



New GaN-based board provides adaptable platform for development of compact LLC dc-dc converter

500 W GaNStar platform demonstrates high-frequency switching capability of integrated MasterGaN1 half-bridge GaN HEMT and driver from STMicroelectronics

- ☆ Compact footprint
- ☆ 97% peak efficiency
- ☆ Primary-side digital control for fast response to load transients

Market demand calls for power supplies which are ever smaller and lighter, without sacrificing efficiency.

It's a tough challenge for power-system designers – but now the task is eased with the launch of **GaNStar**, a rapid development platform which demonstrates the scope for GaN power switches to:

- Support a high switching frequency of 250 kHz at load

- Enable a substantial reduction in system size and weight by reducing the size of magnetic components
- Achieve high efficiency of up to 97%
- Simplify circuit design – the STMicroelectronics MasterGaN1 combines GaN HEMT switches and drivers in a single package

Make the first step in designing a 500 W-rated LLC dc-dc converter as easy as possible by using the GaNStar development platform. Backed by full technical documentation and support from Future Electronics' dedicated power electronics specialists, GaNStar is the ideal starting point for designers who want to discover how GaN technology can help them shrink high-voltage converter circuits.



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ENQUIRE FOR MORE INFORMATION ABOUT THE GANSTAR DEVELOPMENT SYSTEM

GaNStar is supplied to pre-qualified customers of Future Electronics.
For more information, contact your local branch or visit: www.my-boardclub.com.

GaNStar: the new compact and efficient 500 W resonant LLC dc-dc converter development platform



What is GaNStar?

A resonant LLC dc-dc converter which can support loads up to 500 W at an output voltage of 48 V dc.

How does GaNStar achieve superior performance?

GaNStar takes advantage of the superior switching capabilities of the STMicroelectronics MasterGaN1, an integrated half-bridge which combines optimized gate drivers and GaN transistors in a single package. These superior switching characteristics enable faster switching operation, reducing the size of bulky magnetics while maintaining high efficiency.

GaNStar uses digital control on the primary side, and enables developers to achieve a fast response to load transients.

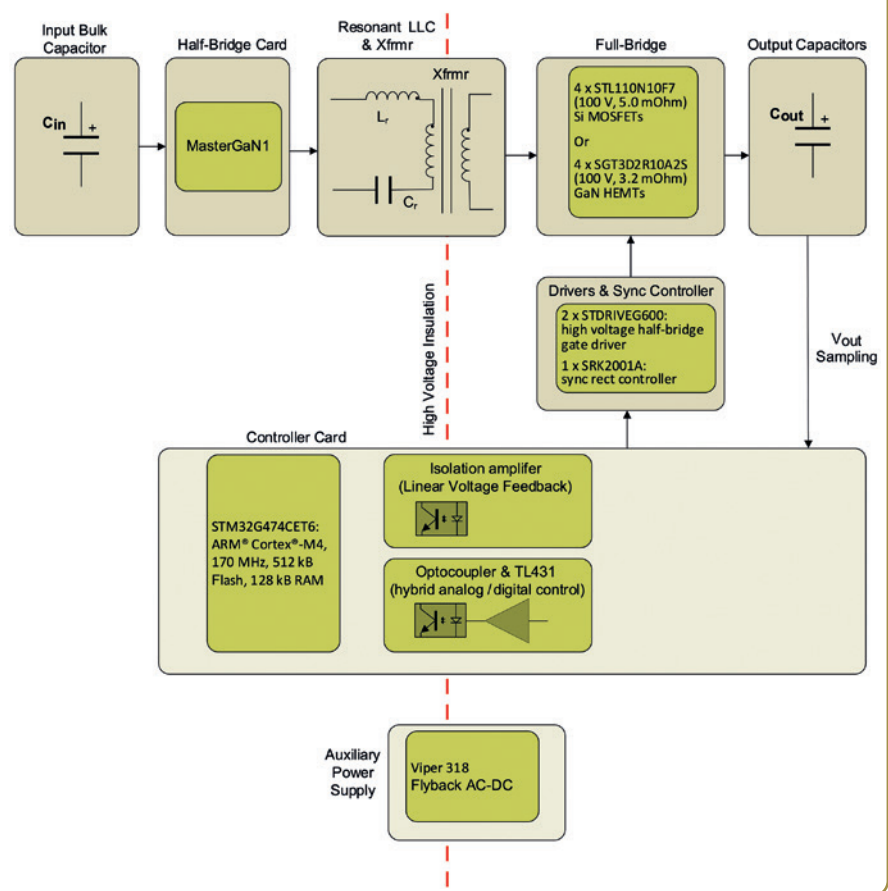
How adaptable is the GaNStar platform?

Designers may choose from two digital control methods implemented in an STM32G4 microcontroller:

- Full digital control using linear voltage sampling feedback enabled by an isolation amplifier
- Hybrid analogue/digital control using a shunt regulator implementing a single dc pole and optocoupler, and type II digital compensation.

Key Features

- Input-voltage range: 350 V to 420 V dc
- Output voltage: 48 V dc
- 500 W maximum load
- 97% efficiency
- Primary-side digital control
 - Fast response time
 - ≥ 5 kHz crossover frequency



Part Number	Domain	Function
MasterGaN1	Primary side	600 V half-bridge driver with two 150 mΩ enhancement mode GaN transistors
4 x STL110N10F7	Secondary side	100 V, 5 mΩ silicon MOSFET
2 x STDRIVEG600	Secondary side	600 V half-bridge gate driver
SRK2001A	Secondary side	Adaptive synchronous rectification controller
STM32G474	Controller circuit	170 MHz MCU with 512 kbytes of Flash, 128 kbytes of RAM

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