

Silicon Labs Isolated Gate Drivers Offer Ultimate Protection for Inverters and Motor Drives

Si828x ISOdriver Family Provides Advanced Monitoring Features for IGBT Switches in High-Voltage Industrial and Green Energy Applications

“Silicon Labs’ new Si828x ISOdriver family provides the ultimate gate driver solution for these applications by helping developers achieve higher system efficiency and noise immunity, minimize design complexity, and enhance system safety and product lifetimes.”

AUSTIN, Texas--([BUSINESS WIRE](#))--[Silicon Labs](#) (NASDAQ: SLAB) has expanded its ISOdriver portfolio with a family of isolated gate drivers designed to protect sensitive insulated-gate bipolar transistor (IGBT) switches in power inverter and motor drive applications. The new Si828x ISOdriver family provides industrial-grade isolation (5 kVrms withstand), best-in-class feature integration including an optional dc-dc converter, the industry’s fastest desaturation detection, superior timing characteristics, and exceptional noise and transient immunity.

Get all the details about Silicon Labs’ Si828x ISOdriver family including product pricing and availability, development tools and data sheets at www.silabs.com/isodriver.

The Si828x family provides an ideal solution for industrial motor drives, solar inverters, high-voltage power converters, uninterruptable power supplies, and heating, ventilation and air conditioning (HVAC) compressor control. Many of these systems are expected to last more than 25 years while operating in harsh environments. Isolators can be first points of failure and lifetime-limiting devices in these systems. Traditional optocoupler-based isolators have significant limitations in temperature range, noise immunity and product lifetime. Based on Silicon Labs’ proven CMOS isolation technology, Si828x gate drivers can operate over a full industrial temperature range, support product lifetimes of up to 100 years, and meet stringent UL, VDE, CQC and CSA standards.

The Si828x family combines robust isolation, advanced gate driver technology and fast over-current monitoring in a single, cost-effective device designed to protect costly IGBT switches. High-power inverter and power converter systems typically use IGBTs for the switching element, and over-current conditions can destroy IGBTs, compromise system-critical functions, jeopardize product safety and diminish reliability. Efficient switching of IGBTs requires the use of isolated gate drivers like the Si828x devices with specialized monitoring and control features.

The defining Si828x feature is a 4 amp gate driver coupled with desaturation detection to monitor the IGBT for over-current. In that event, the Si828x driver initiates a controlled shutdown of the switch while updating the controller with the fault status, protecting the IGBT and the system. Additional integrated features include split outputs, a Miller clamp to prevent parasitic gate turn-on, and driver power state and fault feedback to the controller.

The Si828x family includes driver versions with an integrated isolated dc-dc converter, which helps developers simplify the layout, reduce component count and board size, and ease the complexity of creating and managing multiple power domains. A single power bus can be routed across the system, eliminating complex spacing concerns. Localizing power supplies to each driver reduces inductance, minimizes noise and removes transients.

“Today’s power inverters and converters for industrial and green energy designs require state-of-the-art signal isolation technology with superior timing characteristics, lower emissions and higher reliability,” said Ross Sabolcik, Vice President of power products at Silicon Labs. “Silicon Labs’ new Si828x ISOdriver family provides the ultimate gate driver solution for these applications by helping developers achieve higher system efficiency and noise immunity, minimize design complexity, and enhance system safety and product lifetimes.”

Si828x ISOdriver Family Highlights

- Industrial-grade isolation: high transient immunity, high reliability, 5 kVrms withstand
- Most comprehensive feature integration in the isolated gate driver market
- Optional integrated dc-dc converter simplifying board layout and driver supply design

- Industry's fastest desaturation detection: up to 10x faster than competitive alternatives
- Fastest, most accurate timing specs with low propagation delay (< 55 ns): up to 10x better than optocoupler solutions and up to 2x better than competing CMOS solutions
- Long lifetimes under high-voltage conditions (100 years at 1000 V)

Silicon Labs offers three evaluation kits to help developers evaluate Si828x ISODriver performance and key features:

- Si8285_86-KIT demonstrates the basic Si828x driver functionality
- Si8281-KIT demonstrates the driver with an integrated dc-dc converter
- Si8284-KIT demonstrates the driver with full-featured dc-dc converter capable of using higher supply voltages

Pricing and Availability

Samples and production quantities of the Si828x isolated gate drivers are available now in a variety of compact wide-body SOIC packages. Pricing in 10,000-unit quantities begins at \$1.59 for base driver products and \$2.87 for devices with an integrated dc-dc converter. (All prices are in USD.) The Si8285_86-KIT, Si8281-KIT and Si8284-KIT evaluation kits are priced at \$19.00 each (USD MSRP). To purchase product samples and development tools, please visit www.silabs.com/isodriver.

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