

PRESS RELEASE

RUGGEDNESS OF CAMBRIDGE GaN DEVICES' ICGaN TECHNOLOGY PROVEN IN VIRGINIA TECH PAPER AT APEC

>70 V over-voltage capability combines with intelligent on-chip protection to deliver highest GaN reliability and ruggedness

Cambridge, UK - [Cambridge GaN Devices \(CGD\)](#), the fabless, clean-tech semiconductor company that develops a range of energy-efficient GaN-based power devices to make greener electronics possible, has announced that independent, third-party research by leading academic research establishment, Virginia Tech University, demonstrates that the CGD's ICGaN™ gallium-nitride (GaN) technology is more reliable and robust than other GaN platforms. The paper, entitled '*A GaN HEMT with Exceptional Gate Over-Voltage Robustness*', presented by researchers from Virginia Tech and Daniel Popa, Director of Innovation & Research, CGD, provides experimental evidence that shows that ICGaN HEMTs, enabled by smart protection circuitry, show an exceptionally high over-voltage margin of over 70 V, which is comparable to state-of-the-art traditional silicon devices, and possibly even higher.

DANIEL POPA | DIRECTOR OF INNOVATION & RESEARCH, CGD

"Accidental high drive voltage is a critical concern for the gate reliability and driver design of GaN HEMT devices. State-of-the-art GaN HEMTs survive around 25 V, which can be within gate voltage overshoots in applications such as converters, resulting in device failure. Until ICGaN, higher breakdown voltage values of 70 V and more, were only possible with state-of-the-art SiC and superjunction devices."

ICGaN HEMTS possess a unique set of intrinsic capabilities, that together elevate device reliability well above current state-of-the-art GaN devices from competitors, while approaching the ruggedness of state-of-the-art Si-based devices. In addition to the hugely elevated dynamic gate breakdown capability, enabled by the inclusion of a fully integrated GaN smart circuitry, and confirmed by the Virginia Tech research, ICGaN technology has a higher voltage threshold of 3 V, higher voltage range (0 – 20 V), and a stronger gate voltage clamping action at lower temperatures.

More, a novel Miller-clamp design, also integrated within the smart ICeGaN circuitry, ensures immunity against high dV/dt and dI/dt events and obviates the need for negative gate voltages for turning-off (and keeping-off) the HEMT, which in turn reduces exposure to dynamic R_{on} stress.

ANDREA BRICCONI | CHIEF COMMERCIAL OFFICER, CGD

"The two major advantages of CGD's ICeGaN technology are ease-of-use and reliability. Our design, which integrates smart protection circuitry fabricated in GaN on-chip with the HEMT, facilitates both these key benefits, enabling devices to be driven like a MOSFET - without the need for special gate drivers, complex and lossy driving circuits, negative voltage supply requirements or additional clamping components – and to survive rugged and challenging application conditions."

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About Cambridge GaN Devices

Cambridge GaN Devices (CGD) is a fabless semiconductor company spun-out by Professor Florin Udrea and Dr Giorgia Longobardi from Cambridge University in 2016 to exploit a revolutionary technology in power devices. Now in the scale-up phase, our mission to bring innovation into everyday life by delivering effortless energy-efficient GaN solutions. CGD designs, develops and commercialises GaN transistors and ICs enabling a radical step change in **energy efficiency** and **compactness** and is suitable for **high volume production**. CGD's ICeGaNTM technology is protected by a strong IP portfolio which constantly grows based on the company's leading innovation skills and ambitions. In addition to the multi-million seed fund and Series A and B investment rounds, CGD has so far successfully secured four projects funded by iUK, BEIS and EU (Penta). The technical and commercial expertise of the CGD team combined with an extensive track record in the power electronics market has been fundamental in early market traction of its proprietary technology.

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