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LTC6909 Spread Spectrum Clock Synchronizes up to 8 Switching Regulators

MILPITAS, CA – March 10, 2009 – Linear Technology announces the LTC6909, a precision silicon oscillator that significantly reduces peak radiated EMI and improves control of switching regulators in multiphase power supplies. The LTC6909 has 8 separate outputs, providing up to 8 rail-to-rail 50% duty cycle clock signals. These outputs can be used to enable or disable and phase-synchronize multiple switching regulators. Phase-synchronization offers a number of design advantages, including improved EMI performance, reduced input and output ripple current, and better load transient response. Using 3 logic inputs, the phase relationship between these outputs can be configured from 45° to 120°, or the outputs can be placed in a logic low or high-Z state.

A single resistor selects the output frequency from 12.5kHz to 6.67MHz. The LTC6909 also offers spread spectrum frequency modulation (SSFM), a technique that modulates the clock frequency by a pseudorandom signal. SSFM is easily enabled and offers a method for decreasing peak electromagnetic emissions. The amount of frequency spreading is fixed at $\pm 10\%$ of the center frequency, and the user selects one of 3 modulation rates.

“Incorporating multiple switching regulators into a single system is much simpler with the LTC6909,” says Doug LaPorte, design manager for Linear Technology. “The LTC6909 can be used to enable and disable a bank of regulators, to synchronize their operation for improved efficiency and offer vastly better EMI performance through SSFM.”

Fully specified over the temperature range of -40°C to 125°C, the LTC6909 offers rugged and reliable operation, as well as fast startup and low power consumption. These parts are available in a compact 16-lead MSOP package. 1000-piece pricing starts at \$2.46 each. For more information, visit www.linear.com.


Photo Caption: Spread Spectrum Oscillator with 8 Phase Synchronized Outputs

Summary of Features: LTC6909

- 8 Clock Outputs Configurable in 8 Phase Settings
- One External Resistor Sets the Output Frequency from 12.5kHz to 6.67MHz
- Optional Spread Spectrum Frequency for Improved EMI Performance
- $\pm 10\%$ Frequency Spreading
- Outputs Can Be Held Low or Muted (Hi-Z)
- 600uA Supply Current Typical ($V_+ = 5V$)
- Operates from a Single 2.7V to 5.5V Supply
- 260us Start-Up
- First Cycle Accurate
- Outputs Are High Impedance Until Frequency Settles
- -40°C to 125°C Operating Temperature Range
- MS16 Package

About Linear Technology

Linear Technology Corporation, a manufacturer of high performance linear integrated circuits, was founded in 1981, became a public company in 1986 and joined the S&P 500 index of major public companies in 2000. Linear Technology products include high performance amplifiers, comparators, voltage references, monolithic filters, linear regulators, DC-DC converters, battery chargers, data converters, communications interface circuits, RF signal conditioning circuits, uModule™ products, and many other analog functions. Applications for Linear Technology's high performance circuits include telecommunications, cellular telephones, networking products such as optical switches, notebook and desktop computers, computer peripherals, video/multimedia, industrial instrumentation, security monitoring devices, high-end consumer products such as digital cameras and MP3 players, complex medical devices, automotive electronics, factory automation, process control, and military and space systems.

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