IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
WACO DIVISION

SEMICONDUCTOR CONNECTIONS LLC,	§	
	§	
Plaintiff,	§	CASE NO. 6:20-cv-109
	§	
v.	§	
	§	**JURY TRIAL DEMANDED**
TAIWAN SEMICONDUCTOR MANUFACTURING COMPANY LIMITED, and TSMC NORTH AMERICA	§	
	§	
Defendants.	§	

PLAINTIFF'S ORIGINAL COMPLAINT

Plaintiff SEMICONDUCTOR CONNECTIONS LLC ("Plaintiff" herein) files this Complaint for Patent Infringement against Defendants TAIWAN SEMICONDUCTOR MANUFACTURING COMPANY LIMITED ("TSMC" herein), and TSMC NORTH AMERICA ("TSMC NA" herein). TSMC and TSMC NA are collectively referred to herein as "Defendants."

PARTIES

1. Plaintiff is a Limited Liability Company organized and existing under the laws of Texas and has a principal place of business located at 6136 Frisco Square Boulevard, Suite 400, Frisco, TX 75034.

2. 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 300-78, Taiwan, R.O.C. TSMC is the parent corporation of Defendant TSMC NA. TSMC engages in business in the State of 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 process by serving the Registered Agent of TSMC NA, Steven A. Schulman at 2851 Junction Avenue, San Jose, CA 95134.

3. TSMC NA is a corporation organized and exiting under the laws of California and has a physical place of business located at 11921 North Mopac Expressway, Austin, TX 78759. TSMC NA may be served with process by serving its Registered Agent, Steven A. Schulman at 2851 Junction Avenue, San Jose, CA 95134.

4. Defendant TSMC and TSMC NA are related entities that work in concert to design, manufacture, import, distribute, market, and/or sell products that are manufactured according to processes patented in the United States.

JURISDICTION AND VENUE

5. This is an action for infringement of United States patents under 35 U.S.C. §§ 271, et seq. Federal question jurisdiction is conferred to this Court over patent infringement actions under 28 U.S.C. §§ 1331 and 1338(a).

6. Defendants are subject to this Court's specific and general personal jurisdiction pursuant to due process and/or the Texas Long Arm Statute, by virtue of at least their substantial business conducted in this forum, directly and/or through intermediaries, including (i) having solicited business in the State of Texas, transacted business within the State of Texas and attempted to derive financial benefit from residents of the State of Texas, including benefits directly related to the instant patent infringement causes of action set forth herein; (ii) having placed its products and services into the stream of commerce throughout the United States and having been actively

engaged in transacting business in Texas and in this District; and (iii) either alone or in conjunction with others, having committed acts of infringement within Texas and in this District.

7. Defendants have sufficient minimum contacts with the Western District of Texas such that this venue is fair and reasonable. Defendants have committed such purposeful acts and/or transactions in this District that they reasonably should know and expect that they could be hailed into this Court as a consequence of such activity. Defendants have transacted and, at the time of the filing of this Complaint, continue to transact business within the Western District of Texas.

8. Defendants directly and/or through intermediaries have advertised (including through websites), offered to sell, sold and/or distributed products made by patented processes, in this District. Further, Defendants directly and/or through intermediaries have purposefully and voluntarily placed such products in the stream of commerce knowing and expecting them to be purchased and used by consumers in Texas and in this District.

9. 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. As will be explained further herein, TSMC has committed acts of infringement within this District. On information and belief, TSMC conducts business in the United States through its subsidiaries, including through Defendant TSMC NA.

10. Venue is proper against TSMC NA in this District pursuant to 28 U.S.C. § 1400(b) because TSMC NA has a regular and established place of business in this District and has committed acts of infringement in this District. TSMC NA has a permanent office location in Austin, Texas, which is in Travis County and within this District. Based on information and belief, TSMC NA employs full-time personnel such as sales personnel and engineers in this District, including in Austin, Texas. TSMC NA has also committed acts of infringement in this District by

commercializing, marketing, selling, distributing, testing, and/or servicing certain products accused of being manufactured by patented processes in this action.

11. For these reasons, personal jurisdiction exists, and venue is proper in this Court under 28 U.S.C. §§ 1391(b), (c) and/or 28 U.S.C. § 1400(b).

BACKGROUND FACTS

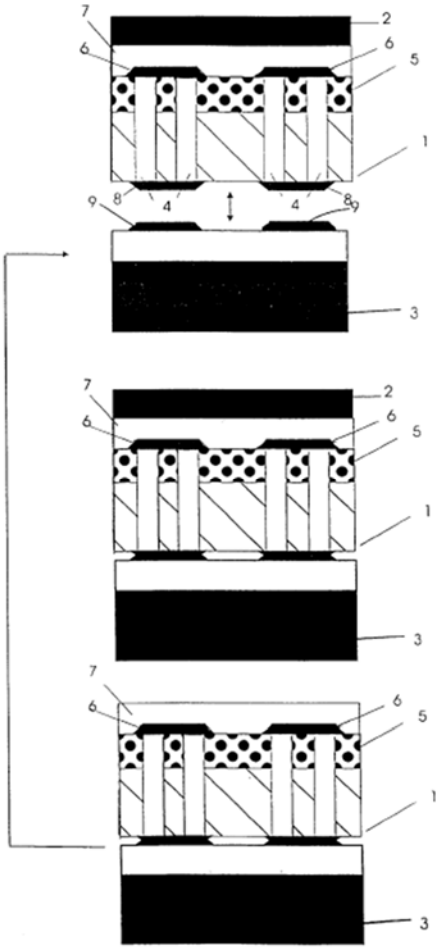
12. Plaintiff is the exclusive licensee of United States Patent No. 6,548,391 ("the '391 Patent" or "Patent-in-Suit") which was issued on April 15, 2003 for a "Method of Vertically Integrating Electric Components by Means of Back Contacting." A true and correct copy of the '391 Patent is attached hereto as Exhibit A.

13. Generally speaking, the '391 Patent relates to the design and manufacture of semiconductor devices. More specifically, the '391 Patent claims a method of connecting two semiconductor components. By way of example, Claim 1 of the '391 Patent reads as follows:

> 1. A method of connecting two semiconductor components comprising the steps of
>
> providing in a first main surface of a first semiconductor substrate first component structures including first contact areas;
>
> forming in said first semiconductor substrate via holes filled with electrically conductive material and electrically insulated from said first semiconductor substrate, said via holes extending down to a second main surface of the first semiconductor substrate and being connected in an electrically conductive manner to said first contact areas via an electrically conductive connection material;
>
> forming on the second main surface of the first semiconductor substrate first lands which are connected in an electrically conductive manner to the first contact areas via the electrically conductive material in the via holes;
>
> providing a second semiconductor substrate having second components structures including second contact areas;
>
> forming second lands which are connected in an electrically conductive manner to the second contact areas;

connecting the first and the second semiconductor substrate in such a way that an electrically conductive as well as a mechanically stable connection between two substrates is established exclusively via the first and the second lands.

14. Figures 2a, 2b, 3 and 4 of the '391 Patent show diagrams of an exemplary embodiment of the invention, illustrating how two substrates may be joined:



15. In the above embodiments, Figures 2a and 2b show a first and second substrate as recited in Claim 1. Figure 3 illustrates the via holes and the connections between the first and second substrates. Figures 3 and 4 also illustrate the contact areas and lands (8 and 9) identified and included in Claim 1. The first and second semiconductor substrates are connected in such a

way that an electrically conductive as well as a mechanically stable connection between the two substrates is established exclusively via the first and the second lands.

COUNT 1 – PATENT INFRINGEMENT

16. Under 35 U.S.C. § 271(g), "[w]however without authority imports into the United States or offers to sell, sells, or uses within the United States a product which is made by a process patented in the United States shall be liable as an infringer, if the importation, offer to sell, sale, or use of the product occurs during the term of such process patent."

17. Defendant TSMC owns and operates a foundry in Taiwan which manufactures semiconductor devices according to the patented method covered by at least Claim 1 of the '391 Patent. A foundry manufactures chips for its customers, that sell the chips to other companies for inclusion in other products. For example, TSMC manufactures semiconductor devices at a variety of different process nodes, including 28-nanometer ("28nm") process nodes. TSMC is a foundry that has contracts with many chip designers to manufacture chips which are eventually sold within the United States, or that are integrated into consumer products that are sold within the United States. On information and belief, TSMC collaborates with its customers in the United States regarding the design of the semiconductor devices.

18. Defendant TSMC NA is a wholly owned subsidiary of TSMC that sells manufactured chips in the United States, including those that were made via the patented process covered by at least Claim 1 of the '391 Patent. TSMC's Annual Report lists the "Major Corporate Function" of TSMC NA as "[s]ales, market development, field technical solutions and business operations for customers in North America."[1] Defendant TSMC and TSMC NA are related entities

[1] Publicly available for download at: https://www.tsmc.com/download/ir/annualReports/2018/english/index.html

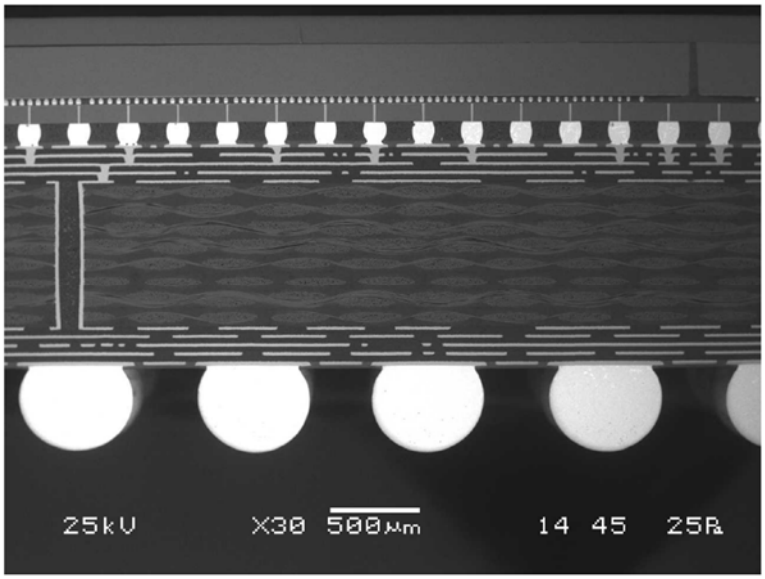
that work in concert to design, manufacture, import, distribute, market, and/or sell products that are manufactured according to processes patented in the United States.

19. Xilinx, Inc. is a chip design company that partners with, and/or purchases from, TSMC and/or TSMC NA. Xilinx is based in the United States and designs, markets, offers for sale, sells and/or imports certain semiconductor chips within the United States.

20. The term "Accused Products" used hereafter, shall refer to all products manufactured by practicing the patented processes covered by the claims of the '391 Patent. The Accused Products include, but are not limited to, the Xilinx Virtex-7 2000T and H580T FPGAs manufactured by TSMC, and all TSMC semiconductor devices, integrated circuits, and products manufactured at the 28nm technology nodes or other process nodes in the same or similar manner. By way of example only, a discussion regarding the Accused Products and their design may be found at: http://www.chipscalereview.com/legacy/tech_monthly/csrtm-1213-front.php.htm

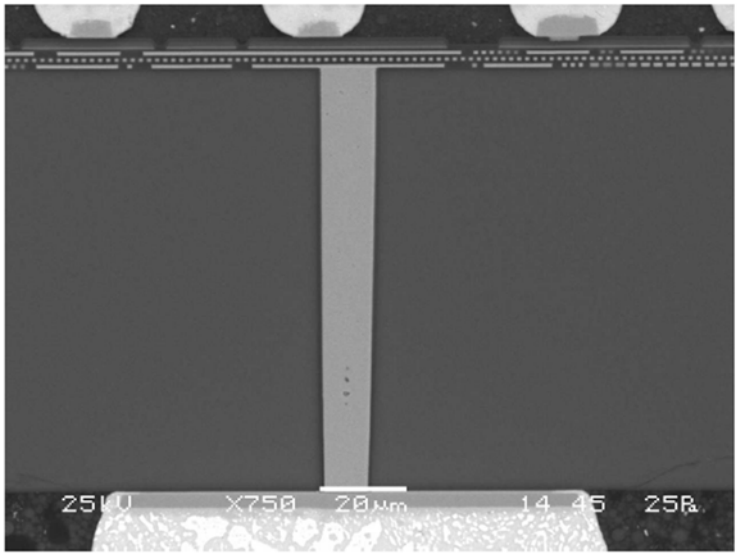
21. The Accused Products are manufactured in accordance with the method covered by at least Claim 1 of the '391 Patent. The Accused Products comprise a first and second substrate (e.g., interposer and chip layer), as shown below[2]:

[2] *See, e.g.*, excerpts from B. Banijamali, S. Ramalingam, H. Liu, M. Kim, Xilinx, Inc., "Outstanding and Innovative Reliability Study of 3D TSV Interposer and the Fine Pitch Solder Micro-bumps," Proc. Of IEEE/ECTC, May 2012, pp. 309-314.



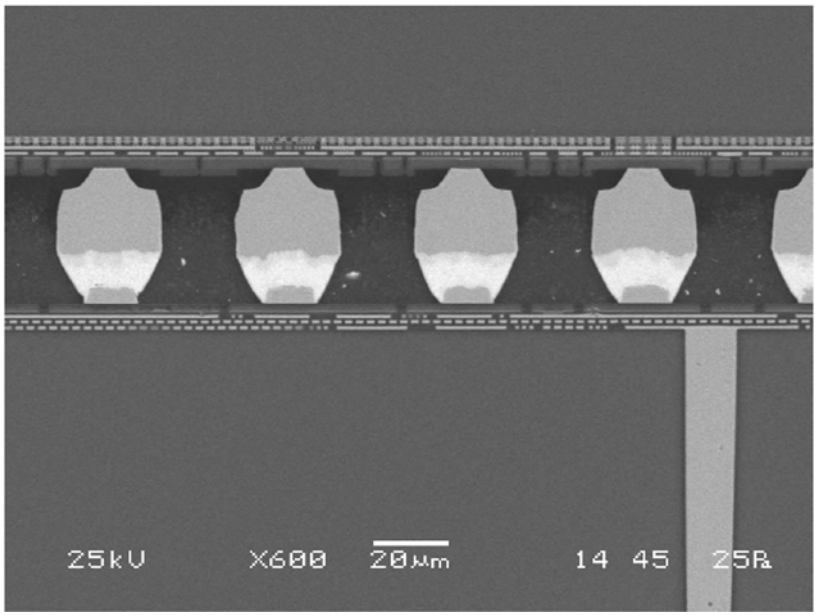
22. The first semiconductor substrate (interposer layer) includes a first main surface, first component structures and first contact areas.

23. The Accused Products also include via holes (sometimes referred to as "TSV") filled with electrically conductive material insulated from the first semiconductor substrate. By way of example, the via holes may be filled with electrically conductive copper that is insulated from the silicon substrate by a silicon dioxide layer. The via holes extend to a second main surface area of the first semiconductor substrate to form an electrically conductive connection.



24. On the second main surface of the first semiconductor substrate there are first lands which are connected in an electrically conductive manner to the first contact areas via the electrically conductive connection material.

25. The second semiconductor substrate (chip layer) has second component structures and second contact areas. Second lands are connected in an electrically conductive manner to the second contact areas. By way of example in the figure below, copper pillars are present as second lands.



26. This configuration allows for connection of the first and second semiconductor substrates in such a way that an electrically conductive as well as a mechanically stable connection between the two substrates is established exclusively via the first and the second lands.

27. Defendant TSMC directly and/or through its subsidiaries, affiliates, agents and/or business partners, have in the past and continue to infringe at least Claim 1 of the ‘391 Patent pursuant to 35 U.S.C. § 271(g) by making, using, selling, or offering to sell, and/or importing integrated circuits devices made by practicing and by performing processes that practice the inventions claimed in the ‘391 Patent, within the United States and this District. By way of

example, TSMC owns and operates one or more foundries responsible for the manufacturing of the Accused Products. In addition, TSMC directly or through its subsidiaries, including TSMC NA, uses, imports, offers for sale, and/or sells the Accused Products within the United States. The Accused Products made by the processes claimed in the '391 Patent are not materially changed by subsequent processes prior to the importation, use, sale, or offer for sale in the United States.

28. Defendant TSMC NA directly and/or through its subsidiaries, affiliates, agents and/or business partners, have in the past and continue to infringe at least Claim 1 of the '391 Patent pursuant to 35 U.S.C. § 271(g) by making, using, selling, or offering to sell, and/or importing integrated circuits devices made by practicing and by performing processes that practice the inventions claimed in the '391 Patent, within the United States and this District. By way of example, TSMC NA is responsible for using, importing, marketing, offering for sale, and/or selling the Accused Products to customers within the United States. Xilinx has a presence within the United States and is a customer for semiconductor chips, such as the Accused Products, manufactured, offered for sale, sold and/or imported by TSMC and/or TSMC NA.

29. Defendants are constructively aware that a significant amount of its Accused Products are eventually sold in the United States.

30. Defendants have actual notice of the '391 Patent. At the latest, the filing of this Complaint constitutes actual notice in accordance with 35 U.S.C. § 287.

31. Plaintiff and all predecessors-in-interest to the '391 Patent have complied with the requirements of 35 U.S.C. § 287.

32. Plaintiff expressly reserves the right to assert additional claims of the '391 Patent against Defendants.

33. Plaintiff has been damaged as a result of Defendants' infringing conduct. Defendants are, thus, liable to Plaintiff in an amount that adequately compensates for their infringement, which, by law, cannot be less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

JURY DEMAND

34. Plaintiff hereby requests a trial by jury pursuant to Rule 38 of the Federal Rules of Civil Procedure.

PRAYER FOR RELIEF

WHEREFORE, Plaintiff respectfully requests that the Court find in its favor and against Defendants, and that the Court grant Plaintiff the following relief:

a. Judgment that one or more claims of the Asserted Patents have been directly infringed, either literally or under the doctrine of equivalents, by Defendants;

b. Judgment that Defendants account for and pay to Plaintiff all damages to and costs incurred by Plaintiff because of Defendants' infringing activities and other conduct complained of herein;

c. That Plaintiff be granted pre-judgment and post-judgment interest on the damages caused by Defendants' infringing activities and other conduct complained of herein;

d. That the Court declare this an exceptional case and award Plaintiff its reasonable attorney's fees and costs in accordance with 35 U.S.C. § 285; and

e. That Plaintiff be granted such other and further relief as the Court may deem just and proper under the circumstances.

DATED: February 11, 2020.

Respectfully submitted,

/s/ Jonathan T. Suder
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Dave R. Gunter
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