UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MONOLITHIC POWER SYSTEMS, INC.,

Petitioner,

v.

GREENTHREAD, LLC,

Patent Owner.

Case No: IPR2024-00468

U.S. Patent No. 8,421,195

PETITIONER'S RESPONSE TO
PATENT OWNER'S REQUEST FOR DIRECTOR REVIEW

TABLE OF CONTENTS

Page

I. BACKGROUND 3

II. ARGUMENT 6

A. The Board correctly interpreted the claim language based on the prosecution history and did not construe the claims, let alone construe the claims in violation of precedent. 7

B. PO rehashes identical arguments already rejected by the Board (and Director) about the Texas claim construction orders without explaining *why* the Board erred. 9

C. PO made statements in the Delaware claim construction completely opposite from what it argues here, and thus, its reliance on *MOSAID* is misplaced. 11

D. PO rehashes its untimely argument about what *minority* carriers are without explaining why the Board erred in rejecting that argument. 14

III. CONCLUSION 15

Patent Owner's ("PO") Request for Director Review of the final written decision finding the challenged claims unpatentable (Paper 92, hereinafter "FWD") should be denied. The Board's decision was well-reasoned and consistent with final written decisions in multiple other proceedings that found the same claims unpatentable for substantially the same reasons. *See generally* IPR2024-00266, Paper 81; IPR2024-00017, Paper 115.[1] Additionally, the Director has already denied PO's Director Review requests of final written decisions in related proceedings involving the same patent claims and related patents and substantially the same arguments. *See* IPR2024-00017, Paper 122 (Pat. No. 8,421,195); IPR2024-00018, Paper 121 (Pat. No. 9,190,502); IPR2024-00020, Paper 112 (Pat. No. 11,121,222); IPR2024-00021, Paper 114 ('222 pat.); IPR2023-01242, Paper 138 ('222 pat.); IPR2023-01244, Paper 130 ('222 pat.).[2] Granting the Request here would result in an outlier outcome that would contradict every single holding by the Board and Director regarding this patent and the related challenged patents.

---

[1] Proceeding no. -266 is between Semiconductor Component Indus., LLC and PO, and proceeding no. -017 is between Cirrus Logic and PO.

[2] Proceeding nos. -017, -018, -020 and -021 are between Cirrus Logic and PO, and proceeding nos. -1242 and 1244 are between Semiconductor Component Indus., LLC and PO.

PO's core argument here—that Petitioner's prior art needs to show actual movement to teach the claim term "aid the movement of minority carriers" because graded dopant concentrations themselves do not aid the movement of carriers—has been rejected by the Board not only in this proceeding but in multiple related IPRs, multiple times. The Board's analysis rested on clear, unambiguous statements the Applicant made during prosecution that a "graded dopant concentration itself creates a 'built-in' electrical field that forces the movement of carriers," noting that the prior art taught movement regardless. FWD at 62, 68. PO cannot escape these statements now. Indeed, the Director has already determined as much by denying Director Review requests in other proceedings that raised similar arguments. And while PO falsely accuses Petitioner of advocating conflicting claim constructions, it is, in fact, PO who took the ***exact opposite*** position in a parallel Delaware district court litigation, explicitly arguing that "aid the movement of . . . carriers" did not require "actually caus[ing] minority carriers to move downward." EX2029 at 43.

PO's remaining arguments fare no better. Its reliance on *MOSAID* is misplaced because Petitioner's positions have been uniformly consistent, whereas PO's have not. PO's reliance on Texas claim construction orders misrepresents those orders, merely rehashes arguments the Board already considered and rejected, multiple times, and PO's argument was ***also*** part of the other Director Review requests that the Director has already rejected in the parallel proceedings.

The Board's decision is entirely consistent with the Texas orders.

Finally, PO's new "minority carrier" argument—raised for the first time in its Sur-Reply and at the final hearing—was also properly rejected as inconsistent with the prosecution history and PO's statements, and PO's new argument here does not raise anything new that was not already considered by the Board. In short, PO's Request is a thinly veiled attempt to reargue issues it already lost in an effort to create an inconsistent result, which is not a proper basis for Director Review.

I. BACKGROUND

The crux of PO's Request for Director Review ("Request" or "Req.") (Paper 94) focuses on the meaning of "aid." Req. at 1–2. The key claim limitation recites "a single drift layer . . . having a graded concentration of dopants . . . [that has a] field to aid the movement of minority carriers from said surface layer to said substrate." *Id.* (citing EX1001, 4:18–24). The parties had disputed at length whether "aid the movement of . . . carriers" requires that the prior art show actual carrier movement or just a graded dopant concentration. FWD at 61–64.

In a parallel Delaware district court litigation that became stayed when this IPR was instituted, PO argued during claim construction that "aid the movement of . . . carriers" ***did not*** require "actually caus[ing] minority carriers to move downward." EX2029 at 43. Indeed, PO emphatically argued that its expert "never intended to say the minority carriers actually move from the surface to the

substrate," instead insisting that all the limitation requires is "simply ***aiding the movement*** of . . . carriers." *Id.* at 43 (emphasis in original).

PO took the exact opposite position in this IPR. Trying to salvage its invalid claims, PO argued that the references did not teach "aid the movement" of carriers because "a 'graded dopant concentration' must move carriers t*o meet the claim limitation.*"). FWD at 51–52. PO argued that not just any graded concentration of dopants would have a field that moves the carriers because the net sum of all other forces could cause carriers to not move (e.g., a "net forces" argument). *Id.*

Conversely, Petitioner argued that the claims merely require that the graded concentration of dopants provide a field that ***aids*** the movement of carriers. Thus, it was unnecessary to present evidence of whether that field in the prior art actually ***caused*** movement by overcoming all other theoretical forces. *See id.* at 57–59. The prior art teaches aiding via a graded concentration of dopants alone, whether or not evidence of actual movement exists. *Id.*

The Board analyzed the prosecution history, rejecting PO's "net forces" argument and agreeing with Petitioner. FWD at 62–63. During prosecution, the Examiner had rejected the Applicant's pending claims under pre-AIA 35 U.S.C. § 112, first paragraph, stating that because "'movement of minority carriers is affected by multiple forces and fields . . . [the] simpl[e] presence of a "unidirectional drift field" [caused by a graded dopant concentration] in itself"

does not appear to move the minority carriers. *Id.* at 61 (citing EX1002 at 269–70). Directly contradicting the precise argument PO is now advocating, the Applicant responded that external forces need not be considered because "a unidirectional drift (electric) field necessarily affects all present minority carriers." *Id.* (citing EX1002 at 269–70, 289). The Applicant further stated that the Examiner's "argument appears to not consider that the graded dopant concentration itself creates a 'built-in' electrical field that forces the movement of carriers." *Id.* at 62 (citing EX1002 at 289–90). Based on those clear and unambiguous statements by the Applicant, the Board rejected PO's "net forces" argument and found that a graded dopant concentration was enough to teach or fairly suggest to a POSITA "aiding minority carrier movement." *Id.* at 63.

Because a graded dopant concentration itself was sufficient to teach "aiding carrier movement," the Board noted that claim 1 does not require evidence of carrier movement over all theoretical forces in the prior art. *Id.* at 64, 68. Because Claim 1 is an apparatus claim, "Petitioner [did] not need to show that [the reference] . . . teaches actually moving any given minority carrier (although it does do so)." *Id.* at 68.

This proceeding is related to several other proceedings brought by Petitioner where the Board found that related patents were invalid for substantially the same reasons. *See, e.g.*, IPR2024-00468, Paper 92 at 64 (no carrier movement required

for ’195 patent); IPR2024-00469, Paper 93 at 58 (same for ’502 patent); IPR2024-00470, Paper 90 at 67 (same for ’222 patent).

This proceeding is also related to others brought by ***other*** petitioners covering the same and related patent claims, which the Board found unpatentable despite PO raising substantially similar arguments. For example, in IPR2023-01244, the Board found that claim 44 of the ’222 patent “does not require . . . movement of any particular number of carriers.” IPR2023-01244, Paper 128 at 54. Notably, in that proceeding, PO also requested Director Review, making a similar argument as it does here—namely, that “the Board [incorrectly] alleges that ‘Petitioner need not demonstrate movement of carriers in [the reference],” but the Director denied that request. *E.g.*, *compare* IPR2023-01244, Paper 122 at 8 (quoted language) with IPR2023-01244, Paper 130 at 2 (Dir. Squires denying PO’s Director Review request); *compare also* IPR2024-00020, Paper 108 at 4 (PO requesting Director Review, arguing that not all graded dopant concentrations “actually aid carrier movement.”) with IPR2024-00020, Paper 112 (Dir. Squires denying request).

Thus, the arguments raised here by PO have already been considered, and rejected, by both the Director and the Board, many times over.

II. ARGUMENT

Despite already being denied Director Review for similar arguments made in related proceedings, PO requests Director Review here. Not only would granting

Director Review here result in inconsistencies with the Director's denials and the Boards' findings of invalidity in those other proceedings, but PO's arguments entirely fail on their merits.

A. The Board correctly interpreted the claim language based on the prosecution history and did not construe the claims, let alone construe the claims in violation of precedent.

PO distorts the FWD when suggesting that the Board construed the claims. The Board simply, and correctly, interpreted the prosecution history to conclude that the plain and ordinary meaning of the claims do not require evidence in the prior art of carrier movement overcoming all possible theoretical forces.

The Board never construed the claim and instead relied on Applicant's statements during prosecution to determine the plain and ordinary meaning of "aid." During prosecution, the Examiner argued exactly what PO argues here, "that the simple presence of a 'graded dopant concentration' 'does not appear to ensure (without knowing [the] other parameters of the device) that it will draw "all" minority carriers.'" FWD at 62 (citing EX1002 at 289–90). To overcome that rejection, the Applicant responded that the Examiner's "argument appears to not consider that the graded dopant concentration itself creates a 'built-in' electrical field that forces the movement of carriers." *Id.* at 62 (citing EX1002 at 289–90). After carefully analyzing this and other statements, the Board found:

> Based on . . . , Patent Owner's statements during prosecution of the '195 patent, along with the specification of the '195 patent, support a determination that a **graded dopant**

> **concentration is enough to teach or at least fairly suggest to the skilled artisan aiding minority carrier movement** in a particular direction.

Id. at 63 (emphasis added). The Applicant's statements "were clear, unambiguous, and indicate that one of ordinary skill in the art need not know whether there are other 'forces and fields' in an electronic device, as the mere presence of a graded dopant concentration creating a 'unidirectional drift field,' facing in the appropriate direction, will 'aid the movement of minority carriers.'" *Id.* at 62–63.

PO distorts the Board's findings when suggesting it construed the claims based on, and in violation of, *ParkerVision, Inc. v. Qualcomm Inc. See* Req. at 4–5 (citing 903 F.3d 1354, 1361 (Fed. Cir. 2018). Because the Board found that "aid" did not require carrier movement, the Board simply cited *Parker Vision* for the proposition that claim 1 was an apparatus claim and thus Petitioner need not show movement of carriers in the prior art. *See* FWD at 68. PO simply reargues here that "aid" requires carrier movement, couching it as if the Board misapplied *Parker Vision* in a claim construction exercise and that any functional language in an apparatus claim requires showing function (e.g., movement) in the prior art.

PO's reliance on *INVT SPE LLC v. Int'l Trade Comm'n* is misplaced. Req. at 5–6 (citing 46 F.4th 1361, 1371 (Fed. Cir. 2022)). Despite PO's arguments otherwise, *INVT* did not hold that actual operation must be shown to practice types of apparatus claims. *Contra* Req. at 6–7 (citing *INVT*, 46 F.4th at 1371). *INVT* determined that the claims at issue did ***not*** require actual performance to be

practiced, so any statement about different hypothetical claims that might require actual performance is dicta. *INVT*, 46 F.4th at 1371, 1374. Further, the Fed. Cir. emphasized that "whether infringement requires actual performance of the recited functions . . . depends on the claim language." *Id.* at 1371. This focus on claim language contradicts a categorical rule for function limitations in "apparatus claims" that PO advances, particularly when the Board has already determined that the claims do not require showing functional language (e.g., carrier movement).

B. PO rehashes identical arguments already rejected by the Board (and Director) about the Texas claim construction orders without explaining *why* the Board erred.

PO makes the same arguments here about two Texas cases that it made to the Board and the Board correctly rejected. Specifically, PO incorrectly argued that two claim construction orders from the W.D. Tex. and E.D. Tex., from lawsuits not involving Petitioner, allegedly support PO's incorrect proposition—i.e., that a graded dopant concentration does not by itself aid carrier movement because there must be "sufficient" doping to actually move carriers. *See* FWD at 54, 64–65; Req. at 7–9 (making arguments about how to read the courts' orders).

The Board correctly rejected PO's arguments in the FWD. The Board rejected PO's interpretation of the W.D. Tex. Order because, there, the court was addressing indefiniteness. FWD at 65–66. The reasonable interpretation of the court's Order was that a graded dopant concentration needed to be sufficiently graded to simply create a "static unidirectional electric drift field," not that

"sufficient" meant carriers needed to move. *Id.* at 64–65. The Board rejected PO's reading of the E.D. Tex. Order because, there, the court was addressing a different question—whether the dopant concentration that both increased and decreased could provide a unidirectional electric drift field. *See* FWD at 66–67. The court was not discussing "sufficient" in the context of whether carriers needed to move. *See id.* at 66–67. In sum, both orders comported with Petitioner's position that "aid" does not require actual carrier movement. *Id.*

Here, PO never explains *why* the Board's analysis of the Texas claim construction orders is allegedly wrong. *See* Req. at 9. Instead, PO (1) reargues that the prosecution history supports that a graded dopant concentration "must have sufficient magnitude to overcome other forces," and (2) argues in conclusory fashion, without citation, that "[n]either court understood the claims to mean that *any* GDC would aid carrier movement." *Id.* at 9. The point of a Director Review request is to argue Board error or other inconsistencies, not just reargue lost positions as PO has done here.

Finally, and perhaps most importantly from a consistency standpoint, PO made these exact same arguments regarding the Texas decisions in Director Review requests in parallel proceedings (IPR2024-00017, Paper 114 at 6–8; IPR2024-00018, Paper 117 at 6–8; IPR2024-00021, Paper 110 at 7–10; IPR2023-01242, Paper 130 at 9–11; IPR2023-01244, Paper 122 at 9–11), and the Director

has already denied those requests (IPR2024-00017, Paper 122; IPR2024-00018, Paper 121; IPR2024-00021, Paper 114; IPR2023-01242, Paper 138; IPR2023-01244, Paper 130. The Director should do so here as well.

C. PO made statements in the Delaware claim construction completely opposite from what it argues here, and thus, its reliance on *MOSAID* is misplaced.

Without offering any clear argument, PO incorrectly alleges that Petitioner made claim construction arguments in Delaware inconsistent from what it proposes here and seemingly argues that this alleged inconsistency requires reversing the FWD under Director Squires' recently issued opinion in *Infineon Techs. Ams. Corp. v. MOSAID Techs. Inc.*, IPR2025-01171, Paper 27 (PTAB Feb. 19, 2026) (Dir. Squires).

PO's argument fails for three reasons. First, PO is the party arguing for a different claim construction than the one it argued for in the Delaware lawsuit. There, PO alleged that "aid the movement of minority carriers" did ***not*** mean "cause minority carriers to move." EX2029 at 43. PO stated:

> [Such a] construction wrongly implies the electric field actually causes minority carriers to move downward from the surface layer to the substrate, as opposed to simply ***aiding the movement*** of minority carriers from the surface layer to the substrate. . . . Dr. Rao never intended to say the minority carriers actually move from the surface layer to the substrate.

Id. (emphasis in original). Thus, despite explicitly stating in Delaware that the claims ***do not*** require carrier movement, PO argues the exact opposite here,

claiming that the graded dopant concentration "***must actually move minority carriers*** from the surface to the substrate." *See, e.g.*, FWD at 53 (citing PO Resp. at 11–12); Req. at 4 (emphasis added). PO's brazen inconsistencies and flip-flopping do not create any reason to overturn a well-reasoned FWD from the Board.

Second, contrary to PO's distortions otherwise, Petitioner's constructions in Delaware were consistent with its arguments. As a threshold matter, no constructions have been argued by either party here,[3] and the Board did not construe any terms in its FWD. Moreover, in Delaware, Petitioner argued that the claim was indefinite because it was unclear how much "aid" of the carriers was required. *See* EX2029 at 44. This is exactly in line with Petitioner's position here, which is that evidence of movement overcoming all other theoretical forces need not be shown because the word "aid" itself does not specify how much "aid" is necessary, and thus any amount of "aid" is sufficient.

Petitioner only argued as an alternative to indefiniteness in Delaware that "aid the movement" meant "cause carriers to move," but did not make any

[3] PO's argument refers at a point to a supposed "proper construction" (Req. at 9–12), but Patent Owner never argued any constructions in the IPR, nor does it offer one now (nor could it). In any event, these arguments are merely rehashes of its other arguments about the "aid" term (*Id.* at 4–7).

argument that that meant the graded dopant concentration had to overcome all other possible forces. *See id.* at 44–45. Thus, in Delaware and here, Petitioner did not contend accounting for other forces was necessary.

Third, *MOSAID* does not apply here. In *MOSAID*, institution was vacated because there were three different district court decisions construing the claims, but the petition did not address them or explain why it took inconsistent positions. *MOSAID*, IPR2025-01171, Paper 27 at 3. Here, in contrast, final written decisions invalidating the claims have issued. The Delaware case was stayed prior to the *Markman* hearing—even the briefing was incomplete at the time the case was stayed, with a reply and sur-reply still to occur—and thus there is no court order with which any finding in this proceeding could be inconsistent. The stay also eliminated risk of conflicting rulings. If the FWD is upheld, the Delaware case becomes moot, and PO's alleged inconsistency concern does not exist because the Delaware court will likely never reach a ruling on the claims at issue here.

Moreover, *MOSAID* is rooted in Rule 42.104(b)(3), which governs petition adequacy at filing. The remedy under this framework has only been applied at institution. Extending it to overturn a FWD would be unprecedented.

Finally, a purpose of the holding in *MOSAID* was to "provide greater predictability and certainty in the patent system." *See MOSAID*, IPR2025-01171, Paper 27 at 3. That goal would be seriously undermined if Director Review was

granted here. This patent has been repeatedly found invalid in multiple IPR requests filed by different petitioners. *See generally* IPR2024-00017; IPR2024-00266. The arguments PO raises here have already been considered and rejected multiple times, both by the Board and by the Director in other Director Review requests. *See* IPR2024-00017, Papers 115 and 122. Granting Director Review here would inject significant unpredictability and uncertainty into the merits of those decisions that have already been confirmed many times over.

D. PO rehashes its untimely argument about what *minority* carriers are without explaining why the Board erred in rejecting that argument.

In its Sur-Reply and at the final hearing, PO raised a new argument, alleging that the patent interpreted "minority carrier" differently than how Petitioner did. The Petition understood that whether a carrier is a "minority" (e.g., an electron or a hole) is dependent upon a dopant type in a region. *See* FWD at 69 (citing Pet. Reply at 23–34), 74. For example, in a p-type well (a region), the minority carriers are holes. *See* FWD at 69–70 (citing Pet. at 36–38 & n.6). PO argued that "minority" status depends on what the device's overall majority carrier is, not the dopant type in a region. *See* FWD at 70 (citing PO Sur-reply at 18–20). Despite PO's argument being untimely, the Board still analyzed it carefully before correctly rejecting it. FWD at 69–75; 37 C.F.R. § 42.23(b).

The Board correctly rejected PO's argument for being inconsistent with the prosecution. During prosecution, the Applicant cited the specification to describe

that minority carriers are region based (e.g., electrons are the minorities in p-type wells). *See* FWD at 71 (citing Ex. 1002 at 254 and Ex. 1001 at 2:42-46). The Board analyzed this and statements like it and found that "[c]ontrary to the position taken in the Sur-reply and at the final hearing, however, PO's prior statement to the Office . . . indicate dopant type is the basis for determining what constitutes majority and minority carriers in transistors." FWD at 71 (citing Ex. 1002 at 254).

Here, PO makes an identical minority carrier argument, but its argument hinges on two points that both fail to show *why* the Board erred. *Compare* FWD at 69–71 (PO arguing "dopant type in a particular region is not the basis for characterizing … minority carriers") *with* Req. at 12–15 (same). First, PO reargues what failed before the Board, namely that that the patent's specification interprets a "minority carrier" differently than how Petitioner did. Req. at 12-13 (citing EX1001 at 1:43–44). But the Board rejected this exact argument because it was inconsistent with the prosecution history. FWD at 72–73 (citing EX1001 at 1:43–44). Second, PO argues that its expert agreed with its definition of minority carriers (Req. at 13 (citing EX2057, ¶ 36 n.3)), but the Board rejected this exact argument because PO's expert's testimony was inconsistent and unsupported. *See* FWD at 73–74. In sum, PO does not explain the alleged Board error.

III. CONCLUSION

For the foregoing reasons, Patent Owner's Request should be denied.

Dated:

Respectfully submitted,

/John D. Esterhay/
John D. Esterhay, Reg. No. 73,512

Lead Counsel
Miguel Bombach, Reg. No. 68,636

Back-up Counsel
John P. Schnurer, Reg. No. 52,196

Attorneys for Petitioner

PERKINS COIE LLP
11452 El Camino Real, Ste 300
San Diego, California 92130-2080
858.720.5700 (phone)
858.720.5799 (fax)

Foley & Lardner LLP
11988 El Camino Real, Suite 400
San Diego, CA 92130
858.847.6700

CERTIFICATE OF SERVICE

The undersigned hereby certifies that a true and correct copy of the foregoing **PETITIONER'S RESPONSE TO PATENT OWNER'S REQUEST FOR DIRECTOR REVIEW** was served electronically via e-mail on March 31, 2026, in its entirety on the following counsel of record for Patent Owner:

Alan Whitehurst; Nicholas T. Matich; Arvind Jairam;
Stuart McCommas; Archis "Neil" Ozarkar
Greenthread-Monolithic-MS@mckoolsmith.com

Respectfully submitted,

Date: March 31, 2026

/ *Anita Chou* /
Anita Chou
Senior Paralegal