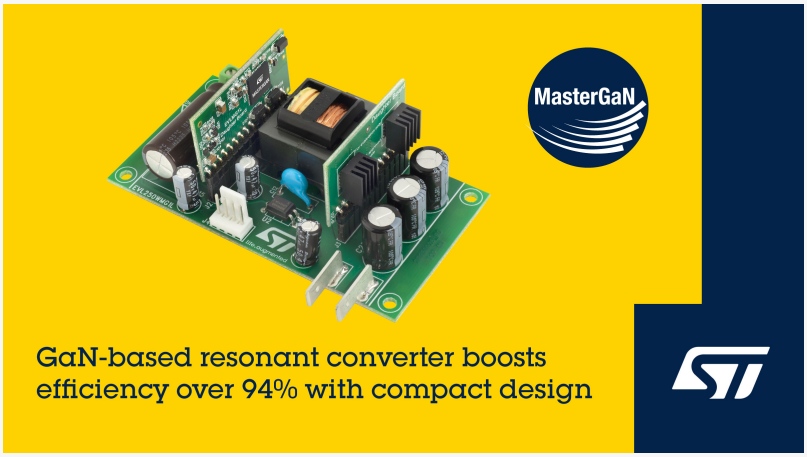
250W MasterGaN reference design from STMicroelectronics fast-tracks compact, efficient industrial power supplies

Robust GaN-based resonant converter with synchronous rectification boosts efficiency over 94%



250W MasterGaN reference design

GENEVA, SWITZERLAND, December 3, 2024 /EINPresswire.com/ -- Accelerating the design of gallium-nitride (GaN) power supplies (PSUs) that deliver superior efficiency and power density, STMicroelectronics has launched the EVL250WMG1L resonant-converter reference design based on the MasterGaN1L System-in-Package (SiP).

ST's MasterGaN SiPs combine GaN power transistors with gate drivers specially optimized to ensure fast and perfectly controlled switching. Using these SiPs in place of an equivalent network of discrete components helps maximize performance and reliability while also accelerating design and saving PCB space.

The new reference design targets industrial applications where space is limited and efficiency is critical. Combining the MasterGaN1L, which contains two 650V 150mΩ GaN FETs, with ST's L6599A resonant controller, the PSU achieves peak efficiency over 94% and operates without heatsinks on the primary side. Also leveraging ST's SRK2001A synchronous-rectification controller, the unit has a compact overall footprint of 80mm x 50mm and outstanding power density of 34 watts per cubic inch (W/inch³).

The PSU can deliver up to 10A output current, equivalent to 250W at 24Vdc, while also having standby current consumption below 1µA for excellent energy saving. Protection features built into the L6599A and SRK2001A ensure resilience against overcurrent, short-circuit and overvoltage, while input-voltage monitoring ensures correct startup and provides under-voltage lockout.

The EVL250WMG1L is available now, fully built and ready for evaluation, for $250.00. Comprehensive related documentation is published at https://www.st.com/en/evaluation-tools/evl250wmg1l.html?icmp=tt41984_gl_pron_dec2024 to help system designers accelerate their GaN power projects.

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