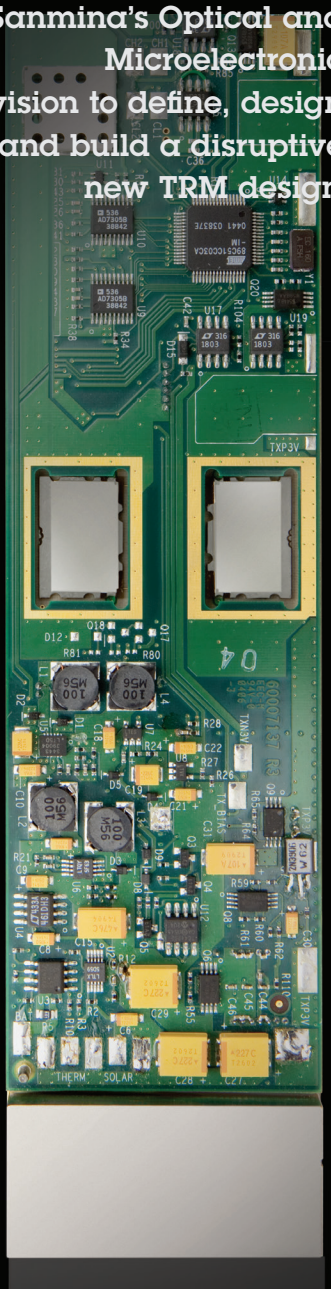
CASE STUDY

FROM CONCEPT TO REALITY, SANMINA PARTNERS WITH MDA TO DELIVER RADAR TRANSMIT RECEIVER MODULES

When MDA wanted to re-imagine a new approach to low-cost, weight-optimized space-based Synthetic Aperture Radars, they partnered with Sanmina's Optical and Microelectronic Division to define, design and build a disruptive new TRM design.



THE CHALLENGE

In space, weight equals cost. MDA wanted to revisit how their Synthetic Aperture Radars, such as RADARSAT-2, were designed and built. Would it be possible to achieve, or even exceed, current performance specifications in a product that was intended to be part of a satellite one-half the size of its predecessor? The key would have to be the proper design of its several hundred C-band Transmit/Receive Modules (TRMs). And finding the right partner to build them.

THE SOLUTION

In Sanmina, MDA found a partner that could do both. To fully understand the challenges before them, Sanmina worked closely with MDA engineers to analyze the broader system issues, jointly decide how to best partition the design and select the right technologies. The final solution borrowed heavily from Sanmina's broad market experience, taking the latest telecom and radar TRM technologies and mixing in volume manufacturing techniques from the surface mount world to create a disruptive new TRM architecture. Harnesses were eliminated by employing wireless communications for control functions. Innovative new techniques of integrating passive microwave components were utilized in the TRM structures to reduce cost, weight and size.

RESULTS

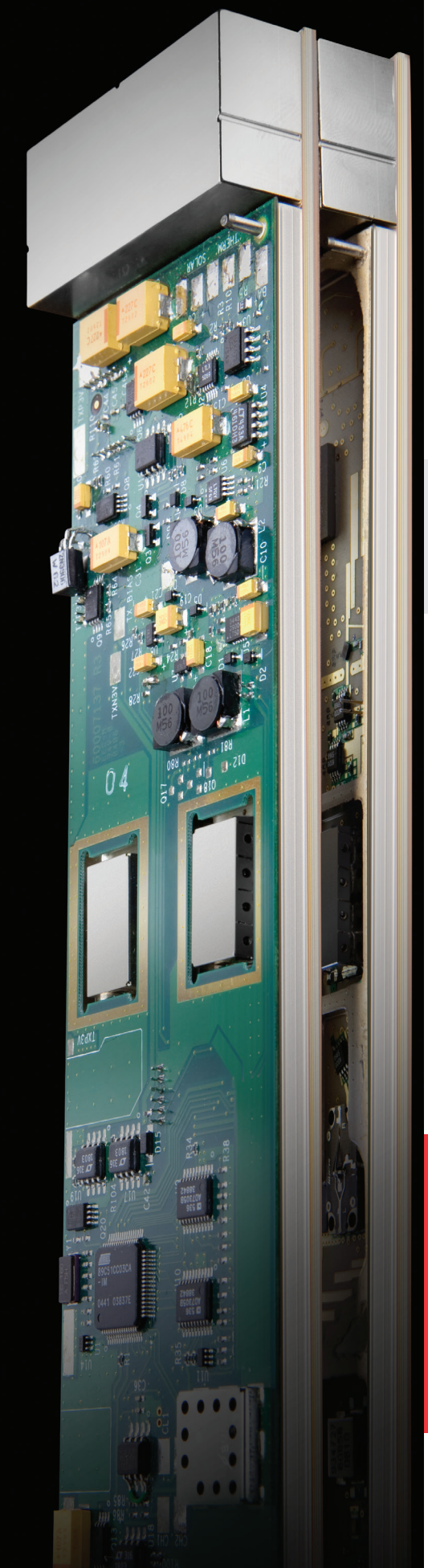
In less than 18 months, Sanmina went from project launch to producing 60 fully functional alpha prototype TRMs. Using these same TRMs, MDA engineers later successfully imaged the International Space Station (ISS), travelling at 7.5 km/s, at a distance of 343 kms.

A LIGHT-WEIGHT TRM FOR HEAVY WEIGHT APPLICATIONS

Sanmina, using standard manufacturing techniques to control cost, along with advanced custom RF and microwave design techniques, demonstrated a very significant reduction of cost in terms of both development and production when compared to traditional TRM designs for space application:

- Integrated TR module with embedded supply, control, transmit/receive functions, amplitude and phase control, limiter, waveguide launch and wireless interfaces
- Used off-the-shelf components from wireless applications for lowest cost
- Embedded passive elements to reduce cost and weight (filters, patch antennae, combiner and waveguide launch)
- Stacked high-performance, low-loss RF board with low-cost control and power supply board for compact design, combining low weight, lowest cost and optimal performance
- Based on standard high-volume surface mount technologies and processes for high manufacturability and lowest cost

"WiNode" - C-Band TRM for satellite-based SAR



RF EXPERIENCE MAKES THE CRUCIAL DIFFERENCE

Sanmina is known for the quality of its engineering teams, and their ability to collaborate with customers to come up with the optimal system configuration. Sanmina leveraged every advantage of their broad industry experience, combined it with a deeply innovative microwave design to create a fundamentally new, and disruptive, TRM architecture. And, ultimately, providing MDA with the exact solution to their problem.

Kenny James, Principal Engineer MacDonald, Dettwiler and Associates Ltd.

"Without Sanmina, we would not have been able to demonstrate our new SAR concept in such a rapid and cost-effective way. Using our initial TRM design, Sanmina performed the detailed design verification and the complete design for manufacture. They performed the entire build, test, re-work and re-test cycle and delivered sixty working modules in record time. The range of expertise brought to the table by Sanmina was impressive indeed. Their cooperative approach to working with our team enabled us to successfully demonstrate our technology in time and on a tight R&D budget."

OUR ABILITY TO DELIVER

The WiNode TRM is another successful example of Sanmina's Optical and Microelectronic Division's ability to deliver Innovative, Cost Effective Solutions to very Challenging Products.

CUSTOM DESIGN AND MANUFACTURING LEADERSHIP

- Custom products designed to our customer's specifications
- World-class integrated design, manufacturing and test team
- 20+ years experience in designing custom components, modules and systems for optical, RF and Microwave products

RADAR PRODUCTS

- Focus on innovation, including the design of next-generation radar elements
- Delivering turnkey product designs and documentation
- Volume manufacturing of Transmit/ Receive Modules, Column Amplifiers and Switch Matrixes

MANUFACTURING LEADERSHIP

- DFx (Design for Manufacturability, Test ability, Assembly, Reliability) and VAVE (Value Analysis / Value Engineering)
- Complete, global, end-to-end-manufacturing solutions from design to logistics
- Advanced global supply chain management
- Post-manufacturing solutions

CUSTOMER KNOWLEDGE

- Technology leadership in the EMS industry
- Focus on dedicated end markets
- Passion for our customers
- Flexible and proactive

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.**

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