

Adapter Reference Design Leverages GaN-Based, Active-Clamp Flyback To Achieve High Density

[Navitas's](#) NVE039 27-W ac adapter reference design is being introduced as the world's smallest, fastest charging mobile adapter enabled by GaNFast power ICs. Additionally, it delivers 5x greater power than standard smartphone chargers and is 2x higher power density, according to the company. With world-wide input voltage capability and a Type C connector with USB-PD 3.0 and Qualcomm Quick Charge 4.0 features, this lightweight reference design delivers an extremely portable 'go anywhere, charge anything' solution.

"The 27 W is another size and speed breakthrough for consumers enabled by GaNFast technology, and with Quick Charge 4.0 compliance, you can decrease the amount of time you spend tethered to an outlet giving your device '5 for 5'—that's five hours of battery life from five minutes of charging" said Stephen Oliver, Navitas' vice president of sales & marketing. "Now that the high-frequency power eco-system of GaNFast power ICs, new controllers, new magnetics and soft-switching topologies has been established, we'll see a wide-range of fast-charging, high density designs on the market."

Using a Navitas' high-speed, half-bridge GaNFast power IC in the advanced active clamp flyback (ACF) topology, the 27-W reference design measures only 39 x 37 x 16 mm (uncased) and achieves a world-record power density of 1.2 W/cc (19 W/in³) uncased and 0.7 W/cc (11 W/in³) assuming a 2.5-mm case thickness (see the figure).

The reference design is available to qualified customers direct from Navitas at a price of \$465 each, which includes a comprehensive user guide/test report with all schematic and layout design files, plus bill of materials. For more information, see the [website](#).



Figure. Using a Navitas' high-speed, half-bridge GaNFast power IC in the active clamp flyback (ACF) topology, the 27-W reference design measures only 39 mm x 37 mm x 16 mm (uncased) and achieves a power density of 1.2 W/cc (19 W/in³) uncased and 0.7 W/cc (11 W/in³) assuming a 2.5-mm case thickness.