1.5MHz, 1.2A Synchronous Step-Down Converter

FEATURES

- High Efficiency: Up to 96%
- 1.5MHz Constant Frequency Operation
- 1.2A Output Current
- No Schottky Diode Required
- 2.5V to 6.0V Input Voltage Range
- Output Voltage as Low as 0.6V
- 100% Duty Cycle in Dropout
- Low Quiescent Current: 40μA
- Slope Compensated Current Mode Control for Excellent Line and Load Transient Response
- Short Circuit Protection
- Thermal Fault Protection
- Inrush Current Limit and Soft Start
- Input over voltage protection(OVP)
- <1μA Shutdown Current
- Tiny SOT23-5 Package

APPLICATIONS

- Cellular and Smart Phones
- Wireless and DSL Modems
- PDA/MID/PAD
- Digital Still and Video Cameras

GENERAL DESCRIPTION

The STI3408B is a constant frequency, current mode PWM step-down converter. The device integrates a main switch and a synchronous rectifier for high efficiency without an external Schottky diode. It is ideal for powering portable equipment that runs from a single cell Lithium-Ion (Li+) battery. The output voltage can be regulated as low as 0.6V. The STI3408B can also run at 100% duty cycle for low dropout operation, extending battery life in portable system. This device offers two operation modes, PWM control and PFM Mode switching control, which allows a high efficiency over the wider range of the load.

TYPICAL APPLICATION

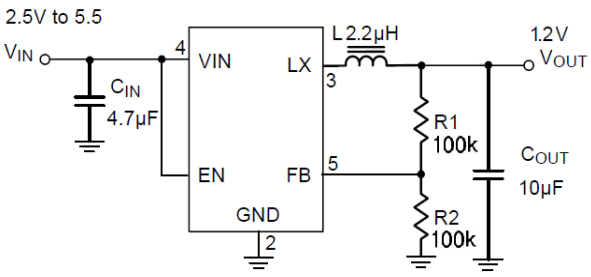
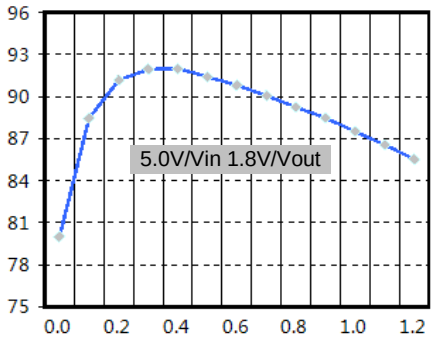


Figure 1. Basic Application Circuit

Efficiency vs. Load Current

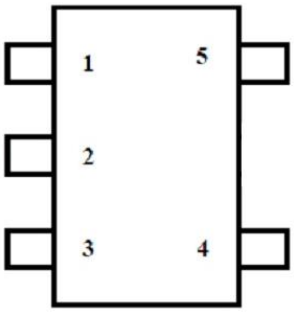


Load Current(A)

ABSOLUTE MAXIMUM RATINGS (Note 1)

Parameter	Symbol	Min.	Max.	Unit
Input Supply Voltage	Vcc	-0.3	6.5	V
LX Voltage	VLX	-0.3	6.5	V
EN,FB Voltage	V	-0.3	6.5	V
Pink Current limit	I peak		1.8	A
Junction Temperature			155	°C
Operating Temperature		-40	+85	°C
Lead Temperature			300	°C
Power Dissipation	PD		600	mW

PACKAGE/ORDER INFORMATION (SOT23-5)



Top Mark:S10XXX (S10:Device Code, XXX: Inside Code)

Part Number	SWICHING FREQUENCY	Temp Range	OUTPUT VOLTAGE (V)	OUTPUT CURRENT (A)
STI3408B	1.5MHz	-40°C to +85°C	ADJ	1.2

PIN DESCRIPTION

PIN	NAME	FUNCTION
1	EN	Chip Enable Pin. Drive RUN above 1.5V to turn on the part. Drive RUN below 0.3V to turn it off. Do not leave RUN floating.
2	GND	Ground Pin 可提供完整规格书 技术支持 欢迎试样 V:runzexin-18
3	LX	Power Switch Output. It is the switch node connection to Inductor.
4	VIN	Power Supply Input. Must be closely decoupled to GND with a 4.7μF or greater ceramic capacitor.
5	FB	Output Voltage Feedback Pin. An internal resistive divider divides the output voltage down for comparison to the internal reference voltage.

ELECTRICAL CHARACTERISTICS (Note 3)

(V_{IN}=V_{RUN}=3.6V, V_{OUT}=1.8V, T_A = 25°C, unless otherwise noted.)

Parameter	Conditions	MIN	TYP	MAX	unit
Input Voltage Range		2.5		6.0	V
OVP Threshold			6.5		V
UVLO Threshold			2.3		V
Input DC Supply Current	(Note 4)				μA
PWM Mode	Vout = 90%, Iload=0mA		140	300	μA
PFM Mode	Vout = 105%, Iload=0mA		40	65	μA
Shutdown Mode	V_{RUN} = 0V, V_{IN}=4.2V		0.1	1.0	μA
Regulated Feedback Voltage	T_A = 25°C	0.588	0.600	0.612	V
	T_A = 0°C ≤ T_A ≤ 85°C	0.586	0.600	0.613	V
	T_A = -40°C ≤ T_A ≤ 85°C	0.585	0.600	0.615	V
Reference Voltage Line Regulation	Vin=2.5V to 6.0V		0.04	0.40	%/V
Output Voltage Line Regulation	V_{IN} = 2.5V to 6.0V		0.04	0.4	%
Output Voltage Load Regulation			0.5		%
Oscillation Frequency	Vout=100%		1.5		MHz
	Vout=0V		300		KHz
On Resistance of PMOS	I_{LX}=100mA		0.25	0.30	Ω
ON Resistance of NMOS	I_{LX}=-100mA		0.10	0.15	Ω
Peak Current Limit	V_{IN}= 3V, Vout=90%		1.8		A
RUN Threshold		0.30	1.0	1.50	V
RUN Leakage Current			±0.01	±1.0	μA
LX Leakage Current	V_{RUN}=0V,V_{IN}=VLX=5V		±0.01	±1.0	μA

Note 1: Absolute Maximum Ratings are those values beyond which the life of a device may be impaired.

Note 2: T_J is calculated from the ambient temperature T_A and power dissipation P_D according to the following formula: T_J = TA + (PD) x (250°C/W).

Note 3: 100% production test at +25°C. Specifications over the temperature range are guaranteed by design and characterization.

Note 4: Dynamic supply current is higher due to the gate charge being delivered at the switching frequency