ISL69147

Digital Dual Output 7-Phase AMD PWM Controller

FN8706
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The ISL69147 is a digital dual output multiphase (X + Y = 7) PWM controller that is compliant with AMD SVI2 specifications. The digital multiphase controller can be configured to support any phase assignments across the two outputs (X and Y). The ISL69147 supports the PMBus V1.3 and SVI2 interfaces, so the device is ideal for controlling the microprocessor core, memory, and system rails for AMD SVI2 based platforms. When the ISL69147 is configured to use the SVI2 interface, Rail 1 can support a maximum of six phases and Rail 2 must have one phase assigned.

The ISL69147 uses a 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 AMD microprocessors. You can use the intuitive Renesas PowerNavigator™ software to configure the device. Diode emulation and automatic phase add/drop features allow you to extract maximum efficiency from the converter regardless of load conditions.

The ISL69147 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 configurable power-good and catastrophic fault protection flags, almost 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.

Applications

- Core and graphics for AMD SVI2 based processors
  - High performance servers core rail
  - High performance graphic rail
  - 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:

- ISL69147 product page

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 DVID performance
  - Dual edge modulation for faster transient response
- 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 phase doubler (ISL6617A) for up to 14-phase operation
- 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 flag output (CFP)
- Intuitive configuration using PowerNavigator
- SMBus/PMBus V1.3 compatible
  - Up to 2MHz bus interface
  - NVM to store up to eight configurations
- Pb-free (RoHS compliant)

Typical Application: VR with ISL99227 Targeting SVI2 Processor Rails

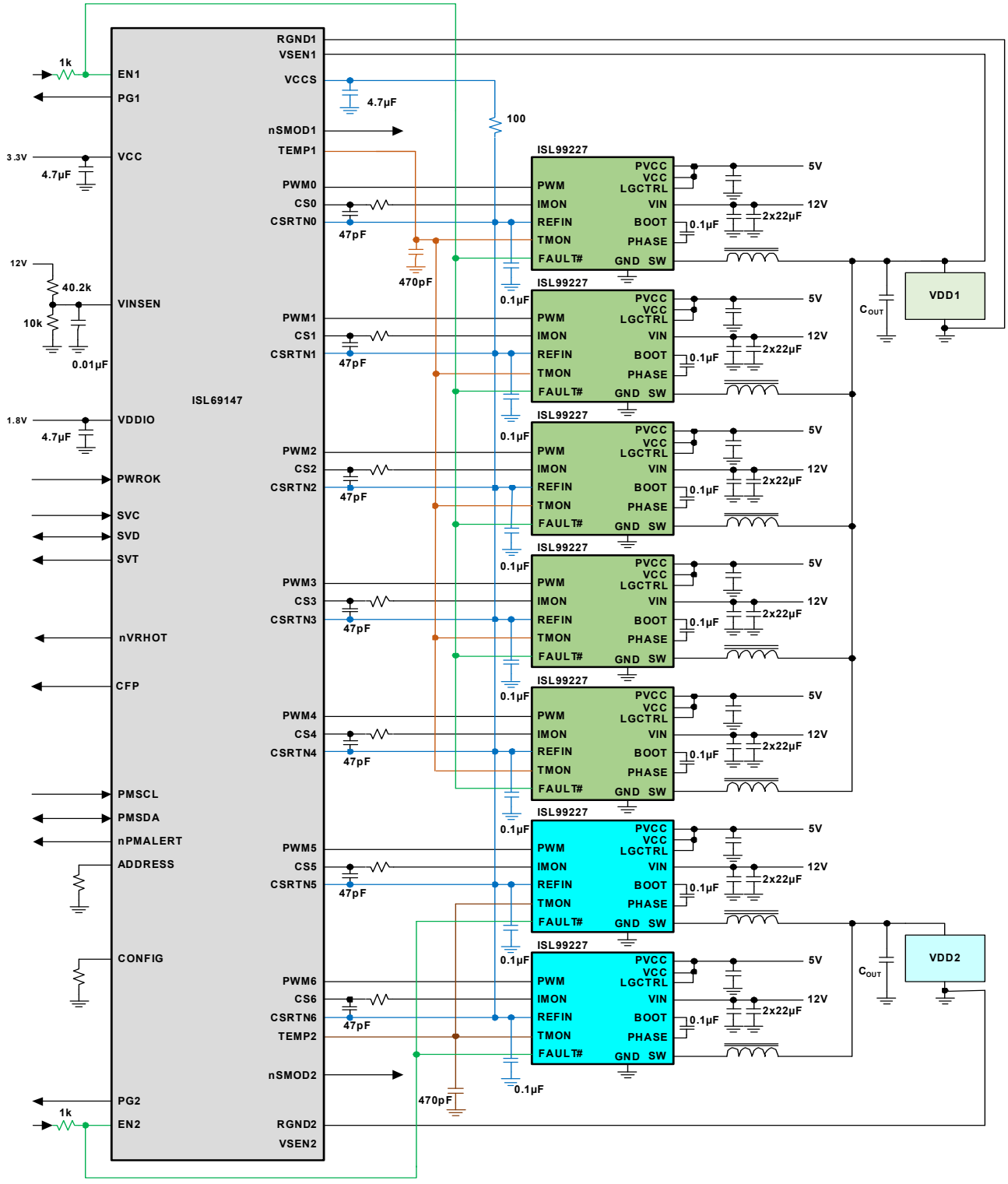


FIGURE 1. VR WITH ISL99227 TARGETING SVI2 PROCESSOR RAILS

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Corporate Headquarters

TOYOSU FORESIA, 3-2-24 Toyosu,
Koto-ku, Tokyo 135-0061, Japan
www.renesas.com

Contact Information

For further information on a product, technology, the most up-to-date version of a document, or your nearest sales office, please visit:
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