

1 RUSS, AUGUST & KABAT
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LONGITUDE LICENSING LIMITED
7

8 **UNITED STATES DISTRICT COURT
CENTRAL DISTRICT OF CALIFORNIA**

9 LONGITUDE LICENSING LIMITED,

10 Plaintiff,

11 v.

12 AMAZON.COM, INC.,

13 Defendant.
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Case No

**COMPLAINT FOR PATENT
INFRINGEMENT**

JURY TRIAL DEMANDED

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1 1. Plaintiff Longitude Licensing Limited (“Longitude” or “Plaintiff”) for its
2 Complaint against Defendant Amazon.com, Inc. (“Amazon.com” or “Defendant”)
3 hereby alleges as follows:

4 **PARTIES**

5 2. Longitude is an entity formed under the laws of Ireland with its principal place
6 of business at Plaza 255 Suite 2A, Blanchardstown Corporate Park 2, Dublin D15
7 YH6H, Ireland.

8 3. On information and belief, Defendant Amazon.com, Inc. is a Delaware
9 corporation with its principal place of business at 410 Terry Avenue North, Seattle,
10 Washington 98109.

11 **NATURE OF THE ACTION**

12 4. This is a civil action for the infringement of United States Patent Nos.
13 7,697,369 (the “369 patent”), 9,379,233 (the “233 patent”), RE43,539 the (“539
14 Patent”), and 9,207,701 (the “701 patent”) (collectively, the “Patents-in-Suit”)
15 under the patent laws of the United States, 35 U.S.C. § 1, et seq.

16 5. This action involves Defendant’s manufacture, use, sale, offer for sale, and/or
17 importation into the United States of infringing products, methods, processes,
18 services and systems that incorporate certain memory chips and components that
19 infringe one or more of the claims of the Patents-in-Suit.

20 **JURISDICTION AND VENUE**

21 6. This Court has original jurisdiction over the subject matter of this Complaint
22 under 28 U.S.C. §§ 1331 and 1338(a) because this action arises under the patent laws
23 of the United States, including 35 U.S.C. §§ 271, et seq.

24 7. Defendant is subject to personal jurisdiction in this judicial district because
25 Defendant regularly transacts business in this judicial district by, among other
26 things, offering Defendant’s products and services to customers, business affiliates
27 and partners located in this judicial district. In addition, Defendant has committed
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1 acts of direct infringement of one or more of the claims of one or more of the Patents-
2 in-Suit in this judicial district.

3 8. Venue in this district is proper under 28 U.S.C. §§ 1400(b) and 1391(b)
4 and (c), because Defendant is subject to personal jurisdiction in this district and has
5 committed acts of infringement in this district. Longitude is informed and believes
6 that Defendant has regular and established places of business in this District at (1)
7 923 Westwood Boulevard, Los Angeles, California 90024; (2) 1620 26th Street,
8 Santa Monica, California 90404; and (3) 40 Pacifica Avenue, Irvine, California
9 92618, among others.

10 **FACTUAL BACKGROUND**

11 9. Longitude operates in one of the most dynamic segments of the international
12 knowledge-based economy. Longitude operates by partnering with patent owners to
13 prosecute and license patent portfolios. The company has also formed customized
14 arrangements that combine exclusive licensing rights and ownership positions, and
15 it also has acquired patents outright from other global patent owners. Longitude has
16 the licensing rights to portfolios totaling nearly 4,000 semiconductor and computer
17 memory patents and patent applications originally filed by well-known technology
18 companies.

19 10. Longitude is the owner by assignment of the patents-in-suit.

20 11. Longitude has licensed the patents-in-suit to a majority of the worldwide
21 memory industry responsible for solid state memory devices used in products sold
22 in the United States, including SK Hynix, Kingston, Winbond, Micron, Samsung
23 Electronics and Kioxia (formerly the memory division of Toshiba).

24 12. One major player in the industry that has refused to license the Patent-in-Suit
25 is Western Digital Corporation (“Western Digital”). Western Digital is a computer
26 hard disk drive manufacturer and data storage company. Western Digital designs,
27 manufactures, and sells data technology products, including storage devices, data
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1 center systems, and cloud storage services. Longitude is informed and believes that
2 Western Digital acquired SanDisk in 2016.

3 13. Since February 2018, Longitude has requested that Western Digital negotiate
4 licenses for patents (including the Patents-in-Suit) that it is infringing, but Western
5 Digital has refused to negotiate, claiming that Longitude may not assert its licensing
6 rights as a result of covenants in two contracts between Western Digital and third
7 parties that have never owned any of the patents-in-suit. Those contracts do not
8 apply to Longitude, but Western Digital nonetheless contended that it could only be
9 sued after every other market participant (apparently including Western Digital's
10 customers) was sued.

11 14. Longitude initiated an arbitration claim against Western Digital for
12 declaratory relief concerning Western Digital's interpretation of the agreements.
13 Western Digital objected to the jurisdiction of the arbitration tribunal to avoid any
14 consideration of the merits of contract arguments.

15 15. After the arbitration against Western Digital was dismissed on jurisdictional
16 grounds, Longitude gave notice to Defendant that it was infringing the patents-in-
17 suit by letter dated September 6, 2022. This letter included a table that identified a
18 number of products that were believed to infringe the patents. Among other things,
19 the letter stated:

20 A number of Amazon products incorporate and use features and
21 functionality covered by Longitude patents, including, for example,
22 the patents and exemplary products identified in the attached table
23 ("Table 1"). In reviewing the Table, you will note that the infringing
24 products contain devices manufactured by Western Digital
25 Corporation ("Western Digital"). While our normal approach is to
26 engage with, and license, suppliers such as Western Digital rather than
27 their customers, Western Digital has refused to engage in any
28 licensing discussions. Consequently, we are contacting Western
Digital customers who are selling products that infringe Longitude
patents.

16. Defendant did not take a license following receipt of this letter and continued
to infringe as stated in the letter. As of the filing of this Complaint, Defendant has
not responded in any manner to Longitude.

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1 17.Among the other products referenced in the letter was Amazon Echo Show
2 10, Fire Stick Lite, and all other Amazon products having Western Digital FKB7
3 NAND flash memory and certain Western Digital NAND memory chips.

4 **THE PATENTS-IN-SUIT**

5 18.Longitude is the owner by assignment of the Patents-in-Suit. Longitude owns
6 all rights to the Patents-in-Suit, including the right to enforce the Patents-in-Suit.

7 19.All maintenance fees for the Patents-in-Suit have been timely paid, and there
8 are no fees currently due.

9 20.United States Patent No. 7,697,369, entitled "System with Controller and
10 Memory," issued on April 13, 2010 from United States Patent Application No.
11 11/759,862 filed on June 7, 2007.

12 21.United States Patent No. RE43,539, entitled "Output Buffer Circuit and
13 Integrated Semiconductor Circuit Device With Such Output Buffer Circuit," issued
14 on July 24, 2012 from United States Patent Application No. 11/798,773 filed on May
15 16, 2007. The '539 Patent is a re-issue of U.S. Patent No. 6,894,547, which issued
16 on May 17, 2005 from United States Patent Application No. 10/320,059 filed
17 December 16, 2002.

18 22.United States Patent No. 9,379,233, entitled "Semiconductor Device," issued
19 on June 28, 2016 from United States Patent Application No. 14/872,844 filed
20 October 1, 2015.

21 23.United States Patent No. 9,207,701, entitled "Supply Voltage Generating
22 Circuit," issued on December 8, 2015 from United States Patent Application No.
23 14/480,768 filed on September 9, 2014.

24 **COUNT I**

25 **(DEFENDANT'S INFRINGEMENT OF THE '369 PATENT)**

26 24.Paragraphs 1 through 23 are incorporated by reference as if fully restated
27 herein.

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1 25. United States Patent No. 7,697,369, entitled "System with Controller and
2 Memory," issued on April 13, 2010 from United States Patent Application No.
3 11/759,862 filed on June 7, 2007.

4 26. Longitude is the owner of the '369 patent with full rights to pursue recovery
5 of royalties for damages for infringement, including full rights to recover past and
6 future damages.

7 27. Each claim of the '369 patent is valid, enforceable, and patent-eligible.

8 28. Longitude and its predecessors in interest have satisfied the requirements of
9 35 U.S.C. § 287(a) with respect to the '369 patent, and Longitude is entitled to
10 damages for Defendant's past infringement. Among other things, Longitude
11 provided actual notice of infringement to the component supplier, Western Digital.

12 29. Defendant has directly infringed (literally and equivalently) and induced
13 others to infringe the '369 patent by making, using, selling, offering for sale, or
14 importing products that infringe the claims of the '369 patent and by inducing others
15 to infringe the claims of the '369 patent without a license or permission from
16 Longitude. These products include without limitation Western Digital PC SN530
17 NVMe SSDs, Western Digital SSDs, and/or Western Digital NAND memory chips
18 and all versions and variations of them offered for sale since the issuance of the '369
19 patent.

20 30. A non-limiting example of Defendant's infringement is its sales and offers for
21 sale of Western Digital PC SN530 NVMe SSDs as demonstrated below.

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The top screenshot displays an Amazon product page for a Western Digital 1TB SSD. The product title is "WD 1TB SSD PC SN530 SDBPNPZ 1T00 M.2 2280 NVMe PCIe Gen3 x4 Solid State Drive". The price is \$159.00. The page includes a product image, a "Buy new" button, and a "FREE Returns" option. The bottom screenshot displays an Amazon product page for a Western Digital 256GB SSD. The product title is "Western Digital 256GB SSD M.2 2230 30mm PC SN530 NVMe PCIe 3.0 Gen3 x4 SDBPTPZ-256G Solid State Drive for Surface Pro Steam Deck Dell HP Lenovo Ultrabook Tablet". The price is \$44.99. The page includes a product image, a "Buy new" button, and a "FREE Returns" option.

Western Digital PC SN530 NVMe SSDs infringe at least claim 1 of the '369 patent.

31. Longitude is informed and believes that the Western Digital PC SN530 NVMe SSD Operates in Compliance with the Open NAND Flash Interface Specification, Revision 4.0 dated April 2, 2014 (ONFI Standard).

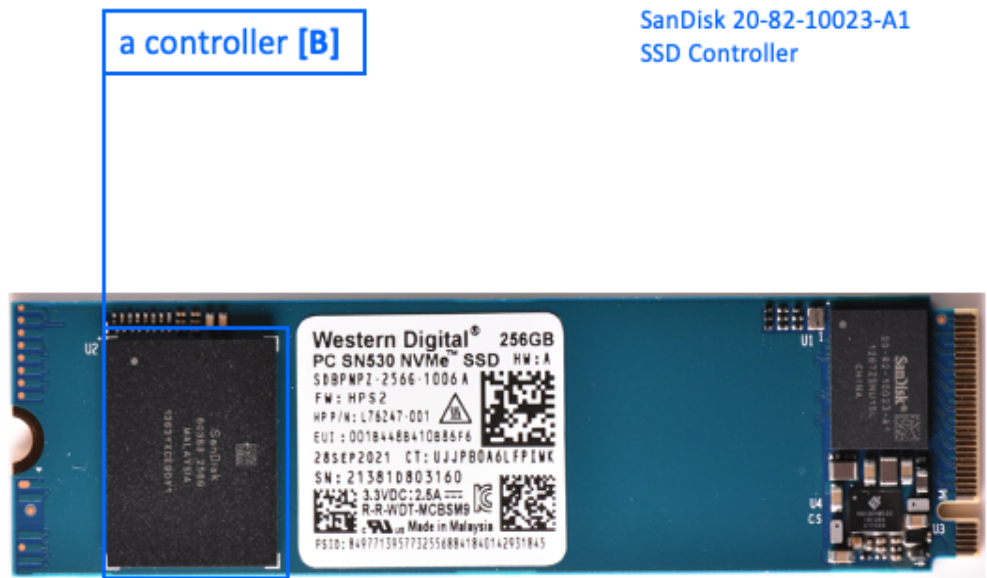
32. The Western Digital PC SN530 NVMe SSD is a system:

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33. The Western Digital PC SN530 NVMe SSD includes a controller:



34. The Western Digital PC SN530 NVMe SSD includes a controller that is adapted to send out a first strobe signal and a write data signal in a write operation, the write data signal being synchronized with the first data strobe signal:

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Signal Name	Input / Output	Description
ALE_x	I	Address Latch Enable The Address Latch Enable signal is one of the signals used by the host to indicate the type of bus cycle (command, address, data). Refer to section 4.3.
WE_x_n	I	Write Enable The Write Enable signal controls the latching of commands, addresses, and input data in the SDR data interface. The Write Enable signal controls the latching of commands and addresses in the NV-DDR2 or NV-DDR3 data interface. Data, commands, and addresses are latched on the rising edge of WE_x_n. This signal shares the same pin as CLK_x in the NV-DDR data interface.
CLK_x	I	Clock The Clock signal is used as the clock in the NV-DDR data interface. This signal shares the same pin as WE_x_n in the SDR, NV-DDR2, and NV-DDR3 data interface.
WP_x_n	I	Write Protect The Write Protect signal disables Flash array program and erase operations. See section 2.19 for requirements.
IO0_0 – IO7_0 (DQ0_0 – DQ7_0)	I/O	I/O Port 0, bits 0-7 The I/O port is an 8-bit wide bidirectional port for transferring address, command, and data to and from the device. Also known as DQ0_0 – DQ7_0 for the NV-DDR, NV-DDR2, and NV-DDR3 data interfaces.
DQS (DQS_x_t)	I/O	Data Strobe (True) The data strobe signal that indicates the data valid window for the NV-DDR and NV-DDR2 data interfaces.
DQS_x_c	I/O	Data Strobe Complement The Data Strobe Complement signal is the complementary signal to Data Strobe True, optionally used in the NV-DDR2 or NV-DDR3 data interface. Specifically, Data Strobe Complement has the opposite value of Data Strobe True when CE_n is low, i.e. if DQS_x_t is high then DQS_x_c is low; if DQS_x_t is low then DQS_x_c is high.
IO8 – IO15	I/O	I/O Port 0, bits 8-15 These signals are used in a 16-bit wide target configuration. The signals are the upper 8 bits for the 16-bit wide bidirectional port used to transfer data to and from the device. These signals are only used in the SDR data interface.

adapted to send out a first data strobe signal [C]

and a write data signal [D]

ONFI Standard at 30.

adapted to send out a first data strobe signal [C]

and a write data signal [D]

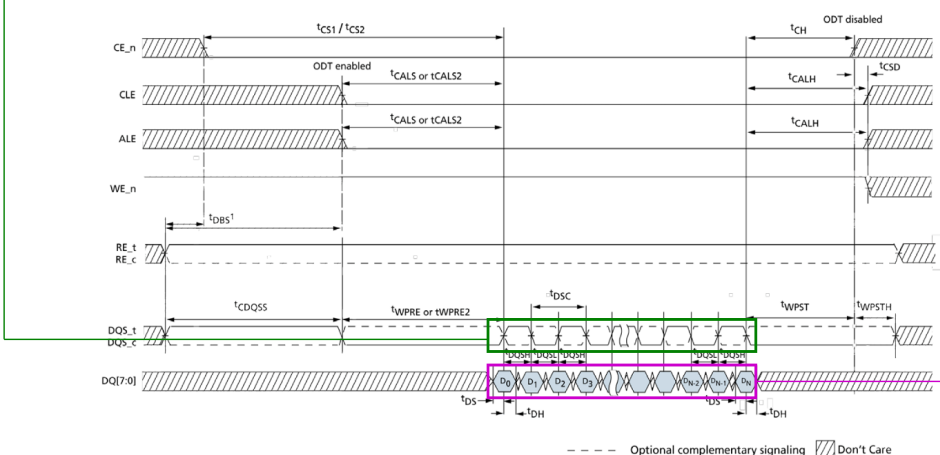


Figure 71 Data input cycle timing

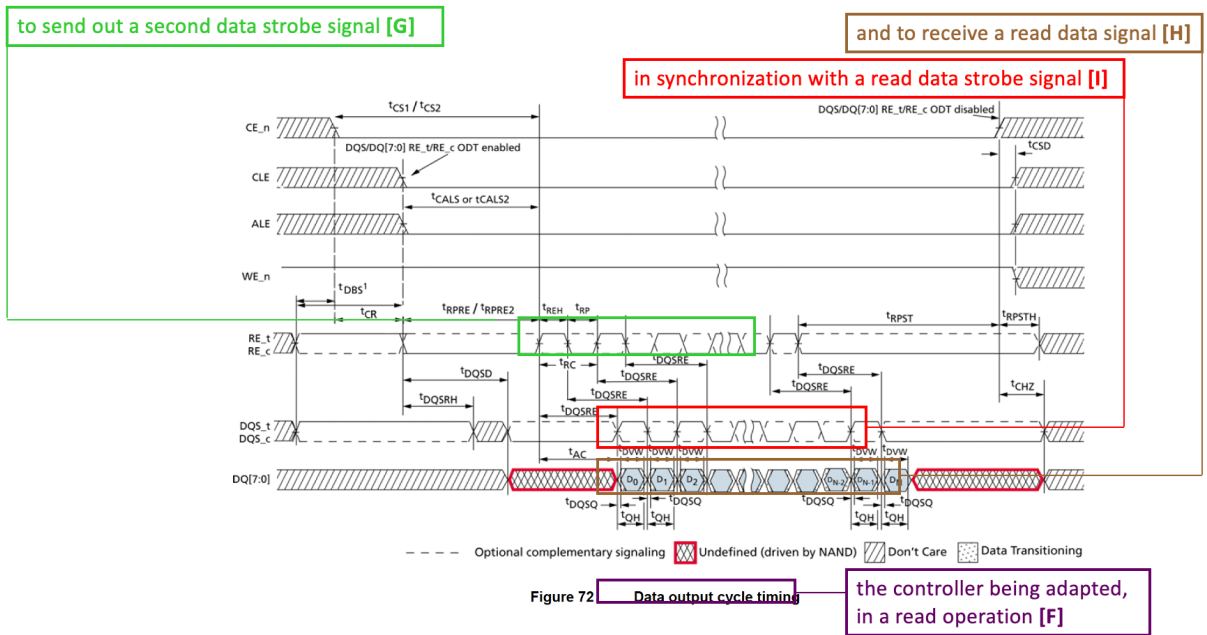
in a write operation, the write data signal being synchronized with the first data strobe signal [E]

ONFI Standard at 165.

35. The Western Digital PC SN530 NVMe SSD further includes a controller being adapted in a read operation to send out a second data strobe signal and to receive a read data signal in synchronization with a read strobe signal.

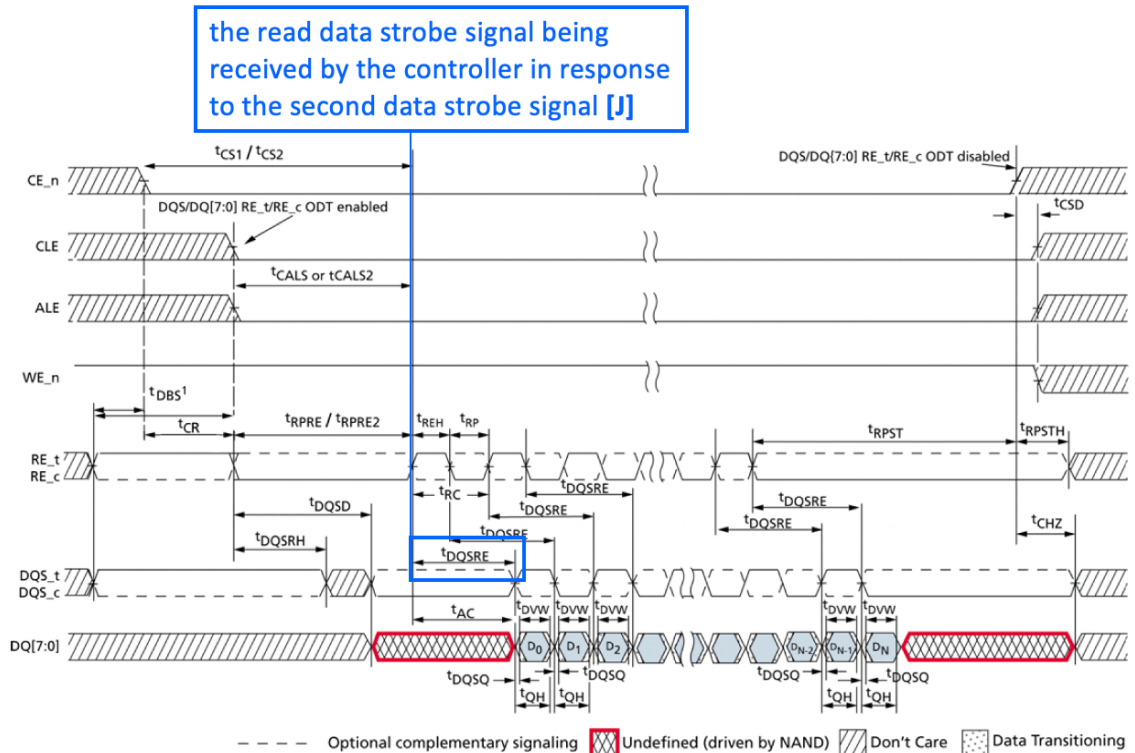
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ONFI Standard at 167.

36. The Western Digital PC SN530 NVMe SSD further includes the read strobe signal being received by the controller in response to the second data strobe signal:

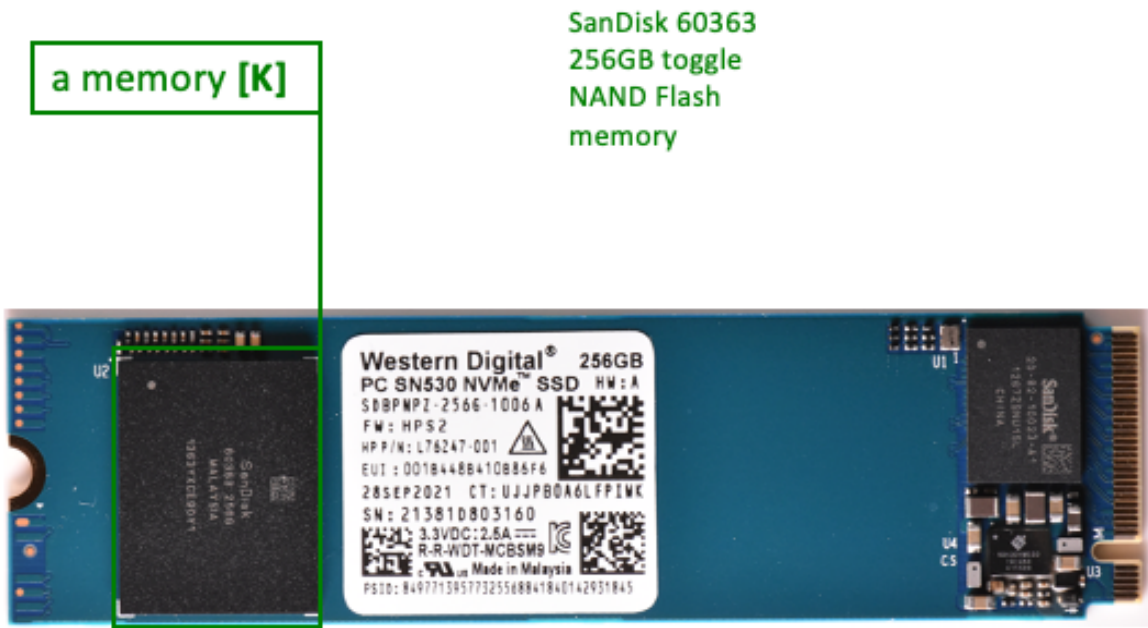


ONFI Standard at 167.

37. The Western Digital PC SN530 NVMe SSD further includes a memory:

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38. The Western Digital PC SN530 NVMe SSD further includes a memory adapted to receive the write data signal in synchronization with the first data strobe signal in the write operation:

adapted to receive the write data signal in synchronization with the first data strobe signal in the write operation [L]

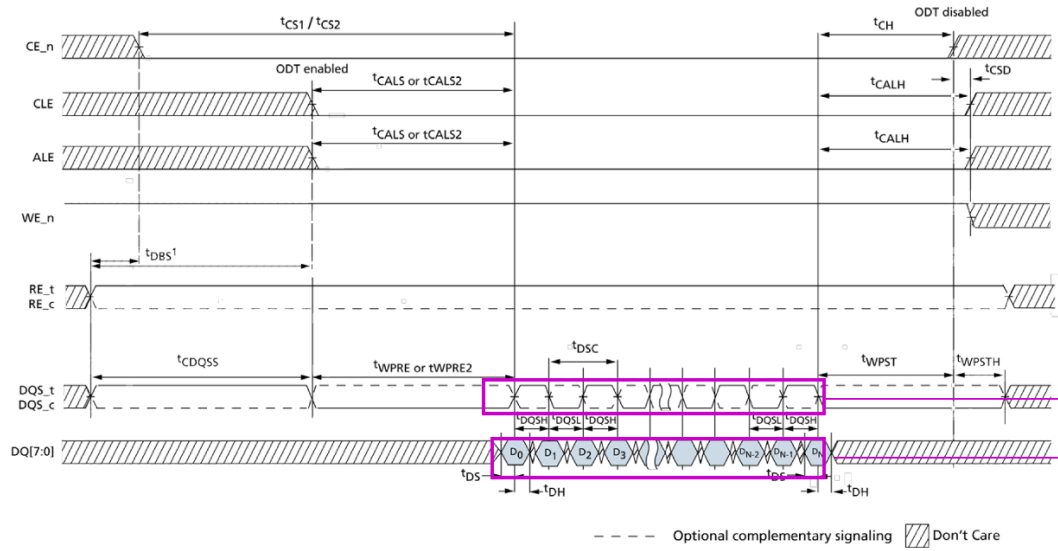


Figure 71 Data input cycle timing

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1 43. Defendant specifically intends its customers and/or end users infringe the ‘369
2 patent, either literally or by the doctrine of equivalents, because Defendant has
3 known about the ‘369 patent and how Defendant's products infringe the claims of
4 the ‘369 patent but Defendant has not taken steps to prevent infringement by its
5 customers and/or end users. Accordingly, Defendant has acted with the specific
6 intent to induce infringement of the ‘369 patent.

7 44. Accordingly, Defendant has induced, and continues to induce, infringement
8 of the ‘369 patent under 35 U.S.C. §271(b).

9 45. As discussed above, Defendant has had knowledge of and notice of the ‘369
10 patent and its infringement since at least September 6, 2022. Despite this
11 knowledge, Defendant continues to commit tortious conduct by way of patent
12 infringement.

13 46. Defendant has been and continues to infringe one or more of the claims of the
14 ‘369 patent through the aforesaid acts.

15 47. Defendant has committed these acts of infringement without license or
16 authorization.

17 48. Plaintiff is entitled to recover damages adequate to compensate for the
18 infringement.

19 49. Defendant has and continues to infringe the ‘369 patent, acting with an
20 objectively high likelihood that its actions constitute infringement of the ‘369 patent.
21 Defendant has known or should have known of this risk at least as early as September
22 6, 2022. Accordingly, Defendant’s infringement of the ‘369 patent has been and
23 continues to be willful.

24 **COUNT II**

25 **(DEFENDANT'S INFRINGEMENT OF THE '539 PATENT)**

26 50. Paragraphs 1 through 49 are incorporated by reference as if fully restated
27 herein.

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1 51. United States Patent No. RE43,539, entitled “Output Buffer Circuit and
2 Integrated Semiconductor Circuit Device With Such Output Buffer Circuit,” issued
3 on July 24, 2012 from United States Patent Application No. 11/798,773 filed on May
4 16, 2007. The ‘539 Patent is a re-issue of U.S. Patent No. 6,894,547, which issued
5 on May 17, 2005 from United States Patent Application No. 10/320,059 filed
6 December 16, 2002.

7 52. Longitude is the owner of the ‘539 patent with full rights to pursue recovery
8 of royalties for damages for infringement, including full rights to recover past and
9 future damages.

10 53. Each claim of the ‘539 patent is valid, enforceable, and patent-eligible.

11 54. Longitude and its predecessors in interest have satisfied the requirements of
12 35 U.S.C. § 287(a) with respect to the ‘539 patent, and Longitude is entitled to
13 damages for Defendant’s past infringement. Among other things, Longitude
14 provided actual notice of infringement to the component supplier, Western Digital.

15 55. Defendant has directly infringed (literally and equivalently) and induced
16 others to infringe the ‘539 patent by making, using, selling, offering for sale, or
17 importing products that infringe the claims of the ‘539 patent and by inducing others
18 to infringe the claims of the ‘539 patent without a license or permission from
19 Longitude. These products include without limitation Western Digital PC SN530
20 NVMe SSDs, Western Digital SSDs, and/or Western Digital NAND memory chips
21 and all versions and variations of them offered for sale since the issuance of the ‘539
22 patent.

23 56. A non-limiting example of Defendant’s infringement is its sales and offers for
24 sale of Western Digital PC SN530 NVMe SSDs as demonstrated below.

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WD 1TB SSD PC SN530 SDBPNPZ 1T00 M.2 2280 NVMe PCIe Gen3 x4 Solid State Drive
 Visit the Western Digital Store
 ★★★★★ 944 ratings
\$159.00
 prime
 FREE Returns

You could have earned **\$922.83** in rewards on your Amazon purchases over the past year with 5% back with an Amazon Prime Rewards Visa Card. Apply now and get a \$100 Amazon Gift Card upon approval. [Learn more](#)

May be available at a lower price from other sellers, potentially without free Prime shipping.

Purchase options and add-ons

Payment plans
 1 option from \$15.50/mo at example APR of 30% (rates from 10-30% APR)

One-time payment
\$159.00

Affirm (approval required) [Learn more](#)
\$15.50/mo or less (12 mo) (10-30% APR)
 • Checking your eligibility will not affect your credit
 • Financing option applies to final order total amount
 • No late fees

Buy new:
\$159.00
 prime
 FREE Returns
 FREE delivery **Saturday, January 7**. Order within 13 hrs 52 mins
 Deliver to Paul - Van Nuys 91401
Only 13 left in stock - order soon.
 Qty: 1
 Add to Cart
 Buy Now
 Secure transaction
 Ships from Amazon
 Sold by Columbus Computer
 Return policy: Eligible for Return, Refund or Replacement within 30 days of receipt
 Support: Free Amazon tech support included
 Add a Protection Plan:

Western Digital 256GB SSD M.2 2230 30mm PC SN530 NVMe PCIe 3.0 Gen3 x4 SDBPTPZ-256G Solid State Drive for Surface Pro Steam Deck Dell HP Lenovo Ultrabook Tablet
 Visit the Western Digital Store
 ★★★★★ 9,682 ratings
\$44.99

With Amazon Business, you would have saved \$227.15 in the last year. [Create a free account](#) and save up to 2% today.

You could have earned **\$922.83** in rewards on your Amazon purchases over the past year with 5% back with an Amazon Prime Rewards Visa Card. Apply now and get a \$100 Amazon Gift Card upon approval. [Learn more](#)

Digital Storage Capacity 256 GB
Hard Disk Interface NVMe
Connectivity Technology USB
Brand Western Digital
Hard Disk Form Factor 2230 Inches

About this item

- Sequential read/write up to (MB/s): 2400/950
- Random read/write up to (IOPS): 170K/120K
- Form Factor, Interface: M.2 2230, PCIe Gen3 x4
- Compatibility: Surface Pro Tablet, Steam Deck and other systems with M.2 2230 NVMe PCIe slot

Buy new:
\$44.99
 FREE delivery **January 11 - 13**.
 Details
 Or fastest delivery **January 10 - 12**.
 Details
 Deliver to Paul - Van Nuys 91401
Only 14 left in stock - order soon.
 Qty: 1
 Add to Cart
 Buy Now
 Secure transaction
 Ships from VL NORTHSIDE ELECT...
 Sold by VL NORTHSIDE ELECT...
 Details
 Return policy: Eligible for Return, Refund or Replacement within 30 days of receipt
 Add a Protection Plan:
 2-Year Data Recovery Plan for **\$12.99**
 3-Year Data Recovery Plan for **\$14.99**

Western Digital PC SN530 NVMe SSDs infringe at least claim 1 of the '539 patent.

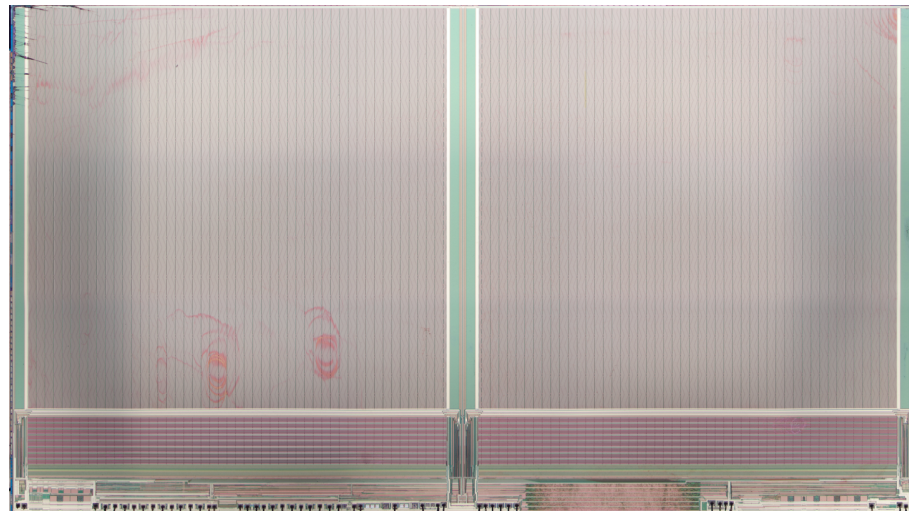
57. The Western Digital PC SN530 NVMe SSD includes a SanDisk memory chip:

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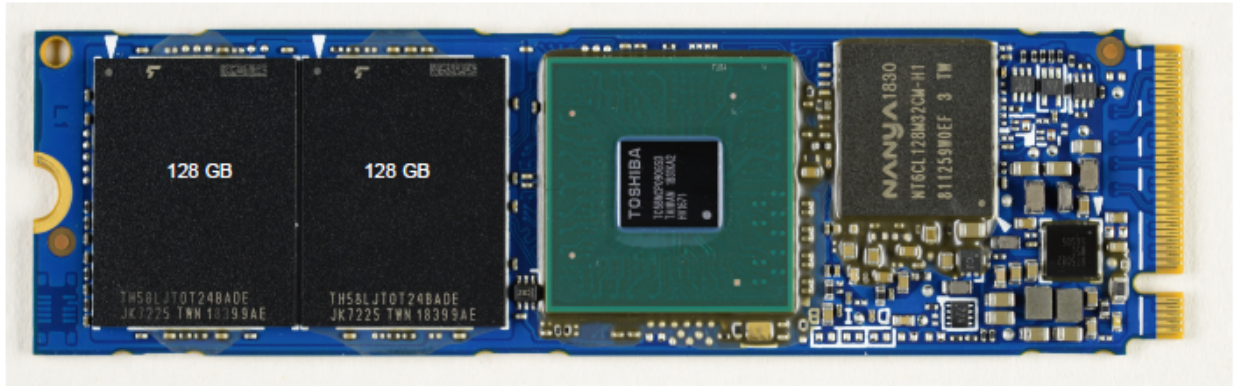
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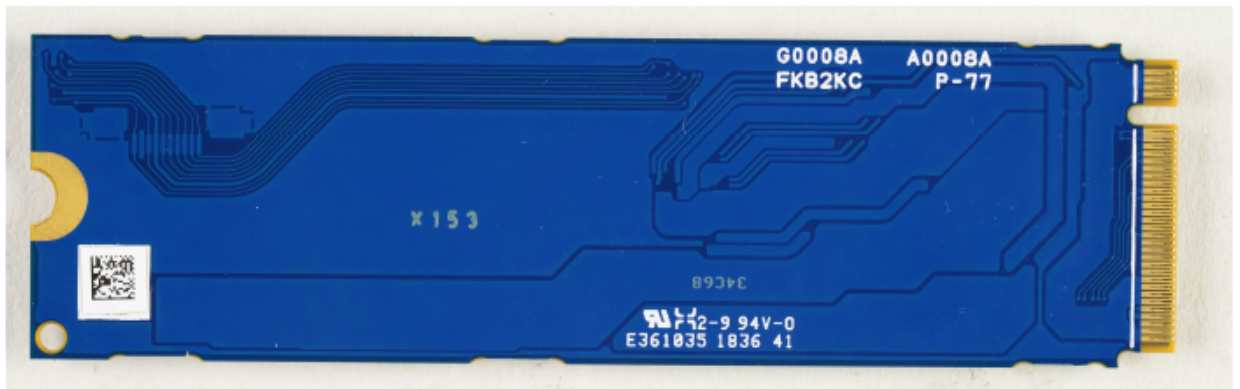
58. The below image shows the pin layout and corners of the SanDisk memory chip used in the Western Digital PC SN530 NVMe SSD:



59. On information and belief, the Western Digital PC SN530 NVMe SSD is substantially similar to the Toshiba KXG60ZNV256G SSD Package (“Toshiba SSD”) for all matters relevant to this complaint. The Toshiba SSD is depicted below:

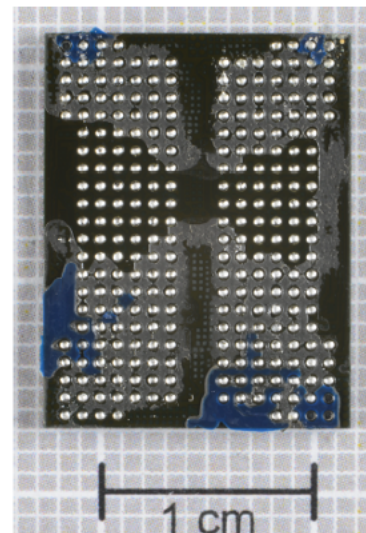


Toshiba KXG60ZNV256G SSD Package – Top



Toshiba KXG60ZNV256G SSD Package – Bottom

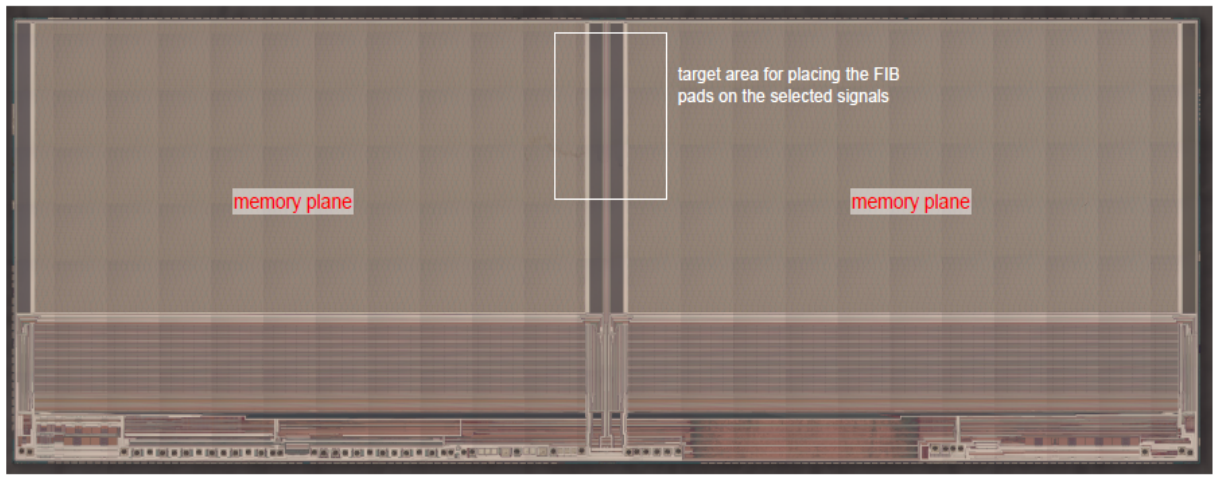
60. The memory chip of the Toshiba SSD, the Toshiba TH58LJT0T24BADE Package is depicted in the images below:



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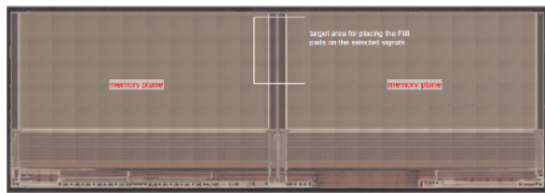
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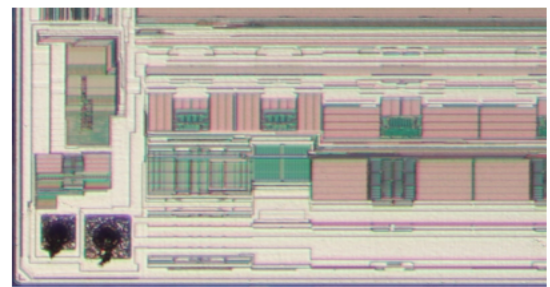
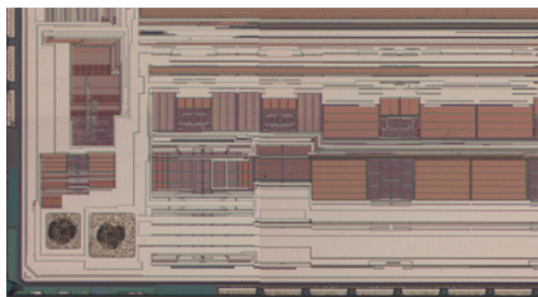
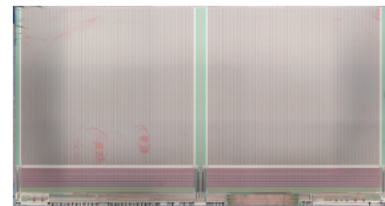


Toshiba 256 Gb 96L 3D NAND Flash Memory Die Photograph

61. A side-by-side comparison of the SanDisk memory chip used in the Western Digital PC SN530 NVMe SSD and the Toshiba TH58LJT0T24BADE Package used in the Toshiba SSD is depicted below:



Toshiba 256 Gb 96L 3D NAND Flash Memory Die Photograph

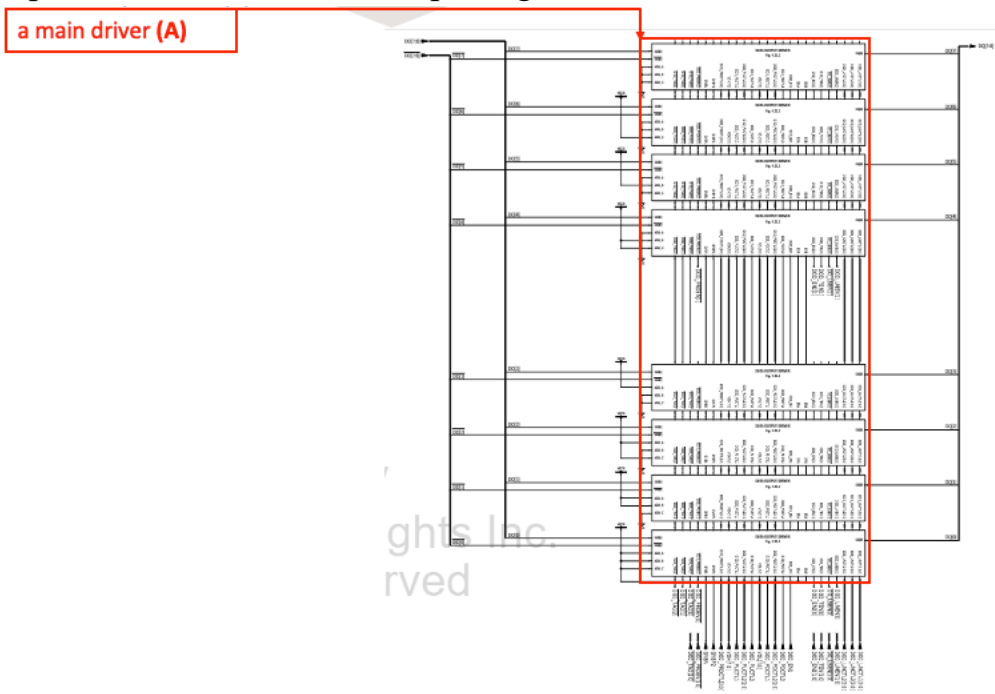


62. Based at least on the above, Longitude is informed and believes, that the corners of the dies of the SanDisk memory chip used in the Western Digital PC SN530 NVMe SSD and the Toshiba TH58LJT0T24BADE Package are substantially the same. Among other things, the corners are substantially the same. Accordingly, Longitude is informed and believes that the various I/Os and peripheral circuits are the same between the Toshiba and Western Digital/SanDisk chips. Furthermore,

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1 Longitude is informed and believes that Toshiba and Western Digital shared the
2 designs for 96 layer chips. Accordingly, the SanDisk memory chip is substantially
3 the same as the Western Digital PC SN530 NVMe SSD and the Toshiba
4 TH58LJT0T24BADE Package. For this reason, Longitude is informed and believes
5 that technical documents and other analysis concerning the Toshiba
6 TH58LJT0T24BADE Package also describe the layout and functionality of the
7 Western Digital PC SN530 NVMe SSD.

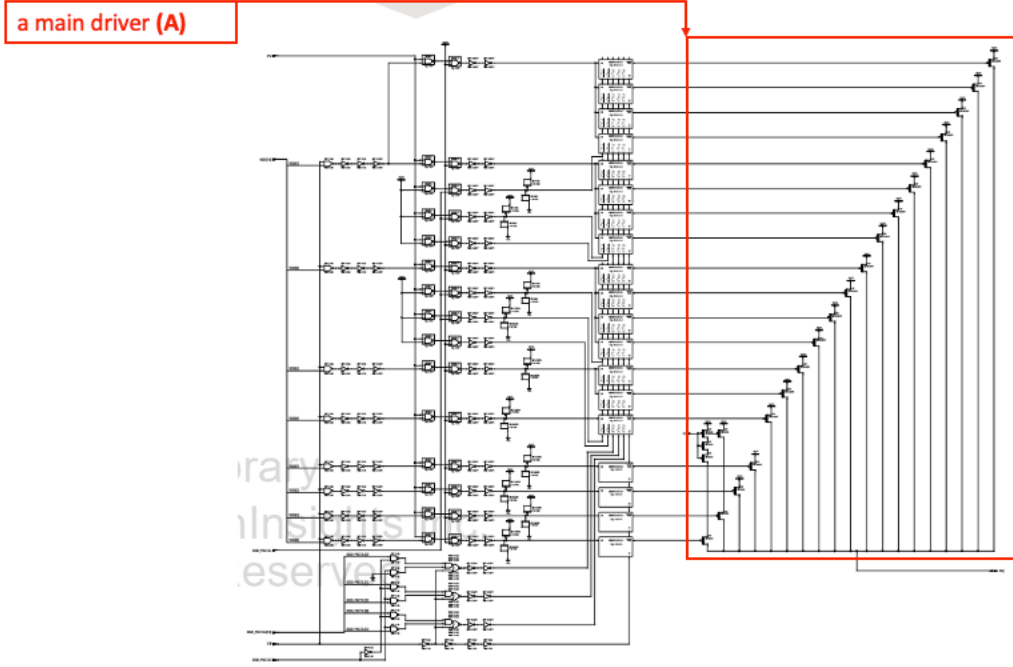
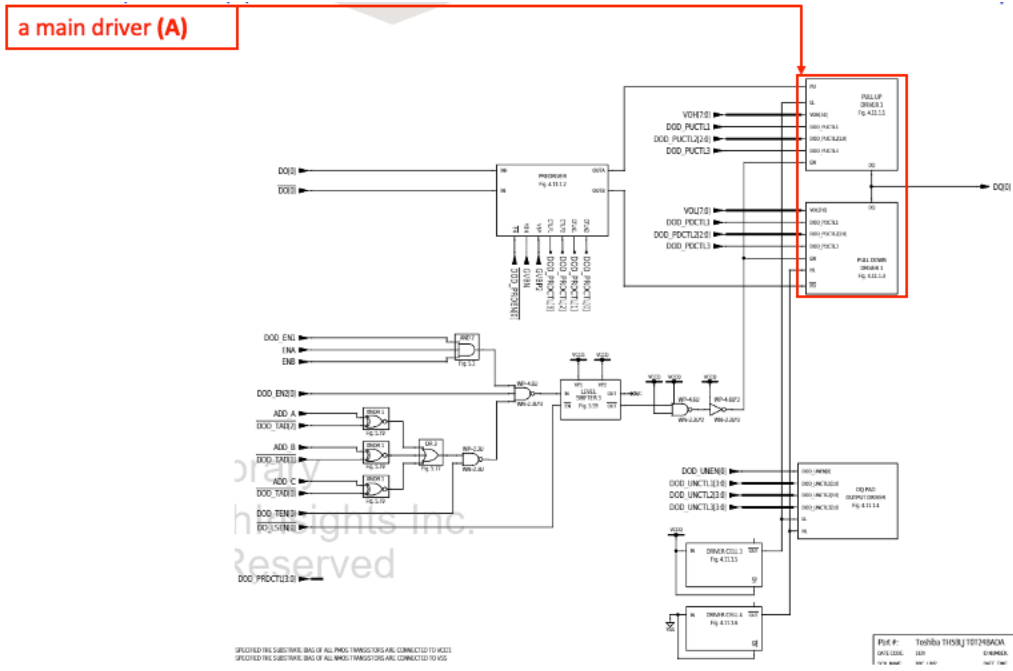
8 63. The Western Digital PC SN530 NVMe SSD includes an output buffer
9 circuit for outputting data in the form of an input pulse train at a predetermined
10 output impedance and slew rate comprising a main driver:



Source: TechInsights Report ID#: CAR-1902-801 Figure 4.11 DATA OUTPUT DRIVERS

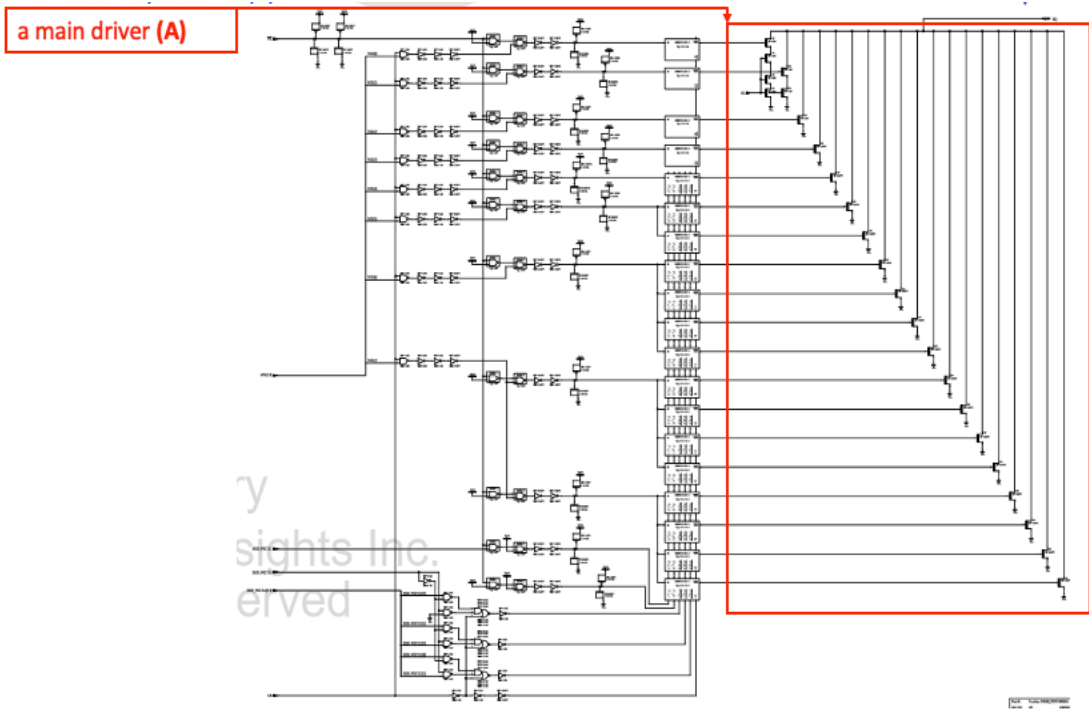
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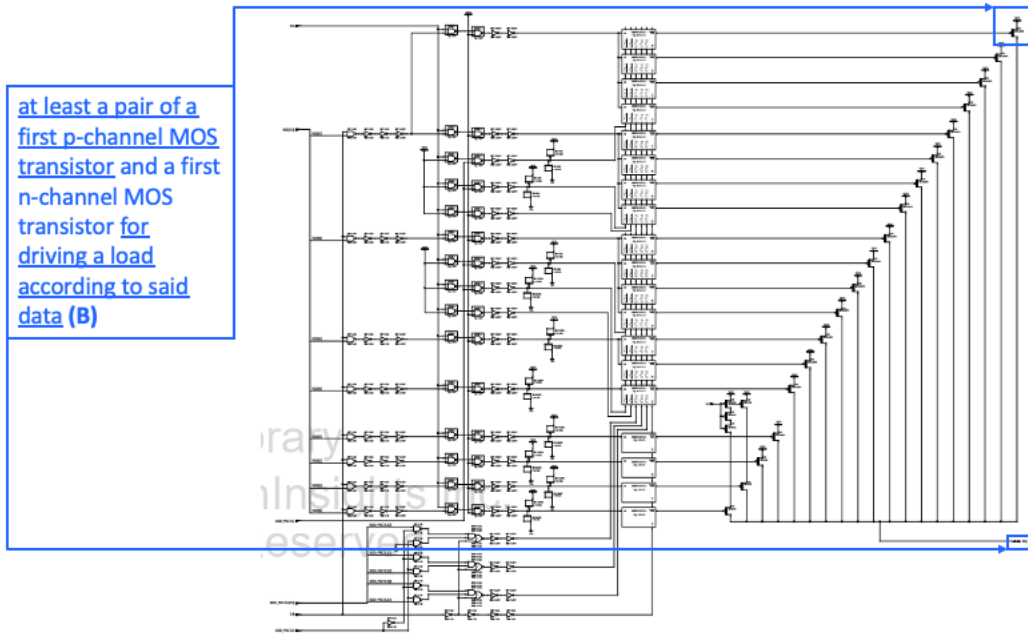
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Source: TechInsights Report ID#: CAR-1902-801 Figure 411.13 PULL DOWN DRIVER 1

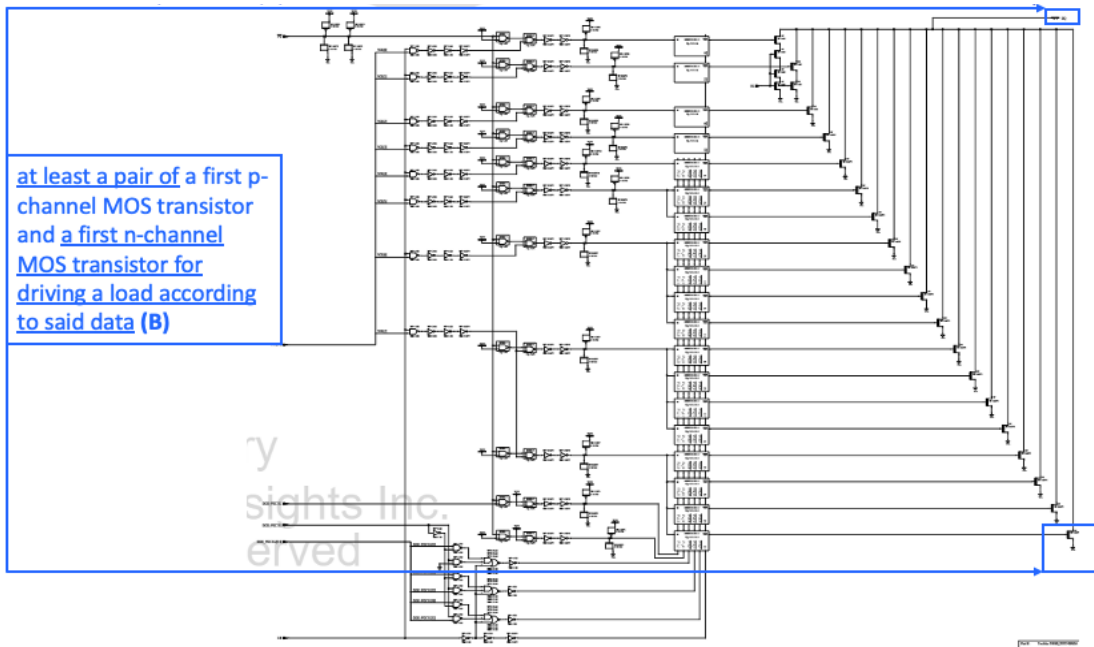
64. The Western Digital PC SN530 NVMe SSD further includes at least a pair of a first p-channel MOS transistor and a first n-channel MOS transistor for driving a load according to said data:



Source: TechInsights Report ID#: CAR-1902-801 Figure 411.11 PULL UP DRIVER 1

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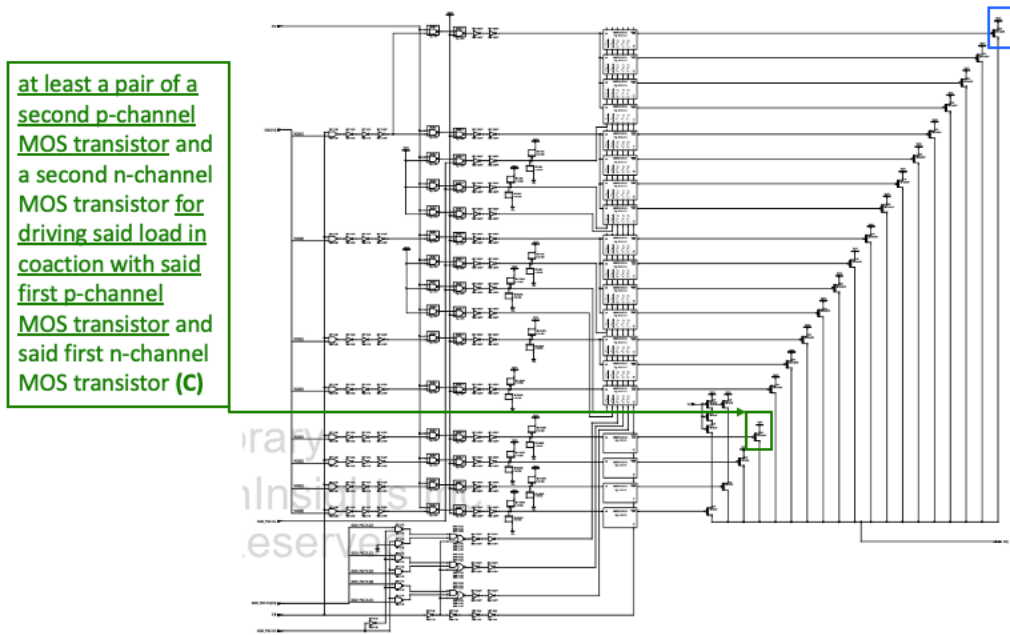
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at least a pair of a first p-channel MOS transistor and a first n-channel MOS transistor for driving a load according to said data (B)

Source: [TechInsights Report ID#: CAR-1902-801](#) Figure 4.11.1.3 PULL DOWN DRIVER 1

65. The Western Digital PC SN530 NVMe SSD further includes at least a pair of a second p-channel MOS transistor and a second n-channel MOS transistor for driving said load in coaction with said first p-channel MOS transistor and said first n-channel MOS transistor:



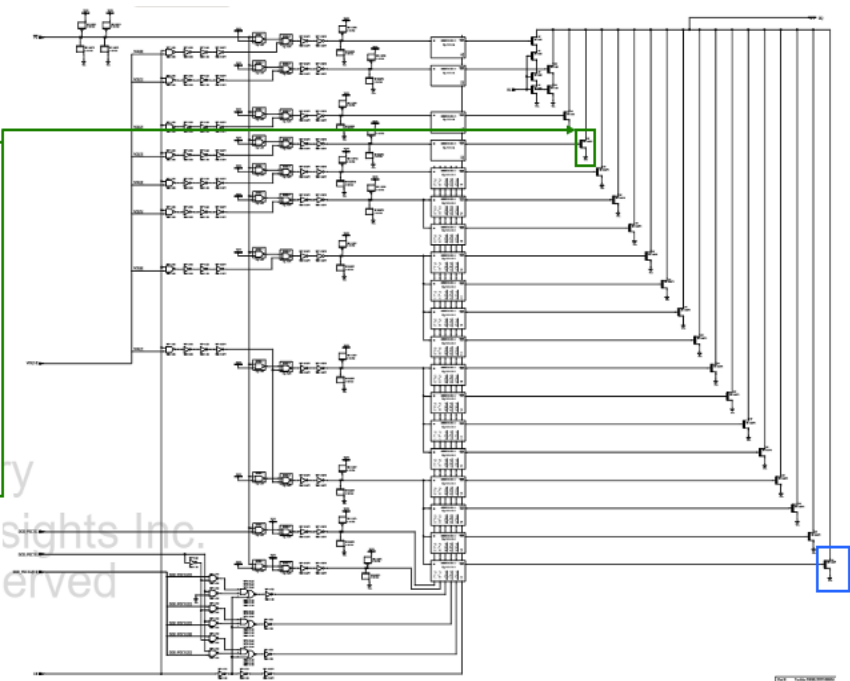
at least a pair of a second p-channel MOS transistor and a second n-channel MOS transistor for driving said load in coaction with said first p-channel MOS transistor and said first n-channel MOS transistor (C)

Source: [TechInsights Report ID#: CAR-1902-801](#) Figure 4.11.1.1 PULL UP DRIVER 1

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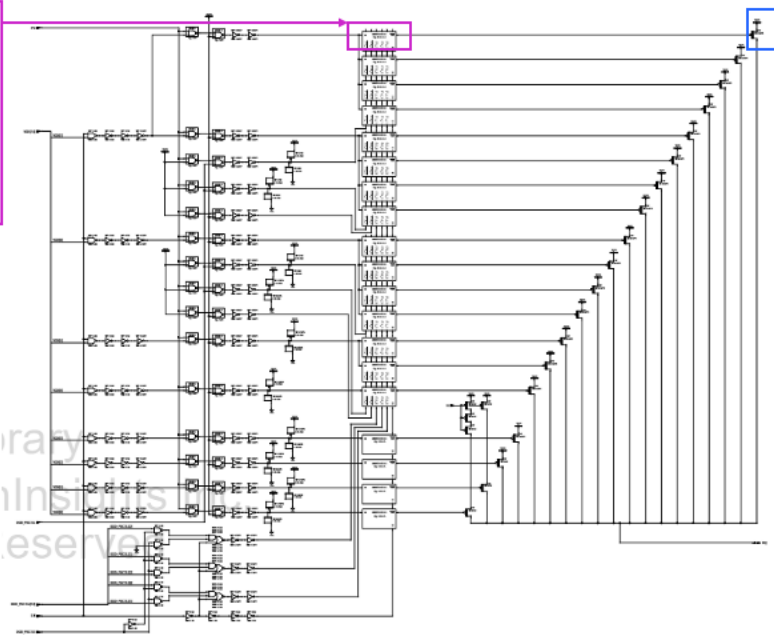
at least a pair of a second p-channel MOS transistor and a second n-channel MOS transistor for driving said load in coaction with said first p-channel MOS transistor and said first n-channel MOS transistor (C)



Source: TechInsights Report ID#: CAR-1902-801 Figure 4.1113 PULL DOWN DRIVER 1

66. The Western Digital PC SN530 NVMe SSD includes a predriver with outputs for driving only said first n-channel MOS transistor and only said first p-channel MOS transistor:

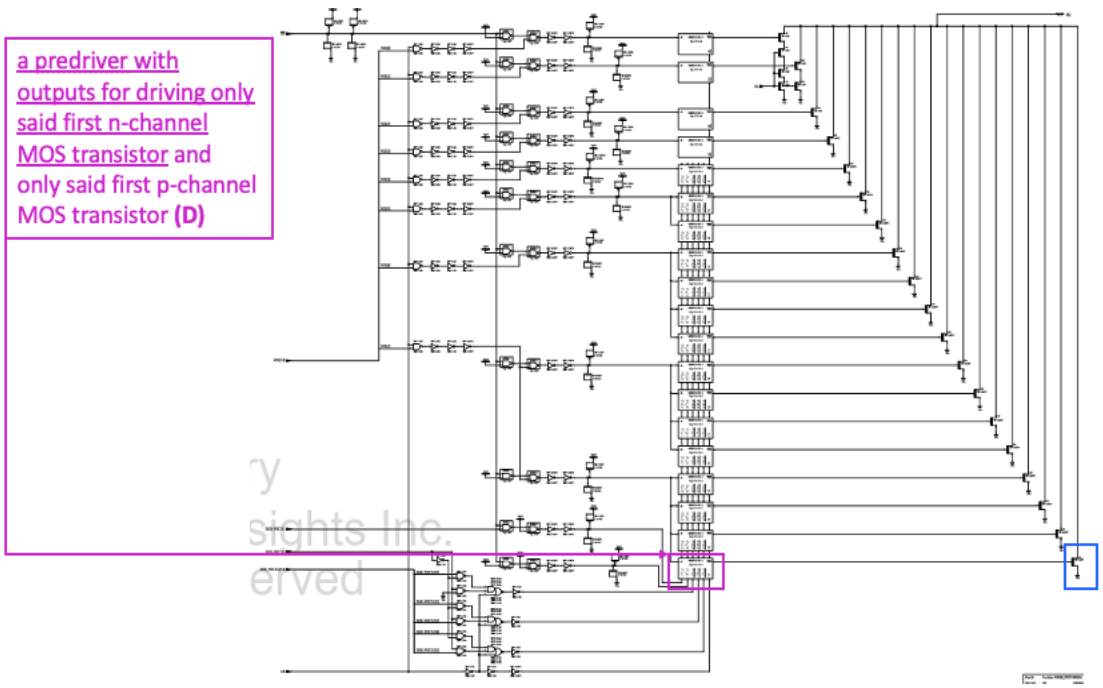
a predriver with outputs for driving only said first n-channel MOS transistor and only said first p-channel MOS transistor (D)



Source: TechInsights Report ID#: CAR-1902-801 Figure 4.1111 PULL UP DRIVER 1

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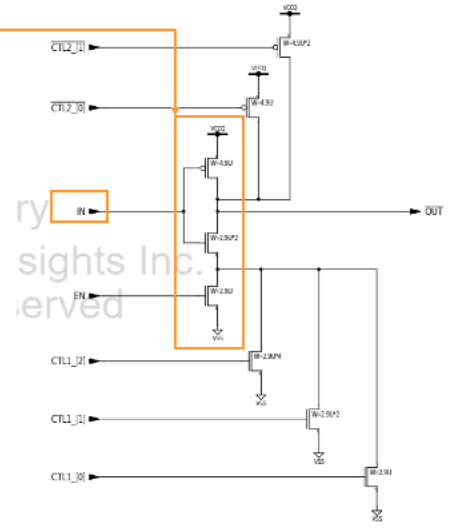
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Source: TechInsights Report ID#: CAR-1902-801 Figure 4.11.13 PULLDOWN DRIVER 1

67. The Western Digital PC SN530 NVMe SSD further comprises at least a pair of a third p-channel MOS transistor and a third n-channel MOS transistor for driving said first p-channel MOS transistor according to said data:

at least a pair of a third p-channel MOS transistor and a third n-channel MOS transistor for driving said first p-channel MOS transistor according to said data (E)

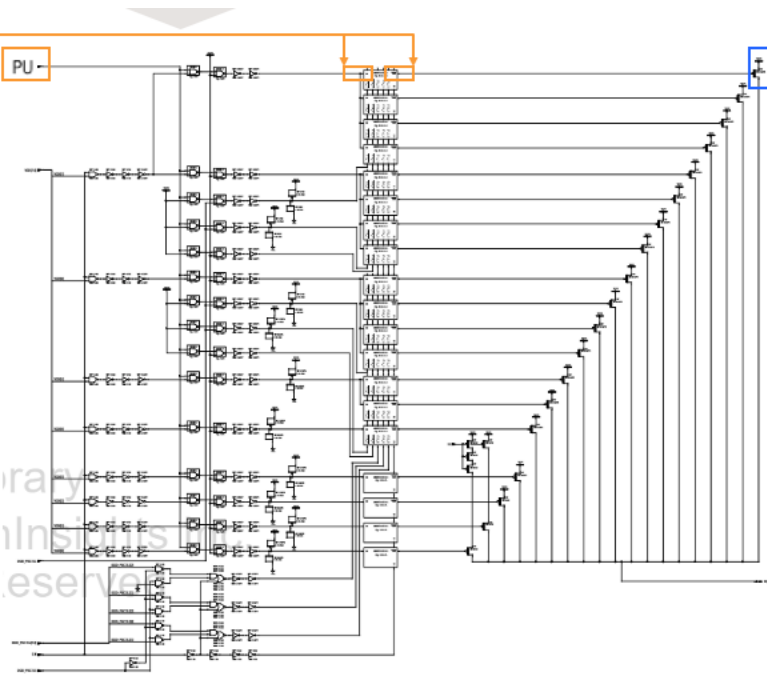


Source: TechInsights Report ID#: CAR-1902-801 Figure 4.11.1.1 DRIVER CELL 1

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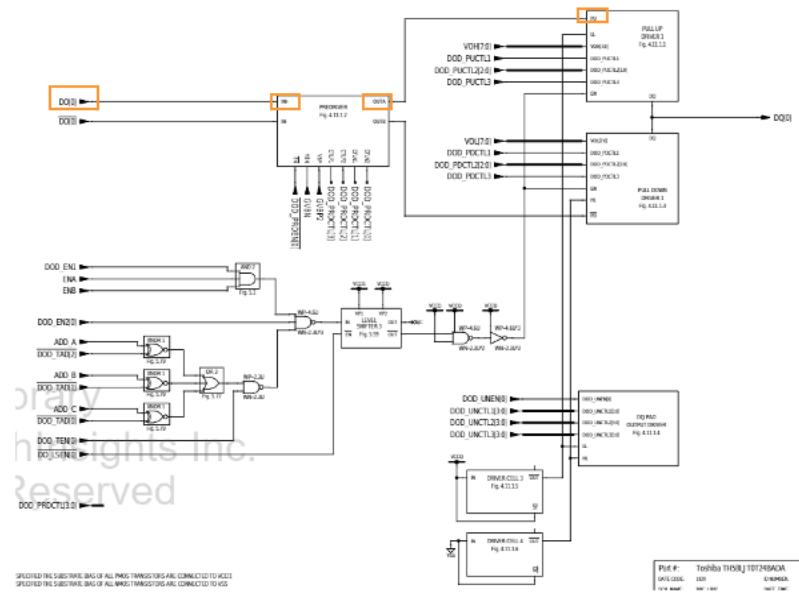
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at least a pair of a third p-channel MOS transistor and a third n-channel MOS transistor for driving said first p-channel MOS transistor according to said data (E)



Source: TechInsights Report ID#: CAR-1902-801 Figure 4.11.11 PULLUP DRIVER 1

at least a pair of a third p-channel MOS transistor and a third n-channel MOS transistor for driving said first p-channel MOS transistor according to said data (E)



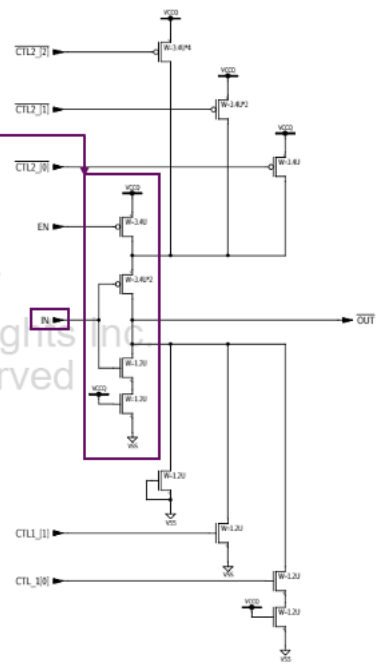
Source: TechInsights Report ID#: CAR-1902-801 Figure 4.11.11 PULLUP DRIVER 1

68. The Western Digital PC SN530 NVMe SSD further includes at least a pair of fourth p-channel MOS transistor and a fourth n-channel MOS transistor for driving said first n-channel MOS transistor according to said data:

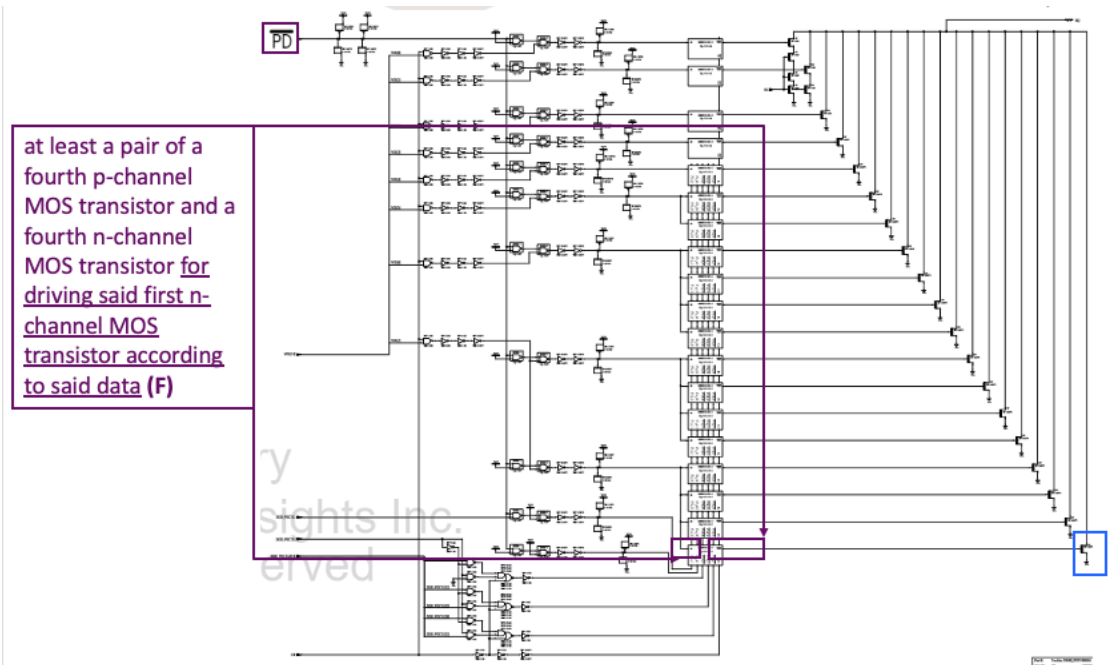
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at least a pair of a fourth p-channel MOS transistor and a fourth n-channel MOS transistor for driving said first n-channel MOS transistor according to said data (F)



Source: TechInsights Report ID#: CAR-1902-801 Figure 4.11.13.1 DRIVER CELL 2



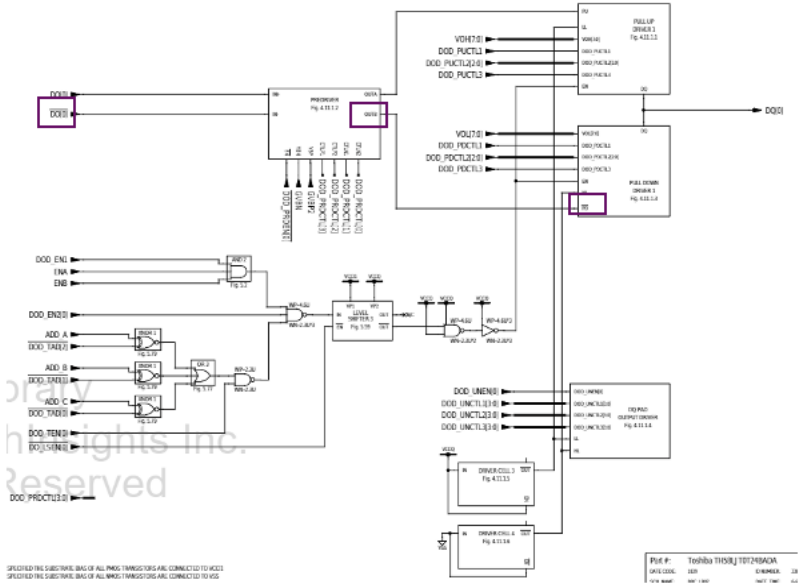
at least a pair of a fourth p-channel MOS transistor and a fourth n-channel MOS transistor for driving said first n-channel MOS transistor according to said data (F)

Source: TechInsights Report ID#: CAR-1902-801 Figure 4.11.13 PULL DOWN DRIVER 1

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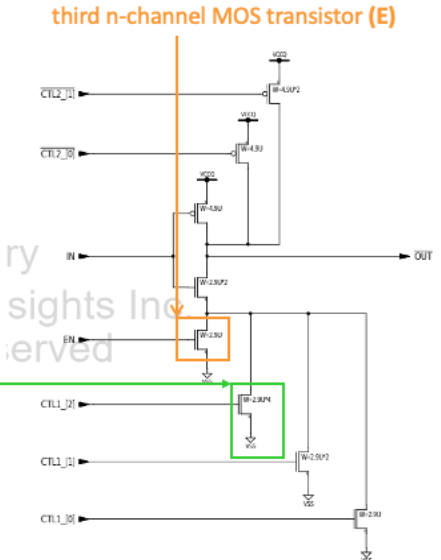
at least a pair of a fourth p-channel MOS transistor and a fourth n-channel MOS transistor for driving said first n-channel MOS transistor according to said data (F)



Source: TechInsights Report ID#: CAR-1902-801 Figure 4.11.1.1 FULL UP DRIVER 1

69. The Western Digital PC SN530 NVMe SSD further includes at least one fifth n-channel MOS transistor for driving said first p-channel MOS transistor in coaction with said third n-channel MOS transistor:

at least one fifth n-channel MOS transistor for driving said first p-channel MOS transistor in coaction with said third n-channel MOS transistor (G)

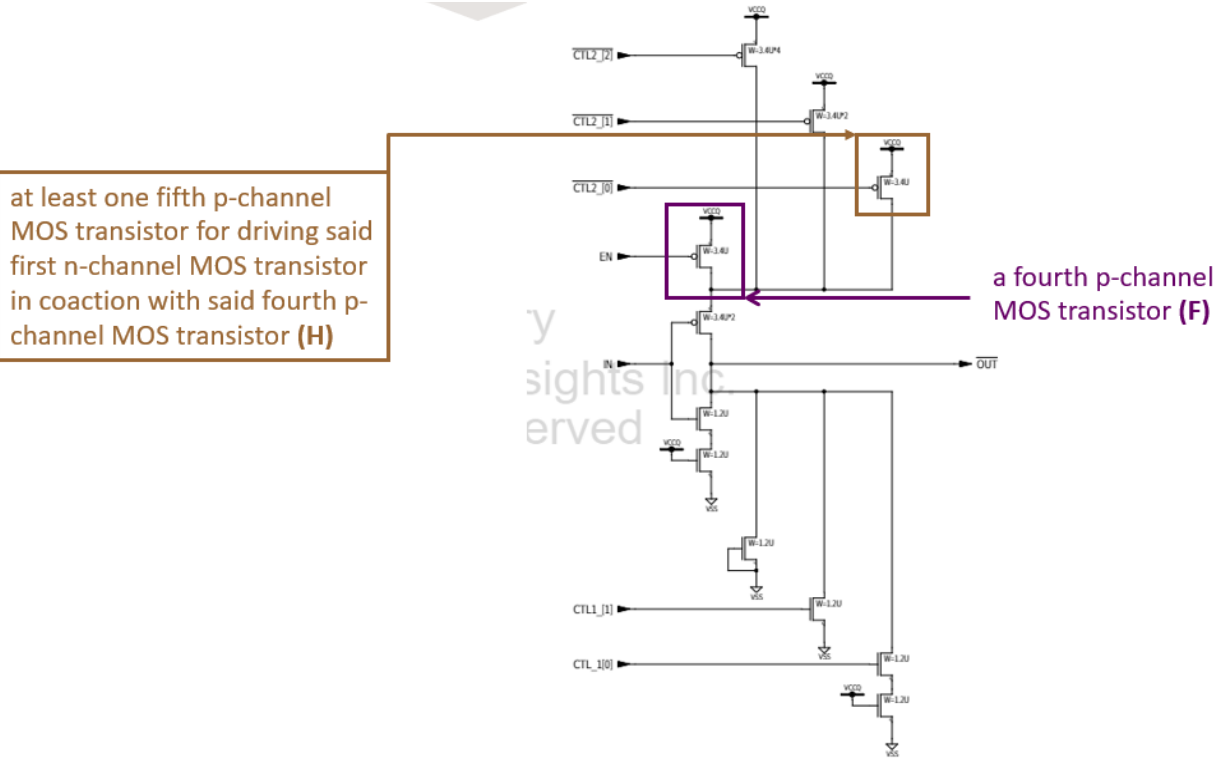


Source: TechInsights Report ID#: CAR-1902-801 Figure 4.11.1.1.1 DRIVER CELL 1

70. The Western Digital PC SN530 NVMe SSD further includes at least one fifth p-channel MOS transistor in coaction with said fourth p-channel MOS transistor:

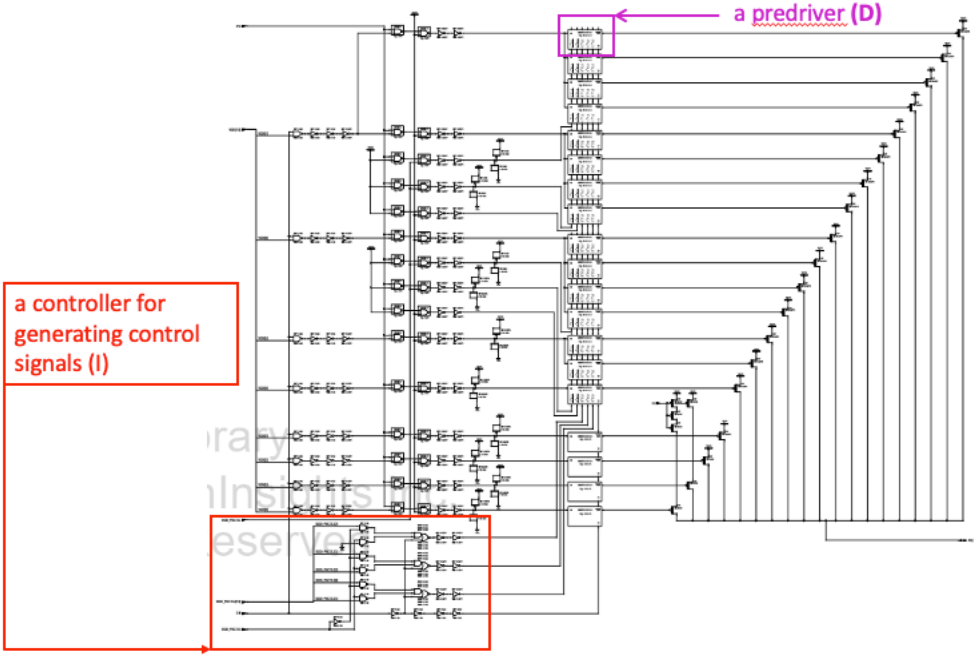
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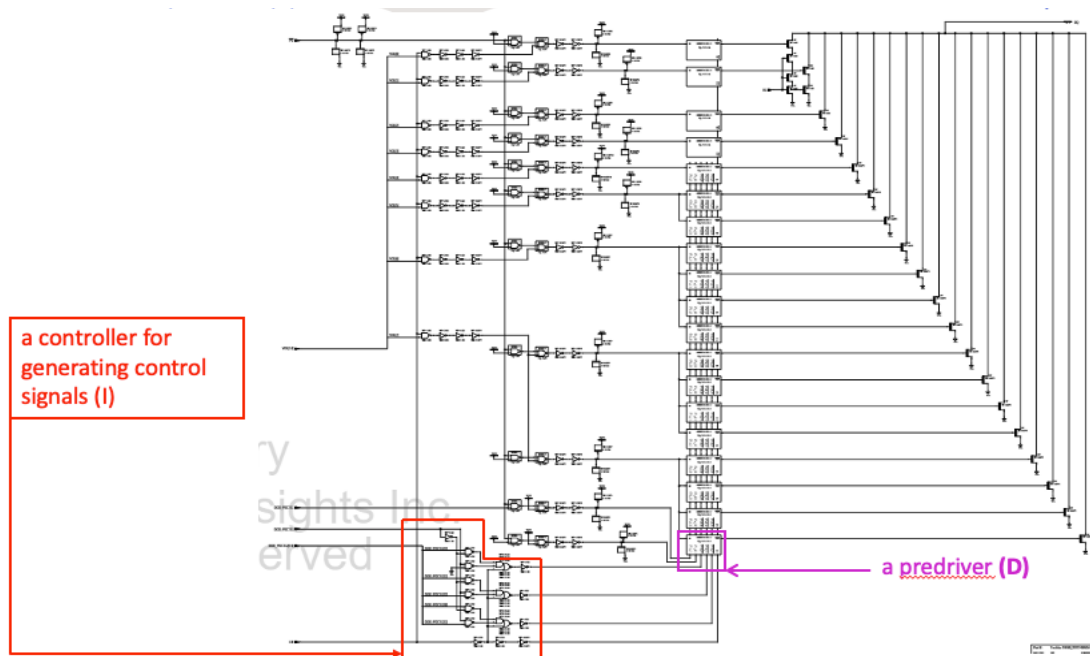
Source: TechInsights Report ID#: CAR-1902-801 Figure 4.11.1.3.1 DRIVER CELL 2

71. The Western Digital PC SN530 NVMe SSD further includes a controller for generating control signals:



Source: TechInsights Report ID#: CAR-1902-801 Figure 4.11.1.1 PULL UP DRIVER 1

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Source: TechInsights Report ID#: CAR-1902-801 Figure 4.111.3 PULL DOWN DRIVER 1

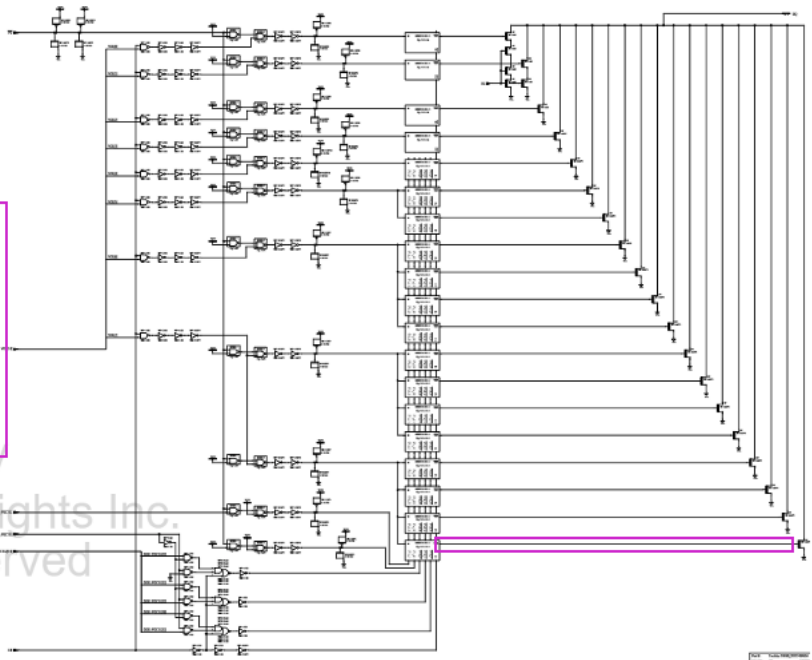
72. The Western Digital PC SN530 NVMe SSD further includes a controller for generating control signals to control said fifth n-channel MOS transistor into and out of operation in coaction with said second p-channel MOS transistor:

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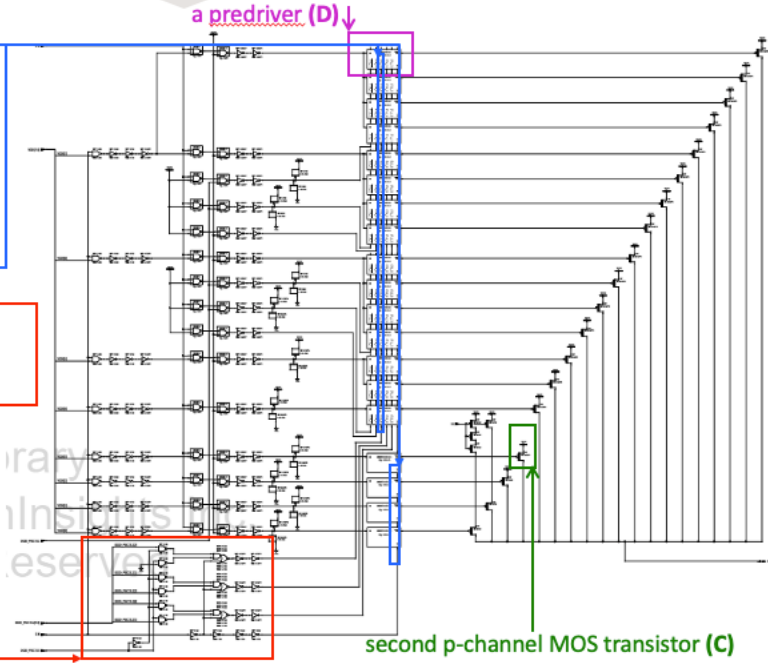
the output of the predriver is directly connected only to said first p-channel MOS transistor and said first n-channel MOS transistor of said main driver (L)



Source: TechInsights Report ID#: CAR-1902-801 Figure 4.111.3 PULL DOWN DRIVER 1

control said fifth n-channel MOS transistor into and out of operation in coaction with said second p-channel MOS transistor (J)

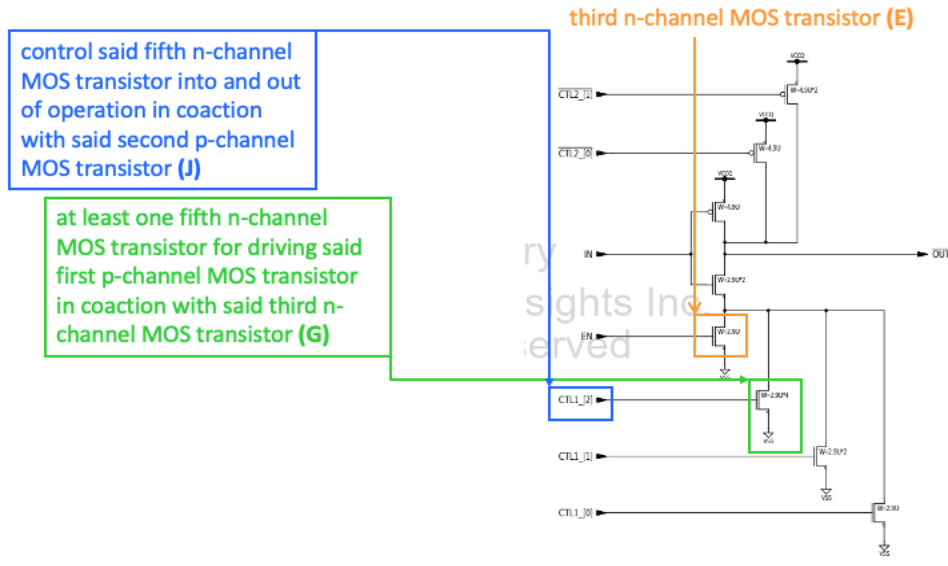
a controller for generating control signals (I)



Source: TechInsights Report ID#: CAR-1902-801 Figure 4.111.1 PULL UP DRIVER 1

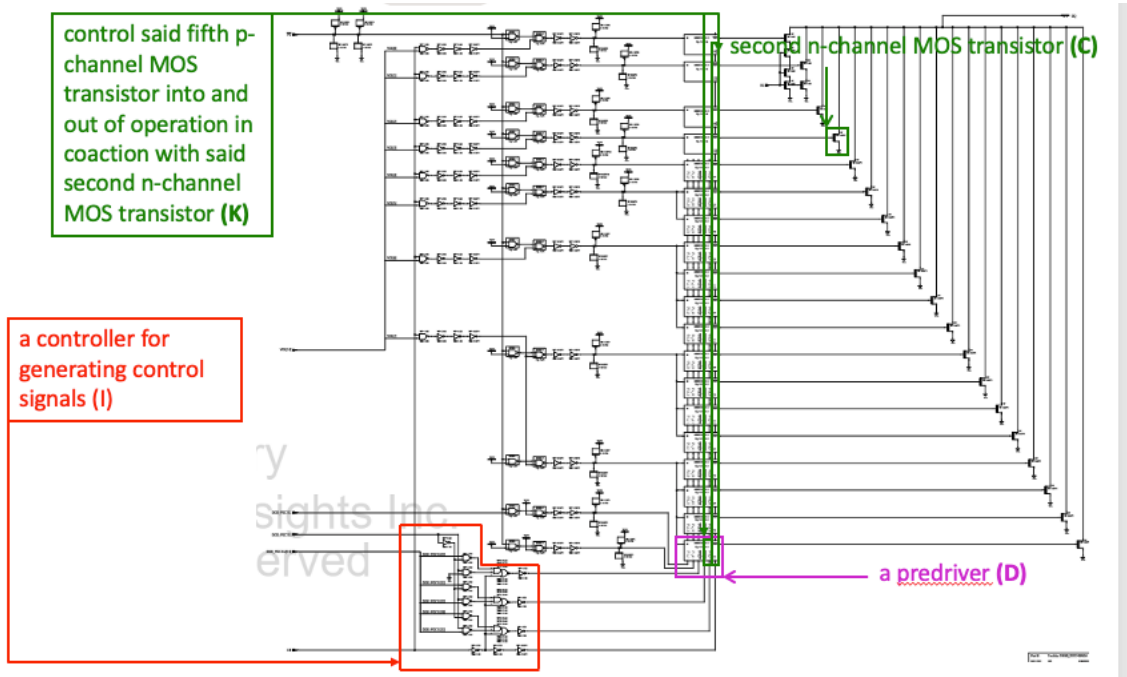
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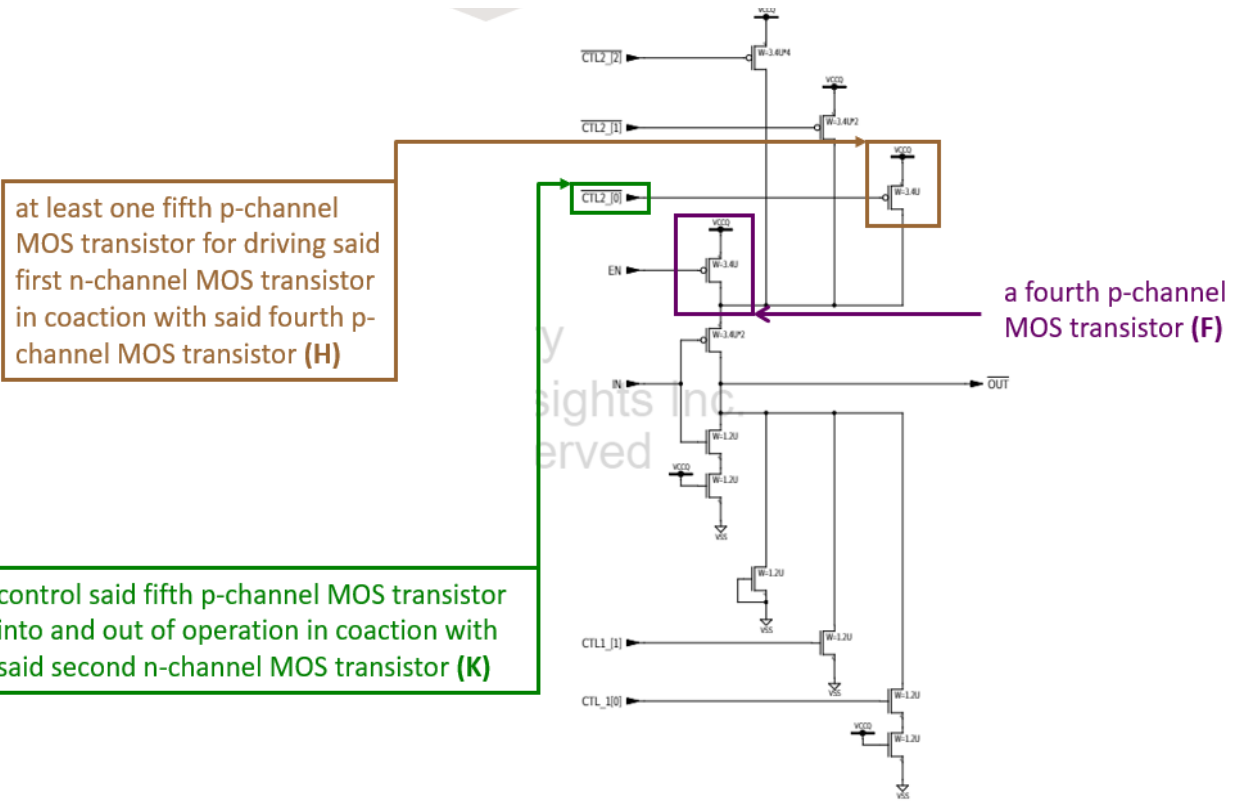
Source: TechInsights Report ID#: CAR-1902-801 Figure 4.11.111 DRIVER CELL 1

73. The Western Digital PC SN530 NVMe SSD further includes a controller for generating control signals to control said fifth p-channel MOS transistor into and out of operation in coaction with said second n-channel MOS-transistor:



Source: TechInsights Report ID#: CAR-1902-801 Figure 4.11.13 PULL DOWN DRIVER 1

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Source: [TechInsights Report ID#: CAR-1902-801](#) Figure 4.11.1.3.1 DRIVER CELL 2

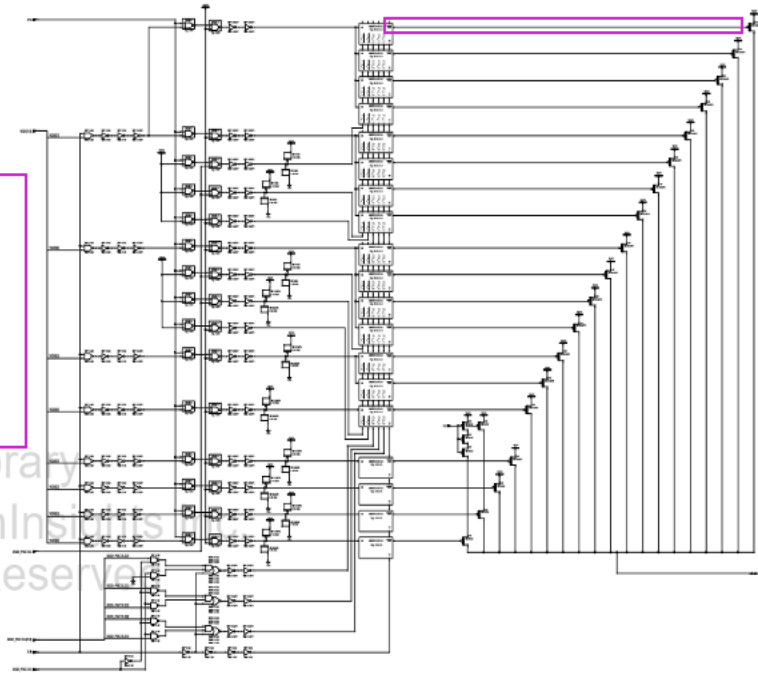
74. The Western Digital PC SN530 NVMe SSD further includes a controller wherein the output of the predriver is directly connected only to said first p-channel MOS transistor and said first n-channel MOS transistor of said main driver:

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the output of the predriver is directly connected only to said first p-channel MOS transistor and said first n-channel MOS transistor of said main driver (L)



Source: TechInsights Report ID#: CAR-1902-801 Figure 4.11.11 PULLUP DRIVER 1

75. Defendant actively, knowingly, and intentionally induces, and continues to actively, knowingly, and intentionally induce, infringement of the '539 patent under 35 U.S.C. §271(b) by its customers and end users.

76. Defendant has had knowledge of and notice of the '539 patent and its infringement since at least the filing of this complaint.

77. Defendant has induced its customers and end users to infringe the '539 patent by using their products as shown above. For example, Defendant encourages its customers and end users to perform infringing methods by the very nature of the products.

78. Defendant specifically intends its customers and/or end users infringe the '539 patent, either literally or by the doctrine of equivalents, because Defendant has known about the '539 patent and how Defendant's products infringe the claims of the '539 patent but Defendant has not taken steps to prevent infringement by its customers and/or end users. Accordingly, Defendant has acted with the specific intent to induce infringement of the '539 patent.

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1 79. Accordingly, Defendant has induced, and continues to induce, infringement
2 of the ‘539 patent under 35 U.S.C. §271(b).

3 80. As discussed above, Defendant has had knowledge of and notice of the ‘539
4 patent and its infringement since at least the filing of this Complaint. Despite this
5 knowledge, Defendant continues to commit tortious conduct by way of patent
6 infringement.

7 81. Defendant has been and continues to infringe one or more of the claims of the
8 ‘539 patent through the aforesaid acts.

9 82. Defendant has committed these acts of infringement without license or
10 authorization.

11 83. Plaintiff is entitled to recover damages adequate to compensate for the
12 infringement.

13 84. Defendant has and continues to infringe the ‘539 patent, acting with an
14 objectively high likelihood that its actions constitute infringement of the ‘539 patent.
15 Defendant has known or should have known of this risk at least as early as the filing
16 of this Complaint. Accordingly, Defendant’s infringement of the ‘539 patent has
17 been and continues to be willful.

18 **COUNT III**

19 **(DEFENDANT’S INFRINGEMENT OF THE ‘233 PATENT)**

20 85. Paragraphs 1 through 84 are incorporated by reference as if fully restated
21 herein.

22 86. United States Patent No. 9,379,233, entitled “Semiconductor Device,” issued
23 on June 28, 2016 from United States Patent Application No. 14/872,844 filed
24 October 1, 2015.

25 87. Longitude is the owner of the ’233 patent with full rights to pursue recovery
26 of royalties for damages for infringement, including full rights to recover past and
27 future damages.

28 88. Each claim of the ’233 patent is valid, enforceable, and patent-eligible.

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1 89. Longitude and its predecessors in interest have satisfied the requirements of
 2 35 U.S.C. § 287(a) with respect to the '233 patent, and Longitude is entitled to
 3 damages for Defendant's past infringement. Among other things, Longitude
 4 provided actual notice of infringement to the component supplier, Western Digital.

5 90. Defendant has directly infringed (literally and equivalently) and induced
 6 others to infringe the '233 patent by making, using, selling, offering for sale, or
 7 importing products that infringe the claims of the '233 patent and by inducing others
 8 to infringe the claims of the '233 patent without a license or permission from
 9 Longitude. These products include without limitation Western Digital PC SN530
 10 NVMe SSDs, Western Digital SSDs, and/or Western Digital NAND memory chips
 11 and all versions and variations of them offered for sale since the issuance of the '233
 12 patent.

13 91. A non-limiting example of Defendant's infringement is its sales and offers for
 14 sale of Western Digital PC SN530 NVMe SSDs as demonstrated below.

The screenshot displays an Amazon product listing for a Western Digital 1TB SSD. The product title is "WD 1TB SSD PC SN530 SDBPNPZ 1T00 M.2 2280 NVMe PCIe Gen3 x4 Solid State Drive". The price is listed as \$159.00. The page includes a navigation bar at the top with categories like "Computers", "Laptops", "Desktops", etc. Below the product title, there is a "Buy new" section showing the price and a "Buy Now" button. A "Payment plans" section offers a "One-time payment" of \$159.00 and an "Affirm" financing option for \$15.50/month or less (12 months) at 10-30% APR. The Affirm section includes a "Learn more" link and a list of terms: "Checking your eligibility will not affect your credit", "Financing option applies to final order total amount", and "No late fees".

The screenshot displays an Amazon product listing for a Western Digital PC SN530 NVMe SSD. The product is shown in a blue and white casing. The title reads: "Western Digital 256GB SSD M.2 2230 30mm PC SN530 NVMe PCIe 3.0 Gen3 x4 SDBPTPZ-256G Solid State Drive for Surface Pro Steam Deck Dell HP Lenovo Ultrabook Tablet". The price is listed as \$44.99. The product specifications include: Digital Storage Capacity: 256 GB; Hard Disk Interface: NVMe; Connectivity: USB; Technology: NVMe; Brand: Western Digital; Hard Disk Form Factor: 2230 Inches. The page also features a "Buy Now" button and a "Secure transaction" badge.

92. Western Digital PC SN530 NVMe SSDs infringe at least claim 1 of the '233 patent.

93. The Western Digital PC SN530 NVMe SSD includes a SanDisk memory chip as shown below:

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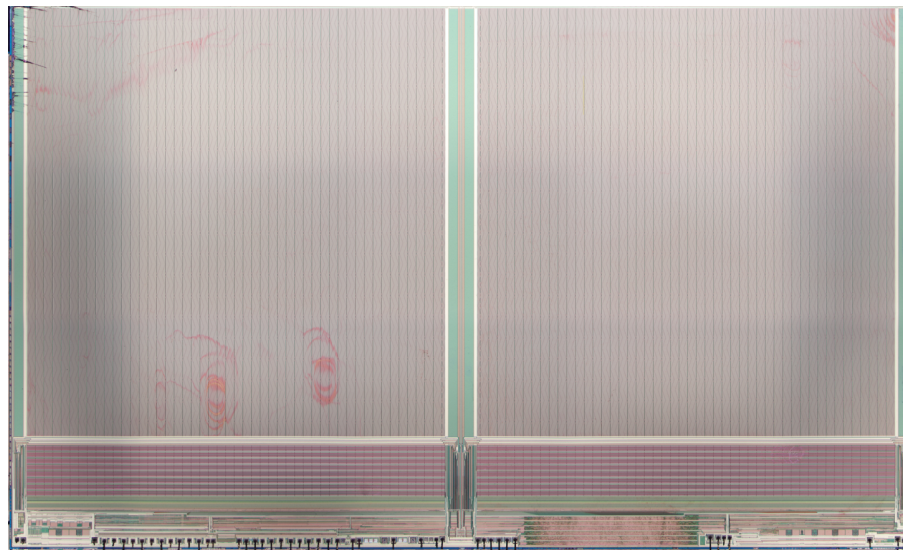
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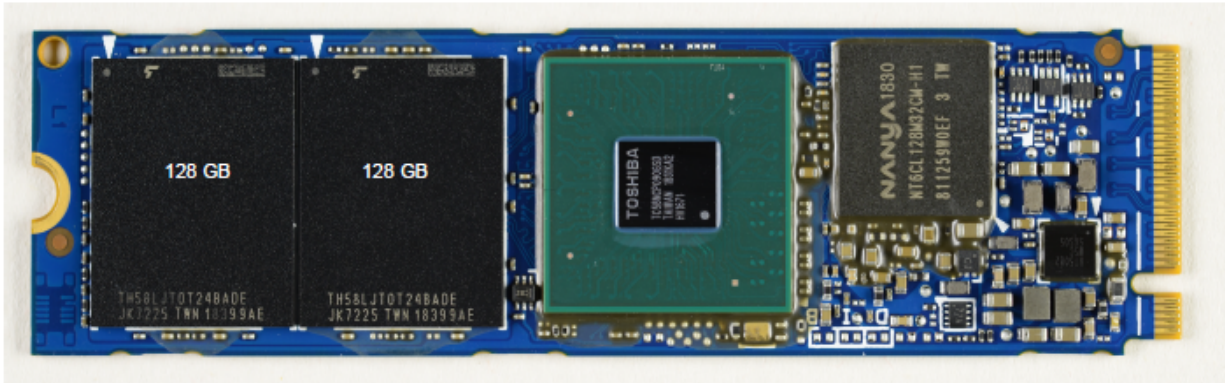
94. The below image shows the pin layout and corners of the SanDisk memory chip used in the Western Digital PC SN530 NVMe SSD:

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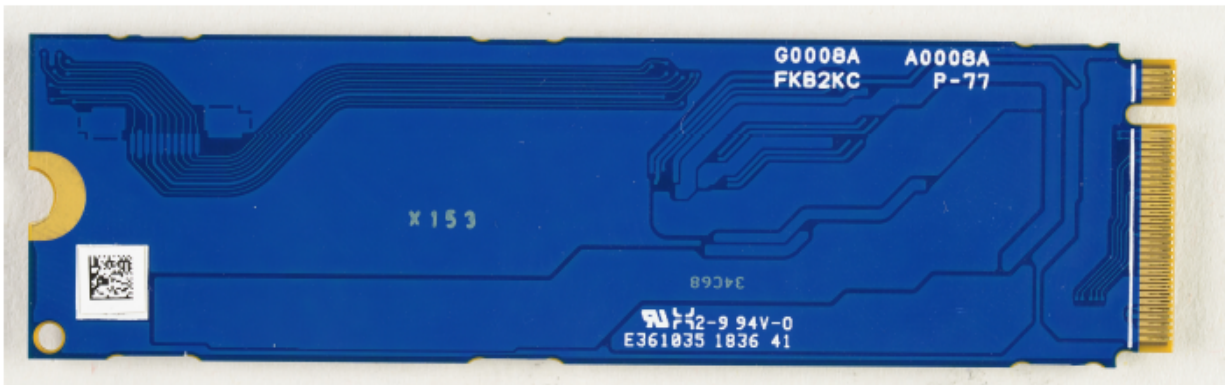
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95. On information and belief, the Western Digital PC SN530 NVMe SSD is substantially similar to the Toshiba KXG60ZNV256G SSD Package (“Toshiba SSD”) for all matters relevant to this complaint. The Toshiba SSD is depicted below:



Toshiba KXG60ZNV256G SSD Package – Top

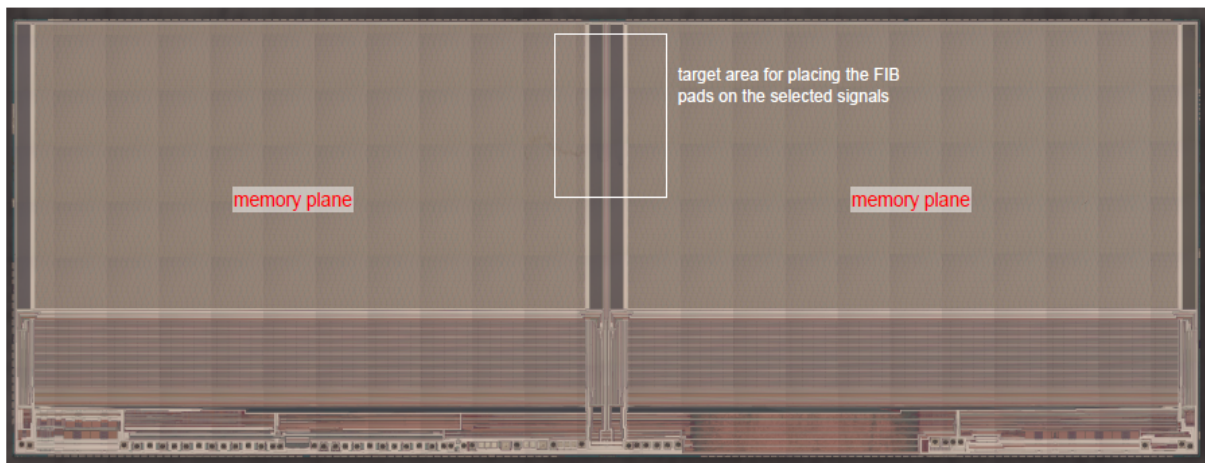
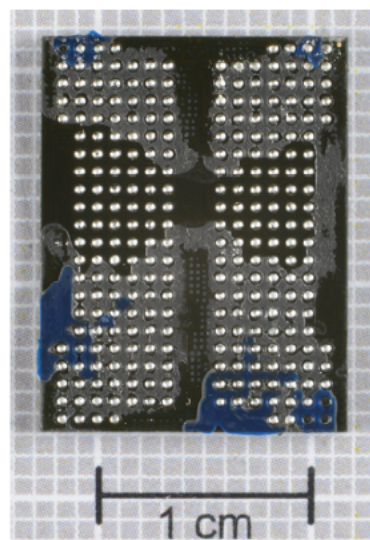
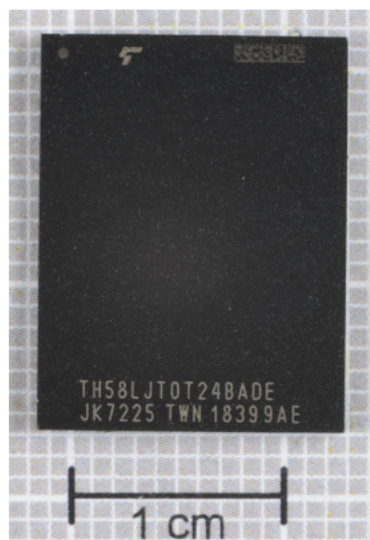


Toshiba KXG60ZNV256G SSD Package – Bottom

96. The memory chip of the Toshiba SSD, the Toshiba TH58LJT0T24BADE Package, is depicted in the images below:

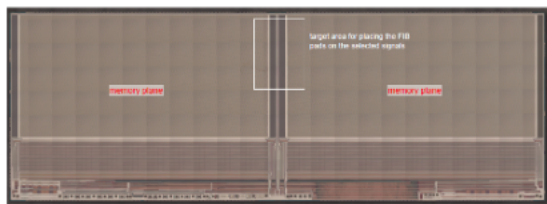
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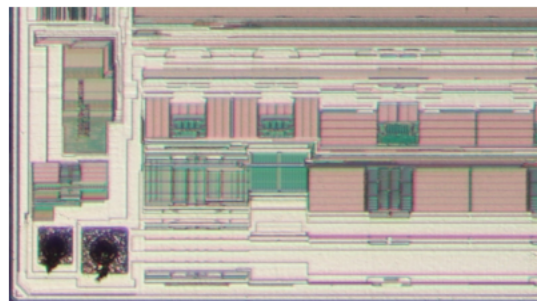
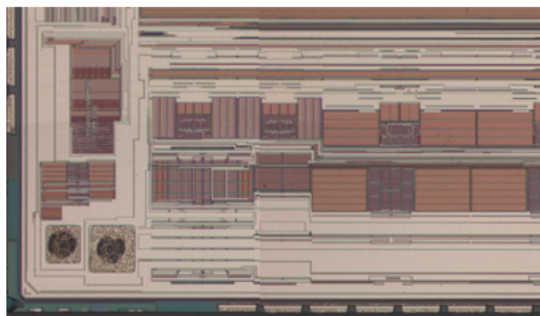
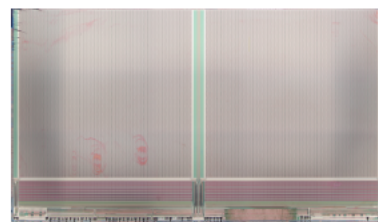


Toshiba 256 Gb 96L 3D NAND Flash Memory Die Photograph

97. A side-by-side comparison of the SanDisk memory chip used in the Western Digital PC SN530 NVMe SSD and the Toshiba TH58LJT0T24BADE Package used in the Toshiba SSD is depicted below:



Toshiba 256 Gb 96L 3D NAND Flash Memory Die Photograph



11 98. Based at least on the above, Longitude is informed and believes that the
 12 corners of the dies of the SanDisk memory chip used in the Western Digital PC
 13 SN530 NVMe SSD and the Toshiba TH58LJT0T24BADE Package are substantially
 14 the same. Accordingly, Longitude is informed and believes that the various I/Os and
 15 peripheral circuits are the same between the Toshiba and Western Digital/SanDisk
 16 chips. Furthermore, Longitude is informed and believes that Toshiba and Western
 17 Digital shared the designs for 96 layer chips. As shown above, the SanDisk memory
 18 chip is substantially the same as the Western Digital PC SN530 NVMe SSD and the
 19 Toshiba TH58LJT0T24BADE Package. For this reason, Longitude is informed and
 20 believes that technical documents and other analysis concerning the Toshiba
 21 TH58LJT0T24BADE Package also describe the layout and functionality of the
 22 Western Digital PC SN530 NVMe SSD and the SanDisk memory chip therein.

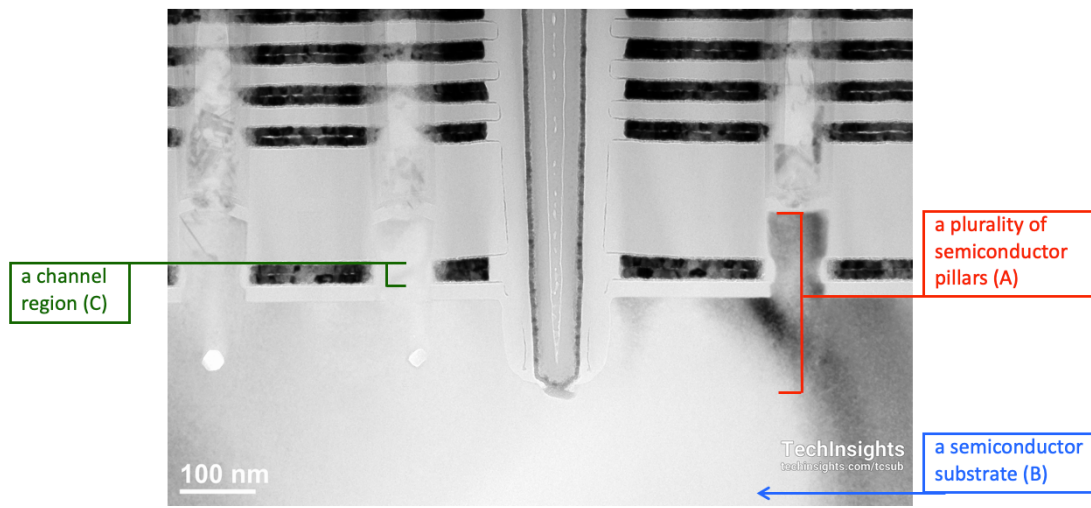
23 99. The SanDisk memory chip used in the Western Digital PC SN530 NVMe SSD
 24 is a semiconductor device comprising a plurality of semiconductor pillars provided
 25 to stand from a semiconductor substrate, each of the semiconductor pillars
 26 comprising a channel region:

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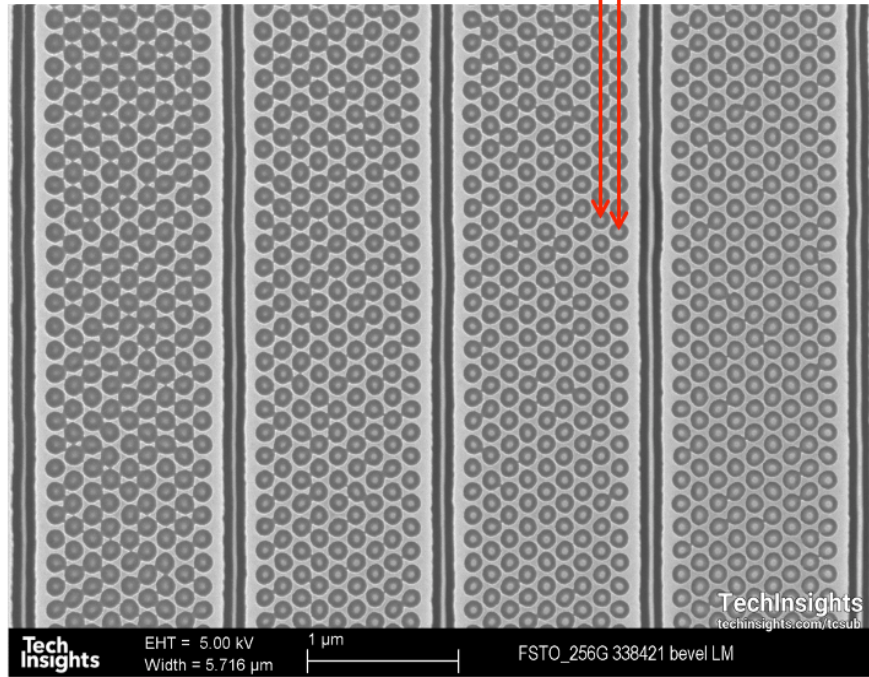
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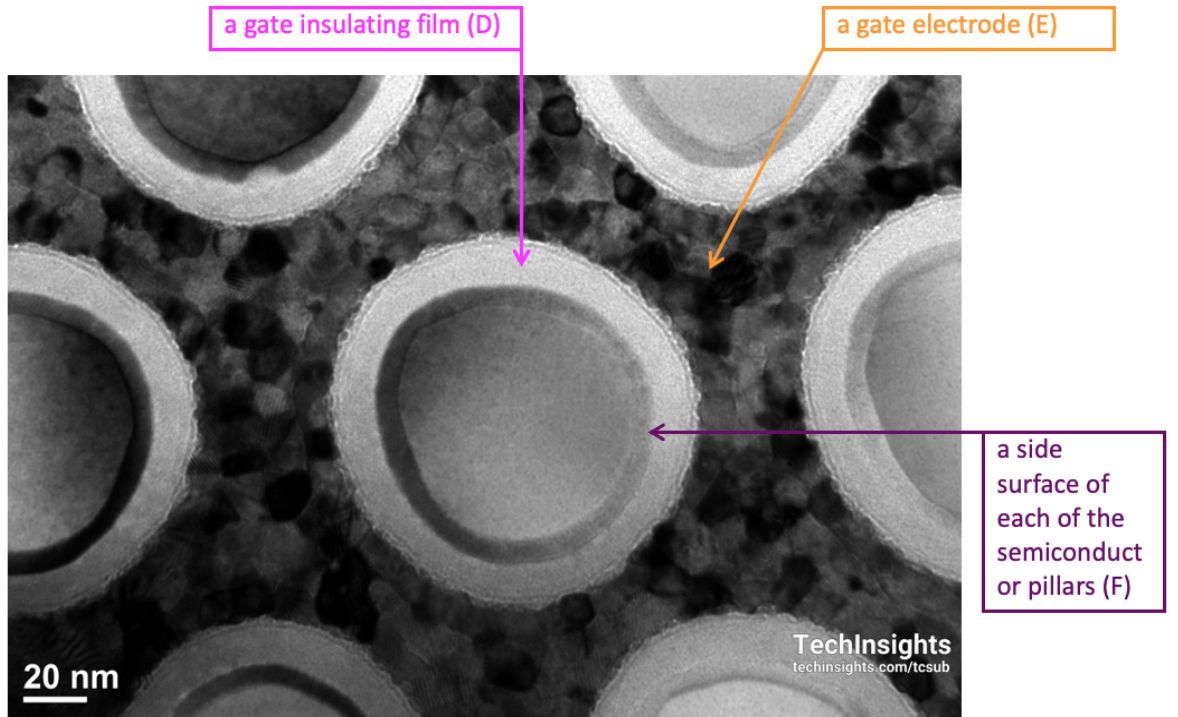
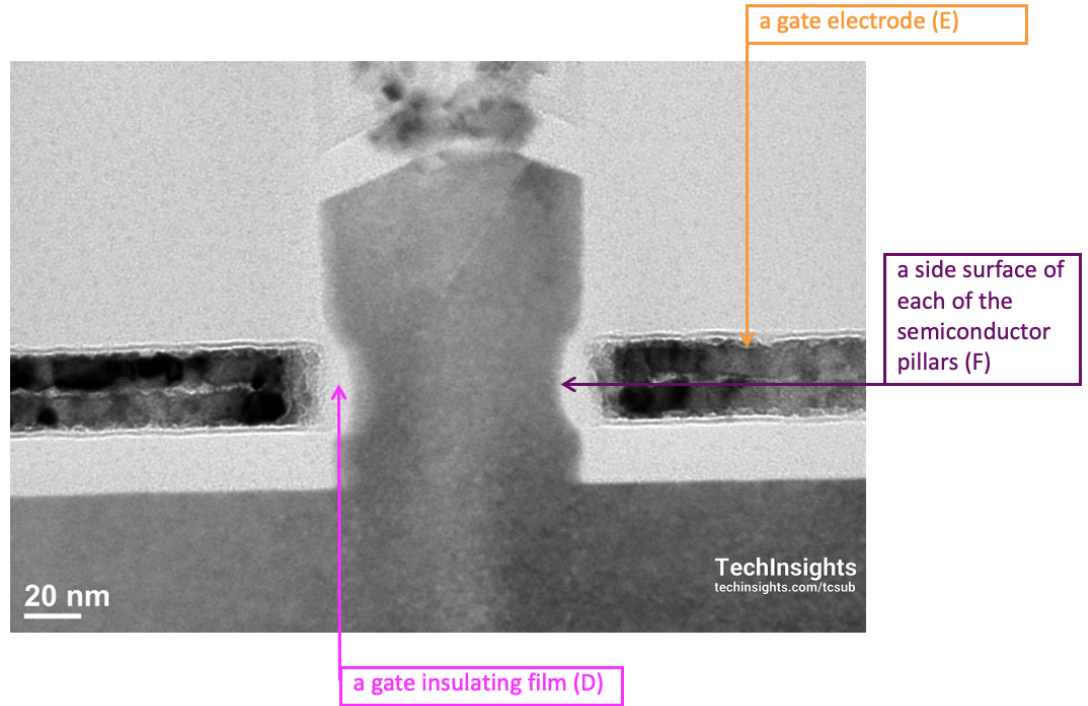
a plurality of semiconductor pillars (A)



100. The SanDisk memory chip used in the Western Digital PC SN530 NVMe SSD is a semiconductor device comprising a gate insulating film and a gate electrode provided over a side surface of each of the semiconductor pillars:

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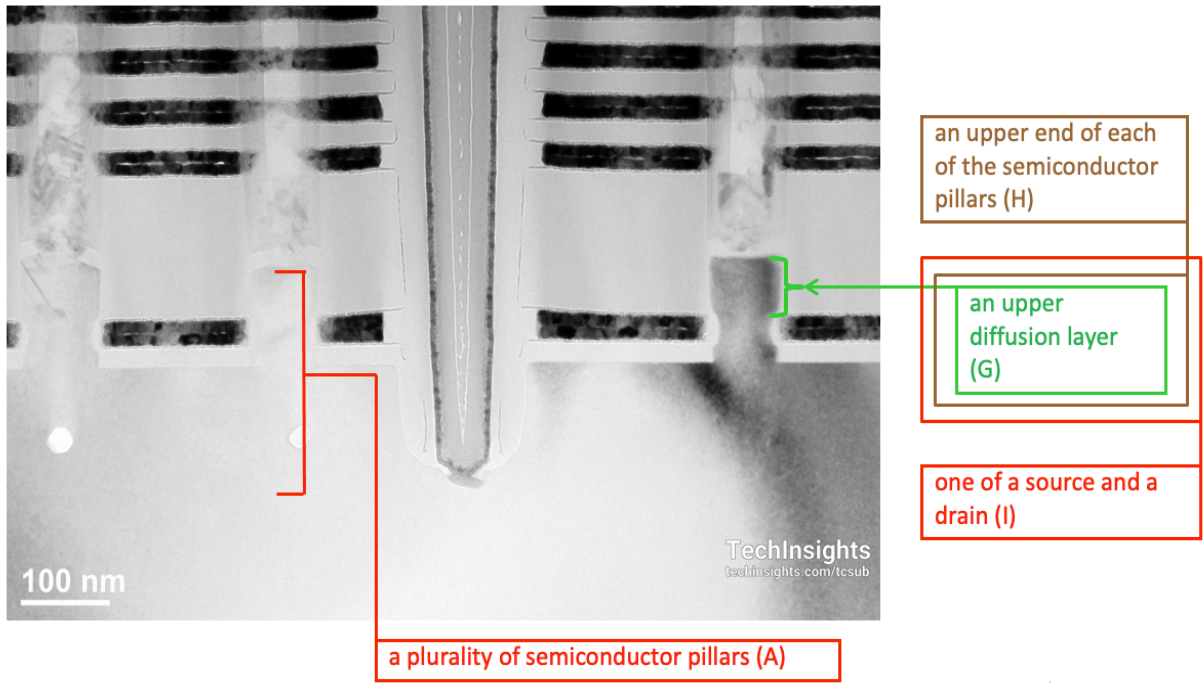
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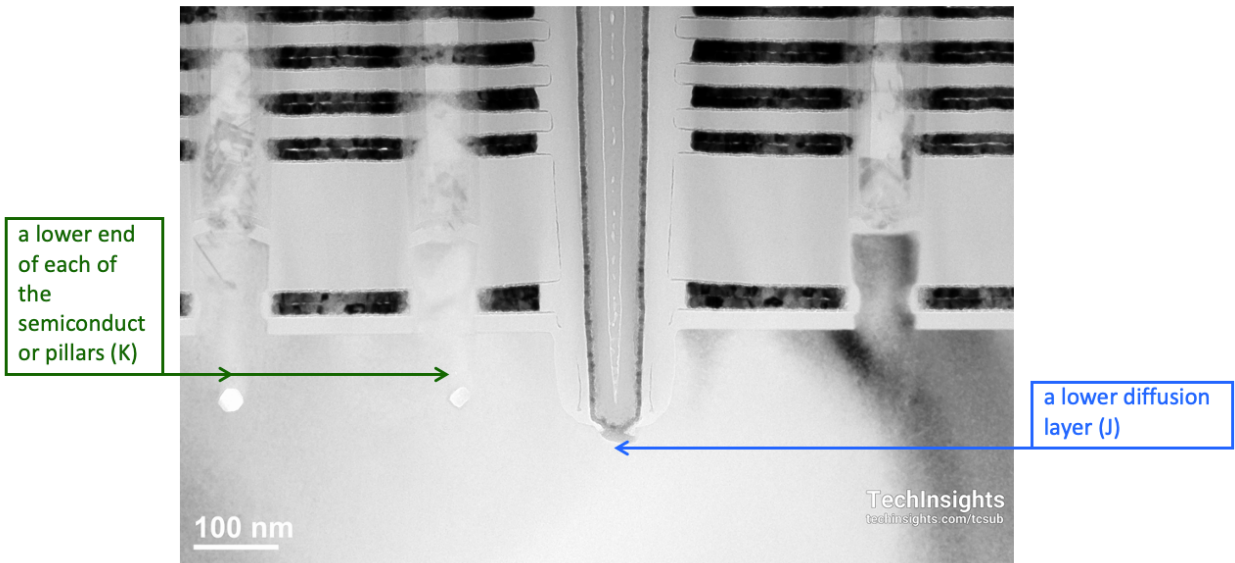
101. The SanDisk memory chip used in the Western Digital PC SN530 NVMe SSD is a semiconductor device comprising an upper diffusion layer provided at an upper end of each of the semiconductor pillars to serve as one of a source and a drain:

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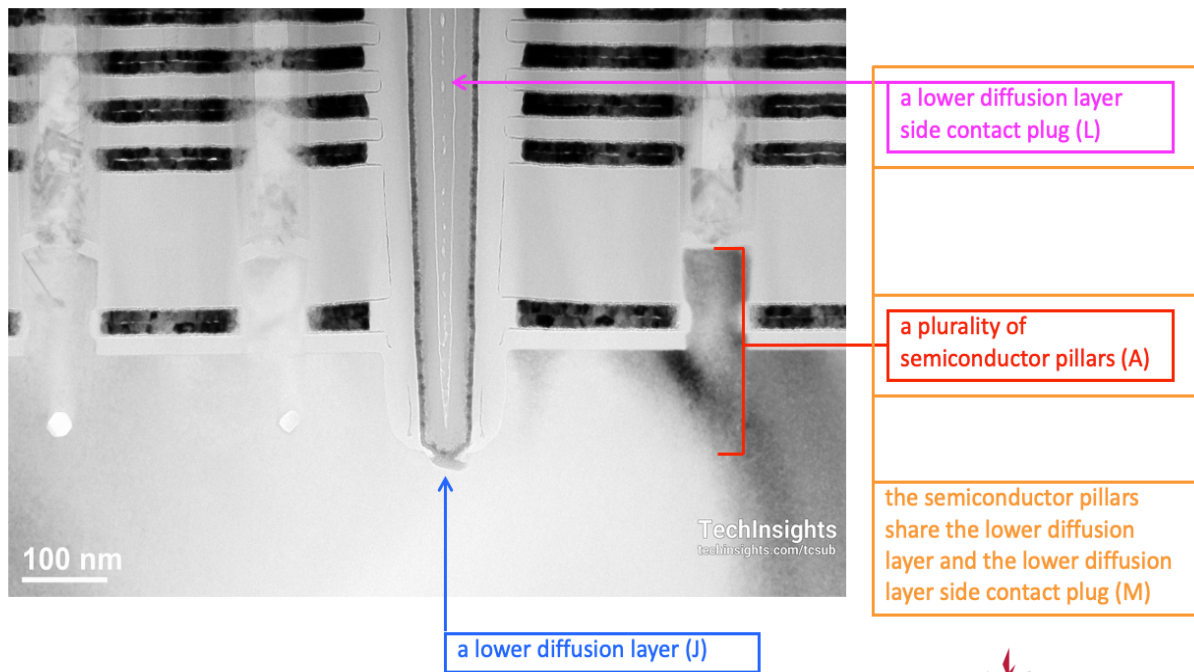
102. The SanDisk memory chip used in the Western Digital PC SN530 NVMe SSD is a semiconductor device comprising a lower diffusion layer operatively coupled to a lower end of each of the semiconductor pillars to serve as the other of the source and the drain:



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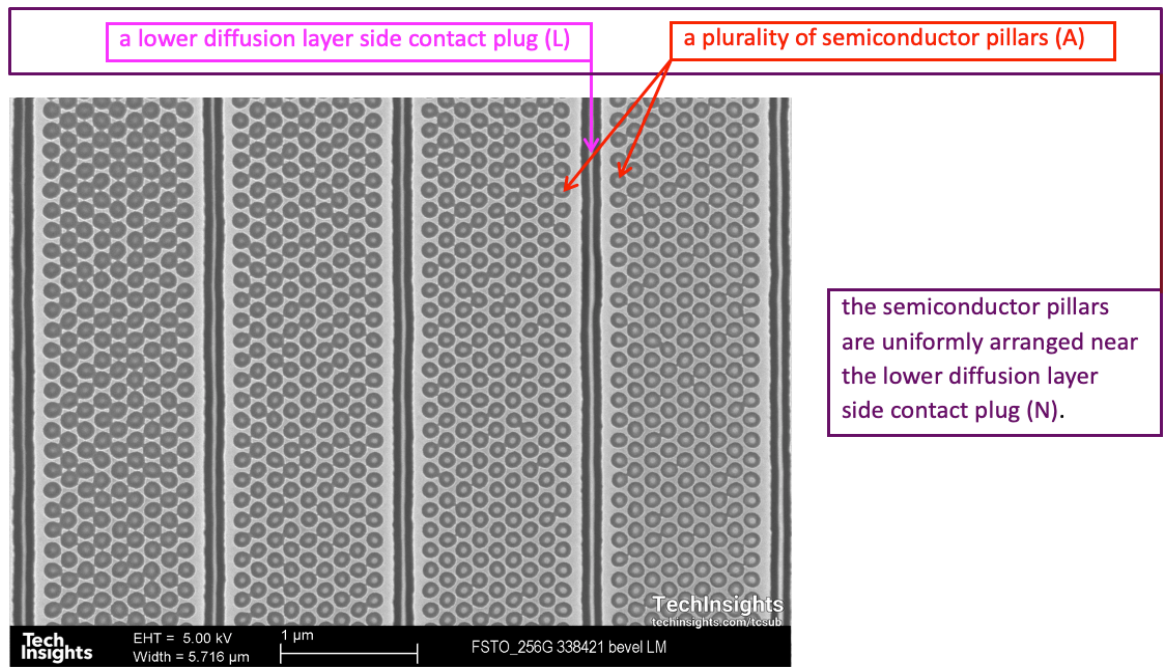
103. The SanDisk memory chip used in the Western Digital PC SN530 NVMe SSD is a semiconductor device comprising a lower diffusion layer side contact plug connected to the lower diffusion layer, wherein the semiconductor pillars share the lower diffusion layer and the lower diffusion layer side contact plug:



104. The SanDisk memory chip used in the Western Digital PC SN530 NVMe SSD is a semiconductor device wherein the semiconductor pillars are uniformly arranged near the lower diffusion side contact:

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105. Defendant actively, knowingly, and intentionally induces, and continues to actively, knowingly, and intentionally induce, infringement of the '233 patent under 35 U.S.C. §271(b) by its customers and end users.

106. Defendant has had knowledge of and notice of the '233 patent and its infringement since at least the filing of this complaint.

107. Defendant has induced its customers and end users to infringe the '233 patent by using their products as shown above. For example, Defendant encourages its customers and end users to perform infringing methods by the very nature of the products.

108. Defendant specifically intends its customers and/or end users infringe the '233 patent, either literally or by the doctrine of equivalents, because Defendant has known about the '233 patent and how Defendant's products infringe the claims of the '233 patent but Defendant has not taken steps to prevent infringement by its customers and/or end users. Accordingly, Defendant has acted with the specific intent to induce infringement of the '233 patent.

109. Accordingly, Defendant has induced, and continues to induce, infringement of the '233 patent under 35 U.S.C. §271(b).

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1 110. As discussed above, Defendant has had knowledge of and notice of the
2 '233 patent and its infringement since at the filing of this Complaint. Despite this
3 knowledge, Defendant continues to commit tortious conduct by way of patent
4 infringement.

5 111. Defendant has been and continues to infringe one or more of the claims
6 of the '233 patent through the aforesaid acts.

7 112. Defendant has committed these acts of infringement without license or
8 authorization.

9 113. Plaintiff is entitled to recover damages adequate to compensate for the
10 infringement.

11 114. Defendant has and continues to infringe the '233 patent, acting with an
12 objectively high likelihood that its actions constitute infringement of the '233 patent.
13 Defendant has known or should have known of this risk at least as early as the filing
14 of this Complaint. Accordingly, Defendant's infringement of the '233 patent has
15 been and continues to be willful.

16 **COUNT IV**

17 **(DEFENDANT'S INFRINGEMENT OF THE '701 PATENT)**

18 115. Paragraphs 1 through 114 are incorporated by reference as if fully
19 restated herein.

20 116. United States Patent No. 9,207,701, entitled "Supply Voltage
21 Generating Circuit," issued on December 8, 2015 from United States Patent
22 Application No. 14/480,768 filed on September 9, 2014.

23 117. Longitude is the owner of the '701 patent with full rights to pursue
24 recovery of royalties for damages for infringement, including full rights to recover
25 past and future damages.

26 118. Each claim of the '701 patent is valid, enforceable, and patent-eligible.

27 119. Longitude and its predecessors in interest have satisfied the
28 requirements of 35 U.S.C. § 287(a) with respect to the '701 patent, and Longitude is

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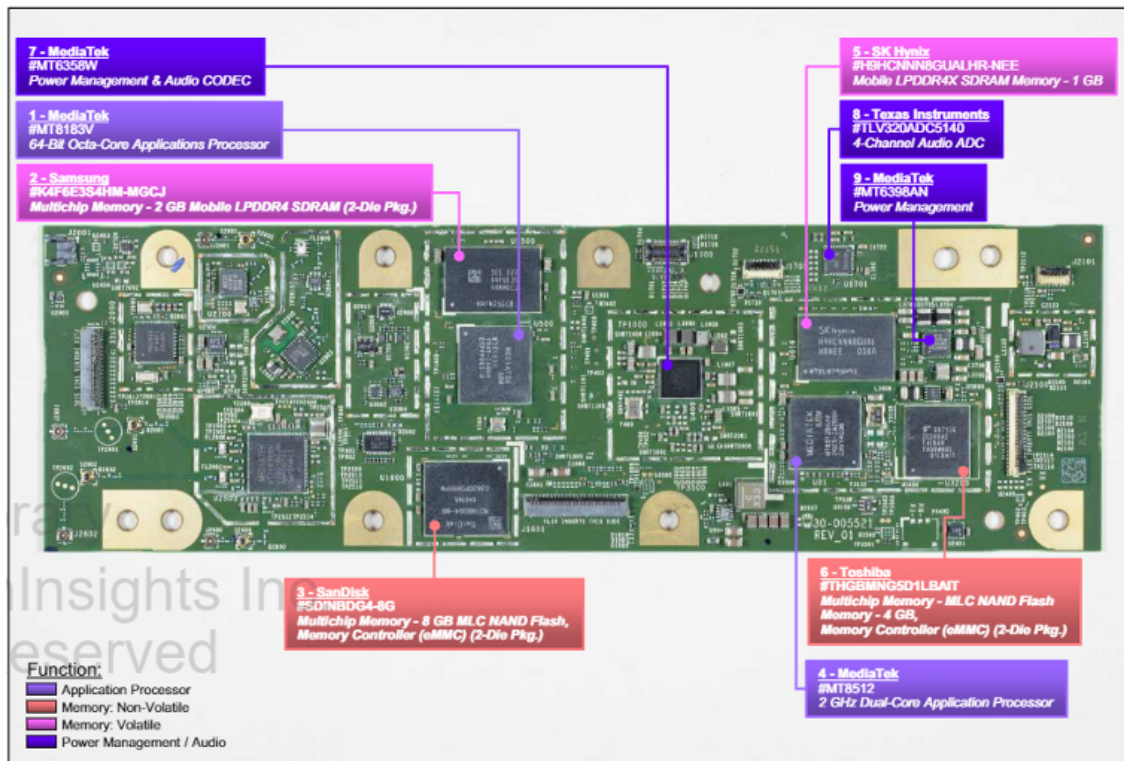
1 entitled to damages for Defendant’s past infringement. Among other things,
2 Longitude provided actual notice of infringement to the component supplier,
3 Western Digital.

4 120. Defendant has directly infringed (literally and equivalently) and
5 induced others to infringe the ’701 patent by making, using, selling, offering for sale,
6 or importing products that infringe the claims of the ’701 patent and by inducing
7 others to infringe the claims of the ’701 patent without a license or permission from
8 Longitude. These products include without limitation the Amazon Echo Show 10
9 (e.g., model t4E4AT), Fire TV Stick Lite (e.g., model S3L46N), all other Amazon
10 products having Western Digital FKB7 NAND flash memory and/or Western Digital
11 NAND memory chips and all versions and variations of them offered for sale since
12 the issuance of the ’701 patent.

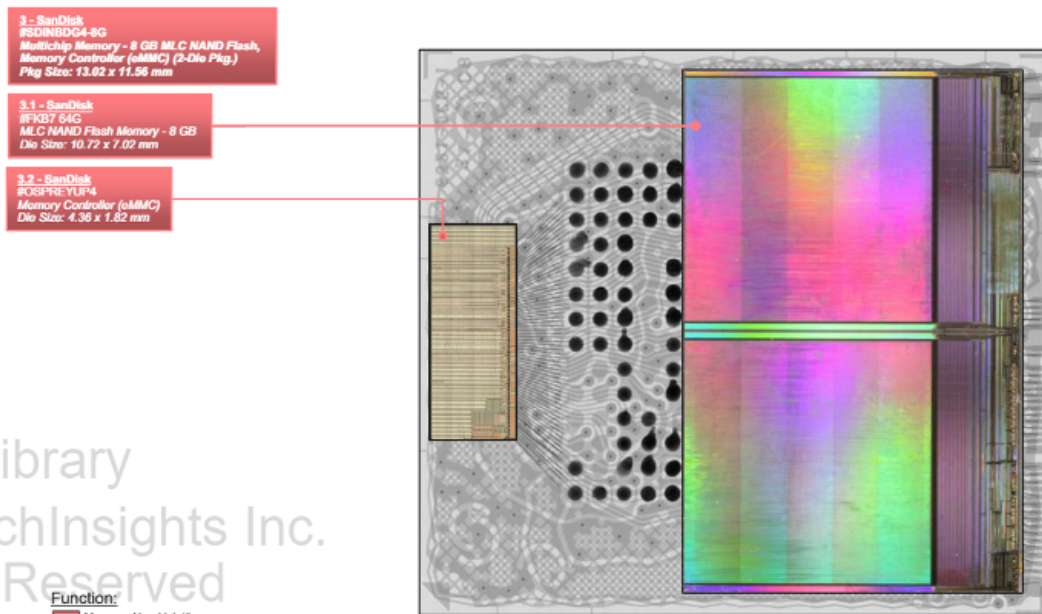
13 121. A non-limiting example of Defendant’s infringement is the Amazon
14 Echo Show 10 (e.g., model t4E4AT) which includes a Western Digital 15nm 64G
15 2D NAND Memory chip which infringes at least claim 1 of the ’701 patent.
16 Exemplary photographs of the Amazon Echo Show 10 are set forth below:



1 122. The various components of the Amazon Echo Show 10, including a
 2 SanDisk memory chip, are shown below:



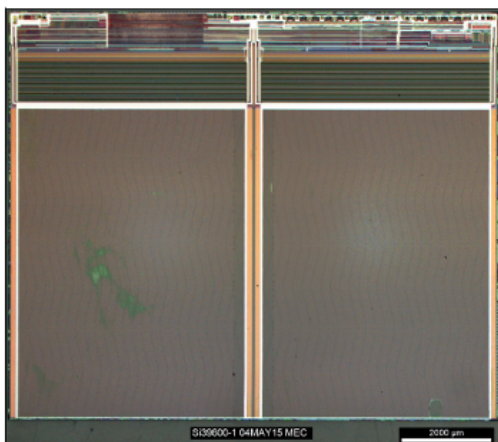
15 123. The components of the SanDisk memory chip, including the SanDisk
 16 FKB7 NAND Flash memory chip are shown below:



27 124. On information and belief, the SanDisk FKB7 NAND Flash memory
 28 chip is substantially similar to the Toshiba FFK8 NAND Flash memory chip

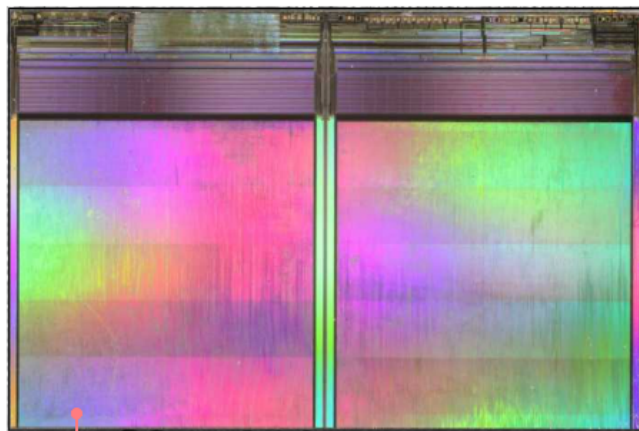
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1 (“Toshiba FFK8”) for all matters relevant to this complaint. The Toshiba FFK8 is
2 depicted below. A side-by-side comparison of the SanDisk FKB7 NAND Flash
3 memory and the Toshiba FFK8 NAND Flash memory chip is depicted below:



Photograph 2.2.1: Die photograph

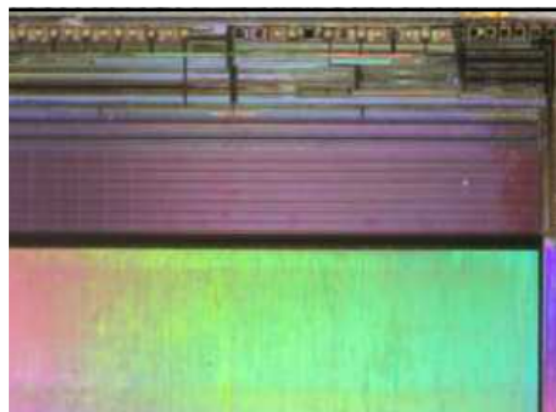
FFK8 128G



FKB7



FFK8 128G



FKB7

23 125. Based at least on the above, Longitude is informed and believes that the
24 corners of the dies of the SanDisk FKB7 NAND Flash memory and the Toshiba
25 FFK8 NAND Flash memory chip are substantially the same. Accordingly,
26 Longitude is informed and believes that the various I/Os and peripheral circuits are
27 the same between the two chips. Furthermore, Longitude is informed and believes
28 that Toshiba and Western Digital shared the designs for the chips. As shown above,

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1 the SanDisk memory chip is substantially the same as the SanDisk FKB7 NAND
 2 Flash memory and the Toshiba FFK8 NAND Flash memory chip. For this reason,
 3 Longitude is informed and believes that technical documents and other analysis
 4 concerning the Toshiba FFK8 NAND Flash memory chip also describe the layout
 5 and functionality of the SanDisk FKB7 NAND Flash memory.

6 126. The SanDisk FKB7 NAND Flash memory within the Amazon Echo
 7 Show 10 performs a method for generating a voltage supply:

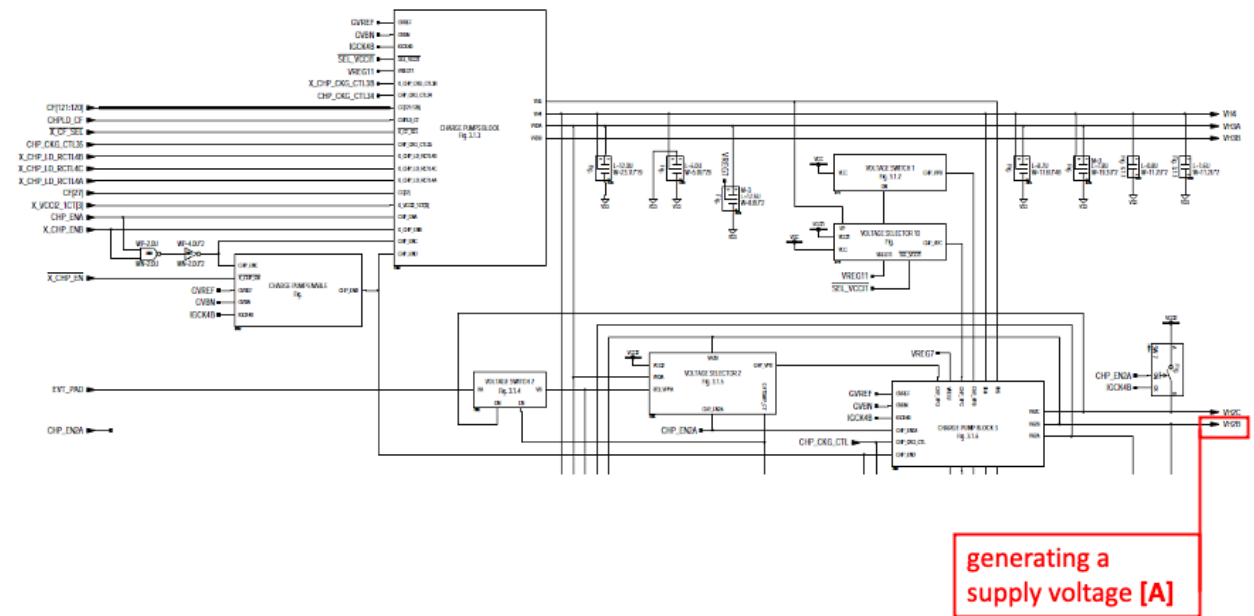


Figure 3.1 CHARGE PUMP SYSTEM

20 127. The SanDisk FKB7 NAND Flash memory within the Amazon Echo
 21 Show 10 performs a method of generating a voltage supply, comprising one of a first
 22 input node supplied with a first power supply voltage and a second input node
 23 supplied with a second power supply voltage that is higher than the first power
 24 supply voltage:

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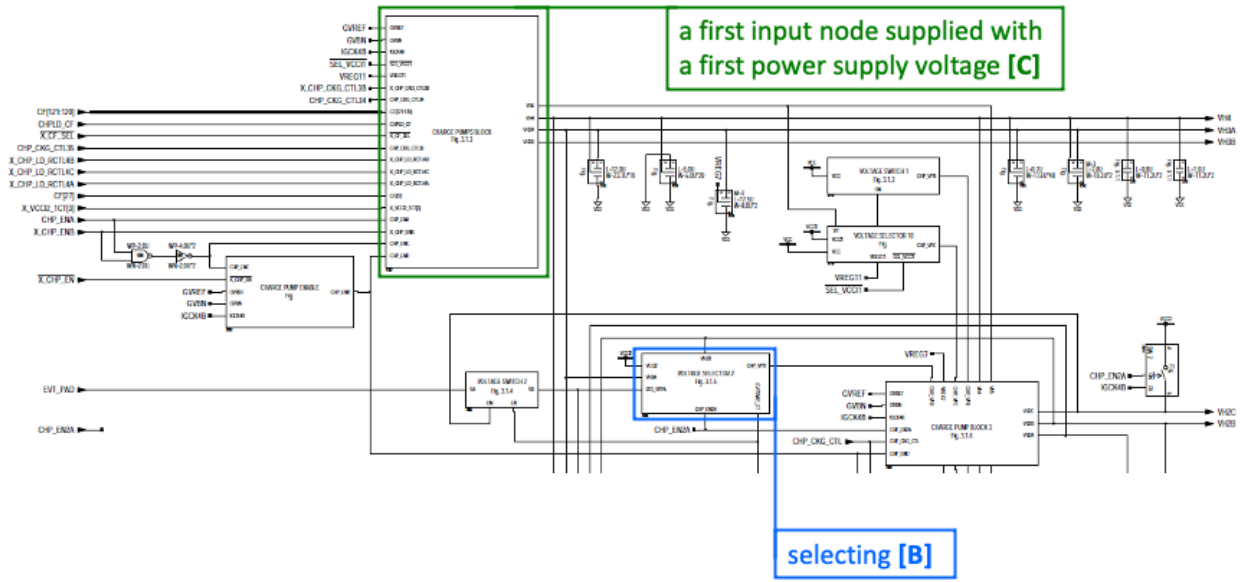


Figure 3.1 CHARGE PUMP SYSTEM

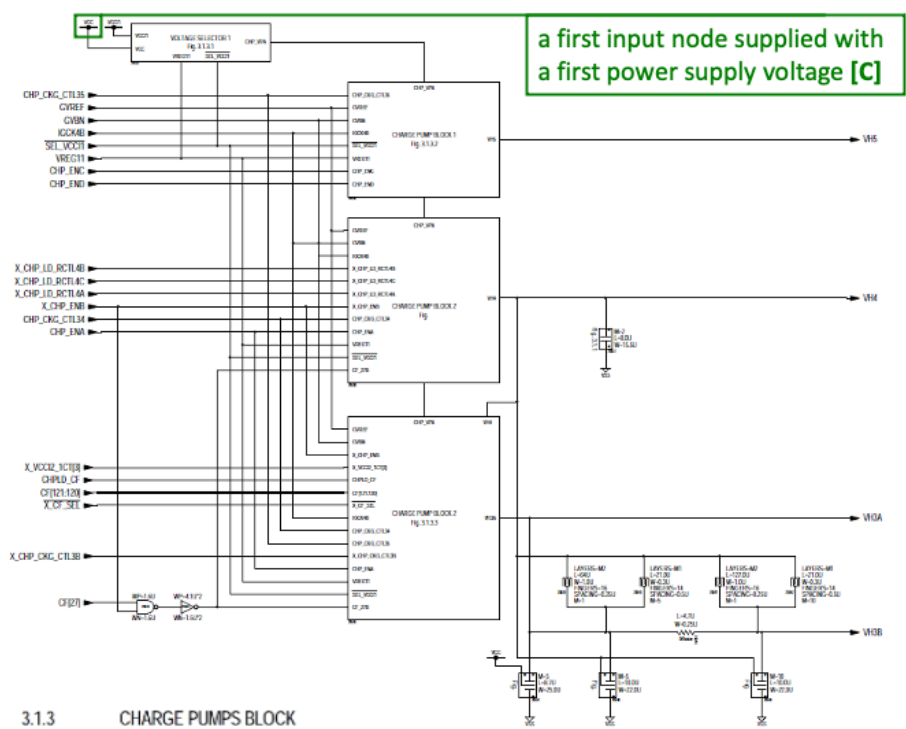


Figure 3.1.3 CHARGE PUMPS BLOCK

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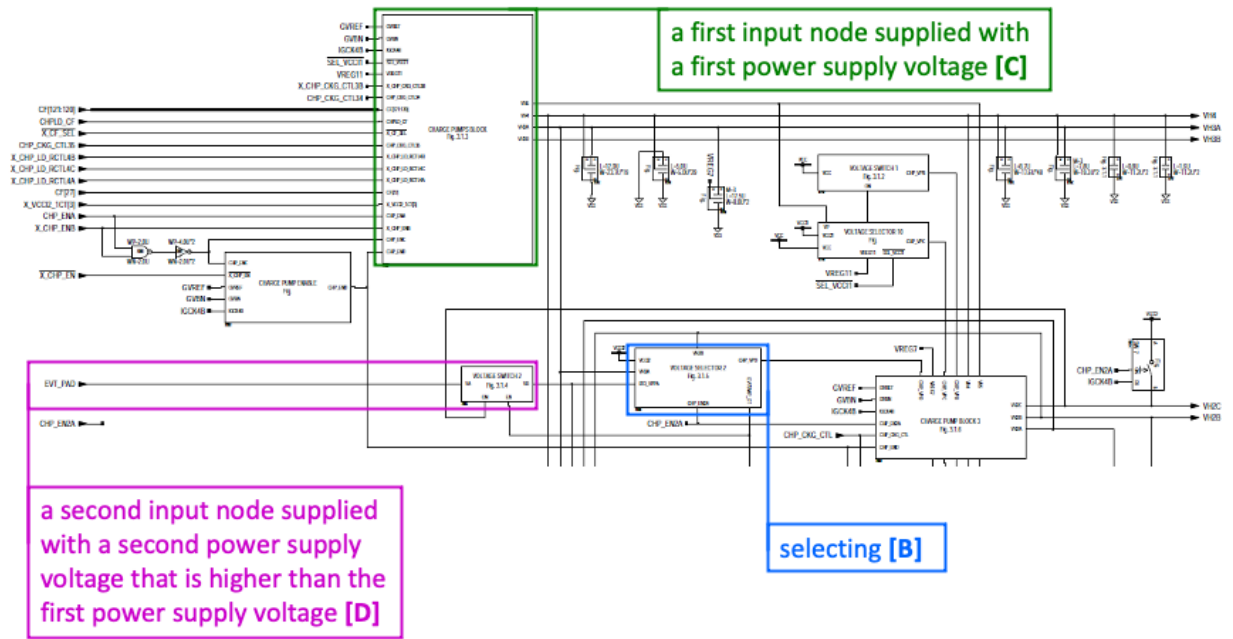


Figure 3.1 CHARGE PUMP SYSTEM

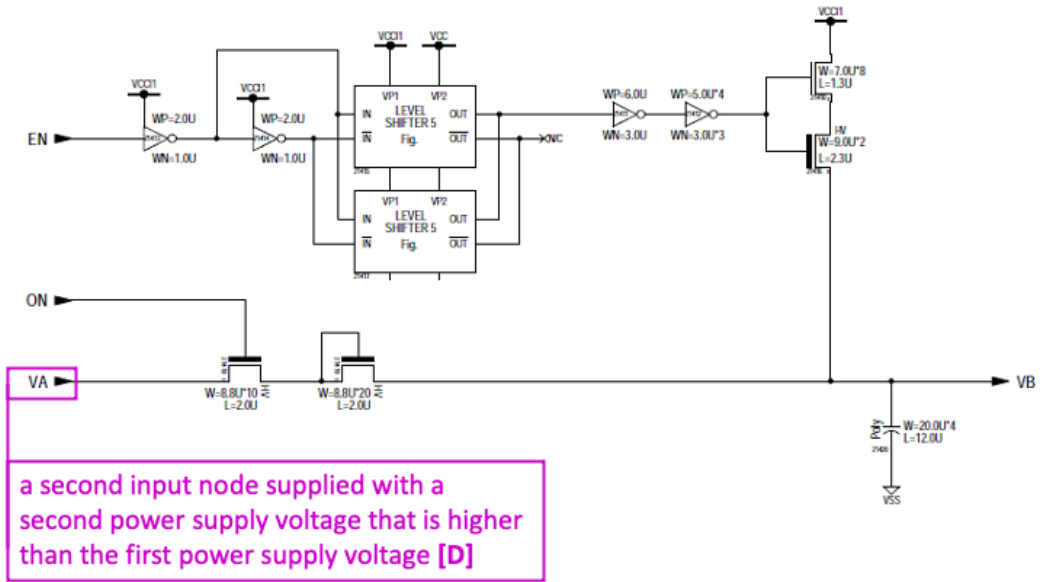


Figure 3.1.4 VOLTAGE SWITCH 2

128. The SanDisk FKB7 NAND Flash memory within the Amazon Echo Show 10 performs a method of generating a voltage supply, further comprising coupling a selected one of the first and second input nodes to booster circuitry

1 comprising a plurality of booster stages to provide an output voltage, wherein
 2 selection of the first input node corresponds to a first number of booster stages and
 3 selection of the second input node corresponds to selection of a second number of
 4 booster stages, the second number being less than the first number:

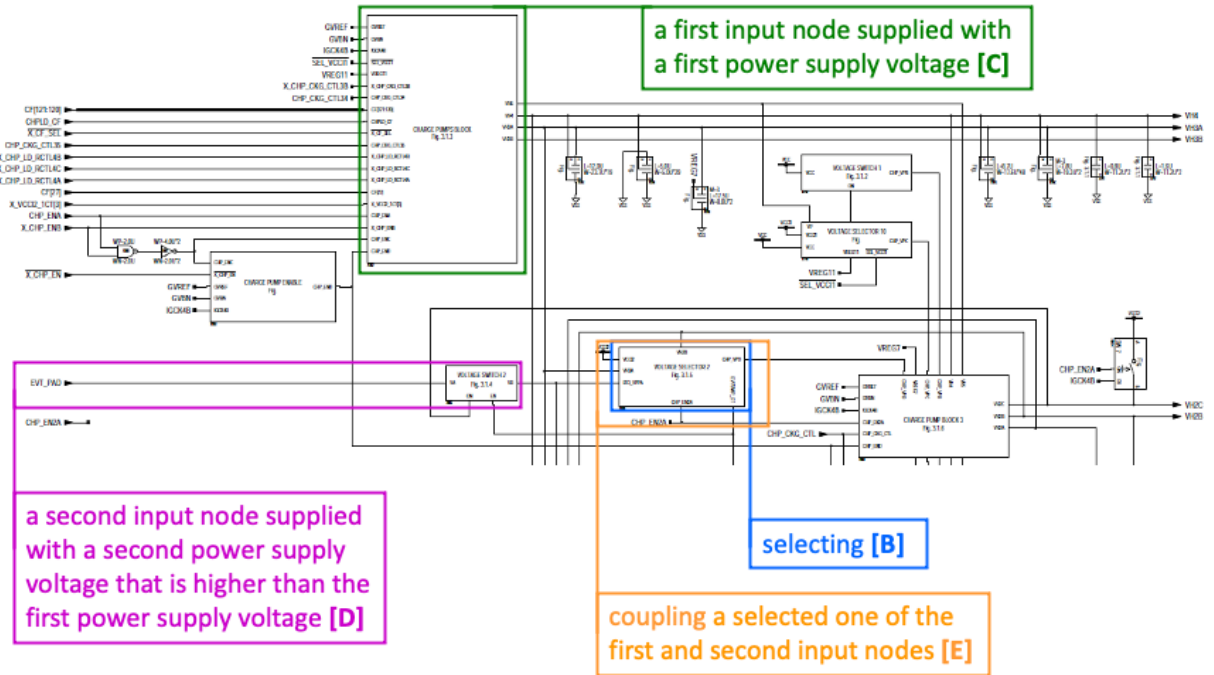


Figure 3.1 CHARGE PUMP SYSTEM

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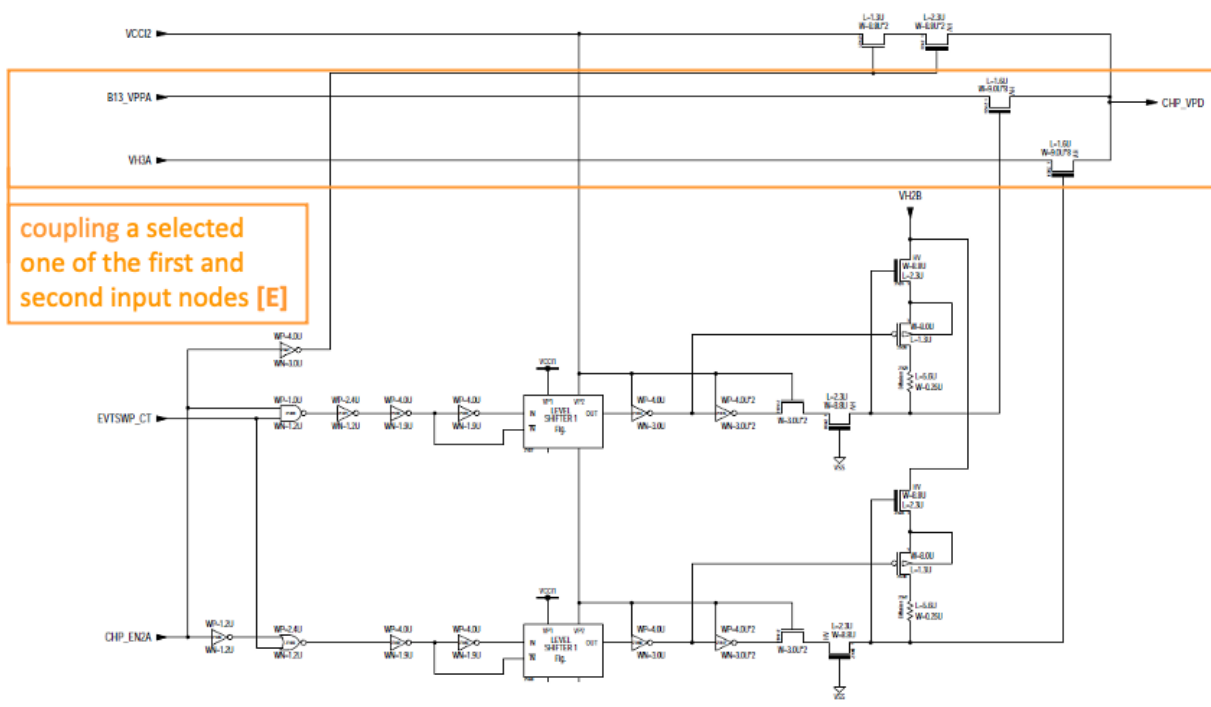


Figure 3.1.5 VOLTAGE SELECTOR 2

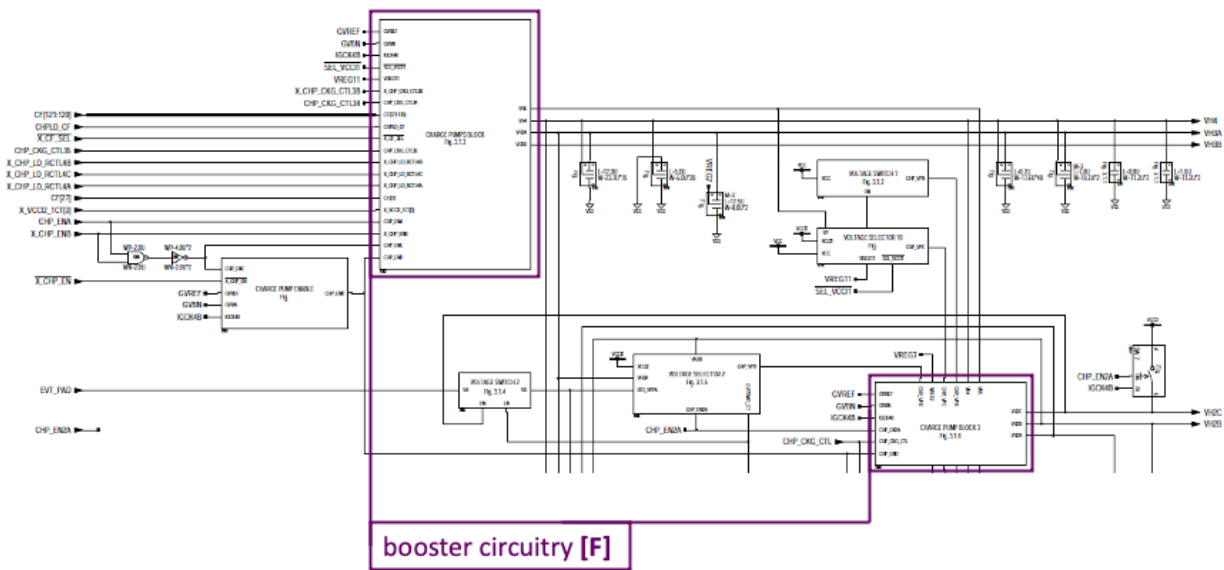


Figure 3.1 CHARGE PUMP SYSTEM

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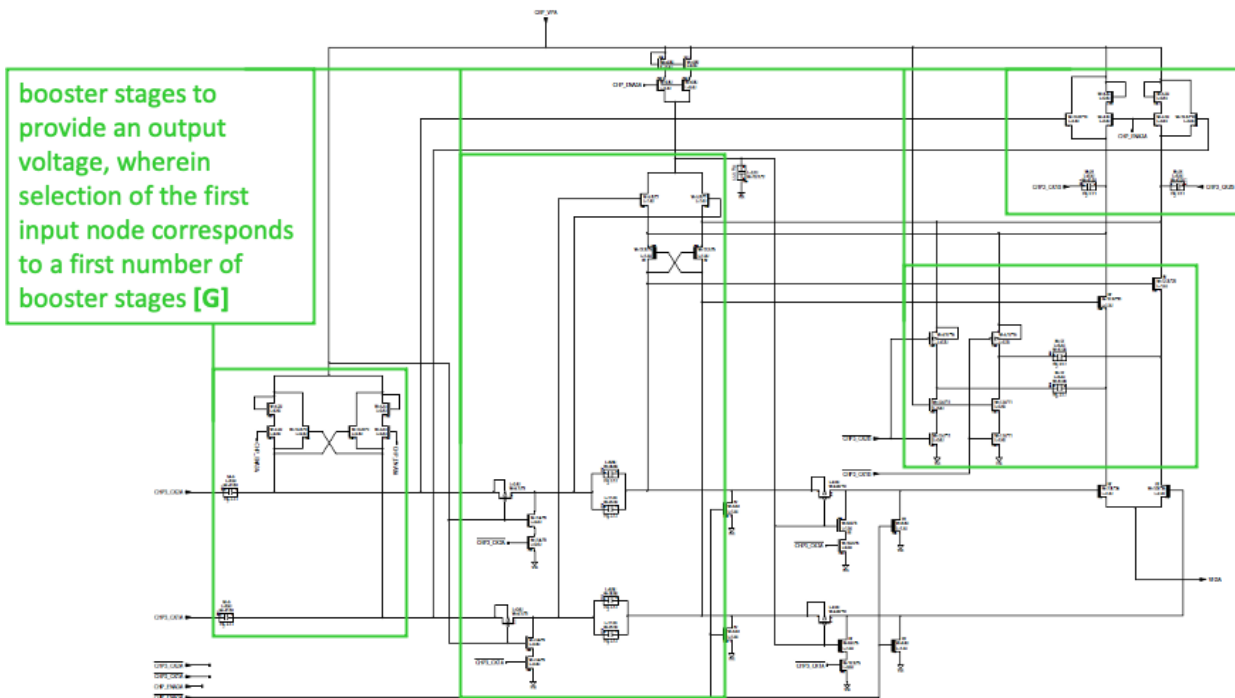


Figure 3.1.3.3.1 CHARGE PUMP 2

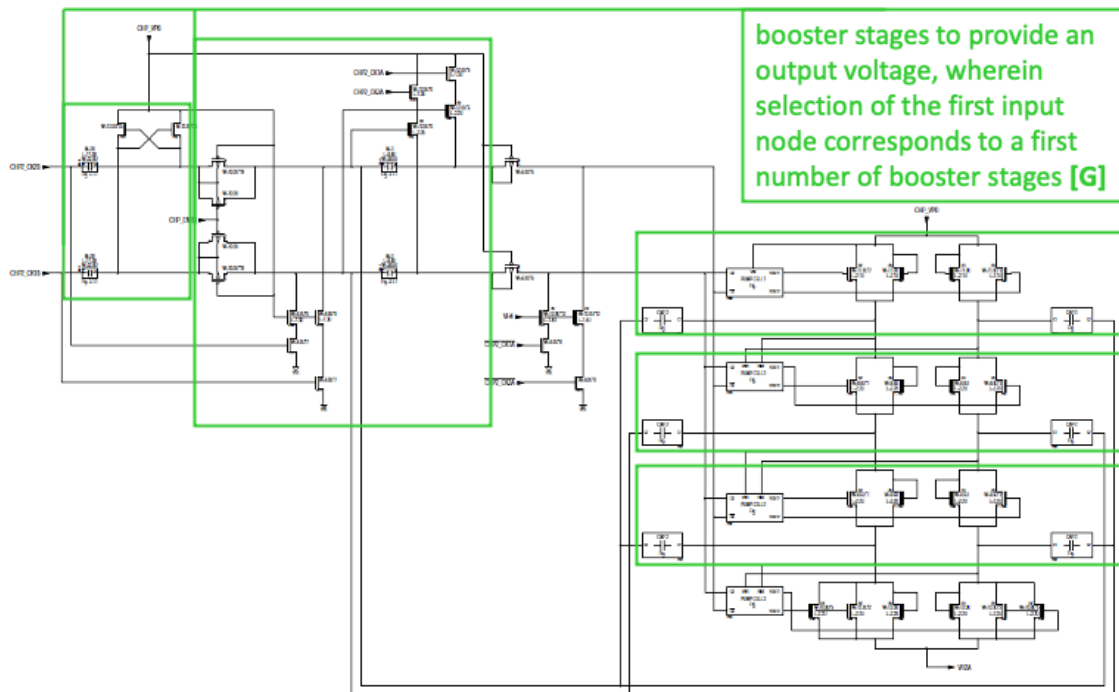


Figure 3.1.6.3 CHARGE PUMP 3

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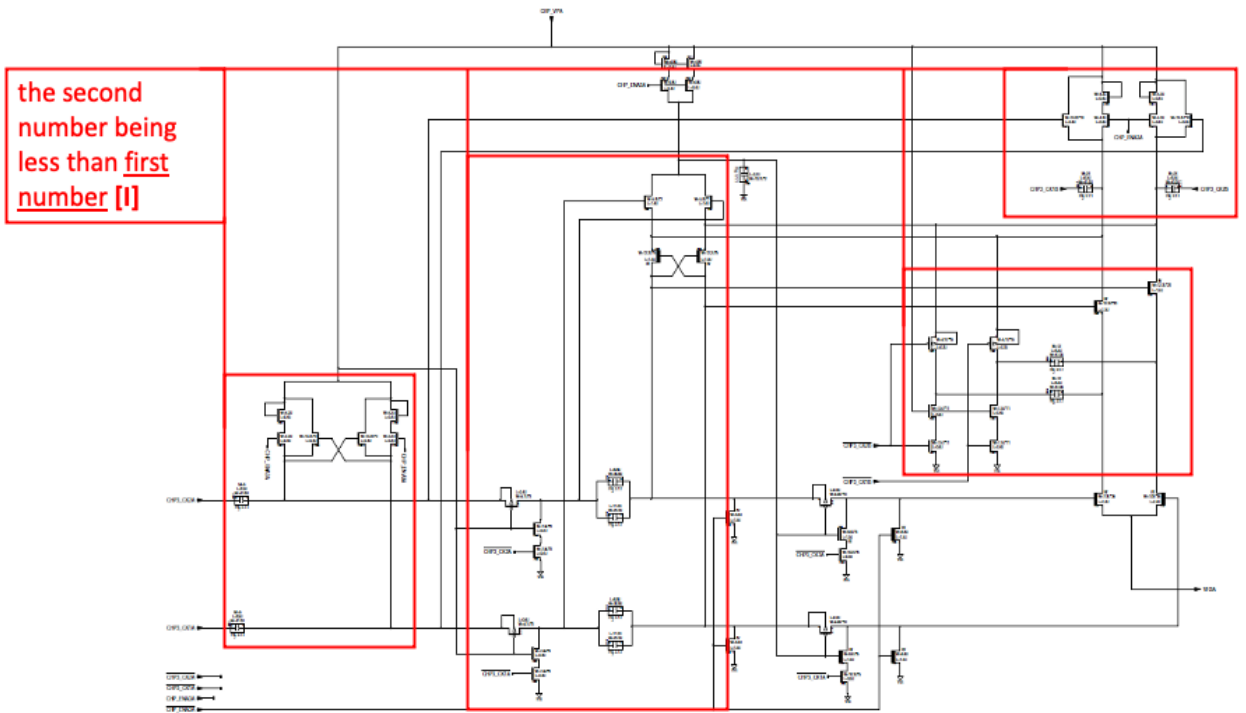


Figure 3.1.3.3.1 CHARGE PUMP 2

129. The SanDisk FKB7 NAND Flash memory within the Amazon Echo Show 10 performs a method of generating a voltage supply, further comprising changing the booster circuitry from the first number of booster stages corresponding to selection of the first input node to the second number of booster stages when the second input node is selected:

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changing the booster circuitry from the first number of booster stages corresponding to selection of the first input node to the second number of booster stages when the second input node is selected [J]

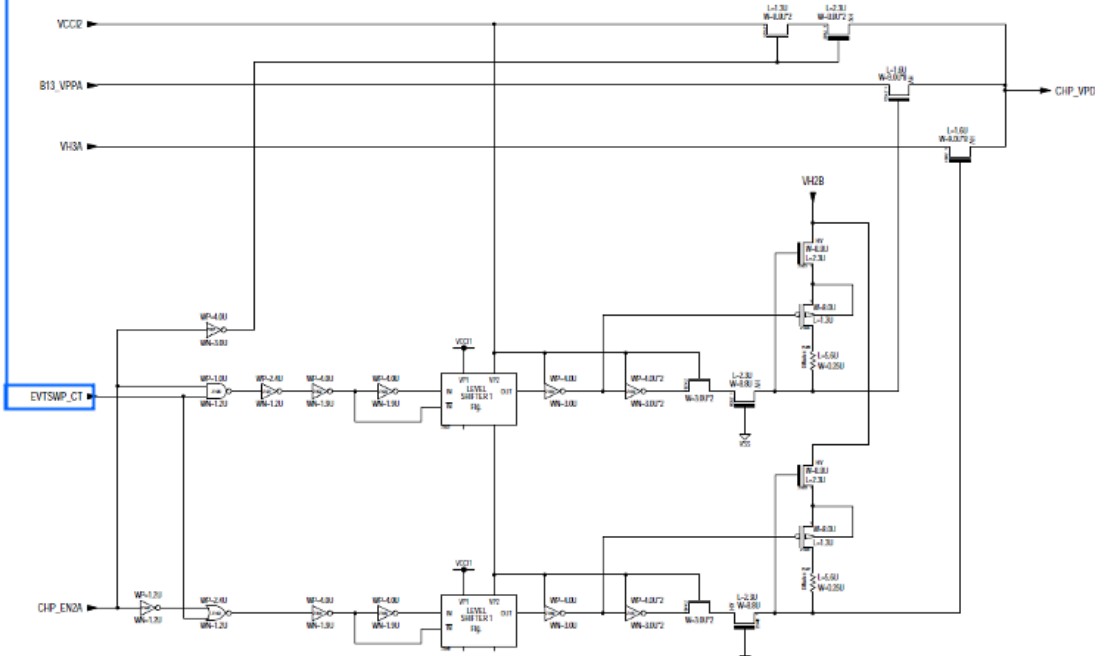


Figure 3.1.5 VOLTAGE SELECTOR 2

130. Defendant actively, knowingly, and intentionally induces, and continues to actively, knowingly, and intentionally induce, infringement of the '701 patent under 35 U.S.C. §271(b) by its customers and end users.

131. Defendant has had knowledge of and notice of the '701 patent and its infringement since at least September 6, 2022 when Longitude gave Defendant notice of its infringing actions. In any event, Defendant has had knowledge and notice of the '701 patent since at least the filing of this complaint.

132. Defendant has induced its customers and end users to infringe the '701 patent by using their products as shown above. For example, Defendant encourages its customers and end users to perform infringing methods by the very nature of the products.

133. Defendant specifically intends that its customers and/or end users infringe the '701 patent, either literally or by the doctrine of equivalents, because Defendant has known about the '701 patent and how Defendant's products infringe the claims of the '701 patent but Defendant has not taken steps to prevent

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1 infringement by its customers and/or end users. Accordingly, Defendant has acted
2 with the specific intent to induce infringement of the ‘701 patent.

3 134. Accordingly, Defendant has induced, and continues to induce,
4 infringement of the ‘701 patent under 35 U.S.C. §271(b).

5 135. As discussed above, Defendant has had knowledge of and notice of the
6 ‘701 patent and its infringement since at least September 6, 2022. Despite this
7 knowledge, Defendant continues to commit tortious conduct by way of patent
8 infringement.

9 136. Defendant has been and continues to infringe one or more of the claims
10 of the ‘701 patent through the aforesaid acts.

11 137. Defendant has committed these acts of infringement without license or
12 authorization.

13 138. Plaintiff is entitled to recover damages adequate to compensate for the
14 infringement.

15 139. Defendant has and continues to infringe the ‘701 patent, acting with an
16 objectively high likelihood that its actions constitute infringement of the ‘701 patent.
17 Defendant has known or should have known of this risk at least as early as September
18 6, 2022. Accordingly, Defendant’s infringement of the ‘701 patent has been and
19 continues to be willful.

20 **PRAYER FOR RELIEF**

21 Wherefore, Longitude, respectfully requests the following relief:

- 22 a) A judgment that Defendant has infringed the ‘369 patent;
- 23 b) A judgment that Defendant has infringed the ’539 patent;
- 24 c) A judgement that Defendant has infringed the ’233 patent;
- 25 d) A judgement that Defendant has infringed the ’701 patent;
- 26 e) A judgment that awards Plaintiff all appropriate damages under 35 U.S.C. §
27 284 for Defendant’s past infringement, and any continuing or future
28 infringement of the Patents-in-Suit, up until the date such judgment is entered,

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- including interest, costs, and disbursements as justified under 35 U.S.C. § 284 to adequately compensate Plaintiff for Defendant’s infringement;
- f) An adjudication that Defendant’s infringement of the Patents-in-Suit has been willful and deliberate;
- g) An adjudication that Plaintiff be awarded treble damages and pre-judgment interest under 35 U.S.C. § 284 as a result of Defendant’s willful and deliberate infringement of the Patents-in-Suit;
- h) An adjudication that this case is exceptional within the meaning of 35 U.S.C. § 285;
- i) An adjudication that Plaintiff be awarded the attorneys’ fees, costs, and expenses it incurs in prosecuting this action; and
- j) An adjudication that Plaintiff be awarded such further relief at law or in equity as the Court deems just and proper.

JURY TRIAL DEMANDED

Plaintiff hereby demands a trial by jury of all issues so triable.

DATED: January 9, 2023

Respectfully submitted,
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/s/ Brian D. Ledahl

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 Paul A. Kroeger, SBN 229074
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 Twelfth Floor
 Los Angeles, California 90025
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Attorneys for Plaintiff
Longitude Licensing, Ltd.