Brief Description

The ZSPM1000 is a configurable true-digital single-phase PWM controller for high-current, non-isolated DC/DC supplies. It operates as a synchronous step-down converter in a single-rail and single-phase configuration.

The ZSPM1000 integrates a digital control loop, optimized for maximum flexibility and stability, as well as load step and steady-state performance. In addition, a rich set of protection and monitoring functions is provided. On-chip, non-volatile memory (NVM) and an I²C™ * interface facilitate configuration.

The PC-based IDT's Pink Power Designer™ provides a user-friendly and easy-to-use interface to the device for communication and configuration. It can guide the user through the design of the digital compensator and offers intuitive configuration methods for additional features, such as protection and sequencing.

Features

- Programmable digital control loop
- Advanced digital control techniques
  - Tru-sample Technology™
  - State-Law Control™ (SLC)
  - Sub-cycle Response™ (SCR)
- Improved transient response and noise immunity
- Protection features
  - Over-current protection
  - Over-voltage protection (VIN, VOUT)
  - Under-voltage protection (VIN, VOUT)
  - Overloaded startup
  - Restart and delay
- Support for SMOD and ZCD drivers
- Fuse-based NVM for improved reliability
- Operation from a single 5V or 3.3V supply
- Optional PMBus™ address selection without external resistors

Benefits

- Fast configurability and design flexibility
- Simplified design and integration
- Reduced component count through system level integration
- Simplified monitoring for system power and thermal management
- Higher energy efficiency across all output loading conditions

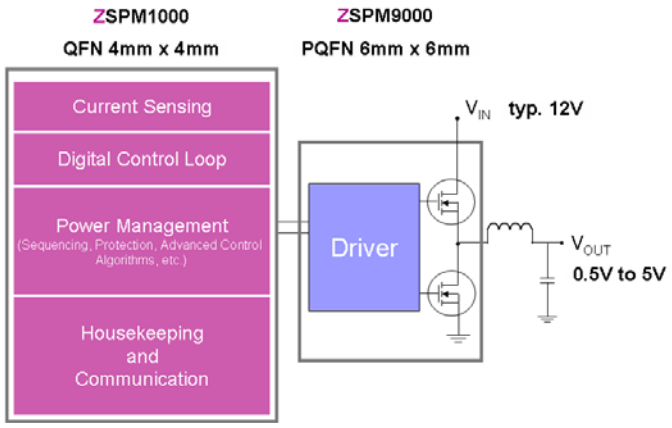
Available Support

- Evaluation Kit
- PC-based Pink Power Designer™

Physical Characteristics

- Operation temperature: -40°C to +125°C**
- V_{OUT} max: 5V
- Lead free (RoHS compliant) 24-pin QFN package (4 mm x 4 mm)

ZSPM1000 Typical Application Diagram



* I²C™ is a registered trademark of NXP.
** Subject to product type.

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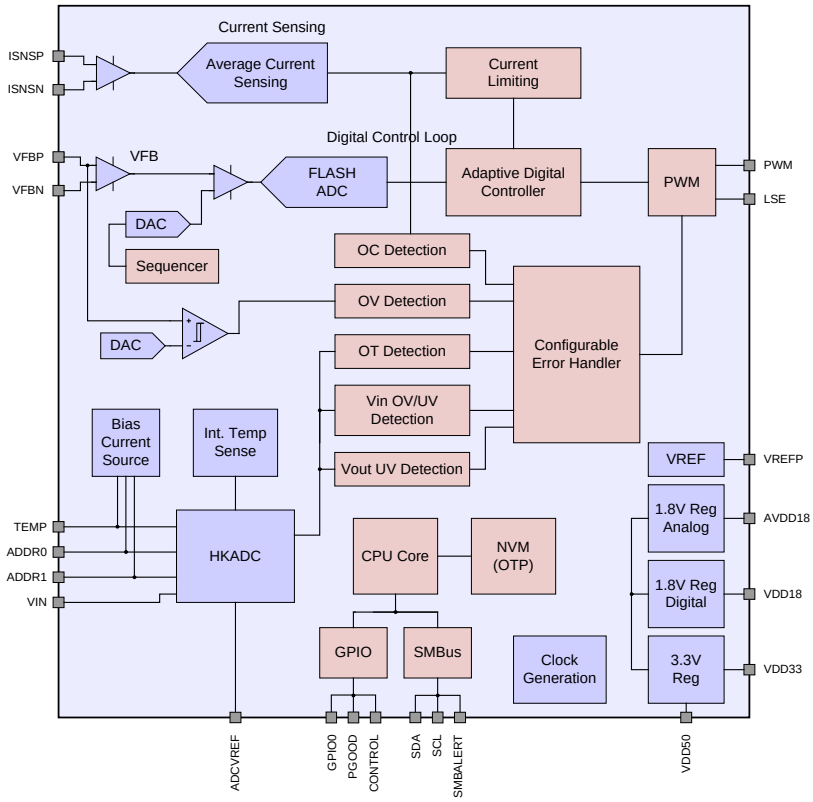
ZSPM1000 Block Diagram



Typical Applications

- *Telecom Switches*
- *Servers and Storage*
- *Base Stations*
- *Network Routers*
- *Industrial Applications*
- *Single-Rail/Single-Phase Supplies for Processors, ASICs, FPGAs, DSPs*

Ordering Information

Sales Code	Description	Package
ZSPM1000ZI1R 1	ZSPM1000 Lead-free QFN24 — Temperature range: -40°C to +85°C *	Reel
ZSPM1000ZA1R 1	ZSPM1000 Lead-free QFN24 — Temperature range: -40°C to +125°C *	Reel
ZSPM8000-KIT	Evaluation Kit for ZSPM1000 with PMBus™ Communication Interface	Kit

* This product is sold under a limited license from PowerOne, Inc. related to digital power technology as set forth in U.S. Patent 7000125 and other related patents owned by PowerOne, Inc. This license does not extend to stand-alone power supply products.

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