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150V Synchronous Step-Down DC/DC Controller Eliminates External Surge Protection Devices

MILPITAS, CA & NORWOOD, MA – June 8, 2017 – Analog Devices, Inc., which recently acquired Linear Technology Corporation, announces the [LTC7801](#), a high voltage nonisolated synchronous step-down switching regulator controller in compact 24-lead packages that drives an all N-channel MOSFET power stage. Its 4V to 140V (150V abs max) input voltage range is designed to operate from a high input voltage source or from an input that has high voltage surges, eliminating the need for external surge suppression devices. The LTC7801 continues to operate at up to 100% duty cycle during input voltage dips down to 4V, making it well suited for transportation, industrial control, robotic and datacom applications.

The output voltage can be set from 0.8V to 60V at output currents up to 20A with efficiencies as high as 96%. The device draws only 40 μ A in sleep mode with the output voltage in regulation, ideal for always-on systems. An internal charge pump allows for 100% duty cycle and operation in dropout, a useful feature when powered from a battery during discharge. The LTC7801's powerful 1 Ω N-channel MOSFET gate drivers can be adjusted from 5V to 10V to enable the use of logic- or standard-level MOSFETs to maximize efficiency. To prevent high on-chip power dissipation in high input voltage applications, the LTC7801 includes an NDRV pin, which drives the gate of an optional external N-channel MOSFET acting as a low dropout linear regulator to supply IC power. The EXTV_{CC} pin permits the LTC7801 to be powered from the output of the switching regulator or other available source, reducing power dissipation and improving efficiency.

The LTC7801 operates with a selectable fixed frequency between 50kHz and 900kHz and is synchronizable to an external clock from 75kHz to 850kHz. The user can select from forced continuous operation, pulse-skipping or low ripple Burst Mode[®] operation during light loads. Its current mode architecture provides easy loop compensation, fast transient response and excellent line regulation. Current sensing is accomplished by sensing the voltage drop across the output inductor (DCR) for highest efficiency or by using an optional sense resistor. A low 80ns minimum on-time allows for high step-down ratios at high switching frequency. Current

foldback limits MOSFET heat dissipation during overload conditions. Additional features include an integrated bootstrap diode, a power good output signal, adjustable input overvoltage lockout and soft-start.

The LTC7801 is available in 4mm x 5mm QFN-24 and TSSOP-24 thermally enhanced packages. Two operating junction temperature grades are available: extended and industrial versions from -40 to 125°C and a high temp automotive version from -40°C to 150°C . The 1,000-piece price starts at \$4.20 each. For more information, visit www.linear.com/product/LTC7801.

Photo Caption: 150V Synchronous Step-Down Controller

Summary of Features: LTC7801


- Wide Input Voltage Range: 4V to 140V (150V Abs Max)
- Wide Output Voltage Range: 0.8V to 60V
- Output Current up to 20A
- Synchronous Rectification for Up to 96% Efficiency
- Low 40 μA Quiescent Current
- 100% Duty Cycle Capability
- Adjustable 5V-10V Gate Drive Voltage for Logic-Level or Standard Threshold MOSFETs
- DCR or R_{SENSE} Current Sense
- Low 80ns Minimum On-Time for High Step-Down Ratios
- Selectable Continuous, Pulse-Skipping or Low Ripple Burst Mode[®] Operation at Light Loads
- Selectable Fixed Operating Frequency from 50kHz to 900kHz
- PLL Synchronizable Operating Frequency from 75kHz to 850kHz
- Current Mode Control for Fast Transient Response & Easy Loop Compensation
- Power Good Output Signal
- Adjustable Input Overvoltage Lockout

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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