



## **Energy Monitoring Hot Swap Controller Enables 100A Board Designs**

MILPITAS, CA – October 1, 2015 – Linear Technology Corporation introduces the [LTC4282](#), an energy monitoring Hot Swap controller with dual MOSFET drive to enable 100A and higher current board designs. The LTC4282 ensures safe board insertion and removal from live 2.9V to 33V backplanes by controlling external N-channel MOSFETs to gently power up capacitors, avoiding sparks, connector damage and system glitches. High current hot-pluggable boards utilize parallel MOSFETs to reduce voltage drop, but all of these MOSFETs require large safe operating area (SOA) to ride through overcurrent faults. By controlling two matching current limited paths, the LTC4282 halves each path's SOA requirements, reducing MOSFET costs in high current applications (>50A). Further cost savings are afforded with a staged start configuration employing a low SOA MOSFET in one path and low  $R_{DS(ON)}$  MOSFETs in the other path. The LTC4282 provides a rugged, compact solution for hot plugging and monitoring, especially in high power circuit boards in servers, network routers and switches, and enterprise data storage systems.

Sitting at the gateway to board power, the LTC4282's  $\pm 0.7\%$  accurate ADC (analog-to-digital converter) reports board voltage, current, power and energy consumption through an I<sup>2</sup>C/SMBus digital interface. During overcurrent conditions, the LTC4282 folds back its 2% accurate current limit to maintain constant MOSFET power dissipation for an adjustable timeout period. Digitally configurable current limit enables dynamic adjustment with load changes and eases selection of low value sense resistors. Minimum and maximum values of the monitored

electrical parameters are recorded, with alerts raised when they exceed 8-bit thresholds. Internal EEPROM provides nonvolatile storage for register configuration and fault log data. To prevent catastrophic damage to the board, the MOSFETs are continuously monitored for abnormal conditions such as low gate voltage and drain-to-source short-circuit or large voltage drop.

Specified over the 0°C to 70°C commercial and –40°C to 85°C industrial temperature ranges, the LTC4282 is offered in a 32-pin 5mm x 5mm QFN package. 1,000-piece pricing starts at \$5.95 each. Device samples and evaluation circuit boards are available online or from your local Linear Technology sales office. Custom programmed devices are available at [www.linear.com/program](http://www.linear.com/program). For more information, visit [www.linear.com/product/LTC4282](http://www.linear.com/product/LTC4282).

**Photo Caption:** 2.9V to 33V Kilowatt Hot Swap Controller with Dual MOSFET Drive, ADC, I<sup>2</sup>C/SMBus Interface & EEPROM


### Summary of Features: LTC4282

- Enables Safe Board Insertion Into Live Backplane
- 12-/16-Bit ADC with ±0.7% Total Unadjusted Error
- I<sup>2</sup>C/SMBus Interface to Read Board Voltage, Current, Power & Energy Usage
- Internal EEPROM for Storing Configuration & Fault Log
- Wide Operating Voltage Range: 2.9V to 33V
- High Current Application Features
  - o Dual MOSFET Gate Drive & Current Sensing
  - o 12V Gate Drive for Lower MOSFET R<sub>DS(ON)</sub>
  - o MOSFET Power Limiting with Current Foldback
- Digital Features
  - o Digitally Adjustable Current Limit & UV/OV/PG Thresholds
  - o Stores Minimum & Maximum Measurements
  - o Alerts When Programmed Thresholds Exceeded
  - o Three General Purpose Input/Outputs
- Continuously Monitors MOSFET Health
- Input Undervoltage & Overvoltage Protection
- 32-Pin 5mm × 5mm QFN Package

The USA list pricing shown is for budgetary use only. International prices may differ due to local duties, taxes, fees and exchange rates.

## About Linear Technology

Linear Technology Corporation, a member of the S&P 500, has been designing, manufacturing and marketing a broad line of high performance analog integrated circuits for major companies worldwide for over three decades. The Company's products provide an essential bridge between our analog world and the digital electronics in communications, networking, industrial, automotive, computer, medical, instrumentation, consumer, and military and aerospace systems. Linear Technology produces power management, data conversion, signal conditioning, RF and interface ICs,  $\mu$ Module<sup>®</sup> subsystems, and wireless sensor network products. For more information, visit [www.linear.com](http://www.linear.com)

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