

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

VOLTERRA SEMICONDUCTOR
LLC,

Plaintiff,

v.

MONOLITHIC POWER SYSTEMS,
INC.,

Defendant.

Civil Action No. 19-2240-CFC

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MEMORANDUM OPINION

September 30, 2021
Wilmington, Delaware



COLM F. CONNOLLY
CHIEF JUDGE

Plaintiff Volterra Semiconductor LLC has sued Monolithic Power Systems, Inc., for infringement of U.S. Patent Nos. 6,362,986 (the #986 patent), 7,525,408 (the #408 patent), and 7,772,955 (the #955 patent). D.I. 71. The asserted patents are directed to DC-to-DC converters with coupled inductive windings and methods for making those windings. Pending before me is Monolithic's motion pursuant to Federal Rule of Civil Procedure 12(b)(6) to dismiss Volterra's Second Amended Complaint in its entirety for failure to adequately plead both direct and indirect infringement. D.I. 83.

I. BACKGROUND

A. The Asserted Patents

The #986 patent claims improved methods for DC-to-DC conversion with coupled inductive windings. Volterra alleges infringement of independent claim 17 and dependent claims 18, 20–21, and 23 of the #986 patent. D.I. 71 ¶ 26.

Claim 17 recites

[a] method for reducing ripple in a DC-to-DC converter of the type producing an output voltage from an input voltage, comprising the steps of:

orienting, in like direction, first and second windings about a common core to increase coupling between the windings; and

alternatively activating the first winding about 180 degrees out of phase with the second winding, to regulate magnitude of the output voltage.

The #408 and #955 patents are both divisions of a common prior application. The #408 patent, in relevant part, claims an N-phase coupled inductor for coupled power conversion. Volterra alleges infringement of independent claim 14 and its dependent claim 20 of the #408 patent. D.I. 71 ¶ 48. Claim 14 recites

[a]n N-phase coupled inductor for magnetically coupling N phases of a power converter, comprising:

a magnetic core including a first and a second magnetic element and N connecting magnetic elements, N being an integer greater than one, the first and second magnetic elements being disposed parallel to each other and separated by a linear separation distance, each connecting magnetic element being coupled to the first and second magnetic elements, the first and second magnetic elements and the N connecting elements cooperatively forming N-1 passageways; and

N windings, each of the N windings for electrically connecting to a respective phase of the power converter,

each winding being wound about a respective connecting element and at least partially through at least one passageway, and

each passageway having two of the N windings wound at least partially therethrough.

The #955 patent claims, in relevant part, coupled inductors with multiple windings.

Volterra alleges infringement of independent claims 12, 16, and 23 and dependent claims 13–15, 17–21, and 24–28 of the #955 patent. D.I. 71 ¶ 66. Claim 12 recites

[a] coupled inductor, comprising:

a magnetic core having a bottom side, a first side, and a second side opposite of the first side, the magnetic core forming a passageway extending from the first side to the second side, the passageway having depth and height defining a cross-sectional area of the passageway, the magnetic core including an outer leg extending from the first side to the second side and partially defining the passageway; and

a first and a second winding having a same number of turns, the first and second windings wound at least partially around the outer leg and through the passageway, the first and second windings separated by a linear separation distance throughout the passageway, the separation distance being along an axis perpendicular to an axis of the height of the passageway and perpendicular to an axis of the depth of the passageway, the separation distance being greater than the height of the passageway, the cross-sectional area of the passageway between the windings being at least 50% free of magnetic material, each winding having a respective first end and a respective second end extending to the bottom side of the magnetic core for soldering to a printed circuit board.

Claim 16 recites

[a] two phase DC-to-DC converter, comprising:

a two phase coupled inductor, including:

a magnetic core forming a passageway, the passageway having depth and height defining a cross-sectional area of the passageway, and

a first and a second winding having a same number of turns wound at least partially around a common leg of the magnetic core and through the passageway, the first and second windings separated by a linear separation distance throughout the passageway the separation distance being along an axis perpendicular to an axis of the height of the passageway and perpendicular to an axis of the depth of the passageway, each winding having a respective first end and a respective second end, the second ends of the first and second windings being electrically connected to a common load, the cross-sectional area of the passageway between the windings being at least 50% free of magnetic material;

a first switch electrically connected between a power source and the first end of the first winding; and

a second switch electrically connected between the power source and the first end of the second winding;

wherein the first and second switches independently and sequentially switch the first end of their respective winding to an input signal of the power source to regulate an output signal at the load.

Claim 23 recites

[a] two phase coupled inductor for magnetically coupling first and second phases of a power converter, comprising:

a magnetic core forming a passageway at least partially defined by first, second, third, and fourth planar surfaces of the magnetic core, the first planar surface being opposite of the second planar surface, the third planar surface being opposite of the fourth planar surface;

a first winding providing electrical interface for the first phase, the first winding wound at least partly about the magnetic core and passing through the passageway along the first planar surface and contacting the third planar surface; and

a second winding providing electrical interface for the second phase, the second winding wound at least partly about the magnetic core and passing through the passageway along the first planar surface and contacting the fourth planar surface,

the passageway having depth and height, the depth being greater than the height,

the first and second windings extending through the magnetic core only via the passageway, and

the first and second windings being separated by a linear separation distance throughout the passageway, the separation distance being along an axis perpendicular to an axis of the height of the passageway and perpendicular to an axis of the depth of the passageway, the separation distance being greater than the height of the passageway.

B. Factual Allegations

The following facts are taken from the Complaint and assumed to be true in assessing the merits of the pending motion. *See Umland v. PLANCO Fin. Servs., Inc.*, 542 F.3d 59, 64 (3d Cir. 2008).

Volterra is a developer of low-voltage power delivery solutions. D.I. 71 ¶ 13. Monolithic is a provider of electronics, including DC-to-DC power converters. D.I. 71 ¶ 6. Volterra accuses Monolithic's 48V-1V and substantially similar products of infringing the asserted patents. D.I. 71 ¶ 18. The 48V-1V Power Solution for CPU, SoC or ASIC Controller is a two-phase DC-to-DC power converter with coupled inductors. D.I. 71 ¶¶ 46(d), 78. Volterra also alleges indirect infringement claims based on MP2888A and MP2965 controllers that operate in a couple inductor mode. D.I. 71 ¶¶ 24–25, 46–47, 64–65.

Monolithic demonstrated the 48V-1V at the 2019 IEEE Applied Power Electronic Conference and Exposition. D.I. 71 ¶ 18. Volterra's allegations rely heavily on Monolithic's display at that conference and a YouTube video promoting the 48V-1V. Based on these materials, Volterra alleges that the accused products have the electronic components (*e.g.*, windings, magnetic elements, and an N-phase coupled inductor) covered by the asserted patents. D.I. 71 ¶¶ 28–38, 50–56, 68–110.

Volterra also alleges that Monolithic was made aware of Volterra's patents and its potential infringement of the patents through communications it had with Intel Corporation, Eaton Corporation PLC, and NVIDIA. D.I. 71 ¶¶ 23(a)–(c), 45(a)–(c), 63(a)–(c). According to the Second Amended Complaint, all three companies expressed to Monolithic concerns about potential infringement of

Volterra's coupled inductor patents. D.I. 71 ¶¶ 23(a)–(c), 45(a)–(c), 63(a)–(c).

Monolithic told Intel that Volterra's patents would not be a problem because they would soon expire. D.I. 71 ¶ 23(a), 45(a), 63(a). Monolithic did not respond to Eaton's expressions of concerns. The Second Amended Complaint also alleges that two of Monolithic's senior engineers cited the asserted patents in their technical writings before the filing of this lawsuit. D.I. 71 ¶ 23(d).

II. LEGAL STANDARDS FOR STATING A CLAIM

To state a claim on which relief can be granted, a complaint must contain “a short and plain statement of the claim showing that the pleader is entitled to relief.” Fed. R. Civ. P. 8(a)(2). Detailed factual allegations are not required, but the complaint must include more than mere “labels and conclusions” or “a formulaic recitation of the elements of a cause of action.” *Bell Atl. Corp. v. Twombly*, 550 U.S. 544, 555 (2007) (citation omitted). The complaint must set forth enough facts, accepted as true, to “state a claim to relief that is plausible on its face.” *Id.* at 570. A claim is facially plausible “when the plaintiff pleads factual content that allows the court to draw the reasonable inference that the defendant is liable for the misconduct alleged.” *Ashcroft v. Iqbal*, 556 U.S. 662, 678 (2009) (citation omitted). Deciding whether a claim is plausible is a “context-specific task that requires the reviewing court to draw on its judicial experience and common sense.” *Id.* at 679 (citation omitted).

III. DISCUSSION

A. Direct Infringement Claims

Monolithic argues that Volterra's direct infringement allegations should be dismissed, because Volterra fails to plead that the 48V-IV practices all the elements of the asserted claims. Volterra relies on a YouTube video to characterize the accused product, and Monolithic argues that this video and Volterra's accompanying annotations do not sufficiently support its allegations.

1. Legal Standards

Liability for direct infringement arises when a party "without authority makes, uses, offers to sell, or sells any patented invention, within the United States or imports into the United States any patented invention during the term of the patent." 35 U.S.C. § 271(a). To plead direct infringement, a plaintiff must allege facts "that plausibly indicate that the accused products contain each of the limitations found in the claim." *TMI Sols. LLC v. Bath & Body Works Direct, Inc.*, 2018 WL 4660370, at *9 (D. Del. Sept. 28, 2018) (citations omitted).

"The complaint must place the potential infringer on notice of what activity is being accused of infringement." *Nalco Co. v. Chem-Mod, LLC*, 883 F.3d 1337, 1350 (Fed. Cir. 2018) (internal quotation marks, alterations, and citation omitted). To provide notice, a plaintiff must generally do more than assert that the product infringes the claim; it must show *how* the defendant plausibly infringes by alleging some facts connecting the allegedly infringing product to the claim elements. *See*

SIPCO, LLC v. Streetline, Inc., 230 F. Supp. 3d 351, 353 (D. Del. 2017) (granting the motion to dismiss because “[t]he complaint contains no attempt to connect anything in the patent claims to anything about any of the accused products.”).

I recognize that detailed structural information about the accused product is not publicly available. It would create a catch-22 if Volterra were required to know confidential facts to avoid the dismissal of its complaint. *See BioMerieux, S.A. v. Hologic, Inc.*, 2018 WL 4603267, at *4 (D. Del. Sept. 25, 2018) (“Plaintiffs cannot be charged with knowing, at the time they drafted their Complaint, non-public information they could only obtain after filing suit and obtaining discovery.”). A party “cannot shield itself from a complaint for direct infringement by operating in such secrecy that the filing of a complaint itself is impossible.” *K-Tech Telecomms., Inc. v. Time Warner Cable, Inc.*, 714 F.3d 1277, 1286 (Fed. Cir. 2013).

2. The #986 Patent

Monolithic maintains that Volterra does not sufficiently plead direct infringement of the #986 patent because it does not explain how the 48V-1V practices the limitation in independent claim 17 that requires “orienting, in like direction, first and second windings about a common core to increase coupling between the windings.” Monolithic argues that the allegations are inadequate to

permit the plausible inference that the 48V-1V has increased coupling or windings that are oriented as required by the claims. D.I. 84 at 13.

Monolithic mischaracterizes Volterra's allegations. Volterra has alleged that each coupled inductor in the 48V-1V must have two windings because they are "dual-phase." D.I. 71 ¶ 30. Volterra also alleges that to achieve coupling, windings must be oriented about a common magnetic core. D.I. 71 ¶ 29. These allegations put Monolithic on notice that the 48V-1V is being accused of infringement based on its implementation of dual-phase coupling and they are sufficient to plead direct infringement. *See Nalco*, 883 F.3d at 1350 ("[T]he Federal Rules of Civil Procedure do not require a plaintiff to plead facts establishing that each element of an asserted claim is met.") (internal quotation marks and citation omitted).

3. The #408 Patent

Monolithic argues that Volterra has not explained how the 48V-1V has "connecting magnetic elements" with "each winding being wound about a respective connecting element and at least partially through at least one passageway," as required by claim 14 of the #408 patent. D.I. 84 at 14. But Volterra has alleged that the accused device has a second connecting magnetic element and a second winding, and its annotations and labels on the two-dimensional drawing of the accused device identify these components in distinct

locations. D.I. 71 ¶¶ 51, 53. The locations of these elements are factual assertions that I must take as true for the motion before me. *See Umland*, 542 F.3d at 64.

4. The #955 Patent

Monolithic also argues that Volterra does not sufficiently allege that the 48V-1V practices some of the #955 patent's limitations. Claims 12 and 16 require that "the cross-sectional area of the passageway between the windings [is] at least 50% free of magnetic material." D.I. 84 at 16. Claims 12 and 23 require a "separation distance greater than the height of the passageway" between the first and second windings. D.I. 84 at 17. Claim 23 further requires that the first and second windings contact the third and fourth planar surfaces respectively. D.I. 84 at 18. Monolithic argues these limitations have not been plausibly alleged, because Volterra has only provided a two-dimensional annotated diagram that does not show the area between the windings. D.I. 84 at 15–20.

Volterra has alleged, however, that the cross-sectional area of the passageway between the windings is at least 50% free of magnetic material, D.I. 71 ¶¶ 70, 81, that the separation distance is greater than the height of the passageway, D.I. 71 ¶¶ 70, 100, and that the first and second windings contact the third and fourth planar surfaces respectively. D.I. D.I. 71 ¶¶ 95–97. These allegations put Monolithic on notice about how the 48V-1V may infringe the #955 patent. *See Nalco*, 883 F.3d at 1350.

B. Induced and Contributory Infringement Claims

1. Legal Standards

A plaintiff can prevail on claims of induced and contributory infringement only by establishing direct infringement. *See Limelight Networks, Inc. v. Akamai Techs., Inc.*, 572 U.S. 915, 921 (2014) (“[I]nducement liability may arise if, but only if, there is direct infringement.”) (internal quotation marks, alterations, and citation omitted); *Aro Mfg. Co. v. Convertible Top Replacement Co.*, 365 U.S. 336, 341 (1961) (“[I]f there is no direct infringement of a patent there can be no contributory infringement.”).

Both “induced infringement [and] contributory infringement require[] knowledge of the patent in suit and knowledge of patent infringement.” *Commil USA, LLC v. Cisco Sys., Inc.*, 575 U.S. 632, 639 (2015) (citation omitted). For “an allegation of induced infringement to survive a motion to dismiss, a complaint must plead facts plausibly showing that the accused infringer specifically intended [another party] to infringe [the patent] and knew that the [other party]’s acts constituted infringement.” *Lifetime Indus., Inc. v. Trim-Lok, Inc.*, 869 F.3d 1372, 1379 (Fed. Cir. 2017) (alterations in original) (internal quotation marks and citation omitted). Contributory infringement requires a showing that the accused infringer “offers to sell or sells . . . a component of a patented [invention], . . . *knowing* the same to be especially made or especially adapted for use in an

infringement of such patent.” 35 U.S.C. § 271(c) (emphasis added). Contributory infringement thus requires “a showing that the alleged contributory infringer knew that the combination for which his component was especially designed was both patented and infringing.” *Aro Mfg. Co. v. Convertible Top Replacement Co.*, 377 U.S. 476, 488 (1964).

2. Underlying Direct Infringement

Monolithic argues that Volterra has failed to adequately allege that any third party has directly infringed the asserted patents. D.I. 84 at 21. But in pleading indirect infringement, a plaintiff “need not identify a *specific* direct infringer if it pleads facts sufficient to allow an inference that at least one direct infringer exists.” *In re Bill of Lading Transmission & Processing Sys. Pat. Litig.*, 681 F.3d 1323, 1336 (Fed. Cir. 2012) (emphasis in the original). Here, Volterra alleges that Monolithic representatives work with customers and suppliers to facilitate infringing marketing, importation, and sales. D.I. 71 ¶¶ 24(e), 46(e), 64(e). Taking these alleged facts as true, it is reasonable to infer that at least one direct infringer exists.

3. Knowledge of Asserted Patents

Monolithic next argues that Volterra has not adequately alleged that Monolithic knew about the specific asserted patents. D.I. 84 at 22–23. But the Second Amended Complaint alleges that Monolithic was made aware of Volterra’s

patents and its potential infringement of the patents through its communications with Intel Corporation, Eaton Corporation PLC, and NVIDIA. And Volterra further alleges that two of Monolithic's senior engineers cited the asserted patents in their technical writings before the filing of this lawsuit.

4. Specific Intent for Induced Infringement

Monolithic argues that Volterra does not allege that Monolithic had the specific intent to cause third parties to infringe as required for induced infringement. *See Lifetime Indus.*, 869 F.3d at 1379 (“For an allegation of induced infringement to survive a motion to dismiss, a complaint must plead facts plausibly showing that the accused infringer specifically intended another party to infringe the patent”) (internal quotation marks, alterations, and citation omitted). But as noted above, Volterra has alleged sufficient facts from which it could be plausibly inferred that Monolithic knew about the asserted patents and its potential infringement of the patents, and the Second Amended Complaint further alleges that Volterra promoted the sale of its accused products and explained to potential customers how to use those products. D.I. 71 ¶¶ 23, 45, 63. These allegations are adequate to allege induced infringement at the pleadings stage. *See Bill of Lading*, 681 F.3d at 1341.

5. Substantial Non-infringing Use for Contributory Infringement

“To state a claim for contributory infringement,” Volterra must “plead facts that allow an inference that the components sold or offered for sale have no substantial non-infringing uses.” *In re Bill of Lading*, 681 F.3d at 1337.

Monolithic contends that Volterra has not pled that the relevant controllers had no substantial non-infringing uses. D.I. 84 at 25. The documentation referenced in the Complaint shows that the MP2888A and MP2965 controllers can be used with or without enabling couple inductor mode. D.I. 71 ¶ 24(b). Because the alleged infringing use only occurs when couple inductor mode is enabled, D.I. 71 ¶¶ 25(a), 47(a), 65(a), Volterra has not pled facts to show that the accused controllers have no substantial non-infringing uses. Volterra has no substantive response to this argument. *See* D.I. 90 at 28. Accordingly, I will grant the motion as to Volterra’s allegations of contributory infringement.

IV. CONCLUSION

For the foregoing reasons, I will grant the motion to dismiss with respect to the allegations of contributory infringement and will deny the remainder of the motion.

The Court will enter an order consistent with this Memorandum Opinion.