

**IN THE UNITED STATES DISTRICT COURT  
FOR THE EASTERN DISTRICT OF TEXAS  
SHERMAN DIVISION**

**Bell Semiconductor, LLC**

**Plaintiff,**

**v.**

**Juniper Networks, Inc.**

**Defendant.**

**Civil Action No. 4:23-cv-974**

**JURY TRIAL DEMANDED**

**COMPLAINT**

Plaintiff Bell Semiconductor, LLC (“Bell Semic” or “Plaintiff”) brings this Complaint against Defendant Juniper Networks, Inc. (“Juniper”) for infringement of U.S. Patent Nos. 7,345,245 (“the ’245 patent”) and 7,646,091 (“the ’091 patent”) (collectively, the “Asserted Patents”). Plaintiff, on personal knowledge of its own acts, and on information and belief as to all others based on investigation, alleges as follows:

**SUMMARY OF THE ACTION**

1. This is a patent infringement suit relating to Juniper’s unauthorized and unlicensed use of the Asserted Patents. The semiconductor technologies claimed in the Asserted Patents are used by Juniper in the production of one or more of its semiconductor chips and packages and products that contain such chips and packages, including but not limited to EX9200-40F line card that contains the LU 1.1 310-030439 semiconductor IC package.
2. Bell Semiconductor brings this action to put a stop to Juniper’s unauthorized and unlicensed use of the inventions claimed in the Asserted Patents.

### **THE PARTIES**

3. Plaintiff Bell Semic is a limited liability company organized under the laws of the State of Delaware with a place of business at One West Broad Street, Suite 901, Bethlehem, PA 18018.

4. Bell Semic stems from a long pedigree that began at Bell Labs. Bell Labs sprung out of the Bell System as a research and development laboratory, and eventually became known as one of America's greatest technology incubators. Bell Labs employees invented the transistor in 1947 in Murray Hill, New Jersey. It was widely considered one of the most important technological breakthroughs of the time, earning the inventors the Nobel Prize in Physics. Bell Labs made the first commercial transistors at a plant in Allentown, Pennsylvania. For decades, Bell Labs licensed its transistor patents to companies throughout the world, creating a technological boom that led to the use of transistors in the semiconductor devices prevalent in most electronic devices today.

5. Bell Semic, a successor to Bell Labs' pioneering efforts, owns over 1,900 worldwide patents and applications, approximately 1,500 of which are active United States patents. This patent portfolio of semiconductor-related inventions was developed over many years by some of the world's leading semiconductor companies, including Bell Labs, Lucent Technologies, Agere Systems, and LSI Logic and LSI Corporation ("LSI"). This portfolio reflects technology that underlies many important innovations in the development of semiconductors and integrated circuits for high-tech products, including smartphones, computers, wearables, digital signal processors, IoT devices, automobiles, broadband carrier access, switches, network processors, and wireless connectors.

6. The principals of Bell Semic all worked at Bell Labs' Allentown facility, and have continued the rich tradition of innovating, licensing, and helping the industry at large since those early days at Bell Labs. For example, Bell Semic's CTO was an LSI Fellow and Broadcom Fellow. He is known throughout the world as an innovator with more than 300 patents to his name, and he has a sterling reputation for helping semiconductor fabs improve their efficiency. Bell Semic's CEO took a brief hiatus from the semiconductor world to work with Nortel Networks in the telecom industry during its bankruptcy. His efforts saved the pensions of tens of thousands of Nortel retirees and employees. In addition, several Bell Semic executives previously served as engineers at many of these companies and were personally involved in creating the ideas claimed throughout Bell Semic's extensive patent portfolio.

7. On information and belief, Juniper is a corporation organized and existing under the laws of Delaware with its principal place of business and headquarters at 1133 Innovation Way Sunnyvale, California, 94089. Juniper has a registered agent for service of process, CT Corporation System, located at 1999 Bryan St., Ste. 900, Dallas, TX 75201-3136.

8. On information and belief, Juniper develops, designs, and/or manufactures products in the United States, including in this District, that use the structures and/or methods of the Asserted Patents; and/or use structures and/or methods of the Asserted Patents in the United States, including in this District, to make products; and/or distribute, market, sells, or offers to sell in the United States and/or import products into the United States, including in this District, that were manufactured using the patented methods or include the patented structures. Additionally, Juniper introduces those products into the stream of commerce knowing that they will be sold and/or used in this District and elsewhere in the United States.

**JURISDICTION AND VENUE**

9. This is an action for patent infringement arising under the Patent Laws of the United States, Title 35 of the United States Code. Accordingly, this Court has subject matter jurisdiction under 28 U.S.C. §§ 1331 and 1338(a).

10. This Court has personal jurisdiction over Juniper under the laws of the State of Texas, due at least to their substantial business in Texas and in this District. Juniper has purposefully and voluntarily availed themselves of the privileges of conducting business in the United States, in the State of Texas, and in this District by continuously and systematically placing goods into the stream of commerce through an established distribution channel with the expectation that they will be purchased by consumers in this District. In the State of Texas and in this District, Juniper, directly and/or through intermediaries: (i) performs at least a portion of the infringements alleged herein; (ii) develops, designs, and/or manufactures products according to claims of each Asserted Patent; (iii) distributes, markets, sells, or offers to sell products that embody the Asserted Patents; and/or (iv) imports products formed according to the processes/methodologies of the Asserted Patents.

11. On information and belief, venue is proper in this Court pursuant to 28 U.S.C. §§ 1391 and 1400 with respect to Juniper because Juniper has committed, and continues to commit, acts of infringement in this District and has a regular and established place of business in this District. For example, Juniper maintains a regular and established place of business at 5830 Granite Pkwy, Ste. 850, Plano TX.

12. On information and belief, Juniper currently employs more than employs no less than 15 persons in the Eastern District of Texas, and no less than approximately 130 persons in or near the Eastern District of Texas throughout the Dallas-Fort Worth Metroplex, including

many in positions that relate to the Asserted Patents.<sup>1</sup> On information and belief, at least some of the personnel it employs in positions related to the Asserted Patents are in its Plano facility in this District.

**U.S. PATENT NO. 7,345,245**

13. Bell Semiconductor owns by assignment the entire right, title, and interest in the '245 patent, entitled "Robust High Density Substrate Design for Thermal Cycling Reliability," which issued on March 18, 2008.

14. The '245 patent issued to inventors Anand Govind, Zafer Kutlu, and Farshad Ghahghahi from United States Patent Application No. 10/681,554, filed October 8, 2003. A true and correct copy of the '245 patent is attached as Exhibit A.

15. Recent silicon technology advances have placed increased demand for high density signal routing on organic BGA substrates. Increased signal routing density in the substrate is obtained by using fine pitch vias through the core so that routing layers below the core can be efficiently utilized. The via pitch reduction requires the use of thin core substrates which are susceptible to warpage during thermal excursions. Typically, the regions under the die corner are regions of stress concentration. Under cycled thermal excursions, cracks can initiate from the ball pad edges and spread into the layers above the ball pad layer.

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<sup>1</sup>[https://www.linkedin.com/search/results/people/?currentCompany=%5B%222240%22%5D&geoUrn=%5B%22100517351%22%5D&origin=FACETED\\_SEARCH&sid=B%3Bs](https://www.linkedin.com/search/results/people/?currentCompany=%5B%222240%22%5D&geoUrn=%5B%22100517351%22%5D&origin=FACETED_SEARCH&sid=B%3Bs) (LinkedIn results for current Juniper employees in Plano TX) (last visited October 31, 2023);  
[https://www.linkedin.com/search/results/people/?currentCompany=%5B%222240%22%5D&geoUrn=%5B%22102164100%22%2C%22103312651%22%5D&origin=FACETED\\_SEARCH&id=zwc](https://www.linkedin.com/search/results/people/?currentCompany=%5B%222240%22%5D&geoUrn=%5B%22102164100%22%2C%22103312651%22%5D&origin=FACETED_SEARCH&id=zwc) (LinkedIn results for current Juniper employees in Allen and Richardson, TX) (last visited October 31, 2023);  
[https://www.linkedin.com/search/results/people/?currentCompany=%5B%222240%22%5D&geoUrn=%5B%2290000031%22%2C%22104194190%22%5D&origin=FACETED\\_SEARCH&id=hP](https://www.linkedin.com/search/results/people/?currentCompany=%5B%222240%22%5D&geoUrn=%5B%2290000031%22%2C%22104194190%22%5D&origin=FACETED_SEARCH&id=hP) (LinkedIn results for current Juniper employees in Dallas, TX and the Dallas-Fort Worth Metroplex) (last visited October 31, 2023)

16. The '245 patent is generally related to a semiconductor package for a die with improved thermal cycling reliability. To eliminate package failures and occurrences cracks in signal traces, the '245 patent teaches routing of signals away from the high stress area associated with the ball pads and the corner of the die.

17. The '245 patent contains 2 independent claims and 12 total claims, covering an integrated circuit substrate. Claim 1 of the '245 patent reads:

1. A semi-conductor package comprising:

a top layer having a die mounted thereon, said die having a corner;  
and

a plurality of layers under the top layer, said plurality of layers comprising a bottom routing layer having signal traces thereon, and a ball pad layer under the bottom routing layer, said ball pad layer having a plurality of ball pads, wherein none of the signal traces of the bottom routing layer are located over ball pads of the ball pad layer which are disposed in an area within two ball pad pitches of the corner of the die.

18. This claim, as a whole, provides significant benefits and improvements to the function of the semiconductor device, e.g., improving system reliability by avoiding functional failures from cracks in the signal traces caused by thermal cycling stresses under the die corner.

**U.S. PATENT NO. 7,646,091**

19. Bell Semiconductor owns by assignment the entire right, title, and interest in the '091 patent, entitled "Semiconductor Package and Method Using Isolated Vss Plane to Accommodate High Speed Circuitry Ground Isolation," which issued on January 12, 2010.

20. The '091 patent issued to inventors Maurice Othieno, Chok Chia, and Amar Amin from United States Patent Application No. 11/399,723, filed April 6, 2006. A true and correct copy of the '091 patent is attached as Exhibit B.

21. The '091 patent is valid and enforceable under the United States Patent Laws.

22. Bell Semic owns, by assignment, all right, title, and interest in and to the '091 patent, including the right to collect for past damages.

23. Modern integrated circuits require both low-speed and high-speed circuitry. Excessive noise generated by the high-speed circuitry interferes with the operation of the low-speed circuitry sharing the same ground plane. At high data rates this is a serious problem. Additionally, at high system performance the problem of ground bounce is magnified.

24. In order to eliminate those problems, the '091 patent teaches the use of a dedicated high-speed ground plane that is electrically isolated from the ground plane used to ground the low-speed circuitry. As described in the '091 patent, a semiconductor integrated circuit package includes a substrate which can have an integrated circuit die attached to it. The package may include a dedicated high-speed ground plane that is electrically isolated from the ground plane used to ground the low-speed circuitry of the package.

25. The '091 patent contains 1 independent claim and 14 total claims, covering an integrated circuit substrate. Claim 1 of the '091 patent reads:

1. A semiconductor integrated circuit (IC) package which comprises:

- a substrate having a first surface and a second surface wherein;
- a first layer of the substrate includes,
  - a first ground plane enabling electrical connection with low speed electronic circuitry, and
  - a second ground plane that is spatially separated and electrically isolated from the first ground plane, the second ground plane enabling electrical connection with high speed electronic circuitry;
- a second layer of the substrate includes,
  - a third ground plane configured for electrical connection with low speed electronic circuitry, and
  - a fourth ground plane that is spatially separated and electrically isolated from the third ground plane, the third ground plane configured for electrical connection with high speed electronic circuitry;

a plurality of electrical connections that electrically connect the first ground plane with solder balls mounted on the second surface of the substrate;

a plurality of additional electrical connections that electrically connect the second ground plane with solder balls mounted on the second surface of the substrate; and

peripheral electrical contacts arranged on the substrate and configured for connection with electronic circuitry external to the package; and

at least one reference plane associated with each layer of the substrate and the ground planes included thereon.

26. This claim, as a whole, provides significant benefits and improvements to the function of the semiconductor device, e.g., improving system performance by reducing cross-talk and ground-bounce.

**COUNT I – INFRINGEMENT OF U.S. PATENT NO. 7,345,245 (JUNIPER)**

27. Bell Semiconductor re-alleges and incorporates by reference the allegations of the foregoing paragraphs as if fully set forth herein.

28. The '245 patent is valid and enforceable under the United States patent Laws.

29. Bell Semiconductor owns, by assignment, all right, title, and interest in and to the '245 patent, including the right to collect for past damages.

30. On information and belief, Juniper has infringed and continues to directly infringe, either literally or under the doctrine of equivalents, pursuant to 35 U.S.C. § 271(a), one or more claims of the '245 patent by making, using, offering to sell, or selling within the United States, or importing into the United States, one or more semiconductor devices, including as one example the and its infringement by the LU 1.1 310-030439 in the EX9200-40F line card, in the United States.

31. A claim chart demonstrating Juniper's infringement of the '245 patent by the LU 1.1 310-030439 in the EX9200-40F line card is attached hereto as Exhibit C.



32. Juniper's Accused Products infringe and continue to infringe one or more claims of the '245 patent during the pendency of the '245 patent.

33. Juniper's infringement of the '245 patent was, and continues to be, done with knowledge of the '245 patent and with knowledge of Bell Semiconductor's contention that Juniper is infringing the '245 patent. On or about June 30, 2023, a representative of Bell Semiconductor provided actual notice to Juniper of the '245 patent and its infringement by the LU 1.1 310-030439 in the EX9200-40F line card. Juniper's infringement of the '245 patent is thus willful and deliberate, entitling Bell Semiconductor to enhanced damages and attorneys' fees.

34. Juniper's infringement of the '245 patent is exceptional and entitles Bell Semiconductor to attorneys' fees and costs incurred in prosecuting this action under 35 U.S.C. § 285.

35. Bell Semiconductor has been damaged by Juniper's infringement of the '245 patent and will continue to be damaged unless Juniper is enjoined by this Court. Bell Semiconductor has suffered and continues to suffer irreparable injury for which there is no adequate remedy at law. The balance of hardships favors Bell Semiconductor, and public interest is not disserved by an injunction.

36. Bell Semiconductor is entitled to recover from Juniper all damages that Bell Semiconductor has sustained as a result of Juniper's infringement of the '245 patent, including without limitation and/or not less than a reasonable royalty.

**COUNT II – INFRINGEMENT OF U.S. PATENT NO. 7,646,091 (JUNIPER)**

37. Bell Semic re-alleges and incorporates by reference the allegations of the foregoing paragraphs as if fully set forth herein.

38. On information and belief, Juniper has and continues to directly infringe pursuant to 35 U.S.C. § 271(a) one or more claims of the '091 patent by making, using, offering to sell, or selling within the United States, or importing into the United States, one or more semiconductor devices, including, by way of example, the LU 1.1 310-030439 in the EX9200-40F line card, in the United States.

39. A claim chart demonstrating Juniper's infringement of the '091 patent via the LU 1.1 310-030439 in the EX9200-40F line card is attached hereto as Exhibit D.

40. Juniper's '091 Accused Products infringe and continue to infringe one or more claims of the '091 patent during the pendency of the '091 patent.

41. On information and belief, Juniper has and continues to infringe pursuant to 35 U.S.C. § 271, *et seq.*, directly, either literally or under the doctrine of equivalents, by making, using, selling or offering to sell in the United States, and/or importing into the United States '091 Accused Products in violation of one or more claims of the '091 patent.

42. Juniper's infringement of the '091 patent was, and continues to be, done with knowledge of the '091 patent and with knowledge of Bell Semiconductor's contention that Juniper is infringing the '091 patent. On June 30, 2023, a representative of Bell Semiconductor provided actual notice to Juniper of the '091 patent and its infringement by the LU 1.1 310-030439. Juniper's infringement of the '091 patent is thus willful and deliberate, entitling Bell Semiconductor to enhanced damages and attorneys' fees.

43. Juniper's infringement of the '091 patent is exceptional and entitles Bell Semic to attorneys' fees and costs incurred in prosecuting this action under 35 U.S.C. § 285.

44. Bell Semic is entitled to recover from TI all damages that Bell Semic has sustained as a result of Juniper's infringement of the '091 patent, including without limitation and/or not less than a reasonable royalty.

**PRAYER FOR RELIEF**

WHEREFORE, Bell Semiconductor respectfully requests that this Court enter judgment in its favor as follows and award Bell Semiconductor the following relief:

- a. a judgment declaring that Defendant has infringed one or more claims of the Asserted Patents in this litigation pursuant to 35 U.S.C. § 271, *et seq.*;
- b. an award of damages adequate to compensate Bell Semiconductor for infringement of the Asserted Patents by Defendant, in an amount to be proven at trial, including supplemental post-verdict damages until such time as Defendant ceases its infringing conduct;
- c. a permanent injunction, pursuant to 35 U.S.C. § 283, prohibiting Defendant and its officers, directors, employees, agents, consultants, contractors, suppliers, distributors, all affiliated entities, and all others acting in privity with Defendant, from committing further acts of infringement;
- d. a judgment requiring Defendant to make an accounting of damages resulting from its infringement of each of the respective Asserted Patents;
- e. enhanced damages for willful infringement;
- f. the costs of this action, as well as attorneys' fees as provided by 35 U.S.C. § 285;
- g. pre-judgment and post-judgment interest at the maximum amount permitted by law;

h. all other relief, in law or equity, to which Bell Semiconductor is entitled.

**DEMAND FOR JURY TRIAL**

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

Dated: October 31, 2023

*/s/ Clifford Chad Henson*

C. Chad Henson (TX Bar No. 24087711)

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