

PUBLIC VERSION

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CIRRUS LOGIC, INC. and
OMNIVISION TECHNOLOGIES, INC.
Petitioner,

v.

GREENTHREAD, LLC,
Patent Owner.

IPR2024-00018
Patent 9,190,502 B2

Before JEFFREY W. ABRAHAM, JON B. TORNQUIST, and
MONICA S. ULLAGADDI, *Administrative Patent Judges*.

ABRAHAM, *Administrative Patent Judge*.

DECISION
Granting Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

Cirrus Logic, Inc., OmniVision Technologies, Inc., and ams Sensors USA, Inc.¹ filed a Petition requesting *inter partes* review of claims 7–12 of U.S. Patent No. 9,190,502 B2 (Ex. 1001, “the ’502 patent”). Paper 1 (“Pet.”). Greenthread, LLC (“Patent Owner”) filed a Preliminary Response to the Petition. Paper 16 (“Prelim. Resp.”). With authorization, Cirrus Logic, Inc., OmniVision Technologies, Inc., and ams Sensors USA, Inc. subsequently filed a Preliminary Reply (Paper 20, “Prelim. Reply”) and Patent Owner filed a Preliminary Sur-reply (Paper 22, “Prelim. Sur-reply”).

On April 10, 2024, the parties filed a Joint Motion to Terminate the Proceedings as to ams-OSRAM USA Inc. (Paper 26), which we granted (Paper 28). The caption of this proceeding has been updated accordingly, and for purposes of this Decision, we refer to Cirrus Logic, Inc. and OmniVision Technologies, Inc. collectively as “Petitioner.”

An *inter partes* review may not be instituted “unless . . . the information presented in the petition . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a) (2018). Having considered the arguments and evidence set forth by Petitioner and Patent Owner, we determine that the information presented in the Petition demonstrates a reasonable likelihood that Petitioner would prevail on at least one of the challenged claims of the ’502 patent. Accordingly, we institute an

¹ After the Petition was filed, original Petitioner ams Sensors USA Inc. merged into ams-OSRAM USA Inc. Paper 23 (Petitioner’s Updated Mandatory Notices).

inter partes review as to all of the challenged claims of the '502 patent on all of the grounds of unpatentability set forth in the Petition.

II. BACKGROUND

A. *Related Matters*

The parties indicate that the '502 patent is at issue in the following proceedings:

Greenthread, LLC v. Cirrus Logic, Inc., No. 1:23-cv-00369 (W.D. Tex. filed March 31, 2023);

Greenthread, LLC v. Texas Instruments Inc., No. 2:23-cv-00157 (E.D. Tex. filed April 6, 2023);

Greenthread, LLC v. OSRAM GmbH, No. 2:23-cv-00179 (E.D. Tex. filed April 19, 2023);

Greenthread, LLC v. OmniVision Technologies, Inc., No. 2:23-cv-00212 (E.D. Tex. filed May 10, 2023); and

Greenthread, LLC v. Monolithic Power Systems, Inc., No. 1:23-cv-00579 (D. Del. filed May 26, 2023).

Pet. 1–2; Paper 6, 2–3 (Patent Owner's mandatory notices).

B. *Real Parties-in-Interest*

Petitioner identifies itself (the two parties identified in the caption) and ams-OSRAM USA Inc., OSRAM GmbH, Heptagon Holding CA Inc., ams-OSRAM AG, and GlobalFoundries, U.S., Inc., as the real parties-in-interest. Pet. 1; Paper 24, 1 (Updated Mandatory Notices). Patent Owner identifies itself as the real party-in-interest. Paper 6, 1.

C. *The '502 patent*

The '502 patent, titled "Semiconductor Devices with Graded Dopant Regions," issued on November 17, 2015. Ex. 1001, codes (45), (54). The

'502 patent “relates to all semiconductor devices and systems,” including Bipolar Junction Transistors (BJT). Ex. 1001, 1:17–30.

The '502 patent explains that in bipolar junction transistors, minority carriers are the principal device conduction mechanism, but majority carriers also play a small but finite role in modulating the conductivity in such devices. Ex. 1001, 1:27–30. The '502 patent further explains that “[e]fforts have been made in graded base transistors to create an ‘aiding drift field’, to enhance the diffusing minority carrier’s speed from emitter to collector” versus the standard “uniformly doped base” bipolar junction transistors. Ex. 1001, 1:38–40. The '502 patent explains that this improvement has not been implemented in most semiconductor devices, including various power MOSFETs and IGBTs, which “still use a uniformly doped drift epitaxial region in the base.” Ex. 1001, 1:40–44. The invention of the '502 patent implements a graded dopant concentration in these devices, which results in two important performance enhancements: “electrons can be swept from source to drain rapidly, while at the same time holes can be recombined closer to the n⁺ buffer layer,” thereby improving “t(on) and t(off) in the same device.” Ex. 1001, 3:13–18.

Figure 1 of the '502 Patent is reproduced below.

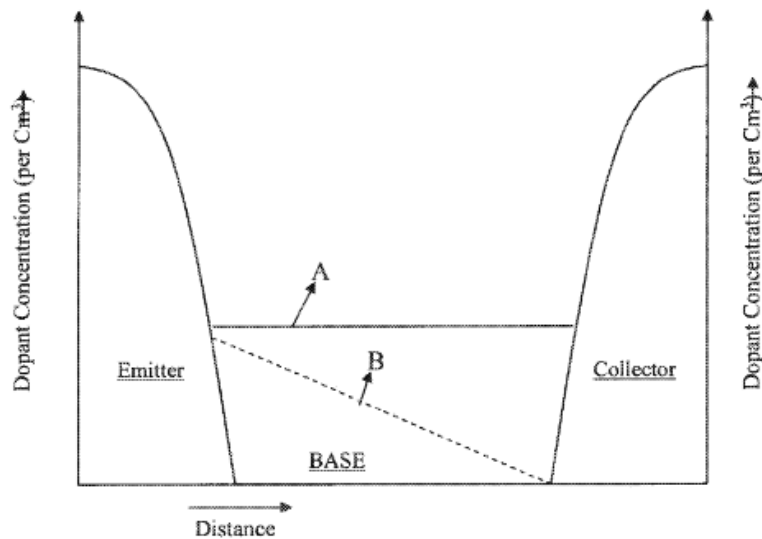


Figure 1 is labeled “Prior Art” and “illustrates the relative doping profiles of emitter, base and collector for the two most popular bipolar junction transistors: namely, A–uniform base, and B–graded base.” Ex. 1001, 2:17–19.

Figure 3A of the ’502 patent is reproduced below.

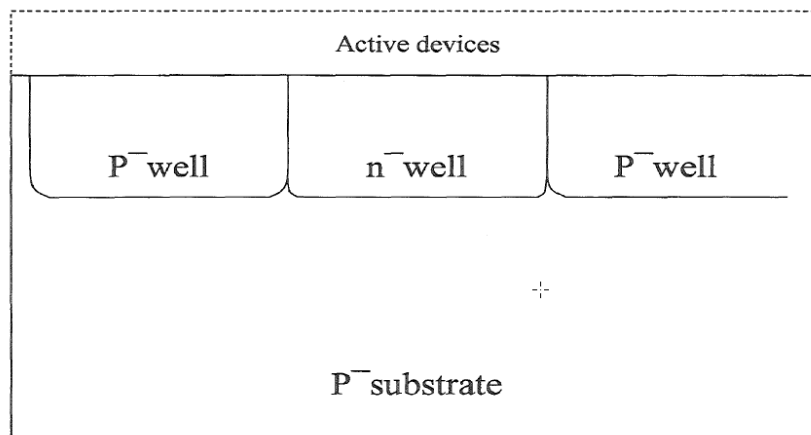


Figure 3A is labeled “Prior art” and shows a cross-sectional view of a “commonly used CMOS silicon substrate with two wells (one n- well in which p-channel transistors are subsequently fabricated and one p- well in

which n-channel transistors are subsequently fabricated).” Ex. 1001, 2:22–27, Fig. 3A.

Figure 5A of the ’014 patent is reproduced below.

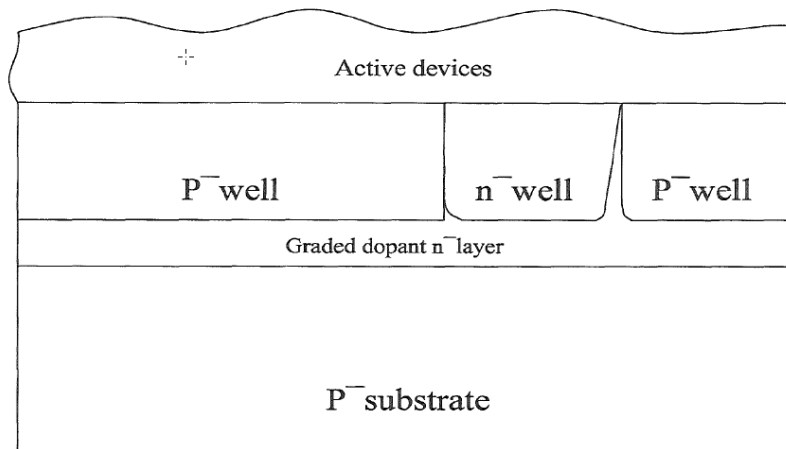


Figure 5A illustrates a cross section of a CMOS silicon substrate with two wells and an underlying layer using embodiments of the invention.

Ex. 1001, 2:31–35. According to the ’502 patent, “[s]purious minority carriers can be generated by clock switching in digital VSLI logic and memory ICs,” and these “unwanted carriers can discharge dynamically-held ‘actively held high’ nodes,” and serve to degrade performance of various types of devices, including digital imaging ICs. Ex. 1001, 3:25–34. The ’502 patent further explains that “a novel technique has been described here by creating a drift field to sweep these unwanted minority carriers into the substrate as quickly as possible, from the active circuitry at the surface.” Ex. 1001, 3:39–42. In particular, “[i]n a preferred embodiment, the subterranean n⁻ layer has a graded donor concentration to sweep the minority carriers deep into the substrate.” Ex. 1001, 3:42–44.

D. Illustrative Claim

Claim 7 is the only independent claim challenged, and is reproduced below.

7. A semiconductor device comprising:
- a surface layer;
 - a substrate;
 - an active region including a source and a drain, disposed on one surface of said surface layer;
 - a single drift layer disposed between the other surface of said surface layer and said substrate, said drift layer having a graded concentration of dopants generating a first static unidirectional electric drift field to aid the movement of minority carriers from said surface layer to said substrate;
 - and
 - at least one well region disposed in said single drift layer, said well region having a graded concentration of dopants generating a second static unidirectional electric drift field to aid the movement of minority carriers from said surface layer to said substrate.

Ex. 1001, 4:52–67.

E. Asserted Grounds of Unpatentability

Petitioner asserts the following grounds of unpatentability (Pet. 6):²

Claim(s) Challenged	35 U.S.C. §	Reference(s)
7	103	Payne ³
7, 8, 11	102	Onoda ⁴ ,
7, 8, 11	103	Onoda
8	103	Payne, Parrillo ⁵

² The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112–29, took effect on March 16, 2013. The ’502 patent claims priority to an application filed September 3, 2004. Ex. 1001, code (45). Thus, we apply the pre-AIA versions of §§ 102 and 103. *See* Pet. 5 n.1.

³ US 4,684,971, issued Aug. 4, 1987 (Ex. 1005).

⁴ Japanese Unexamined Patent Application Pub. No. H8-279598, published Oct. 22, 1996 (Ex. 1042 (certified English translation); Ex. 1043 (original document)).

⁵ US 4,435,896, issued Mar. 13, 1984 (Ex. 1025).

Claim(s) Challenged	35 U.S.C. §	Reference(s)
9–11	103	Payne, Wolf ⁶
9, 10	103	Onoda, Wolf
12	103	Payne, Silverbrook ⁷
12	103	Onoda, Silverbrook

Petitioner also relies upon the declaration testimony of Sanjay Banerjee, Ph.D. Ex. 1003.

III. ANALYSIS

A. Legal Standard

“In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016). The burden of persuasion never shifts to Patent Owner. *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015).

“A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. Inc., v. Union Oil Co.*, 814 F.2d 628, 631 (Fed. Cir. 1987); *see also Finisar Corp. v. DirecTV Grp., Inc.*, 523 F.3d 1323, 1334 (Fed. Cir. 2008) (to anticipate a patent claim under 35 U.S.C. § 102, “a single prior art reference must expressly or inherently disclose each claim limitation”). Moreover, “[b]ecause the hallmark of anticipation is prior invention, the prior art reference—in order to anticipate under 35 U.S.C. § 102—must not only disclose all elements of the claim within the

⁶ Stanley Wolf & Richard N. Tauber, *Silicon Processing for the VLSI Era*, Vols. 1–4 (Lattice Press 2000) (Ex. 1008).

⁷ US 6,614,560 B1, issued Sept. 2, 2003 (Ex. 1047).

four corners of the document, but must also disclose those elements ‘arranged as in the claim.’” *Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1369 (Fed. Cir. 2008) (quoting *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 1548 (Fed. Cir. 1983)).

Whether a reference anticipates is assessed from the perspective of one of ordinary skill in the art. *See Dayco Prods., Inc. v. Total Containment, Inc.*, 329 F.3d 1358, 1368 (Fed. Cir. 2003) (“‘[T]he dispositive question regarding anticipation [i]s whether one skilled in the art would reasonably understand or infer from the [prior art reference’s] teaching’ that every claim element was disclosed in that single reference.” (alterations in original) (quoting *In re Baxter Travenol Labs.*, 952 F.2d 388, 390 (Fed. Cir. 1991))). Additionally, “[u]nder the principles of inherency, if the prior art necessarily functions in accordance with, or includes, the claimed limitations, it anticipates.” *MEHL/Biophile Int’l Corp. v. Milgraum*, 192 F.3d 1362, 1365 (Fed. Cir. 1999) (citation omitted); *In re Cruciferous Sprout Litig.*, 301 F.3d 1343, 1349–50 (Fed. Cir. 2002).

A patent claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and “the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) when in evidence, objective

evidence of nonobviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

B. Level of Ordinary Skill in the Art

In order to determine whether an invention would have been obvious at the time the application was filed, we consider the level of ordinary skill in the pertinent art. *Graham*, 383 U.S. at 17. In assessing the level of ordinary skill in the art, various factors may be considered, including the “type of problems encountered in the art; prior art solutions to those problems; rapidity with which innovations are made; sophistication of the technology; and educational level of active workers in the field.” *In re GPAC, Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995) (quotation omitted).

Petitioner contends that one of ordinary skill in the art would have had “a Bachelor’s degree in electrical engineering, material science, applied physics, or a related field, and four years of experience in semiconductor design and manufacturing or equivalent work experience.” Pet. 8 (citing Ex. 1003 ¶¶ 57–60). Petitioner further contends that “[a]dditional education might compensate for a deficiency in experience, and vice-versa.” Pet. 8–9.

Although Patent Owner does not address the level of ordinary skill in the art, Patent Owner agreed with Petitioner’s characterization of the ordinarily skilled artisan during a previous litigation, as noted by Petitioner. *See generally*, Prelim. Resp.; Pet. 9 (citing Ex. 1045 ¶ 13).

On this record, we adopt Petitioner’s unchallenged definition of the person of ordinary skill in the art as it appears consistent with the prior art of record. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001)

(holding that the prior art itself can reflect the appropriate level of ordinary skill in the art).

C. *Claim Construction*

In an *inter partes* review proceeding, a patent claim is construed using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. § 282(b). 37 C.F.R. § 42.100(b) (as amended Oct. 11, 2018). This rule adopts the same claim construction standard used by Article III federal courts, which follow *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc), and its progeny. Under this standard, the words of a claim are generally given their “ordinary and customary meaning,” which is the meaning the term would have to a person of ordinary skill at the time of the invention, in the context of the entire patent including the specification. *See Phillips*, 415 F.3d at 1312–13.

Petitioner contends that no claim terms require express construction to resolve the issues presented in the Petition. Pet. 10.

Patent Owner does not assert that any claim terms require express construction. *See generally*, Prelim. Resp.

Upon review of the record, we determine that no claim terms require express construction for purposes of this Decision. *See Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed. Cir. 2019) (“The Board is required to construe ‘only those terms . . . that are in controversy, and only to the extent necessary to resolve the controversy.’”) (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).

D. *Timeliness of the Petition Under 35 U.S.C. § 315(b)*

Pursuant to 35 U.S.C. § 315(b), “[a]n *inter partes* review may not be instituted if the petition requesting the proceeding is filed more than 1 year

after the date on which the petitioner, real party in interest, or privy of the petitioner is served with a complaint alleging infringement of the patent.”

Patent Owner argues that the Petition should be dismissed because it is untimely. Prelim. Resp. 2. In particular, Patent Owner argues that Petitioner is in privity with [REDACTED]

[REDACTED] who

Patent Owner asserts are time-barred under 35 U.S.C. § 315(b) and [REDACTED]

[REDACTED] Prelim. Resp. 2–3.

Patent Owner advances several theories supporting its privity arguments, including that [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] for custom-made products. Prelim. Resp. 3. Based on these theories, Patent Owner argues that [REDACTED]

[REDACTED] Prelim.

Resp. 3 (citing *Applications in Internet Time, LLC v. RPX Corp.*, 897 F.3d 1336, 1360 (Fed. Cir. 2018)).

1. *Legal Standard*

Patent Owner does not assert that Petitioner was a party to, or named as a real party-in-interest in any prior lawsuit involving the ’502 patent. “A person who is not a party to a suit generally has not had a ‘full and fair opportunity to litigate’ the claims and issues settled in that suit.” *Taylor v. Sturgell*, 553 U.S. 880, 892 (2008). Thus, in general, Petitioner should not be precluded from addressing the unpatentability of a patent based on the filing of [REDACTED]. *See id.*

(explaining that, in general, one is not bound by a judgment “in which he is not designated as a party or to which he has not been made a party by service of process”); *WesternGeco LLC v. ION Geophysical Corp.*, 889 F.3d 1308, 1319 (Fed. Cir. 2018) (noting the “general rule against nonparty preclusion”). This rule is deeply-rooted in the “historic tradition that everyone should have his own day in court.” *Taylor*, 553 U.S. at 892–93 (quoting *Richards v. Jefferson County*, 517 U.S. 793, 798 (1996)).

An exception to this deeply-rooted rule exists for parties that are in privity with a defendant in an earlier litigation. *See WesternGeco*, 889 F.3d at 1319 (noting that “the standards for the privity inquiry must be grounded in due process”). The Supreme Court in *Taylor* identified considerations where nonparty preclusion would be justified, including:

- (1) an agreement to be bound; (2) pre-existing substantive legal relationships between the person to be bound and a party to the judgment (e.g., “preceding and succeeding owners of property”); (3) adequate representation by someone with the same interests who was a party (e.g., “class actions” and “suits brought by trustees, guardians, and other fiduciaries”); (4) assumption of control over the litigation in which the judgment was rendered; (5) where the nonparty to an earlier litigation acts as a proxy for the named party to relitigate the same issues; and (6) a special statutory scheme expressly foreclosing successive litigation by nonlitigants.

Id. (citing *Taylor*, 553 U.S. at 894–95).

As this list of considerations indicates, “the mere existence of some relationship between a petitioner and another entity is not sufficient” to place that petitioner in privity with that entity. *Google LLC v. DDC Technology, LLC*, IPR2023-00707, Paper 27 at 37 (PTAB Oct. 25, 2023). Instead, “that relationship must be related to [an earlier] lawsuit and be sufficiently close that it can be fairly said the petitioner had a full and fair opportunity to

litigate the validity of the patent in that lawsuit,” or the evidence must demonstrate “that petitioner is simply serving as a proxy to allow another party to litigate the patent validity question that the other party raised in an earlier filed litigation.” *Id.*; *WesternGeco*, 889 F.3d at 1319; *see also Ventex Co. v. Columbia Sportswear North America, Inc.*, IPR2017-00651, Paper 148, at 10, 12 (PTAB Jan. 24, 2019) (precedential) (finding privity where the two parties “had a specially structured, preexisting, and well established business relationship with one another, including indemnification and exclusivity arrangements”).

A petitioner’s “initial identification of the real parties in interest [and privies] should be accepted unless and until disputed by a patent owner.” *Worlds Inc. v. Bungie, Inc.*, 903 F.3d 1237, 1244 (Fed. Cir. 2018). In order to raise such a dispute, “a patent owner must produce *some* evidence that tends to show that a particular [time-barred] third party should be named a [privity].” *Id.* The amount of evidence a patent owner must produce does not rise to the level of that required to overcome a burden of production. *Id.* at 1244 n.8. One potential formulation of the amount of evidence required is “evidence that ‘reasonably brings into question the accuracy of a petitioner’s’” assertion that it is not time-barred. *Id.* (quoting *Atlanta Gas Light v. Bennett Regulator Guards, Inc.*, IPR2013-00453, Paper 88 (PTAB Jan. 6, 2015) (addressing the amount of evidence required from a patent owner to question a petitioner’s identification of the real parties-in-interest)). Although the “burden remains with the petitioner to establish” the timeliness of its petition, it need not respond until the patent owner reasonably brings into question the accuracy of its assertion that it is not time-barred. *Id.* at 1242.

2. *Whether we May Consider Petitioner's Preliminary Reply*

As noted above, we authorized Petitioner to file a Preliminary Reply and Patent Owner to file a Preliminary Sur-reply, both limited to addressing the issue of the timeliness of the Petition. Patent Owner argues that Petitioner's Preliminary Reply is not appropriate because Petitioner "could have reasonably foreseen" Patent Owner's untimeliness arguments when filing its Petition because Patent Owner informed Petitioner about these arguments before it filed the Petition. Prelim. Resp. 2, 34–36 (quoting *Sandoz Inc. v. Abbvie Biotechnology Ltd.*, IPR2018-00002, Paper 11 at 3 (PTAB Mar. 6, 2018); citing Ex. 2011).

We disagree with Patent Owner's argument. According to the Federal Circuit, a petitioner's "initial identification of the real parties in interest [and privies] should be accepted unless and until disputed by a patent owner." *Worlds*, 903 F.3d at 1244. Thus, there is no requirement that a petitioner preemptively address a disputed issue of privity in its petition.

Although Patent Owner generally made Petitioner aware that it would raise a timeliness issue under § 315(b), Petitioner is not required to address potential arguments that Patent Owner may raise in its Preliminary Response. *See* Ex. 2011. This is especially true where Patent Owner's assertions of privity, for the reasons set forth below, are not sufficient to reasonably call into question Petitioner's assertion that the Petition is timely.

Accordingly, we consider Petitioner's Preliminary Reply, as well as Patent Owner's Preliminary Sur-Reply, in determining whether Petitioner has shown its Petition is timely.

3. *The Effect of the Earlier Suits [REDACTED] on the Timeliness of the Present Petition*

Patent Owner alleges that [REDACTED], are time-barred under § 315(b). Prelim. Resp. 2–3. As to [REDACTED] the present record does not contain any evidence tending to show that this is the case.

Section 315(b) bars institution of *inter partes* review only when “the petition requesting the proceeding is filed more than 1 year after the date on which the petitioner, real party in interest, or privy of the petitioner is served with a complaint alleging infringement of the patent.” There is no evidence, on the present record, that [REDACTED] any earlier than January 23, 2023, which is less than one year before the filing of the Petition on October 27, 2023. *Compare* Pet. 91, with Ex. 2009 (cited at Prelim.

Resp. 5). Accordingly, the service of [REDACTED] [REDACTED] time-barred under § 315(b).⁸

Patent Owner argues that because [REDACTED] was served with an infringement complaint early enough to create a time bar, and [REDACTED] [REDACTED] is time-barred under § 315(b). Prelim. Resp. 4–5, 17 (arguing that [REDACTED] [REDACTED]). We are presented with no authority, however, for extending the time bar of Section 315(b) to a party that is a real party in interest to a potential privy of a petitioner. Thus, Patent Owner has produced no evidence that [REDACTED] is a time-barred entity under § 315(b).

⁸ In the next section, we address Patent Owner’s argument that [REDACTED] [REDACTED]. Our findings as to [REDACTED] regarding privy provide additional support for our determination that service of a complaint against [REDACTED] does not give rise to a time bar.

4. [REDACTED] *as Alleged Privies*

In the subsections below, we address Patent Owner’s arguments that [REDACTED] of Petitioner and Petitioner’s real party-in-interest, GlobalFoundries⁹, under § 315(b).

a. *Agency*

Patent Owner argues that “[b]y making custom [REDACTED], Petitioners step into their shoes, and serve[] as their ‘agent,’ by [REDACTED] Prelim. Resp. 3, 23–26. We disagree.

First, Patent Owner’s agency argument is not based on the applicable legal standard. For purposes of privity under § 315(b), the relevant question is whether Petitioner is acting as an agent for [REDACTED] in filing a petition for *inter partes* review. The applicable principle is that “preclusion is appropriate when a nonparty later brings suit as an agent for a party who is bound by a judgment.” *Taylor*, 553 U.S. at 895. As the Federal Circuit explains, the rationale behind § 315(b)’s time bar is “to prevent successive challenges to a patent by those who previously have had the opportunity to make such challenges in prior litigation.” *WesternGeco*, 889 F.3d at 1319. Therefore, the relevant question is “whether the petitioner is simply serving as a proxy to allow another party to litigate the patent validity question that the other party raised in an earlier filed litigation.” *Id.* Here, Patent Owner does not assert that Petitioner is acting as an agent for [REDACTED] in this proceeding. Any such assertion would be appropriate only based on evidence that [REDACTED]

⁹ Petitioner identifies GlobalFoundries U.S., Inc. (“GlobalFoundries”) as a real party-in-interest. Pet. 1.

[REDACTED] in the proceeding. *See Taylor*, 553 U.S. at 906 (cautioning that “preclusion is appropriate only if the putative agent’s conduct of the suit is subject to the control of the party who is bound by the prior adjudication”). No such evidence is in this record.

Patent Owner argues that to be in [REDACTED], “what matters is not the scope or nature of the agency, but whether ‘the prior action concerned a matter within the agency.’” Prelim. Resp. 25 (citing *Herrion v. Children’s Hosp. Nat. Med. Ctr.*, 786 F. Supp. 2d 359 (D.D.C.), *aff’d*, 448 F. App’x 71 (D.C. Cir. 2011); *see also* Prelim. Resp. 23–24 (citing *John Street Leasehold, LLC v. Cap. Mgmt. Res., L.P.*, 283 F.3d 73 (2d Cir. 2002); *Fiumara v. Fireman’s Fund Ins. Companies*, 746 F.2d 87 (1st Cir. 1984); *In re Google LLC*, 949 F.3d 1338, 1346 (Fed. Cir. 2020)). This conclusion, however, would significantly expand the analysis set forth in *Taylor*, which noted that preclusion is only appropriate if the putative agent’s conduct “is subject to the control of the party who is bound by the prior adjudication.” *Taylor*, 553 U.S. at 906 (explaining that “courts should be cautious about finding preclusion” on the basis of agency). Moreover, the privity inquiry must take into account the rationale behind § 315(b)’s preclusion provision, which “is to prevent successive challenges to a patent by those who previously have had the opportunity to make such challenges in prior litigation.” *WesternGeco*, 889 F.3d at 1319. Patent Owner’s broad interpretation would be inconsistent with this purpose.

Even if Patent Owner’s argument that a general agency relationship is sufficient to demonstrate privity for purposes of nonparty preclusion were on solid legal footing, it lacks factual support in the record. An “essential element[] of agency” is “the principal’s ‘right to direct or control the agent’s actions.’” *In re Google LLC*, 949 F.3d 1338, 1345 (Fed. Cir. 2020) (quoting

Meyer v. Holley, 537 U.S. 280, 286 (2003)). Patent Owner does not argue in the Preliminary Response that [REDACTED]

[REDACTED] much less direct us to any evidence that would tend to prove the existence of such a right. Prelim. Resp. 22–25.

Patent Owner argues that GlobalFoundries “produc[es] ICs for other companies, rather than those of its own design,” and that Cirrus Logic makes “custom” products. Prelim. Resp. 25 (citing Ex. 2033, 12, 35); *see In re Google*, 949 F.3d at 1346 (contracts to “[a]ssembl[e] equipment based on information and instructions provided by Google” were “suggestive of an agency relationship;” first alteration in original). Patent Owner does not allege, however, that any particular product [REDACTED] [REDACTED] with respect to the patented technology. Prelim. Resp. 17–18, 25–29 (“[Global Foundries] has not identified what [REDACTED]”). Thus, Patent Owner does not direct us to sufficient evidence demonstrating that Petitioner [REDACTED] [REDACTED].

b. Preceding and Succeeding Owners of Property

Patent Owner argues that [REDACTED]

[REDACTED] Prelim. Resp. 3, 26–29 (citing *Taylor*, 553 U.S. at 894). It is true that entities who are “preceding and succeeding owners of property” can be in privity with one another. *Taylor*, 553 U.S. at 894. This rule, however, “is extended or denied in an effort to protect conflicting property interests rather than an effort to implement concepts of participation or representation.”

18A C. Wright, A. Miller, & E. Cooper, Federal Practice and Procedure § 4448 (3d. ed. 2023); *see also id.* at § 4462 (“Successive Property Relationships”) (“There is no independent reason to treat the defeated litigant as the representative of his transferee. Preclusion is limited to the property involved in the judgment.”). As noted above, our relevant analysis is based on the relationships between the parties with respect to the prior proceedings or the Petition (e.g., participation or representation), not on property interests. *See WesternGeco*, 889 F.3d at 1319 (noting that the privity requirement is used “to prevent successive challenges to a patent by those who previously have had the opportunity to make such challenges in prior litigation”).

Moreover, the rule related to preceding and succeeding owners of property does not extend to the point where all manufacturers of allegedly infringing goods are in privity with the customers who buy those goods. *See, e.g., id.* at 1319–22 (the parties “had a contractual and fairly standard customer-manufacturer relationship regarding the accused product,” which “does not necessarily suggest that the relationship is sufficiently close that both” parties should be considered to be in privity); *Wi-Fi One, LLC v. Broadcom Corp.*, 887 F.3d 1329, 1340–41 (Fed. Cir. 2018) (same); *Samsung Electronics Co. Ltd. v. Netlist Inc.*, IPR2022-00615, Paper 64 at 22–26 (PTAB June 30, 2023) (same).

Patent Owner alleges that [REDACTED]

[REDACTED] Prelim. Resp. 27. For example, Patent Owner asserts that [REDACTED] are Cirrus Logic customers. Prelim. Resp. 7–8. Patent Owner also asserts that Cirrus Logic chips are

[REDACTED], and [REDACTED]

[REDACTED] Prelim. Resp. 7–8, 17–18. Patent Owner makes a similar

assertion regarding OmniVision sensors. Prelim. Resp. 11–12, 18. Patent Owner also asserts that [REDACTED] [REDACTED], but has not made any infringement allegation against GlobalFoundries and has not identified any accused product or component made by GlobalFoundries. Prelim. Resp. 13, 25–26.

Under the applicable legal standard, we accept Petitioner’s identification of the real parties-in-interest and privies absent *some* evidence that tends to show that a particular time-barred third party is a privy of Petitioner. *Worlds*, 903 F.3d at 1243–44. There is no requirement that a petition identify petitioner’s customers as privies, unless the petitioner and the customers have a sufficiently close relationship that “it can be fairly said that the petitioner had a full and fair opportunity to litigate the validity of the patent in that lawsuit” or that or that petitioner is serving as a proxy to allow the customer to challenge the patent. *WesternGeco*, 889 F.3d at 1319.

Patent Owner’s evidence that Petitioner’s products are [REDACTED] [REDACTED] does not come close to meeting this standard. Patent Owner does not assert that any of Petitioner’s products were specifically accused [REDACTED] or that any

¹⁰ For example, Patent Owner alleges Cirrus Logic’s chips “CS35L41 and CS40L25 are both currently accused, . . . and both are [REDACTED] Prelim. Resp. 8–9 (citing Exs. 2018, 2021, 2035). Patent Owner’s evidence does not show that Cirrus Logic’s chips CS35L41 or CS40L25 were specifically accused during the [REDACTED]. Although Patent Owner cites a Teardown report (Ex. 2035), Patent Owner does not show that the report was cited or relied upon in the [REDACTED]. Furthermore, the report shows that the accused [REDACTED] contains “16 major ICs” (integrated circuits), all but one of which are supplied by manufacturers other than Cirrus Logic. Ex. 2035, 2. Likewise, Patent Owner contends that an

Petitioner was involved in those cases through third party discovery or otherwise. There is no suggestion that any Petitioner was even aware of the '502 Patent or Patent Owner's infringement claim before being served with a complaint. Thus, Patent Owner does not present evidence that lends support to a finding that [REDACTED]

[REDACTED] renders them privies.

c. [REDACTED]

Patent Owner argues [REDACTED]

[REDACTED] Prelim. Resp. 30–31 (citing *Ventex*, IPR2017-00651, Paper 148).

We disagree. Unlike the agreements in *Ventex*, Paper 148 at 12, [REDACTED]

[REDACTED] Nor is there any argument that [REDACTED]

d. *Patent Exhaustion*

Patent Owner argues that the doctrine of patent exhaustion [REDACTED]

[REDACTED] Prelim. Resp. 31. According to Patent Owner,

OmniVision sensor (OV7261) is a component of [REDACTED]. Prelim. Resp. 11 (citing Ex. 2021, 18). Again, there is no persuasive evidence that OV7261, in particular, was alleged to infringe any patent during the [REDACTED].

[REDACTED] Prelim. Resp. 31. We disagree. It is true that [REDACTED]
[REDACTED]
[REDACTED] against any claim of infringement by Patent Owner. The relevant question, however, is ultimately whether the relationship between Petitioner [REDACTED] is sufficiently close to justify denying Petitioner its day in court. *See Taylor*, 553 U.S. at 892. Patent Owner does not sufficiently explain why a [REDACTED]
[REDACTED].

e. Indemnification

Patent Owner argues that [REDACTED]
[REDACTED] Prelim. Resp. 31–32. As evidence of this alleged indemnification obligation, Patent Owner argues that [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED] Prelim. Resp. 32 (quoting Paper 11, 8; citing Ex. 2033, 24). Patent Owner also directs us to the indemnification provisions found in Petitioner Cirrus Logic’s “standard sales agreement[.]” Prelim. Resp. 10, 18 (citing Ex. 2026, 1, 4–5).

An agreement by a petitioner to indemnify a third party in an earlier infringement suit can give rise to a privity relationship between the petitioner and that third party. *Intel Corp. v. U.S. Int’l Trade Comm’n*, 946 F.2d 821, 839 (Fed. Cir. 1991). Cirrus Logic’s indemnification provisions are directed to specific products sold by Cirrus Logic. Ex. 2026. To the extent that Cirrus Logic’s indemnification provisions could demonstrate a

privity relationship sufficient to deny Petitioner its day in court, it must be with respect to a product Cirrus Logic [REDACTED]¹¹ and that was alleged to infringe in a complaint filed in the district court. The present record, however, does not identify any Cirrus Logic device or component that formed the basis for [REDACTED]
[REDACTED]. See Prelim. Resp. 8–10; Ex. 2003, 21–22 ([REDACTED]
[REDACTED]); Ex. 2005, 3–7 ([REDACTED]
[REDACTED]); see also footnote 10, supra. As such, we are not persuaded that the indemnification provisions of Cirrus Logic’s “standard sales agreement” are relevant to [REDACTED].¹²

Patent Owner contends that Global Foundries’ publications suggest it may indemnify customers. Prelim. Resp. 13. Patent Owner also presents evidence that Global Foundries may ma [REDACTED]

[REDACTED] Prelim. Resp. 13 (citing Ex. 2014, 19). We are directed to no persuasive evidence, however, that Global Foundries [REDACTED]
[REDACTED]

[REDACTED] As such, there is simply insufficient evidence to suggest that

¹¹ As discussed above, with respect to the ’502 patent, the evidence of record suggest [REDACTED] is not time-barred.

¹² Additionally, an indemnification agreement does not give rise to privity where the indemnitor has the option either “to pay for any litigation defense expenses or for any damages related to infringement” or, in the alternative, “to modify or replace the equipment if an infringement claim [is] made,” as opposed to being required “to defend [the indemnitee] from a patent infringement lawsuit, reimburse or pay for a lawsuit, cover any damages liability for any adverse patent infringement verdict against [the indemnitee], or initiate an invalidity challenge in one or more fora.” *WesternGeco*, 889 F.3d at 1321. This describes the options available in the Terms and Conditions of Exhibit 2026.

any party had an [REDACTED] that would give rise to a privity relationship relevant to the current Petition.

f. Conclusion as to Timeliness of the Petition

As noted above, privity concerns “whether the petitioner and the prior litigant’s relationship—as it relates to the [earlier] lawsuit—is sufficiently close that it can be fairly said that the petitioner had a full and fair opportunity to litigate the validity of the patent in that lawsuit,” or “whether the petitioner is simply serving as a proxy to allow another party to litigate the patent validity question that the other party raised in an earlier filed litigation.” *WesternGeco*, 889 F.3d at 1319. A petitioner’s “initial identification of the real parties in interest [and privies] should be accepted unless and until disputed by a patent owner.” *Worlds*, 903 F.3d at 1244. In order to raise such a dispute, “a patent owner must produce *some* evidence that tends to show that a particular [time-barred] third party should be named a [privity].” *Id.* Here, Patent Owner argues that it has produced such evidence in several respects, but, on the present record, none of the evidence in question tends to show that [REDACTED]

[REDACTED] As such, we find the evidence of record does not tend to suggest that Petitioner is time-barred under 35 U.S.C. § 315(b), or call into question Petitioner’s assertion that the Petition is timely-filed.¹³

¹³ Pursuant to 37 C.F.R. § 42.51(b)(1)(iii), Petitioner is required to “serve relevant information that is inconsistent with a position” it has advanced during the proceeding. To the extent Petitioner is in possession of information that is inconsistent with its assertion that it is not [REDACTED], such information should be served upon Patent Owner, subject to the exceptions outlined in § 42.51(b)(1)(iii).

E. Claim 7 – Alleged Obviousness in view of Payne

Petitioner contends claim 7 would have been obvious in view of Payne. Pet. 10–38. On the present record, Patent Owner does not dispute Petitioner’s arguments. *See generally*, Prelim. Resp.

1. Payne (Ex. 1005)

Payne “relates to complementary field effect transistors formed by ion implantation, and in particular to a structure and method of fabrication which permit high packing density.” Ex. 1005, 1:5–8. According to Payne, CMOS devices “comprise n-channel and p-channel devices formed in the same substrate,” and are traditionally “formed by diffusion or implantation of a p-type ‘tub’ in an n-type silicon substrate so that the n-channel device is fabricated in the tub and the p-channel device is fabricated in the adjacent portion of the substrate.” Ex. 1005, 1:9–18. This method “led to the constraint that the concentration at the surface in the tub was much greater than the surface concentration of the substrate.” Ex. 1005, 1:18–21. Payne states that one proposed method to avoid this constraint was “to form the p-channel device in a second tub of n-conductivity type and higher impurity concentration than a more lightly doped substrate.” Ex. 1005, 1:24–27. “Using either the single tub or twin tub approach, a considerable amount of semiconductor area is needed due to the fact that the tub impurities will diffuse laterally as well as vertically during the drive-in to establish the desired tub depth.” Ex. 1005, 1:34–38. Payne states that “[t]his is particularly troublesome in the twin-tub process since any significant overlap of the two tubs results in decreased doping concentration of each tub at the boundaries which can cause punch through or field inversion channeling during device operation.” Ex. 1005, 1:39–43. This problem

required large spacing of the source and drain regions of the transistors, and Payne seeks to avoid this need by “provid[ing] a CMOS structure and method of manufacture which requires little semiconductor space.”

Ex. 1005, 1:43–54.

In particular, Payne’s “device is fabricated in a silicon semiconductor substrate, 10, of ‘N–’ conductivity type which . . . is typically approximately 20 mils thick.” Ex. 1005, 2:56–60. On this substrate, tub regions 15 and 17 are formed, one “having the same conductivity type as the substrate but higher impurity concentration” and the other having the opposite conductivity type. Ex. 1005, 3:35–39, 4:12–14, Figs. 2–5. Surface regions 18 and 20 are formed “covering essentially the same area as” tubs 15 and 17, with each region having the same conductivity type as the tub over which it lies but with higher impurity concentration. Ex. 1005, 4:31–5:17, Figs. 7–9, 11. Payne’s CMOS device includes a “p-channel device [that] includes source and drain regions, 21 and 22, respectively, of P+ conductivity type formed with[in] the N surface region, 18” and an “n-channel device [that] includes source and drain regions, 23 and 24, of N+ conductivity type formed within the P surface region 20.” Ex. 1005, 5:21–27, Fig. 10. Payne states that this approach can reduce the spacing between “source and drain regions of adjacent devices” from 12 microns to 5 microns. Ex. 1005, 5:54–6:19, Figs. 12, 13.

2. Analysis

Petitioner argues that Payne would have taught or suggested the limitations of claim 7. Pet. 10–37. As noted above, on the present record, Patent Owner does not challenge Petitioner’s arguments or evidence. *See generally*, Prelim. Resp.

The preamble of claim 7 recites “[a] semiconductor device comprising.” Ex. 1001, 4:52. Petitioner argues that Payne teaches the preamble, directing us to Payne’s disclosure that “a primary object of [its] invention [is] to provide a CMOS structure and method of manufacture which requires little semiconductor space.” Pet. 10–11 (quoting Ex. 1005, 1:51–54). Patent Owner does not dispute this argument. Thus, Petitioner has shown sufficiently, at this stage of the proceeding, that Payne teaches the preamble of claim 7.

Claim 7 recites “a surface layer.” Ex. 1001, 4:53. Petitioner argues that Payne teaches or suggests this limitation, and Patent Owner does not dispute this argument. Pet. 11–13. Petitioner directs us to evidence that tends to show that Payne discloses a surface layer similar to that in the ’502 patent. Ex. 1001, Fig. 5(b); Ex. 1003 ¶¶ 74–76; Ex. 1005, 2:50–60, 5:21–27, 6:57–59, Fig. 10; Ex. 1030, 6, 7, 9, 12, 13; Ex. 1033. In particular, Figure 5(b) of the ’502 patent and Payne’s Figure 10 show quite similar structures, and Patent Owner’s district court claim construction brief identified the relevant structure in Figure 5(b) of the ’502 patent as a surface layer. Ex. 1030, 7, 12. Thus, Petitioner has shown sufficiently, at this stage of the proceeding, that Payne teaches this limitation of claim 7.

Claim 7 next recites “a substrate.” Ex. 1001, 4:54. Petitioner argues that Payne teaches this limitation, and Patent Owner does not dispute this argument. Pet. 13–15. Payne discloses fabricating its CMOS device “in a silicon semiconductor substrate.” Ex. 1005, 1:60–65, 2:50–60, Fig. 10. Thus, Petitioner has shown sufficiently, at this stage of the proceeding, that Payne teaches this limitation of claim 7.

Claim 7 recites “an active region including a source and a drain, disposed on one surface of said surface layer.” Ex. 1001, 4:55–56.

Petitioner argues that Payne teaches this limitation, and Patent Owner does not dispute this argument. Pet. 15–18. Payne discloses forming p-channel and n-channel transistors, each with source and drain regions. Ex. 1005, 1:5–19, 5:18–29, 6:57–59. Petitioner directs us to evidence that a person of ordinary skill in the art would have considered the transistors to be active regions. Ex. 1001, Fig. 5(b); Ex. 1030, 6–7, 11; Ex. 1003 ¶¶ 80–81; Ex. 1008B, 299–300. Thus, Petitioner has shown sufficiently, at this stage of the proceeding, that Payne teaches this limitation of claim 7.

Claim 7 recites “a single drift layer disposed between the other surface of said surface layer and said substrate.” Ex. 1001, 4:57–58. Petitioner argues that Payne discloses or suggests this limitation, and Patent Owner does not dispute this argument. Pet. 18–21. Payne discloses a first tub region with a surface region in it that, on the present record, appears quite similar to the single drift layer and well region of the ’502 patent. *Compare* Ex. 1003 ¶ 87; Ex. 1005, 3:28–43, 4:19–39, 5:7–17, 5:44–50, Fig. 10, *with* Ex. 1001, Fig. 5(b); Ex. 1030, 7, 11. Thus, Petitioner has shown sufficiently, at this stage of the proceeding, that Payne teaches this limitation of claim 7.

Claim 7 further recites “said drift layer having a graded concentration of dopants generating a first static unidirectional electric drift field to aid the movement of minority carriers from said surface layer to said substrate.” Ex. 1001, 4:58–62. Petitioner argues that Payne teaches or suggests this limitation, and Patent Owner does not dispute this argument. Pet. 21–31. Regarding a graded-dopant concentration, Payne’s Figure 11 shows a dopant concentration in tubs 15, 17 that decreases with increasing depth. Ex. 1005, 2:38–41, 5:14–17, 5:56–57, Figs. 10, 11. Regarding the claimed first static unidirectional electric drift field, Petitioner relies on the parent file history

and cited references, arguing that the presence of a graded dopant concentration similar to that in Payne “creates a ‘built-in’ electrical field that forces the movement of carriers into a particular direction” and that the direction in which carriers are forced with the concentration profile disclosed in Payne is downward, toward the substrate and away from the surface. Pet. 24–31 (quoting Ex. 1046, 289–90 (emphasis omitted); citing Ex. 1010, 2:27–32, 5:14–22; Ex. 1003 ¶¶ 95–96). Thus, Petitioner has shown sufficiently, at this stage of the proceeding, that Payne teaches this limitation of claim 7.

Claim 7 recites “at least one well region disposed in said single drift layer, said well region having a graded concentration of dopants generating a second static unidirectional electric drift field to aid the movement of minority carriers from said surface layer to said substrate.” Ex. 1001, 4:63–67. Petitioner argues that Payne teaches this limitation, and Patent Owner does not dispute this argument. Pet. 31–38. Petitioner argues that Payne’s tub region 15 satisfies this claim limitation to the same extent as the well region that Patent Owner identifies in Figure 5(b) of the ’502 patent, and that this layer has a graded dopant concentration. Pet. 31–33 (citing Ex. 1001, Fig. 5(b); Ex. 1030, 7; Ex. 1005, 1:65–68, 4:31–39, 4:63–5:14, 5:44–55, Figs. 10–11). Relying on Patent Owner’s arguments during prosecution and in its district court claim construction brief, Petitioner contends that the presence of this layer creates a second “static unidirectional electric drift field that aids the movement of minority carriers from the surface layer to the substrate.” Pet. 36–37; Ex. 1003 ¶¶ 117–119. Thus, Petitioner has shown sufficiently, at this stage of the proceeding, that Payne teaches this limitation of claim 7.

3. *Conclusion*

Upon review of Petitioner’s arguments and supporting evidence, we determine that Petitioner demonstrates a reasonable likelihood that claim 7 would have been unpatentable as obvious over Payne.

F. *Claims 9–11 – Alleged Obviousness in view of Payne and Wolf*

Petitioner contends that the subject matter of claims 9–11 would have been obvious in view of the combined disclosures of Payne and Wolf. Pet. 70–74. Patent Owner does not dispute or challenge Petitioner’s arguments or evidence. *See generally*, Prelim. Resp.

1. *Wolf (Ex. 1008)*

Wolf is a four-volume textbook titled “Silicon Processing for the VLSI Era.” Ex. 1008. A portion of the textbook focuses on CMOS technology. Ex. 1008A, 807–40.

2. *Analysis*

Petitioner contends that Payne is directed to CMOS devices, and Wolf, which published over 20 years after Payne was filed, teaches “fundamental features and concepts related to semiconductor manufacturing, with particular emphasis on CMOS.” Pet. 75–76. According to Petitioner, a person of ordinary skill in the art “would have therefore understood and expected that the teachings of Wolf would apply to Payne, and would have looked to Wolf for advances in CMOS technology and additional process details to the extent not covered in Payne.” Pet. 76.

a. *Claim 9*

Claim 9 depends from claim 7 and further recites that “the semiconductor device is a central processing unit (CPU).” Ex. 1001, 5:5–6. Petitioner argues that a person of ordinary skill in the art would have

“known to fabricate microprocessors (CPUs) using CMOS technology to achieve the benefits of ‘lower power-dissipation’ in such devices.” Pet. 76 (quoting Ex. 1008B (Wolf), 368–370; citing Ex. 1003 ¶ 195). Petitioner also contends that it would have been obvious to fabricate known CPUs using Payne’s technology to benefit from increased packing density, and that a person of ordinary skill in the art would have had a reasonable expectation of success because “Payne’s twin-well CMOS process was a known improvement over conventional twin-well CMOS process and would have been used for its intended purpose in manufacturing known CPUs, designed for implementation using CMOS technology.” Pet. 77 (citing Ex. 1003 ¶¶ 197–199). Petitioner also argues using Payne’s technology to form CPUs involved the combination of familiar elements, according to known methods, to yield predictable results. Pet. 77.

Patent Owner does not challenge Petitioner’s arguments and evidence. *See generally*, Prelim. Resp.

Upon review of the arguments and prior art of record, we determine that Petitioner demonstrates sufficiently for purposes of institution that Payne and Wolf disclose or suggest the limitations of claim 9, and that a person of ordinary skill in the art would have had reason to combine the teachings of Payne and Wolf, and would have had a reasonable expectation of successfully achieving the claimed invention.

b. *Claim 10*

Claim 10 depends from claim 7 and further recites that “the semiconductor device is a DRAM device.” Ex. 1001, 5:7–8. Petitioner contends that a person of ordinary skill in the art would have

known to fabricate DRAM devices for “the advantages of cost per bit, device density, and flexibility of use (i.e., both read and

write operations are possible) [which] have made DRAMs the most widely used form of semiconductor memory to date,” and to do so using CMOS technology to take advantage of “lower power dissipation [] and smaller soft error rates.”

Pet. 78 (quoting Ex.1008B, 587, 596–597; citing Ex. 1003 ¶ 200).

Petitioner also contends that it would have been obvious to fabricate known DRAM devices using Payne’s technology to benefit from increased packing density, and that a person of ordinary skill in the art would have had a reasonable expectation of success because “Payne’s improved CMOS process was an improvement over conventional twin-well CMOS process and would have been used for its intended purpose in manufacturing a known DRAM designed for implementation using CMOS technology.”

Pet. 78–79 (citing Ex. 1003 ¶¶ 201–203). Additionally, Petitioner argues that using Payne’s technology to form DRAMs involved the combination of familiar elements, according to known methods, to yield predictable results. Pet. 78–79.

Patent Owner does not challenge Petitioner’s arguments and evidence. *See generally*, Prelim. Resp.

Upon review of the arguments and prior art of record, we determine that Petitioner demonstrates sufficiently for purposes of institution that Payne and Wolf disclose or suggest the limitations of claim 10, and that a person of ordinary skill in the art would have had reason to combine the teachings of Payne and Wolf, and would have had a reasonable expectation of successfully achieving the claimed invention.

c. Claim 11

Claim 11 depends from claim 7 and further recites that “the semiconductor device is a flash memory device.” Ex. 1001, 5:9–10.

Petitioner contends that a person of ordinary skill in the art would have “known to fabricate semiconductor flash memory devices to achieve the benefits of ‘high density [], small-die size, lower cost, and hot-electron writability of EPROMs, together with the easy erasability, on-board reprogrammability, and electrontunneling erasure features of EEPROMs,’ and to do so using CMOS technology for ‘lower power-dissipation.’”

Pet. 79 (quoting Ex. 1008B, 632–34; Ex. 1008A 808–810; citing Ex. 1003 ¶ 204).

Petitioner also contends that it would have been obvious to fabricate known DRAM devices using Payne’s technology to benefit from increased packing density, and that a person of ordinary skill in the art would have had a reasonable expectation of success because “Payne’s improved CMOS process was an improvement over conventional twin-well CMOS process and would have been used for its intended purpose in manufacturing a known flash memory designed for implementation using CMOS technology.” Pet. 80 (citing Ex. 1003 ¶¶ 206–208). Additionally, Petitioner argues using Payne’s technology to form DRAMs involved the combination of familiar elements, according to known methods, to yield predictable results. Pet. 80.

Patent Owner does not challenge Petitioner’s arguments and evidence. *See generally*, Prelim. Resp.

Upon review of the arguments and prior art of record, we determine that Petitioner demonstrates sufficiently for purposes of institution that Payne and Wolf disclose or suggest the limitations of claim 11, and that a person of ordinary skill in the art would have had reason to combine the teachings of Payne and Wolf, and would have had a reasonable expectation of successfully achieving the claimed invention.

3. *Conclusion*

Based on the foregoing, we determine that Petitioner demonstrates a reasonable likelihood that claims 9–11 would have been unpatentable as obvious over Payne and Wolf.

G. Claim 12 – Alleged Obviousness in view of Payne and Silverbrook

Petitioner contends that the subject matter of claim 12 would have been obvious over the combined disclosures of Payne and Silverbrook. Pet. 83–85.

1. *Silverbrook (Ex. 1047)*

Silverbrook “relates substantially to the concept of a disposable camera having instant printing capabilities.” Ex. 1047, 1:8–9. Part of Silverbrook’s camera is an “Image Capture and Processing Chip” that performs “CMOS image sensing.” Ex. 1047, 6:41–49. The CMOS image sensing is accomplished by “a CMOS active pixel sensor array” manufactured using a “CMOS/DRAM/APS process.” Ex. 1047, 6:50–55.

2. *Analysis*

Claim 12 depends from claim 1 and further requires “wherein the semiconductor device is an image sensor device.” Ex. 1001, 5:11–12. Petitioner contends that Silverbrook discloses a CMOS image sensor device, and that “[i]t would have been obvious to fabricate the known CMOS logic or CMOS image sensors in Silverbrook’s [Image Capture and Processing Chip] using Payne’s improved twin-well CMOS technology for the benefit of increased packing density.” Pet. 83–84 (citing Ex. 1047, 6:41–13:39; Ex. 1003 ¶¶ 222–224). Additionally, Petitioner argues that using Payne’s technology to form CMOS image sensors involved the combination of familiar elements, according to known methods, to yield predictable results.

Patent Owner does not, on this record, contest Petitioner’s arguments with respect to claim 12. *See generally*, Prelim. Resp.

Upon review of the arguments and prior art of record, we determine that Petitioner demonstrates sufficiently for purposes of institution that Payne and Silverbrook disclose or suggest the limitations of claim 12, and that a person of ordinary skill in the art would have had reason to combine the teachings of Payne and Silverbrook, and would have had a reasonable expectation of successfully achieving the claimed invention.

3. Conclusion

Based on the foregoing, we determine that Petitioner demonstrates a reasonable likelihood that claim 12 would have been unpatentable as obvious over Payne and Silverbrook.

IV. CONCLUSION

For the reasons discussed above, we are persuaded on the present record that the Petition is not time-barred under 35 U.S.C. § 315(b). Further, because Petitioner has demonstrated a reasonable likelihood that at least one challenged claim of the ’502 patent is unpatentable over the prior art of record, we institute an *inter partes* review. And because we find some grounds sufficient for institution, we institute on all grounds in the petition. *See SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 1353 (2018) (“The agency cannot curate the claims at issue but must decide them all.”); *PGS Geophysical AS v. Iancu*, 891 F.3d 1354, 1360 (Fed. Cir. 2018) (interpreting the statute as requiring “a simple yes-or-no institution choice respecting a petition, embracing all challenges included in the petition”).

At this stage of the proceeding, we have not made a final

determination with respect to the patentability of any challenged claim or any underlying factual or legal issue.

V. ORDER

For the foregoing reasons, it is:

ORDERED that, pursuant to 35 U.S.C. § 314(a), *inter partes* review is instituted with respect to the grounds of unpatentability set forth in the Petition;

FURTHER ORDERED that, pursuant to 35 U.S.C. § 314(a) and 37 C.F.R. § 42.4, notice is given of institution of trial commencing on the entry date of this Decision;

FURTHER ORDERED that, in view of the pending motion to seal, this Decision is being filed “Board and Parties Only”; and

FURTHER ORDERED that after conferring with Petitioner, Patent Owner shall, within one week of this Decision, submit to the Board via email to Trials@uspto.gov, a version of this Decision to be filed on the public record, with any redactions proposed by either party.

IPR2024-00018
Patent 9,190,502 B2

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