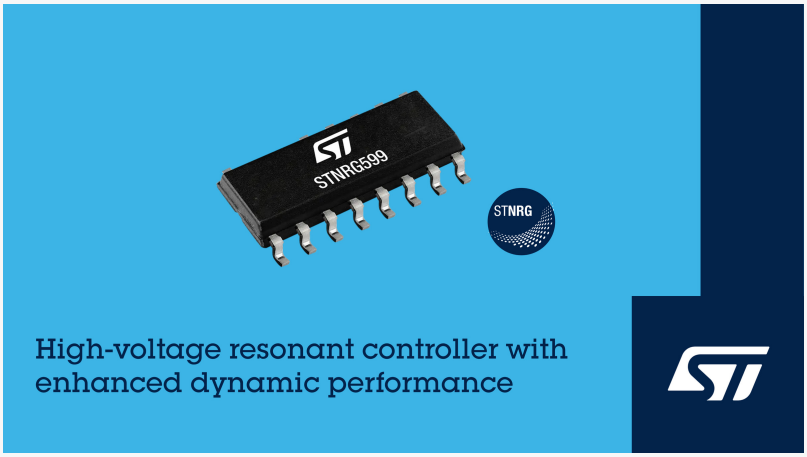
STMicroelectronics’ phase-shift control ICs squeeze more efficiency from resonant converters

New controllers enhance no-load performance in power supplies and lighting drivers



ST phase-shift control ICs

GENEVA, SWITZERLAND, February 18, 2026 /EINPresswire.com/ -- STMicroelectronics has introduced the STNRG599A and STNRG599B controllers for resonant-converter topologies with innovative phase-shift control (PSC) that boosts power-supply no-load efficiency and delivers flicker-free deep dimming in lighting applications.

The STNRG599A is optimized for power conversion, with built-in X-capacitor discharge circuitry for safety in adapters, chargers, TV power supplies, and industrial power supplies. The STNRG599B, without discharge circuitry, targets circuits such as lighting drivers. The controllers operate up to 750kHz maximum frequency, with a wide input-voltage range to handle applications from 90W to several hundred Watts.

In each IC, two complementary outputs drive external high-side and low-side switches 180° out-of-phase, with zero-voltage switching across the full operating range. ST’s PSC technique regulates the output by directly controlling the phase shift between the half-bridge voltage and the resonant-tank current. This reduces the control loop’s sensitivity to LLC/LCC component tolerances, which stabilizes the burst-mode entry and exit thresholds, enhances dynamic behavior, and increases input-voltage ripple rejection.

Both controllers integrate hard-switching prevention and anti-capacitive protection. In addition, overcurrent protection with delayed shutdown and automatic restart controlled by an external pin allow flexible management of short-term overcurrent events, persistent overloads, and output short-circuits. There is also non-latched DC brown-out/brown-in protection with programmable enable and disable thresholds, which prevents operation when the input voltage

is outside the selected range.

Using the associated EVLG599-250WLLC evaluation board, users can quickly explore how PSC improves performance and efficiency in AC/DC adapters, industrial DC/DC converters, and switched-mode power supplies. The board combines the STNRG599A with ST's SRK2001A synchronous rectifier and MasterGaN1L power system-in-package, which contains two 150mΩ GaN FETs and an offline half-bridge driver. The ready-to-use heatsink-free converter has sub-1µA standby current and delivers up to 10A continuous output current within a 78mm x 54mm x 23mm outline.

The STNRG599A and STNRG599B are in production now, in a SO16N package, priced from $0.61 for orders of 1000 pieces.

The EVLG599-250WLLC is available from the eSTore or through distributors for $336.00.

Please visit www.st.com/stnrg599 for more information.

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