Lasertec manufactures unique inspection and measurement systems that incorporate the cutting-edge technologies of applied optics and offers them to customers worldwide. Our core business is the manufacture and sale of semiconductor-related inspection equipment.
Semiconductor devices are used in almost every electronic device and industrial product around us today. Their applications span a wide range of areas, from consumer products such as smartphones, PCs, TVs, and air-conditioning systems, to cars and trains, and to credit cards and digital currencies.
Semiconductor devices are manufactured using photomasks, which serve as the source of original patterns for integrated circuits. Lasertec’s inspection systems are designed to optically inspect photomasks and their pre-patterned substrates called mask blanks.

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<thead>
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<tbody>
<tr>
<td>1</td>
<td>Mask Substrate</td>
<td>A glass plate from which a mask blank is made.</td>
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<tr>
<td>2</td>
<td>Mask Blank (Blank)</td>
<td>A plate with light-shield metal coating applied to the surface of a mask substrate. A photomask is made from a mask blank.</td>
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<tr>
<td>3</td>
<td>Photomask (Mask)</td>
<td>A plate with a circuit pattern defined on the surface of a mask blank. It provides the original pattern to be transferred to wafers in lithography.</td>
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<tr>
<td>4</td>
<td>Wafer</td>
<td>A circular and thin semiconductor material made by slicing a crystalline silicon ingot extruded in a cylindrical shape. Circuit patterns are printed on a wafer in lithography to form integrated circuits.</td>
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<tr>
<td>5</td>
<td>Semiconductor Device</td>
<td>Once integrated circuits are formed, the wafer is diced into individual chips. Each chip is then sealed with resin.</td>
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</table>
The original circuit pattern on the mask is transferred to wafers in lithography using reduction optics. The process is repeated many times with different masks to print multiple-layer patterns on each wafer to create semiconductor devices.
Size of defects detected by Lasertec’s inspection systems

- Defect on blank material
- Defect on patterned mask

One nanometer is a billionth of one meter.
Semiconductor devices will be used in greater numbers.

As the scope of semiconductor application expands and the demand for semiconductor devices increases, inspection systems will be required in greater numbers. Lasertec will offer the cutting-edge technologies of inspection and metrology to meet the requirement and contribute to society.

- **Mobile / IoT**
  - Various things connected to the Internet

- **Data Center**
  - Massive data storage

- **AI**
  - Emergence of artificial intelligence

- **Automotive**
  - Electric vehicles, onboard electronics, and self-driving cars

The expansion of these four areas will dramatically increase the demand for semiconductor devices.

- **Logic devices** for calculation and image processing
- **Image sensors** for light sensing and imaging
- **Memories** for data storage
- **Power devices** for optimum power conversion and control