



**40V, 1A Synchronous Buck Converter Can Step 36V_{IN}
Down to 3.3V_{OUT} with a 2MHz Switching Frequency**

MILPITAS, CA – January 7, 2013 – Linear Technology announces the [LTC3646](#), a 40V input capable synchronous buck converter that can deliver up to 1A of continuous output current from a 3mm x 4mm DFN-14 (or thermally enhanced MSOP16) package. It operates from an input voltage range of 4V to 40V, making it ideal for automotive and industrial applications that require high voltage input capability, high efficiency and fast switching frequencies for small solution footprints. The LTC3646 utilizes a unique controlled on-time architecture that can step inputs as high as 36V down to 3.3V with switching frequencies in excess of 2MHz, keeping switching noise out of critical frequency bands, such as AM radio. Furthermore, it can deliver very fast transient response even with duty cycles less than 10%. Its internal synchronous rectification delivers efficiencies as high as 95% and requires only 140µA of quiescent current, maximizing battery run time. The combination of its 3mm x 4mm DFN package (or MSOP-16E) and tiny externals, offers a very compact solution footprint for a wide array of high voltage applications.

The LTC3646 utilizes internal high-side and synchronous power switches to deliver high efficiency outputs up to 1A. Its internal switching frequency can be programmed between 200kHz and 3.0MHz or synchronized to an external clock. The combination of high efficiency and only 140µA of quiescent current offers high efficiency over a very broad load range. For noise sensitive applications, the LTC3646 can be used in forced continuous operation to minimize voltage ripple.

The standard LTC3646 offers an output range of 2.0V to 30V whereas the LTC3646-1 offers outputs from 0.6V to 15V. Both versions offer additional features including internal soft-start, internal compensation and robust short-circuit protection.

Pricing for both packages, the LTC3646EDE/-1 and LTC3646EMSE/-1, respectively, starts at \$2.85 each. Extended temperature versions (I grades), namely the LTC3646IDE/-1 and LTC3646IMSE/-1, are available with pricing starting at \$3.14 each. Finally, high temperature (H grade) options, namely the LTC3646HDE/-1 and LTC3646HMSE/-1 are available with pricing starting at \$3.39 each. All pricing is in 1,000-piece quantities and all versions are available from stock. For more information, visit www.linear.com/product/LTC3646


Photo Caption: 40V, 1A Synchronous Buck Converter Delivers 95% Efficiency

Summary of Features: LTC3646/-1

- Wide Input Voltage Range: 4.0V to 40V (45V Absolute Maximum)
- 1A Guaranteed Output Current
- High Efficiency: Up to 95%
- Wide Output Voltage Range
 - LTC3646: 2.0V to 30V
 - LTC3646-1: 0.6V to 15V
- 2MHz Constant Frequency Operation with Duty Cycles Down to 6%
- $\pm 1\%$ Accurate Reference Voltage
- Internal or External Compensation
- Switching Frequency Adjustable & Synchronizable: 200kHz to 3MHz
- Selectable High Efficiency Burst Mode[®] Operation or Forced Continuous Mode
- 14 Lead 3mm × 4mm DFN or Thermally Enhanced 16-Lead MSOP Packages

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 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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