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Company Backgrounder

The promise of SiC

In 1999, a small team of researchers at Rutgers University founded UnitedSiC. This was in the days when Silicon Carbide (SiC) technology was still in its infancy, and devices were being manufactured in the research lab on thumbnail sized pieces of SiC. This team developed many of the basic SiC process techniques used with the company's external foundry partners today.

In 2009, a group of successful entrepreneurs who believed in the promise of wide band-gap materials, and SiC in particular acquired the company. Even then, the overall SiC market was relatively small, but it presented an excellent investment opportunity based on the projected market for SiC-based devices. In addition, larger scale manufacturing techniques gave the potential to drive down the higher costs associated with an SiC solution.

In 2010, UnitedSiC built a pilot production cleanroom near Princeton NJ, to enhance the SiC processes to the stage where they could be directly installed in a commercial foundry. At this point, UnitedSiC became a fabless company, focusing their resources on product design, R & D and customer support, employing an already proven industry strategy that allowed for fast, efficient company growth.

Growing SiC manufacturing capabilities

In 2011, UnitedSiC processes were successfully installed at a commercial foundry using the largest substrate (4") available at the time. The resulting products delivered highly differentiated functionality, and improved power efficiency, based on a lower cost switch solution using the UnitedSiC core JFET technology. When coupled with an appropriately designed Si MOSFET, UnitedSiC was able to manufacture devices that were 1/2 the die size at 1200 V and less than 1/3 the die size at 650 V, compared to its nearest competitor. This not only delivered significantly improved device performance that helped customers achieve new levels of end system performance, but also helped drive company profitability. It is this technology that put UnitedSiC on the roadmap of the incumbent $1B Si Superjunction market.

In 2014, UnitedSiC initiated installation of its leading edge SiC processes in a domestic 6" foundry and shipped AEC-Q101 qualified products in 2017. Moving forward, strong foundry partnerships will enable UnitedSiC to scale significantly by supporting SiC processes in high volume silicon fabs.

Today, the UnitedSiC product portfolio is expanding at a rapid rate, and now spans from 650 V to 1700 V, in packages ranging from D2PAK, TO-220, TO-247, D2PAK-7L, and many others. As a result, UnitedSiC expects to have the industry's largest SiC discrete portfolio, targeting wide band-gap power applications in the fast growing automotive, industrial, datacenter, and renewable markets.

Strong Future

Customers around the world are now using the UnitedSiC FET, JFET and Schottky diode devices in new electric vehicle (EV) chargers, AC-DC and DC-DC power supplies, solid-state circuit breakers, variable speed motor drives and solar PV inverters. As a result, these SiC devices are enabling our customers to achieve superior end-product performance, assuring success in their end markets.

UnitedSiC – Simply More Efficient