Silicon Labs Launches Plug-and-Play Isolated Power Supply Solution

Si88xx Isolators with On-Chip dc-dc Converter Target Industrial Applications Including Factory Automation, Solar Inverters and Battery Management

“The new Si88xx family brings the superior EMI performance, high data rates and reliability of Silicon Labs’ digital isolator technology to demanding applications requiring both signal and power isolation coupled with higher channel count density”

AUSTIN, Texas--(BUSINESS WIRE)--Silicon Labs (NASDAQ: SLAB), a leading provider of digital isolator and power products for industrial automation, today introduced a new family of high-speed, multi-channel digital isolators designed to provide a complete, highly integrated solution for signal and power isolation. Silicon Labs’ new Si88xx isolators feature an integrated dc-dc converter with 78 percent efficiency, deliver up to 2 W of power, and offer very low electromagnetic interference (EMI) emissions and high noise immunity. The Si88xx family reduces system cost, speeds time-to-market and enhances reliability for applications in harsh, noisy operating environments including factory automation, process control, programmable logic controllers (PLCs), solar inverters and automotive battery management.

Silicon Labs’ Si88xx isolator family addresses a critical need in industrial automation for plug-and-play isolated power supplies. Developers often must design made-from-scratch isolated power supplies, which can be a time-consuming, frustrating and costly process requiring numerous discrete components. Discrete power isolation solutions commonly use field-effect transistors (FETs), controllers, single-channel isolators or optocouplers, and other components. In contrast, a design based on a multi-channel Si88xx isolator requires the addition of only one miniature ferrite core transformer and a few discrete passive components. Solutions based on Si88xx isolators ultimately save multiple design iterations and reduce bill-of-materials (BOM) cost and design complexity while enhancing noise immunity and power efficiency.

Si88xx digital isolators provide up to 2 W of isolated power by harvesting power from the primary side to supply secondary side power. The isolators offer up to four high-speed digital isolation channels with excellent timing characteristics including low propagation delay and low jitter, enabling longer system lifetimes at high voltages. These signal isolation characteristics are critical for developers designing systems for industrial automation, battery management and motor control requiring long-term performance. The low-power, high-speed Si88xx digital isolation channels offer substantial data rate, propagation delay and reliability advantages over legacy isolation technologies including optocouplers. The Si88xx family supports data rates of up to 100 Mbps, and Si8xx devices achieve typical propagation delays of 23 ns.

The Si88xx isolators incorporate Silicon Labs’ proven, patented digital isolator technology with an on-chip isolated dc-dc converter providing regulated output voltages of 3.3 V or 5.0 V (or >5 V with external components) at peak output power levels of up to 2 W. The robust dc-dc converter architecture, coupled with a ferrite core isolated transformer, provides ample power to self-power the secondary side of the isolator as well as other components such as RS-485 or CAN transceivers, microcontrollers and analog-to-digital converters (ADCs). The dc-dc converter is based on a modified fly-back architecture with secondary side sensing and feedback to the controller with external compensation. The power switches use zero voltage switching (ZVS) techniques to minimize power losses as well as dithering to minimize EMI.

The Si88xx isolators incorporate multiple safety features including a built-in soft-start function providing protection from inrush currents, a cycle-by-cycle current limiting capability and thermal detection/shutdown. The integrated dc-dc converter includes a built-in secondary sensing and feedback signal, eliminating the need for an additional opto feedback path while enabling excellent line and load regulation for greater system stability. The dc-dc converter also features a shut-down option and user-adjustable switching frequency for fine-tuning the EMI profile to suit each developer’s application needs.

“The new Si88xx family brings the superior EMI performance, high data rates and reliability of Silicon Labs’ digital isolator technology to demanding applications requiring both signal and power isolation coupled with higher channel count density,” said Ross Sabolcik, vice president and general manager of Silicon Labs’ Analog, Power and Sensor products. “The Si88xx digital isolators provide industrial system developers with a complete, plug-and-play solution that greatly simplifies their power supply applications while ensuring long-term performance and reliability.”

Pricing and Availability

Samples and production quantities of Si88xx digital isolators are available now in 20-pin WB SOIC packages. Ordering options include a choice of dc-dc converter features, isolation channel configurations and a fail-safe mode. All Si88xx products are certified by UL, CSA, VDE and CQC. Si88xx family pricing in 10,000-unit quantities begins at $2.42 (USD). To help developers evaluate the performance of Si88xx isolators, Silicon Labs’ Si88xxxISO-KIT evaluation kit is available now for $29 (USD MSRP). For more details about Silicon Labs’ Si88xx digital isolators and to purchase samples and development tools, please

visit www.silabs.com/Si88xx.

Silicon Labs

Silicon Labs (NASDAQ: SLAB) is a leading provider of silicon, software and system solutions for the Internet of Things, Internet infrastructure, industrial automation, consumer and automotive markets. We solve the electronics industry's toughest problems, providing customers with significant advantages in performance, energy savings, connectivity and design simplicity. Backed by our world-class engineering teams with unsurpassed software and mixed-signal design expertise, Silicon Labs empowers developers with the tools and technologies they need to advance quickly and easily from initial idea to final product. www.silabs.com

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