

High Efficiency Step-Down Converter Provides Power for IEEE1394 "FireWire"

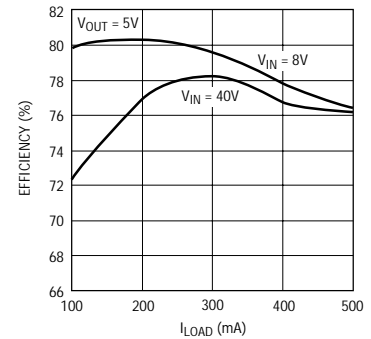
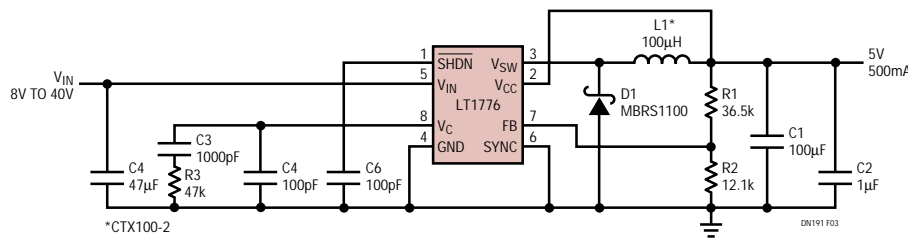
Faster microprocessors, more memory and better graphics have fueled the rapid growth of the personal computer industry. However, many of the peripheral connections use older interface technologies that are starting to limit performance and growth for future applications.

The IEEE1394 High Performance Serial Bus ("FireWire") addresses these interface issues by providing a flexible and cost-effective way to share real time information among data-intensive applications, such as digital camcorders, digital VCRs and digital video disks (DVDs). This serial bus supports data transfer rates of 100Mbps, 200Mbps and 400Mbps. It also provides unregulated 8VDC to 40VDC at up to 1.5A.

This circuit produces a regulated 5V at 500mA from a FireWire input (8V to 40V) using the **LT1776**, a high voltage, high efficiency buck converter IC.

Current mode control offers excellent dynamic input supply rejection and overcurrent protection. The SO-8 package and 200kHz switching frequency help minimize PC board area requirements. The part also has a SYNC pin, used to synchronize the internal oscillator to an external clock, which can be anywhere from 250kHz to 400kHz.

The internal control circuitry draws power from the V_{CC} pin and the **LT1776** switch circuitry maintains a rapid rise time at high loads. At light loads, it slows down the rise time to avoid pulse skipping, thus maintaining constant frequency from heavy to light load. This helps significantly in reducing output ripple voltage and switching noise in the audio frequency spectrum.



Source: Design Note 191
www.linear-tech.com/distrib.html