

Latest Generation 200-V GaN FETs Double The Performance

EPC’s EPC2215 and EPC2207 are 200-V eGaN FETs that are half the size of the company’s previous generation of 200-V devices. The EPC2215 specifies an $R_{DS(on)}$ of 8 mΩ and a current rating of 162 Apulsed, while the EPC2207 specifies 22 mΩ and 54 Apulsed.

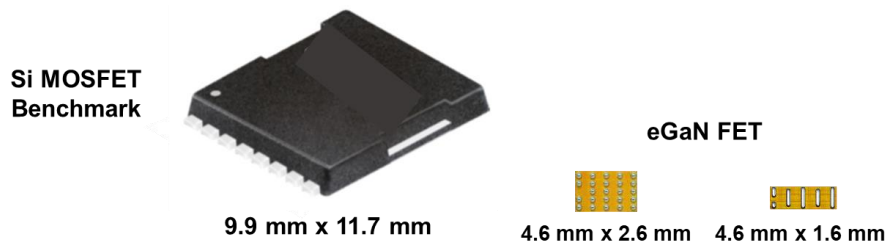
The performance advantage over a benchmark silicon device is even higher, says EPC. For example, the EPC2215 has 33% lower on-resistance, yet is 15 times smaller in size (see the table). Gate charge (Q_G) is ten times smaller than the silicon MOSFET benchmark with the new technology, and like all eGaN FETs, there is no reverse recovery charge (Q_{RR}) enabling lower distortion class D audio amplifiers as well as more efficient synchronous rectifiers and motor drives. In addition to those applications, the eGaN FETs are suited for use in solar MPPTs (maximum power point trackers), dc-dc converters (hard-switched and resonant), and multilevel high-voltage converters.

According to Alex Lidow, EPC’s co-founder and CEO, “This latest generation of eGaN FETs achieves higher performance in a smaller, more thermally efficient size, and at a comparable cost to traditional MOSFETs. The inevitable displacement of the aging power MOSFET with GaN devices is becoming clearer every day.”

EPC worked in collaboration with Semiconductor Power Electronics Center (SPEC) at University of Texas at Austin to develop a 400-V, 2.5-kW-capable eGaN FET-based four-level flying capacitor multilevel bridgeless totem-pole rectifier that is suitable for data center applications using the new EPC2215. Professor Alex Huang, who is the Dula D. Cockrell Centennial Chair in Engineering Director for SPEC commented that, “the advantageous characteristics of eGaN FETs allowed this converter to achieve high power density, ultra-high efficiency, and low harmonic distortion.”

In quantities of 2500, unit pricing is \$2.84 for the EPC2215 and \$1.49 for the EPC2207. Pricing for the associated half-bridge development boards is \$118.75. All products and boards are available from [Digi-Key](#). For more on the PFC rectifier co-developed with SPEC, see EPC’s [How2AppNote 016](#). Or for more about the FETs, see the EPC2215 product [page](#) and the EPC2207 product [page](#).

Table. Performance comparison of benchmark silicon 200-V FET versus 200-V eGaN FETs.



Parameter	MOSFET Benchmark (@ 10 V _{GS})	EPC2215 (@ 5 V _{GS})	EPC GaN FET Improvement
R_{DS(on)} typ	9 mΩ	6 mΩ	33% lower
R _{DS(on)} max	11.1 mΩ	8 mΩ	28% lower
Q _{GD} typ	8 nC @ 100V _{DS}	1.6 nC	80% lower
Q _{OSS} typ	162 nC @ 100V _{DS}	68 nC	58% lower
Q _{RR} typ	309 nC	0 nC	Infinitely lower
Device Size	115.83 mm²	7.36 mm²	15x smaller