65V, 8A (I_{OUT}), Synchronous Step-Down Silent Switcher 2 Delivers 94% Efficiency at 2MHz & Ultralow EMI/EMC Emissions

MILPITAS, CA and NORWOOD, MA – April 25, 2017 – Analog Devices, Inc., which recently acquired Linear Technology Corporation, announces the LT8645S, an 8A, 65V input capable synchronous step-down switching regulator. Its unique Silent Switcher® 2 architecture uses two internal input capacitors as well as internal BST and $INTV_{CC}$ capacitors to minimize the area of the hot loops. Combined with very well controlled switching edges and internal construction with an integral ground plane and the use of copper pillars in lieu of bond wires, the LT8645S dramatically reduces EMI/EMC emissions. This improved EMI/EMC performance is not sensitive to board layout, simplifying design and reducing risk even when using two layer PC boards. The LT8645S can easily pass the automotive CISPR25, Class 5 peak EMI limits with a 2MHz switching frequency over its entire load range. Spread spectrum frequency modulation is also available to lower EMI/EMC levels further.

The LT8645S's synchronous rectification delivers efficiency as high as 94% with a switching frequency of 2MHz. Its 3.4V to 65V input voltage range is ideal for dual cell transportation, 48V automotive and industrial applications. The internal high efficiency switches can deliver up to 8A of continuous output current to voltages as low as 0.97V. The LT8645S's Burst Mode® operation offers only 2.5µA of quiescent current, well suited for applications such as automotive/transportation always-on systems, which need to extend operating battery life. The LT8645S's unique design maintains a minimum dropout voltage of only 60mV (at1A) under all conditions, enabling it to excel in scenarios such as automotive cold-crank. Furthermore, a fast minimum on-time of only 40ns enables 2MHz constant frequency switching from a 24V input to a 2.0V output, enabling designers to optimize efficiency while avoiding critical noise-sensitive frequency bands. The LT8645S's 32-lead, 4mm x 6mm LQFN package and high switching frequency keeps external inductors and capacitors small, providing a compact, thermally efficient footprint.

The LT8645S utilizes internal top and bottom high efficiency power switches with the necessary boost diode, oscillator, control and logic circuitry integrated into a single die. Low

ripple Burst Mode operation maintains high efficiency at low output currents while keeping output ripple below 10mV_{P-P}. For applications requiring the lowest noise operation, the LT8645S can be programmed to run in pulse-skipping mode. Its switching frequency is programmable and synchronizable from 200kHz to 2.2MHz. Special design techniques and a new high speed process enable high efficiency over a wide input voltage range, and the LT8645's current mode topology enables fast transient response and excellent loop stability. Other features include internal compensation, a power good flag, output soft-start/tracking and thermal protection.

The LT8645SEV is packaged in a 4mm x 6mm LQFN package. An industrial temperature version, the LT8645SIV, is tested and guaranteed to operate from a –40°C to 125°C operating junction temperature. Pricing starts at $5.95 each for 1,000-piece quantities and both versions are available from stock. For more information, visit www.linear.com/product/LT8645S.

Photo Caption: 65V, 8A (I_{OUT}), 2.2MHz Synchronous Step-Down with Reduced EMI/EMC Emissions Well Below CISPR25, Class 5 Limits

Summary of Features: LT8645S

- Silent Switcher® 2 Architecture
  - Ultralow EMI/EMC Emissions on Any PCB
  - Eliminates PCB Layout Sensitivity
  - Internal Capacitors for V_{IN}, BST, $INTV_{CC}$ Reduce Radiated EMI
  - Spread Spectrum Frequency Modulation
- High Efficiency at High Frequency
- Up to 95% Efficiency at 1MHz
- Up to 94% Efficiency at 2MHz
- Wide Input Voltage Range: 3.4V to 65V
- 8A Maximum Continuous Output Current
- Ultralow Quiescent Current Burst Mode® Operation
  - 2.5µA I_Q Regulating $12V_{IN}$ to $3.3V_{OUT}$
  - Output Ripple < 10mV_{P-P}
- Fast Minimum Switch On-Time: 40ns
- Low Dropout Under All Conditions: 60mV at 1A
- Programmable Pulse-Skipping Mode
- Safely Tolerates Inductor Saturation in Overload
- Adjustable & Synchronizable: 200kHz to 2.2MHz
- Output Soft-Start & Tracking
- Small 32-Lead 4mm × 6mm LQFN Package

Pricing shown is for budgetary use only and may differ due to local duties, taxes, fees and exchange rates.

Analog Devices just got more Powerful. On March 10, Analog Devices acquired Linear Technology, creating the premier high performance analog company. More info at http://lt.linear.com/07c

About Analog Devices

Analog Devices (NASDAQ: ADI) is the leading global high-performance analog technology company dedicated to solving the toughest engineering challenges. We enable our customers to interpret the world around us by intelligently bridging the physical and digital with unmatched technologies that sense, measure, power, connect and interpret. Visit http://www.analog.com

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