



28 μ A I_Q Dual Output, Boost + Buck Synchronous DC/DC Controller Maintains Regulation in Automotive Systems

MILPITAS, CA – October 21, 2015 – Linear Technology Corporation introduces the [LTC7812](#), 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, maintaining output regulation during cold crank and load dump conditions. Unlike conventional single inductor buck-boost regulators, the LTC7812's cascaded boost + buck solution provides fast transient response with continuous, non-pulsating, input and output currents, substantially reducing ripple voltage and electromagnetic interference (EMI), making it ideal for automotive, industrial and high power battery operated systems.

The LTC7812 operates from an input voltage of 4.5V to 38V and maintains operation down to 2.5V after start-up. The synchronous boost converter can produce output voltages up to 60V and can run at 0% duty cycle (synchronous switch ON) to pass through the input voltage when required for maximum efficiency. The step-down converter can produce output voltages from 0.8V to 24V with an efficiency as high as 98%. In addition, the LTC7812 can be configured for Burst Mode[®] operation, reducing quiescent current to 28 μ A with the buck channel on (33 μ A for both channels on) in sleep mode, a useful feature for preserving battery run time. The powerful 1 Ω 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 LTC7812's constant frequency current mode architecture enables a selectable frequency from 50kHz to 900kHz or it can be synchronized to an external clock from 75kHz to 850kHz. Additional features include adjustable soft-start or tracking, foldback current limit, output overvoltage protection, run control and a power good output voltage signal.

The LTC7812 is available in a 32-lead 5mm x 5mm QFN package. The 1,000-piece price starts at \$4.00 each. For more information, visit www.linear.com/product/LTC7812.

Photo Caption: Low I_Q Buck + Boost Synchronous Controller

Summary of Features: LTC7812

- Synchronous Boost + Buck Controllers
- Wide Bias Input Voltage Range: 4.5V to 38V
- Output Remains in Regulation Through Input Dips (Cold Crank) Down to 2.5V
- Boost Output Voltage Up to 60V
- Buck Output Voltage Range: 0.8V to 24V
- When Cascaded, Allows V_{IN} Above, Below or Equal to Regulated V_{OUT}
- Low Input & Output Ripple
- Low EMI
- Fast Output Transient Response
- High Light Load Efficiency
- Low Operating IQ: 33 μ A (Both Channels On)
- Low Operating IQ: 28 μ 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, μ Module[®] subsystems, and wireless sensor network products. For more information, visit www.linear.com

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