

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

LONE STAR SILICON INNOVATIONS LLC,

Plaintiff,

v.

NANYA TECHNOLOGY CORPORATION,  
NANYA TECHNOLOGY CORPORATION  
U.S.A.,

and

NANYA TECHNOLOGY CORPORATION  
DELAWARE.

Defendants.

Civil Action No. 2:16-cv-1117

**JURY TRIAL DEMANDED**

**COMPLAINT FOR PATENT INFRINGEMENT**

Plaintiff, Lone Star Silicon Innovations LLC (“Lone Star”), complains against Defendants Nanya Technology Corporation, Nanya Technology Corporation, U.S.A., and Nanya Technology Corporation Delaware (collectively “Defendants”) as follows:

**NATURE OF ACTION**

1. This is an action for patent infringement of United States Patent Nos. 5,872,038; 6,097,061; 6,103,611; 6,326,231 and 6,388,330 (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 principle 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. Defendant Nanya Technology Corporation (“Nanya”) is a corporation incorporated under the laws of Taiwan with its principal place of business at Hwa Ya Technology Park, 669 Fu Hsing 3rd Road, KueiShan, TaoYuan 333, Taiwan. Defendant Nanya 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 memory devices and/or devices that incorporate memory devices that embody the patented technology, and enabling end-user purchasers to use such devices in this District.

4. Defendant Nanya Technology Corporation, U.S.A. (“Nanya USA”) is a corporation organized under the laws of the state of California with its principal place of business at 1735 Technology Dr., Suite 400, San Jose, California 95110. Nanya USA’s registered agent for service of process in the State of Texas is CT Corporation System, located at 1999 Bryan St., Ste. 900, Dallas, TX 75201-3136 USA. Upon information and belief, Nanya USA is a wholly-owned subsidiary of Nanya. Nanya USA supports Nanya’s original equipment manufacturers (“OEM”) business in the United States with local sales and technical support offices in San Jose, California, as well as Austin and Houston, Texas. These local sales and technical support offices support the sales, product marketing, quality assurance, and logistics operations of Nanya in the United States. Nanya USA also has a network of manufacturer representatives and distributors across the United States to support customers. Nanya USA has also established warehouse locations in the United States. Defendant Nanya USA conducts business in and is doing business in Texas, and in the District, and elsewhere in the United States, including, without limitation, using, promoting, offering to sell, importing and/or selling

memory devices and/or devices that incorporate memory devices that embody patented technology, and enabling end-user purchasers to use such devices in this District.

5. Defendant Nanya Technology Corporation Delaware (“Nanya Delaware”) is a corporation organized under the laws of the state of Delaware with principal places of business at 5104 Old Ironside Drive, Suite 113, Santa Clara, California 95054, and 108 West 13th Street, Wilmington, Delaware 19801. Nanya Delaware’s registered agent for service of process in the State of Texas is Business Filings Incorporated, 701 Brazos Street, Suite 720, Austin, Texas 78701. Upon information and belief, Nanya Delaware is a wholly-owned subsidiary of Nanya. Defendant Nanya Delaware conducts business in and is doing business in Texas and in the District and elsewhere in the United States, including, without limitation, using, promoting, offering to sell, importing and/or selling memory devices and/or devices that incorporate memory devices that embody patented technology, and enabling end-user purchasers to use such devices in this District.

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

#### **JURISDICTION AND VENUE**

7. 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).

8. 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 its 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, within this district 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. 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.

9. On information and belief, Defendants do one or more of the following with memory devices and/or devices that incorporate memory devices that embody the patented technology that they or their foundries manufacture: (a) make these devices in the United States for sale to customers, including customers in Texas; (b) import these devices into the United States for sale to consumers, including consumers in Texas; (c) sell them or offer them for sale in the United States, including to customers in Texas; and/or (d) 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.

10. 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 (including through websites), offered to sell, sold and/or distributed infringing products, and/or have induced the sale and use of infringing products.

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

11. On February 16, 1999, U.S. Patent No. 5,872,038 (“the ’038 patent”), entitled “Semiconductor Device Having an Elevated Active Region Formed in an Oxide Trench and Method of Manufacture Thereof,” a copy of which is attached hereto as Exhibit A, was duly and legally issued. The ’038 patent issued from U.S. patent application Serial Number 08/780,643, filed January 8, 1997 and discloses and relates to the design of and processes for fabricating semiconductor memory devices. The inventors assigned all right, title, and interest in the ’038 patent to Advanced Micro Devices, Inc. (hereinafter “AMD”). AMD assigned its entire right, title, and interest in the ’038 patent to Lone Star, and Lone Star is the sole owner of all rights, title and interest in and to the ’038 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 ’038 patent.

12. On August 1, 2000, U.S. Patent No. 6,097,061 (“the ’061 patent”), entitled “Trenched Gate Metal Oxide Semiconductor Device And Method,” a copy of which is attached

hereto as Exhibit B, was duly and legally issued. The '061 patent issued from U.S. patent application Serial Number 09/052,051 filed December March 30, 1998 and discloses and relates to the design of and processes for fabricating semiconductor transistor devices. The inventors assigned all right, title, and interest in the '061 patent to AMD. AMD assigned its entire right, title, and interest in the '061 patent to Lone Star, and Lone Star is the sole owner of all rights, title and interest in and to the '061 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 '061 patent.

13. 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 C, 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 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.

14. 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 D, 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.

15. 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 E, 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.

#### **DEFENDANTS' INFRINGING PRODUCTS AND METHODS**

16. Defendants make, use, sell, offer for sale and/or import into the United States DRAM memory semiconductor devices and products incorporating these devices. These products are high-density, random access memory devices that provide high-speed data storage and retrieval. Defendants' DRAM memory devices include computing DRAM products, consumer DRAM products, mobile RAM products, and Elixir Notebook or Desktop memory cards. The devices are provided as wafers and chips, and are integrated as components of personal computer memories, mobile device memories, networking devices, servers, digital home appliances, consumer electronics, communications equipment, computer peripherals, automotive systems and other applications. Defendants' LPDDR products offer lower power

consumption relative to other DRAM products and are used in mobile phones, tablets, embedded applications, ultra-thin laptop computers and other mobile consumer devices that require low power consumption. Despite not having a license to the '611, '038 or '231 patents, Defendants have used the semiconductor fabrication methods claimed therein in making DRAM memory devices. Despite not having a license to the '330 or '061 patents, Defendants DRAM memory products adopt the designs claimed in these patents.

**FIRST CAUSE OF ACTION – INFRINGEMENT OF THE '038 PATENT**

17. Plaintiff hereby repeats and re-alleges the allegations contained in paragraphs 1 to 16, as if fully set forth herein.

18. Defendants Nanya, Nanya USA, and Nanya Delaware, directly and/or through their subsidiaries, affiliates, agents, and/or business partners, have in the past and continue to directly infringe the '038 patent pursuant to 35 U.S.C. § 271(g) by importing, using, selling or offering to sell DRAM memory semiconductor devices in the United States made using the methods claimed in the '038 patent, including at least claims 1, 2, 8, 9, 10, 11, 14 and 15. On information and belief, DRAM memory semiconductor devices manufactured by Defendants and/or other related entities and/or business partner foundries, are made using a process that practices the claims of the '038 patent including practicing the steps of: (a) forming a plurality of gate electrodes on a substrate, with an active region of the substrate being defined by adjacent walls of two gate electrodes; (b) forming an insulating layer over the gate electrodes and the active region; (c) etching a trench in the insulating layer to expose a portion of the active region of the substrate; (d) filling the trench with a polysilicon material; and (e) doping the polysilicon material to form an elevated active region above the active region of the substrate. On



information and belief, Defendants directly infringe when they import, use, sell or offer for sale in the United States DRAM memory semiconductor devices made using the claimed methods.

19. Defendants have been and are engaged in one or more of these direct infringing activities related to their DRAM memory semiconductor devices, including at least their computing DRAM products (e.g., part numbers beginning in “NT256,” “NT512,” “NT1G,” “NT2G,” “NT4G,” “NT8G,” “NT16T,” “NT32T”), including DDR2 SDRAM and DDR3 SDRAM; consumer DRAM products (e.g., part numbers beginning in “NT5”), including any of the DDR, DDR2, DDR3, DDR4 chips configured in Commercial Grade, Industrial Grade, or Automotive Grade; mobile RAM products (e.g., part numbers beginning in “NT6”), including any of the Mobile LPDDR, Mobile LPDDR2, Mobile LPDDR3 chips; Elixir Notebook or Desktop memory cards, including DDR3 SDRAM SODIMM (e.g., products with part numbers beginning with M2S4G64C or M2S8G64C), DDR3 SDRAM Unbuffered DIMM (e.g., products with part numbers beginning with M2F4G64C, M2X4G64C, M2F8G64C, M2X8G64C); and any other DRAM memory devices made by a substantially similar process (“the ’038 Accused DRAM Products”).

20. Defendants have been and are now indirectly infringing the ’038 patent under 35 U.S.C. § 271(b) by actively inducing acts of direct infringement performed by others, including at least claims 1, 2, 8, 9, 10, 11, 14 and 15. Defendants have actual notice of the ’038 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 of Defendants and of their owned and controlled subsidiaries 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 '038 patent. Upon information and belief, Nanya itself has been issued over 500 patents, including over a dozen patents prosecuted in the USPTO in the same classifications as the '038 patent, giving Defendants intimate knowledge of the art in fields relevant to this civil action. The timing, circumstances and extent of Nanya and its subsidiaries Nanya USA and Nanya Delaware obtaining actual knowledge of the '038 patent prior to the commencement of this lawsuit will be confirmed during discovery.

21. Upon gaining knowledge of the '038 patent, it was, or became, apparent to Defendants that the manufacture, sale, importing, offer for sale, and use of their '038 Accused DRAM Products result in infringement of the '038 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 '038 patent.

22. The '038 Accused DRAM Products are intended for integration into products known to be sold widely in the United States. Defendants make DRAM semiconductor devices using methods claimed in the '038 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 (such as makers of mobile devices, desktop computers and other devices that use DRAM memory) to import products that integrate DRAM semiconductor devices made using the methods claimed in the '038 patent, or to sell or use such products, or offer them for sale, in the United States. For example, Defendants induce third-party manufacturers, OEMs, importers, resellers, and other customers who purchase devices manufactured at Nanya's overseas facilities, or supplied under agreements with partner foundries, to import devices made using the methods

claimed in the '038 patent, or to sell or use such devices, or offer them for sale in the United States without authority.

23. Defendants encourage customers, resellers, OEMs, or others to import into the United States and sell and use in the United States the '038 Accused DRAM Products made using the methods claimed in the '038 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 '038 patent, the '038 Accused DRAM 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 '038 Accused DRAM 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 '038 patent by incorporating such DRAM semiconductor 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 '038 patent. Therefore, Defendants are aware that their customers will infringe the '038 patent by importing, selling and using the products supplied by Defendants.

24. 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 '038 Accused DRAM Products that they manufacture and supply, including through advertising, marketing, and sales activities directed at United States sales. On information and belief, Nanya and its subsidiaries 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, and sale in

the United States. Defendants routinely market their infringing DRAM memory 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. Nanya has publicly stated that its DRAM products are primarily targeted for desktop computers, tablet computers, mobile phones, networking devices, servers, and other products, all of which are widely sold and used in the United States. 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.

25. Defendants also provide OEMs, manufacturers, importers, resellers, customers, and end users instructions, user guides, and technical specifications on how to incorporate the '038 Accused DRAM 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, user guides, and technical specifications and embed the products in end products and make, use, offer to sell, sell, or import them into the United States, they directly infringe one or more claims of the '038 patent. Defendants know that by providing such instructions, user guides, and technical specifications, OEMs, manufacturers, importers, resellers, customers, and end users follow them, and therefore directly infringe one or more claims of the '038 patent. Defendants thus know that their actions actively induce infringement.

26. Defendants have engaged and will continue to engage in additional activities to specifically target the United States market for the '038 Accused DRAM Products and actively induce OEMs, manufacturers, importers, resellers, customers, and end users to directly infringe one or more claims of the '038 patent in the United States. For example, Defendants have set up

a global sales network that includes the United States to encourage various OEMs, manufacturers, importers, resellers, customers, and end users to include their infringing technology in their computers, mobile devices, removable storage devices and other products. Defendant Nanya USA is responsible for Defendants' sales and marketing activities in the United States.

27. Defendants derive significant revenue by selling their DRAM memory products to third parties who directly infringe the '038 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 '038 patent by, using, offering to sell, selling, or importing products that incorporate the '038 Accused DRAM 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.

28. Defendants' direct and indirect infringement of the '038 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 '038 patent.

29. On information and belief, Defendant Nanya, including its subsidiaries Nanya USA and Nanya Delaware, 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 '038 patent by making, using, selling, offering for sale and importing in the United States the '038 Accused DRAM 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 '038 patent and without a good faith basis to believe that their activities do not infringe any valid claim of the '038 patent. All infringement of the '038 patent following Defendants' knowledge of the '038 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 '061 PATENT**

30. Plaintiff hereby repeats and re-alleges the allegations contained in paragraphs 1 to 16, as if fully set forth herein.

31. Defendants, directly and/or through their subsidiaries, affiliates, agents, and/or business partners, have in the past and continue to directly infringe the '061 patent pursuant to 35 U.S.C. § 271(a) by making, using, selling, offering to sell and/or importing DRAM memory semiconductor devices that embody the inventions claimed in the '061 patent, within the United States and within this District, including at least claims 1, 3, 4, 11, 13 and 14. In violation of the '061 patent, Defendants' accused DRAM memory devices include: (a) a semiconductor substrate of a first conductivity type; (b) a source region of a second conductivity type in the semiconductor substrate; (c) a drain region of the second conductivity type spaced from the source region in the semiconductor substrate; (d) a trench having substantially upright vertical surfaces and a bottom surface formed in the semiconductor substrate intermediate the source and drain regions; (e) a channel region formed in the semiconductor substrate and forming a contiguous region beneath the bottom surface of the trench and immediately contiguous to the source and drain regions; (f) a trench-to-gate insulating layer formed on the substantially upright vertical surfaces and the bottom surface inside the trench and forming a contiguous layer inside

the trench; and (g) a trenched gate electrode having a top surface and formed on the trench-to-gate insulating layer inside the trench.

32. Defendants have been and are engaged in one or more of these direct infringing activities related to their DRAM memory semiconductor devices, including at least their computing DRAM products (e.g., part numbers beginning in “NT256,” “NT512,” “NT1G,” “NT2G,” “NT4G,” “NT8G,” “NT16T,” “NT32T”), including DDR2 SDRAM and DDR3 SDRAM; consumer DRAM products (e.g., part numbers beginning in “NT5”), including any of the DDR, DDR2, DDR3, DDR4 chips configured in Commercial Grade, Industrial Grade, or Automotive Grade; mobile RAM products (e.g., part numbers beginning in “NT6”), including any of the Mobile LPDDR, Mobile LPDDR2, Mobile LPDDR3 chips; and Elixir Notebook or Desktop memory cards, including DDR3 SDRAM SODIMM (e.g., products with part numbers beginning with M2S4G64C or M2S8G64C), DDR3 SDRAM Unbuffered DIMM (e.g., products with part numbers beginning with M2F4G64C, M2X4G64C, M2F8G64C, M2X8G64C); and any other DRAM memory devices of substantially similar design (“the ’061 Accused DRAM Products”).

33. Defendants, directly and/or through their subsidiaries, affiliates, agents, and/or business partners, have been and are now indirectly infringing the ’061 patent under 35 U.S.C. § 271(b) by actively inducing acts of direct infringement performed by others, including at least claims 1, 3, 4, 11, 13 and 14. Defendants have actual notice of the ’061 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 of Defendants and of their owned and controlled subsidiaries 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 '061 patent. Upon information and belief, Nanya itself has been issued over 500 patents, including dozens of patents prosecuted in the USPTO in the same classifications as the '061 patent, giving Defendants intimate knowledge of the art in fields relevant to this civil action. The timing, circumstances and extent of Nanya and its subsidiaries Nanya USA and Nanya Delaware obtaining actual knowledge of the '061 patent prior to the commencement of this lawsuit will be confirmed during discovery.

34. Upon gaining knowledge of the '061 patent, it was, or became, apparent to Defendants that the manufacture, sale, importing, offer for sale, and use of their '061 Accused DRAM Products result in infringement of the '061 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 '061 patent.

35. The '061 Accused DRAM Products are intended for integration into products known to be sold widely in the United States. Defendants make DRAM semiconductor devices that embody the inventions claimed in the '061 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 (such as makers of mobile devices, desktop computers and other devices that use DRAM memory) to import products that integrate DRAM semiconductor devices embodying inventions claimed in the '061 patent, or to sell or use such products, or offer them for sale, in the United States. For example, Defendants induce third-party manufacturers, OEMs, importers, resellers, and other customers who purchase devices manufactured at Nanya's overseas facilities, or supplied under agreements with partner foundries, to import devices



embodying inventions claimed in the '061 patent, or to sell or use such devices, or offer them for sale in the United States without authority.

36. Defendants encourage customers, resellers, OEMs, or others to import into the United States and sell and use in the United States the '061 Accused DRAM Products embodying inventions claimed in the '061 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 '061 patent, the '061 Accused DRAM 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 '061 Accused DRAM Products are integral components of the computer and mobile products incorporating them, that the infringing DRAM Products are built into the computer and other products, and cannot be removed or disabled by a purchaser of the consumer products containing the infringing DRAM memory devices, such that Defendants' customers will infringe one or more claims of the '061 patent by incorporating such DRAM semiconductor 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 '061 patent. Therefore, Defendants are aware that their customers will infringe one or more claims of the '061 patent by selling, offering for sale, importing and/or using the products as-sold and as-marketed by Defendants.

37. 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 '061 Accused DRAM Products that they manufacture and supply, including through advertising, marketing, and sales

activities directed at United States sales. On information and belief, Nanya and its subsidiaries 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, and sale in the United States. Defendants routinely market their infringing DRAM memory 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. Nanya has publicly stated that its DRAM products are primarily targeted for desktop computers, tablet computers, mobile phones, networking devices, servers, and other products, all of which are widely sold and used in the United States. 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.

38. Defendants also provide OEMs, manufacturers, importers, resellers, customers, and end users instructions, user guides, and technical specifications on how to incorporate the '061 Accused DRAM 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, user guides, 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 '061 patent. Defendants know that by providing such instructions, user guides, and technical specifications, OEMs, manufacturers, importers, resellers, customers, and end users follow them, and therefore directly infringe one or more claims of the '061 patent. Defendants thus know that their actions actively induce infringement.

39. Defendants have engaged and will continue to engage in additional activities to specifically target the United States market for the '061 Accused DRAM Products and actively induce OEMs, manufacturers, importers, resellers, customers, and end users to directly infringe one or more claims of the '061 patent in the United States. For example, Defendants have set up a global sales network that includes the United States to encourage various OEMs, manufacturers, importers, resellers, customers, and end users to include their infringing technology in their computers, mobile devices, removable storage devices and other products. Defendant Nanya USA is responsible for Defendants' sales and marketing activities in the United States.

40. Defendants derive significant revenue by selling the '061 Accused DRAM Products to third parties who directly infringe the '061 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 '061 patent by, using, offering to sell, selling, or importing products that incorporate the '061 Accused DRAM 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.

41. Upon information and belief, Defendants have continued and will continue to engage in activities constituting contributory infringement of the '061 patent under 35 U.S.C. § 271(c), including at least claims 1, 3, 4, 11, 13 and 14. Defendants contributorily infringe with knowledge that the '061 Accused DRAM Products, or the use thereof, infringe the '061 patent. Defendants knowingly and intentionally contributed to the direct infringement of the '061 patent by others, by supplying these DRAM memory chipset products, that embody a material part of the claimed invention of the '061 patent, that are known by the Defendants to be specially made

or adapted for use in an infringing manner. For example, and without limitation, the '061 Accused DRAM Products are used in end products, including computers, laptops, tablets and mobile telephones. The '061 Accused DRAM 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 '061 patent. There are no substantial uses of the '061 Accused DRAM Products that do not infringe the '061 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 '061 patent under 35 U.S.C. § 271(c).

42. Defendants' direct and indirect infringement of the '061 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 '061 patent.

43. On information and belief, Defendant Nanya, including its subsidiaries Nanya USA and Nanya Delaware, 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 '061 patent by making, using, selling, offering for sale and importing in the United States the '061 Accused DRAM 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 '061 patent and without a good faith basis to believe that their activities do not infringe any valid claim of the '061 patent. All infringement of the '061 patent following Defendants' knowledge

of the '061 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 '611 PATENT**

44. Plaintiff hereby repeats and re-alleges the allegations contained in paragraphs 1 to 16, as if fully set forth herein.

45. Defendants Nanya, Nanya USA, and Nanya Delaware, directly and/or through their subsidiaries, affiliates, agents, and/or business partners, have also 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 DRAM memory semiconductor devices in the United States made using the methods claimed in the '611 patent, including at least claims 1, 2, 3, 4, 5, 8, 9, 10, 11, 12 and 15. On information and belief, DRAM memory semiconductor devices manufactured by Defendants and/or by other related entities and/or business partner foundries, are made using a process that practices the claims of the '611 patent including practicing the steps of: (a) forming a plurality of gate arrangements on a top surface of the substrate, with two of the plurality of gate arrangements 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 so that each of the plurality of spacers physically contacts one of the two gate arrangements and the substrate, and 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. On information

and belief, Defendants directly infringe when they import, use, sell or offer for sale in the United States DRAM memory semiconductor devices made using the claimed methods.

46. Defendants have been and are engaged in one or more of these direct infringing activities related to their DRAM memory semiconductor devices, including at least their computing DRAM products (e.g., part numbers beginning in “NT256,” “NT512,” “NT1G,” “NT2G,” “NT4G,” “NT8G,” “NT16T,” “NT32T”), including DDR2 SDRAM and DDR3 SDRAM; consumer DRAM products (e.g., part numbers beginning in “NT5”), including any of the DDR, DDR2, DDR3, DDR4 chips configured in Commercial Grade, Industrial Grade, or Automotive Grade; mobile RAM products (e.g., part numbers beginning in “NT6”), including any of the Mobile LPDDR, Mobile LPDDR2, Mobile LPDDR3 chips; and Elixir Notebook or Desktop memory cards, including DDR3 SDRAM SODIMM (e.g., products with part numbers beginning with M2S4G64C or M2S8G64C), DDR3 SDRAM Unbuffered DIMM (e.g., products with part numbers beginning with M2F4G64C, M2X4G64C, M2F8G64C, M2X8G64C); and any other DRAM memory devices made by a substantially similar process (“the ’611 Accused DRAM Products”).

47. Defendants have been and are now indirectly infringing the ’611 patent under 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, including at least claims 1, 2, 3, 4, 5, 8, 9, 10, 11, 12, and 15. Upon information and belief, Defendants have numerous lawyers and other active agents of Defendants and of their owned and controlled subsidiaries 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, Nanya itself has been issued over 500 patents, including over a dozen 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 Nanya and its subsidiaries Nanya USA and Nanya Delaware obtaining actual knowledge of the '611 patent prior to the commencement of this lawsuit will be confirmed during discovery.

48. 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 DRAM Products result 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 under 35 U.S.C. § 271(b).

49. The '611 Accused DRAM Products are intended for integration into products known to be sold widely in the United States. Defendants make DRAM semiconductor 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 customers (such as makers of mobile devices, desktop computers and other devices that use DRAM memory) to import products that integrate DRAM semiconductor devices made using the methods claimed in the '611 patent, or to sell or use such products, or offer them for sale, in the United States. For example, Defendants induce third-party manufacturers, OEMs, importers, resellers, and other customers who purchase devices manufactured at Nanya's overseas facilities, or supplied under agreements with partner foundries, to import devices made using the methods

claimed in the '611 patent, or to sell or use such devices, or offer them for sale in the United States without authority.

50. Defendants encourage customers, resellers, OEMs, or others to import into the United States and sell and use in the United States the '611 Accused DRAM Products made using the methods claimed in 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 DRAM 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 '611 Accused DRAM Products are always made using the same fabrication methods under Defendants' exclusive direction and control such that Defendants' customers will infringe one or more claims of the '611 patent by incorporating such DRAM semiconductor 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 its customers will infringe the '611 patent by importing, selling and using the products supplied by Defendants.

51. 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 '611 Accused DRAM Products that they manufacture and supply, including through advertising, marketing, and sales activities directed at United States sales. On information and belief, Nanya and its subsidiaries 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, and sale in the United States. Defendants routinely market their infringing DRAM memory 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. Nanya has publicly stated that its DRAM products are primarily targeted for desktop computers, tablet computers, mobile phones, networking devices, servers, and other products, all of which are widely sold and used in the United States. 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.

52. Defendants also provide OEMs, manufacturers, importers, resellers, customers, and end users instructions, user guides, and technical specifications on how to incorporate the '611 Accused DRAM 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, user guides, 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, user guides, 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.

53. Defendants have engaged and will continue to engage in additional activities to specifically target the United States market for the '611 Accused DRAM Products and actively induce OEMs, 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 set up a global sales network that includes the United States to encourage various OEMs, manufacturers, importers, resellers, customers, and end users to include their infringing technology in their computers, mobile devices, removable storage devices and other products. Defendant Nanya USA is responsible for Defendants' sales and marketing activities in the United States.

54. Defendants derive significant revenue by selling their DRAM memory 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 DRAM 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.

55. 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.

56. On information and belief, Defendant Nanya, including its subsidiaries Nanya USA and Nanya Delaware, 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 DRAM 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.

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

57. Plaintiff hereby repeats and re-alleges the allegations contained in paragraphs 1 to 16, as if fully set forth herein.

58. Defendants, directly and/or through their subsidiaries, affiliates, agents, and/or business partners, have also 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 DRAM memory semiconductor devices in the United States made using the methods claimed in the '231 patent, including at least claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 13, 15, 16 and 17. On information and belief, DRAM memory semiconductor devices manufactured by Defendants and/or other related entities and/or business partner foundries, are made using a process that practices the claims of the '231 patent including 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. On information and belief,

Defendants directly infringe when they import, use, sell or offer for sale in the United States DRAM memory semiconductor devices made using the claimed methods.

59. Defendants have been and are engaged in one or more of these direct infringing activities related to their DRAM memory semiconductor devices, including at least their computing DRAM products (e.g., part numbers beginning in “NT256,” “NT512,” “NT1G,” “NT2G,” “NT4G,” “NT8G,” “NT16T,” “NT32T”), including DDR2 SDRAM and DDR3 SDRAM; consumer DRAM products (e.g., part numbers beginning in “NT5”), including any of the DDR, DDR2, DDR3, DDR4 chips configured in Commercial Grade, Industrial Grade, or Automotive Grade; mobile RAM products (e.g., part numbers beginning in “NT6”), including any of the Mobile LPDDR, Mobile LPDDR2, or Mobile LPDDR3 chips; and Elixir Notebook or Desktop memory cards, including DDR3 SDRAM SODIMM (e.g., products with part numbers beginning with M2S4G64C or M2S8G64C), DDR3 SDRAM Unbuffered DIMM (e.g., products with part numbers beginning with M2F4G64C, M2X4G64C, M2F8G64C, M2X8G64C); and any other DRAM memory devices made by a substantially similar process (“the ’231 Accused DRAM Products”).

60. Defendants have been and are now indirectly infringing the ’231 patent under 35 U.S.C. § 271(b) by actively inducing acts of direct infringement performed by others. Defendants have actual notice of the ’231 patent and the infringement alleged herein at least upon the service of this Complaint, including at least claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 13, 15, 16, and 17. Upon information and belief, Defendants have numerous lawyers and other active agents of Defendants and of their owned and controlled subsidiaries 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, Nanya itself has been issued over 500 patents, including over a dozen 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 Nanya and its subsidiaries Nanya USA and Nanya Delaware obtaining actual knowledge of the '231 patent prior to the commencement of this lawsuit will be confirmed during discovery.

61. 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 DRAM 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.

62. The '231 Accused DRAM Products are intended for integration into products known to be sold widely in the United States. Defendants make DRAM semiconductor 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 (such as makers of mobile devices, desktop computers and other devices that use DRAM memory) to import products that integrate DRAM semiconductor 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 third-party manufacturers, OEMs, importers, resellers, and other customers who purchase devices manufactured at Nanya's overseas 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.

63. Defendants encourage customers, resellers, OEMs, or others to import into the United States and sell and use in the United States the '231 Accused DRAM 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 DRAM 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 DRAM Products are always made using the same fabrication methods under Defendants' exclusive direction and control such that Defendants' customers will infringe one or more claims of the '231 patent by incorporating such DRAM semiconductor 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, selling and using the products supplied by Defendants.

64. 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 DRAM Products that they manufacture and supply, including through advertising, marketing, and sales activities directed at United States sales. On information and belief, Nanya and its subsidiaries 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, and sale in the United States. Defendants routinely market their infringing DRAM memory 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. Nanya has publicly stated that its DRAM products are primarily targeted for desktop computers, tablet computers, mobile phones, networking devices, servers, and other products, all of which are widely sold and used in the United States. 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.

65. Defendants also provide OEMs, manufacturers, importers, resellers, customers, and end users instructions, user guides, and technical specifications on how to incorporate the '231 Accused DRAM 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, user guides, 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, user guides, 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.

66. Defendants have engaged and will continue to engage in additional activities to specifically target the United States market for the '231 Accused DRAM 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 set up a global sales network that includes the United States to encourage various OEMs, manufacturers, importers, resellers, customers, and end users to include their infringing technology in their computers, mobile devices, removable storage devices and other products. Defendant Nanya USA is responsible for Defendants' sales and marketing activities in the United States.

67. Defendants derive significant revenue by selling their DRAM memory 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 DRAM 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.

68. 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.

69. On information and belief, Defendant Nanya, including its subsidiaries Nanya USA and Nanya Delaware, 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 DRAM 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 its 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.

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

70. Plaintiff hereby repeats and re-alleges the allegations contained in paragraphs 1 to 16, as if fully set forth herein.

71. 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 pursuant to 35 U.S.C. § 271(a) by making, using, selling, offering to sell and/or importing DRAM memory semiconductor devices that embody the inventions claimed in the '330 patent, within the United States and within this District, including at least claims 1, 2, 5, 6, 7 and 10. In violation of the '330 patent, Defendants' accused DRAM memory 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; (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 open to the first conductor core; and (f) a second conductor core filling the second opening and connected to the first conductor core.

72. Defendants have been and are engaged in one or more of these direct infringing activities related to their DRAM memory semiconductor devices, including at least their computing DRAM products (e.g., part numbers beginning in “NT256,” “NT512,” “NT1G,” “NT2G,” “NT4G,” “NT8G,” “NT16T,” “NT32T”), including DDR2 SDRAM and DDR3 SDRAM; consumer DRAM products (e.g., part numbers beginning in “NT5”), including any of the DDR, DDR2, DDR3, DDR4 chips configured in Commercial Grade, Industrial Grade, or Automotive Grade; mobile RAM products (e.g., part numbers beginning in “NT6”), including any of the Mobile LPDDR, Mobile LPDDR2, Mobile LPDDR3 chips; and Elixir Notebook or Desktop memory cards, including DDR3 SDRAM SODIMM (e.g., products with part numbers beginning with M2S4G64C or M2S8G64C), DDR3 SDRAM Unbuffered DIMM (e.g., products with part numbers beginning with M2F4G64C, M2X4G64C, M2F8G64C, M2X8G64C); and any other DRAM memory devices of substantially similar design (“the ’330 Accused DRAM Products”).

73. Defendants, directly and/or through their subsidiaries, affiliates, agents, and/or business partners, have been and are now indirectly infringing the ’330 patent under 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, including at least claims 1, 2, 5, 6, 7 and 10. Upon information and belief, Defendants have numerous lawyers and other active agents of Defendants and of their owned and controlled subsidiaries 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, Nanya itself has been issued over 500 patents,

including over a dozen 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 Nanya and its subsidiaries Nanya USA and Nanya Delaware obtaining actual knowledge of the '330 patent prior to the commencement of this lawsuit will be confirmed during discovery.

74. 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 DRAM Products result 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 under 35 U.S.C. § 271(b).

75. The '330 Accused DRAM Products are intended for integration into products known to be sold widely in the United States. Defendants and their subsidiaries make DRAM semiconductor 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 (such as makers of mobile devices, desktop computers and other devices that use DRAM memory) to import products that integrate DRAM semiconductor 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 third-party manufacturers, original equipment manufacturers (OEMs), importers, resellers, and other customers who purchase devices manufactured at Nanya's overseas facilities, or supplied under agreements with partner foundries, to import devices embodying inventions claimed in the '330 patent, or to sell or use such devices, or offer them for sale in the United States without authority.

76. Defendants encourage customers, resellers, OEMs, or others to import into the United States and sell and use in the United States the '330 Accused DRAM 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 DRAM 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 '330 Accused DRAM Products are integral components of the computer and mobile products incorporating them, that the infringing DRAM Products are built into the computer and other products, and cannot be removed or disabled by a purchaser of the consumer products containing the infringing DRAM memory devices, such that Defendants' customers will infringe one or more claims of the '330 patent by incorporating such DRAM semiconductor 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 selling, offering for sale, importing and/or using the products as-sold and as-marketed by Defendants.

77. 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 '330 Accused DRAM Products that they manufacture and supply, including through advertising, marketing, and sales activities directed at United States sales. On information and belief, Nanya and its subsidiaries 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, and sale in the United States. Defendants routinely market their infringing DRAM memory 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. Nanya has publicly stated that its DRAM products are primarily targeted for desktop computers, tablet computers, mobile phones, networking devices, servers, and other products, all of which are widely sold and used in the United States. 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.

78. Defendants also provide OEMs, manufacturers, importers, resellers, customers, and end users instructions, user guides, and technical specifications on how to incorporate the '330 Accused DRAM 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, user guides, 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, user guides, 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.

79. Defendants have engaged and will continue to engage in additional activities to specifically target the United States market for the '330 Accused DRAM Products and actively induce OEMs, 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 set up a global sales network that includes the United States to encourage various OEMs, manufacturers, importers, resellers, customers, and end users to include their infringing technology in their computers, mobile devices, removable storage devices and other products. Defendant Nanya USA is responsible for Defendants' sales and marketing activities in the United States.

80. Defendants derive significant revenue by selling the '330 Accused DRAM Products to third parties who directly infringe the '330 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 '330 patent by, using, offering to sell, selling, or importing products that incorporate the '330 Accused DRAM 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.

81. Upon information and belief, Defendants have continued and will continue to engage in activities constituting contributory infringement of the '330 patent under 35 U.S.C. § 271(c), including at least claims 1, 2, 5, 6, 7 and 10. Defendants contributorily infringe with knowledge that the '330 Accused DRAM 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 DRAM memory chipset products, that embody a material part of the claimed invention of the '330 patent, that 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 DRAM Products are used in end products, including computers, laptops, tablets and mobile telephones. The '330 Accused DRAM 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 DRAM 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).

82. 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.

83. On information and belief, Defendant Nanya, including its subsidiaries Nanya USA and Nanya Delaware, 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 DRAM 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 its 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.

**PRAYER FOR RELIEF**

WHEREFORE, Plaintiffs prays for:

1. Judgment that the '038, '061, '611, '231 and '330 patents are each valid and enforceable;
2. Judgment that the '038, '061, '611, '231 and '330 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: October 7, 2016

/s/ Timothy P. Maloney

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