PRODUCT BRIEF

RIC70847

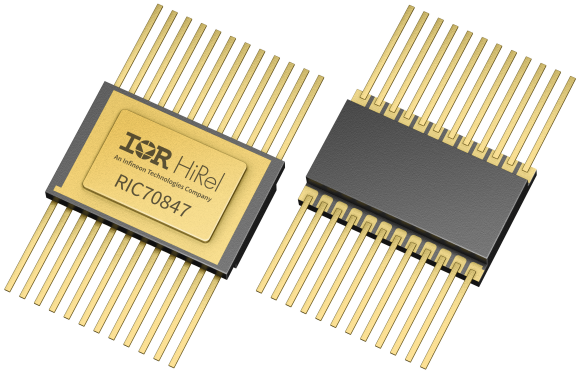
Rad hard 17.1 V buck controller with integrated gate driver

RIC70847 is a radiation hardened synchronous buck controller with an integrated gate driver, designed for harsh radiation environments and space applications. The device offers reliable performance with electrical parameters defined up to 100 krad(Si) pre- and post-irradiation and Single Event Effects (SEE) characterized up to a linear energy transfer (LET) of 81.8 MeV·cm²/mg. RIC70847 operates over the full military ambient temperature range of -55°C to 125°C and is available in a hermetically sealed 24-lead flatpack or die form.

The integrated half bridge gate driver has a 5 V drive voltage and is designed to work with logic level transistors, such as Infineon IR HiRel's rad hard R8 power FETs. RIC70847 supports a wide input voltage range including nominal inputs of 5 V and 12 V, and the output voltage can support low voltages from 0.6 V to 5 V. This makes RIC70847 ideal for point of load (PoL) applications such as core rails of space rated FPGAs and ASICs.

A key feature of RIC70847 is load-line regulation, also referred to as AVP or droop regulation. Our device dynamically adjusts the output voltage based on the power demand of the load, providing system benefits such as low power dissipation and reduced output capacitor size. Paired with peak current mode control, tight reference accuracy, and external FETs, RIC70847 allows for a small and flexible system solution.

The device features multiple integrated fault protections for increased reliability: IN undervoltage lockout (UVLO), VIN overvoltage (OVP), VDRV undervoltage lockout (VDRV UVLO), output voltage overvoltage (VOUT OVP), overcurrent protection (OCP), overtemperature protection (OTP), and loss of SYNCI signal. These features ensure that the RIC70847 maintains proper synchronization and reliable performance under demanding environmental conditions.



24-lead flatpack

Key features

- Wide supply range (5 V and 12 V nominal)
- Wide load output range (5.25 V to 0.6 V nominal)
- Integrated 5 V half bridge gate driver
- Load line regulation improving transient response
- Supports multiphase solutions
- Radiation lot acceptance tested
- TID of 100 krad(Si)
- No destructive SEE up to LET of 81.8 MeV·cm²/mg

Target Applications

- PoL converter for space grade FPGA, ASIC, and DSP core rails
- Digital processing payload systems
- Distributed satellite power systems

Key Benefits

- Wide voltage range supports mul-tiple system architectures
- Tight reference voltage accuracy improves support of the latest FPGA
- 5 V drive optimized to work with R8 FET, allowing for efficiency optimization

Space

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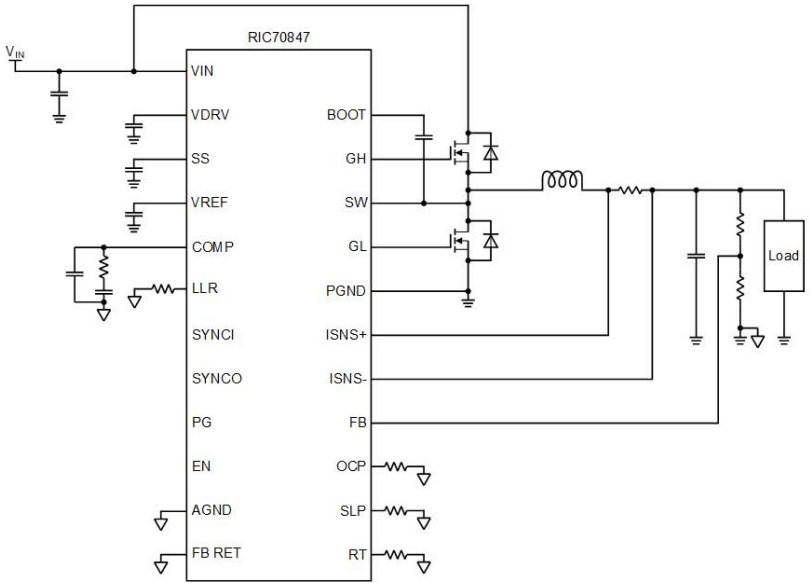
Typical PoL application



Product Table

Orderable part number	Package type	Device level	Total ionizing dose level
5962R2320601VXC	24-lead flatpack	Level V[1]	100 krad(Si)
RIC70847F	24-lead flatpack	COTS[2]	—

1 Per MIL-PRF-38535

2 Intended for engineering evaluation only, devices are only electrically tested at 25°C and for hermeticity

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