UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

ADVANCED INTEGRATED CIRCUIT PROCESS LLC, Plaintiffs, vs. TAIWAN SEMICONDUCTOR MANUFACTURING COMPANY LIMITED, Defendant.	Civil Action No. 2:25-cv-324 **JURY TRIAL DEMANDED**

COMPLAINT FOR PATENT INFRINGEMENT

This is an action for patent infringement in which Plaintiff Advanced Integrated Circuit Process LLC ("AICP" or "Plaintiff") makes the following allegations against Defendant Taiwan Semiconductor Manufacturing Company Limited ("TSMC" or "Defendant") for infringing the Patents asserted in this matter.

PARTIES

1. Plaintiff AICP is a Texas limited liability company with its principal place of business at 825 Watters Creek Blvd, Suite 250, Allen, Texas 75013.

2. Defendant TSMC is a company organized and existing under the laws of Taiwan. It has a principal place of business located at 8, Li-Hsin Rd. 6, Hsinchu Science Park, Hsinchu 300-096, Taiwan, R.O.C. TSMC engages in business in Texas. Pursuant to § 17.044 of the Texas Civil Practice & Remedies Code, TSMC has designated the Secretary of State as its agent for service of process and may be served with process through the Secretary of State. The Secretary of State may forward service to TSMC at its home office address located at 8, Li-Hsin Rd. 6, Hsinchu Science Park, Hsinchu 300-78, Taiwan, R.O.C. Alternatively, TSMC may be served with

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process by serving the Registered Agent of its wholly owned subsidiary TSMC North America, Steven A. Schulman, at 2851 Junction Avenue, San Jose, CA 95134.

JURISDICTION AND VENUE

3. This Court has subject matter jurisdiction pursuant to 28 U.S.C. §§ 1331 and 1338(a) because this action arises under the patent laws of the United States, 35 U.S.C. §§ 1 *et seq.*

4. TSMC is subject to this Court's specific personal jurisdiction pursuant to due process and the Texas Long Arm Statute because it directly and/or through subsidiaries and agents makes, imports, ships, distributes, offers for sale, sells, uses, and advertises (including offering products and services through its websites) infringing semiconductor devices in the United States, Texas, and this District.

5. TSMC is also subject to this Court's specific personal jurisdiction pursuant to due process and the Texas Long Arm Statute because it directly and/or through its subsidiaries and agents induced its direct and indirect customers to commit acts of infringement in the United States, Texas, and this District.

6. TSMC is further subject to this Court's specific personal jurisdiction pursuant to due process and the Texas Long Arm Statute because it directly and/or through its subsidiaries and agents contributed to its direct and indirect customers' acts of infringement in the United States, Texas, and this District.

7. TSMC's subsidiaries and agents include at least TSMC Technology, Inc., which is a wholly owned subsidiary of TSMC that is registered in Texas as a foreign corporation, with a registered agent at 2435 North Central Expressway, Suite 600, Richardson, Texas, and TSMC North America, which is a wholly owned subsidiary of TSMC registered in Texas as a foreign corporation with the Office of the Comptroller. On information and belief, TSMC North America

maintains a physical place of business at 11921 North Mopac Expressway, Austin, Texas 78759.

8. The "Business Activities" for TSMC North America are "[s]ales and marketing of integrated circuits and semiconductor devices" and "[e]ngineering support activities" for TSMC Technology, Inc. TSMC North America was incorporated in 1988, and TSMC Technology, Inc. was incorporated in 1996. *See* 2023 TSMC Annual Report.[1]

9. TSMC directly, through its subsidiaries and agents, and through its direct and indirect customers has purposefully and voluntarily placed infringing semiconductor products in the stream of commerce knowing, expecting, and intending them to be sold in and purchased and used by consumers in the United States, Texas, and this District.

10. TSMC is traded on the New York Stock Exchange. For at least the last five years, TSMC has derived most of its net revenue from contracts with companies headquartered in the United States. In 2023, 65% of TSMC's net revenue was derived from United States-based contracts. *See* 2023 TSMC Annual Report. That figure was 66% in 2022, 64% in 2021, 61% in 2020, and 59% in 2019. *See* 2022 TSMC Annual Report; 2021 TSMC Annual Report; 2020 TSMC Annual Report; 2019 TSMC Annual Report.

11. Similarly, much of TSMC's net revenue is attributable to the use of its products in consumer electronics, such as smartphones and other smart devices. In 2024, "Smartphone," "Internet of Things," "Digital Consumer Electronics," and "Automotive" accounted for 47% of TSMC's net revenue.[2]

12. In its 2023 Form 20-F, TSMC identified Advanced Micro Devices, Inc., Broadcom

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[1] All annual reports referenced herein are available at https://investor.tsmc.com/english/annual-reports.

[2] *2024 Fourth Quarter Earnings Conference* at 7 (Jan. 16, 2025), available at https://investor.tsmc.com/english/encrypt/files/encrypt_file/reports/2025-01/244ed7a603f240c2aaf09c21b22e9356beec897d/4Q24%20Presentation%20%28E%29.pdf.

Limited, Infineon Technologies AG, Intel Corporation, MediaTek Inc., Nvidia Corporation, NXP Semiconductors N.V., and Qualcomm Inc. as among its major customers. Each of these companies maintains a physical place of business in Texas, and most of them are nationwide companies headquartered in the United States. The foreign entities (Infineon Technologies, MediaTek, and NXP) maintain substantial operations in the United States. Broadcom, Intel, MediaTek, NXP, and Qualcomm have been identified in TSMC's Form 20-F as among its major customers for at least the last five years.

13. On information and belief, all of these TSMC customers make, import, ship, distribute, offer for sale, sell, use, and/or advertise (including offering products and services through websites) TSMC's infringing semiconductor products (or products incorporating TSMC's infringing semiconductor products) in the United States, Texas, and this District.

14. Moreover, at least Broadcom, Intel, MediaTek, NXP, and Qualcomm supply infringing semiconductor products to national end-device makers, like Apple and Samsung, who, in turn, directly or indirectly make, import, ship, distribute, offer for sale, sell, use, and/or advertise (including offering products and services through websites) products incorporating TSMC's infringing semiconductor products in the United States, Texas, and this District.

15. In fact, Apple is one of TSMC's major customers. Apple is one of the largest consumer electronics companies in the United States and it maintains substantial operations and physical places of business throughout Texas. In a March 13, 2024, press release, Apple described TSMC as a "key manufacturing partner[]." Apple CEO Tim Cook has personally attended ceremonies in the United States to commemorate TSMC's building of production facilities within the United States.

16. TSMC's targeted effort to sell its infringing semiconductor devices into the United

States, Texas, and this District is further underscored by its investment in United States-based production facilities. Since 2010, TSMC's wholly owned subsidiary TSMC Washington, LLC, which was incorporated in 1996, has operated a foundry for TSMC customers in Washington State. Between 2020 and 2024, TSMC announced investments of $65 billion to build three advanced semiconductor fabrication facilities in Arizona. TSMC Arizona Corporation, a wholly owned subsidiary of TSMC, was incorporated in 2020. The "Business Activities" for both TSMC Washington, LLC and TSMC Arizona Corporation are "Manufacturing, sales, and testing of integrated circuits and other semiconductor devices." 2023 TSMC Annual Report.[3]

17. TSMC has manufactured several generations of semiconductor devices for Apple, which Apple then incorporates into its consumer end-devices, such as iPhones and iPads. For example, TSMC manufactures the Apple A15 Bionic chip, discussed below, which is used in at least Apple's iPhone 13, iPhone SE, iPhone 14, iPad Mini, and Apple TV products.

18. Using its vast, national distribution channels, Apple, directly or indirectly, makes, imports, ships, distributes, offers for sale, sells, uses, and advertises (including offering products and services through its websites) products incorporating TSMC's infringing semiconductor products in the United States, Texas, and this District.

19. TSMC's relationship and business with Apple is sufficient to establish specific personal jurisdiction over TSMC in Texas and this District.

20. The nature of TSMC's business, which it describes as "manufactur[ing] semiconductors using our manufacturing processes for our customers based on proprietary integrated circuit designs provided by them," *see* 2023 TSMC Form 20-F, also requires that TSMC

[3] TSMC Arizona now manufactures FinFET semiconductor devices for Apple. *TSMC Begins Producing 4-Nanometer Chips in Arizona, Raimondo Says*, Reuters (Jan. 10, 2025), available at https://www.reuters.com/technology/tsmc-begins-producing-4-nanometer-chips-arizona-raimondo-says-2025-01-10/.

form close relationships with its customers and actively assist them in the development and manufacture of their products. Indeed, TSMC identifies "closely interact[ing] with customers" and "enhanc[ing] the quality of customer collaboration" as among its goals. TSMC 2023 Annual Report. To facilitate this process, TSMC has "established a dedicated customer service team to act as the primary contact window, facilitating seamless communication and coordination with customers in areas such as product design, mask making, wafer manufacturing, and 3DFabric® technology services." And it conducts "quarterly business/technical reviews," "feedback reviews," and "surveys" with its customers. *Id.* In short, as TSMC itself described, "the key to TSMC's success has always been to enable its customers' success." 2023 TSMC Annual Report.

21. As an example, for decades, TSMC has enjoyed a close partnership with Freescale Semiconductors, Inc., which merged with NXP in 2015. In 2004, TSMC and Freescale announced "an agreement to jointly develop a new generation" of advanced chip-making technology. That "joint development project" was "located at Freescale's Dan Noble Center in Austin, Texas, USA." TSMC touted this collaboration with Freescale as among its major R&D projects in its 2006 Annual Report.

22. The collaboration between these companies remained alive and well in 2023. On May 16, 2023, NXP "announced its collaboration with TSMC to deliver the industry's first automotive embedded MRAM (Magnetic Random Access Memory) in 16 nm FinFET technology." [4] NXP explicitly acknowledged the longevity of this partnership, stating that "NXP's successful collaboration with TSMC spans decades and has consistently delivered high quality embedded memory technology . . . ."

23. For many years, the United States and its consumer electronics market has been a

[4] FinFET (Fin Field-Effect Transistor) refers to a type of three-dimensional transistor. All TSMC 16nm and below process nodes utilize FinFET technology.

key driver of TSMC's business. TSMC knows this and has worked closely with various technology companies based in the United States to win and maintain their business. TSMC works hard and takes steps to ensure successful integration of its infringing semiconductor products into its direct and indirect customers' products. It makes itself extensively available to its customers, including through various resources and assets based in the United States and Texas.

24. TSMC also advertises and actively promotes its semiconductor devices to customers in the United States and in Texas. In 2024, TSMC hosted in-person technology workshops across the United States, including a "TSMC 2024 Technology Workshop" held in Austin, Texas on May 2.[5] This event offered customers and partners the opportunity to "learn about" various TSMC products, including "TSMC's industry-leading HPC, smartphone, IoT, and automotive platform solutions"; "TSMC's advanced technology progress on 5nm, 4nm, 4nm, 2nm processes and beyond"; and "TSMC's specialty technology breakthroughs on ultra-low power, RF, embedded memory, power management, sensor technologies, and more."[6]

25. The promotional materials for TSMC's 2024 Technology Symposium in Austin make clear that the event was held by Taiwan Semiconductor Manufacturing Company Limited, as indicated in the following image:[7]

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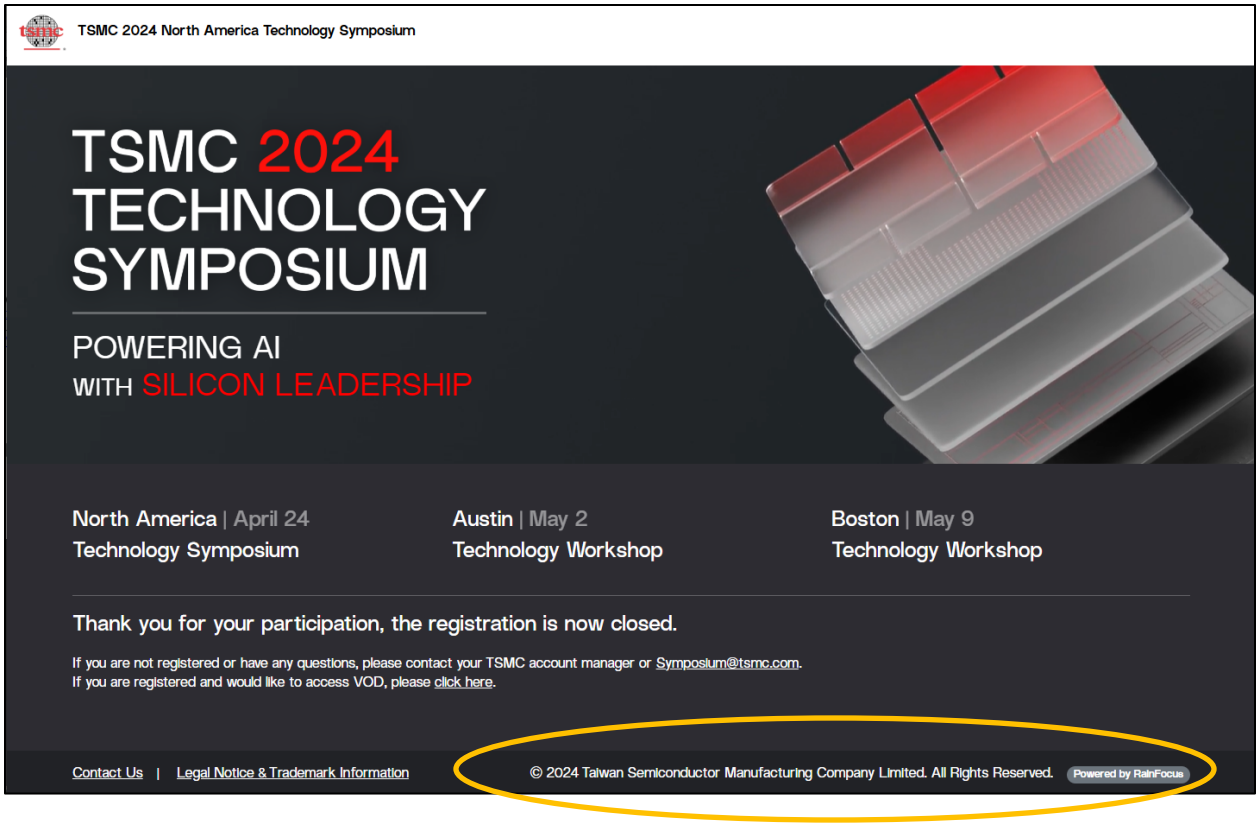
[5] *See TSMC 2024 Technology Workshop – Austin* (last accessed Feb. 13, 2025), available at https://marketingeda.com/event/tsmc-2024-technology-workshop-austin/.

[6] *TSMC 2024 Technology Symposium: Powering AI With Silicon Leadership*, available at https://web.archive.org/web/20240529025256/https://www.tsmc.com/static/english/campaign/Symposium2024/index.htm.

[7] *TSMC 2024 North America Technology Symposium* (last accessed Feb. 13, 2025), available at https://reg.rainfocus.com/flow/tsmc/tsna24/attlanding/page/landing.



26. TSMC also recruits prospective employees in the United States and in Texas, both through its website and at in-person events. For example, TSMC hosted a "Career Talk" at Texas A&M University on January 23, 2025, at which students could "network with [TSMC] and explore the global opportunities at TSMC."[8] TSMC is actively recruiting at Texas A&M as part of its "2025 Spring Campus Recruitment" campaign, as indicated in TSMC's following post on LinkedIn:

[8] *Texas A&M University Career Talk* (last accessed Feb. 13, 2025), available at https://careers.tsmc.com/en_US/events/Eventdetail?jobId=15233&source=LinkedIn%C2%A0&tags=AZCampus_Pro_Y25W501_518_ep_LI.

TSMC
641,640 followers
2d

Announcing TSMC's 2025 Spring Campus Recruitment!

We're hitting the road again, and we can't wait to meet the next wave of innovators and tech enthusiasts. Join us at our campus events to explore exciting career opportunities and see why TSMC is the perfect place to launch your career in technology.

Check out the calendar for all our campus visit dates. We look forward to connecting with you soon!

Event Registration: https://lnkd.in/gqzZN4vF
U.S. Opportunities: https://lnkd.in/gpxiK3BR

#TSMC #CampusRecruitment #Spring2025 #JoinUs

27. TSMC's website lists numerous employment opportunities in Texas related to the design and engineering of semiconductor devices, including those manufactured at FinFET

process nodes.[9] For example, in Texas, TSMC is seeking to hire an ASIC Design Methodology and Flow Application Engineer with experience working "on leading edge process technology (7nm/5nm or more advanced)" to "support customers on ASIC Physical Design Implementation on TSMC's advanced process technologies (5nm/3nm/2nm/Angstrom-class nodes)," "[e]ngage in Design Methodology and flow support on advanced technology nodes (FinFET, nanosheet/GAA)," and "[p]rovide design flow support for TSMC customers in North America including training, issue resolution, and solution development/deployment."[10] In Texas, TSMC is also seeking to hire an Engineer/Senior Engineer in Physical Design with, at minimum, "experience with TSMC N16 [16-nanometer] or below technology," but preferably experience with "TSMC N5 [5-nanometer] and below technology."[11] TSMC's operations in Texas involve design, flow support, issue resolution, and solution development/deployment for FinFET process nodes for TSMC customers in North America.

28. TSMC employees in Texas have likewise posted about their work on TSMC's FinFET semiconductor devices on LinkedIn. For example, one TSMC employee based in Austin, Texas has described her work for TSMC in Austin as involving "20nm, 16nm, 10nm, 7nm, 5nm and 3nm FinFET process" nodes:[12]

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[9] *See TSMC Careers* (last accessed Feb. 14, 2025), available at https://careers.tsmc.com/en_US/careers/SearchJobs/?1277=13220&1277_format=1380&542=5701&542_format=486&listFilterMode=1&jobRecordsPerPage=10&.

[10] *ASIC Design Methodology & Flow Application Engineer* (last accessed Feb. 13, 2025), available at https://careers.tsmc.com/en_US/careers/JobDetail?jobId=13540.

[11] *Engineer/Senior Engineer, Physical Design* (last accessed Feb. 13, 2025), available at https://careers.tsmc.com/en_US/careers/JobDetail?jobId=13534.

[12] *LinkedIn Profile of Sumana Mitra* (last accessed Feb. 14, 2025), available at https://www.linkedin.com/in/sumanamitra.

Experience

TSMC

11 years 5 months

Principal Engineer

Jun 2021 - Present · 3 years 9 months

Austin, Texas, United States

Senior Layout Engineer

Jul 2017 - Present · 7 years 8 months

Austin, Texas

Layout Engineer

Oct 2013 - Present · 11 years 5 months

High speed custom SRAM memory compiler layout using latest technology (20nm, 16nm ,10nm ,7nm ,5nm and 3nm FinFET process with dual pattern)

Using Cadence Virtuoso 18 VXL with Pcell

29. Another TSMC engineer in Austin, Texas has posted on LinkedIn regarding their work on TSMC's 28nm and 16nm processes:[13]

[13] *LinkedIn Profile of Sharath Chandra Uppu* (last accessed Feb. 14, 2025), available at https://www.linkedin.com/in/sharath-chandra-uppu-b8a65320.

Experience

TSMC

16 years 11 months

Engineer

Jun 2011 - Present · 13 years 9 months

Austin, Texas Area

Developing custom and compiler memories in 28nm to 16nm TSMC process.
Iam responsible for Circuit Design, Characterization, Developing compiler code, IP quality check.
1. Co-lead self timed double pump SRAM compiler in 16nm.
Responsible for building critical path netlist, characterization & compiler development.
2. lead ROM compiler in ROM compiler in 20nm.
Responsible for circuit design, char, compiler development. This was my first project as lead. This project was built from scratch to meet low power specs.
3. Co-lead clock based double pump custom SRAM in 28nm.
Responsible for circuit design and char.

Show less

30. With TSMC's knowledge, TSMC's customers, directly or indirectly, sell and offer to sell products incorporating TSMC's infringing semiconductor products throughout the United States, Texas, and this District—products that TSMC helps to design and manufacture. In working with and supplying its customers, TSMC knew and desired that its infringing semiconductor products would reach throughout the United States, including Texas (the second most populous state in the United States) and this District.

31. TSMC also directly and/or through its agents and subsidiaries offers to sell, sells, imports, and/or advertises its infringing semiconductor products throughout the United States, including Texas and this District.

32. TSMC therefore knows, expects, intends, and desires that its infringing semiconductor products, and products containing its infringing semiconductor products, will be sold in the United States, Texas, and this District. At a minimum, on information and belief and as

alleged herein, TSMC has purposefully conducted business in the United States related to the claims asserted in this action, such that this Court may exercise personal jurisdiction over TSMC at least by virtue of Federal Rule of Civil Procedure 4(k)(2). On information and belief, TSMC infringes the asserted patents by practicing the claimed methods as part of its FinFET manufacturing process at its Arizona fab. For example, on TSMC's Q4 2024 earnings call, Chairman and CEO C.C. Wei explained that TSMC already manufactures FinFET semiconductor devices in the United States and will expand such manufacturing going forward:

> Building on the successful result of our earlier engineering wafer production, we were able to pull ahead the production schedule of our first fab in Arizona. Our first fab has already entered the high-volume production in Q4 '24, utilizing N4 [4-nanometer] process technology with a yield comparable to our fabs in Taiwan. We expect a smooth ramp-up-process.
>
> Our plans for the second fab and third fab in Arizona are also on track. These fabs will utilize even more advanced technologies such as our N3 [3-nanometer], N2 [2-nanometer] and A16, based on customers' needs. Thus, TSMC will continue to play a critical and integral role in enabling our customers' success while remaining a key partner and enabler of the US semiconductor industry.[14]

33. TSMC also offers to sell and sells in the United States semiconductor devices that it produced by practicing the claimed methods.

34. Venue is proper against Defendant TSMC in this District pursuant to 28 U.S.C. § 1391(c)(3) and 28 U.S.C. § 1400(b). TSMC is not a resident of the United States and may be sued in any district, including this District.

THE PATENTS

35. This complaint asserts causes of action for infringement of United States Patent No. 7,632,751 ("the '751 Patent"), United States Patent No. 7,439,623 ("the '623 Patent"), United

[14] *Edited Transcript, 2330.TW – Q4 Taiwan Semiconductor Manufacturing Co Ltd Earnings Call* at 5–6, available at https://investor.tsmc.com/english/encrypt/files/encrypt_file/reports/2025-01/84aeb15bbe33894365d33f52e027c5268ba95dcf/TSMC%204Q24%20Transcript.pdf.

States Patent No. 8,329,572 ("the '572 Patent"), and United States Patent No. 8,884,373 ("the '373 Patent") (collectively "the Asserted Patents").

36. Each of the Asserted Patents claims patent-eligible subject matter and is a valid and enforceable U.S. patent, the entire right, title, and interest to which AICP owns by assignment.

U.S. Patent No. 7,632,751

37. U.S. Patent No. 7,632,751 is entitled "Semiconductor Device Having Via Connecting Between Interconnects" and was issued by the U.S. Patent and Trademark Office (the "PTO") to inventor Takeshi Harada on December 15, 2009. Plaintiff holds by assignment all rights and title to the '751 Patent, including the sole and exclusive right to bring a claim for its infringement. A copy of the '751 Patent is attached to this complaint as **Exhibit A**.

38. The '751 Patent generally claims a method for fabricating a semiconductor device.

39. TSMC is not licensed to practice the '751 Patent in either an express or implied manner, nor does it enjoy or benefit from any rights in or to the '751 Patent whatsoever.

U.S. Patent No. 7,439,623

40. U.S. Patent No. 7,439,623 is entitled "Semiconductor Device Having Via Connecting Between Interconnects" and was issued by the PTO to inventor Takeshi Harada on October 21, 2008. Plaintiff holds by assignment all rights and title to the '623 Patent, including the sole and exclusive right to bring a claim for its infringement. A copy of the '623 Patent is attached to this complaint as **Exhibit B**.

41. The application preceding the '623 Patent, US11/000,904, was published on June 9, 2005, as U.S. Patent Application No. US 2005/0121792 A1.

42. The '623 Patent generally claims a structure for a semiconductor device.

43. To the extent applicable, Plaintiff has complied with 35 U.S.C. § 287(a) with

respect to the ’623 Patent.

44. TSMC is not licensed to practice the ’623 Patent in either an express or implied manner, nor does it enjoy or benefit from any rights in or to the ’623 Patent whatsoever.

U.S. Patent No. 8,329,572

45. U.S. Patent No. 8,329,572 is entitled “Semiconductor Device and Method for Fabricating the Same” and was issued by the PTO to inventor Shunsuke Isono on December 11, 2012. Plaintiff holds by assignment all rights and title to the ’572 Patent, including the sole and exclusive right to bring a claim for its infringement. A copy of the ’572 Patent is attached to this complaint as **Exhibit C**.

46. The ’572 Patent generally claims a method for fabricating a semiconductor device.

47. TSMC is not licensed to practice the ’572 Patent in either an express or implied manner, nor does it enjoy or benefit from any rights in or to the ’572 Patent whatsoever.

U.S. Patent No. 8,884,373

48. U.S. Patent No. 8,884,373 is entitled “Semiconductor Device” and was issued by the PTO to inventors Yoshihiro Sato, Hideyuki Arai, and Takayuki Yamada on November 11, 2014. Plaintiff holds by assignment all rights and title to the ’373 Patent, including the sole and exclusive right to bring a claim for its infringement. A copy of the ’373 Patent is attached to this complaint as **Exhibit C**.

49. The ’373 Patent generally claims a structure of a semiconductor device.

50. To the extent applicable, Plaintiff has complied with 35 U.S.C. § 287(a) with respect to the ’373 Patent.

51. TSMC is not licensed to practice the ’373 Patent in either an express or implied manner, nor does it enjoy or benefit from any rights in or to the ’373 Patent whatsoever.

TSMC'S USE OF AICP'S PATENTED TECHNOLOGY

52. TSMC manufactures semiconductor devices at different process nodes, including 3-nanometer, 5-nanometer, 16-nanometer, and 28-nanometer process nodes. The semiconductor devices TSMC manufactures are, in turn, incorporated by TSMC's customers into third-party electronic components and products, such as computer chips, mobile devices, and computer graphics cards.

53. For example, on information and belief, TSMC has manufactured and continues to manufacture the BCM6715 semiconductor device for Broadcom using a 16-nanometer FinFET manufacturing process node.[15]

54. On information and belief, TSMC has manufactured and continues to manufacture the Qualcomm WCN7851 chip integrated into the Qualcomm Snapdragon 8 Gen 3 using a 16-nanometer FinFET manufacturing process node.

55. Hereafter, the term "Accused FinFET Products" refers to all semiconductor devices TSMC manufactures by practicing the claimed method of the '751 and '623 Patents, including the BCM6715, the WCN7851, and all other semiconductor devices that TSMC manufactures at its 3-, 4-, 5-, 6-, 7-, 10-, 12-, and 16-nanometer FinFET process nodes.

56. TSMC has additionally manufactured and, on information and belief, continues to manufacture the Apple A18 Bionic semiconductor device (the "A18 Bionic") for Apple using a 3-nanometer FinFET manufacturing process node.[16]

57. TSMC has also manufactured and, on information and belief, continues to

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[15] *See, e.g.*, Telran Co., *SFP Fiber Router Wi-Fi 6 Support Mesh* at 2 (last accessed Feb. 13, 2025), available at https://heb.telran.co.il/images/EX-5401-B1_ENG_DS_UM_2022_2.pdf.

[16] *See, e.g.*, Apple Insider, *Compared: A18 vs A18 Pro—Breaking Down What's Powering iPhone 16* (last accessed Feb. 11, 2025), available at: https://appleinsider.com/articles/24/09/11/compared-a18-vs-a18-pro----breaking-down-whats-powering-iphone-16.

manufacture, the Apple A15 Bionic semiconductor device (the "A15 Bionic") for Apple using a 5-nanometer FinFET manufacturing process node.[17]

58. Hereafter, the term "Accused 3-, 4-, and 5-Nanometer Products" refers to all semiconductor devices TSMC manufactures by practicing the claimed method of the '572 Patent, including the Apple A18 Bionic, the Apple A15 Bionic, and all other semiconductor devices TSMC manufactures at its 3-, 4-, and 5-nanometer FinFET process nodes.

59. TSMC has also manufactured and, on information and belief, continues to manufacture the Snapdragon S4 Plus MSM8960 ("MSM8960") semiconductor device for Qualcomm.

60. TSMC has manufactured and continues to manufacture the MSM8960 for Qualcomm using a 28-nanometer manufacturing process node.[18]

61. Hereafter, the term "Accused 28-Nanometer Products" refers to all products manufactured by TSMC by practicing the '373 Patent, including at least all semiconductor devices manufactured according to TSMC's 28-nanometer process node and all electronic components and products incorporating such semiconductor devices and processes.

COUNT ONE
INFRINGEMENT OF U.S. PATENT NO. 7,632,751

62. Plaintiff repeats and incorporates by reference each preceding paragraph as if fully set forth herein and further states:

63. TSMC has directly infringed and continues to directly infringe the '751 Patent

[17] *See, e.g.*, UnitedLex, *Revealing the Hidden Innovations within the A15 Bionic SoC Found in the iPhone 13* (last accessed Feb. 7, 2025), available at: https://unitedlex.com/insights/revealing-the-hidden-innovations-within-the-a15-bionic-soc-found-in-the/.
[18] *See, e.g.*, NotebookCheck, *Qualcomm Snapdragon S4 Plus MSM8960* (last accessed Feb. 7, 2025), available at https://www.notebookcheck.net/Qualcomm-Snapdragon-MSM8960-SoC.86868.0
.html.

under 35 §§ U.S.C. 271(a) and/or 271(g), either literally or through the doctrine of equivalents, by making, using, offering to sell, selling, and/or importing in or into the United States Accused FinFET Products manufactured by practicing the method claimed in the ’751 Patent as described below, including at least claim 1. By way of example, such Accused FinFET Products include the BCM6715 manufactured, used, sold, offered for sale, and/or imported by TSMC.

64. Claim 1 is illustrative of the claims of the ’751 Patent. It recites “[a] method for fabricating a semiconductor device comprising the steps of:

(a) forming a first interconnect on a semiconductor substrate;

(b) forming a first insulating film on the first interconnect;

(c) forming in the first insulating film, a via hole connected to the first interconnect, a dummy hole which is arranged so as to be incapable of having current flow therethrough, and an interconnect trench connected to the via hole and the dummy hole; and

(d) depositing a conductive material in the via hole, the dummy hole and the interconnect trench, thereby forming a via, a dummy via and a second interconnect.”

65. TSMC manufactures the exemplary BCM6715 semiconductor devices by practicing every step of this claimed method.[19]

66. The BCM6715 is a semiconductor device fabricated through a method that comprises forming a first interconnect on a semiconductor substrate and forming a first insulating film on the first interconnect. In the BCM6715, the first interconnect is formed with a polysilicon layer and a first insulating film, made of SiO_2, is then formed on the first interconnect.

67. The method for fabricating the BCM6715 further comprises forming a via hole in the first insulating film (made of SiO_2) connected to the first interconnect (polysilicon layer).

68. The method for fabricating the BCM6715 further comprises forming a dummy hole

[19] This description of infringement is illustrative and not intended to be an exhaustive or limiting explanation of every manner in which the BCM6715 infringes.

in the first insulating film that is arranged so as to be incapable of having current flow therethrough. Specifically, dummy holes formed in the first insulating film of the BCM6715 are connected to a dummy interconnect (metal layer), which is a floating connection disconnected from any active circuitry. Because the dummy interconnect is not connected to any active circuitry, the dummy holes are incapable of having current flow through them.

69. The method for fabricating the BCM6715 further comprises forming in the first insulating film an interconnect trench that is connected to the via hole and the dummy hole.

70. Finally, the method for fabricating the BCM6715 further comprises depositing copper, a conductive material, in the via hole, the dummy hole, and the interconnect trench, thereby forming a via, a dummy via, and a second interconnect.

71. TSMC fabricates the BCM6715 by practicing every step of the method of Claim 1 of the ’751 Patent.

72. Because the BCM6715 is fabricated by practicing the method claimed by the ’751 Patent, the BCM6715 is an infringing semiconductor device.

73. On information and belief, all semiconductor devices TSMC manufactures at its 16-nanometer FinFET process node likewise infringe in substantially the same manner as the BCM6715 because the method claimed by the ’751 Patent is a necessary part of the 16-nanometer FinFET manufacturing process. For example, on information and belief, TSMC’s 16-nanometer FinFET process node variants share lithographic spacing, aerial margins, and overlap requirements, collectively known as design rules or ground rules. As a result of these common ground rules, TSMC’s manufacturing process infringes the ’751 Patent in substantially the same way for all Accused FinFET Products that it manufactures at its 16-nanometer FinFET process nodes, regardless of process node variant.

74. Further, all semiconductor devices manufactured at TSMC's 16-nanometer through 3-nanometer FinFET process nodes likewise infringe in substantially the same manner as the BCM6715 because the method claimed by the '751 Patent is a necessary part of the FinFET manufacturing process. On information and belief, TSMC uses the method claimed by the '751 Patent to create dummy vias across all its FinFET process nodes. For example, such dummy vias are often created to ensure consistent spacing between fins, a feature common to all FinFET devices. And ensuring consistent spacing becomes more difficult—making the creation of dummy vias through the patented process more important—as FinFET devices are produced at smaller process nodes.

75. In addition to directly infringing the '751 Patent by making, using, selling, offering to sell, and/or importing Accused FinFET Products into the United States, TSMC likewise has induced infringement of the '751 Patent under 35 U.S.C. § 271(b). TSMC has actively encouraged its customers (including at least Broadcom) to directly infringe the '751 Patent by using, selling, offering for sale, and/or importing Accused FinFET Products (including at least the BCM6715) and electronic devices and products containing Accused FinFET Products. TSMC actively encouraged its customers to employ TSMC's infringing process nodes to manufacture their semiconductor devices, electronic components, and products by and through TSMC's sales, engineering, and technical marketing efforts and staff. TSMC's sales engineers and technical marketing staff interface with TSMC's customers and potential customers to obtain "design wins" (*i.e.*, contracts with customers) to develop and manufacture infringing chips. In attempting to obtain these "design wins," TSMC's sales engineers and technical marketing staff tout the technological and economic benefits of the infringing chips and actively encourage use of the infringing chips. TSMC has known that their customers' acts constituted direct infringement of at

least one claim of the ’751 Patent since at least as of the filing of this Complaint. As a result of TSMC’s active encouragement and intentional inducement, its customers have committed acts directly infringing the ’751 Patent.

76. TSMC has had actual knowledge of the ’751 Patent since at least November 3, 2009, when the examiner cited U.S. Patent Application No. 2009/0045522, from which the ’751 Patent issued, as a reference during the prosecution of TSMC’s U.S. Patent Application No. 11/457,032. TSMC’s continued infringement following that date, despite its knowledge of the ’751 Patent, was intentional and deliberate and willful.

77. TSMC’s direct, induced, and willful infringement of the ’751 Patent has caused, and will continue to cause, substantial damage to AICP. Therefore, AICP is entitled to an award of damages adequate to compensate for TSMC’s infringement, but not less than reasonable royalty, together with pre-and post-judgment interest, attorneys’ fees, and costs as fixed by the Court under 35 U.S.C. §§ 284 and 285.

COUNT TWO
INFRINGEMENT OF U.S. PATENT NO. 7,439,623

78. Plaintiff repeats and incorporates by reference each preceding paragraph as if fully set forth herein and further states:

79. TSMC has directly infringed and continues to directly infringe the ’623 Patent under 35 § U.S.C. 271(a), either literally or through the doctrine of equivalents, by making, using, selling, offering to sell, and/or importing in or into the United States Accused FinFET Products and other products made by practicing and by performing processes that result in practicing the ’623 Patent as described below, including at least claim 1.

80. By way of example, such Accused FinFET Products include the WCN7851 manufactured, used, sold, offered for sale, and/or imported by TSMC.

81. For example, Claim 1 is illustrative of the claims of the ’623 Patent. It recites “[a] semiconductor device comprising:

a semiconductor substrate;

a first interconnect formed on the semiconductor substrate;

a first insulating film formed on the first interconnect;

a second interconnect formed on the first insulating film;

a via formed through the first insulating film and connecting between the first and second interconnects; and

a dummy via connected to the second interconnect,

wherein the dummy via is made of a conductive film and is arranged so as to be incapable of having current flow therethrough;

the second interconnect and the via form a dual damascene structure,

and the second interconnect and the dummy via form a dual damascene structure.”

82. The exemplary WCN7851 semiconductor device manufactured by TSMC meets every element of this claim.[20]

83. The WCN7851 is a semiconductor device that comprises a semiconductor substrate, a first copper interconnect formed on the semiconductor substrate, a first insulating film of silicon dioxide and silicon nitride formed on the first interconnect, and a second copper interconnect formed on the first insulating film of silicon dioxide and silicon nitride. It further comprises a copper via formed through the first insulating film of silicon dioxide and silicon nitride, which connects the first and second copper interconnects, and a copper dummy via connected to the second copper interconnect.

[20] This description of infringement is illustrative and not intended to be an exhaustive or limiting explanation of every manner in which the WCN7851 infringes.

84. In the WCN7851, the dummy via is made of copper, a conductive material, and is positioned so that current cannot flow through it.

85. In the WCN7851, the second interconnect and the via form a dual damascene structure, and the second interconnect and the dummy via also form a dual damascene structure.

86. Because the WCN7851 practices at least Claim 1 of the '623 Patent, all semiconductor devices manufactured according to TSMC's 16-nanometer FinFET process node likewise infringe because infringement occurs as a result of its manufacturing process. For example, on information and belief, TSMC uses common MIS transistor structures for all semiconductor devices that it manufactures at its 16-nanometer process node. TSMC makes available to its customers standard cell libraries for integrated chip design, customization, and manufacture. These standard cell libraries, on information and belief, implement the claimed inventions.[21] Variants of TSMC's 16-nanometer process node share lithographic spacing, aerial margins, and overlap requirements, collectively known as design rules or ground rules. As a result of these common ground rules, all Accused FinFET Products infringe the '623 Patent in the same manner as the WCN7851 does.

87. Further, all semiconductor devices manufactured at TSMC's 16-nanometer through 3-nanometer FinFET process nodes likewise infringe in substantially the same manner as the WCN7851 because infringement occurs as a result of TSMC's FinFET manufacturing process. As FinFET nodes progress, cost and yield considerations favor maintaining as much process continuity across FinFET process nodes as possible, and this continuity across TSMC's FinFET

[21] For example, TSMC's 2023 annual report notes that "[s]ilicon intellectual property (IP) is the basic building block of IC designs" and "TSMC and its alliance partners offer customers a rich portfolio of reusable Ips, which are building blocks for many circuit designs." *TSMC Annual Report 2023* at 102 (last accessed Feb. 7, 2025), available at https://investor.tsmc.com/sites/ir/annual-report/2023/2023%20Annual%20Report_E.pdf.

process nodes results in infringement of the ’623 Patent by all devices TSMC manufactures at those nodes. This continuity includes basic device aspects such as spacers, as well as performance enhancement techniques such as stress layers. This is evidenced by those nodes’ common technical specifications. For example, all of the accused FinFET process nodes manufacture transistors with common structures essential to forming FinFET transistors.

88. In addition to directly infringing the ’623 Patent by making, using, selling, offering to sell, and/or importing Accused FinFET Products into the United States, TSMC likewise has induced infringement of the ’623 Patent under 35 U.S.C. § 271(b). TSMC has actively encouraged its customers (including at least Qualcomm) to directly infringe the ’623 Patent by using, selling, offering for sale, and/or importing electronic devices and products containing the Accused FinFET Products (including at least the WCN7851). TSMC actively encouraged its customers to employ TSMC’s infringing process nodes to manufacture their semiconductor devices, electronic components, and products by and through TSMC’s sales, engineering, and technical marketing efforts and staff. TSMC’s sales engineers and technical marketing staff interface with TSMC’s customers and potential customers to obtain “design wins” (*i.e.*, contracts with customers) to develop and manufacture infringing chips. In attempting to obtain these “design wins,” TSMC’s sales engineers and technical marketing staff tout the technological and economic benefits of the infringing chips and actively encourage use of the infringing chips. TSMC has known that their customers’ acts constituted direct infringement of at least one claim of the ’623 Patent since at least as of the filing of this Complaint. As a result of TSMC’s active encouragement and intentional inducement, its customers have committed acts directly infringing the ’623 Patent.

89. Moreover, TSMC intends to cause, and has taken affirmative steps to induce, infringement by customers and end-users by at least, *inter alia*, encouraging, promoting,

instructing, and/or directing the infringing use of the Accused FinFET Products. As discussed above, TSMC took direct steps to encourage, promote, instruct, and/or direct its customers and end-users use of the Accused FinFET Products.

90. As detailed above, the WCN7851 and other Accused FinFET Products infringe at least Claim 1 of the ’623 Patent. Accordingly, by encouraging, promoting, instructing, and/or directing users to use the WCN7851 and Accused FinFET Products, TSMC is actively inducing infringement of the ’623 Patent in violation of 35 U.S.C. § 271(b).

91. TSMC likewise is liable as a contributory infringer of the ’623 Patent under 35 U.S.C. § 271(c). TSMC has offered to sell and/or sold within the United States services for manufacturing and designs for the Accused FinFET Products that practice the ’623 Patent. The Accused FinFET Products comprise semiconductor devices, each of which constitutes a material part of the ’623 Patent’s invention that can be incorporated into electronic components and products.

92. For example, such manufacturing services and designs were offered for sale, sold, and marketed by and through TSMC’s sales, engineering, and technical marketing efforts and staff. Such efforts resulted in TSMC’s manufacturing of the infringing WCN7851. Upon information and belief, TSMC’s customers do not manufacture the Accused FinFET Products on their own, but contract with others, such as TSMC, to manufacture such devices. TSMC has known such Accused FinFET Products to be especially adapted for practicing, and thus infringing, the ’623 Patent since at least the filing of this Complaint. The Accused FinFET Products are not staple articles nor a commodity of commerce suitable for substantial non-infringing use because they cannot be used individually without incorporation into electronic components and products. Thus, TSMC is liable as a contributory infringer.

93. TSMC has had actual knowledge of the ’623 Patent since at least December 22, 2010, when the examiner cited U.S. Patent Application No. 2005/0121792, from which the ’623 Patent issued, as a reference during the prosecution of TSMC’s U.S. Patent Application No. 11/655,849. TSMC’s continued infringement following that date, despite its knowledge of the ’623 Patent, was intentional and deliberate and willful.

94. TSMC’s direct, induced, contributory, and willful infringement of the ’623 Patent has caused, and will continue to cause, substantial damage to AICP. Therefore, AICP is entitled to an award of damages adequate to compensate for TSMC’s infringement, but not less than reasonable royalty, together with pre-and post-judgment interest, attorneys’ fees, and costs as fixed by the Court under 35 U.S.C. §§ 284 and 285.

COUNT THREE
INFRINGEMENT OF U.S. PATENT NO. 8,329,572

95. Plaintiff repeats and incorporates by reference each preceding paragraph as if fully set forth herein and further states:

96. TSMC has directly infringed and continues to directly infringe the ’572 Patent under 35 §§ U.S.C. 271(a) and/or 271(g), either literally or through the doctrine of equivalents, by making, using, offering to sell, selling, and/or importing in or into the United States Accused 3-, 4-, and 5-Nanometer Products manufactured by practicing the method claimed in the ’572 Patent as described below, including at least claim 1. By way of example, such Accused 3-, 4-, and 5-Nanometer Products include the A15 Bionic and A18 Bionic manufactured, used, sold, offered for sale, and/or imported by TSMC.

97. Claim 1 is illustrative of the claims of the ’572 Patent. It recites “[a] method for fabricating a semiconductor device comprising:

the step (a) of forming a first insulating film over a semiconductor substrate;

the step (b) of forming an interconnect layer in at least an upper portion of the first insulating film;

the step (c) of forming an oxidation-resistant conductor film covering the top of the interconnect layer;

the step (d) of forming a second insulating film on the first insulating film and the oxidation-resistant conductor film;

the step (e) of forming a third insulating film on the second insulating film;

the step (f) of removing, using a photoresist as a mask, portions of the third insulating film and the second insulating film located over the interconnect layer until the oxidation-resistant conductor film is exposed in one step; and

the step (g) of removing the photoresist."

98. TSMC manufactures the exemplary A15 Bionic and A18 Bionic semiconductor devices by practicing every step of this claimed method.[22]

99. The A15 Bionic is a semiconductor device fabricated through a method that comprises an initial step of forming a first insulating film over a semiconductor substrate. An interconnect layer made of copper is then formed in the first insulating film, and an oxidation-resistant conductor film made of cobalt is formed to cover the top of the interconnect layer. A second insulating film, made of SiOC, is formed on the first insulating film and the oxidation-resistant conductor film, and a third insulating film, an Al-Oxide layer, is formed over the second insulating film. Finally, using a photoresist as a mask, portions of the Al-Oxide and SiOC layers located over the copper interconnect layer are removed, exposing the cobalt conductor film in one step, and the photoresist is removed.

100. Because the A15 Bionic is fabricated by practicing the method claimed by the '572 Patent, the A15 Bionic is an infringing semiconductor device. Further, on information and belief, all semiconductor devices TSMC manufactures at its 5-nanometer process node likewise infringe

[22] This description of infringement is illustrative and not intended to be an exhaustive or limiting explanation of every manner in which the A15 Bionic and A18 Bionic infringe.

because infringement occurs as a result of TSMC's 5-nanometer FinFET manufacturing process. For example, on information and belief, TSMC's 5-nanometer FinFET process node variants share lithographic spacing, aerial margins, and overlap requirements, collectively known as design rules or ground rules. Application of these rules requires practicing the method claimed by the '572 Patent.

101. The A18 Bionic is a semiconductor device composed by forming a first insulating film over a semiconductor substrate. An interconnect layer made of copper is then formed in the first insulating film, and an oxidation-resistant conductor film made of cobalt is formed to cover the top of the interconnect layer. A second insulating film, made of AlN, is then formed on the first insulating film and the oxidation-resistant conductor film, and a third insulating film, made of SiOC, is formed over the second insulating film. Finally, using a photoresist as a mask, portions of the SiOC and AlN layers located over the copper interconnect layer are removed, exposing the cobalt conductor film in one step, and the photoresist is removed.

102. Because the A18 Bionic is fabricated by practicing the method claimed by the '572 Patent, the A18 Bionic is an infringing semiconductor device. Further, on information and belief, all semiconductor devices TSMC manufactures at its 3-nanometer process node likewise infringe because infringement occurs as a result of TSMC's 3-nanometer FinFET manufacturing process. For example, on information and belief, TSMC's 3-nanometer FinFET process node variants share lithographic spacing, aerial margins, and overlap requirements, collectively known as design rules or ground rules. Application of these rules requires practicing the method claimed by the '572 Patent.

103. Further, on information and belief, the cobalt capping and photoresist mask method claimed by the '572 Patent is a necessary part of FinFET manufacturing process at TSMC's 3-, 4-

, and 5-nanometer process nodes. All Accused 3-, 4-, and 5-Nanometer Products manufactured at TSMC's 3-, 4-, and 5-nanometer FinFET process nodes therefore infringe the '572 Patent, as the A15 Bionic and A18 Bionic do.

104. In addition to directly infringing the '572 Patent by making, using, selling, offering to sell, and/or importing Accused 3-, 4-, and 5-Nanometer Products into the United States, TSMC likewise has induced infringement of the '572 Patent under 35 U.S.C. § 271(b). TSMC has actively encouraged its customers (including at least Apple) to directly infringe the '572 Patent by using, selling, offering for sale, and/or importing Accused 3-, 4-, and 5-Nanometer Products (including at least the A15 Bionic and A18 Bionic) and electronic devices and products containing Accused 3-, 4-, and 5-Nanometer Products. TSMC actively encouraged its customers to employ TSMC's infringing process nodes to manufacture their semiconductor devices, electronic components, and products by and through TSMC's sales, engineering, and technical marketing efforts and staff. TSMC's sales engineers and technical marketing staff interface with TSMC's customers and potential customers to obtain "design wins" (*i.e.*, contracts with customers) to develop and manufacture infringing chips. In attempting to obtain these "design wins," TSMC's sales engineers and technical marketing staff tout the technological and economic benefits of the infringing chips and actively encourage use of the infringing chips. TSMC has known that their customers' acts constituted direct infringement of at least one claim of the '572 Patent since at least as of the filing of this Complaint. As a result of TSMC's active encouragement and intentional inducement, its customers have committed acts directly infringing the '572 Patent.

105. TSMC has had actual knowledge of the '572 Patent since at least February 6, 2018, when the examiner cited U.S. Patent Application No. 2005/0070086, from which the '572 Patent issued, as a reference during the prosecution of TSMC's U.S. Patent Application No. 15/626,681.

TSMC's continued infringement following that date, despite its knowledge of the '572 Patent, was intentional and deliberate and willful.

106. TSMC's direct, induced, and willful infringement of the '572 Patent has caused, and will continue to cause, substantial damage to AICP. Therefore, AICP is entitled to an award of damages adequate to compensate for TSMC's infringement, but not less than reasonable royalty, together with pre-and post-judgment interest, attorneys' fees, and costs as fixed by the Court under 35 U.S.C. §§ 284 and 285.

COUNT FOUR
INFRINGEMENT OF U.S. PATENT NO. 8,884,373

107. Plaintiff repeats and incorporates by reference each preceding paragraph as if fully set forth herein and further states:

108. TSMC has directly infringed and continues to directly infringe the '373 Patent under 35 § U.S.C. 271(a), either literally or through the doctrine of equivalents, by making, using, selling, offering to sell, and/or importing in or into the United States Accused 28-Nanometer Products and other products made by practicing and by performing processes that result in practicing the '373 Patent as described below, including at least claim 1.

109. By way of example, such Accused 28-Nanometer Products include the MSM8960 manufactured, used, sold, offered for sale, and/or imported by TSMC.

110. For example, Claim 1 is illustrative of the claims of the '373 Patent. It recites "[a] semiconductor device, comprising:

> a first dual-gate electrode; and
>
> a second dual-gate electrode being separated from the first dual-gate electrode, wherein
>
> the first dual-gate electrode includes a first gate electrode located on a first active region and having a first silicon film of a first conductivity type and a second gate electrode located on a second active region and having a first silicon film of a second conductivity type,

the second dual-gate electrode includes a third gate electrode located on a third active region and having a second silicon film of the first conductivity type and a fourth gate electrode located on a fourth active region and having a second silicon film of the second conductivity type,

the first active region and the second active region are isolated from each other with an isolation region interposed therebetween,

the first gate electrode and the second gate electrode are connected to each other on the isolation region, and

at least a portion of the first silicon film of the first conductivity type has a first-conductivity-type impurity concentration higher than that of a portion of the second silicon film of the first conductivity type located on the third active region."

111. The exemplary MSM8960 semiconductor device manufactured by TSMC meets every element of this claim.[23]

112. The MSM8960 is a semiconductor device comprising a first dual-gate electrode and a second dual-gate electrode, which is separated from the first dual-gate electrode. The first dual-gate electrode and second dual-gate electrode are located in different portions of the die.

113. The first dual-gate electrode in the MSM8960 includes a first gate electrode located on a first active region and having a first silicon film of a first conductivity type and a second gate electrode located on a second active region and having a first silicon film of a second conductivity type. The first gate electrode in the first dual-gate electrode is a PMOS gate electrode, while the second gate electrode in the first dual-gate electrode is an NMOS gate electrode. The same polysilicon film is shared between these PMOS and NMOS electrodes. This PMOS gate electrode is located on a PMOS active region and the polysilicon film is of p-type conductivity over the PMOS active region, while the NMOS gate electrode is located on an NMOS active region and the polysilicon film is of n-type conductivity over the NMOS active region.

[23] This description of infringement is illustrative and not intended to be an exhaustive or limiting explanation of every manner in which the MSM8960 infringes.

114. The second dual-gate electrode in the MSM8960 includes a third gate electrode located on a third active region and having a second silicon film of the first conductivity type and a fourth gate electrode located on a fourth active region and having a second silicon film of the second conductivity type. The third gate electrode in the second dual-gate electrode is a PMOS gate electrode, while the fourth gate electrode in the second dual-gate electrode is an NMOS gate electrode. The same polysilicon film is shared between these PMOS and NMOS electrodes. This PMOS gate electrode is located on a PMOS active region and the polysilicon film is of p-type conductivity over the PMOS active region, while the NMOS gate electrode is located on an NMOS active region and the polysilicon film is of n-type conductivity over the NMOS active region.

115. In the MSM8960, the first active region and the second active region are separated by a shallow trench isolation, such that the first active region and the second active region are isolated from each other with an isolation region interposed therebetween. In the MSM8960, the first gate electrode (PMOS) and the second gate electrode (NMOS) are connected on that isolation region.

116. In the MSM8960, the first silicon film of the first conductivity type has a first-conductivity-type impurity concentration higher than that of a portion of the second silicon film of the first conductivity type located on the third active region. The first polysilicon film, which is of p-type conductivity, has a p-type impurity concentration higher than that of a portion of the second polysilicon film of p-type conductivity located on the third active region.

117. Because the MSM8960 practices at least Claim 1 of the ’373 Patent, all semiconductor devices manufactured according to TSMC’s 28-nanometer process node likewise infringe because infringement occurs as a result of its manufacturing process. For example, on information and belief, TSMC uses common MIS transistor structures for all semiconductor

devices that it manufactures at its 28-nanometer process node. TSMC makes available to its customers standard cell libraries for integrated chip design, customization, and manufacture. These standard cell libraries, on information and belief, implement the claimed inventions.[24] Variants of TSMC's 28-nanometer process node share lithographic spacing, aerial margins, and overlap requirements, collectively known as design rules or ground rules. As a result of these common design rules and ground rules, all Accused 28-Nanometer Products infringe the '373 Patent in the same manner as the MSM8960 does.

118. In addition to directly infringing the '373 Patent by making, using, selling, offering to sell, and/or importing Accused 28-Nanometer Products into the United States, TSMC likewise has induced infringement of the '373 Patent under 35 U.S.C. § 271(b). TSMC has actively encouraged its customers (including at least Qualcomm) to directly infringe the '373 Patent by using, selling, offering for sale, and/or importing electronic devices and products containing the Accused 28-Nanometer Products (including at least the MSM8960). TSMC actively encouraged its customers to employ TSMC's infringing process nodes to manufacture their semiconductor devices, electronic components, and products by and through TSMC's sales, engineering, and technical marketing efforts and staff. TSMC's sales engineers and technical marketing staff interface with TSMC's customers and potential customers to obtain "design wins" (*i.e.*, contracts with customers) to develop and manufacture infringing chips. In attempting to obtain these "design wins," TSMC's sales engineers and technical marketing staff tout the technological and economic benefits of the infringing chips and actively encourage use of the infringing chips. TSMC has

[24] For example, TSMC's 2023 annual report notes that "[s]ilicon intellectual property (IP) is the basic building block of IC designs" and "TSMC and its alliance partners offer customers a rich portfolio of reusable Ips, which are building blocks for many circuit designs." *TSMC Annual Report 2023* at 102 (last accessed Feb. 7, 2025), available at https://investor.tsmc.com/sites/ir/annual-report/2023/2023%20Annual%20Report_E.pdf.

known that their customers' acts constituted direct infringement of at least one claim of the '373 Patent since at least as of the filing of this Complaint. As a result of TSMC's active encouragement and intentional inducement, its customers have committed acts directly infringing the '373 Patent.

119. Moreover, TSMC intends to cause, and has taken affirmative steps to induce, infringement by customers and end-users by at least, *inter alia*, encouraging, promoting, instructing, and/or directing the infringing use of the Accused 28-Nanometer Products. As discussed above, TSMC took direct steps to encourage, promote, instruct, and/or direct its customers and end-users use of the Accused 28-Nanometer Products.

120. As detailed above, the MSM8960 and other Accused 28-Nanometer Products infringe at least Claim 1 of the '373 Patent. Accordingly, by encouraging, promoting, instructing, and/or directing users to use the MSM8960 and Accused 28-Nanometer Products, TSMC is actively inducing infringement of the '373 Patent in violation of 35 U.S.C. § 271(b).

121. TSMC likewise is liable as a contributory infringer of the '373 Patent under 35 U.S.C. § 271(c). TSMC has offered to sell and/or sold within the United States services for manufacturing and designs for the Accused 28-Nanometer Products that practice the '373 Patent. The Accused 28-Nanometer Products comprise semiconductor devices, each of which constitutes a material part of the '373 Patent's invention that can be incorporated into electronic components and products.

122. For example, such manufacturing services and designs were offered for sale, sold, and marketed by and through TSMC's sales, engineering, and technical marketing efforts and staff. Such efforts resulted in TSMC's manufacturing of the infringing MSM8960. Upon information and belief, TSMC's customers do not manufacture the Accused 28-Nanometer Products on their own, but contract with others, such as TSMC, to manufacture such devices. TSMC has known

such Accused 28-Nanometer Products to be especially adapted for practicing, and thus infringing, the ’373 Patent since at least the filing of this Complaint. The Accused 28-Nanometer Products are not staple articles nor a commodity of commerce suitable for substantial non-infringing use because they cannot be used individually without incorporation into electronic components and products. Thus, TSMC is liable as a contributory infringer.

123. TSMC has been aware of the ’373 Patent since the filing of this complaint.

124. TSMC’s direct, induced, contributory, and willful infringement of the ’373 Patent has caused, and will continue to cause, substantial damage to AICP. Therefore, AICP is entitled to an award of damages adequate to compensate for TSMC’s infringement, but not less than reasonable royalty, together with pre-and post-judgment interest, attorneys’ fees, and costs as fixed by the Court under 35 U.S.C. §§ 284 and 285.

DEMAND FOR JURY TRIAL

125. Plaintiff hereby demands a jury trial for all issues so triable.

PRAYER FOR RELIEF

WHEREFORE, Plaintiff requests entry of judgment in its favor and against Defendant TSMC as follows:

A. Declaring that TSMC has directly infringed, either literally and/or under the doctrine of equivalents, and continues to directly infringe United States Patent Nos. 7,632,751; 7,439,623; 8,329,572, and 8,884,373;

B. Declaring that TSMC has induced infringement and continues to induce infringement of United States Patent Nos. 7,632,751; 7,439,623; 8,329,572, and 8,884,373;

C. Declaring that TSMC has contributorily infringed and continues to contributorily infringe United States Patent Nos. 7,439,623 and 8,884,373;

D. Awarding lost profits and/or reasonable royalty damages, including treble damages for willful infringement, to Plaintiff in an amount no less than a reasonable royalty for TSMC's infringement of the Asserted Patents, together with prejudgment and post-judgment interest and costs as permitted under 35 U.S.C. § 284;

E. Awarding attorneys' fees pursuant to 35 U.S.C. § 285 or as otherwise permitted by law;

F. Ordering TSMC to pay supplemental damages to Plaintiff, including any ongoing royalties and interest, with an accounting, as needed;

G. Enjoining TSMC from practicing the Asserted Patents; and

H. Awarding such other costs and further relief as the Court may deem just and proper.

Dated: April 1, 2025

Respectfully submitted,

/s/ Justin A. Nelson by permission Claire Abernathy Henry

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