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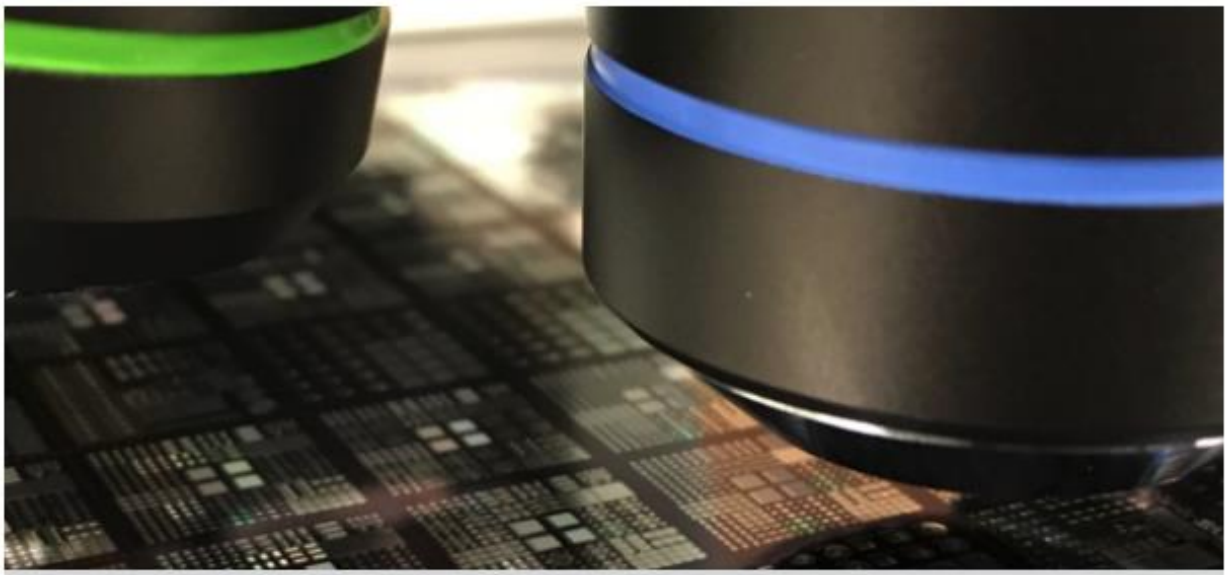
AIXTRON says YESvGaN – December 14, 2021



Company to partner in EU research project to develop highly efficient power transistors based on a novel process technology

Epitaxy specialist Aixtron has announced that it is a partner in the EU 'YESvGaN' (Vertical GaN on Silicon: Wide Band Gap Power at Silicon Cost) research project, which aims to develop highly efficient power transistors based on a novel process technology for large-scale industrial production.

The 'YESvGaN' consortium estimates the potential electricity savings by the consistent use of such YESvGaN vertical membrane GaN transistors in the EU in 2030 to be equivalent to the power output of seven nuclear power plants or ten coal-fired power plants.

For the development of vertical GaN power transistors with silicon as substrate, the consortium will be relying on the epitaxy expertise of Aixtron SE. This is because for this newly developed power device, GaN must grow over a large area in the form of crystalline layers on a suitable substrate such as a silicon wafer.

In order to further drive the market penetration of GaN-based devices, Aixtron is also testing epitaxial growth on epi wafers with 300 mm diameter as part of the 'YESvGaN' research project; currently, MOCVD technology is primarily used for crystalline growth on 150 mm to 200 mm wafers. For the deposition of GaN layers on 300 mm silicon substrates, the deposition systems specialist is developing the required equipment.
"GaN power transistors on silicon wafers provide us with the intriguing opportunity to combine about 15 percent higher power density in GaN compared to silicon (Si) with the cost advantages of the established silicon technology. The performance is thus expected to exceed that of modern SiC MOSFETs at chip costs rivalling those of Si IGBTs," says Michael Heuken, VP Advanced Technologies at Aixtron SE.

'YESvGaN' partners include Bosch, Ferdinand-Braun-Institut, Leibnitz Institute for Highest Frequency Technology, Fraunhofer Institute for Integrated Systems and Device Technology, Finepower, X-FAB, NanoWired and Siltronic, Centre national de la recherche scientifique CNRS, Ion Beam Services, STMicroelectronics, EpiGan, Universiteit Gent, EV Group, Materials Center Leoben Forschung, Hexagam, Linkopings Universitet, Smart Induction Converter Technologies, Universitat de Valènciam Aurel, Consorzio nazionale interuniversitario per la nanoelettronica, and Raw Power.

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