TI expands PMBus power solutions for point-of-load designs

Texas Instruments today introduced two 20-V step-down voltage regulators with PMBus digital interface and adaptive voltage scaling capability for non-isolated point-of-load designs. Together with the National system power protection and management products, TI provides the design engineer with complete single-, dual- and multi-rail, multi-phase PMBus solutions -- allowing telecom and server designers to intelligently monitor, protect and manage the state of health of their power systems.

Flexible step-down controllers

TI's 2-MHz TPS40400 single-channel controller with a 3-V to 20-V input range and the new 1.2-MHz TPS40422 dual-channel or multi-phase controller with 4.5-V to 20-V input voltage range combine high-performance analog voltage regulation with digital control to achieve greater than 90-percent efficiency, tight output voltage accuracy and design flexibility. The devices' unique adaptive voltage scaling capability saves up to 25-percent more power than previous solutions, and eliminates the need for up to 12 external components. The controllers achieve even greater power efficiency when paired with TI's NexFET power MOSFETs, such as the CSD87350Q5D.

"Telecom, cloud computing data centers and mobile internet infrastructure applications require high-performance, low-risk digital power management solutions," said Niklas Fallgren, vice president and general manager of OEM Embedded Power at GE Energy. "TI's integrated digital power controllers help our DLynx point-of-load modules deliver real-time diagnostics and monitoring with adaptive voltage scaling, while ensuring PMBus interoperability."

Designers configure the TPS40400 or TPS40422's parameters to monitor and control the power system using TI's easy-to-use graphical user interface software tool. In addition, TI's SwitcherPro™ tool makes it easy to develop internally and externally compensated designs in less than one minute.

System power protection and management

The TPS40400 and TPS40422 can be combined with the National 17-V LM25066 system power and hot-swap protection IC as a complete PMBus-compliant solution for 12-V systems with input protection and power conversion. The LM25066 continuously supplies the system management controller with real-time, accurate power measurement including voltage, current, temperature and fault data for each blade subsystem in a telecom or server application – enabling increased reliability. For those 48-V systems that generate a 12-V intermediate bus, the National +/- 48-V LM5066 and LM5064 system power and protection circuits accurately

measure, protect and control the electrical operating conditions.

Do more with TI Digital Power

TPS40400 and TPS40422 analog PMBus controllers and the National system protection ICs extend TI's portfolio of digital power products that meet any non-isolated or isolated power design requirement. UCD9K and UCD3K digital power controllers and UCD7K drivers provide built-in hardware features to make implementation of power topologies easier, faster and more accurate, while providing a high degree of configurability. TI's fully programmable TMS320F28x Piccolo and Delfino 32-bit microcontrollers provide intelligent digital power peripherals, flexible software programmability and real-time control performance for power supplies. See: www.ti.com/digitalpower [1].

Availability and pricing

All TI and National power management products are available from TI and its authorized network of distributors. The new TPS40400 comes in a thermally enhanced 24-pin, 3.5-mm x 5.5-mm QFN package. Suggested resale pricing is $2.15 in 1,000-unit quantities. The TPS40422 comes in a 40-pin, 6-mm x 6-mm package, and is currently sampling with expected volume production later in the fourth quarter. Suggested resale pricing is $3.10 in 1,000-unit quantities.

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