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700-V GaN Semiconductors Improve Efficiency For High-Demand Applications

[STMicroelectronics](#) has added seven 700-V PowerGaN devices to its portfolio. These parts are designed to deliver high efficiency and power density to high-voltage power supplies, supporting 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.

The seven GaN enhancement-mode transistors (HEMTs) join ST's 700-V PowerGaN series with typical $R_{DS(on)}$ values from 53 m Ω to 270 m Ω . They also feature low internal capacitances and low gate charge, inherent in GaN wide-bandgap technology. Each has a $Q_g \times R_{DS(on)}$ figure of merit (FoM) significantly ahead of traditional silicon devices. The transistors include the

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

Qualified to ST's reliability standards, the 700-V devices broaden choices and ensure leading-edge performance and efficiency, says the vendor.

The devices are housed in DPAK, TOLL, and PowerFLAT surface-mount packages that are proven in practice and widely supported by major electronic design automation libraries and toolchains. The TOLL 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 700-V 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. For more information, see the PowerGaN transistors [page](#).