

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

LONE STAR SILICON INNOVATIONS LLC,

Plaintiff,

v.

RENESAS ELECTRONICS CORPORATION  
and RENESAS ELECTRONICS AMERICA  
INC.,

Defendants.

Civil Action No. 2:16-cv-1438

**JURY TRIAL DEMANDED**

**COMPLAINT FOR PATENT INFRINGEMENT**

Plaintiff, Lone Star Silicon Innovations LLC (“Lone Star”), complains against Defendants Renesas Electronics Corporation and Renesas Electronics America Inc. (individually or collectively “Defendants”) as follows:

**NATURE OF ACTION**

1. This is an action for patent infringement of United States Patent Nos. 6,103,611, 6,380,588; 6,153,933; 6,388,330; 6,046,089; and 6,326,231 (collectively, the “Patents in Suit”) under the Patent Laws of the United States, 35 U.S.C. § 1, *et seq.*

**THE PARTIES**

2. Plaintiff Lone Star is a corporation organized and existing under the laws of the State of Texas with its principal place of business at 8105 Razor Blvd., Suite 210, Plano, TX 75024. Lone Star is in the business of licensing patented technology. Lone Star is the assignee of the Patents in Suit.

3. Upon information and belief, Defendant Renesas Electronics Corporation (hereinafter “Renesas”) is a corporation organized under the laws of Japan, with its principal place

of business at Toyosu Foresia, 3-2-24 Toyosu, Koto-ku, Tokyo 135-0061, Japan. Defendant Renesas conducts business in and is doing business in Texas and in this District and elsewhere in the United States, including, without limitation, using, promoting, offering to sell, importing, and/or selling integrated circuit devices that embody and/or are made using the patented technology, and enabling end-user purchasers to use such devices in this District.

4. Defendant Renesas Electronics America Inc. (hereinafter “Renesas America”) is a corporation organized under the laws of the State of California, with its principal place of business at 2801 Scott Boulevard, Santa Clara, CA 95050, U.S.A. Renesas America’s registered agent for service of process in the State of Texas is Corporation Service Company, 211 E. 7th Street, Suite 620, Austin, TX 78701-3136. Upon information and belief, Renesas America is a wholly-owned subsidiary of Renesas. Defendant Renesas America conducts business in and is doing business in Texas and in this District and elsewhere in the United States, including, without limitation, using, promoting, offering to sell, importing, and/or selling integrated circuit devices that embody and/or are made using the patented technology, and enabling end-user purchasers to use such devices in this District.

5. Upon information and belief, Renesas controls and is the majority owner of Renesas America, and Defendants are joint tortfeasors with one another with respect to the matters alleged herein.

#### **JURISDICTION AND VENUE**

6. This action arises under the Patent Laws of the United States, Title 35 of the United States Code. This Court has subject matter jurisdiction over this action pursuant to 28 U.S.C. §§ 1331 and 1338(a).

7. On information and belief, Defendants are subject to this Court's specific and general personal jurisdiction pursuant to due process and/or the Texas Long Arm Statute, due at least to their substantial business conducted in this forum, directly and/or through intermediaries, including (i) having solicited business in the State of Texas, transacted business within the State of Texas and attempted to derive financial benefit from residents of the State of Texas, including benefits directly related to the instant patent infringement causes of action set forth herein; (ii) having placed their products and services into the stream of commerce throughout the United States and having been actively engaged in transacting business in Texas and in this District; and (iii) either alone or in conjunction with others, having committed acts of infringement within Texas and in this District. On information and belief, Defendants, directly and/or through intermediaries, have advertised (including through websites), offered to sell, sold and/or distributed infringing products, and/or have induced the sale and use of infringing products in the United States and in Texas. Each Defendant has, directly or through its distribution network, purposefully and voluntarily placed such products in the stream of commerce knowing and expecting them to be purchased and used by consumers in Texas and in this District. Each Defendant has either committed direct infringement in Texas or committed indirect infringement based on acts of direct infringement in Texas. Further, on information and belief, Defendants are subject to the Court's general jurisdiction, including from regularly doing or soliciting business, engaging in other persistent courses of conduct, and/or deriving substantial revenue from goods and services provided to individuals in Texas and in this District.

8. On information and belief, Defendants do one or more of the following with integrated circuit devices and/or devices that incorporate such devices that they manufacture: (a) import these devices into the United States for sale to consumers, including consumers in Texas;

(b) sell them or offer them for sale in the United States, including to customers in Texas; and/or  
(c) sell them to customers who incorporate them into products that such customers import, sell or offer for sale in the United States, including in Texas.

9. Venue lies in this District pursuant to 28 U.S.C. §§ 1391(b), 1391(c) and 1400(b) because each Defendant is subject to personal jurisdiction in this District, resides in, has regularly conducted business in this District and/or has committed acts of patent infringement in this District. Without limitation, on information and belief, within this District Defendants directly and/or through intermediaries have advertised, offered to sell, sold and/or distributed infringing products, and/or have induced the sale and use of infringing products.

#### **THE PATENTS IN SUIT**

10. On August 15, 2000, U.S. Patent No. 6,103,611 (“the ‘611 patent”), entitled “Methods And Arrangements For Improved Spacer Formation Within A Semiconductor Device,” a copy of which is attached hereto as Exhibit A, was duly and legally issued. The ‘611 patent issued from U.S. patent application Serial Number 08/993,830 filed December 18, 1997, and discloses and relates to the design of and processes for fabricating semiconductor devices. The inventors assigned all right, title, and interest in the ‘611 patent to Advanced Micro Devices, Inc. (“AMD”). AMD assigned its entire right, title, and interest in the ‘611 patent to Lone Star, and Lone Star is the sole owner of all rights, title, and interest in and to the ‘611 patent including the right to sue for and collect past, present and future damages and to seek and obtain injunctive or any other relief for infringement of the ‘611 patent.

11. On April 30, 2002, U.S. Patent No. 6,380,588 (“the ‘588 patent”), entitled “Semiconductor Device Having Uniform Spacers,” a copy of which is attached hereto as Exhibit B, was duly and legally issued. The ‘588 patent issued from U.S. patent application Serial Number

09/567,013 filed May 9, 2000, and discloses and relates to the design of and processes for fabricating semiconductor devices. The inventors assigned all right, title, and interest in the '588 patent to Advanced Micro Devices, Inc. ("AMD"). AMD assigned its entire right, title, and interest in the '588 patent to Lone Star, and Lone Star is the sole owner of all rights, title, and interest in and to the '588 patent including the right to sue for and collect past, present and future damages and to seek and obtain injunctive or any other relief for infringement of the '588 patent.

12. On November 28, 2000, U.S. Patent No. 6,153,933 ("the '933 patent"), entitled "Elimination of Residual Materials in a Multiple-Layer Interconnect Structure," a copy of which is attached hereto as Exhibit C, was duly and legally issued. The '933 patent issued from U.S. patent application Serial Number 08/925,821 filed September 5, 1997 and discloses and relates to the design of and processes for fabricating semiconductor devices. The inventors assigned all right, title, and interest in the '933 patent to AMD. AMD assigned its entire right, title, and interest in the '933 patent to Lone Star, and Lone Star is the sole owner of all rights, title and interest in and to the '933 patent including the right to sue for and collect past, present and future damages and to seek and obtain injunctive or any other relief for infringement of the '933 patent.

13. On May 14, 2002, U.S. Patent No. 6,388,330 ("the '330 patent"), entitled "Low Dielectric Constant Etch Stop Layers In Integrated Circuit Interconnects," a copy of which is attached hereto as Exhibit D, was duly and legally issued. The '330 patent issued from U.S. patent application Serial Number 09/776,012 filed February 1, 2001, and discloses and relates to the design of and processes for fabricating semiconductor devices. The inventors assigned all right, title, and interest in the '330 patent to AMD. AMD assigned its entire right, title, and interest in the '330 patent to Lone Star, and Lone Star is the sole owner of all rights, title, and interest in and

to the '330 patent including the right to sue for and collect past, present and future damages and to seek and obtain injunctive or any other relief for infringement of the '330 patent.

14. On April 4, 2000, U.S. Patent No. 6,046,089 (“the ‘089 patent”), entitled “Selectively Sized Spacers,” a copy of which is attached hereto as Exhibit E, was duly and legally issued. The ‘089 patent issued from U.S. patent application Serial Number 09/002,727 filed January 5, 1998 and discloses and relates to the design of and processes for fabricating semiconductor devices. The inventors assigned all right, title, and interest in the ‘089 patent to AMD. AMD assigned its entire right, title, and interest in the ‘089 patent to Lone Star, and Lone Star is the sole owner of all rights, title and interest in and to the ‘089 patent including the right to sue for and collect past, present and future damages and to seek and obtain injunctive or any other relief for infringement of the ‘089 patent.

15. On December 4, 2001, U.S. Patent No. 6,326,231 (“the ‘231 patent”), entitled “Use Of Silicon Oxynitride ARC For Metal Layers,” a copy of which is attached hereto as Exhibit F, was duly and legally issued. The ‘231 patent issued from U.S. patent application Serial Number 09/207,562 filed December 8, 1998 and discloses and relates to the design of and processes for fabricating semiconductor devices. The inventors assigned all right, title, and interest in the ‘231 patent to AMD. AMD assigned its entire right, title, and interest in the ‘231 patent to Lone Star, and Lone Star is the sole owner of all rights, title and interest in and to the ‘231 patent including the right to sue for and collect past, present and future damages and to seek and obtain injunctive or any other relief for infringement of the ‘231 patent.

#### **DEFENDANTS’ INFRINGING PRODUCTS AND METHODS**

16. Defendants are in the business of manufacturing semiconductors or integrated circuits for others. Using their own processes and techniques, Defendants make, use, sell, offer for

sale, and/or import into the United States integrated circuit devices including microcontroller units (“MCUs”), microprocessor units (“MPUs”), graphics processing units (“GPUs”), large scale integrated chips (“LSIs”), and system-on-chips devices (“SoCs”), for use in devices and applications such as automobiles, cameras, gaming consoles, industrial controllers and networks, home electronics, office automation products, power supplies, and information communication technology communications applications. Upon information and belief, Defendants own and operate, or control through wholly owned subsidiaries, semiconductor fabrication facilities in Japan and China. Upon information and belief, Defendants also outsource manufacturing of semiconductor products to third parties for later sale by Defendants. Defendants’ sales in the U.S. and North America are made through Renesas’s wholly-owned subsidiary Renesas America.

17. Despite not having a license to the ‘611, ‘089, or ‘231 patents, Defendants have used the fabrication methods claimed therein in making integrated circuit devices and used, sold, offered for sale, and imported into the U.S. integrated circuit device manufactured using such claimed methods. Despite not having a license to the ‘933, ‘588, or ‘330 patents, Defendants’ integrated circuit products adopt the designs claimed in these patents.

**FIRST CAUSE OF ACTION – INFRINGEMENT OF THE ‘611 PATENT**

18. Plaintiff hereby repeats and re-alleges the allegations contained in paragraphs 1 to 17, as if fully set forth herein.

19. Defendants, directly and/or through their subsidiaries, affiliates, agents, and/or business partners, have in the past and continue to directly infringe the ‘611 patent pursuant to 35 U.S.C. § 271(g) by importing, using, selling, or offering to sell integrated circuit devices in the United States made using the methods claimed in the ‘611 patent, including at least claims 1, 2, 3, 4, and 5. For example, Defendants use, sell, offer for sale, and/or import integrated circuit devices

having substantially uniformly sized spacers on transistor gate arrangements within semiconductor devices on a common substrate, and made by practicing the steps of: (a) forming a plurality of gate arrangements on a top surface of the substrate, wherein two of the plurality of gate arrangements are positioned parallel to one another and separated by a defined space; (b) forming a dielectric layer over at least a portion of the two gate arrangements and at least a portion of the defined space; (c) removing portions of the dielectric layer to form a plurality of spacers, wherein each of the plurality of spacers physically contacts one of the two gate arrangements and the substrate, and wherein the spacers located within the defined space each have a base width that is approximately the same; (d) configuring one of the two gate arrangements to control an electrical current between a source region and a drain region formed in the substrate; and (e) configuring the remaining one of the two transistor gate arrangements to be non-operational. Defendants directly infringe when they import, use, sell, or offer for sale in the United States integrated circuit devices made using the method steps recited in the claims.

20. Defendants have been and are engaged in one or more of these direct infringing activities related to their embedded flash memory semiconductor devices that are manufactured with using a process that forms substantially uniformly sized spacers on transistor gate arrangements in accordance with claims 1, 2, 3, 4 or 5, such as Defendants' RH850/F1L R7F7010232AFP MCU with embedded NOR flash memory made using Renesas's 40-nanometer process and other embedded flash memory semiconductor devices having substantially uniformly sized spacers on transistor gate arrangements made by a substantially similar process ("the '611 Accused Products").

21. Defendants, directly and/or through their subsidiaries, affiliates, agents, and/or business partners, have been and are now indirectly infringing the '611 patent, including at least



claims 1, 2, 3, 4, and 5, pursuant to 35 U.S.C. § 271(b) by actively inducing acts of direct infringement performed by others. Defendants have actual notice of the '611 patent and the infringement alleged herein at least upon the service of this Complaint. Upon information and belief, Defendants have numerous lawyers and other active agents who regularly review patents and published patent applications relevant to technology in the fields of the Patents in Suit, specifically including patents directed to semiconductor memory devices issued to competitors such as AMD, the original assignee of the '611 patent. Upon information and belief, Defendants collectively have been issued over 8,945 patents, including at least 24 patents prosecuted in the USPTO in the same classifications as the '611 patent, giving Defendants intimate knowledge of the art in fields relevant to this civil action. The timing, circumstances and extent of Defendants obtaining actual knowledge of the '611 patent prior to the commencement of this lawsuit will be confirmed during discovery.

22. Upon gaining knowledge of the '611 patent, it was, or became, apparent to Defendants that the manufacture, sale, importing, offer for sale, and use of their '611 Accused Products results in infringement of the '611 patent. Upon information and belief, Defendants have continued and will continue to engage in activities constituting inducement of infringement, notwithstanding their knowledge, or willful blindness thereto, that the activities they induce result in infringement of the '611 patent.

23. The '611 Accused Products are intended for integration into products known to be sold widely in the United States. Defendants make integrated circuit devices using methods claimed in the '611 patent, which devices infringe when they are imported into, or sold, used, or offered for sale in the United States. Defendants indirectly infringe by inducing direct customers and other downstream parties to import products that incorporate integrated circuit devices made

using the methods recited in claims of the '611 patent, or to sell or use such products, or offer them for sale, in the United States. For example, Defendants induce OEMs, importers, resellers, and others who purchase or otherwise obtain devices manufactured at Defendants' overseas facilities to import devices made using the methods recited in claims of the '611 patent, or to sell or use such devices, or offer them for sale in the United States without authority.

24. Defendants encourage customers, resellers or others to import into the United States and sell and use in the United States the '611 Accused Products made using the methods recited in the claims of the '611 patent with knowledge and the specific intent to cause the acts of direct infringement performed by these third parties. On information and belief, after Defendants obtained knowledge of the '611 patent, the '611 Accused Products have been and will continue to be imported into the United States and sold in large volumes by themselves and by others, such as customers, distributors, and resellers. Upon information and belief, Defendants work closely with their customers in the processes of selecting products appropriate for their customers' specific applications and developing new products. Defendants are aware that the '611 Accused Products are always made using the same fabrication methods under Defendants' direction and control such that Defendants' customers will infringe one or more claims of the '611 patent by incorporating such integrated circuit devices in other products, and that subsequent importation, sale, and use of such products in the United States would be a direct infringement of the '611 patent. Therefore, Defendants are aware that their customers will infringe the '611 patent by importing, selling, offering for sale, and/or using the products supplied by Defendants.

25. Defendants directly benefit from and actively and knowingly encourage customers', resellers', and users' importation of these products into the United States and sale and use within the United States. Defendants actively encourage customers, OEMs, resellers and

downstream users to import, use, and sell in the United States the '611 Accused Products that they manufacture and supply, including through advertising, marketing, and sales activities directed at United States sales. On information and belief, Defendants are aware of the size and importance of the United States market for customers of their products, and also distribute or supply these products intended for importation, use, offer for sale, and sale in the United States. Defendants routinely market their infringing products to third parties for inclusion in products that are sold to customers in the United States. Defendant Renesas America provides a direct sales outlet for these products in the United States. Defendants' marketing efforts show that they have specifically intended to and have induced direct infringement in the United States.

26. Defendants also provide OEMs, manufacturers, importers, resellers, customers, and end users instructions, data, simulation tools, user guides, technical resources, and technical specifications on how to incorporate the '611 Accused Products into electronics products that are made, used, sold, offered for sale in and/or imported into the United States. When OEMs, manufacturers, importers, resellers, customers, and end users follow such instructions, data, simulation tools, user guides, technical resources, and technical specifications and embed the products in end products and make, use, offer to sell, sell, or import into the United States, they directly infringe one or more claims of the '611 patent. Defendants know that by providing such instructions, data, simulation tools, user guides, technical resources, and technical specifications, OEMs, manufacturers, importers, resellers, customers, and end users follow them, and therefore directly infringe one or more claims of the '611 patent. Defendants thus know that their actions actively induce infringement.

27. Defendants have engaged and will continue to engage in additional activities to specifically target the United States market for the '611 Accused Products and actively induce

manufacturers, importers, resellers, customers, and end users to directly infringe one or more claims of the '611 patent in the United States. For example, Defendants have showcased their semiconductor devices and process technologies at various industry events and through written materials distributed in the United States, and through the [www.renesas.com](http://www.renesas.com) website in an effort to encourage customers to include the infringing technology in their products. These events are attended by the direct infringers mentioned above and generally by companies that make, use, offer to sell, sell, or import in the United States products that use integrated circuit components such as those made by Defendants.

28. Defendants derive significant revenue by selling the '611 Accused Products to third parties who directly infringe the '611 patent in the United States. Defendants' extensive sales and marketing efforts, sales volume, and partnerships all evidence their intent to induce companies to infringe one or more claims of the '611 patent by, using, offering to sell, selling, or importing products that incorporate the '611 Accused Products in the United States. Defendants have had specific intent to induce infringement or have been willfully blind to the direct infringement they are inducing.

29. Defendants' direct and indirect infringement of the '611 patent has injured Lone Star, and Lone Star is entitled to recover damages adequate to compensate for such infringement pursuant to 35 U.S.C. § 284. Unless they cease their infringing activities, Defendants will continue to injure Lone Star by infringing the '611 patent.

30. On information and belief, Defendants acted egregiously and with willful misconduct in that their actions constituted direct or indirect infringement of a valid patent, and this was either known or so obvious that Defendants should have known about it. Defendants continue to infringe the '611 patent by making, using, selling, offering for sale, and importing in

the United States the '611 Accused Products and to induce the direct infringement of others performing these acts, or they have acted at least in reckless disregard of Lone Star's patent rights. On information and belief, Defendants will continue their infringement notwithstanding actual knowledge of the '611 patent and without a good faith basis to believe that their activities do not infringe any valid claim of the '611 patent. All infringement of the '611 patent following Defendants' knowledge of the '611 patent is willful and Lone Star is entitled to treble damages and attorneys' fees and costs incurred in this action under 35 U.S.C. §§ 284 and 285.

**SECOND CAUSE OF ACTION – INFRINGEMENT OF THE '588 PATENT**

31. Plaintiff hereby repeats and re-alleges the allegations contained in paragraphs 1 to 17, as if fully set forth herein.

32. Defendants, directly and/or through their subsidiaries, affiliates, agents, and/or business partners, have in the past and continue to directly infringe the '588 patent, including at least claims 1, 2 and 3, pursuant to 35 U.S.C. § 271(a) by using, selling, offering to sell, and/or importing integrated circuit devices that embody the inventions claimed in the '588 patent, within the United States and within this District. In violation of the '588 patent, for example, Defendants' accused integrated circuit devices include: (a) a semiconductor substrate having a mixture of operational gate arrangements and non-operational gate arrangements on a surface of the substrate, the space between said gate arrangements being substantially the same distance, each operational and non-operational gate arrangement having dielectric spacers which are of uniform shape and size, each spacer having substantially the same width and physically contacting the substrate; and (b) wherein removal of the non-operational gate arrangements provides operational gate arrangements on said substrate having uniformly sized spacers and different distances between the operational gate arrangements.

33. Defendants have been and are engaged in one or more of these direct infringing activities related to their embedded flash memory semiconductor devices that have substantially uniform sized spacers on transistor gate arrangements in accordance with claims 1, 2, or 3, such as Defendants' RH850/F1L R7F7010232AFP MCU with embedded NOR flash memory made using Renesas's 40-nanometer process and other embedded flash memory semiconductor devices having substantially uniformly sized spacers on transistor gate arrangements of a design substantially similar to that of the RH850/F1L R7F7010232AFP MCU with embedded NOR flash memory ("the '588 Accused Products").

34. Defendants, directly and/or through their subsidiaries, affiliates, agents, and/or business partners, have been and are now indirectly infringing the '588 patent, including at least claims 1 and 3, pursuant to 35 U.S.C. § 271(b) by actively inducing acts of direct infringement performed by others. Defendants have actual notice of the '588 patent and the infringement alleged herein at least upon the service of this Complaint. Upon information and belief, Defendants have numerous lawyers and other active agents who regularly review patents and published patent applications relevant to technology in the fields of the Patents in Suit, specifically including patents directed to semiconductor memory devices issued to competitors such as AMD, the original assignee of the '588 patent. Upon information and belief, Defendants collectively have been issued over 8,945 patents, including 32 patents prosecuted in the USPTO in the same classifications as the '588 patent, giving Defendants intimate knowledge of the art in fields relevant to this civil action. The timing, circumstances and extent of Defendants obtaining actual knowledge of the '588 patent prior to the commencement of this lawsuit will be confirmed during discovery.

35. Upon gaining knowledge of the '588 patent, it was, or became, apparent to Defendants that the manufacture, sale, importing, offer for sale, and use of their '588 Accused

Products results in infringement of the '588 patent. Upon information and belief, Defendants have continued and will continue to engage in activities constituting inducement of infringement, notwithstanding their knowledge, or willful blindness thereto, that the activities they induce result in infringement of the '588 patent.

36. The '588 Accused Products are intended for integration into products known to be sold widely in the United States. Defendants make integrated circuit devices that embody the inventions claimed in the '588 patent, which devices infringe when they are imported into, or sold, used, or offered for sale in the United States. Defendants indirectly infringe by inducing customers and other downstream parties to import products that incorporate integrated circuit devices embodying inventions claimed in the '588 patent, or to sell or use such products, or offer them for sale, in the United States. For example, Defendants OEMs, importers, resellers, and others who purchase or otherwise obtain devices manufactured at Defendants' overseas facilities, or supplied under agreement with partner foundries, to import devices embodying inventions recited in claims of the '588 patent, or to sell or use such devices, or offer them for sale in the United States without authority.

37. Defendants encourage customers, resellers, OEMs, or others to import into the United States and sell and use in the United States the '588 Accused Products embodying inventions claimed in the '588 patent with knowledge and the specific intent to cause the acts of direct infringement performed by these third parties. On information and belief, after Defendants obtained knowledge of the '588 patent, the '588 Accused Products have been and will continue to be imported into the United States and sold in large volumes by themselves and by others, such as customers, distributors and resellers. Upon information and belief, Defendants work closely with their customers in the processes of selecting products appropriate for their customers' specific

applications and developing new products. Defendants are aware that the '588 Accused Products are integral components of the products incorporating them, that the infringing integrated circuits are built into the products and cannot be removed or disabled by a purchaser of the products containing the infringing integrated circuit devices, such that Defendants' customers will infringe one or more claims of the '588 patent by incorporating such integrated circuit devices in other products, and that subsequent importation, sale, and use of such products in the United States would be a direct infringement of the '588 patent. Therefore, Defendants are aware that their customers will infringe one or more claims of the '588 patent by importing, selling, offering for sale, and/or using the products supplied by Defendants.

38. Defendants directly benefit from and actively and knowingly encourage customers', resellers', and users' importation of these products into the United States and sale and use within the United States. Defendants actively encourage customers, resellers, OEM's, and downstream users to import, use, and sell in the United States the '588 Accused Products that they manufacture and supply, including through advertising, marketing, and sales activities directed at United States sales. On information and belief, Defendants are aware of the size and importance of the United States market for customers of their products, and also distribute or supply these products intended for importation, use, offer for sale, and sale in the United States. Defendants routinely market their infringing integrated circuit products to third parties for inclusion in products that are sold to customers in the United States. Defendant Renesas America provides a direct sales outlet for these products in the United States. Defendants' marketing efforts show that they have specifically intended to and have induced direct infringement in the United States.

39. Defendants also provide OEMs, manufacturers, importers, resellers, customers, and end users instructions, data, simulation tools, user guides, technical resources, and technical



specifications on how to incorporate the '588 Accused Products into electronics products that are made, used, sold, offered for sale in and/or imported into the United States. When OEMs, manufacturers, importers, resellers, customers, and end users follow such instructions, data, simulation tools, user guides, technical resources, and technical specifications and embed the products in end products and make, use, offer to sell, sell, or import into the United States, they directly infringe one or more claims of the '588 patent. Defendants know that by providing such instructions, data, simulation tools, user guides, technical resources, and technical specifications, OEMs, manufacturers, importers, resellers, customers, and end users follow them, and therefore directly infringe one or more claims of the '588 patent. Defendants thus know that their actions actively induce infringement.

40. Defendants have engaged and will continue to engage in additional activities to specifically target the United States market for the '588 Accused Products and actively induce manufacturers, importers, resellers, customers, and end users to directly infringe one or more claims of the '588 patent in the United States. For example, Defendants have showcased their semiconductor devices and process technologies at various industry events and through written materials distributed in the United States, and through the [www.renesas.com](http://www.renesas.com) website in an effort to encourage customers to include the infringing technology in their products. These events are attended by the direct infringers mentioned above and generally by companies that make, use, offer to sell, sell, or import in the United States products that use integrated circuit components such as those made by Defendants. Defendants derive significant revenue by selling the '588 Accused Products to third parties who directly infringe the '588 patent in the United States.

41. Defendants derive significant revenue by selling the '588 Accused Products to third parties who directly infringe the '588 patent in the United States. Defendants' extensive sales and

marketing efforts, sales volume, and partnerships all evidence their intent to induce companies to infringe one or more claims of the '588 patent by, using, offering to sell, selling, or importing products that incorporate the '588 Accused Products, in the United States. Defendants have had specific intent to induce infringement or have been willfully blind to the direct infringement they are inducing.

42. Upon information and belief, Defendants have continued and will continue to engage in activities constituting contributory infringement of the '588 patent, including at least claims 1 and 3, pursuant to 35 U.S.C. § 271(c). Defendants contributorily infringe with knowledge that the '588 Accused Products, or the use thereof, infringe the '588 patent. Defendants knowingly and intentionally contributed to the direct infringement of the '588 patent by others by supplying these integrated circuit devices that embody a material part of the claimed invention of the '588 patent, which are known by the Defendants to be specially made or adapted for use in an infringing manner. For example, and without limitation, the '588 Accused Products are used in various end products, such as gaming consoles. The '588 Accused Products are not staple articles or commodities of commerce suitable for non-infringing use and are especially made for or adapted for use in infringing the '588 patent. There are no substantial uses of the '588 Accused Products that do not infringe the '588 patent. By contributing a material part of the infringing computing products sold, offered for sale, imported, and used by their customers, resellers, and users, Defendants have been and are now indirectly infringing the '588 patent under 35 U.S.C. § 271(c).

43. Defendants' direct and indirect infringement of the '588 patent has injured Lone Star, and Lone Star is entitled to recover damages adequate to compensate for such infringement pursuant to 35 U.S.C. § 284. Unless they cease their infringing activities, Defendants will continue to injure Lone Star by infringing the '588 patent.

44. On information and belief, Defendants acted egregiously and with willful misconduct in that their actions constituted direct or indirect infringement of a valid patent, and this was either known or so obvious that Defendants should have known about it. Defendants continue to infringe the '588 patent by making, using, selling, offering for sale, and importing in the United States the '588 Accused Products, and to induce the direct infringement of others performing these acts, or they have acted at least in reckless disregard of Lone Star's patent rights. On information and belief, Defendants will continue their infringement notwithstanding actual knowledge of the '588 patent and without a good faith basis to believe that their activities do not infringe any valid claim of the '588 patent. All infringement of the '588 patent following Defendants' knowledge of the '588 patent is willful and Lone Star is entitled to treble damages and attorneys' fees and costs incurred in this action under 35 U.S.C. §§ 284 and 285.

**THIRD CAUSE OF ACTION – INFRINGEMENT OF THE '933 PATENT**

45. Plaintiff hereby repeats and re-alleges the allegations contained in paragraphs 1 to 17, as if fully set forth herein.

46. Defendants, directly and/or through their subsidiaries, affiliates, agents, and/or business partners, have in the past and continue to directly infringe the '933 patent, including at least claim 1, pursuant to 35 U.S.C. § 271(a) by using, selling, offering to sell, and/or importing integrated circuit devices that embody the inventions claimed in the '933 patent, within the United States and within this District. In violation of the '933 patent, for example, Defendants' accused integrated circuit devices include: (a) a wafer stack; (b) a first interconnect layer formed on the wafer stack, wherein the first interconnect layer includes at least one depression formed in a first dielectric layer; and (c) a second interconnect layer formed on the first interconnect layer, wherein the second interconnect layer includes a substantially planarized top surface located above the first

interconnect layer and the depression in the first dielectric layer, the second interconnect layer being substantially free of residual conductive material, wherein the second interconnect layer includes a second dielectric layer and at least one second layer conductor that extends downwardly from the top surface through the second layer dielectric to the first layer interconnect.

47. Defendants have been and are engaged in one or more of these direct infringing activities related to their embedded DRAM semiconductor devices that have first and second interconnect layers designed in accordance with claim 1, such as Defendants' D813301 GPU with embedded DRAM and other embedded DRAM semiconductor devices having first and second interconnect layers of a design substantially similar to that of the D813301 GPU with embedded DRAM device ("the '933 Accused Products").

48. Defendants, directly and/or through their subsidiaries, affiliates, agents, and/or business partners, have been and are now indirectly infringing the '933 patent, including at least claim 1, pursuant to 35 U.S.C. § 271(b) by actively inducing acts of direct infringement performed by others. Defendants have actual notice of the '933 patent and the infringement alleged herein at least upon the service of this Complaint. Upon information and belief, Defendants have numerous lawyers and other active agents who regularly review patents and published patent applications relevant to technology in the fields of the Patents in Suit, specifically including patents directed to semiconductor memory devices issued to competitors such as AMD, the original assignee of the '933 patent. Upon information and belief, Defendants collectively have been issued over 8,945 patents, including 249 patents prosecuted in the USPTO in the same classifications as the '933 patent, giving Defendants intimate knowledge of the art in fields relevant to this civil action. The timing, circumstances and extent of Defendants obtaining actual knowledge of the '933 patent prior to the commencement of this lawsuit will be confirmed during discovery.

49. Upon gaining knowledge of the '933 patent, it was, or became, apparent to Defendants that the manufacture, sale, importing, offer for sale, and use of their '933 Accused Products results in infringement of the '933 patent. Upon information and belief, Defendants have continued and will continue to engage in activities constituting inducement of infringement, notwithstanding their knowledge, or willful blindness thereto, that the activities they induce result in infringement of the '933 patent.

50. The '933 Accused Products are intended for integration into products known to be sold widely in the United States. Defendants make integrated circuit devices that embody the inventions claimed in the '933 patent, which devices infringe when they are imported into, or sold, used, or offered for sale in the United States. Defendants indirectly infringe by inducing customers and other downstream parties to import products that incorporate integrated circuit devices embodying inventions claimed in the '933 patent, or to sell or use such products, or offer them for sale, in the United States. For example, Defendants OEMs, importers, resellers, and others who purchase or otherwise obtain devices manufactured at Defendants' overseas facilities, or supplied under agreement with partner foundries, to import devices embodying inventions recited in claims of the '933 patent, or to sell or use such devices, or offer them for sale in the United States without authority.

51. Defendants encourage customers, resellers, OEMs, or others to import into the United States and sell and use in the United States the '933 Accused Products embodying inventions claimed in the '933 patent with knowledge and the specific intent to cause the acts of direct infringement performed by these third parties. On information and belief, after Defendants obtained knowledge of the '933 patent, the '933 Accused Products have been and will continue to be imported into the United States and sold in large volumes by themselves and by others, such as

customers, distributors and resellers. Upon information and belief, Defendants work closely with their customers in the processes of selecting products appropriate for their customers' specific applications and developing new products. Defendants are aware that the '933 Accused Products are integral components of the products incorporating them, that the infringing integrated circuits are built into the products and cannot be removed or disabled by a purchaser of the products containing the infringing integrated circuit devices, such that Defendants' customers will infringe one or more claims of the '933 patent by incorporating such integrated circuit devices in other products, and that subsequent importation, sale, and use of such products in the United States would be a direct infringement of the '933 patent. Therefore, Defendants are aware that their customers will infringe one or more claims of the '933 patent by importing, selling, offering for sale, and/or using the products supplied by Defendants.

52. Defendants directly benefit from and actively and knowingly encourage customers', resellers', and users' importation of these products into the United States and sale and use within the United States. Defendants actively encourage customers, resellers, OEM's, and downstream users to import, use, and sell in the United States the '933 Accused Products that they manufacture and supply, including through advertising, marketing, and sales activities directed at United States sales. On information and belief, Defendants are aware of the size and importance of the United States market for customers of their products, and also distribute or supply these products intended for importation, use, offer for sale, and sale in the United States. Defendants routinely market their infringing integrated circuit products to third parties for inclusion in products that are sold to customers in the United States. Defendant Renesas America provides a direct sales outlet for these products in the United States. Defendants' marketing efforts show that they have specifically intended to and have induced direct infringement in the United States.

53. Defendants also provide OEMs, manufacturers, importers, resellers, customers, and end users instructions, data, simulation tools, user guides, technical resources, and technical specifications on how to incorporate the '933 Accused Products into electronics products that are made, used, sold, offered for sale in and/or imported into the United States. When OEMs, manufacturers, importers, resellers, customers, and end users follow such instructions, data, simulation tools, user guides, technical resources, and technical specifications and embed the products in end products and make, use, offer to sell, sell, or import into the United States, they directly infringe one or more claims of the '933 patent. Defendants know that by providing such instructions, data, simulation tools, user guides, technical resources, and technical specifications, OEMs, manufacturers, importers, resellers, customers, and end users follow them, and therefore directly infringe one or more claims of the '933 patent. Defendants thus know that their actions actively induce infringement.

54. Defendants have engaged and will continue to engage in additional activities to specifically target the United States market for the '933 Accused Products and actively induce manufacturers, importers, resellers, customers, and end users to directly infringe one or more claims of the '933 patent in the United States. For example, Defendants have showcased their semiconductor devices and process technologies at various industry events and through written materials distributed in the United States, and through the [www.renesas.com](http://www.renesas.com) website in an effort to encourage customers to include the infringing technology in their products. These events are attended by the direct infringers mentioned above and generally by companies that make, use, offer to sell, sell, or import in the United States products that use integrated circuit components such as those made by Defendants. Defendants derive significant revenue by selling the '933 Accused Products to third parties who directly infringe the '933 patent in the United States.

55. Defendants derive significant revenue by selling the ‘933 Accused Products to third parties who directly infringe the ‘933 patent in the United States. Defendants’ extensive sales and marketing efforts, sales volume, and partnerships all evidence their intent to induce companies to infringe one or more claims of the ‘933 patent by, using, offering to sell, selling, or importing products that incorporate the ‘933 Accused Products, in the United States. Defendants have had specific intent to induce infringement or have been willfully blind to the direct infringement they are inducing.

56. Upon information and belief, Defendants have continued and will continue to engage in activities constituting contributory infringement of the ‘933 patent, including at least claim 1, pursuant to 35 U.S.C. § 271(c). Defendants contributorily infringe with knowledge that the ‘933 Accused Products, or the use thereof, infringe the ‘933 patent. Defendants knowingly and intentionally contributed to the direct infringement of the ‘933 patent by others by supplying these integrated circuit devices that embody a material part of the claimed invention of the ‘933 patent, which are known by the Defendants to be specially made or adapted for use in an infringing manner. For example, and without limitation, the ‘933 Accused Products are used in various end products, such as gaming consoles. The ‘933 Accused Products are not staple articles or commodities of commerce suitable for non-infringing use and are especially made for or adapted for use in infringing the ‘933 patent. There are no substantial uses of the ‘933 Accused Products that do not infringe the ‘933 patent. By contributing a material part of the infringing computing products sold, offered for sale, imported, and used by their customers, resellers, and users, Defendants have been and are now indirectly infringing the ‘933 patent under 35 U.S.C. § 271(c).

57. Defendants’ direct and indirect infringement of the ‘933 patent has injured Lone Star, and Lone Star is entitled to recover damages adequate to compensate for such infringement



pursuant to 35 U.S.C. § 284. Unless they cease their infringing activities, Defendants will continue to injure Lone Star by infringing the '933 patent.

58. On information and belief, Defendants acted egregiously and with willful misconduct in that their actions constituted direct or indirect infringement of a valid patent, and this was either known or so obvious that Defendants should have known about it. Defendants continue to infringe the '933 patent by making, using, selling, offering for sale, and importing in the United States the '933 Accused Products, and to induce the direct infringement of others performing these acts, or they have acted at least in reckless disregard of Lone Star's patent rights. On information and belief, Defendants will continue their infringement notwithstanding actual knowledge of the '933 patent and without a good faith basis to believe that their activities do not infringe any valid claim of the '933 patent. All infringement of the '933 patent following Defendants' knowledge of the '933 patent is willful and Lone Star is entitled to treble damages and attorneys' fees and costs incurred in this action under 35 U.S.C. §§ 284 and 285.

**FOURTH CAUSE OF ACTION – INFRINGEMENT OF THE '330 PATENT**

59. Plaintiff hereby repeats and re-alleges the allegations contained in paragraphs 1 to 17, as if fully set forth herein.

60. Defendants, directly and/or through their subsidiaries, affiliates, agents, and/or business partners, have in the past and continue to directly infringe the '330 patent, including at least claims 1, 4 and 5, pursuant to 35 U.S.C. § 271(a) by using, selling, offering to sell, and/or importing integrated circuit devices that embody the inventions claimed in the '330 patent, within the United States and within this District. In violation of the '330 patent, for example, Defendants' accused integrated circuit devices include: (a) a semiconductor substrate having a semiconductor device provided thereon; (b) a first dielectric layer formed over the semiconductor substrate having

a first opening provided therein; (c) a first conductor core filling the first opening and connected to the semiconductor device; (d) an etch stop layer of silicon nitride formed over the first dielectric layer and the first conductor core, the etch stop layer having a dielectric constant below 5.5; (e) a second dielectric layer formed over the etch stop layer and having a second opening provided therein open to the first conductor core; and (f) a second conductor core filling the second opening and connected to the first conductor core.

61. Defendants have been and are engaged in one or more of these direct infringing activities related to their embedded flash memory devices having transistor interconnects designed in accordance with claims 1, 4 or 5, such as Defendants' RH850/F1L R7F7010232AFP MCU with embedded NOR flash memory made using Renesas's 40-nanometer process, and other embedded flash memory semiconductor devices having transistor interconnects of a design substantially similar to that of the RH850/F1L R7F7010232AFP MCU with embedded NOR flash memory device ("the '330 Accused Products").

62. Defendants, directly and/or through their subsidiaries, affiliates, agents, and/or business partners, have been and are now indirectly infringing the '330 patent, including at least claims 1, 4 and 5, pursuant to 35 U.S.C. § 271(b) by actively inducing acts of direct infringement performed by others. Defendants have actual notice of the '330 patent and the infringement alleged herein at least upon the service of this Complaint. Upon information and belief, Defendants have numerous lawyers and other active agents who regularly review patents and published patent applications relevant to technology in the fields of the Patents in Suit, specifically including patents directed to semiconductor memory devices issued to competitors such as AMD, the original assignee of the '330 patent. Upon information and belief, Defendants collectively have been issued over 8,945 patents, including 221 patents prosecuted in the USPTO in the same classifications as

the '330 patent, giving Defendants intimate knowledge of the art in fields relevant to this civil action. The timing, circumstances and extent of Defendants obtaining actual knowledge of the '330 patent prior to the commencement of this lawsuit will be confirmed during discovery.

63. Upon gaining knowledge of the '330 patent, it was, or became, apparent to Defendants that the manufacture, sale, importing, offer for sale, and use of their '330 Accused Products results in infringement of the '330 patent. Upon information and belief, Defendants have continued and will continue to engage in activities constituting inducement of infringement, notwithstanding their knowledge, or willful blindness thereto, that the activities they induce result in infringement of the '330 patent.

64. The '330 Accused Products are intended for integration into products known to be sold widely in the United States. Defendants make integrated circuit devices that embody the inventions claimed in the '330 patent, which devices infringe when they are imported into, or sold, used, or offered for sale in the United States. Defendants indirectly infringe by inducing customers and other downstream parties to import products that incorporate integrated circuit devices embodying inventions claimed in the '330 patent, or to sell or use such products, or offer them for sale, in the United States. For example, Defendants induce OEMs, importers, resellers, and others who purchase or otherwise obtain devices manufactured at Defendants' overseas facilities, or supplied under agreements with partner foundries, to import devices embodying inventions recited in claims of the '330 patent, or to sell or use such devices, or offer them for sale in the United States without authority.

65. Defendants encourage customers, OEMs, resellers or others to import into the United States and sell and use in the United States the '330 Accused Products embodying inventions claimed in the '330 patent with knowledge and the specific intent to cause the acts of

direct infringement performed by these third parties. On information and belief, after Defendants obtained knowledge of the '330 patent, the '330 Accused Products have been and will continue to be imported into the United States and sold in large volumes by themselves and by others, such as customers, distributors and resellers. Upon information and belief, Defendants work closely with their customers in the processes of selecting products appropriate for their customers' specific applications and developing new products. Defendants are aware that the '330 Accused Products are integral components of the products incorporating them, that the infringing integrated circuits are built into the products and cannot be removed or disabled by a purchaser of the products containing the infringing integrated circuit devices, such that Defendants' customers will infringe one or more claims of the '330 patent by incorporating such integrated circuit devices in other products, and that subsequent importation, sale, and use of such products in the United States would be a direct infringement of the '330 patent. Therefore, Defendants are aware that their customers will infringe one or more claims of the '330 patent by importing, selling, offering for sale, and/or using the products supplied by Defendants.

66. Defendants directly benefit from and actively and knowingly encourage customers', resellers', and users' importation of these products into the United States and sale and use within the United States. Defendants actively encourage customers, OEMs, resellers, and downstream users to import, use, and sell in the United States the '330 Accused Products that they manufacture and supply, including through advertising, marketing, and sales activities directed at United States sales. On information and belief, Defendants are aware of the size and importance of the United States market for customers of their products, and also distribute or supply these products intended for importation, use, offer for sale, and sale in the United States. Defendants routinely market their infringing integrated circuit products to third parties for inclusion in

products that are sold to customers in the United States. Defendant Renesas America provides a direct sales outlet for these products in the United States. Defendants' marketing efforts show that they have specifically intended to and have induced direct infringement in the United States.

67. Defendants also provide OEMs, manufacturers, importers, resellers, customers, and end users instructions, data, simulation tools, user guides, technical resources, and technical specifications on how to incorporate the '330 Accused Products into electronics products that are made, used, sold, offered for sale in and/or imported into the United States. When OEMs, manufacturers, importers, resellers, customers, and end users follow such instructions, data, simulation tools, user guides, technical resources, and technical specifications and embed the products in end products and make, use, offer to sell, sell, or import into the United States, they directly infringe one or more claims of the '330 patent. Defendants know that by providing such instructions, data, simulation tools, user guides, technical resources, and technical specifications, OEMs, manufacturers, importers, resellers, customers, and end users follow them, and therefore directly infringe one or more claims of the '330 patent. Defendants thus know that their actions actively induce infringement.

68. Defendants have engaged and will continue to engage in additional activities to specifically target the United States market for the '330 Accused Products and actively induce manufacturers, importers, resellers, customers, and end users to directly infringe one or more claims of the '330 patent in the United States. For example, Defendants have showcased their semiconductor devices and process technologies at various industry events and through written materials distributed in the United States, and through the [www.renesas.com](http://www.renesas.com) website in an effort to encourage customers to include the infringing technology in their products. These events are attended by the direct infringers mentioned above and generally by companies that make, use, offer

to sell, sell, or import in the United States products that use integrated circuit components such as those made by Defendants. Defendants derive significant revenue by selling the '330 Accused Products to third parties who directly infringe the '330 patent in the United States. Defendants derive significant revenue by selling the '330 Accused Products to third parties who directly infringe the '330 patent in the United States.

69. Defendants' extensive sales and marketing efforts, sales volume, and partnerships all evidence their intent to induce companies to infringe one or more claims of the '330 patent by, using, offering to sell, selling, or importing products that incorporate the '330 Accused Products, in the United States. Defendants have had specific intent to induce infringement or have been willfully blind to the direct infringement they are inducing.

70. Upon information and belief, Defendants have continued and will continue to engage in activities constituting contributory infringement of the '330 patent, including at least claims 1, 2, 4 and 5, pursuant to 35 U.S.C. § 271(c). Defendants contributorily infringe with knowledge that the '330 Accused Products, or the use thereof, infringe the '330 patent. Defendants knowingly and intentionally contributed to the direct infringement of the '330 patent by others by supplying these integrated circuit devices that embody a material part of the claimed invention of the '330 patent, which are known by the Defendants to be specially made or adapted for use in an infringing manner. For example, and without limitation, the '330 Accused Products are used in various end products, such as automobiles. The '330 Accused Products are not staple articles or commodities of commerce suitable for non-infringing use and are especially made for or adapted for use in infringing the '330 patent. There are no substantial uses of the '330 Accused Products that do not infringe the '330 patent. By contributing a material part of the infringing computing

products sold, offered for sale, imported, and used by their customers, resellers, and users, Defendants have been and are now indirectly infringing the '330 patent under 35 U.S.C. § 271(c).

71. Defendants' direct and indirect infringement of the '330 patent has injured Lone Star, and Lone Star is entitled to recover damages adequate to compensate for such infringement pursuant to 35 U.S.C. § 284. Unless they cease their infringing activities, Defendants will continue to injure Lone Star by infringing the '330 patent.

72. On information and belief, Defendants acted egregiously and with willful misconduct in that their actions constituted direct or indirect infringement of a valid patent, and this was either known or so obvious that Defendants should have known about it. Defendants continue to infringe the '330 patent by making, using, selling, offering for sale, and importing in the United States the '330 Accused Products, and to induce the direct infringement of others performing these acts, or they have acted at least in reckless disregard of Lone Star's patent rights. On information and belief, Defendants will continue their infringement notwithstanding actual knowledge of the '330 patent and without a good faith basis to believe that their activities do not infringe any valid claim of the '330 patent. All infringement of the '330 patent following Defendants' knowledge of the '330 patent is willful and Lone Star is entitled to treble damages and attorneys' fees and costs incurred in this action under 35 U.S.C. §§ 284 and 285.

#### **FIFTH CAUSE OF ACTION – INFRINGEMENT OF THE '089 PATENT**

73. Plaintiff hereby repeats and re-alleges the allegations contained in paragraphs 1 to 17, as if fully set forth herein.

74. Defendants, directly and/or through their subsidiaries, affiliates, agents, and/or business partners, have in the past and continue to directly infringe the '089 patent pursuant to 35 U.S.C. § 271(g) by importing, using, selling, or offering to sell integrated circuit devices in the

United States made using the methods claimed in the '089 patent, including at least claims 1 and 2. For example, Defendants use, sell, offer for sale, and/or import integrated circuit devices having selectively sized gate spacers made by practicing the steps of: (a) forming at least one spacer adjacent to an edge of each of a plurality of gates on a substrate, the plurality of gates including a first gate and at least one remaining gate; (b) applying a mask to the first gate, including at least a portion of said at least one spacer for the first gate; (c) etching and therein sizing said at least one spacer for each of the at least one remaining gate into a geometry that is smaller than the at least one spacer for the first gate; (d) removing the mask from the first gate; and (e) applying an ion implantation and forming a highly doped region within the substrate adjacent to the sized at least one spacer. Defendants directly infringe when they import, use, sell, or offer for sale in the United States integrated circuit devices made using the method steps recited in the claims.

75. Defendants have been and are engaged in one or more of these direct infringing activities related to their CMOS integrated circuit devices having selectively sized transistor gate made in accordance with claims 1 or 2, such as Defendants' CMOS Image Sensor made for the Nikon D4 camera made using Renesas's 250-nanometer CMOS process, and other CMOS integrated circuit devices having selectively sized gate spacers made by a substantially similar process ("the '089 Accused Products").

76. Defendants, directly and/or through their subsidiaries, affiliates, agents, and/or business partners, have been and are now indirectly infringing the '089 patent, including at least claims 1 and 2, pursuant to 35 U.S.C. § 271(b) by actively inducing acts of direct infringement performed by others. Defendants have actual notice of the '089 patent and the infringement alleged herein at least upon the service of this Complaint. Upon information and belief, Defendants have numerous lawyers and other active agents who regularly review patents and published patent



applications relevant to technology in the fields of the Patents in Suit, specifically including patents directed to semiconductor memory devices issued to competitors such as AMD, the original assignee of the '089 patent. Upon information and belief, Defendants collectively have been issued over 8,945 patents, including 20 patents prosecuted in the USPTO in the same classifications as the '089 patent, giving Defendants intimate knowledge of the art in fields relevant to this civil action. The timing, circumstances and extent of Defendants obtaining actual knowledge of the '089 patent prior to the commencement of this lawsuit will be confirmed during discovery.

77. Upon gaining knowledge of the '089 patent, it was, or became, apparent to Defendants that the manufacture, sale, importing, offer for sale, and use of their '089 Accused Products results in infringement of the '089 patent. Upon information and belief, Defendants have continued and will continue to engage in activities constituting inducement of infringement, notwithstanding their knowledge, or willful blindness thereto, that the activities they induce result in infringement of the '089 patent.

78. The '089 Accused Products are intended for integration into products known to be sold widely in the United States. Defendants make integrated circuit devices using methods claimed in the '089 patent, which devices infringe when they are imported into, or sold, used, or offered for sale in the United States. Defendants indirectly infringe by inducing direct customers and other downstream parties to import products that incorporate integrated circuit devices made using the methods recited in claims of the '089 patent, or to sell or use such products, or offer them for sale, in the United States. For example, Defendants induce OEMs, importers, resellers, and others who purchase or otherwise obtain devices manufactured at Defendants' overseas facilities, or supplied under agreements with partner foundries, to import devices made using the methods

recited in claims of the '089 patent, or to sell or use such devices, or offer them for sale in the United States without authority.

79. Defendants encourage customers, OEM's, resellers or others to import into the United States and sell and use in the United States the '089 Accused Products made using the methods recited in the claims of the '089 patent with knowledge and the specific intent to cause the acts of direct infringement performed by these third parties. On information and belief, after Defendants obtained knowledge of the '089 patent, the '089 Accused Products have been and will continue to be imported into the United States and sold in large volumes by themselves and by others, such as customers, distributors, and resellers. Upon information and belief, Defendants work closely with their customers in the processes of selecting products appropriate for their customers' specific applications and developing new products. Defendants are aware that the '089 Accused Products are always made using the same fabrication methods under Defendants' direction and control such that Defendants' customers will infringe one or more claims of the '089 patent by incorporating such integrated circuit devices in other products, and that subsequent importation, sale, and use of such products in the United States would be a direct infringement of the '089 patent. Therefore, Defendants are aware that their customers will infringe the '089 patent by importing, selling, offering for sale, and/or using the products supplied by Defendants.

80. Defendants directly benefit from and actively and knowingly encourage customers', resellers', and users' importation of these products into the United States and sale and use within the United States. Defendants actively encourage customers, OEMs, resellers and downstream users to import, use, and sell in the United States the '089 Accused Products that they manufacture and supply, including through advertising, marketing, and sales activities directed at United States sales. On information and belief, Defendants are aware of the size and importance

of the United States market for customers of their products, and also distribute or supply these products intended for importation, use, and sale in the United States. Defendants routinely market their infringing products to third parties for inclusion in products that are sold to customers in the United States. Defendant Renesas America provides a direct sales outlet for these products in the United States. Defendants' marketing efforts show that they have specifically intended to and have induced direct infringement in the United States.

81. Defendants also provide OEMs, manufacturers, importers, resellers, customers, and end users instructions, data, simulation tools, user guides, technical resources, and technical specifications on how to incorporate the '089 Accused Products into electronics products that are made, used, sold, offered for sale in and/or imported into the United States. When OEMs, manufacturers, importers, resellers, customers, and end users follow such instructions, data, simulation tools, user guides, technical resources, and technical specifications and embed the products in end products and make, use, offer to sell, sell, or import into the United States, they directly infringe one or more claims of the '089 patent. Defendants know that by providing such instructions, data, simulation tools, user guides, technical resources, and technical specifications, OEMs, manufacturers, importers, resellers, customers, and end users follow them, and therefore directly infringe one or more claims of the '089 patent. Defendants thus know that their actions actively induce infringement.

82. Defendants have engaged and will continue to engage in additional activities to specifically target the United States market for the '089 Accused Products and actively induce manufacturers, importers, resellers, customers, and end users to directly infringe one or more claims of the '089 patent in the United States. For example, Defendants have showcased their semiconductor devices and process technologies at various industry events and through written

materials distributed in the United States, and through the [www.renesas.com](http://www.renesas.com) website in an effort to encourage customers to include the infringing technology in their products. These events are attended by the direct infringers mentioned above and generally by companies that make, use, offer to sell, sell, or import in the United States products that use integrated circuit components such as those made by Defendants.

83. Defendants derive significant revenue by selling the '089 Accused Products to third parties who directly infringe the '089 patent in the United States. Defendants' extensive sales and marketing efforts, sales volume, and partnerships all evidence their intent to induce companies to infringe one or more claims of the '089 patent by, using, offering to sell, selling, or importing products that incorporate the '089 Accused Products in the United States. Defendants have had specific intent to induce infringement or have been willfully blind to the direct infringement they are inducing.

84. Defendants' direct and indirect infringement of the '089 patent has injured Lone Star, and Lone Star is entitled to recover damages adequate to compensate for such infringement pursuant to 35 U.S.C. § 284. Unless they cease their infringing activities, Defendants will continue to injure Lone Star by infringing the '089 patent.

85. On information and belief, Defendants acted egregiously and with willful misconduct in that their actions constituted direct or indirect infringement of a valid patent, and this was either known or so obvious that Defendants should have known about it. Defendants continue to infringe the '089 patent by making, using, selling, offering for sale, and importing in the United States the '089 Accused Products and to induce the direct infringement of others performing these acts, or they have acted at least in reckless disregard of Lone Star's patent rights. On information and belief, Defendants will continue their infringement notwithstanding actual

knowledge of the '089 patent and without a good faith basis to believe that their activities do not infringe any valid claim of the '089 patent. All infringement of the '089 patent following Defendants' knowledge of the '089 patent is willful and Lone Star is entitled to treble damages and attorneys' fees and costs incurred in this action under 35 U.S.C. §§ 284 and 285.

**SIXTH CAUSE OF ACTION – INFRINGEMENT OF THE '231 PATENT**

86. Plaintiff hereby repeats and re-alleges the allegations contained in paragraphs 1 to 17, as if fully set forth herein.

87. Defendants, directly and/or through their subsidiaries, affiliates, agents, and/or business partners, have in the past and continue to directly infringe the '231 patent pursuant to 35 U.S.C. § 271(g) by importing, using, selling or offering to sell integrated circuit devices in the United States made using the methods claimed in the '231 patent, including at least claims 1, 2, 3, 4 and 7. For example, Defendants use, sell, offer for sale, and/or import integrated circuit devices made by practicing the steps of: (a) providing a semiconductor substrate comprising the metal layer over at least part of the semiconductor substrate; (b) depositing a silicon oxynitride layer on the metal layer having a thickness from about 100 Å to about 1500 Å; and (c) forming an oxide layer having a thickness from about 5 Å to about 50 Å over the silicon oxynitride layer to provide the silicon oxynitride antireflection coating, with the oxide layer forming a barrier to migration of nitrogen atoms from the silicon oxynitride layer. Defendants directly infringe when they import, use, sell or offer for sale in the United States integrated circuit devices made using the claimed methods.

88. Defendants have been and are engaged in one or more of these direct infringing activities related to their CMOS integrated circuit devices having a silicon oxynitride antireflection coating made in accordance with claims 1, 2, 3, 4 or 7, such as Defendants' CMOS Image Sensor

made for the Nikon D4 camera made using Renesas's 250-nanometer CMOS process and other CMOS integrated circuit devices having a silicon oxynitride antireflection coating made by a substantially similar process ("the '231 Accused Products").

89. Defendants have been and are now indirectly infringing the '231 patent, including at least claims 1, 2, 3, 4 and 7, pursuant to 35 U.S.C. § 271(b) by actively inducing acts of direct infringement performed by others. Upon information and belief, Defendants have numerous lawyers and other active agents who regularly review patents and published patent applications relevant to technology in the fields of the Patents in Suit, specifically including patents directed to semiconductor memory devices issued to competitors such as AMD, the original assignee of the '231 patent. Upon information and belief, Defendants collectively have been issued over 8,945 patents, including 32 patents prosecuted in the USPTO in the same classifications as the '231 patent, giving Defendants intimate knowledge of the art in fields relevant to this civil action. The timing, circumstances and extent of Defendants obtaining actual knowledge of the '231 patent prior to the commencement of this lawsuit will be confirmed during discovery.

90. Upon gaining knowledge of the '231 patent, it was, or became, apparent to Defendants that the manufacture, sale, importing, offer for sale, and use of their '231 Accused Products result in infringement of the '231 patent. Upon information and belief, Defendants have continued and will continue to engage in activities constituting inducement of infringement, notwithstanding their knowledge, or willful blindness thereto, that the activities they induce result in infringement of the '231 patent under 35 U.S.C. § 271(b).

91. The '231 Accused Products are intended for integration into products known to be sold widely in the United States. Defendants and their subsidiaries make integrated circuit devices using methods claimed in the '231 patent, which devices infringe when they are imported into, or

sold, used, or offered for sale in, the United States. Defendants indirectly infringe by inducing customers to import products that integrate integrated circuit devices made using the methods claimed in the '231 patent, or to sell or use such products, or offer them for sale, in the United States. For example, Defendants induce OEMs, importers, resellers, and other customers who purchase devices manufactured at Renesas' facilities, or supplied under agreements with partner foundries, to import devices made using the methods claimed in the '231 patent, or to sell or use such devices, or offer them for sale in the United States without authority.

92. Defendants encourage customers, resellers, OEMs, or others to import into the United States and sell and use in the United States the '231 Accused Products made using the methods claimed in the '231 patent with knowledge and the specific intent to cause the acts of direct infringement performed by these third parties. On information and belief, after Defendants obtained knowledge of the '231 patent, the '231 Accused Products have been and will continue to be imported into the United States and sold in large volumes by themselves and by others, such as customers, distributors and resellers. Defendants are aware that the '231 Accused Products are always made using the same fabrication methods under Defendants' direction and control such that Defendants' customers will infringe one or more claims of the '231 patent by incorporating such integrated circuit devices in other products, and that subsequent importation, sale and use of such products in the United States would be a direct infringement of the '231 patent. Therefore, Defendants are aware that their customers will infringe the '231 patent by importing, offering for sale, selling and/or using the products supplied by Defendants.

93. Defendants directly benefit from and actively and knowingly encourage customers, resellers, and users' importation of these products into the United States and sale and use within the United States. Defendants actively encourage customers and downstream users, OEMs, and

resellers to import, use, and sell in the United States the '231 Accused Products that they manufacture and supply, including through advertising, marketing, and sales activities directed at United States sales. On information and belief, Defendants are aware of the size and importance of the United States market for customers of Defendants' products, and also distribute or supply these products intended for importation, use, offer for sale, and sale in the United States. Defendants routinely market their infringing integrated circuit products to third parties for inclusion in products that are sold to customers in the United States, as well as directly to end user customers. Defendants have numerous direct sales, distributors and reseller outlets for these products in the United States. Defendants' marketing efforts show that they have specifically intended to and have induced direct infringement in the United States.

94. Defendants also provide OEMs, manufacturers, importers, resellers, customers, and end users instructions, data, simulation tools, user guides, technical resources, and technical specifications on how to incorporate the '231 Accused Products into electronics products that are made, used, sold, offered for sale in and/or imported into the United States. When OEMs, manufacturers, importers, resellers, customers, and end users follow such instructions, data, simulation tools, user guides, technical resources, and technical specifications and embed the products in end products and make, use, offer to sell, sell, or import into the United States, they directly infringe one or more claims of the '231 patent. Defendants know that by providing such instructions, data, simulation tools, user guides, technical resources, and technical specifications, OEMs, manufacturers, importers, resellers, customers, and end users follow them, and therefore directly infringe one or more claims of the '231 patent. Defendants thus know that their actions actively induce infringement.



95. Defendants have engaged and will continue to engage in additional activities to specifically target the United States market for the '231 Accused Products and actively induce OEMs, manufacturers, importers, resellers, customers, and end users to directly infringe one or more claims of the '231 patent in the United States. For example, Defendants have showcased their semiconductor devices and process technologies at various industry events and through written materials distributed in the United States, and through the [www.renesas.com](http://www.renesas.com) website in an effort to encourage customers to include the infringing technology in their products. These events are attended by the direct infringers mentioned above and generally by companies that make, use, offer to sell, sell, or import in the United States products that use integrated circuit components such as those made by Defendants. Defendants derive significant revenue by selling the '231 Accused Products to third parties who directly infringe the '231 patent in the United States.

96. Defendants derive significant revenue by selling their integrated circuit products to third parties who directly infringe the '231 patent in the United States. Defendants' extensive sales and marketing efforts, sales volume, and partnerships all evidence their intent to induce companies to infringe one or more claims of the '231 patent by, using, offering to sell, selling, or importing products that incorporate the '231 Accused Products, in the United States. Defendants have had specific intent to induce infringement or have been willfully blind to the direct infringement they are inducing.

97. Defendants' direct and indirect infringement of the '231 patent has injured Lone Star, and Lone Star is entitled to recover damages adequate to compensate for such infringement pursuant to 35 U.S.C. § 284. Unless they cease their infringing activities, Defendants will continue to injure Lone Star by infringing the '231 patent.

98. On information and belief, Defendants acted egregiously and with willful misconduct in that their actions constituted direct or indirect infringement of a valid patent, and this was either known or so obvious that Defendants should have known about it. Defendants continue to infringe the '231 patent by making, using, selling, offering for sale and importing in the United States the '231 Accused Products and to induce the direct infringement of others performing these acts, or they have acted at least in reckless disregard of Lone Star's patent rights. On information and belief, Defendants will continue their infringement notwithstanding actual knowledge of the '231 patent and without a good faith basis to believe that their activities do not infringe any valid claim of the '231 patent. All infringement of the '231 patent following Defendants' knowledge of the '231 patent is willful and Lone Star is entitled to treble damages and attorneys' fees and costs incurred in this action under 35 U.S.C. §§ 284 and 285.

**PRAYER FOR RELIEF**

WHEREFORE, Plaintiffs prays for:

1. Judgment that the '611, '588, '933, '330, '089, and '231 patents are each valid and enforceable;
2. Judgment that the '611, '588, '933, '330, '089, and '231 patents are infringed by Defendants;
3. Judgment that Defendants' acts of patent infringement relating to the patents are willful;
4. An award of damages arising out of Defendants' acts of patent infringement, together with pre-judgment and post-judgment interest;

5. Judgment that the damages so adjudged be trebled in accordance with 35 U.S.C. § 284;
6. An award of Plaintiff's attorneys' fees, costs and expenses incurred in this action in accordance with 35 U.S.C. § 285; and
7. Such other and further relief as the Court may deem just and proper.

**JURY DEMAND**

Plaintiff demands trial by jury of all issues triable of right by a jury.

**RESERVATION OF RIGHTS**

Plaintiff's investigation is ongoing, and certain material information remains in the sole possession of Defendants or third parties, which will be obtained via discovery herein. Plaintiff expressly reserves the right to amend or supplement the causes of action set forth herein in accordance with Rule 15 of the Federal Rules of Civil Procedure.

Respectfully submitted,

Date: December 20, 2016

/s/ Timothy P. Maloney

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