



March 2006

FAN5031

8-Bit Programmable, 2 to 4 Phase, Synchronous Buck Controller

Features

- Selectable 2, 3, or 4 phase operation at up to 1MHz per phase
- $\pm 7.7\text{mV}$ worst-case differential sensing error over temperature
- Active current balancing between the output phases
- Power good and Crowbar blanking supports on-the-fly VID code changes
- 0.5V to 1.6V output
- Fully compliant to both Intel's VR10 and VR11 specifications
- Selectable VR10 extended (7 bit) and VR11 (8 bit) VID tables
- Programmable soft start ramp
- Programmable short circuit protection and latch-off delay

Applications

- Desktop PC/Server processor power supplies for existing and next generation Intel processors
- VRM modules

Description

The FAN5031 device is a multi-phase buck switching regulator controller, that is optimized to convert a 12V input supply to the processor core voltage required by high performance Intel processors. It has an internal 8-bit DAC that converts a digital voltage identification (VID) code, that is sent from the processor, to set the output voltage between 0.5V and 1.6V in 6.25 mV steps. It outputs a PWM signals to external MOSFET drivers that, in turn, drive the switching power MOSFETs. The switching frequency of the design is easily programmable by a single resistor value and the number of phases can be programmed to support 2, 3, or 4 phase applications.

The FAN5031 also includes programmable no-load offset and droop functions to adjust the output voltage as a function of the load current, as required by the Intel specifications. The FAN5031 also provides an accurate and reliable short circuit protection function with an adjustable over current set-point.

The FAN5031 is specified over the commercial temperature range of 0°C to +85°C and is available in a 40-lead MLP package.

Ordering Information

| Part Number | Temperature Range | Package Type | Packing Method | Quantity per Reel |
|-------------|-------------------|--------------|----------------|-------------------|
| FAN5031MPX* | 0°C to 85°C | MLP-40 | Tape and Reel | 3,000 |

*Lead free part

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FAN5031 Block Diagram

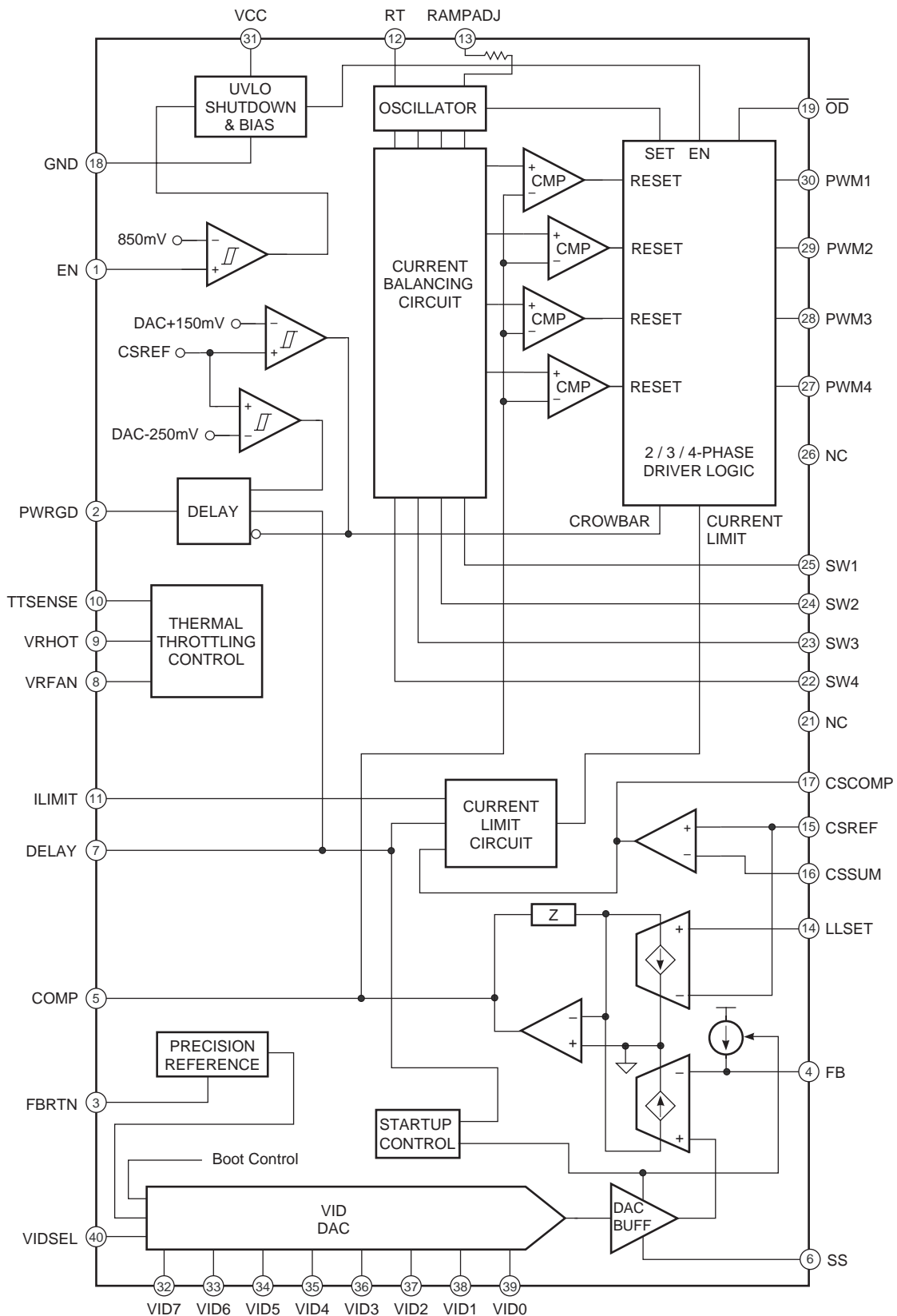


Figure 1. Block Diagram

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PRODUCT STATUS DEFINITIONS

Definition of Terms

| Datasheet Identification | Product Status | Definition |
|--------------------------|------------------------|---|
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