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

MAXEON SOLAR PTE. LTD.,	
Plaintiff,	**CIVIL ACTION NO. 2:24-cv-210**
v.	**JURY TRIAL DEMANDED**
CANADIAN SOLAR, INC.,	
Defendant.	

COMPLAINT FOR PATENT INFRINGEMENT

Maxeon Solar Pte. Ltd. ("Maxeon") files this complaint for patent infringement ("Complaint") against Canadian Solar, Inc. ("Canadian Solar"), and alleges as follows:

THE PARTIES

Maxeon

1. Maxeon is a limited liability company organized and existing under the laws of Singapore. Its principal place of business is located at 8 Marina Boulevard #05-02, Marina Bay Financial Centre, Singapore 018981.

2. Maxeon's history dates back to 1985, when its predecessor, SunPower Corporation ("SunPower"), was founded by Richard Swanson, a professor of electrical engineering at Stanford University, who conducted groundbreaking research on high-efficiency silicon solar cells. Swanson, often referred to as "The father of solar in the U.S.," led SunPower to become one of the preeminent solar companies in the world, producing high-performance solar panels, systems, and services for residential, commercial, and utility-scale markets. Eric Wesoff, "Dick Swanson Retiring from SunPower, But Not Done," Greentech Media (Oct. 8, 2012). Swanson is also known for suggesting a famous correlation, "that the cost of the photovoltaic cells needed to generate solar

power falls by 20% with each doubling of global manufacturing capacity," referred to as "Swanson's Law." Geoffrey Carr, "Sunny uplands," The Economist (Nov. 21, 2012).

3. Since its inception, SunPower has made major investments in solar technology development and innovation, and has become a global leader in the field. SunPower's innovations are embodied in, and protected by, a large patent portfolio spanning more than 1,650 patents worldwide (including those asserted herein). These innovations have also been successfully implemented in various industries around the world through best-in-class solar panel product lines. Due to SunPower's efforts, continued by Maxeon, today's solar modules are significantly more efficient and sustainable, and solar energy has become a viable alternative to non-renewable energy sources.

4. One specific innovation relates to solar cell technologies that utilize a tunnel oxide layer with a silicon emitter. The term "TOPCon" stands for **t**unnel **o**xide **p**assivated **con**tact, and refers to solar cells that incorporate a thin layer of silicon oxide (e.g., silicon dioxide, SiO_2) to form a tunnel barrier between the silicon wafer and the metal contacts. *See* Feldman, et al., "A Passivated Rear Contact for High-Efficiency n-Type Silicon Solar Cells Enabling High V_{oc}S and *FF* > 82%" at 1 (28th European PV Solar Energy Conference & Exhibition, Paris, Sept. 30 – Oct. 4, 2013) (hereinafter "Feldman").[1] This oxide layer acts as a passivation layer that reduces the surface recombination of the charge carriers, as well as a tunnel layer that allows the charge carriers to tunnel through the barrier and reach the contacts. SunPower had designed and patented a Front Contact Solar Cell using an oxide layer in this configuration years before the "TOPCon" moniker

[1] The term "TOPCon" appears to have been coined by researchers at the Fraunhofer Institute for Solar Energy Systems (ISE) in 2013. *See* Feldman at 1. Unsurprisingly, these researchers rely on, and cite throughout, research performed by Swanson. *See generally id.*

was ever used. *Compare* asserted U.S. Patent No. 8,222,516, Fig. 1 (annotated) *with* Feldman, Fig. 3.

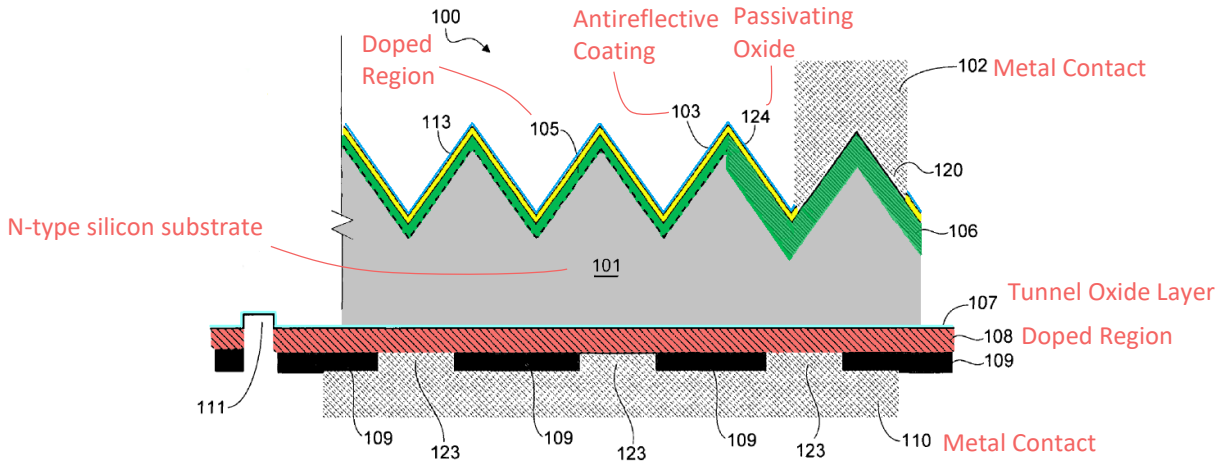


FIG. 1

Exemplary SunPower Front Contact Solar Cell Patent (2008)

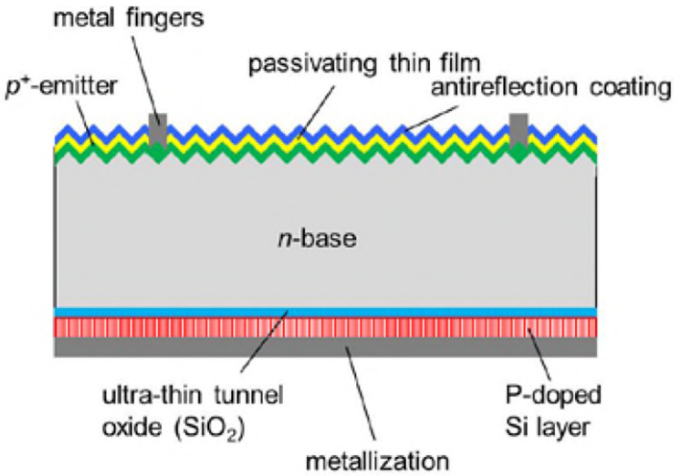


Figure 3: Solar cell with boron-doped emitter at the front and passivated rear contacts.

Feldman "TOPCon" Solar Cell (2013)

5. TOPCon technology is an improvement over conventional solar cell technologies, such as passivated emitter and rear cell ("PERC"), because it can achieve improved operating

characteristics, including higher conversion efficiency and power output. Another benefit to TOPCon technology is its compatibility with existing industrial processes and equipment for solar cell manufacturing, and its ability to be integrated with other solar cell technologies, such as heterojunction, tandem, and bifacial solar cells, to further boost solar cell efficiency and performance. For these reasons, TOPCon technology has emerged as the predominant technology for new expansion and replacement of PERC technology, and has generated significant market interest.

6. In 2020, a group of researchers conducted a patent landscape report related to TOPCon technology and found that "SunPower is the earliest patent assignee among the top six companies" who own the most TOPCon patents and that SunPower's "early patents might be the parent applications of the initial structure of the TOPCon solar cell." Chieh-Wa Tsai, et. al, *Patent Analysis of High Efficiency Tunneling Oxide Passivated Contact Solar Cells*, 13 ENERGIES 3060, 10 (2020); *see also id.*, Fig. 8 (below, red box added).

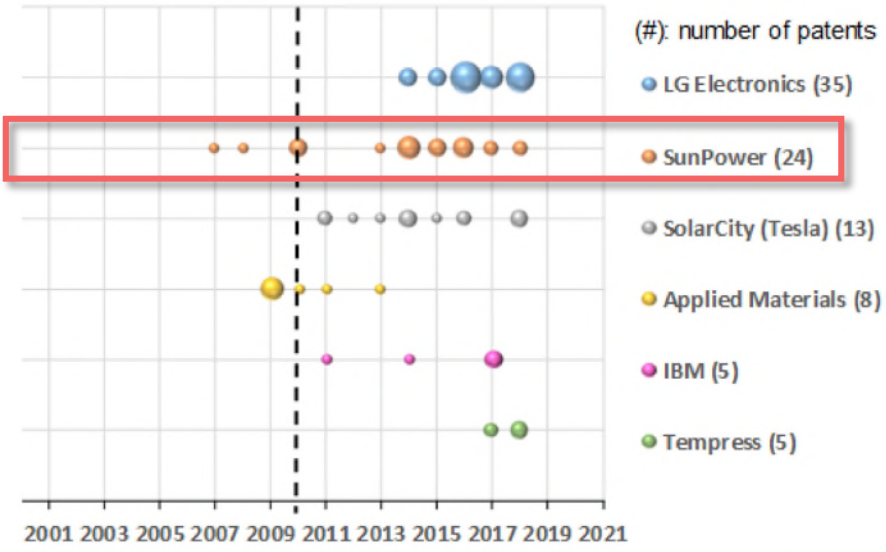


Figure 8. Timeline of technology development of major patent assignees.

TOPCon Patent Analysis (2020)

7. In August 2020, SunPower completed a strategic spin-off of its solar panel manufacturing and international operations to Maxeon Solar Technologies, Ltd., which is the ultimate parent company to Maxeon. Maxeon and SunPower continued to develop and commercialize next generation solar panel technologies, with early stage research conducted by SunPower's Silicon Valley-based research and development group, and deployment-focused innovation and scale-up carried out by Maxeon.

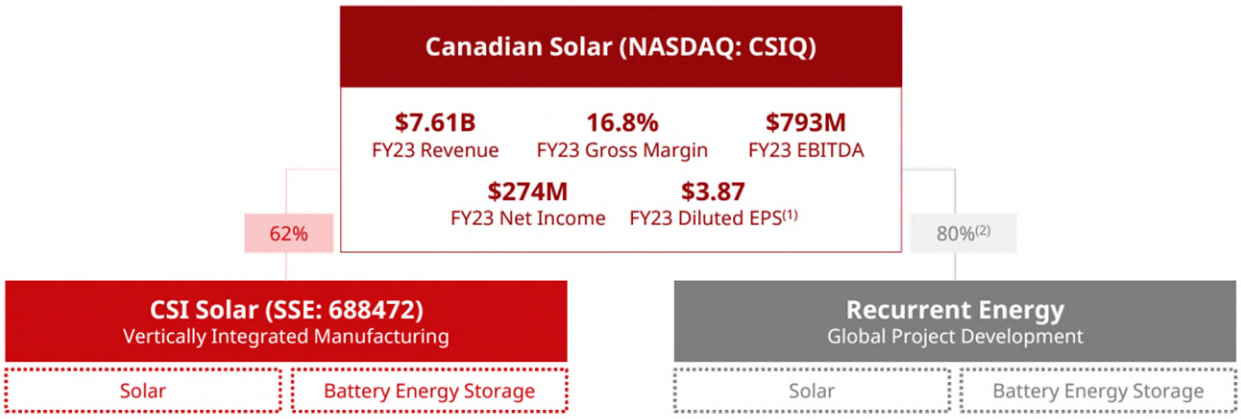
Canadian Solar

8. Upon information and belief, Canadian Solar is a corporation organized and existing under the laws of Canada. Its principal place of business is located at 545 Speedvale Avenue West, Guelph, Ontario, N1K 1E6.

9. Canadian Solar "has two business segments: Recurrent Energy and CSI Solar. These two businesses operate as follows:

- **Recurrent Energy** is one of the world's largest clean energy project development platforms with 15 years of experience, having delivered approximately 10 GWp of solar power projects and 3.3 GWh of battery energy storage projects. It is vertically integrated and has strong expertise in greenfield origination, development, financing, execution, operations and maintenance, and asset management.
- **CSI Solar** consists of solar module and battery energy storage manufacturing, and delivery of total system solutions, including inverters, solar system kits and EPC (engineering, procurement, and construction) services."

https://investors.canadiansolar.com/news-releases/news-release-details/canadian-solar-reports-fourth-quarter-and-full-year-2023-results (last accessed March 24, 2024); *see also* Canadian Solar 4Q23 Earnings Call at 4 (March 14, 2024) (below) *available at* https://investors.canadiansolar.com/static-files/3cb9e820-02b8-41be-b0c5-f03369055873 (last accessed March 24, 2024).



Canadian Solar Corporate Structure

10. In 2019—more than 10 years after SunPower/Maxeon pioneered TOPCon technology—the CSI Solar segment started "developing N-type TOPCon (Tunnel Oxide Passivated Contacts) technologies." CSI Solar Co., Ltd, "CSI High Efficiency TOPCon Module White Paper" at 1 (January 2023) *available at* https://static.csisolar.com/wp-content/uploads/2023/03/08111805/Canadian-Solar-TOPCon-Module-Technical-White-Paper.v4.pdf (last accessed March 24, 2024). Understanding the advantages of TOPCon technology for solar cells, including more power, greater efficiency, and compatibility with existing PERC production lines; and seeing the trend that "TOPCon is expected to be mainstream cell technology in the coming years," Canadian Solar aggressively entered into the TOPCon marketplace with its own "TOPCon module portfolio covering both 182mm and 210mm cells,

single-glass and double-glass encapsulation, and various module sizes and power outputs to satisfy different application scenarios." *Id.* at 1-2, Fig. 2 (below).

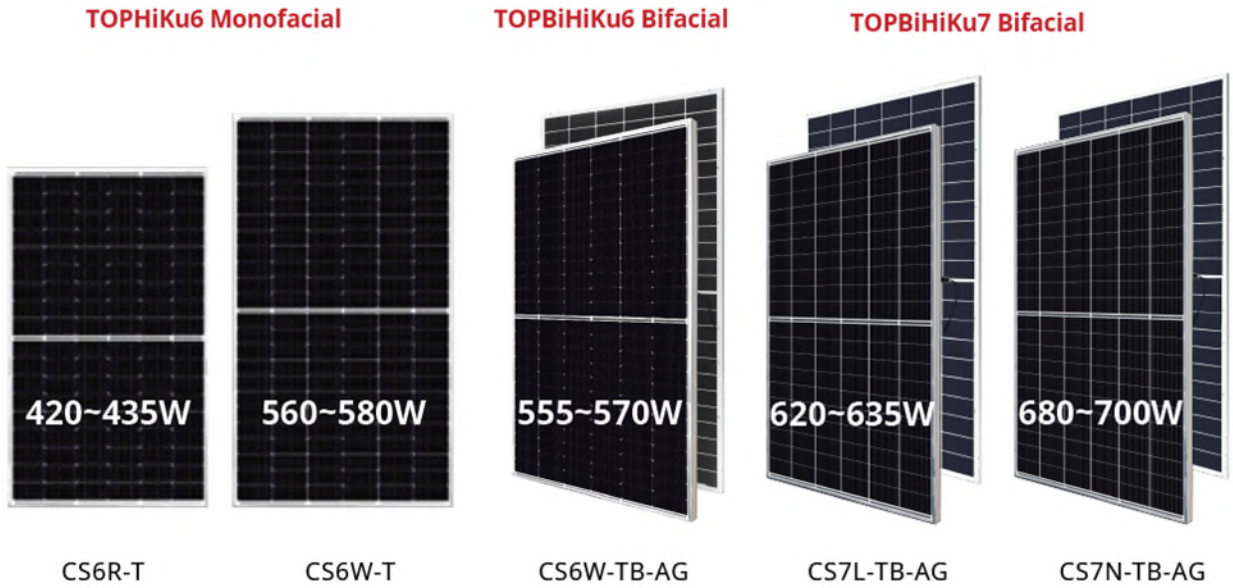
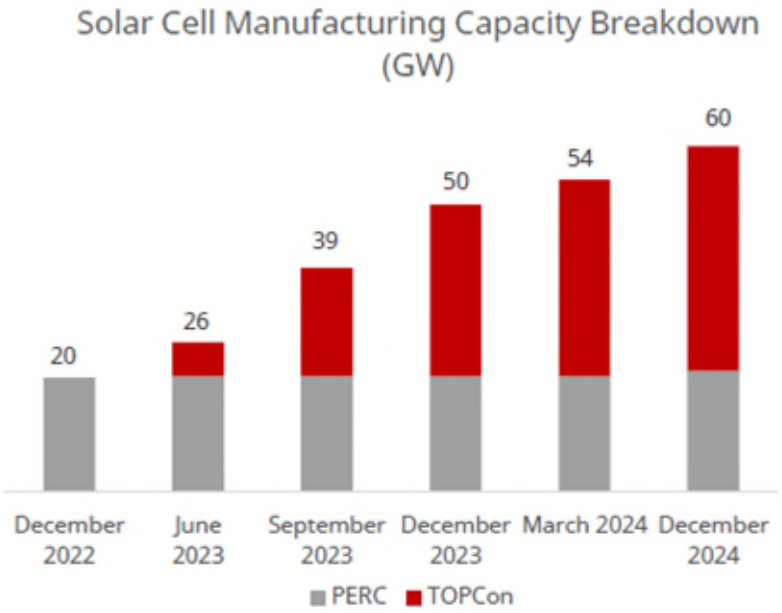


Figure 2. CSI TOPCon Module Family

Example Canadian Solar TOPCon Products

11. On December 15, 2022, Canadian Solar "announced that its majority-owned subsidiary CSI Solar Co., Ltd. will start mass production of high efficiency N-type TOPCon (Tunnel Oxide Passivated Contact) solar modules in the first quarter of 2023[, including] . . . bifacial TOPBiHiKu6 (555W-570W) and monofacial TOPHiKu6 (420W-575W) modules, and the 210mm cell based bifacial TOPBiHiKu7 (615W-690W) modules." https://investors.canadiansolar.com/news-releases/news-release-details/canadian-solar-start-mass-production-topcon-modules-power-output (last accessed March 24, 2024). By the end of the third quarter 2023, Canadian Solar would boast that "N-type TOPCon cell capacity now accounts for half of [its] total cell capacity." Canadian Solar, Investor Presentation at 9, 20 (Nov. 2023) (hereinafter "Investor Presentation") (below) *available at*

https://investors.canadiansolar.com/static-files/1fad9099-b915-4ec4-9c39-070083556036 (last accessed March 24, 2024).



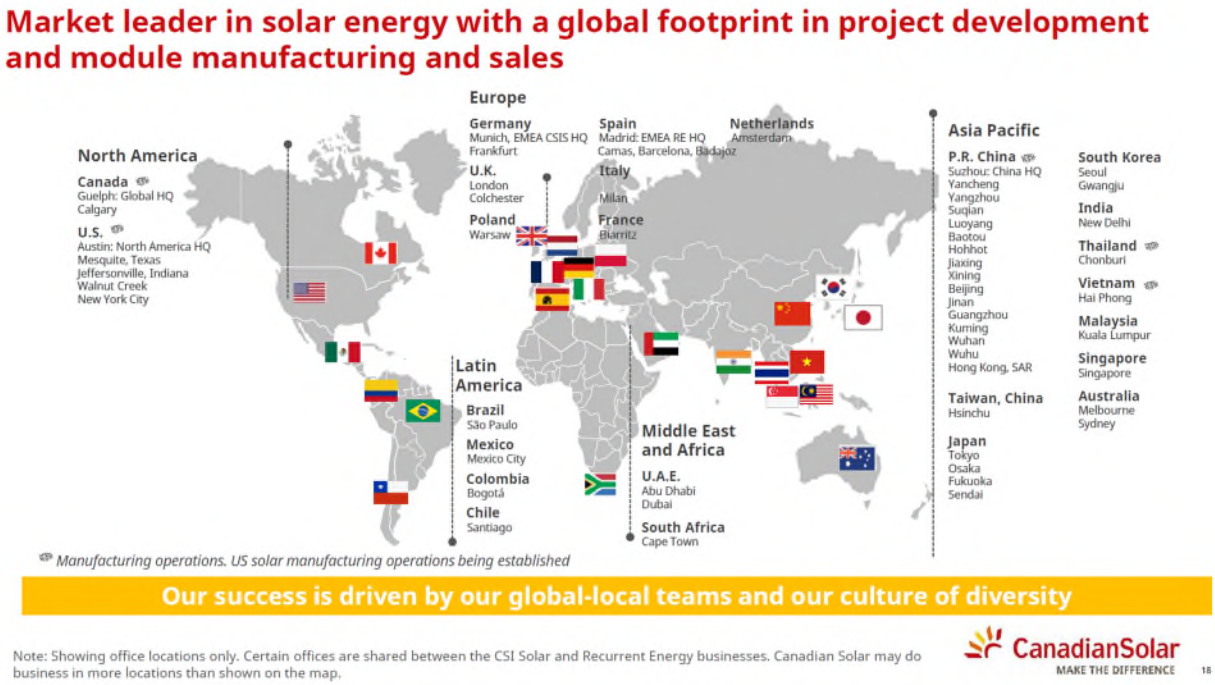
Canadian Solar's Solar Cell Manufacturing Breakdown by Type

JURISDICTION AND VENUE

12. This is an action for infringement arising under the patent laws of the United States 35 U.S.C. § 271. Accordingly, this Court has subject matter jurisdiction pursuant to 28 U.S.C. §§ 1331 and 1338(a).

13. Upon information and belief, Canadian Solar is subject to this Court's specific and general personal jurisdiction pursuant to due process and/or the Texas Long Arm Statute, due at least to its substantial business in this State and District, including: (A) at least part of its infringing activities alleged herein; and (B) regularly doing or soliciting business, engaging in other persistent conduct, and/or deriving substantial revenue from infringing goods offered for sale, sold, and imported in or to Texas, and services provided to Texas residents directly and/or vicariously through and/or in concert with its alter egos, intermediaries, agents, distributors, importers, customers, subsidiaries, and/or consumers. For example, Canadian Solar states that it is "a leading

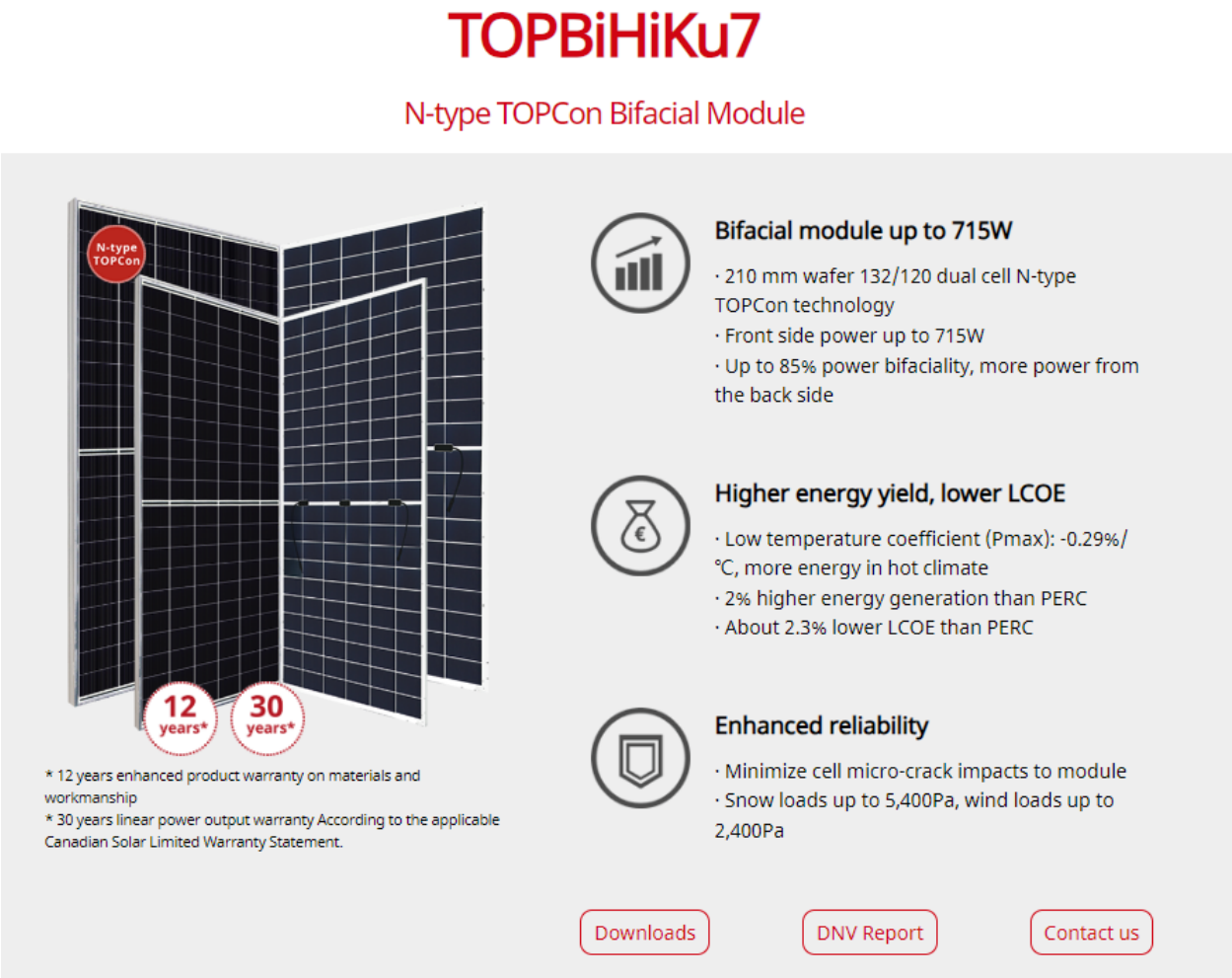
manufacturer of solar photovoltaic modules, provider of solar energy and battery storage solutions, and developer of utility-scale solar power and battery storage projects with a geographically diversified pipeline in various stages of development" which has "delivered over 102 GW of premium-quality, solar photovoltaic modules to customers **across the world**." *See* https://investors.canadiansolar.com/news-releases/news-release-details/canadian-solar-receives-dnv-endorsement-cutting-edge-topcon (Sept. 11, 2023) (emphasis added) (last accessed March 24, 2024). Canadian Solar claims to be a "Market leader in solar energy with a global footprint in project development and module manufacturing and sales" with office locations in 25 countries, including the United States. Investor Presentation at 18 (below).



Canadian Solar's Global Footprint

14. Further, Canadian Solar maintains commercial websites accessible to the residents of Texas and this District through which Canadian Solar promotes, markets, advertises, and facilitates sales of the infringing TOPCon solar modules. https://www.csisolar.com/module/ (last accessed March 24, 2024).

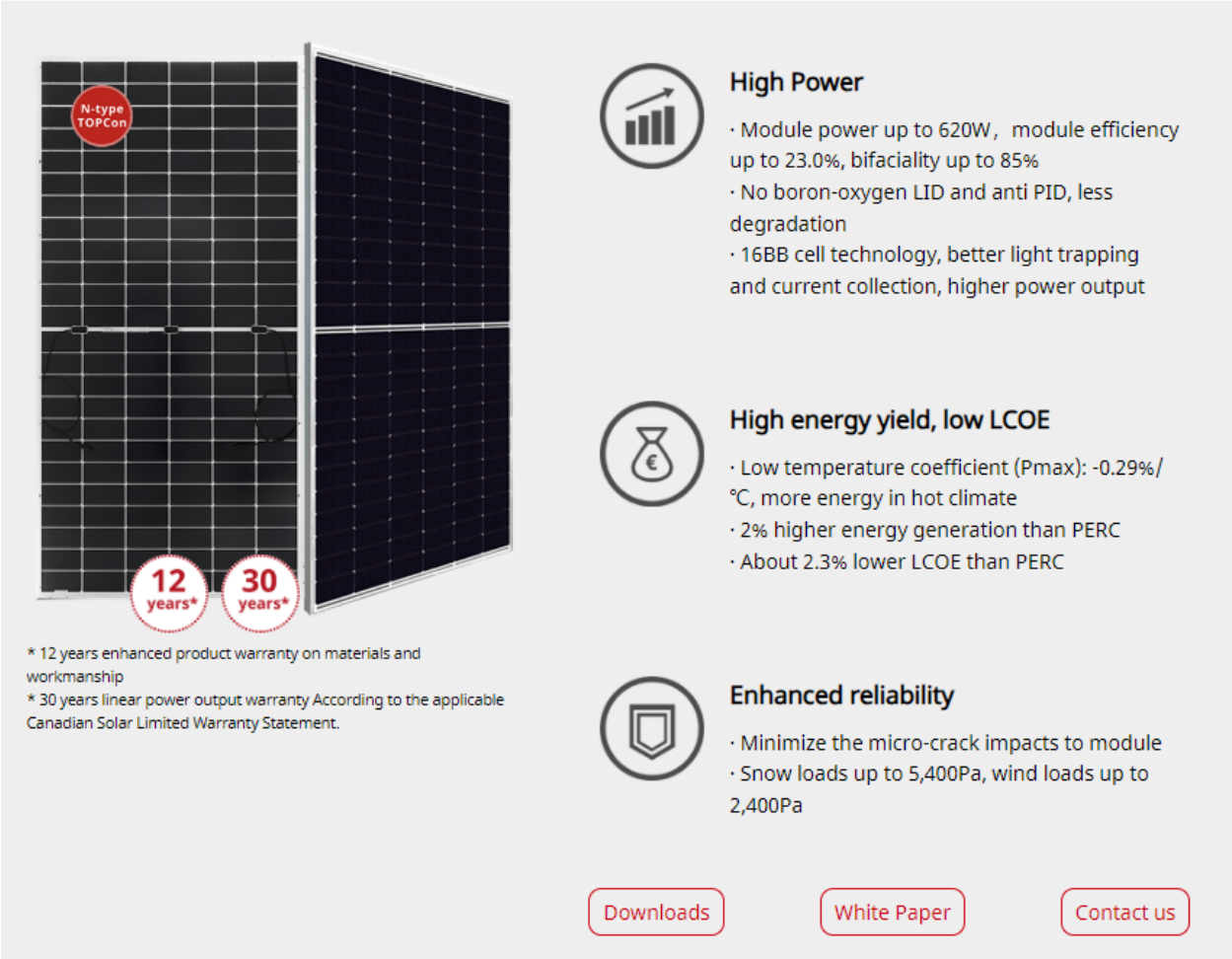
15. In particular, Canadian Solar offers for sale the TOPBiHiKu7 series solar module that is an "N-type TOPCon Bifacial Module" on its website. https://www.csisolar.com/topbihiku7/ (below) (last accessed March 24, 2024).



Canadian Solar's Landing Page for the TOPBiHiKu7 N-type TOPCon Bifacial Module

16. Upon information and belief, one or more models of the TOPBiHiKu7 N-type TOPCon Bifacial Module series is sold and distributed in Texas and in this District.

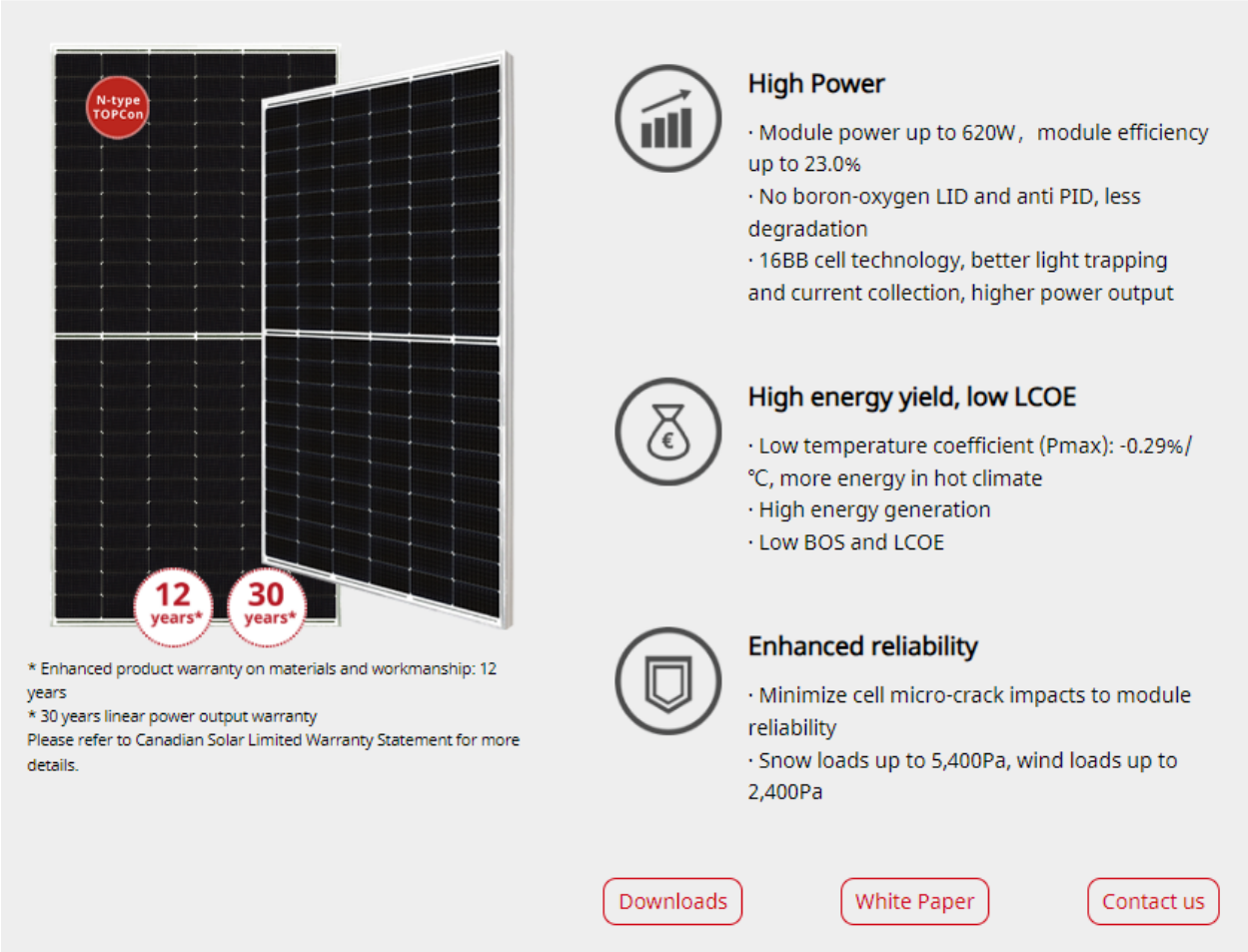
17. Canadian Solar also offers for sale the TOPBiHiKu6 solar module series that is an "N-type TOPCon Bifacial Module" on its website. https://www.csisolar.com/topbihiku6/ (below) (last accessed March 24, 2024).



Canadian Solar's Landing Page for the TOPBiHiKu6 N-type TOPCon Bifacial Module

18. Upon information and belief, one or more models of the TOPBiHiKu6 N-type TOPCon Bifacial Module series is sold and distributed in Texas and in this District.

19. Canadian Solar further offers for sale the TOPHiKu6 solar module series that is an "N-Type TOPCon Monofacial Module" on its website. https://www.csisolar.com/tophiku6/ (below) (last accessed March 24, 2024).



Canadian Solar's Landing Page for the TOPHiKu6 N-Type TOPCon Monofacial Module

20. Upon information and belief, one or more models of the TOPHiKu6 N-type TOPCon Monofacial Module series is sold and distributed in Texas and in this District.

21. Canadian Solar also does business in Texas via its module manufacturing facility in Mesquite, Texas. *See* Investor Presentation at 8 (showing June 15, 2023 announcement regarding facility) (below). This manufacturing plant purports to output the equivalent of "20,000 high-power modules per day" and to have created "1,500 new jobs in the region." *Id.* (below).

CANADIAN SOLAR ANNOUNCES U.S. MODULE MANUFACTURING FACILITY IN MESQUITE, TEXAS

GUELPH, ON, June 15, 2023 /PRNewswire/ -- Canadian Solar Inc. (the "Company" or "Canadian Solar") (NASDAQ: CSIQ), headquartered in Guelph, Ontario, today announced that it is establishing a solar PV module production facility in Mesquite, Texas.

Canadian Solar is building a state-of-the-art solar photovoltaic module manufacturing plant with an annual output of 5 GW, equivalent to approximately 20,000 high-power modules per day. The new facility represents an investment of over $250 million and will create approximately 1,500 skilled jobs once it is fully ramped up. Production is expected to begin around the end of 2023. This will be Canadian Solar's first United States manufacturing facility, following its successful track record of production in Canada, China, Brazil, Thailand and Vietnam. In 2021, Canadian Solar relocated Recurrent Energy, its 17-year-old U.S. subsidiary, to Austin, spearheading the rapid growth of renewable energy in the Lone Star State as a solar and battery storage project developer.

"Canadian Solar's new $250 million manufacturing plant in Mesquite will bolster Texas' status as the energy capital of the world and secure our leadership as a global tech hub," said **Governor Greg Abbott**. "I thank Canadian Solar for choosing Texas for their next U.S. business investment and for creating 1,500 new jobs in the region to help boost the community for generations to come."

United States Senator Ted Cruz expressed his enthusiasm for the project stating, "Texas is an energy production powerhouse, and we embrace an all-of-the-above energy strategy. It's great to see this incredible investment in Mesquite, which will create 1,500 good-paying jobs in Texas. This kind of investment in the Lone Star State is the reason people are flocking to our great state. I will continue to fight for Texas innovators and job creators in the U.S. Senate."

Canadian Solar's Mesquite, TX Manufacturing Facility

22. Canadian Solar's Chairman and CEO, Dr. Shawn Qu, confirmed that Canadian Solar's "Texas [solar panel] module factory . . . began production in late 2023 . . . [and Canadian Solar] continue[s] to see strong demand for [its] U.S.-made products."

https://investors.canadiansolar.com/news-releases/news-release-details/canadian-solar-reports-fourth-quarter-and-full-year-2023-results (last accessed March 24, 2024).

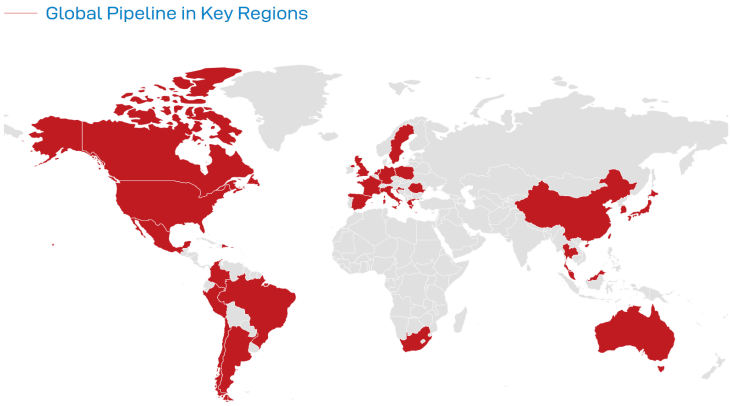
23. Recently, Canadian Solar announced that it "has secured a framework agreement to provide Sol Systems[, a leading renewable energy company,] with a significant supply of modules from its newly ramped Texas module factory." https://investors.canadiansolar.com/news-releases/news-release-details/canadian-solar-partners-sol-systems-ramp-us-module-manufacturing (last accessed March 24, 2024). "Canadian Solar will supply its latest high efficiency N-Type TOPCon (Tunnel Oxide Passivated Contact) solar modules to support Sol Systems' project pipeline in the U.S. between 2024 and 2025." *Id.*

24. This Court has personal jurisdiction over Canadian Solar, directly or through intermediaries, distributors, importers, customers, subsidiaries, and/or consumers including its U.S.-based, wholly owned subsidiaries, Canadian Solar Construction (USA) LLC, Canadian Solar (USA) Inc., Recurrent Energy Group Inc., and Recurrent Energy, LLC. On its own and/or through direction and control of its subsidiaries, Canadian Solar has committed acts of direct and/or indirect patent infringement within Texas, and elsewhere within the United States, giving rise to this action, and/or has established minimum contacts with Texas such that personal jurisdiction over Canadian Solar would not offend traditional notions of fair play and substantial justice.

25. Canadian Solar also maintains a corporate presence in the United States through, at least, Recurrent Energy, LLC[2] ("Recurrent Energy") which is headquartered in Texas. In fact, Canadian Solar purposefully "relocated Recurrent Energy . . . to Austin, [to] spearhead[] the rapid growth of renewable energy in the Lone Star State [also known as Texas] as a solar and battery storage project developer." https://investors.canadiansolar.com/news-releases/news-release-

[2] Recurrent Energy is located at 98 San Jacinto Blvd, Ste 750, Austin, Texas 78701. *See Contact Us*, Recurrent Energy, https://recurrentenergy.com/contact/ (last accessed March 24, 2024) (mouse over Texas location).

details/canadian-solar-announces-us-module-manufacturing-facility (June 15, 2023) (last accessed March 24, 2024). According to its website, "Recurrent Energy is one of the world's largest and most geographically diversified utility-scale solar and energy storage project development, ownership and operations platforms." https://recurrentenergy.com/ (last accessed March 24, 2024). Recurrent Energy is "a wholly-owned subsidiary of Canadian Solar Inc. and function[s] as Canadian Solar's global development and power services business." *Id.* "Recurrent Energy has successfully developed 9 GWp of solar and 3 GWh of battery storage projects across six continents" with "a pipeline of more than 25 GWp in solar and 47 GWh in battery storage under development." https://recurrentenergy.com/project-portfolio/ (last accessed March 24, 2024). In Texas, Recurrent Energy "closed $282 million of debt financing to construct its Maplewood and Maplewood 2 solar projects, located in Pecos County in the Permian Basin of West Texas." https://investors.canadiansolar.com/news-releases/news-release-details/recurrent-energy-reaches-key-milestone-texas-solar-projects (July 21, 2020) (last accessed March 24, 2024). Recurrent Energy's global reach purports to encompass the entire United States and beyond. *See* https://recurrentenergy.com/project-portfolio/ (screenshot below) (last accessed March 24, 2024).



Recurrent Energy's Global Pipeline Demonstrative

26. Upon information and belief, Canadian Solar controls or otherwise directs and authorizes all activities of Recurrent Energy, including Recurrent Energy's manufacturing, using,

offering for sale, selling, and/or importing accused products, their components, and/or products containing the same, which incorporate the fundamental technologies covered by the asserted patents. Recurrent Energy is authorized to import, sell, or offer for sale the accused products on behalf of its controlling parent. Upon information and belief, Canadian Solar researches, designs, develops, manufactures, and sells the accused TOPCon solar modules and directs Recurrent Energy to do the same, as well as import, offer for sale, and sell the accused products in the United States. Accordingly, Recurrent Energy conducts infringing activities on behalf of Canadian Solar.

27. Upon information and belief, Recurrent Energy's corporate presence in the United States gives Canadian Solar substantially the same business advantages it enjoys in conducting its business through its own offices or paid agents in the state. This includes Recurrent Energy's headquarters in Austin, Texas, and its additional office location in New York, New York. *See Contact Us*, Recurrent Energy, https://recurrentenergy.com/contact/ (last accessed March 24, 2024) (mouse over U.S. locations).

28. Upon information and belief, on its own behalf and/or via its alter egos, representatives, authorized distributors, agents, intermediaries, importers, customers, subsidiaries, and/or consumers maintaining a business presence, operating in, and/or residing in the United States, Canadian Solar has distributed and sold its infringing TOPCon solar modules in Texas, including within this District.

29. Upon information and belief, Canadian Solar has placed and continues to place infringing TOPCon solar modules into the stream of commerce via established distribution channels comprising at least representatives, customers, and/or its wholly owned, U.S.-based subsidiary Recurrent Energy, for the sale of the infringing TOPCon solar modules, with the

knowledge and/or intent that those infringing TOPCon solar modules are imported, used, offered for sale, sold, and continue to be sold in the United States and Texas, including in this District.

30. In the alternative, the Court has personal jurisdiction over Canadian Solar under Federal Rule of Civil Procedure 4(k)(2), because the claims for patent infringement in this action arise under federal law, Canadian Solar is not subject to the jurisdiction of the courts of general jurisdiction of any state, and exercising jurisdiction over Canadian Solar is consistent with the U.S. Constitution.

31. Venue is proper in this judicial district pursuant to 28 U.S.C. § 1391 because, among other things, Canadian Solar is not resident in the United States, and thus may be sued in any judicial district, including this one, pursuant to 28 U.S.C. § 1391(c)(3).

THE ASSERTED PATENTS AND TECHNOLOGY

32. The patents-in-suit include Maxeon's United States Patent Nos. 8,222,516 ("the '516 patent"), 8,878,053 ("the '053 patent"), and 11,251,315 ("the '315 patent") (collectively "the Asserted Patents").

33. On July 17, 2012, the United States Patent and Trademark Office ("USPTO") duly and legally issued the '516 patent, titled "Front Contact Solar Cell with Formed Emitter," to SunPower. The named inventor of the '516 patent is Peter John Cousins. A true and correct copy of the '516 patent is attached as Exhibit 1 to this Complaint.

34. The '516 patent is generally directed to a low-cost, high-efficiency front contact solar cell. The '516 patent discloses and specifically claims novel and non-obvious subject matter that represents improvements over conventional solar cells that were available as of the priority date of the '516 patent.

35. On November 4, 2014, the USPTO duly and legally issued the '053 patent, titled "Front Contact Solar Cell with Formed Emitter," to SunPower. The named inventor of the '053

patent is Peter John Cousins. The ’053 patent is a division of the application that issued as the ’516 patent. A true and correct copy of the ’053 patent is attached as Exhibit 2 to this Complaint.

36. The ’053 patent is generally directed to methods for fabricating a low-cost, high-efficiency front contact solar cell. The ’053 patent discloses and specifically claims novel and non-obvious subject matter that represents improvements over conventional methods for fabricating solar cells that were available as of the priority date of the ’053 patent.

37. On February 15, 2022, the USPTO duly and legally issued the ’315 patent, titled “Solar Cells with Improved Lifetime, Passivation and/or Efficiency,” to SunPower. The named inventors of the ’315 patent are David D. Smith, Tim Dennis, and Russelle De Jesus Tabajonda. A true and correct copy of the ’315 patent is attached as Exhibit 3 to this Complaint.

38. The ’315 patent relates generally to solar cell fabrication processes and structures. The ’315 patent claims novel and non-obvious subject matter that represents improvements over solar cells that were available as of the priority date for the ’315 patent.

39. On December 14, 2022, SunPower assigned the Asserted Patents to Maxeon. Maxeon owns the entire right, title, and interest in and to each of the Asserted Patents.

CANADIAN SOLAR’S INFRINGING PRODUCTS AND ACTIVITIES

40. As described in detail above, Canadian Solar designs, manufactures, imports, sells, and/or offers to sell TOPCon solar modules. *See* https://www.csisolar.com/module/ (last accessed March 24, 2024). Claims of the Asserted Patents cover all models of Canadian Solar’s solar module series that incorporate TOPCon technology (the “Accused Products”), including, but not limited to, the TOPBiHiKu7, TOPBiHiKu6, and TOPHiKu6 series solar modules. To be clear, each of these series of solar modules include models of different sizes and configurations. *See, e.g.*, CS-Datasheet-TOPBiHiKu7-TOPCon_CS7N-TB-AG_v1.62_EN (listing model numbers CS7N-685TB-AG, CS7N-690TB-AG, CS7N-695TB-AG, CS7N-700TB-AG, CS7N-705TB-AG,

CS7N-710TB-AG, CS7N-715TB-AG) (hereinafter, "TOPBiHiKu7 Datasheet"). Upon information and belief, each of these models and all other models of Canadian Solar's solar modules that incorporate TOPCon technology are fabricated in a substantially similar way and/or have substantially similar features, such that each infringes the asserted claims in the same way.

COUNT I

(INFRINGEMENT OF U.S. PATENT NO. 8,222,516)

41. Maxeon re-alleges and incorporates by reference the allegations in paragraphs 1-40 above.

42. Maxeon is the assignee of the '516 patent. Maxeon has all substantial rights to enforce the '516 patent, including the right to exclude others and to sue and recover damages for past and future infringement.

43. The '516 patent is valid, enforceable, and was duly issued in full compliance with Title 35 of the United States Code.

44. Canadian Solar has infringed and continues to infringe directly and/or indirectly, either literally or under the doctrine of equivalents, one or more claims of the '516 patent in this District and elsewhere.

Direct Infringement

45. Canadian Solar directly infringes at least claims 9 and 10 of the '516 patent under 35 U.S.C. § 271(a) by making, using, selling, offering for sale in the United States, and/or importing into the United States, without permission, consent, authority or license, the Accused Products, including without limitation the TOPBiHiKu7 series solar modules. Furthermore, upon information and belief, Canadian Solar sells and makes the Accused Products outside of the United States, delivers the Accused Products to its customers, distributors, and/or subsidiaries in the United States, or in the case that it delivers the Accused Products outside of the United States,

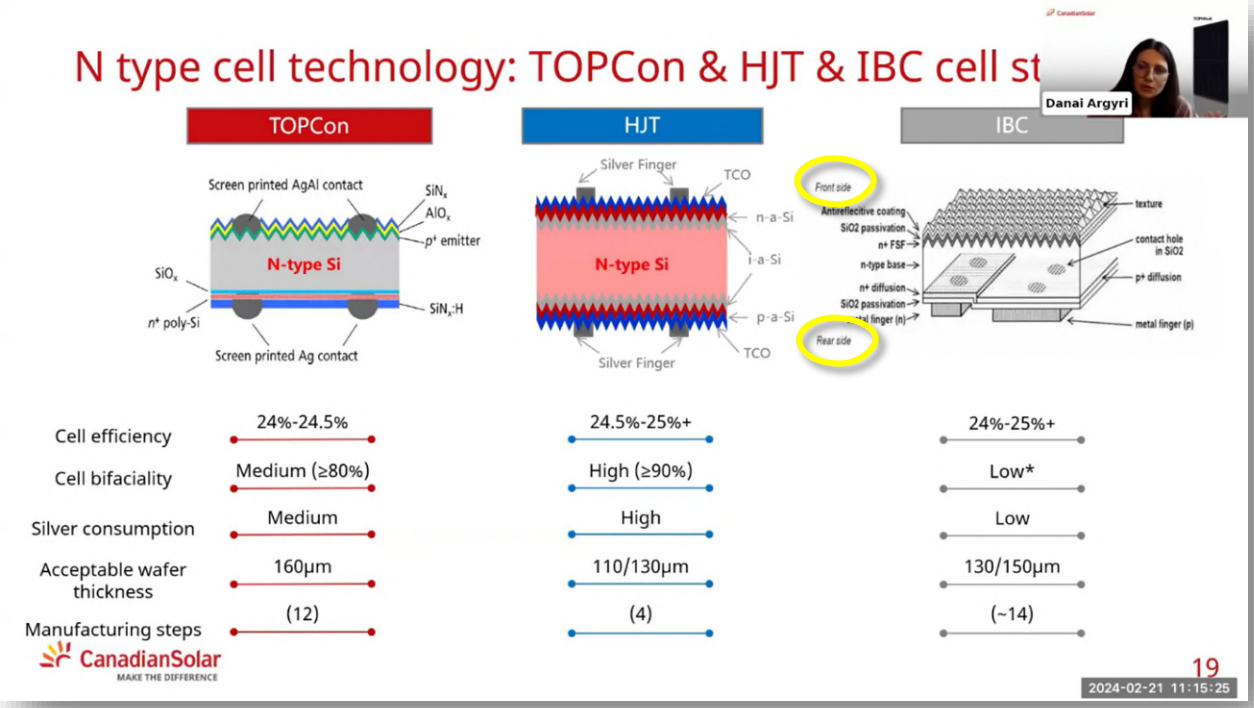
Canadian Solar does so intending and/or knowing that the Accused Solar Cell Modules are destined for the United States, thereby directly infringing at least claims 9 and 10 of the ’516 patent.

46. For example, independent claim 9 of the ’516 patent recites:

> 9. A solar cell having a front side facing the sun to collect solar radiation during normal operation and a backside opposite the front side, the solar cell comprising:
>
> a substrate having a textured front surface;
>
> an emitter layer formed over a back surface of the substrate, the emitter layer forming a backside junction with the substrate;
>
> an oxide layer formed between the back surface of the substrate and the emitter layer;
>
> a first metal contact making an electrical connection to the substrate on the front side of the solar cell; and
>
> a second metal contact making an electrical connection to the emitter layer on the backside of the solar cell, the first metal contact and the second metal contact being configured to allow an external electrical circuit to be powered by the solar cell.

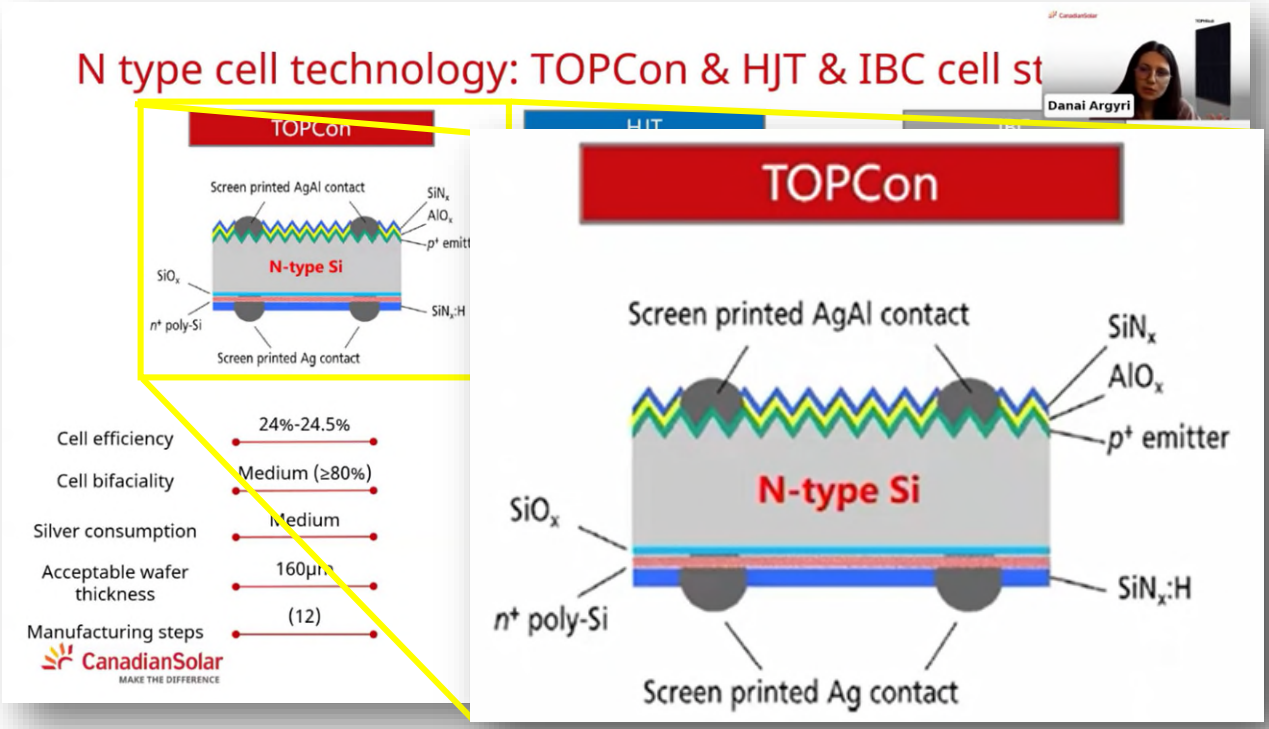
47. During a webinar, Danai Argyri, a subject matter expert for Canadian Solar, stated “the TB model currently in production uses TOPCon technology which we will dive further into during the webinar.” New High-Power Residential TOPCon Module: Discover the solar solution for extreme environmental conditions, 5:43 (Canadian Solar North America Feb. 21, 2024) *available at* pardot.csisolar.com/webinarsNA (hereinafter, “CS Webinar”) (last accessed March 24, 2024). All models of the TOPBiHiKu7 series solar modules include the “TB” designation and thus are manufactured and/or configured as described in CS Webinar. While reference is made to the TOPBiHiKu7 series solar modules, it is believed that this series is representative of all Canadian Solar models that incorporate TOPCon technology.

48. The TOPBiHiKu7 series solar modules include a solar cell having a front side facing the sun to collect solar radiation during normal operation and a backside opposite the front side. Upon information and belief, the textured side of the N-type Si substrate is the "front side" of the solar cell. For example, in the CS Webinar, the textured side is indicated as the "front side" for the IBC solar cell and a "Rear side" (i.e., a backside) is indicated opposite the front side. *See id.* at 10:40 (screenshot below) (yellow circles added).



TOPBiHiKu7 TOPCon Design

49. According to the CS Webinar, the TOPBiHiKu7 series solar modules implements its "TOPCon" technology using the following design:



TOPBiHiKu7 TOPCon Design

CS Webinar at 10:40 (zoomed annotation)

50. TOPBiHiKu7 series solar modules have an "N-type Si" substrate with a textured front surface.

51. TOPBiHiKu7 series solar modules have an "n^+ poly-Si" layer, which is an emitter layer formed over a back surface of the N-type Si substrate.

52. The "n^+ poly-Si" layer (i.e., the emitter layer) in the TOPBiHiKu7 series modules is formed on the backside of the of the solar cell and forms a backside junction with the N-type Si substrate.

53. TOPBiHiKu7 series solar modules have a SiO_x layer, which is an oxide layer formed between the back surface of the N-type Si substrate (i.e., the substrate) and the "n^+ poly-Si" layer (i.e., the emitter layer).

54. TOPBiHiKu7 series solar modules have a "Screen printed AgAl contact," which is a first metal contact making an electrical connection to the N-type Si substrate (i.e., the substrate) on the front side of the solar cell.

55. TOPBiHiKu7 series modules have a "Screen printed Ag contact," which is a second metal contact making an electrical connection to the "n^+ poly-Si" layer (i.e., the emitter layer) on the backside of the solar cell.

56. The "Screen printed AgAl contact" (i.e., the first metal contact) on the front side of the solar cell and the "Screen printed Ag contact" (i.e., the second metal contact) on the backside of the solar cell are configured to allow an external electrical circuit to be powered by the solar cell. For example, the TOPBiHiKu7 Datasheet shows the electrical characteristics for powering an external electrical circuit by the solar cell. TOPBiHiKu7 Datasheet at 2 (partial, below)

ELECTRICAL DATA | NMOT*

	Nominal Max. Power (Pmax)	Opt. Operating Voltage (Vmp)	Opt. Operating Current (Imp)	Open Circuit Voltage (Voc)	Short Circuit Current (Isc)
CS7N-685TB-AG	518 W	37.2 V	13.91 A	44.8 V	14.79 A
CS7N-690TB-AG	522 W	37.4 V	13.94 A	45.0 V	14.83 A
CS7N-695TB-AG	526 W	37.6 V	13.97 A	45.2 V	14.87 A
CS7N-700TB-AG	529 W	37.8 V	14.00 A	45.4 V	14.91 A
CS7N-705TB-AG	533 W	38.0 V	14.03 A	45.5 V	14.95 A
CS7N-710TB-AG	537 W	38.2 V	14.06 A	45.7 V	14.99 A
CS7N-715TB-AG	541 W	38.4 V	14.09 A	45.9 V	15.03 A

* Under Nominal Module Operating Temperature (NMOT), irradiance of 800 W/m² spectrum AM 1.5, ambient temperature 20°C, wind speed 1 m/s.

TOPBiHiKu7 Electrical Characteristics

Indirect Infringement

57. Upon information and belief, Canadian Solar has actively induced, under 35 U.S.C. § 271(b), distributors, customers, subsidiaries, importers, and/or consumers (e.g., Sol Systems) that import, purchase, or sell the Accused Products that include or are made using all of the limitations of one or more claims of the '516 patent to directly infringe one or more claims of

the ’516 patent by using, offering for sale, selling, and/or importing the Accused Products. Canadian Solar has done so with knowledge, or with willful blindness of the fact, that the induced acts constitute infringement of the ’516 patent. Upon information and belief, Canadian Solar intends to cause, and has taken affirmative steps to induce infringement by distributors, customers, subsidiaries, and/or consumers by, inter alia, creating advertisements that promote the infringing use of the Accused Products, creating established distribution channels for the Accused Products into and within the United States, manufacturing the Accused Products, distributing or making available instructions or manuals for these products to purchasers and prospective buyers, and/or providing technical support, replacement parts, or services for these products to those purchasers in the United States directly and/or through Recurrent Energy and/or other affiliates and distributors.

58. At a minimum, Canadian Solar has known of the ’516 patent at least as early as the filing date of this Complaint.

59. Upon information and belief, despite having knowledge of the ’516 patent and knowledge that it is directly and/or indirectly infringing one or more claims of the ’516 patent, Canadian Solar has nevertheless continued its infringing conduct. Canadian Solar’s infringing activities relative to the ’516 patent have been, and continue to be willful and deliberate misconduct beyond typical infringement such that Maxeon is entitled under 35 U.S.C. § 284 to enhanced damages up to three times the compensatory amount awarded.

60. Maxeon has been damaged as a result of Canadian Solar’s infringing conduct. Canadian Solar is liable to Maxeon in an amount that adequately compensates Maxeon for Canadian Solar’s infringement, which, by law, cannot be less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

COUNT II

(INFRINGEMENT OF U.S. PATENT NO. 8,878,053)

61. Maxeon re-alleges and incorporates by reference the allegations in paragraphs 1-60 above.

62. Maxeon is the assignee of the ’053 patent. Maxeon has all substantial rights to enforce the ’053 patent, including the right to exclude others and to sue and recover damages for past and future infringement.

63. The ’053 patent is valid, enforceable, and was duly issued in full compliance with Title 35 of the United States Code.

64. Canadian Solar has infringed and continues to infringe directly, either literally or under the doctrine of equivalents, one or more claims of the ’053 patent in this District and elsewhere.

Direct Infringement

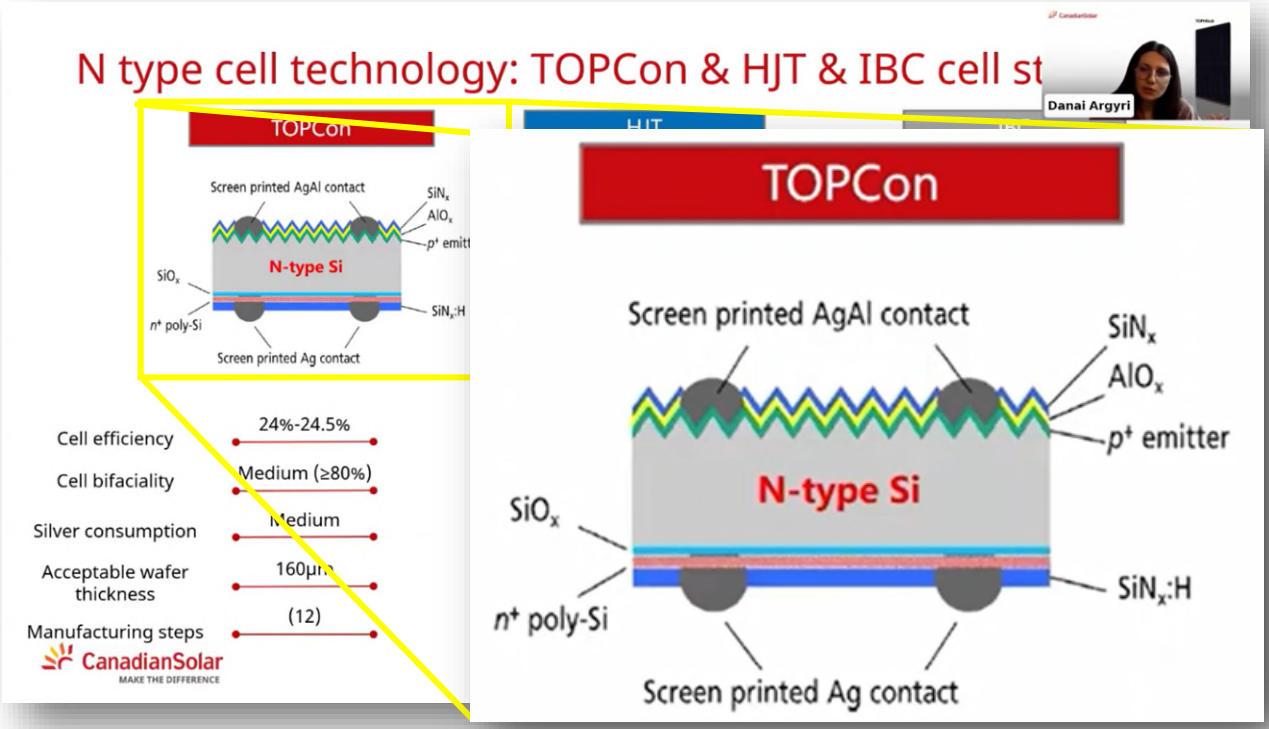
65. Canadian Solar directly infringes at least claims 9, 12, and 14-20 of the ’053 patent under 35 U.S.C. § 271(a) by making, using, selling, offering for sale in the United States, and/or importing into the United States, without permission, consent, authority or license, the Accused Products, including without limitation the TOPBiHiKu7 series solar modules, which are manufactured according to the methods of claims 9, 12, and 14-20. Furthermore, upon information and belief, Canadian Solar manufactures the Accused Products outside of the United States according to the methods of claims 9, 12, and 14-20, imports the Accused Products into the United States, and delivers the Accused Products to its customers, distributors, and/or subsidiaries in the United States, or in the case that it delivers the Accused Products outside of the United States, Canadian Solar does so intending and/or knowing that the Accused Solar Cell Modules are

destined for the United States, thereby directly infringing at least claims 9, 12, and 14-20 of the ’053 patent pursuant to 35 U.S.C. § 271(g).

66. For example, independent claim 16 of the ’053 patent recites:

> 16. A method of fabricating a solar cell comprising:
>
> forming an oxide layer over a back surface of a silicon substrate;
>
> forming a layer of polysilicon over the oxide layer;
>
> diffusing dopants into the layer of polysilicon to form a backside junction with the silicon substrate;
>
> diffusing dopants into a front surface of the silicon substrate, the front surface of the silicon substrate facing the sun during normal operation; and
>
> forming a metal contact on the front surface of the silicon substrate, wherein the metal contact is electrically coupled to the silicon substrate.

67. Upon information and belief, Canadian Solar performs the steps of claim 16 because the TOPBiHiKu7 series solar modules are fabricated using a “TOPCon” configuration, as shown in the following design:



TOPBiHiKu7 TOPCon Design

CS Webinar at 10:40 (zoomed annotation)

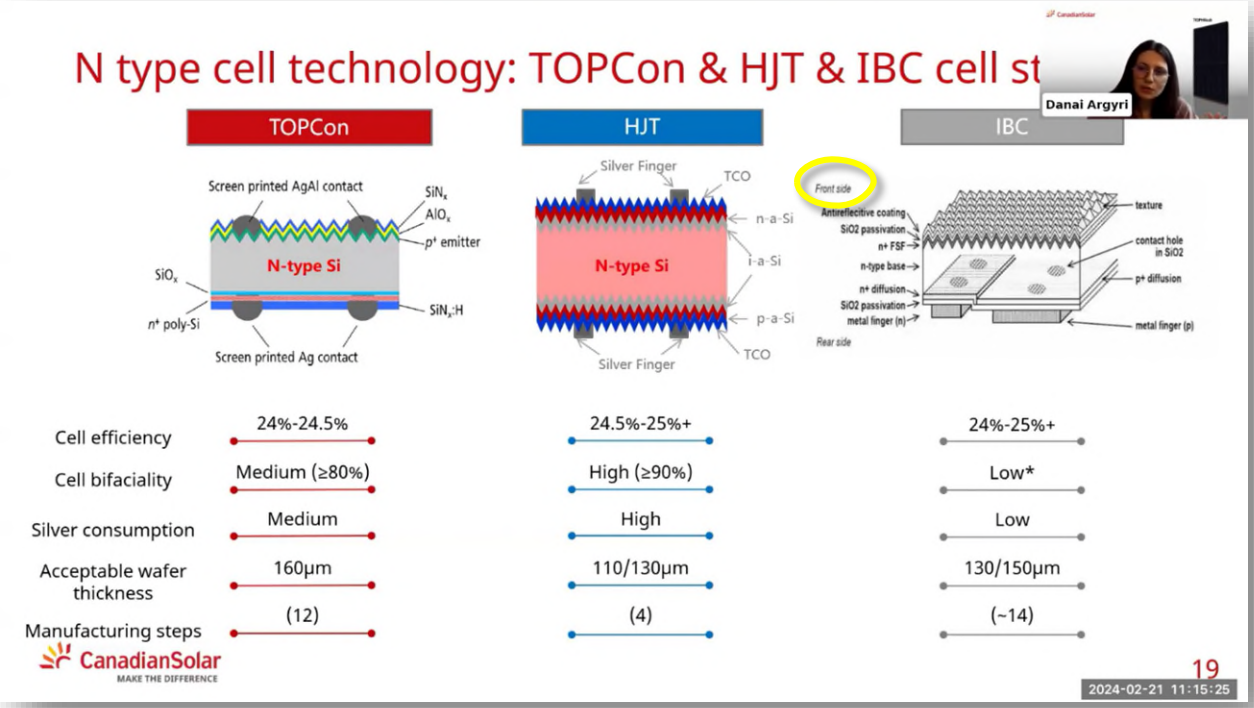
68. Upon information and belief, Canadian Solar performs the step of forming an oxide layer over a back surface of a silicon substrate because TOPBiHiKu7 series solar modules have an "N-type Si" substrate and a SiO_x layer (i.e., an oxide layer) formed over a back surface of the N-type Si substrate.

69. Upon information and belief, Canadian Solar performs the step of forming a layer of polysilicon over the oxide layer because TOPBiHiKu7 series solar modules have an "n^+ poly-Si" layer (e.g., a layer of polysilicon) formed over a "SiO_x" layer (i.e., the oxide layer).

70. Upon information and belief, Canadian Solar performs the step of diffusing dopants into the layer of polysilicon to form a backside junction with the silicon substrate because, regarding the "n^+ poly-Si" layer (e.g., the layer of polysilicon), the description of this layer as "n^+"

indicates that dopants have been diffused into the layer of polysilicon to form a backside junction with the N-type Si substrate.

71. Upon information and belief, Canadian Solar performs the step of diffusing dopants into a front surface of the silicon substrate, the front surface of the silicon substrate facing the sun during normal operation, because TOPBiHiKu7 series solar modules have a "p^+ emitter" region identified on a front surface of the N-type Si substrate, which indicates that dopants have been diffused into the front surface of the silicon substrate. Upon information and belief, the textured surface is the front surface of the N-type Si substrate and faces the sun during normal operation. For example, in the CS Webinar, the textured side is indicated as the "front side" for the IBC cell. *See id.* at 10:40 (screenshot below) (yellow circle added):



TOPBiHiKu7 TOPCon Design

72. Upon information and belief, Canadian Solar performs the step of forming a metal contact on the front surface of the silicon substrate, wherein the metal contact is electrically coupled to the silicon substrate, because TOPBiHiKu7 series solar modules have a "screen printed AgAl contact" (i.e., a metal contact) on the front surface of the N-type Si substrate. The "screen printed AgAl contact" is electronically coupled to the N-type Si substrate.

73. At a minimum, Canadian Solar has known of the '053 patent at least as early as the filing date of this Complaint.

74. Upon information and belief, despite having knowledge of the '053 patent and knowledge that it is directly infringing one or more claims of the '053 patent, Canadian Solar has nevertheless continued its infringing conduct. Canadian Solar's infringing activities relative to the '053 patent have been, and continue to be willful and deliberate misconduct beyond typical infringement such that Maxeon is entitled under 35 U.S.C. § 284 to enhanced damages up to three times the compensatory amount awarded.

75. Maxeon has been damaged as a result of Canadian Solar's infringing conduct. Canadian Solar is liable to Maxeon in an amount that adequately compensates Maxeon for Canadian Solar's infringement, which, by law, cannot be less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

COUNT III

(INFRINGEMENT OF U.S. PATENT NO. 11,251,315)

76. Maxeon re-alleges and incorporates by reference the allegations in paragraphs 1-75 above.

77. Maxeon is the assignee of the '315 patent. Maxeon has all substantial rights to enforce the '315 patent, including the right to exclude others and to sue and recover damages for past and future infringement.

78. The ’315 patent is valid, enforceable, and was duly issued in full compliance with Title 35 of the United States Code.

79. Canadian Solar has infringed and continues to infringe directly and/or indirectly, either literally or under the doctrine of equivalents, one or more claims of the ’315 patent in this District and elsewhere.

Direct Infringement

80. Canadian Solar directly infringes at least claims 10-11 and 13-15 of the ’315 patent under 35 U.S.C. § 271(a) by making, using, selling, offering for sale in the United States, and/or importing into the United States, without permission, consent, authority or license, the Accused Products, including without limitation the TOPBiHiKu7 series solar modules. Furthermore, upon information and belief, Canadian Solar sells and makes the Accused Products outside of the United States, delivers the Accused Products to its customers, distributors, and/or subsidiaries in the United States, or in the case that it delivers the Accused Products outside of the United States, Canadian Solar does so intending and/or knowing that the Accused Solar Cell Modules are destined for the United States, thereby directly infringing at least claims 10-11 and 13-15 of the ’315 patent.

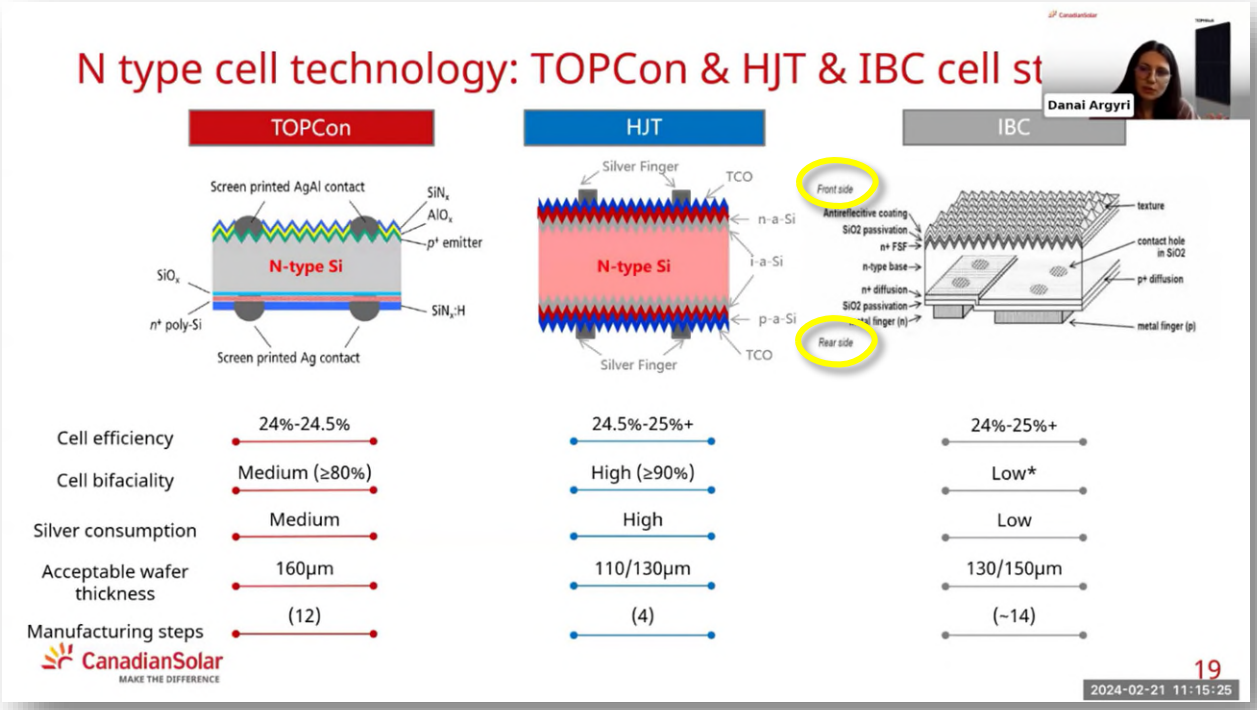
81. For example, independent claim 10 of the ’315 patent recites:

> 10. A solar cell, the solar cell having a front side which faces the sun during normal operation and a back side opposite the front side, the solar cell comprising:
>
> a silicon substrate, wherein a portion of the silicon substrate has a dopant concentration of approximately less than or equal to 2×10^{18} cm^{-3} and wherein the portion of the silicon substrate is formed at the front side of the solar cell;
>
> a dielectric region formed over the silicon substrate, wherein the dielectric region is formed over the back side of solar;

a first emitter region having metal impurities formed over the dielectric region; and

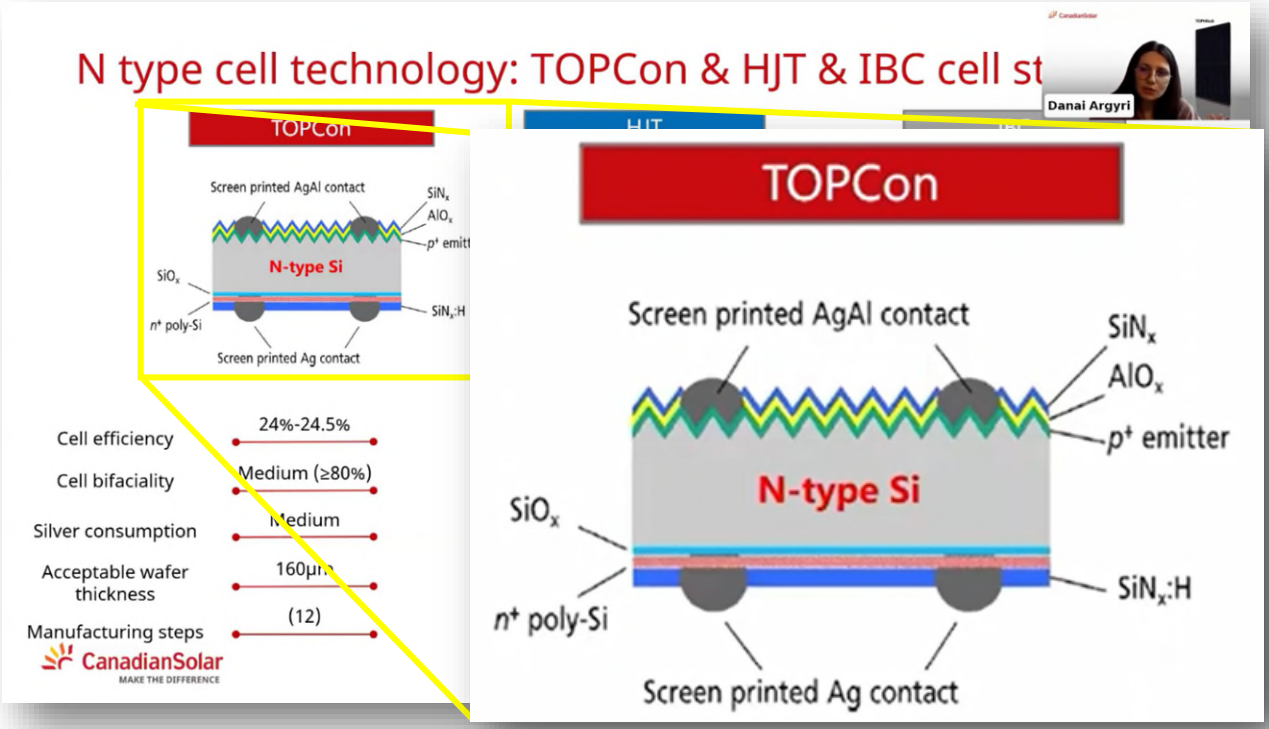
a first metal contact formed over the first emitter region.

82. Upon information and belief, the textured surface of the substrate is the front side, which faces the sun during normal operation, and the back side is opposite the front side. For example, in the CS Webinar, the textured side is indicated as the "front side" for the IBC cell and the "rear side" (i.e., the backside) is indicated opposite the "front side." *See id.* at 10:40 (screenshot below) (yellow circles added).



TOPBiHiKu7 TOPCon Design

83. The TOPBiHiKu7 series solar modules implements its "TOPCon" technology using the following design:



TOPBiHiKu7 TOPCon Design

CS Webinar at 10:40 (zoomed annotation)

84. TOPBiHiKu7 series solar modules have an "N-type Si" substrate that, upon information and belief, has a dopant concentration of approximately less than or equal to 2×10^{18} cm^{-3}.

85. TOPBiHiKu7 series solar modules have a "p^+ emitter" region identified on a front side of the solar cell, which is a portion of the N-type Si substrate.

86. TOPBiHiKu7 series solar modules have a "SiO_x" layer (i.e., a dielectric region) formed over the N-Type Si substrate on the back side of the solar cell.

87. TOPBiHiKu7 series solar modules have a "n^+ poly-Si" layer, which is a first emitter region formed over the "SiO_x" layer (i.e., the first dielectric region). Upon information and belief, the "n^+ poly-Si" layer has metal impurities.

88. TOPBiHiKu7 series solar modules have a "Screen printed Ag contact," which is a metal contact, formed over the "n^+ poly-Si" layer (i.e., the first emitter region).

Indirect Infringement

89. Upon information and belief, Canadian Solar has actively induced, under 35 U.S.C. § 271(b), distributors, customers, subsidiaries, importers, and/or consumers (e.g., Sol Systems) that import, purchase, or sell the Accused Products that include or are made using all of the limitations of one or more claims of the '315 patent to directly infringe one or more claims of the '315 patent by using, offering for sale, selling, and/or importing the Accused Products. Canadian Solar has done so with knowledge, or with willful blindness of the fact, that the induced acts constitute infringement of the '315 patent. Upon information and belief, Canadian Solar intends to cause, and has taken affirmative steps to induce infringement by distributors, customers, subsidiaries, and/or consumers by, inter alia, creating advertisements that promote the infringing use of the Accused Products, creating established distribution channels for the Accused Products into and within the United States, manufacturing the Accused Products, distributing or making available instructions or manuals for these products to purchasers and prospective buyers, and/or providing technical support, replacement parts, or services for these products to those purchasers in the United States directly and/or through Recurrent Energy and/or other affiliates and distributors.

90. At a minimum, Canadian Solar has known of the '315 patent at least as early as the filing date of this Complaint.

91. Upon information and belief, despite having knowledge of the '315 patent and knowledge that it is directly and/or indirectly infringing one or more claims of the '315 patent, Canadian Solar has nevertheless continued its infringing conduct. Canadian Solar's infringing activities relative to the '315 patent have been, and continue to be willful and deliberate misconduct

beyond typical infringement such that Maxeon is entitled under 35 U.S.C. § 284 to enhanced damages up to three times the compensatory amount awarded.

92. Maxeon has been damaged as a result of Canadian Solar's infringing conduct. Canadian Solar is liable to Maxeon in an amount that adequately compensates Maxeon for Canadian Solar's infringement, which, by law, cannot be less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

PRAYER FOR RELIEF

WHEREFORE, Maxeon requests the Court to grant the following relief:

A. A judgment that Canadian Solar has infringed one or more claims of each of the Asserted Patents and/or has induced infringement of the '516 patent and/or '315 patent;

B. A judgment that each of the Asserted Patents is valid and enforceable;

C. A permanent injunction enjoining Canadian Solar, its employees, agents, officers, directors, attorneys, successors, affiliates, subsidiaries, and assigns, and all of those in active concert and participation with any of the foregoing persons or entities, from infringing or inducing infringement of the Asserted Patents;

D. A judgment for an accounting of all damages and to pay damages adequate to compensate Maxeon for Canadian Solar's infringement of the Asserted Patents;

E. A judgment that Canadian Solar has willfully infringed the Asserted Patents;

F. A judgment that the damages award be increased up to three times the actual amount assessed, pursuant to 35 U.S.C. § 284;

G. A judgment requiring Canadian Solar to pay Maxeon's costs, expenses, and pre-judgment and post-judgment interest for Canadian Solar's infringement of each of the Asserted Patents pursuant to 35 U.S.C. § 284;

H. A judgment finding that this is an exceptional case and awarding Maxeon its reasonable attorneys' fees pursuant to 35 U.S.C. § 285; and

I. Such other relief that the Court deems just and proper.

DEMAND FOR JURY TRIAL

In accordance with Federal Rule of Civil Procedure 38 and Local Rule CV-38, Maxeon respectfully demands a jury trial of all issues triable to a jury in this action.

Dated: March 25, 2024

Respectfully submitted,

/s/ Eric J. Klein

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