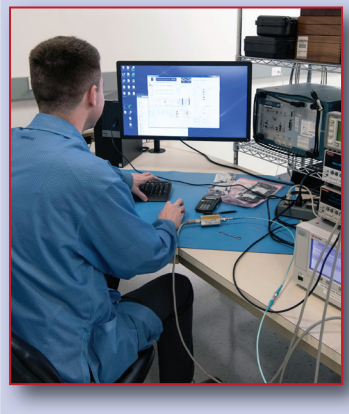
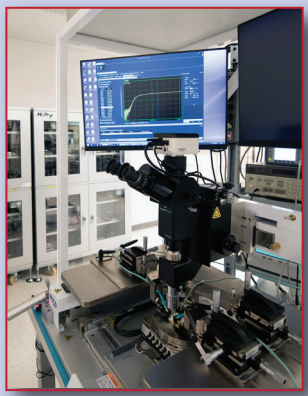
FABS and LABS

Custom MMIC—Melding Process Technology, Innovative Design and an Enviable Culture





When Paul Blount worked for a fabless semiconductor company, he would come home complaining about what they were doing—or not doing. Paul's wife eventually challenged him to start his own company, since he thought he could do it better. So he did, launching Custom MMIC on May 5, 2006 from the basement of his home. Thirteen years later, the rapidly growing firm has just completed a second office and lab expansion—now at 20,000 square feet—to house the continuing arrival of new staff and test equipment.

Custom MMIC's standard products catalog has grown to 165 products spanning DC to 67 GHz, packaged and die, and reflecting most every RF function: amplifiers, voltage variable and digital attenuators, switches, mixers, phase shifters and multipliers. Custom MMIC did not begin as a standard products company. Initially, Paul offered design services, developing his reputation largely through Small Business Innovation Research (SBIR) programs. The first one tasked him to design LNA MMICs consuming very little power, for X- and Ku-Band phased arrays. His design used only 30 mW, significant for an array with thousands of T/R modules. These innovative designs started the catalog, which now contributes some 85 percent of the company's revenue.

As GaAs MMIC suppliers have consolidated and rationalized their portfolios, Custom MMIC has stepped into that void, finding abundant opportunities by taking on the most challenging requirements and supporting long-lived programs, particularly for military and space systems. Without an internal fab, Custom MMIC designers can choose the best process from an array of global foundries, using it to create an innovative design. As one example, amplifier phase noise is often overlooked as an important limitation on system performance. Seeing this, Custom MMIC pioneered low phase noise amplifiers and now offers a family of products in this area.

Custom MMIC believes the data sheet is the primary tool for assessing and choosing MMICs for a new design. So the applications team is always adding more characterization data, particularly second-tier parameters that may prove important, such as second harmonic and IP2 performance. Better to identify a possible problem from the data sheet before finding it when testing a prototype.

Recognizing the challenge companies face when their suppliers obsolete products, Custom MMIC is implementing an innovative plan to source key Custom MMIC products from two different foundries. Should one fab discontinue a process, Custom MMIC can offer customers a second product "off the shelf." While it may need to be qualified in the system, the customer will not have to embark on a long and costly MMIC design.

Growth and many customer awards are the obvious signs of Custom MMIC's success. Yet they are just the outcome of what makes the company successful: its core values. Paul is proud that not a single employee has resigned in 13 years. He fosters a culture that respects spending time with family and he is passionate about the "Women in Engineering" scholarship, which awards substantial financial support to young women pursuing undergraduate engineering degrees. When you have created a culture of respect and kindness, recruited a talented team, empowered them and treat your customers as members of the team, success follows. QED.

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