MAX20416

2.2MHz Dual-Output, Low-Voltage Step-Down Converters

Small, Dual-Output, Low-Voltage Step-Down Converters

Description

Create a design and simulate using EE-Sim® tools: MAX20416

The MAX20416 is a high-efficiency, dual-output, low- voltage DC-DC converter. The synchronous step-down converters operate from a 3.0V to 5.5V input voltage range and provide a 0.8V to 3.8V output voltage range at up to 3A. The buck converters achieve ±1.5% output error over load, line, and temperature range.

The IC features a 2.2MHz fixed-frequency pulse-width modulation (PWM) mode for better noise immunity and load-transient response, and a pulse-frequency modulation mode (skip) for increased efficiency during light-load operation. The 2.2MHz frequency operation allows for use of all-ceramic capacitors, minimizing the external component footprint. Programmable spread-spectrum-frequency modulation minimizes radiated electromagnetic emissions. Integrated low $R_{DS(ON)}$ switches improve efficiency at heavy loads and make the layout a much simpler task with respect to discrete solutions.

The IC is offered with factory-preset or resistor-adjustable output voltages. Additional features include soft-start ramping, overcurrent limiting, and overtemperature protection. The MAX20416 is available in a lead(Pb)-free, 24-pin TQFN package (see the Ordering Information/Selector Guide for available options).

Key Features

- Multiple Functions for Small Size
  - Dual Synchronous Buck Converters Up to 3A
    - Fixed Output Voltage from 0.8V to 3.8V
    - Resistor-Adjustable Output Voltage
  - 3.0V to 5.5V Operating Supply Voltage
  - 2.2MHz Operation
  - 93% ±3% Undervoltage Threshold
  - 107% ±3% Overvoltage Threshold
  - Individual EN Inputs and Active-Low RESET_ Outputs

- High Precision
  - ±1.5% Output-Voltage Accuracy
  - Good Load-Transient Performance for Buck Converters
- Robust for the Automotive Environment
  - Current-Mode, Forced-PWM, and Skip Operation
  - Overtemperature and Short-Circuit Protection
  - 4mm × 4mm 24-Pin TQFN
  - -40°C to +125°C Automotive Temperature Range

Applications/Uses

- ADAS
- Infotainment
- SOC Power