described in the Patent Owner Response, the "first connection part is fabricated by mechanical support of the first electronic component," which at a minimum requires physical contact between the "first electronic component" and "connection

part.” (POR at 26-28.) And, all Petitioner has demonstrated is the possible core and shielding in Vinciarelli-664, but there has been no demonstration of physical attachment between the two where mechanical support could be argued. (*Id.* at 28.)

There is no “first connection part is fabricated by mechanical support of the first electronic component” because there is no claimed structure where the connection part is attached to the surface of an exposed core.

C. Petitioner’s argument that Vinciarelli-664 and the accused products are the same should be disregarded

Petitioner argues that Vinciarelli-664 describes the accused product and, by extension, that Vinciarelli-664 meets all limitations of the ’263 Patent. Petitioner has zero evidence that the two are the same. (EX2008 at 105:14-106:5 (Dr. Baker admitting that he had not conducted any analysis to demonstrate that the product is the same as being described by Vinciarelli-664 despite an eye-balling of the figures).) Tellingly, none of Petitioner’s documentation of the product are near Vinciarelli-664’s priority date. Petitioner’s argument should be disregarded because it is mere attorney argument.

Nonetheless, even if the product and prior art were similar, the PTAB’s analysis of validity based on prior art publications is a separate question to that of a district court’s determination of infringement of products.

V. Petitioner's Grounds 1B and 1C similarly fail

As described in the Patent Owner Response, Petitioner's Grounds 1B and 1C fail because they fail to cure the deficiencies of Ground 1A described in section IV. The Reply (at 27-28) does not cure these deficiencies.

Ground 1C has further deficiency in its combination. As described in the Patent Owner Response, a POSITA would not have been motivated to go from bulk production to the module-by-module process of Zeng-014. (POR at 55-59.) The Reply's reference to incorporated references in Vinciarelli-664 does not support Petitioner's arguments. (Reply at 27-28.) The embodiments relied upon in Vinciarelli-664 are directed to bulk processing (Pet. at 55-57), and the fact that Vinciarelli-664 incorporates or references other applications, does not mean that a POSITA would have found any motivation to move from bulk processing of Vinciarelli-664's modules to a significantly slower and more cumbersome process of bending conductors onto singulated power supplies. (POR at 55-59.)

VI. Claim construction**A. [1g]: "is fabricated by mechanical support of the first electronic component"**

Petitioner provides no substantive analysis to contest the Patent Owner Response, and the Board's analysis in its institution decision regarding this term. (Reply at 2-3.) Consequently, Patent Owner's construction should be adopted and this term should be interpreted as structural.

B. [1f]: “wherein the carrier is disposed at 1/3 to 2/3 of a height of the power converter”

Limitation [1f] should be construed to describe the carrier’s location to be at 1/3 to 2/3 of the height of the power converter, not that only a portion of the carrier is located at 1/3 to 2/3 of the power converter’s height.

Petitioner’s Reply (at 3) mischaracterizes Patent Owner as replacing language for “disposed at.” This is not the case; Patent Owner provides construction for “disposed at,” which describes the position where an element (the “carrier”) is located. It is Petitioner who re-writes this phrase to broaden it; in effect, Petitioner re-writes [1f] to state: “wherein at least a portion of the carrier is disposed at 1/3 to 2/3 of a height of the power converter.” Petitioner’s construction is so broad that it covers any type of configuration so long as the carrier has at least part of it existing within the middle 3rd of the device. (EX2008 at 88:17-24.)

Patent Owner’s interpretation is consistent with the intrinsic record and is therefore the correct interpretation under *Phillips*. See *Phillips v. AWH Corp.*, 415 F.3d 1303, 1319-20 (Fed. Cir. 2005). Every single embodiment that references the carrier’s position as it relates to its components, describes the carrier as within the middle 1/3rd of the device. (POR at 12-14.)

Petitioner’s Reply points to 5:53-59 for support of its construction (POR at 3-6), but this section does not describe the carrier’s positioning, the critical issue surrounding the construction of [1f]. 5:53-59 of the ’263 Patent describes an

embodiment that is not related to precise carrier positioning to reduce strain. This section states nothing about the carrier, the 1/3rd to 2/3rd orientation, nor does it describe reducing strain. And, this section starts by stating “[i]n further embodiment.” Petitioner’s relied-upon 5:53-59 is excerpted in full below.

In a further embodiment, the definition of the symmetry mentioned above may be that, the second height H2 is not greater than twice the first height H1, or the first height H1 is not greater than twice the second height H2. In one embodiment, the height of the first electronic component C1 equals to the height of the second electronic component C2.

(EX1001 at 5:53-59.) It would be incorrect, as Petitioner does, to extend this language—which mentions nothing about the carrier or 1/3 to 2/3 orientation—to broaden the interpretation of [1f].

In contrast, the sentences preceding 5:53-59 describe an embodiment that describes the precise orientation of the carrier as it relates to the components to reduce strain, this section states:

In a further embodiment, the first electronic component C1 and the second electronic component C2 are symmetric with respect to the carrier PCB. As such, the resource of the carrier PCB can be quite utilized, and the uniform strain distribution of throughout the converter can be benefited. Therefore, no additional strain solution is needed, for avoiding the problem of increasing of the power converter volume resulted from using an additional strain solution.

(EX1001 at 5:45-53.) This section, along with the other sections of the ’263

Patent referencing positioning of a carrier, all state that it is within the middle 3rd of the device's height. (POR at 12-14.)

For the above reasons and the reasons described in the Patent Owner Response, Patent Owner's construction of [1f] should be adopted.

VII. Petitioner fails to demonstrate that grounds 1a, 1b, 1c and 3 teach the carrier height limitations of [1f]

A. Grounds 1A-1C fail to demonstrate that [1f] is taught in Vinciarelli-664

Each of Grounds 1A-1C fails because Vinciarelli-664 makes no disclosure or teaching of a carrier completely above a 1/3rd height line and completely below a 2/3rd height line.

From the beginning of this proceeding to its post-institution Reply, Petitioner has only pointed to figure illustrations in Vinciarelli-664 but has yet to make one single citation to the written description in Vinciarelli-664's specification describing the carrier's actual position and height coordinates. (Pet. at 31-34; Reply at 23-24.) It is impossible to derive the actual carrier heights from glancing at Vinciarelli-664's illustrations, and it is likewise and thusly impossible to make any conclusion whether the illustrated carrier is kept completely within the middle-third or if it crosses one of [1f]'s boundary lines.

Petitioner now attempts to rely on a separate embodiment of Vinciarelli-664. (Reply at 24.) Petitioner cannot simply mix and match certain features of certain

embodiments at will. Nor can it do so in Reply.

Accordingly, Vinciarelli-664 fails to anticipate or render obvious the precise quantitative requirement of [1f]. Each one of Grounds 1A-1C thusly fails.

B. Petitioner's Ground 3 Fails to Demonstrate that [1f] is Taught in Vinciarelli-218

As discussed above, the plain and ordinary meaning of [1f] as understood by a POSITA would be that the carrier is disposed entirely within the 1/3 to 2/3 height range. This interpretation is a precise quantitative constraint on the carrier placement: [1f] is unmet if, for example, the height level of the carrier's top edge is located above the 2/3 height line. [1f] is a requirement that is met (or not) based on an evaluation of quantitative heights. This is a level of precision that cannot be found solely in non-scale patent drawings; Federal Circuit precedent requires some actual written description in a specification. *In re Wright*, 569 F.2d 1124, 1127 (CCPA 1977).

Petitioner's Reply inherits the mistakes of the Petition, by continuing to focus on the centrality of Vinciarelli-218's PCB due to component symmetry. (Reply at 9-12.) In the Reply, Petitioner continues to push its position that Vinciarelli-218 includes disclosure of component symmetry. (*See id.*) This still misses the mark, as the dispute is not whether or not component symmetry is disclosed, but that component symmetry is insufficient to prove that the prior art confined its PCB within a certain specific height range. A prior art disclosure of

equal component symmetry does nothing to suggest that resultant carrier is disposed at a $1/10$ to $9/10$ height range (not meeting [1f]), $1/5$ to $4/5$ height range (not meeting [1f]), a $1/4$ to $3/4$ height range (not meeting [1f]), or the necessary $1/3$ to $2/3$ height range.

Ground 3 thusly fails.

VIII. CONCLUSION

For the above reasons, all challenged claims are not invalid.

Dated: April 29, 2025

Respectfully submitted,

/ Miguel Bombach /

John P. Schnurer, Reg. No. 52,196
Lead Counsel

PERKINS COIE LLP
11452 El Camino Real, Suite 300
San Diego, California 92130
(858) 720-5700

Back-Up Counsel
Miguel Bombach, Reg. No. 68,636
Yun (Louise) Lu, Reg. No. 72,766

Attorneys for Patent Owner
Delta Electronics, Inc.

CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.6(e), I certify that I caused to be served a true and correct copy of the foregoing: PATENT OWNER'S SUR-REPLY TO PETITION TO INSTITUTE INTER PARTES REVIEW and accompanying exhibit by email to the electronic service addresses for Petitioner on the date indicated below:

LEAD COUNSEL	BACK-UP COUNSEL
Steven Katz, Reg. No. 43,706 Fish & Richardson P.C. 60 South Sixth Street, Suite 3200 Minneapolis, MN 55402 Tel: 202-783-5070 Fax: 877-769-7945 Email: IPR25808-0012IP1@fr.com katz@fr.com	Lawrence Kolodney, Reg. No. 43,807 Ryan O'Connor, Reg. No. 60,254 60 South Sixth Street, Suite 3200 Minneapolis, MN 55402 Tel: 202-783-5070 Fax: 877-769-7945 Email: PTABInbound@fr.com kolodney@fr.com; oconnor@fr.com

Dated: April 29, 2025

Respectfully submitted,

/Anita Chou/

Anita Chou, Paralegal
Perkins Coie LLP