



CASE STUDY

HETEROGENEOUS PACKAGING FOR CUSTOM MULTI-CHIP MODULE. FIRST PROTOTYPES BUILT IN ONLY 48 HOURS.

In pursuit of terabit/s applications, a tier one communications company developed several disruptive semiconductor die and silicon photonic chips for a high speed pluggable application. They needed a partner to design a highly customized and integrated package for the bare die in a multi-chip device that could accelerate time to market. They chose Sanmina.

GOAL

In pursuit of terabit/s applications, a tier one communications company developed several disruptive semiconductor die and silicon photonic chips for a high speed pluggable application. In order to launch the product, they needed a partner to design a highly customized integrated package for the bare die in a multi-chip device in parallel with die fabrication. They also needed the partner to enable rapid prototyping and faster time to market.

THE CHALLENGE

Increasing interconnect density is driving the need for heterogeneous multi-chip modules using flip chip technology. At the same time, die sizes are increasing, while the available area is constant. Specific aspects of the disruptive design fell outside standard architectures and design rules, but were essential to the functionality. Standard industry solutions could not implement the design. The partner needed to be willing to develop an integrated design that would balance the trade-offs of different technologies and design and support a customized manufacturing process. The customer needed a prototype within a week of receiving the die and a supplier with flexibility to iteratively implement technology changes.

WHY SANMINA

The customer needed a tailored implementation of advanced chip packaging technology. They were looking for a partner that could develop and qualify the multi-chip module with minimal technical support, and be self-sufficient with engineering support during volume manufacturing. Sanmina provides flexible micro-electronics production processes that can be tailored to accommodate leading edge customer specific designs. The customer had confidence in Sanmina's integrated product development and manufacturing experience, based on a proven track record for successful introduction of new multi-chip technologies in a variety of different configurations and materials (with and without optical interfaces).



APPROACH

Sanmina established a joint integrated project team combining resources in both companies to collaboratively develop the product solution.

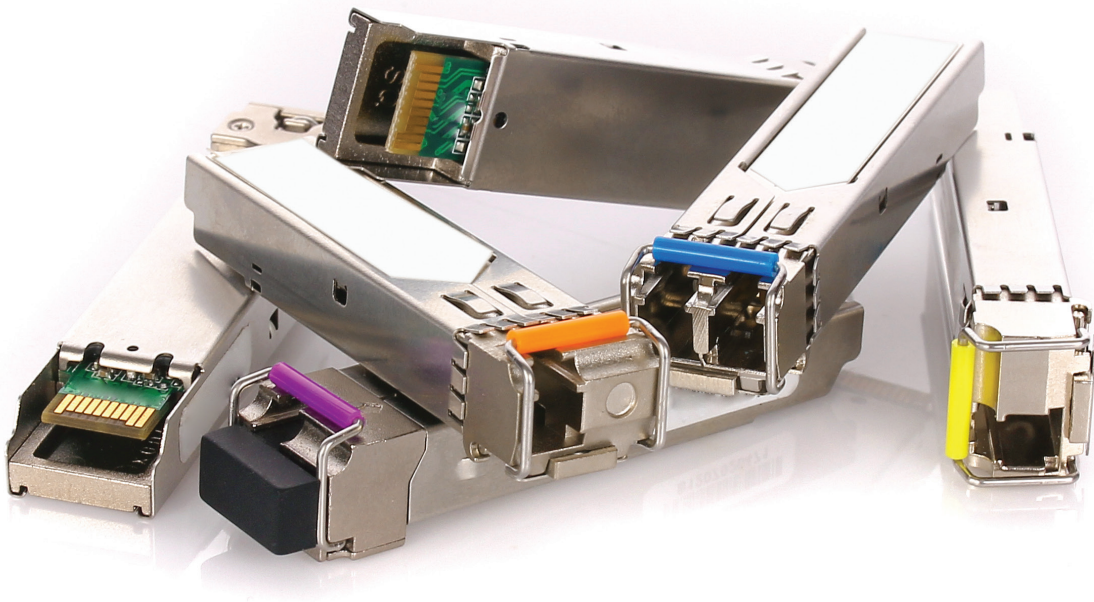
- Advanced Finite Element Analysis (FEA) modeling was used to assess material and module configurations.
- Material was selected and assembly trials for product specific heterogeneous integration were conducted.
- Sanmina and the customer worked together to manage the challenging technical trade-offs between performance and manufacturability.
- The customer and Sanmina collaborated on the module design to accelerate time to market.

Sanmina developed the integration and manufacturing solution.

- Sanmina provided an integrated manufacturing solution by selecting the equipment and material needed to assemble the final product.
- State-of-the art multi chip module technologies were selected for manufacturing processes including chip attach and flip chip.
- Prototypes were developed, tested and the integration process was validated for robustness and compliance, according to Telcordia standards.
- Additional Sanmina value-added services included sustaining engineering during production.

THE RESULTS

- Prototype delivered in only 48 hours after receiving first die, accelerating time to market.
- Collaborative development and manufacturing enabled a leading edge customer product with reduced time to market.
- Customized microelectronic module solution addressed a highly optimized system requirement.



ABOUT SANMINA

Sanmina makes some of the most complex and innovative optical, electronic and mechanical products in the world. Recognized as a technology leader, Sanmina provides end-to-end design, manufacturing and logistics solutions, delivering superior quality and support to Original Equipment Manufacturers (OEMs) primarily in the communications networks, computing and storage, medical, defense and aerospace, industrial and semiconductor, multimedia, automotive and clean technology sectors.

More information regarding the company is available at <http://www.sanmina.com>.