Navitas Enables OPPO's Dream: The Smallest, Thinnest, Lightest, Universal Fast Charger Ever

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New Gallium Nitride (GaNFast) power ICs enable a 3x shrink for top tech phone maker

DUBLIN, IRELAND –(PRWeb)—Navitas Semiconductor announced today that OPPO, a world-leading phone manufacturer had adopted its gallium nitride (GaNFast™) power ICs to enable the world's smallest, thinnest and lightest 50W fast charger. Measuring only 82 x 39 x 10.5 mm (34 cc) and as light as 60 g, there is for the first time a fast charger is as thin as the phone itself. The Mini provides the full 50W via OPPO's pioneering SuperVOOC fast-charging protocol, or the USB-C Programmable Power Supply (PPS) specification. It's a flexible device, capable of charging smartphones, tablets and many laptops. It's also the same size as the very popular Asian "Wang Wang" brand rice cookie – which has led many to refer to it as the 'cookie' charger.

The 50W Mini SuperVOOC charger was launched on July 15th by Jialiang (Jeff) ZHANG, Chief Charging Technology Scientist at OPPO, who said "Using gallium nitride devices to drive transformers to very high frequencies has been the dream of all technical workers for many years", adding "GaN devices will trigger a technological revolution in the field of power supplies."

Gallium nitride (GaN) is a next-generation semiconductor technology that runs up to 20x faster than old, slow silicon (Si), and enables 3x more power, which translates to up to 3x faster charging in half the size & weight. Navitas' GaNFast power ICs monolithically integrate GaN power, GaN analog and GaN logic circuits on the same chip, to enable faster, reliable, efficient operation.

For the 50W Mini, the high-speed performance of GaNFast power ICs opened the door to a new circuit topology – the 'pulsed' active-clamp flyback (ACF) which can tolerate a very wide input voltage range while maintaining a steady output to charge the phone battery. This allows the designer to remove the electrolytic 'bulk capacitor' from the system which can take up 40% of the total volume. In addition, running 16x faster than traditional chargers meant that a traditional 50 kHz 'wire-wound' transformer with over 20mm height can be replaced with a new high-speed 800 kHz, 8 mm planar transformer for an extremely low-profile and lightweight form-factor.

The new topology also allows OPPO's proprietary 'direct-charge' approach to reduce wear-out mechanisms and extend phone battery life.

"The 50W Mini is a great example of a next-generation fast charger, where new materials, new architectures & new component technology combine to create a revolution in power electronics," said Stephen Oliver, Navitas' Vice-President Marketing and Investor Relations, adding "We're at the point where GaN fast chargers have stepped far beyond boutique accessories and are now addressing high-volume, cost-effective and extremely high-performance markets… the writing is on the wall for old, slow silicon chips."

About Navitas:

Navitas Semiconductor Inc. is the world's first and only GaN Power IC company, founded in 2014. Navitas has a strong and growing team of power semiconductor industry experts with a combined 200 years of experience in materials, devices, applications, systems and marketing, plus a proven record of innovation with over 300 patents among its founders. GaN power ICs monolithically-integrate GaN power, GaN analog and GaN logic circuits to enable faster charging, higher power density and greater energy savings for mobile, consumer, enterprise, eMobility and new energy markets. Over 100 Navitas patents are issued or pending.

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