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Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832
Email & Skype: info@chipsmall.com Web: www.chipsmall.com
Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

FAIRCHILD SEMICONDUCTOR®

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
- ±7.7mV 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

FAN5031 Block Diagram

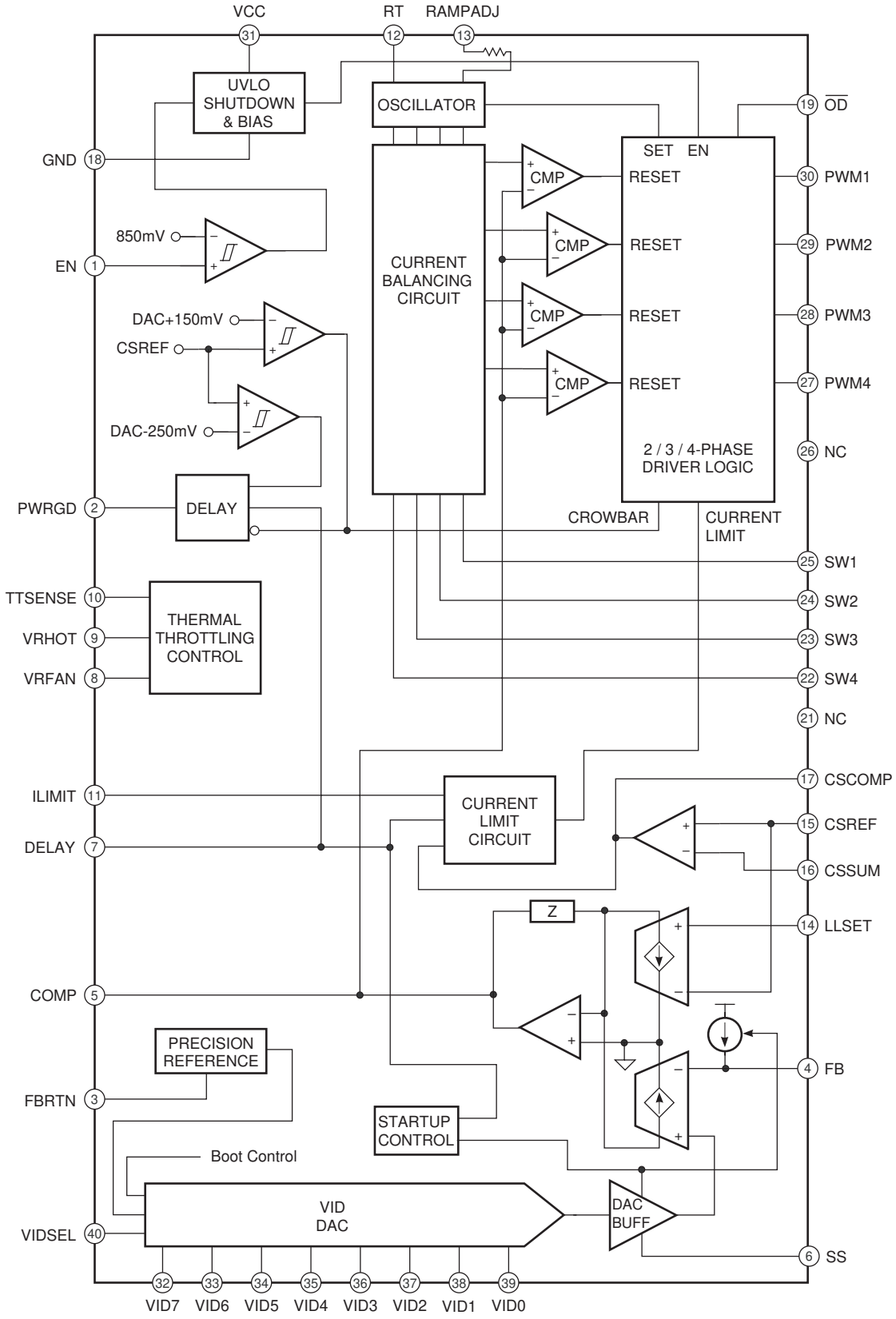

Figure 1. Block Diagram

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PRODUCT STATUS DEFINITIONS

Definition of Terms

Datasheet Identification	Product Status	Definition
Advance Information	Formative or In Design	This datasheet contains the design specifications for product development. Specifications may change in any manner without notice.
Preliminary	First Production	This datasheet contains preliminary data, and supplementary data will be published at a later date. Fairchild Semiconductor reserves the right to make changes at any time without notice in order to improve design.
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