IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

GREENTHREAD, LLC **Plaintiff,** **vs.** **MONOLITHIC POWER SYSTEMS, INC.** **Defendant.**	**Civil Action No.** **JURY TRIAL DEMANDED**

ORIGINAL COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff Greenthread, LLC ("Greenthread" or "Plaintiff") files this Original Complaint against Monolithic Power Systems, Inc. ("MPS" or "Defendant") 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 mixed-signal circuits and sensor devices, power management integrated circuits, junction field effect transistors, processors, logic devices, DRAM and NAND flash, and image sensors and (2) allowing manufacturers to scale down the feature size of their semiconductor products.

2. Defendant has infringed and continues 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

MPS, 1048
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’014 Patent”), (collectively “the Greenthread Patents”), copies of which are attached hereto as Exhibits 1-6, respectively. Defendant has infringed and continues 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; and inducing others to do the same.

THE PARTIES

3. 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. MPS is a corporation organized and existing under the laws of Delaware with its headquarters at 5808 Lake Washington Blvd., Kirkland, Washington 98033.

5. “MPS Accused Products” are products accused of meeting the claim limitations of a Greenthread Patent in this suit. MPS 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 MPS, including switching converters and controllers, multi-phase controllers, power management integrated circuits, USB switches, load switches, MOFSET drivers, isolated gate drivers, digital isolators, isolated DC/DC converters, power modules, battery chargers and monitors, fuel gauges, stepper motor drivers, brushless DC pre-drivers, brushless DC motor controllers, brushed DC drivers, fan drivers, backlight drivers, audio drivers, analog-to-digital converters, angular position sensors, current sensors, and other products containing transistors.

6. Exhibit 8, demonstrating how exemplary MPS Accused Products meet the claim

limitations of Greenthread Patents, is incorporated herein by reference.

7. MPS sells MPS Accused Products directly and indirectly.[1]

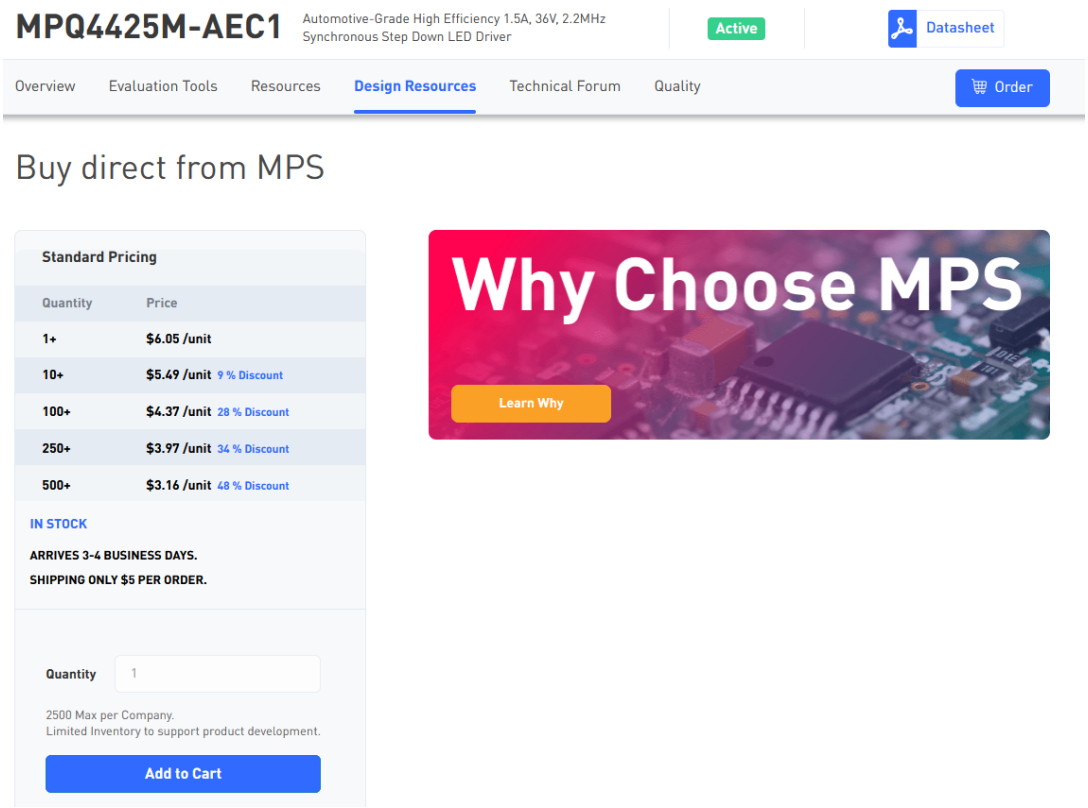
Customers, Sales and Marketing

We sell our products through third-party distributors, value-added resellers and directly to original equipment manufacturers ("OEMs"), original design manufacturers ("ODMs"), electronic manufacturing service ("EMS") providers and other end customers. Our third-party distributors are subject to distribution agreements with us, which allow the distributors to sell our products to end customers and other resellers, including OEMs, ODMs or EMS providers. Our value-added resellers may second source our products and provide other services to customers. ODMs typically design and manufacture electronic products on behalf of OEMs, and EMS providers typically provide manufacturing services for OEMs and other electronic product suppliers.

8. For example, MPS allows customers to purchase MPS Accused Products directly through its website.[2]

[1] MPS, Form 10-K (Dec. 31, 2022), https://media.monolithicpower.com/mps_cms_document/2/0/2022_mps_annual_report.pdf?_gl=1*1eopt24*_ga*MTU4NTU1NTQ3Ny4xNjgzNjM4MjIx*_ga_XNRPF6L9DD*MTY4NDE4NTgzOS4zLjEuMTY4NDE4NjA4OS4yMi4wLjA.&_ga=2.178535588.183754632.1684185838-1585555477.1683638221

[2] Product Overview of MPQ4425M-AEC1, https://www.monolithicpower.com/en/mpq4425m-aec1.html



9. Some of MPS's direct sales, offers for sale, and importation into the United States of MPS Accused Products are to "support product development" by MPS customers who may make integrate MPS Accused Products into their designs, sometimes called "design wins," and make large additional purchases of MPS Accused Products.[3]

10. For example, MPS directly sells "Evaluation Kits" which are used to market MPS Accused Products and win larger contracts/design wins, including indirect sales.[4]

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[3] *Id.*

[4] Product Overview of EVKT-MP2651, https://www.monolithicpower.com/en/products/evkt-mp2651.html

Overview | Related Tools | Design Resources | Technical Forum | Quality | Order

Products > EV Kits and EV Boards > EVKT-MP2651

EVKT-MP2651

MP2651 Evaluation Kit | Active | Datasheet

Description

The EVKT-MP2651 is an evaluation kit designed for the MP2651. It demonstrates the capabilities of the MP2651, a buck-boost charger IC designed for battery packs with 1 cell to 4 cells in series.

The device can accept a wide 4V to 22V input voltage (V_{IN}) range to charge the battery. It also supplies a wide 3V to 21V voltage range at the IN pin in source mode. This function is compliant with USB power delivery (PD) specifications.

Product Evaluated

MP2651GVT	I²C-Controlled, USB PD 6A Buck-Boost Charger with OTG/Source Mode for 1-Cell to 4-Cell Series Battery Applications	Active

11. MPS maintains sales offices in the United States to sell MPS Accused Products and MPS assists its customers with the design of customer products to integrate MPS Accused Products into MPS customer products, including in the United States.[5]

> We have sales offices in China, India, Japan, South Korea, Singapore, Taiwan, the United States and throughout Europe. Our products typically require a highly technical sales and applications engineering effort where we assist our customers in the design and use of our products in their application. We maintain a staff of applications engineers who work directly with our customers' engineers in the development of their systems' electronics containing our products.

12. For example, MPS makes sales of MPS Accused Products through offices in Michigan, Washington, and California.[6] On information and belief, MPS sales and marketing

[5] MPS, Form 10-K (Dec. 31, 2022), https://media.monolithicpower.com/mps_cms_document/2/0/2022_mps_annual_report.pdf?_gl=1*1eopt24*_ga*MTU4NTU1NTQ3Ny4xNjgzNjM4MjIx*_ga_XNRPF6L9DD*MTY4NDE4NTgzOS4zLjEuMTY4NDE4NjA4OS4yMi4wLjA.&_ga=2.178535588.183754632.1684185838-1585555477.1683638221

[6] MPS, Job Listings, https://www.monolithicpower.com/en/about-mps/careers/job-listings.html

personnel use MPS Accused Products in the United States, for example in demonstrations. This use is important to achieving design wins.

About MPS Company Investor Relations Sustainability & ESG Careers News & Press Releases

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View By Region: U.S.

Job Type	Title	Location
Finance (3)		
Design Engineering (62)		
Marketing (4)		
Legal (5)		
Applications Engineering (32)		
Other (31)		
Human Resources (2)		
Product Engineering (1)		
Test Engineering (4)		
Field Applications Engineering (11)		

Field Sales Engineer — Michigan

Field Sales Engineer (MPSnow)

Position Overview:

Job Functions:

Responsible for driving all design-in activity and wins within assigned customer accounts and geographies. Responsible for consistently exceeding assigned revenue targets.Indirect management of Manufacturers Representatives and channel partners (distribution branches)...

Field Sales Engineer — Washington

Field Sales Engineer (MPSnow)

Position Overview:

Job Functions:

Responsible for driving all design-in activity and wins within assigned customer accounts and geographies. Responsible for consistently exceeding assigned revenue targets.Indirect management of Manufacturers Representatives and channel partners (distribution branches)...

North America Channel Manager — San Jose, CA

North America Channel Manager

Overall knowledge of distribution and Rep sales processesAt least 5 years' experience working with semiconductor distributorsMust have general technical understanding of power semiconductors, customers, applications.General understanding of DTAM regions, and organizations.Past history of success in driving a closed loop distribution process including:Training...

Field Sales Engineer — Michigan

Field Sales Engineer (FSE)

Primary functions:

Responsible for driving all design-in activity and wins within assigned customer accounts and geographies. Responsible for consistently meeting or exceeding assigned revenue targets.Work closely with MPS product division marketing and engineering personnel to identify target applications/circuits t...

13. MPS performs quality assurance in the United States, which on information and belief, involves use of MPS Accused Products in the United States.[7] Quality control use in the United States is important to MPS design wins.

Sr. Customer Quality Engineer

Sr. Customer Quality Engineer
Job Code: 1686
Location: San Jose, CA

Apply

This is an important customer-facing, hands-on role in an emerging Automotive Quality organization in a rapidly growing semiconductor IC company. The key responsibilities are to work seamlessly with related Engineering, Production, Business groups and other QA functions to ensure timely responses and efficient closure of customer Quality requests, such as handling field returns/8D/FA cases, and audit support. He/she will interface to many internal functions, as well as directly with customers, in responding to requests and managing customer quality situations. As such, candidate should have a solid quality / engineering background, along with good team competence and communication skills.

Major Responsibilities

- Manage customer quality requirements, inquires/questions or issues, as the front-line interface.
- Manage Quality issue diagnoses, root-cause analysis with FA and other groups as hand-on contributor for the assigned customer accounts.
- Project-manage Automotive customer-audits in both HQ and our location in Chengdu as the customer-facing contact for MPS and our sub-cons.
- Write FA and co-develop 8D reports as well as manage customer-facing communications.

SUBJECT MATTER JURISDICTION

14. 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, VENUE, AND JOINDER

15. This Court has personal jurisdiction over Defendant MPS as a citizen/resident of Delaware. On information and belief, the Court further has personal jurisdiction over MPS, because MPS has regularly conducted and continue to conduct business in the United States, in the State of Delaware, and in this judicial district. On information and belief, MPS has committed infringing activities in Delaware and in this judicial district by making, using, offering for sale, and/or selling in the United States and/or importing into the United States, products and systems that infringe upon the Greenthread Patents, or by placing such infringing products and systems

[7] MPS, Job Listings, https://www.monolithicpower.com/en/about-mps/careers/job-listings.html

into the stream of commerce with the awareness, knowledge, and intent that they would be used, offered for sale, or sold by others in this judicial district and/or purchased by consumers in this district.

16. Venue is proper as to MPS pursuant to 28 U.S.C. §§ 1391(b) and 1400(b) because it is a citizen/resident of Delaware and has committed, and continues to commit, acts of infringement in this District.

THE GREENTHREAD PATENTS

17. 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,[8] filed on September 3, 2004. A true and correct copy of the '195 Patent is attached hereto as Exhibit 1 and incorporated herein by reference.

18. 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,[9] 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.

19. 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

[8] Pub. No. US 2006/0049464.

[9] Pub. No. US 2006/0049464.

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,[10] 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.

20. 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,[11] 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.

21. On September 14, 2021, the U.S. Patent and Trademark Office duly and legally 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,[12] 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.

22. 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,[13] filed on

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[10] Pub. No. US 2006/0049464.

[11] Pub. No. US 2006/0049464.

[12] Pub. No. US 2006/0049464.

[13] Pub. No. US 2006/0049464.

September 3, 2004. A true and correct copy of the ’014 Patent is attached hereto as Exhibit 6 and incorporated herein by reference.

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

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

25. MPS is not currently licensed to practice the Greenthread Patents.

26. The Greenthread Patents are valid and enforceable.

FACTUAL BACKGROUND

27. 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.

28. 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.

29. 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."[14] Dr. Rao built these devices from scratch while a graduate student at SMU.

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

31. 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.

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[14] *Remarks by Director Iancu at the 2019 International Intellectual Property Conference* (June 10, 2019), https://www.uspto.gov/about-us/news-updates/remarks-director-iancu-2019-international-intellectual-property-conference

32. 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.[15] 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.[16]

33. 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

[15] Texas Instruments Collection Summary Comments Provided by Texas Instruments Staff, http://smithsonianchips.si.edu/texas/wafer.htm

[16] Texas Instruments Collection Wafer Display, TI number: G00200 (1985), http://smithsonianchips.si.edu/texas/t_360.htm

controllers and memory.

34. 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.

35. 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.

MPS'S INFRINGEMENT

36. MPS has directly and indirectly 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 that practice the claimed inventions (*i.e.*, the MPS Accused Products).

37. Further, in concert with its authorized distributors and customers, MPS causes or induces infringing accused products to be made, used, offered to be sold, sold within the United States, and/or imported into the United States.

38. Specifically, MPS has designed and/or incorporated into other products semiconductor devices for use in analog, digital, and mixed-signal integrated circuits. The MPS Accused Products include switching converters and controllers, multi-phase controllers, power management integrated circuits, USB switches, load switches, MOFSET drivers, isolated gate drivers, digital isolators, isolated DC/DC converters, power modules, battery chargers and monitors, fuel gauges, stepper motor drivers, brushless DC pre-drivers, brushless DC motor controllers, brushed DC drivers, fan drivers, backlight drivers, audio drivers, analog-to-digital converters, angular position sensors, current sensors, and other products containing transistors, and are further identified in Exhibit 8.

39. MPS had knowledge of Greenthread Patents at least through the USPTO's citation of U.S. Patent Pub. 2007/0158790 (U.S. Patent Application No.11/622,496 issued as U.S. Patent No. 8,421,195) during prosecution of MPS's U.S. Patent No. 8,598,637, titled "High voltage junction field effect transistor with spiral field plate." Accordingly MPS has had knowledge of the Greenthread Patents since before 2013, the date of the MPS patent.

40. MPS has knowledge of the Greenthread Patents at least as of the filing of this complaint.

41. MPS's infringement is willful.

42. As shown in Exhibit 8, the exemplary MPS MP86905 monolithic half-bridge meets each and every element of at least one claim of the Greenthread Patents.

43. The infringing structures within semiconductor devices identified in Exhibit 8 have application, not only in the product identified in Exhibit 8, but in many types of devices designed and manufactured by MPS, for example to improve switching speed of MPS Accused Products.

44. Upon information and belief, MPS designs and contracts fabrication for

semiconductor devices 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 regions with graded dopant concentrations.

45. Upon information and belief, the MPS semiconductor devices are in relevant part substantially similar to the exemplary MPS MP86905 monolithic half-bridge shown in Exhibit 8, particularly with regard to the manner in which the exemplary MPS MP86905 monolithic half-bridge includes and utilizes regions with graded dopant concentrations. Exhibit 8 is thus illustrative of the manner in which the MPS Accused Products meet the claim limitations of the Greenthread Patents.

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

48. MPS'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 MPS Accused Products.

51. As alleged above, MPS 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 MPS Accused Products. Defendant's infringement is and continues to be willful.

52. As alleged above, Defendant induces infringement of at least one claim of the '195 Patent by designing and marketing infringing products for sale, use, and importation into the United States.

53. MPS'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

54. 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.

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

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

57. 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.

58. As alleged above, the products analyzed in Exhibit 8 are exemplary of the MPS Accused Products.

59. As alleged above, MPS has 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 MPS Accused Products. Defendant's infringement is and continues to be willful.

60. As alleged above, Defendant induces infringement of at least one claim of the ’502 Patent by designing and marketing infringing products for sale, use, and importation into the United States.

61. MPS’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

62. 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.

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

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

65. 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 ’842 Patent.

66. As alleged above, the products analyzed in Exhibit 8 are exemplary of the MPS Accused Products.

67. As alleged above, MPS has and continues 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 MPS Accused Products. Defendant’s infringement is and continues to be willful.

68. As alleged above, Defendant induces infringement of at least one claim of the ’842 Patent by designing and marketing infringing products for sale, use, and importation into the United States.

69. MPS’s 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

70. 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.

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

72. MPS’s infringement has damaged and continues to damage Greenthread in an amount yet to be determined, of at least a reasonable royalty.

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 ’481 Patent.

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

75. As alleged above, MPS has and continues 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 MPS Accused Products. Defendant’s infringement is and continues to be willful.

76. As alleged above, Defendant induces infringement of at least one claim of the ’481 Patent by designing and marketing infringing products for sale, use, and importation into the

United States.

77. MPS'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

78. 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.

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

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

81. 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.

82. As alleged above, the products analyzed in Exhibit 8 are exemplary of the MPS Accused Products.

83. As alleged above, MPS has 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 MPS Accused Products. Defendant's infringement is and continues to be willful.

84. As alleged above, Defendant induces infringement of at least one claim of the '222 Patent by designing and marketing infringing products for sale, use, and importation into the United States.

85. MPS'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

86. 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.

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

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

89. 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.

90. As alleged above, the products analyzed in Exhibit 8 are exemplary of the MPS Accused Products.

91. As alleged above, MPS has and continues 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 MPS Accused Products. Defendant's infringement is and continues to be willful.

92. As alleged above, Defendant induces infringement of at least one claim of the '014 Patent by designing and marketing infringing products for sale, use, and importation into the United States.

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

DAMAGES

94. As a result of MPS'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 MPS as a result of using the patented technology. Greenthread further seeks any other damages to which Greenthread is entitled under law or in equity, including enhanced damages for MPS's willful infringement.

DEMAND FOR JURY TRIAL

95. 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 MPS Accused Products;

C. An award of damages sufficient to compensate Greenthread for Defendant's infringement and enhanced damages 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. Damages for pre-issuance infringement under 35 U.S.C. § 154(d);

G. An award of prejudgment and post-judgment interest; and

H. Such other and further relief as the Court may deem just and proper.

Dated: May 26, 2023

Respectfully submitted,

FARNAN LLP

/s/ Brian E. Farnan

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