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STMicroelectronics Introduces First PowerGaN Products for More Energy-Efficient, Slimmer Power Supplies

- *Gallium Nitride (GaN)-based products deliver better energy efficiency and enable more compact designs of power supplies for a broad range of consumer, industrial, and automotive applications*
- *First product from full portfolio of ST's PowerGaN family in production now; additional devices in various packages and specification ratings coming soon*

Geneva, Switzerland, December 15, 2021 - STMicroelectronics (NYSE: STM), a global semiconductor leader serving customers across the spectrum of electronics applications, has revealed a new family of GaN power semiconductors in the STPOWER portfolio that can significantly reduce energy use and enable slimmer designs in a huge variety of electronic products. Target applications include consumer equipment such as chargers, external power adapters for PCs, LED-lighting drivers, and power supplies inside televisions and home appliances. This equipment is produced in high volumes worldwide and, with greater efficiency, can realize significant CO_2 savings. In higher-power applications, ST's PowerGaN devices also benefit telecom power supplies, industrial motor drives, solar inverters, and electric vehicles and chargers.

"Commercializing GaN-based products is the next frontier for power semiconductors, and we are ready to realize the potential of this exciting technology. Today ST is announcing the first product in a new family, belonging to the STPOWER portfolio, that can deliver breakthrough performance for a large variety of power supplies across consumer, industrial, and automotive applications," said Edoardo Merli, Power Transistor Macro-Division General Manager and Group Vice President of STMicroelectronics' Automotive and Discrete Group. "*We are committed to progressively building up our PowerGaN portfolio to enable customers to design more efficient, smaller power supplies everywhere*."

Further technical information:
Gallium Nitride (GaN) is a compound wide-bandgap semiconductor material capable of supporting far higher voltages than traditional silicon without compromising on-resistance thus reducing conduction losses. Products implemented in this technology can also be switched much more efficiently, resulting in very low switching losses. The possibility of operating at higher frequencies implies the adoption of smaller passive components. All these features enable designers to cut total losses (reduce heat generated) and improve efficiency in power converters. As a result, GaN allows for miniaturization, making a PC adaptor smaller and lighter than today's ubiquitous chargers, for example.

According to a third-party estimate, a standard mobile phone charger can be reduced by up to 40% in size when using GaN components, or it can be designed to deliver more power in the same size. Similar performance improvement in efficiency and power density can be envisioned for a broad number of applications across consumer, industrial, and automotive electronics. The first device in ST's new G-HEMT transistor family is the 650V SGT120R65AL with 120mΩ maximum on-resistance ($R_{DS(on)}$), 15A maximum current capability, and a Kelvin source connection for optimum gate driving. It is available now in an industry-standard PowerFLAT 5x6 HV compact surface-mount package, at $3.00 (1000 pieces). Its typical applications are PC adaptors, USB wall chargers, and wireless charging.

650V GaN transistors in development are available now as engineering samples. These include the SGT120R65A2S with 120mΩ $R_{DS(on)}$ in an advanced laminated package, the 2SPAK™, which eliminates wire bonding to boost efficiency and reliability in high-power and high-frequency applications, as well as the SGT65R65AL and SGT65R65A2S both with 65mΩ $R_{DS(on)}$ in PowerFLAT 5x6 HV and 2SPAK, respectively. Volume production for these products is expected in H2 2022.

In addition, a new cascode GaN transistor, SGT250R65ALCS with 250mΩ $R_{DS(on)}$ in a PQFN 5x6, belonging to the G-FET family, will be available for sampling in Q3 2022.

G-FET™ transistor family is a very fast, ultra-low Q_{rr}, robust GaN cascode or d-mode FET with standard silicon gate-drive for a wide range of power applications.

G-HEMT™ transistor family is an ultra-fast, zero Q_{rr} e-mode HEMT, easily parallelable, well suited for very high frequency and power applications.

G-FET and G-HEMT are both belonging to the PowerGaN family of STPOWER product portfolio.

For more information please go to www.st.com/gan-transistors and www.st.com/gan-hemt-transistors.

About STMicroelectronics

At ST, we are 46,000 creators and makers of semiconductor technologies mastering the semiconductor supply chain with state-of-the-art manufacturing facilities. An independent device manufacturer, we work with more than 100,000 customers and thousands of partners to design and build products, solutions, and ecosystems that address their challenges and opportunities, and the need to support a more sustainable world. Our technologies enable smarter mobility, more efficient power and energy management, and the wide-scale deployment of the Internet of Things and 5G technology. ST is committed to becoming carbon neutral by 2027. Further information can be found at www.st.com.

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