

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Taiwan Semiconductor Manufacturing Company Ltd. and Apple Inc.,

Petitioners,

v.

Marlin Semiconductor Ltd.,

Patent Owner.

Patent No. 9,093,473 B2

Filing Date: July 25, 2014

Issue Date: July 28, 2015

Title: SEMICONDUCTOR DEVICE
AND METHOD FOR FABRICATING THE SAME

Inter Partes Review No. IPR2025-00879

**PETITIONERS' REQUEST FOR DIRECTOR REVIEW OF DECISION
DENYING INSTITUTION OF *INTER PARTES* REVIEW**

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I. INTRODUCTION

The Director Discretionary Denial Decision (Paper 15, “Decision”) should be reversed because it fails to consider important issues of compelling public interest, is based on erroneous conclusions of law and clearly erroneous findings of material fact, and reflects significant inconsistency with discretionary denial decisions in other Board proceedings. IPR is appropriate because of at least (1) the significant national security and policy interests put at risk by the challenged patents, (2) the settled expectations of Petitioners and their customers versus any minimal expectations of the new patent owner, Marlin Semiconductor Ltd. (“MSL”), asserting a patent recently acquired in 2021, (3) the lack of any overlap between the IPR and ITC proceedings due to the inability of the ITC to invalidate patents, (4) the Examiner’s material errors, (5) the applicant’s unfair dealings contributing to the erroneous allowance, and (6) the USITC’s indefinite shut down, making it even more likely the final written decision would issue *before* the USITC issues a final determination.

First, semiconductors are the enablers that unleash innovation and drive the global economy. Petitioner Taiwan Semiconductor Manufacturing Corporation Ltd. (“TSMC”) is the world’s largest semiconductor manufacturer, reportedly providing around 90% of the world’s most advanced chips. (Ex-1147.) About 70% of its revenues are from U.S. headquartered customers. MSL’s allegations target TSMC-

made chips that are essential for U.S. national security and to the health and wellbeing of the U.S. public and industry—they underlie artificial intelligence, advanced smartphones, communication networking, autonomous vehicles, robotics, and military/defense applications. Given this extraordinarily broad impact, it is difficult to imagine a case with more compelling public interest. As Secretary Lutnick explained, “national security” is the “key” reason to “bring semiconductors home,” a goal of President Trump’s agenda: “Our national security depends on bringing our supply chain home. This is especially true when we are dealing with critical technology, computer chips that are not only important to our civilian world ... but also to our military.” (Ex-1111, 44.) President Trump also issued an executive order stating: “It is the policy of the United States to sustain and enhance America’s global AI dominance in order to promote human flourishing, economic competitiveness, and national security.” TSMC has committed \$165 billion to building manufacturing facilities in Arizona to fulfill the Administration’s national security agenda. (Ex-1119.) During a meeting with TSMC’s CEO and President Trump, Secretary Lutnick also stated that, “You’re seeing the power of Donald Trump’s presidency because TSMC, the greatest manufacturer of chips in the world, is coming to America with a \$100 billion investment.” (*Id.*)

MSL is asserting U.S. Patent No. 7,745,847 (the “’847 patent”), 9,953,880 (the “’880 patent”); 9,184,292 (the “’292 patent”); 9,147,747 (the “’747 patent”);

and 9,093,473 (the “’473 patent”) (collectively “Asserted Patents”) against Petitioners. (Ex-2109 (Notice of Institution of Investigation).) Based on these patents, MSL asks the ITC to enjoin the sale of all semiconductors made using TSMC’s 7nm-2nm process node technologies. (See Ex-1151 (Complaint), ¶¶19, 95, 99, 109, 125; see also *Certain Foreign-Fabricated Semiconductor Devices, Products Containing The Same, And Components Thereof*, Inv. No. 337-TA-1443, Third Amended Complaint (July 23, 2025).) The semiconductor chips that drive artificial intelligence systems, such as NVIDIA’s H100, are manufactured with TSMC’s 4 nm process, and NVIDIA’s latest B100 and B200 chips can only be manufactured using TSMC’s world-leading 3 nm process. (Ex-1188, at 2.) If MSL is successful in its baseless litigation campaign, it will harm vital U.S. economic and national security interests. The Office has an interest in ensuring that the patents asserted against this critical technology are valid.

Second, a balanced settled-expectations analysis weighs *against* denial. TSMC and its customers had settled expectations that the ’473 patent would not be enforced in view of the lengthy period of the prior owner’s inaction. Though the patent issued in 2015, it had never been asserted in any venue against any party until 2025 when MSL asserted it against Petitioners and the other ITC respondents. Nor is there any evidence that the patent was earlier commercialized, marked, publicly

licensed, or otherwise applied in the semiconductor technology space.¹ Unlike TSMC and its customers, MSL could not possibly have had “settled expectations.” MSL did not even exist until 2020 and only recently acquired the patent in 2021.

Third, as TSMC’s Petition and discretionary denial opposition demonstrate, the ’473 patent issued because of material errors by the Examiner and Applicant’s unfair dealings during prosecution. (*See generally* Paper 1; Paper 14 §§ II-III.)

Finally, due to the lapse in appropriations, the USITC ceased regular operations on October 1, 2025. This changes the *Fintiv* calculus, as it is now even more likely the FWD will issue before final action by the USITC. Therefore, one of the primary justifications for discretionary denial offered in the Decision, i.e., “it is unlikely that a final written decision in these proceedings will issue before the ITC trial occurs” (Paper 15, 2), warrants reconsideration.

The Administration should adjudicate whether these asserted patents were correctly issued, because that assessment has national economic and security

¹ Patent Owner claims that the ’473 patent “was issued to a direct commercial competitor in the Petitioners’ exact commercial space” (Paper 14, 32 n.9), but it provides no evidence to support this assertion and does not argue, let alone provide evidence, that the previous patent owner ever commercialized, marked, publicly licensed, or otherwise applied the patented technology in the semiconductor space.

consequences. The Board is best suited to review the patentability of the '473 patent. There is no dispute that the underlying technology, involving complicated semiconductor processing, is complex or that the technically trained PTAB judges are more experienced than a lay jury at assessing validity. And it is a lay jury that will have to assess validity because, as a matter of law, there can be no dispute that the ITC *cannot* finally adjudicate the validity of patents. Further, due to the complexities of this case—including 14 ITC respondents and two parallel district court cases that will likely continue after the ITC investigation concludes—having the Board resolve the invalidity issues in a single proceeding can provide significant efficiencies.

TSMC respectfully requests reconsideration of the Decision.

II. ARGUMENT

A. **Compelling Economic, National Security, and Other Public Interest Considerations All Warrant Reconsideration and Referral of the Petition**

The Decision discredits TSMC's detailed arguments regarding the public interest because "Petitioner's arguments are not narrowly tailored towards particular products or manufacturing methods." (Paper 15, 3.) But that is because *patent owner* failed to narrowly tailor its *accusations*. The TSMC process technologies implicated by MSL's litigation campaign include *all* products made using TSMC's 7nm through 2nm process node technologies. These nodes are used to manufacture

thousands of unique customer-designed semiconductor devices, accounting for 84% of TSMC's annual revenue—the bulk of which are purchased by companies headquartered or with a substantial presence in the U.S. About 70% of TSMC's revenues are from customers headquartered in the U.S., including AMD, Amazon, Apple, Broadcom, Google, Intel, Marvell, Meta, Microsoft, NVIDIA, Qualcomm, Tesla, and Xilinx. It is difficult to envision a more devastating scenario for these companies than to strip them of access to TSMC's accused process nodes and the accused products based on patents that should never have issued. This result would cripple these leading U.S. semiconductor companies and the U.S. economy. Indeed, the Administration's goals for U.S. semiconductor leadership would be set back by such a result.

For national security, TSMC makes semiconductors for a wide range of “military-grade” devices used by the Department of War. In particular, MSL asserts the '473 patent against semiconductor chips manufactured by TSMC that drive artificial intelligence systems and can only be manufactured using TSMC's world-leading process nodes. TSMC is an important part of the American AI-dominance strategy. (Ex-1130 (Ansys collaboration); Ex-1131 (Cadence collaboration).) AI is a “key emerging technology area[]” relevant to economic growth and “also for military applications such as autonomous unmanned systems, data processing, decision-making, and cognitive warfare.” (Ex-1156, 22-23.) TSMC's accused

technology is vital for the US's current advantage in AI. For example, NVIDIA's H100 is manufactured with TSMC's 4 nm process, and NVIDIA's latest B100 and B200 chips can only be manufactured using TSMC's 3 nm technology. (Ex-1188, 2.)

Relying on erroneously issued patents, MSL seeks to enjoin an expansive set of the same critical semiconductor technologies that President Trump and Congress sought to protect, hoping to exploit the ITC's inability to finally determine the validity of a patent and the uncertainty that is inherent in having lay jurors decide issues of patent validity. The Office has an interest in ensuring that the patents asserted against this critical technology were correctly granted in the first place. And this Office, with professionally trained Administrative Patent Judges, is uniquely positioned to decide the invalidity of this patent. The mission of this Office and U.S. national security and economic interests uniformly point to one conclusion: this Office should review the merits of TSMC's petition.

B. Petitioners' Settled Expectations Heavily Outweigh Whatever Settled Expectations MSL Purports to Have Had

A settled expectations analysis that focuses only on the expectations of MSL, without regard for the expectations of TSMC, its customers, and the public, is not balanced or fair. TSMC, its customers, and the public have settled expectations, and they heavily outweigh MSL's purported expectations. Indeed, prior decisions have given significant weight to the petitioner's economic activities that developed and expanded during an extended period of non-assertion after the patent issued.

1. *Petitioners’ Settled Expectations Favor Referral*

Although the ’473 patent issued 2015, no one asserted, commercialized, marked, publicly licensed, or otherwise applied the ’473 patent in the semiconductor technology space until MSL asserted it for the first time against Petitioners and its customers in 2025. Meanwhile, during nearly a decade of inaction by the prior patent owner, TSMC has invested billions of dollars to build fabrication facilities to continuously manufacture millions of wafers per year using the accused technology. Similarly, its customers have invested significant resources into designs that work with TSMC’s technology. The settled expectations of TSMC and its customers during the lengthy period of inactivity between issuance and assertion thus weighs heavily against discretionary denial.

TSMC’s continuous manufacture of the accused chips (requiring billions of dollars in investments) demonstrate that TSMC—and its customers who implement TSMC’s accused technology—had settled expectations that the ’473 patent would not apply to the accused technology. Indeed, the ’473 patent relates to traditional, two-dimensional planar MOSFET technology, which differs fundamentally from the accused, three-dimensional FinFET technology. Thus, Patent Owner acquired the ’473 patent only to unexpectedly shift the claimed technology into new technology areas that the patent never contemplated. These factors were not given due consideration in the Decision. (*See Intel Corp. v. Proxense LLC*, IPR2025-00327,

Paper 12, at 2-3 (June 26, 2025) (explaining it “weigh[s] against a patent owner’s claim of settled expectation” when patent was “in force for years” but not “applied in a petitioner’s particular technology space”).)

2. MSL Has No Legitimate Settled Expectations

Contrary to the findings in the Decision, MSL could not have had “strong settled expectations.” (Decision, 2.) MSL acquired the ’473 patent only recently, in 2021. The few years in which MSL held the ’473 patent cannot support any claim of “settled” expectations. It cannot seriously be argued that MSL had settled expectations merely because the ’473 patent issued in 2015—before MSL was even involved. When MSL acquired the ’473 patent in 2021, the patent had never before been litigated. MSL surely understood that asserting the patent for the first time would invite invalidity challenges.

Instead, what matters is MSL’s expectations for its 2021 investment. (*See Anaheim Gardens, L.P. v. United States*, 953 F.3d 1344, 1350-51 (Fed. Cir. 2020) (noting that “the timing” of a purchase of property and the “knowledge of the purchaser” are relevant considerations in determining whether a purchaser had reasonable investment-backed expectations).) Given the prior owner’s inaction, MSL could not have had “settled” expectations that the ’473 patent is enforceable. The Decision’s statement to the contrary is inconsistent with the Director’s earlier finding in *Shenzen Tuozhu Technology*, where years of non-enforcement weighed

against the patent owner’s claim to “settled expectations” of enforceability. (*See Shenzhen Tuozhu Tech. Co., Ltd. v. Stratasy, Inc.*, IPR2025-00438, -531, -532, -585, -611, Paper 10, at 3 (July 17, 2025) (referring based in part on evidence that the challenged patents, which had been in force for approximately 10 years, had “never been commercialized, asserted, marked, licensed, or otherwise applied” in petitioner’s “technology space”—a factor that “weigh[ed] against Patent Owner’s claim of strong settled expectations”).)

Moreover, according to the Federal Circuit, patent owners know and expect that their patents may be subject to post-issuance reconsideration proceedings by the PTO, including IPRs. (*See Celgene Corp. v. Peter*, 931 F.3d 1342, 1361-63 (Fed. Cir. 2019).) The PTO intervened in *Celgene* and advanced the position that patent owners lack a settled expectation that their patents will not be subject to post-issuance challenges, including IPRs. (*See* Brief for Intervenor at 42-43, *Celgene Corp. v. Iancu*, No. 2018-1167 (Fed. Cir. Aug. 30, 2018) (Doc. No. 43).) Having prevailed by making this argument in *Celgene*, the PTO is estopped from taking the opposite position in later proceedings, including this one. (*See Trs. in Bankr. of N. Am. Rubber Thread Co. v. United States*, 593 F.3d 1346, 1353 (Fed. Cir. 2010).)

Other areas of law that have analyzed a property owner’s extended periods of inaction routinely find the equities favor innocent actors such as TSMC. (*See* Restatement (First) of Prop. § 459 cmt. a (1993) (“Through lapse of time old rights

become obscure. A long continued use raises reasonable expectations of its continuance.”); *Anaheim Gardens, L.P. v. United States*, 953 F.3d 1344, at 1350-51 (Fed. Cir. 2020) (noting that “the timing of the purchase and knowledge of the purchaser”—especially “a sophisticated investor”—“are relevant considerations in determining whether a purchaser had reasonable investment-backed expectations” in the takings context); *Nordlinger v. Hahn*, 505 U.S. 1, at 12-13 (1992) (“[A]n existing owner rationally may be thought to have vested expectations in his property or home that are more deserving of protection than the anticipatory expectations of a new owner at the point of purchase.”).)

The settled expectations of TSMC, its customers, and the public, spanning nearly a decade, cannot be overridden merely based on MSL’s recent acquisition of the ’473 patent. MSL acquired that patent subject to TSMC’s, its customer’s, and the public’s expectations, which were reasonable in view of the prior owner’s inaction and the disparate technology covered by the ’473 patent.

C. The Decision Did Not Consider Material Errors, Applicant’s Admission of Relevant Prior Art, or Applicant’s Unfair Dealings During U.S. Prosecution, All Favoring Referral

A holistic assessment of *all evidence and arguments*—including the explicit errors by the Examiner, combined with Applicant’s unfair dealings by concealing material information concerning the Taiwanese patent prosecution from the Examiner—should warrant reconsideration and referral. Indeed, the facts here are

stronger than the errors determined to be sufficient to justify referral in other proceedings. (*See, e.g.*, Paper 14 § II-III.) The Office should use its resources to correct the Examiner's error, particularly given the critical national security considerations associated with the assertion of this clearly erroneously issued patent by the new patent holder, MSL. (*See Taiwan Semiconductor Mfg. Co. Ltd. v. Marlin Semiconductor Ltd.*, IPR2025-00847, Paper-11, at 4 (September 3, 2025) ("Although the challenged patent has been in force for fifteen years, Petitioner appears to show a material error by the Office, and it is an appropriate use of Office resources to review the potential error."); *Microsoft Corp. v. Partec Cluster Competence Ctr. GmbH*, IPR2025-00318, Paper 9, at 3 (June 12, 2025) (referring to the panel, despite a later trial date, because "Petitioner appears to show a material error by the Office and it is an appropriate use of Office resources to review the potential error").)

There can be no dispute that the Examiner erred in issuing the '473 patent claims. First, the Examiner erred in allowing the '473 patent without issuing a single Office Action despite the existence of several prior art references that disclose the patent claims.

Second, the Examiner overlooked Applicant's admitted prior art ("AAPA") and at least four prior-art references in the file wrapper (i.e., Ting, Cheng, Lan, and Lin), which disclose the claim limitations. (*See* Paper 14 § II.A.) Specifically, Ting,

Cheng, Lan, and AAPA disclose epitaxial layers backfilled into recesses adjacent to the gate. Lin and AAPA disclose photoetching a slot into the gate pattern. The Taiwanese Intellectual Property Office rejected the Taiwanese counterpart to the '473 patent based on Lin, and the applicant was able to overcome the rejection only by arguing that Lin failed to disclose forming an epitaxial layer before photoetching a slot into the gate pattern. (*See* EX-1049; EX-1050.) However, because Lin teaches photoetching the slot *after* source/drain formation, a POSITA would have readily understood that combining Lin with any one of Ting, Cheng, Lan, and AAPA would necessarily result in forming the source/drain epitaxial layer *before* slot formation, as claimed. The Examiner erred by failing to appreciate this fact. And applicant contributed to these errors by concealing from the Examiner material information—including the U.S. counterparts of Lin and Lan, both of which the applicant owned—as well as the Taiwanese Examiner's rejection. (Paper 14 § III.)

Third, the Examiner failed to identify Okuno, Mandelman, Chong, and Shin, which, alone or in combination, render the claims obvious. The facts surrounding these references are stronger than the facts in *Anthony* and in *Microsoft v. XI* where the Director denied the patent owner's request for discretionary denial and referred the case. (*See* IPR2025-00559, Paper-9 (May 27, 2025); IPR2025-00253, Paper-13 (June 25, 2025); Paper 14 § II.A.1.)

The Examiner's errors and Applicant's unfair dealings during prosecution each led to the erroneous issuance of the '473 patent and constitute material errors that weigh heavily against discretionary denial.

III. THE GOVERNMENT SHUTDOWN CHANGES THE CALCULUS UNDER *FINTIV*

One of the primary assumptions of the discretionary denial decision was that the projected final written decision due date would predate a trial in the ITC. (Decision, 2.) This assumption is no longer supported because of the lapse of appropriations on October 1, 2025, and subsequent government shutdown. The USITC has already "ceased regular operations."² By contrast, the USPTO has announced that it "will remain open and fully operational until further notice."³ As such, the trial date in the USITC is now uncertain, whereas the FWD date remains undisturbed. This change of circumstances underscores the need for Director review of the Decision. (Paper 15.)

IV. CONCLUSION

The question before the Director is whether the Office should review TSMC's petitions on the merits to determine whether erroneously issued patents are being used to threaten vital national security and economic interests. The Board is

² https://www.usitc.gov/press_room/2025_lapse_of_appropriations

³ <https://www.uspto.gov/uspto-operating-status>

optimally positioned to correct the errors and the unfair dealings by Applicant that led to the issuance of the '473 patent. A discretionary denial that prevents a substantive assessment of TSMC's petition unnecessarily risks essential U.S. economic and national security interests. Here, the discretionary denial was based on an abuse of discretion and erroneous findings of material fact. To avoid the harm that would arise from an exclusion order or injunction of critical TSMC's technologies, Petitioner respectfully requests that the Director withdraw the Discretionary Denial and refer the matter to a panel for consideration of the grounds presented.

Dated: October 3, 2025

Respectfully submitted,

/ J. Preston Long /

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CERTIFICATE OF SERVICE

The undersigned hereby certifies that a copy of the foregoing **Petitioners' Request for Director Review of Decision Denying Institution of *Inter Partes* Review** was served on October 3, 2025, via e-mail directed to counsel of record for Patent Owner at the following:

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Dated: October 3, 2025

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