ISL69133

Digital, Dual Output, 4-Phase Configurable, VR13/IMVP8 PWM Controller

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The ISL69133 is a digital, dual output, flexible, multiphase (X+Y ≤ 4) PWM controller designed to be compliant with Intel VR13/IMVP8 specifications. The digital multiphase controller can be configured to support any desired phase assignments up to a maximum of four phases across the two outputs (X and Y). For example, 3+1, 2+2, or even single output operation as a 4+0 configuration, are supported. With a flexible X+Y ≤ 4-phase assignment, PMBus, and SerialVID (SVID) interfaces, the ISL69133 is ideal for controlling the microprocessor core, memory, and system rails of Intel VR13/IMVP8 platforms.

The ISL69133 uses Intersil's proprietary, digital, linear, synthetic, current modulation scheme to achieve the industry's best combination of transient response and ease-of-tuning while addressing the challenges of powering the latest generation of Intel microprocessors. Device configuration and telemetry monitoring are accomplished using Intersil's intuitive PowerNavigator™ GUI. Diode emulation and automatic phase add/drop features allow the user to extract maximum efficiency from the converter regardless of load conditions.

The ISL69133 supports a comprehensive fault management system to enable the design of highly reliable systems. From an overcurrent protection scheme, including peak and average detection, to the configurable power-good and catastrophic fault protection flags, any need is accommodated.

With minimal external components, the ability to store eight configurations, robust fault management, and highly accurate regulation capability, implementing a high-performance, multiphase regulator has never been easier.

Features

- Advanced, linear, digital modulation scheme
  - Zero latency, synthetic current control for excellent high frequency current balance
  - Auto phase add/drop for excellent load vs efficiency profile
  - Excellent Dynamic Voltage Identification (DVID) performance
  - Dual edge modulation for faster transient response
- Flexible phase assignment from 0 to 4 phases per output
- Up to 1MHz operation for high density designs
- Diode braking for overshoot reduction
- Diode emulation for enhanced light-load efficiency
- Differential remote voltage sensing supports ±0.5% closed-loop system accuracy over load, line, and temperature
- Highly accurate current sensing for excellent load-line regulation and accurate OCP
  - Supports ISL99227 60A smart power stages
  - Supports DCR sense with integrated temperature compensation
- Supports external input current sense required for NVDIMM
- Comprehensive fault management enables high reliability systems
  - Pulse-by-pulse phase current limiting
  - Total output current protection
  - Output and input OV/UV protection
  - Open voltage sense detect
  - Black box recording capability for faults
  - Configurable Catastrophic Failure Protection (CFP) flag output
- Intuitive configuration using PowerNavigator

- SMBus/PMBus v1.3 compatible
  - Up to 2MHz bus interface
  - NVM to store up to 8 configurations
- Pb-free (RoHS compliant)

Applications

- Core and memory for Intel VR13 and IMVP8 based designs
  - High performance server core and memory rails
  - High performance graphics rails
  - High-end desktop with overclocking option
- Networking, data center, storage, and general purpose

Related Literature

- For a full list of related documents, visit our website
  - ISL69133 product page