

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

INERGY TECHNOLOGY, INC.,
Petitioner

v.

FORCE MOS TECHNOLOGY CO. LTD.,
Patent Owner

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

PATENT OWNER'S PRELIMINARY RESPONSE

Table of Contents

Table of Authorities.....	iv
Patent Owner’s Exhibit List.....	vi
I. INTRODUCTION	1
II. OVERVIEW OF THE ’409 PATENT	3
III. CLAIM CONSTRUCTION	4
A. “substantially square-shaped cells with rounded corners” (cl. 1)	4
B. “substantially square-shaped cells with truncated corners” (cl. 6)	9
IV. PETITIONER HAS FAILED TO DEMONSTRATE A REASONABLE LIKELIHOOD THAT THE CHALLENGED CLAIMS ARE UNPATENTABLE.....	12
A. Ground 1: Kobayashi Fails to Anticipate Claims 1 or 3-5.....	12
1. Claim 1	12
(a) Kobayashi Fails to Disclose element 1[a]: “said trenched gates surrounding said transistor cells as closed cells constituting substantially square-shaped cells with rounded corners”	12
2. Claims 3-5	15
B. Ground 3: Kobayashi in view of Kikkawa Fails to Render the Challenged Claims Unpatentable	16
1. Claim 2	16
2. Claim 6	16
a) Kobayashi Fails to Disclose element 6[a]: “said trenched gates surrounding said transistor cells as closed cells constituting substantially square-shaped cells with truncated corners”	16
C. Ground 3: Kobayashi in view of alleged knowledge of a POSITA Fails to Render the Challenged Claims Unpatentable	20
1. Claim 5	20
D. Ground 4: Kobayashi in view of Hshieh Fails to Render the Challenged Claims Unpatentable	20
1. Claim 1	20

a)	Petitioner Fails to Articulate a Sufficient Motivation to Combine Kobayashi and Hshieh in the Manner Claimed by Limitation 1[a]	20
2.	Claims 3-5	28
E.	Ground 5: Kobayashi in view of Hshieh and Kikkawa Fails to Render the Challenged Claims Unpatentable	28
1.	Claim 2	28
2.	Claim 6	29
(a)	Petitioner Fails to Articulate a Sufficient Motivation to Combine Kobayashi and Hshieh in the Manner Claimed by Limitation 6[a]	29
F.	Ground 6: Kobayashi in view of Hshieh and knowledge of a POSITA Fails to Render the Challenged Claims Unpatentable	30
V.	THE BOARD SHOULD EXERCISE ITS SECTION 314(a) DISCRETION TO DENY INSTITUTION	31
VI.	CONCLUSION	35
	Certificate of Service 37 C.F.R. § 42.6(e)	37
	Certificate of Compliance Pursuant to 37 C.F.R. § 42.24	38

Table of Authorities

	Page(s)
Cases	
<i>Apple v. Fintiv</i> , IPR2020-00019, Paper 11 (PTAB Mar. 20, 2020)	<i>passim</i>
<i>Clare v. Chrysler Grp. LLC</i> , 819 F.3d 1323 (Fed. Cir. 2016)	4
<i>Cont'l Cirs. LLC v. Intel Corp.</i> , 915 F.3d 788 (Fed. Cir. 2019)	8
<i>In re Cyclobenzaprine Hydrochloride</i> , 676 F.3d 1063 (Fed. Cir. 2012)	27
<i>Deering Precision Instruments, L.L.C. v. Vector Distribution Sys., Inc.</i> , 347 F.3d 1314 (Fed. Cir. 2003)	4
<i>DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.</i> , 567 F.3d 1314 (Fed. Cir. 2009)	24
<i>Global Tel*Link Corporation v. Hlfip Holding, Inc.</i> , IPR2021-00444, Paper 14 (PTAB Jul. 22, 2021)	32, 34
<i>Knauf Insulation, Inc. v. Rockwool Int'l A/S</i> , 788 F. App'x 728 (Fed. Cir. 2019)	26
<i>Thorner v. Sony Computer Entertainment America LLC</i> , 669 F. 3d 1362 (Fed. Cir. 2012)	8
<i>Uniloc 2017 LLC v. Samsung Elecs. Am., Inc.</i> , No. 2:19-cv-00259-JRG-RSP, 2020 WL 1433960 (E.D. Tex. Mar. 24, 2020)	31
<i>Zhuhai Cosmx Battery Co., Ltd., v. Ningde Amperex Technology Ltd.</i> , IPR2023-00585, Paper 12 (PTAB Oct. 24, 2023)	33
Statutes	
35 U.S.C. § 313	1

Other Authorities

37 C.F.R. § 42.107	1
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Patent Owner's Exhibit List

Exhibit No.	Description	Identifier
2001	Transcript of Feb. 13, 2024 Deposition of David Kuan-Yu Liu, PhD in <i>Force MOS Technology Co., Ltd. v. ASUSTeK Computer, Inc.</i> , Case No. 2:22-cv-00460-JRG (E.D. Tex.)	n/a
2002	Declaration of David Kuan-Yu Liu, Ph.D., served on Jan. 30, 2024 in <i>Force MOS Technology Co., Ltd. v. ASUSTeK Computer, Inc.</i> , Case No. 2:22-cv-00460-JRG (E.D. Tex.)	n/a
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 <i>Force MOS Technology Co., Ltd. v. ASUSTeK Computer, Inc.</i> , Case No. 2:22-cv-00460-JRG (E.D. Tex.)	n/a
2004	Amended Docket Control Order, filed on Jan. 18, 2024 as Dkt. No. 35 in <i>Force MOS Technology Co., Ltd. v. ASUSTeK Computer, Inc.</i> , Case No. 2:22-cv-00460-JRG (E.D. Tex.)	n/a
2005	Cover pleading to Defendant ASUSTek Computer, Inc.'s Invalidity Contentions, served on Jul. 18, 2024 in <i>Force MOS Technology Co., Ltd. v. ASUSTeK Computer, Inc.</i> , Case No. 2:22-cv-00460-JRG (E.D. Tex.)	n/a
2006	U.S. Patent No. 6,700,158 to Cao et al. (issued Mar. 2, 2004)	n/a
2007	Excerpts from Webster's New World Dictionary, Third College Ed. (1991) for "square," "substantial," "round," "rounded," and "truncate"	n/a

Pursuant to 35 U.S.C. § 313 and 37 C.F.R. § 42.107, Patent Owner Force MOS Technology Co. Ltd. (“Patent Owner” or “Force MOS”) hereby submits its Patent Owner Preliminary Response and exhibits thereto.

I. INTRODUCTION

The Board should deny the present request for *inter partes* review of U.S. Patent No. 7,812,409 (Ex. 1001, hereinafter “the ’409 patent”). Petitioner presents arguments in two sets of grounds, both of which plainly fail.

Petitioner argues in Grounds 1-3 that the challenged independent claims—claims 1 and 6 of the ’409 Patent—are disclosed by Kobayashi alone. However, Petitioner argues for claim constructions that improperly conflate “rounded” corners with “truncated” corners, and it also erroneously contends that the prior art’s hexagons are “substantially square shaped.” Moreover, Petitioner argues that the claim term “substantially square-shaped cells with rounded corners” does not actually require the square shapes (which are seen in a *top view*) to have rounded corners. Instead, Petitioner points to Kobayashi’s disclosure of unrelated rounding in gate trench *bottoms* and *openings*. As Petitioner’s own annotated diagram demonstrates, such rounding is only visible from a cross-sectional *side view*, and thus is not actually rounding the corners *of the alleged square shape*. In short, Petitioner’s arguments in Grounds 1-3 are plainly inconsistent with the language of the claims.

Grounds 4-6 fare no better. Each of those grounds asserts that claims 1 and 6 are disclosed by the combination of Kobayashi and Hshieh (Ex. 1006, U.S. Patent No. 5,763,914). In particular, they argue that Hshieh discloses rounding of cell corners and that such rounding was “well known.” But, Petitioner’s “well-known” argument again improperly conflates rounding of trench bottoms (*side view* rounding) with rounding of the corners of the cell structure (*top view* rounding). Petitioner and its expert identify nothing beyond Hshieh itself as allegedly disclosing top view rounding of MOSFET cells. Moreover, Petitioner’s obviousness arguments wholly ignore the manifest differences in structure and purpose between Kobayashi and Hshieh. In particular, the cited portions of Hshieh only discuss the importance of rounding in the context of the *two* sharper corners of “non-orthogonal parallelograms”, rather than disclosing or suggesting “substantially square-shaped cells with” all corners rounded. And, Hshieh expressly teaches away from using square cell structures, characterizing them as not having good packing density—the entire purpose of the invention of Hshieh. Notably, neither Petitioner nor its expert attempts to address these glaring issues with Hshieh’s disclosures.

Finally, Petitioner’s arguments against discretionary denial are also meritless. Petitioner largely attempts to escape discretionary denial by claiming that it is not a party to Patent Owner’s ongoing litigation asserting the ’409 Patent in the Eastern

District of Texas. However, Petitioner's admitted real-party-in-interest is the sole defendant in that action.

For all of these reasons, institution should be denied.

II. OVERVIEW OF THE '409 PATENT

The '409 Patent relates to improved cell layouts for trench MOSFETs. Ex. 1001 ('409 Patent), Abstract. The '409 Patent recognizes that prior art cell layouts for trench MOSFETs—which used conventional square shaped cells with square shaped contacts—had a problem. *Id.*, Fig. 1A. In particular, the problem of “parasitic bipolar NPN latch up”—a type of undesired current flow—was especially pronounced near the cells' corners in the prior art devices. *Id.* at 1:15-20. The '409 Patent recognized that this problem was exacerbated by the significant variation in the distances between the contact and the gates in prior art, where the distances at the corners of the trench gate would be over 1.4 times farther from the source contact than the same measurement at the middle of the sides of the trench gate. *Id.*, Fig. 1A, 1:28-39. As a result, the non-uniform space between the square-shaped contact and the corners of the trench create weak points, resulting in low avalanche current and reduced device ruggedness. *Id.* at 1:45-57. The '409 Patent addressed this problem by introducing an improved cell layout, having rounded or truncated corners to make the space between the trenched gate and the source contact more uniform, thereby enhancing device ruggedness. *Id.* at 2:3-7, Abstract, Figs. 2, 3.

III. CLAIM CONSTRUCTION¹

A. “substantially square-shaped cells with rounded corners” (cl. 1)

Petitioner provides no plausible basis for deviating from this term’s plain and ordinary meaning. Thus, this term should receive its plain and ordinary meaning, *i.e.*: the cells have, from the top view perspective, largely or essentially the shape of a square (a shape that has four equal sides and four right angles) with all corners rounded (*i.e.* having a curved shape like a portion of a circle or oval). A square is a shape with four sides of equal length and four right angles. Ex. 2007 at 6. Substantially square shaped cells refers to cells having largely or essentially the shape of a square from a top-view cross-sectional perspective. Indeed, it is well established that the patent claim term “substantially” (as used in this context) is a term of approximation that means “largely” or “essentially.” *Clare v. Chrysler Grp. LLC*, 819 F.3d 1323, 1330 (Fed. Cir. 2016) (“the ordinary meaning of ‘substantially’ has often been recognized to mean ‘largely but not wholly that which is specified.’”); *Deering Precision Instruments, L.L.C. v. Vector Distribution Sys., Inc.*, 347 F.3d

¹ Patent Owner only addresses the constructions relevant to this Preliminary Response. In the event that this Petition is instituted, Patent Owner reserves the right to raise different or additional claim construction issues in its Patent Owner Response.

1314, 1323 (Fed. Cir. 2003) (“‘substantially’ can also mean ‘largely’ or ‘essentially.’”); Ex. 2007 at 7 (“substantial”: “7 with regard to essential elements”).

Moreover, because the claimed device is a three dimensional object, whereas a square is two dimensional, one must know the relevant perspective. And, the patent is clear that the relevant view is the “top view” of the cell.² Ex. 1001 (’409 Patent), Fig. 2, 3 (depicting top view of cells), at 1:20-1:33 (discussing “top view of a closed cell unit” of the prior art), at 3:32-34 (referring to “top view of a closed cell configuration of an improved semiconductor power device of this invention). Indeed, a primary purpose of the invention is improving device ruggedness by increasing the uniformity of the distances between the source contact and the gate trench, as seen from a top view. *Id.* at 1:18-57, 1:66-2:7; *see also id.* at 3:34-45, 3:55-4:3, 4:9-20, 4:33-51 (describing the preferred embodiments in the context of various measurements of the top view perspective of Figures 2 and 3); *see also* Ex. 1002

² More specifically, the relevant view of the cell is a *cross-sectional top view* since Figures 1A, 2, and 3 omit the overlaying source metal and interlayer oxide layers to permit view of the trench gate structure. *Compare* Ex. 1001 (’409 Patent), Fig. 1A (depicting gate trenches) *with* Fig. 1C (depicting “source metal” layer and inter oxide layer over gate trenches); *compare id.*, Fig. 2 *with* Figs. 2A-2D (same); *compare id.*, Fig. 3 *with* Figs. 3A-3D (same).

(’409 File History) at 302, l. 29 (discussing “top view of closed cells” of the pending claims).

“Rounded corners” simply means that the “substantially square-shaped cells” have corners that are round in that top view, i.e. having a curved shape like a portion of a circle or oval. Ex. 2007 at 5 (“round”: “3 curved in shape like part of a sphere or circle ... n. 1 something round or rounded; thing or part that is spherical, globular, circular, curved, annular or cylindrical”); *see also* Ex. 1001 (’409 Patent), Fig. 3, 4:4-9 (describing Fig. 3 as embodiment with “rounded corners” for gate trenches, and depicting a square with curved corners). Finally, this claim term requires that all four corners of the essentially square shape be rounded, as the ’409 Patent consistently depicts and describes. *See, e.g.*, Ex. 1001, Fig. 3 (illustrated all four corners of square being rounded). Indeed, permitting some corners to not be rounded would be entirely inconsistent with the ’409 Patent’s disclosure that the rounded corners are meant to make the distance between the trench gates and the source contact metal more ***uniform***. *Id.* at 2:3-7. Having some but not all corners of the cell be rounded would only increase non-uniformity.

Petitioner proposes that “rounded corners” be construed as “corners that are truncated by design layout and then rounded.” Pet. at 15. Petitioner does not expressly seek a construction of the remainder of this limitation, but in Grounds 1-3, Petitioner applies “substantially square-shaped cells with rounded corners”

against hexagons and squares with standard, sharp corners. Pet. at 26. Petitioner nonetheless argues that hexagons are essentially squares because one can visualize the geometry of hexagons as being created by cutting off large portions of squares. *Id.* And, Petitioner argues that the “rounded corners” need not be the actual corners of a square as visible in a top-view, but rather can be satisfied by rounding of the gate trenches as viewed in a side view cross-section of the cell. Pet. at 27.

Petitioner’s arguments fundamentally misconstrue this claim term, and ignore the clear teachings of the specification of the ’409 Patent. The ’409 Patent discloses two distinct embodiments: cells with “truncated corner[s]” and cells with “rounded corner[s].” Ex. 1001 (’409 Patent) at 1:66-2:7. Figure 2 is an “improved cell layout” where the “trenched gate 100 [] has [] truncated corners.” *Id.* at 3:17, 3:32-35. And, correspondingly, claim 6 recites “said trenched gates surrounding said transistor cells as closed cells constituting substantially square-shaped cells with *truncated corners.*” *Id.*, cl. 6 (emphasis added). By contrast, Figure 3 is “another embodiment of this invention wherein a closed cell unit 200 of a MOSFET device includes trenched gate 210 ... and the trenched gate is formed with rounded corners 215.” *Id.* at 4:4-9. Similarly, claim 1 recites “trenched gates surrounding said transistor cells as closed cells constituting substantially square-shaped cells with *rounded corners.*” *Id.*, cl. 1 (emphasis added).

Despite these teachings, Petitioner's construction conflates these embodiments, arguing that both "truncated" and "rounded" corners must begin with a "truncated" "design layout" and that "rounded corners" are thereafter "rounded." Pet. at 15-18. Petitioner and its expert point to the '409 Patent's specification statement that "[t]he truncated corners are formed by design layout not process. It is by nature that truncated corners in layout becomes rounded after exposure due to resolution issue of 0.18~0.35 μm photolithography." Ex. 1001 ('409 Patent) at 2:17-20; *see also id.* at 4:57-62; *see also id.* at 2:14-17, 2:58-60. But nothing in this statement represents a clear and unmistakable disclaimer relating to the design of a MOSFET with "rounded corners." *See Thorner v. Sony Computer Entertainment America LLC*, 669 F. 3d 1362, 1367 (Fed. Cir. 2012). To the contrary, all of Petitioner's cites are passages that discuss the "process for manufacturing" or "manufacturing process." Ex. 1001 ('409 Patent) at 2:10-20, 4:53-62. Nothing in claim 1 of the '409 Patent—which is an apparatus claim—indicates that it is limited to products made by a particular process (i.e. by truncating in a design layout and then rounding as Petitioner proposes). *Id.*, cls. 1, 6; *See, e.g., Cont'l Cirs. LLC v. Intel Corp.*, 915 F.3d 788, 799 (Fed. Cir. 2019) ("Generally, a novel product that meets the criteria of patentability is not limited to the process by which it was made.") (cleaned up). Nor does the background knowledge of a POSA compel Petitioner's construction. Indeed, in the co-pending litigation involving the '409

Patent, Petitioner’s expert admitted that such rounded corners can be created by rounded corners in a mask design layout—contrary to Petitioner’s construction. Ex. 2001 at 143:16-21.

Finally, Petitioner argues that its construction is compelled by the prosecution history where the patentee distinguished the Pfirsch reference. Pet. at 17. But the patentee never distinguished Pfirsch on the basis of the “rounded corner” limitation. Indeed, the patentee expressly admitted that “Pfirsch [] has a closed cell with square trench gate with rounded corner.” Ex. 1002 (’409 File History) at 302. Instead, the patentee distinguished Pfirsch as having a “square contact with rounded corner,” i.e. that it lacked the claimed “circular trench.” *Id.*; *see also id.* at 295 (in same office action response, amending claim to recite “circular trench contact hole”). Thus, there is no clear and unmistakable disclaimer of rounded corners created by processes other than truncating in design layout and then rounding.

B. “substantially square-shaped cells with truncated corners” (cl. 6)

As with the prior term, Petitioner provides no plausible basis for deviating from the plain and ordinary meaning. Thus, this term should receive its plain and ordinary meaning: the cells have, from the top view perspective, largely or essentially the shape of a square (a shape that has four equal sides and four right angles) with all corners truncated (i.e. being cut off).

The appropriate construction of this term is readily apparent for the same reasons discussed in the prior term. *See supra* III.A. A square is a shape with four sides of equal length and four right angles. Ex. 2007 at 6. Substantially square shaped cells refers to cells having largely or essentially the shape of a square. Ex. 2007 at 7. Truncated corners simply means that the substantially square-shaped cells have corners that are cut off. Ex. 2007 at 8 (“truncate”: “to cut off a part of; shorten by cutting”); *see also* Ex. 1001 (’409 Patent), Fig. 2, 3:34-39, 3:55-61 (describing Fig. 2 as embodiment with “truncated corners” for gate trenches, and depicting a square with corners that have been cut off). And, as discussed, the patent and prosecution history makes clear the relevant perspective for the cells is the top view, and all the corners have to be truncated. Ex. 1001, Figs. 2-3, 1:18-57, 1:66-2:7, 3:32-45, 3:55-4:3, 4:9-20, 4:33-51.

Petitioner’s “design layout” arguments fail here for the same reasons that they do for the previous claim term. *See supra* III.A. In particular, Petitioner points to language in the specification describing methods by which embodiments of the invention *can* be manufactured, but does not identify any language of manifest exclusion or restriction that would disclaim other methods of manufacturing the claimed apparatus. Pet. at 19 (citing Ex. 1001 (’409 Patent) at 2:10-20; 4:53-64). Nothing in the claims or specification limits the apparatus claim 6 to being manufactured in a particular way.

Petitioner's prosecution history argument also fails. Petitioner cites to a generic statement in the prosecution history where the patentee explained where a long list of newly amended limitations had section 112 support, only one of which was "truncated corners." Pet. at 19 (citing Ex. 1002 at 302). Although the patentee ideally could have noted that support for the truncated corners of the amended claim 13 was further supported by Figure 2, as opposed to only mentioning Figure 3, none of the cited statements rise to the level of clear or unmistakable disclaimer that would justify rewriting this limitation in the manner that Petitioner suggests. Ex. 1002 at 302. Indeed, nothing in the cited portion of the prosecution history mentions the "design layout" language that Petitioner is attempting to import in this limitation. *Id.* Similarly, to the extent that Petitioner is attempting to apply their arguments about Pfirsch (which they discuss regarding "rounded corners") to this limitation, that argument fails for the same reasons discussed above. *See supra* III.A. Indeed, the cited portion of the file history does not even mention truncated corners in relation to Pfirsch. Ex. 1002 at 302; Ex. 1011 (Pfirsch), Fig. 2.

**IV. PETITIONER HAS FAILED TO DEMONSTRATE A REASONABLE
LIKELIHOOD THAT THE CHALLENGED CLAIMS ARE
UNPATENTABLE³**

A. Ground 1: Kobayashi Fails to Anticipate Claims 1 or 3-5

1. Claim 1

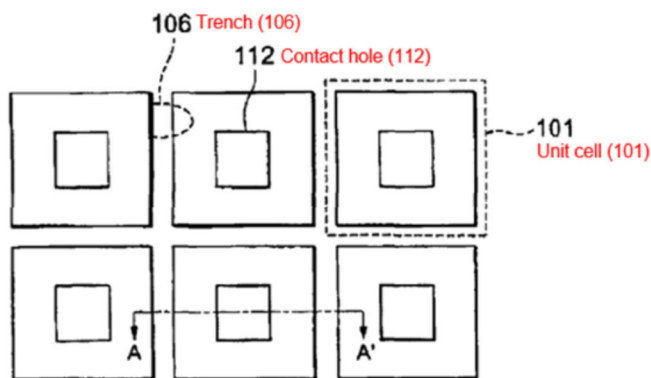
- (a) Kobayashi Fails to Disclose element 1[a]: “said
trenched gates surrounding said transistor cells as
closed cells constituting substantially square-shaped
cells with rounded corners”**

As discussed above, the appropriate construction of the term “substantially square-shaped cells with rounded corners” requires the cells have, from the top view perspective, largely or essentially the shape of a square (a shape that has four equal sides and four right angles) with all corners rounded (i.e. having a curved shape like a portion of a circle or oval). *Supra*, III.A. Petitioner identifies this limitation as being satisfied by the squares of Kobayashi’s Figure 3A, or alternatively the hexagons of Kobayashi’s Figure 4A. Pet. at 26. Both of these theories plainly fail.

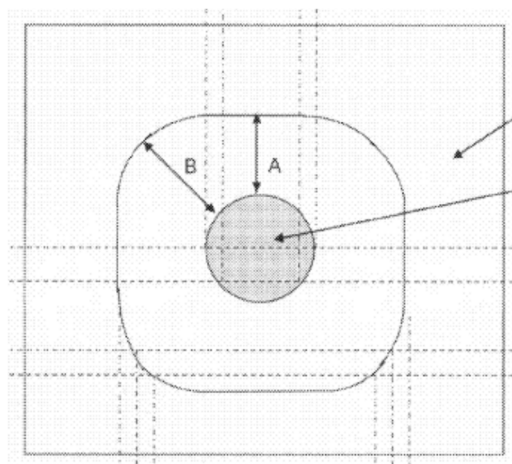
Applying the appropriate construction to the squares of Figure 3A, Kobayashi’s squares plainly lack rounded corners from a top view perspective. Instead, as illustrated in Petitioner’s own brief, Kobayashi’s Figure 3A depicts

³ In this preliminary response, Patent Owner only presents arguments against institution of this Petition. In the event that this Petition is instituted, Patent Owner reserves the right to raise additional or different arguments in its Patent Owner Response.

conventional squares with standard, right-angled corners—not rounded corners. This is plainly incongruous with the rounded corners limitation, as illustrated by comparing Kobayashi's Figure 3A with Figure 3 of the '409 Patent:



Pet. at 52 (annotating Ex. 1005, Fig. 3A)



Ex. 1001 ('409 Patent), Fig. 3 (cropped)

Petitioner's argument as to the hexagons of Kobayashi's Figure 4A is even worse. Figure 4A of Kobayahsi depicts conventional, regular hexagons with sharp corners. Ex. 1005 at Fig. 4A. Such hexagons have six sides of equal length, not the four sides of equal length of a square. *Id.* Petitioner argues that such hexagons are nonetheless “substantially square cells with rounded corners.” Pet. at 26. But, this is based on Petitioner's erroneous claim construction which, as discussed above (*supra* III.A), improperly conflates “truncated” and “rounded.” And, in any event, Petitioner's own figures demonstrate that creating a hexagon from a square would require cutting off far more than just the corners—two of the sides of the hypothetical square would be rendered into mere points. Pet. at 53 (annotating

Kobayashi, Fig. 4A). In short, a hexagon is not essentially square shaped, and Kobayashi does not describe or depict Figure 4A as having any rounded corners.

Despite these deficiencies, Petitioner argues that Kobayashi's squares and hexagons can nonetheless satisfy the "rounded corners" limitation because Kobayashi describes the gate trench bottoms and openings as being rounded in a *side view* cross-section. Pet. at 27 (depicting alleged rounded corners in an annotated version of the side view cross-section of Kobayashi's Fig. 6C). But as discussed, above (*supra* III.A), the relevant perspective for this limitation is the *top view* perspective of the substantially square-shaped cell. Indeed, that is plainly evident from the disclosures relating to Figure 3 of the '409 Patent—rounded corners 215 are only described and depicted as being present in the top-view perspective. Ex. 1001 ('409 Patent) at Fig. 3, 4:4-13. By contrast, the cross-sectional perspectives of Figure 3 are not described or depicted as having rounded corners. *Id.* at Figs. 3A-3D, 4:17-33. Also, rounding of solely trench bottoms and openings would not serve the '409 Patent's goal of improving device ruggedness by improving the uniformity of the distance between the trenched gates and the source metal contact. *Id.* at 3:21-26.

Petitioner's argument is also inconsistent with the structure of the claim language, which recites "said *trenched gates surrounding said transistor cells as closed cells* constituting substantially square-shaped cells with rounded corners."

Viewed from the top-view perspective, the gate trenches plainly surround the transistor cells. Ex. 1001 ('409 Patent) at Fig. 3, 2:45-47, 4:20-22 (depicting and describing that cell's source and body regions surrounded by gates). But viewed from a side view perspective—as Petitioner's "rounded corner" theory requires—the gates do not *surround* the bottom of the cells' source and body regions (which instead directly contact the N+ substrate layer). *Id.*, Figs. 2A-2D, 3A-3D. The same is true of Kobayashi's Fig. 6C. Pet. at 27 (citing Ex. 1005 at 7:57-8:4). Petitioner's argument would essentially rewrite the "rounded corners" limitation as simply requiring that the gate trenches have *some* rounded corners *somewhere*. But the claim requires "substantially square-shaped *cells with rounded corners*," which Kobayashi plainly lacks.

2. Claims 3-5

Claims 3-5 depend from claim 1. Ex. 1001 ('409 Patent), cls. 3-5. Petitioner's arguments in Ground 1 for alleged anticipation of claims 3-5 are based on Petitioner's anticipation arguments for claim 1, which fail as discussed above. Pet. at 33-35; *see supra* IV.A.1.a. Thus, Petitioner has not demonstrated that claims 3-5 are anticipated.

B. Ground 3: Kobayashi in view of Kikkawa Fails to Render the Challenged Claims Unpatentable

1. Claim 2

Claim 2 depends from claim 1. Ex. 1001 ('409 Patent), cl. 2. Petitioner's arguments in Ground 2 for alleged obviousness of claim 2 are based on Petitioner's arguments in Ground 1 that Kobayashi anticipates claim 1, which fail as discussed above. Pet. at 37 ("claim 2 depends from claim 1, and claim 1 is disclosed by Kobayashi for the reasons provided above"). Petitioner offers no argument or evidence that Kikkawa cures any of the deficiencies of Kobayashi identified above with respect to claim 1. That is, because Petitioner has failed to demonstrate that Kobayashi discloses each limitation of claim 1, Petitioner's obviousness arguments for claim 2 fail for the same reasons discussed above for claim 1 in Ground 1. *See supra*, IV.A.1. Thus, Petitioner has not demonstrated that claim 2 is obvious.

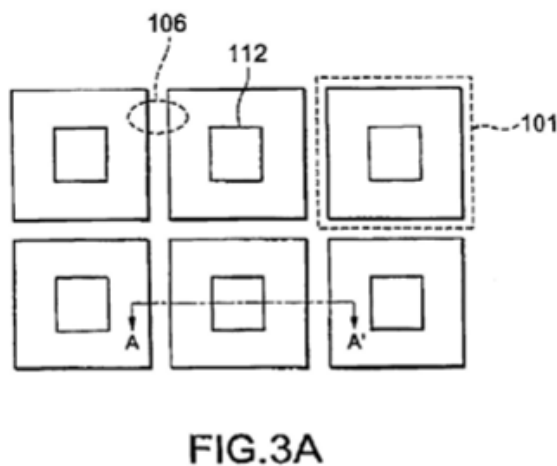
2. Claim 6

a) Kobayashi Fails to Disclose element 6[a]: "said trenched gates surrounding said transistor cells as closed cells constituting substantially square-shaped cells with truncated corners"

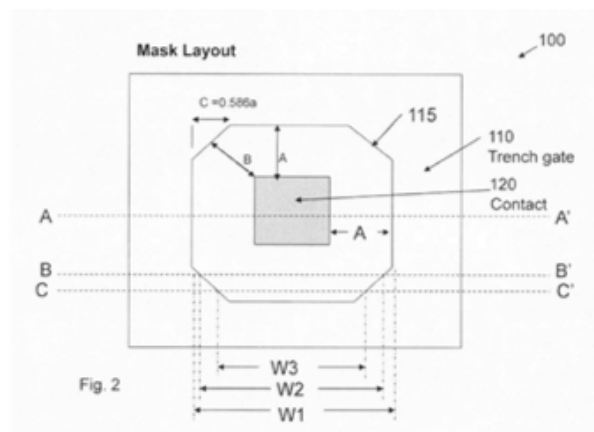
As discussed above, the appropriate construction of the term "substantially square-shaped cells with truncated corners" requires that the cells have, from the top view perspective, largely or essentially the shape of a square (a shape that has four equal sides and four right angles) with all corners truncated (i.e. being cut off).

Supra, III.B. Petitioner and its expert identify the same evidence in Kobayashi for this claim limitation as they identify in connection with element 1[a] of claim 1 in Ground 1. Pet. at 39 (citing “VIII.A.1.b”, i.e. Pet. at 25-27); *see also* Ex. 1003 ¶ 89. However, neither the squares of Kobayashi’s Figure 3A, nor the hexagons of Kobayashi’s Figure 4A, satisfy this limitation as properly construed. Pet. at 26.

As to the squares of Kobayashi’s Figure 3A, they are plainly not truncated or cut off, but rather have the full, normal ninety-degree angled corners of a conventional square. This is plainly incongruous with the “truncated corners” as used in the ’409 Patent, as illustrated in Figure 2:



Ex. 1005 (Kobayashi), Fig. 3A



Ex. 1001 ('409 Patent), Fig. 2

As to the hexagons of Kobayashi’s Figure 4A, as discussed above, hexagons are not substantially square shaped. *See supra* IV.A.1.a. Indeed, the only “evidence” that Petitioner or its expert presents in support of such an argument is a diagram

showing that squares can be drawn around the hexagons of Kobayashi's Figure 4A. Pet. at 26; Ex. 1003 ¶ 68. But, neither Petitioner nor its expert provides any reasoned explanation why such hexagons are "*substantially square-shaped* cells with truncated corners." *Id.* As noted, Kobayashi's hexagons have six equal sides, while squares have four equal sides. Although Figure 2 of the '409 Patent demonstrates that "truncated corners" of "*substantially square-shaped* cells" can result in a shape having more than four sides by virtue of the truncation of the corners, Figure 2 also demonstrates that truncating the corners still leaves something that is essentially square shaped, i.e. having four main sides which are longer than the truncated corners' sides. Ex. 1001 ('409 Patent), Fig. 2. By contrast, in attempting to contort Kobayashi's hexagons into shapes derived from hypothetical squares, Petitioner cuts off far more than just four corners. Instead, they cut off so much from two of the hypothetical square's sides that all that is left are mere points, and the resulting shape has six equal sides. Pet. at 26 (annotating Ex. 1005, Fig. 4A); Ex. 1003 ¶ 68. And neither Petitioner nor its expert points to any evidence in Kobayashi—or anywhere else in the field of semiconductors—that characterizes hexagons as substantially square shaped with truncated corners. Indeed, Kobayashi itself identifies squares and hexagons as alternative cell layouts. Ex. 1005, 6:25-30.

To the extent that Petitioner or its expert argues that Kobayashi satisfies the "truncated corner" limitation in the side view—as they argue with respect to the

“rounded corner” limitation of claim 1—that argument fails for the same reasons discussed above. In particular, the relevant perspective for this limitation is the *top view* perspective, not the side view perspective. *See supra* III.A, III.B, IV.A.1.a. And, as discussed, Petitioner’s argument would essentially rewrite the claim as requiring that the gate trenches have corners truncated *somewhere*, but the claim recites “substantially square-shaped *cells with* truncated corners.” *Id.*; Ex. 1001 (’409 Patent), cl. 6 (emphasis added). Moreover, neither Petitioner nor its expert even attempts to present any argument that the squares of Kobayashi’s Figure 3A are *truncated* or cut off in the side view—they only argue that the trench gate bottoms and openings are *rounded* in the side view. Pet. at 27, 39; Ex. 1003 ¶¶ 69, 89.

Petitioner offers no argument or evidence that Kikkawa cures any of the deficiencies of Kobayashi identified above with respect to claims 1 and 6. Instead, Petitioner solely relies on Kobayashi’s disclosures for this limitation. Pet. at 39; Ex. 1003 ¶ 89. Nor does petitioner offer any theory that it would be obvious to modify Kobayashi to meet this limitation. Pet. at 39, 41, 47-48. Thus, Petitioner has not demonstrated that claim 6 is obvious.

C. Ground 3: Kobayashi in view of alleged knowledge of a POSITA Fails to Render the Challenged Claims Unpatentable

1. Claim 5

Claim 5 depends from claim 1. Ex. 1001 ('409 Patent), cl. 5. Petitioner's arguments in Ground 3 for alleged obviousness of claim 5 are based on Petitioner's arguments in Ground 1 that Kobayashi anticipates claim 1, which fail as discussed above. Pet. at 49. Petitioner offers no argument or evidence that the knowledge of a POSITA cures any of the deficiencies of Kobayashi identified above with respect to claim 1. That is, because Petitioner has failed to demonstrate that Kobayashi discloses each limitation of claim 1, Petitioner's obviousness arguments for claim 5 in Ground 3 fail for the same reasons discussed above for claim 1 in Ground 1. *See supra*, IV.A.1.a.

D. Ground 4: Kobayashi in view of Hshieh Fails to Render the Challenged Claims Unpatentable

1. Claim 1

a) Petitioner Fails to Articulate a Sufficient Motivation to Combine Kobayashi and Hshieh in the Manner Claimed by Limitation 1[a]

In Ground 4, Petitioner and its expert argue that it would have been obvious to combine Kobayashi with Hshieh to achieve the structure of element 1[a] ("said trenched gates surrounding said transistor cells as closed cells constituting substantially square-shaped cells with rounded corners"). Pet. at 51-54, 56-63. As discussed in Ground 1, Kobayashi alone fails to disclose or render obvious

“substantially square shaped cells with rounded corners.” *See supra* IV.A.1.a. However, Petitioner argues that “rounding” the corners of MOSFETs was well-known and conventional in the art, as illustrated by Hshieh. Pet. at 58, 59. Notably, although Petitioner and its expert recite several different obviousness rationales from MPEP 2143 and *KSR*, in each instance, each such rationale is based on the notion that “rounding” was well-known and conventional. Pet. at 59-62; Ex. 1003 ¶¶ 133, 135-141. However, the *only* evidence that Petitioner and its expert cite that “rounding” was known and conventional are the Kobayashi and Hshieh references themselves (as well as a paper about side-view rounding of trench corner bottoms cited in Kobayashi). *Id.*

However, in doing so, Petitioner and its expert repeat the error they made in Ground 1—conflating rounding of trench bottoms and openings (i.e. *side view* rounding) with the specific configuration of the ’409 Patent wherein the power device is designed to have cells with a substantially square shape with rounded corners *from a top view*. *See supra* III.A, IV.A.1.a. Indeed, there is no dispute that side view rounding in trenched MOSFETs (i.e. rounding of gate trench bottoms and openings) was long known prior to the ’409 Patent. Ex. 1012 at 1, 4 (citing to references in 1993, 1996, and 1997 as relating to trench corner rounding). As Petitioner’s own evidence demonstrates, rounding of the openings and bottoms of MOSFET gate trenches (i.e. *side view* rounding) is intended to address the different

problem of trench sharp corners in the side view having a high electric field, resulting in leakage and undesired breakdown characteristics. Ex. 1011 at 1:34-40; Ex. 1012 at 1; *see also* Ex. 2006 (US6700158) at 1:34-53.

By contrast, the rounding of the corners of a MOSFET cell shape in the *top view*, as disclosed in the '409 Patent, is directed to improving the uniformity of the distance between the trenched gates and a source metal contact. Ex. 1001 ('409 Patent) at 2:3-7, 2:21-23, 3:39-41. Rather than being concerned with high electric fields caused by the sharpness of the gate's top and bottom corners in the side view, the problem the specific structure of the '409 Patent is intended to resolve is "parasitic bipolar NPN latch up" which result in low avalanche current due to "non-uniform space between the square contact and the trench in the closed cell." *Id.* at 1:18-20, 1:48-57. Notably, Petitioner and their expert are entirely silent as to the differences between *side view* rounding and *top view* rounding—simply conflating the distinct types of rounding in Kobayashi and Hshieh as one type of "rounding" and summarily concluding that "rounding" was well-known. Pet. at 59-62; Ex. 1003 ¶¶ 133, 135-141. But as discussed, claim 1 does not require that there simply be "rounding" *anywhere* on the gate trenches, it specifically recites "substantially square-shaped cells with rounded corners," i.e. cells having rounded corners from the top view. *See supra* III.A. And, nowhere does Petitioner or its expert articulate any motivation to combine the alleged *top view* rounding of Hshieh with

Kobayashi—Petitioner and its expert fail to provide any evidence that *top view* rounding of cell corners was well-known and conventional.

Indeed, the only evidence cited by Petitioner or its expert even arguably relating to *top view* rounding of gate trench corners is Hshieh itself. However, rather than providing a motivation to combine, the disclosures of Hshieh plainly teach away from combining Hshieh with Kobayashi in the manner claimed. In particular, Hshieh is directed to increasing the packing density of the cell topology of power transistors by using “***non-orthogonal*** parallelograms.”⁴ Ex. 1006, Abstract (emphasis added), 2:64-3:55, 4:32-5:2, Figs. 5A-5B, cls. 1, 8, 12, 21, 26, 30. In explaining the purpose of its invention, Hshieh specifically identifies square cell configurations as having disadvantageous packing densities: “[t]he packing density of the transistor cell is improved with the parallelogram cell occupies less areas than ***the regular square cell*** having the same total channel width.” Ex. 1006, Abstract (emphasis added); *see also id.* at 1:14-23 (identifying power MOSFETs having “cellular structure” with “square” topologies as having increased “JFET resistance” and “on-resistance,” particularly as “cell size is reduced.”), Figs. 2C. By contrast, Hshieh touts its “non-orthogonal parallelogram” cell layout as providing “***packing***

⁴ As discussed, a square has four equal sides and four *right angles* and thus is an *orthogonal* parallelogram. *See supra* III.A, Ex. 2007 at 6.

density [that] is increased with the same total channel width formed in a smaller cell area **when compared to that of square cells** as [] commonly used in the prior art such that the cell size can be further reduced without sacrificing the total channel width.” *Id.* at 2:64-3:5 (emphasis added).

Hshieh’s repeated teaching away of square cell layouts is clearly inconsistent with combining Hshieh with Kobayashi in a manner to have “substantially *square-shaped cells* with rounded corners,” as the ’409 Patent claims. *See DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 567 F.3d 1314, 1326 (Fed. Cir. 2009) (“A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference.”). Nowhere does Petitioner or its expert attempt to address this glaring inconsistency. Moreover, the cited disclosures of Hshieh regarding “rounded” corners is directly related to Hshieh’s use of *non-orthogonal* parallelograms, as Hshieh discloses that “the packing density is increased by manufacturing the transistor cells as *non-orthogonal parallelograms with the sharper corner blunted or rounded* whereby the packing density is increased ... while the punch through vulnerability at the *weak points in these sharper corners of the non-orthogonal parallelogram cells* may be eliminated” Ex. 1006 at 3:6-14 (emphasis added); *DePuy Spine*, 567 F.3d at 1326 (“An inference of nonobviousness is especially

strong where the prior art's teachings undermine the very reason being proffered as to why a person of ordinary skill would have combined the known elements.”).

Indeed, as those quotations from Hshieh demonstrate, because Hshieh is focused on the specific problems of its parallelogram configuration, the cited portions of Hshieh only involve rounding the *two* sharper corners of each non-orthogonal parallelogram, leaving two corners unrounded. Pet. at 5 (citing Ex. 1006, 5:3-28, Figs. 6A-7A); *see also* Ex. 1006 at 4:8-12, 7:23-25, 8:15-19. Neither Petitioner nor its expert articulates any reason for why a POSA would be motivated to combine the cited portions of Hshieh and Kobayashi so as to have *all* corners be rounded, as this limitation requires. *See supra* III.A.

Finally, Petitioner and its expert also ignore important differences between the purposes of the “rounded” corners in Hshieh and the particular configuration of the '409 Patent having substantially square-shaped cells with rounded corners and a circular trench contact. The '409 Patent teaches that these two techniques address the problem of the prior art of non-uniform distances between trench gates and the source trench contact. In particular, as Figure 1C of the '409 Patent illustrates, the parasitic bipolar latch up problem that the patent is attempting to address originates in the P⁺ region at the bottom of the trenched source contact. Ex. 1001 ('409 Patent) at Fig. 1C, 1:42-45 (“The resistance R between the channel and the P⁺ region 25 is

proportional to the space, i.e., the shortest distance between the metal contact region 15 and the trenched gates 20.”).

By contrast, Hshieh’s structure is fundamentally different. Indeed, Hshieh’s MOSFETs entirely lack trenched source contacts.⁵ That is, unlike the ’409 Patent which has both “trenched gates” and a “circular [source] trench contact,” Hshieh only discloses embodiments with trenched *gates*. Ex. 1006 Fig. 4B, 9D, 10B, 7:26-8:5. In each of Hshieh’s embodiments, rather than having source metal connected to a metal-filled trench penetrating into the semiconductor material’s source and body regions, the source metal instead is in a planar relationship with the semiconductor material and contacts the semiconductor material through “source openings” in the oxide layer. *Id.* Figs, 4B, 9D, 10B, 1:45-51, 3:38-42, 6:52-56, 7:26-30, 7:56-60, cl. 21. Thus, not surprisingly, Hshieh’s discussion of “rounding” is not concerned with problems relating to trenched source contacts. Rather, Hshieh is concerned with the effect of the “three dimension diffusion effect” at the two sharper corners of Hshieh’s non-orthogonal parallelograms. Ex. 1006 at 5:3-17.

⁵ The claimed “circular trench contact” of the ’409 Patent is a trenched source contact because it is “filled with a contact metal plug” that is “connected to a source metal disposed on top of the circular trench contact.” Ex. 1001 (’409 Patent), cl. 1; *see also* Figs. 2A, 3A (depicting “trench contact 120” connected to the “Source Metal” layer).

Thus, Petitioner’s obviousness combination presents a classic example of improper cherry-picking and hindsight bias. *Knauf Insulation, Inc. v. Rockwool Int’l A/S*, 788 F. App’x 728, 733 (Fed. Cir. 2019) (“It is not enough, even after *KSR*, to support a determination of obviousness that a reference includes a broad generic disclosure and a common utility to that in the claims and other prior art references—there must be some reason to select a species from the genus.”). Kobayashi discloses multiple embodiments with a variety of different cell configurations, including conventional square and hexagon cells, and square or circular source contacts. Ex. 1005, at Figs. 3A, 3B, and 4A. Hsieh discloses non-orthogonal parallelograms with non-trenched source contacts and having the two sharpest corners of its gates be rounded. Ex. 1006 at Figs. 4B, 6A, 6B, 9D, 10B, 3:6-14, 5:3-17, 7:26-8:5. Yet, without explanation, Petitioner and its expert conclude by mere *ipse dixit* that it would be obvious to land on the exact claimed combination of substantially square cell shapes with all rounded corners and circular contact trenches—a configuration that just happens to render the distance between gate trenches and source contacts more uniform, despite none of the cited references identifying that as a problem. The standard for obviousness requires more. *See, e.g., In re Cyclobenzaprine Hydrochloride*, 676 F.3d 1063, 1071 (Fed. Cir. 2012) (“Where, however, a defendant urges an obviousness finding by ‘merely throw[ing] metaphorical darts at a board’ in hopes of arriving at a successful result, but ‘the prior art gave either no

indication of which parameters were critical or no direction as to which of many possible choices is likely to be successful,’ courts should reject ‘hindsight claims of obviousness.’”).

2. Claims 3-5

Claims 3-5 depend from claim 1. Ex. 1001 (’409 Patent), cls. 3-5. Petitioner’s arguments in Ground 4 for alleged obviousness of claims 3-5 are based on Petitioner’s anticipation arguments in Ground 4 for claim 1, which fail as discussed above. Pet. at 55-56; *see supra* IV.D.1.a. Thus, Petitioner has not demonstrated that claims 3-5 are obvious.

E. Ground 5: Kobayashi in view of Hshieh and Kikkawa Fails to Render the Challenged Claims Unpatentable

1. Claim 2

Claim 2 depends from claim 1. Ex. 1001 (’409 Patent), cl. 2. Petitioner’s arguments in Ground 5 for alleged obviousness of claim 2 are based on Petitioner’s arguments that Kobayashi and Hshieh render obvious claim 1, which fail as discussed above in Ground 4. Pet. at 37 (“claim 2 depends from claim 1, and claim 1 is disclosed by Kobayashi for the reasons provided above”). Petitioner offers no argument or evidence that Kikkawa cures any of the deficiencies of the Kobayashi-Hshieh combination discussed in connection with Ground 4 with respect to claim 1. That is, because Petitioner has failed to demonstrate that Kobayashi-Hshieh renders

obvious claim 1, Petitioner's obviousness arguments for claim 2 fail for the same reasons. *See supra*, IV.D.1.

2. Claim 6

(a) Petitioner Fails to Articulate a Sufficient Motivation to Combine Kobayashi and Hshieh in the Manner Claimed by Limitation 6[a]

Petitioner's arguments in Ground 5 for alleged obviousness of limitation 6[a] of claim 6 (which recites "truncated corners") are based on Petitioner's arguments that Kobayashi and Hshieh render obvious limitation 1[a] of claim 1 (which recites "rounded corners"), which fail as discussed above in Ground 4. Pet. at 65-67. In particular, Petitioner offers no argument or evidence that Kikkawa cures any of the deficiencies of the Kobayashi-Hshieh combination discussed in connection with Ground 4 with respect to claim 1. That is, because Petitioner has failed to demonstrate that Kobayashi-Hshieh renders obvious claim 1, Petitioner's obviousness arguments for claim 6 fail for the same reasons. *See supra*, IV.D.1.

In particular, the disclosures of Hshieh relating to "blunted" corners have the same problems as the disclosures of Hshieh relating to "rounded" corners. First, Petitioner improperly conflates side view rounding of trench bottoms/openings with top view truncation of corners. *See supra* III.A, IV.A.1.a, IV.D.1.a. Second, the cited portions of Hshieh only disclose blunting the two sharp corners of a non-orthogonal parallelogram, rather than truncating all four corners of a square shape.

See supra, IV.D.1.a. Third, Hshieh expressly teaches away from using square shaped cells. *See supra* IV.D.1.a. Fourth, because Hshieh has a very different MOSFET structure, the problems addressed by Hshieh's blunting are unrelated to the problem addressed by the cell configuration claimed in the '409 Patent. *See supra* IV.D.1.a. Fifth, the proposed combination is the result of using hindsight bias to arbitrarily cherry pick elements from the various embodiments of Kobayashi and Hshieh to arrive at a solution with relatively uniform distances between the gates and source contacts without meaningful explanation, i.e. selecting square shape cells from among Kobayashi's and Hshieh's various cell shapes, selecting circular shaped source contact trenches from among Kobayashi's various source contact shapes, and using Hshieh's disclosures relating to blunting the two sharpest corners of a non-orthogonal parallelogram to truncate all four corners of a square. *See supra* IV.D.1.a.

Thus, for the same reasons discussed above in Ground 4 as to limitation 1[a], Petitioner fails to present a sufficient motivation to combine Kobayashi and Hshieh in the manner claimed in limitation 6[a].

F. Ground 6: Kobayashi in view of Hshieh and knowledge of a POSITA Fails to Render the Challenged Claims Unpatentable

Claim 5 depends from claim 1. Ex. 1001 ('409 Patent), cl. 5. Petitioner's arguments in Ground 6 for alleged obviousness of claim 5 are based on Petitioner's arguments that Kobayashi-Hshieh renders obvious claim 1, which fail as discussed

above. Pet. at 67. Petitioner offers no argument or evidence that the knowledge of a POSITA cures any of the deficiencies of Kobayashi-Hsieh identified above in Ground 4 with respect to claim 1. That is, because Petitioner has failed to demonstrate that Kobayashi-Hsieh renders obvious claim 1, Petitioner's obviousness arguments for claim 5 in Ground 6 fail for the same reasons discussed above for claim 1 in Ground 4. *See supra*, IV.D.1.

V. THE BOARD SHOULD EXERCISE ITS SECTION 314(a) DISCRETION TO DENY INSTITUTION

Here, each of the *Fintiv* factors weigh in favor of discretionary denial. As to *Fintiv* factor 1, there is no stay of litigation. Although Petitioner's real-party-in-interest, ASUSTek Computer Inc. ("ASUS") (Pet. at 1) has asked for a stay of the pending litigation (Ex. 2003), the district court has not acted on the motion at this time. Such motion is also exceedingly unlikely to be granted, as one of the three patents-in-suit in that case is not subject to any *inter partes* review petition. Ex. 1009 (Compl.) ¶¶64-86 (asserting, *inter alia*, U.S. Patent No. 7,847,346); Ex. 1010 (Amend. Compl.) ¶¶73-95 (same); Ex. 2003 at 2 (noting that IPR petitions have only been filed as to '409 and '634 Patents); *Uniloc 2017 LLC v. Samsung Elecs. Am., Inc.*, No. 2:19-cv-00259-JRG-RSP, 2020 WL 1433960, at *6 (E.D. Tex. Mar. 24, 2020) (in case assigned to same District Judge, denying stay where less than all asserted claims were subject to IPR). Thus, factor 1 weighs in favor of discretionary denial.

Fintiv factors 2 and 3 also weigh in favor of discretionary denial. As Petitioner admits, the '409 Patent is asserted in Force MOS's action in the Eastern District of Texas ("EDTX") against ASUS. Pet. at 1; Ex. 1010 (Amended Compl.) ¶¶96-106. Although Petitioner *itself* is not a party to that case, Petitioner's admitted real-party-in-interest ASUS is the defendant in that case. Pet. at 1; Ex. 1009 (Complaint) ¶¶7-8, 40-86 (naming and identifying infringement allegations against ASUS); Ex. 1010 (Amended Complaint) ¶¶7-8, 49-106 (same); see *Global Tel*Link Corporation v. Hlfip Holding, Inc.*, IPR2021-00444, Paper 14 at 27-28 (PTAB Jul. 22, 2021) (treating co-pending district court case involving real-parties-in-interest as relevant to *Fintiv* factors, even though Petitioner was not a "named defendant"). Moreover, Petitioner admits that the trial in that case is scheduled for *six* months before the expected Final Written Decision date if this IPR is instituted. Pet. at 72. Although Petitioner argues that the EDTX *ASUS* case is in its early stages, that is simply not true. The parties have already exchanged infringement and invalidity contentions. Ex. 1018 (Docket Control Order) at 4-5. The opening claim construction brief is due to be filed in the *ASUS* case on February 27, 2024—the same due date as this preliminary response, and claim construction discovery (included expert depositions as to claim construction) has already been completed. Ex. 2004 (Amended DCO) at 4. And, by the time that a decision on institution is expected in this IPR on approximately May 27, 2024 (Trial Practice Guide at 3), the

schedule in the EDTX *ASUS* case provides that the *Markman* hearing will be already held (on April 9, 2024) and fact discovery is scheduled to be complete (on May 20, 2024). *Id.*; see *Zhuhai Cosmx Battery Co., Ltd., v. Ningde Amperex Technology Ltd.*, IPR2023-00585, Paper 12 at 14 (PTAB Oct. 24, 2023) (“the pertinent inquiry concerns the investment in the parallel proceeding by the court and the parties ‘at the time of the institution decision.’”).

Fintiv factor 4 also weighs in favor of discretionary denial. Here, Petitioner does not dispute that the overlap between this IPR and the EDTX case is significant. Pet. at 73. Indeed, real-party-in-interest ASUS’s invalidity contentions served in the EDTX case include the same Kobayashi and Hshieh grounds as in this Petition. Ex. 2005 at 7-8 (identifying the asserted prior art as including Hshieh (“C-4”) and Kobayashi (“C-7”)); *id.* at 39 (identifying, *inter alia*, anticipation ground for Kobayashi and obviousness ground for Kobayashi in view of Hshieh). And, although Petitioner *itself* has agreed “not to pursue invalidity challenges in any district court case based on the same or substantially the same grounds relied upon in this Petition, and so this factor favors institution” (Pet. at 73)—the record reflects no such stipulation from the party that is actually the defendant in the pending EDTX case: real-party-in-interest ASUS. Moreover, Petitioner’s preferred stipulation is unduly narrow because it does not include “grounds that could have reasonably been raised.” Vidal Memorandum at 3; see *Zhuhai Cosmx Battery Co., Ltd.*, IPR2023-

00585, Paper 12 at 16 (refusing to fully credit stipulation that “does not extend to any ground ‘that could have been reasonably raised’”).

Fintiv factor 5 weighs in favor of discretionary denial. Petitioner argues that it is not a party in any pending litigation involving Patent Owner. However, as noted, Petitioner’s real party-in-interest, ASUS, is the sole defendant in the EDTX action, brought by Patent Owner. Ex. 1009 (Compl.) ¶ 2; Ex. 1010 (Amend. Compl.) ¶ 2; *Global Tel*Link Corporation v. Hlfip Holding, Inc.*, IPR2021-00444, Paper 14 at 28 (PTAB Jul. 22, 2021) (holding that “*Fintiv* factor 5 weighs in favor of discretionary denial of the Petition” when “all of the defendants in the [co-pending litigation] are real parties-in-interest in [the IPR] proceeding.”). And, in any event, *Fintiv* provides that “petitioner should [] address any other district court or Federal Circuit proceedings involving the challenged patent to discuss why addressing the same or substantially the same issues would not be duplicative of the prior case even if the petition is brought by a different party.” *Apple v. Fintiv*, IPR2020-00019, Paper 11 at 14 (PTAB Mar. 20, 2020) (precedential). Petitioner fails to do so in its factor 4 or 5 analysis, as plainly the issues in this IPR would be duplicative of the issues that will be addressed in the EDTX *ASUS* case (see discussion of factor 4 above).

Finally, *Fintiv* factor 6 weighs in favor of discretionary denial. As discussed above, the merits of the petition are extraordinarily weak. Petitioner’s primary invalidity grounds (grounds 1-3) rely on arguing that rounded means truncated, that

hexagons are substantially square-shaped, and that side view rounding of gate trench bottoms is the same as substantially square-shaped cells with rounded corners. *See supra* IV.A-IV.C. Similarly, Petitioner's second set of grounds (grounds 4-6) not only continue to conflate top and side view rounding, but plainly rely on cherry-picking portions from two references without meaningful explanation and combining them in a manner that inexplicably arrives at the structure disclosed in the '409 Patent, despite no evidence that the specific problem that the '409 Patent attempts to address was known in the art. *See supra* IV.D-IV.F. And, as discussed, Petitioner and its expert wholly ignore the express teaching away provided in Hsieh. *Id.* Rather, neither Petitioner nor its expert even attempts to present substantive arguments addressing these glaring deficiencies in the references.

Because all *Fintiv* factors weigh in favor of dismissal, the petition should be discretionarily denied under section 314(a).

VI. CONCLUSION

For the above reasons, Patent Owner requests that institution of this Petition for *inter partes* review be denied.

Date: February 27, 2024

Respectfully submitted,

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Certificate of Service 37 C.F.R. § 42.6(e)

The undersigned certifies that on February 27, 2024, I will cause true and correct copies of the foregoing Patent Owner's Preliminary Response, and all associated exhibits or appendices referred to therein, to be served electronically upon the following attorneys who have consented to service via email. Pet. at 2-3.

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Certificate of Compliance Pursuant to 37 C.F.R. § 42.24

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