MAX20471

Low-Voltage Synchronous Boost Converter

Industry's Only Automotive Synchronous Boost Converter with Up to 1A of Output Current and True Shutdown and Active-Low RESET Output

NDA Required. Request Full Data Sheet and Software

Description

Create a design and simulate using EE-Sim® tools: MAX20471

The MAX20471, MAX20472, and MAX20473 are high-efficiency, low-voltage DC-DC converters that boost a 3.0V to 4.0V input supply to between 3.8V and 5.25V (factory configurable) at 500mA, 1A, or 2A. The boost converters achieve ±1.5% output error over load, line, and temperature ranges.

The ICs feature a 2.2MHz fixed-frequency, forced pulse-width modulation (FPWM) mode for better noise immunity and load-transient response, as well as a pulse-frequency modulation (skip) mode for increased efficiency during light-load operation. The 2.2MHz frequency operation enables the use of all-ceramic capacitors and minimizes external components. The programmable spread-spectrum frequency modulation minimizes radiated electromagnetic emissions. Integrated low $R_{DS(ON)}$ switches improve efficiency at heavy loads, which make the layout a much simpler task with respect to discrete solutions.

Other features of the parts include true output shutdown, soft-start ramping, overcurrent limiting, and overtemperature protection.

Applications/Uses

- Automotive CAN Transceivers
- Automotive Point of Load

Key Features

- Synchronous Boost Converter
  - 3.8V to 5.25V Output in 50mV Steps
  - 500mA, 1A, and 2A Output Versions
- 3.0V to 4.0V Operating Supply Voltage
- True Output Shutdown
- 2.2MHz Switching Operation
- Open-Drain Reset Output Pin (Active-Low RESET)
- Spread-Spectrum Enable Pin (EN)

- High Precision
  - ±1.5% Output-Voltage Accuracy
  - 93V ±2% Undervoltage Monitoring
  - 107V ±2% Overvoltage Monitoring
  - Good Load-Transient Performance

- Robust for the Automotive Environment
  - Current-Mode Control, Forced-PWM, and Skip Operation
  - Overtemperature and Overcurrent Protection
  - 12-Pin (3mm × 3mm) TDFN
  - 8-Pin (0.150”) SOIC (MAX20471 Only)
  - -40°C to +125°C Automotive Temperature Range