**Paper No. 38**

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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INERGY TECHNOLOGY, INC.,
Petitioner

v.

FORCE MOS TECHNOLOGY CO. LTD.,
Patent Owner

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*Inter Partes Review* No. IPR2024-00094
U.S. Patent No. 7,812,409

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# PATENT OWNER'S REQUEST FOR DIRECTOR REVIEW OF THE FINAL WRITTEN DECISION

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## Patent Owner's Exhibit List

| Exhibit No. | Description |
|---|---|
| 2001 | Transcript of Feb. 13, 2024 Deposition of David Kuan-Yu Liu, PhD in *Force MOS Technology Co., Ltd. v. ASUSTeK Computer, Inc.*, Case No. 2:22-cv-00460-JRG (E.D. Tex.) |
| 2002 | Declaration of David Kuan-Yu Liu, Ph.D., served on Jan. 30, 2024 in *Force MOS Technology Co., Ltd. v. ASUSTeK Computer, Inc.*, Case No. 2:22-cv-00460-JRG (E.D. Tex.) |
| 2003 | Defendant ASUStek Computer, Inc.'s Motion to Stay Pending Resolution of Inter Partes Reviews, filed on Nov. 30, 2023 as Dkt. No. 30 in *Force MOS Technology Co., Ltd. v. ASUSTeK Computer, Inc.*, Case No. 2:22-cv-00460-JRG (E.D. Tex.) |
| 2004 | Amended Docket Control Order, filed on Jan. 18, 2024 as Dkt. No. 35 in *Force MOS Technology Co., Ltd. v. ASUSTeK Computer, Inc.*, Case No. 2:22-cv-00460-JRG (E.D. Tex.) |
| 2005 | Cover pleading to Defendant ASUStek Computer, Inc.'s Invalidity Contentions, served on Jul. 18, 2024 in *Force MOS Technology Co., Ltd. v. ASUSTeK Computer, Inc.*, Case No. 2:22-cv-00460-JRG (E.D. Tex.) |
| 2006 | U.S. Patent No. 6,700,158 to Cao et al. (issued Mar. 2, 2004) |
| 2007 | Excerpts from Webster's New World Dictionary, Third College Ed. (1991) for "square," "substantial," "round," "rounded," and "truncate" |
| 2008 | Memorandum Opinion and Order denying Defendant ASUStek Computer, Inc.'s Motion to Stay Pending Resolution of Inter Partes Reviews, filed on April 11, 2024 as Dkt. No. 74 in Force MOS Technology Co., Ltd. v. ASUSTeK Computer, Inc., Case No. 2:22-cv-00460-JRG (E.D. Tex.) |
| 2009 | --Intentionally Not Used-- |
| 2010 | --Intentionally Not Used-- |

| Exhibit No. | Description |
|---|---|
| 2011 | Claim Construction Order, Dkt. No. 132 from *Force MOS Technology Co., Ltd. v. ASUSTeK Computer, Inc.*, Case No. 2:22-cv-00460-JRG (E.D. Tex.) |
| 2012 | U.S. Patent No. 5,304,831 to Yilmaz et al., "Low on-resistance power MOS technology" |
| 2013 | U.S. Patent No. 6,867,083 to Imam et al., "Method of forming a body contact of a transistor and structure there" |
| 2014 | Excerpts of Lutz, Josef, et al. "Semiconductor power devices." 2018, ISBN 978-3-319-70917-8 ("Lutz"); |
| 2015 | Li, S., & Boyd, J. P. (2015). Approximation on non-tensor domains including squircles, Part III: Polynomial hyperinterpolation and radial basis function interpolation on Chebyshev-like grids and truncated uniform grids. Journal of Computational Physics, 281, 653–668. doi:10.1016/j.jcp.2014.10.035 |
| 2016 | Maneuski, Dima, V. Gostilo, and A. Owens. "TCAD simulation studies of novel geometries for CZT ring-drift detectors." Journal of Physics D: Applied Physics 53.1 (2019): 015114 |
| 2017 | Cohen, S. Simon. "Contact resistance and methods for its determination." *MRS Online Proceedings Library (OPL)* 18 (1982): 361. |
| 2018 | Excerpts from Semiconductor Glossary |
| 2019 | Ng, Hong Seng. "Review on Methods for Trench MOSFET Gate Oxide Reliability and Switching Speed Improvement." ECS Transactions 27.1 (2010): 21 |
| 2020 | --Intentionally Not Used-- |
| 2021 | Declaration of Dean Neikirk, Ph.D. in Support of Patent Owner's Response |
| 2022 | Curriculum Vitae of Dean Neikirk, Ph.D. |

| Exhibit No. | Description |
|---|---|
| 2023 | Transcript of August 6, 2024 Deposition of Sylvia D. Hall-Ellis, Ph.D. |
| 2024 | Transcript of August 23, 2024 Deposition of Dr. David Kuan-Yu Liu |
| 2026 | Patent Owner's Oral Hearing Demonstratives |
| 2027 | Jury Verdict, ECF Docket No. 358, as filed in *Force Mos Technology Co., Ltd. v. ASUSTeK Computer, Inc.*, No. 2:22-cv-00460-JRG (E.D. Tex.)<br><br>[Tentatively identified, but not filed, pending request for leave to file] |
| 2028 | Redacted Trial Transcript, Volume 3, ECF Docket No. 417, as filed in *Force Mos Technology Co., Ltd. v. ASUSTeK Computer, Inc.*, No. 2:22-cv-00460-JRG (E.D. Tex.)<br><br>[Tentatively identified, but not filed, pending request for leave to file] |
| 2029 | Findings of Fact and Conclusion of Law [Regarding Defendant's Inequitable Conduct Claims], filed temporarily under seal as ECF Docket No. 420 in *Force Mos Technology Co., Ltd. v. ASUSTeK Computer, Inc.*, No. 2:22-cv-00460-JRG (E.D. Tex.)<br><br>[Tentatively identified, but not filed, pending request for leave to file] |
| 2030 | Amended Final Judgment, ECF Docket No. 422, as filed in *Force Mos Technology Co., Ltd. v. ASUSTeK Computer, Inc.*, No. 2:22-cv-00460-JRG (E.D. Tex.)<br><br>[Tentatively identified, but not filed, pending request for leave to file] |

# I. INTRODUCTION

This case presents the extraordinary consequences of applying improper standards for decisions on institution: a miscarriage of justice. A Federal District Court and jury—presented with the same prior art grounds by Petitioner's real-party-in-interest—has already found that claim 1 of the '409 Patent is valid. That is not surprising. Petitioner's arguments in this IPR were so evidently weak, it could not secure a reply declaration from its own expert to rebut Patent Owner's expert. Nevertheless, the Board reached a contrary conclusion in this IPR, finding claim 1 obvious over the same prior art combination presented to the District Court.

The errors started with the Board's decision on institution. Applying the prior administration's excessively loose *Fintiv* guidance, the Board instituted after finding every *Fintiv* factor to weigh against institution save one: purported "compelling merits." However, the compelling merits credited by the Board—that the Hshieh reference contained an "express teaching" motivating the combination—were entirely illusory. Indeed, Patent Owner's expert provided a detailed, multi-page technical declaration explaining why such teachings were entirely inapplicable to Kobayashi. Those opinions went entirely unrebutted by Petitioner's expert. Thus, the Board apparently faced a predicament—it had credited "compelling merits" of a motivation to combine in the Institution Decision which had been shown to be completely meritless during the proceedings. In response, without any regard to

Patent Owner's due process rights, the Board created and credited new arguments never presented in this IPR, even relying on prior art considered during prosecution.

Under these facts, one remedy is appropriate: the Director should eliminate these errors—root and branch—by exercising the inherent authority to reconsider the Institution Decision. Alternatively, the Director should issue a new final written decision confirming the patentability of all challenged claims.

## II. BACKGROUND

### A. U.S. Patent No. 7,812,409 ("the '409 Patent")

The '409 Patent teaches improved cell layouts for trenched MOSFETs. Ex. 1001, Abstract. A MOSFET is a transistor which, like a switch, alters the flow of electric charge between two terminals (the source and the drain) in response to a change in potential of a third terminal (the gate). Ex. 2021 ¶¶57, 60. Trenched MOSFETs embed gate material into trenches so that the channel—where charge flows in the "ON" state—is vertical. *Id.* ¶¶65-66. This allows for increased density and lower on-resistance, improving efficiency. *Id.* Cell layouts for prior trenched MOSFETs—which used square-shaped cells and contacts—experienced "parasitic bipolar NPN latch up." *Id.*, ¶72; Ex. 1001, Fig. 1A, 1:15-20. This undesired current flow was especially pronounced near the cells' corners in prior art devices. *Id.*

The '409 Patent recognized that latch up was exacerbated by significant variations in the distance between the contact and the trench gates. In conventional

square cell layouts, distances at the gate corners were ~1.4 times farther from the source contact than at the sides of the trench gate. Ex. 1001, Fig. 1A, 1:28-39. This non-uniformity created weak points, resulting in low avalanche current and reduced ruggedness. *Id.*, 1:45-57. The '409 Patent solved this with an improved cell layout: combining a circular contact with rounded or truncated corners to make the space more uniform, enhancing ruggedness. *Id.*, 2:3-7, Abstract, Figs. 2-3, cls. 1, 6.

During prosecution of the '409 Patent, the examiner acknowledged that there were prior art MOSFETs with square cells having rounded corners, such as the Pfirsch reference. Ex. 1002, 237-238, 295, 302, 309; Ex. 1011 ("Pfirsch"). The examiner also acknowledged the existence of prior art MOSFETs with circular contacts. Ex. 1002, 277-280. However, the examiner ultimately accepted the patentee's argument that the prior art did not teach the unique cell layout recited in the claims. *Id.*, 213-215, 227-231, 260-262.

**B. The Origin of the Parties' Dispute**

On March 7, 2023, Patent Owner filed an amended complaint in the Eastern District of Texas against ASUSTeK Computer, Inc. ("ASUS"), alleging, among other things, infringement of the '409 Patent. Ex. 1010, 23, 27. Petitioner Inergy Technology, Inc.—an indirect supplier to ASUS of some of the MOSFETs accused of infringement—filed the instant IPR petition on October 27, 2023—over seven months later, and nearly a year after the *ASUS* lawsuit was first filed. Pet., 75; Ex.

2028 at 205:3-6;[1] Ex. 1009, 26. ASUS is an admitted real-party-of-interest in this IPR, as is ASUS's direct supplier Panjit International, Inc.. Pet., 1; *see also* Ex. 1010, ¶¶45-47. Throughout both proceedings, Petitioner and ASUS have been represented by the same counsel. Paper 1 at 2, Ex. 2003 at 9; Paper 30, 1-2.

### C. The Asserted Grounds and Prior Art

The Petition presented two sets of grounds: (1) grounds 1-3, arguing that Kobayashi alone discloses claim 1; and (2) grounds 4-6, arguing that Kobayashi combined with Hshieh renders claim 1 obvious. Pet., 3-4. Kobayashi discloses trench MOSFETs using conventional cell layouts: square or hexagonal cells with sharp corners and square or circular contacts. Ex. 1005, Figs. 3A, 4A; Ex. 2021 ¶103. Although Kobayashi refers to "rounding," it does not round the corners of a MOSFET's *cell*—the cells' corners are plainly unrounded in the top view of Fig. 3A. Rather, Kobayashi rounds the gate trenches' openings and bottoms—visible in the side view. Ex. 1005, 7:57-59, Fig. 6C; Ex. 2021 ¶104; *see also* Ex. 2021 ¶¶90, 110-115. Nonetheless, the Petition relied on this side view rounding for grounds 1-3 as the claimed "substantially square-shaped cells with rounded corners." Pet., 27.

Hshieh is directed to a MOSFET cell topology which arranges cells as non-

[1] On June 12, 2025, Patent Owner requested, by email, leave to file what have been tentatively identified as exhibits 2027-2030 (but not yet filed). The Director may rely on such public records, which are judicially noticeable. *See* FRE 201(b)(2).

orthogonal parallelograms to improve packing density over conventional square cells. Ex. 1006, 2:64-3:5, Ex. 2021, ¶¶105-106, 138. Most of Hshieh's embodiments lack "trenched gates," and none have trenched source contacts. Ex. 1006, Figs. 4B, 9D, 10B, 7:26-8:5; Ex. 2021 ¶106. Instead of trenched contact metal plugs to provide source charge flow into the cells (as claimed), Hshieh's source metal lies flat and only contacts the semiconductor material of the cell through "source openings" in the oxide layer. Ex. 1006, Figs, 4B, 1:45-51, 3:38-42, 6:52-56, 7:2630, 7:56-60, cl. 21; Ex. 2021 ¶106. Thus, because Hshieh entirely lacks trench source contacts, Hshieh's "rounding" is not concerned with the distance between a trenched source contact and a gate trench. Ex. 2021 ¶¶106, 144-145.

Rather, Hshieh discloses rounding to address the "three dimension diffusion effect," which is particularly significant at the two sharper corners of Hshieh's non-orthogonal parallelograms. Ex. 1006, 2:19-34, 5:3-17; Ex. 2021 ¶¶105-106. The 3D diffusion phenomenon causes, in cell corners, p-type dopants to not diffuse *horizontally* as much as n-type dopants. Ex. 2012, 3:42-4:1 (cited by Ex. 1006, 2:19-34). Since double diffused MOSFETs have *horizontal* channels, this results in a short channel, and thus punch-through, at the corners. *Id.*, 4:1-11, Fig. 4 (element 44); Ex. 2021 ¶¶146-148.

The Petition presents a boilerplate motivation to combine, asserting the existence of "several [unnamed] benefits" and "several [unnamed] advantages" of

combining Kobayashi and Hshieh. Pet., 58. It also has boilerplate recitations of each *KSR* factor, which largely repeat the insufficient argument that Kobayashi and Hshieh have some similarities. *Id.*, 59-62. The Petition only made two motivation to combine arguments with any factual specificity.

First, it argued that Hshieh itself discloses a "known technique" and "express teaching" of the "advantages for rounding," citing Hshieh's three-dimensional diffusion effect disclosures. Pet., 59, 60 (citing Ex., 1006, 5:3-17). Second, the Petition argued that "it was known that the corners of the square cells tend to induce higher peak electric fields, which would lead to a low avalanche breakdown voltage, which is undesirable." Pet., 57. As support for that, the Petition cited: (i) *the '409 Patent itself*, (ii) the irrelevant side view rounding of Kobayashi's gate trench openings and bottoms, and (iii) Kim, a paper cited by Kobayashi describing the same side view rounding problem as Kobayashi. *Id.*, 57. The Petition also pincites Dr. Liu's declaration, but never asserted his background or experience as a basis for its argument that it was known that "corners" "induce higher peak electric fields" or that rounding top view corners was a "known" solution to that problem. *Id.*, 57-63.

Notably, neither the Petition nor Dr. Liu's declaration mentioned Pfirsch in their motivation to combine arguments, or in any of the prior art grounds. *See, e.g.*, Pet., 56-63; Ex. 1003, ¶¶131-143. Rather, Pfirsch was only cited regarding prosecution history and claim construction. Pet. at 8-9, 17; Ex. 1003, ¶¶ 39-45, 57.

### D. The Preliminary Response and Institution Decision

Patent Owner's preliminary response argued that institution should be denied under *Fintiv.* The *ASUS* litigation—filed against the real-party-in-interest to this IPR—was scheduled to hold its *Markman* hearing and substantially complete fact discovery before the IPR's institution deadline. Paper 27 at 31-35. And its trial was scheduled well before potential completion of the IPR. There was also significant overlap between the proceedings, including the same invalidity grounds. *Id.*

As to the grounds over Kobayashi and Hshieh, Patent Owner argued that the Petition's theory that rounding was generally "known" conflated the side view rounding of gates in Kobayashi and Kim with the claimed top view rounding of cells. *Id.* at 21-23. It also noted that Hshieh was the *only* reference cited by Petitioner or its expert that involved top view rounding, which was insufficient to show that top view rounding of cell corners was well-known or conventional. *Id.*, 22. And it noted that Hshieh's rounding addressed the problems created by using non-orthogonal parallelograms, and taught away from using square shaped cells as having low density. *Id.*, 23-24. Thus, in light of the significant structural differences between Hshieh and Kobayashi, Patent Owner explained that the combination was ultimately a product of hindsight bias and cherry-picking of prior art disclosures. *Id.*, 25-28.

The Board's decision on institution rejected Patent Owner's arguments and instituted this IPR. As to the merits issues, the Board did not dispute that Petitioner's

expert declaration was unsupported as to whether "top view rounding was well known," but it credited the "express teachings in Hshieh about the benefits of top view rounding." Paper 9, 24-25. It also disregarded Patent Owner's teaching away arguments, noting that some figures of Hshieh showed rounding of all corners. *Id.*, 26. In doing so, it did acknowledge that "Hshieh's rounding addresses a different problem (the three-dimension diffusion effect)" from the problem addressed by the '409 Patent. *Id.*, 26. As to *Fintiv*, the Board agreed with Patent Owner as to *Fintiv* factors 1-5, finding that each of those factors "favor[ed] discretionary denial." *Id.*, 32-35. However, applying the now-vacated guidance of the prior administration's Director, the Board did not discretionarily deny institution due to purported "compelling merits" of the alleged "express teaching" in Hshieh. *Id.*, 31, 36-37.

**E. The Evidence and Argument Developed During the IPR**

Given that the Institution Decision had appeared to agree with a number of Patent Owner's preliminary arguments, the Patent Owner Response focused heavily on the alleged "express teaching" in Hshieh. In particular, Dr. Neikirk offered a detailed, multi-page technical explanation explaining why the "three dimensional diffusion phenomenon"—the express reason for Hshieh's rounding—had no applicability to Kobayashi. Paper 24, 54-60; Ex. 2021 ¶¶ 146-151. In its reply, Petitioner did not submit <u>any</u> responsive expert declaration, only attorney argument, and it did not mention Pfirsch. Paper 26, 22-24. Instead, it incorrectly stated that:

(1) the Board had already rejected that argument; and (2) Kobayashi and Hshieh both "faced the problem of 'punch-through' at sharp cell corners." *Id.*, 24. Patent Owner's surreply showed both were false—Kobayashi does not mention punch-through, but instead the distinct concept of avalanche breakdown. Paper 27, 22-23.

### F. The *ASUS* Trial Outcome

The *ASUS* litigation ultimately proceeded to a jury trial on February 7-13, 2025. At trial, Defendant ASUS presented the same invalidity grounds for claim 1 of the '409 Patent as presented in this IPR: anticipation over Kobayashi, and alleged obviousness over Kobayashi and Hshieh. Ex. 2028, 803:16-804:9, 813:14-24. The jury issued a verdict on February 13, 2025, finding for Force MOS on all issues and awarding $10.5 million in damages. Ex., 2027. In particular, it rejected ASUS's invalidity arguments, finding claim 1 not to have been shown invalid. *Id.*, 6.

The Court held an inequitable conduct bench trial on March 31, 2025, where ASUS asserted inequitable conduct in prosecution of the '409 Patent related to alleged withholding of the Kobayashi and Hshieh references during prosecution. On June 12, 2025, the Court delivered its findings of fact and conclusions of law.[2] The Court rejected all of ASUS's arguments, holding that ASUS failed to demonstrate: (1) that Kobayashi discloses "square-shaped cells with rounded corners;" (2) that

[2] That document has been sealed temporarily, and thus is not presently on the docket, but counsel for ASUS has confirmed it contains no ASUS confidential information.

Kobayashi anticipates; (3) a motivation to combine Kobayashi and Hshieh; or (4) that Hshieh and/or Kobayashi rendered any claim obvious. Ex. 2029, 15, 18-19. The Court also found both references cumulative over the art cited during prosecution, including Pfirsch. *Id.*, 15-17, 21, 42. The Court then entered judgment, confirming validity of claim 1 of the '409 Patent. Ex. 2030.

**G. The Final Written Decision**

On May 16, 2025, the Board issued a Final Written Decision finding claims 1, and 3-5 unpatentable, relying on Petitioner's Kobayashi + Hshieh grounds. Paper 37, 28-38. Rather than crediting the attorney argument in Petitioner's reply, the Board rejected Patent Owner's arguments by creating and crediting numerous arguments raised by the Board itself for the first time in the Final Written Decision.

First, the Board found that Kim teaches two *distinct* benefits of side view rounding: (1) lowering gate leakage; and (2) increasing breakdown voltage. It concluded that this second benefit demonstrated that all corners (side or top) will have high electric fields, resulting in breakdown. Paper 37, 28. These were new arguments created by the Board that Patent Owner had no opportunity to address.

Second, the Board credited, based on Dr. Liu's purported years of experience, Dr. Liu's conclusory testimony that corners "reach higher peak electric fields," and characterized him as opining that "it was known to eliminate problematic corners via top view rounding." Paper, 37, 29. However, the Petition never asserted Dr.

Liu's experience as a basis for such being "known." Pet., 57-58. Nor did Dr. Liu's declaration mention "top view" rounding or distinguish it from side view rounding. Ex. 1003 ¶¶132-141. Instead, the Board's decision is replete with citations to Dr. Liu's deposition, despite the fact that Petitioner never even cited that deposition, and Patent Owner only cited different portions of it. Paper 37 at 29, 33, 35; Paper 26; Paper 24 at 58, 60. Thus, again, the Board independently created new arguments to which Patent Owner had no opportunity to respond.

Third, the Board repeatedly relied on Pfirsch as a basis for its conclusion that top view rounding was known, and as a motivation to use top view rounding. Paper 37, 29, 35-36. As discussed, Pfirsch is not one of the asserted prior art references—it could not be under 35 U.S.C. § 325(d). And, Petitioner never raised Pfirsch to support its motivation to combine. Thus, these were new arguments created by the Board that Patent Owner had no opportunity to address.

Fourth, the Board rejected Patent Owner's explanation of the inapplicability of the three-dimensional diffusion phenomena to Kobayashi, and instead replaced Dr. Neikirk's analysis it with its own unsupported technical analysis. Paper 37, 33-36. In particular, because one claim in Hshieh recites a trench gate with rounded corners, and because Hshieh has vertical channels, the Board concluded that Hshieh's rounding must not be for the purpose of what Hshieh says it is, i.e. preventing the corner vulnerability caused by the three-dimension diffusion. *Id.*, 35.

Again, these were new arguments were created by the Board, and Patent Owner had no opportunity to address them. The Board also noted Patent Owner's argument that Hshieh's trenched gate embodiment have "horizontal/lateral boundaries" (unlike Kobayashi) but falsely stated that "Patent Owner does not meaningfully explain how this is significant." *Id.*, 35 n.11; *see also* Ex. 2021 ¶¶ 147-150.

## III. ARGUMENT

### A. The Director Can Exercise the PTO's Inherent Authority to Reconsider the Institution Decision

The Patent Office has inherent authority to reconsider IPR institution decisions, which is not appealable. *Medtronic, Inc. v. Robert Bosch Healthcare Sys., Inc.*, 839 F.3d 1382, 1386 (Fed. Cir. 2016). Although that authority has often been exercised by the Board, the Board's exercise of that authority has only been pursuant to the Director's delegation of institution decision authority to the Board. 35 U.S.C. § 314(a); 37 C.F.R. § 42.4(a). Reconsideration is also consistent with the Director Review regulations, which provide that "[i]n the course of reviewing [a final] decision, the Director may review any interlocutory decision rendered by the Board in reaching that decision." 37 C.F.R. § 42.75(a). Institution is plainly an interlocutory decision rendered by the Board in reaching its final decision.

### B. Reconsideration of Institution is Appropriate to Prevent a Miscarriage of Justice

The Director should reconsider institution to prevent a miscarriage of justice.

Indeed, the importance of adjudication by jury trial, and the solemnity of judgments of Article III Courts, is well-established. *See SEC v. Jarkesy*, 144 S. Ct. 2117, 2127 (2024) (overturning an administrative proceeding as violating Seventh Amendment); *In re Lockwood*, 50 F. 3d 966, 980 (Fed. Cir. 1995) (in an action at law, a patentee "is entitled under the Seventh Amendment to trial by jury … to determine validity of his patents"); *Gordon v. United States*, 117 U.S. 697, 702, 1864 WL 11666 (1865) (Article III courts' judgments are "final and conclusive upon the rights of the parties"); *Johnson v. Towsley*, 13 Wall. 72, 84-87, 20 L.Ed. 485 (1871) (once "title had passed from the government," "the question [of the validity of a land patent] became one of private right" as a "vested right ... can only be divested according to law" and such "is of the very essence of judicial authority."). ASUS had a full and fair opportunity to argue its invalidity grounds to a jury and Court, and those arguments were rejected on the merits. Thus, permitting the Final Written Decision to stand would have the effect of overturning an Article III judgment and a prior jury verdict on the very same issues.

This would violate Patent Owner's rights under Article III and the Seventh Amendment and constitute a miscarriage of justice. Indeed, the Board's Institution Decision grossly misapplied *Fintiv*, finding alleged "compelling merits" of an "express teaching" in Hshieh to outweigh all other *Fintiv* factors. Paper 9, 31-32, 35-36. This administration has already rescinded the "compelling merits"

memorandum the Board relied on. *See* https://www.uspto.gov/about-us/news-updates/uspto-rescinds-memorandum-addressing-discretionary-denial-procedures. And, the purported "express teaching" cited at institution was illusory—Dr. Neikirk showed it had no applicability to Kobayashi. Ex. 2021 ¶¶149-150. Plainly, the Board would not have had to invent new arguments if the "express teaching" argument was defensible—Petitioner and its expert would have done so in their reply. *Supra*, II.G. Moreover, the panoply of new arguments in the Final Written Decision plainly violated Patent Owner's due process rights. *See Dell Inc. v. Acceleron, LLC*, 818 F. 3d 1293, 1301 (Fed. Cir. 2016); *SAS Institute Inc. v. Iancu*, 584 U.S. 357, 1357 (2018) (the petition "define[s] the scope of the [IPR] litigation all the way … through to conclusion."). Thus, reconsideration of institution is necessary to prevent a miscarriage of justice.

### C. Alternatively, the Director Should Enter a New Decision Upholding All Claims as Patentable Because the Board Improperly Relied on New Arguments

As discussed, the Final Written Decision rejected Patent Owner's non-obviousness arguments by creating new arguments that no party ever raised. *Supra,* II.G. A proper decision would reject Petitioner's motivation to combine arguments as being factually unsupported and instead credit Dr. Neikirk's extensive and unrebutted explanation for why there was not a motivation to combine Kobayashi and Hshieh. Ex. 2021 ¶¶134-151. Indeed, if Patent Owner had an opportunity to

respond to the Board's new theories, it would have shown they were meritless.

The Board's theory that that "breakdown voltage" is distinct form "gate leakage" in Kim is simply incorrect. Kim teaches that breakdown and leakage are both caused by thinning of gate oxide at *side view* trench corners. Ex. 1012, 1, 4. Pfirsch is outside the scope of the Petition, does not mention "rounding," and actually teaches a different method to address electric fields at corners: "prevent[ing] the formation of a channel" in the corners using a "highly doped region." Ex. 1011, Abstract, 1:41-43, 3:11-30. Dr. Liu's declaration has no assertion, based on his background, of a general motivation to perform *top view* rounding, and if it did, it would be conclusory. Ex. 1003 ¶¶ 133, 135, 141; 37 C.F.R. § 42.65(a). The Board's reinterpretation of Hshieh's rounding as addressing something other than the 3D diffusion effect contradicts Hshieh's "express teaching." Ex. 1006, 5:3-17 (cited by Pet., 59). And, Dr. Neikirk *did* explain why one claim in Hshieh rounds the corners of a trench gate: unlike Kobayashi, Hshieh's trench gate embodiments have *horizontal* boundaries susceptible to the 3D diffusion effect, as the 3D diffusion effect relates to differential rates of *horizontal* diffusion. Ex. 2021 ¶¶147-150. Thus, the Board's Final Written Decision also fails on the merits.

## IV. CONCLUSION

The Director should grant review to reconsider institution, or alternatively, issue a new final written decision finding all challenged claims patentable.

Date: June 16, 2025

Respectfully submitted,

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**Certificate of Service**

The undersigned certifies that on June 16, 2025, I will cause true and correct copies of the foregoing Patent Owner's Request for Director Review, and all associated exhibits or appendices referred to therein, to be served electronically upon the following attorneys who have consented to service via email. Paper No. 16.

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**Certificate of Compliance**

This paper complies with the typeface requirements of 37 C.F.R. § 42.6(a)(ii) and the type style requirements of 37 C.F.R. § 42.6(a)(iii)&(iv). It also complies with the page limits of 37 C.F.R. § 42.75(c)(2) and § 42.24(a)(1)(v).

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