

Brief Description

The ZSPM10x5 single-phase digital PWM controller family is optimally configured for use with the Murata Power Solutions 25A and 35A Power Blocks in smart digital power solutions.

The ZSPM10x5 controllers integrate a digital control loop, optimized for load-step transient response, steady-state performance, stability, and maximum flexibility. For improved system reliability, a rich set of protection and monitoring functions is provided.

The ZSPM10x5 family features a user-selectable, preconfigured digital control loop and compensators optimized for use with the Murata Power Solutions 25A power block OKLP-X/25-W12-C and 35A power block OKLP-X/35-W12-C.

Downloadable reference solutions are available, including IDT's Pink Power Designer™ GUI, layout guidelines, bill of materials, and step-by-step instructions.

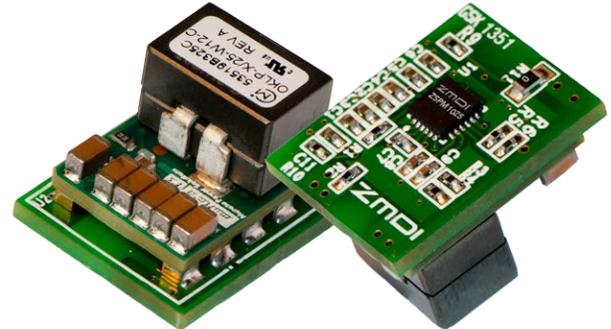
- **ZSPM10x5A** features PMBus™ programmable output voltage (0.35V-3.60V); four predefined output capacitance ranges; and configurable protection, sequencing, and monitoring.
- **ZSPM10x5C** features pin-strap selectable output voltage (0.62V-1.20V) and four predefined output capacitance ranges.
- **ZSPM10x5D** features pin-strap selectable output voltage (1.25V-3.40V) and four predefined output capacitance ranges.

Available Support

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

Physical Characteristics

- Operation temperature: -40°C to +125°C
- V_{OUT} : 0.35V to 3.60V (ZSPM10x5A)
- V_{OUT} : 0.62V to 1.20V (ZSPM10x5C)
- V_{OUT} : 1.25V to 3.40V (ZSPM10x5D)
- Lead free (RoHS compliant) 24-pin QFN package (4mm x 4mm)

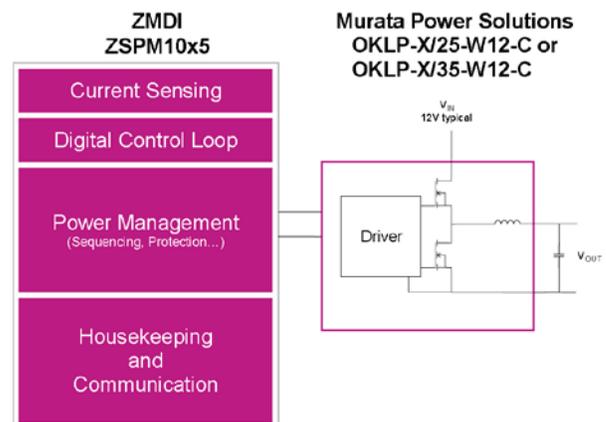


Features

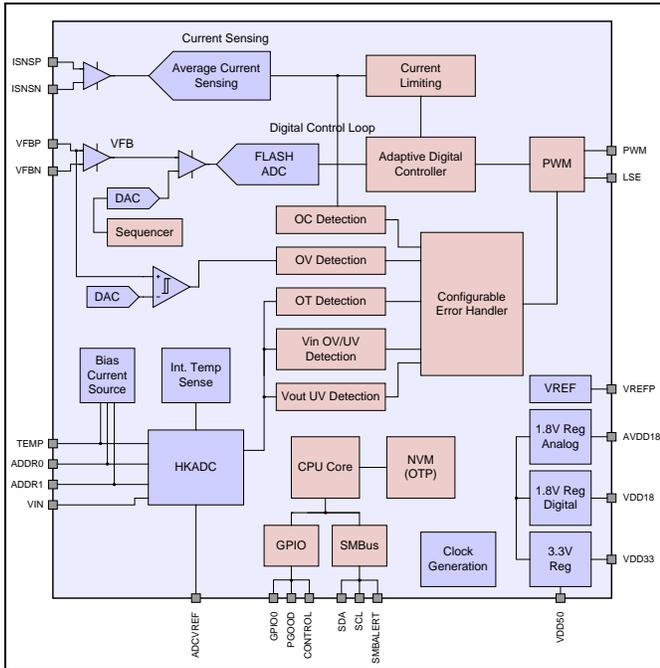
- Application-optimized digital control loop
- Advanced digital control techniques for maximum flexibility and excellent transient performance
- Extensive fault monitoring and handling
- Pre-configured for optimized use with Murata Power Solutions 25A and 35A Power Blocks
- PMBus™ or 2-pin configuration for loop compensation, output voltage, and slew rate
- Operation from a single 5V or 3.3V supply

Benefits

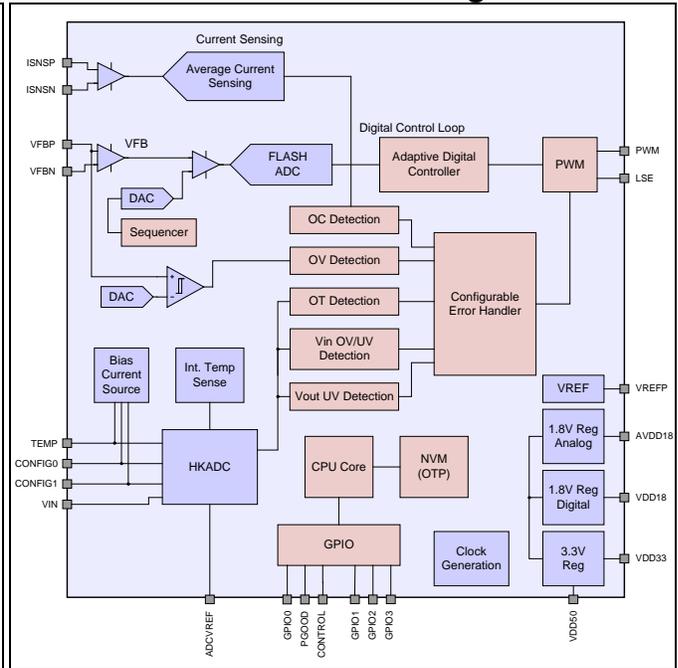
- Fast time-to-market using off-the-shelf, optimally configured controller and power block
- Fast configurability and design flexibility
- Simplified design flow and high reliability via proven system design solution
- Pin-to-pin compatibility across the product family enabling 25A and 35A point-of-load platform designs with or without digital communication



ZSPM10x5A Block Diagram



ZSPM10x5C and ZSPM10x5D Block Diagram



Product Overview

| IDT PWM Controller | Murata Power Block | Output Current (A) | Output Voltage | | Output Capacitance ¹ (µF) | Predefined Compensation Loops ¹ | Configurable | Digital Monitoring |
|--------------------|--------------------|--------------------|----------------|------------------|--------------------------------------|--------------------------------------------|--------------|-----------------------------------|
| | | | Level (V) | Slew Rate (V/ms) | | | | |
| ZSPM1025A | OKLP-X/25 | 25 | 0.35-3.60 | 0.01-10 | 200-5700 | 4 | PMBus™ | Final application and development |
| ZSPM1025C | OKLP-X/25 | 25 | 0.62-1.20 | 0.10-10 | 200-5700 | 4 | Pin Strap | Only during development |
| ZSPM1025D | OKLP-X/25 | 25 | 1.25-3.40 | 0.10-10 | 200-5700 | 4 | Pin Strap | Only during development |
| ZSPM1035A | OKLP-X/35 | 35 | 0.35-3.60 | 0.01-10 | 200-5700 | 4 | PMBus™ | Final application and development |
| ZSPM1035C | OKLP-X/35 | 35 | 0.62-1.20 | 0.10-10 | 200-5700 | 4 | Pin Strap | Only during development |
| ZSPM1035D | OKLP-X/35 | 35 | 1.25-3.40 | 0.10-10 | 200-5700 | 4 | Pin Strap | Only during development |

Note 1: See datasheet for more information.

Ordering Information

Note: Part numbers ZSPM1025AA1W 1 and ZSPM1035AA1W 1 are 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.

| Sales Code | Description | Package |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| ZSPM1025AA1W 1 | ZSPM1025A Digital PWM Controller for use with Murata 25A Power Block OKLP-X/25-W12-C | Reel |
| ZSPM1025CA1W 0 | ZSPM1025C Digital PWM Controller for use with Murata 25A Power Block OKLP-X/25-W12-C | Reel |
| ZSPM1025DA1W 0 | ZSPM1025D Digital PWM Controller for use with Murata 25A Power Block OKLP-X/25-W12-C | Reel |
| ZSPM1035AA1W 1 | ZSPM1035A Digital PWM Controller for use with Murata 35A Power Block OKLP-X/35-W12-C | Reel |
| ZSPM1035CA1W 0 | ZSPM1035C Digital PWM Controller for use with Murata 35A Power Block OKLP-X/35-W12-C | Reel |
| ZSPM1035DA1W 0 | ZSPM1035D Digital PWM Controller for use with Murata 35A Power Block OKLP-X/35-W12-C | Reel |
| ZSPM8025-KIT | Evaluation Kit for ZSPM1025A with PMBus™ Communication Interface. Pink Power Designer™ GUI can be downloaded from the IDT web site at www.IDT.com/ZSPM8025KIT | Kit |
| ZSPM8725-KIT | Evaluation Kit for ZSPM1025C with PMBus™ Communication Interface. Pink Power Designer™ GUI can be downloaded from the IDT web site at www.IDT.com/ZSPM8725KIT | Kit |
| ZSPM8825-KIT | Evaluation Kit for ZSPM1025D with PMBus™ Communication Interface. Pink Power Designer™ GUI can be downloaded from the IDT web site at www.IDT.com/ZSPM8825KIT | Kit |
| ZSPM8035-KIT | Evaluation Kit for ZSPM1035A with PMBus™ Communication Interface. Pink Power Designer™ GUI can be downloaded from the IDT web site at www.IDT.com/ZSPM8035KIT | Kit |
| ZSPM8735-KIT | Evaluation Kit for ZSPM1035C with PMBus™ Communication Interface. Pink Power Designer™ GUI can be downloaded from the IDT web site at www.IDT.com/ZSPM8735KIT | Kit |
| ZSPM8835-KIT | Evaluation Kit for ZSPM1035D with PMBus™ Communication Interface. Pink Power Designer™ GUI can be downloaded from the IDT web site at www.IDT.com/ZSPM8835KIT | Kit |

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