

Brief Description

The ZSPM1063 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 ZSPM1063 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 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, including protection and sequencing.

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

Physical Characteristics

- Operation temperature: -40°C to +125°C
- Operation from a single 5V or 3.3V supply
- V_{OUT} max: 5V
- Lead-free (RoHS compliant) 32-pin QFN package (5mm x 5mm)

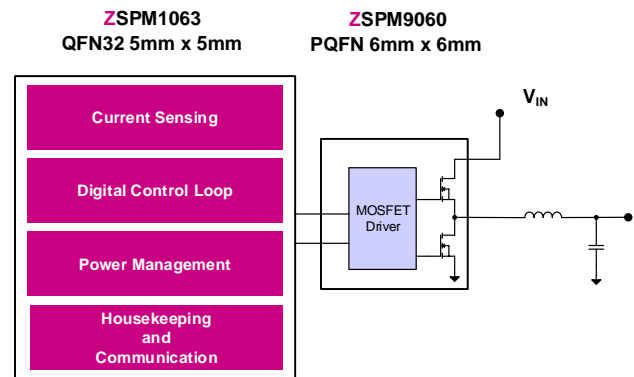
Available Support

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

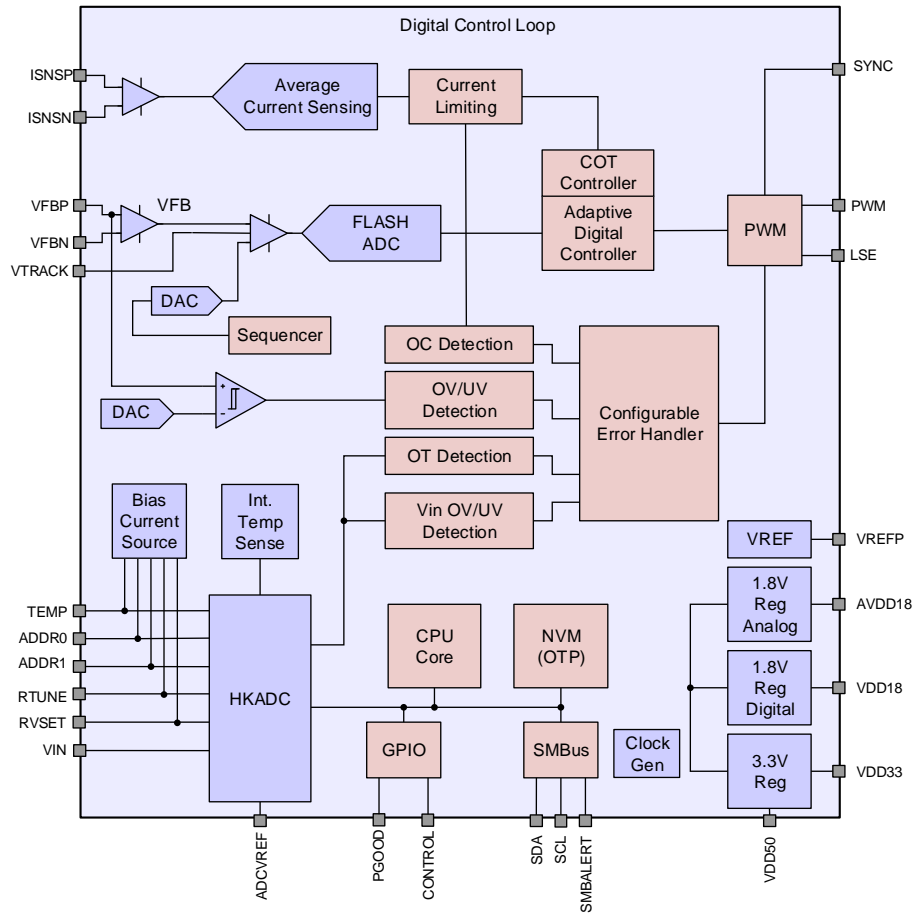
Features

- Programmable digital control loop
- Optional PMBus™ address selection without external resistors
- V_{IN} feed-forward
- Advanced, digital control techniques
 - Tru-sample Technology™
 - State-Law Control™ (SLC)
 - Sub-cycle Response™ (SCR)
- Improved transient response and noise immunity
- Discontinuous conduction mode (DCM) at light loads
- Protection features
 - Over-current protection
 - Over-voltage protection (V_{IN}, V_{OUT})
 - Under-voltage protection (V_{IN}, V_{OUT})
 - Overloaded startup
 - Restart and delay
- Fuse-based NVM for improved reliability
- Re-programmable one-time programmable (OTP) memory feature
- V_{OUT} sequencing from external source
- Pin-strapping options: RTUNE and RVSET
- Tri-state PWM output
- Additional driver support options
- Constant on-time controller (COT) in DCM

ZSPM1063 Typical Application Diagram



ZSPM1063 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
ZSPM1063BA1R 1	ZSPM1063 Lead-free QFN32 — Temperature range: -40°C to +125°C	Reel
ZSPM1063-KIT02	Evaluation Kit with PMBus™ Communication Interface. The Pink Power Designer™ GUI is available for download on www.IDT.com/ZSPM1063 after login (see details in data sheet section 7).	

* 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.

IMPORTANT NOTICE AND DISCLAIMER

RENESAS ELECTRONICS CORPORATION AND ITS SUBSIDIARIES (“RENESAS”) PROVIDES TECHNICAL SPECIFICATIONS AND RELIABILITY DATA (INCLUDING DATASHEETS), DESIGN RESOURCES (INCLUDING REFERENCE DESIGNS), APPLICATION OR OTHER DESIGN ADVICE, WEB TOOLS, SAFETY INFORMATION, AND OTHER RESOURCES “AS IS” AND WITH ALL FAULTS, AND DISCLAIMS ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR NON-INFRINGEMENT OF THIRD-PARTY INTELLECTUAL PROPERTY RIGHTS.

These resources are intended for developers who are designing with Renesas products. You are solely responsible for (1) selecting the appropriate products for your application, (2) designing, validating, and testing your application, and (3) ensuring your application meets applicable standards, and any other safety, security, or other requirements. These resources are subject to change without notice. Renesas grants you permission to use these resources only to develop an application that uses Renesas products. Other reproduction or use of these resources is strictly prohibited. No license is granted to any other Renesas intellectual property or to any third-party intellectual property. Renesas disclaims responsibility for, and you will fully indemnify Renesas and its representatives against, any claims, damages, costs, losses, or liabilities arising from your use of these resources. Renesas' products are provided only subject to Renesas' Terms and Conditions of Sale or other applicable terms agreed to in writing. No use of any Renesas resources expands or otherwise alters any applicable warranties or warranty disclaimers for these products.

(Disclaimer Rev.1.01 Jan 2024)

Corporate Headquarters

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

Trademarks

Renesas and the Renesas logo are trademarks of Renesas Electronics Corporation. All trademarks and registered trademarks are the property of their respective owners.

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 www.renesas.com/contact-us/.