

GaN Single-Stage, Isolated Converter

Gallium-nitride-based power converters yield power efficiency rating of more than 90 percent for power and space-constrained communications satellites

The Frontgrade GaN Single-Stage, Isolated DC-DC Converter is an efficient isolated step-down regulator rated at 50 Watts. Output voltage remote sense provides accurate point of load voltage regulation.

Compared to conventional two-stage DC-DC converters, the Frontgrade GaN Single-Stage, Isolated Converters increase power efficiency from approximately 80 percent to more than 90 percent while simultaneously reducing size, weight, power, and cost (SWaP-C) requirements in space applications.

The 28V radiation-tolerant converters are also the first satellite single-stage, isolated, power supplies to incorporate gallium-nitride (GaN) FET technology. These GaN-based converters provide customers with a unique, fully tested, off-the-shelf power conversion solution. The move to GaN enables higher performance and switching frequencies, thereby improving response time to changing load currents compared to silicon-based DC-DC converters. These new converters can also be used in parallel for higher-power applications.

By converting power straight from the power bus to the point of load, the new single-stage converters operate easily within the increasingly stringent voltage tolerances of today's leading-edge processing devices. This includes deep-submicron ASICs and FPGAs used in software-defined payloads that can be reprogrammed in-orbit to extend the mission life of space applications.



Package Size:
(2.5L x 1.5W x 0.63H inch)
(63.5mm x 38.1mm x 16mm)

Designed for aerospace and high-reliability space applications, the new 28V converters have a total dose radiation tolerance of 75krad (Si) and SEL/SEB/SEGR: Immune up to 60 MeV-cm²/mg. For higher levels of radiation tolerance, please contact your Frontgrade Sales Team for more details.

These converters are available in a gull-winged power package that enables surface-mount installation and a low-impedance interconnect with the system board.

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KEY FEATURES

Input Voltage Range:	20VDC – 38VDC
Output Voltages Available:	0.8, 1.0, 1.2, 1.8, 2.5, 3.3, 5.0, 7.0, 12.0 (VDC)
Output Power:	50W (Can be paralleled for higher power applications)
Radiation Performance:	75krad (Si), Dose rate = 0.01 rad (Si) / s SEL/SEB/SEGR: Immune up to 60 MeV-cm ² /mg
Efficiency, 50% Load:	92% Typical
Line Regulation:	0.1% MAX
Operating Temperature (Tj): Storage Temperature:	-40°C to 125°C -40°C to 125°C
Package Size:	2.5 inches x 1.5 inches x 0.63 inches 63.5mm x 38.1mm x 16mm
Weight:	70g, typical