



CASE STUDY

GIGOPTIX: TAKING A BREAKTHROUGH DEVICE TO MARKET IN “RECORD TIME”

GigOptix had invented a revolutionary optical modulator, but faced challenges with both technology development and manufacturing. Relying on Sanmina, it went from design to volume production in just six months. GigOptix not only penetrated the market, but took a technological lead in the modulator field.

THE OPPORTUNITY

GigOptix created a 40G Mach-Zehnder modulator based on its proprietary Thin Film Polymer on Silicon (TFPS™) technology. Traditional devices used either lithium niobate or indium phosphide, both crystalline materials. But unlike lithium niobate, the GigOptix modulator was smaller and fit into industry standard 3.5 × 4.5” 300-pin transponders. Its polymer innovation also outperformed indium phosphide. Overall, this modulator was faster and its low drive voltage cut power consumption by over 20%. It was truly disruptive.

Moreover, GigOptix could bundle the new modulator with its 40G and 100G drivers. With this revolutionary modulator, GigOptix can offer a bundled solution with their compatible Mach-Zehnder 40G and 100G drivers. But success was far from certain.

THE CHALLENGE

GigOptix had to overcome a variety of obstacles simultaneously:

- **Time-to-market was absolutely critical.** If their modulators did not reach companies in time, they would use available modulators from other vendors.
- **Manufacturing had to be best-in-class.** For instance, polymer modulators require much finer alignment than lithium niobate versions, because the optical mold is much smaller.
- **The manufacturer had to create new packaging.**
- **Customer acceptance was a key entry barrier.** Since polymer modulators were new, they lacked a track record. Buyers had to trust both the technology and its manufacturer.

WHY SANMINA?

GigOptix selected Sanmina because of its:

- **Speed.** Sanmina is an expert at new product introduction, bringing complex, quality products to market quickly.
- **Deep experience in optics.** Sanmina’s Optical and Microelectronics Division is focused on the design, industrialization, test and custom manufacturing of revolutionary optical products with decades of experience in the field. It had also previously manufactured more traditional modulators.
- **End-to-end capability.** Sanmina can handle every task from design to development and prototyping, along with global manufacturing.





THE APPROACH

No one had ever seen a polymer modulator before. With the LX 8401 DPSK 40G modulator, Sanmina:

- **Developed the passive alignment and epoxy curing processes.**
- **Solved the difficult alignment problem.** within +/- 2 micron.
- **Created new equipment.** It developed the equipment needed to produce these new designs in volume.
- **Built in China.** It moved the entire project to its state-of-the-art factory in Shenzhen.

Meanwhile, GigOptix was also working on a 100G DP-QPSK polymer modulator. As GigOptix saw rapid progress on the 40G device, it asked Sanmina to co-design and manufacture its 100G DP-QPSK modulator, as well as its new 40G DP-QPSK modulator. Sanmina:

- **Helped design these ultra-compact solutions.**
- **Prototyped the devices in North America.**
- **Manufactured them in Shenzhen.**

RESULTS

Together with GigOptix, Sanmina:

- **Brought the first polymer modulator to market, fully qualified.**
- **Developed prototypes early.** They began appearing within two to three months.
- **Succeeded with the critical production time requirement.** Sanmina got the 40G production line up and running in six months, in "record time," according to GigOptix Chairman and CEO, Dr. Avi Katz.
- **Swiftly produced the next generation 100G modulator.**

CEO Dr. Katz congratulated Sanmina "for bringing up this leading production line in record time," and stated, "I am thankful for their solid partnering in enabling our revolutionary TFPS™ modulators." Added Vice President Dinu, "Sanmina was the right choice, for sure."

SANMINA'S ABILITY TO DELIVER

The groundbreaking GigOptix modulators are one more example of Sanmina's ability to ramp quickly with new technology and deliver some of the most innovative optical products in the world.

DESIGN AND MANUFACTURING LEADERSHIP

- **Custom opto-electronic solutions to your requirements.**
- **Deep expertise in advanced optical/RF packaging, opto-electronic components, and systems.**

ABOUT SANMINA

Sanmina Corporation is a leading integrated manufacturing solutions provider serving the fastest-growing segments of the global Electronics Manufacturing Services (EMS) market. Recognized as a technology leader, Sanmina provides end-to-end manufacturing solutions, delivering superior quality and support to Original Equipment Manufacturers (OEMs) primarily in the medical, communications networks, defense and aerospace, industrial and semiconductor systems, multimedia, computing and storage, automotive and clean technology sectors. Sanmina has facilities strategically located in key regions throughout the world.

More information regarding the company is available at www.sanmina.com.