

**IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF DELAWARE**

SAMSUNG ELECTRONICS CO., LTD.

Plaintiff,

v.

TECHNICAL CONSUMER PRODUCTS,  
INC. dba TCP LIGHTING,

Defendant.

CIVIL ACTION NO. \_\_\_\_\_

JURY TRIAL DEMANDED

**COMPLAINT FOR PATENT INFRINGEMENT**

Plaintiff Samsung Electronics Co., Ltd. (“Samsung”) files this Complaint against defendant Technical Consumer Products, Inc. dba TCP Lighting (“TCP”), seeking damages and other relief for patent infringement, and alleges with knowledge to its own acts, and on information and belief as to other matters, as follows:

**NATURE OF THE ACTION**

1. This is an action for patent infringement arising under the Patent Laws of the United States, 35 U.S.C. § 271 *et seq.*

**THE PARTIES**

2. Samsung is a corporation organized under the laws of Republic of Korea, with a principal place of business at 129 Samsung-Ro, Maetan-3dong, Yeongtong-gu, Suwon-si, Gyeonggi, 443-742, South Korea.

3. Samsung is the assignee and owner of U.S. Patent Nos. 9,035,341 (“the ’341 patent”), 9,373,746 (“the ’746 patent”), 9,105,762 (“the ’762 patent”), and 7,759,140 (“the ’140

patent”) (collectively “the Asserted Patents”). Samsung holds all substantial rights, title, and interest in the Asserted Patents, including the exclusive right to sue for infringement.

4. On information and belief, TCP is a Delaware corporation with a principal place of business at 325 Campus Dr. Aurora, Ohio, 44202. TCP’s registered agent, The Corporation Trust Company, is located at 1209 Orange St., Wilmington, Delaware 19801.

### **JURISDICTION AND VENUE**

5. This action arises under the patent laws of the United States, Title 35 of the United States Code. This Court has subject matter jurisdiction pursuant to 28 U.S.C. §§ 1331 and 1338(a).

6. This Court has personal jurisdiction over TCP. TCP is amenable to service of summons for this action. Furthermore, personal jurisdiction over TCP in this action comports with due process. TCP has sought the protection of and benefit from the laws of the State of Delaware by incorporating and organizing in Delaware.

7. Venue is proper in this Court pursuant to 28 U.S.C. § 1400(b). On information and belief, TCP is incorporated in the State of Delaware and, therefore, is a resident of this District.

### **BACKGROUND AND FACTS**

8. Samsung is a world leader in the research, development and manufacture of semiconductor products, including industry-leading LED technology. Samsung consistently ranks among the very top of companies awarded U.S. patents for its innovations, and holds thousands of patents in the U.S. and worldwide related to LED technology.

9. Samsung has developed novel and improved light emitting diodes (LED), and the method of manufacturing such LEDs, including the Asserted Patents.

10. U.S. Patent 9,035,341 titled “SEMICONDUCTOR LIGHT EMITTING DEVICE WITH WIRING UNIT ARRANGEMENT,” was duly and legally issued by the United States Patent and Trademark Office on May 19, 2015, after a full and fair examination. The ’341 patent has been assigned to Samsung, and Samsung holds all rights, title, and interest in the ’341 patent, including the right to collect and receive damages for past, present and future infringements. A true and correct copy of the ’341 patent is filed herewith as **Exhibit 1**.

11. U.S. Patent 9,373,746 titled “MANUFACTURING METHOD OF SEMICONDUCTOR LIGHT EMITTING DEVICE HAVING SLOPED WIRING UNIT,” was duly and legally issued by the United States Patent and Trademark Office on June 21, 2016, after a full and fair examination. The ’746 patent has been assigned to Samsung, and Samsung holds all rights, title, and interest in the ’746 patent, including the right to collect and receive damages for past, present and future infringements. A true and correct copy of the ’746 patent is filed herewith as **Exhibit 2**.

12. U.S. Patent 9,105,762 titled “SEMICONDUCTOR LIGHT EMITTING DEVICE AND MANUFACTURING METHOD THEREOF,” was duly and legally issued by the United States Patent and Trademark Office on August 11, 2015, after a full and fair examination. The ’762 patent has been assigned to Samsung, and Samsung holds all rights, title, and interest in the ’762 patent, including the right to collect and receive damages for past, present and future infringements. A true and correct copy of the ’762 patent is filed herewith as **Exhibit 3**.

13. U.S. Patent 7,759,140 titled “LIGHT-EMITTING DEVICE AND METHOD OF MANUFACTURING THE SAME,” was duly and legally issued by the United States Patent and Trademark Office on July 20, 2010, after a full and fair examination. The ’140 patent has been assigned to Samsung, and Samsung holds all rights, title, and interest in the ’140 patent, including

the right to collect and receive damages for past, present and future infringements. A true and correct copy of the '140 patent is filed herewith as **Exhibit 4**.

14. On information and belief, TCP was founded in 2001, is a manufacturer and distributor of electrical apparatus and equipment, including lightings and lighting fixtures incorporating LED chips. TCP makes, uses, sells, offers to sell, and/or imports into the United States, for example, TCP model number L60A19N06V30K4.<sup>1</sup> An image of TCP L60A19N06V30K4 and its packaging is included as Figure 1 below.

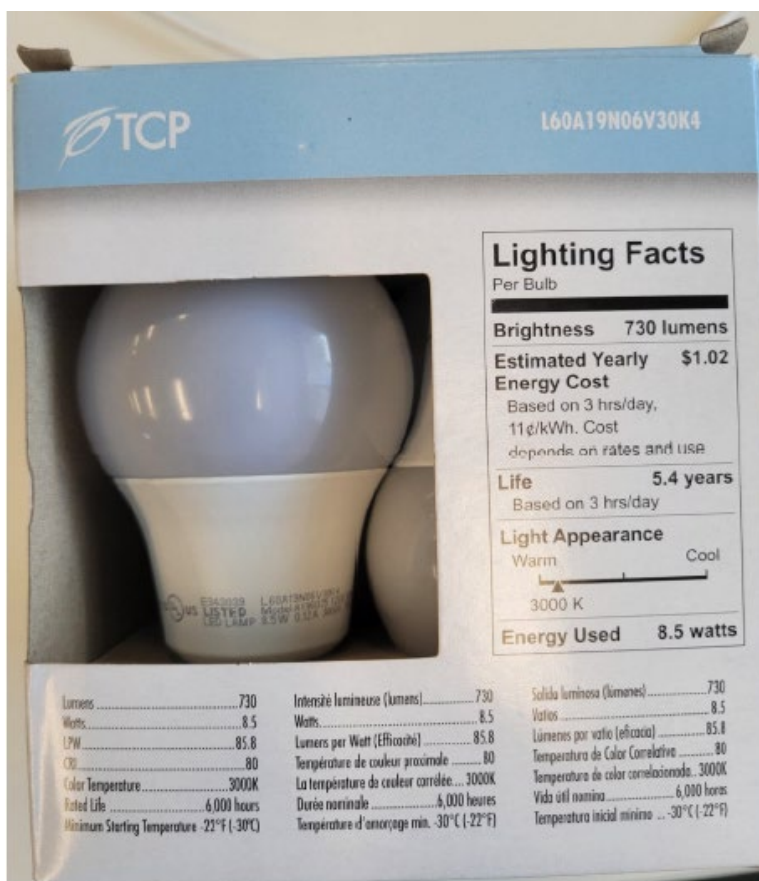


Fig. 1

<sup>1</sup> See, e.g., EcoSave Lamps - Product Specification [https://tcpsalesapp.blob.core.windows.net/specsheets/wf228354\\_led\\_ecosave.pdf](https://tcpsalesapp.blob.core.windows.net/specsheets/wf228354_led_ecosave.pdf) (last visited February 16, 2023).

15. On information and belief, TCP makes, uses, sells, offers to sell and/or imports into the United States, TCP products such as L60A19N06V30K4 containing LED chips manufactured by Seoul Semiconductor Co., Ltd. (“Seoul Semiconductor”) that incorporate the technologies covered by the Asserted Patents (the “Accused Products”).

### COUNT I

#### **INFRINGEMENT OF U.S. PATENT 9,035,341**

16. Samsung re-alleges paragraphs 1-15 above as if fully set forth herein. Samsung further alleges as follows:

17. On information and belief, TCP has directly infringed and continues to infringe one or more claims of the ’341 patent literally or under the doctrine of equivalents, including but not limited to exemplary claim 1, in violation of 35 U.S.C. § 271(a), at least by making, using, selling, offering for sale and/or importing into the United States, without authority or license, the Accused Products.

18. On information and belief, at least as of February 17, 2023, Samsung has placed TCP on actual notice of the ’341 patent and actual notice that its actions constitute infringement of the ’341 patent. Even after TCP had actual notice of its infringing actions, TCP has intentionally induced and continues to intentionally induce others, including its suppliers, contract manufacturers, distributors, and/or customers, to infringe one or more claims of the ’341 patent, including but not limited to exemplary claim 1, in violation of 35 U.S.C. §271(b), by actively encouraging others to use, sell, offer to sell and/or import into the United States, the Accused Products, and by instructing others to infringe the ’341 patent.

19. At least as of February 17, 2023, TCP has acted with knowledge or willful blindness that the acts it is actively inducing constitute infringement of the ’341 patent. On

information and belief, TCP intends to cause infringement by these suppliers, contract manufacturers, distributors, and/or customers. TCP has taken affirmative steps to induce infringement by, inter alia, creating advertisements that promote the infringing use of the infringing products, creating an established distribution channel for these products into and within the United States, distributing or making available instructions or manuals for these products to purchasers and prospective buyers, and/or providing technical support, or services for these products to these purchasers in the United States.

20. For example, after actual notice of its infringing actions, TCP actively promotes the sale, use, and/or importation of the Accused Products in marketing materials, technical specifications, data sheets, and web pages on its website.<sup>2</sup> On information and belief, TCP supplies customers with the Accused Products so that they may be used, sold, or offered for sale by those customers throughout the United States. TCP additionally provides a wide range of technical support to customers, including product-specific customer support for L60A19N06V30K4.<sup>3</sup> TCP also publicly promotes use of the Accused Products by customers in the United States.<sup>4</sup>

21. Fig. 2(a) below are images of a LED chip (which on information and belief is manufactured by Seoul Semiconductor) incorporated into TCP L60A19N06V30K4, prior to removal of chip packaging.

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<sup>2</sup> See, e.g., [https://tcpsalesapp.blob.core.windows.net/specsheets/wf228354\\_led\\_ecosave.pdf](https://tcpsalesapp.blob.core.windows.net/specsheets/wf228354_led_ecosave.pdf) (last visited February 16, 2023).

<sup>3</sup> See, e.g., TCP Amazon Store - <https://www.amazon.com/TCP-Equivalent-Shatter-Resistent-Non-Dimmable/dp/B087JXFH68?source=ps-sl-shoppingads-lpcontext&ref=fplfs&smid=ATVPDKIKX0DER&th=1> (last visited February 16, 2023).

<sup>4</sup> See *id.*



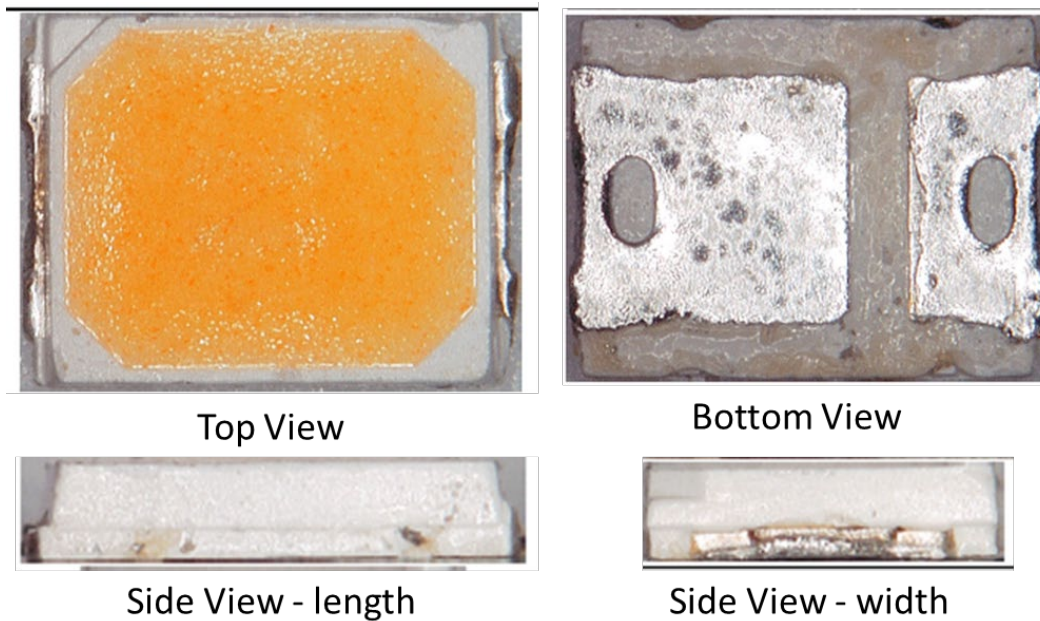


Fig. 2(a)

22. Fig. 2(b) below are images of the LED chip after its packaging has been removed:

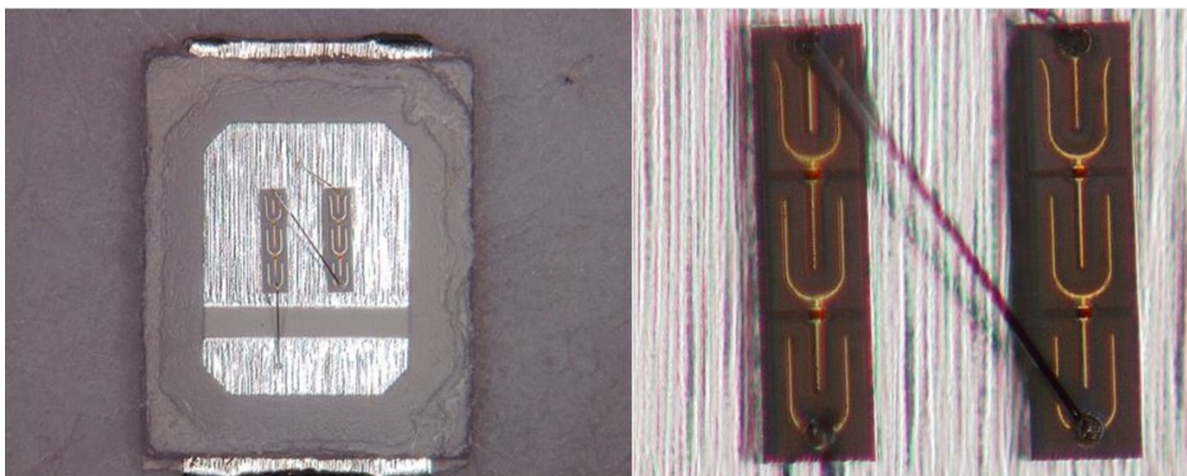


Fig. 2(b)

23. Figs. 3 below is an annotated scanning electron microscopic ("SEM") image of a portion of the LED chip, after its packaging has been removed:

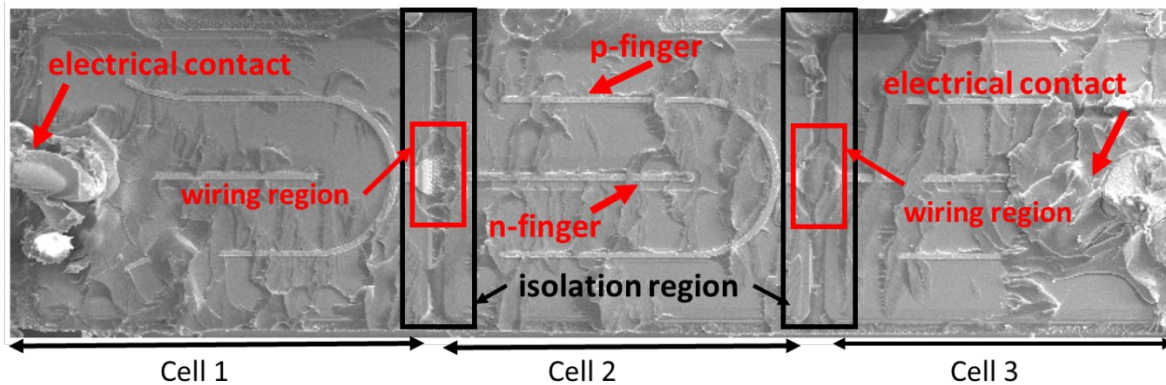


Fig. 3

24. Fig. 3 shows a plurality of light emitting cells, each separated by an isolation region. The light emitting cells are electrically connected by a wiring unit in a “wiring region.”

25. Fig. 4 below is annotated to show location 1 and location 2 on the LED chip. Location 1 is located inside the wiring region shown in Fig. 3 above, and location 2 is outside of the wiring region. Using a focused ion beam, cross-sectional cuts were made on the LED chip at location 1 and location 2, respectively.

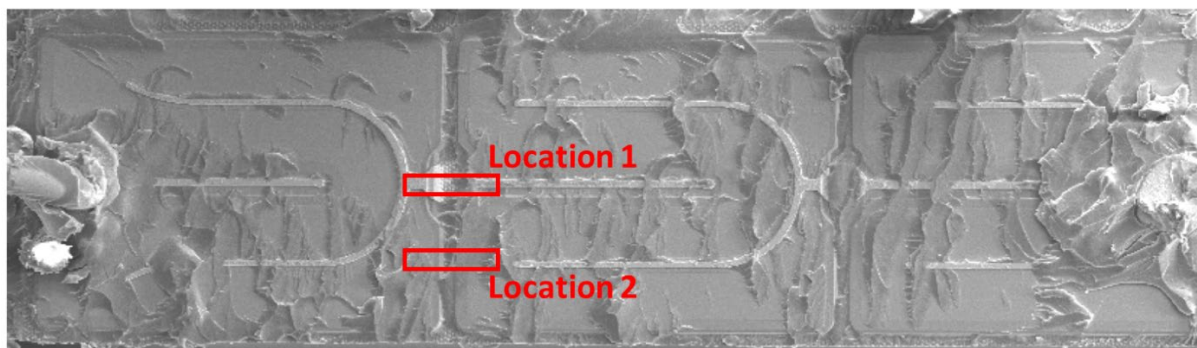


Fig. 4

26. Fig. 5 is an annotated SEM image of the cross-sectional cut at location 1 using a focused ion beam, shown below:



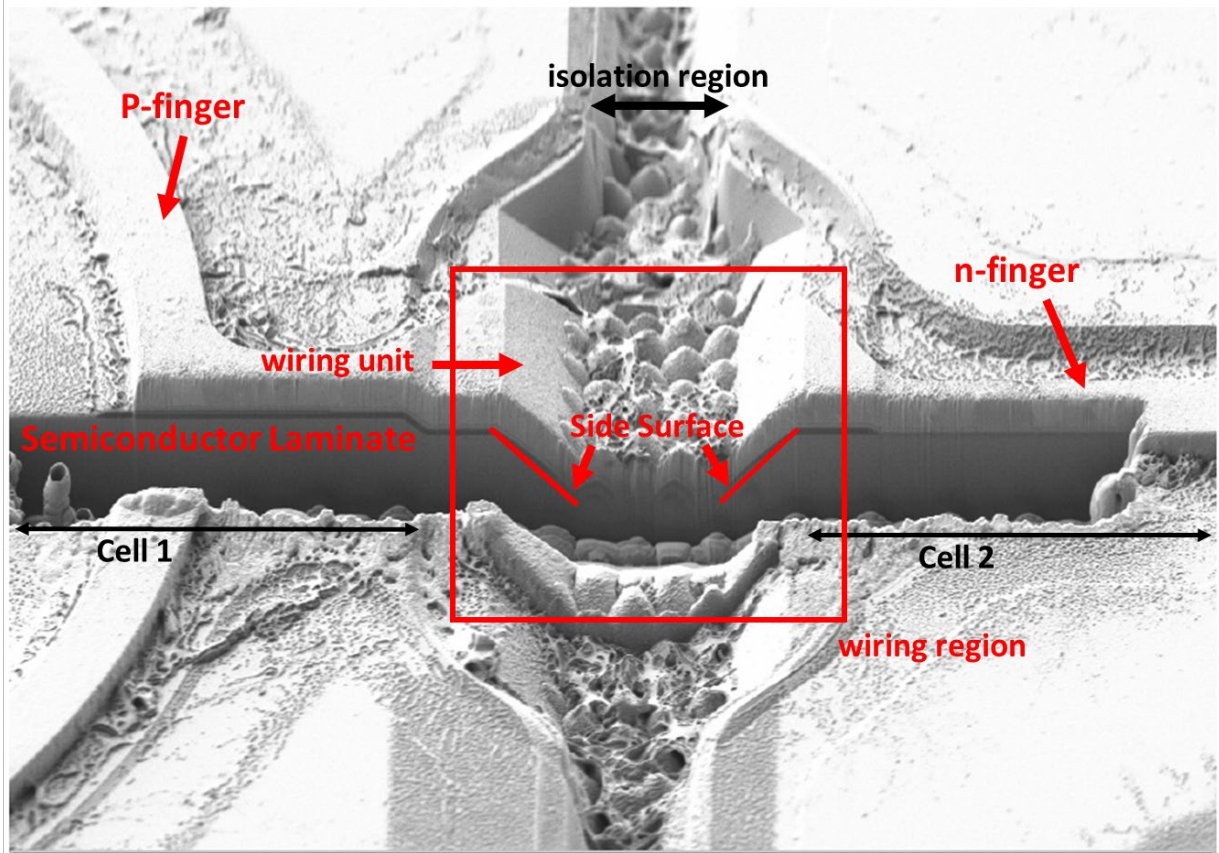


Fig. 5

27. Fig. 5 shows a wiring unit in the wiring region that electrically connects Cell 1 and Cell 2. The wiring unit connects to the p-finger of Cell 1 and n-finger of Cell 2. Cell 1 and Cell 2 each comprises a semiconductor laminate layer. On information and belief, the semiconductor laminate layer is disposed on a substrate (shown in Fig. 7 below). On information and belief, the semiconductor laminate layer comprises at least an n-doped semiconductor region containing GaN or GaN compound formed on top of the substrate, an active region formed on top of the n-doped region, and a p-doped semiconductor region containing GaN or GaN compound formed on top of the active layer. Fig. 5 further shows a side surface of the semiconductor laminate on Cell 1 and Cell 2 within the wiring region.

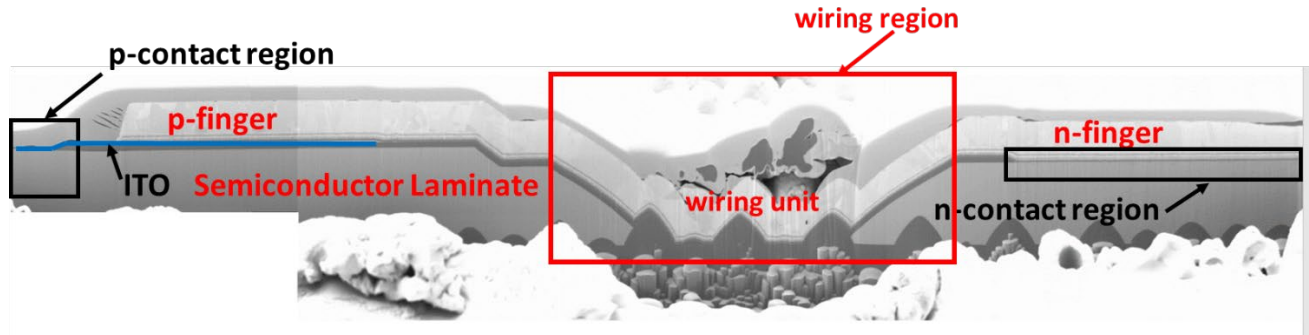


Fig. 6

28. Fig. 6 above is another annotated SEM image of the cross-sectional cut at location 1. Due to imaging limitations caused by the large amount of magnification required, Fig. 6 is a composite image formed from different images of location 1 shown in Fig. 4. Fig. 6 shows the n-finger contacts the semiconductor laminate in the n-contact region. Fig. 6 further shows the p-finger contacts a transparent electrode layer of indium tin oxide (ITO), which in turn contacts the semiconductor laminate in the p-contact region. On information and belief, the n-finger is electrically connected to an n-doped region of the semiconductor laminate layer, and the p-finger is electrically connected to a p-doped region of the semiconductor laminate layer via the layer of ITO.

29. Fig. 7 is an annotated SEM image of the cross-sectional cut made using a focused ion beam at location 2, shown below:

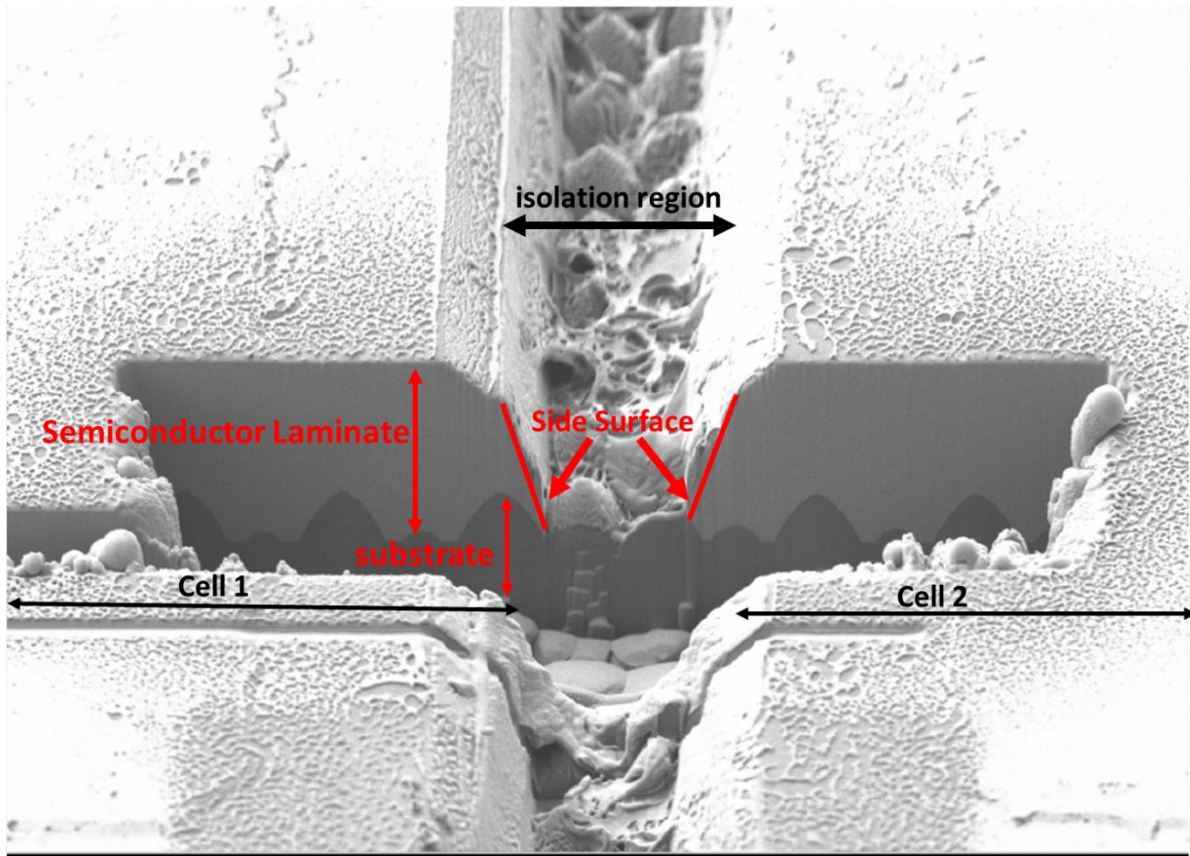


Fig. 7

30. Fig. 7 shows that at location 2, Cell 1 and Cell 2 are divided by the isolation region. Fig. 7 also shows that the semiconductor laminate layer is formed on top of a substrate. When comparing the side surfaces shown in Fig. 5 and Fig. 7, the side surfaces shown in Fig. 5, which are in contact with the wiring unit in the wiring region are gentler in slope than the side surfaces in other regions, for example as shown in Fig. 7.

31. TCP's infringement has caused and is continuing to cause damage and irreparable injury to Samsung, Samsung will continue to suffer damage and irreparable injury unless and until that infringement is enjoined by this Court, as a remedy at law alone would be inadequate.

32. To the extent that TCP has continued or continues to make, use, sell, offer for sale and/or import into the United States the Accused Products that infringe the '341 patent following its awareness of the '341 patent, TCP's infringement is willful and entitles Samsung to an award

of enhanced damages pursuant to 35 U.S.C. § 284 and attorneys' fees pursuant to 35 U.S.C. § 285.

33. Samsung is entitled to injunctive relief and damages in accordance with 35 U.S.C. §§ 271, 281, 283, and 284.

## COUNT II

### **INFRINGEMENT OF U.S. PATENT 9,373,746**

34. Samsung re-alleges paragraphs 1-15 above as if fully set forth herein. Samsung further alleges as follows:

35. On information and belief, TCP has directly infringed and continues to infringe one or more claims of the '746 patent literally or under the doctrine of equivalents, including but not limited to exemplary claim 1, in violation of 35 U.S.C. § 271(g), at least by importing into the United States or by using, selling, or offering for sale in the United States, without authority or license, the Accused Products.

36. On information and belief, at least as of February 17, 2023, Samsung has placed TCP on actual notice of the '746 patent and actual notice that its action constitute infringement of the '746 patent. Even after TCP had actual notice of its infringing actions, TCP has intentionally induced and continues to intentionally induce others, including its suppliers, contract manufacturers, distributors, and/or customers, to infringe one or more claims of the '746 patent, including but not limited to exemplary claim 1, in violation of 35 U.S.C. §271(b), by actively encouraging and/or instructing others to import into the United States or to use, sell, or offer to sell in the United States, the Accused Products.

37. At least as of February 17, 2023, TCP has acted with knowledge or willful blindness that the acts it is actively inducing constitute infringement of the '746 patent. On information and belief, TCP intend to cause infringement by these suppliers, contract

manufacturers, distributors, and/or customers. TCP has taken affirmative steps to induce infringement by, inter alia, creating advertisements that promote the infringing use of the infringing products, creating an established distribution channel for these products into and within the United States, distributing or making available instructions or manuals for these products to purchasers and prospective buyers, and/or providing technical support, or services for these products to these purchasers in the United States.

38. For example, after actual notice of its infringing actions, TCP actively promotes the sale, use, and/or importation of the Accused Products in marketing materials, technical specifications, data sheets, and web pages on its website.<sup>5</sup> On information and belief, TCP supplies customers with the Accused Products so that they may be used, sold, or offered for sale by those customers throughout the United States. TCP additionally provides a wide range of technical support to customers, including product-specific customer support for L60A19N06V30K4.<sup>6</sup> TCP also publicly promotes use of the Accused Products by customers in the United States.<sup>7</sup>

39. Fig. 8(a) below are images of a LED chip (which on information and belief is manufactured by Seoul Semiconductor) incorporated into TCP L60A19N06V30K4, prior to removal of chip packaging.

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<sup>5</sup> See, e.g., [https://tcpsalesapp.blob.core.windows.net/specsheets/wf228354\\_led\\_ecosave.pdf](https://tcpsalesapp.blob.core.windows.net/specsheets/wf228354_led_ecosave.pdf) (last visited February 16, 2023).

<sup>6</sup> See, e.g., TCP Amazon Store - <https://www.amazon.com/TCP-Equivalent-Shatter-Resistent-Non-Dimmable/dp/B087JXFH68?source=ps-sl-shoppingads-lpcontext&ref=fplfs&smid=ATVPDKIKX0DER&th=1> (last visited February 16, 2023).

<sup>7</sup> See *id.*



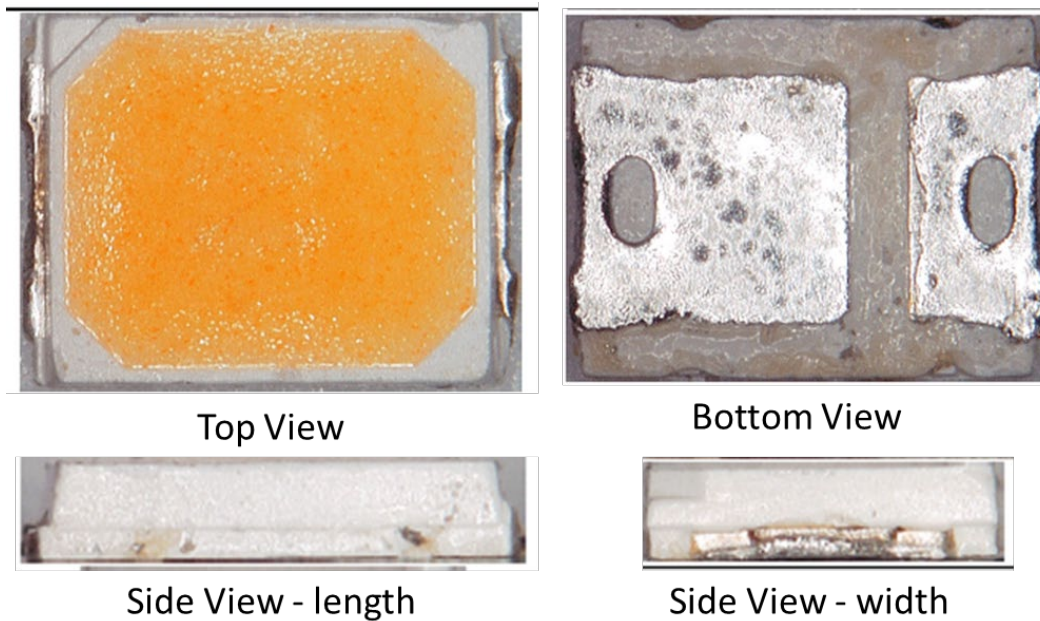


Fig. 8(a)

40. Fig. 8(b) below are images of the LED chip after its packaging has been removed:

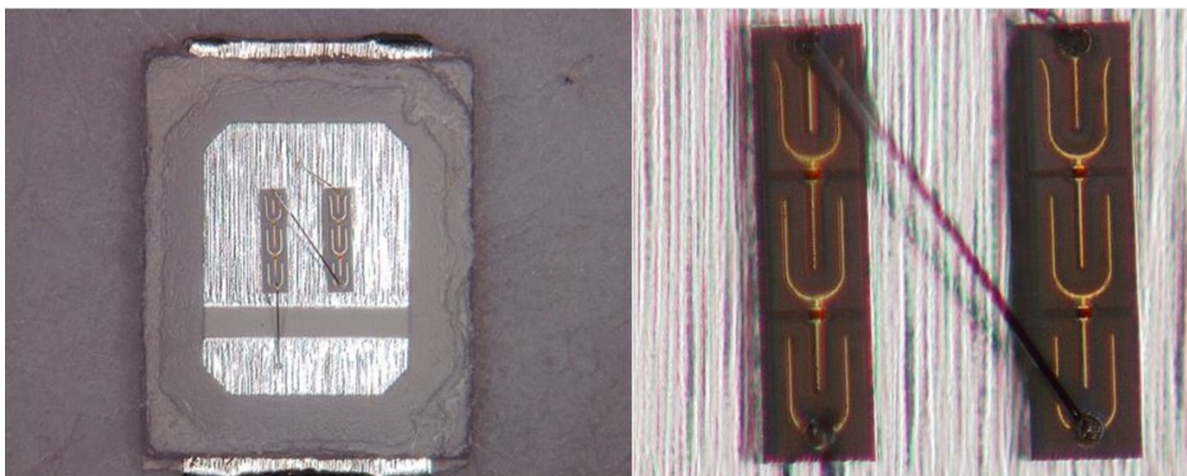


Fig. 8(b)

41. Figs. 9 below is an annotated SEM image of a portion of the LED chip, after its packaging has been removed:



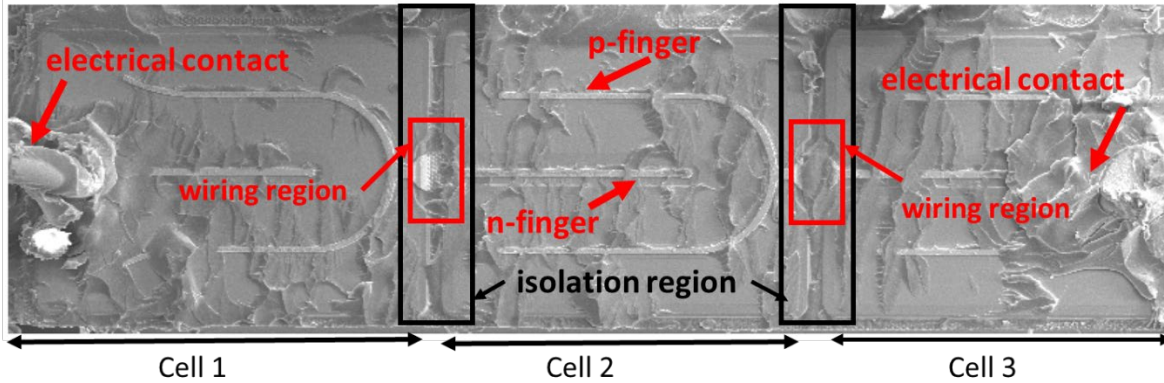


Fig. 9

42. Fig. 9 shows forming a plurality of light emitting cells, each separated by an isolation region. A wiring unit is formed in the wiring region to electrically connect the light emitting cells.

43. Fig. 10 below is annotated to show location 1 and location 2 on the LED chip. Location 1 is located inside the “wiring region” shown in Fig. 8 above, and location 2 is outside of the “wiring region.” Using a focused ion beam, cross-sectional cuts were made on the LED chip at location 1 and location 2, respectively.

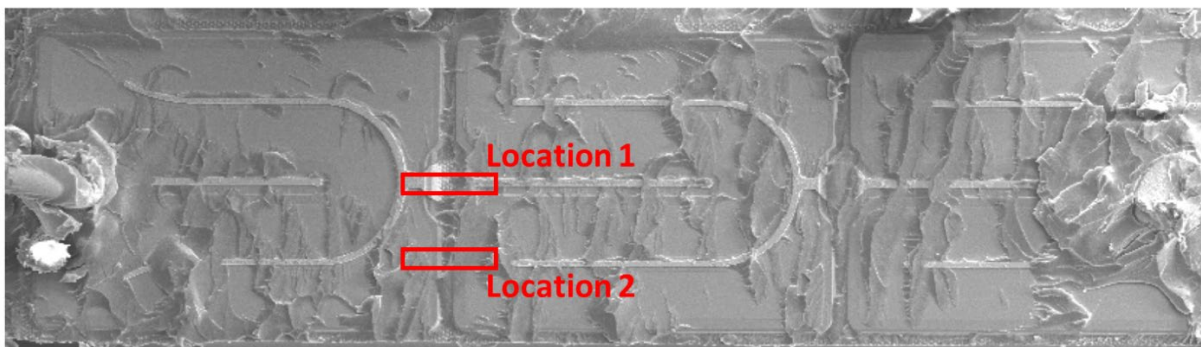


Fig. 10

44. Fig. 11 is an annotated SEM image of the cross-sectional cut at location 1 using a focused ion beam, shown below:

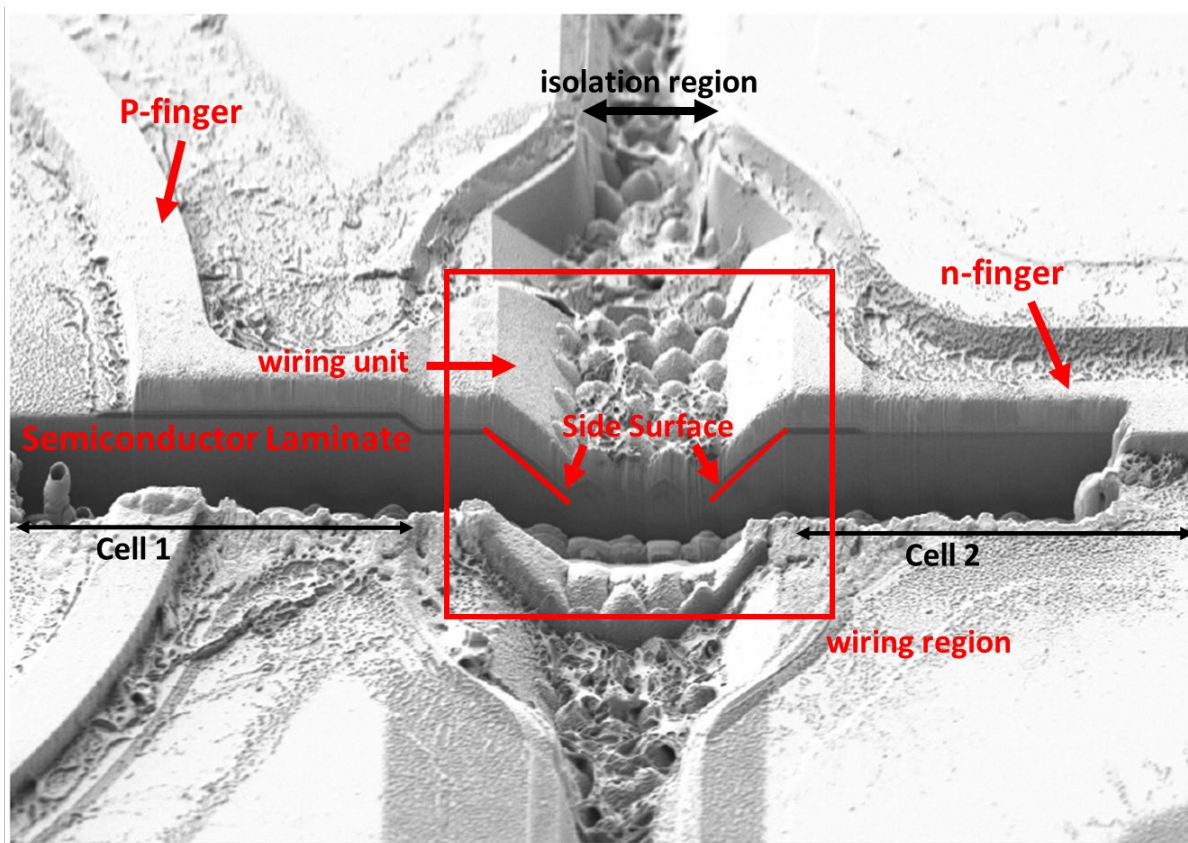


Fig. 11

45. Fig. 11 shows forming a wiring unit in the wiring region that electrically connects the p-finger of Cell 1 and the n-finger of Cell 2. Cell 1 and Cell 2 each comprises a semiconductor laminate layer. On information and belief, the semiconductor laminate layer is formed on top of a substrate (shown in Fig. 13). On information and belief, the semiconductor laminate layer comprises at least an n-doped semiconductor region containing GaN or GaN compound formed on top of the substrate, an active region formed on top of the n-doped region, and a p-doped semiconductor region containing GaN or GaN compound formed on top of the active layer. Fig. 11 further shows forming side surfaces of the semiconductor laminate on Cell 1 and Cell 2 within the wiring region.

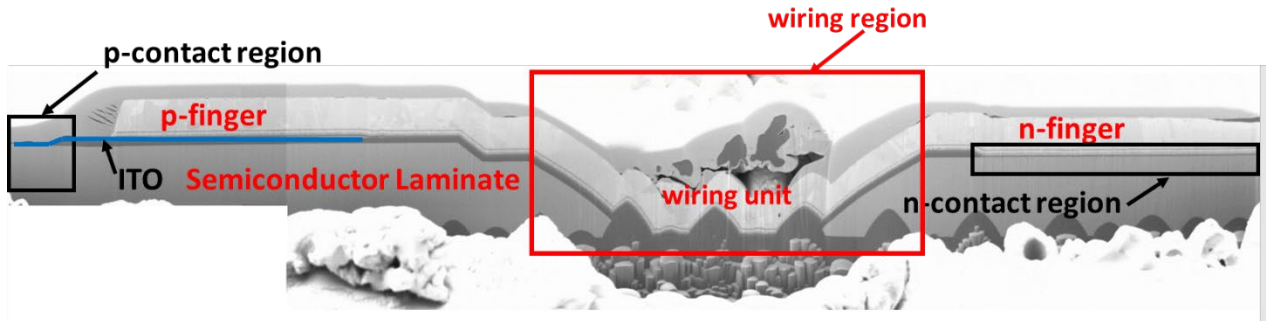


Fig. 12

46. Fig. 12 above is another annotated SEM image of the cross-sectional cut at location 1. Fig. 12 shows forming the n-finger to contact the semiconductor laminate in the n-contact region. Fig. 12 further shows forming the p-finger to contact a transparent electrode layer of indium tin oxide (ITO), which in turn contacts the semiconductor laminate in the p-contact region. On information and belief, the n-finger is electrically connected to an n-doped region of the semiconductor laminate layer, and the p-finger is electrically connected to a p-doped region of the semiconductor laminate layer via the layer of ITO.

47. Fig. 13 is an annotated SEM image of the cross-sectional cut made using a focused ion beam at location 2, shown below:

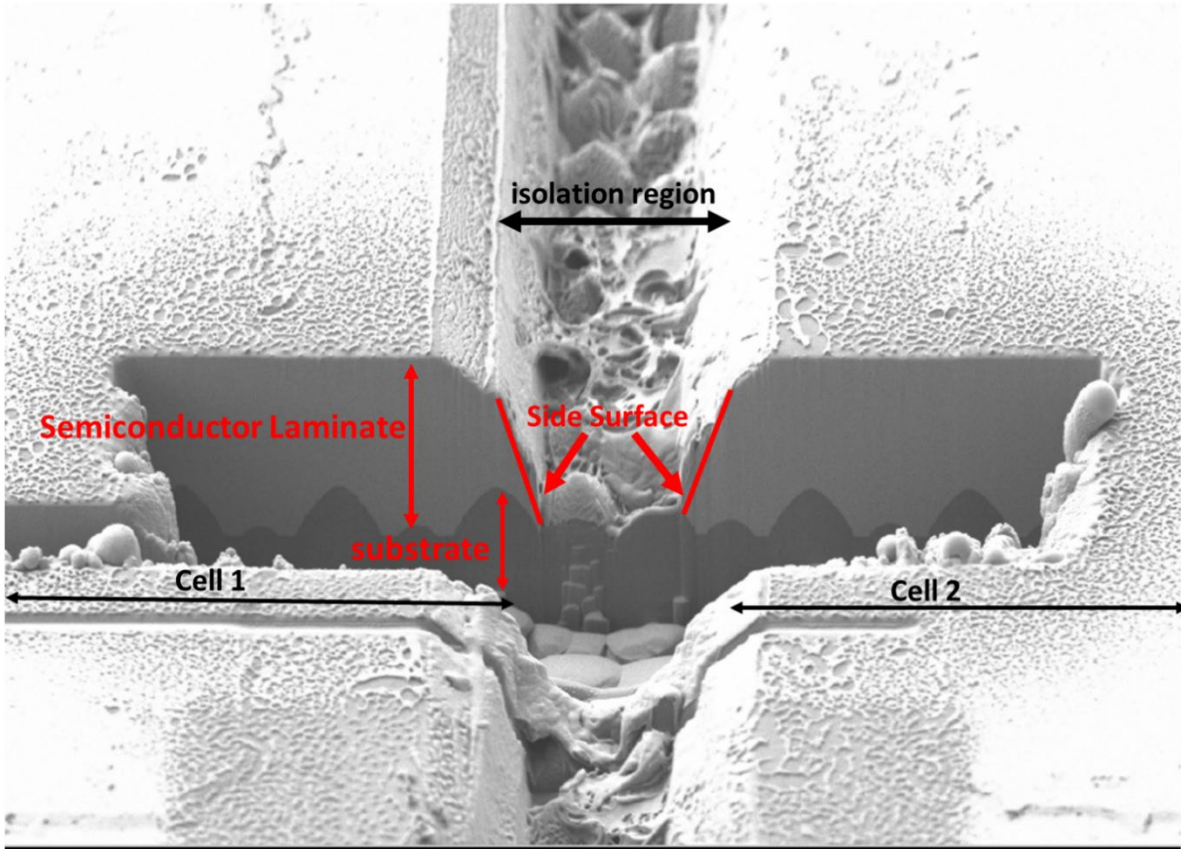


Fig. 13

48. Fig. 13 shows that at location 2, Cell 1 and Cell 2 are divided by forming an isolation region. Fig. 13 also shows that the semiconductor laminate layer is formed on top of a substrate. When comparing the side surfaces shown in Fig. 11 and Fig. 13, the side surfaces shown in Fig. 11, which are in contact with the wiring unit inside the wiring region, are gentler in slope than the side surface in other regions, for example as shown in Fig. 11.

49. TCP's infringement has caused and is continuing to cause damage and irreparable injury to Samsung, Samsung will continue to suffer damage and irreparable injury unless and until that infringement is enjoined by this Court, as a remedy at law alone would be inadequate.

50. To the extent that TCP has continued or continues to import into the United States or use, sell, offer for sale in the United States the Accused Products that infringe the '746 patent following its awareness of the '746 patent, TCP's infringement is willful and entitles Samsung to



an award of enhanced damages pursuant to 35 U.S.C. § 284 and attorneys' fees pursuant to 35 U.S.C. § 285.

51. Samsung is entitled to injunctive relief and damages in accordance with 35 U.S.C. §§ 271, 281, 283, and 284.

### **COUNT III**

#### **INFRINGEMENT OF U.S. PATENT 9,105,762**

52. Samsung re-alleges paragraphs 1-15 above as if fully set forth herein. Samsung further alleges as follows:

53. On information and belief, TCP has directly infringed and continues to infringe one or more claims of the '762 patent literally or under the doctrine of equivalents, including but not limited to exemplary claim 1, in violation of 35 U.S.C. § 271(g), at least by importing into the United States or by using, selling, or offering for sale in the United States, without authority or license, the Accused Products.

54. On information and belief, at least as of February 17, 2023, Samsung has placed TCP on actual notice of the '762 patent and actual notice that its action constitute infringement of the '762 patent. Even after TCP had actual notice of its infringing actions, TCP has intentionally induced and continues to intentionally induce others, including its suppliers, contract manufacturers, distributors, and/or customers, to infringe one or more claims of the '762 patent, including but not limited to exemplary claim 1, in violation of 35 U.S.C. §271(b), by actively encouraging and/or instructing others to import into the United States or to use, sell, or offer to sell in the United States, the Accused Products.

55. At least as of February 17, 2023 TCP has acted with knowledge or willful blindness that the acts it is actively inducing constitute infringement of the '762 patent. On

information and belief, TCP intend to cause infringement by these suppliers, contract manufacturers, distributors, and/or customers. TCP has taken affirmative steps to induce infringement by, inter alia, creating advertisements that promote the infringing use of the infringing products, creating an established distribution channel for these products into and within the United States, distributing or making available instructions or manuals for these products to purchasers and prospective buyers, and/or providing technical support, or services for these products to these purchasers in the United States.

56. For example, after actual notice of its infringing actions, TCP actively promotes the sale, use, and/or importation of the Accused Products in marketing materials, technical specifications, data sheets, and web pages on its website.<sup>8</sup> On information and belief, TCP supplies customers with the Accused Products so that they may be used, sold, or offered for sale by those customers throughout the United States. TCP additionally provides a wide range of technical support to customers, including product-specific customer support for L60A19N06V30K4.<sup>9</sup> TCP also publicly promotes use of the Accused Products by customers in the United States.<sup>10</sup>

57. Fig. 14(a) below are image of a LED chip (which on information and belief is manufactured by Seoul Semiconductor) incorporated into TCP L60A19N06V30K4, prior to removal of chip packaging:

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<sup>8</sup> See, e.g., [https://tcpsalesapp.blob.core.windows.net/specsheets/wf228354\\_led\\_ecosave.pdf](https://tcpsalesapp.blob.core.windows.net/specsheets/wf228354_led_ecosave.pdf) (last visited February 16, 2023).

<sup>9</sup> See, e.g., TCP Amazon Store - <https://www.amazon.com/TCP-Equivalent-Shatter-Resistent-Non-Dimmable/dp/B087JXFH68?source=ps-sl-shoppingads-lpcontext&ref=fplfs&smid=ATVPDKIKX0DER&th=1> (last visited February 16, 2023).

<sup>10</sup> See *id.*



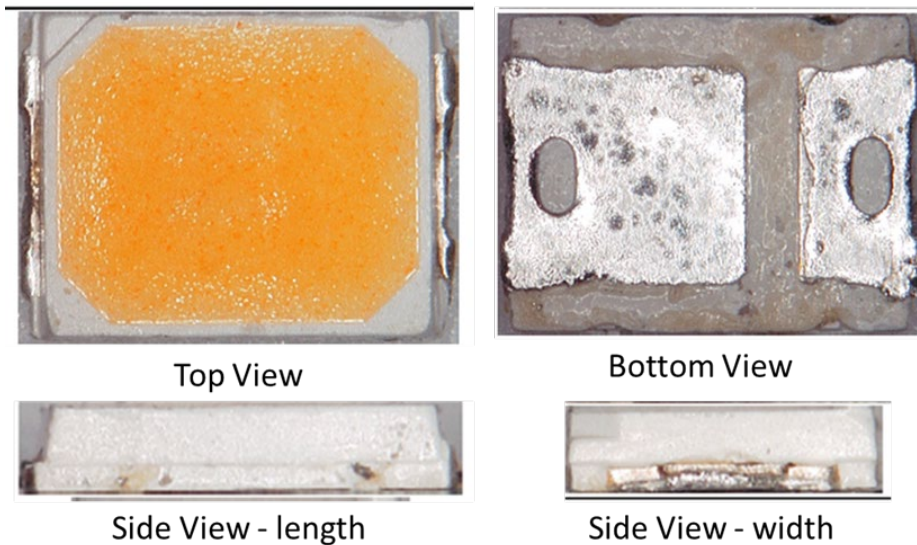


Fig. 14(a)

58. Fig. 14(b) below are images of the LED chip after its packaging has been removed:

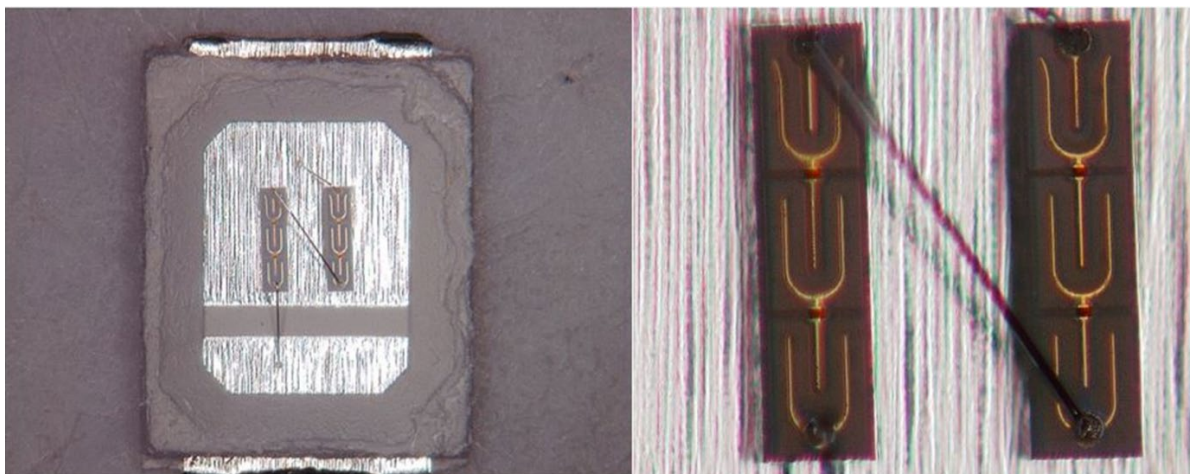


Fig. 14(b)

59. Fig. 15 below is an annotated SEM image of a portion of the LED chip after its packaging has been removed:

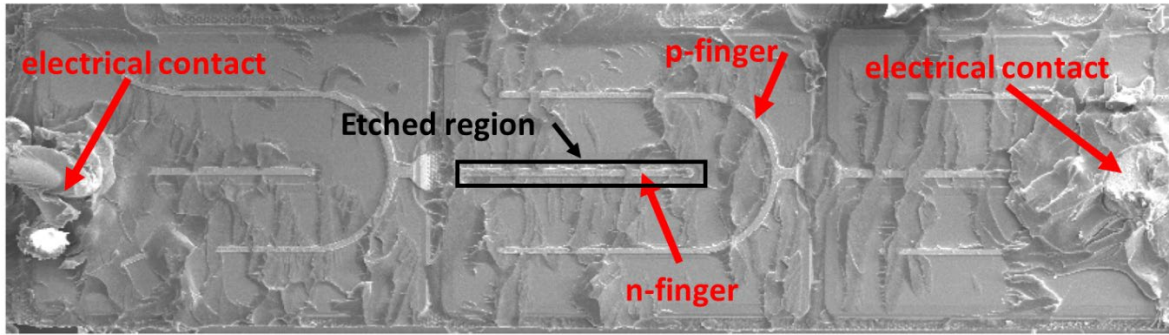


Fig. 15

60. Fig. 15 shows that LED chip comprises p-fingers, n-fingers, and electrical contacts. On information and belief, the n-fingers are formed in region (etched region) where a p-doped region of GaN or GaN compound formed on top of the active region, the active region, and a portion of an n-doped GaN or GaN compound formed on a substrate has been removed by etching.

61. Fig. 16 below is annotated to show location 1 and location 2 on the LED chip. Location 1 is in the vicinity of the electrical contact on the right side, and location 2 is across the n-finger in the middle light emitting cell.

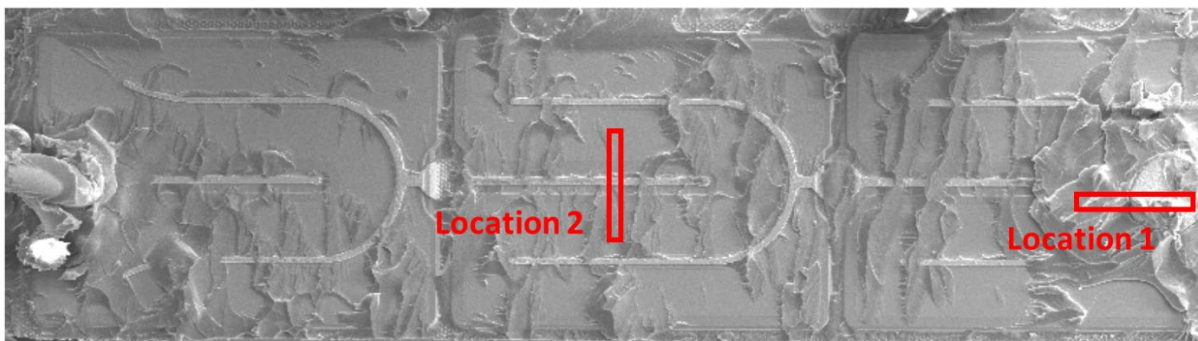


Fig. 16

62. Fig. 17 is an annotated SEM image of a cross-section cut made using a focused ion beam at location 1, shown below:

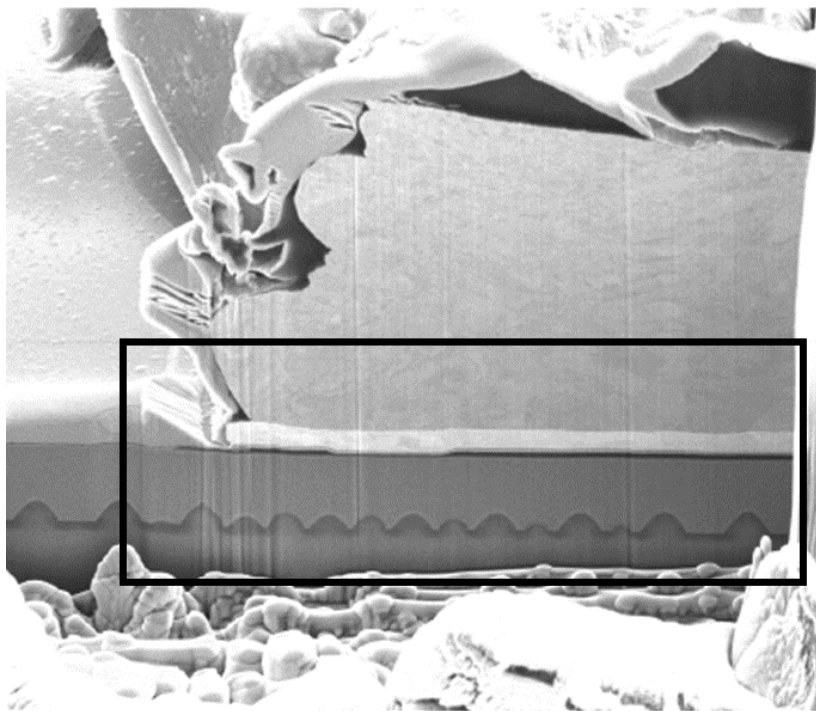


Fig. 17

63. Fig. 18 below is an annotated zoomed-in view of the cross-section at location 1 seen in the box in Fig. 17. Due to imaging limitations caused by the large magnification required.

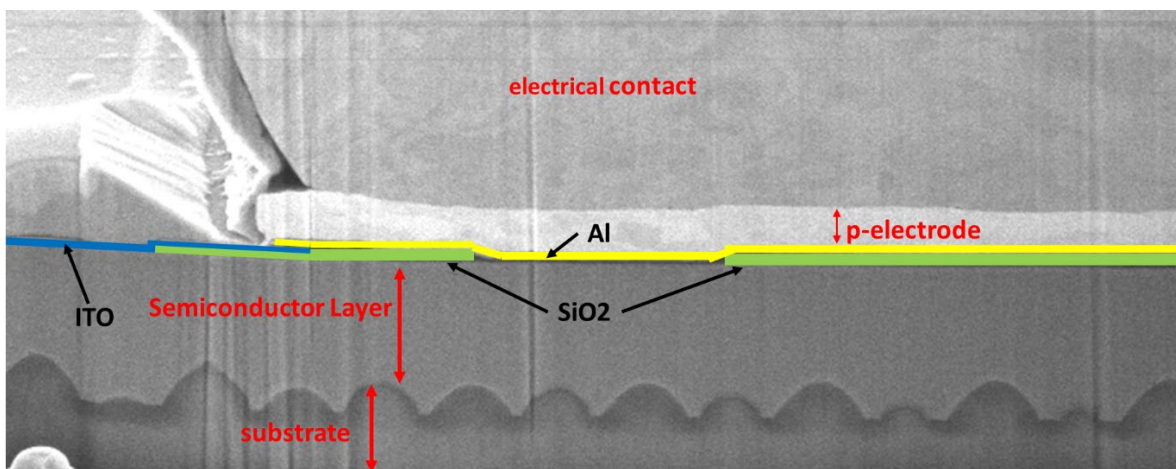


Fig. 18

64. Fig. 18 shows forming a semiconductor layer on top of a substrate. On information and belief, the semiconductor layer comprises an n-doped semiconductor region containing GaN or GaN compound formed on top of substrate, an active region formed on top the n-doped region,



and a p-doped semiconductor region containing GaN or GaN compound formed on top of the active region, these regions being sequentially stacked. Fig. 18 further shows forming an insulating layer and forming a transparent electrode on top of a portion of the insulating layer. On information and belief, the insulating layer is formed on top of the p-doped region of the semiconductor layer. On information and belief, the transparent electrode comprises indium tin oxide (ITO), and the insulating layer comprises of SiO<sub>2</sub>. Further, on information and belief, a reflecting layer made of aluminum (Al) is formed on top of the SiO<sub>2</sub> layer where the ITO has been selectively removed. Further, Fig. 18 shows the p-electrode formed on top of the ITO and the Al layers.

65. Fig. 19 is an annotated SEM image of a cross section cut made using a focused ion beam at location 2, shown below:

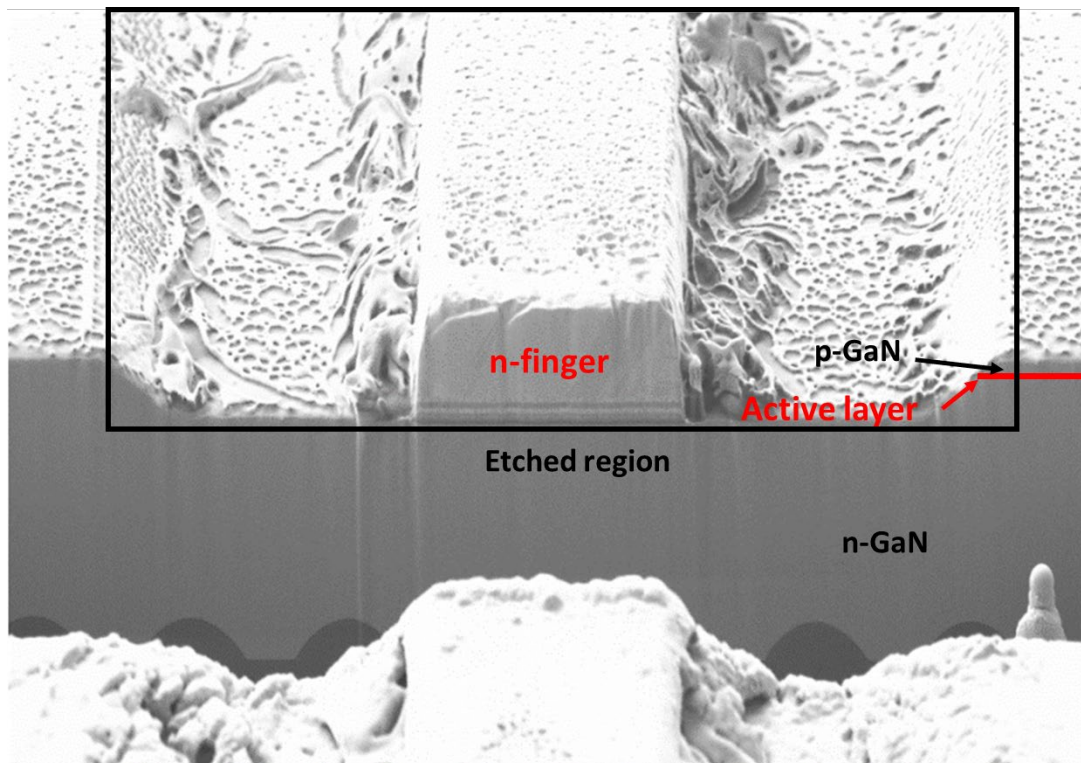


Fig. 19

66. Fig. 19 shows that at location 2, the n-finger is formed on top of the n-doped layer of GaN compound within the etched region. On information and belief, the n-finger functions as an electrode and is electrically connected to the n-doped GaN. On information and belief, the etched region is formed by selective removal of the p-doped layer of GaN compound, the active layer, and portions of the n-doped layer of GaN compound.

67. TCP's infringement has caused and is continuing to cause damage and irreparable injury to Samsung. Samsung will continue to suffer damage and irreparable injury unless and until that infringement is enjoined by this Court, as a remedy at law alone would be inadequate.

68. To the extent that TCP has continued or continues to import into the United States or use, sell, offer for sale in the United States the Accused Products that infringe the '762 patent following its awareness of the '762 patent, TCP's infringement is willful and entitles Samsung to an award of enhanced damages pursuant to 35 U.S.C. § 284 and attorneys' fees pursuant to 35 U.S.C. § 285.

69. Samsung is entitled to injunctive relief and damages in accordance with 35 U.S.C. §§ 271, 281, 283, and 284.

#### **COUNT IV**

#### **INFRINGEMENT OF U.S. PATENT 7,759,140**

70. Samsung re-alleges paragraphs 1-15 above as if fully set forth herein. Samsung further alleges as follows:

71. On information and belief, TCP has directly infringed and continues to infringe one or more claims of the '140 patent literally or under the doctrine of equivalents, including but not limited to exemplary claim 1, in violation of 35 U.S.C. § 271(g), at least by importing into the United States or by using, selling, or offering for sale in the United States, without authority or license, the Accused Products.

72. On information and belief, at least as of February 17, 2023, Samsung has placed TCP on actual notice of the '140 patent and actual notice that its action constitute infringement of the '140 patent. Even after TCP had actual notice of its infringing actions, TCP has intentionally induced and continues to intentionally induce others, including its suppliers, contract manufacturers, distributors, and/or customers, to infringe one or more claims of the '140 patent, including but not limited to exemplary claim 1, in violation of 35 U.S.C. §271(b), by actively encouraging and/or instructing others to import into the United States or to use, sell, or offer to sell in the United States, the Accused Products.

73. At least as of February 17, 2023 TCP has acted with knowledge of willful blindness that the acts it is actively inducing constitute infringement of the '410 patent. On information and belief, TCP intend to cause infringement by these suppliers, contract manufacturers, distributors, and/or customers. TCP has taken affirmative steps to induce infringement by, inter alia, creating advertisements that promote the infringing use of the infringing products, creating an established distribution channel for these products into and within the United States, distributing or making available instructions or manuals for these products to purchasers and prospective buyers, and/or providing technical support, or services for these products to these purchasers in the United States.

74. For example, after actual notice of its infringing actions, TCP actively promotes the sale, use, and/or importation of the Accused Products in marketing materials, technical specifications, data sheets, and web pages on its website.<sup>11</sup> On information and belief, TCP supplies customers with the Accused Products so that they may be used, sold, or offered for sale

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<sup>11</sup> See, e.g., [https://tcpsalesapp.blob.core.windows.net/specsheets/wf228354\\_led\\_ecosave.pdf](https://tcpsalesapp.blob.core.windows.net/specsheets/wf228354_led_ecosave.pdf) (last visited February 16, 2023).



by those customers throughout the United States. TCP additionally provides a wide range of technical support to customers, including product-specific customer support for L60A19N06V30K4.<sup>12</sup> TCP also publicly promotes use of the Accused Products by customers in the United States.<sup>13</sup>

75. Fig. 20 below are images of another LED chip (which on information and belief is manufactured by Seoul Semiconductor) incorporated into TCP L60A19N06V30K4, prior to removal of chip packaging:

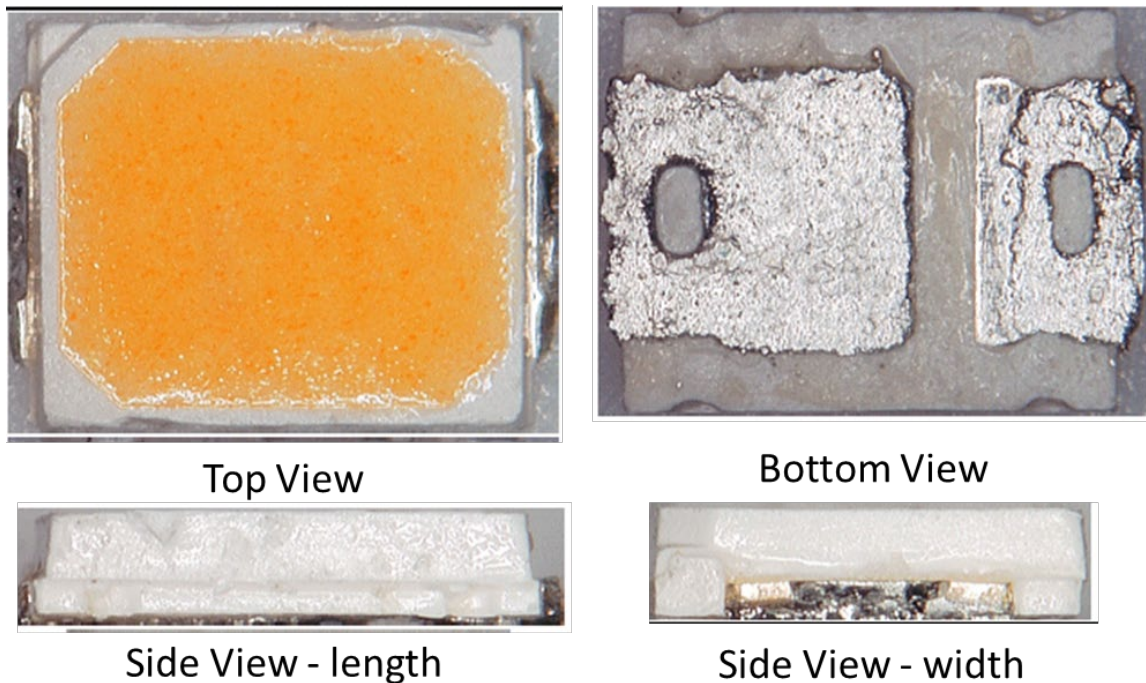


Fig. 20

76. Fig. 21 below is an annotated SEM image of a cross section portion of the LED chip showing forming at least one protruded portion with a curved surface on a planarized

<sup>12</sup> See, e.g., TCP Amazon Store - <https://www.amazon.com/TCP-Equivalent-Shatter-Resistent-Non-Dimmable/dp/B087JXFH68?source=ps-sl-shoppingads-lpcontext&ref=fplfs&smid=ATVPDKIKX0DER&th=1> (last visited February 16, 2023).

<sup>13</sup> See *id.*

substrate, and forming a first n-doped semiconductor crystal layer of GaN or GaN compound to cover the surface of the protruded portion and planarizing the first semiconductor crystal layer.

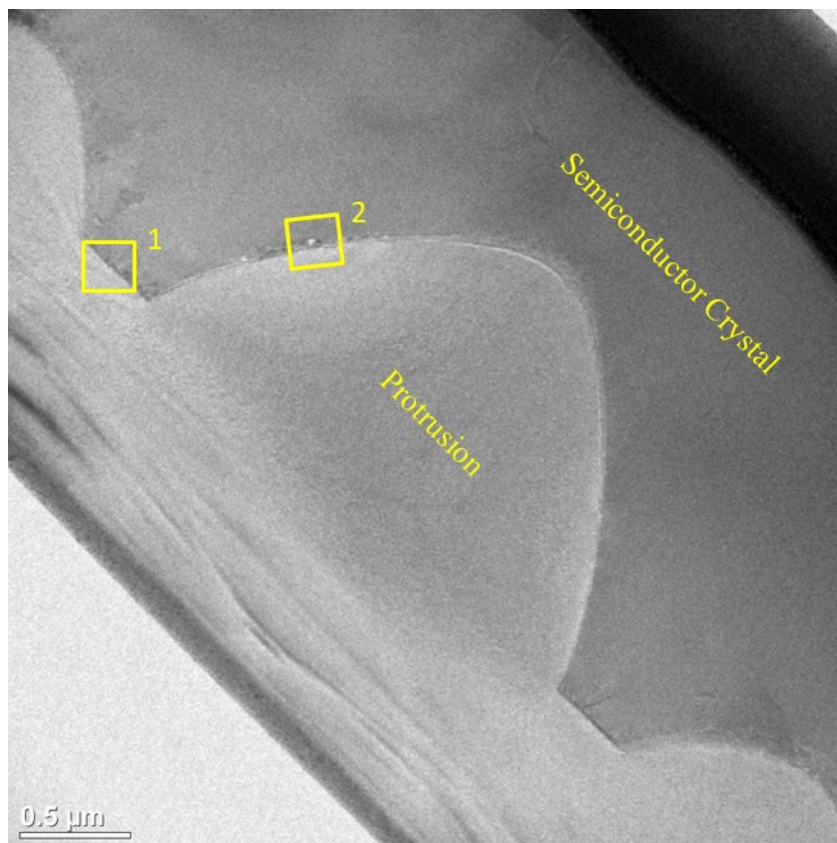


Fig. 21

77. Fig. 22 is an annotated SEM image of a zoom-in portion of the LED chip which shows forming an active layer and p-type semiconductor crystal layer of on the first n-type semiconductor crystal layer.

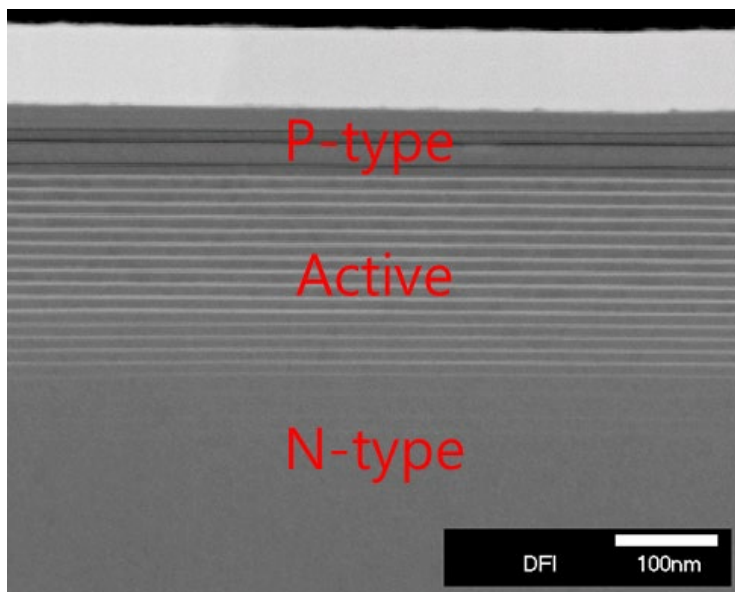


Fig. 22

78. Fig. 23 below is a zoomed in image of the chip at the region labeled with a yellow box numbered 1 in Fig. 21 above. Fig. 23 is annotated to show the A-axis direction of the semiconductor crystal layer growth. The crystal surface orientations of the protrusion are parallel to the A-axis direction. The growth of the semiconductor crystal layer is in the C-axis direction which is perpendicular to the A-axis direction and therefore different than the crystal surface orientations.

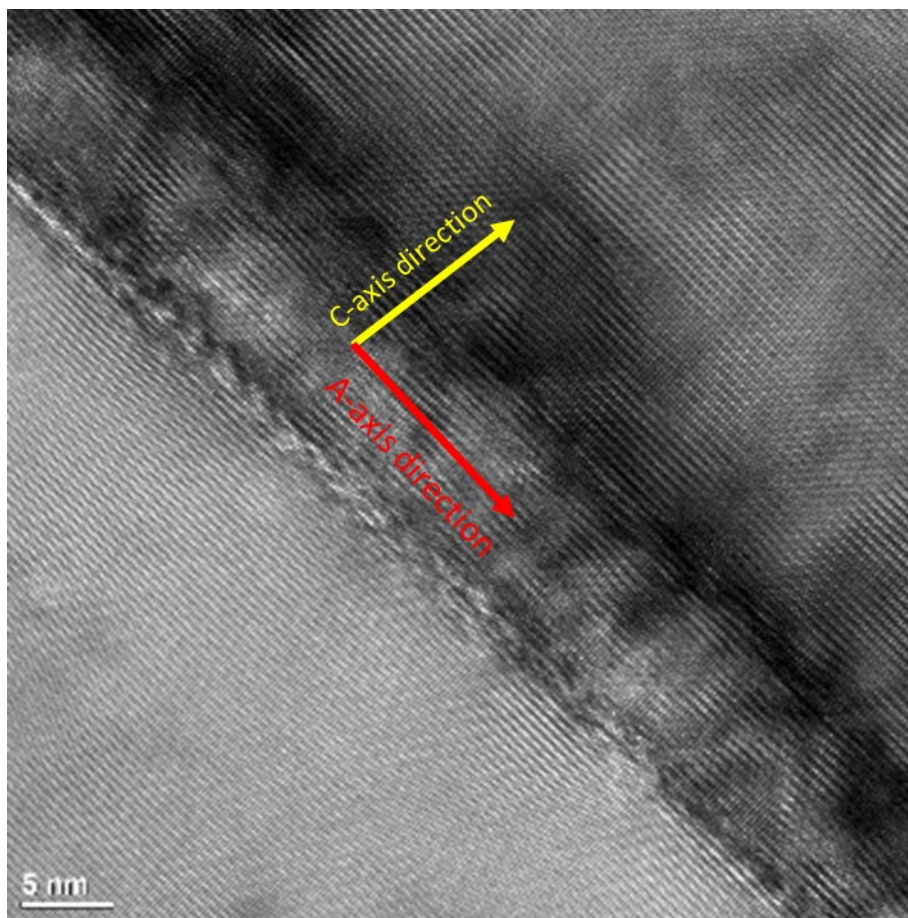


Fig. 23

79. Fig. 24(a) below is a zoomed in image of the chip at the region labeled with a yellow box numbered 2 in Fig. 21 above. This region shows the semiconductor crystal layer growth on the protrusion. Figure 24(b) is a zoomed in image of the top of the growth on the protrusion shown in Fig. 24(a).

80. The small crystal growth on the protrusion is evidence that the growth rate of the semiconductor crystal is higher in between the protrusions than on the protrusions because the growth in between the protrusions rises up faster and covers the growth on the protrusions thereby stunting the growth on the protrusions. Given the faster growth rate, the majority of the growth occurs in between the protrusions.



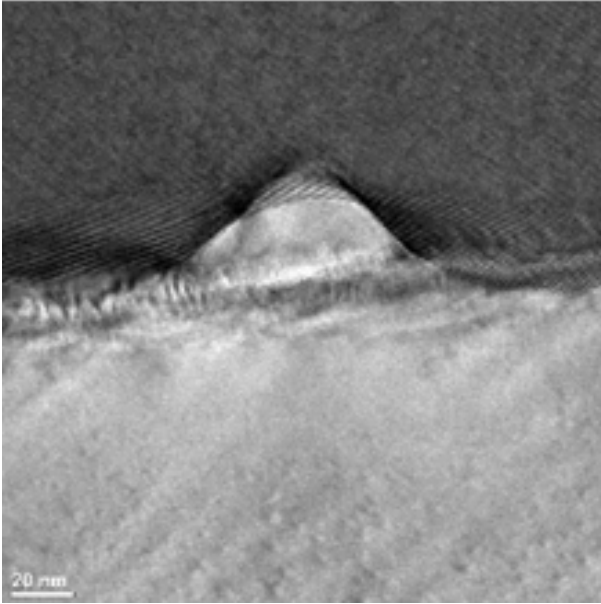


Fig. 24(a)

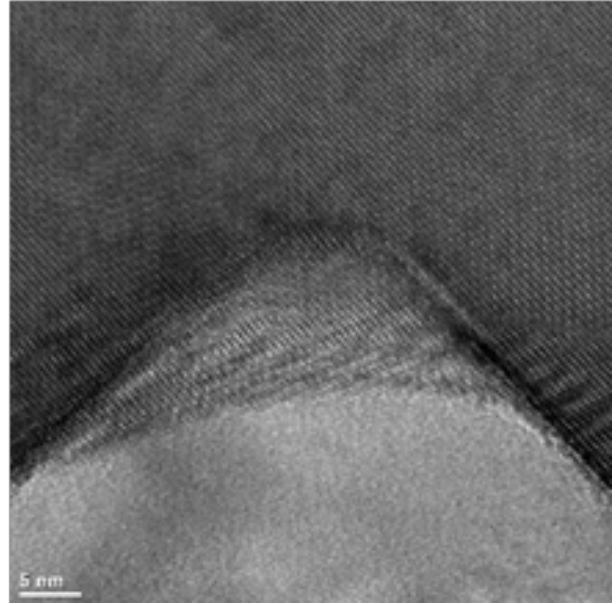


Fig. 24(b)

81. TCP's infringement has caused and is continuing to cause damage and irreparable injury to Samsung. Samsung will continue to suffer damage and irreparable injury unless and until that infringement is enjoined by this Court, as a remedy at law alone would be inadequate.

82. To the extent that TCP has continued or continues to import into the United States or use, sell, offer for sale in the United States the Accused Products that infringe the '140 patent following its awareness of the '140 patent, TCP's infringement is willful and entitles Samsung to an award of enhanced damages pursuant to 35 U.S.C. § 284 and attorneys' fees pursuant to 35 U.S.C. § 285.

83. Samsung is entitled to injunctive relief and damages in accordance with 35 U.S.C. §§ 271, 281, 283, and 284.

**PRAYER FOR RELIEF**

**WHEREFORE**, Samsung respectfully requests the following relief:

- A. The entry of a judgment in favor of Samsung, and against TCP, that TCP has infringed and continues to infringe, one or more claims of each of the Asserted Patents.
- B. The entry of a judgement in favor of Samsung, and against TCP, that TCP has induced, and continues to induce, the infringement of one or more claims of each of the Asserted Patents;
- C. The entry of a judgment in favor of Samsung, and against TCP, that TCP has willfully infringed one or more claims of each of the Asserted Patents;
- D. The entry of a judgement in favor of Samsung, and against TCP, awarding Samsung damages to be paid by TCP in an amount to be proven at trial adequate to compensate Samsung for TCP's past infringement and any continuing or future infringement through the date such judgment is entered, but in no event less than a reasonable royalty for TCP's infringement;
- E. The entry of a judgment in favor of Samsung, and against TCP, trebling damages pursuant to 35 U.S.C. § 284 as result of TCP's willful infringement;
- F. The entry of a judgement and order that this case is exceptional and awarding Samsung its reasonable attorneys' fee to be paid by TCP as provided by 35 U.S.C. § 285;
- G. The entry of a judgment in favor of Samsung, and against TCP, awarding Samsung expenses, costs, and disbarments in this action, including pre-judgement and post-judgement interest;
- H. The entry of a judgment in favor of Samsung, and against TCP, that TCP and its officers, employees, agents, attorneys, affiliates, successors, assigns, and others acting in privity or concert with it be enjoined permanently from making, using, offering to



sell, and selling or inducing or inducing or contributing to others to make, use, offer to sell, or sell any product that infringes the one of more claims of the Asserted Patents, and from importing the same into the United States;

I. Such other relief as this Court deems just and equitable.

**JURY DEMAND**

Pursuant to Federal Rule of Civil Procedure 38(b), Samsung hereby demands trial by jury in this action on all issues so triable.

Dated: February 17, 2023

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Respectfully submitted,

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*/s/ Adam W. Poff*

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