

XC9203

Series

Synchronous Step-Down DC/DC Converter + VD Low ESR Capacitor Compatible



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Preliminary

- ◆Low ESR Ceramic Capacitor Compatible
- ◆Input Voltage Range : 1.8V ~ 6.0V
- ◆Output Voltage Range : 1.0V ~ 6.0V
- ◆Switching Frequency : 300kHz (±15%)
- ◆Efficiency : 92% (TYP.)
- ◆P-channel Power MOSFET & N-channel MOSFET built-in
- ◆PWM/PFM mode selection
- ◆USP-10B, MSOP-8A Packages

General Description

The XC9203 series are synchronous rectification step-down DC/DC converters with P-channel power MOSFET and N-channel MOSFET built in. The series can be used with ceramic capacitors. More than 200mA of output current can be set with the external components, an inductor and two capacitors.

Output voltage is selectable in 0.1V increments within a range of 1.0V ~ 6.0V. With a 300kHz frequency, the size of the external components can be reduced. Switching frequencies of 150kHz and 600kHz are also available as semi-custom-designed products.

Ceramic capacitors can be used for the load capacitors which gives more freedom of choice for components as well as saving space.

Synchronous rectification PWM control can be switched to non-synchronous PWM/PFM automatic switchable control by using the CE/MODE pin.

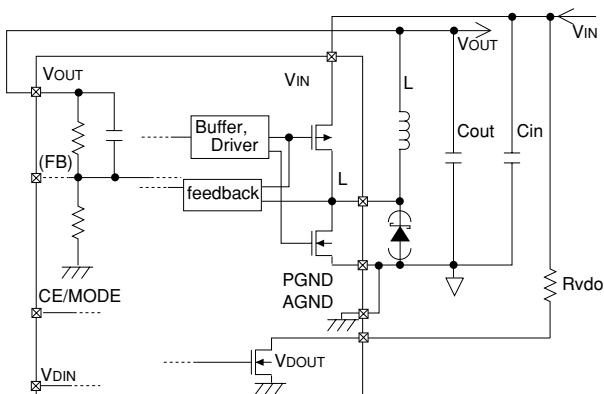
Soft-start time is internally set to 10msec.

As a voltage detector function is also built-in, voltage can be monitored using an externally connected transistor.

During shutdown (CE pin=L), consumption current can be reduced to as little as 1.0μA or less.

By monitoring the voltage difference between V_{DD}-LX (between drain-source of the built-in P-channel power MOSFET), it is possible to detect overshoot current and limit the current. An internal protection circuit then shuts down the output using a method of integral latching. U.V.L.O is also built - in.

Typical Application Circuit



Applications

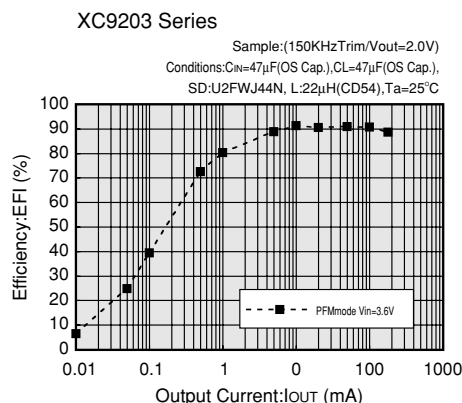
- PDAs
- Mobile phones
- Palm top computers
- Portable audio systems
- Various multi function power supplies

Features

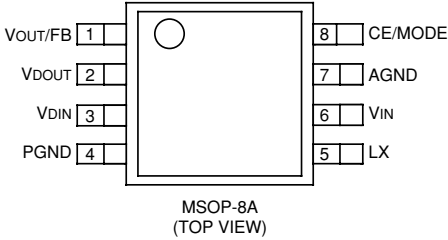
- Input Voltage Range** : 1.8V ~ 6.0V
- Output Voltage Range** : 1.0V ~ 6.0V (0.1V steps)
- Switching Frequency** : 300kHz
 - : 150kHz, 600kHz available as custom
- Output Current**
 - : ≤600mA (VIN=5.0V, VOUT=3.2V)
 - : ≤200mA (VIN=1.8V, VOUT=1.0V)
- Mode Selection** : Externally switchable
 - Control 1** : Synchronous PWM control
 - Control 2** : Non-synchronous PWM/PFM control
- Protection Circuit** : Integral latch method
 - (Over current limiter, Shutdown after 5ms)
- Efficiency** : 92% (VIN=5.0V, VOUT=3.3V : typ.)
- Stand-by Function** : I_{STB} = 1.0μA (max.)
- Output Capacitor** : Ceramic capacitor compatible
- Voltage Detector Function** : 0.85V Detect, N-ch Open Drain Output
- P-channel power MOSFET** : Built-in at high side
- N-channel MOSFET** : Built-in at low side
- Packages** : USP-10B, MSOP-8

Typical Performance Characteristic

EFFICIENCY vs. OUTPUT CURRENT



Pin Configuration



Pin Assignment

PIN NUMBER	PIN NAME	FUNCTION
1	VOUT/FB	Output Voltage Monitor
2	VDOUT	Voltage Detector Output
3	VDIN	Voltage Detector Input
4	PGND	Power Ground
5	LX	Switch
6	VIN	Power Input
7	AGND	Analog Ground
8	CE/MODE	CE or PWM / PFM Switch