

Highest Power Density for Regulated DC-DC Converters Achieved Using EPC GaN FETs and Analog Devices Controller

EPC and Analog Devices introduce a reference design using a new Analog controller fully optimized to drive EPC GaN FETs and achieving > 96.5% efficiency.

EL SEGUNDO, CA, UNITED STATES, May 2, 2023 /EINPresswire.com/ -- EPC announces the



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Alex Lidow, CEO and co-founder of EPC

availability of the [EPC9158](#), a dual output synchronous buck converter reference design board operating at 500 kHz switching frequency that converts an input voltage of 48 V - 54 V to a regulated 12 V output and delivers up to 25 A per phase or 50 A total continuous current. The combination of the new Analog LTC7890 synchronous GaN buck controller with ultra-efficient GaN FETs from EPC enables a highly efficient solution in a small footprint for high power density applications. The solution achieves 96.5% efficient at 48 V to 12 V and 50 A continuous current.

The high-power density makes this solution ideal for computing, industrial, consumer, and telecom power

systems requiring small size and high efficiency. eGaN® FETs provide the fast switching, high efficiency and small size that can meet the stringent power density requirements of these leading-edge applications.

The EPC9158 reference design uses the [EPC2218](#) 100 V enhancement-mode GaN FET and the LTC7890 two-phase analog buck controller with integrated GaN drivers.

- The LTC7890 100 V low I_q, dual, 2-phase synchronous step-down controller is fully optimized to drive EPC GaN FETs and integrates a half bridge driver and smart bootstrap diode. It offers optimized near-zero deadtime or programmable deadtime and programmable switching frequency up to 3 MHz. The quiescent current of 5 uA (VIN = 48 V, VOUT = 5 V, CH1 only) enables very low standby power consumption and excellent light load efficiency.

- The EPC2218 is a 100 V GaN FET with 3.2 mOhm max RDS(on), 10.5 nC QG, 1.5 nC QGD, 46 nC QOSS and zero QRR in a super small 3.5 mm x 1.95 mm footprint and can deliver up to 60 A continuous current and 231 A peak current. The excellent dynamic parameters allow very small switching losses at 500 kHz switching frequency.

The efficiency of the EPC9158 is greater than 96.5 % for 12 V output and 48 V input. In addition to light load operating mode and adjustable dead time, the board offers UVLO, Over-current protection, and power good output.

Alex Lidow, CEO of EPC commented,

“GaN FETs are required to achieve the maxim power density for DC-DC converters. We are delighted to work with Analog Devices to combine the benefits of their advanced controllers with the performance of GaN to provide customers with the highest power density and low component count solution that increases the efficiency, increases power density, and reduces system cost”

“The Analog Device’s LTC7890 is designed to fully exploit the high performance of EPC’s eGaN FETs for high power density solutions” said Tae Han, Sr. Product Marketing Manager at Analog Devices, “The LTC7890 offers higher switching frequency and optimized deadtime that competes well above the current solution in the market while operating in very lower power consumption. With these new controllers, customers can take advantage of the very fast switching of GaN for the highest power density.”

Price and Availability

The EPC9158 demonstration board from EPC is priced \$480.00 each and is available for immediate delivery from [Digi-Key](https://www.digikey.com/en/supplier-centers/epc) at <https://www.digikey.com/en/supplier-centers/epc>

For more information on the LTC7890 from Analog contact Tae Han (Tae.Han@analog.com)

About EPC

EPC is the leader in enhancement mode gallium nitride (eGaN®) based power management.

EPC and Analog Devices Deliver Highest Power Density for Regulated DC-DC Converters

EPC2218
100 V, 3.2 mΩ
231 A_{pulsed}
6.8 mm²

EPC9158

EPC
EFFICIENT POWER CONVERSION

Highest Power Density for Regulated DC-DC Converters Achieved Using EPC GaN FETs and Analog Devices Controller

eGaN FETs and integrated circuits provide performance many times greater than the best silicon power MOSFETs in applications such as DC-DC converters, remote sensing technology (lidar), motor drives for eMobility, robotics, and drones, and low-cost satellites.

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About Analog Devices

Analog Devices, Inc. (NASDAQ: ADI) operates at the center of the modern digital economy, converting real-world phenomena into actionable insight with its comprehensive suite of analog and mixed signal, power management, radio frequency (RF), and digital and sensor technologies. ADI serves 125,000 customers worldwide with more than 75,000 products in the industrial, communications, automotive, and consumer markets. ADI is headquartered in Wilmington, MA. Visit <https://www.analog.com>

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