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Solid State Technology Online Article

Firm touts GaN-on-diamond

February 14, 2006 - Group4 Labs LLC has developed a gallium nitride (GaN)-on-diamond semiconductor wafer, targeting high-power, high-frequency applications such as solid-state white lighting.

The GaN layer is atomically attached to a freestanding proprietary polycrystalline, chemical-vapor deposited diamond substrate, with the active region of the device sitting <0.5nm from the diamond, creating a thermal conductor with 3x-30x more thermal conductivity than conventional semiconductors (a 3x improvement of a transistor array could boost power density by tenfold).

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"This new type of semiconductor allows manufacturers of power amplifiers [for cellular base stations], microwave and millimeter-wave circuits, UV laser diodes, and ultrabright blue/green/white LEDs to achieve power density and efficiency levels never before attained," stated Group4 Labs CEO Felix Ejeckam.

The atomically smooth exposed GaN is epi-ready for further deposition; the wafer is shipped freestanding or on a disposable silicon wafer mount.

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