

ZSPM4523

High-Efficiency Solar PV MPPT Regulator for Super Cap Systems

ZMDI[®]
The Analog Mixed Signal Company



Brief Description

The ZSPM4523 is a DC/DC synchronous switching super capacitor charger with fully integrated power switches, internal compensation, and full fault protection. It uses a temperature-independent photovoltaic maximum power point tracking (MPPT) calculator to optimize power output from the source during Full-Charge Mode. Its 1MHz switching frequency allows using small filter components, which results in smaller board space and reduced bill-of-material costs.

In Full-Charge Mode, the duty cycle is controlled by the MPPT function. Once the termination voltage is reached, the regulator operates in Constant Voltage Mode. When the regulator is disabled (the EN pin is low), the device draws 10 μ A (typical) quiescent current from V_{OUT}.

The ZSPM4523 integrates a wide range of protection circuitry, including input supply under-voltage lockout, output over-voltage protection, current limiting, and thermal shutdown.

The ZSPM4523 includes supervisory reporting via the NFLT (Inverted Fault) open-drain output to interface other components in the system. Device programming is achieved by the I²C[™]* interface through the SCL and SDA pins.

Benefits

- Up to 1.5A continuous output current
- High efficiency – up to 92% at typical load

Features

- Temperature-independent MPPT regulation
- V_{OUT} reverse-current blocking
- Programmable temperature-compensated termination voltage: 2.48 to 2.74 V $\pm$ 1%
- User programmable maximum charge current: 50mA to 1500mA
- Input supply under-voltage lockout
- Full protection for V_{OUT} over-voltage
- I²C[™] program interface with EEPROM registers
- Charge status indication

Related ZMDI Smart Power Products

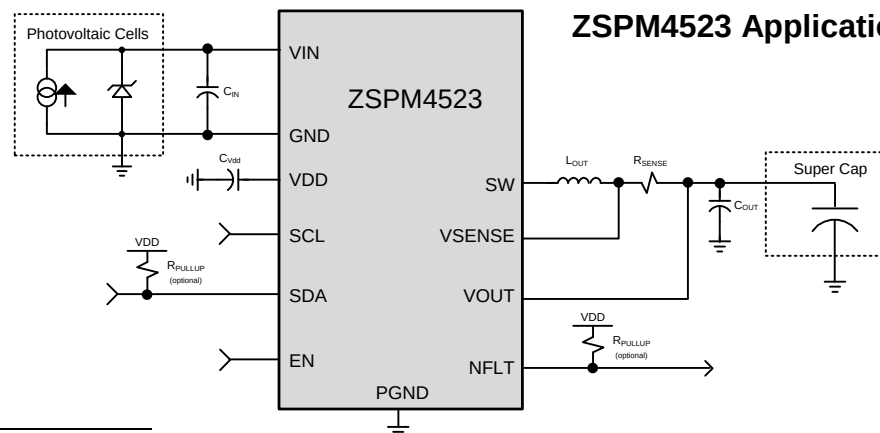
- ZSPM4521 High-Efficiency Charger for Li-Ion Batteries with MPPT Regulator
- ZSPM4551 High-Efficiency Charger for Li-Ion Batteries
- ZSPM4121 Ultra-low Power Under-Voltage Switch
- ZSPM4141 Ultra-Low-Power Linear Regulator

Available Support

- Evaluation Kit
- Support Documentation

Physical Characteristics

- Wide input voltage range: 3.2V to 7.2V
- Junction operating temperature -40°C to 125°C
- Packaged in a 16-pin PQFN (4mm x 4mm)



* I²C[™] is a trademark of NXP.

For more information, contact ZMDI via analog@zmdi.com.

ZSPM4523

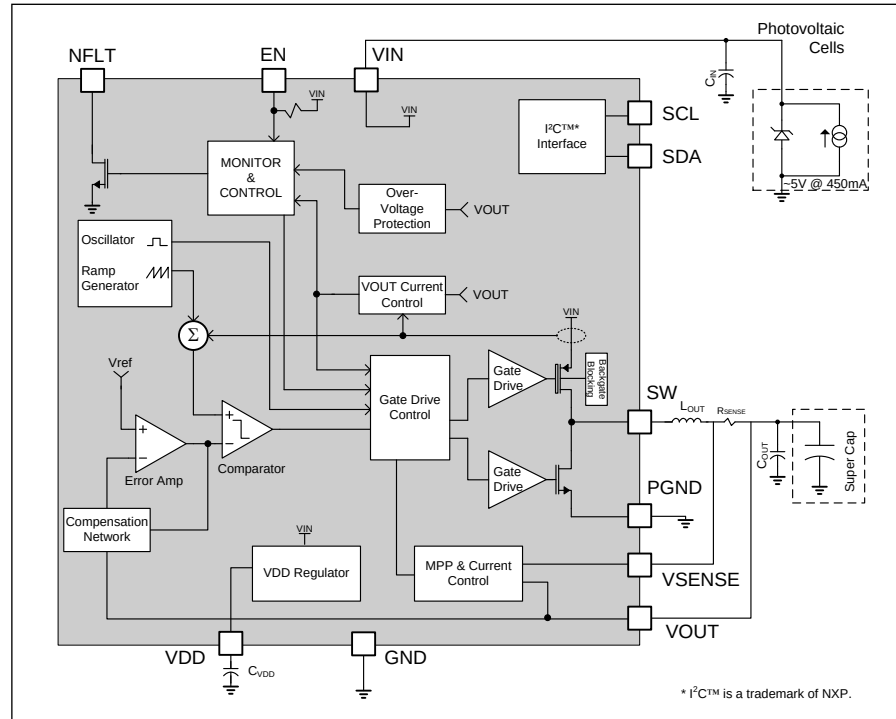
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ZSPM4523 Block Diagram



Typical Applications

- Portable solar chargers
- Off-grid systems
- Wireless sensor networks

Ordering Information

Ordering Code	Description	Package
ZSPM4523AA1W	ZSPM4523 High-Efficiency Regulator for Super Cap Systems	16-pin PQFN / 7" Reel (1000 parts)
ZSPM4523AA1R	ZSPM4523 High-Efficiency Regulator for Super Cap Systems	16-pin PQFN / 13" Reel (3300 parts)
ZSPM4523KIT	ZSPM4523 Evaluation Kit	

Sales and Further Information

www.zmdi.com

Analog@zmdi.com

Zentrum Mikroelektronik Dresden AG Grenzstrasse 28 01109 Dresden Germany Phone +49.351.8822.7.776 Fax +49.351.8822.8.7776	ZMD America, Inc. 1525 McCarthy Blvd., #212 Milpitas, CA 95035-7453 USA Phone +855.275.9634 (USA) Phone +408.883.6310 Fax +408.883.6358	Zentrum Mikroelektronik Dresden AG, Japan Office 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	ZMD Far East, Ltd. 3F, No. 51, Sec. 2, Keelung Road 11052 Taipei Taiwan Phone +886.2.2377.8189 Fax +886.2.2377.8199	Zentrum Mikroelektronik Dresden AG, Korea Office 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
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