PRODUCT BRIEF

100 V rad hard GaN transistor for space applications

Infineon IR HiRel's first DLA-qualified GaN device for high reliability space applications

Infineon IR HiRel's rad hard GaN transistor has achieved a major milestone as one of the first DLA-qualified GaN devices to enter the high reliability market with MIL-PRF-19500 JANS certification. By combining Infineon's industry-leading GaN design and manufacturing expertise with IR HiRel's 80 years of experience in developing space-grade electronics, our cutting-edge 100 V rad hard GaN device sets a new standard in extreme environment applications. Commercial-off-the-shelf (COTS) options are also available.

With Total Ionizing Dose (TID) and Single Event Effects (SEE) specifications at product level, our GaN device ensures utmost reliability in mission-critical operations and extended space missions. Optimized for systems where size, weight, and power (SWaP) advantages are paramount, our best-in-class GaN transistor minimizes power losses, maximizes power density, and delivers improved thermal management capabilities, all supporting a reduced payload mass.

Our GaN transistor is available in three variations with COTS and JANS screening levels, each featuring a low $R_{DS(ON)}$, low gate charge, and zero reverse recovery charge – ideal characteristics for switching applications such as DC-DC converters and motor controllers. By enabling the design of high-frequency power management circuits, our device supports the development of a new generation of extremely robust, efficient, and lightweight power management and distribution systems.

Key features

- Single Event Effect (SEE) hardened up to LET(GAN)[1]=70 MeV.cm²/mg (Au ion)
- Ultra-low $R_{DS(ON)}$
- Low total gate charge
- Zero reverse recovery charge
- Hermetically sealed ceramic package
- Surface mount
- Light weight
- ESD rating: Class 1C per MIL-STD-750, Method 1020

Product summary

- V_{DS} max: 100 V
- I_D: 52 A
- $R_{DS(on)}$ max: 6.0 mΩ
- Q_G max: 13 nC
- Size: 7.1 mm x 5.3 mm
- REF: MIL-PRF-19500 / 794

Potential applications

- Isolated DC-DC converters
- Point-of-load (PoL) converters for FPGA, ASIC, and DSP core rails
- Synchronous rectification
- Motor drives

Space

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Our GaN transistor has been characterized in heavy ion environment for SEE. The device is SEE hardened at LET(GAN)[1]=70 MeV.cm^2/mg with V_{ds}=100 V and V_{gs}=-5V. Our JANS transistor is qualified per MIL-PRF-19500 with slash sheet 794.

Product table

Part number	Package	V_{DS} (max)	I_{DS} (max)	$R_{DS(ON)}$ at 25°C (max)	Q_G (max)	Q_{rr}	TID level	Screening level
IG1NT052N10R	PowIR-SMD	100 V	52 A	6.0 mΩ	13 nC	0 nC	100 kRad(Si)	COTS
IG1NT052N10G	PowIR-SMD	100 V	52 A	6.0 mΩ	13 nC	0 nC	500 kRad(Si)	COTS
JANSG2N7697UFHC	PowIR-SMD	100 V	52 A	6.0 mΩ	13 nC	0 nC	500 kRad(Si)	JANS

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