

ADVANCE INFORMATION

All information in this data sheet is preliminary and subject to change.

8/97



High-Speed, Step-Down Controllers with Synchronous Rectification for CPU Power

General Description

The MAX1638/MAX1639 are ultra-high-performance, step-down DC-DC controllers for CPU power in high-end computer systems. Designed for demanding applications in which output voltage precision and good transient response are critical for proper operation, they deliver over 35A from 1.1V to 3.5V with $\pm 1\%$ total accuracy from a +5V $\pm 10\%$ supply. Excellent dynamic response corrects output transients caused by the latest dynamically clocked CPUs. These controllers achieve over 90% efficiency by using synchronous rectification. Flying-capacitor bootstrap circuitry drives inexpensive, external N-channel MOSFETs.

The switching frequency is pin selectable for 300kHz, 600kHz, or 1MHz. High switching frequencies allow the use of a small, surface-mount inductor and decrease output filter capacitor requirements, reducing board area and system cost.

The MAX1638 is available in a 24-pin SSOP and offers additional features such as a digitally programmable output; adjustable transient response; selectable 0.5%, 1%, or 2% AC load regulation; and gate drive for an instant current-boost MOSFET. The MAX1639 is resistor adjustable and comes in a 16-pin narrow SO package. Other features in both controllers include internal digital soft-start, a power-good output, and a 3.5V $\pm 1\%$ reference output.

Applications

Pentium Pro™, Pentium II™, PowerPC™, Alpha™, and K6™ Systems
Desktop Computers
LAN Servers
Industrial Computers
GTL Bus Termination

Features

- ♦ Better than $\pm 1\%$ Output Accuracy Over Line and Load
- ♦ Intel VRM-Specification Compatible
- ♦ 90% Efficiency
- ♦ Excellent Transient Response
- ♦ Over 35A Output Current
- ♦ Digitally Programmable Output from 1.3V to 3.5V (MAX1638)
- ♦ Resistor-Adjustable Output down to 1.1V (MAX1639)
- ♦ Remote Sensing
- ♦ Adjustable AC-Loop Gain (MAX1638)
- ♦ GlitchCatcher™ Circuit for Fast Load-Transient Response (MAX1638)
- ♦ Power-Good (PWROK) Output
- ♦ Current-Mode Control
- ♦ Digital Soft-Start
- ♦ 2A Gate-Drive Outputs
- ♦ Current-Limited Output
- ♦ Switching Frequency to 1MHz

Ordering Information

PART	TEMP. RANGE	PIN-PACKAGE
MAX1638EAG	-40°C to +85°C	24 SSOP
MAX1638EEG	-40°C to +85°C	24 QSOP
MAX1639ESE	-40°C to +85°C	16 Narrow SO

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PowerPC is a trademark of IBM Corp.

Alpha is a trademark of Digital Equipment Corp.

K6 is a trademark of Advanced Micro Devices.

GlitchCatcher is a trademark of Maxim Integrated Products.



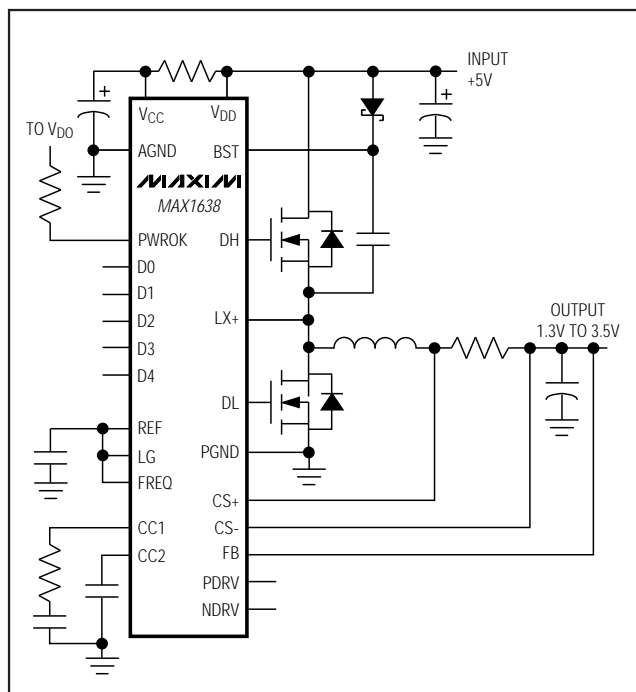
Maxim Integrated Products 4-185

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For small orders, phone 408-737-7600 ext. 3468.

MAX1638/MAX1639

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Typical Operating Circuit



Pin Configuration

