



Luxtera Announces Technology Breakthrough of Germanium-Enabled Integrated Photodetector on Mainstream SOI-CMOS Wafer

-- Orders of magnitude cost-savings, making photodetectors virtually free --

Carlsbad, Calif., March 14, 2007 – Luxtera Inc., the world leader in Silicon Photonics, today announced that it is the first company to use a standard SOI-CMOS fabrication process, and by strategically adding pure germanium around optical waveguides, it has developed an integrated long-wavelength photodetection capability. This technology breakthrough, which is well ahead of others in the market, enables monolithic, fully integrated opto-electronic semiconductor devices to consume far less power, gain reliability due to fewer components, and realize orders of magnitude cost reductions that can make photodetectors virtually free.

Conventional optics manufacturing costs are primarily driven by assembly, test and bill of materials. This new integrated photodetector significantly reduces the costs for all three areas. By embedding the photodetectors directly on the wafer, costs associated with assembly and test of multiple components are eliminated. Furthermore, by placing the photodetector immediately adjacent to the receiver electronics on a common CMOS die, electronic noise is reduced, enabling the photodetector to detect much lower power signals. This improves receiver performance by a factor of four; therefore, less expensive low-power lasers can be used on the transmit side, reducing the transceiver cost.

“By integrating photodetectors, Luxtera has made a significant breakthrough that’s years ahead of its competition,” said Jag Bolaria, senior analyst with The Linley Group. “By quickly productizing this technology, Luxtera should be in a position to lower the cost of optics for future high-volume deployment.”

Until now, commercial photodetectors have been implemented in systems using discrete components, where customers were faced with the cost of purchasing individual photodetectors for each photonic receiver. Luxtera’s new technology allows practically an unlimited number of photodetectors to be grown directly on a die during wafer manufacturing, and to be economically tested at the wafer scale. At one low cost,

thousands of photodetectors can now be grown at the same time, enabling engineers to develop new applications. Now designers can use large numbers of photodetectors freely instead of sparingly because the cost of the final product will no longer be affected by the number of photodetectors used. In applications where larger numbers of photodetectors are required, such as chip-to-chip and intra-chip optical connectivity, this invention brings individual photodetector costs from over one-dollar to less than a penny.

To achieve photonic to electronic signal conversion, Luxtera applies small amounts of pure germanium along optical waveguides on a CMOS die and connects it to the chip level metallic interconnect by using a step that is common to the CMOS transistors and germanium photodetectors. This integration capability has the potential to make discrete photodetectors obsolete in the future just like very large scale integration (VLSI) made discrete transistors practically obsolete in electronic design.

“This technology is revolutionary for the industry—it brings us much closer to delivering high performance optical transceivers at cost points associated with legacy copper,” said Alex Dickinson, CEO of Luxtera. “We are the only company in the industry that has done this, well ahead of the competition.”

Luxtera is currently demonstrating this technology on complete 10Gbps 130 nanometer SOI-CMOS receivers using the Freescale Semiconductor foundry fabrication process. The demonstration receiver consists of a fully integrated die with Germanium photodetectors and all required supporting electronic and photonic logic, including optical interface to fiber (fiber-to-the-chip), Trans-Impedance Amplifier (TIA) and Limiting Amplifier (LA). The first commercial application is expected to target Luxtera’s next generation transceivers for optical connectivity in communications and consumer markets. Other potential applications include areas where large numbers of photodetectors are needed and include optical sensors in infrared cameras, interactive gaming and medical imaging. It is also a major milestone to make future optical chip-to-chip and intrachip connectivity feasible.

About Luxtera

Luxtera, Inc. is a fabless semiconductor company and the world leader in silicon photonics. Luxtera will fulfill the world’s insatiable demand for bandwidth by uniting the high performance of fiber-optic communications with the low-cost and high-volume manufacturing advantages of mainstream silicon CMOS fabrication. The company was

founded in 2001 by a team of industry-renowned researchers and technology managers drawn from the communication and semiconductors industries. Luxtera is funded by leading venture capitalists: Sevin Rosen Funds, August Capital and New Enterprise Associates. Luxtera will ship its first commercial products based on its CMOS photonics technology in 2007. Luxtera is headquartered in Carlsbad, CA. More information on Luxtera can be found on the company's web site: www.luxtera.com.

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