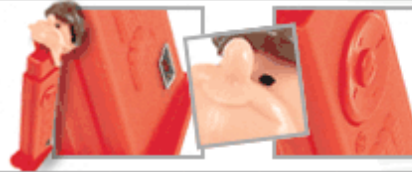


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## Group4 Releases Second Diamond Wafer

Online staff -- *Electronic News*, 3/31/2006

Group4 Labs is now offering what it says is the world's first 2-inch gallium nitride (GaN)-on-diamond semiconductor wafer.

The wafer is the second in the company's Xero Wafer family which offers a single GaN layer atomically attached to a synthetic diamond substrate, permitting "unprecedented" high temperature resilience. That makes it ideal for high-power, high-frequency electronic solid-state white lighting, military and photonics applications, according to Group4.

The Menlo Park, Calif.-based privately-held company says that its technology enables the GaN layer to be atomically attached to a freestanding, proprietary, polycrystalline chemical-vapor-deposited (CVD) diamond substrate (25-microns thick).

The GaN exposed is an atomically-smooth surface finish that is epi-ready for further epitaxial deposition. The device is commercially available as a freestanding 2-inch wafer or optionally on a disposable, silicon substrate to permit easy handling during wafer processing.

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The device is commercially available as a freestanding 2-inch wafer or optionally on a disposable, silicon substrate to permit easy handling during wafer processing.

Group4 Labs' proprietary GaN-on-Diamond technology addresses the classic heat problem plaguing the high power and high-speed transistor industry: excessive heat build-up inside the chip's engine that ultimately leads to device failure, the company said in a statement. The new material system offer a unique solution by extricating heat from the chip's core almost at the instant that it is generated. This is due to the nanometer proximity of the chip's active region to diamond, which Group4 says is a nearly perfect thermal conductor.

CVD diamond's thermal conductivity is about 3X to 30X more than that of conventional semiconductors. Just a 3X improvement in the thermal conductivity of a transistor array's substrate could boost the array's power-density by 10X to 100X depending on device configuration, the company said. Group4 Labs' scientists have, for the first time, successfully attached a 2-inch gallium nitride compound semiconductor to the tough-to-handle diamond substrate.

"This wafer is a 2-inch extension of what we introduced last month," said Felix Ejeckam, CEO, in a statement. "It's specially targeted to makers of power amplifiers (for cellular base stations), microwave and millimeter-wave circuits, UV laser diodes and ultra-bright blue/green/white LEDs who want tremendous power and thermal performance at little or no additional cost, compared to currently available semiconductor solutions."



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