

Exhibit B – Infringement of U.S. Patent No. 8,878,053

Defendants’ Q.TRON solar module series incorporating Defendants’ Q.ANTUM NEO technology (i.e., TOPCon technology), including but not limited to the Q.TRON-G1+, Q.TRON BLK-G1+, Q.TRON M-G2+, Q.TRON BLK M-G2+, Q.TRON XL-G2, Q.TRON XL-G2.3/BFG, Q.TRON M-G2.4+, Q.TRON S-G2.4+, Q.TRON BLK M-G2.4+, Q.TRON SMART BLK-G1+, Q.TRON SMART-G1+, and Q.TRON AC series solar modules, and substantially similar TOPCon module products infringe at least claims 9, 12, and 14-20 of U.S. Patent No. 8,878,053 (“the ’053 Patent”), as shown in the table below. Maxeon’s charting of the Q.TRON solar module series as representative of additional Accused Products in no way limits the scope of the Accused Products that infringe the ’053 Patent or the scope of Maxeon’s allegations regarding the ’053 Patent for any exemplary products identified in Maxeon’s Complaint for Patent Infringement against Defendants or additional infringing solar modules identified through discovery.

On information and belief, each of the Accused Products will infringe in substantially the same way as shown in the chart below.

Certain aspects of the infringement analysis require information that is not in the public domain, but is exclusively within the knowledge and control of Defendants. Maxeon intends and specifically reserves the right to promptly supplement these Infringement Contentions after Defendants produce sufficient relevant technical information regarding the design, manufacturing, fabrication, and operation of the Accused Products.

Maxeon further reserves the right to rely on 35 U.S.C. § 295 whereby “if the court finds—(1) that a substantial likelihood exists that the product was made by the patented process, and (2) that the plaintiff has made a reasonable effort to determine the process actually used in the production of the product and was unable to so determine, the product shall be presumed to have been so made, and the burden of establishing that the product was not made by the process shall be on the party asserting that it was not so made.”

Maxeon reserves the right to supplement and/or amend these Infringement Contentions in view of information and/or documents that may be obtained during discovery, further investigation, the Court’s claim construction ruling, applicable case law and authorities, and/or any other reasons permitted under the Court’s orders, the Local Patent Rules, and the Federal Rules of Civil Procedure.

Claim 9	Defendants’ Q.TRON Solar Module Series (“Q.TRON”)
[9.0] A method of fabricating a solar cell comprising:	Defendants perform a “method of fabricating a solar cell” for Q.TRON comprising the steps identified below. Defendants’ datasheets for its Q.TRON solar module series (“Q.TRON Datasheets”) incorporating Defendants’ Q.ANTUM NEO technology (i.e., TOPCon technology) disclose that the modules contain Q.ANTUM NEO “solar half cells.”

HANWHA v. MAXEON
IPR2024-01199
HANWHA 1087

Q.TRON-G1+ SERIES

■ Mechanical Specification

Format	1717 mm × 1045 mm × 32 mm (including frame)
Weight	19.9 kg
Front Cover	3.2 mm thermally pre-stressed glass with anti-reflection technology
Back Cover	Composite film
Frame	Black anodised aluminium
Cell	6 × 20 monocrystalline Q.ANTUM NEO solar half cells
Junction box	53-101 mm × 32-60 mm × 15-18 mm Protection class IP67, with bypass diodes
Cable	4 mm ² Solar cable; (+) ≥1470 mm, (-) ≥1470 mm
Connector	Staubli MC4; IP68

MAX-HAN0001643 (“Q.TRON-G1+ Datasheet”) at MAX-HAN0001644.

Q.TRON BLK-G1+ SERIES

■ Mechanical Specification

Format	1717 mm × 1045 mm × 32 mm (including frame)
Weight	19.9 kg
Front Cover	3.2 mm thermally pre-stressed glass with anti-reflection technology
Back Cover	Composite film
Frame	Black anodised aluminium
Cell	6 × 20 monocrystalline Q.ANTUM NEO solar half cells
Junction box	53-101 mm × 32-60 mm × 15-18 mm Protection class IP67, with bypass diodes
Cable	4 mm ² Solar cable; (+) ≥1470 mm, (-) ≥1470 mm
Connector	Staubli MC4; IP68

MAX-HAN0001648 (“Q.TRON BLK-G1+ Datasheet”) at MAX-HAN0001649.

Q.TRON M-G2+ SERIES

■ Mechanical Specification

Format	67.8 in × 44.6 in × 1.18 in (including frame) (1722 mm × 1134 mm × 30 mm)
Weight	46.7 lbs (21.2 kg)
Front Cover	0.13 in (3.2 mm) thermally pre-stressed glass with anti-reflection technology
Back Cover	Composite film
Frame	Black anodised aluminium
Cell	6 × 18 monocrystalline QANTUM NEO solar half cells
Junction box	2.09-3.98 in × 1.26-2.36 in × 0.59-0.71 in (53-101 mm × 32-60 mm × 15-18 mm), Protection class IP67, with bypass diodes
Cable	4 mm ² Solar cable; (+) ≥ 68.9 in (1750 mm), (-) ≥ 68.9 in (1750 mm)
Connector	Stäubli MC4; IP68

MAX-HAN0001652 (“Q.TRON M-G2+ Datasheet”) at MAX-HAN0001653.

Q.TRON BLK M-G2+ SERIES

■ Mechanical Specification

Format	67.8 in × 44.6 in × 1.18 in (including frame) (1722 mm × 1134 mm × 30 mm)
Weight	46.7 lbs (21.2 kg)
Front Cover	0.13 in (3.2 mm) thermally pre-stressed glass with anti-reflection technology
Back Cover	Composite film
Frame	Black anodised aluminium
Cell	6 × 18 monocrystalline QANTUM NEO solar half cells
Junction box	2.09-3.98 in × 1.26-2.36 in × 0.59-0.71 in (53-101 mm × 32-60 mm × 15-18 mm), Protection class IP67, with bypass diodes
Cable	4 mm ² Solar cable; (+) ≥ 68.9 in (1750 mm), (-) ≥ 68.9 in (1750 mm)
Connector	Stäubli MC4; IP68

MAX-HAN0001650 (“Q.TRON BLK M-G2+ Datasheet”) at MAX-HAN0001651.

Q.TRON XL-G2 SERIES

■ Mechanical Specification

Format	96.9 in × 44.6 in × 1.38 in (including frame) (2462 mm × 1134 mm × 35 mm)
Weight	78.0 lbs (35.4 kg)
Front Cover	0.08 in (2.0 mm) thermally pre-stressed glass with anti-reflection technology
Back Cover	0.08 in (2.0 mm) semi-tempered glass
Frame	Anodised aluminium
Cell	6 × 26 monocrystalline Q.ANTUM NEO solar half cells
Junction box	2.09-3.98 × 1.26-2.36 × 0.59-0.71 in (53-101mm × 32-60mm × 15-18 mm), Protection class IP67, with bypass diodes
Cable	4 mm ² Solar cable; (+) ≥ 29.5 in (750 mm), (-) ≥ 13.8 in (350 mm)
Connector	Stäubli MC4-Evo2, Stäubli MC4 ; IP68

MAX-HAN0001654 (“Q.TRON XL-G2 Datasheet”) at MAX-HAN0001655.

Q.TRON SMART Module based on Ultimate Cell Technology

Q.TRON SMART module power up to 400 Wp is based on Qcells' Zero-Gap Technology and the innovative N-type cell technology called Q.ANTUM NEO. Combining N-type cell technology with Advanced Yield Security and the world's strictest quality testing program QCPV, Q.ANTUM NEO surpasses the performance of conventional N-type products.

This module also contains an integrated DC/DC converter. Voltage limitation will lead to increased output current. The output voltage and current will not exceed its limit respectively.

Product Name	Q.TRON SMART BLK-G1+	Q.TRON SMART-G1+
Power Class	370 Wp - 390 Wp	380 Wp - 400 Wp
Efficiency	20.6 % - 22 %	21.2 % - 22.3 %
Voltage Limit (VLIM)	35 V	
Current Limit (ILIM)	132.2 A	
Format (including frame)	1717 mm × 1045 mm × 32 mm	
Weight	19.9 kg	
Frame	Black anodized aluminum	
Cell	6 × 20 Q.ANTUM solar half cell	
Junction box IP	Smart junction box: 85 - 198 mm × 85 - 102 mm × 22 mm Protection class IP6	
Temperature Coefficient of PMPP	- 0.30 % / K	
Snow Load	8100 Pa	
Wind Load	4000 Pa	

MAX-HAN0001656 ("Q.TRON SMART Datasheet") at MAX-HAN0001663.

	■ Description The Q.TRON AC SERIES is a N-Type TOPCon PV module with an integrated microinverter. The module, with its embedded microinverter, provides optimized power output while also acting as a rapid shutdown compliant solution for optimal system safety. The solution includes a microinverter, DC cables and a junction box, enabling a streamlined installation experience. ■ Mechanical Specification <table> <tr> <td>Format</td><td>67.8 in × 44.6 in × 1.57 in (including frame) (1722 mm × 1134 mm × 40 mm)</td></tr> <tr> <td>Weight</td><td>50.6 lbs (23 kg)</td></tr> <tr> <td>Front Cover</td><td>0.13 in (3.2 mm) thermally pre-stressed ARC solar glass</td></tr> <tr> <td>Back Cover</td><td>Composite film</td></tr> <tr> <td>Frame</td><td>Black anodized aluminum</td></tr> <tr> <td>Cell</td><td>6 × 18 monocrystalline Q.ANTUM NEO solar half cells</td></tr> <tr> <td>Junction Box</td><td>2.09-3.98 in × 1.26-2.36 in × 0.59-0.71 in (53-101 mm × 32-60 mm × 15-18 mm), Protection class IP67, with bypass diodes</td></tr> <tr> <td>Cable</td><td>4 mm² Solar cable; (+) ≥ 25.8 in (655 mm), (-) ≥ 25.2 in (640 mm)</td></tr> <tr> <td>Connector</td><td>Stäubli MC4; IP68</td></tr> </table> Technical drawing of the Q.TRON AC SERIES PV module. The drawing shows the module's dimensions: 67.8" (1722 mm) width and 44.6" (1134 mm) height. It includes 4 grounding points (ø 0.18" (4.5 mm)) and 4 mounting slots (DETAIL B). A drainage hole (ø 0.33" (8.5 mm)) is also shown. The frame thickness is 1.57" (40 mm). A detail view (DETAIL A) shows a hole with a diameter of 0.63" (16 mm) and a distance of 0.97" (24.55 mm) from the edge.	Format	67.8 in × 44.6 in × 1.57 in (including frame) (1722 mm × 1134 mm × 40 mm)	Weight	50.6 lbs (23 kg)	Front Cover	0.13 in (3.2 mm) thermally pre-stressed ARC solar glass	Back Cover	Composite film	Frame	Black anodized aluminum	Cell	6 × 18 monocrystalline Q.ANTUM NEO solar half cells	Junction Box	2.09-3.98 in × 1.26-2.36 in × 0.59-0.71 in (53-101 mm × 32-60 mm × 15-18 mm), Protection class IP67, with bypass diodes	Cable	4 mm ² Solar cable; (+) ≥ 25.8 in (655 mm), (-) ≥ 25.2 in (640 mm)	Connector	Stäubli MC4; IP68
Format	67.8 in × 44.6 in × 1.57 in (including frame) (1722 mm × 1134 mm × 40 mm)																		
Weight	50.6 lbs (23 kg)																		
Front Cover	0.13 in (3.2 mm) thermally pre-stressed ARC solar glass																		
Back Cover	Composite film																		
Frame	Black anodized aluminum																		
Cell	6 × 18 monocrystalline Q.ANTUM NEO solar half cells																		
Junction Box	2.09-3.98 in × 1.26-2.36 in × 0.59-0.71 in (53-101 mm × 32-60 mm × 15-18 mm), Protection class IP67, with bypass diodes																		
Cable	4 mm ² Solar cable; (+) ≥ 25.8 in (655 mm), (-) ≥ 25.2 in (640 mm)																		
Connector	Stäubli MC4; IP68																		
[9.1] forming a layer of polysilicon over a back surface of a silicon substrate;	MAX-HAN0001645 (“Q.TRON AC Datasheet”) at MAX-HAN0001646. Thus, Defendants perform a “method of fabricating a solar cell” for Q.TRON. Defendants perform the “forming a layer of polysilicon over a back surface of a silicon substrate” step. Benjamin G. Lee et al., “Towards >25% Efficiency of Passivating-Contact Solar Cells in Mass Production,” SiliconPV 2023, 13th Int’l Conf. on Crystalline Silicon (published Feb. 22, 2024), MAX-HAN0001434 (“Q.ANTUM NEO Analysis”), contains a Figure 1 disclosing the general structure of Q.TRON:																		

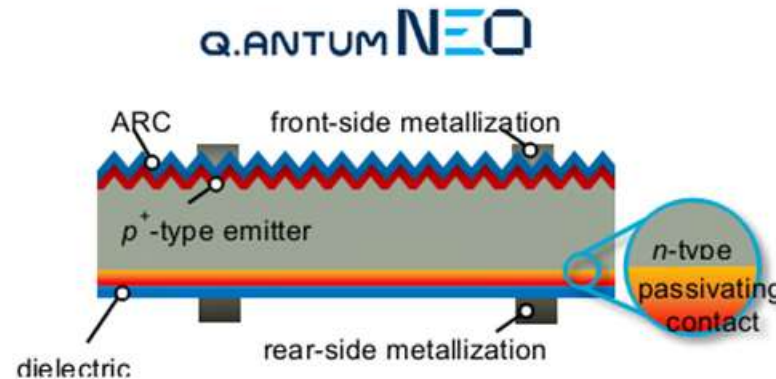


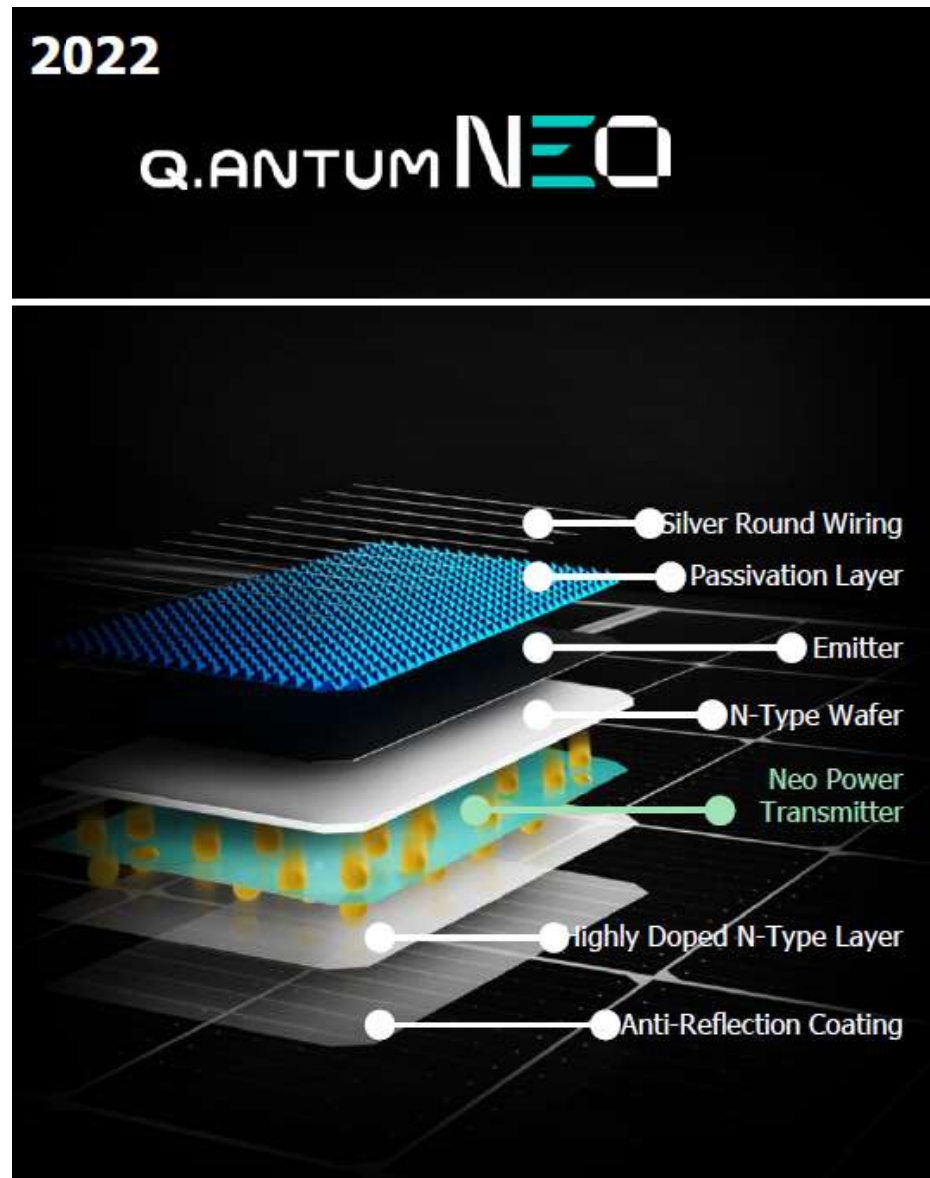
Figure 1. Cross-section diagram representing the Q.antum Neo n-type solar cell with passivating contact.

That figure shows an “n-type solar cell” where the gray-colored layer is an *n*-type substrate (i.e., a silicon substrate). *Id.* Defendants’ March 12, 2024 report on the “[l]atest development status of Qcells Q.ANTUM NEO technology” labels this layer as “*n*-type Si” and refers to it as an “*n*-type silicon substrate.” MAX-HAN0001439 (“Q.ANTUM NEO Status Update”) at MAX-HAN0001441-42, MAX-HAN0001447-48 (reproduced below).

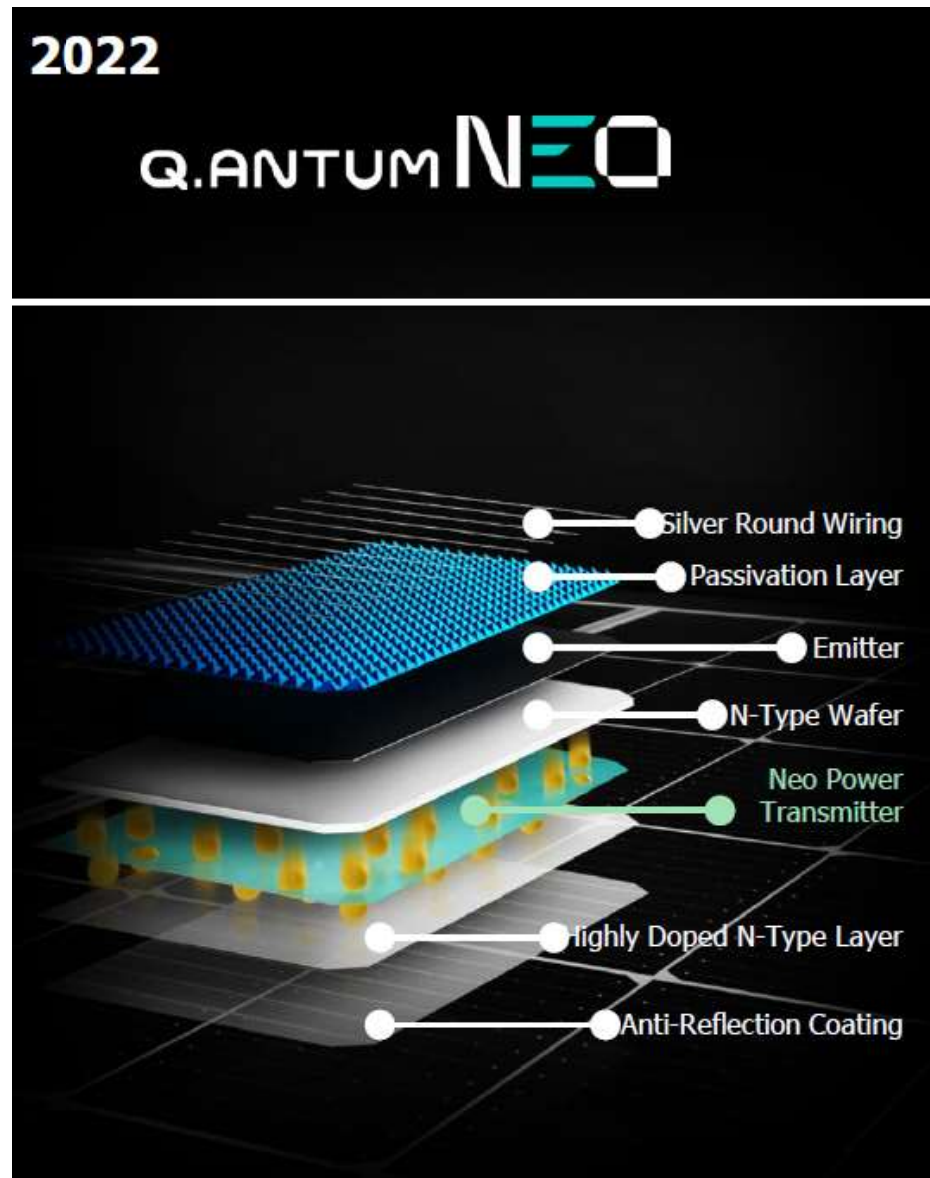
Q.ANTUM NEO^[1-2] technology (TOPCon based)

- Passivating rear-side contact
- *n*-type silicon substrate

Defendants also refer to the *n*-type substrate as the “N-Type Wafer.” *See* Harsh Galia, New PV module-based solutions for utility-scale deployments in the U.S. (May 21, 2024), MAX-HAN0001592 at MAX-HAN0001598 (“Q.ANTUM NEO Layer Stack”) (reproduced below).



	Q.TRON has a “Highly doped N-type layer” (i.e., a layer of polysilicon) that is formed over a back surface of the N-type wafer (i.e., a silicon substrate) as shown above. <i>See</i> Q.ANTUM NEO Layer Stack. Further, Figure 1 of the Q.ANTUM NEO Analysis (reproduced above) shows a “passivating contact,” which is described as a “tunnel-oxide passivated contact.” <i>See</i> Q.ANTUM NEO Analysis at MAX-HAN0001434. That is, the “passivating contact” in Figure 1 is a stack of layers that includes both a tunnel oxide layer and n-polysilicon passivation layer. <i>Id.</i>; <i>see id.</i> at MAX-HAN0001438 (referring to the rear-side of the Q.TRON solar cell as a “n-polysilicon passivation stack”). This understanding is also supported by the “Neo Power Transmitter” and “Highly Doped N-type Layer” shown in the Q.ANTUM NEO Layer Stack. <i>Compare id. with</i> Q.ANTUM NEO Layer Stack (reproduced above). The “passivating contact,” which includes the “Highly Doped N-type Layer” (i.e., the layer of polysilicon), is formed over a back surface of the n-type silicon substrate. <i>See</i> Q.ANTUM NEO Analysis at MAX-HAN0001434; <i>id.</i> at MAX-HAN0001435 (disclosing that the cell “has the n-type passivating contact on the rear”). Thus, Defendants perform the “forming a layer of polysilicon over a back surface of a silicon substrate” step.
[9.2] forming a first dopant source layer over the layer of polysilicon;	Defendants perform the “forming a first dopant source layer over the layer of polysilicon” step. Q.TRON has a “Highly doped N-type layer” (i.e., a layer of polysilicon) that is formed over a back surface of the N-type wafer (i.e., a silicon substrate) as shown below. <i>See</i> Q.ANTUM NEO Layer Stack.



Further, Figure 1 of the Q.ANTUM NEO Analysis shows a “passivating contact,” which is described as a “tunnel-oxide passivated contact.” See Q.ANTUM NEO Analysis at MAX-HAN0001434 (reproduced below).

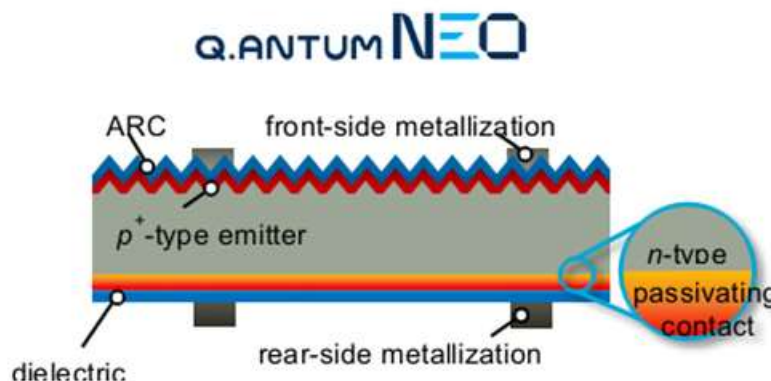


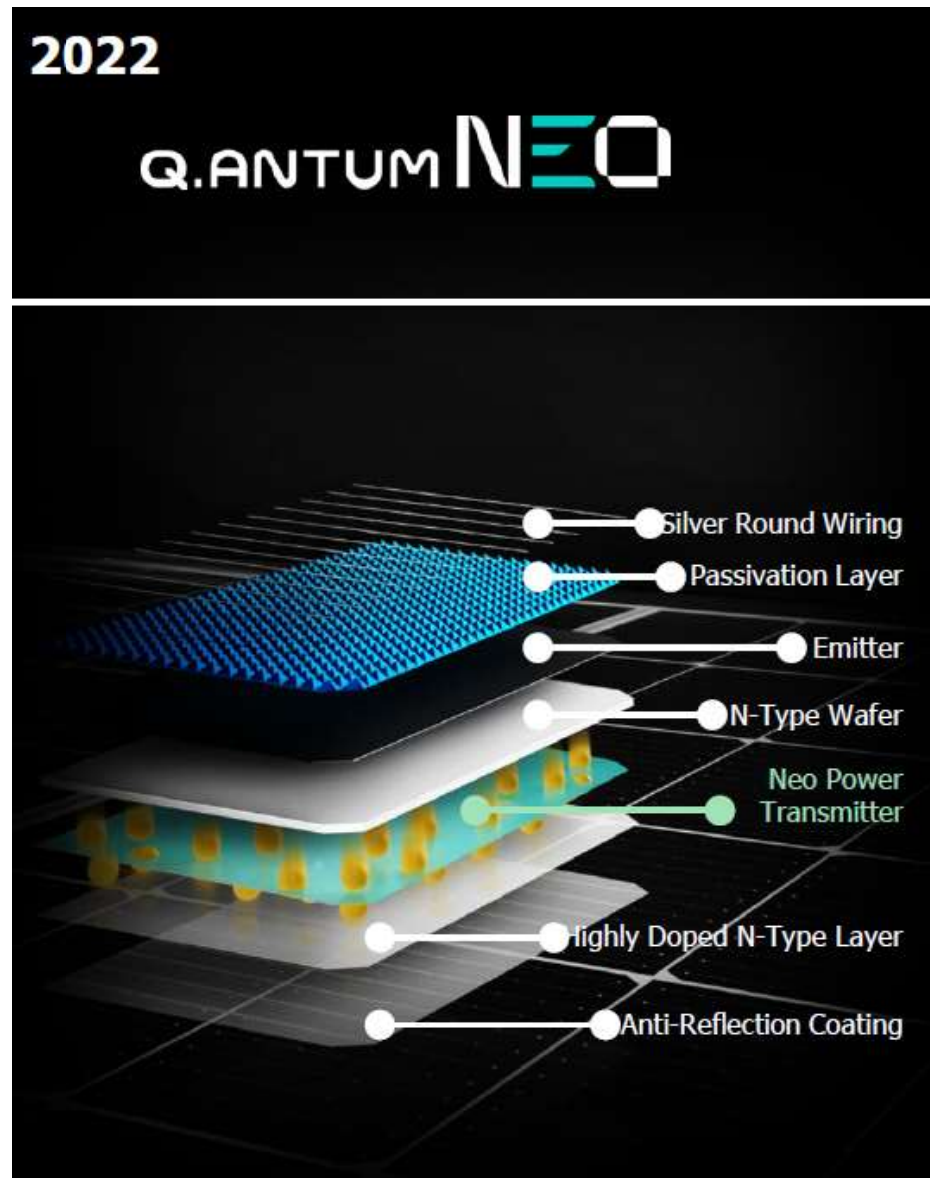
Figure 1. Cross-section diagram representing the Q.antum Neo n-type solar cell with passivating contact.

That is, the “passivating contact” in Figure 1 is a stack of layers that includes both a tunnel oxide layer and n-polysilicon passivation layer.” *Id.*; *see id.* at MAX-HAN0001438 (referring to the rear-side of the Q.TRON solar cell as a “n-polysilicon passivation stack”). This understanding is also supported by the “Neo Power Transmitter” and “Highly Doped N-type Layer” shown in the Q.ANTUM NEO Layer Stack. *Compare id. with* Q.ANTUM NEO Layer Stack (reproduced above). The “passivating contact,” which includes the “Highly Doped N-type Layer” (i.e., the layer of polysilicon), is formed over a back surface of the n-type silicon substrate. See Q.ANTUM NEO Analysis at MAX-HAN0001434; *id.* at MAX-HAN0001435 (disclosing that the cell “has the n-type passivating contact on the rear”).

Upon information and belief, the description of the layer of polysilicon as “n-polysilicon” indicates that dopants have been diffused into the layer of polysilicon by forming a first dopant source layer over the layer of polysilicon and diffusing dopants from the first dopant source layer to the layer of polysilicon. Thus, Defendants perform the “forming a first dopant source layer over the layer of polysilicon” step.

The infringement analysis requires information that is not in the public domain, but is exclusively within Defendants’ knowledge and control. Maxeon intends and specifically reserves the right to promptly supplement these Infringement

	Contentions after Defendants produce sufficient relevant technical information regarding the design, manufacture, fabrication, and operation of the Accused Products.
[9.3] diffusing dopants from the first dopant source layer to the layer of polysilicon to form a backside junction with the silicon substrate;	Defendants perform the “diffusing dopants from the first dopant source layer to the layer of polysilicon to form a backside junction with the silicon substrate” step. Q.TRON has a “Highly doped N-type layer” (i.e., a layer of polysilicon) that is formed over a back surface of the N-type wafer (i.e., a silicon substrate) as shown below. <i>See</i> Q.ANTUM NEO Layer Stack.



Further, Figure 1 of the Q.ANTUM NEO Analysis shows a “passivating contact,” which is described as a “tunnel-oxide passivated contact.” See Q.ANTUM NEO Analysis at MAX-HAN0001434 (reproduced below).

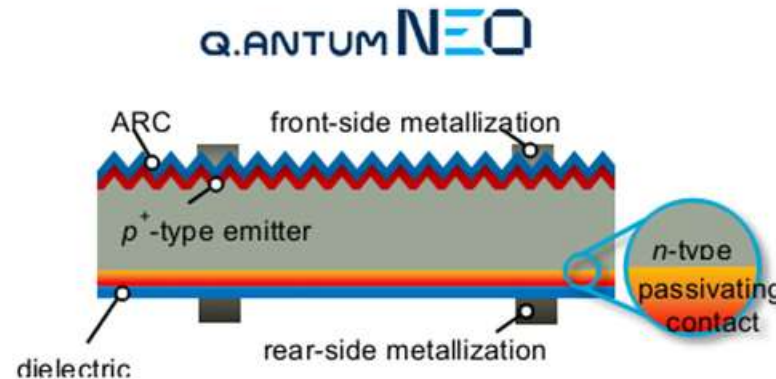


Figure 1. Cross-section diagram representing the Q.antum Neo n-type solar cell with passivating contact.

That is, the “passivating contact” in Figure 1 is a stack of layers that includes both a tunnel oxide layer and n-polysilicon passivation layer. *Id.*; see *id.* at MAX-HAN0001438 (referring to the rear-side of the Q.TRON solar cell as a “n-polysilicon passivation stack”). This understanding is also supported by the “Neo Power Transmitter” and “Highly Doped N-type Layer” shown in the Q.ANTUM NEO Layer Stack. Compare *id.* with Q.ANTUM NEO Layer Stack (reproduced above). The “passivating contact,” which includes the “Highly Doped N-type Layer” (i.e., the layer of polysilicon), is formed over a back surface of the n-type silicon substrate. See Q.ANTUM NEO Analysis at MAX-HAN0001434; *id.* at MAX-HAN0001435 (disclosing that the cell “has the n-type passivating contact on the rear”). The layer of polysilicon within the “passivating contact” also forms a backside junction with the n-type substrate (i.e., the substrate).

Upon information and belief, the description of the layer of polysilicon as “n-polysilicon” indicates that dopants have been diffused into the layer of polysilicon by forming a first dopant source layer over the layer of polysilicon and diffusing dopants from the first dopant source layer to the layer of polysilicon. Thus, Defendants perform the “diffusing dopants from the first dopant source layer to the layer of polysilicon to form a backside junction with the silicon substrate” step.

The infringement analysis requires information that is not in the public domain, but is exclusively within Defendants’ knowledge and control. Maxeon intends and specifically reserves the right to promptly supplement these Infringement

	Contentions after Defendants produce sufficient relevant technical information regarding the design, manufacture, fabrication, and operation of the Accused Products.																		
[9.4] diffusing dopants into a front surface of the silicon substrate, the front surface of the silicon substrate facing the sun during normal operation; and	Defendants perform the “diffusing dopants into a front surface of the silicon substrate, the front surface of the silicon substrate facing the sun during normal operation” step. The Q.TRON Datasheets disclose that the Q.TRON series modules contain a “Front Cover” with “thermally pre-stressed glass with anti-reflection technology [or ARC (i.e., anti-reflective coating) solar glass],” indicating that the front side of the solar cells, and thus the front surface of the silicon substrate, faces the sun during normal operation. Q.TRON-G1+ SERIES ■ Mechanical Specification <table> <tr> <td>Format</td><td>1717 mm × 1045 mm × 32 mm (including frame)</td></tr> <tr> <td>Weight</td><td>19.9 kg</td></tr> <tr> <td>Front Cover</td><td>3.2 mm thermally pre-stressed glass with anti-reflection technology</td></tr> <tr> <td>Back Cover</td><td>Composite film</td></tr> <tr> <td>Frame</td><td>Black anodised aluminium</td></tr> <tr> <td>Cell</td><td>6 × 20 monocrystalline Q.ANTUM NEO solar half cells</td></tr> <tr> <td>Junction box</td><td>53-101 mm × 32-60 mm × 15-18 mm Protection class IP67, with bypass diodes</td></tr> <tr> <td>Cable</td><td>4 mm² Solar cable; (+) ≥1470 mm, (-) ≥1470 mm</td></tr> <tr> <td>Connector</td><td>Staubli MC4; IP68</td></tr> </table> Q.TRON-G1+ Datasheet at MAX-HAN0001644.	Format	1717 mm × 1045 mm × 32 mm (including frame)	Weight	19.9 kg	Front Cover	3.2 mm thermally pre-stressed glass with anti-reflection technology	Back Cover	Composite film	Frame	Black anodised aluminium	Cell	6 × 20 monocrystalline Q.ANTUM NEO solar half cells	Junction box	53-101 mm × 32-60 mm × 15-18 mm Protection class IP67, with bypass diodes	Cable	4 mm ² Solar cable; (+) ≥1470 mm, (-) ≥1470 mm	Connector	Staubli MC4; IP68
Format	1717 mm × 1045 mm × 32 mm (including frame)																		
Weight	19.9 kg																		
Front Cover	3.2 mm thermally pre-stressed glass with anti-reflection technology																		
Back Cover	Composite film																		
Frame	Black anodised aluminium																		
Cell	6 × 20 monocrystalline Q.ANTUM NEO solar half cells																		
Junction box	53-101 mm × 32-60 mm × 15-18 mm Protection class IP67, with bypass diodes																		
Cable	4 mm ² Solar cable; (+) ≥1470 mm, (-) ≥1470 mm																		
Connector	Staubli MC4; IP68																		

Q.TRON BLK-G1+ SERIES

■ Mechanical Specification

Format	1717 mm × 1045 mm × 32 mm (including frame)
Weight	19.9 kg
Front Cover	3.2 mm thermally pre-stressed glass with anti-reflection technology
Back Cover	Composite film
Frame	Black anodised aluminium
Cell	6 × 20 monocrystalline Q.ANTUM NEO solar half cells
Junction box	53-101 mm × 32-60 mm × 15-18 mm Protection class IP67, with bypass diodes
Cable	4 mm ² Solar cable; (+) ≥ 1470 mm, (-) ≥ 1470 mm
Connector	Stäubli MC4; IP68

Q.TRON BLK-G1+ Datasheet at MAX-HAN0001649.

Q.TRON M-G2+ SERIES

■ Mechanical Specification

Format	67.8 in × 44.6 in × 1.18 in (including frame) (1722 mm × 1134 mm × 30 mm)
Weight	46.7 lbs (21.2 kg)
Front Cover	0.13 in (3.2 mm) thermally pre-stressed glass with anti-reflection technology
Back Cover	Composite film
Frame	Black anodised aluminium
Cell	6 × 18 monocrystalline Q.ANTUM NEO solar half cells
Junction box	2.09-3.98 in × 1.26-2.36 in × 0.59-0.71 in (53-101 mm × 32-60 mm × 15-18 mm), Protection class IP67, with bypass diodes
Cable	4 mm ² Solar cable; (+) ≥ 68.9 in (1750 mm), (-) ≥ 68.9 in (1750 mm)
Connector	Stäubli MC4; IP68

Q.TRON M-G2+ Datasheet at MAX-HAN0001653.

Q.TRON BLK M-G2+ SERIES

■ Mechanical Specification

Format	67.8 in × 44.6 in × 1.18 in (including frame) (1722 mm × 1134 mm × 30 mm)
Weight	46.7 lbs (21.2 kg)
Front Cover	0.13 in (3.2 mm) thermally pre-stressed glass with anti-reflection technology
Back Cover	Composite film
Frame	Black anodised aluminium
Cell	6 × 18 monocrystalline Q.ANTUM NEO solar half cells
Junction box	2.09-3.98 in × 1.26-2.36 in × 0.59-0.71 in (53-101 mm × 32-60 mm × 15-18 mm), Protection class IP67, with bypass diodes
Cable	4 mm ² Solar cable; (+) ≥ 68.9 in (1750 mm), (-) ≥ 68.9 in (1750 mm)
Connector	Stäubli MC4; IP68

Q.TRON BLK M-G2+ Datasheet at MAX-HAN0001651.

Q.TRON XL-G2 SERIES

■ Mechanical Specification

Format	96.9 in × 44.6 in × 1.38 in (including frame) (2462 mm × 1134 mm × 35 mm)
Weight	78.0 lbs (35.4 kg)
Front Cover	0.08 in (2.0 mm) thermally pre-stressed glass with anti-reflection technology
Back Cover	0.08 in (2.0 mm) semi-tempered glass
Frame	Anodised aluminium
Cell	6 × 26 monocrystalline Q.ANTUM NEO solar half cells
Junction box	2.09-3.98 × 1.26-2.36 × 0.59-0.71 in (53-101 mm × 32-60 mm × 15-18 mm), Protection class IP67, with bypass diodes
Cable	4 mm ² Solar cable; (+) ≥ 29.5 in (750 mm), (-) ≥ 13.8 in (350 mm)
Connector	Stäubli MC4-Evo2, Stäubli MC4 ; IP68

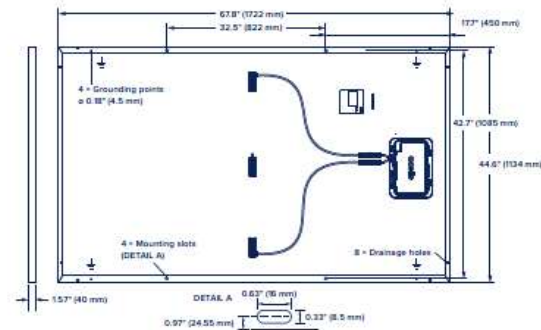
Q.TRON XL-G2 Datasheet at MAX-HAN0001655.

■ Description

The Q.TRON AC SERIES is a N-Type TOPCon PV module with an integrated microinverter. The module, with its embedded microinverter, provides optimized power output while also acting as a rapid shutdown compliant solution for optimal system safety. The solution includes a microinverter, DC cables and a junction box, enabling a streamlined installation experience.

■ Mechanical Specification

Format	67.8 in × 44.6 in × 1.57 in (including frame) (1722 mm × 1134 mm × 40 mm)
Weight	50.6 lbs (23 kg)
Front Cover	0.13 in (3.2 mm) thermally pre-stressed ARC solar glass
Back Cover	Composite film
Frame	Black anodized aluminum
Cell	6 × 18 monocrystalline Q.ANTUM NEO solar half cells
Junction Box	2.09-3.98 in × 1.26-2.36 in × 0.59-0.71 in (53-101 mm × 32-60 mm × 15-18 mm), Protection class IP67, with bypass diodes
Cable	4 mm ² Solar cable; (+) ≥ 25.8 in (655 mm), (-) ≥ 25.2 in (640 mm)
Connector	Stäubli MC4; IP68



Q.TRON AC Datasheet at MAX-HAN0001646.

Further, Q.ANTUM NEO Analysis discloses that “[t]he cell has a p⁺, boron-doped emitter on the front side.” Q.ANTUM NEO Analysis at MAX-HAN0001435. Figure 1 of the Q.ANTUM NEO Analysis shows the “p⁺-type emitter” on the front surface of the silicon substrate (reproduced below). *See id.* at MAX-HAN0001434. The p⁺-type emitter is a “boron-doped emitter.”

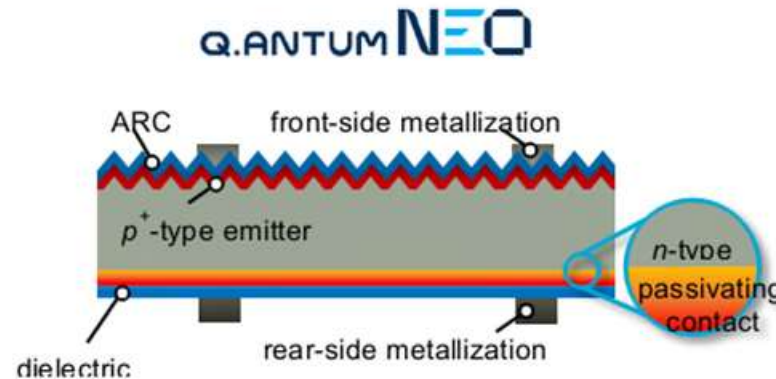


Figure 1. Cross-section diagram representing the Q.antum Neo n-type solar cell with passivating contact.

Upon information and belief, the p^+ -type emitter that is formed on the front surface of the silicon substrate and doped with boron is formed via diffusing dopants into a front surface of the silicon substrate. Thus, Defendants perform the “diffusing dopants into a front surface of the silicon substrate, the front surface of the silicon substrate facing the sun during normal operation” step.

The infringement analysis requires information that is not in the public domain, but is exclusively within Defendants’ knowledge and control. Maxeon intends and specifically reserves the right to promptly supplement these Infringement Contentions after Defendants produce sufficient relevant technical information regarding the design, manufacture, fabrication, and operation of the Accused Products.

[9.5] forming a metal contact on the front surface of the silicon substrate, wherein the metal contact is electrically coupled to the silicon substrate.

Defendants perform the “forming a metal contact on the front surface of the silicon substrate, wherein the metal contact is electrically coupled to the silicon substrate” step.

The Q.ANTUM NEO Analysis contains Figure 1 disclosing the general structure of Q.TRON:

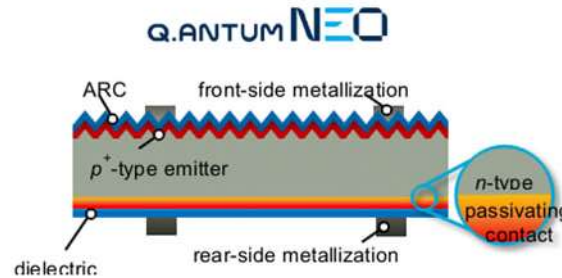


Figure 1. Cross-section diagram representing the Q.antum Neo n-type solar cell with passivating contact.

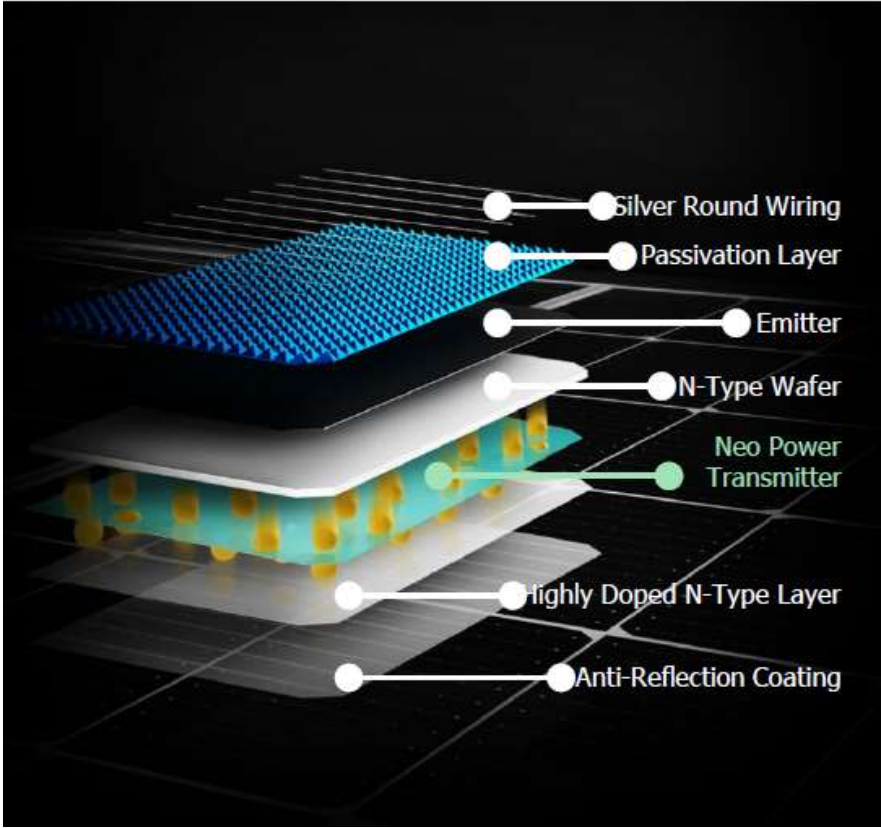
See Q.ANTUM NEO Analysis at MAX-HAN0001434. Figure 1 shows “front-side metallization,” which is a metal contact electrically coupled to the front surface of the n-type silicon substrate. *See id.* (disclosing that Defendants “engineer[ed] the front metal contact to decrease its recombination and improve its contact to silicon”).

Thus, Defendants perform the “forming a metal contact on the front surface of the silicon substrate, wherein the metal contact is electrically coupled to the silicon substrate” step.

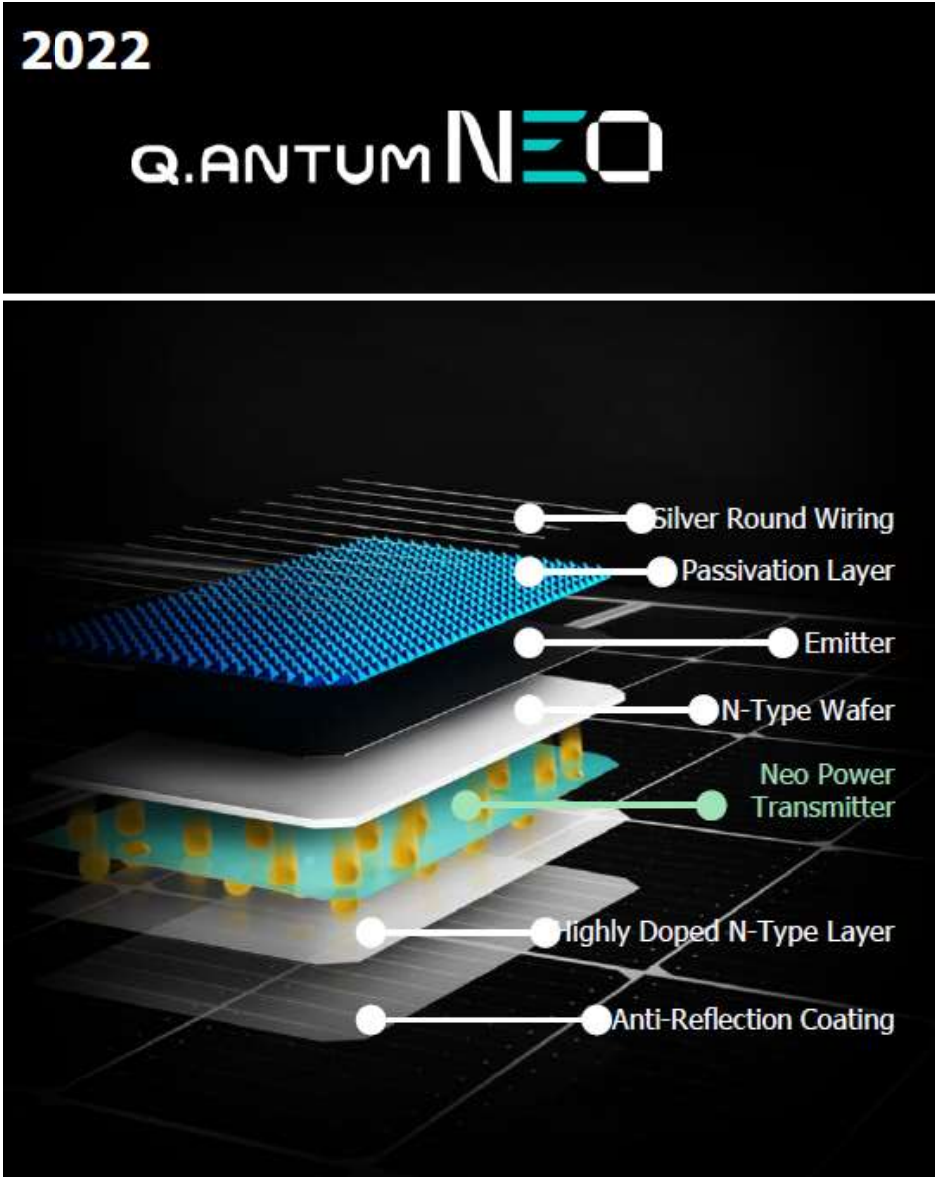
Claim 12	Defendants’ Q.TRON Solar Module Series (“Q.TRON”)
[12.0] The method of claim 9 wherein diffusing dopants into the front surface of the silicon substrate comprises forming a second dopant source layer over the silicon substrate and diffusing dopants from the second dopant source layer	<i>See</i> evidence for Claim 9, <i>supra</i>, demonstrating that Defendants perform every limitation of Claim 9. Defendants perform the “method of claim 9 wherein diffusing dopants into the front surface of the silicon substrate comprises forming a second dopant source layer over the silicon substrate and diffusing dopants from the second dopant source layer into the silicon substrate.” Q.ANTUM NEO Analysis discloses that “[t]he cell has a p+, boron-doped emitter on the front side.” Q.ANTUM NEO Analysis at MAX-HAN0001435. Figure 1 of the Q.ANTUM NEO Analysis shows the “p+-type emitter” on the front surface of the silicon substrate (reproduced below). <i>See id.</i> at MAX-HAN0001434. The p+-type emitter is a “boron-doped emitter.”

Claim 16	Defendants' Q.TRON Solar Module Series ("Q.TRON")
[16.0] A method of fabricating a solar cell comprising:	See evidence for limitation [9.0], <i>supra</i> .
[16.1] forming an oxide layer over a back surface of a silicon substrate;	Defendants perform the “forming an oxide layer over a back surface of a silicon substrate” step. “Q.TRON is Qcells’ latest TOPCon N-type panel.” MAX-HAN0001455 (reproduced below). Q.TRON is Qcells’ latest TOPCon N-type panel, incorporating cutting-edge and proprietary Q.ANTUM NEO Technology. With Q.TRON’s outstanding performance, along with its exceptional power and efficiency, you can expect a quality product from USA’s leading complete energy solutions provider. TOPCon stands for “tunnel-oxide passivated contact.” Q.ANTUM NEO Analysis at MAX-HAN0001434. “In February 2024, the [Qcells] division launched the Q.TRON G2 utilizing our propriety TOPCon cell manufacturing technology, Quantum Neo.” MAX-HAN0001457 at MAX-HAN0001506; <i>see also</i> MAX-HAN0001636 at MAX-HAN0001637 (“Q.ANTUM NEO is based on a TopCON-type cell structure that incorporates passivating contact technology to deliver higher efficiencies than typical PERC-type cells.”). Q.ANTUM NEO cells have a tunnel oxide layer referred to as the “NEO Power Transmitter.” <i>See</i> MAX-HAN0001632 at MAX-HAN0001633 (image reproduced below showing tunnel effect).

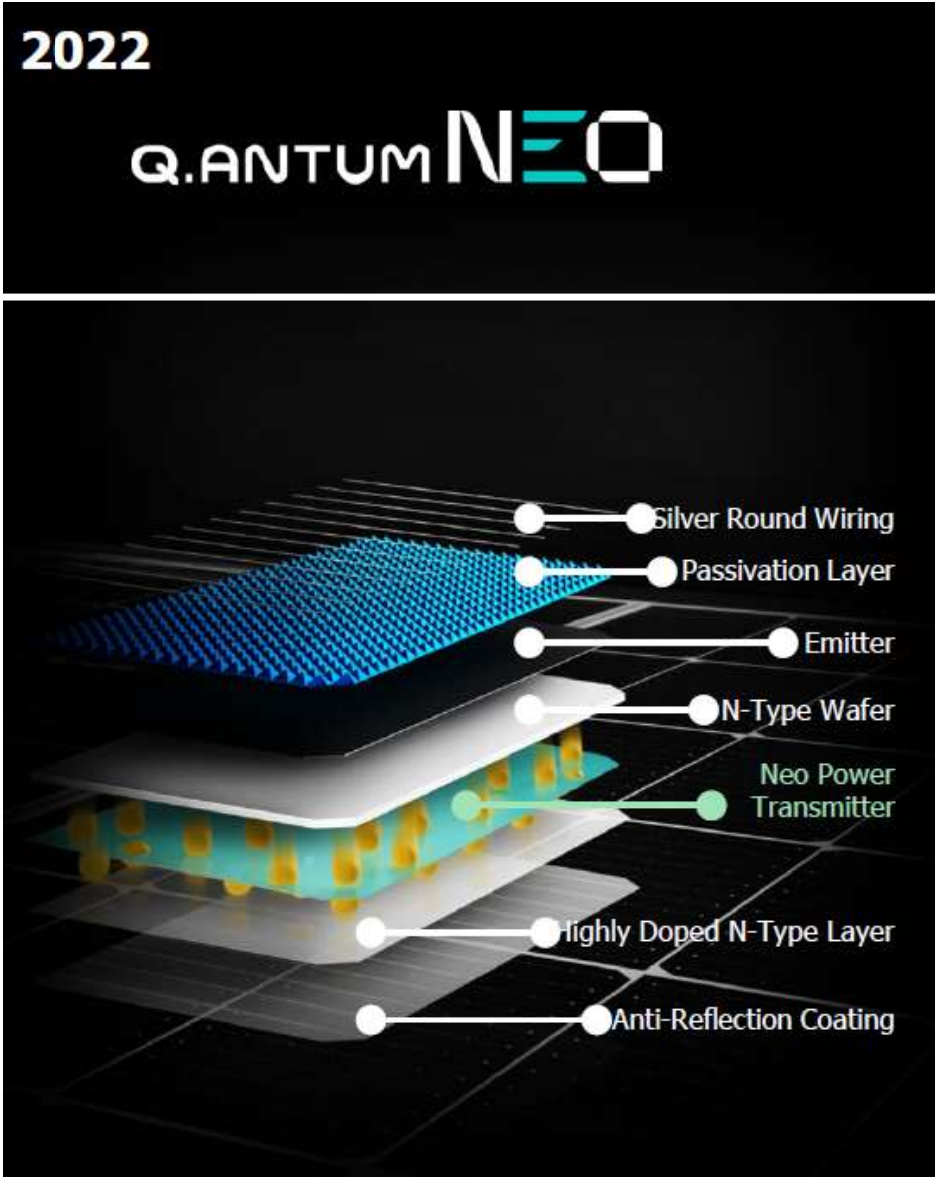
Claim 16	Defendants' Q.TRON Solar Module Series ("Q.TRON")
	A 3D perspective diagram of the Q.ATOM NEO Technology. It shows a blue rectangular block representing the N-type Silicon substrate. On top of this block is a yellow, wavy, textured layer labeled 'NEO Power Transmitter'. Below the transmitter is a grey layer labeled 'Electrical Back Contact'. Orange spheres representing 'Charge Carrier' are shown moving from the silicon substrate through the transmitter. A circular inset on the left shows a cross-section of the technology with labels for 'Q.ATOM NEO Technology' and 'Charge Carrier'. Further, Q.ATOM NEO Analysis contains Figure 1 disclosing the general structure of Q.TRON: A cross-sectional diagram of a Q.ATOM NEO n-type solar cell. The diagram shows a stack of layers: a top blue layer labeled 'ARC' (Anti-Reflective Coating), a red wavy layer labeled 'front-side metallization', a grey layer labeled 'p⁺-type emitter', and a bottom blue layer labeled 'dielectric'. Below the dielectric is a red layer labeled 'rear-side metallization'. A circular inset on the right shows a magnified view of the 'n-type passivating contact' layer, which is a stack of layers including a tunnel oxide layer and an n-polysilicon passivation layer. Figure 1. Cross-section diagram representing the Q.ATOM Neo n-type solar cell with passivating contact. See Q.ATOM NEO Analysis at MAX-HAN0001434. Figure 1 shows a “passivating contact,” which is described as a “tunnel-oxide passivated contact.” <i>Id.</i> That is, the “passivating contact” in Figure 1 is a stack of layers that includes both a tunnel oxide layer and n-polysilicon passivation layer. <i>Id.</i>; see <i>id.</i> at MAX-HAN0001438 (referring to the rear-side of Q.TRON as a “n-polysilicon passivation stack”). This understanding is also supported by the “Neo Power Transmitter” and “Highly Doped N-type Layer” shown in the Q.ATOM NEO Layer Stack. <i>Compare id. with</i> Q.ATOM NEO Layer Stack (reproduced below). The Neo Power Transmitter is formed over the back surface of the silicon substrate.

Claim 16	Defendants' Q.TRON Solar Module Series ("Q.TRON")
	2022 Q.ANTUM NEO  The diagram illustrates the layered structure of the Q.ANTUM NEO solar cell. From top to bottom, the layers are: Silver Round Wiring (represented by a grid of blue dots), Passivation Layer (a thin white layer), Emitter (a thin white layer), N-Type Wafer (a thick white layer), Neo Power Transmitter (a layer with yellow dots), Highly Doped N-Type Layer (a thin white layer), and Anti-Reflection Coating (a thin white layer at the bottom). The layers are shown in a perspective view, with the Silver Round Wiring and Neo Power Transmitter layers being the most prominent. Thus, Defendants perform the “forming an oxide layer over a back surface of a silicon substrate” step.

Claim 16	Defendants' Q.TRON Solar Module Series ("Q.TRON")
[16.2] forming a layer of polysilicon over the oxide layer;	Defendants perform the “forming a layer of polysilicon over the oxide layer” step. Q.TRON has a “Highly doped N-type layer” (i.e., a layer of polysilicon) that is formed over the Neo Power Transmitter (i.e., the oxide layer) as shown below. <i>See</i> Q.ANTUM NEO Layer Stack.

Claim 16	Defendants' Q.TRON Solar Module Series ("Q.TRON")
	 The diagram illustrates the layered structure of the Q.ANTUM NEO solar cell. At the top, the text "2022" and "Q.ANTUM NEO" are displayed. Below this, a 3D cutaway view shows the following layers from top to bottom: Silver Round Wiring (represented by a grid of blue dots), Passivation Layer (a thin white layer), Emitter (a thin white layer), N-Type Wafer (a thick white layer), Neo Power Transmitter (a layer with yellow and green dots), Highly Doped N-Type Layer (a thin white layer), and Anti-Reflection Coating (a thin white layer at the bottom). The background of the diagram is a dark grid pattern.

Claim 16	Defendants' Q.TRON Solar Module Series ("Q.TRON")
	Further, Figure 1 of the Q.ANTUM NEO Analysis (reproduced below) shows a "passivating contact," which is described as a "tunnel-oxide passivated contact." See Q.ANTUM NEO Analysis at MAX-HAN0001434. Figure 1. Cross-section diagram representing the Q.antum Neo n-type solar cell with passivating contact. That is, the "passivating contact" in Figure 1 is a stack of layers that includes both a tunnel oxide layer and n-polysilicon passivation layer. <i>Id.</i>; see <i>id.</i> at MAX-HAN0001438 (referring to the rear-side of Q.TRON as a "n-polysilicon passivation stack"). This understanding is also supported by the "Neo Power Transmitter" and "Highly Doped N-type Layer" shown in the Q.ANTUM NEO Layer Stack. Compare <i>id.</i> with Q.ANTUM NEO Layer Stack (reproduced below). The "passivating contact," which includes the "Highly Doped N-type Layer" (i.e., the layer of polysilicon), is formed over the tunnel oxide layer. See Q.ANTUM NEO Analysis at MAX-HAN0001434; <i>id.</i> at MAX-HAN0001435 (disclosing that the cell "has the n-type passivating contact on the rear"). Thus, Defendants perform the "forming a layer of polysilicon over the oxide layer" step.
[16.3] diffusing dopants into the layer of polysilicon to form a backside junction with the silicon substrate;	Defendants perform the "diffusing dopants into the layer of polysilicon to form a backside junction with the silicon substrate" step. Q.TRON has a "Highly doped N-type layer" (i.e., a layer of polysilicon) that is formed over a back surface of the N-type wafer (i.e., a silicon substrate) as shown below. See Q.ANTUM NEO Layer Stack.

Claim 16	Defendants' Q.TRON Solar Module Series ("Q.TRON")
	 The diagram illustrates the layered structure of the 2022 Q.ANTUM NEO solar module. The layers, from top to bottom, are: - Silver Round Wiring - Passivation Layer - Emitter - N-Type Wafer - Neo Power Transmitter - Highly Doped N-Type Layer - Anti-Reflection Coating

Claim 16	Defendants' Q.TRON Solar Module Series ("Q.TRON")
	Further, Figure 1 of the Q.ANTUM NEO Analysis (reproduced below) shows a "passivating contact," which is described as a "tunnel-oxide passivated contact." See Q.ANTUM NEO Analysis at MAX-HAN0001434. The diagram is a cross-sectional view of a solar cell. At the top, there is a wavy blue line labeled 'ARC' (anti-reflection coating). Below this is a red wavy line labeled 'front-side metallization'. Underneath is a grey layer labeled 'p⁺-type emitter'. Below the emitter is a thin blue layer labeled 'dielectric'. At the bottom is a thick grey layer labeled 'n-type silicon substrate'. A red wavy line at the bottom is labeled 'rear-side metallization'. A circular inset on the right side of the diagram shows a magnified view of the 'passivating contact' layer, which consists of a yellow 'n-type' layer and a red 'passivating contact' layer. Figure 1. Cross-section diagram representing the Q.antum Neo n-type solar cell with passivating contact. That is, the “passivating contact” in Figure 1 is a stack of layers that includes both a tunnel oxide layer and n-polysilicon passivation layer. <i>Id.</i>; <i>see id.</i> at MAX-HAN0001438 (referring to the rear-side of the Q.TRON solar cell as a “n-polysilicon passivation stack”). This understanding is also supported by the “Neo Power Transmitter” and “Highly Doped N-type Layer” shown in the Q.ANTUM NEO Layer Stack. <i>Compare id. with</i> Q.ANTUM NEO Layer Stack (reproduced above). The “passivating contact,” which includes the “Highly Doped N-type Layer” (i.e., the layer of polysilicon), is formed over a back surface of the n-type silicon substrate. See Q.ANTUM NEO Analysis at MAX-HAN0001434; <i>id.</i> at MAX-HAN0001435 (disclosing that the cell “has the n-type passivating contact on the rear”). The layer of polysilicon within the “passivating contact” also forms a backside junction with the n-type substrate (i.e., the substrate). Upon information and belief, the description of the layer of polysilicon as “n-polysilicon” indicates that dopants have been diffused into the layer of polysilicon. Thus, Defendants perform the “diffusing dopants into the layer of polysilicon to form a backside junction with the silicon substrate” step. The infringement analysis requires information that is not in the public domain, but is exclusively within Defendants’ knowledge and control. Maxeon intends and specifically reserves the right to promptly supplement these Infringement

Claim 16	Defendants' Q.TRON Solar Module Series ("Q.TRON")
	Contentions after Defendants produce sufficient relevant technical information regarding the design, manufacture, fabrication, and operation of the Accused Products.
[16.4] diffusing dopants into a front surface of the silicon substrate, the front surface of the silicon substrate facing the sun during normal operation; and	See evidence for limitation [9.4], <i>supra</i> .
[16.5] forming a metal contact on the front surface of the silicon substrate, wherein the metal contact is electrically coupled to the silicon substrate.	See evidence for limitation [9.5] <i>supra</i> .