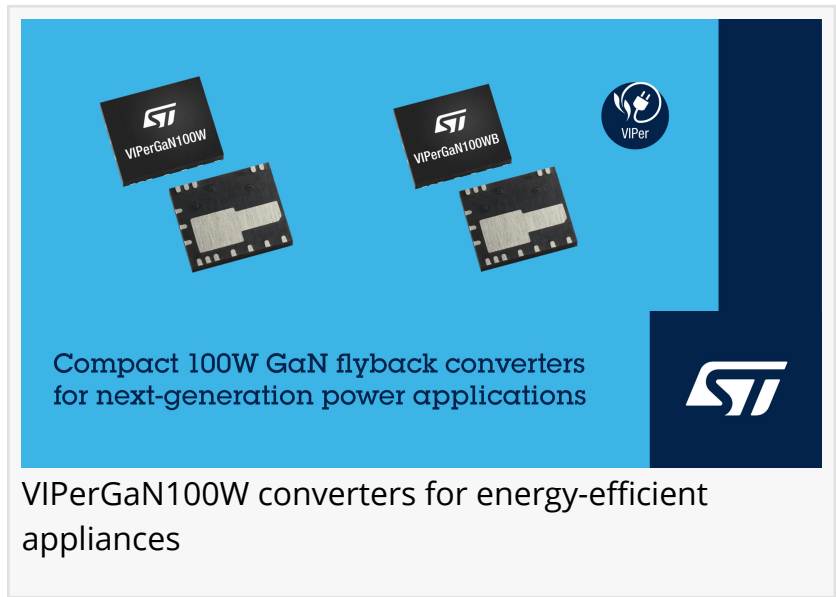


# STMicroelectronics reveals VIPerGaN 100W converters for energy-efficient appliances

*Monolithic GaN converters integrate power switch, gate driver, and flyback control*

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STMicroelectronics has introduced two 100-Watt VIPerGaN high-voltage converters, extending wide-bandgap energy savings throughout domestic appliances, building and home automation, smart lighting, and consumer products including televisions and device chargers.



VIPerGaN100W converters for energy-efficient appliances

The new converters include the [VIPerGaN100W](#), with 3.5A drain current limit, while the [VIPerGaN100WB](#) has a 4.2A current limit for handling short-term peak power up to 125W. The extra flexibility saves designers over-specifying power circuitry in equipment containing inductive loads like solenoid valves or motors, such as in coffee makers, small appliances, and air-conditioners. Both converters are compatible with the universal AC input voltage range, from 85V to 265V, and will deliver 100W from 185V supply.

The 700V gallium-nitride (GaN) power transistor in each converter ensures ruggedness and reliability, with extremely low RDS(on) of 0.27mΩ that helps achieve great thermal performance. The 5mm x 6mm QFN devices also integrate the flyback converter as well as the GaN gate driver, which saves designers fine-tuning gate resistance and inductance to optimize switching performance.

On the other hand, leveraging the high switching frequency possible with GaN power transistors lets circuit designers use small passive components to achieve outstanding energy efficiency and power density. Demonstrating this, ST has produced the EVLVIPGAN100WP reference design for a 100W USB Type-C Power Delivery 3.0 adapter featuring the VIPERGAN100W. With five output settings from 5V/3.0A to 20V/5.0A, secondary-side regulation, and optocoupler feedback, the reference design has peak efficiency over 92% and power density of 24W/in<sup>3</sup>.

The VIPerGaN100W and VIPerGaN100WB each contain a flyback converter that operates in quasi-resonant mode with zero-voltage switching. Here, flexible power management limits the switching frequency to ensure optimal efficiency across the load range, including frequency foldback at light load and valley skipping at mid load. In valley-skipping mode, ST's proprietary valley lock stabilizes the number of valleys skipped to prevent variations at audio frequencies and so ensure silent operation at all loads. Burst-mode operation at no-load cuts power consumption below 30mW.

In addition, line-voltage feedforward sharpens control of energy per cycle, stabilizing power as the input voltage fluctuates. Also, dynamic blanking time limits the change in switching frequency to minimize switching losses. Both converters integrate protection against input and output overvoltage, overtemperature, brown-in, and brown-out.

Extending ST's VIPerGaN family of integrated converters, the VIPerGaN100W and VIPerGaN100WB are available now at the eStore and distributors, from \$1.25 for orders of 1000 pieces.

Visit <https://www.st.com/vipergan-flyback-converters> for more information.

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