



42V Input with 55V Transient Protection, 2MHz Dual Channel Step-Down Regulator with Power-On Reset & Watchdog Timer

MILPITAS, CA – August 16, 2011 – Linear Technology Corporation announces the [LT3641](#), a dual channel, current mode step-down switching regulator with a power-on reset and watchdog timer. Its 4V to 42V input voltage range with 55V transient capability makes it ideal for load dump and cold crank conditions commonly found in automotive applications which require constant output regulation even with input transients as high as 55V. The LT3641 uses a unique dual channel design with a high input voltage ($4V_{IN}$ to $42V_{IN}$, $55V_{IN}$ transient capability) nonsynchronous channel, which delivers 1.3A of output current combined with a lower input voltage ($2.5V_{IN}$ to $5.5V_{IN}$) synchronous channel, delivering up to 1.1A of continuous output current. Although the part allows separate inputs for each channel, most applications will use the output of the high voltage channel to power the lower voltage channel, offering dual outputs while optimizing efficiency and switching frequency. For example, using a nominal 12V input and a 2MHz switching frequency, the LT3641 can deliver a 3.3V output at 600mA with 85% efficiency via its high voltage channel and a 1.8V output at 800mA with 90% secondary conversion efficiency via its lower voltage channel.

The integrated microprocessor supervisor functions support high reliability applications such as automotive electronic control units. The LT3641 includes one power-on reset timer for each channel and one common watchdog timer. The reset and watchdog timeout periods are independently adjustable using external capacitors. Tight accuracy specifications and glitch immunity ensure reliable reset operation of a system without false triggering. The LT3641 implements a windowed watchdog timer monitoring for WDI falling edges grouped too close together or too far apart.

The LT3641's switching frequency is user programmable from 350kHz to 2.5MHz, enabling the designer to optimize efficiency while avoiding critical noise-sensitive frequency bands. Similarly, its low minimum on-time enables it to offer high switching frequencies even

with high step-down ratios. For example, even with inputs as high as 35V, it can deliver 3.3V and 1.1V outputs using a 2MHz switching frequency, allowing it to avoid critical frequency bands such as AM radio while minimizing the size of external components. The LT3641 can deliver output voltages as low as 1.26V on its high voltage channel and down to 0.6V on its low voltage channel, enabling it to power the latest generation of microprocessors. Its low ripple Burst Mode[®] operation reduces quiescent current to only 290 μ A with less than 15mV_{PK-PK} of output ripple, making it well suited for applications such as automotive or telecom systems, which demand always-on operation and optimum battery life. The LT3641's 4mm x 5mm QFN-28 (or TSSOP-28) package and high switching frequency keeps external inductors and capacitors small, providing a very compact thermally efficient footprint.

The LT3641EUFD and LT3641EFE are priced starting at \$3.58 each for 1,000 piece quantities. The LT3641IUFD and LT3641IFE are tested and guaranteed to operate from a -40°C to 125°C operating junction temperature and are priced at \$4.02 each in 1,000 piece quantities. All versions are available from stock. For more information, visit

www.linear.com/product/LT3641


Photo Caption: 42V (55V Transient Protection), Dual Step-Down Regulator with Power-On Reset & Watchdog Timer

Summary of Features: LT3641

- High Voltage Buck Regulator:
 - 4V to 42V Operating Range, with Transient Protection to 55V
 - 1.3A Output Current
- Low Voltage Synchronous Buck Regulator:
 - 2.5V to 5.5V Input Voltage Range
 - 1.1A Output Current
- Synchronizable, Adjustable 350kHz to 2.5MHz Switching Frequency
- Programmable Power-On Reset Timer
- Programmable Window Mode Watchdog Timer
- Typical Quiescent Current: $I_Q < 290\mu\text{A}$
- Short-Circuit Robust
- Programmable Soft-Start
- Low Shutdown Current: $I_Q < 1\mu\text{A}$
- Thermal Shutdown
- Available in Thermally Enhanced 28-Lead (4mm x 5mm) QFN & 28-Lead TSSOP 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, and μ Module[®] subsystems.

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