

Automotive Dual-Phase Hybrid Step-Down Synchronous Controller with Load Current

Monitor

FEATURES

- ▶ 98.4% Peak Efficiency in 48V to 12V Application
- ▶ 97.7% Full Load Efficiency at 1kW Output Power
- ► Wide V_{IN} Range: 19V to 90V (100V ABS Max)
- ► Output Voltage Up to 35V
- ► 10V Gate Drive for Optimal Efficiency
- Output Current Monitor
- ► EXTV_{CC} Input for Improved Die Temperature
- ▶ ±1.25% Output Voltage Accuracy
- ► R_{SENSE} or Inductor DCR Current Sensing
- ▶ Phase-Lockable Fixed Frequency 150kHz to 1.5MHz
- ► CLKOUT Pin for Multi-ICs Parallel Operation
- Soft Switching and Low EMI Performance
- Overtemperature and OC/OV Protection
- 46-Lead (48-Lead Body) 7mm x 7mm Plastic Side-Solderable OFN
- ► AEC-Q100 Qualified for Automotive Applications

APPLICATIONS

- Automotive
- ► Intermediate Bus Converters
- ► High Current Distributed Power Systems
- ► Telecom, Datacom, and Storage Systems

GENERAL DESCRIPTION

The LTC7822-1 uses an ADI-proprietary architecture that merges a soft switching charge pump topology with a dual-phase interleaved synchronous step-down converter to provide superior efficiency and low EMI performance compared to traditional switching architectures. In a typical 48V to 12V application, up to 98.4% efficiency is attainable with the LTC7822-1.

With reduced switching losses, the hybrid converter allows higher switching frequency without sacrificing much efficiency. The proprietary dual-phase topology greatly reduces the capacitor number in the charge pump stage compared to the single-phase hybrid converters. LTC7822-1 supports both standard discrete inductors and coupled inductors.

The LTC7822-1 can be easily paralleled to provide higher output current with its accurate current sharing capability and frequency synchronization function. Current monitor provides an analog voltage reflecting the load current.

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TYPICAL APPLICATION

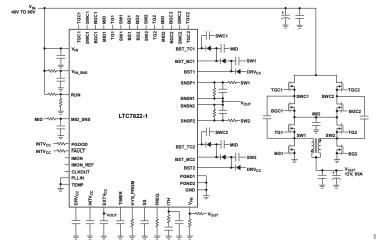


Figure 1. 12V 85A Step-Down Converter

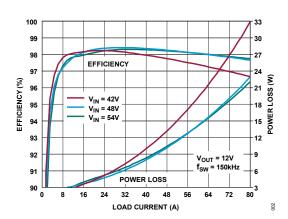


Figure 2. Efficiency and Power Loss vs. Load

Current for Vout = 12V

Data Sheet LTC7822-1

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analog.com Rev. Sp0 2 of 2