

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

GREENTHREAD, LLC

Plaintiff,

vs.

**AMS-OSRAM AG, OSRAM GMBH, and
AMS SENSORS USA INC.**

Defendants.

Civil Action No. 2:23-cv-179

JURY TRIAL DEMANDED

ORIGINAL COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff Greenthread, LLC (“Greenthread” or “Plaintiff”) files this Original Complaint against Defendants AMS-OSRAM AG, OSRAM GmbH, and AMS Sensors USA Inc. (collectively “AMS-OSRAM” or “Defendants”) and hereby alleges as follows:

THE NATURE OF THE ACTION

1. Greenthread owns a family of patents related to transistors and other components of integrated semiconductor devices. Greenthread’s patented inventions describe semiconductor devices that employ graded dopants and well regions for creating electric fields for aiding and/or limiting the movement of carriers to (or from) the semiconductor surface to (or from) the semiconductor substrate. These inventions improve semiconductor devices by (1) creating faster, more efficient, and more reliable processors, logic devices, and image sensors and (2) allowing manufacturers to scale down the feature size of their semiconductor products.

2. Defendants have infringed and continue to infringe six Greenthread patents: U.S. Patent Nos. 8,421,195 (the “195 Patent”), 9,190,502 (the “502 Patent”), 10,510,842 (the “842 Patent”), 10,734,481 (the “481 Patent”), 11,121,222 (the “222 Patent”), and 11,316,014 (the

“’014 Patent”), (collectively “the Greenthread Patents”), copies of which are attached hereto as Exhibits 1-6, respectively. Defendants have infringed and continue to infringe the Greenthread Patents by making, using, selling, offering for sale, and/or importing into the United States, semiconductor devices with infringing graded dopant regions and/or electronic products containing the same.

THE PARTIES

3. Plaintiff Greenthread, LLC (“Greenthread”) is a limited liability company organized and existing under the laws of Texas, having its principal place of business at 7424 Mason Dells Drive, Dallas, Texas 75230-3244.

4. Defendant AMS-OSRAM AG is a foreign corporation organized and existing under the laws of Austria, having its principal places of business at Tobelbader Strasse 30, 8141 Premstaetten, Austria and at Marcel-Breuer-Strasse 4 80807 Munich, Germany.

5. Defendant OSRAM GmbH is a foreign corporation organized and existing under the laws of Germany, having its principal places of business at Marcel-Breuer-Strasse 4 80807 Munich, Germany and Tobelbader Strasse 30, 8141 Premstaetten, Austria.

6. Defendant ams Sensors USA Inc. is organized and exists under the law of Nevada, with its principal place of business at 5556 Tennyson Parkway, Plano, Texas 75024. Upon information and belief, ams Sensors USA Inc. is a wholly owned subsidiary of AMS-OSRAM AG and/or OSRAM GmbH. ams Sensors USA Inc.’s Nevada corporate registration lists its Plano address for all of its officers and directors.

7. On information and belief AMS-OSRAM AG and OSRAM GmbH acts with and through ams Sensors USA, Inc. and other US affiliates or partners to conduct their joint business in the United States, including designing, using, manufacturing selling and importing into the

United States AMS-OSRAM Accused Products. On information and belief, ams Sensors USA, Inc. employees and officers coordinate with employees of other AMS-OSRAM entities in these activities to pursue a common enterprise.

8. The AMS-OSRAM enterprise purports to be a “global leader in optical solutions” that offers “a unique product and technology portfolio for sensing, illumination and visualization: from prime-quality light emitters and optical components to micro-modules, light sensors, ICs and related software.”¹ AMS-OSRAM designs, manufactures, tests, and sells semiconductor devices to approximately 22,000 customers with over 40 research and development sites worldwide.²

SUBJECT MATTER JURISDICTION

9. This action arises under the patent laws of the United States, namely 35 U.S.C. §§ 271, 281, and 284-285, among others.

10. This court has subject matter jurisdiction over the patent infringement claims asserted in this case under 28 U.S.C. §§ 1331 and 1338(a).

PERSONAL JURISDICTION AND VENUE

11. The Court has general personal jurisdiction over ams Sensors, Inc. because its principal place of business is in this district. ams Sensors USA Inc.’s Nevada corporate registration lists 5556 Tennyson Parkway, Plano, Texas 75024 as the address for all of its officers and directors.

12. The Court has general personal jurisdiction over AMS-OSRAM AG and OSRAM GmbH because they operate and control the common business AMS-OSRAM enterprise, including ams Sensors USA Inc. over which the court has general personal jurisdiction. For example, notwithstanding the purported corporate separateness of AMS-OSRAM AG and

¹ <https://ams-osram.com/about-us>

² <https://ams-osram.com/>

OSRAM GmbH the companies maintain co-headquarters for the AMS-OSRAM enterprise.³

13. On information and belief, AMS-OSRAM AG manufactures some AMS-OSRAM Accused Products (defined below) for sale and import into the United States with and through ams Sensors USA Inc. at a fab co-located with its Austrian co-headquarters.⁴

14. Likewise, on information and belief, the AMS-OSRAM Advanced Optical Sensors division of the AMS-OSRAM enterprise is responsible for the design, testing, manufacture, and sale of many accused products. The AMS-OSRAM enterprise holds out that division as a “global team in Europe, North America and Asia.”⁵ On information and belief, the persons comprising this team are formally employed by various AMS-OSRAM entities in the countries in which they work, including, ams Sensors USA Inc., but operate as a single “team.” On information and belief, other AMS-OSRAM divisions are similarly organized.

15. This Court has personal jurisdiction over Defendants in accordance with the Texas Long Arm Statute, Tex. Civ. Prac. & Rem. Code § 17.042, because, among other things, Defendants have (1) contracted in Texas to sell AMS-OSRAM Accused Products including at Defendants’ Plano facility, (2) contracted with Texas residents to sell AMS-OSRAM Accused Products in Texas (including Mouser Electronics), (3) committed other acts of infringement in Texas, including, on information and belief, testing accused products at Defendants’ Plano facility, and (3) recruited Texas residents for employment, including at Defendants’ facility in Plano Texas.

16. This Court has specific personal jurisdiction over Defendants because they have committed acts within this District giving rise to this action (including acts of infringement) and

³ <https://ams-osram.com/about-us/locations-distribution/headquarters>

⁴ <https://ams-osram.com/about-us/locations-distribution/headquarters>

⁵ <https://ams-osram.com/news/press-releases/elektra-award-shortlist>

have established minimum contacts with this forum such that the exercise of jurisdiction over Defendants would not offend traditional notions of fair play and substantial justice. Such acts include designing, testing, and selling AMS-OSRAM Accused Products in and from this district, including from AMS-OSRAM's "Design Center" and "Sales Office" at 5556 Tennyson Parkway Plano, TX 75024.⁶

17. Products of the AMS-OSRAM enterprise are designed and advertised specifically for the U.S. market. For example, AMS-OSRAM advertises that TMF8828 (identified below as an exemplary AMS-OSRAM Accused Product) complies with federal safety regulations, 21 CFR 1040.10 and 1040.11.⁷

18. Furthermore, OSRAM GmbH is an owner and operator of the internet domain www.ams-osram.com. On information and belief, AMS-OSRAM AG, OSRAM GmbH, and the AMS-OSRAM enterprise are responsible for the website at www.ams-osram.com.

⁶ <https://ams-osram.com/about-us/locations-distribution/design-application-test-center>
<https://ams-osram.com/about-us/locations-distribution/sales-offices-branches>

⁷ https://ams.com/documents/20143/6015057/TMF882X_DS000693_5-00.pdf

ICANN | LOOKUP

Registration data lookup tool

Enter a domain name or an Internet number resource (IP Network or ASN) [Frequently Asked Questions \(FAQ\)](#)

By submitting any personal data, I acknowledge and agree that the personal data submitted by me will be processed in accordance with the ICANN [Privacy Policy](#), and agree to abide by the website [Terms of Service](#) and the [registration data lookup tool Terms of Use](#).

Domain Information

Name: AMS-OSRAM.COM
Registry Domain ID: 2420500666_DOMAIN_COM-VRSN
Domain Status:
[clientTransferProhibited](#)
Nameservers:
DNS1.CSCDNS.NET
DNS2.CSCDNS.NET

Dates


Registry Expiration: 2023-08-06 12:40:11 UTC
Updated: 2021-11-22 13:16:07 UTC
Created: 2019-08-06 12:40:11 UTC

Contact Information

Administrative:
Name: Steffen Siguda
Organization: OSRAM GmbH
Email: wwwdomains@osram.com
Phone: tel:+49.8962130
Fax: tel:+49.8962132020
Mailing Address: Marcel-Breuer-Strasse 6, Munich, BY, 80807, DE

19. A visitor to www.ams-osram.com attempting to purchase a TMF8828 (identified below as an exemplary AMS-OSRAM Accused Product) is directed to AMS-OSRAM’s Texas-based “Channel Partner” Mouser Electronics.

ams TMF8828 configurable 8x8 multi-zone Time-of-Flight Sensor



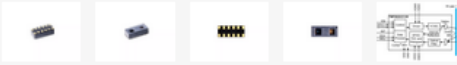
Description

The TMF8828 is a direct time-of-flight (dToF) sensor in a single modular package with associated VCSEL. The dToF device is based on SPAD, TDC and histogram technology and achieves 5000 mm detection range. Due to its lens on the SPAD, it supports 3x3, 4x4, 3x6 and 8x8 multizone output data and a wide, dynamically adjustable, field of view. A multi-lens-array (MLA) inside the package above the VCSEL widens up the FoI (field of illumination). All processing of the raw data is performed on-chip and the TMF8828 provides distance information together with confidence values on its I2C interface.

[Datasheet](#) [Choose product](#)

[Contact us](#) [Support](#)

New



Ordering codes

Product Type	Description	Order No.
TMF8828-1A		Request product
TMF8828-1AM		Buy now

1 AMS-OSRAM product page for TMF8828

Order now

Descr

Digi-Key [Buy now](#)

Mouser [Buy now](#)

2 Pop-up window for "Buy Now" button on TMF8828 product page

The screenshot shows the Mouser Electronics website for the product **TMF8828-1AM**. The page layout includes a top navigation bar with links for Products, Manufacturers, Services & Tools, Technical Resources, and Help. A search bar is located at the top right. The main content area is divided into two columns. The left column contains the product image and a table of specifications:

Mouser #:	985-TMF8828-1AM
Mfr. #:	TMF8828-1AM
Mfr.:	ams OSRAM
Customer #:	<input type="text" value="Customer #"/>
Description:	Distance Sensor Modules 1D TOF
Lifecycle:	NEW New Product: New from this manufacturer.
Datasheet:	TMF8828-1AM Datasheet (PDF)
ECAD Model:	Request Free CAD Models
Download the free Library Loader to convert this file for your ECAD Tool. Learn more about ECAD Model.	
More Information	Learn more about ams OSRAM TMF8828-1AM

The right column displays the product's availability and pricing:

- In Stock: 1,012**
- Stock:** 1,012 Can Ship Immediately
- Factory Lead-Time:** 22 Weeks
- Enter Quantity:**
- Pricing (USD)**

Qty.	Unit Price	Ext. Price
Cut Tape / MouseReel™ †		
1	\$12.08	\$12.08
10	\$9.54	\$95.40
50	\$7.85	\$392.50
100	\$6.79	\$679.00
Full Reel (Order in multiples of 500)		
500	\$6.35	\$3,175.00
1,000	\$5.93	\$5,930.00
2,000	\$5.82	\$11,640.00
5,000	Quote	

3 Clicking "Mouser" button on AMS-OSRAM TMF8828 product page leads to Mouser TMF8828 product page.

The screenshot shows the "Distribution partners North America" section. It lists several partners in a grid format:

- Canada:** Future Electronics Inc. - Worldwide Corporate Headquarters, 237 Hymus Blvd., Pointe-Claire, Quebec, H9R 5C7, Canada. www.futureelectronics.com, [Offices](#)
- United States:** Arrow Electronics, Inc., 9201 East Dry Creek Road, Centennial, CO 80112, www.arrow.com, [Offices](#)
- United States:** Avnet, Inc. - Corporate Headquarters, 2211 South 47th Street, Phoenix, AZ 85034, www.avnet.com, [Offices](#)
- United States:** Digi-Key Corp., 701 Brooks Avenue South, 56701-2757 Thief River Falls, sales@digkey.com, <https://www.digkey.com>
- United States:** Mouser Electronics, Inc. (HQ), 1000 North Main Street, 76063-1514 Mansfield, <https://www2.mouser.com/>

4 AMS-OSRAM site listing Mouser as a "Distribution partner." The address provided for Mouser's "HQ" is located outside Dallas, Texas.

20. Venue is proper in this Court pursuant to 28 U.S.C. §§ 1391 and 1400 because

AMS-OSRAM has committed, and continues to commit, acts of infringement in this District and has a regular and established place of business in this District at 5556 Tennyson Parkway, Plano, Texas 75024. Venue is also proper because ams Sensors USA Inc. maintains its principal place of business in the District at 5556 Tennyson Parkway, Plano, Texas 75024.

21. “AMS-OSRAM Accused Products” are products accused of meeting the claim limitations of a Greenthread Patent in this suit. AMS-OSRAM designs and manufactures semiconductor devices containing transistors and other structures that infringe the Greenthread Patents in the United States. The infringing structures within semiconductor devices have application in many types of devices designed and manufactured by AMS-OSRAM, including capacitive sensors, light sensors, 3D sensors, position sensors, complementary metal-oxide semiconductor (“CMOS”) imaging sensors, sensor interfaces, analog and mixed signal application specific integrated circuits (“ASIC”), infrared emitters, laser diodes, sensors for phototransistors, photodiodes, optical sensors, and photo integrated circuits; and LEDs for illumination and automotive, consumer, and industry applications.⁸

22. Exhibit 8 demonstrates how an exemplary AMS-OSRAM Accused Product meets the claim limitations of Greenthread Patents and is herein incorporated by reference.

THE GREENTHREAD PATENTS

23. On April 16, 2013, the U.S. Patent and Trademark Office duly and legally issued U.S. Patent No. 8,421,195 (“the ’195 Patent”), entitled “Semiconductor Devices with Graded Dopant Regions,” listing Dr. Mohan Rao as the inventor, from a patent application filed January 12, 2007. The ’195 Patent claims priority from U.S. Patent Application No. 10/934,915,⁹ filed on

⁸ <https://ams.com/en/products>; <https://www.osram.com/os/products/index.jsp>

⁹ Pub. No. US 2006/0049464.

September 3, 2004. A true and correct copy of the '195 Patent is attached hereto as Exhibit 1 and incorporated herein by reference.

24. On November 17, 2015, the U.S. Patent and Trademark Office duly and legally issued U.S. Patent No. 9,190,502 (“the '502 Patent”), entitled “Semiconductor Devices with Graded Dopant Regions,” listing Dr. Mohan Rao as the inventor, from a patent application filed October 16, 2014. The '502 Patent claims priority from U.S. Patent Application No. 10/934,915,¹⁰ filed on September 3, 2004. A true and correct copy of the '502 Patent is attached hereto as Exhibit 2 and incorporated herein by reference.

25. On December 17, 2019, the U.S. Patent and Trademark Office duly and legally issued U.S. Patent No. 10,510,842 (“the '842 Patent”), entitled “Semiconductor Devices with Graded Dopant Regions,” listing Dr. Mohan Rao as the inventor, from a patent application filed on May 9, 2017. The '842 Patent claims priority from U.S. Patent Application No. 10/934,915,¹¹ filed on September 3, 2004. A true and correct copy of the '842 Patent is attached hereto as Exhibit 3 and incorporated herein by reference.

26. On August 4, 2020, the U.S. Patent and Trademark Office duly and legally issued U.S. Patent No. 10,734,481 (“the '481 Patent”), entitled “Semiconductor Devices with Graded Dopant Regions,” listing Dr. Mohan Rao as the inventor, from a patent application filed on December 17, 2019. The '481 Patent claims priority from U.S. Patent Application No. 10/934,915,¹² filed on September 3, 2004. A true and correct copy of the '481 Patent is attached hereto as Exhibit 4 and incorporated herein by reference.

27. On September 14, 2021, the U.S. Patent and Trademark Office duly and legally

¹⁰ Pub. No. US 2006/0049464.

¹¹ Pub. No. US 2006/0049464.

¹² Pub. No. US 2006/0049464.

issued U.S. Patent No. 11,121,222 (“the ’222 Patent”), entitled “Semiconductor Devices with Graded Dopant Regions,” listing Dr. Mohan Rao as the inventor, from a patent application filed on July 27, 2020. The ’222 Patent claims priority from U.S. Patent Application No. 10/934,915,¹³ filed on September 3, 2004. A true and correct copy of the ’222 Patent is attached hereto as Exhibit 5 and incorporated herein by reference.

28. On April 26, 2022, the U.S. Patent and Trademark Office duly and legally issued U.S. Patent No. 11,316,014 (“the ’014 Patent”), entitled “Semiconductor Devices with Graded Dopant Regions,” listing Dr. Mohan Rao as the inventor, from a patent application filed on July 9, 2021. The ’014 Patent claims priority from U.S. Patent Application No. 10/934,915,¹⁴ filed on September 3, 2004. A true and correct copy of the ’014 Patent is attached hereto as Exhibit 6 and incorporated herein by reference.

29. The ’195, ’502, ’842, ’481, ’222, and ’014 Patents are collectively referred to as the “Greenthread Patents.”

30. Greenthread exclusively owns all rights, title, and interest in the Greenthread Patents necessary to bring this action, including the right to recover past and future damages. Certain of the Greenthread Patents were previously owned by Dr. G.R. Mohan Rao (“Dr. Rao”). On April 27, 2015, Dr. Rao assigned to Greenthread the then-issued Greenthread Patents and all related “continuations, continuations-in-part and extensions of said Applications and Patents and any pending applications or issued patents that directly claim or are amended to claim priority to any of the Applications or Patents.” Dr. Rao’s assignment was recorded with the U.S. Patent and Trademark Office on May 13, 2015, and again on July 22, 2021, and is attached hereto as Exhibit

¹³ Pub. No. US 2006/0049464.

¹⁴ Pub. No. US 2006/0049464.

7. Greenthread has therefore owned all rights to the Greenthread Patents necessary to bring this action throughout the period of Texas Instrument's infringement and still owns those rights to the Greenthread Patents.

31. Defendant is not currently licensed to practice the Greenthread Patents.

32. The Greenthread Patents are valid and enforceable.

FACTUAL BACKGROUND

33. Dr. G.R. Mohan Rao ("Dr. Rao"), the sole inventor of the Greenthread Patents, has been an innovator in the semiconductor industry since the 1960s. He is a named inventor on more than 100 Patents worldwide and authored numerous technical publications over the last 50 years.

34. In September 1968, Dr. Rao received a Ph.D. in physics with a specialization in electronics from Andhra University in Waltair, India. He then traveled to the United States to attend a graduate program in physics at the University of Cincinnati.

35. After learning of an opportunity to work with Professor William Carr of Southern Methodist University ("SMU"), Dr. Rao transferred to SMU where he earned a Ph.D. in Electrical Engineering. While there, he worked in the SMU laboratory with Jack Kilby of Texas Instruments (a pioneering electrical engineer who would later receive a Nobel Prize for his work), on metal-oxide-silicon transistors ("MOS devices"), which are used for switching and amplifying electronic signals in electronic devices. MOS devices form the basis of modern electronics and are the most widely used semiconductor devices in the world. The U.S. Patent and Trademark Office has called this device a "groundbreaking invention that transformed life and culture around the world."¹⁵ Dr. Rao built these devices from scratch while a graduate student at SMU.

36. Through his mentor, Jack Kilby, Dr. Rao interviewed with—and was ultimately

¹⁵ <https://www.uspto.gov/about-us/news-updates/remarks-director-iancu-2019-international-lectual-property-conference>

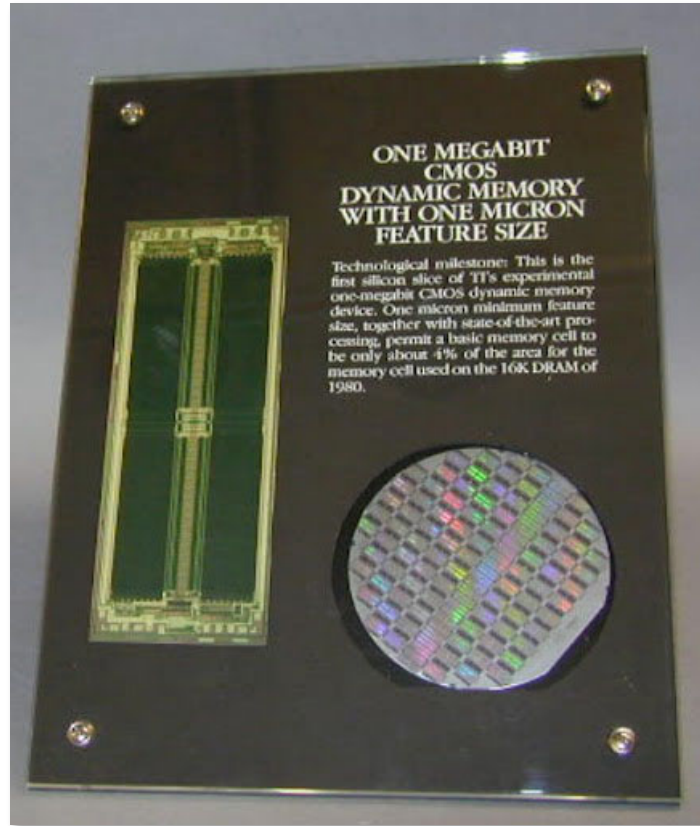
hired by—Texas Instruments to continue his work on MOS devices in 1972. Dr. Rao worked at Texas Instruments for the next twenty-two years, rising from an engineer to a Senior Fellow. At that time, Texas Instruments had only 12 Senior Fellows out of approximately 20,000 engineers. Eventually, Dr. Rao moved into a management position at Texas Instruments, ultimately becoming a Senior Vice President in 1985.

37. At Texas Instruments, Dr. Rao received his first patent while working in a process and product engineering capacity to solve a production problem with Texas Instruments' 4-kilobit RAM product. That patent was merely the beginning of Dr. Rao's long inventive career. Indeed, from the late 1970s through the mid-1980s, Dr. Rao worked on or managed projects relating to Texas Instruments' 64kb RAM, 256Kb RAM, 1Mb RAM, 4 Mb RAM, EEPROM, SRAM, and microcontrollers. For that work, Dr. Rao received numerous additional U.S. Patents.

38. The USPTO was not the only organization to recognize Dr. Rao's achievements. Some of Dr. Rao's work at Texas Instruments was so remarkable that it has been credited in multiple exhibits in the National Museum of American History at the Smithsonian Institution.¹⁶ For example, the Smithsonian has displayed Texas Instruments' experimental 1-megabit CMOS DRAM, produced in April 1985 under Dr. Rao's leadership, and credited Dr. Rao for the achievement.¹⁷

¹⁶ <http://smithsonianchips.si.edu/texas/wafer.htm>

¹⁷ http://smithsonianchips.si.edu/texas/t_360.htm



39. In 1994, Dr. Rao left Texas Instruments for Cirrus Logic. During his two-year tenure at Cirrus Logic, he received more U.S. Patents relating to his work on integrated graphics controllers and memory.

40. In 1996, Dr. Rao started a company called Silicon Aquarius. Through a relationship between Silicon Aquarius and Matsushita, Dr. Rao led a design team in working on a 256Mb DRAM chip. After Silicon Aquarius ceased operations, Dr. Rao did consulting work for a number of different consulting companies and devoted much of his free time to thinking about various challenges and problems with which the semiconductor industry had struggled for years.

41. In 2003, Dr. Rao and Philip John founded Greenthread to continue Dr. Rao's pioneering work. A focal point of Dr. Rao's research was poor refresh time and the related problem of how to deal with and control the movement of both wanted and unwanted carriers in semiconductor devices, including memory and logic devices. Dr. Rao realized that graded dopants

could be used to create a “drift layer” and other structures to facilitate the movement—in an upward or downward direction, as appropriate—of carriers from the semiconductor surfaces down into the substrate and vice versa. It was Dr. Rao’s work on this problem that culminated in the Greenthread Patents.

42. Dr. Rao resides in this District.

AMS-OSRAM’S INFRINGEMENT

43. AMS-OSRAM has directly infringed, and continues to infringe, one or more claims of each of the Greenthread Patents through making, using, offering to sell, selling within the United States, and/or importing into the United States semiconductor products, including capacitive sensors, light sensors, 3D sensors, position sensors, CMOS imaging sensors, sensor interfaces, analog and mixed signal ASICs, infrared emitters, laser diodes, sensors for phototransistors, photodiodes, optical sensors, and photo integrated circuits; and LEDs for illumination and automotive, consumer, and industry applications¹⁸ that practice the claimed inventions (*i.e.*, the AMS-OSRAM Accused Products). A non-exhaustive, exemplary list of the types of products or devices that infringe are further identified in Exhibit 8.

44. As shown in Exhibit 8, an exemplary AMS-OSRAM Accused Product, TMF8828, meets each and every element of at least one claim of the Greenthread Patents. As shown above, the exemplary accused products are sold in the United States through AMS-OSRAM authorized distributors, such as Mouser Electronics.

45. Upon information and belief, AMS-OSRAM fabricates and designs the AMS-OSRAM Accused Products using similar designs according to a limited number of processes, many or all of which utilize substantially similar process steps, including process steps for creating

¹⁸ <https://ams.com/en/products>; <https://www.osram.com/os/products/index.jsp>

regions with graded dopant concentrations, because the invention would have application in those categories of products. For example, using Greenthread's invention improves switching time in transistors used in AMS-OSRAM Accused Products. Upon information and belief, the AMS-OSRAM Accused Products are in relevant part substantially similar to the exemplary TMF8828 shown in Exhibit 8, particularly with regard to the manner in which the exemplary TMF8828 includes and utilizes regions with graded dopant concentrations. Exhibit 8 is thus illustrative of the manner in which the AMS-OSRAM Accused Products meet the claim limitations of the Greenthread Patents.¹⁹

COUNT I: INFRINGEMENT OF U.S. PATENT NO. 8,421,195

46. Greenthread incorporates by reference and re-alleges all of the foregoing paragraphs of this Complaint and exhibits attached hereto as if fully set forth herein.

47. The following allegations are based on publicly available information and a

¹⁹ Multiple courts have upheld Greenthread's construction of the Greenthread Patents in related matters. In *Greenthread, LLC v. Samsung Electronics Co., Ltd. et al.*, Case No. 2:19-cv-00147-JRG (E.D. Tex.), the Eastern District of Texas Court adopted Greenthread's claim construction. *See* Dkt. 67. In *Greenthread, LLC v. Intel Corp., et al.*, Case No. 6:22-cv-00105-ADA (W.D. Tex.), the Western District of Texas similarly issued a preliminary claim construction order adopting Greenthread's construction. *See* Dkt. 36-21 in *Greenthread, LLC v. Intel Corp.*, Case No. 3:22-cv-02001-JR (attaching as an exhibit the Western District of Texas's preliminary claim construction order in a status update before the District of Oregon). The claims in this matter against Intel were ultimately severed and transferred to Oregon, and the District of Oregon adopted the Western District of Texas' preliminary claim construction. *See* Dkt. 44 ("The Court also finds that the WDTX's preliminary constructions and summary judgment rulings are neither legally incorrect nor factually distinguishable. As a result, the Court adopts the WDTX's preliminary constructions and summary judgment rulings as its own. . ."). The Western District of Texas also denied Defendants' motions to dismiss and for summary judgment on similar grounds. *See* Dkt. 36-22 in *Greenthread, LLC v. Intel Corp.*, Case no. 3:22-cv-02001-JR (attaching as an exhibit the Western District of Texas' denial of Defendants' motion for summary judgment); Dkt. 110 in *Greenthread LLC v. Intel Corp.*, Case No. 6:22-cv-00105-ADA (W.D. Tex). The District of Oregon similarly adopted these rulings. *See* Dkt. 44 in *Greenthread, LLC v. Intel Corp.*, Case no. 3:22-cv-02001-JR.

reasonable investigation of the structure and operation of the AMS-OSRAM Accused Products. Greenthread reserves the right to modify this description, including, for example, on the basis of information about the AMS-OSRAM Accused Products that it obtains during discovery.

48. Defendant's infringement has damaged and continues to damage Greenthread in an amount yet to be determined, of at least a reasonable royalty.

49. As alleged above and in Exhibit 8, the products analyzed in Exhibit 8 meet each and every one of the claim limitations of at least one claim of the '195 Patent.

50. As alleged above, the products analyzed in Exhibit 8 are exemplary of the AMS-OSRAM Accused Products.

51. As alleged above, Defendant has infringed and continue to infringe at least one claim of the '195 Patent by making, using, offering to sell, selling within the United States, and/or importing into the United States AMS-OSRAM Accused Products. As alleged above, Defendant has and continues to infringe at least one claim of the '195 Patent by making, using, offering to sell, selling within the United States, and/or importing into the United States AMS-OSRAM Accused Products.

52. Defendant's infringement has damaged and continues to damage Greenthread in an amount yet to be determined, of at least a reasonable royalty.

COUNT II: INFRINGEMENT OF U.S. PATENT NO. 9,190,502

53. Greenthread incorporates by reference and re-alleges all of the foregoing paragraphs of this Complaint and exhibits attached hereto as if fully set forth herein.

54. The following allegations are based on publicly available information and a reasonable investigation of the structure and operation of the AMS-OSRAM Accused Products. Greenthread reserves the right to modify this description, including, for example, on the basis of

information about the AMS-OSRAM Accused Products that it obtains during discovery.

55. As alleged above and in Exhibit 8, the products analyzed in Exhibit 8 meet each and every one of the claim limitations of at least one claim of the '502 Patent.

56. As alleged above, the products analyzed in Exhibit 8 are exemplary of the AMS-OSRAM Accused Products.

57. As alleged above, Defendant has infringed and continues to infringe at least one claim of the '502 Patent by making, using, offering to sell, selling within the United States, and/or importing into the United States AMS-OSRAM Accused Products.

58. Defendant's infringement has damaged and continues to damage Greenthread in an amount yet to be determined, of at least a reasonable royalty.

COUNT III: INFRINGEMENT OF U.S. PATENT NO. 10,510,842

59. Greenthread incorporates by reference and re-alleges all of the foregoing paragraphs of this Complaint and exhibits attached hereto as if fully set forth herein.

60. The following allegations are based on publicly available information and a reasonable investigation of the structure and operation of the AMS-OSRAM Accused Products. Greenthread reserves the right to modify this description, including, for example, on the basis of information about the AMS-OSRAM Accused Products that it obtains during discovery.

61. As alleged above and in Exhibits 8, the products analyzed in Exhibit 8 meet each and every one of the claim limitations of at least one claim of the '842 Patent.

62. As alleged above, the products analyzed in Exhibit 8 are exemplary of the AMS-OSRAM Accused Products.

63. As alleged above, Defendants have infringed and continue to infringe at least one claim of the '842 Patent by making, using, offering to sell, selling within the United States, and/or

importing into the United States AMS-OSRAM Accused Products.

64. Defendants' infringement has damaged and continues to damage Greenthread in an amount yet to be determined, of at least a reasonable royalty.

COUNT IV: INFRINGEMENT OF U.S. PATENT NO. 10,734,481

65. Greenthread incorporates by reference and re-alleges all of the foregoing paragraphs of this Complaint and exhibits attached hereto as if fully set forth herein.

66. The following allegations are based on publicly available information and a reasonable investigation of the structure and operation of the AMS-OSRAM Accused Products. Greenthread reserves the right to modify this description, including, for example, on the basis of information about the AMS-OSRAM Accused Products that it obtains during discovery.

67. As alleged above and in Exhibits 8, the products analyzed in Exhibit 8 meet each and every one of the claim limitations of at least one claim of the '481 Patent.

68. As alleged above, the products analyzed in Exhibit 8 are exemplary of the AMS-OSRAM Accused Products.

69. As alleged above, Defendant has infringed and continue to infringe at least one claim of the '481 Patent by making, using, offering to sell, selling within the United States, and/or importing into the United States AMS-OSRAM Accused Products.

70. Defendant's infringement has damaged and continues to damage Greenthread in an amount yet to be determined, of at least a reasonable royalty.

COUNT V: INFRINGEMENT OF U.S. PATENT NO. 11,121,222

71. Greenthread incorporates by reference and re-alleges all of the foregoing paragraphs of this Complaint and exhibits attached hereto as if fully set forth herein.

72. The following allegations are based on publicly available information and a

reasonable investigation of the structure and operation of the AMS-OSRAM Accused Products. Greenthread reserves the right to modify this description, including, for example, on the basis of information about the AMS-OSRAM Accused Products that it obtains during discovery.

73. As alleged above and in Exhibit 8, the products analyzed in Exhibit 8 meet each and every one of the claim limitations of at least one claim of the '222 Patent.

74. As alleged above, the products analyzed in Exhibit 8 are exemplary of the AMS-OSRAM Accused Products.

75. As alleged above, Defendant has infringed and continues to infringe at least one claim of the '222 Patent by making, using, offering to sell, selling within the United States, and/or importing into the United States AMS-OSRAM Accused Products.

76. Defendant's infringement has damaged and continues to damage Greenthread in an amount yet to be determined, of at least a reasonable royalty.

COUNT VI: INFRINGEMENT OF U.S. PATENT NO. 11,316,014

77. Greenthread incorporates by reference and re-alleges all of the foregoing paragraphs of this Complaint and exhibits attached hereto as if fully set forth herein.

78. The following allegations are based on publicly available information and a reasonable investigation of the structure and operation of the AMS-OSRAM Accused Products. Greenthread reserves the right to modify this description, including, for example, on the basis of information about the AMS-OSRAM Accused Products that it obtains during discovery.

79. As alleged above and in Exhibits 8, the products analyzed in Exhibit 8 meet each and every one of the claim limitations of at least one claim of the '014 Patent.

80. As alleged above, the products analyzed in Exhibit 8 are exemplary of the AMS-OSRAM Accused Products.

81. As alleged above, Defendant has infringed and continue to infringe at least one claim of the '014 Patent by making, using, offering to sell, selling within the United States, and/or importing into the United States AMS-OSRAM Accused Products.

82. Defendant's infringement has damaged and continues to damage Greenthread in an amount yet to be determined, of at least a reasonable royalty.

DAMAGES

83. As a result of Defendant's acts of infringement, Greenthread has suffered and continues to suffer actual and consequential damages. However, Greenthread does not yet know the full extent of the infringement and the amount of damages cannot be ascertained except through discovery and special accounting. To the fullest extent permitted by law, Greenthread seeks recovery of damages at least for reasonable royalties, unjust enrichment, and benefits received by Defendant as a result of using the patented technology. Greenthread further seeks any other damages to which Greenthread is entitled under law or in equity.

DEMAND FOR JURY TRIAL

84. Greenthread hereby demands a jury trial for all issues so triable.

PRAYER FOR RELIEF

WHEREFORE, Greenthread respectfully requests that this Court enter judgment in its favor as follows:

- A. That Judgment be entered that Defendant has infringed one or more claims of the Greenthread Patents, literally and under the doctrine of equivalents;
- B. That, in accordance with 35 U.S.C. § 283, Defendant and all its affiliates, employees, agents, officers, directors, attorneys, successors, and assigns and all those acting on behalf

of or in active concert or participation with any of them, be preliminarily and permanently enjoined from (1) infringing the Greenthread Patents and (2) making, using, selling, and offering for sale, or importing into the United States, the AMS-OSRAM Accused Products;

- C. An award of damages sufficient to compensate Greenthread for Defendant's infringement under 35 U.S.C. § 284;
- D. That the case be found exceptional under 35 U.S.C. § 285 and that Greenthread be awarded its reasonable attorneys' fees;
- E. Costs and expenses in this action;
- F. An award of prejudgment and post-judgment interest; and
- G. Such other and further relief as the Court may deem just and proper.

Dated: April 19, 2023.

MCKOOL SMITH, P.C.

/s/ Alan L. Whitehurst

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