



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

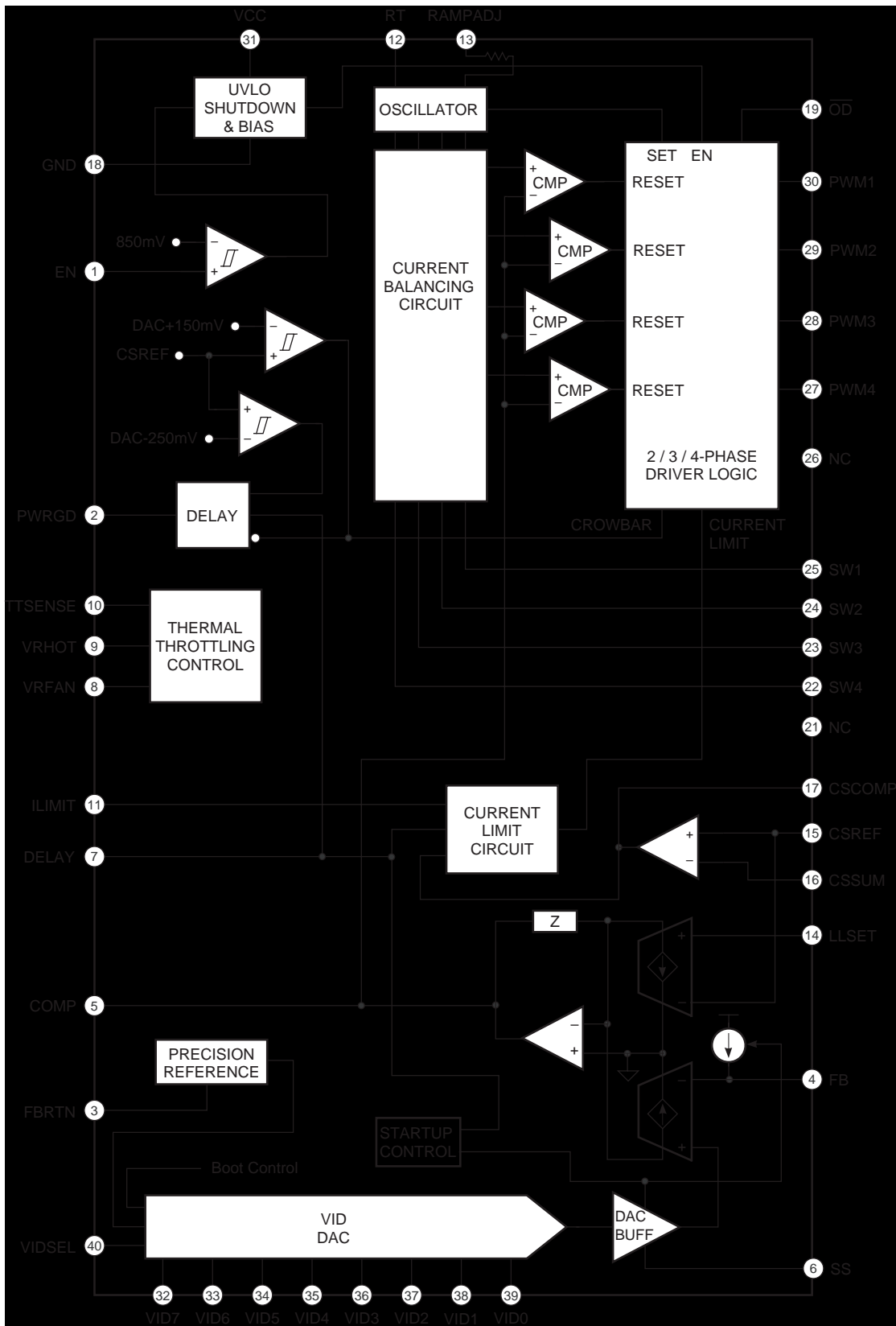
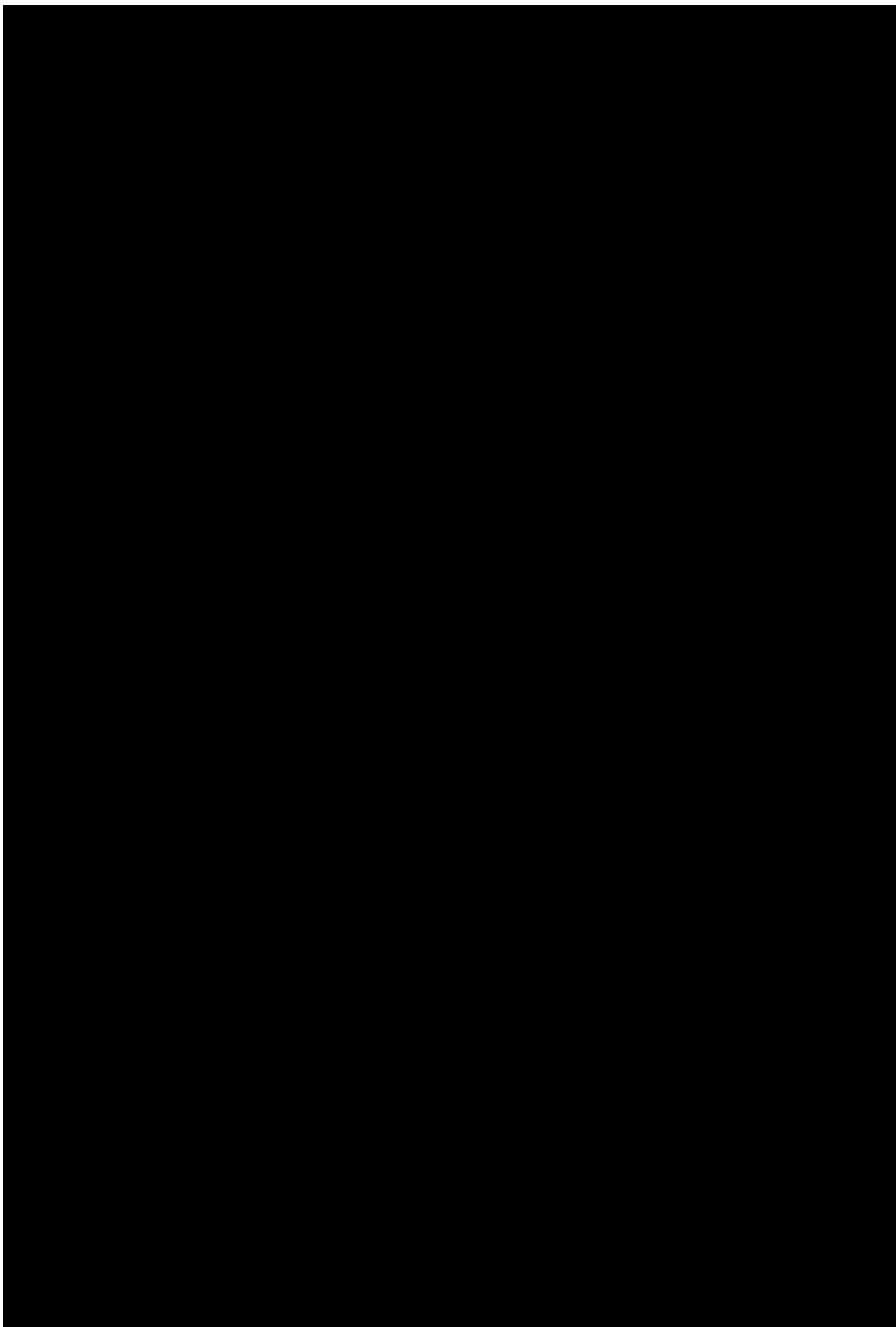


Figure 1. Block Diagram



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FAN5031

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General 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.

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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

BUY

Datasheet

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- Fully compliant to both Intel's VR10 and VR11 specifications
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Applications

- Desktop PC/Server processor power supplies for existing and next generation Intel processors
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Product status/pricing/packaging

BUY

Product	Product status	Pb-free Status	Pricing*	Package type	Leads	Packing method	Package Marking Convention**
FAN5031MPX	Full Production	 Full Production	\$1.71	MLP	40	TAPE REEL	Line 1: \$Y (Fairchild logo) &Z (Asm. Plant Code) &2 (2-Digit Date Code) &T (Die Trace Code) Line 2: 5031MP Line 3: C1

* Fairchild 1,000 piece Budgetary Pricing

** A sample button will appear if the part is available through Fairchild's on-line samples program. If there is no sample button, please contact a [Fairchild distributor](#) to obtain samples



Indicates product with Pb-free second-level interconnect. For more information [click here](#).

Package marking information for product FAN5031 is available. [Click here for more information](#).

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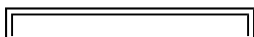
Application notes

[AN-6052: AN-6052 Instructions for the Multi-Phase VR11 MathCad Design Tool](#) (294 K) Jul 27, 2007

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Qualification Support

Click on a product for detailed qualification data



Product

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