ZSPM4023-12

24V/12A Synchronous DC/DC Buck Regulator

Brief Description

The ZSPM4023-12 is a constant-frequency, synchronous DC/DC buck regulator featuring adaptive on-time control architecture. The ZSPM4023-12 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 ZSPM4023-12 operates at a constant 600kHz (typical) switching frequency in continuous-conduction mode and can be used to provide up to 12A of output current. The output voltage is adjustable from 5.5V down to 0.8V.

Under medium to heavy loads, the ZSPM4023-12 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 ZSPM4023-12 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 ZSPM4023-12 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 ±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

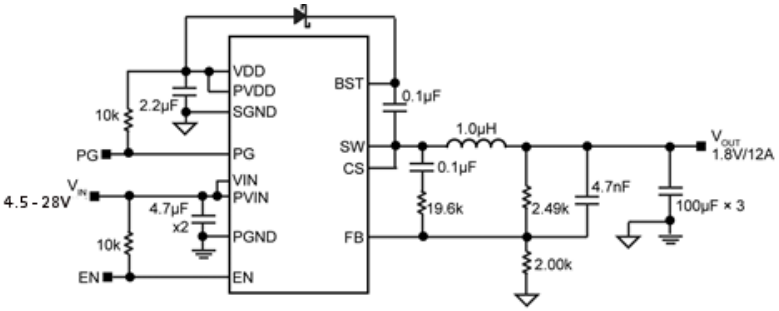
Available Support

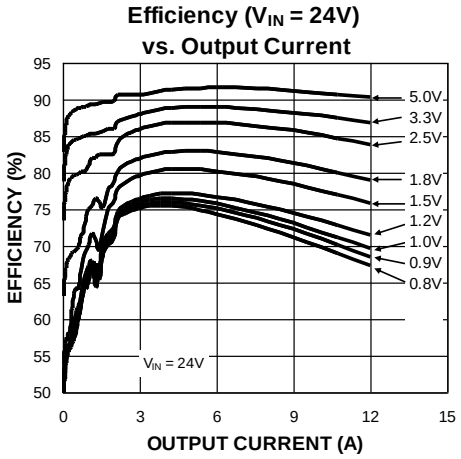
- Evaluation Kit
- Support documentation

Physical Characteristics

- Input voltage range: 4.5V to 28V
- Output current: up to 12A
- Switching frequency: 600kHz
- Junction temperature: –40°C to +125°C
- 28-pin 5mm × 6mm QFN package

ZSPM4023-12 Typical Application





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

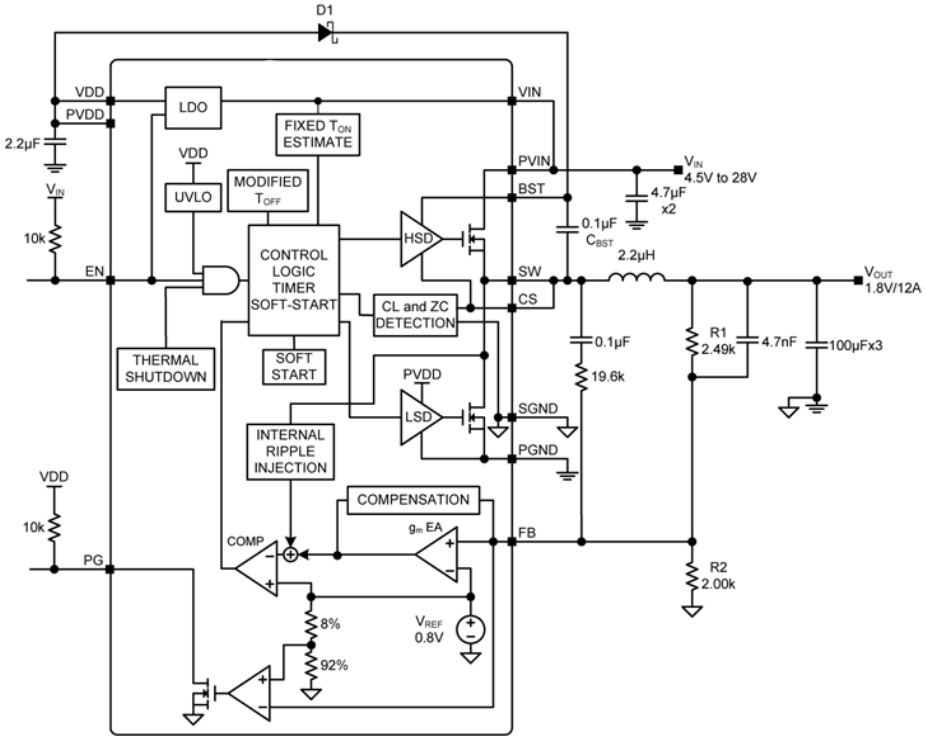
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The Analog Mixed Signal Company

ZSPM4023-12 Functional Diagram



Typical Applications

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

Ordering Information

Product Sales Code	Description	Package
ZSPM4023AA1W12	ZSPM4023-12 QFN28 5mmx6mm — Temperature range: –40°C to +125°C	7” reel with 1000 ICs
ZSPM4023-12-KIT	Evaluation Kit for ZSPM4023-12, including ZSPM4023-12 Evaluation Board.	Kit

Sales and Further Information

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