Quad Digital Power Supply Manager with Powerful GUI Speeds Development

Linear Technology has introduced the LTC2974 power supply manager with EEPROM for complete digital management of power supply systems with four or more power rails.

The LTC2974 utilizes an I2C interface and PMBus command set to monitor and control positive or negative supplies, providing rapid troubleshooting and debug capabilities during power system design, development, production and failure analysis. Any supply with a “run” pin can be sequenced and controlled using tracking or time-based events. The LTC2974’s four channels simultaneously monitor voltage and current, as well as external temperature so users can compensate for shifting MOSFET RDS(ON) or inductor DCR. Each supply can be margined and trimmed over temperature, using a digital servo loop that measures the rail voltage and continuously adjusts to maintain accuracy.

All of the LTC2974’s supply functions perform with uncompromising accuracy, with better than ±0.25% total unadjusted error. Users can harness the powerful LTpowerPlay™ GUI to intuitively configure and interrogate the LTC2974’s registers, user settings, and fault log. For applications requiring more than four supplies, the LTC2974 can be cascaded using a 1-wire synchronization bus, allowing fault dependencies to be established across devices sharing the fault bus.

The LTC2974 is suitable for a wide variety of applications, including uninterruptible power supplies (UPS), automotive, medical, video and networking applications. The LTC2974 integrates key building blocks, such as differential measurement and adjustment, high resolution data converters, high retention EEPROM, and a precise reference to enable digital management of an otherwise purely analog power system. A programmable watchdog timer provides supervision to an external microcontroller, FPGA, ASIC. All four channels are fully functional, with dedicated monitoring, supervising, sequencing, margining, trimming, fault protection features. Black box fault logging provides a method to diagnose failure at the time of fault by storing critical parameters in EEPROM.

In the field, the LTC2974 operates autonomously to provide continuous supervision and to take preprogrammed action in response to faults. The LTC2974 is also protected with an internal die temperature sensor. This high level of mixed-signal integration ensures that the LTC2974 can reliably manage even the most complex power supply systems with ease.

The LTC2974 joins its 8-channel counterpart, the LTC2978, as part of Linear's expanding digital power supply manager product line, and complements Linear's complete stand-alone DC/DC regulators, such as the 15A LTM4627 or dual 8A LTM4628, which are offered in 15mm x 15mm µModµle® packages.

The LTC2974 is available in a 64-lead 9mm x 9mm QFN package that is RoHS compliant and specified over the commercial and industrial temperature ranges. The DC1856 demo system with DC1613 USB-to-PMBus controller showcases the LTC2974 managing four discrete supplies, and is available at www.linear.com [1] or from local Linear sales offices. The LTC2974 is priced starting at $8.85 each in 1,000 piece quantities.

For more information, please visit www.linear.com/product/LTC2974 [2].

Posted by Ron M. Seidel, Editorial Intern

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