

Brief Description

The ZSPM2000 is a configurable true-digital single-phase PWM controller for high-current, non-isolated DC/DC supplies. The ZSPM2000 includes a high-speed MOSFET driver for a synchronous step-down converter in a single-rail and single-phase configuration.

The ZSPM2000 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.

IDT's PC-based Pink Power Designer™ graphical user interface (GUI) 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
- Integrated MOSFET driver with adaptive anti-cross-conduction protection
- 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

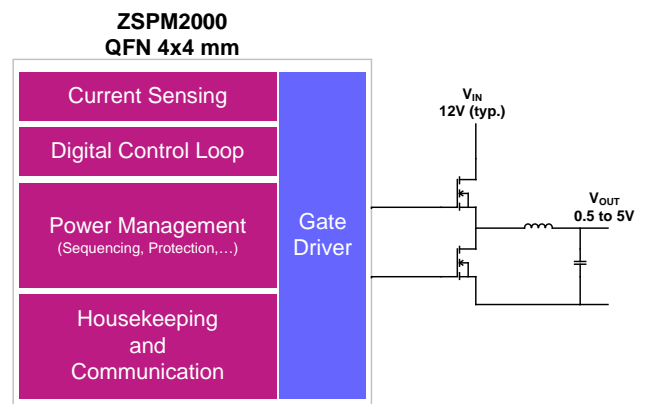
Available Support

- Evaluation Kit
- PC-based Pink Power Designer™ GUI

Physical Characteristics

- Operation temperature: -40°C to +85°C
- V_{OUT} max: 5V
- VDD50 and VDD50DRV supply: 4.75V to 5.25V
- Lead free (RoHS-compliant)

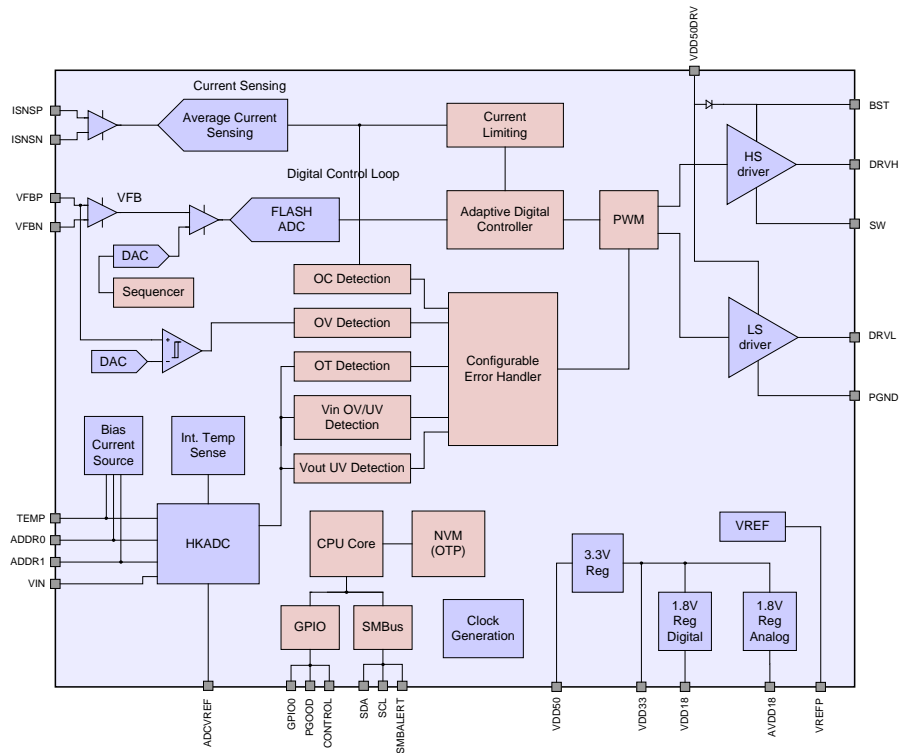
ZSPM2000 Typical Application Diagram



^{*} I²C™ is a registered trademark of NXP.

ZSPM2000 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
ZSPM2000ZI2R 1	ZSPM2000 Lead-free QFN28 — Temperature range: -40°C to +85°C*	Reel
ZSPM2000-KIT01	Evaluation Kit for ZSPM2000 with PMBus™ Communication Interface — the Pink Power Designer™ GUI for kit can be downloaded from the IDT web site at www.IDT.com/ZSPM2000 (login required; see data sheet section 9 for details)	Kit

* Note: 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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