SC457
Single-Phase Single Chip Vcore Power Supply

POWER MANAGEMENT

Description

The SC457 is a single phase, high performance PWM controller designed to power advanced processors. On-chip support is provided for VID on-the-fly transitions and active voltage positioning.

The SC457 implements hysteretic control technology providing the fastest possible transient response while avoiding the stability issues inherent to classical PWM controllers. Eliminating the sense resistors reduces costs and PCB area while increasing system efficiency. Integrated SmartDriver™ technology initially turns on the high-side driver with soft drive to reduce ringing, EMI, and capacitive turn-on of the low side MOSFET, while increasing overall efficiency.

Hysteretic operation adaptively reduces the SC457 switching frequency at light loads. Combined with an automatic power-save mode which prevents negative current flow in the low-side FET, system efficiency is significantly enhanced during light loading conditions.

A 7-bit DAC, accurate to 0.85%, sets the output voltage reference and implements the 0.300V to 1.500V range required by the processor. The DAC slew rate is externally programmed to minimize transient currents and audible noise. True differential remote sensing provides accurate point-of-load regulation at the processor die. Other features include programmable soft-start, open-drain PG_DEL and PG# outputs, dynamic current sharing, over-voltage and programmable over-current protection. The SC457 is available in a space-saving 32-pin MLP package.

Features

- Single-Phase Solution with Integrated Drivers
- Hysteretic Control for Fast Transient Response
- Active Voltage Positioning
- True Differential Remote (die) Sensing
- On-Chip Support for all Power Management Features
- Programmable Soft-Start and DAC Slew Control
- Programmable OCP Threshold
- Supports all Ceramic Decoupling Solutions
- 32-Pin MLP (5x5) - product is WEEE and RoHS compliant
- Default 1.2V Boot Voltage
- Soft OFF State

Applications

- Notebook PCs
- Embedded Applications
- Graphics and other Processor Cores