



Dual Input, 2.5A Synchronous Step-Down DC/DC Converter Delivers 95% Efficiency from 2.4V to 42V Inputs with Lossless PowerPath Control

MILPITAS, CA – October 4, 2016 – Linear Technology Corporation announces the [LTC3126](#), a 2.5A, 42V synchronous step-down switching regulator with an integrated dual input PowerPath™ control. A unique power stage topology enables operation from either of two independent power sources, with seamless, internally controlled transitions between inputs to ensure a stable output voltage during hot-plug and power source disconnect events. Internal power switches and synchronous rectification combine to deliver 95% efficiency over a wide voltage range, enable a fast transient response and ensure excellent loop stability while switching at 2MHz. This allows designers to avoid critical noise-sensitive frequency bands such as AM radio, while providing a highly compact solution footprint. The LTC3126's current mode topology is internally compensated, eliminating the need for external compensation components. Burst Mode® operation maintains high efficiency at low output currents while keeping peak-to-peak output ripple below 1%. Further, it features a quiescent current under 2µA in no-load standby conditions, ideal for always-on systems and portable applications. The LTC3126's wide 2.4V to 42V input and 0.818V to V_{IN} output voltage ranges are well suited for automotive applications which must regulate through cold-crank, load dump and stop-start scenarios. Other key applications include portable industrial/communications test equipment, battery and supercapacitor backup power systems, automotive power with battery backup, uninterruptible power supplies, and systems powered by unregulated wall adapters or single to multicell stacks of most battery chemistries.

The LTC3126's integrated lossless PowerPath circuitry supports seamless operation from two separate input power sources. Pin-selectable ideal diode-OR and priority input modes with user-programmable undervoltage lockout thresholds provide full control over the transition between the input power sources. The fast, automatic switchover provided by this internal PowerPath eliminates the need for hold-up capacitors and minimizes disturbances on the output

rail. An active input channel indicator and independent input and output power good signals provide complete feedback of the power system status. Other features include 1 μ A current in shutdown, internal soft-start and thermal protection.

The LTC3126 is housed in thermally enhanced 28-lead TSSOP and 4mm x 5mm QFN packages. These packages, when combined with the device's high switching frequency that enables small external inductors and capacitors, provide a compact, thermally efficient footprint. E-and I-grade devices both feature an operating junction temperature of -40°C to 125°C . The H-grade high reliability version is offered in TSSOP only and is tested and guaranteed to operate from -40°C to 150°C operating junction temperature. Pricing starts at \$6.25 each in 1000-piece quantities. All versions are available from stock. For more information, visit www.linear.com/product/LTC3126.

Photo Caption: Dual Input, 42V, 2.5A, Synchronous Step-Down DC/DC Converter Operates from 2.4V with PowerPath Control

Summary of Features: LTC3126

- Seamless, Automatic Transition Between Two Input Power Sources
- Wide Input Voltage Range: 2.4V to 42V
- Wide Output Voltage Range: 0.818V to V_{IN}
- Up to 2.5A Continuous Output Current
- Pin-Selectable Priority & Ideal Diode-OR Modes
- Burst Mode[®] Operation, $I_{\text{Q}} = 2\mu\text{A}$
- 95% Efficiency at 1A, $V_{\text{IN}} = 12\text{V}$, $V_{\text{OUT}} = 5\text{V}$
- 1 μ A Current in Shutdown
- Programmable Input UVLO Thresholds
- Input Valid, Priority Channel & PGOOD Indicators
- 200kHz to 2.2MHz Fixed Frequency PWM
- Synchronizable to an External Clock
- Current Mode Control with 60ns Minimum On-Time
- Minimal External Components
- Thermally Enhanced 28-Lead 4mm \times 5mm QFN & 28-Lead TSSOP Packages

Pricing shown is for budgetary use only and 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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