

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

**Bell Semiconductor, LLC**

**Plaintiff,**

**v.**

**Cisco Systems, Inc.**

**Defendant.**

**Civil Action No. 24-cv-937**

**JURY TRIAL DEMANDED**

**COMPLAINT**

Plaintiff Bell Semiconductor, LLC (“Bell Semic” or “Plaintiff”) brings this Complaint against Defendant Cisco Systems, Inc. (“Cisco”) for infringement of U.S. Patent Nos. 7,345,245 and (“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 Cisco’s unauthorized and unlicensed use of the Asserted Patents. The semiconductor technologies claimed in the Asserted Patents are used by Cisco in one or more of its semiconductor chips and packages, including but not limited to the Cisco 08-1072-03 semiconductor integrated circuit package (“Exemplary Accused Package”) and products containing at least one such chip and/or package, such as the Cisco UCS Virtual Interface Card 1457 system board, which contains an Exemplary Accused Package. These semiconductor chips and/or packages, and products containing the same, are collectively referred to as the “Accused Products.”

2. Bell Semic brings this action to put a stop to Cisco'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 401 N. Michigan Ave. Chicago, IL 60611.

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. A number of the principals of Bell Semic 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. In addition, certain 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, Cisco is a corporation organized and existing under the laws of Delaware with its principal place of business and headquarters at 170 West Tasman Dr., San Jose, CA 95134. Cisco has a registered agent for service of process, Corporation Service Company (dba CSC - Lawyers Incorporating Service Company), located at 211 E. 7th Street, Suite 620, Austin, TX 78701-3218.

8. On information and belief, Cisco develops, designs, and/or manufactures products in the United States, including in this District, that use the structures and/or methods of the Asserted Patent; 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, Cisco 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**

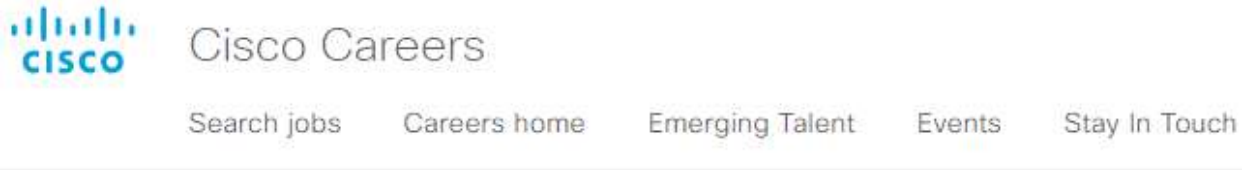
9. This is an action for patent infringement arising under the Patent Laws of the United States, Title 35 of the United States Code. Accordingly, this Court has subject matter jurisdiction under 28 U.S.C. §§ 1331 and 1338(a).

10. This Court has personal jurisdiction over Cisco under the laws of the State of Texas, due at least to their substantial business in Texas and in this District. Cisco 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, Cisco, 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 Patent; 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 Cisco because Cisco 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, Cisco maintains regular and established places of business at 2260 Chelsea Blvd., Allen TX 75013; 2250 East President George Bush Highway, Building 5, Richardson TX; and Cisco Building RCDN-6, Renner Pkwy & W. Renner Rd., Richardson TX 75080.

12. On information and belief, Cisco currently employs nearly 500 persons in the Eastern District of Texas, and approximately 1900 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 and/or Accused Products are in Cisco's Richardson and/or Allen facilities in this District, and as of this time last year, Cisco was actively seeking to hire additional such personnel. E.g.,



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## Switching Escalation Engineer

<b>LOCATION:</b> Richardson, Texas, US	<b>JOB TYPE</b> Professional
<b>AREA OF INTEREST</b> Engineer - Network	<b>TECHNOLOGY INTEREST</b> Networking, Software Development
<b>COMPENSATION RANGE</b> 125400 USD - 184600 USD	<b>JOB ID</b> 1402165

<sup>1</sup>[https://www.linkedin.com/search/results/people/?currentCompany=%5B%2292950%22%2C%221063%22%5D&geoUrn=%5B%22102164100%22%2C%22103312651%22%5D&origin=FACEBOOK\\_SEARCH&sid=P\\*](https://www.linkedin.com/search/results/people/?currentCompany=%5B%2292950%22%2C%221063%22%5D&geoUrn=%5B%22102164100%22%2C%22103312651%22%5D&origin=FACEBOOK_SEARCH&sid=P*) (LinkedIn results for current Cisco and Cisco Meraki employees in Richardson, TX and Allen, TX) (last visited October 16, 2024);  
[https://www.linkedin.com/search/results/people/?currentCompany=%5B%2292950%22%2C%221063%22%5D&geoUrn=%5B%2290000031%22%2C%22104194190%22%5D&origin=FACEBOOK\\_SEARCH&sid=v1C](https://www.linkedin.com/search/results/people/?currentCompany=%5B%2292950%22%2C%221063%22%5D&geoUrn=%5B%2290000031%22%2C%22104194190%22%5D&origin=FACEBOOK_SEARCH&sid=v1C) (LinkedIn results for current Cisco and Cisco Meraki employees in Dallas, TX and the Dallas-Fort Worth Metroplex) (last visited October 16, 2024)

## WHAT YOU'LL DO

In this Software Engineer role, you will be part of a highly technical team that solves critical issues, and manages customer communication and virtual teams. You'll balance hard technical skills with the soft skills required to quickly drive customer issues to closure. You'll maintain end-to-end ownership of efforts to resolve customer issues and help drive improvements in product quality by sharing the field learnings with engineering teams. It's a very dynamic role that requires engaging with Sales/account teams, Marketing, Development, and Test teams.

## WHO YOU'LL WORK WITH

The Switching Escalation team is part of the Enterprise Switching Engineering Group in Cisco and manages overall customer experience for our flagship products & solutions in the enterprise space. Enterprise Switching is on the cusp of major transition with the launch of next-generation Catalyst 9000 Switching Family to support intent-based networking. This is an exciting time to be part of this major transition in enterprise switching business.

*See Cisco Careers, Switching Escalation Engineer,*

<https://jobs.cisco.com/jobs/ProjectDetail/Switching-Escalation-Engineer/1402165> (last visited October 30, 2023).

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

13. Bell Semic 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.

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 of 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 Semic 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 fourth 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**

27. Bell Semic 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 Semic 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, Cisco 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 examples the Cisco 08-1072-03 semiconductor integrated package and the Cisco UCS Virtual Interface Card 1457 system board (which contains a Cisco 08-1072-03 semiconductor integrated package), in the United States.

31. A claim chart demonstrating Cisco's infringement of certain exemplary claims of the '245 patent by the Cisco 08-1072-03 semiconductor integrated package and the Cisco UCS Virtual Interface Card 1457 system board (which contains a Cisco 08-1072-03 semiconductor integrated package) is attached hereto as Exhibit C.

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

33. Cisco's infringement of the '245 patent was, and continues to be, done with knowledge of the '245 patent and with knowledge of Bell Semic's contention that Cisco is infringing the '245 patent. On or about June 30, 2023, a representative of Bell Semic provided actual notice to Cisco of the '245 patent. On or about October 17, 2024, Cisco was further provided actual notice of its infringement thereof via the Cisco 80-1072-03 semiconductor IC package and products containing the same, including but not limited to the Cisco UCS Virtual Interface Card 1457 system board. Cisco's infringement of the '245 patent is thus willful and deliberate at least as of that date, entitling Bell Semic to enhanced damages and attorneys' fees.

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

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

36. Bell Semic is entitled to recover from Cisco all damages that Bell Semic has sustained as a result of Cisco'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**

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

38. The '091 patent is valid and enforceable under the United States patent laws.

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

40. On information and belief, Cisco 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 '091 patent by making, using, offering to sell, or selling within the United States, or importing into the United States, one or more semiconductor integrated circuit packages and products containing the same, including as one example the Cisco 08-1072-03 semiconductor integrated circuit package, in the United States.

41. A claim chart demonstrating Cisco's infringement of certain exemplary claims of the '091 patent by the Cisco 08-1072-03 semiconductor integrated circuit package is attached hereto as Exhibit D.

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

43. Cisco's infringement of the '091 patent was, and continues to be, done with knowledge of the '091 patent and with knowledge of Bell Semic's contention that Cisco is infringing the '091 patent. On or about October 17, 2024, a representative of Bell Semic provided actual notice to Cisco of the '091 patent and Cisco's infringement thereof via the Cisco 80-1072-03 semiconductor IC package. Cisco's infringement of the '091 patent is thus willful and deliberate at least as of that date, entitling Bell Semic to enhanced damages and attorneys' fees.

44. Cisco'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.

45. Bell Semic has been damaged by Cisco's infringement of the '091 patent and will continue to be damaged unless Cisco is enjoined by this Court. Bell Semic has suffered and continues to suffer irreparable injury for which there is no adequate remedy at law. The balance of hardships favors Bell Semic, and public interest is not disserved by an injunction.

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

**PRAYER FOR RELIEF**

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

- a. a judgment declaring that Defendant has infringed one or more claims of each Asserted Patent in this litigation pursuant to 35 U.S.C. § 271, *et seq.*;
- b. an award of damages adequate to compensate Bell Semic for infringement of each Asserted Patent 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 Asserted Patent;
- 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 Semic is entitled.

**DEMAND FOR JURY TRIAL**

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

Dated: October 18, 2024

/s/ Clifford Chad Henson

C. Chad Henson (TX Bar No. 24087711)

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