NEWS RELEASE

Transphorm’s TOLL FETs Position GaN as Optimal Devices for Power Hungry AI Applications

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Three New Devices Bring SuperGaN’s Normally-Off D-Mode Platform Advantages to SMD-Based High Power Systems Requiring Higher Reliability and Performance with Lower Thermals in a Compact Footprint

GOLETA, Calif.--(BUSINESS WIRE)-- **Transphorm, Inc.** (Nasdaq: TGAN), a global leader in robust GaN power semiconductors, the future of next generation power systems, today introduced three SuperGaN® FETs in TOLL packages with on-resistances of 35, 50, and 72 milliohms. Transphorm’s TOLL package configuration is industry standard, meaning the SuperGaN TOLL FETs can be used as drop-in replacements for any e-mode TOLL solution. The new devices also offer Transphorm’s proven high voltage dynamic (switching) on-resistance reliability that is generally lacking in leading foundry-based e-mode GaN offerings. To sample the devices, visit Transphorm’s product page: **https://www.transphormusa.com/en/products/**.

The three surface mount devices (SMDs) support higher power applications operating within an average range of 1 to 3 kilowatts. These power systems are typically found in high performance segments such as computing (AI, server, telecom, data center), energy and industrial (PV inverters, servo motors), and other broad industrial markets which, collectively, have a current global GaN TAM of $2.5B. Notably, the FETs are optimal solutions for today’s rapidly expanding AI systems that rely on GPUs requiring 10 to 15 times the power of traditional CPUs.

Transphorm’s high power GaN devices are already widely supplied to leading customers who use them to power in-production high performance systems including datacenter power supplies, high power gaming PSUs, UPSes, and microinverters. These applications can also be supported by the TOLL devices as can electric-vehicle-based DC-to-DC converters and onboard chargers, with the underlying SuperGaN die already automotive (AEC-Q101) qualified.

The SuperGaN TOLL FETs represent the sixth package type offered by Transphorm, giving customers the widest selection of packages to meet their unique design requirements. As with all Transphorm products, the TOLL devices harness the inherent performance and reliability advantages made possible by the normally-off d-mode SuperGaN platform. For a detailed competitive analysis between SuperGaN and e-mode GaN, **download the company's latest white paper** titled The Fundamental Advantages of d-Mode GaN in Cascode Configuration. The white paper's conclusion aligns with a **head-to-head comparison** released earlier this year showing the 72 milliohm SuperGaN FETs outperforming larger 50 milliohm e-mode devices in a commercially available 280 W gaming laptop charger.

SuperGaN devices lead the market with unmatched:

- Reliability at < 0.03 FIT
- Gate safety margin at ± 20 V
- Noise immunity at 4 V
- Temperature coefficient of resistance (TCR) at 20% lower than e-mode
- Drive flexibility with standard drivers and protection circuits readily available in silicon-based controllers/drivers

Device Specifications

The robust 650 V SuperGaN TOLL devices are JEDEC qualified. Because the normally-off d-mode platform pairs the GaN HEMT with a low voltage silicon MOSFET, the SuperGaN FETs are easy to drive with commonly used off-the-shelf gate drivers. They can be used in various hard- and soft-switching AC-to-DC, DC-to-DC, and DC-to-AC topologies to increase power density while reducing system size, weight, and overall cost.

Part	Dimensions (mm)	RDS(on) (mΩ) typ	RDS(on) (mΩ) max	Vth (V) typ	Id (25°C) (A) max
TP65H035G4QS	10 x 12	35	41	4	46.5
TP65H050G4QS	10 x 12	50	60	4	34
TP65H070G4QS	10 x 12	72	85	4	29

Availability and Supporting Resources

The SuperGaN TOLL devices are currently available to sample. To receive product, visit **https://www.transphormusa.com/en/products/** and submit a request.

Key application notes to optimize TOLL-based system development include:

- **AN0009**: Recommended External Circuitry for Transphorm GaN FETs
- **AN0003**: Printed Circuit Board Layout and Probing for GaN Power Switches

- **AN0014**: Low Cost, High Density High-Voltage Silicon Driver for Low-to Mid-Power GaN FET Applications

About Transphorm

Transphorm, Inc., a global leader in the GaN revolution, designs and manufactures high performance and high reliability GaN semiconductors for high voltage power conversion applications. Having one of the largest Power GaN IP portfolios of more than 1,000 owned or licensed patents, Transphorm produces the industry's first JEDEC and AEC-Q101 qualified high voltage GaN semiconductor devices. The Company's vertically integrated device business model allows for innovation at every development stage: design, fabrication, device, and application support. Transphorm's innovations move power electronics beyond the limitations of silicon to achieve over 99% efficiency, 50% more power density, and 20% lower system cost. Transphorm is headquartered in Goleta, California and has manufacturing operations in Goleta and Aizu, Japan. For more information, please visit **www.transphormusa.com**. Follow us on Twitter @transphormusa and WeChat @ Transphorm_GaN.

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