

Brief Description

The ZSPM4013 is a DC/DC synchronous switching regulator with fully integrated power switches, internal compensation, and full fault protection. The 1MHz switching frequency enables using small filter components, resulting in reduced board space and reduced bill-of-materials costs.

The ZSPM4013 utilizes current mode feedback in normal regulation pulse-width modulation (PWM) mode. When the regulator is disabled (EN pin is low), the ZSPM4013 draws less than 10µA quiescent current.

The ZSPM4013 integrates a wide range of protection circuitry, including input supply under-voltage lockout, output voltage soft start, current limit, V_{OUT} over-voltage, and thermal shutdown. The ZSPM4013 includes supervisory reporting through the PG (Power Good) open drain output to interface other components in the system.

Features

- Output voltage options (depends on order code):
 - Fixed output voltages: 1.5V, 1.8V, 2.5V, 3.3V, or 5V with +/- 2% output tolerance
 - Adjustable output voltage range: 0.9V to 5V with +/- 1.5% reference
- Wide input voltage range: 6V to 18V
- 1MHz +/- 10% fixed switching frequency
- 3A continuous output current
- High efficiency – up to 95%
- Current mode PWM control with pulse-frequency modulation (PFM) mode for improved light load efficiency
- Voltage supervisor for V_{OUT} reported at the PG pin
- Input supply under voltage lockout
- Soft start for controlled startup with no overshoot
- Full protection for over-current, over-temperature, and V_{OUT} over-voltage
- Less than 10µA in Disabled Mode
- Low external component count

Benefits

- Increased battery life
- Minimal external component count (3 capacitors, 1 inductor)
- Inherent fault protection and reporting

Available Support

- Evaluation Kit
- Documentation

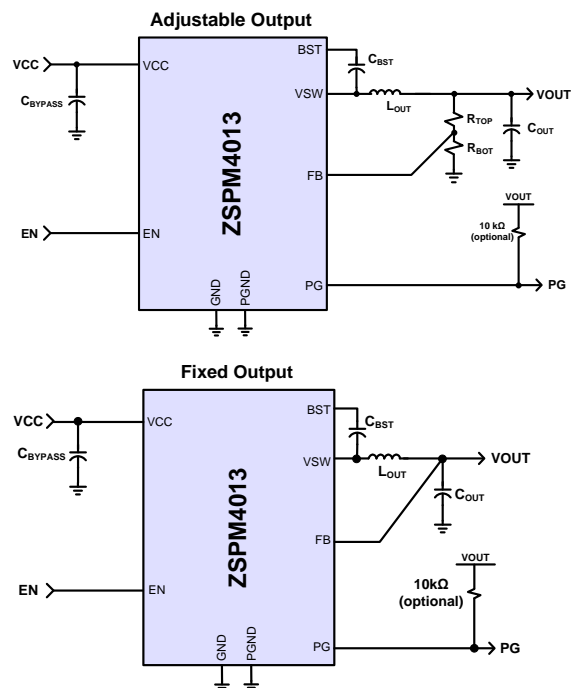
Physical Characteristics

- Junction operating temperature -40°C to 125°C
- Packaged in a 16pin QFN (3x3mm)

Related IDT Products

- ZSPM4011/ZSPM4012: 1A/2A synchronous buck converters, available with adjustable output from 0.9 to 5V or fixed output voltages at 1.5V, 1.8V, 2.5V, 3.3V, 5.0V (16-lead 3x3mm QFN)
- ZSPM1000: >5A single-phase, single-rail, true digital PWM controller (24-lead 4x4mm QFN)

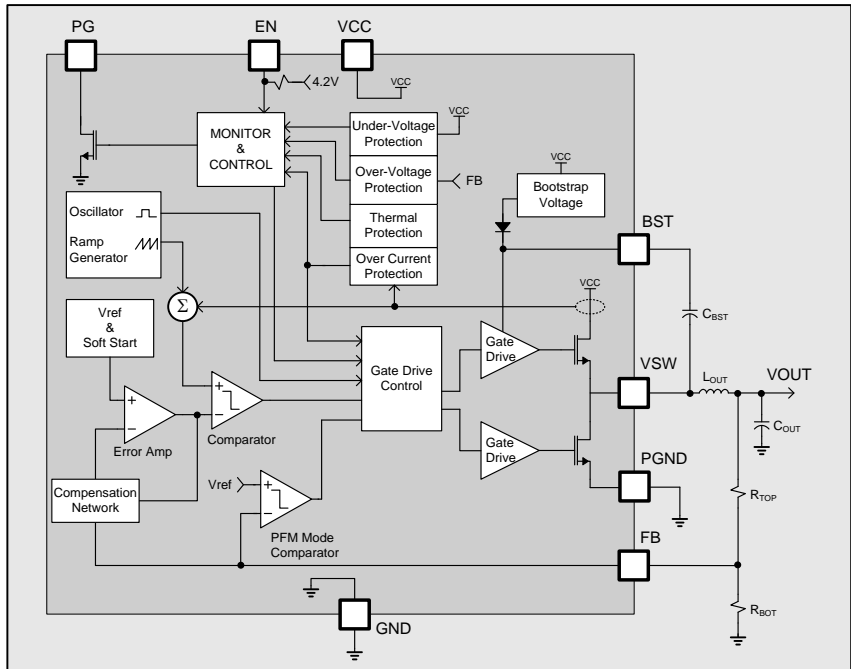
ZSPM4013 Application Circuits



ZSPM4013 Block Diagram

Typical Applications

- Wireless access points, cable modems
- Set-top boxes
- DVD, LCD, LED supplies
- Portable products, including GPS, smart phones, tablet PCs
- Printers



Ordering Information

Ordering Code	Description	Package
ZSPM4013AA1W00	ZSPM4013, 3A Synchronous Buck Converter: adjustable output, 0.9V to 5V, 16-pin 3x3mm QFN	7" reel with 1000 ICs
ZSPM4013AA1W15	ZSPM4013, 3A Synchronous Buck Converter: fixed output, 1.5V, 16-pin 3x3mm QFN	7" reel with 1000 ICs
ZSPM4013AA1W18	ZSPM4013, 3A Synchronous Buck Converter: fixed output, 1.8V, 16-pin 3x3mm QFN	7" reel with 1000 ICs
ZSPM4013AA1W25	ZSPM4013, 3A Synchronous Buck Converter: fixed output, 2.5V, 16-pin 3x3mm QFN	7" reel with 1000 ICs
ZSPM4013AA1W33	ZSPM4013, 3A Synchronous Buck Converter: fixed output, 3.3V, 16-pin 3x3mm QFN	7" reel with 1000 ICs
ZSPM4013AA1W50	ZSPM4013, 3A Synchronous Buck Converter: fixed output, 5.0V, 16-pin 3x3mm QFN	7" reel with 1000 ICs
ZSPM4013KIT	ZSPM4013KIT, Evaluation Kit for 3A Synchronous Buck Converter	Kit

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