

# ST's GaN half-bridge drivers fine-tuned for power conversion and motion control in consumer and industrial applications

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STMicroelectronics' new high-voltage half-bridge gate drivers for GaN applications add extra flexibility and features for greater efficiency and robustness.

The latest [STDRIVEG610](#) and [STDRIVEG611](#) give designers two options to manage GaN devices in power conversion and motion applications for greater efficiency, power density and ruggedness in consumer and industrial applications.



The STDRIVEG610 addresses applications requiring an extremely fast 300ns start-up time which is an important parameter for converter topologies like LLC or ACF ensuring accurate controlled turn-off intervals in burst mode.

The STDRIVEG611 is tailored for hard switching in motion-control applications with additional protection features like high-side UVLO and smart shut down overcurrent protection.

Both devices are suitable for hard-switching and soft-switching topologies with built-in interlocking to prevent cross conduction. The STDRIVEG610 elevates the performance of power adapters, chargers, and power-factor correction (PFC) circuits. The STDRIVEG611 saves space as well as boosting efficiency and reliability in drives for home appliances, pumps and compressors, industrial servo drives, and factory automation.

To simplify the design, both devices integrate a high-side bootstrap diode as well as 6V high-side and low-side linear regulators with high current capability and short propagation delay matched to within 10ns. Each driver has a separate sink and source path, with 2.4A/1.2Ω sink and 1.0A/3.7Ω source parameters, for optimal driving.

The integrated UVLO protection safeguards both the lower and upper 600V GaN power switches by preventing operation in low-efficiency or dangerous conditions. There is also over-temperature protection and both devices benefit from high dV/dt immunity, up to  $\pm 200\text{V/ns}$ . The input pins feature an extended voltage range, from 3.3V to 20V, which simplifies the controller interface circuitry. Both devices have a standby pin for power saving during inactive periods or burst mode and a separated power ground for Kelvin source driving or connecting a current shunt.

As well as ensuring a low bill of materials through extensive feature integration, the STDRIVEG610 and STDRIVEG611 have a compact 4mm x 5mm QFN outline that saves board space. Both devices are in production now and available from \$1.56 for orders of 1000 pieces.

The EVLSTDRIVEG610Q and EVLSTDRIVEG611 evaluation boards are also now available to accelerate development. Each is ready to use and combines the 600V high-speed half-bridge gate driver with two of ST's SGT120R65AL enhancement-mode GaN HEMTs.

For more information please visit [www.st.com/gandrivers](http://www.st.com/gandrivers).

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