

Cambridge GaN Devices unveils breakthrough in EV power electronics technology

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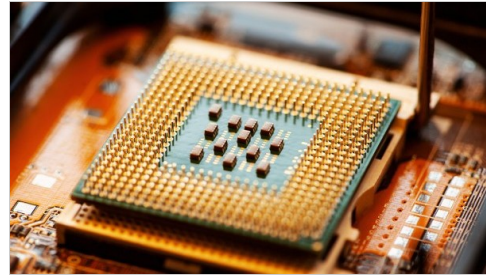
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CGD's Combo ICeGaN solution aims to revolutionize the EV market with efficiency and cost-effectiveness, challenging SiC solutions

Cambridge GaN Devices (CGD), a fabless, clean-tech semiconductor company, announced a breakthrough in enabling gallium nitride (GaN) technology for the electric vehicle powertrain applications market, particularly for systems over 100 kW. The company's Combo ICeGaN solution, which integrates ICeGaN high-electron-mobility transistors integrated circuits (HEMT IC) with insulated-gate bipolar transistors (IGBT) within the same module or intelligent power module (IPM), aims to offer high efficiency while remaining cost-effective compared to silicon carbide (SiC) solutions.



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CGD anticipates having working demonstrations of Combo ICeGaN by the end of 2025, marking a significant step toward commercializing this innovative and cost-effective solution for the EV market.

CGD's Founder and CEO Giorgia Longobardi highlighted the revolutionary aspect of Combo ICeGaN, which combines the benefits of GaN and silicon technologies to provide a solution that is both economical and efficient, potentially leading to faster charging and longer ranges in EVs. The company is collaborating with tier 1 automotive EV manufacturers to market this technology.

The dual functionality of the Combo ICeGaN arises from the parallel architecture of ICeGaN and IGBT devices, which share similar drive voltage ranges and gate robustness, allowing them to efficiently handle different load conditions.

At lower currents, the ICeGaN switch operates with minimal conduction and switching losses, while the IGBT takes over under high current or surge conditions, benefiting from high saturation currents and avalanche clamping capability. This innovative approach addresses the efficiency drop at higher temperatures through the bipolar component of the IGBT and optimally manages sensing and protection functions to enhance the Safe Operating Area (SOA) of both devices.

CGD's advancement with the Combo ICeGaN technology aims to extend GaN's benefits, previously proven in DC-to-DC converters and onboard chargers, to the high-demand over 100-kW traction inverter market. According to CGD's founders, this technology pairing between ICeGaN and IGBTs represents a significant milestone in the field of power devices, combining on-chip intelligence with robust performance under various load conditions and temperatures.

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