Masimo Semiconductor, a wholly owned subsidiary of Masimo Corporation, has been researching III-V optoelectronic devices since 1982. Masimo Semiconductor's scientists and engineers cumulatively have over 100 years of experience and account for over 140 publications, 34 patents, and 3 world record discrete semiconductor devices.

In 2003, Masimo Semiconductor brought online and moved into the current 40,000 sq. ft. state-of-the-art production facility. Masimo Semiconductor's large modern office and laboratories are located in Hudson, NH. The facility features a 13,500 sq. ft. of Class 100/1000 cleanroom space that houses an MOCVD and processing laboratory as well as an extensive materials characterization and device testing area. Office area is available for customer use and an additional 50,000 sq. ft. is available for capacity expansion.
CPV Cells
Masimo Semiconductor makes next generation efficiency solar cells (over 42% at 500 suns, (25°C), as independently verified by the National Renewable Energy Laboratory. The patent pending Bi-Facial Growth (BFG) cells are exclusively a Masimo Semiconductor-owned and developed product.

Night Vision
Masimo Semiconductor has extensive experience in high quality, low particle, metal-organic chemical vapor deposition (MOCVD). We will license our 7.5 and 1.25µm InAs/GaAs and InGaAs based photodiode epitwafers to leading night vision equipment makers.

LEDs
Masimo Semiconductor works with many “fabless” companies on customer proprietary LED products. Masimo Semiconductor-made LED products range from simple emitter red LEDs for medical equipment to InGaN/GaN violet and blue LEDs for instrument makers.

Avalanche and PIN Photodiodes
Masimo Semiconductor can design or implement customer photodiode epi-design. Our design service includes customer designed photomasks to microfabricate various photodetectors, including sensitive photon-counting avalanche photodiodes (APDs) for specialty instruments as well as standard PINs for optical communications.

Thermophotovoltaics
Masimo Semiconductor is a leading supplier of specialty low bandgap InGaAs power converter cells for thermophotovoltaic power systems that are being examined to replace thermoelectrics for power in deep space planetary exploration missions by utilizing thermal photons generated from radioisotope heat sources.

Laser Power Converters
Masimo Semiconductor has world class expertise in the design of various photovoltaic power converter products, this design and manufacturing technology provides laser power converters that can supply power to remote locations or sensors via a laser beam in free space or a laser beam guided by an optical fiber.

Design
Masimo Semiconductor maintains a flexible customer production wafer growth and processing laboratory. We offer optical structure design, device performance modeling and process flow layout services for the full range of III-V compound semiconductor devices. Our capabilities include CAD design of photodiode/package test sets, development of customer driven processes as well as custom fabrication processes. Capabilities range from prototype development to full production.

Epi-Fab Growth
Masimo Semiconductor offers large area epitaxial growth on multiple high production MOCVD reactors as well as small diameter wafers. The reactors are optimized for growth InP and GaAs based material systems and growth can be performed on 2”, 3”, or 6” diameter wafers.

Masimo Semiconductor has developed significant know-how for growing devices with challenging delivery specifications such as high purity materials, to fabricate devices for all high purity wafers.

Device Fabrication
Starting with Masimo Semiconductor MOCVD growth, or customer supplied epitaxial wafers and device concept; we can take GaAs, InP, Silicon, Indium Nitride, Lithium Tantalate on Si wafers (up to 4”) through the full device fabrication process. We provide engineering expertise to develop a process flow, use patented test lots, experimental development approaches, and provide alternative steps and materials to optimize a device for both performance and manufacturing costs.

Testing
Masimo Semiconductor provides non-destructive optical characterization and device performance measurements as well as device failure testing to meet in-depth performance acceptability and lifetime reliability requirements. All materials characterization is performed in a class 1000 cleanroom located adjacent to the MOCVD laboratory and a pass-through allows wafer transfer from MOCVD to characterization. We provide the following materials characterization: Surface inspection and Defect Count, Spectral Reflectance, Photoluminescence, SIMS, Hall and Photoacoustic. We also provide the following device testing: Solar Cells – Simulated IV Measurements (1-sun & concentration), IQE, EQE, Reflectance, LEDs – Intensity Mapping.