



300mV Start-Up, 1.6 μ A I_Q Synchronous Buck-Boost DC/DC Converter with Integrated PowerPath for Low Power Wireless Sensor Applications

MILPITAS, CA – December 14, 2015 – Linear Technology announces the [LTC3106](#), a highly integrated, 1.6 μ A quiescent current 300mV start-up buck-boost DC/DC converter with PowerPath™ management, optimized for multisource, low power systems. The LTC3106 is ideal for powering low power wireless sensors from rechargeable or primary batteries supplemented by energy harvesting. The LTC3106 incorporates maximum power point control (MPPC) making it compatible with common high impedance power sources, including photovoltaic cells, thermoelectric generators (TEGs) and fuel cells.

The LTC3106 operates over an input voltage range of 300mV to 5.5V from the primary power source when a backup source, typically a battery, is present. The LTC3106 is compatible with both primary and rechargeable batteries connected to the backup power input. Without a backup source, it operates from 850mV to 5.5V and down to 300mV after start-up. If the primary power source is unavailable, the LTC3106 seamlessly switches to the backup power source. The primary power source, which can be derived from harvested energy, can optionally trickle charge the battery whenever surplus energy is available as well as providing power to the load.

The LTC3106 provides 300mA steady state and 650mA peak load current at up to 92% efficiency. Its Burst Mode® operation offers a quiescent current of only 1.6 μ A, further optimizing converter efficiency over all operating conditions. Zero power “shelf mode” ensures that the backup battery will remain charged if left connected to the LTC3106 for an extended time. An accurate RUN pin and a dedicated MPP pin are provided for input voltage control. Either can be user programmed to set the input source MPP, maximizing the energy that can be extracted from the input source. The LTC3106 is ideal for powering wireless sensors and data acquisition applications. Surplus or ambient energy can be harvested and then used to supplement or replace traditional wired or battery power, resulting in significant periodic maintenance cost savings for the user. Typically, such applications, including wireless sensors, require very low average power, but require periodic pulses of higher load current. For example for transmission bursts.

Additional features include a 90mA peak current limit setting for lower power applications, user-selectable overvoltage and undervoltage protection for a rechargeable battery, thermal shutdown, preset selectable output voltages and a power good output voltage signal. The combination of the LTC3106's small package options and minimal external components ensures a very compact solution footprint.

The LTC3106 is available in 20-lead 3mm x 4mm QFN and TSSOP-20 packages. Prices start at \$2.94 each in 1,000-piece quantities. Both are available from stock. For more information, visit www.linear.com/product/LTC3106.

Photo Caption: Low V_{IN} Buck-Boost DC/DC Converter with MPCC

Summary of Features: LTC3106

- Dual Input Low Voltage Buck-Boost DC/DC Converter
- Integrated PowerPath Manager
- Maximum Power Point Control for High Impedance Sources
- V_{IN} Range (With Backup Source): 300mV to 5.5V
- V_{IN} Range (Without Backup Source): 850mV to 5.5V, Maintains Operation Down to 300mV After Start-Up
- Compatible with Primary or Rechargeable Backup Batteries
- Digitally Selectable Output Voltages
- Burst Mode[®] Operation: $I_Q = 1.6\mu$ A
- Battery Backup Trickle Charger
- Shelf Mode Disconnect Function to Preserve Battery Shelf Life
- Accurate Turn-On Threshold
- Power Good Indicator
- Selectable Peak Current Limit 90mA/650mA
- 20-Lead 3mm x 4mm QFN or TSSOP-20 Package

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, µModule[®] subsystems, and wireless sensor network products. For more information, visit www.linear.com

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