switching transistors such as MOSFETs and IGBTs.

Nevertheless, the technical details are still unsettled, with every manufacturer presenting its own solution to die design and packaging integration. This brings fierce competition, which will accelerate technical innovation and further lower prices. Moreover, GaN business models are still very different, and in the future we will see supply chain restructuring driven by the main cost factors. Manufacturers propose different approaches for epitaxy, gate structure, device design, and packaging, all focused on solving the problems linked to GaN’s intrinsic properties and its integration with silicon.

In this report, System Plus Consulting presents an overview of the state of the art of GaN-on-silicon HEMTs to highlight the differences in design and manufacturing processes, and their impact on device size and production cost. We have analysed different devices at low and medium voltage from EPC, Texas Instruments, Panasonic, GaN Systems and Transphorm. The report includes detailed optical, Scanning Electron Microscope and Transmission Electron Microscope pictures of the packaging, the transistor structures and the epitaxy.

This report provides an estimated production cost for the integrated circuit gate driver, transistor, and package. It also compares the different components available on the market.
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