



Transphorm's Top-Side Cooled TOLT FET Delivers Superior Thermal and Electrical Performance for Computing, AI, Energy, and Automotive Power Systems

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New Device is the Industry's First Standard Top-Side Cooled TOLT GaN Transistor, Again Expanding the Company's Broad Portfolio of Package Options

GOLETA, Calif.--(BUSINESS WIRE)--Oct. 26, 2023-- [Transphorm, Inc.](#) (Nasdaq: TGAN), a global leader in robust GaN power semiconductors, the future of next generation power systems, today introduced the SuperGaN® TOLT FET. With an on-resistance of 72 milliohms, the [TP65H070G4RS](#) transistor is the industry's first top-side cooled surface mount GaN device in the JEDEC-standard (MO-332) TOLT package. The TOLT package offers flexibility of thermal management to customers where system requirements do not allow for the more conventional surface mount devices with bottom-side cooling. The thermal performance of the TOLT is similar to that of the widely used, thermally robust TO-247 through-hole packages and delivers the added benefit of highly efficient manufacturing processes enabled by SMD-based printed circuit board assembly (PCBA).

The TP65H070G4RS leverages Transphorm's robust, high performance 650-volt normally-off d-mode GaN platform offering improved efficiency over silicon, silicon carbide, and other GaN offerings via lower gate charge, output capacitance, crossover loss, reverse recovery charge, and dynamic resistance. The SuperGaN platform advantages combined with the TOLT's better thermals and system assembly flexibility results in a high performance, high reliability GaN solution for customers seeking to bring to market power systems with higher power density and efficiency at an overall lower power system cost.

Transphorm is engaged with multiple global partners for high power GaN, including lead customers in server and storage power, a global leader in the energy/microinverter space, an innovative manufacturer of off-grid power solutions, and a leader in satellite communications.

"Surface mount devices such as the TOLL and the TOLT offer various benefits such as lower internal inductance as well as simpler board mounting during manufacturing. The TOLT adds to that more flexible overall thermal management with through-hole like thermal performance by using top-side cooling," said Philip Zuk, SVP Business Development and Marketing, Transphorm. "These devices are commonly found in mid to high power system applications for key market segments including high performance computing (Server, Telecom, AI Power), Renewables and Industrial, and Electric Vehicles, some of which our GaN technology already powers today. We're very excited to enable our customers to realize additional system level benefits with TOLT SuperGaN solutions."

Today's product release comes on the heels of Transphorm's recent introduction of its [three new TOLL FETs](#). Addition of the TOLT expands the company's product offerings yet again. Its availability highlights Transphorm's commitment to supporting customer preferences by making its SuperGaN platform accessible in various packages across the widest power range.

Device Specifications

SuperGaN devices lead the market with unmatched:

- Reliability at < 0.05 FIT
- Gate safety margin at ± 20 V
- Noise immunity at 4 V
- Temperature coefficient of resistance (TCR) at 20% lower than e-mode normally-off GaN
- Drive flexibility with standard off-the-shelf silicon drivers

The robust 650 V SuperGaN TOLT device is JEDEC qualified. Because the normally-off d-mode platform pairs the GaN HEMT with an integrated 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) (m Ω) typ	RDS(on) (m Ω) max	V _{th} (V) typ	I _d (25°C) (A) max
TP65H070G4RS	10 x 15	72	85	4	29

Availability and Supporting Resources

The TP65H070G4RS SuperGaN TOLT device is currently available to sample. To receive product, submit a request at <https://www.transphormusa.com/en/products/>.

Access the TP65H070G4RS datasheet here: <https://www.transphormusa.com/en/document/datasheet-tp65h070g4rs/>

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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Press Contact:

Heather Ailara

+1.973.567.6040

heather.ailara@transphormusa.com

Investor Contacts:

David Hanover or Jack Perkins

KCSA Strategic Communications

transphorm@kcsa.com

Source: Transphorm, Inc.