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350-V GaN Transistor Boasts Small Size And Low Cost

Efficient Power Conversion's EPC2050 is a 350-V GaN transistor with a maximum $R_{DS(ON)}$ of 80 mΩ and a 26 A pulsed output current. The EPC2050 measures just 1.95 mm x 1.95 mm. According to the company, this tiny size enables power solutions that occupy ten times less area than comparable silicon solutions.

Applications benefiting from the fast-switching speed and tiny size of the EPC2050 include dc-dc conversion from/to 120 V to 160 V such as in aerospace applications, 120-V to 150-V motor control for medical motors, dc-ac inverters, multi-level converters such as totem-pole PFC and dc-dc solutions converting 400-V input to 12-V, 20-V or 48-V outputs. Additional applications include fast chargers, battery management systems, electric vehicle charging, solar power inverters, high power lidar for autonomous cars and delivery vehicles, LED lighting, RF switches, and consumer and industrial wirings like wall-mounted sockets and Class D audio.

The EPC2050 is also suitable for 120-Vac-only applications. A typical power supply bus voltage is between 170 V and 250 V. This includes applications specific to the Americas market, such as power tools and in-wall powered devices, seat-back airline 120-V inverters, and commercial LED lighting.

"With the EPC2050, designers no longer have to choose between size and performance—they can have both and lower cost!" said Alex Lidow, EPC's CEO.

The EPC90121 development board is a 4-A max. output half bridge featuring the EPC2050 and the Onsemi NCP51820 gate driver. The board measures 2 in. x 2 in., contains all critical components, and the layout supports optimal switching performance.

The EPC2050 eGaN FET is priced for 1K units at $3.05 each, and the EPC90121 development board is priced at $156.25 each. Both are available from Digi-Key. For more information see the EPC20250 product page and the EPC90121 product page.

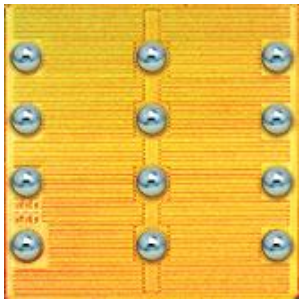

Fig. 1. The EPC2050 offers power system designers a 350-V, 80-mΩ max. $R_{DS(ON)}$ power transistor in an extremely small, 1.95-mm x 1.95-mm chip-scale package. It's well suited for use in multi-level converters, EV charging, solar power inverters, lidar and LED lighting.

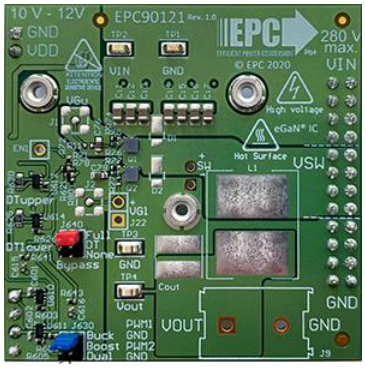

Fig. 2. Measuring 2 in. x 2 in., the EPC90121 development board contains two EPC2050 GaN FETs in a half-bridge configuration with the onsemi NCP51820 gate driver. It also contains all critical components and the layout supports optimal switching performance. Additionally, there are various probe points to facilitate simple waveform measurement and efficiency calculation.