

GLOSSARY OF TECHNICAL TERMS

This glossary contains explanations of certain technical terms used in this document. As such, these terms and their meanings may not correspond to standard industry meanings or usage of these terms.

“AOI”	automated optical inspection
“advanced packaging”	advanced packaging architectures and technologies, including wafer-level packaging, 2.5D packaging and 3D packaging
“BC”	a type of photovoltaic cell technology in which both the positive and negative electrodes are arranged on the rear side of the cell, with no metal electrodes on the front side. This design reduces optical shading losses caused by reflection and blockage of incident light by front-side electrodes
“CPO”	co-packaged optics, an advanced heterogeneous integration of SiPh devices and ASIC on a single packaged substrate that addresses ultra-high-bandwidth, low-latency and energy-efficient requirements for next-generation data centre interconnects
“Emitter”	a key layer in a photovoltaic cell responsible for collecting charge carriers generated by the cell and contributing to current generation
“GW”	gigawatt, a unit of power, one GW equals to 1,000,000,000 watt
“HDI”	A printed circuit boards that achieve higher wiring density per unit area through the use of microvias, fine line circuitry and multilayer stacking processes
“HJT”	heterojunctions that are formed between semiconductors with dissimilar band gaps, on which HJT PV cells (a type of N-type cell) are based
“LACE”	laser accelerated controlled etching, a process that utilises laser technology to form a modified layer within transparent materials. Due to the difference in corrosion resistance between the modified and unmodified regions, subsequent chemical etching preferentially removes the modified material, thereby forming micro-vias or trenches
“LCOE”	levelised cost of energy, the average cost per unit of electricity generated, including all costs such as construction, operation, maintenance and raw material
“LIA”	a process that utilises laser technology to perform full-area, high-intensity and uniform photo-injection and thermal annealing on photovoltaic cells, thereby enhancing open-circuit voltage and fill factor to improve cell conversion efficiency

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“LIB”	A highly integrated and modular industrial production line that uses laser as the core heat source to assemble multiple independent workpieces, such as cells and electrical connectors into functional modules through laser processing
“LIF”	a processing technique in which laser energy is used to locally and rapidly heat materials, enabling particles, pastes, or interfaces to undergo sintering, densification, or the formation of conductive connections under localised high-temperature conditions
“MBI”	A technology that uses an insulating-layered conductive metal backsheet as a carrier for current collection and cell interconnection, enabling direct electrical conduction between the rear electrodes of solar cells and the metal backsheet
“Micro LED”	an information display technology that uses micro-scale light-emitting diode chips with a long side of less than 100 micrometres and a short side of less than 50 micrometres, which are fabricated without a substrate
“N-type cells”	a type of PV cell made from N-type silicon wafer
“PCB”	a general-purpose carrier platform composed of an insulating substrate and conductive circuitry, providing precise physical support and electrical interconnection for electronic components, including semiconductor chips
“PERC”	a photovoltaic cell technology in which a dielectric passivation layer is formed on the rear side of the solar cell to serve as a rear surface reflector, thereby enhancing the absorption of long-wavelength light and improving photovoltaic conversion efficiency, as defined by the China Photovoltaic Industry Association
“Perovskite Cell”	a type of thin-film photovoltaic cell that uses “organic – inorganic hybrid metal halide” materials as the light-absorbing photoactive layer
“P/N-type photovoltaic cells”	crystalline silicon photovoltaic cells based on P-type silicon wafers, where “P-type” refers to a semiconductor with holes as the majority charge carriers; crystalline silicon photovoltaic cells based on N-type silicon wafers, where “N-type” refers to a semiconductor with electrons as the majority charge carriers
“PTP”	a non-contact printing technique in which paste is coated onto a specific flexible light-transmitting material, and a high-power laser beam is used for high-speed pattern scanning to transfer the paste from the flexible material onto the surface of the solar cell, thereby forming grid lines
“P-type cells”	a type of PV cell made from P-type silicon wafer
“R&D”	research and development

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“SE Laser Doping”	a processing technique that utilises the localised heating effect of a laser, based on a diffusion-formed doping source, to create a locally heavily doped emitter structure in the electrode contact regions of photovoltaic cells, thereby forming a selective emitter and improving photovoltaic conversion efficiency
“Tandem”	a photovoltaic technology in which sub-cells with different bandgaps are stacked together to form a tandem solar cell. This approach can effectively enhance the absorption of incident solar spectrum energy, thereby improving photovoltaic conversion efficiency. A “sub-cell” refers to an individual cell unit within a tandem photovoltaic device
“TCI”	a technology in which laser processing is used to scribe and passivate isolation regions at predefined cutting areas on solar cells, thereby reducing edge recombination losses and improving module power output
“TCO, or transparent conductive oxides”	a class of materials with high visible-light transmittance and low resistivity
“TFLN, or thin-film lithium niobate”	a key material platform in integrated photonics, typically referring to an ultra-thin, usually submicron, single-crystal lithium niobate film formed on silicon, silicon dioxide or other substrates through physical or chemical processes
“TGV”	a process in which a laser beam with ultra-high power density is shaped and focused to act instantaneously inside transparent materials, forming localised laser-accelerated modified channels. Based on the difference in chemical etching rates between the modified and unmodified regions, through-vias with controllable morphology and a specific aspect ratio are subsequently formed via wet chemical etching
“TOPCon”	tunnel oxide passivated contact, an advanced technology for PV cells that uses an ultra-thin silicon oxide layer between a heavily doped polycrystalline silicon layer and the silicon wafer to improve performance
“Z”	Zetta