

# STMicroelectronics' new GaN semiconductors improve energy efficiency for applications from AI servers to robotics

*700V PowerGaN devices improve energy efficiency and enable more compact designs for AI servers, robotics, industrial systems and advanced consumer applications*

GENEVA, SWITZERLAND, May 26, 2026

/EINPresswire.com/ -- New gallium nitride (GaN)-based power semiconductors from

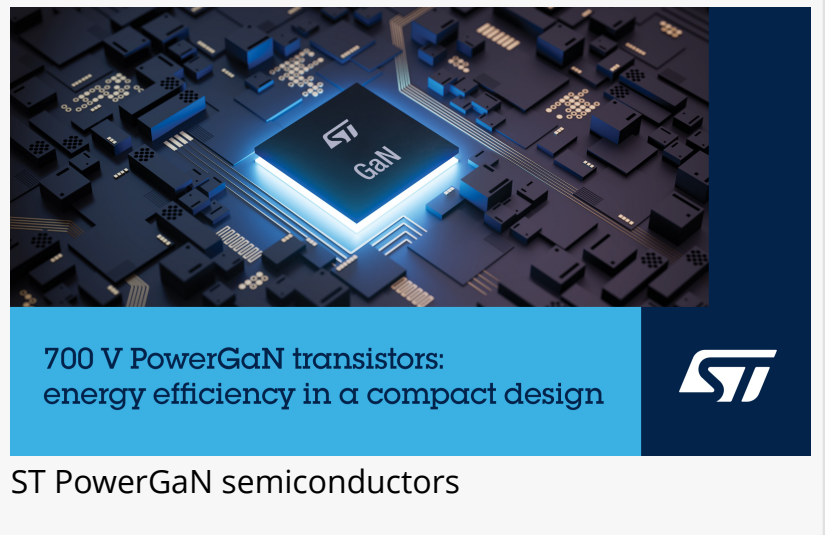
STMicroelectronics are designed to improve efficiency and increase power density in high-demand applications

that support electrification. The 700V PowerGaN devices in the STPOWER portfolio address challenges such as rising AI server power consumption and the need for higher-performance power conversion beyond the limits of conventional silicon technologies.

ST's [new PowerGaN devices](#) deliver high efficiency and power density to high-voltage power supplies. Engineered for a 700V operating rating, they support reliable high-power operation and higher-frequency topologies. PowerGaN's inherent advantages, including low conduction losses, very low switching loss at high operating frequencies, and zero reverse-recovery charge, enable reduced system size, weight, and operating temperature. These attributes are important for power semiconductors used in robotics, industrial power supplies, and smart-grid converters for energy generation, distribution, and storage.

"Broadening our PowerGaN portfolio with new 700V devices extends the benefits of gallium-nitride technology into medium-power and high-power applications," said Mario Aleo, Executive Vice President, Power & Discrete Sub-Group, STMicroelectronics. "We will continue to expand the portfolio with additional voltage ratings and features, reinforcing our commitment to GaN for tomorrow's AI servers, humanoid robotics, industrial power, and advanced consumer power applications including home appliances."

Technical Notes to Editors:



The seven new GaN enhancement-mode transistors (HEMTs) now joining ST's 700V PowerGaN series cover a wide range of continuous current ratings, from 6 A to 29 A, and typical RDS(on) from 53 mΩ to 270 mΩ. Also featuring ultra-low internal capacitances and low gate charge, inherent in GaN wide-bandgap technology, each has a Qg x RDS(on) figure of merit (FoM) significantly ahead of traditional silicon devices.

Qualified to ST's reliability standards, the 700V devices broaden choices and ensure leading-edge performance and efficiency. They can drop into power-conversion circuits as a replacement for MOSFETs, or enable new, higher-frequency topologies. Their capability to operate at elevated switching frequencies reduces the size of magnetics and passives, enabling a more compact power stage and higher power density.

The devices are housed in DPAK, TO-LL, and PowerFLAT surface-mount packages that are proven in practice and widely supported by major electronic design automation libraries and toolchains. The TO-LL and PowerFLAT devices provide a Kelvin source connection that separates the gate-control circuit from the main power path to maximize noise immunity, protect the gate driver, and preserve timing margin. The devices introduced are:

- SGT350R70GTK (6 A, 270 mΩ\*) in 6.10 mm x 6.60 mm 3-pin DPAK with solderable tab.
  - SGT070R70HTO (26 A, 53 mΩ\*) in leadless TO-LL with thermally efficient drain and source connections.
  - SGT080R70ILB (29 A, 60 mΩ\*), SGT105R70ILB (21.7 A, 80 mΩ\*), SGT140R70ILB (17 A, 106 mΩ\*), SGT190R70ILB (11.5 A, 138 mΩ\*), SGT240R70ILB (10 A, 165 mΩ\*) in PowerFLAT 8x8 with solderable source pad for enhanced thermal performance.
- (\* typical RDS(on))

The new 700V PowerGaN transistors are in production now and available from the eStore or through distributors, from \$0.63 to \$2.25 for orders of 1000 pieces.

Please visit <https://www.st.com/new-700v-powergan>

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