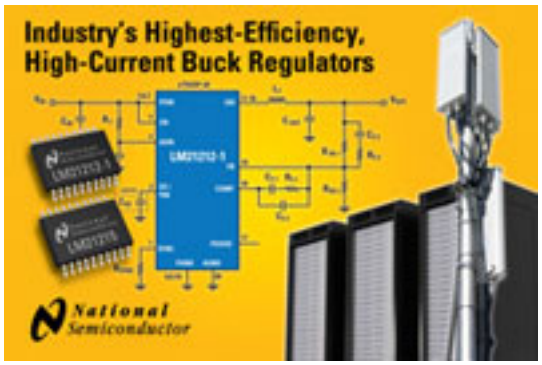
12A and 15A Buck Regulators Deliver Greater Than 97 Percent Efficiency for High-Performance FPGAs, ASICs and Microprocessors



National Semiconductor Corp. recently introduced a pair of high-current, synchronous buck regulators with the industry's highest efficiency at 97 percent. The LM21212-1 and LM21215 are well-suited for high-performance FPGAs, ASICs and microprocessors used in a variety of low-voltage applications including wireless, networking and optical communications infrastructure. Use National's WEBENCH® Power Designer or WEBENCH® FPGA Power Architect to create a design with these products in minutes.

National will showcase the LM21212-1 and LM21215 at the Applied Power Electronics Conference and Expo (APEC) in Fort Worth, Texas, March 6-10. APEC is one of the industry's leading conferences for practicing power electronics professionals.

Members of National's PowerWise® energy-efficient product family, the LM21212-1 and LM21215 high-current buck regulators feature integrated high-side and low-side FETs, which simplify design and reduce solution size. The LM21212-1 features an output current up to 12 amps with synchronizable switching frequency and the LM21215 provides a resistor-programmable current limit, allowing up to 15 amps of continuous output current, offering the industry?s best power density. Both products provide peak efficiency greater than 97 percent from a 5V input to 3.3V output, and greater than 92 percent efficiency when regulating a 1.2V output from a 5V input. Under typical operating conditions such as 5 Vin, 1.2 Vout, 10A, 500 kHz and 25 degrees C ambient, the regulators provide a three percent to five percent efficiency improvement and up to 10 degrees C cooler case temperature than similar products on the market today.

The LM21212-1 and LM21215 are monolithic synchronous buck regulators offered in a small 4.4 mm by 6.5 mm by 0.9 mm package. The LM21212-1 is capable of delivering up to 12A of continuous output current with a switching frequency that can be synchronized to an external oscillator between 300 kHz and 1.5 MHz. The LM21215 features a fixed 500 kHz switching frequency and is capable of delivering up to 15A.

The regulators are optimized to work over an input voltage range of 2.95V to 5.5V and produce an output voltage down to 0.6V with superior efficiency. The voltage-mode control loop provides high noise immunity and narrow duty cycle and can be compensated to be stable with any type of output capacitor for maximum flexibility and ease-of-use. A programmable over-current protection feature allows a user to specify the peak current level. An internal over voltage protection circuit provides increased system reliability, while a precision enable pin and integrated UVLO allow turn-on of the device to be tightly controlled and sequenced.

Start-up inrush currents are limited by both an internally fixed and externally adjustable soft-start circuit. Both regulators provide a monotonic startup into a pre-biased load, preventing the devices from sinking current until the internal soft-start ramp exceeds the voltage at the feedback pin. Fault detection and supply sequencing are also possible with the integrated power good circuit. The regulators are designed to work well in multi-rail power supply architectures, as the output voltage can be configured to track a higher voltage rail using the SS/TRK pin.

For more information on the LM21212-1 or to order samples and an evaluation board, visit: http://www.national.com/pf/LM/LM21212-1.html

For more information on the LM21215 or to order samples and an evaluation board, visit: http://www.national.com/pf/LM/LM21215.html