



## **Ultralow Voltage Step-Up Energy Harvester & Power Manager IC Extends Useful Life of Primary Batteries in WSNs**

MILPITAS, CA – February 27, 2014 – Linear Technology announces the [LTC3107](#), a highly integrated DC/DC converter designed to extend the life of a primary battery in low power wireless system networks (WSNs). The LTC3107 combines energy harvesting and power management capability with a primary battery cell to extend the battery's usable lifetime. The LTC3107 harvests energy from thermoelectric generators (TEGs) and thermopiles when these sources are available, storing excess power in a storage capacitor and seamlessly transitioning to the primary cell to power a wireless sensor node when harvested power is unavailable.

The LTC3107's internal boost converter, combined with a small step-up transformer, harvests energy from input voltages as low as 20mV, commonly found from sources such as TEGs and thermopiles, and delivers an output which tracks the battery voltage. An additional 2.2V LDO output provides power to an external microprocessor. If harvested energy is not available, the system is powered directly from the battery, requiring only 6μA. The combination of a small step-up transformer, 3mm x 3mm package and minimal external components ensures a highly compact solution footprint.

The LTC3107 is designed to use the primary battery to start up the IC and power  $V_{OUT}$  and the LDO with or without any available power from the energy harvesting source. When the energy harvesting source is available, the LTC3107 seamlessly transitions to run only from the energy harvesting source with only 80nA of quiescent current drawn from the primary battery. If the energy harvesting source goes away or if the load exceeds the energy harvested, the LTC3107

transitions to the primary battery to supply the  $V_{OUT}$  and VLDO loads. The BATT\_OFF indicator can be used to track the battery usage.

The LTC3107EDD is offered in a 3mm x 3mm 10-lead DFN package, priced starting at \$2.95 each for 1,000-piece quantities. An industrial grade version, the LTC3107IDD, is guaranteed to operate over the -40°C to 125°C operating junction temperature range and is priced starting at \$3.45 each in 1,000-piece quantities. Both versions are available from stock.

For more information, visit [www.linear.com/product/LTC3107](http://www.linear.com/product/LTC3107)


**Photo Caption:** Ultralow Voltage Step-Up Energy Harvester & Power Manager IC Primary Battery Extender

### Summary of Features: LTC3107

- Thermal Energy Harvesting Assisted Power Management System
- $V_{OUT}$  Tracks the Primary Battery Voltage
- 2.2V LDO Output
- Reserve Energy Output, Clamped to 4.3V
- Operates from Inputs as Low as 20mV
- Battery In-Use Indicator (BAT\_OFF)
- $I_Q$  from Battery:
  - o 80nA When Energy Harvesting
  - o 6µA with No Energy Harvesting
- Standard Compact Step-Up Transformer
- Small, Thermally Enhanced 10-Lead 3mm × 3mm DFN Package

## 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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