USB PD 3.1 High Power Density and Low-Profile Solutions using EPC GaN Integrated Power Stage

EPC introduces the EPC9177, an eGaN® IC-based reference design for high power density

EL SEGUNDO, CA, USA, February 28, 2023 /EINPresswire.com/ -- EPC announces the availability of the EPC9177, a digitally-controlled, single-output synchronous buck converter reference design board operating at 720 kHz switching frequency converting an input voltage of 48 V, 36 V, 28 V to a regulated 12 V output voltage and delivering up to 20 A continuous output current.

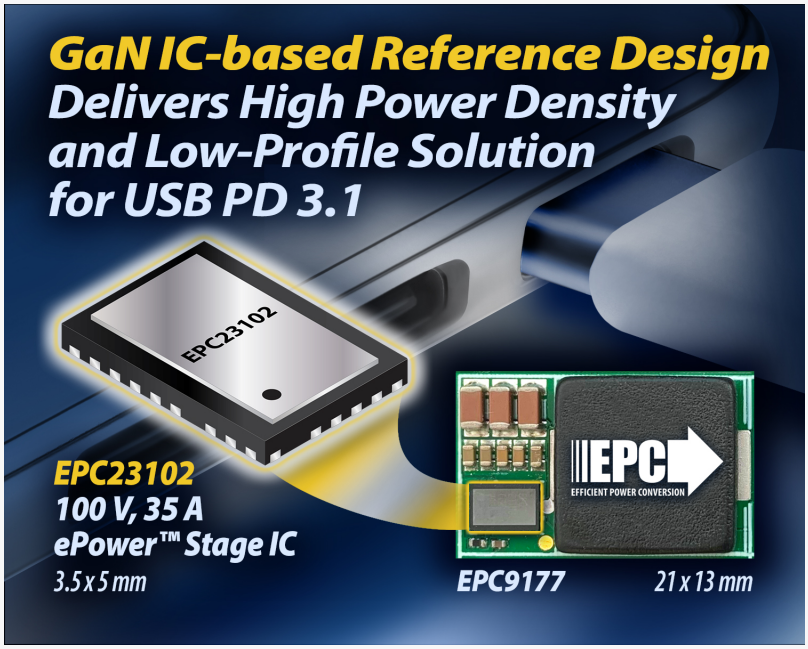
> GaN ICs provide the maxim power density for DC-DC converters. EPC GaN power stages give power system designers the highest power density and low component count solutions for USB PD 3.1."
>
> *Alex Lidow, CEO and Co-Founder*

The small area (21 mm x 13 mm), low-profile (3 mm height inductor), synchronous buck converter features the EPC23102 fully integrated half-bridge ePower™ Stage and is optimized for computing power supplies and USB PD 3.1 multiport chargers and on-board DC-DC solutions able to convert a 28 V – 48 V input to a 12 V or 20 V output.

With the advent of USB PD 3.1, the output voltage for USB charging increases from 20 V to 48 V and the power increases from 100 W up to 240 W. This higher power enables USB charging beyond laptop and cell phone fast charging to higher power applications including gaming PCs, power tools, and ebikes. While the main output of the chargers is 48 V to allow the higher output power with 5 A rated cables, multiport chargers can also support lower output voltages such as 5 V, 12 V, 20 V to be compatible with a wider range of devices. A smart DC-DC regulator is required to generate these lower voltages. Additionally, a DC-DC regulator will be required resident on the motherboard of the gaming PC or power tools to convert the 48 V to 20 V and 12 V input.

The EPC23102 GaN power stage integrates the half-bridge driver and FETs (100 V, 6.6 mΩ R(DSon)), the level shifter and the bootstrap charging and can switch with very high efficiency – up to 3 MHz. It enables the EPC9177 reference board to deliver up to 20 A continuous current using a heatsink and 15 A continuous current without a heatsink to 12 V output voltage, with

greater than 97.3% efficiency with a 48 V input.



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The high power density makes this reference design ideal for computing, industrial, consumer, and telecom power systems requiring small size and high efficiency. eGaN FETs and ICs provide the fast switching, high efficiency and small size that can meet the stringent power density requirements of these leading-edge applications.

Alex Lidow, CEO of EPC commented, “GaN ICs provide the maxim power density for DC-DC converters. EPC GaN power stages give power system designers the highest power density and low component count solutions for USB PD 3.1. The EPC9177 reference solution, based on the EPC23102, increases efficiency and power density, and reduces overall system cost for USB PD 3.1 implementation.”

Price and Availability

The EPC9177 reference design board from EPC is priced $480.00 each and is available for immediate delivery from Digi-Key at https://www.digikey.com/en/supplier-centers/epc

About EPC

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