

EPC Space Launches a High-Performance Radiation-Hardened DC-DC Controller with Matching Reference Design

ANDOVER, MA, UNITED STATES, April 16, 2025 /EINPresswire.com/ -- [EPC](#)

[Space](#) announces the release of the [EPCS4001](#), a radiation-hardened, high-frequency buck converter controller optimized for space and high-energy physics applications. In tandem with the EPCS4001, EPC Space also introduces the EPCSC401 reference design, offering engineers a complete, tested, and ready-to-deploy solution.

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“Our customers asked for a simplified path to integrate GaN-based, radiation-hardened DC-DC conversion into their systems, and the EPCS4001 with the EPCSC401 reference design delivers exactly that,”

Maurizio Salato, VP of Engineering at EPC Space

The EPCS4001 is a rad-hard CMOS ASIC, co-developed with The European Organization for Nuclear Research, known as CERN, tailored specifically for use with EPC’s GaN-based Rad Hard power stage the [EPC7011L7](#) family. This two-component solution provides a robust and flexible point-of-load converter architecture that excels in extreme environments.

Key Features of the EPCS4001:

- Wide Input Voltage Range: 18 V to 50 V input, with an adjustable output centered at 12 V
- High Switching Frequency: Adjustable from 0.5 MHz to 3 MHz, enabling use of compact inductors from 200–500 nH.
- Integrated Bias Regulators: On-chip 12 V and 5 V linear regulators eliminate the need for external bias circuitry.
- Protection & Telemetry: Built-in under-voltage lockout (UVLO), over-temperature protection, and Power Good signal for fault monitoring.
- Radiation and Magnetic Tolerance: Operates reliably in environments with very high radiation. The controller has been designed for operation in a strong magnetic field in excess of 40,000 Gauss.
- Fully Compatible with EPC GaN Power Stages: Designed to pair with the EPC7011L7 family, enabling radiation-hardened power conversion in compact form factors.

EPCSC401 Reference Design – Turnkey Performance

To support rapid design-in, EPC Space has released the EPCSC401 reference design, a 48 V-to-12 V buck converter that demonstrates the full capabilities of the EPCS4001 and EPC7011L7 family in a compact layout. It features:

- Pre-optimized PCB layout for minimal loop inductance and maximum efficiency.
- Compatibility with both cored and coreless inductors, allowing designers to tailor magnetic components for application-specific needs, including high magnetic field environments.
- Verified thermal performance with conduction cooling and integrated heatsinking for space-like conditions.



The advertisement features a dark blue background with a starry space pattern. At the top, the text "Ready-to-deploy Solution:" is in yellow, followed by "High-Performance Radiation-Hardened DC-DC Controller with Matching Reference Design" in white. Below this, a green PCB labeled "EPCSC401" is shown, with "48V-12V, 5A" written in yellow. To the right, two black integrated circuits are shown: one labeled "EPCS4001" and another labeled "EPCS4001" with "Rad-Hard 48 V-input buck converter controller" written below it. The EPC Space logo is at the bottom left of the image area. Below the image area, the text "High-Performance Radiation-Hardened DC-DC Controller with Matching Reference Design" is repeated in white.

Ready-to-deploy Solution:
High-Performance Radiation-Hardened DC-DC Controller with Matching Reference Design

EPCS4001
Rad-Hard 48 V-input buck converter controller

EPC · SPACE

High-Performance Radiation-Hardened DC-DC Controller with Matching Reference Design

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Applications

- Spacecraft power systems
- High Energy Physics instrumentation
- Radiation-tolerant point-of-load converters
- Defense and aerospace systems requiring high efficiency and compact size

Availability

The EPCS4001 controller and EPCSC401 reference design are available now. Datasheets, user guides, and design files can be accessed through epc.space.

About EPC Space

EPC Space provides revolutionary high-reliability radiation-hardened enhancement-mode gallium nitride power management solutions for space and other harsh environments. Radiation hardened GaN-based power devices address critical spaceborne environments for applications such as power supplies, motor drives, ion thrusters, and more. eGaN is a registered trademark of Efficient Power Conversion Corporation, Inc.

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