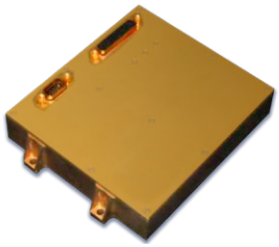
GaN in Space

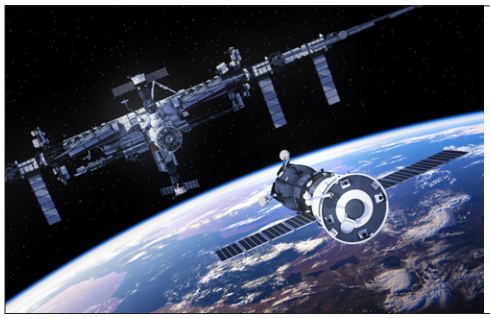
The unmatched reliability and performance of gallium nitride-based power devices is accelerating evolutionary advances in critical spaceborne systems. EPC Space offers Rad Hard packaged GaN devices with superior electrical and radiation hardened performance over the aging silicon MOSFET.

Applications for GaN in Space



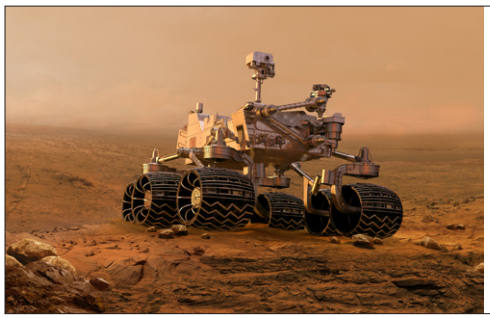
DC-DC Converters

GaN technology enables a new generation of power converters in space operating at **higher frequencies, higher efficiencies**, and **greater power densities** than ever achievable before.



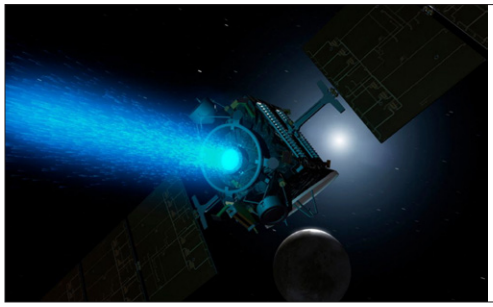
Lidar

Lidar systems provide the “eyes” for autonomous navigation and docking for rendezvous missions and robotics used in space. The shorter the laser beam pulse, the higher the resolution of the lidar images. GaN devices provide this needed **speed, increase the efficiency**, and **shrink the size** for lidar.



Motor Drive

Ruggedized high-precision brushless DC motors are critical for the myriad of robotics and automated instrumentation used in space missions. Rad Hard GaN power devices provide the **small size**, **light weight**, and **precision control** that brushless DC (BLDC) motors require and can withstand the harsh environment.



Ion Thrusters

An ion thruster is a form of electric drive used for in-mission spacecraft propulsion with uses such as orientation and positioning of satellites and interplanetary propulsion of low-mass robotic vehicles. Rad hard GaN enables **smaller**, **lighter**, **more efficient** power supply to these systems, increasing the power delivery.

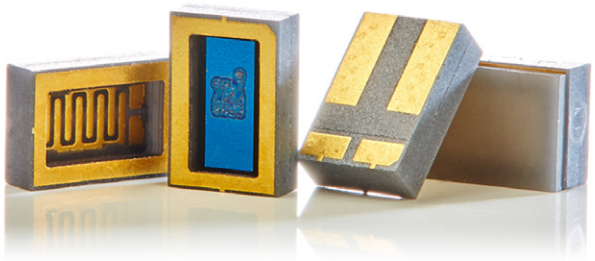
Why GaN?

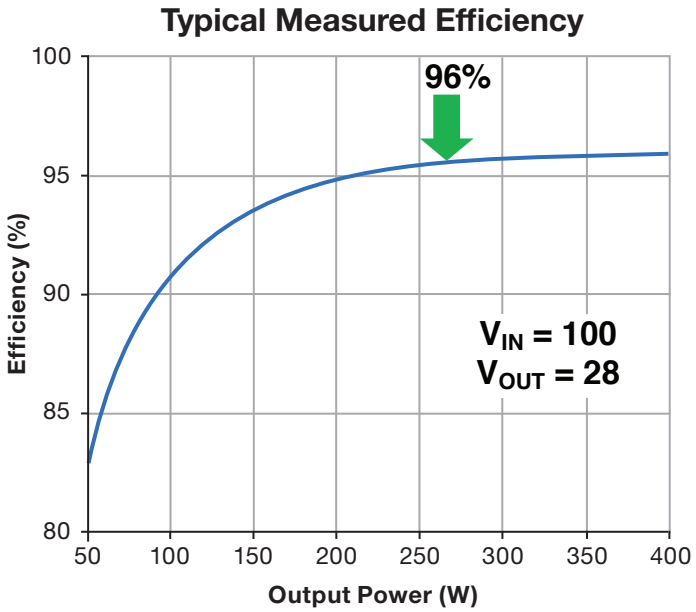
Features

- Proven reliability
- No parasitic p-n junction diode
- High frequency switching
- Higher power system efficiency
- Smaller footprint

Benefits

- Reduce system size and weight
- Higher frequency communications
- Eliminate shielding
- Eliminate solar panels
- Extend the life of the satellite





Cross Reference*

EPC Space Part	Voltage (V)	I_D (A)	$R_{DS(on)}$ mΩ	IR Part Number	IR's Voltage
FBG04N08A	40	8	24	IRHNJ57034, JANSR2N7480U3 IRHNJ57Z30, JANSR2N7479U3	30 V-60 V
FBG04N30B	40	30	6	IRHNA57Z60, JANSR2N7467U2 IRHNA57064, JANSR2N7468U2	30 V-60 V
FBG10N30B	100	30	9	IRHNA67160, JANSR2N7579U2	100 V
FBG10N05A	100	5	38	IRHNJ67130, JANSR2N7587U3	100 V
FBG20N04A	200	4	102	IRHNJ67230, JANSR2N7591U3 IRHE67230	200 V
FBG20N18B	200	18	26	IRHNA7260, JANSR2N7433U IRHNJ67230, JANSR2N7591U3	200 V
FBG30N04C	300	4	404	IRHNJ7330SE, JANSR2N7465U3	400 V

*Information provided for reference only. Designer remains responsible for using its independent analysis, evaluation and judgment in designing Designer's systems and products.

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