

UNITED STATES PATENT AND TRADEMARK OFFICE

---

BEFORE THE PATENT TRIAL AND APPEAL BOARD

---

SAMSUNG ELECTRONICS CO., LTD.,  
GLOBALFOUNDRIES U.S. INC., and  
QUALCOMM INCORPORATED,  
Petitioner,

v.

KAIST IP US LLC,  
Patent Owner.

---

Case IPR2018-00266  
Patent 6,885,055 B2

---

Before NEIL T. POWELL, MINN CHUNG, and  
ELIZABETH M. ROESEL, *Administrative Patent Judges*.

ROESEL, *Administrative Patent Judge*.

DECISION  
Denying Institution of *Inter Partes* Review  
35 U.S.C. § 314(a)

Samsung Electronics Co., Ltd., Globalfoundries U.S. Inc., and QUALCOMM Incorporated (collectively “Petitioner”) filed a Petition (Paper 1, “Pet.”) requesting an *inter partes* review of claims 1–6, 11, 12, and 14–17 (the “challenged claims”) of the U.S. Patent No. 6,885,055 B2 (Ex. 1001, “the ’055 patent”). KAIST IP US LLC (“Patent Owner”) filed a Preliminary Response. Paper 8 (“Prelim. Resp.”).

Institution of *inter partes* review is discretionary. *See* 35 U.S.C. §§ 314(a), 325(d). As discussed further below, the Petition in this case (“Second Petition”) was filed by the same Petitioner and challenges the same claims of the same patent based on the same prior art as the Petition in Case IPR2017-01046 (“First Petition”), where institution was denied. Under the circumstances of this case and for the reasons explained below, we exercise our discretion not to institute an *inter partes* review on any of the challenged claims of the ’055 patent.

## I. BACKGROUND

### A. *Related Matters*

According to the parties, the ’055 patent is the subject of the following civil action: *KAIST IP US LLC v. Samsung Electronics Co.*, No. 2:16-cv-01314-JRG-RSP (E.D. Tex., filed November 29, 2016). Pet. 1; Paper 6, 2 (Patent Owner’s Mandatory Notices).

The ’055 patent is also the subject of the following *inter partes* review proceedings:

*Samsung Electronics Co. v. KAIST IP US LLC*, Case IPR2017-01046 (institution denied Oct. 2, 2017; Petitioner’s request for rehearing denied Jan. 22, 2018);

*Samsung Electronics Co. v. KAIST IP US LLC*, Case IPR2017-01047 (institution denied Oct. 2, 2017; Petitioner’s request for rehearing denied Jan. 22, 2018); and

*Samsung Electronics Co. v. KAIST IP US LLC*, Case IPR2018-00267 (petition filed concurrently with IPR2018-00266 challenging claims 7, 9, 10, 13, and 19 of the ’055 patent).

Pet. 1; Paper 6, 1.

*B. The ’055 Patent (Ex. 1001)*

The ’055 patent issued from U.S. Application No. 10/358,981, filed February 4, 2003. Ex. 1001, [21], [22].

The ’055 patent relates to a double-gate Fin Field Effect Transistor (“FinFET”). *Id.* at [57], 1:6–7. According to the ’055 patent, a FinFET is a conventional CMOS<sup>1</sup> structure that enables reduced channel length and nano-sized devices. *Id.* at 1:15–28, 1:65–67, 2:37–39, 3:21–29, Figs. 1c, 2. The ’055 patent identifies disadvantages of conventional double-gate MOS devices fabricated on Silicon On Insulator (“SOI”) substrates. *Id.* at [57], 1:46–64, 3:64–4:7. According to the ’055 patent, these problems are addressed by providing a double-gate FinFET device fabricated on a bulk silicon substrate, where the Fin active region is connected to the substrate. *Id.* at [57], 1:8–14, 4:10–19.

An embodiment is shown in Figure 3a of the ’055 patent, which is reproduced below:

---

<sup>1</sup> We understand MOS as an acronym for Metal Oxide Semiconductor and CMOS as an acronym for Complementary Metal Oxide Semiconductor.

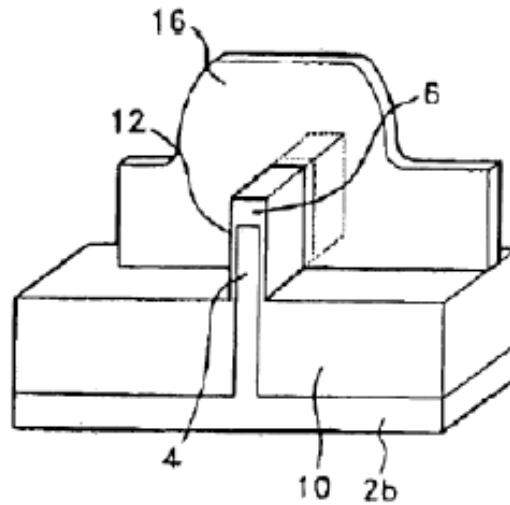


Fig. 3a

Figure 3a of the '055 patent shows a perspective view of a FinFET device, including bulk silicon substrate 2b, Fin active region 4, second oxide layer 10, gate oxide layer 12 at both side-walls of Fin active region 4, first oxide layer 6 on the upper surface of Fin active region 4, and gate 16 on first oxide layer 6 and second oxide layer 10. Ex. 1001, 4:62–65, 5:36–48. Fin active region 4 consists of single crystalline silicon with the shape of a wall on the surface of bulk silicon substrate 2b and is connected to bulk silicon substrate 2b. *Id.* at 5:36–40. A source/drain region is formed on both sides of Fin active region 4, except where the gate 16 overlaps with the Fin active region. *Id.* at 5:48–51.

According to the '055 patent, the device structure shown in Figure 3a differs from a conventional FinFET structure in that “Fin active region 4 is not floating and is connected to the bulk silicon substrate” (*id.* at 6:16–17) and “the device is fabricated on a bulk wafer rather than a SOI wafer” (*id.* at 6:25–26). The '055 patent states that this structural change results in improved device characteristics by removing the floating body problem and

providing more efficient transfer of heat from the channel to the substrate. *Id.* at 6:17–24. A cost advantage is also noted. *Id.* at 6:25–26.

A metal layer for wiring is omitted from Figure 3a of the '055 patent (*id.* at 6:12), but is shown in the plan view of Figure 6d, which is reproduced below:

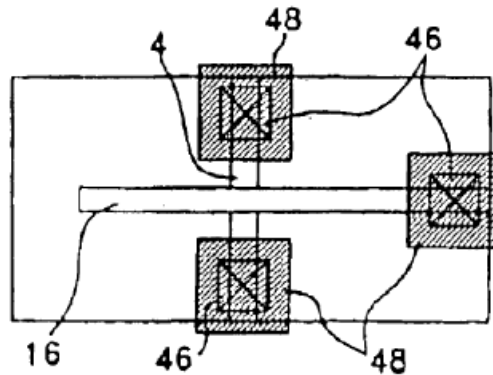


Fig. 6d

Figure 6d of the '055 patent shows the masking steps for implementing a FinFET device, including contact regions 46 and metal layer 48, which are formed at the source/drain and gate 16 contact regions. *Id.* at 5:4–6, 5:51–53, 7:37–43.

### C. Illustrative Claim

Claim 1 is the sole independent claim challenged in the Second Petition and is reproduced below, with parenthetical letters (a)–(j) added to correspond with Petitioner's identification of the claim elements:

1. (a) A double-gate FinFET device, comprising:
  - (b) a bulk silicon substrate;
  - (c) a Fin active region which is a wall-shape single crystalline silicon on a surface of the bulk silicon substrate and connected to said bulk silicon substrate;

(d) a second oxide layer which is formed up to a certain height of the Fin active region from the surface of bulk silicon substrate;

(e) a gate oxide layer which is formed on both side-walls of the Fin active region protruded from said second oxide layer;

(f) a first oxide layer which is formed on the upper surface of said Fin active region with a thickness greater or equal to that of the gate oxide;

(g) a gate which is formed on said first and second oxide layer;

(h) a source/drain region which is formed on both sides of the Fin active region except where said gate overlaps with the Fin active region; and

(i) a contact region and a metal layer which are formed at said source/drain and gate contact region,

(j) wherein the thickness of said gate oxide layer is between 0.5 nm and 10 nm, and the thickness of said first oxidation layer is between 0.5 nm and 200 nm.

Ex. 1001, 12:2–27.

*D. Case IPR2017-01046: The First Petition*

On March 9, 2017, Petitioner filed the First Petition requesting *inter partes* review of claims 1–6, 11, 12, and 14–17 of the '055 patent.

Case IPR2017-01046, Paper 1. In the First Petition, Petitioner asserted the following grounds of unpatentability under 35 U.S.C. § 103(a):

	References	Challenged Claim(s)
1	Inaba, <sup>2</sup> Hieda, <sup>3</sup> and Mizuno <sup>4</sup>	1–6, 11, 12, and 14–17
2	Inaba, Hieda, Mizuno, and Seliskar <sup>5</sup>	15
3	Inaba and Hieda	1–6, 11, 12, and 14–17
4	Inaba, Hieda, and Seliskar	15

On October 2, 2017, based on the arguments and evidence presented in the First Petition, we denied institution as to claims 1–6, 11, 12, and 14–17 of the '055 patent, i.e., all claims challenged in the First Petition. *Samsung Electronics Co. v. KAIST IP US LLC*, Case IPR2017-01046 (PTAB Oct. 2, 2017) (Paper 12). Petitioner requested rehearing of our decision denying institution. Case IPR2017-01046, Paper 13. On January 22, 2018, we denied Petitioner's request for rehearing. *Samsung Electronics Co. v. KAIST IP US LLC*, Case IPR2017-01046 (PTAB Jan. 22, 2018) (Paper 14).

*E. Case IPR2018-00266: The Second Petition*

Two months after our decision denying institution in Case IPR2017-01046, Petitioner filed a Second Petition requesting *inter partes* review of

---

<sup>2</sup> Inaba et al., U.S. Patent No. 6,525,403 B2, filed September 24, 2001 and issued February 25, 2003, Ex. 1005 (“Inaba”).

<sup>3</sup> Hieda, U.S. Publication No. 2002/0011612, published January 31, 2002, Ex. 1006 (“Hieda”).

<sup>4</sup> Mizuno et al., U.S. Patent No. 5,844,278, issued December 1, 1998, Ex. 1007 (“Mizuno”).

<sup>5</sup> Seliskar et al., U.S. Patent No. 6,355,532 B1, filed October 6, 1999 and issued March 12, 2002, Ex. 1008 (“Seliskar”).

claims 1–6, 11, 12, and 14–17 of the '055 patent, i.e., the same claims as Petitioner challenged in Case IPR2017-01046. In the Second Petition, Petitioner asserts the following grounds of unpatentability:

	References	Challenged Claim(s)
1a	Inaba and Mizuno	1–3 and 16
1b	Inaba, Mizuno, and Hieda	4–6, 11, 12, 14, 15, and 17
2	Inaba, Hieda, Mizuno, and Seliskar	15
3	Inaba and Hieda	1–6, 11, 12, and 14–17
4	Inaba, Hieda, and Seliskar	15

Petitioner represents that the Second Petition is “essentially identical” to the First Petition “except that Petitioner no longer relies on *Hieda* for claim element 1(i).” Pet. 73. Petitioner explains that the Second Petition is “essentially a copy” of the First Petition “with the exception that *Inaba* alone is being relied upon for claim element 1(i).” *Id.* at 74. According to Petitioner, other changes to First Petition “are non-substantive and simply made to comport with the above change.” *Id.* Petitioner submits a redline comparing the First Petition with the Second Petition. Ex. 1014.

## II. DISCUSSION

### A. Discretion under 35 U.S.C. §§ 314(a) and 325(d)

Institution of *inter partes* review is discretionary. *See* 35 U.S.C. § 314(a) (specifying circumstance in which *inter partes* review “may” be instituted); *SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 1351 (2018) (“§ 314(a) invests the Director with discretion on the question whether to institute review”). When faced with serial petitions challenging the same patent, we



consider the following non-exhaustive factors in determining whether to exercise our discretion under § 314(a):

1. whether the same petitioner previously filed a petition directed to the same claims of the same patent;
2. whether at the time of filing of the first petition the petitioner knew of the prior art asserted in the second petition or should have known of it;
3. whether at the time of filing of the second petition the petitioner already received the patent owner's preliminary response to the first petition or received the Board's decision on whether to institute review in the first petition;
4. the length of time that elapsed between the time the petitioner learned of the prior art asserted in the second petition and the filing of the second petition;
5. whether the petitioner provides adequate explanation for the time elapsed between the filings of multiple petitions directed to the same claims of the same patent;
6. the finite resources of the Board; and
7. the requirement under 35 U.S.C. § 316(a)(11) to issue a final determination not later than 1 year after the date on which the Director notices institution of review.

*Gen. Plastic Indus. Co. v. Canon Kabushiki Kaisha*, Case IPR2016-01357, slip op. 15–16 (PTAB Sept. 6, 2017) (Paper 19) (precedential)<sup>6</sup> (hereinafter, “*General Plastic*”) (citing *NVIDIA Corp. v. Samsung Elec. Co.*, Case IPR2016-00134, slip op. 6–7 (PTAB May 4, 2016) (Paper 9)). A central issue addressed by the *General Plastic* factors is balancing the equities between a petitioner and a patent owner when information is

---

<sup>6</sup> Section II.B.4.i of *General Plastic* was designated precedential on October 18, 2017.

available from prior Board proceedings for a subsequent proceeding.

*General Plastic*, slip op. at 15–19.

In determining whether to institute an *inter partes* review, we may “take into account whether, and reject the petition or request because, the same or substantially the same prior art or arguments previously were presented to the Office.” 35 U.S.C. § 325(d). Our discretion under section 325(d) is in addition to, not in lieu of, consideration of the *General Plastic* factors under 35 U.S.C. § 314(a). *General Plastic*, slip op. at 19.

*B. Parties’ Contentions*

Petitioner contends that the Board’s discretion under 35 U.S.C. § 314(a) or 325(d) should not be used to deny institution of the Second Petition. Pet. 75 (citing *General Plastic*). According to Petitioner, the Second Petition “does not derive an unfair advantage . . . because Petitioner is not adding any new evidence (e.g., new prior art, new explanation, etc.) based on the preliminary response or the Board’s decision.” *Id.* at 75 (emphasis omitted). Petitioner contends that the *General Plastic* factors show that the Second Petition should be considered and instituted. *Id.* at 75–77.

Patent Owner argues that the Board should deny the Second Petition under *General Plastic* and section 325(d) because it “represents nothing more than a third attempt to argue the identical art, the identical evidence, and the identical issues considered in the [First] Petition and the request for rehearing on the [First] Petition.” Prelim. Resp. 6. According to Patent Owner, Petitioner’s conduct “is harassing and the Board should reject this tactic as a matter of substantive fairness.” *Id.* Patent Owner argues that the

*General Plastic* factors weigh against entertaining the Second Petition. *Id.* at 7–8.

C. *Application of General Plastic Factors and Section 325(d)*

We use the non-exhaustive *General Plastic* factors as a framework for assessing whether we should exercise our discretion under 35 U.S.C. § 314(a) to deny institution of the Second Petition. We also consider whether section 325(d) is applicable.

1. *Whether Petitioner Previously Filed a Petition Directed to the Same Claims of the Same Patent*

As discussed above, the Second Petition was filed by the same Petitioner and challenges the same claims of the same patent as the First Petition. Accordingly, the first *General Plastic* factor weighs against institution.

2. *Whether at the Time of Filing of the First Petition the Petitioner Knew of the Prior Art Asserted in the Second Petition or Should Have Known of It*

As discussed above, the Second Petition is based on the same prior art as the First Petition. Hence, Petitioner knew of the prior art asserted in the Second Petition when it filed the First Petition. Accordingly, the second *General Plastic* factor weighs against institution.

3. *Whether at the Time of Filing of the Second Petition the Petitioner Already Received the Patent Owner's Preliminary Response to the First Petition or Received the Board's Decision on Whether to Institute Review in the First Petition*

Petitioner filed the First Petition on March 9, 2017. Case IPR2017-01046, Paper 1. Patent Owner filed its Preliminary Response to the First Petition on July 4, 2017. Case IPR2017-01046, Paper 10. We issued our

decision denying institution of the First Petition on October 2, 2017. *Samsung Electronics Co. v. KAIST IP US LLC*, Case IPR2017-01046 (PTAB Oct. 2, 2017) (Paper 12). Petitioner filed the Second Petition on December 5, 2017. Hence, when Petitioner filed the Second Petition, it had both Patent Owner's Preliminary Response to the First Petition and the Board's decision denying the First Petition.

Petitioner concedes that it used the Board's decision on the First Petition as a roadmap for drafting the Second Petition. Pet. 73–74. More particularly, Petitioner asserts:

The instant Petition is essentially identical to the 1046 Petition except that Petitioner no longer relies on *Hieda* for claim element 1(i). . . . the Board found in IPR2017-01046 that Petitioner had not shown sufficiently that it would have been obvious to combine *Inaba* with *Hieda* with respect to claim element 1(i). . . . the instant petition is essentially a copy of the 1046 Petition with the exception that *Inaba* alone is being relied upon for claim element 1(i).

Pet. 73–74. In other words, Petitioner relied on the Board's analysis of Petitioner's contentions regarding claim element 1(i) in the First Petition as a roadmap for modifying Petitioner's contentions regarding claim element 1(i) in the Second Petition. This is precisely the type of conduct to which *General Plastic* factor 3 is directed. There, the Board explained:

Multiple, staggered petitions challenging the same patent and same claims raise the potential for abuse. The absence of any restrictions on follow-on petitions would allow petitioners the opportunity to strategically stage their prior art and arguments in multiple petitions, using our decisions as a roadmap, until a ground is found that results in the grant of review. All other factors aside, this is unfair to patent owners and is an inefficient use of the *inter partes* review process and other post-grant review processes.

*General Plastic*, slip op. 17–18.

We are not persuaded by Petitioner’s argument that it derived no unfair advantage from Patent Owner’s Preliminary Response and the Board’s decision on the First Petition. Pet. 75. By its own admission, Petitioner modified its contentions regarding claim element 1(i) in attempt to remedy deficiencies identified by the Board in its decision denying institution of the First Petition. *Id.* at 73–74.

Accordingly, the third *General Plastic* factor weighs strongly against institution.

4. *The Length of Time That Elapsed Between the Time the Petitioner Learned of the Prior Art Asserted in the Second Petition and the Filing of the Second Petition*

Petitioner contends *General Plastic* factor 4 is inapplicable because Petitioner is not submitting new prior art and because the filing of the Second Petition was not unreasonably delayed. Pet. 76. We disagree. The Second Petition is based on the same prior art as the First Petition. Accordingly, the relevant time period for *General Plastic* factor 4 is the time that elapsed between the filing of the First Petition and the filing of the Second Petition, which is about nine months.

5. *Whether the Petitioner Provides Adequate Explanation for the Time Elapsed Between the Filings of Multiple Petitions Directed to the Same Claims of the Same Patent*

Petitioner attempts to explain the delay in filing the Second Petition by asserting that Petitioner “was waiting on the Board’s decision on [Petitioner’s] request for rehearing” of the Board’s denial of institution of the First Petition. Pet. 76. Petitioner’s explanation reinforces that the Second Petition is merely an attempt to remedy the deficiencies the Board

identified in the First Petition, i.e., a second bite at the apple, relying on the Board's analysis of the First Petition as a roadmap for drafting the Second Petition. Petitioner has not provided an adequate explanation for the time elapsed between the filing of the First Petition and the filing of the Second Petition, both of which are directed to the same claims of the same patent. Accordingly, the fifth *General Plastic* factor weighs against institution.

6. *The Finite Resources of the Board*

Petitioner argues that, because it is not adding new evidence relative to that presented in the First Petition, the Board's resources will not be unduly exhausted by instituting trial on the Second Petition. Pet. 76–77.

We determine that the sixth *General Plastic* factor is not implicated under the circumstances of this case, and, therefore, does not weigh for or against exercising our discretion.

7. *The Requirement under 35 U.S.C. § 316(a)(11) to Issue a Final Determination Not Later Than 1 Year After the Date on Which the Director Notices Institution of Review*

Petitioner argues “there is no readily identifiable roadblock threatening the Board's issuance of a final determination within the statutory one-year limit.” Pet. 77. Patent Owner contends that factor 7 is not relevant.

Under the circumstances of this case, we determine the seventh *General Plastic* factor is neutral.

8. *Other Factors*

Neither party identifies any additional factors relevant to the exercise of our discretion under 35 U.S.C. § 314(a) that are not already encompassed by the foregoing discussion of *General Plastic* factors 1–7.

9. *Section 325(d)*

Petitioner asserts that the Second Petition is “essentially identical” to the First Petition. Pet. 73; *see also id.* at 74 (the Second Petition is “essentially a copy” of the First Petition). Petitioner further asserts that no new prior art and no new explanation have been added to the First Petition. *Id.* at 75. Petitioner does not contend that it substantially changed the arguments presented in the Second Petition, as compared with the arguments presented in First Petition. Even if Petitioner’s arguments were substantially changed, that would not avoid section 325(d). The statute is worded in the alternative and allows us to consider whether “the same prior art *or* arguments previously were presented to the Office.” 35 U.S.C. § 325(d). Because no new prior art is presented in the Second Petition, section 325(d) provides another reason to exercise our discretion in favor of non-institution.

D. *Weighing the Factors for Discretionary Non-Institution*

As discussed above, *supra* Section II.C., we find that four of the seven *General Plastic* factors (factors 1, 2, 4, and 5) weigh against institution, one of the *General Plastic* factors (factor 3) weighs strongly against institution, and the remaining two *General Plastic* factors are neutral. Upon weighing the relevant factors, we determine that non-institution is appropriate under the circumstances of this case. In particular, Petitioner’s strategic use of our decision denying institution of the First Petition, and presumably Patent Owner’s arguments, as a roadmap to remedy deficiencies in Petitioner’s case weighs heavily against institution. Petitioner does not provide an adequate explanation for why it could not have articulated its present challenges earlier and does not persuade us that institution of trial based on the Second Petition is appropriate in light of the accompanying burden to the Board and

Patent Owner. Furthermore, because the Second Petition relies on the same prior art as was previously presented to the Office in the First Petition, section 325(d) authorizes us to decline institution.

### III. CONCLUSION

For all of the reasons discussed above, we exercise our discretion under 35 U.S.C. §§ 314(a) and 325(d) not to institute *inter partes* review of claims 1–6, 11, 12, and 14–17 of the '055 patent.

### IV. ORDER

Accordingly, it is

ORDERED that the Petition is *denied* as to all challenged claims of the '055 patent, and no trial is instituted.



IPR2018-00266  
Patent 6,885,055 B2

PETITIONER:

Naveen Modi  
naveenmodi@paulhastings.com

Allan Soobert  
allansoobert@paulhastings.com

Chetan Bansal  
chetanbansal@paulhastings.com

Quadeer Ahmed  
quadeerahmed@paulhastings.com

PATENT OWNER:

Andrew Choung  
achoung@glaserweil.com

Rex Hwang  
rhwang@glaserweil.com