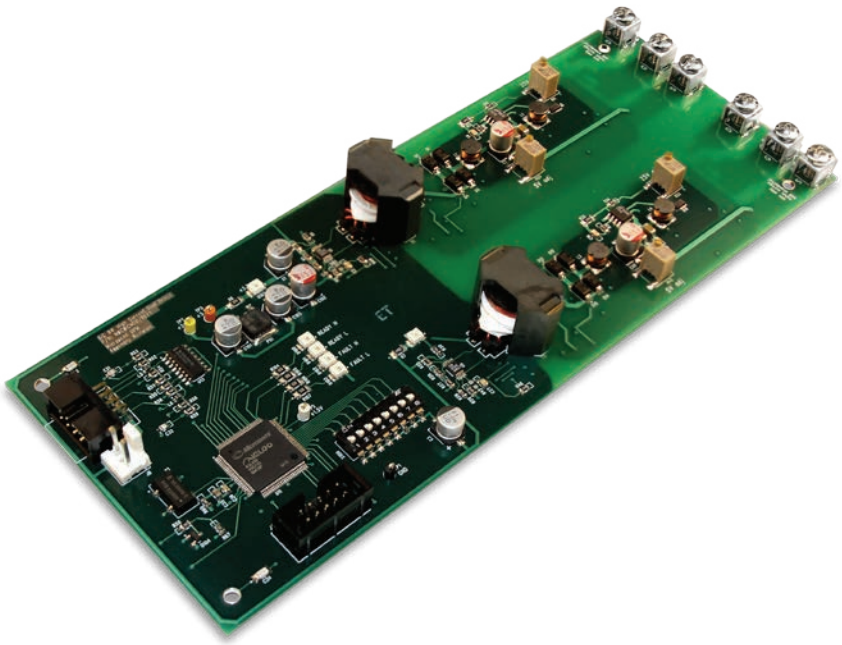
Dual SiC MOSFET Driver Reference Design

MSCSICMDD/REF1

The dual SiC MOSFET driver reference design is an open-source solution that provides user-friendly design guides, enabling faster time-to-market for customers using Microsemi SiC MOSFETs. The reference design also supports the transition to Microsemi's next-generation SiC MOSFETs.

The new reference design provides customers with a highly isolated SiC MOSFET dual-gate driver switch as a means of evaluating SiC MOSFETs in a number of topologies. This includes modes optimized for half-bridge switching with synchronous dead-time protection and asynchronous signal transfer with no protection. It can also be configured to provide concurrent drive to study unclamped inductive switching (UIS) or double pulse testing. The board supports the modification of gate resistor values to accommodate most Microsemi discretes and modules.

The dual SiC MOSFET driver reference design is ideal for a wide range of end markets and applications, including aerospace (actuation, air conditioning, and power distribution), automotive (hybrid/electric vehicle powertrains), electric vehicle battery chargers, DC-to-DC converters, and energy recovery), defense (power supply and high-power motor drive), industrial (photovoltaic inverters, motor drives), welding, uninterruptible power supply, switched-mode power supply, induction heating, and oil drilling), and medical (MRI and X-ray power supply).



Features

- Switch configurable as either a high/low side driver with half bridges or independent drive
- Requires only a 24 V power input
- Galvanic isolation of more than 2000 V on both gate drivers
- Capable of 8 W of gate drive power per side
- Peak output current of up to ±30 A
- Up to 400 kHz maximum switching frequency
- Single-ended or RS485/RS422 differential input gate control
- Desaturation shoot-through (short-circuit) protection
- ±100 kV/µs capability
- Fault signaling
- SiC compatible under voltage lockout protection
- Gate drive voltage is –5 V/20 V and adjustable for lower voltages
- Switch-configurable dead time
- Option of disabling shoot-through protection for dual switch UIS/RUIS testing
- Very low timing skew

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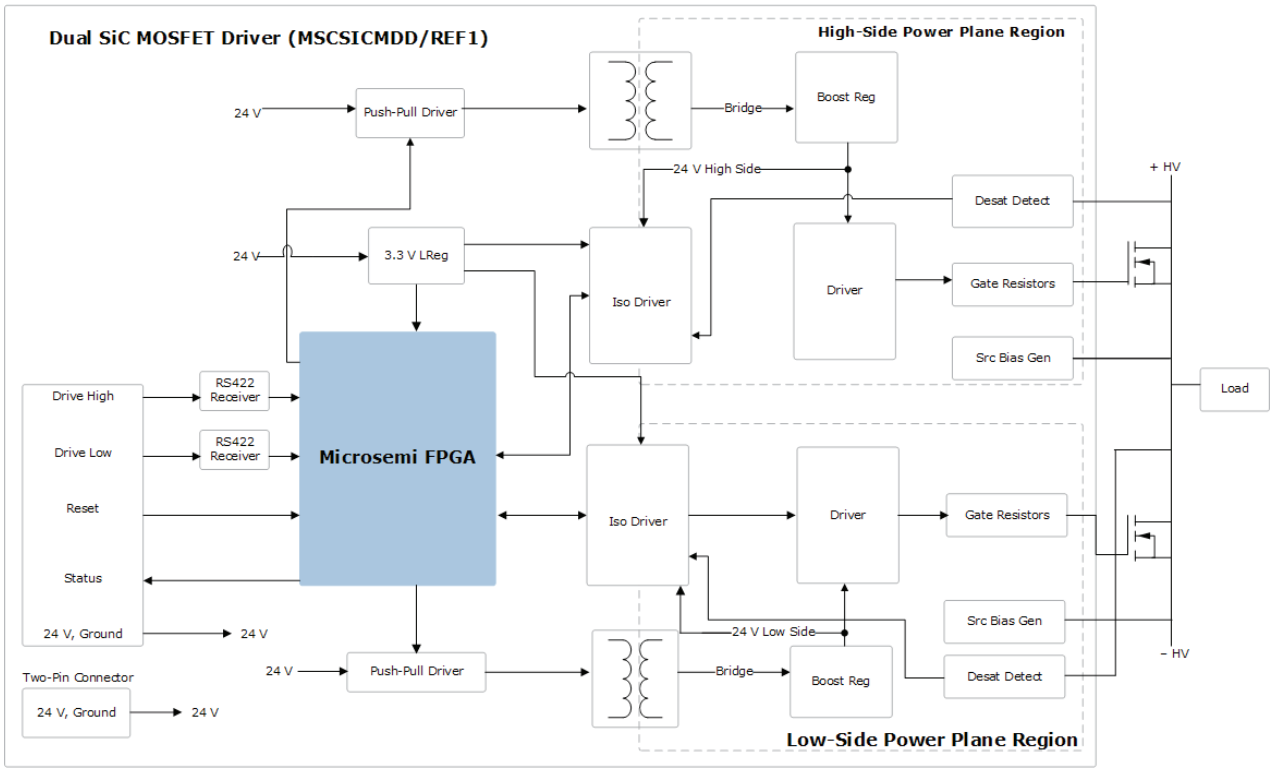

The dual SiC MOSFET driver reference design (MSCSICMDD/REF1) includes an evaluation board and is now available for purchase. For more information, visit www.microsemi.com/product-directory/mosfet/3539-sic-mosfet#documentation or contact sales.support@microsemi.com.

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