



Quick-PWM Master Controllers for Voltage-Positioned CPU Core Power Supplies (IMVP-IV)

General Description

The MAX1907A/MAX1981A are single-phase, Quick-PWM™ master controllers for IMVP-IV™ CPU core supplies. Multi-phase operation is achieved using a Quick-PWM slave controller (MAX1980). Multiphase operation reduces input ripple current requirements and output voltage ripple while easing component selection and layout difficulties. The MAX1907A/MAX1981A include active voltage positioning with adjustable gain and offset, reducing power dissipation and bulk output capacitance requirements.

The MAX1907A/MAX1981A are intended for two different notebook CPU core applications: either bucking down the battery directly, or 5V system supply to create the core voltage. The single-stage conversion method allows these devices to directly step down high-voltage batteries for the highest possible efficiency. Alternatively, two-stage conversion (stepping down the 5V system supply instead of the battery) at higher switching frequency provides the minimum possible physical size.

The MAX1907A/MAX1981A meet the IMVP-IV specifications and include logic to interface with the CPU power good signals from the VCCP and VCCMCH rails within the system. The regulator features power-up sequencing, automatically ramping up to the Intel-specified boot voltage. The MAX1907A/MAX1981A feature independent four-level logic inputs for setting the boot voltage (B0–B2) and the suspend voltage (S0–S2).

The MAX1907A/MAX1981A include output undervoltage protection, thermal protection, and system power-OK (SYSPOK) input/output. When any of these protection features detect a fault, the MAX1907A/MAX1981A immediately shut down. Additionally, the MAX1907A includes overvoltage protection.

The MAX1907A/MAX1981A are available in a thin 40-pin QFN package.

Applications

IMVP-IV™ Notebook Computers
Single-Phase CPU Core Supply
Multiphase CPU Core Supply
Voltage-Positioned Step-Down Converters
Servers/Desktop Computers

Typical Operating Circuit appears at end of data sheet.

Quick-PWM is a trademark of Maxim Integrated Products, Inc.
IMVP-IV is a trademark of Intel Corp.

Features

- ♦ Quick-PWM Master Controllers
- ♦ Multiphase Conversion with Slave Controller (MAX1980)
- ♦ Active Voltage Positioning with Adjustable Gain and Offset
- ♦ Adjustable Slew Rate Control
- ♦ $\pm 0.75\%$ V_{OUT} Accuracy Over Line, Load, and Temperature
- ♦ 6-Bit On-Board DAC (16mV Increments)
- ♦ 0.700V to 1.708V Output Adjust Range
- ♦ Selectable 200kHz/300kHz/550kHz/1000kHz Switching Frequency
- ♦ 2V to 28V Battery Input Voltage Range
- ♦ Drive Large Synchronous Rectifier MOSFETs
- ♦ Output Overvoltage Protection (MAX1907A Only)
- ♦ Undervoltage and Thermal Fault Protection
- ♦ Power Sequencing and Selectable Boot Voltage
- ♦ Low-Profile 40-Pin Thin QFN, 6mm × 6mm Package

Ordering Information

PART	TEMP RANGE	PIN-PACKAGE
MAX1907AETL	-40°C to +100°C	40-QFN Thin 6mm x 6mm
MAX1981AETL	-40°C to +100°C	40-QFN Thin 6mm x 6mm

Pin Configuration

