



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

MILPITAS, CA – May 23, 2016 – Linear Technology Corporation announces the [LTC3895](#), a high voltage non-isolated synchronous step-down switching regulator controller 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 LTC3895 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 20amps with efficiencies as high as 96%. This part draws only 40 $\mu$ A in sleep mode with the output voltage in regulation, ideal for always-on systems. An internal charge pump allows for 100% duty cycle operation in dropout, a useful feature when powered from a battery during discharge. The LTC3895's powerful 1 $\Omega$  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 LTC3895 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 EXT<sub>VCC</sub> pin permits the LTC3895 to be powered from the output of the switching regulator or other available source, reducing power dissipation and improving efficiency.

The LTC3895 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<sup>®</sup> operation during light loads. Its current mode architecture provides easy loop compensation, fast transient response and excellent line regulation. Current sensing is accomplished by measuring 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 a fixed 5V or 3.3V output option, integrated bootstrap diode, a power good output signal, adjustable input overvoltage lockout and soft-start.

The LTC3895 is available in a TSSOP-38 thermally enhanced package with several pins removed for high voltage spacing. Two operating junction temperature grades are available with extended and industrial versions from  $-40$  to  $125^{\circ}\text{C}$  and a high temp automotive version from  $-40^{\circ}\text{C}$  to  $150^{\circ}\text{C}$ . The 1,000-piece price starts at \$4.70 each. For more information, visit [www.linear.com/product/LTC3895](http://www.linear.com/product/LTC3895).

**Photo Caption:** 150V Synchronous Step-Down Controller


### Summary of Features: LTC3895

- Wide Input Voltage Range: 4V to 140V, (150V Abs Max)
- Wide Output Voltage Range: 0.8V to 60V
- Output Current up to 20 Amps
- Synchronous Rectification for up to 96% Efficiency
- Low 40 $\mu\text{A}$  Quiescent Current
- 100% Duty Cycle Capability
- Adjustable 5V-10V Gate Drive Voltage for Logic-Level or Standard Threshold MOSFETs
- DCR or  $R_{\text{SENSE}}$  Current Sense
- Low 80ns Minimum On-Time for High Step-Down Ratios
- Selectable Continuous, Pulse-Skipping or Low Ripple Burst Mode<sup>®</sup> 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

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## 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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