Enhancement-Mode GaN FET Delivers Extremely Low On-Resistance

Efficient Power Conversion (EPC) had added a new 150-V member to its family of enhancement-mode gallium nitride-on-silicon (eGaN) FETs. Housed in a passivated die package measuring only 5.76 mm^2, the 150-V, 12-A EPC2018 is rated for a maximum $R_{DS(ON)}$ of 25 mΩ with 5 V applied to the gate. Plus, it switches very fast and offers exceptionally low gate charge (Q_G) with zero reverse recovery (Qrr) in a very small package.

Maximum gate charge is 7.5 nC at 5-V gate voltage. While GaN's exceptionally high electron mobility and low temperature coefficient results in very low $R_{DS(ON)}$, the power transistor's lateral device structure and majority carrier diode provide exceptionally low Q_G and zero Qrr, according to EPC.

"The EPC2018 is an excellent complement to our existing family of eGaN FETs. The low on-resistance, low output capacitance, fast switching, and no reverse recovery reduce the switching losses in power conversion applications and allow for higher efficiency and improved sound quality in Class D audio applications," says Alex Lidow, co-founder and CEO.

Target applications for the new eGaN FET include high-speed dc-dc converters, point-of-load (POL) regulators, class D audio amplifiers, as well as many other circuits needing nanosecond switching speeds.

As shown in the figure, the EPC2018 is offered only in passivated die form with solder bars. In 1000-piece quantities, the power transistor is priced at $6.54 and is immediately available through Digi-Key.

Figure. Housed in a passivated die form, the EPC2018 is a 150-V enhancement-mode GaN-on-silicon FET specifying a maximum R_{DS}(on) of 25 mΩ with 5 V applied to the gate.

—Contributed by Ashok Bindra

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