PRODUCT BRIEF

RIC70115 evaluation board

Half-bridge RIC70115 gate drivers with 100 V IG1NT052N10R GaN transistors evaluation board

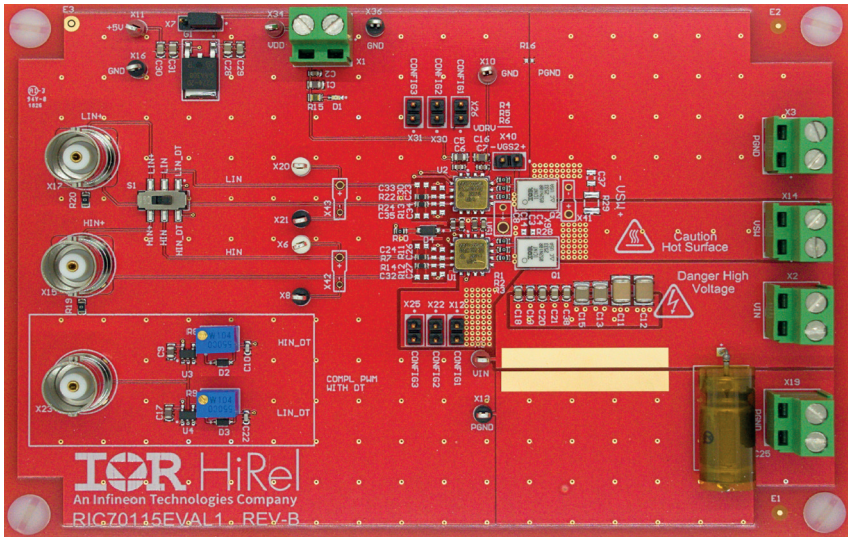
RIC70115EVAL1 is an evaluation board for RIC70115, a radiation hardened (rad hard) gate driver optimized to control GaN HEMTs. RIC70115 is the industry's only GaN-based driver for high- and low-side configuration. The evaluation board was created to showcase operation with the industry's first JANS-qualified rad hard GaN transistor, IG1NT052N10R.

The RIC70115 is a rad hard gate driver built to withstand harsh radiation environments experienced in space applications. Its wide supply voltage range of 4.75 V to 15 V is regulated with an internal low dropout regulator (LDO) to maintain a drive voltage of 4.8 V. The RIC70115EVAL1 board is designed with two RIC70115 gate driver ICs and two IG1NT052N10R GaN HEMTs in a half-bridge configuration, showcasing the RIC70115's ability to operate in both the high-side and low-side gate driver configuration.

The half-bridge configuration supports switch-mode topologies such as buck, boost, or any single-ended and double-ended converter topologies. Both gate drivers can be controlled by two PWM input signals, or one PWM input signal using a programmable dead time circuit. RIC70115EVAL1 includes an external LDO that can be used to regulate a 5 V supply for the dead time generator circuit. TDI resistors are connected between the PWM input logic signal and IN+/- pins to enable high-side operation and to provide noise immunity to the input logic. RIC70115EVAL1 features a Miller clamp pin which ensures low impedance at the gate of the FETs during the switching transitions. The layout of the board is optimized to support efficient, high-speed switching GaN transistor operation. This board provides an evaluation platform for applications such as satellite bus and payload, power conditioning unit, power distribution unit, and DC-DC converter.

Key features

- Truly differential input (TDI) to suppress potential common mode noise
- Efficient and optimized PCB layout
- Dead time (DT) generator circuit to enable half-bridge operation with a single Pulse Width Modulation (PWM) signal
- External LDO generates 5 V supply for DT generator circuit
- Flexible output power stage to support single-ended and double-ended power topologies
- High-speed GaN transistor switching operation
- Rad hard GaN HEMTs allow up to 52 A DC current in the half-bridge for power DC-DC converters



RIC70115EVAL1

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Space

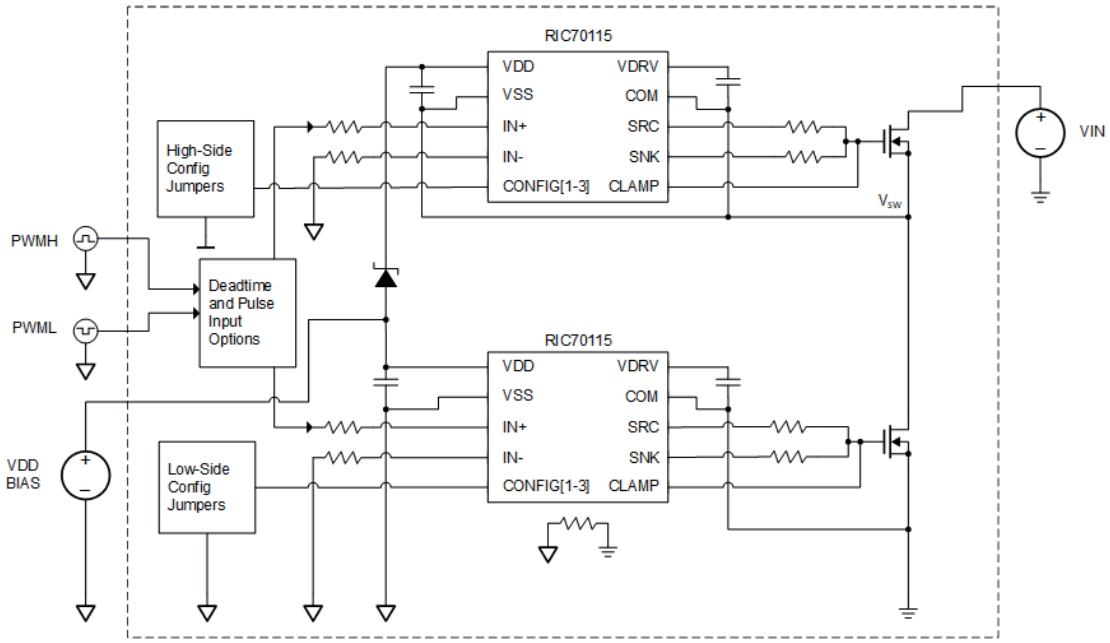
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Block Diagram

A simplified schematic of RIC70115EVAL1



Part Information

Orderable part number	Package type	Device level	Total ionizing dose level
5962R2420701Vxx	16-pin LCC	Level V[1,3]	100 krad(Si)
RIC70115G	16-pin LCC	COTS[2]	
RIC70115EVAL1	Evaluation board		

[1] Per MIL-PRF-38535

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

[3] MIL-PRF-38535 QMLV certification pending

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