

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TEXAS INSTRUMENTS INCORPORATED,
Petitioner,

v.

GREENTHREAD, LLC,
Patent Owner.

IPR2024-00772
Patent 10,734,481 B2

Before GRACE KARAFFA OBERMANN, JON B. TORNQUIST, and
MONICA S. ULLAGADDI, *Administrative Patent Judges*.

ULLAGADDI, *Administrative Patent Judge*.

DECISION
Granting Institution of *Inter Partes* Review
35 U.S.C. § 314
Granting Motion for Joinder
35 U.S.C. § 315(c)

I. INTRODUCTION

Texas Instruments Inc. (“Petitioner” or “TI”) filed a petition (Paper 3, “Pet.”) to institute an *inter partes* review of claims 1–9, 12–27, and 30–36 of U.S. Patent No. 10,734,481 B2 (Ex. 1001, “the ’481 patent”). Petitioner also moved to join the present proceeding with IPR2024-00001 (“00001IPR”). Paper 2 (“Motion” or “Mot.”). Greenthread LLC (“Patent Owner”) filed a Preliminary Response (Paper 13, “Prelim. Resp.”) to the Petition and an Opposition to Petitioner’s Motion (Paper 7, “Opp.”). Petitioner filed a Reply (Paper 18, “Reply”) to the Preliminary Response. Patent Owner did not file a Sur-reply.

A decision to institute under § 314 may not institute on fewer than all claims challenged in the petition. *SAS Inst. Inc. v. Iancu*, 138 S. Ct. 1348, 1359–60 (2018). In addition, if the Board institutes trial, it will institute “on all of the challenged claims and on all grounds of unpatentability asserted for each claim.” 37 C.F.R. § 42.108(a). Having considered the arguments and the associated evidence presented in the Petition, Preliminary Response, Preliminary Reply, Motion, and Opposition, we institute *inter partes* review and grant Petitioner’s Motion for Joinder for the reasons described below.

A. *Real Parties in Interest*

Petitioner identifies itself as the real party in interest. Pet. 1. Patent Owner identifies itself as the real party in interest. Paper 5, 1.

B. *Related Matters*

The parties identify the following district court litigations as related matters: *Greenthread, LLC v. Cirrus Logic, Inc.*, No. 1:23-cv-00369 (W.D. Tex. Mar. 31, 2023); *Greenthread, LLC v. OmniVision Technologies, Inc.*, No. 2:23-cv-00212 (E.D. Tex. May 10, 2023); *Greenthread, LLC v Texas*

IPR2024-00772
Patent 10,734,481 B2

Instruments Inc., No. 2:23-cv-00157 (E.D. Tex. Apr. 6, 2023); and *Greenthread, LLC v. Monolithic Power Systems, Inc.*, No. 1:23-cv-00579 (D. Del. May 26, 2023). Pet. 1–2; Paper 5, 1–2. Petitioner additionally identifies *Greenthread, LLC v. OSRAM GmbH*, No. 2:23-cv-00179 (E.D. Tex. Apr. 19, 2023). Pet. 2.

The parties identify the following post-grant proceedings as related matters: *Cirrus Logic, Inc., et al. v. Greenthread, LLC*, IPR2024-00001, filed October 12, 2023; *Semiconductor Components Industries, LLC v. Greenthread, LLC*, IPR2024-00264, filed December 11, 2023; and *Monolithic Power Systems, Inc. v. Greenthread, LLC*, IPR2024-00551, filed March 18, 2024. Pet. 2; Paper 5, 2.

C. Asserted Grounds of Unpatentability

The Petition in this proceeding challenges the same claims of the '481 patent on identical grounds of unpatentability, and relies on the same evidence, including the same declarant testimony, as presented in the 00001IPR. Pet. 5; Mot. 1, 4–6; 00001IPR, Paper 36, 5. These challenges are summarized in the chart below. Petitioner supports its challenges with the Declaration of Dr. Sanjay Bannerjee. Ex. 1003.

Claims Challenged	35 U.S.C. §¹	Reference(s)/Basis
1–9, 12–14, 16–27, 30–36	103	Kawagoe ²
1–9, 12–14, 16–27, 30–36	103	Kawagoe, Gupta ³
1, 2, 4–9, 12–22, 24–27, 30–36	103	Wieczorek, ⁴ Wolf ⁵
1, 2, 4–9, 12–22, 24–27, 30–36	103	Wieczorek, Wolf, Gupta
19, 36	103	Kawagoe, Silverbrook ⁶
19, 36	103	Wieczorek, Wolf, Silverbrook

II. TIMELINESS OF THE PETITION

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

¹ The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284 (2011), amended 35 U.S.C. § 103, effective March 16, 2013. Because applications from which the ’481 patent claims priority were filed before this date, the pre-AIA version of § 103 applies.

² U.S. Patent No. 6,043,114, issued Mar. 28, 2000 (Ex. 1007, “Kawagoe”).

³ U.S. Patent No. 6,163,877, issued Dec. 19, 2000 (Ex. 1014, “Gupta”).

⁴ U.S. Patent Publication No. 2003/0183856 A1, published Oct. 2, 2003 (Ex. 1006, “Wieczorek”).

⁵ Petitioner cites four volumes for Wolf: *Stanley Wolf & Richard Tauber, Silicon Processing For The VLSI Era*, Volume 1 – Process Technology, 2nd ed., (Lattice Press 2000) (Ex. 1008A); *Stanley Wolf & Richard Tauber, Silicon Processing For The VLSI Era*, Volume 2 – Process Integration, (Lattice Press 2000) (Ex. 1008B); *Stanley Wolf & Richard Tauber, Silicon Processing For The VLSI Era*, Volume 3 – The Submicron MOSFET, (Lattice Press 2000) (Ex. 1008C); and *Stanley Wolf & Richard Tauber, Silicon Processing For The VLSI Era*, Volume 4 – Deep-Submicron Process Technology, (Lattice Press 2000) (Ex. 1008D).

petitioner is served with a complaint alleging infringement of the patent.” Patent Owner argues that the Petition is untimely under 35 U.S.C. § 315(b) because Petitioner is in privity with time-barred entities. Prelim. Resp. 14–35. However, 35 U.S.C. § 315(b) also provides that the one-year time bar “shall not apply to a request for joinder under subsection (c).” 37 C.F.R. § 42.122(b). Because the Petition is accompanied by a timely request for joinder (Paper 2) to the instituted 00001 IPR proceeding, which we grant as further discussed below, Patent Owner’s argument that the Petition is time-barred under 35 U.S.C. § 315(b) is moot, irrespective of whether Petitioner is in privity with time-barred entities.

III. MOTION FOR JOINDER

Petitioner moves to join the Petition to the 0001 IPR. *See generally* Mot. A motion for joinder should (1) set forth reasons why joinder is appropriate; (2) identify any new grounds of unpatentability asserted in the petition; (3) explain what impact (if any) joinder would have on the trial schedule for the existing review; and (4) address specifically how briefing and discovery may be simplified. *Samsung Elecs., Co. v. Raytheon Co.*, IPR2016-00962, Paper 12 at 5 (PTAB Aug. 24, 2016) (citing *Kyocera Corp. v. Softview LLC*, IPR2013-00004, Paper 15 at 4 (PTAB Apr. 24, 2013)).

A. *Whether the Petition Warrants Institution*

The Petition challenges the patentability of claims 1–9, 12–27, and 30–36 of the ’481 patent. Pet. 5. Each challenge identified in the Petition

⁶ U.S. Patent No. 6,614,560 B1, issued Sept. 2, 2003 (Ex. 1042, “Silverbrook”).

is based on Kawagoe or Wieczorek, alone or in combination with other references. *Id.*

Patent Owner does not challenge the sufficiency of the evidence asserted in the Petition to support institution of review, except to argue that the prior art does not teach or suggest the claim 1 limitation directed to “aid[ing] carrier movement from the first surface to the second surface of the substrate.” Prelim. Resp. 1–14. The instant Petition presents arguments and evidence substantially similar to that of the Petition in the 00001IPR. In the 00001IPR, in its Preliminary Response, Patent Owner only disputed whether the 00001IPR Petitioners were time-barred under § 315(b). *See generally* 00001IPR, Paper 15. In the present proceeding, Patent Owner presents arguments in its Preliminary Response that are similar to arguments presented in Patent Owner’s Response to the Petition in the 00001IPR. *Compare* 00001IPR, Paper 47, 6–26, *with* Prelim. Resp. 4–14. We address these arguments below.

1. *The Primary References*

a) *Kawagoe*

Kawagoe discloses a process for manufacturing a semiconductor integrated circuit device using an epitaxial wafer, i.e., a semiconductor wafer having a semiconductor single crystal epitaxial layer grown over a polished semiconductor substrate. Ex. 1007, 1:13–27, 2:31–35. According to Kawagoe, “[t]he epitaxial wafer is advantageous in that it is excellent in suppressing the soft errors and resisting to the latchup,”⁷ as well as

⁷ Petitioner submits Exhibit 1009 (Wang and Agrawal, *Single Event Upset: An Embedded Tutorial*, 21st Int’l Conf on VLSI Design, 429–434, IEEE 2008), which explains that “soft errors” are “random and not related to

“drastically reduc[ing] the defect density of the gate insulating film” of a semiconductor integrated device. *Id.* at 1:33–40.

Kawagoe discloses various “representative” processes, including processes in which the single crystal (epitaxial) layer contains an impurity of the same type and in the same concentration as the substrate body. Ex. 1007, 2:55–3:9. According to Kawagoe, the impurity concentration of the substrate body can be made higher than that of epitaxial layer “so that the resistance of the semiconductor substrate body can be relatively lowered to improve the resistance to the latchup.” *Id.* at 4:1–8. Kawagoe discloses a process for manufacturing a semiconductor integrated circuit device including a step of forming a semiconductor region (well) extending below the epitaxial layer and having an impurity concentration that decreases with increasing depth below the epitaxial layer. *Id.* at 3:10–25. According to Kawagoe, the well can be used for forming a complementary MOS.FET⁸ circuit. *Id.* at 3:32–38.

Kawagoe describes seven embodiments, including Embodiment 1 (Ex. 1007, 6:41–12:40, Figs. 1–8) and Embodiment 4 (*id.* at 14:46–19:64, Figs. 16–25). According to Embodiment 1, a semiconductor integrated circuit device includes semiconductor substrate body 2S, epitaxial layer 2E, and gettering layer 2G. *Id.* at 6:51–56, Fig. 1. Substrate body 2S and epitaxial layer 2E are doped with p-type impurity in equal concentrations.

permanent hardware faults” and “[t]heir causes may be internal (e.g., interconnect coupling) or external (e.g., cosmic radiation),” including “alpha particles [that] are emitted when the nucleus of an unstable isotope decays to a lower energy state.” Ex. 1009, Abstract, 430. Dr. Banerjee characterizes “latchup” as “a ‘short-circuit’ failure condition in poorly designed circuits.” Ex. 1003 ¶ 75.

⁸ Metal-Oxide-Semiconductor.Field-Effect-Transistor

Id. at 6:60–7:3, 10:51–55, 11:12–16. Embodiment 1 includes n-channel MOS.FET (“nMOS”) 4N and p-channel MOS.FET (“pMOS”) 4P, the latter being formed in n-well 6, which is doped with n-type impurity and extends below the epitaxial layer. *Id.* at 8:46–52, 9:32–40, 11:18–24, 11:43–50, Figs. 1, 5, 7.

According to Embodiment 4, substrate body 2S and epitaxial layer 2E are doped with p-type impurity, and the impurity concentration of substrate body 2S is higher than that of epitaxial layer 2E “to improve the resistance to the latchup.” Ex. 1007, 14:64–15:6, 15:13–17, 16:16–21, 19:59–63, Fig. 17. Embodiment 4 includes p-well 6 p formed with nMOS 4N and n-well 6 n formed with pMOS 4P. *Id.* at 15:26–40, 17:40–18:35, Figs. 16, 21–23. In Embodiment 4, the impurity concentration in p-well 6 p and n-well 6 n decreases with increasing depth below the epitaxial layer. *Id.* at 15:62–16:15, 17:55–61, Fig. 17. Kawagoe discloses that the concentration gradient reduces soft errors by attracting carriers (electrons) to the substrate and preventing them from entering the p-well. *Id.* at 16:2–11.

Petitioner relies on Kawagoe Figures 17 and 23, which are reproduced below and illustrate Embodiment 4 and its properties.

FIG. 17

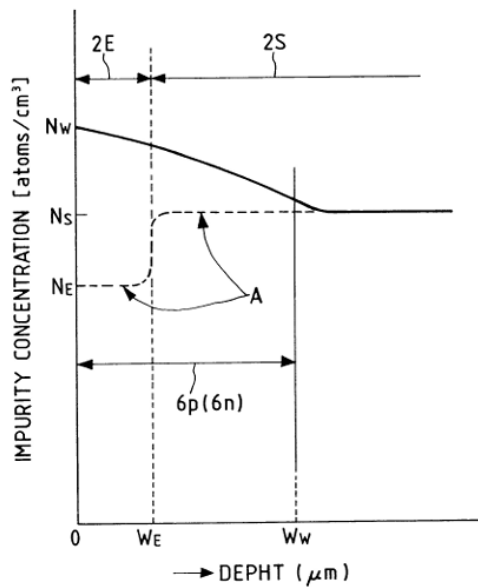


FIG. 23

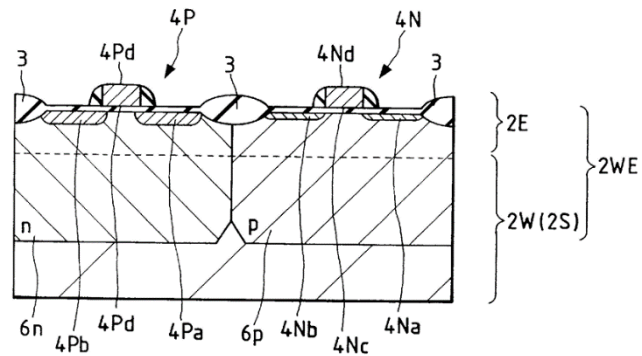


Figure 17 is a plot of impurity concentration as a function of depth in a semiconductor integrated circuit device, which shows “the p-well 6p and n-well 6n have their impurity concentrations gradually lowered in the depthwise direction from the principal surface (having an impurity concentration N_w) of the epitaxial layer 2E.” Ex. 1007, 5:41–45, 15:62–16:40. Figure 23 shows a step in a process for manufacturing a semiconductor integrated circuit device, including p-well 6p formed with nMOS 4N and n-well 6n formed with pMOS 4P. *Id.* at 5:1–4, 15:26–32, 18:3–35.

b) Wieczorek

Wieczorek relates “to a semiconductor device, such as a field-effect transistor, having an improved retrograde dopant profile in a channel region of the transistor element.” Ex. 1006 ¶ 2. The Petition relies on Wieczorek’s description of the prior art, not its disclosed improvement. Pet. 11, 40.

Wieczorek explains that a retrograde channel dopant profile is one where “the concentration of dopants increases from the gate insulation layer to the areas located deeper down the channel region.” Ex. 1006 ¶ 6.

According to Wieczorek, a retrograde channel dopant profile is desirable, but “very difficult to obtain.” *Id.* Wieczorek states that “the dopant concentration immediately after the implantation process exhibits a desired retrograde dopant profile” (*id.* ¶ 9), but during heat treatment, “the initially retrograde profile in the vicinity of the surface of the semiconductor device . . . may have become substantially uniformly distributed” due to diffusion of the dopant atoms (*id.* ¶ 11).

Petitioner relies on Figures 1b and 2b, reproduced below, which Wieczorek uses to illustrate the prior art.

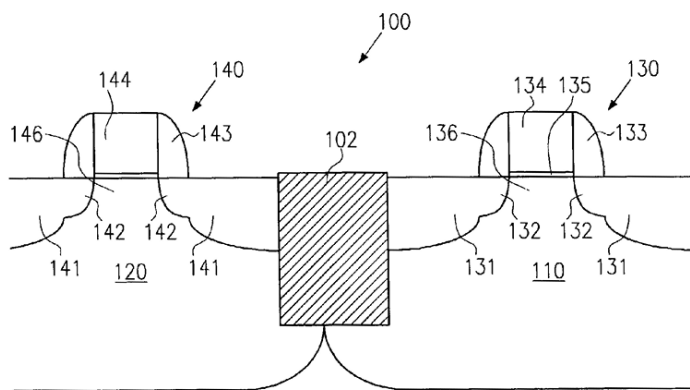


FIG. 1b
(Prior Art)

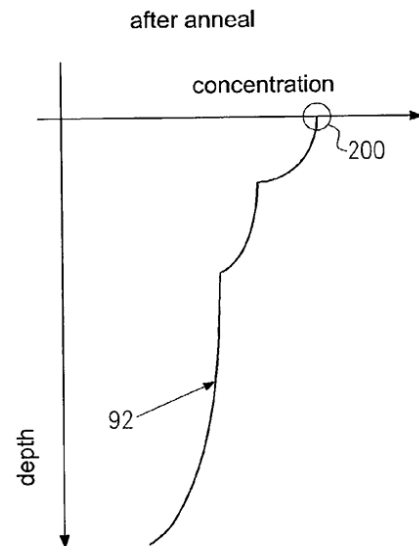


FIG. 2b
(Prior Art)

Wieczorek Figure 1b shows a conventional semiconductor device at an intermediate manufacturing stage, including shallow trench isolation 102 separating N-well structure 120 from P-well structure 110. Ex. 1006

¶¶ 7, 20. The device includes P-channel transistor 140 with source and drain regions 141 in N-well structure 120 and N-channel transistor 130 with source and drain regions 131 in P-well structure 110. *Id.* ¶ 12. Wiczorek Figure 2b is a graph of dopant concentration versus depth of N-well structure 120 and P-well structure 110 and shows “a typical dopant profile with respect to the depth of the respective well structure” after ion implantation and heat treatment. *Id.* ¶¶ 9–11, 13, 21.

2. Patent Owner’s Arguments

Patent Owner argues that “[t]he Petition should not be instituted, because (among other deficiencies) it fails to show that the prior art discloses the ‘aid carrier movement’ claim limitation” recited in claim 1. Prelim. Resp. 1. According to Patent Owner:

Defendants assert that the specification does not provide guidance on how to assess or measure carrier movement. This is not true. The claims and the specification make clear that the electric field must move the carriers in a particular direction (from the surface layer to the substrate). *Whether the carrier movement has a particular speed or acceleration is beyond the scope of the claim*, as long as it meets the other limitations of the claim.

Id. at 5 (quoting Ex. 1020, 38) (emphasis added). With respect to the prosecution history statement cited by Petitioner—that “a downward-sloping graded dopant concentration was known in the prior art to create an ‘inherent “built-in” unidirectional electric field’ that sweeps carriers down,”—Patent Owner asserts that Petitioner’s quotation of this statement is incomplete. *Id.* (citing Pet. 32; Ex. 1016, 286, 289). Patent Owner takes the position that it also argued “that the movement of carriers ‘[d]epend[s] on the particular slope of the graded concentration of dopant[s]’” and this

statement was made in response “to an Office Action regarding a claim that required a ‘single static unidirectional electric drift field to aid the movement of carriers.’” *Id.* (alterations in original).

Pointing to the Examiner’s findings during prosecution of the U.S. Patent Application No. 11/622,496, filed on Jan. 12, 2007, which matured into parent U.S. Patent No. 8,421,195 (“the ’195 patent”),⁹ Patent Owner asserts that “[s]ince the mere direction of the gradient is *not* sufficient to determine whether the gradient would ‘aid carrier movement,’ the premise of the Petition is false.” *Id.* at 8. According to Patent Owner, Kawagoe teaches the following:

Specifically, the electrons produced by the α -ray are attracted to the substrate body 2S by that concentration gradient and prevented from entering the p-well 6p so that the soft errors can be reduced in case the MIS memory of the DRAM or the like is formed in the p-well 6p.

Id. at 10 (quoting Ex. 1007, 16:7–11 (emphases omitted)). In view of this disclosure, Patent Owner contends that Kawagoe teaches inhibiting carrier movement, not aiding carrier movement. *Id.*

Patent Owner includes additional details in support of its view that the asserted prior art fails to establish obviousness of the “aid carrier movement” limitation of claim 1. Prelim. Resp. 1–14.

⁹ Patent Owner contends that “during prosecution, the examiner said that in ‘a complex electronic device, movement of minority carriers is affected by multiple forces and fields’ and that a ‘drift field may attempt to apply a force on all minority carriers in a specific direction’ but that ‘without knowing other parameters of the device’ one cannot say whether the field would aid carrier movement.” Prelim. Resp. 6 (citing Ex. 1016, 270).

During prosecution of the '195 patent, the Examiner rejected claims under the pre-AIA version of 35 U.S.C. § 112, first paragraph and found that “movement of minority carriers is affected by multiple forces and fields” and that “it does not appear that simply the presence of ‘a unidirectional drift field’ in itself can achieve ‘drawing *all* minority carriers from said surface layer to said substrate.’” Ex. 1016, 289 (emphasis added). Patent Owner responded with the following argument:

[A] unidirectional drift (electric) field necessarily affects all the present minority carriers in the same way - moving all minority carriers in the same direction because of the unidirectional drift due to the existence of the electric field. *See* “Physics and Technology of Semiconductor Devices,” A.S. Grove, pp. 224–225, John Wiley and Sons, Inc., New York, 1st Edition 1967 (“This same electric field will then be of such direction as to aid the motion of injected holes. Thus the injected minority carriers will now move not only by diffusion but also by drift due to the existence of this electric field.”). Depending on the particular slope of the graded concentration of dopant, all minority carriers are either swept “down” (from the surface layer to the substrate) or “up” (from the substrate to the surface layer). *See* Applicant’s Figs. 5(b) and 5(c).

Id. Patent Owner further argued that the Examiner’s finding

appears to not consider that the graded dopant concentration itself creates a “built-in” electrical field that forces the movement of carriers into a particular direction, whereby the “direction” of the electrical field and the resulting direction of the carrier movement depends *solely* on the slope of the graded concentration of dopant. With regard to the existence of a “built-in” electric field created by a graded dopant density, . . . *this inherent “built-in” unidirectional electric field is the additional parameter for ensuring that all minority carriers are being moved in one direction* and which parameter the Office Action deemed to be missing from the disclosure.

Id. at 289–90 (emphases added). Also, “without conceding its position on this issue,” Patent Owner amended claims to eliminate reference to “*all* carriers” and instead, refer to “carriers.”¹⁰ *Id.* at 290.

3. *Analysis*

At this stage of the proceeding, we determine that Patent Owner’s statements made during prosecution of the ’195 patent appear to contradict its arguments in the present proceeding. *See generally* Prelim. Resp. Based on the present record, Patent Owner’s statements during prosecution support Petitioner’s argument that a graded dopant concentration is enough to teach aiding carrier movement in a particular direction. Patent Owner does not dispute that Kawagoe has a graded dopant concentration in the active region at this stage of the proceeding. *Id.* Patent Owner also does not dispute that Kawagoe’s transistor has carriers in the active region or that the graded dopant concentration of Kawagoe is lowered from the surface to the bottom substrate (Ex. 1007, Fig. 17). *Id.* At this stage of the proceeding, the evidence of record supports Petitioner’s position sufficiently to meet the reasonable likelihood threshold for institution.

We decline to make further determinations, on this preliminary record, regarding the dispute surrounding this limitation, because the trial in the 00001 IPR is the better proceeding in which to do so. Specifically, as compared to the preliminary phase of this case, the instituted trial in the

¹⁰ The examined claims of the ’195 patent generally recited “a unidirectional drift field drawing all minority carriers from said surface layer to said substrate.” Ex. 1016, 286. Patent Owner amended the claims of the ’195 patent to recite “maintain[ing] a single static unidirectional electric drift field to aid the movement of minority carriers from said surface layer to said substrate.” *Id.*

00001IPR affords the parties a better opportunity to fully and fairly brief, argue, and develop evidence in support of their positions. We observe, on this record, the dispute is inadequate to undermine the sufficiency of Petitioner's evidence to support institution of review.

4. *Remaining Claims*

In view of our determination that Petitioner establishes a reasonable likelihood for claim 1, and because Petitioner's arguments and evidence for remaining independent claim 20 (Pet. 46–47) are similar to Petitioner's arguments and evidence for claim 1 (*id.* at 14–36), and because Petitioner's arguments and evidence for dependent claims 2–9, 12–19, 21–27, and 30–36 (*id.* at 36–46) are unopposed at this stage by Patent Owner, we determine that it is unnecessary to provide an explicit analysis of Petitioner's challenges to the remaining claims in order to provide guidance to the parties for the upcoming trial. Consolidated Trial Practice Guide November 2019 (“CTPG”)¹¹ at 64; *see* 37 C.F.R. § 42.108(a) (“When instituting *inter partes* review, the Board will authorize the review to proceed on all of the challenged claims and on all grounds of unpatentability asserted for each claim.”); *see also SAS*, 138 S. Ct. at 1359–60 (holding that 35 U.S.C. § 314 forbids the Board's prior “partial institution” practice). For this same reason, we further determine that we need not provide an explicit analysis of the remaining grounds presented by Petitioner.

B. *Whether to Join Petitioner as a Party to the 00001IPR*

Petitioner contends that joinder is appropriate because the Petition challenges the same claims of the same patent on the same grounds set forth

¹¹ Available at <https://www.uspto.gov/TralPracticeGuideConsolidated>.

in the 00001 IPR, and because “supporting materials—including its supporting expert declaration, exhibits, and exhibit numbering—are identical to those presented in the [00001] IPR.” Mot. 1, 6 (citing 00001 IPR, Paper 1). Petitioner further contends “it will act as an ‘understudy’ . . . in the proceeding.” *Id.* at 2. Petitioner asserts it “will not seek additional depositions or deposition time” and “agrees to be bound by the scheduling order in the Cirrus IPR proceeding.” *Id.* Petitioner “agrees to rely entirely on, and be bound by, the expert declarations and depositions in the [00001] IPR.” *Id.* at 8. Petitioner further contends that “unless and until the current petitioner in IPR2024-00001 ceases to participate in the instituted [00001] IPR, [Petitioner] will not assume an active role.” *Id.* Petitioner indicates that it “agrees to the following conditions:”

(a) TI shall not make any substantive filing and shall be bound by the filings of the Cirrus IPR Petitioner, unless a filing concerns termination and settlement, or issues solely involving TI;

(b) TI shall not present any argument or make any presentation at oral hearing unless an issue solely involves TI, or when addressing Board-approved motions that do not affect the Cirrus IPR Petitioner, or its respective position;

(c) TI shall not seek to cross-examine or defend the cross-examination of any witness, unless the topic of cross-examination concerns issues solely involving TI;

(d) TI shall not seek discovery from Patent Owner on issues not solely involving TI;

(e) TI will not rely on expert testimony beyond that submitted by the Cirrus IPR Petitioner unless the Cirrus IPR Petitioner is terminated from the case.

Id. at 2. Petitioner “will also abide by any additional conditions the Board deems appropriate for an ‘understudy’ role.” *Id.* at 8.

Patent Owner argues that joinder “should be denied” because “joinder is prejudicial to Patent Owner,” is “aimed at obtaining unfair settlement leverage” and the joinder motion “is likely to be moot by the time it is decided.” Opp. 1.

In particular, Patent Owner argues that joinder would be prejudicial because, unlike in the 00001 IPR, the instant Preliminary Response “address[es] the prior art related merits of the petition, . . . the timeliness of petition, and other procedural issues unique to TI, such as *Fintiv* factors.” Opp. 3–4. Patent Owner asserts that joinder “allow[s] TI to free-ride on an institution decision based on circumstances particular to different challengers and irrelevant to TI’s petition” because:

TI waited almost exactly a year after being sued before filing the instant petition and its joinder motion effectively seeks to skip the institution stage in its own IPR (including a merits review), because it saw that in the CL/OV IPRs Greenthread focused on procedural issues that are necessarily specific to those two entities.

Id. at 4.¹² Patent Owner further argues that the Petition is aimed at blocking settlement of related district court litigations and IPR proceedings between Petitioner and CL/OV unless a settlement is also reached with Petitioner in the instant parallel district court litigation and the instant IPR. *Id.* at 4–5. Patent Owner asserts “TI admits that its motion will inhibit Greenthread’s ability to settle with CL and OV.” *Id.* at 4 (citing Mot. 2); *see also* Mot. 2 (“[Petitioner’s] interests may not be adequately protected in the Cirrus IPR,

¹² “CL/OV” references the joint petitioners of IPR2024-00001: Cirrus Logic and OmniVision. Opp. 1.

particularly if the Cirrus IPR Petitioner settles with Patent Owner and ceases to participate.”).

With regard to Patent Owner’s argument that joinder would be unavailable if Patent Owner prevails on a request for Director Review of the Institution Decision in the 00001 IPR, we note that this request has been denied. *Id.* at 5–6; 00001 IPR, Paper 34 (PTAB May 30, 2024). We accordingly consider whether joinder is appropriate under the four-part standard set forth above.

With regard to Patent Owner’s argument that the instant Preliminary Response “address[es] the prior art related merits of the Petition,” we addressed those arguments above. *Supra* §§ III.A.2–3. The present Preliminary Response does not address “other procedural issues unique to TI, such as *Fintiv* factors” contrary to Patent Owner’s assertion. Finally, any issues related to timeliness of the Petitioner under 35 U.S.C. § 315(b) are rendered moot because the Petition is accompanied by a timely request for joinder (Paper 2) to the instituted proceeding (IPR2024-00001), irrespective of whether Petitioner is in privity with time-barred entities. *Supra* § II.

Patent Owner’s other argument is not persuasive because it is based on speculation, without any evidence, that Petitioner “TI is trying to block settlement with any of these defendants unless Greenthread also settles with TI.” Opp. 5 (emphasis omitted). As discussed below, we determine that Patent Owner will not be prejudiced unduly by the joinder. Moreover, we note that even in a situation where the petitioner and patent owner in the proceeding to be joined had settled (*Code200 v. Bright Data Ltd.*, IPR2022-00861, Paper 17 at 5 (PTAB July 25, 2022) (vacated)), the Director nevertheless vacated a decision to deny a motion for joinder. *Code200*,

IPR2022-00861, Paper 18 at 7 (Vidal Aug. 23, 2022) (precedential); *see also eBay, Inc. v. Lexos Media IP, LLC*, IPR2024-00336, Paper 11 at 13–15 (PTAB Feb. 23, 2024).

Based on the facts and circumstances discussed above, having reviewed the briefings of both parties, we determine Petitioner has established good cause for joining the 00001 IPR. Specifically, we find that joining Petitioner to the 00001 IPR is unlikely to require any delay or modification to the scheduling order already in place for the 00001 IPR. We also determine that Patent Owner will not be prejudiced unduly by the joinder of this proceeding. Thus, we determine that granting the Motion for Joinder under these circumstances would help “secure the just, speedy, and inexpensive resolution” of these proceedings. *See* 37 C.F.R. § 42.1(b). For the above reasons, we grant Petitioner’s Motion for Joinder and join Petitioner as a party to the 00001 IPR.

IV. CONCLUSION

For the above reasons, we determine that there is a reasonable likelihood that Petitioner would prevail with respect to at least one of the claims challenged in the Petition. Accordingly, we institute an *inter partes* review of all challenged claims based on the grounds asserted in the Petition. In addition, we grant Petitioner’s Motion for Joinder. Patent Owner’s argument that the Petition is time-barred under 35 U.S.C. § 315(b) is moot because it is accompanied by a request for joinder to an instituted proceeding, which we grant.

V. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review of the '481 patent is hereby instituted, commencing on the entry date of this Order, and pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial.

FURTHER ORDERED that the trial is authorized on all grounds set forth in the Petition;

FURTHER ORDERED that Petitioner's Motion for Joinder with IPR2024-00001 is granted, and Petitioner is hereby joined as a petitioner in IPR2024-00001;

FURTHER ORDERED that there are no changes to the grounds on which trial in IPR2024-00001 was instituted, and no other grounds are added in IPR2024-00001;

FURTHER ORDERED that the Scheduling Order entered in IPR2024-00001, including any schedule changes agreed to by the parties in that proceeding pursuant to the Scheduling Order, shall govern the trial schedule in IPR2024-00001;

FURTHER ORDERED that Petitioner's role in IPR2024-00001 shall be limited as stated by Petitioner in the Motion for Joinder unless and until Cirrus Logic, Inc. and OmniVision Technologies, Inc. are terminated from that proceeding;

FURTHER ORDERED that the case caption in IPR2024-00001 shall be changed to reflect joinder of Texas Instruments, Inc. as a petitioner in accordance with the attached example;

FURTHER ORDERED that a copy of this Decision be entered into the record of IPR2024-00001; and

IPR2024-00772
Patent 10,734,481 B2

FURTHER ORDERED that all further filings shall be made in
IPR2024-00001.

For PETITIONER:

Joshua A. Griswold
Patrick J. Bisenius
FISH & RICHARDSON P.C.
griswold@fr.com
bisenius@fr.com

For PATENT OWNER:

Alan Whitehurst
Nicholas T. Matich
Arvind Jairam
Stuart McCommas
Archis “Neil” Ozarkar
MCKOOL SMITH, P.C.
awhitehurst@mckoolsmith.com
nmatich@mckoolsmith.com
ajairam@mckoolsmith.com
smccommas@mckoolsmith.com

IPR2024-00772
Patent 10,734,481 B2

[Sample Case Caption]

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CIRRUS LOGIC, INCORPORATED,
OMNIVISION TECHNOLOGIES, INCORPORATED, and
TEXAS INSTRUMENTS INCORPORATED
Petitioner,

v.

GREENTHREAD, LLC,
Patent Owner.

IPR2024-00001*
Patent 10,734,481 B2

* Texas Instruments Incorporated, which filed a petition in IPR2024-00772, has been joined as a party to this proceeding.