

# ZSPM4023-09

## 24V/9A Synchronous DC/DC Buck Regulator



### Brief Description

The ZSPM4023-09 is a constant-frequency, synchronous DC/DC buck regulator featuring adaptive on-time control architecture. The ZSPM4023-09 operates over a 4.5V to 28V supply range (24V typical). It has an internal linear regulator that provides a regulated 5V to power the internal control circuitry. The ZSPM4023-09 operates at a constant 600kHz (typical) switching frequency in continuous-conduction mode and can be used to provide up to 9A of output current. The output voltage is adjustable from 5.5V down to 0.8V.

Under medium to heavy loads, the ZSPM4023-09 provides high efficiency and ultra-fast transient response via its rapid-control architecture. Under light load conditions, it maintains high efficiency and a superior transient response by transitioning to variable-frequency, discontinuous mode operation with its ultra-light-load architecture.

The ZSPM4023-09 offers a full suite of protection features to ensure protection of the IC during fault conditions. These include under-voltage lockout to ensure proper operation under power-sag conditions; thermal shutdown; internal soft-start to reduce inrush current; foldback current limiting; and “hiccup” mode short-circuit protection. The ZSPM4023-09 includes a power good (PG) output to allow simple sequencing.

### Benefits

- Ultra-light load efficiency – up to 80% at 10mA
- Up to 95% efficiency
- Feedback reference accuracy as high as  $\pm 1\%$

### Features

- Rapid-control architecture enables operation with a high input/output voltage ratio (e.g.,  $V_{IN} = 28V$  and  $V_{OUT} = 0.8V$ ) and small output capacitance
- Adjustable output voltage from 0.8V to 5.5V
- Universally compatible with most output capacitors—stable with zero to high ESR
- Power good (PG) output
- Foldback current limiting and “hiccup” mode short-circuit protection
- Safe start-up into pre-biased loads

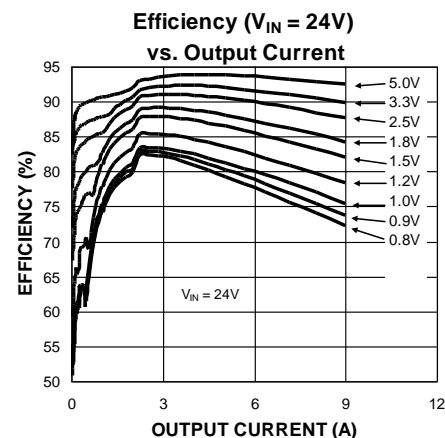
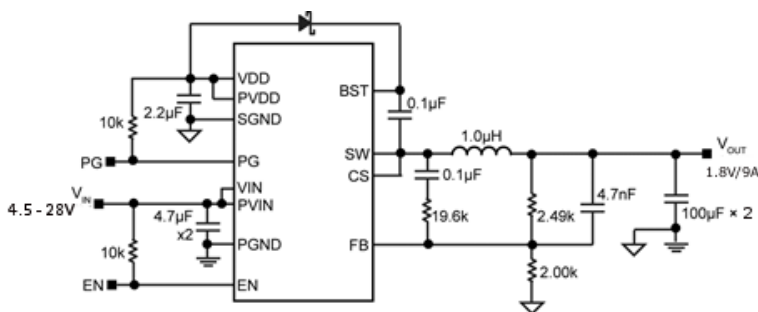
### Available Support

- Evaluation Kit
- Support documentation

### Physical Characteristics

- Input voltage range: 4.5V to 28V
- Output current: up to 9A
- Switching frequency: 600kHz
- Junction temperature:  $-40^{\circ}C$  to  $+125^{\circ}C$
- 28-pin 5mm  $\times$  6mm QFN package

### ZSPM4023-09 Typical Application



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

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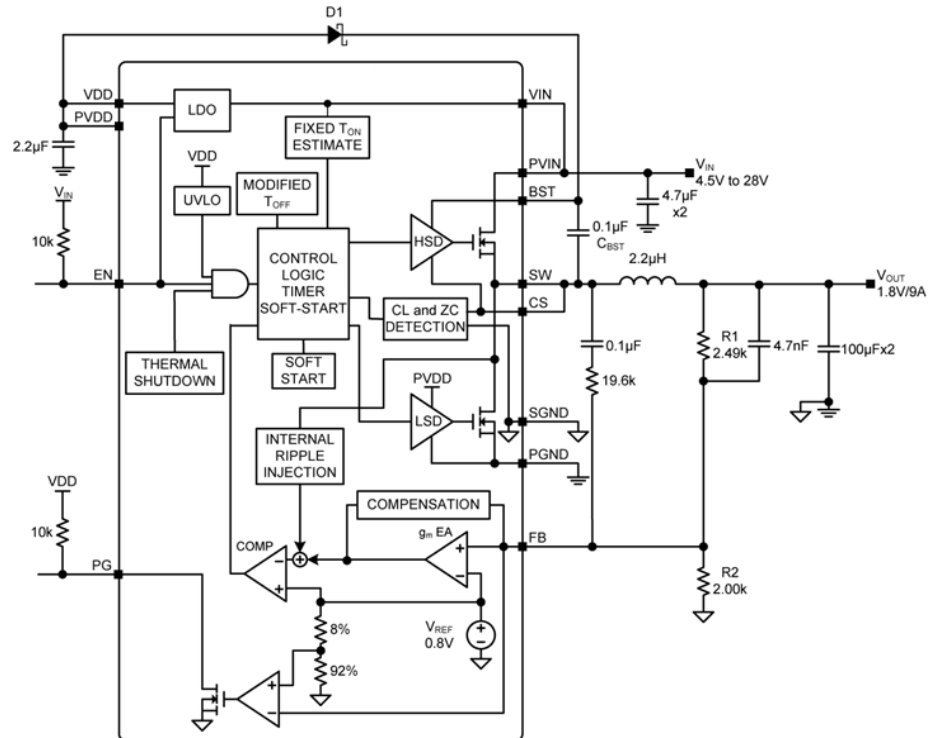
24V/9A Synchronous DC/DC Buck Regulator



The Analog Mixed Signal Company



## ZSPM4023-09 Functional Diagram



### Typical Applications

- ❖ Servers, work stations
- ❖ Routers, switches, and telecom equipment
- ❖ Base stations

## Ordering Information

Product Sales Code	Description	Package
ZSPM4023AA1W09	ZSPM4023-09 QFN28 5mmx6mm — Temperature range: -40°C to +125°C	7" reel with 1000 ICs
ZSPM4023-09-KIT	Evaluation Kit for ZSPM4023-09, including ZSPM4023-09 Evaluation Board.	Kit

Sales and Further Information		<a href="http://www.zmdi.com">www.zmdi.com</a>	<a href="mailto:Analog@zmdi.com">Analog@zmdi.com</a>	
<b>Zentrum Mikroelektronik Dresden AG</b> Global Headquarters Grenzstrasse 28 01109 Dresden, Germany  Central Office: Phone +49.351.8822.0 Fax +49.351.8822.600	<b>ZMD America, Inc.</b> 1525 McCarthy Blvd., #212 Milpitas, CA 95035-7453 USA  USA Phone +855.275.9634  Phone +408.883.6310 Fax +408.883.6358	<b>Zentrum Mikroelektronik Dresden AG, Japan Office</b> 2nd Floor, Shinbashi Tokyu Bldg. 4-21-3, Shinbashi, Minato-ku Tokyo, 105-0004 Japan  Phone +81.3.6895.7410 Fax +81.3.6895.7301	<b>ZMD FAR EAST, Ltd.</b> 3F, No. 51, Sec. 2, Keelung Road 11052 Taipei Taiwan  Phone +886.2.2377.8189 Fax +886.2.2377.8199	<b>Zentrum Mikroelektronik Dresden AG, Korea Office</b> U-space 1 Building 11th Floor, Unit JA-1102 670 Sampyeong-dong Bundang-gu, Seongnam-si Gyeonggi-do, 463-400 Korea  Phone +82.31.950.7679 Fax +82.504.841.3026
<b>European Technical Support</b> Phone +49.351.8822.7.772 Fax +49.351.8822.87.772	<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.			
<b>European Sales (Stuttgart)</b> Phone +49.711.674517.55 Fax +49.711.674517.87955				

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ZMDI:

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