

40-V Rad-Hard GaN FET Boasts Low On-Resistance

[EPC's](#) EPC7019 is a 40-V, 1.5-m Ω , 530-A pulsed, radiation-hardened eGaN FET in a small 13.9-mm² footprint. The EPC7019 has a total dose rating greater than 1 Mrad and SEE immunity for LET of 85 MeV/(mg/cm²). These devices are offered in a chip-scale package, the same as the commercial eGaN FET and IC family (see the figure). Packaged versions will be available from EPC Space.

According to EPC, the device has a figure of merit ($R_{DS(ON)} \times Q_G$) that is 20 times lower than alternative rad-hard silicon solutions while its size is 20 times smaller. The company adds that with higher breakdown strength, lower gate charge, lower switching losses, better thermal conductivity, and lower on-resistance, power devices based on GaN significantly outperform silicon-based devices and enable higher switching frequencies resulting in higher power densities, higher efficiencies, and more compact and lighter weight circuitry for critical spaceborne missions. Finally, GaN devices support higher total radiation level and SEE LET levels than silicon solutions, says EPC.

Applications benefiting from the performance and fast deployment of the EPC7019 include power supplies for satellites and mission equipment and motor drives for robotics and instrumentation.

"EPC's GaN technology enables a new generation of power conversion and motor drives in space operating at higher frequencies, higher efficiencies, and greater power densities than ever achievable before" said Alex Lidow, CEO, and co-founder of EPC. "The EPC7019 offers designers a solution with a figure of merit that is 20 times better than best-in-class silicon rad hard devices. This is the lowest on-resistance for a rad hard transistor on the market today. And, the EPC7019 is significantly smaller and lower cost".

The EPC7019 is available for engineering sampling and will be fully qualified for volume shipments in October, 2022. For more information, see the EPC7019 [page](#) or the [datasheet](#).

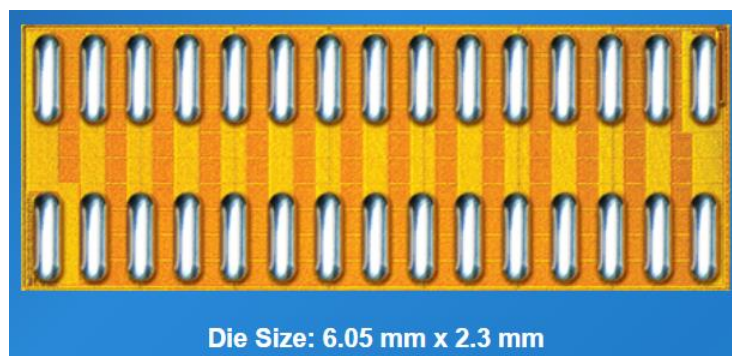


Figure. With its 1.5-m Ω max. $R_{DS(ON)}$ at $V_{GS} = 5 V$ and $I_D = 36 A$, the EPC7019 40-V eGaN FET is said to offer the lowest on-resistance of any rad-hard transistor currently on the market. According to the company its $R_{DS(ON)} \times Q_G$ figure of merit is 20 times lower than alternative rad-hard silicon solutions while its size is 20 times smaller.