



## **60V Low $I_Q$ Dual Output Boost + Buck Synchronous DC/DC Controller Maintains Voltage Regulation in Automotive Systems**

MILPITAS, CA – March 30, 2016 – Linear Technology Corporation introduces the [LTC7813](#), a dual output (boost + buck), low quiescent current synchronous DC/DC controller. When cascaded, its independent step-up (boost) and step-down (buck) controllers regulate the output voltage from an input voltage that can be above, below, or equal to the output voltage, including during an automotive load dump or cold crank. Unlike conventional single inductor buck-boost regulators, the LTC7813's cascaded boost + buck solution provides fast transient response with continuous, non-pulsating input and output currents. It substantially reduces ripple voltage and EMI, ideal for automotive, industrial and high power battery operated systems.

The LTC7813 operates from an input voltage of 4.5V to 60V during start-up and maintains operation down to a 2.2V input after start-up. The boost converter can produce an output voltage up to 60V and the buck converter produces an output voltage ranging from 0.8V to 60V with the entire system achieving an efficiency as high as 98%. In addition, this device can be configured for Pass-Through or Wire Mode with the synchronous Boost MOSFET continuously on and the buck converter running at 99% duty cycle resulting in the input voltage being passed to the output with minimal voltage drop.

The LTC7813 can be configured for Burst Mode<sup>®</sup> operation, reducing quiescent current to 29 $\mu$ A with the buck channel on (34 $\mu$ A for both on) in sleep mode, a useful feature for preserving battery run times. The powerful 1 $\Omega$  onboard all N-channel gate drivers minimize MOSFET switching losses and provide an output current of more than 10 amps per channel, limited only by external components. The output current for each converter is sensed by monitoring the voltage drop across the inductor (DCR) or by using a separate sense resistor.

The LTC7813's current mode architecture enables a fixed selectable frequency from 50kHz to 900kHz or it can be synchronized to an external clock from 75kHz to 850kHz. Additional features include adjustable gate drive voltage, soft-start or tracking, and foldback current limit, output overvoltage protection, run control and a power good output signal.

The LTC7813 is available in a 32-lead 5mm x 5mm QFN package. The 1,000-piece price starts at \$4.82 each. For more information, visit [www.linear.com/product/LTC7813](http://www.linear.com/product/LTC7813).

**Photo Caption:** 60V Low  $I_Q$  Buck + Boost Synchronous Controller


### Summary of Features: LTC7813

- Synchronous Boost + Buck Controllers
- Wide Bias Input Voltage Range: 4.5V to 60V
- Output Remains in Regulation Through Input Dips (Cold Crank) Down to 2.2V
- Boost Output Voltage Up to 60V
- Buck Output Voltage Range: 0.8V to 60V
- Pass-Through or Wire Mode
- When Cascaded, Allows  $V_{IN}$  Above, Below, or Equal to Regulated  $V_{OUT}$
- Low Input and Output Ripple
- Low EMI
- Fast Output Transient Response
- High Light-Load Efficiency
- Low Operating  $I_Q$ : 34 $\mu$ A (Both Channels On)
- Low Operating  $I_Q$ : 29 $\mu$ A (Buck Channel On)
- $R_{SENSE}$  or Lossless DCR Current Sensing
- Phase-Lockable Frequency (75kHz to 850kHz)

The USA list pricing shown is for budgetary use only. International prices may differ due to local duties, taxes, fees and exchange rates.

## 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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