Brief Description

The ZSPM1363 is a configurable true-digital dual-phase PWM controller for high-current, non-isolated DC/DC supplies. It operates as a synchronous step-down converter in a single-rail and dual-phase configuration.

The ZSPM1363 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^2C 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)

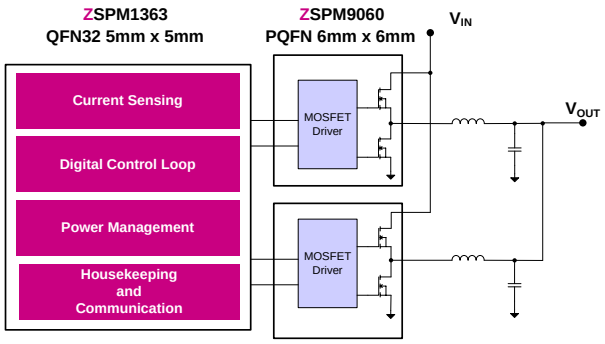
Available Support

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

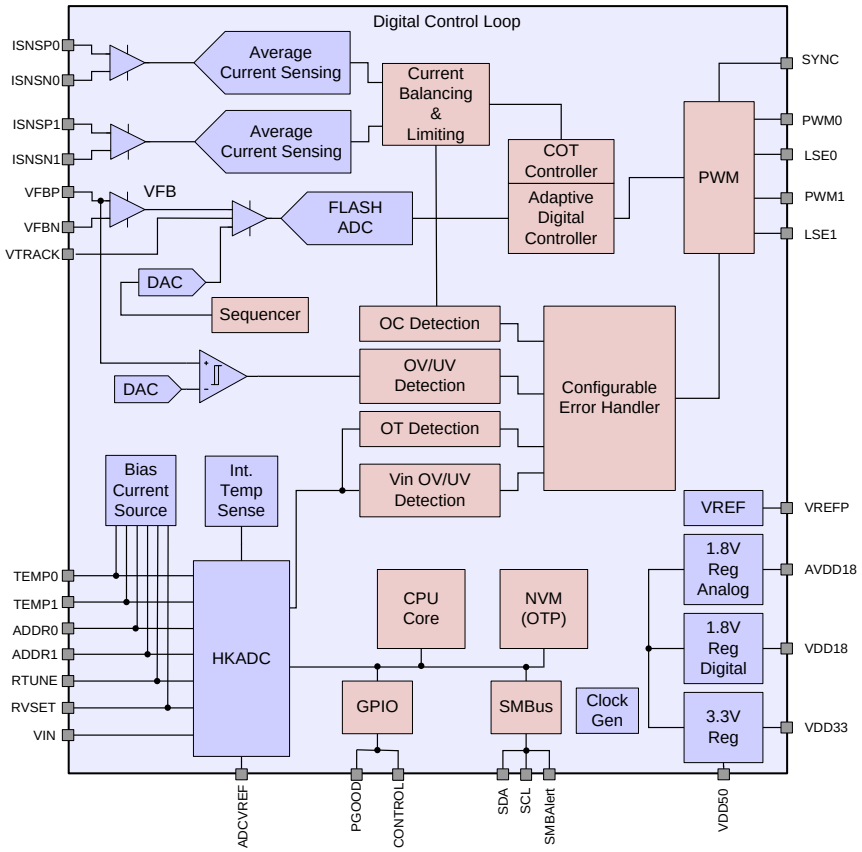
Features

- Programmable digital control loop
- Dual-phase, single-rail solution
- Power modes (phase addition/drop)
- 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) and phase dropping 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
- Current balancing between both phases
- Tri-state PWM outputs
- Additional driver support options
- Constant on-time controller (COT) in DCM

ZSPM1363 Typical Application Diagram



ZSPM1363 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
ZSPM1363BA1R 1	ZSPM1363 Lead-free QFN32 — Temperature range: -40°C to +125°C	Reel
ZSPM1363-KIT02	Evaluation Kit with PMBus™ Communication Interface. The Pink Power Designer™ GUI is available for download on www.IDT.com/ZSPM1363 after login (see details in data sheet section 7).	

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