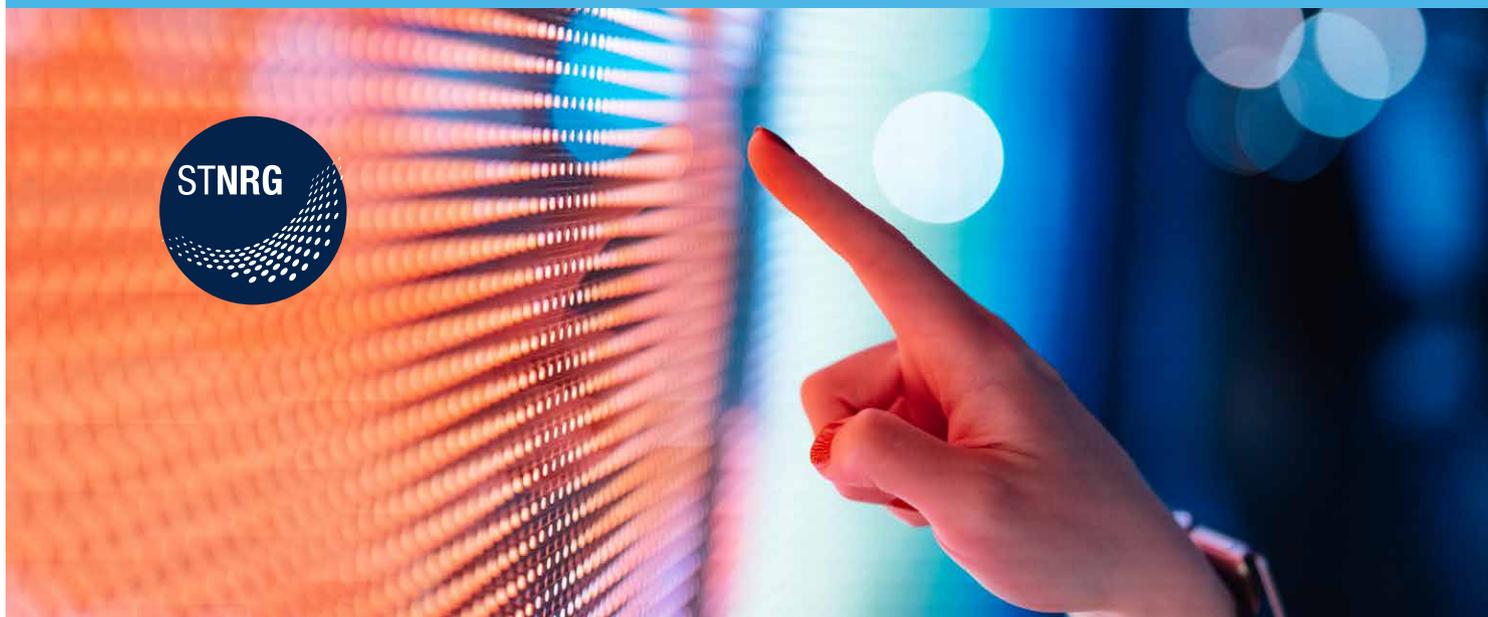




STNRG599

Innovative resonant controller for high power applications



New high-voltage resonant controller with innovative phase-shift control method

STNRG599 is an innovative resonant controller that enables excellent performance, including high switching frequency, low consumption, and high efficiency over the entire load range, with very stable output during fast load transients. It's an ideal primary-side controller for power supplies from 90 W up to several hundred watts, in GaN or MOSFET-based designs requiring high power density and compliance with stringent energy-efficiency regulations.

KEY FEATURES AND BENEFITS

- High voltage resonant controller with gate drivers embedded
- 800V HV and X-cap discharge embedded
- Phase shift control method
- Up to 750 kHz switching frequency with adaptive dead time
- Advanced burst mode with very accurate entry/exit thresholds
- Wide input voltage / output power range
- Very low no load consumption < 75 mW

KEY APPLICATIONS

- High-power LED lighting modules
- LED TV power supply
- Consumer and industrial SMPS
- Adapters for tablets, notebooks and all-in-one (AIO) computers
- USB Type-C® power delivery smart chargers and adapters
- Desktop PC power supply



Optimized for maximum efficiency

Higher efficiency

STNRG599 offers an advanced burst mode mechanism enabling high efficiency at light load with very accurate entry/exit thresholds. From 50% load to full load, the efficiency is over 91% with a peak of 94% for both low Vac and high Vac.

Robustness and protection

STNRG599 features a full set of protections like hard-switching prevention, anti-capacitive protection, two levels of overcurrent protection, programmable delayed shutdown with automatic restart, DC brown out/in. STNRG599A has X-Cap discharge

enabled, whereas in STNRG599B the X-Cap discharge is disabled for applications like lighting power supplies. Moreover, 800 V high-voltage startup and soft-start functions ensure a safe and smooth power-up.

Easy design

STNRG599 embeds high voltage start-up and drivers to reduce external components needed. The pinout is very similar to previous ST resonant controllers, such as the L6599A, making PCB redesign with this new device easy. As an analog controller with only a few adjustable parameters, it can be easily optimized for a wide range of applications, including lighting, adapters, TVs, and general industrial power supplies.

Compact

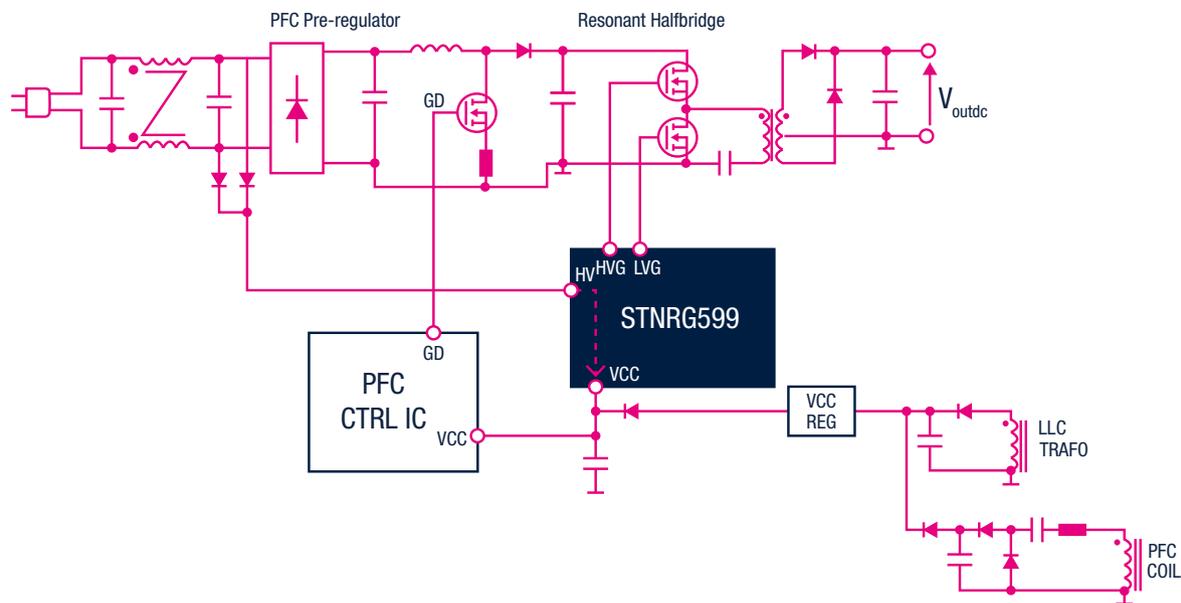
STNRG599 is available in SO16N package and helps achieve high-power-density solutions thanks to its high-frequency operation which reduces the size of external components, like small magnetizing inductance.

As mentioned, the device integrates several functions, such as X-cap discharge, high-voltage startup, and drivers that help save BOM space and reduce cost.



EVLG599-250WLLC evaluation board
400 V to 24 V / 10.5 A DC-DC resonant LLC converter

Typical system diagram



Order code	XCAP discharge function	Package	Packaging	Description	Evaluation board
STNRG599A	Enabled	SO-16N	Tape & Reel	Resonant half bridge controller	EVLG599-250WLLC
STNRG599B	Disabled				-



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