Nuvotronics: Small Solutions for Big Problems

Nuvotronics was founded in Virginia in 2008. The company origins came from efforts to commercialize PolyStrata®, a new packaging technology that was being funded primarily by DARPA's 3D microelectrical-RF-systems (3D-MERFS) and disruptive manufacturing technologies (DMT) programs at Rohm and Haas. The business assets and IP surrounding PolyStrata were purchased from Rohm and Haas and these assets became the foundational basis for Nuvotronics. Since its founding in 2008, Nuvotronics has been refining the techniques and expanding the applications of the PolyStrata technology.

PolyStrata is a microfabrication process that allows precision patterned layers of both metals and polymers to be deposited on a flat substrate, resulting in sophisticated miniature devices with features ranging from a few microns to several centimeters. The 3D-MERFS program was focused on developing mmWave phased arrays for satellite communications and the DMT program addressed broadband GaN-based hybrid microwave amplifiers.

The PolyStrata technology is based on integrated circuit manufacturing techniques, so large numbers of devices can be fabricated on a single substrate. As Nuvotronics commercialized and increased volume, they pushed to larger substrates. In 2014, with investment and adoption from customers, the wafer manufacturing capability grew from six-inch to eight-inch substrates and the company moved to its current location in Durham, N.C.

The growth of the manufacturing capabilities continued. In 2019, Nuvotronics was acquired by Cubic Corporation, a leader in edge computing and networking, expeditionary communications and assured datalink solutions. Nuvotronics became the advanced microelectronics group within Cubic and the eight-inch wafer manufacturing line was expanded. In 2021, the company began constructing a 14-inch x 14-inch panel manufacturing line to augment the capacity in response to an increase in demand for components in LEO satellites. The 14-inch panel line became operational at the end of 2023.

As a result of these activities, the Cubic Nuvotronics facility in Durham, N. C., has grown to a 60,000 sq. ft. factory. This facility offers full design, fabrication, assembly and test of circuits and packaged die in one secure location for shorter lead times and greater cost savings. On the existing eight-inch production line, Nuvotronics has a capacity of 500 wafers per year, but the 14-inch panel expansion increases output by 23x. The expectation is that this will accelerate the affordable production of multi-use RF and mmWave packages, components and subsystems.

The advantages of the PolyStrata technology have dramatically expanded the product portfolio. Nuvotronics now touts a wide range of standard and custom passive components, subassemblies and antenna arrays, along with packaging and multi-chip module capabilities to 175 GHz and beyond. These components and capabilities target 5G/6G wireless, space, test and measurement, defense and dual-use applications. Nuvotronics is proud to be a vertically integrated company that can offer new solutions to optimize performance and SWaP-C considerations from design through manufacturing and testing as the company pivots toward standard products. For Nuvotronics, big problems require small solutions.

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