FD5012MNTXG

Dual-Rail, 12-Phase Digital Controller with PMBus

Product Overview

For complete documentation, see the data sheet.

The FD5012 is a high performance, 12 phase digital buck controller, which can be configured for single or dualrail outputs. It is fully compatible with Intel® SVID protocol. It is designed to power Intel's VR13 and VR14 processor rails, and highcurrent, lowvoltage digital loads such as the FPGA and ASIC. All of the required parameters are programmable through the PMBus interface.

The FD5012 device uses onsemi's proprietary Advanced COT architecture to implement control and power management functions with maximum flexibility, performance and minimal controller and overall solution size. The Advanced COT control features extremely low latency against severe load transients and allows a high switching frequency design with ceramic only output capacitors. NonVolatile OTP Memory is included to store multiple custom configurations. It also achieves the best platform efficiency by implementing fasttochange dynamic phase management and a variable frequency light load control.

The FD5012 device is designed to be used with onsemi's smart power stages which accurately integrate inductor current sensing and temperature monitoring.

Features

- Phase and Rail Configurability is M + N 12. M 1 and N 6
- VR13 and VR14 Compliant with 25 MHz SVID Bus
- PMBus 1.2 Configuration and Monitoring
- Programmable Switching Frequency 400 kHz to 1.5 MHz
- User Programmable Droop and Internal Compensation
- Custom VID DAC up to 2.5V
- Advanced Phase Management with Auto Phase Shedding
- Low Quiescent Power and Pulse Skipping Operation
- Fault Management
- Extensive and Accurate Telemetry

  For more features, see the data sheet

Applications

- Multi-Phase Buck DC-DC Converter
- High−Current Voltage Regulator for VR13 and VR14 Based Intel's Microprocessors
- DDR Memory Voltage Regulator in Intel's VR13 and VR14 Based Systems
- Low-Voltage and High-Power ASIC and SoC Power Management

End Products

- High-Current Voltage Regulators
- Intel VR13 and VR14 Server Systems
- General Server, Data Networking, and Telecommunication Equipment

Part Electrical Specifications

Product	Status	Compilance	Topology	Phases	Control Mode	V_{CC} Min (V)	V_{CC} Max (V)	f_{SW} Typ (kHz)	Package Type	Case Outline	MSL Type	MSL Temp (°C)	Container Type	Container Qty.
FD5012MNTXG	Active	H Pb	Step-Down	1/2/3/4/5/6/7/8	COT	3.135	3.465	800	QFN-48	485BA.PDF	1	260	REEL	3000

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