

David Barkan (SBN 160825)  
[barkan@fr.com](mailto:barkan@fr.com)

Leeron Kalay (SBN 233579)  
[kalay@fr.com](mailto:kalay@fr.com)

Fish & Richardson P.C.  
500 Arguello Street, Suite 500  
Redwood City, CA 94063  
Phone: (650) 839-5070 / Fax: (650) 839-5071

Michael J. McKeon (*pro hac vice* application to be submitted)  
[mckeon@fr.com](mailto:mckeon@fr.com)

Christian A. Chu (SBN 218336)  
[chu@fr.com](mailto:chu@fr.com)

FISH & RICHARDSON P.C.  
1425 K Street, N.W., 11<sup>th</sup> Floor  
Washington, D.C. 20005  
Phone: (202) 783-5070 / Fax: (202) 783-2331

*Attorneys for Plaintiffs*

**UNITED STATES DISTRICT COURT  
SOUTHERN DISTRICT OF CALIFORNIA**

Macronix International Co., Ltd.,  
Plaintiff,

v.

Toshiba Corporation, Toshiba America  
Electronic Components Inc., and Toshiba  
America Information Systems, Inc.  
Defendants.

Case No. **'17CV0462 BAS WVG**

**COMPLAINT FOR PATENT  
INFRINGEMENT**

**DEMAND FOR JURY TRIAL**

Plaintiff Macronix International Co., Ltd. ("Macronix") for its Complaint  
alleges as follows:

**INTRODUCTION**

This is an action against Defendants Toshiba Corporation, Toshiba America  
Electronic Components Inc., and Toshiba America Information Systems, Inc.,

COMPLAINT FOR PATENT  
INFRINGEMENT

(individually or collectively “Toshiba”), for patent infringement under the Patent Laws of the United States, 35 U.S.C. § 1 *et seq.*, for infringing the following Macronix patents:

- a) United States Patent No. 6,552,360 (“the ’360 Patent”), titled “Method and Circuit Layout for Reducing Post Chemical-Mechanical Polishing Defect Count” (Ex. 1);
- b) United States Patent No. 6,788,602 (“the ’602 Patent”), titled “Memory Device and Operation Thereof” (Ex. 2);
- c) United States Patent No. 8,035,417 (“the ’417 Patent”), titled “Output Buffer Circuit with Variable Drive Strength” (Ex. 3);

(collectively the “Asserted Patents” or the “Patents-In-Suit”). These Asserted Patents are generally directed to structural and operational improvements for non-volatile memory devices. Their technologies provide critical functionalities in consumer electronic devices.

On information and belief, Toshiba has and continues to design, manufacture, use, offer for sale, sell, and / or import into the United States certain non-volatile memory devices (“Accused NVM”) and products containing these Accused NVM, including but not limited to memory cards, solid-state drives, wearable devices, digital camcorders, mobile devices, advanced audiovisual systems, car navigation systems, computers, servers, and other consumer electronics (collectively “Accused Products”).

## **THE PARTIES**

1. Macronix International Co., Ltd. (“Macronix”) is a corporation organized under the laws of Taiwan, having its principal place of business at No. 16, Li-Hsin Road, Science Park, Hsin-chu, Taiwan.

2. Toshiba Corporation (“TC”) is a corporation organized under the laws of Japan, having its principal place of business at Shibaura 1-Chome Minato-ku, Tokyo, Japan.

3. Toshiba America Electronic Components, Inc. (“TAEC”) is a wholly owned subsidiary of Toshiba America, Inc. (“TAI”), which is a wholly owned subsidiary of TC. TAEC is organized under the laws of California and maintains offices at 9740 Irvine Boulevard, Irvine, CA 92618. TAEC’s principal business is engineering, marketing, and sales of Toshiba semiconductors and storage products. TAEC offers flash memory-based storage solutions, solid-state drives, a broad range of discrete devices, displays, and components for the computing, wireless, networking, automotive and digital consumer markets.

4. Toshiba Information Systems, Inc. (“TAIS”) is a wholly owned subsidiary of Toshiba America, Inc., which is a wholly owned subsidiary of TC. TAIS is organized under the laws of California and maintains offices at the same location of TAEC, *i.e.*, 9740 Irvine Boulevard, Irvine, CA 92618. TAIS’s principal business is the sales, marketing, and distribution of consumer electronics products and solutions, including laptops & netbooks, LCD and LED televisions, Blu-ray and DVD players, camcorders, storage products for automotive, computer and consumer electronics applications, and telephony equipment and associated applications.

### **JURISDICTION AND VENUE**

5. This action arises under the patent law of the United States, 35 U.S.C. § 1 et seq., and thus this Court has subject matter jurisdiction over this action pursuant to 28 U.S.C. §§ 1331 and 1338(a).

6. This Court has personal jurisdiction over TC, TAEC, and TAIS consistent with the requirements of Fed. R. Civ. P. 4(k), California Code of Civil Procedure § 410.10, and the Due Process Clause of the United States Constitution.

7. Venue is proper in this District under 28 U.S.C. §§ 1391 and 1400(b) because Toshiba is subject to personal jurisdiction in this District, and has committed acts of patent infringement in this District.

8. TC itself and/or through subcontractors or subsidiaries, manufactures, assembles, packages, and tests the Accused NVM, and on information and belief,

incorporates these Accused NVMs into Accused Products at foreign facilities. For example, Toshiba's English website directed at customers in this state and this District states that:

**“Toshiba manufactures all its NAND Flash Memories at its Yokkaichi Operations in order to maintain their quality.** On September 9, 2014, Phase 2 of Fab 5 and the newly built Fab 2 were inaugurated.

In order to meet growing demand for memory chips, Toshiba has increased its plant investments in expanding manufacturing capacity and accelerating the development and production of next-generation memories.”

See <http://toshiba.semicon-storage.com/ap-en/product/memory/nand-flash.html> (emphasis added).

9. Many models of these Accused NVMs manufactured by TC in Japan are available for purchase in California, including this District. See Ex. 4. (Toshiba Semiconductor & Storage Products: Sales Contacts in California). For example, Accused NVM are available for purchase in California, including this District, through Toshiba's distributors. See *id.*; Ex. 5 (Purchase Receipts and Photographs of Accused Products). Samples of certain Accused Products, including Toshiba's TC58NVG1S3HTA00, TC58NVG3S0FTA00, and TH58TEG7DCJTA20 were purchased in California and, on information and belief, are equally available for purchase in this specific District. A copy of the purchase receipt and photographs of the samples of the accused devices are attached to the Complaint. See Ex. 5. Additional Accused NVMs, including those cited in exemplary claim charts, are available for purchase through distributors in the United States. On information and belief, TC – on its own or through its U.S.-based subsidiaries – then imports into the United States, sells, offers for sale, and uses such Accused NVMs and/or products

1 containing these Accused NVMs. Accordingly, TC has committed and continues to  
 2 commit acts of patent infringement in the State of California and within this District.

3 10. TC has consented to personal jurisdiction in California in other actions.  
 4 Ex. 6 at ¶ 5.

5 11. TAIS and TAEC are both California corporations that are  
 6 headquartered at 9740 Irvine Boulevard, Irvine, CA 92618. This headquarters is  
 7 less than 100 miles from the courthouse in this District. On information and belief,  
 8 TAEC maintains authorized representatives, authorized distributors, and value  
 9 added resellers in this District. By doing business in this state, including at least  
 10 selling, offering for sale, and using Accused NVM and Accused Products in  
 11 California and this District, TAIS and TAEC committed and continues to commit  
 12 acts of patent infringement within the jurisdiction of this Court.

13 12. Moreover, TC, TAIS, and TAEC advertise in the State of California  
 14 under the brand name “Toshiba.” For example, Toshiba sponsors and participates in  
 15 various semiconductor conferences, such as the Flash Memory Summit in Santa  
 16 Clara, California to promote the sale and use of the accused Non-Volatile Memory  
 17 devices:



25 See Ex. 7 (<http://toshiba.semicon-storage.com/us/top.html>).

26 13. The buyers of the Accused Products have used, and continue to use, the  
 27 accused non-volatile memory devices and Accused Products in California and  
 28 within this District. Sales of the Accused Products were made by Toshiba with the

1 knowledge or understanding that the devices would be used in California and this  
2 District. Toshiba otherwise has conducted substantial and regular business within  
3 California.

#### 4 **BACKGROUND FACTS AND THE PATENTS-IN-SUIT**

5 14. Macronix America, Inc. (“Macronix America”) was established in 1982  
6 in San Jose, California to research, design, manufacture, and sell non-volatile  
7 memory devices. Macronix America was later reorganized so that the corporate  
8 parent is Macronix, with Macronix America being a wholly owned subsidiary.  
9 Macronix America focuses on supporting Macronix products in the United States.  
10 Macronix America is located at 680 North McCarthy Boulevard, Milpitas,  
11 California 95035.

12 15. Macronix is a leading innovator of non-volatile memory semiconductor  
13 solutions. According to a 2011 study by the Patent Board™, among the 240  
14 semiconductor companies evaluated, Macronix’s patent portfolio was ranked 18<sup>th</sup>  
15 worldwide and was 1<sup>st</sup> in the Taiwanese semiconductor industry. Led by scientists,  
16 engineers, and researchers, Macronix dedicates a substantial portion of its revenue  
17 more than \$150 million in 2015, more than \$200 million in 2014, and more than  
18 \$170 million in 2013, to research and development of non-volatile memory.  
19 Macronix employees regularly publish and present technical papers in major  
20 international conferences to help bring the next generation of non-volatile memory  
21 to consumers around the world.

22 16. Macronix’s investment in research and development has produced  
23 numerous patents related to non-volatile memory products and their methods of  
24 manufacture.

25 17. Non-volatile memory allows devices to retain information even in the  
26 absence of a power source for extended periods of time. For example, in  
27 smartphones, personal information such as names and telephone numbers and  
28 multimedia, such as music, video, and photos can be stored in the phone’s non-

1 volatile memory and will remain in that memory even when the phone is turned off.  
2 In contrast, volatile memory, such as dynamic random-access memory (“DRAM”),  
3 loses data if electrical power is removed.

4 18. In this action, Macronix asserts patents that are directed to structural  
5 and operational improvements for non-volatile memory devices and one patent is  
6 directed to architectural, control logic, and operational improvements for micro-  
7 controller devices. Specifically, Macronix owns all rights, title, and interest in U.S.  
8 Patent Nos. 6,552,360, 6,788,602, and 8,035,417 (collectively “the Asserted  
9 Patents” or “the Patents-in-Suit”). Exs. 1-3, respectively. Toshiba has infringed,  
10 and continues to infringe each of the Patents-in-Suit as detailed below.

11 **U.S. Patent No. 6,552,360**

12 19. United States Patent No. 6,552,360 (“the ’360 Patent”), titled “Method  
13 and Circuit Layout for Reducing Post Chemical-Mechanical Polishing Defect  
14 Count,” issued on April 22, 2003, to inventors Chun-Lien Su, Chi-Yuan Chin,  
15 Ming-Shang Chen, Tsung-Hsien Wu, and Yih-Shi Lin. *See* Ex. 1.

16 20. The ’360 Patent issued from Application No. 10/054,985, filed on  
17 January 25, 2002. *Id.*

18 21. Macronix owns by assignment the entire right, title, and interest in and  
19 to the ’360 Patent.

20 22. The claims of the ’360 Patent are valid, enforceable, and currently in  
21 full force and effect.

22 23. The ’360 Patent is generally directed to a circuit layout on a substrate  
23 of a semiconductor wafer suitable to be used with a Chemical-Mechanical Polishing  
24 (“CMP”) process. ’360 Patent at 1:9-10. For example, FIG. 4 of the ’360 Patent  
25 shows a circuit layout of a plurality of strips of a first circuit structure (e.g., 130a)  
26 and at least two strips of a second circuit structure (e.g., 130b) where each of the  
27 two strips of the second circuit structure link the front end and the rear end of the  
28 strips of the first circuit structure. *Id.* at 2:26-30.



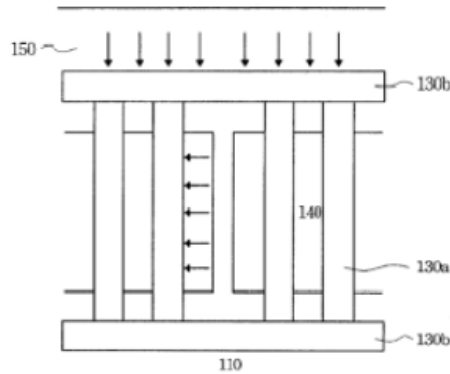


FIG. 4

24. Such a layout can improve structure strength of the circuit to reduce the possibility of generating defects during the CMP process, thereby promoting yield and throughput. *Id.* at 2:10-13. For example, the polishing pressure on the front and rear ends on the first circuit structure 130a may be more uniform because of the presence of the second circuit structure 130b. *Id.* at 4:59-62. As a result, the possibility of generating defects in the CMP process may decrease. *Id.* at 4:63-65.

#### **U.S. Patent No 6,788,602**

25. United States Patent No. 6,788,602 (“the ’602 Patent”), titled “Memory Device and Operation Thereof,” issued on September 7, 2004 to inventors Jen-Ren Huang, Ming-Hung Chou, and Hsin-Chien Chen. *See* Ex. 2.

26. The ’602 Patent issued from Application No. 10/214,770, which was filed on Aug. 9, 2002. *Id.*

27. Macronix owns by assignment the entire right, title, and interest in and to the ’602 Patent.

28. The claims of the ’602 Patent are valid, enforceable, and currently in full force and effect.

29. The ’602 Patent is generally directed to a semiconductor memory device and method for preventing dummy cells coupled to dummy word lines from over-erasing. *Id.* at 1:7-10. To protect a usable memory cell from damage, the memory device may include, at an edge, a word line that is not used for programing or storing data, i.e. a “dummy word line.” *See* ’602 Patent at 1:23-28. This dummy



1 word line and the corresponding “dummy cell” are in a constant state of being  
2 erased. *Id.* at 1:32-33. This over-erasure could result in current leakage along the  
3 bit lines coupled to the over-erased dummy cells during read operations of usable  
4 memory cells. *Id.* at 1:34-36. The ’602 Patent is generally directed to a device to  
5 prevent such over-erasure by coupling the dummy word line to a positive bias.

6 **U.S. Patent No. 8,035,417**

7 30. United States Patent No. 8,035,417 (“the ’417 Patent”), titled “Output  
8 Buffer Circuit with Variable Drive Strength,” issued on October 11, 2011 to  
9 inventors Chun-Hsiung Hung and Chun-Yi Lee. *See* Ex. 3.

10 31. The ’417 Patent issued from Application No. 12/843,452, filed on July  
11 26, 2010. *Id.*

12 32. Macronix International Co., Ltd. owns by assignment the entire right,  
13 title, and interest in and to the ’417 Patent.

14 33. The claims of the ’417 Patent are valid, enforceable, and currently in  
15 full force and effect.

16 34. A trend in modern power supply design is to provide an output buffer  
17 circuit for each electrical load that has been customized to satisfy the specific  
18 voltage, speed and other requirements of that load. *See* ’417 Patent at 1:11-15. This  
19 complicates design. *Id.* To address this problem, the ’417 Patent discloses an  
20 output buffer circuit that can be set to have an appropriate drive strength depending  
21 on its purpose, the supply voltage, and the electrical characteristics of the electrical  
22 load. *See id.* at Abstract.

23 35. Such variable output buffer circuits may be arranged in parallel, as  
24 shown for example in exemplary FIG. 6 of the ’417 Patent. The combined output of  
25 the plurality of buffer circuits, labelled DQ in Figure 6, has a combined output drive  
26 strength that varies with the values of the control input signals that enable or disable  
27 each individual buffer circuit. *Id.* at 8:49-53. Accordingly, the output of the buffer  
28

1 circuit has suitable drive characteristics to fit the requirements of the electrical load.  
 2 *Id.* at 8:53-55.

### 3 **TOSHIBA'S INFRINGEMENT**

4 36. Toshiba imports, makes, uses, sells, and offers for sale Accused  
 5 Products, including Accused NVMs. Examples of such Accused Products include,  
 6 but are not limited to, Toshiba's NAND flash memory chips, memory cards, solid-  
 7 state drives, wearable devices, digital camcorders, mobile devices, advanced  
 8 audiovisual systems, car navigation systems, computers, servers, and other  
 9 consumer electronics.

10 37. As shown on Toshiba's website, many models of Accused NVMs as  
 11 well as Accused Products are available for purchase in California, including this  
 12 District. *See* Ex. 4. (Toshiba Semiconductor & Storage Products: Sales Contacts in  
 13 California). For example, Accused Products are available for purchase in  
 14 California, including this District, through Toshiba's distributors. *See id.*; Ex. 5  
 15 (Purchase Receipts and Photographs of Accused Products). Samples of certain  
 16 Accused Products, including Toshiba's TC58NVG1S3HTA00,  
 17 TC58NVG3S0FTA00, and TH58TEG7DCJTA20 were purchased in California and,  
 18 on information and belief, are equally available for purchase in this specific District.  
 19 A copy of the purchase receipt and photographs of the samples of these Accused  
 20 Products are attached to the Complaint. *See* Ex. 5.

21 38. In the non-volatile memory and micro-controller industry, designers  
 22 and manufacturers invest large research budgets and years of time to develop next  
 23 generation architectures and fabrication process platforms. Those architecture and  
 24 process platforms are the building blocks that are used to produce families of many  
 25 different models of commercial non-volatile memory devices. These models  
 26 incorporate the same architecture and/or are fabricated by the same process, but  
 27 differ by memory capacity, voltage, speed, packaging, or other implementation  
 28 details. This industry standard practice of developing an architecture and process

platform for generating families of many different models of non-volatile memory devices is necessary for cost-effective operation in this competitive industry.

39. The purchased samples of Accused Products share the architecture and fabrication processes that are relevant to Macronix's allegations of infringement under the Patents-in-Suit.

40. The exemplary Accused NVM, as well as other accused Toshiba non-volatile memories using the same architecture and/or operational improvements, and products containing the same exemplary Accused NVM and such other accused Toshiba non-volatile memories infringe at least claims 1 and 2 and other claims of the '360 Patent; claims 1, 6, 7, 9, 11, and 12 and other claims of the '602 Patent; claims 1, 11, and 18 and other claims of the '417 Patent. Additional Toshiba non-volatile memory devices are identified in at least Exs. 11 and 12.

#### **Toshiba's Knowledge of the Patents-in-Suit**

41. Macronix and Toshiba engaged in a series of discussions relating to Toshiba's infringement of Macronix' patents. Macronix also gave notice regarding Toshiba's infringement of the '360 Patent on or about April 2, 2015. *See* Confidential Ex. 8 (filed under seal). Macronix gave notice regarding Toshiba's infringement of the '602 and the '417 Patents on or about January 14, 2016. *See* Confidential Exs. 9 and 10 (filed under seal).<sup>1</sup>

42. During these discussions and as notice of infringement, Macronix presented Toshiba with claim charts demonstrating infringement of exemplary claims from each of the Patents-in-Suit. *See* Confidential Exs. 8-10.

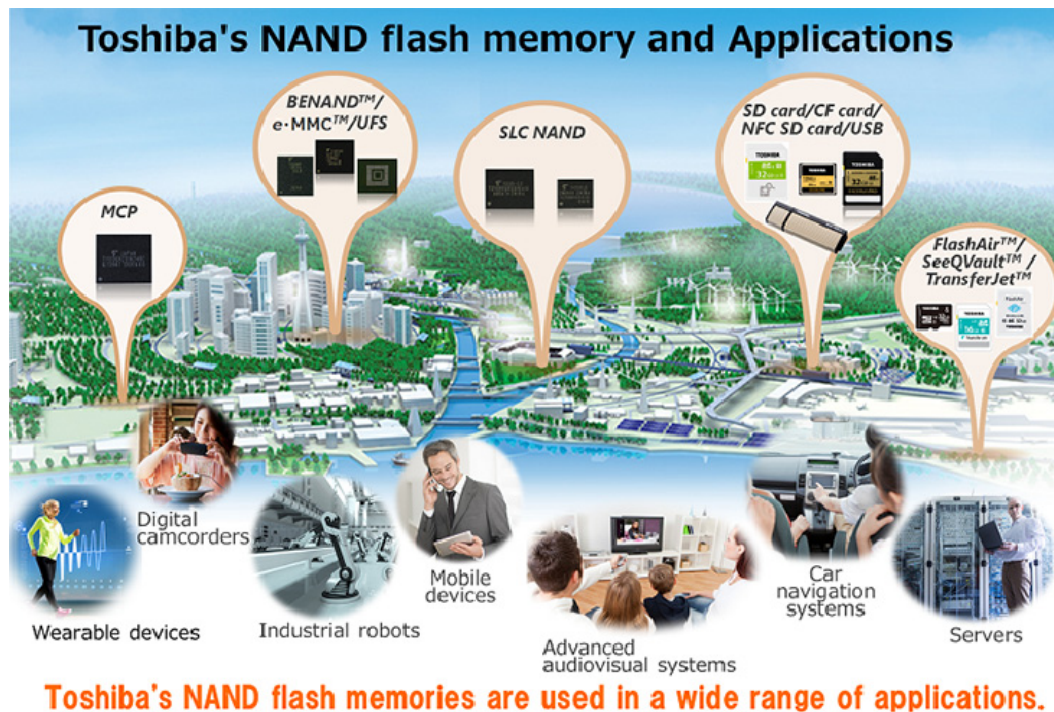
43. At a minimum, Toshiba has been made aware of each of the Patents-in-Suit, and Macronix's allegations of infringement of each of the Patents-in-Suit since

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<sup>1</sup> The claim charts provided in Confidential Exhibits 8 through 10 are merely exemplary. Macronix will provide additional charts in accordance with the local patent rules and requirements, and specifically reserves the right to assert additional claims and additional grounds of infringement based on, among other things, discovery.

1 April 2, 2015 with respect to the '360 Patent and January 14, 2016 with respect to  
2 the '602 and '417 Patents.

3 44. Toshiba is aware that its customers and end-users are using the accused  
4 products in an infringing manner. For example, Toshiba's website states that  
5 NAND flash memory is suitable for storing large amounts of data, referring to "Fast  
6 write and erase rates." Further, Toshiba's website promotes the use of the accused  
7 products "in a wide range of applications":



20 See <http://toshiba.semicon-storage.com/us/product/memory/nand-flash.html>.

21 45. Further, Toshiba provides its customers with extensive datasheets,  
22 application notes, white papers, and other technical support describing the operation  
23 and specifications of the Accused NVM and/or Accused Products. See, e.g., Ex.  
24 11.<sup>2</sup> For example, Toshiba's product catalogue expressly states that, before  
25 customers use the Accused Products, "customers must also refer and comply" with  
26 Toshiba's product documentation:

27

28 <sup>2</sup> Although the datasheet attached as Ex. 11 has a "confidential" label, it is publicly  
available at: <http://www.datasheetspdf.com/PDF/TH58TEG8DDKTAK0/910996/1>.

1 “Before customers use the Product, create designs including the  
2 Product, or incorporate the Product into their own applications,  
3 customers must also refer to and comply with (a) the latest versions of  
4 all relevant TOSHIBA information, including without limitation, this  
5 document, the specifications, the data sheets and application notes for  
6 Product and the precautions and conditions set forth in the  
7 “TOSHIBA Semiconductor Reliability Handbook” and (b) the  
8 instructions for the application with which the Product will be used  
9 with or for. Customers are solely responsible for all aspects of their  
10 own product design or applications, including but not limited to (a)  
11 determining the appropriateness of the use of this Product in such  
12 design or applications; (b) evaluating and determining the  
13 applicability of any information contained in this document, or in  
14 charts, diagrams, programs, algorithms, sample application circuits, or  
15 any other referenced documents; and (c) validating all operating  
16 parameters for such designs and applications.”

17 *See* Ex. 12; *see also* Ex. 11. The information and instructions provided by Toshiba  
18 through customer-facing documents induce its customers to directly infringe the  
19 Patents-in-Suit.

#### 20 **Infringement of the '360 Patent**

21 46. Toshiba has directly infringed at least claims 1 and 2 of the '360 Patent,  
22 as well as other claims of this patent, literally and/or under the doctrine of  
23 equivalents, in violation of 35 U.S.C. § 271. The infringing products include at least  
24 Toshiba's TC58NVG4D2FTA00 and TH58TEG7DCJTA20 chips and products  
25 containing the same. On information and belief and subject to further discovery,  
26 other Accused NVM and Accused Products containing these Accused NVM also  
27 infringe the claims of this patent.  
28



1           47. An exemplary claim chart, demonstrating infringement of one of these  
2 sample accused products is attached as Exhibit 8.<sup>3</sup> The infringement remains  
3 ongoing.

4           48. Toshiba induces infringement of the asserted claims of the '360 Patent  
5 because it had knowledge of the '360 Patent and the Accused Products'  
6 infringement thereof since at least April 2, 2015, when Macronix notified Toshiba  
7 about this patent. Toshiba's participation in discussions about this patent, and  
8 Toshiba's continued sale, offer for sale, importation, and/or sale for importation of  
9 Accused Products with the intent that its customers will use the Accused Products in  
10 an infringing manner constitute inducing infringement. As set forth in Exhibit 8,  
11 when Toshiba's customers use the Accused Products in their intended manner, these  
12 customers directly infringe the asserted claims of the '360 Patent. By providing the  
13 Accused Products to its customers and instructions to use the Accused Products in  
14 an infringing manner while being on notice of the '360 Patent and Macronix's  
15 infringement theories, Toshiba has demonstrated specific intent that its customers  
16 infringe the '360 Patent.

17           49. Toshiba contributorily infringes the asserted claims of the '360 Patent  
18 because it had knowledge of the '360 Patent and the Accused Products'  
19 infringement thereof since at least April 2, 2015, when Macronix notified Toshiba  
20 about this patent. Toshiba's participation in discussions about this patent, and  
21 Toshiba's continued sale, offer for sale, importation, and/or sale for importation of  
22 Accused Products that embody a material part of the claimed invention of the '360  
23 Patent, that are known by Toshiba to be specially made or adapted for use in an  
24 infringing manner, and that are not staple articles with substantial non-infringing  
25

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26 <sup>3</sup> Exhibit 8 is merely exemplary. Macronix will provide additional charts in  
27 accordance with the local patent rules and requirements, and specifically reserves  
28 the right to assert additional claims and additional grounds of infringement based  
on, among other things, discovery.

1 uses constitutes contributory infringement. Toshiba's website includes video and  
 2 descriptions about the high quality production to avoid defects, which when used by  
 3 Toshiba's customers use the Accused Products in their intended manner, these  
 4 customers directly infringe the asserted claims of the '360 Patent. The Accused  
 5 Products are specially designed to improve structure strength of the circuit to reduce  
 6 the possibility of generating defects during the CMP process in a manner that  
 7 infringes the asserted claims of the '360 Patent and have no substantial non-  
 8 infringing uses.

9 50. Toshiba's infringement is ongoing and willful because Toshiba has had  
 10 knowledge of the '360 Patent since at least April 2, 2015, and on information and  
 11 belief, Toshiba has no good faith belief in non-infringement.

#### 12 **Infringement of the '602 Patent**

13 51. Toshiba has directly infringed at least claims 1, 6, 7, 9, 11, and 12 of  
 14 the '602 Patent, as well as other claims of this patent, literally and/or under the  
 15 doctrine of equivalents, in violation of 35 U.S.C. § 271. The infringing products  
 16 include at least Toshiba's TH58TEG8DDKBA8C chip and products containing the  
 17 same. On information and belief and subject to further discovery, other Accused  
 18 NVM and Accused Products containing these Accused NVM also infringe the  
 19 claims of this patent.

20 52. An exemplary claim chart, demonstrating infringement of one of these  
 21 sample accused products is attached as Exhibit 9.<sup>4</sup> The infringement remains  
 22 ongoing.

23 53. Toshiba induces infringement of the asserted claims of the '602 Patent  
 24 because it had knowledge of the '602 Patent and the Accused Products'

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25  
 26 <sup>4</sup> Exhibit 9 is merely exemplary. Macronix will provide additional charts in  
 27 accordance with the local patent rules and requirements, and specifically reserves  
 28 the right to assert additional claims and additional grounds of infringement based  
 on, among other things, discovery.



1 infringement thereof since at least January 14, 2016, when Macronix notified  
2 Toshiba about this patent. Toshiba's participation in discussions about this patent,  
3 and Toshiba's continued sale, offer for sale, importation, and/or sale for importation  
4 of Accused Products with the intent that its customers will use the Accused Products  
5 in an infringing manner constitute inducing infringement. As set forth in Exhibit 9,  
6 when Toshiba's customers use the Accused Products in their intended manner, these  
7 customers directly infringe the asserted claims of the '602 Patent. By providing the  
8 Accused Products to its customers and instructions to use the Accused Products in  
9 an infringing manner while being on notice of the '602 Patent and Macronix's  
10 infringement theories, Toshiba has demonstrated specific intent that its customers  
11 infringe the '602 Patent.

12         54. Toshiba contributorily infringes the asserted claims of the '602 Patent  
13 because it had knowledge of the '602 Patent and the Accused Products'  
14 infringement thereof since at least January 14, 2016, when Macronix notified  
15 Toshiba about this patent. Toshiba's participation in discussions about this patent,  
16 and Toshiba's continued sale, offer for sale, importation, and/or sale for importation  
17 of Accused Products that embody a material part of the claimed invention of the  
18 '602 Patent, that are known by Toshiba to be specially made or adapted for use in an  
19 infringing manner, and that are not staple articles with substantial non-infringing  
20 uses constitutes contributory infringement. Toshiba's datasheets state that the erase  
21 operations which practice the claims of the '602 Patent "are automatically executed  
22 making the device most suitable for applications such as solid-state file storage,  
23 voice recording, image file memory for still cameras and other systems which  
24 require high-density non-volatile memory data storage." Ex. 11. As set forth in  
25 Exhibit 9, when Toshiba's customers use the Accused Products in their intended  
26 manner, these customers directly infringe the asserted claims of the '602 Patent.  
27 The Accused Products are specially designed to write, store, and erase information  
28

1 in a manner that infringes the asserted claims of the '602 Patent and have no  
2 substantial non-infringing uses

3 55. Toshiba's infringement is ongoing and willful because Toshiba has had  
4 knowledge of the '602 Patent since at least January 14, 2016, and on information  
5 and belief, Toshiba has no good faith belief in non-infringement.

6 **Infringement of the '417 Patent**

7 56. Toshiba has directly infringed at least claims 1, 11, and 18 of the '417  
8 Patent, as well as other claims of this patent, literally and/or under the doctrine of  
9 equivalents, in violation of 35 U.S.C. § 271. The infringing products include at least  
10 Toshiba's TH58TEG8DDKBA8C chip and products containing the same. On  
11 information and belief and subject to further discovery, other Accused NVM and  
12 Accused Products containing these Accused NVM also infringe the claims of this  
13 patent.

14 57. An exemplary claim chart, demonstrating infringement of one of these  
15 sample accused products is attached as Exhibit 10.<sup>5</sup> The infringement remains  
16 ongoing.

17 58. Toshiba induces infringement of the asserted claims of the '417 Patent  
18 because it had knowledge of the '417 Patent and the Accused Products'  
19 infringement thereof since at least January 14, 2016, when Macronix notified  
20 Toshiba about this patent. Toshiba's participation in discussions about this patent,  
21 and Toshiba's continued sale, offer for sale, importation, and/or sale for importation  
22 of Accused Products with the intent that its customers will use the Accused Products  
23 in an infringing manner constitute inducing infringement. As set forth in Exhibit 10,  
24 when Toshiba's customers use the Accused Products in their intended manner, these  
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26 <sup>5</sup> Exhibit 10 is merely exemplary. Macronix will provide additional charts in  
27 accordance with the local patent rules and requirements, and specifically reserves  
28 the right to assert additional claims and additional grounds of infringement based  
on, among other things, discovery.

1 customers directly infringe the asserted claims of the '417 Patent. As noted above,  
2 Toshiba's customer-facing documentation, including datasheets, instruct customers  
3 with respect to voltage specifications for the power supply voltage ( $V_{CC}$ ), Input  
4 Voltage ( $V_{IN}$ ) and Input/Output Voltage ( $V_{IO}$ ) among others. *See* Ex. 11. By  
5 providing the Accused Products to its customers and instructions to use the Accused  
6 Products in an infringing manner while being on notice of the '417 Patent and  
7 Macronix's infringement theories, Toshiba has demonstrated specific intent that its  
8 customers infringe the '417 Patent.

9         59. Toshiba contributorily infringes the asserted claims of the '417 Patent  
10 because it had knowledge of the '417 Patent and the Accused Products'  
11 infringement thereof since at least January 14, 2016, when Macronix notified  
12 Toshiba about this patent. Toshiba's participation in discussions about this patent,  
13 and Toshiba's continued sale, offer for sale, importation, and/or sale for importation  
14 of Accused Products that embody a material part of the claimed invention of the  
15 '417 Patent, that are known by Toshiba to be specially made or adapted for use in an  
16 infringing manner, and that are not staple articles with substantial non-infringing  
17 uses constitutes contributory infringement. As set forth in Exhibit 10, when  
18 Toshiba's customers use the Accused Products in their intended manner, these  
19 customers directly infringe the asserted claims of the '417 Patent. The Toshiba  
20 datasheets refer to the use of a buffer to write, store, and erase information in a  
21 manner that infringes the asserted claims of the '417 Patent and have no substantial  
22 non-infringing uses

23         60. Toshiba's infringement is ongoing and willful because Toshiba has had  
24 knowledge of the '417 Patent since at least January 14, 2016, and on information  
25 and belief, Toshiba has no good faith belief in non-infringement.

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**COUNT I**

**(Infringement of U.S. Patent No. 6,552,360 By Toshiba)**

61. Macronix incorporates by reference the allegations as set forth in paragraphs 1 through 60 as if stated fully herein.

62. Toshiba has directly infringed at least claims 1 and 2, in addition to other claims, of the '360 Patent, literally and/or under the doctrine of equivalents, in violation of 35 U.S.C. § 271. The infringing products include the Accused NVM and products containing the same, including but not limited to memory cards, solid-state drives, wearable devices such as digital camcorders, mobile devices, advanced audiovisual systems, car navigation systems, computers, servers, and other consumer electronics. Exemplary claim charts demonstrating how these representative accused products infringe are attached as Exhibit 8. The infringement remains ongoing and will continue unless enjoined by the Court.

63. In addition to its direct infringement, Toshiba has been and is now indirectly infringing by way of inducing infringement and/or contributing to the infringement of one or more claims of the '360 Patent. Macronix incorporates by reference the allegations as set forth in paragraphs 41 through 45 as well as paragraphs 46 through 50.

64. As a consequence of Toshiba's infringement, Macronix is entitled to recover damages adequate to compensate it for the injuries complained of herein, but in no event less than a reasonable royalty.

65. Toshiba's infringement is willful, deliberate, and intentional because Toshiba has had knowledge of the '360 Patent since at least April 2, 2015, and on information and belief, Toshiba has no good faith belief in non-infringement.

**COUNT II**

**(Infringement of U.S. Patent No. 6,788,602 By Toshiba)**

66. Macronix incorporates by reference the allegations as set forth in paragraphs 1 through 60 as if stated fully herein.

1           67.    Toshiba has directly infringed at least claims 1, 7, and 11, in addition to  
2 other claims, of the '602 Patent, literally and/or under the doctrine of equivalents, in  
3 violation of 35 U.S.C. § 271. The infringing products include the Accused NVM  
4 and products containing the same, including but not limited to memory cards, solid-  
5 state drives, wearable devices such as digital camcorders, mobile devices, advanced  
6 audiovisual systems, car navigation systems, computers, servers, and other  
7 consumer electronics. Exemplary claim charts demonstrating how these  
8 representative accused products infringe are attached as Exhibit 9. The infringement  
9 remains ongoing and will continue unless enjoined by the Court.

10           68.    In addition to its direct infringement, Toshiba has been and is now  
11 indirectly infringing by way of inducing infringement and/or contributing to the  
12 infringement of one or more claims of the '602 Patent. Macronix incorporates by  
13 reference the allegations as set forth in paragraphs 41 through 45 as well as  
14 paragraphs 51 through 55.

15           69.    As a consequence of Toshiba's infringement, Macronix is entitled to  
16 recover damages adequate to compensate it for the injuries complained of herein,  
17 but in no event less than a reasonable royalty.

18           70.    Toshiba's infringement is willful, deliberate, and intentional because  
19 Toshiba has had knowledge of the '602 Patent since at least January 14, 2016, and  
20 on information and belief, Toshiba has no good faith belief in non-infringement.

### 21                                   **COUNT III**

#### 22                   **(Infringement of U.S. Patent No. 8,035,417 By Toshiba)**

23           71.    Macronix incorporates by reference the allegations as set forth in  
24 paragraphs 1 through 60 as if stated fully herein.

25           72.    Toshiba has directly infringed at least claims 1, 11, and 18, in addition  
26 to other claims, of the '417 Patent, literally and/or under the doctrine of equivalents,  
27 in violation of 35 U.S.C. § 271. The infringing products include the Accused NVM  
28 and products containing the same, including but not limited to memory cards, solid-

1 state drives, wearable devices such as digital camcorders, mobile devices, advanced  
 2 audiovisual systems, car navigation systems, computers, servers, and other  
 3 consumer electronics. Exemplary claim charts demonstrating how these  
 4 representative accused products infringe are attached as Exhibit 10. The  
 5 infringement remains ongoing and will continue unless enjoined by the Court.

6 73. In addition to its direct infringement, Toshiba has been and is now  
 7 indirectly infringing by way of inducing infringement and/or contributing to the  
 8 infringement of one or more claims of the '417 Patent. Macronix incorporates by  
 9 reference the allegations as set forth in paragraphs 41 through 45 as well as  
 10 paragraphs 56 through 60.

11 74. As a consequence of Toshiba's infringement, Macronix is entitled to  
 12 recover damages adequate to compensate it for the injuries complained of herein,  
 13 but in no event less than a reasonable royalty.

14 75. Toshiba's infringement is willful, deliberate, and intentional because  
 15 Toshiba has had knowledge of the '417 Patent since at least January 14, 2016, and  
 16 on information and belief, Toshiba has no good faith belief in non-infringement.

### 17 **PRAYER FOR RELIEF**

18 WHEREFORE, Macronix respectfully requests that this Court enter judgment  
 19 and provide relief as follows:

20 (a) That Toshiba has infringed one or more claims of the '360, '602, and  
 21 '417 Patents;

22 (b) That Toshiba has induced infringement of one or more claims of the  
 23 '360, '602, and '417 Patents;

24 (c) That Toshiba has contributed to the infringement of one or more claims  
 25 of the '360, '602, and '417 Patents;

26 (d) That Toshiba's infringement of one or more claims of the '360, '602,  
 27 and '417 Patents has been willful, deliberate, and intentional;

1 (e) That Toshiba pay Macronix damages in amounts sufficient to  
2 compensate it for Toshiba's infringement of the '360, '602, and '417 Patents,  
3 together with prejudgment and post judgment interest and costs, pursuant to 35  
4 U.S.C. § 284;

5 (f) That, pursuant to 35 U.S.C. § 284, treble damages be awarded to  
6 Macronix;

7 (g) That Toshiba be ordered to account for additional damages for any and  
8 all periods of infringement not included in the damages awarded by the Court or  
9 jury, including specifically any time periods between any order or verdict awarding  
10 damages and entry of final judgment.

11 (h) That this is an exceptional case under 35 U.S.C. § 285, and Macronix  
12 be awarded reasonable attorneys' fees and costs incurred in this action;

13 (i) That Toshiba, and its respective officers, agents, servants, employees,  
14 attorneys, and all persons in active concert or participation with any of the directly  
15 or indirectly, be permanently enjoined from infringing the '360, '602, and '417  
16 Patents;

17 (j) That Macronix be awarded such other equitable or legal relief as the  
18 Court may deem just and proper.

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20 **JURY TRIAL DEMANDED**

21 Macronix demands a jury trial on all issues so triable.  
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1 Dated: March 7, 2017

FISH & RICHARDSON P.C.

2  
3 By: /s/ David Barkan

4 David Barkan (SBN 160825)

5 barkan@fr.com

6 Leeron Kalay (SBN 233579)

7 kalay@fr.com

8 Fish & Richardson P.C.

9 500 Arguello Street, Suite 500

10 Redwood City, CA 94063

11 Phone: (650)839-5070

12 Fax: (650)839-5071

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14 Attorneys for Plaintiff Macronix  
15 International Co., Ltd.  
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**CERTIFICATE OF SERVICE**

The undersigned hereby certifies that a true and correct copy of the above and foregoing document has been served on March 7, 2017, to all counsel of record who are deemed to have consented to electronic service via the Court's CM/ECF system per Civil Local Rule 5.4. Any other counsel of record will be served by electronic mail, facsimile and/or overnight delivery.

/s/ David Barkan