

100-V GaN FETs Feature Lower On-Resistance, Higher Voltage Ratings

[Efficient Power Conversion's](#) latest generation 100-V eGaN FETs, the EPC2218 and EPC2204, feature nearly 20% lower $R_{DS(on)}$, as well as increased dc ratings compared with prior generation eGaN FET products. The performance advantage of the EPC2218 (3.2 m Ω , 231 Apulsed) and the EPC2204 (6 m Ω , 125 Apulsed) over a benchmark silicon device is even higher. According to the company, the EPC2204 has 25% lower on-resistance, yet is also one third the size (see the table).

In addition, gate charge (Q_G) is said to be less than half that of the silicon MOSFET benchmark, 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. Other applications include dc-dc converters (hard-switched and resonant), and lidar for autonomous cars, robotics, and drones.

Alex Lidow, EPC's co-founder and CEO commented, "With the clear superiority of these new 100-V eGaN FETs, one might expect them to be priced at a premium. However, EPC has priced these state-of-the-art 100-V transistors comparable with their aging ancestor, the silicon power MOSFET. Designers can take advantage of devices that are higher performance, smaller, more thermally efficient, and at a comparable cost. The displacement of the power MOSFET with GaN devices continues to accelerate."

In quantities of 2500, unit pricing is \$0.99 for the EPC2204 and \$2.09 for the EPC2218. Pricing for their respective half-bridge development boards, the EPC9097 and EPC90123, is \$118.75 each. All products and boards are available from [Digi-Key](#). For more information see the [EPC2204](#) and [EPC2218](#) product pages.

Table. Comparing the EPC2204 100-V eGaN FET with a benchmark silicon MOSFET.

MOSFET Benchmark

3.3 mm x 3.3 mm



eGaN FET

1.5 mm x 2.5 mm



Parameter	MOSFET Benchmark 10 V _{GS}	EPC2204 5 V _{GS}	EPC GaN FET Improvement
R_{DS(on)} typ	7.2 mΩ	4.5 mΩ	38%
R _{DS(on)} max	9.2 m Ω	5.6 m Ω	64%
Q _G typ	15 nC	6.4 nC	57%
Q_{GD} typ	5 nC @ 40 V_{DS}	0.9 nC @ 50 V_{DS}	82%
Q _{OSS} typ	29 nC @ 40 V _{DS}	25 nC @ 50 V _{DS}	14%
Q_{RR} typ	29 nC @ 40 V	0 nC	Infinitely
Device Size	10.9 mm²	3.75 mm²	66%