UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

HANWHA SOLUTIONS CORPORATION,

Petitioner,

v.

MAXEON SOLAR PTE. LTD.,
Patent Owner.

Case No. IPR2024-01199
U.S. Patent No. 8,878,053

PETITIONER'S UPDATED TABLE OF EXHIBITS

Petitioner's Table of Exhibits

No.	Description
1001	U.S. Patent No. 8,878,053 B2 ("USP053")
1002	File History for U.S. Patent No. 8,878,053 B2 (App. No. 13/495,577) ("FH053")
1003	Declaration of Dr. Zachary Holman Regarding U.S. Patent No. 8,878,053 B2
1004	EP1732142A1 to Froitzheim ("Froitzheim")
1005	Gan and Swanson, *Polysilicon Emitters for Silicon Concentrator Solar Cells, IEEE Conference on Photovoltaic Specialists*, Vol. 1, Pages 245-240 (1990) ("Gan")
1006	WO 2009/094575 A2 ("Borden-575")
1007	U.S. Patent No. 6,998,288 to Smith ("Smith")
1008	CN 1949545A to Li (Translation) ("Li")
1009	Translation Declaration for Li
1010	Zachary C. Holman, *Electron Transport in Amorphous Silicon* (May 2005) (Thesis Presented to The Division of Mathematics and Natural Sciences, Reed College) ("Holman-Thesis")
1011	Reserved
1012	Reserved
1013	Declaration of June Munford
1014	Complaint for Patent Infringement, *Maxeon Solar Pte. Ltd. v. Hanwha Solutions Corp., et al.*, Civil Action No. 2:24-cv-262 (E.D. Tex. Apr. 19, 2024), ECF No. 1 ("Complaint")
1015	U.S. Patent No. 7,468,485 to Swanson ("Swanson")
1016	R. J. Komp, *Practical Photovoltaics Electricity From Solar Cells*, 3rd Ed. (2002) ("Komp")
1017	BP Solar Global Marketing, BP-MSX-120, 120-Watt Multicrystalline Photovoltaic Module ("BP-MSX-120")
1018	J. Nelson, *The Physics of Solar Cells, Imperial College Press* (2003) ("Nelson")
1019	T. Krygowski, A, Rohatgi, D. Ruby, *Simultaneous P and B Diffusion, In-Situ Surface Passivation, Impurity Filtering and Gettering for High-Frequency Silicon Solar Cells*, SAND-97-2620C; CONF-970953- ("Krygowski")

No.	Description
1020	A. Luque, S. Hegedus, *Handbook of Photovoltaic Science and Engineering*, Wiley (2003) ("Luque")
1021	J. Gordon, *Solar Energy the State of the Art*, ISES (2001) ("Gordon")
1022	U.S. Patent No. 6,262,359 to Meier ("Meier")
1023	U.S. Patent No. 4,525,593 to Yablonovitch ("Yablonovitch")
1024	WO 2009/094578 A2 ("Borden-578")
1025	U.S. Patent No. 4,665,277 to Sah ("Sah")
1026	D. Chapin et al., *A New Silicon P-N Junction Photocell for Converting Solar Radiation into Electrical Power*, J. Appl. Phys. 25, 676 (1954) ("Chapin")
1027	W. Shockley, H. J. Queisser, *Detailed Balance Limit of Efficiency of pn Junction Solar Cells*, J. Appl. Phys. 32, 510 (1961) ("Shockley")
1028	A. Metz, R. Meyer, B. Kuhlmann, M. Grauvogl, R. Hezel, *18.5% Efficient First-Generation MIS Inversion-Layer Silicon Solar Cells*, 26th PVSC (1997) ("Metz")
1029	D. De Ceuster, P. Cousins, D. Rose, D. Vicente, P. Tipones, W. Mulligan, *Low Cost, High Volume Production of >22% efficiency silicon solar cells*, 22nd European Photovoltaic Solar Energy Conference, 3-7 September 2007, Milan, Italy, pp. 816-819 ("De-Ceuster")
1030	J. Benick, J. Rentsch, Ch. Schetter, C. Voyer, D. Biro, R. Preu, *PECVD PSG as a Dopant Source for Industrial Solar Cells, Presented at the 21st European Photovoltaic Solar Energy Conference*, September 4-8, 2006, Dresden (2CV.4.26) ("Benick")
1031	JP07-106611 to Okayasu (Translation) ("Okayasu")
1032	Translation Declaration for Okayasu
1033	Robert F. Pierret, *Semiconductor Device Fundamentals*, Addison Wesley Longman (Part I) (1996) ("Pierret")
1034	A. I. A. Rahim, C. D. Marsh, P. Ashburn, G. R. Booker, *Impact of Ex-Situ and In-Situ Cleans on the Performance of Bipolar Transistors With Low Thermal Budget In-Situ Phosphorus-Doped Polysilicon Emitter Contacts*, IEEE

No.	Description
	TRANSACTIONS ON ELECTRON DEVICES, VOL. 48, NO. 11 (November 2001) ("Rahim")
1035	N. S. Parekh, R. V. Taylor, D. O. Massetti, *A Simple Method to Control Bipolar Polysilicon Emitter Interfacial Oxide*, J. Electrochem. Soc., Vol. 141, No. 11, pp. 3167-3172 (1994) ("Parekh")
1036	E. Yablonovitch, T. Gmitter, R. M. Swanson, Y. H. Kwark, *A 720 mV open circuit voltage SiOx:c-Si:SiO x double heterostructure solar cell*, Appl. Phys. Lett. 47, 1211–1213 (1985) ("Yablonovitch-1985")
1037	Reserved
1038	Reserved
1039	File History of U.S. Patent App. No. 14/504,771 ("771FH")
1040	U.S. Patent No. 8,222,516 B2 ("USP516")
1041	Reserved
1042	U.S. Patent Appl. Pub. No. 2002/0142500 A1 ("Foglietti")
1043	Mark John Kerr, *Surface, Emitter and Bulk Recombination in Silicon and Development of Silicon Nitride Passivated Solar Cells* (2002) (Ph.D. Thesis, The Australian National University) ("Kerr")
1044	Reserved
1045	M. Green, *Silicon Solar Cells Advanced Principles & Practice*, Centre for Photovoltaic Devices and Systems (1995) ("Green-1995")
1046	Y. H. Kwark, R. M. Swanson, *N-Type Sipos and Poly-Silicon Emitters*, Solid-State Electronics Vol. 30, No. 11, pp. 1121-1125 (1987) ("Kwark")
1047	G. R. Wolstenholme, N. Jorgensen, P. Ashburn, G. R. Booker, *An investigation of the thermal stability of the interfacial oxide in polycrystalline silicon emitter bipolar transistors by comparing device results with high-resolution electron microscopy observations*, J. Appl. Phys. 61, 225–233 (1987) ("Wolstenholme")
1048	Reserved
1049	M. Green, *Solar Cells Operating Principles Technology and System Applications* (1986) ("Green-1986")

No.	Description
1050	N. G. Tarr, *A polysilicon emitter solar cell*, IEEE Electron Device Letters, vol. 6, no. 12, pp. 655-658, Dec. 1985 ("Tarr")
1051	R. M. Swanson, *Point Contact Solar Cells: Modeling and Experiment*, Solar Cells, 17, pp. 85-118 (1986) ("Swanson-1986")
1052	U.S. Patent No. 4,158,591 to Avery ("Avery")
1053	U.S. Patent No. 5,899,804 to Schlosser ("Schlosser")
1054	U.S. Patent No. 7,144,751 to Gee ("Gee")
1055	Reserved
1056	WO 2006/097303 A1 ("Agostinelli")
1057	P.V. Meyers, R. Kee, C. Wolden, L. Raja, V. Kaydanov, T. Ohno, R. Collins, M. Aire, J. Kestner, A. Fahrenbruch, *Atmospheric Pressure Chemical Vapor Deposition of CdTe for High Efficiency Thin Film PV Devices*, NREL Annual Report 26 January 1998 – 25 January 1999 (Sept. 1999) ("NREL-1999")
1058	R. M. Swanson, R. A. Sinton, *High-Efficiency Silicon Solar Cells, Advances in Solar Energy: An Annual Review of Research and Development*, vol. 6. Chapter 4 (1990) ("Swanson-1990")
1059	G. Lubberts, B. C. Burkey, F. Moser, E. A. Trabka, *Optical properties of phosphorus-doped polycrystalline silicon layers*, J. Appl. Phys. 52(11), (Nov. 1981) ("Lubberts")
1060	U.S. Patent No. 6,352,876 to Bordogna ("Bordogna")
1061	E. Centurioni, D. Iencinella, R. Rizzoli, F. Zignani, *Silicon Heterojunction Solar Cell: A New Buffer Layer Concept With Low-Temperature Epitaxial Silicon*, IEEE Transactions on Electron Devices, Vol. 51, No. 11 (November 2004) ("Centurioni")
1062	M. Farrokh-Baroughi, H. El-Gohary, S. Sivoththaman, *Optical, Electrical, and Structural Properties of PECVD Quasi Epitaxial Phosphorous Doped Silicon Films on Crystalline Silicon Substrate*, Canadian Solar Buildings Conference (August 20-24, 2004) ("Farrokh-Baroughi")
1063	Email chain between Counsel and Trial Board, dated December 11-12, 2024

No.	Description
1064	Plaintiff Maxeon Solar Pte. Ltd.'s Disclosure of Asserted Claims and Infringement Contentions, *Maxeon Solar Pte. Ltd. v. Hanwha Solutions Corp., et al.*, Civil Action No. 2:24-cv- 262 (E.D. Tex. Nov. 21, 2024)
1065	Docket Control Order, *Maxeon Solar Pte. Ltd. v. Hanwha Solutions Corp., et al.*, Civil Action No. 2:24-cv- 262 (E.D. Tex. Nov. 25, 2024), ECF No. 33
1066	Reserved
1067	Reserved
1068	Reserved
1069	Reserved
1070	Declaration of Mark D. Selwyn in Support of Petitioner's Notice of Intent to Designate Mark D. Selwyn, a Provisionally Recognized PTAB Attorney, as Back-Up Counsel Pursuant to 37 C.F.R. § 42.10(c)
1071	Deposition Transcript of Douglas S. Ruby, Ph.D., June 24, 2025, in *Canadian Solar, Inc. v. Maxeon Solar Pte, Ltd.*, IPR2024-01039, IPR20024-01040 ("Ruby-CSI-Dep.")
1072	Sandia Report, Fundamental Understanding and Development of Lost-Cost, High-Efficiency Silicon Solar Cells, Annual Progress Report: Sept. 1998-Aug. 1999 (May 2000) ("Sandia-2000")
1073	U.S. Patent Number 5,792,280 to Ruby ("Ruby-280")
1074	D.S. Ruby, et al., Simplified processing for 23%-efficient silicon concentrator solar cells, Conference Record of the Twenty Third IEEE Photovoltaic Specialists Conference pp. 172-177 (1993) ("Ruby-1993")
1075	Deposition Transcript of Douglas S. Ruby, Ph.D., July 31, 2025, in *Hanwha Solutions Corp. v. Maxeon Solar Pte, Ltd.*, IPR2024-01199, IPR20024-01203 ("Ruby-Tr.")
1076	Reserved
1077	Reply Declaration of Dr. Zachary Holman Regarding U.S. Patent No. 8,222,516 B2 ("Reply-Decl.")
1078	David L. Pulfrey, MIS Solar Cells: A Review, IEEE Transactions on Electronic Devices, Vol ED-25, No. 11, Nov. 1978 ("Pulfrey")

No.	Description
1079	M. Lemiti et al, Physical Properties of RT-LPCVD and LPCVD Polysilicon Thin Films: Application to Emitter Solar Cell (1994) ("Lemiti")
1080	A. Metz et al., Record Efficiencies Above 21% for Mis-contacted Diffused Junction Silicon Solar Cells, 26th PVSC (Sept. 30 – Oct. 3, 1997) ("Metz-1997")
1081	Reserved
1082	Reserved
1083	Reserved
1084	Reserved
1085	SAND Report, SAND 2001-0833, History of the Crystalline Silicon Photovoltaic Cell Research Program at Sandia National Laboratories (April 2001) ("Ruby-2001")
1086	D. S. Ruby & J. D. McBrayer, The Effects Of Different Diffusion Sources On Silicon Solar Cell Recombination Properties, Sandia Nat'l. Labs. (1990) ("Ruby-1990")
1087	Plaintiff Maxeon Solar Pte. Ltd.'s Disclosure of Asserted Claims and Infringement Contentions, *Maxeon Solar Pte. Ltd. v. Hanwha Solutions Corp., et al.*, Civil Action No. 2:24-cv- 262 (E.D. Tex. Nov. 21, 2024) ("Maxeon-IC")
1088	Errata from the May 8, 2025 Deposition of Dr. Zachary Holman
1089	Declaration of Gilbert T. Smolenski dated September 5, 2025
1090	Reserved
1091	Petitioner's Demonstratives for Oral Argument

CERTIFICATE OF SERVICE

I hereby certify that, on November 25, 2025, I caused a true and correct copy of the following materials:

- Exhibit 1091
- Petitioner's Updated Table of Exhibits

to be served on Patent Owner via electronic mail to:

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