

# ZSPM1000

True Digital PWM Controller (Single-Phase, Single-Rail)

**ZMDI**<sup>®</sup>  
The Analog Mixed Signal Company



## 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 I<sup>2</sup>C<sup>™</sup> interface facilitate configuration.

The PC-based ZMDI's Pink Power Designer<sup>™</sup> 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<sup>™</sup>
  - State-Law Control<sup>™</sup> (SLC)
  - Sub-cycle Response<sup>™</sup> (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<sup>™</sup> 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

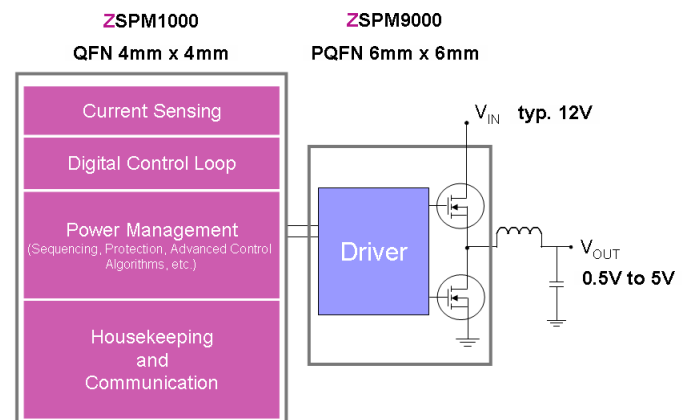
## Available Support

- Evaluation Kit
- PC-based Pink Power Designer<sup>™</sup>

## Physical Characteristics

- Operation temperature: -40°C to +125°C\*\*
- V<sub>OUT</sub> max: 5V
- Lead free (RoHS compliant) 24-pin QFN package (4 mm x 4 mm)

## ZSPM1000 Typical Application Diagram



<sup>\*</sup> I<sup>2</sup>C<sup>™</sup> is a registered trademark of NXP.

<sup>\*\*</sup> Subject to product type.

For more information, contact ZMDI via [SPM@zmdi.com](mailto:SPM@zmdi.com).

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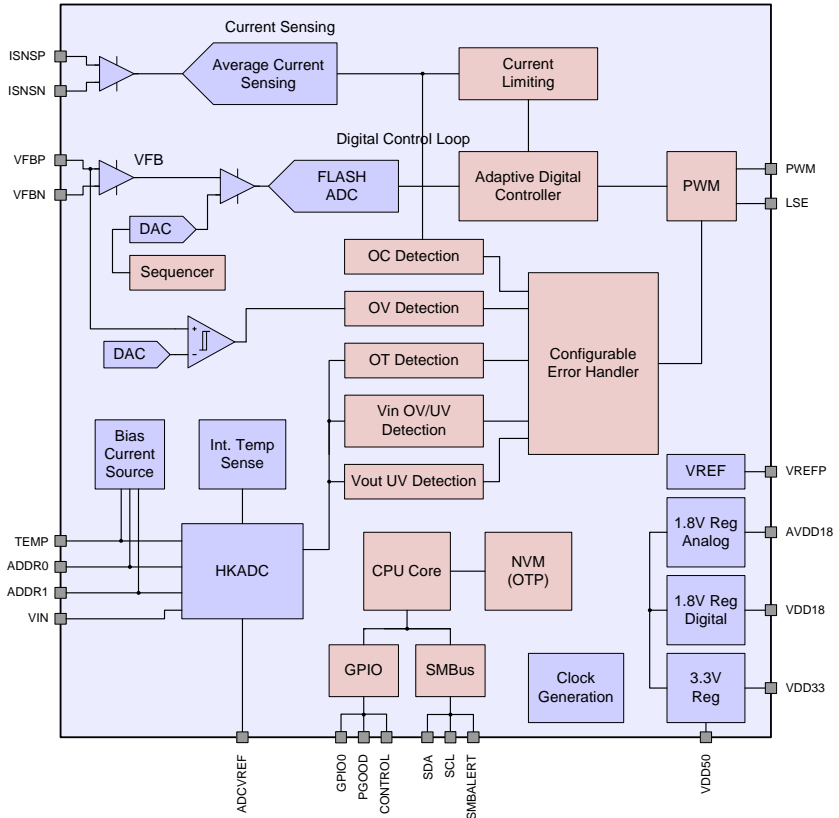
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## ZSPM1000 Block Diagram



### 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 (See additional options in section 7 of the ZSPM1000 Data Sheet.)

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 and Pink Power Designer™ GUI	Kit

Sales and Further Information		<a href="http://www.zmdi.com">www.zmdi.com</a>	<a href="mailto:SPM@zmdi.com">SPM@zmdi.com</a>
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<b>European Sales (Stuttgart)</b> Phone +49.711.674517.55 Fax +49.711.674517.87955	<b>DISCLAIMER:</b> This information applies to a product under development. Its characteristics and specifications are subject to change without notice. Zentrum Mikroelektronik Dresden AG (ZMD AG) assumes no obligation regarding future manufacture unless otherwise agreed to in writing. The information furnished hereby is believed to be true and accurate. However, under no circumstances shall ZMD AG be liable to any customer, licensee, or any other third party for any special, indirect, incidental, or consequential damages of any kind or nature whatsoever arising out of or in any way related to the furnishing, performance, or use of this technical data. ZMD AG hereby expressly disclaims any liability of ZMD AG to any customer, licensee or any other third party, and any such customer, licensee and any other third party hereby waives any liability of ZMD AG for any damages in connection with or arising out of the furnishing, performance or use of this technical data, whether based on contract, warranty, tort (including negligence), strict liability, or otherwise.		

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