

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

NORTH STAR INNOVATIONS
INC.,

Plaintiff

v.

CYPRESS SEMICONDUCTOR
CORPORATION, and UMC Group
USA

Defendants

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C.A. No.

JURY TRIAL DEMANDED

COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff North Star Innovations Inc. ("Plaintiff" or "North Star"), by and through its attorneys, files this Complaint for Patent Infringement against Defendants Cypress Semiconductor Corporation and UMC Group USA. Plaintiff alleges as follows:

PARTIES

1. Plaintiff North Star is a corporation organized and existing under the laws of the State of Delaware, with a place of business at 600 Anton Blvd., Costa Mesa, California 92626. Plaintiff is the owner of seminal patents in various fields, including integrated circuits, semiconductor memory architecture, and semiconductor memory devices. Plaintiff's portfolio includes, for example, patents that teach valuable innovations and improvements related to semiconductor manufacturing processes and packaging, as well as patents that teach novel circuit designs to improve speed, power consumption, density, reliability, cost, efficiency, and organization. Plaintiff is actively engaged in licensing efforts with respect to such technologies.

2. Defendant Cypress Semiconductor Corporation (“Cypress”) is a corporation organized and existing under the laws of the State of Delaware, with a place of business at 198 Champion Ct., San Jose, CA 95134-1709. Defendant may be served with process in this judicial district by serving its registered agent for service of process: Corporation Service Company, 2711 Centerville Rd., Suite 400, Wilmington, DE 19808.

3. Cypress manufactures and sells various memory products, such as SRAM, NOR Flash memories, and dual-port memories. On its website, Cypress claims to be “the global leader in high-performance and low power memories [and] No. 1 in SRAM market share,” while Spansion, Inc. (which was recently merged into Cypress) has long touted itself as “the world’s leading manufacturer of NOR Flash memory.”

4. Defendant UMC Group USA (“UMC USA”) is a California corporation organized and existing under the laws of the State of California, with places of business at 488 De Guigne Drive, Sunnyvale, CA 95124. UMC may be served by serving its registered agent for service of process, Mr. Peter Courture, 993 Highland Circle, Los Altos, CA 94024.

5. On information and belief, UMC USA is the U.S. and North American sales arm for, and a wholly-owned subsidiary of, United Microelectronics Corporation (“UMC”), a Taiwanese company that manufactures and sells semiconductor products throughout the world. *See, e.g.,* <http://www.umc.com/English/contact/index.asp>. UMC’s website states: “UMC is a leading global semiconductor foundry that provides advanced technology and manufacturing for applications spanning every major sector of the IC [i.e., integrated circuit] industry. UMC’s robust foundry solutions allow chip designers to leverage the company’s leading-edge processes ... and a wide range of specialty technologies. Production is supported through 10 wafer manufacturing facilities The company employs over 17,000 people worldwide and has

offices in Taiwan, Japan, Korea, China, Singapore, Europe, and the United States.” UMC is a publicly traded entity in the United States, listed on the New York Stock Exchange under the ticker symbol of “UMC”.

JURISDICTION AND VENUE

4. This action arises under the patent laws of the United States, 35 U.S.C. § 1 *et seq.*, including §§ 271, 281, 282(a), 283, 284, and 285. This Court has subject matter jurisdiction over this patent infringement action pursuant to 28 U.S.C. §§ 1331 and 1338(a).

5. This Court has personal jurisdiction over Defendants. Upon information and belief, Defendants have regularly conducted and continue to conduct business in the State of Delaware. On information and belief, Defendants, directly or indirectly through their agents, have committed infringing activities in Delaware and in the United States by using, marketing, offering for sale, selling, and/or importing products or systems that infringe the Patents-In-Suit (as defined below); by placing such infringing products and systems into the stream of commerce with the awareness, knowledge, and intent that they would be used, offered for sale, and/or sold by others in this judicial district and/or purchased by consumers in this judicial district; and/or by importing, offering for sale, selling, and/or using in this judicial district one or more products made by a process patented in the U.S..

6. For example, Cypress makes semiconductor products, including memory devices, in the U.S. and markets, sells, and distributes semiconductor products, including memory devices, throughout the U.S., either directly or indirectly through one or more sales offices, authorized distributors, and/or manufacturer representatives, such as through the Delaware office of Parallax South, Inc.

7. Similarly, on information and belief, UMC USA markets, sells, and distributes semiconductor products, including memory devices, throughout the country, either directly or indirectly through one or more sales offices, authorized distributors, and/or manufacturer representatives.

8. Further, this Court has personal jurisdiction over Cypress because Cypress is organized under the laws of the State of Delaware. Cypress has thereby availed itself of the privileges of conducting business in the State of Delaware and has sought protection and benefit from the laws of the State of Delaware. This Court's exercise of personal jurisdiction over Cypress would therefore comport with due process.

9. This Court has jurisdiction over this action against both Defendants because the subject matter of the action satisfies the requirements of 35 U.S.C. § 299(a) in that (1) it arises, at least in part, out of the same transaction, occurrence, or series of transactions or occurrences relating to the making, using, importing into the United States, offering for sale, and/or selling of the same accused products, and (2) questions of fact common to both defendants will arise in the action.

10. Venue is proper pursuant to 28 U.S.C. §§ 1391(b) and 1400(b).

THE PATENTS-IN-SUIT

11. On October 5, 1999, U.S. Patent No. 5,961,373 ("the '373 Patent") – entitled "Process for Forming a Semiconductor Device" – was lawfully and properly issued by the United States Patent and Trademark Office ("USPTO"), after a full and fair examination. The named inventors on the '373 Patent are Lei Ping Lai and Sung C. Kim. A true and correct copy of the '373 Patent is attached hereto as Exhibit A and incorporated by reference.

12. Generally speaking, the '373 Patent teaches, among other things, a Chemical Mechanical Polishing ("CMP") process in which conditioning of a polishing pad is optimized to provide, among other benefits, a reproducible polishing process that reduces the likelihood of dishing and contributes to improved planarity and greater efficiency.

13. On October 15, 2002, U.S. Patent No. 6,465,743 ("the '743 Patent") – entitled "Multi-Strand Substrate for Ball-Grid Array Assemblies and Method" – was lawfully and properly issued by the USPTO, after a full and fair examination. The named inventor on the '743 Patent is Norman Lee Owens. A true and correct copy of the '743 Patent is attached hereto as Exhibit B and incorporated by reference.

14. Generally speaking, the '743 Patent teaches, among other things, a novel method for assembling ball-grid array (BGA) packages in an "N by M" array having multiple rows and multiple columns, where the method produces multiple substrates in a way that is cost effective and is conducive to large-scale automated assembly.

15. On July 14, 1998, U.S. Patent No. 5,781,480 ("the '480 Patent") – entitled "Pipelined Dual Port Integrated Circuit Memory" – was lawfully and properly issued by the USPTO, after a full and fair examination. The named inventors on the '480 Patent are Scott George Nogle, Alan S. Roth, and Shuang Li Ho. A true and correct copy of the '480 Patent is attached hereto as Exhibit C and incorporated by reference.

16. Generally speaking, the '480 Patent teaches, among other things, a novel circuit design for static random access memory ("SRAM") whereby substantially simultaneous requests for access are serviced sequentially within a single cycle of a clock signal. Because dual port functionality is obtained using a standard SRAM memory cell, the memory may be manufactured using relatively less integrated circuit surface area, and therefore at a lower cost.

17. The '373 Patent, the '743 Patent, and the '480 Patent may be referred to individually as a "Patent-in-Suit" or collectively as the "Patents-in-Suit."

18. By way of assignment, Plaintiff is the owner of all right, title, and interest in and to the Patents-in-Suit, including the rights to prosecute this action and to collect and receive damages for all past, present, and future infringements.

COUNT ONE: INFRINGEMENT OF THE '373 PATENT

19. Plaintiff incorporates the above allegations as if set forth here in full.

20. The '373 Patent is valid and enforceable. Defendants do not have a license to practice the patented inventions of the '373 Patent.

21. On information and belief, at least Claims 1, 2, and 3 of the '373 Patent are infringed, either literally or under the doctrine of equivalents, when the CMP process is performed (a) on any patterned semiconductor device substrate that includes an insulating layer and (b) by, and in accordance with the recommended use of, certain (i) CMP polishing machines manufactured and/or provided by Applied Materials, such as the AMAT Mirra Polisher or the AMAT Reflexion Polisher, and (ii) pad conditioners, such as the 3M Diamond Pad Conditioner A165 or the K00003 Kinik pad conditioner.

22. On information and belief, and in violation of 35 U.S.C. §271(a) and/or (g), Defendants infringe at least Claims 1, 2, and 3 of the '373 Patent. For example, on information and belief, Cypress and UMC USA import, offer for sale, or sell products made according to a process that meets every limitation in Claim 1 of the '373 Patent, which recites: "A process for forming a semiconductor device comprising the steps of: placing a substrate onto a polishing pad within an apparatus, wherein a layer overlies the substrate; polishing the layer and conditioning the polishing pad using a first conditioner during a first time period; polishing the

layer without conditioning the polishing pad using the first conditioner for a second time period after the first time period and before depositing an additional layer; and removing the substrate from the apparatus after the steps of polishing.”

23. On information and belief, wafer fabrication for many of the semiconductor products offered for sale or sold by Cypress, including various memory devices, occurs in the U.S. – at facilities that own and utilize one or more Applied Materials Mirra Polishers, such as at Cypress’ fab in Bloomington, Minnesota and/or at its Fab 25 in Austin, Texas.

24. For example, Cypress manufactures, markets, offers for sale, and/or sells a memory product referred to as NOR Flash (65nm), Part Number S25FL128AGBHI200. On information and belief, wafer fabrication for that product occurs at Cypress’ (formerly Spansion’s) Fab 25 in Austin, Texas (in violation of 35 U.S.C. § 271(a)) and/or at an overseas XMC facility using the Applied Materials Reflexion Polisher in a manner that infringes at least Claim 1 of the ‘373 Patent. Either way, the importation, offer for sale, sale, or use of such products violates 35 U.S.C. §271(g).

25. On information and belief, many of the semiconductor products manufactured by UMC, including memory devices imported, offered for sale, and/or sold by UMC Group USA in the U.S. (in violation of 35 U.S.C. §271(g)), are manufactured at overseas foundries that own and utilize one or more Applied Materials Mirra and/or Reflexion Polishers, such as UMC Fab 12A in Tainan, Taiwan, UMC Fab 8D in Hsinchu, Taiwan, and UMC Fab 12i in Singapore.

26. Cypress, which has its own U.S. foundries but also outsources some of its manufacturing and assembly to companies, such as UMC, who operate overseas foundries, imports, offers for sale and/or sells numerous products manufactured at UMC Fab 12A, in

violation of 35 U.S.C. §271(g). By way of example, and on information and belief, wafer fabrication for the Cypress HX3 USB 3.0 HUB Controller and for Cypress' entire 16-MBIT Asynchronous SRAM Family (65nm), occurs at UMC Fab 12A in Tainan, Taiwan, using at least the process patented by Claim 1 of the '373 Patent. On information and belief, UMC USA and Cypress import, offer for sale, sell, and/or use these products in the U.S., in violation of 35 U.S.C. § 271(g).

27. By way of further example, wafer fabrication for all Xilinx Virtex®-4 and Virtex®-5 FPGA products and devices occurs at UMC Fab 12A in Tainan, Taiwan, using the processes patented by at least Claims, 1, 2, and 3 of the '373 Patent. On information and belief, UMC USA imports, offers for sale, sells, and/or uses these products in the U.S., in violation of 35 U.S.C. § 271(g).

28. On information and belief, many other products imported, made, offered for sale, sold, and/or used by Defendants are manufactured, in whole or in part, using the patented processes recited in one or more claims of the '373 Patent, in violation of 35 U.S.C. §§ 271(a) and/or (g). Plaintiff expressly reserves the right to assert additional patents and additional claims and to identify additional infringing products and additional entities who operate in concert with Defendants, in accordance with the Federal Rules of Civil Procedure, the Court's scheduling order and the Court's local rules.

29. Plaintiff has been damaged by Defendants' infringing conduct and will continue to be damaged unless Defendants are enjoined from further infringement. Accordingly, upon finding for Plaintiff, the Court should award to Plaintiff damages adequate to compensate for the infringement, in an amount to be determined at trial, but in no event less than a reasonable royalty for the use made of the invention by the infringer, together with

interest and costs as fixed by the Court. Further, upon judgment in favor of Plaintiff, the Court should permanently enjoin Cypress from committing the infringing acts.

COUNT TWO: INFRINGEMENT OF THE '743 PATENT

30. Plaintiff incorporates the above allegations as if set forth here in full.

31. The '743 Patent is valid and enforceable. Cypress does not have a license to practice the patented inventions of the '743 Patent.

32. On information and belief, Cypress has infringed and is currently infringing, either literally or under the doctrine of equivalents, at least claims 1, 2, 7, and 8 of the '743 Patent. More specifically, on information and belief, and in violation of 35 U.S.C. §271(g), Cypress imports, offers to sell, sells, and/or uses one or more products made by a process patented in the U.S, including the method recited in Claim 1 of the '373 Patent: "A method for assembling ball-grid array (BGA) packages, comprising the steps of: providing a plurality of BGA substrates arranged in an N by M array within a printed circuit board having a thickness, wherein N and M are greater than or equal to 2, each of the plurality of BGA substrates having a plurality of bond posts on one side and a plurality of contact pads on an opposite side; attaching a semiconductor die to each of the plurality of BGA substrates, the semiconductor die having a plurality of bond pads; encapsulating the semiconductor die with an encapsulant; curing the encapsulant; attaching conductive solder balls to each of the plurality of contact pads; and dividing the N by M array into separate BGA packages, and wherein each of the separate BGA packages is substantially planar."

33. For example, Cypress imports, offers for sale, sells, and/or uses Part Number S25FL128AGBHI200, which is a 128 Mbit NOR Flash (65nm) memory device in a 24-pin BGA package. On information and belief, that product is assembled in accordance with the

method set forth in Claim 1 of the '743 Patent. As such, Cypress' actions constitute patent infringement.

34. On information and belief, many other Cypress products assembled in a BGA package are likewise assembled using the patented methods of the '743 Patent; thus, the importation, offer for sale, sale, and/or use of such products by Cypress constitutes infringement of the '743 Patent. Plaintiff expressly reserves the right to assert additional patents and additional claims and to identify additional infringing products in accordance with the Federal Rules of Civil Procedure, the Court's scheduling order, and the Court's local rules.

35. Plaintiff has been damaged by Cypress' infringing conduct and will continue to be damaged unless Cypress is enjoined from further infringement. Accordingly, upon finding for Plaintiff, the Court should award to Plaintiff damages adequate to compensate for the infringement, in an amount to be determined at trial, but in no event less than a reasonable royalty for the use made of the invention by the infringer, together with interest and costs as fixed by the Court. Further, upon judgment in favor of Plaintiff, the Court should permanently enjoin Cypress from committing the infringing acts.

COUNT THREE: INFRINGEMENT OF THE '480 PATENT

36. Plaintiff incorporates the above allegations as if set forth here in full.

37. The '480 Patent is valid and enforceable. Cypress does not have a license to practice the patented inventions of the '480 Patent.

38. On information and belief, Cypress has infringed and is currently infringing, either literally or under the doctrine of equivalents, at least Claim 1 of the '480 Patent, which recites: "An integrated circuit memory, comprising: a plurality of memory cells, each of the plurality of memory cells being coupled to a single word line and to a single bit line pair; an

address decoder, coupled to the plurality of memory cells, for selecting a memory cell of the plurality of memory cells in response to receiving an address; a first address port, coupled to the address decoder, for providing a first address to the address decoder for accessing the plurality of memory cells; a second address port, coupled to the address decoder, for providing a second address to the address decoder for accessing the plurality of memory cells; a read data port, coupled to the plurality of memory cells, for reading data from the plurality of memory cells in response to either the first or the second address; a write data port, coupled to the plurality of memory cells, for writing data to the plurality of memory cells in response to either the first or the second address; and a control circuit, coupled to the address decoder, to the first and second address ports, and to the read and write data ports, the control circuit for controlling access to the plurality of memory cells, wherein substantially simultaneous requests for access to the plurality of memory cells are serviced sequentially within a single clock cycle of a clock signal of a data processor accessing the integrated circuit memory.”

39. More specifically, on information and belief, and in violation of 35 U.S.C. §271, Cypress makes, uses, offers for sale, and/or sells one or more products that meet each and every limitation recited in Claim 1 of the '480 Patent. For example, Cypress imports, offers for sale, sells, and/or uses an 18-Mbit QDR II SRAM in various configurations, as seen in the following part numbers: CY7C1311KV18; CY7C1911KV18; CY7C1313KV18; and CY7C1315KV18 (collectively, “QDR II SRAM”). On information and belief, QDR II SRAM meets each and every limitation, either literally or under the doctrine of equivalents, of at least Claim 1 of the '480 Patent,

40. On information and belief, Cypress makes, uses, offers for sale, or sells many other products with the same circuitry or substantially similar circuitry, including all products

with the same QDR II SRAM Four-Word Burst Architecture, that likewise infringe at least Claim 1 of the '743 Patent. Plaintiff expressly reserves the right to assert additional patents and additional claims and to identify additional infringing products in accordance with the Federal Rules of Civil Procedure, the Court's scheduling order, and the Court's local rules.

41. Plaintiff has been damaged by Cypress's infringing conduct and will continue to be damaged unless Cypress is enjoined from further infringement. Accordingly, upon finding for Plaintiff, the Court should award to Plaintiff damages adequate to compensate for the infringement, in an amount to be determined at trial, but in no event less than a reasonable royalty for the use made of the invention by the infringer, together with interest and costs as fixed by the Court. Further, upon judgment in favor of Plaintiff, the Court should permanently enjoin Cypress from committing the infringing acts.

DEMAND FOR JURY TRIAL

24. Plaintiff hereby demands a trial by jury on all issues.

PRAYER FOR RELIEF

WHEREFORE, Plaintiff respectfully prays for entry of judgment as follows:

25. That Cypress has directly infringed, either literally or under the doctrine of equivalents, one or more claims of each of the Patents-In-Suit;

26. That UMC has directly infringed, either literally or under the doctrine of equivalents, one or more claims of the '373 Patent.

27. That Plaintiff is entitled to, and should recover, all damages to which Plaintiff is entitled under 35 U.S.C. § 284, but in no event less than a reasonable royalty;

28. That Defendants be ordered to provide an accounting;

29. That Plaintiff, as the prevailing party, shall recover from Defendants all taxable costs of court;

30. That Plaintiff shall recover from Defendants all pre- and post-judgment interest on the damages award, calculated at the highest interest rates allowed by law;

31. That this case is exceptional and that Plaintiff therefore shall recover its attorney's fees and other recoverable expenses, under 35 U.S.C. § 285; and

32. That Plaintiff shall recover from Defendants such other and further relief as the Court may deem appropriate.

Dated: May 17, 2016

Respectfully submitted,

Of Counsel:

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